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# A Critical Evaluation of ITSO Smart Ticketing policy, practice and outcomes

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RESEARCH DEGREES WITH PLYMOUTH UNIVERSITY

# A CRITICAL EVALUATION OF ITSO SMART TICKETING POLICY, PRACTICE AND OUTCOMES

by

**ALISON RUMBLES**

A thesis submitted to the University of Plymouth
In partial fulfilment for the degree of

**DOCTOR OF PHILOSOPHY**

School of Geography,
Earth and Environmental Sciences
Faculty of Science and Engineering

**January 2018**

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# Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Sub-Committee.

Work submitted for this research degree at the Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment.

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# Abstract

Alison Rumbles

**A Critical Evaluation of ITSO Smart Ticketing, Policy, Practice and Outcomes**

This thesis contributes to the ongoing debate on the future of smart ticketing in the United Kingdom, and in particular the role of ITSO in that future. Through evaluation of commentary from prominent elite personnel connected with the transport industry and from local and national government departments, this thesis identifies the environment in which smart ticketing is intended to operate, the means by which that is achieved and the significance of the outcomes. Key themes which emerged from the research were Partnership Working and Governance, the Customer Proposition and the ITSO Question, which focused on the operationalisation of smart ticketing in the bus industry.

In terms of the evaluation of the outcomes of ITSO, conclusions are reached as to the success ITSO has achieved in terms of the national concessionary schemes as well as the limited success it has achieved in relation to commercial interoperable ticketing in a deregulated environment which has been revealed to work against the concept of interoperability.

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# Introduction

Transport policy in the UK has evolved through successive governments to the situation currently, where the balance of social, economic and environmental concerns as represented in the concept of 'sustainability' are a central theme of current transport policy objectives (Docherty & Shaw, 2008). To achieve that aim of sustainable transport, the enhancement of public transport has been a focus of attention, and, as part of that process, measures designed to attract users from their cars, including Smart Ticketing, have been embedded into transport policy (Stradling, Meadows & Beatty, 2000). The government's commitment to ITSO, "an inter-operable smartcard specification and supporting environment" (Blythe, 2004, p.51) , is intended to enable the delivery of this policy initiative.

This research project will explore the role and scope of ITSO smart ticketing in the public transport industry in the UK. In particular, it will focus on the governance framework in which it is delivered, in a local context and that of the wider implications of national roll out. The current government's commitment to sustainable transport, as stated in the 2011 White Paper, "Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen" (2011b), is the context within which the present policy on Smart and Integrated ticketing rests and, therefore, the evaluation of smart ticketing policy, it's practice and outcomes will be from this standpoint.

The project has investigated the extent of the achievement of a stated government aim to make "the best use of smartcards and multi-operator ticketing …… while seamlessly moving from one operator, or mode of transport, to another" (DfT, 2012b, p.5). Smart, integrated ticketing was seen as integral to the door-to-door strategy (DfT, 2013b). It was seen as the means to facilitate seamless travel across different modes and operators, making door- to-door journeys by public transport easier.

## 1.1 Research Aim

Two original aims were determined for this research project in the context of the smart ticketing debate as it stood in 2012. These were, firstly, to critically analyse the process and policy delivery of ITSO Smart Ticketing through qualitative research focusing on the insights, views and perceptions of key industry and government personnel, a previously overlooked rich source of knowledge in this field. Secondly, to assess the impact of technology on key outcomes of a multi operator, multi modal, smart ticketing project – South West Smart Applications Ltd (SWSAL), an empirical study was envisaged to monitor boarding times, emissions and passenger use.

As the research progressed, and, in the light of literary investigation, initial interviews, and fieldwork in Norfolk, it became increasingly evident that a detailed focus on quantitative indicators such as boarding times wasn't necessary. For example, the value of assessing perceived outcomes in relation to boarding times was identified as being of lesser significance to the overall debate than originally envisaged. This was evident from the on-bus survey work undertook in relation to boarding times in that the actual fare transaction, ie the smart element of boarding, was only part of the overall boarding time, the others being a combination of factors including passenger age and mobility, their ability to locate the smartcard, coping with shopping and luggage, social interaction with the driver etc. Therefore, the emphasis in this piece of work shifted to a qualitative focus with the principal aim of analysing process and policy delivery of ITSO Smart Ticketing, on a local and national scale, as revealed through the insights, views and perceptions of key industry and government personnel.

The following research questions take account of this shift in emphasis:

1. Are there differences in the delivery and effectiveness of different ITSO smart ticketing schemes? If so, why do some schemes work better than others?
2. How can the Department for Transport and the passenger transport industry work together to best achieve policy objectives?

3. Is the customer well served by the schemes on offer?
4. To what extent does the ITSO specification work, and what future proofing steps are required?
5. Are there general lessons to draw from working with other sectors and from other areas with a longer tradition in smart ticketing?

These research questions are answered through the evolution of this thesis, as firstly the political and operational context are explored through the literature reviewed in chapters 2 and 3 and then the principal areas of discussion around partnership working, the customer proposition and the ITSO question become the focus for the analysis chapters 5, 6 and 7. Chapter 8 brings the focus back to these questions which are answered in the 9 conclusions drawn at the end of this thesis.

In order to gather the appropriate evidence to complete this investigation, I have adopted a pragmatic approach, investigating a real world policy topic, utilising an interpretivist method of inquiry through face to face interviews. It was anticipated that through analysis of the qualitative narratives, conclusions would be drawn as to the degree the stated aims of government policy to achieve seamless travel across the UK, have been achieved thus far, and determine implications for the future

## 1.2 Basic Definitions

There are several key phrases utilised throughout this thesis which require definition at the very beginning to avoid confusion.

**Smart ticketing** is where the ticket or product is stored electronically on a microchip rather than printed on a paper ticket (Blythe, 1998). In most existing smart ticketing schemes, this microchip is embedded in a smartcard, but it could also be on a smart phone. Alternatively, a smart product could be linked to a travel account situated in a scheme's back office, so that the chip acts as a token rather holding the ticket product itself (Sauveron, 2009).

**Interoperable** is defined as being "able to exchange and make use of information" (*Oxford Dictionary*, 2015) or more pertinently in this context, "capable of being used or operated reciprocally" (*Dictionary Reference*, 2015). The word interoperable is used throughout these discussion chapters, as opposed to ITSO smart ticketing, with the intention that it encompasses the range of available technologies which facilitate interoperability to the end user, the customer.

**Integration** is defined as "an act or instance of combining into an integral whole" (*Dictionary Reference*, 2015). In the transport context, London can be described as having an integrated network where the principal forms of public transport are co-ordinated under one regulatory body, namely Transport for London. Likewise, Perth in Western Australia has an integrated transport system. "**Integrated ticketing** describes tickets (or entitlements to travel) which are accepted by different operators or different modes, or both." (DfT, 2013b, p.26).

At the commencement of this research ITSO was deemed the only way forward for interoperable smart ticketing in the UK outside of London. London was recognised by many who took part in this research as being uniquely distinct by virtue of its regulatory environment, flat fare structure and funding regime. In the rest of the deregulated UK, with its variety of commercial bus operators offering a multitude of different fare offerings the transfer of the successful Oyster scheme was not possible. Oyster operated as a closed scheme, or proprietary scheme, developed by a large private finance initiative contract (Ford, 2007), and was not ITSO and hence not inter-operable, other than within London. Indeed, the deregulated market was a significant barrier to the introduction of interoperable smart ticketing due to the disintegrated nature of its operating companies and the lack of any common infrastructure for its delivery (Shaw & Docherty, 2014).

## 1.3 Chapter Synopsis

The thesis will proceed by first reviewing transport policy in **chapter 2**, starting pre 1997, documenting the evolution of transport in the United Kingdom and how the formulation of transport policy tended to be reactionary to transport activity, in particular to the dramatic rise of car ownership in the early to mid-twentieth century. The dramatic changes brought about by the Conservative government of 1979 on public transport, principally, in relation to this thesis, the deregulation and privatisation of the bus industry are examined. The move to a more integrated sustainable transport agenda became the focus towards the end of the Conservatives run of power at the end of the 1990's as Labour took office for the next thirteen years in 1997. This was the era where technology advancements in areas other than public transport began to emerge which opened up the possibility of utilising smart developments in ticketing. The chapter reflects and considers the context of transport policy in which smart ticketing rests.

**Chapter 3** then focusses on smart ticketing, exploring its policy framework, origins and implementation. The nationally endorsed governance model for transport is partnership working and is considered through an examination of Government publications and other available literature. A review of the ITSO specification and organisation is then presented before examining the legislative and financial levers available to the government to promote smart ticketing. The chapter concludes with a review of successful smart ticketing schemes across the world including the Oyster card scheme and Perth SmartRider from Western Australia, the latter providing a comparative study to contrast with the UK experiences.

The methodology adhered to throughout this piece of research is the focus for **chapter 4**, which commences by stating the epistemological and philosophical positioning of the work, explaining the reasons for the adoption of an overall pragmatic approach. The

specific methods utilised are then presented with an explanation of the way in which the resultant data was handled and analysed.

The subsequent three chapters focus on the principal areas of interest which emerged from the dataset, namely Partnership Working and Governance, The Customer Proposition and The ITSO Question. These were by no means the only areas of interest, but were significant in terms of the numbers of responses, and therefore identified as worthy of further and more rigorous discussion. In each chapter a section is devoted to comparisons in Perth with contrasting perspectives of the way in which their smart ticketing scheme was designed and implemented.

**Chapter 5** focusses on Partnership Working and Governance and explores the evolution and theory of partnership working in relation to the delivery of smart ticketing in the UK. The barriers to effective partnership within the governance structures are debated as revealed through the responses from participants across the spectrum of operations and administration. As was envisaged, there were some strong views expressed from all quarters on the way in which Governance structures affected the delivery. This is shown to be particularly true in relation to the role and scope of the Department for Transport and the extent to which it should, or should not, be involved in the process. The chapter concludes with suggestions as to how the smart ticketing debate should move forward and comparisons again, are drawn with the Perth case study.

The Customer Proposition has grown to become a favourite phrase during the term of this piece of research and it forms the subject of **chapter 6**. The chapter examines those aspects which are seen as important to the customer, from the various viewpoints of the different categories of participant, and it becomes clear that actually the customer was not at the centre of the process initially; rather that technology was the leader.

**Chapter 7** addresses the ITSO Question itself, exploring how interoperability can be achieved and to what extent it is desirable within the deregulated environment outside of London. The complexity of ITSO within that environment is reviewed as experienced first-hand by all those participants involved in its delivery. The ITSO organisation is examined and discussed and there are many informed views cited as to the direction which could be adopted in the ever changing technological world of smart, be it mobile or contactless payments.

**Chapter 8** seeks to bring together the dominant views and conclusions from each of the three main discussion chapters and includes reflections on the methodology, and policy recommendations. It closes with a concise list of 9 principal conclusions, which collectively answer the research questions.

# 2 Review of Transport Policy

In March 2012, Norman Baker MP, Parliamentary Under-Secretary of State for Transport made the following statement in the foreword to *Green Light for Better Buses*:

> *"This isn't simply about providing more reliable, more frequent and more affordable services but making the best use of smartcards and multi-operator ticketing. In the years to come, we want any bus traveller to purchase tickets quickly and conveniently while seamlessly moving from one operator, or mode of transport, to another." (DfT, 2012b, p.5)*

This recent policy commitment to Smart Ticketing as a core pathway to supporting wider sustainable transport outputs has its roots in policy initiatives of successive governments. Sustainable transport has been a key objective of the previous Labour, Coalition and Conservative governments which in modern times can be traced back to 1997. To achieve this objective, the enhancement of public transport has been a focus of attention and, as part of that process, measures designed to attract users from their cars, including Smart Ticketing, have been embedded into transport policy. The government's commitment to ITSO, "an inter-operable smartcard specification and supporting environment" (Blythe, 2004, p.51), is intended to enable the delivery of this policy initiative.

In order to understand the place that Smart Ticketing occupies in present day UK Transport Policy thinking, I will seek within this chapter to examine how the wider umbrella of transport policy has evolved in provincial England under successive governments and in varying economic, environmental and social conditions. Particular reference will only be made to London, Northern Ireland, Scotland or Wales, where it is directly relevant. I will review literature appraising the evolution of transport policy, and in particular focus on that which relates to more recent policy developments which have resulted in, and impacted on, the development of Smart Ticketing in the public

transport sector. I will consider its relevance and application across modes, but for the purpose of this thesis, the focus will principally be on buses.

Until devolution in 1999/2000, the delivery of transport policy took place as part of a "command and control" approach by UK national and local government. London can be considered a 'special' case as the creation of the Greater London Authority in 2000 set it apart from the rest of England, particularly in relation to bus service provision. This is in large part determined by its unique governance framework, and the contrast between that and the rest of England will be investigated further in this chapter.

The chapter seeks to outline the change in transport policy context, priority and governance which have all contributed to the space within which the role of Smart Ticketing operates. It starts by providing a short summary of the history of transport policy in the years leading up to 1997 with particular focus on the importance of bus deregulation and its legacy to wider transport policy. It then considers the change in emphasis to a more integrated sustainable transport system post 1997 and the extension of a devolved approach, pioneered by New Labour to local integrated transport delivery. It was under this regime that current Smart Ticketing policy, explored in more detail in chapter 3, was founded.

## 2.1 UK Transport Policy pre 1997

### 2.1.1 From Competition to Co-ordination and Control

The development of transport in Great Britain has gone through various stages in its history, from the significant expansion in modes of transport during the Industrial Revolution, notably canals and the railway, with the latter being the principal mode of transport in mainland Britain for almost a century, to the modern era of a personal car centred economy (Bogart, 2009; Robinson & Bamford, 1978). Modes of transport were initially complementary, due to the nature of their differences and relative limitations, which resulted in a period of co-ordination in transport terms (Glaister, 2006).

However, with the rapid development of motorised transport in the early twentieth century, and the impact of two world wars, which necessitated the intervention of the government in a time of national emergency, control and regulation became more the order of the day (Glaister, 2006). In the post war years there were periods of increasing regulation to manage competition, interspersed with periods of relaxation of regulation to allow natural market forces to influence policy (Robinson & Bamford, 1978).

The development of transport policy largely came about as 'reactive' to developments within the transport industry, particularly the rapid growth of car ownership. The Road Traffic Act of 1930 for example, established Area Traffic Commissioners, who were required to oversee license applications which were introduced to bring "stability into an industry where competition was resulting in chronic instability" (Glaister, 2006, p.10). This 'wasteful competition' was deemed to be against the public interest. In London, where the expansion of rail and road transport was little short of phenomenal in the early twentieth century, the creation of the London Passenger Transport Board (LPTB) in 1930 was a reaction to the expansion of traffic and congestion in the capital as well as the developing Underground system. This growing awareness resulted in the development of administrative systems to effectively control the workings of the transport sector to the benefit of the passenger and society as a whole with many similarities between the LPTB and today's Transport for London, although social and environmental considerations were not on the political agenda at that time (Crompton, 1999; Glaister, 2006).

The UK Transport Policy landscape, as a result, was shaped over years of successive national government decisions which were in large part directed by the growth of the car and consequent development of transport infrastructure (Headicar, 2009). The evidence for this is no more marked than in the building of motorways where between 1959 and 1972, 1000 miles of motorway linked the majority of major regional cities in England (Starkie, 2015). In terms of public transport, the 1968 Transport Act included proposals to improve the co-ordination of such in urban conurbations resulting in the

creation of the Passenger Transport Authorities (PTA's). These PTA's were empowered to provide an integrated public transport system, as was the case in London, which resulted in the take-over of the majority of local bus services within these areas (Robinson & Bamford, 1978). The PTA's and the associated Passenger Transport Executives which support them oversee public transport in their areas but have no highway powers (Knowles & Abrantes, 2008).

### 2.1.2 The National Bus Company

The 1968 Transport Act "redirected emphasis away from 'efficiency' and 'competition' towards 'service' and 'modal integration'" (Seedhouse, 2012, p.58) through the creation of PTA's and the National Bus Company (NBC) in England and Wales, a merger of the two former major transport groups, Tilling and British Electric Traction (BET) (Nash, 2013). The formation of the NBC and the Scottish Transport Group in Scotland made provision, for the first time, for significant levels of government subsidy to support unprofitable but socially necessary services. This was in part as a consequence of the loss of transport links for significant numbers of the travelling public following the impact of Beeching's railway closure programme (Beeching, 1963; Mackie, 1999; Robinson & Bamford, 1978). The National Bus Company introduced "extra layers of management" (Nash, 2013, p.19) at Regional and National level with their associated administrative costs. However, there were distinct benefits to its passengers through the integration of bus services between its 70 subsidiary companies along with integrated pricing and the norm of interoperable ticketing on standardised equipment.

The National Bus Company and its subsidiaries operated throughout the 1970's. However, it was widely considered that bus services were at the end of the queue when it came to local authority interest in terms of fleet investment or provision of bus priority measures to overcome increasing congestion (Helm, 2009). Over time, and

particularly after the 1979 election of the Conservative neoliberal administration, the government believed that the National Bus Company and other publicly owned utility companies were inefficient in their use of public funds, through subsidies, and as a result of inefficient practices revealed through investigations in the 1984 White Paper, *Buses* (DfT, 1984), concluded that a 30% cost reduction was achievable through privatisation (Glaister, 2006).

### 2.1.3 Deregulation and the demise of the NBC

The 1979 election of Margaret Thatcher's Government moved policy objectives away from a period of regulation and control to that of deregulation, leading to the privatisation of both the rail and bus industry facilitating a resurgence of a market led industry (Bagwell & Lyth, 2006). Bus deregulation was a confusing issue as it included the removal of route licensing, the requirement of local authorities to only provide for socially necessary services, the breaking up and privatising of the National Bus Company, the removal to arm's length companies of local authority owned operators and the requirement for the industry to be subject to the normal provisions of competition law (Nash, 1993).

Deregulation of the bus industry was set against the context of the car being viewed by both the general public and politicians alike as "an indication of personal and national wealth" (Davison & Knowles, 2006). The Government, however, true to its neoliberalist principles, was determined to "remove barriers to competition, in order to foster the free market in the belief that this would encourage efficiency" (Glaister, 2006, p.20). It was understood by some, and indeed echoed in the White Paper (DfT, 1984)that if regulation was removed, competition, and indeed new entrants to the industry, would be encouraged with resultant economies of scale and consequential improvements to the efficiency of networks which would potentially be beneficial to the passenger (Glaister, 2006). Glaister argued that a principal reason for pursuing a policy of bus deregulation was financial in that it was considered to be the means by which a

reduction in bus subsidies could be achieved “the aim was to introduce genuine competition into bus labour markets by creating a competitive industrial structure: that is, to both deregulate and priavatise” (2006, p.195). At the time there was much controversy as to whether such a policy initiative was the right decision and opposing views from Glaister and Beesley (1985b; 1985a) on the one hand, in favour of competition and Gwilliam, Nash and Mackie (1985a; 1985b) on the other, against competition reflected a division of opinion in the bus world of the day as to whether such a strategy would be damaging to the public good or not. Gwilliam, Nash and Mackie also argued that an integrated network would provide a better service to the passenger, than an uncoordinated or disintegrated network (1985b), a feature of the deregulated environment which has significant ramifications, as revealed in this piece of research.

The Transport Act of 1985 (HMSO) was a pivotal piece of transport legislation in the Conservative administration which both ended the regulatory control that had been in place since the 1930 Road Traffic Act, and commercialised and privatised the bus industry (Preston & Almutairi, 2013). At that time, 75% of the industry was still in public ownership, the National Bus Company (NBC), with its 70 subsidiary companies accounted for around 28%, a further 28% was owned by the metropolitan and municipal companies and 13% by the Scottish Bus Group (Preston & Almutairi, 2013). The action was swift and saw the sale of all former NBC subsidiary companies within two years, 40 of which were to Management Teams (HANSARD, 1988), and by the mid-1990s the industry was predominantly privatised (White & Farrington, 1998).

The exception to this was a core of 48 local Municipal companies which, whilst operating as standalone businesses, remained in local authority ownership as sole or majority shareholders thereby combining the benefits of commercial operational freedom, with earned surpluses benefitting the public sector. By 2015 only 12 of the original 48 companies still remained in local authority ownership. The government viewed the 1985 Act as a means of reducing subsidy at the same time as stimulating

competition and improving efficiency (White & Farrington, 1998). However, a significant omission in these grand plans for full deregulation and pure market led solutions was London. The 1984 London Regional Transport Act saw the control of bus services moved from local to central government with the introduction of competitive tendering for bus services in a process which lasted 15 years. It was not until 1999 that New Labour, through the Greater London Authority Act, returned buses in the capital to the control of local government, in the form of the elected Mayor and Greater London Assembly, and a new executive agency, Transport for London (established in 2000) (Preston & Almutairi, 2013). This will be reviewed in greater detail later in the chapter. Preston and Almutairi (2013) viewed this difference in approach for London as "a form of experimental control" (p.209) against the rest of the deregulated country.

The academic world is inevitably full of contrasting views on the validity of opposing political decisions on how transport should or should not be 'regulated'. The definition of regulation is often controversial, but in relation to governmental involvement in the public sector, James (2005, p.324) defines it as a "specific form of control that uses rules or standards combined with monitoring and enforcement activity as a mechanism of control". The opposite, pro-market view is advocated by Hibbs (2000) who argues his case, actively opposing state involvement in the transport industry, although others maintain that "state involvement in transport has always been of addressing market failure" (Docherty, Shaw & Gather, 2004, p.258). At this juncture, an acknowledgement of the importance and relevance of theoretical standpoints in underpinning the formulation of any policy, including transport, is necessary as this enables the understanding of the nature and development of the policy within institutional frameworks (Jessop, 1997; Pemberton, 2000).

The quest for efficiency, reflected in the legislation of both the 1980 and 1984 Transport Acts, liberalised the bus markets but also saw the introduction of new financial mechanisms for providing social services (Button & Keeler, 1993). White

(1990) in his work on the welfare benefits derived from bus deregulation outside London, concluded that whilst there were net benefits in metropolitan areas, the opposite was true in shire counties, where cost reductions were much lower, and in relation to consumer benefits, passengers had certainly suffered in relation to increased fares and an associated decline in passenger trips. In his review of bus deregulation in Britain some ten years after privatisation, White (1997) observed that in terms of overall poor industry performance, with a few notable exceptions, including London, efforts were necessary to improve the quality of public transport "in order for it to play a wider role in transport provision" (p.13). The encouragement of competition between commercial bus operators, was monitored through the Office of Fair Trading and the Monopolies and Mergers Commission, who in parallel with privatisation, closely watched, and intervened to ensure that policy objectives were adhered to (White, 1997).

### 2.1.4 The cost of Predict and Provide policy

In describing the development of transport policy over this period as a "patchwork quilt" (p.65), Headicar (2009) concludes that it lacked any logical overall planning, but rather was added to and altered as time went on. With the continued rise in car ownership and the commitment of successive governments to provide ever increasing facilities for the motorist, throughout a significant part of the twentieth century transport policy experienced a period of car domination (Begg & Gray, 2004; Headicar, 2009). The phenomenon of "predict and provide" characterised the years leading up to 1997 and this approach to policy was described by Shaw and Walton (2001) as one which "prioritised the use of the private car and signalled a predisposition to provide additional road capacity in preference to alternative transport options" (p.1032). This policy was heavily influenced by pressure groups from the car owning electorate and Labour and Conservative governments were guilty of supporting the car owner, at least in theoretical terms (Begg & Gray, 2004; Cahill, 2010).

No policy exists in isolation, and following on from the political and economic climate of the late 1970s and early 1980's, a time of global oil price shocks (Docherty, Shaw & Gather, 2004), there was a growing environmental concern and it was inevitable that a change in transport policy would be necessary (Goodwin, 1999). The Earth Summit in Rio de Janeiro in 1992 focused the world's attention on the issue of global warming and climate change (Glaister, 2006). Environmental concerns surrounding the increase in traffic growth and associated emissions of carbon dioxide (Golob & Hensher, 1998), combined with pressure group campaigns, brought about the publication of the 1997 Road Traffic Reduction Act (Docherty, 2001). The issue of financial limitations was as relevant to the development of a new approach to transport policy as was environmental concern and "it was the squeeze on public spending and not the emergence of a more environmentally sensitive transport policy that heralded the end of the period of major road building" (Docherty, Shaw & Gather, 2004, p.260).

### 2.1.5 A move towards Integrated Sustainable Transport Policies

Whilst the Conservatives approach to transport policy through the 1980's was characterised by privatisation and deregulation, John Major's term in office, 1990 to 1997, saw the start of the modern movement towards a more integrated approach to sustainable transport. This is evidenced in the sphere of tourism and the Countryside Commission in its publication on Sustainable Rural Tourism: *Opportunities for Local Action* (1995). This paper recognised the need to take account of the relationship between the needs of visitors, the environment and local communities. This emerging shift in policy was built upon and developed within the White Paper *Rural England, A nation committed to a living countryside* (DoE, 1995) which stated that its objectives were to improve the choice and quality of transport, and to reduce the adverse impact on the environment. This was to be achieved by encouraging local authorities to develop imaginative and efficient use of public transport in their planning by effectively communicating with all relevant partners (DoE, 1995). John Major's government's

parting gesture in the Green Paper: *Transport - the Way Ahead* continued the theme of integration in pursuit of a "healthy, sustainable environment" (Glaister, 2006).

In recognition of this change in policy approach, enhanced sustainable policy ideas were more energetically developed in New Labour's pre 1997 election transport document *Consensus for Change* which "articulated a new direction for transport policy" (Docherty & Shaw, 2008, p.4). Many academics and transport professionals were reportedly excited (Ledgard, 2010) as, at the end of the Conservative government's eighteen year period in office, the mood appeared to be changing from 'neo-liberalist' policies, making "government smaller and more market driven" (Healey, 2010, p.70) to what was termed 'new realism' principles (Docherty & Shaw, 2011; Goodwin, 1999), but as will be revealed, this excitement proved short lived.

## 2.2 A New Approach to UK Transport Policy post 1997

### 2.2.1 The promise of New Labour

The landslide election of Tony Blair's New Labour government in 1997 promised radical change for transport. This was quickly reflected in the formulation of the 1998 White Paper: *A New Deal for Transport* (DETR, 1998a). The new government took counsel from academics and professionals in the transport world in thinking referred to as "new realism". This concept was devised by Phil Goodwin amongst others who advocated the promotion of multimodal policies moving away from the 'predict and provide' approach as discussed in section 2.1.4 (Docherty & Shaw, 2011). These principles promoted better integration between modes of transport and between other policy areas such as land use and health (Goodwin, 1999). Goodwin further referred to the aspiration of this New Deal policy as fostering the "conditions in which people's everyday behaviour and attitudes may be in harmony with policy" (Goodwin, 1999, p.657). This very important acknowledgement of the part that behavioural aspects played in determining passenger transport decisions would come to feature

prominently in policy making (Steg & Tertoolen, 1999) and, as is explored in chapter 3, is central to the ethos of Smart Ticketing solutions.

An early and important initiative of New Labour involved the amalgamation of both policies for and delivery of transport, planning and the environment into one new Department for Environment, Transport and the Regions (DETR). The DETR was a physical response to the aspiration to seamlessly integrate the responsibility for addressing the issues of air pollution and carbon emissions, under the direction of John Prescott and is explained in more detail in section 3.2.1 (Begg & Gray, 2004; Headicar, 2009). It was within this context of a simpler governance structure that a more integrated policy was crafted and introduced with direct implications for sustainable transport and ticketing which is explored in detail in chapter 3.

The 1998 White Paper represented an important shift, abandoning 'predict and provide' in favour of a "better, more integrated system to tackle the problems of congestion and pollution" (DETR, 1998a, p.Foreword). This fundamental change in emphasis meant that a culture of influencing traffic growth, rather than accommodation, was required utilising "policy instruments …. which are sufficiently powerful – both sticks and carrots" (Goodwin, 1999, p.663). The rhetoric accompanying this White Paper promised much, and a number of associated daughter publications were published, most notably *From Workhorse to Thoroughbred – A Better Role for Buses* (DETR, 1999) and *Breaking the Logjam* (DETR, 1998b) to further elaborate on specific policy areas (Mackie, 1998). The principal policy initiatives addressed were road traffic growth and congestion charging, including the retention of revenues by local authorities for their use in the promotion of local transport planning, local air quality and climate change, social exclusion, rural sustainability and an increase in local authority powers, including Quality Contracts for bus services (Begg & Gray, 2004; Mackie, 1998; 1999). It was against this background of integrated transport with a focus on the bus that the concept of ITSO, a single body to develop a specification to support smart integrated ticketing in a deregulated market, was conceived and pursued by both the then Department for

Environment, Transport and the Regions, local government, PTA's, bus operators and other interested partners, this will be fully explored in chapter 3.

### 2.2.2 The importance of Transport on the Social Agenda

The development of social policy as an integral part of transport policy, alongside economic and environmental aims, has increasingly been recognised as essential to promote well-being (Stanley & Lucas, 2008). Social Exclusion was one of the policy areas identified in the 1998 White Paper and in his reflections on Transport Policy and Social Exclusion, Preston (2009) referred to the "holy trinity of sustainable transport policy" (Preston, 2009, p.140) as the social, economic and environmental aspects, and he questioned whether transport related social exclusion had been given the prominence it deserved, despite the establishment of a Social Exclusion Unit by the newly elected Labour government in 1997 (Preston & Rajé, 2007). The terminology used by the policy makers in this regard is particularly relevant. Preston and Rajé (2007, p.154) define accessibility as "ease of reaching" and mobility as "ease of moving". The relationship between social exclusion and transport (or to be more precise – mobility), is one which has been increasingly developed and has been reflected in the introduction of 'accessibility planning' in the statutory Local Transport Plans (Shergold & Parkhurst, 2012).

For the large proportion of the car owning population policy makers looked to find alternative solutions to limit the environmental impact in towns and cities, combatting congestion and reducing air pollution. Park and Ride was considered to fit with the new focus of integration and sustainability and in effect was a policy bridge between the car and bus agendas (DETR, 2000; Meek, Ison & Enoch, 2010). Park and Ride schemes were adopted by a number of local authorities, and 130 bus based park and ride sites were introduced across the country (Meek, Ison & Enoch, 2010). There are mixed views as to the success of these schemes as "there has been a growing body of evidence which suggested that it can have a limited or even counter-productive impact

on its policy goals" (Meek, Ison & Enoch, 2009, p.468). Indeed Goodwin et al draw attention to their research findings, in similar vein to Meek, Ison and Enoch, in which "the work on park and ride [was] a successful example of how initially embarrassing research findings can illuminate and inform subsequent policy development" (Goodwin et al., 2004, p.7). They, like Davison and Knowles (2006), argued that such policy initiatives cannot work in isolation, rather that they need to be considered within a package of complementary measures. Notable exceptions to these findings are the very successful park and ride schemes in the historic cities of Oxford, Cambridge and York, where successful Quality Partnership arrangements (explained later in section 2.2.6) aided by considerable local political support have resulted in well patronised schemes with "increased [bus] service frequencies and new high quality bus fleets" (Docherty & Shaw, 2008, p.103).

### 2.2.3 The desire for an Integrated Sustainable Approach to Transport Policy

The crucial words in relation to this thesis in the 1998 White Paper were 'integrated' and 'sustainable' (DETR, 1998a, p.Foreword), encapsulating the change in political emphasis and redefining policy objectives for the whole country (Lyons & Harman, 2002). Integration was not new to UK Transport Policy but the White Paper re-defined integration in terms of "within and between different types of transport", "with the environment", "with land use planning" and "with policies of education, health and wealth creation" (DETR, 1998a), all of which were collectively identified as contributing to 'quality of life' an underlying theme of transport and other key policies of the new government. Docherty and Shaw (2008) suggested that the White Paper contained a "sound and contextualized analysis of the transport problems" (p.10) of the day. However, before more of the policy was realised, the loud neoliberal opposition supported by the car lobby and the vociferous media capitalised on those aspects which were viewed as anti-car, and consequently of major significance to a majority of the middle England electorate who had voted New Labour into office (Glaister, 2006).

This had the effect of some policy initiatives being watered down and in some cases side-lined as a result of electorate pacification, a case, perhaps, of "political pragmatism" (Begg & Gray, 2004, p.162).

The term "sustainable" is one which could be considered vague and open to differing interpretations (Docherty & Shaw, 2008). The 1998 White Paper utilises the working definition from *Our Common Future* (The Brundtland Report): "sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs" (DETR, 1998a). The holistic approach to transport as part of a package of polices designed to enhance quality of life for all was a tall order, and one which called for "widespread changes in human behaviour" as well as "significant reductions in the volume of car traffic" (Steg & Tertoolen, 1999, p.63). The move to understand and affect human behaviour is one which has been the focus of many academic studies, and the growing interest in a range of initiatives to encourage people to choose smarter travel options other than their car have come to be known as 'soft' transport policy measures (Anable, 2005; Cairns et al., 2008; May, Page & Hull, 2008). As will be explored within chapter 3, Smart Ticketing is regarded as a key transport 'soft' measure to realising such policy aspirations.

### 2.2.4 The importance of the Bus "From Workhorse to Thoroughbred"

The transformation of the image of the bus was one of the aims of the publication *From Workhorse to Thoroughbred – A Better Role for Buses* (DETR, 1999), and it set an ambitious agenda for the industry which was further developed in the 2000 Transport Act (Hine & Preston, 2003). In pursuit of the integrated agenda, interoperable ticketing between modes and operators was specifically identified as an area to be developed to make it "simple and easy to use to meet passengers' needs and to win new passengers onto public transport" (DETR, 1999, p.28). Buses were undoubtedly viewed as a lower cost alternative to achieve this new aspiration, able "to lead our transport revolution for the 21st century" (DETR, 1998a, p.10). Following a period of

upheaval in the bus industry after deregulation and privatisation, bus patronage had declined severely outside London, as graphically illustrated in Figure 1. In 1950 12,734 million passenger journeys were recorded on local bus services in Great Britain, which had dropped to 5,335 million in 1986/1987. Following deregulation this figure dropped a further 17% to 4,430 million in 1997/1998, with just 2,578 million of those being recorded in England outside of London (DfT, 2015d). In the PTE areas, real passenger numbers dropped by 40% between 1985/86 and 1996/1997 alone (Docherty & Shaw, 2008).

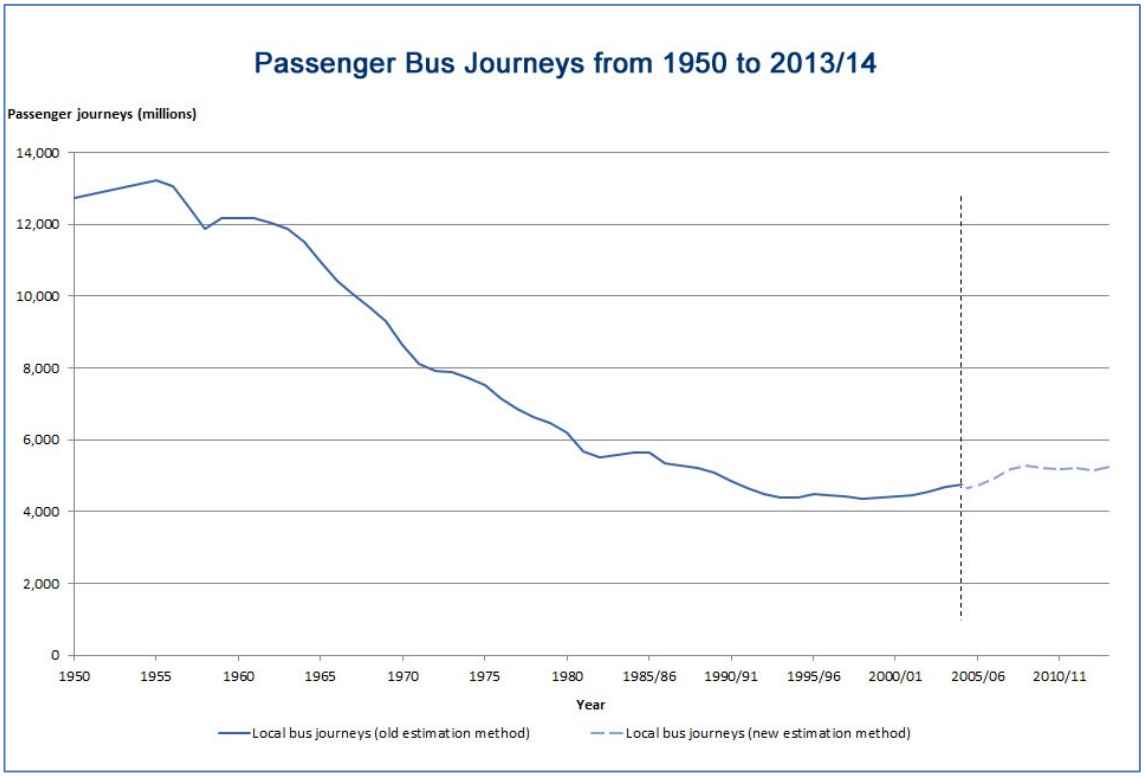



**Figure 1: Passenger journeys on local bus services in Great Britain from 1950 to 2013/14**
**Source: https://www.gov.uk/government/statistical-data-sets/bus01-local-bus-passenger-journeys [Accessed: 15/7/15]**

The piecemeal sell off of the National Bus Company subsidiaries and Municipal operations, as outlined in section 2.2.3, had by 1997, aggregated after a period of aggressive competition in the market place (Glaister, 2006; Helm, 2009). There remained some five major players in the form of FirstBus, Stagecoach, Go-Ahead,

National Express and Arriva. By 2013 these five operators accounted for the majority of bus services (64.1%) in the UK as illustrated in Figure 2.

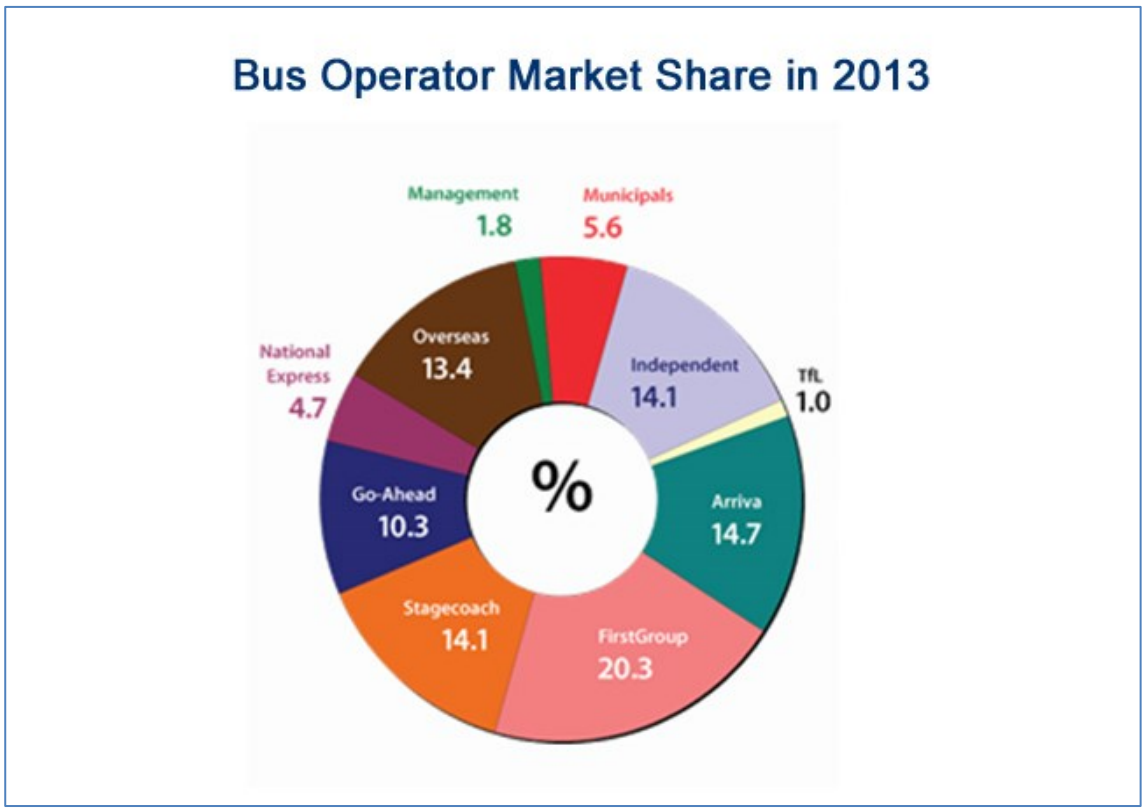



**Figure 2: Bus Operator market share in 2013**
**Source: http://www.taspublications.co.uk/content/bus-industry-monitor/7-industry-structure-and-ownership [accessed 8.2.13]**

In terms of the passenger numbers behind this market share, 2,307 million passenger journeys were recorded in the period 2014/15 on local services in England outside of London which represents a further decline of some 11% from 1997/98. The contrast to this steady decline is London, which for the same period, saw a staggering increase in passenger numbers of 94.7% from 1,230 million in 1997/98 to 2,394 million in 2014/15 (DfT, 2015d). Viewed in terms of population, the difference is even more pronounced, with the number of journeys per passenger in London being over 5 times that per person outside London, which clearly shows that something is going right in London but horrendously wrong in the rest of the UK. The London perspective is further explored in sections 2.3 and 3.8.2.

### 2.2.5 Local Transport Plans

Whilst the national policy landscape was determined by central government, it was at local government level that plans were formulated in order to secure the necessary funding for their implementation and delivery. Local Transport Planning takes place within counties and unitary authorities, where they are required to work with local bus and rail operators to improve local public transport networks (Glaister, 2006). In order to obtain transport funding prior to 1997, local authorities submitted annual bids to central government through the Transport Policy and Programme (TPP) process. The TPP framework only addressed capital expenditure, and included competitive bidding for integrated packages of local measures, some of which were the result of partnership arrangements between Local Authorities and Bus Operating Companies (Davison & Knowles, 2006). The 1998 White Paper saw the transport planning system as being a key element of an integrated transport policy, encouraging sustainable travel choices (Headicar, 2009). Integration was identified as being between different types of transport, the environment and other related policy areas such as education, health and economic development.

As part of the strategy to reorganise the way in which transport was planned and funded at a local level, contained within *Transport 2010: The 10-Year Plan* (2000) was the requirement for local authorities to produce Local Transport Plans. These were formulated in conjunction with bus operators, other relevant agencies and the public, addressing the issues of congestion, air quality, accessibility and road safety, on which additional funding was predicated. (Glaister, 2006; Headicar, 2009). These Local Transport Plans (LTP1) were for a five year period from 2000 and, as designated in the 2000 Transport Act, were accompanied by a significant increase in the capital funding provision for local transport (HMSO, 2000). This meant that for the first time local authorities received an indicative five year funding allocation based on an initial assessment of their Plan submission as opposed to the previous annual allocations which hindered longer term planning. For each of the five years, the Authorities were

obliged to submit Annual Progress Reports which were subject to an annual performance monitoring exercise where the forthcoming year's budget could be increased or decreased by up to twenty five per cent based on performance. (DETR, 2000). An essential pre-requisite to obtain the additional funding required the local authorities to demonstrate how they would meet a series of thirty five centrally defined Performance Indicators. In addition, the authorities were also able to include additional targets relevant to their local areas, which in itself was indicative of a move to a more local sphere of governance (Seedhouse, 2012).

In addition to funding applied for through the LTP's, the Transport Innovation Fund was made available for the period 2008-2011 to incentivise local authorities to introduce measures encouraged in the 2000 Transport Act, namely road pricing, modal shift and better bus services, the latter through the means of Quality Partnerships (Glaister, 2006).

### 2.2.6 Quality Partnerships and Quality Contracts

As observed earlier in the chapter, the concept of partnership working to achieve a desired outcome in integrated transport provision started to gain political capital during the latter part of the John Major Conservative government, but was taken up in earnest by the New Labour administration post 1997. The promotion of informal Quality Partnerships where local authorities work in structured, but voluntary, arrangements with Operators, rather than the formal bus franchising, as retained by TfL in London were encouraged by the government to facilitate improvements to bus services through co-operation between local authorities and operators (Docherty & Shaw, 2008). The 2000 Transport Act, and subsequent Local Transport Act of 2008, bolstered this partnership initiative between operators and local authorities not only through LTP's but also through the introduction of the Quality Partnership Scheme model (DfT, 2006), a collaborative initiative between local authorities and bus operators intended to improve the quality of bus services on a route or in an area (Butcher, 2010; Headicar, 2009).

In their work on Quality Partnerships, Davison and Knowles (2006) identified two types of Quality Partnerships, Quality Bus Partnerships (QBP's) which can be legally binding, but can equally be voluntary and Quality Partnership Schemes (QPS's), which are statutory. Mackie (1999) identified at least three sorts of voluntary QBP's, route or corridor based, area wide and social partnerships. These were largely informal voluntary agreements between local authorities and bus operators covering investment in new vehicles, principally low floor, low emission vehicles accompanied by improved staff training and passenger information facilities on the part of Operators and bus priority schemes, new bus shelters and improved interchange services on the part of local authorities (DETR, 1999; Hull, 2005). Investigation of the literature has revealed differences in perception as to how the varying terms of Partnership are defined and indeed counted. Davison and Knowles (2006) reported that in 2002 there were 380 Voluntary Quality Partnerships in existence with the prospect of a further 400 in the pipeline, whereas the Bus Partnership website cites the existence of only 14 Voluntary Partnership schemes, with a further 6 Statutory Quality Partnerships (CPT UK and pteg, 2015).

The legally binding nature of Statutory Quality Partnership Schemes (SQPS's) and Statutory Quality Contracts is what sets them apart from Quality Bus Partnerships, yet the success of this policy is questionable as only a few SQP's have been signed, notably 5 in the PTE areas between 2007 and 2012 (CPT UK and pteg, 2015) and Nottingham in 2010 (Nottingham City Council, 2010), and, as of July 2015, no Statutory Quality Contracts have been signed. Recognising the fact that no local transport authority had pursued this option the Department of Transport examined the reasons behind the poor take up of the statutory partnership provisions in the 2000 Transport Act in their publication *Putting Passengers First* (2006). This resulted in the *Local Transport Act of 2008* (HMSO, 2008) incorporating amendments to make Quality Contracts a more realistic option for authorities and at the same time "ensuring

appropriate safeguards to protect the legitimate interests of bus operators" (DfT, 2009c, p.4).

The principle of Quality Contracts is that they offer local authorities a degree of partial regulation if operators were failing to deliver and hence not achieving the anticipated patronage growth targets (Docherty & Shaw, 2008). In practice, however, Quality Contracts are granted at the discretion of the Secretary of State and are resisted by the industry, so any that are pursued are likely to be in more challenging urban areas (Hine & Preston, 2003). Mackie (1999) observed that Quality Contracts were "essentially area franchises on the London Transport model" (p.5) and surmised that they would consequently be appealing to local authorities and PTE's as it would give them a measure of power lost through deregulation. The downside of such power acquisition is the financial risk that goes with such a decision and this negative aspect is another contributing factor as to why few Quality Contracts have been pursued by Local Authorities. With regard to the other 'partner' in this contract scenario, Butcher (2010) in her standard note to the House of Commons, reported that operators were not at all enthusiastic about Quality Contracts, considering them to be "bureaucratic and inflexible", reducing "the incentive for operators to improve the quality and quantity of services, to the detriment of the travelling public." (p.12). Figure 3, taken from the Local Transport Act 2008 guidance notes on Quality Contracts, shows the complex process to be followed in implementing a Quality Contract, a major factor in why local authorities and PTE's have not taken advantage of the opportunity to assume control of services within their areas.

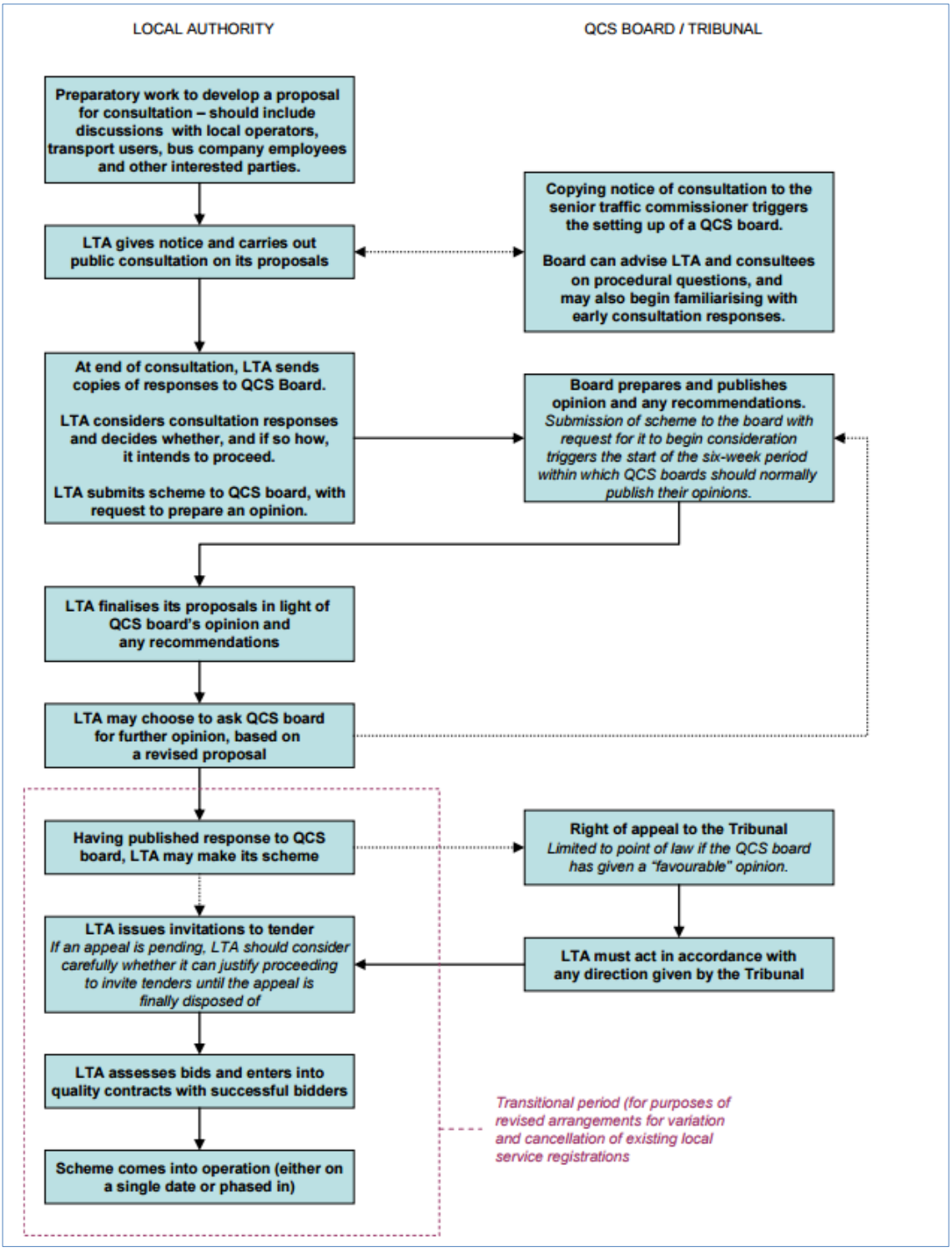



**Figure 3: Summary of the process for implementing a Quality Contract Scheme**
**Source: (Department for Transport, 2009b, p51)**

Whilst the Local Transport Act of 2008 made the prospect of Quality Contracts a more realistic option for local authorities through a relaxation of requirements, until 2011, only one local authority had expressed an interest in the option (DfT, 2011b). This

despite the fact that Integrated Transport Authorities (ITA's), formerly Passenger Transport Authorities, have "consistently made it clear that in their view the deregulated system did not work and they required more control over bus services in their areas in order to grow patronage." (Butcher, 2010, p.13). In its publication, *Green Light for Better Buses* (DfT, 2012b), the government re-committed itself to the retention of the regulatory structure whereby local authorities could enter into voluntary partnerships agreements or SQPS's in order to achieve quality bus services in their areas. To this end, the round of Better Bus Fund applications in 2011 reflected Quality Partnerships in action in 24 local authority areas, totalling £50m (DfT website: 9.3.13).

Research carried out in Greater Manchester during 2004, sought to discover whether their own voluntary Quality Bus Partnership, consisting of over 60 stakeholders, including 54 bus operators, was achieving their stated aims of reducing congestion and encouraging modal shift within a Quality Bus Corridor (Davison & Knowles, 2006). Following a qualitative approach, Davison deduced that the Quality Bus Partnership had not succeeded in attracting car users to the bus, despite all the initiatives of bus prioritisation, vehicle improvements and staff training. Davison and Knowles's recommendations in terms of steps that should be taken to redress this situation included a requirement for effective marketing campaigns, stringent law enforcement (in relation to policing bus priority measures), fiscal measures to restrict car use (notably congestion charging) and changes to the policy relating to business incentives for car use and the lack of integrated ticketing (Davison & Knowles, 2006). These findings support others who maintain that a 'package' of integrated measures are necessary "to help beat congestion" (Parkhurst & Richardson, 2002, p.46).

### 2.2.7 Smarter Choices and the Rise of Soft Measures

The 1998 White Paper asserted that the "mood is for change" (DETR, 1998a), and there was a, rather naïve, belief that social conscience, stung by the revelations of global warming and the contribution of car usage to ever increasing emission levels

would be enough to encourage less voluntary car use (Jensen, 1999; Knowles, Shaw & Docherty, 2008; Stradling, Meadows & Beatty, 2000). Such development of transport policy measures specifically aimed at influencing travel behaviour have become more prevalent in relation to the carbon reduction debate.

A function of the Department of Transport has been the pursuit of research in support of transport policy, and the link between climate policy and transport policy was inevitable given the huge contribution the transport industry makes to the total of all carbon dioxide emissions (Anable, Lane & Kelay, 2006). Technological advances in the reduction of vehicle carbon emissions have aided transport policy objectives, although Anable and Shaw (2007) argue that there has been a "disproportionate dependence" (p.454) on such innovations. The concept of 'smarter' choices, or attaining behaviour change, also known as voluntary travel behaviour change or soft policy measures is considered to be of equal importance (Cahill, 2010; Cairns *et al.*, 2008; Rye, 2002; Stopher et al., 2009). The principle behind such soft measures being that individuals are incentivised to change their way of travelling. The Smarter Choices policy encompasses such actions as workplace and school travel plans, personalised travel planning, integrated ticketing, smart ticketing, public transport information, better marketing, travel awareness campaigns, car clubs, teleworking and teleconferencing. Usually such measures, or interventions, are not introduced independently, but rather as a collective scheme, the combined effect of which is "to assist the travelling public in making smarter choices" (Knowles, Shaw & Docherty, 2008, p.195).

One of the ways in which success or otherwise of a policy is determined is through measuring or monitoring, and in respect of 'soft measures' this is equally pertinent, but particularly difficult to do so accurately (Stopher *et al.*, 2009). In contrast to these 'soft' measures, 'hard' measures are defined as "physical engineering measures" (DfT, 2010b, p.3) which impact on the physical aspects of public transport provision such as journey time, reliability, frequency and coverage. Evidence of successful 'Smarter

Choices' schemes are often measured in relation to statistical changes in bus patronage, or reductions in traffic (Anable, 2005; Cairns *et al.*, 2008). However in considering the scale factor, Anable and Shaw (2007) suggest that greater impact could be achieved in strategic action plans in targeting areas with a combination of 'soft' and 'hard' measures which together are "capable of delivering geographically bespoke but nevertheless meaningful reductions in $CO_2$ emissions" (Anable & Shaw, 2007, p.454).

In political terms, the changing of people's travel habits has been described by Docherty and Shaw (2008) as "a formidable endeavour that requires political bravery, risk taking and long-term planning, whose costs appear immediate but whose benefits will fall in a different electoral cycle" (Docherty & Shaw, 2008, p.7). Soft measures are a much less expensive option than investment in infrastrucutre, as a means of reducing car use and so effecting a corresponding reduction in emissions and congestion (Stopher *et al.*, 2009). Healey (2006) argues that "changing people's travel habits is much more than an exercise in economics. It involves cultural shifts" (p.191). However, to pursue such a policy option effectively, investment and commitment are required on the part of, usually, a local authority, with the support of local agencies and operators, the results from which might be a long time coming.

### 2.2.8 What of the car?

In 2000, the government published *Transport 2010: The 10-Year Plan* (2000), in which the long term spending plans for the delivery of the policies contained in the 1998 White Paper were specified, with a planned total spend of £180 billion, including provision for the building of additional road space. Shaw and Walton (2001) maintained that "the proposals outlined in the 10 Year Plan amount to a major policy U turn for a government once committed to radically scaling down the national trunk road programme" (Shaw & Walton, 2001, p.1033). In his review of the ten year plan, Docherty (2001) criticised what he viewed as a return to the policies of the previous

government, and a weakening of will to tackle the car related issues of congestion and pollution. This view was passionately supported by Begg and Gray (2004), who were concerned that the loss of "'joined up' policy making" (p.155), or integration between transport and environmental policy makers was detrimental to the aims of the government in terms of climate change and emissions reduction. In their evaluation of the trunk road building programme outlined in the Transport Act, Shaw and Walton (2001) argued that the plans, whilst not entirely resorting to 'predict and provide' policy, fell short of new realism principles outlined in the White Paper, and, through the combination of public transport with road construction solutions, pursued a direction which they termed "pragmatic multimodalism" (Shaw & Walton, 2001, p.1033). They contended that a commitment to improving all types of transport was "a meaningless platitude" (Shaw & Walton, 2001, p.1041) without definable, measureable targets. This is supported by other academics who have assessed the success or otherwise of transport policies through the identification of indicators, against which performance is measured (Castillo & Pitfield, 2010; Marsden & Bonsall, 2006; May, Page & Hull, 2008; Walton & Shaw, 2003).

The principle of road user charging is one for which much was promised to facilitate a fairer way of users bearing an appropriate burden of the costs incurred in using their cars. Whilst the option of road user charging was included in the 1998 White Paper and subsequent Transport Act of 2000, the government opted to delegate such 'politically contentious' decisions and the burden was placed on Local Authorities. With the notable exception of London which by now was a devolved jurisdiction and pressed ahead with its own policy agenda (Glaister, 2002; Preston, Smith & Starkie, 2000; White & Farrington, 1998), only a small scheme of road charging in Durham was introduced with no other local authority in England taking up this policy opportunity (Headicar, 2009). Indeed, to undertake a national scheme of road charging, along the lines adopted by London, would, maintains Wolmar "require great political courage and conviction … [and] without strong political leadership a scheme that could reduce

congestion and reduce carbon emissions will forever remain 'ten years away'" (Wolmar, 2007, p.28). Sir Rod Eddington in his advice to government (2006) promoted the preparation of a pathway to road pricing over the next ten years, but ten years on, other than London, we seem to be no nearer this goal. Indeed, whilst transport policy as a whole started out as a shift away from the car it ended up being business more or less as usual.

In relation to road user charging, the difference between the rest of the country and London is evident and this important element of an integrated transport policy is part of the wider strategy of devolution in the capital (Mackinnon, Shaw & Docherty, 2010). It is this devolved, as opposed to deregulated, governance approach to London which is considered in the next section and which becomes a central theme to later sections of the thesis.

## 2.3 Devolution not Deregulation – why London is 'Special'

The policy of devolution, or "political decentralisation" (Mackinnon, Shaw & Docherty, 2010, p.271) pursued by the Labour Party for Scotland, Wales and Northern Ireland also applied to the Greater London Authority in 2000. This policy changed the governance landscape in relation to transport policy in the UK. In transport terms, the powers held in respect of the different modes varies between each devolved region, but London has limited control of rail transport and total control of road and bus transport (Mackinnon, Shaw & Docherty, 2010). Anable and Shaw (2007) maintain that London "provides the clearest example of city-regional transport governance" (p.452) with its powers over a range of modes and its huge capital investment. These circumstances, supported by strong political leadership in the form of a new Mayor made ideal conditions for the development of a sustainable transport strategy (MacKinnon, Shaw & Docherty, 2008).

Using the powers in the 2000 Transport Act, Ken Livingstone, the new charismatic Mayor of London, with executive powers (Sweeting, 2002), displayed great political

strength of character to implement the London Congestion Charge in 2003, in spite of substantial opposition, including that of the Labour government (Cahill, 2010). His opponents changed their views when it became clear that the initiative was a success, with the scheme achieving many of the outcomes identified within the Labour government's transport policy statements, namely reductions in traffic levels, congestion, accidents and emissions as well as measurable changes in travel behaviour through modal switch (Glaister, 2006).

Examination of The Mayor's Transport Strategy consultation document (2009a) and the resultant Mayor's Transport Strategy of 2010, reveals a reversal of the commitment to congestion charging policy pursued by Ken Livingstone. The new Mayor, Boris Johnson, despite a stated belief that London will "achieve its transport, congestion, air quality and health objectives during the next decade" (TfL, 2010a, p.3), announced his intention to revoke the western extension of the congestion zone following public opposition. The long term effects of this decision are yet to be seen, but the courage displayed in the decision to pursue an aggressive pro public transport agenda in the early 2000's have undoubtedly paid dividends in the passenger growth and consequential economic growth of the UK's capital city.

The institutional framework within London has allowed Transport for London, through the Mayor "to fund, develop and implement a comprehensive strategy including integration across modes" (Hendy, 2005, p.199) in a way that has not been possible in other parts of the UK because of deregulation. The complementary nature of the package of policies which is a combination of 'hard' (congestion charging) and 'soft' (integrated fares and ticketing) measures, as highlighted in section 2.2.7, has led to significant benefits for passengers and the economy with huge passenger growth and massive take up of Oyster, see section 3.8.2. This realised the desired aims of the Mayors Transport Strategy of 2001, in dramatically increasing bus patronage across the whole network and encouraging those who had never previously used the bus to switch from car to bus (Hendy, 2005). The combination of institutional change which

allowed for an integrated transport policy and provision, combined with strong leadership (Mackinnon, Shaw & Docherty, 2010) has proved a highly effective framework for successful smart integrated ticketing delivery in London, which is in sharp contrast with that outside of the capital as will be explored in more detail in chapter 3. The irony is that since 2014, TfL moved even further away from the rest of the country in its innovative move to contactless ticketing, and indeed the removal of cash from London buses, further emphasising the contrast with the rest of the UK (Melia, 2015).

## 2.4 Summary

This chapter started with a brief review of the history of transport policy, illustrating the move from command and control through the neoliberal policies of 'predict and provide' to the modern day integrated sustainable transport agenda, reflecting the concern for global warming and climate change, albeit tempered by economic restraints. This shift in policy emphasis was enthusiastically promoted by New Labour when they came to power in 1997 as reflected in the reorganisation of the Department for Environment, Transport and the Regions (DETR). Through subsequent policy initiatives, the New Labour government committed itself to enhance Sustainable Integrated Transport delivery. This was evidenced through the introduction of Local Transport Plans with their associated planning and funding improvements, the promotion of partnership working, both on a voluntary and statutory basis through the introduction of Quality Partnerships and the legislative framework for Quality Contracts alongside the encouragement of Smarter Choices to effect changes in the travelling public. This chapter has also focused on the difference that exists between London and the rest of England, both in terms of policy and governance, drawing attention to the disparity of funding provision, executive powers and consequent impacts on passenger numbers. These will be investigated further in chapter 3 in relation to Smart Ticketing and the Congestion Charge, 'soft' and 'hard' measures delivered concurrently with clear and measureable success.

The larger scale sustainable transport policy environment reviewed chronologically in this chapter has set the context for the evolution of smart and integrated ticketing policy. The shift in transport policy over modern times and the increased complexity of such policy in a devolved policy making arena (Jessop, 1997; Mackinnon, Shaw & Docherty, 2010) has been mirrored by a "general shift to a more complex, multi-actor and multi-layered system of governance" (Docherty, Shaw & Gather, 2004, p.258), the evidence of this structure will be explored in more detail in chapter 3. In chapter 3, in the context of the election of the Coalition government in 2010, the theme of complex governance structures, on both a national and local level, and the continued development of partnership working will be explored in relation to the design and delivery of Smart Ticketing policy. Having established the context of Transport Policy within which Smart Ticketing policy rests, the origins of ITSO, both the organisation and specification, will be reviewed and the delivery framework examined in the literature available.

**Table 1: Key Policy Documents referred to and emerging themes**

| Year | Policy Document type | Title/Aim | Government | Section | Theme |
|---|---|---|---|---|---|
| 1968 | Transport Act | Creation of NBC, Scottish Group | Labour | 2.2.2 | Operations |
| 1985 | Transport Act | Buses de-regulated and return to private ownership | Conservative | 2.2.3 | Operations |
| 1984 | London Regional Transport Act | Took control of bus services away from local government and into central government control. | Conservative | 2.2.3 | Operations |
| 1995 | White Paper | Rural England - A nation committed to a living countryside | Conservative | 2.2.4 | Integrated Sustainable |
| 1996 | Green Paper | Transport – The way ahead | Conservative | 2.2.4 | Partnership |
| 1997 | Road Traffic Reduction Act | Requiring local authorities to prepare reports on local road traffic levels. | Conservative | 2.2.3 | |
| 1996 | Consensus for Change | Labour's Transport Strategy for the 21st century | | 2.2.4 | Governance and Partnership in a Sustainable Agenda |
| 1998 | White Paper | A New Deal for Transport better for everyone | Labour | 2.3.1 | Governance and Partnership in a Sustainable Agenda |
| 1998 | Consultation Paper | From Workhorse to Thoroughbred – A Better Role for Buses | Labour | 2.3.4 | Governance and Partnership |
| 1998 | Consultation Paper | Breaking the Logjam | Labour | 2.3.4 | |
| 1999 | The Greater London Authority Act | Returned buses to control of London Assembly and Transport for London (TfL) | Labour | 2.2.3 | Operations |
| 2000 | Transport Act | Transport 2010 – the Ten Year Plan | Labour | 2.3.5 and 2.3.7 | Governance and Partnership |
| 2001 | PPI | Public Private Partnership established for London Underground | Labour | | |
| 2003 | Event | London Congestion Charge implemented | Labour | 2.4 and 3.8.2 | Complementary Measures |
| 2003 | White Paper | Managing Our Roads | Labour | | |
| 2004 | White Paper | The Future of Transport: a network for 2030 | Labour | | |
| 2006 | Discussion Document | The Eddington Transport Study | Labour | 2.3.7 | Complementary Measures |
| 2006 | Consultation Paper | Putting Passengers First | Labour | | |
| 2007 | Discussion Document | Towards a Sustainable Transport System | Labour | | |
| 2007 | Transport Act | Concessionary Bus Travel Act | Labour | | |
| 2008 | Local Transport Act | Local Transport Act | Labour | 2.3.5 | Partnership |
| 2011 | White Paper | Creating growth, cutting carbon – making sustainable local transport happen | Coalition | | |
| 2012 | Discussion Document | Green Light for Better Buses | Coalition | 2.3.5 and 3.2 | Complementary Measures |
| 2013 | Strategy | Door to Door: A strategy for improving sustainable transport integration | Coalition | | |
| 2016 | Policy Paper | Bus Services Bill | Conservative | | |

# 3 Review of Smart Ticketing

The previous chapter considered the evolution of transport policy and how it has been shaped by political, environmental and economic influences into an agenda predicated on and committed to integrated and sustainable principles. In this chapter I will consider the place that Smart Ticketing has within this agenda. The chapter starts by seeking to define what is meant by Smart Ticketing from a UK perspective, before reviewing the transport policy transition which has brought about its importance from New Labour, 1997-2010, to the UK's first Coalition government since 1945, revealing a continuity of approach, adhering to the sustainable agenda. It will then explore mechanisms for the delivery of Smart Ticketing within this policy framework and investigate the reasons behind the creation of ITSO, its development and current status. This approach and application will be considered at both a national scale exploring the role and influence of the Department for Transport, as well as at a local and regional scale through Local Authorities and third party managed service providers working in partnership with Bus Operators.

To ensure a considered and balanced approach is achieved, existing research literature on smart ticketing is examined and acknowledged to identify its relevance to, and the positioning of, this research. The chapter then focuses on specific smart ticketing schemes, firstly the English National Concessionary Travel Scheme (ENCTS) part of the largest interoperable scheme in the UK, which utilises the ITSO platform for over 7 million users, as mandated by the government in 2007 (HMSO, 2007). It then considers the role of the UK's largest smartcard Managed Service provider, South West Smart Applications Ltd (SWSAL) and critically examines the design and delivery mechanics of smart ticketing schemes through the vehicle of mutually based partnership working. The chapter then concludes by consulting the wider place and approach of alternative smart ticketing solutions through a brief but considered review

of existing smart ticketing schemes in the UK and Australia, with particular attention paid to Oyster in London and SmartRider in Perth along with a review of future developments in the field of smart ticketing.

## 3.1 Smart Ticketing Defined

In the late 1990s awareness was growing in the public transport sector of the attractiveness of Smart Ticketing, as evidenced through breakthrough technological developments in other sectors, notably banking and communications (Blythe, 2004; Sauveron, 2009). The application of this developing technology to the public transport industry was evident in other parts of the world, such as Hong Kong (DfT, 2009a), and large cities such as London kept abreast of the business case outcomes of such technologies and looked to follow suit, as detailed in section 2.3.

Bryan and Blythe (2007) describe a smartcard as being "essentially a credit-card sized piece of plastic which has a micro-chip embedded in it" (p.173) and it is the micro-chip which makes the card 'smart'. Early experiments in Smart Ticketing were focused on the technology rather than as a response to demand from the market, identified as the "market pull" effect (Blythe, 2004, p.47) and consequently they failed to achieve any real benefits. These early smartcards were single application cards, with limitations due to the memory constraints of the microchip, but speedy developments during the late 1980's and early 1990's in new technologies meant that cards became powerful, secure 'computing objects' allowing for multiple applications (Markantonakis et al., 2009; Sauveron, 2009). More recently, technological advances in mobile phones mean that their processing capabilities are superior to that of most smart cards. Developments in Near Field Communication (NFC) technology and Be-In-Be-Out systems (BIBO) are potential competitors to the smartcard industry (Ford, 2007).

The benefits of Smart Ticketing in making public transport more attractive to users were clearly considered an incentive to transport policy makers, but an additional and potentially hugely useful bonus for the employment of such ticketing is expected to be

an abundance of data in electronic, and therefore very accessible, form (Bagchi & White, 2004; Bagchi & White, 2005; Pelletier, Trepanier & Morency, 2011). Transport planners and bus operators have for years relied on gathering their data through traditional survey methods, counting heads and recording journey movements, and supplementing information on 'end to end' journeys with interviews (Bryan & Blythe, 2007). The potential of 'rich' smartcard data, collected for all journeys, rather than random samples, could facilitate more accurate network design utilising sophisticated data analysis software which "would provide service planners with clear, dynamic service-performance statistics" (Bryan & Blythe, 2007, p.177). This ideal scenario is reliant on the widespread take up of smart enabled Electronic Ticket Machines (ETMs), and the trouble free use of software.

## 3.2 Influencing Smart Ticketing Delivery through National Governance

Before considering in detail how smart ticketing schemes are delivered as a practical output from within the English transport planning system, it is important to review how governance structures which control such delivery functions and how transport policy delivery is organised and overseen at both a national and local scale. The role of the Department for Transport as an example of a national scale policy body of government will first be reviewed followed by a closer inspection of the way in which local authorities work in partnership with bus operators, to deliver smart ticketing through partnership initiatives.

### 3.2.1 The Role of the National 'Scale'

At the national scale, Ministers are collectively responsible for all aspects of government policy and the implementation of transport policy is principally the responsibility of the Department for Transport and its civil servants, alongside other agents in both the public and private sectors. As Glaister (2006) observed "whilst local authorities have an important part to play in implementing the government's transport

policies, it is central government that establishes the regulatory and financial framework within which each of the transport industries operates" (Glaister, 2006, p.57). The Department for Transport's scope of service delivery is wide ranging, covering all modes of transport with a total budget in 2011/12 of £14.8 billion (DfT, 2012a). In 2014 the work of the Department was organised through four main thematic groups plus the General Counsel's office which is the link with the Secretary of State. These four thematic groups are the International, Strategy and Environment group which covers aviation and maritime policy and is responsible for the 'decarbonising' of transport and impact on the environment; the Domestic group, which has responsibility for rail, including the current work on High Speed 2, roads, traffic and bus travel including the Government's Localism agenda; the Major Projects and London group which focuses on major infrastructure projects and all work relating to the capital; and the Corporate group, which is responsible for a range of operational functions such as Finance and IT which serve the whole Department (DfT, 2012a).

In seeking to deliver a range of successive transport policies, explored in section 2.3.5, the government have promoted the concept of collaborative working through informal and formal agreements between local authorities and bus operators across multiple disciplines. These concepts of partnership, collaboration and co-ordination, are closely related and tend to be used interchangeably in the public sector (Hall, 1999). It is this bringing together of stakeholders from government and business into partnerships to achieve the delivery of government policy at local and regional scales which has been the focus for the delivery of smart ticketing policy, as evidenced through recent government publications (DfT, 2012b).

### 3.2.2 Partnership Working – a nationally endorsed governance model for transport

In her work on collaborative practices in the planning world, Healey (2006; 2010) maintains that partnership working "hold[s] the promise of developing understandings,

policies and projects" (2006, p.237) and potentially is more productive than those achievements attained through bureaucratic means alone. The move by successive governments in recent years to encourage the promotion of shared governance of smart ticketing schemes through the avenue of public and private bodies coming together to achieve a delivery programme is a reflection of a wider theme of partnership collaboration mirrored in other transport and non-transport policy areas with varying degrees of success. In the publication *Meeting the aspirations of the British people, 2007 Pre-Budget Report and Comprehensive Spending Review* (Treasury, 2007), the concept of collaborative working is a recurring theme "spanning department boundaries" (p.2) across all disciplines to achieve mutually beneficial outcomes. At a local scale a specific example of such partnership arrangements is that of the 'First Stop York Partnership', a partnership of focussed stakeholders who came together to maximise tourist advantages for the city of York in the mid 1990's (Vernon et al., 2005).

In 1999, reacting to the 1998 White Paper *A New Deal for Transport, Better for Everyone (DETR, 1998a)* and the proposition that local authorities and operators should adopt a partnership approach, Mackie argued that this made particular sense in the 'carrot and stick' context, whereby all partners brought something to the table (Mackie, 1999). Goodwin also describes Quality Partnerships, one of a range of proposed partnership delivery mechanisms, as a "bargain" (Goodwin, 1999, p.665) through which operators and local authorities would have much to gain but not without goodwill and commitment on both sides. Grayling (2001) emphasises that positive collaboration between operators and local authorities would only happen if "real and meaningful partnership" (p.141) was achieved. However, in the context of delivering an integrated transport policy, Goodwin (1999) signalled concern at the pressures which local transport departments are likely to suffer in ensuring delivery of policy which extends to areas outside of its remit, such as land use. In his evaluation of the institutional governance arrangements in the Tyne and Wear conurbation, Pemberton

(2000) concluded that there was a need for greater integration between different sections within local authorities delivering policies impacting on transport. He suggested that "the national state still retained a key role in 'steering' governance" (Pemberton, 2000, p.306) citing evidence of a reluctance on the part of state to relinquish responsibility, immediately following policy decisions.

In more recent times, a more fragmented nature of governance structures has resulted from successive reorganisation of government at the national and local scale, including decentralisation, which has meant that closer co-operation between all elements of policy delivery is necessary. The reduction in institutional functions during the years of deregulation and privatisation, described as 'hollowing out', was replaced by the introduction of new state functions, so-called 'filling in', as more complex systems of governance developed to keep pace with increasing requirements (Docherty, Shaw & Gather, 2004). The formation of the ITSO organisation, as detailed in section 3.4, can be so viewed as it was established to instigate the introduction and adoption of a new standard specification designed to facilitate inter-operable smart ticketing in a competitive market. This was a classic example of 'filling in', in other words, creating administrative structures to enable the provision of state services.

The core requirement of 'partnership working' at all levels, within and between organisations, apart from perhaps, the unique example of London, is now fundamental to the successful implementation of transport policy (Glaister, 2006). The example cited in section 2.3.5 of a Quality Partnership in Greater Manchester, involved the PTA and PTE, ten District Councils, 54 Bus Operating Companies and other interested parties (Davison & Knowles, 2006). This way of working is not necessarily widely supported however and is viewed by some commentators as a source of concern, as observed by Hull (2005) in her evaluation of integrated transport planning: "an increasingly fragmented delivery sector and changes in the organisational responsibilities for transport policy, however, exacerbate [problems of] communication" (Hull, 2005, p.320).

The transfer, or sharing, of knowledge within partnerships or collaborations is another facet which is a determinant of a successful outcome, and Timms (2011) in his work on the urban transport policy transfer process, found that the sharing of best practice was an aspiration of many of those engaged in partnership working, but not always a given. However, examples of good practice in partnership working are evident, as illustrated earlier in this section, and the transfer of this experience, by committed transport professionals and other key personnel and individuals in both government and the commercial sector is possible, but at best will only achieve pockets of 'integrated' services, rather than an 'integrated' countrywide network, within the current national governance framework.

### 3.2.3 Personnel, Individuals and Partnership Governance

The practice of employment policies within the Civil Service is such that 'generalists' are located in varying policy disciplines, usually for relatively short periods of tenure, which works against the development of deep subject knowledge (Docherty & Shaw, 2011). Furthermore, the Civil Service personnel within the Department for Transport are required to adjust quickly to changes in priorities (Glaister, 2006). This coupled with an inherent "culture of risk aversion" (Docherty & Shaw, 2011, p.239) poses a restraining influence on those politicians who are keen to deliver significant change. Consideration of the personnel involved in policy delivery at all levels, namely ministers, civil servants and policy advisors within government departments at both national and local scales, as well as those engaged in state agencies and commercial concerns is another very important element of the success or otherwise of partnership working which calls for "effective management of the relationships between the different actors involved … to better co-ordinate the policy and services" (Pemberton, 2000, p.306).

In lessons learned from an evaluation of governance through partnerships (OECD, 2001) the mixed results suggested that "improving governance through partnerships is

not an easy task" (OECD, 2001, p.15). However it then presented a partnership strategy to improve governance which included making policy goals consistent, strengthening accountability and providing flexibility in the management of public programmes. May, Page and Hull (2008), in their research programme Design and Implementation Support Tools for Integrated Local Land use, Transport and the Environment (DISTILLATE) set out to develop decision-support tools for local government. They focussed on 16 local authorities across England and one of their conclusions recounted how the "quality of the relationship" (p.338) between the partners and specifically who leads the partnership was fundamental to the success of that partnership and the consequential successful implementation of policy and practice.

### 3.3 A Deregulated Market: The need for ITSO

The deregulated market was a significant barrier to the introduction of interoperable smart ticketing due to the disintegrated nature of its operating companies and the lack of any common infrastructure for its delivery (Shaw & Docherty, 2014). Therefore some technical means of facilitating the interoperability of smart ticketing became the initial driver to finding a way to deliver in the rest of the (deregulated) country what TfL was managing to achieve in (regulated) London, in terms of their interoperable ticketing offering.

The state of the market at the time that ITSO was first conceived was very narrow in terms of equipment supply. In section 3.1 the importance of the data potentially retrievable through smart ticketing was highlighted, but this would be reliant on the willingness of private commercial bus operators to allow access to their data sets, available through their smart enabled Electronic Ticket Machine's (ETM), a somewhat optimistic expectation in the commercial world of competitive bus operations. ETM providers in the early 2000's consisted of a mere handful of suppliers, which included Almex, Parkeon, ERG, Scheidt & Bachmann and Cubic. Each of these suppliers was

linked with one of the principal bus operating companies and as all were commercial concerns, it is not surprising that both the ETM suppliers and the bus operating companies resisted the move to develop interoperable ticketing across all suppliers and all operators. There have been one or two more recent entrants to this supplier community, but high initial investment and the difficulty of finding a niche in an already established limited market in terms of numbers of major players has had a limiting effect.

### 3.3.1 Integrated Transport Smart Card Organisation

In 1998, in response to the White Paper and its recognition of the role of smart cards in 'integrated ticketing' (Blythe, 2004) a group of key transport personnel and organisations in the UK, notably Transport for London, the Passenger Transport Executives, some large Local Authorities, the Association of Train Operating Companies (ATOC) and the Department for Transport recognised the need for a standard specification to enable interoperable Smart Ticketing in the deregulated transport industry (Stoddart, 2006). ITSO, originally an acronym for the Integrated Transport Smart Card Organisation, but one subsequently dropped by the ITSO board after 2010, was formed as a not-for-profit Member organisation, to be the Guardian of the Crown copyright for the ITSO specification (Blythe, 2004; ITSO, 2000; ITSO, 2013).

> *In conversation, the term ITSO is sometimes confusing because it is simultaneously a specification (Crown Copyright), a Membership Body and an interoperable environment assured through a Certification regime for each of the hardware/software building blocks in a 'smart media' ticketing scheme. (MVA & SWSAL, 2010)*

The governance of ITSO is unusual in that the Board is made up of representatives of the membership through direct elections. Each of the public, rail, bus and supplier sectors has 2 sector directors and the Department for Transport, Transport Scotland, the Welsh Government and Transport for London also have one director each representing them on the ITSO Board (ITSO, 2015). In 2009 the Department for

Transport, aware of pressures on ITSO, as a result of the growth in smart ticketing due to requirements of the English National Concessionary Travel Scheme, commissioned a review which resulted in some reorganisation and a re-commitment to supporting and promoting ITSO on the part of the Department (DfT, 2009d).

### 3.3.2 The ITSO Specification

The ITSO Specification "was developed with the aim of ensuring that public transport operators throughout Great Britain can develop compatible Smart Ticketing systems" (ITSO, 2013). The intention was that this UK specification would complement the European public transport industry (Blythe, 2004). The virtue of ITSO over other so termed proprietary cards, is that it is not confined to one supplier, specifically that it is open access and "not ... prescriptive to the card supplying industry" (Blythe, 2004, p.51). This is what sets it apart from other smart cards, and, at its simplest level, the ITSO specification allows for multiple products to be assigned to one ITSO card (Blythe, 2004). This technical specification is actually a collection of open technical specifications and standards, a protocol developed for interoperable contact-less smartcards (Turner & Wilson, 2010).

As illustrated in Figure 4, the development of progressive versions of the ITSO specification from version 2.1 in 2004, some six years after such a specification was first conceived, through to the most current, stable, version of 2.1.4 issued in 2010 reflects a long evolutionary period (Blythe, 2004). The need for progression of specification versions was largely driven by difficulties experienced with early ITSO scheme implementations. These had a negative effect on confidence in the specification, due to poor performance across a multiple supplier supply chain in terms of a card's ability to be read by the smartcard readers attached to the different Electronic Ticket machines (ETMs) on buses. Whilst effective, the ITSO specification is not complete and is still reliant on individual suppliers interpreting and delivering

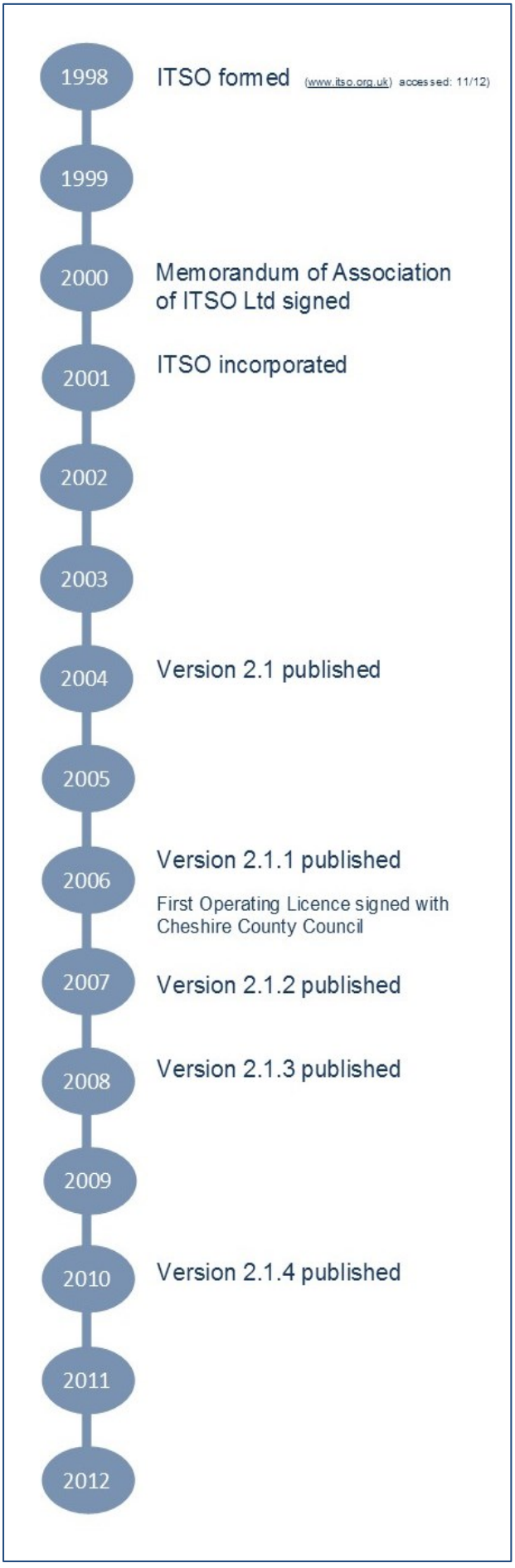



Figure 4: The ITSO Timeline

what is required on the ground. A major issue in the early years of ITSO was that of compliance. In early versions of the ITSO specification, significant parts of the specification were imprecise and this coupled with differing interpretations by suppliers, secure in the knowledge that there were limited checks to ensure compliance, meant that the instances of incompatibility between ETM suppliers was high, and still is in some cases. In other disciplines where standards are subject to routine checks, this is avoided, for example, British standards for Quality Management Systems, ISO9001, involve annual checks to ensure that organisations are complying with the specification as defined (bsi, 2015).

The nervousness on the part of the operator community regarding the reliability of the ITSO specification has served to hinder the voluntary expansion of schemes by both bus operators and local authorities tasked

with working in partnership to achieve wider use of ITSO Smart Ticketing. This experience is in stark contrast to London's (non ITSO) Oyster card which was achieving widespread acclaim for its appeal to passengers and achievement of positive behaviour changes in transport choice (Hendy, 2005). Currently, steps are being taken to address this issue by ITSO committees, as revealed during the interviews undertaken in this thesis, which are explored in chapter 7.

### 3.3.3 How ITSO works

Figure 5 illustrates the way in which an ITSO compliant system works. The system principally depends on ISAMs (ITSO Secure Application Modules) which are secure electronic data processing modules, the size of a mobile phone SIM card. The ISAMs validate the holder's permissions, authenticate their electronic tickets, and store the relevant data. These ISAMs then in turn communicate with a back office system (HOPS or Host Operator Processing System) through another security device called an HSAM (HOPS Secure Application Module). In addition, ISAMs are also inserted into electronic ticket machines and other transport ticketing equipment as found in railway ticketing gates and tram and ferry ticketing machines (ITSO, 2015). As is evident in Figure 5, security is at the heart of the ITSO process, security for the customer, and most importantly, security for the operator. When an operator sets up an ITSO system, the ISAMs have to be initialised or 'profiled' using the ITSO Security Management System (ISMS) which is run by ITSO Limited. This is fundamental as it is "part of the ITSO Security Sub System which acts as the 'keeper of the keys', managing the provision of data access keys to the secure devices (ISAMs) in ticketing machines and barriers" (ITSO, 2015).

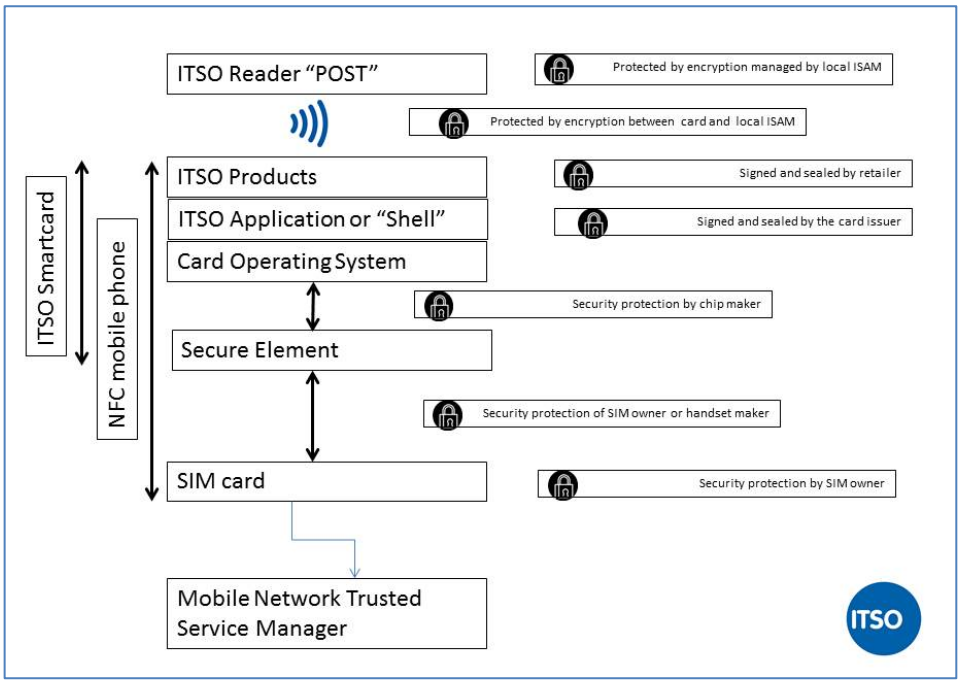



**Figure 5: ITSO explained by ITSO**
**Source: https://www.itso.org.uk/itso-explained/**

The issue of security is of prime importance in smart technology and smartcards offer a range of security mechanisms for authentication and ensuring data confidentiality (Markantonakis *et al.*, 2009). Many smartcard schemes provide a card key, but "ITSO provides card, shell and product keys [and] the security architecture for the card and back office transactions imperative for the secure transmission of data amongst inter-operable schemes" (Stoddart, 2006, p.12), key requirements in the achievement of government transport policy objectives.

Figure 6 is a representation of the ITSO process as represented by South West Smart Applications Ltd (SWSAL). The area within the blue dotted line is subject to the ITSO specification, principally the Host Operator Processing System (HOPS) and the Point of Sale Terminals (POSTS), which are the electronic ticket machines (ETMs) or ticket vending machines (TVMs). The coloured boxes outside of the blue zone represent those elements that are key to the delivery of the smart ticketing scheme, such as the Card/Customer Management System (CMS). The ITSO specification provides the

protocol for the HOPS to communicate with the POSTS but does not provide the protocol for the HOPS to communicate with the CMS.

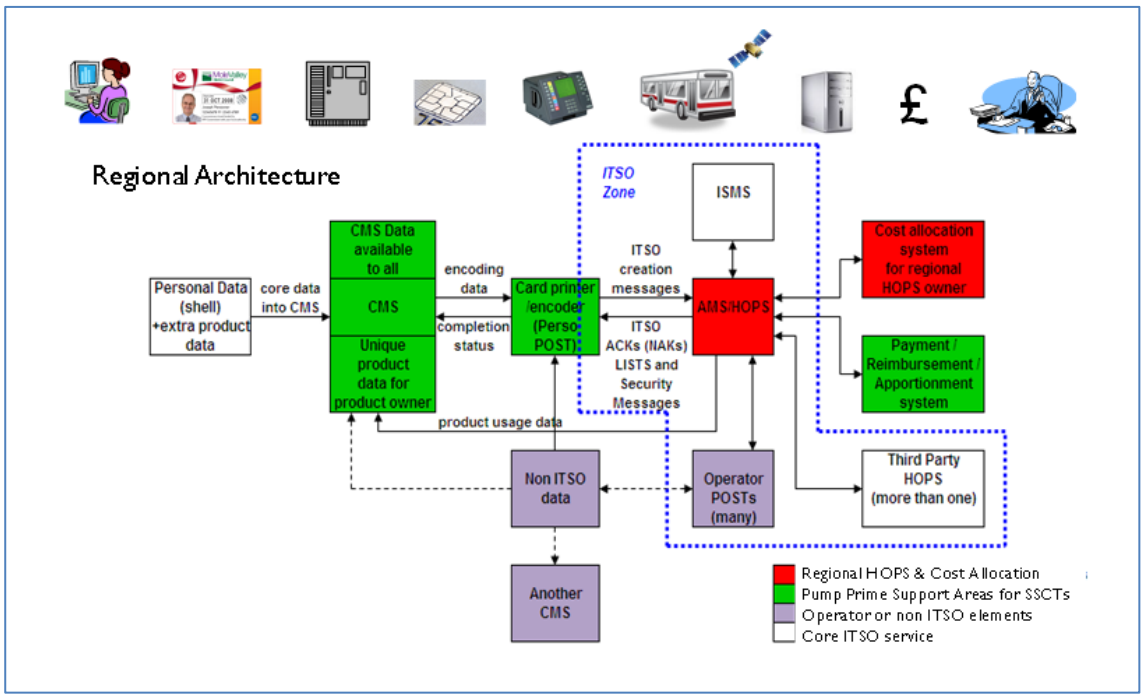



Figure 6: The ITSO Process Model
Source: SWSAL

The complexity of the ITSO process and the technology which lies behind the concept of Smart Ticketing is such that change is rapid and expensive to keep pace with. Expectations on the part of the customer are high, including aspirations to use one card on different modes in different countries, and ITSO, as reported by the then Director of Member Services, Lindsay Robertson, are actively involved in an Alliance of Smart Ticketing associations including France's AFIMB, the Calypso Networks Association and Germany's VDV-KA, working together "towards a common goal of interoperable ticketing right across Europe" (Robertson, 2012). However, in respect of the ITSO organisation Board, questions were raised in 2013 by some ITSO Members, following work undertaken on behalf of an ITSO committee, as to the suitability of its composition and governance structure and its compliance with best practice models for similar bodies. They sought reference from the ITSO Memorandum of Association (ITSO, 2000), ITSO Ltd Articles of Association and the DfT Commercial Review of

ITSO (DfT, 2009d) as well as advice from the Institute of Directors (IoD) on governance best practice and put forward a proposal for consideration by the Board (SWSAL, 2013). The recommendations proposed were that ITSO change its governance structure in line with the recommendations from the IoD, to improve governance through a better committee structure, improved reporting arrangements and to appoint independent non-executive directors to the Board to balance out the current Membership only Board of Directors. This suggestion has not, at the time of writing, been taken up and from the interviews undertaken in this thesis still remains a concern of many ITSO Members, and whilst many may criticise the governance structure, they do not criticise the need for ITSO to exist.

### 3.3.4 ITSO Services Ltd

ITSO Services Ltd (ISL) was a separate company to ITSO and was established by the Department for Transport as a task and finish enterprise, to provide 'back office' facilities in the form of a Host Operator Processing System (HOPS), for those Travel Concession Authorities (TCA's) without their own such facilities but who would need a HOPS to be compliant with their responsibility under the Concessionary Travel Act 2007. This provision came to an end in October 2012 at which point, all TCAs had to have in place, suitable access to back office systems. The cessation of this facility had the effect of causing local authorities to find alternative means of administering their concessionary fares schemes, with limited guidance being provided by the Department for Transport (DfT, 2010a). How local authorities, such as those in the south west of England reacted to this development and were aided by the services of a Managed Service Provider are examined more closely in section 3.5.1.

## 3.4 National Policy Levers to support Smart Ticketing Delivery

The very fact that legislation exists to facilitate the delivery of any policy is not always sufficient for it to be enacted. Local authorities and other public sector organisations

generally only pursue those initiatives which fit with their own plans (DfT, 2011a). Therefore, in order to ensure that a policy is taken up and pursued, means of encouragement, be it legislative or financial, have been shown to be productive. Such encouragement could be subtle as is evident in several 'soft' approaches to transport policy such as travel planning which take account of the 'nudge' theory, as developed by Thaler and Sunstein (2009). This theory, based on the principle that people's behaviour can be altered in a predictable way through subtle and gentle direction (Thaler & Sunstein, 2009), has been adopted by the government in other policy areas, notably health, where it has been the subject of some controversy in terms of possible misinterpretation of its application (Bonell et al., 2010). Financial incentives, or 'carrots' (Goodwin, 1999) are more tangible inducements to adopt policy and take the form of pump priming, grant funding or performance rewards, but these are only likely to be effective if the policy aligns with overall objectives of the organisation concerned (DfT, 2011a). One definition of 'pump priming' is an "injection of (relatively small) sums of money by a government into a depressed economy through commissioning of public works" (Business Dictionary 2015). The purpose of such cash injections is to stimulate demand with a ripple effect resulting in more money being injected into the economy. A review of specific policy levers put in place to enable smart ticketing delivery will now be considered.

### 3.4.1 Legislative Policy Levers

As part of *New Deal for the public transport passenger* (DETR, 1998a), attention was focused on those aspects which directly impacted the passenger, and included reference to the provision of "more through ticketing and travelcards" along with "half price or lower fares for elderly people on buses" (DETR, 1998a). The most significant development in the evolution of ITSO smart ticketing in England was that of the English National Concessionary Travel Scheme (ENCTS) first introduced by New Labour in 2001 with half fare local bus travel for people over 60 (later revised to those of pensionable age) and those with a disability, which was extended in April 2006 to free

off peak travel within a local area (Andrews et al., 2011; Headicar, 2009). In April 2008 the concession was further extended to free travel by bus across England as detailed within the *Concessionary Bus Travel Act* of 2007 (HMSO, 2007; Knowles & Abrantes, 2008) a highly significant piece of legislation, in relation to this thesis. The introduction of the National Concessionary Scheme reflected the Labour government's commitment to reducing social exclusion (Baker & White, 2010) and it was separately introduced in Wales, Northern Ireland and Scotland between 2002 and 2006. The Labour government made the brave decision to promote the use of smartcards for the National Concessionary Travel Schemes for elderly and disabled residents and this involved the employment of the ITSO platform to enable interoperability of cards up and down the country (DfT, 2010a; Turner & Wilson, 2010). This was a crucial stage in the Smart Ticketing story in England, as the government mandated the use of a specific technical specification to enable interoperability of concessionary cards UK wide.

Following the decision that ENCTS should be delivered on an ITSO platform, the responsibility for its introduction was then devolved to the local TCA's (DfT, 2010a). These bodies are responsible for the reimbursement of "bus operators for all concessionary journeys starting within their boundaries" (DfT, 2010a, p.7). Initially there were some 238 TCA's in the form of Shire District Councils, Unitary Authorities, Passenger Transport Executives and London Boroughs, however this number was reduced in 2014, as ENCTS responsibility migrated from a Borough/District council to a highway authority (County or Unitary) resulting in 90 TCA's (DfT, 2014). The delivery of this scheme through so many different authorities, with varying degrees of levels of commitment, has led to a fragmented and disintegrated approach. Whilst the government obliged the introduction of ENCTS ITSO Smart Ticketing by local authorities, it recognised that smart cards are only one element of the system, with full

smart ticketing requiring operational readers and back office systems, and the procurement of necessary infrastructure required additional assistance (DfT, 2009a).

Whilst free off peak local bus travel was initially introduced from April 2006 within each English travel concessionary area the concession was extended to cover any trip throughout England from 0930 to 2300 weekdays and anytime weekends in April 2008 (Knowles & Abrantes, 2008). In their assessment of the impacts of free concessionary travel, Baker and White (2010) studied a TCA in England, Salisbury District Council, utilising a direct survey of pass holders. Their findings showed that overall bus usage rose by 19% between 2005/2006 and 2006/2007, and they deduced that "there appears to be a greater use of buses by those with cars available. This in turn may support wider policies aimed at traffic reduction" (Baker & White, 2010, p.25). The proven track record of the National Concessionary Fare schemes in England, Scotland and Wales shows, unsurprisingly, that free travel encourages increased bus patronage (Andrews *et al.*, 2011).

Towards the end of their period in office, the Labour government, through the offices of the Department for Transport, commissioned a consultancy firm, Detica, to assist in an evaluation of the costs and benefits associated with Smart Ticketing schemes (DfT & Detica, 2009). The overall conclusions of the report, albeit based on limited research, identified that following an initial capital set up cost, the benefits gained in terms of promoting bus patronage and modal switch away from cars, reducing fraud, enhancing safety and achieving integration with other services were significant. The evidence collated within this report, along with supporting data collected during a period of public consultation, informed the production of the *Smart and Integrated Ticketing Strategy* (DfT, 2009a) which was published by the Labour government, in 2009.

The Strategy embraced the spirit of the government's long standing stated commitment to sustainable transport, and identified the contribution of Smart Ticketing to the overall aim of "combating both congestion and climate change". Significant at this stage was the acknowledgement of the key role of ITSO (Turner & Wilson, 2010), in providing "for interoperability between schemes and … a technical toolkit to allow operators and authorities to deliver the vision" (DfT, 2009a, p.4).

In drawing up the *Smart and Integrated Ticketing Strategy* (2009a) the Department for Transport drew on evidence from Smart Ticketing schemes across the world in support of their policy to proceed in this way (DfT, 2009a). Examples from Hong Kong (Octopus Scheme), Lyon and Chicago were cited, alongside the Oyster Card Scheme in London which was recognised by the Department "as an extremely successful integrated scheme, delivering significant benefits to passengers and to TfL" (Turner & Wilson, 2010). Indeed, in the foreword to the Strategy, Lord Adonis, Secretary of State for Transport from 2009 to 2010, focusing on the success of London's Oyster card stated:

> *"Around the world there are examples of innovative new ticketing solutions improving the passenger experience and encouraging more sustainable travel patterns. The right ticketing 'offer' can help deliver a move away from private cars towards public transport combating both congestion and climate change" (DfT, 2009a, p.1)*

The Strategy, as a key Smart Ticketing policy document, has a particular significance for this thesis, as it preceded and influenced the publication of the Coalition

government's White Paper of 2011. The continuity of policy stimulated a fresh approach to ticketing initiatives, especially in relation to the requirement for all the National Concessionary Travel schemes to go fully ITSO smart by the end of 2012, ie, cards being 'read' by ITSO enabled ticket machines.

As the 13 year period of Labour government came to an end in 2010, replaced by a Coalition government between the Conservatives and Liberal Democrats, the outward commitment of sustainability and sustainable transport was carried forward in the publication of a White Paper in January 2011 *Creating growth, cutting carbon: making sustainable local transport happen* (DfT, 2011b). The emphasis of the paper centred around two key objectives, namely "to help create growth in the economy, and to tackle climate change by cutting our carbon emissions" (DfT, 2011b, p.5). The message of sustainability in terms of bus services was carried through to the document published by the Department for Transport entitled *Green Light for Better Buses*, (DfT, 2012b) where the emphasis focused on the encouragement of competition, cutting emissions, reducing air pollution and improving bus services to make them more reliable and frequent and, importantly in relation to this thesis, "making the best use of smartcards and multi operator ticketing … seamlessly moving from one operator, or mode of transport, to another" (DfT, 2012b, p.5). The subsequent publication of *Door to Door A strategy for improving sustainable transport integration* (DfT, 2013b) continued to be a sustainable transport theme, albeit balanced with the desire for economic growth, and introduced specific initiatives to encourage smart and integrated ticketing delivery across the country and they will be considered in section 3.4.3.

Having established the transport policy framework and levers, we need to consider and explore the financial policy levers which have also been employed by government to induce operators and local authorities to invest in smart ticketing development and nudge the smart agenda forward.

### 3.4.2 Financial Policy Levers

Operators of local bus services benefit from the Bus Service Operators Grant (BSOG) which reimburses the majority of the fuel duty paid by operators; in 2006 this repaid 81% of duty paid on ultra-low sulphur diesel fuel, and 100% for new cleaner fuels. This grant, formerly known as fuel duty rebate, was first introduced in 1965 and payment has been linked to fuel consumption rather than economic or social objectives (DfT & Detica, 2009). Over the past fifty years, the industry has become reliant on its contribution to overall revenue; and it now represents a sizeable portion of bus operators' annual revenue. For example, the BSOG claimed by First Group, UK Bus division, in year ending September 2009 was £76.8 million (National Archives, 2009), against a total UK bus income in 2009 of £1,182 million (First Bus, 2009). This represents a proportion of 6%, which is a significant percentage of total revenue to all operators across the country. This significance is clear when considered alongside the declared profits in the UK bus industry, which in 2012/13 fell for the third year in succession to an average figure of 8.3% in urban areas and 6.7% in English rural areas (Coach & Bus Week, 2015).

In April 2010, in line with its developing smart ticketing policy, the government offered a further uplift to BSOG of 8% to those operators installing and operating ITSO smart ticketing systems (DfT, 2009a, p.8). If the BSOG claim submitted by First Bus in 2009 was uplifted by this amount, then the total additional claim, over the five years from 2010 to 2015 would exceed £30m, a not inconsiderable incentive to introduce interoperable smart ticketing for just this one bus operator. In work undertaken on behalf of the Department for Transport to identify the BSOG smart uplift for the 7 largest English City areas, identified as Smart Cities areas, explored in more detail in section 3.4.3, the statistics (see Table 2) revealed the extent to which Operators were assisted through this policy lever in the period 2012-2013. The table also shows the potential smart uplift that could have been claimed had 100% smart implementation been achieved, the grand total for which would have been in excess of £9m.

Table 2: BSOG Smart Uplift Statistics 2012-13
Source: SWSAL

| Smart City Area | 2012 - 2013 | | | |
|---|---|---|---|---|
| | Eligible Buses Total | Smart Uplift Claimed | % claimed | 100% Smart Uplift Potential |
| Bristol - West of England | 915 | £596,341 | 84% | £709,930 |
| Centro | 3110 | £1,771,548 | 64% | £2,108,985 |
| Greater Manchester | 1531 | £803,420 | 71% | £956,452 |
| Merseytravel | 1927 | £1,171,508 | 82% | £1,394,653 |
| Nesti | 1925.5 | £1,517,964 | 87% | £1,807,100 |
| South Yorkshire PTE | 883 | £376,193 | 53% | £447,849 |
| West Yorkshire PTE | 2537 | £1,808,153 | 84% | £2,152,563 |
| | | | | |
| **TOTAL** | **12828.5** | **£8,045,127** | | **£9,577,532** |

The policy focus of seeking to reduce carbon emissions and so tackle climate change in the Coalition government's sustainable transport policy was represented in the White Paper of 2011 (DfT, 2011b). However, and possibly not surprising due to the economic crisis at the time, the concept of 'integrated' transport was relegated in favour of "a transport system that is an engine for economic growth" (DfT, 2011b, p.7). To achieve such policy aims, the White Paper detailed a reliance on "local solutions" which would be supported by a simplified, but highly significant, transport funding plan, the £560 million Local Sustainable Transport Fund (LSTF). This was intended to encourage local authorities to devise solutions to address the issue of climate change, "delivering cleaner environments, improved safety and increased levels of physical activity" (DfT, 2011b, p.9). It represented a massive amount of pump priming and the DfT awarded this funding to 96 sustainable transport packages submitted by 77 local authorities between 2011 and 2015 with an additional £100 million capital funding made available through the Local Growth Fund for 2015 to 2016 (DfT, 2013d). This commitment to 'Localism' in line with the government's overall policy to devolve responsibility to the local level from central control, another example of the "filling in" concept referred to in section 3.2.2, meant that the onus was now on local authorities to "determine their own solutions tailored for the specific needs and behaviour patterns

of their own communities" (DfT, 2011b, p.13). The specific relevance of this funding to the SWSAL project is considered in section 3.5.1.

In the publication, *The Future of Transport a network for 2030* (DfT, 2004), the government reaffirmed their commitment to kick starting public transport projects around the country to invigorate patronage growth. There was recognition, on the part of government, that assistance was required at a local level in "targeting the up-front costs for Authorities, improving the commercial business case for operators and making procurement easier through the provision of Department for Transport framework agreements" (DfT, 2009a, p.28). This was further promoted in the White Paper of 2011 (DfT, 2011b) through encouragement of the creation of Local Enterprise Partnerships, which replaced the former Regional Development Agencies. These consisted of local authorities and businesses together covering functional economic areas, the expectation being that these Partnerships would take a proactive role, supported by the LSTF fund and Regional Growth Fund. An initial 56 Local Enterprise Partnership proposals were submitted to government and 24 areas were confirmed to proceed at that time. In their evaluation of the bus and rail markets in Great Britain in 2014, the Institute for Public Policy Research Think Tank (IPPR, 2014), observed that in Birmingham three such LEP's working with the PTE were forced to compete for funding instead of collaborating, this led the IPPR to "recommend the creation of regional transport bodies modelled on TfL at the level of city regions and combined authorities" (IPPR, 2014, p.38), to achieve the economies of scale required, specifically in urban areas, to achieve transport policy aspirations.

### 3.4.3 Department for Transport Interventions to promote Smart Ticketing Projects

In the capital the Department for Transport provided additional funding to Transport for London (TfL) to deliver the ITSO on Prestige project to enable passengers to travel into, within and across London using an ITSO smartcard (Bus and Coach, 2011). An

initial investment of around £60m was committed to the project which was due for completion by December 2013 and included an upgrade to London's Oyster equipment. This enabled the reading of ITSO smartcards and contactless bank cards as well as Oyster smartcards at ticket barriers in London stations (DfT, 2013b), albeit that there are still instances of technical difficulties to this day.

The 2011 White Paper (DfT, 2011b) promoted a new model in the 'end to end' journey concept, where the improvement of the whole journey experience from the point of view of the passenger was given more prominence. Whilst the focus of this research is the bus industry, its place alongside the rail sector in the provision of public transport in the UK cannot be ignored. Bus and rail companies have very diverse cultures reflecting their customer bases and backgrounds and their administration is controlled by different bodies and, as identified in section 3.2.1, separate sections within the DfT (Lyons & Harman, 2002). The principle of deregulation which applied to the bus industry was not mirrored in the rail sector and passenger train services are operated under franchise by 25 Train Operating Companies (TOCs). In his review of franchising in the rail industry, Brown, (2013) concluded that franchising was "an important component of the privatised industry structure, and it is highly unlikely that these successes could have been delivered if franchising was fundamentally flawed." (p.6). The coordinating body of the TOC's is the Association of Train Operating Companies (ATOC) and they organise the common ticketing structure, which, along with the franchising arrangement provides an integrated base on which to implement smart and integrated ticketing across the industry, an extension of the wider government commitment to end to end seamless travel.

To complement this common ticketing structure, one of the Department for Transport's specific smart ticketing projects was to support and promote seamless smart travel on the railways of the South East of England. This project, known as South East Flexible Ticketing (SEFT), and with an initial investment of £45m, was intended to enable

automated ticket purchase and collection on ITSO smartcards facilitating travel on all modes across the capital. In their publication *Door to Door A strategy for improving sustainable transport integration (2013b)* SEFT was heralded as "a new approach working in partnership with train operators and the lead local transport authority to deliver both smart ticketing capability and new, enhanced products" (DfT, 2013b, p.29). The delivery of this initiative was not underestimated by the Department and they described it as a "tall order" (p.29) as it required the dual technical operation (smart and proprietary) of 12 train operating companies, 300 stations and up to 180 million passenger journeys per year (DfT, 2013b).

The extension of the SEFT concept and approach across the country was further recognised by the Department of Transport as a "challenging task", because "unlike London, most cities do not franchise bus and rail operations. Any such integration therefore needs to be achieved working with the operators in their area" (DfT, 2013b, p.29). This understanding stimulated another significant initiative on the part of the DfT, 'Smart Cities', which was established to support the nine largest cities or city regions across England in the delivery and enhancement of smart, integrated ticketing schemes (DfT, 2013b). There was an expectation that local authorities would be involved in the initiative, as TfL was in the delivery of the SEFT initiative, and the DfT actively fostered and supported partnership working in those areas (DfT, 2013c). The various schemes were expected to utilise existing smart infrastructure and the DfT reaffirmed their commitment to the ITSO specification and its involvement in the ITSO organisation. In the Greater Manchester PTE area (GMPTE), the strengthening of connectivity between all transport modes and the introduction of smart ticketing was a major aim of their partnership and in a speech to the Transport Times Bus Summit in February 2015, the then Minister for Transport, Baroness Kramer, applauded the bus operators involved in the Smart Cities Partnership in Manchester for their commitment to smart integrated ticketing initiatives.

Alongside London centric initiatives in the south east of England and the major cities in the UK, the Department for Transport also looked to the extension of smart, integrated ticketing in rural areas of England. This was in the form of a national Managed Service Pilot of a rural shire county to help smaller operators and authorities benefit from smart ticketing (DfT, 2013b). This 3 year pilot was undertaken with Norfolk County Council and fully funded by the Department of Transport to the tune of £2.5m (DfT, 2013e) with 40 small and medium-sized bus operators invited to join, which collectively operated over 500 buses. These operators were able to install appropriate smart ticketing equipment via a Managed Service provider, SWSAL (see section 3.7) without needing to purchase the equipment up-front. The aim of the pilot was to establish a model for enabling smaller bus operators to go smart which would then be transferable across the country (DfT, 2013e). The Norfolk smartcard, the holdall® card, was introduced in April 2014 and in its first phase allowed interoperability between several local bus operators on the Park and Ride service in Norwich. Research carried out by Passenger Focus on behalf of the Department for Transport revealed a slow and steady take up by passengers (Passenger Focus, 2015) with favourable support by both users and potential users.

An ultimate aim of the government was the enablement of seamless door-to-door journeys across the country, and the encouragement of the various initiatives discussed in this section were envisaged and indeed expected in due course to become interoperable with each other. The resultant network of interoperable local ticketing schemes, described by the DfT as ‘islands’ were intended to be linked by corridors of intercity transport as represented in Figure 7 which would achieve the vision of seamless travel without the need for a single national ticketing scheme.

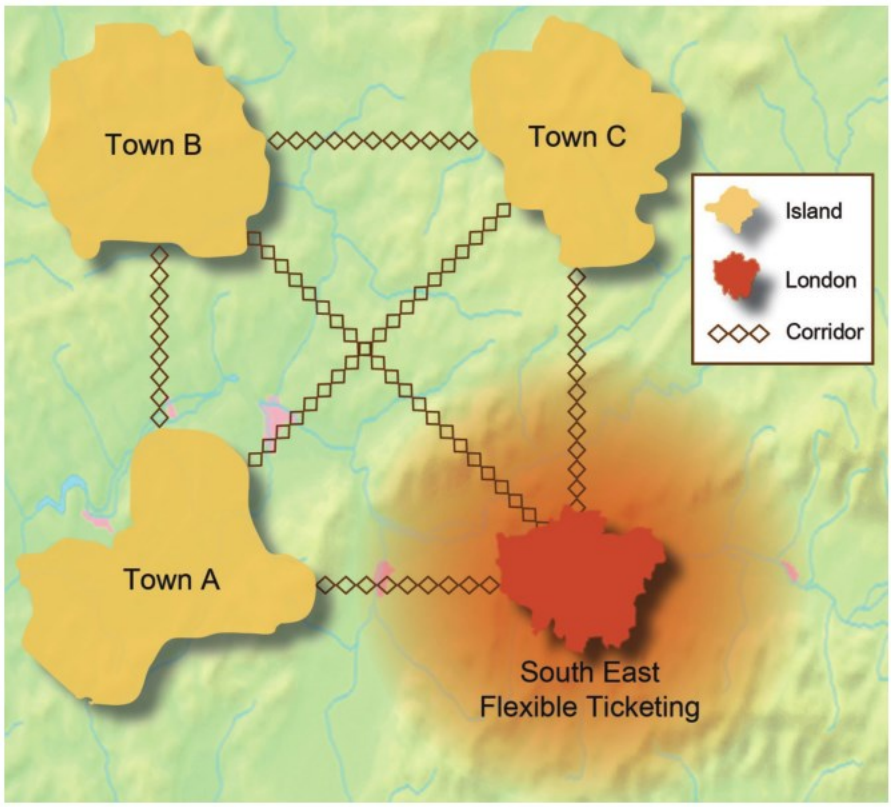



Figure 7: Connected Islands of Smart Ticketing
Source: Department for Transport (2013b)

In its commitment to all these initiatives the Department of Transport acknowledged the ITSO specification, its governance and associated issues such as national hotlisting of lost and stolen cards, as being at the heart of all such schemes (DfT, 2013b).

## 3.5 Smartcard Schemes Resulting from Policy Initiatives

This literature review will now consider specific smart ticketing schemes that have been implemented both in the UK and other parts of the world, the latter focusing on those schemes which have been held up as best practice, including the Oyster card in London. An examination of a Managed Service Provider, South West Smart Applications Ltd, which facilitates the delivery of several schemes will precede a review of individual schemes, taking account of the prevalent governance frameworks and scope of each, drawing out those aspects which make for good transferable models of delivery and implementation.

### 3.5.1 SWSAL – a Managed Service Provider for Smart Ticketing Delivery

At a regional level, South West Smart Applications Ltd (SWSAL – formerly known as South West Smart Card Board, SWSCB) was established to assist local authorities in the delivery of Smart Ticketing, with the specific remit "to support economic growth, enhance mobility and reduce carbon throughout the SW region by delivering the DfT vision for Smart and Integrated Ticketing" (SWSAL, 2011, p.3). SWSAL is a public/private partnership, a 'not for profit' company limited by guarantee, made up of Members from 16 local authorities, 15 commercial bus operators, non-commercial bus operators and other Associate Members. The Associate (non-voting) Members of SWSAL include the DfT, Community Transport Association (CTA), Confederation of Passenger Transport (CPT), ITSO Limited, Local Enterprise Partnerships (LEPs), Passenger Focus, TravelWatch, South West Forum for the Future and the Centre of Sustainable Transport (CST) at the University of Plymouth (SWSAL, 2011). The responsibilities of the local authority Members involves a commitment to deliver ITSO ticketing across their respective areas, whilst the commercial bus operator Members assume responsibility for the provision of ITSO ticketing equipment on all their buses and commit to working in partnership with SWSAL to achieve the same. All Members commit to coordinate on ITSO licensing, regional smart platform utilisation and the delivery of multi-operator ticketing products. To achieve this SWSAL secured a small amount of pump prime grant funding from both the SWIEP (South West Improvement and Efficiency Partnership) and the LSTF. It has facilitated, through partnership working, the delivery of Smart Ticketing equipment on all registered local bus services in south west England and the associated back office software, a regional 'e-money' platform and ITSO migration for south west Community Transport (SWSAL, 2011). In the past four years it has added the facility of a Managed Service to its portfolio of services provided for the exclusive use of its Members. The way in which this works was outlined in section 3.4.3 in relation to Norfolk County Council, who a local authority Member of SWSAL. The geographical extent of the SWSAL membership is illustrated

in Figure 8, and also shows the other principal Managed Service providers, namely, NESTI, NowCard, Yorcard and Centro.

**Figure 8: Travel Concession Authorities and Managed Service Providers in 2012**
**Source: (SWSAL, 2015)**

The adoption of a partnership approach to delivering operational efficiencies is the principle on which SWSAL was founded and in its LSTF bid of 2011, SWSAL recognised that the cost benefit ratio for commercial bus operators investing in ITSO was positive as a consequence of the BSOG uplift discussed in section 3.4.2 (SWSAL,

2011). However the smaller operators generally operating tendered services missed out on those benefits and it is for those operators that the Managed Service facility was developed. (SWSAL, 2011). The Managed Services include a Financial Conducts Authority (FCA) regulated E-purse; web portals for both ENCTS and commercial products; a Customer Contact Centre Service; Product and Customer Research; and Development and Member Scheme delivery. SWSAL provides direct support through purchasing, rental, maintenance and monitoring of equipment and processes (SWSAL, 2015). Table 3 details the expected growth value of outcomes included in the LSTF bid, and in particular, BSOG income was projected to benefit the region by £9,628,271 over the life of the project, assuming a total of 2000 fully equipped vehicles with ITSO equipment. As discussed in section 3.4.2, the significance of the BSOG uplift cannot be overstated as an incentive for operators to adopt interoperable smart ticketing.

**Table 3: Economic Growth of Value of Outcomes in SWSAL LSTF Bid 2011**
**Source: (SWSAL, 2011)**

| Outcome Year | 2011-12 | 2012-13 | 2013-14 | 2014-15 | Total |
|---|---|---|---|---|---|
| Concessionary Travel Saving | £313,788.00 | £537,921.00 | £762,055.00 | £896,536.00 | £2,510,300.00 |
| Regional HOPS Efficiency Gain | -£11,932.00 | £112,943.00 | £351,318.00 | £589,818.00 | £1,042,147.00 |
| Additional Patronage Income | £1,117,200.00 | £1,915,200.00 | £2,713,200.00 | £3,192,000.00 | £8,937,600.00 |
| Emissions & Congestion Savings | £616,542.00 | £1,056,929.00 | £1,497,317.00 | £1,761,549.00 | £4,932,337.00 |
| Additional BSOG Income | £1,891,003.00 | £2,162,356.00 | £2,787,456.00 | £2,787,456.00 | £9,628,271.00 |
| Local Economy Supply Chain Impact | £4,407,000.00 | £3,620,000.00 | £693,000.00 | £693,000.00 | £9,413,000.00 |
| **Total** | **£8,333,601.00** | **£9,405,349.00** | **£8,804,346.00** | **£9,920,359.00** | **£36,463,655.00** |
| **Overall** | DfT BCR Rating = **HIGH** | | | | |

SWSAL was a manifestation of the policy aspirations of a government committed to the model of partnership working, as set out in sections 2.2.6 and 3.2.2. At a regional level, the partnership between 35 different Member organisations across the spectrum of local authorities and bus operators, supported by related agencies has been very successful as evidenced in the delivery of all of its 3100 vehicles being equipped with ITSO ETM's within its original timescales, 10 interoperable schemes delivered

supporting over 130 million smart transactions per year, and the establishment of a Managed Service, the success of which is evident in Norfolk as well as throughout south west England, with more authorities looking to join SWSAL to benefit from its service from all parts of the country.

### 3.5.2 Other Successful Smart Ticketing Schemes in the UK

In addition to SWSAL, there have been several other successful commercial smart ticketing initiatives outside London, very few of which have been ITSO schemes in the true sense, as described in section 3.5. In Oxford, SmartZone, an integrated interoperable ITSO scheme, was introduced in 2011, and includes a smartcard system alongside improved routing and timetabling (Passenger Focus, 2013a). It was introduced following the establishment of a voluntary Quality Partnership scheme in Oxford in 1991 (Davison & Knowles, 2006), the principal partners of which are Oxfordshire County Council, Oxfordshire City Council, Oxford Bus Company and Stagecoach Oxford. In order to satisfy the air quality improvement plans a Qualifying Agreement was drawn up by the County Council to improve the pedestrian experience (DfT, 2011b). The measures put in place included high levels of fleet replacement, specifically with low emissions, high levels of bus priority, and high bus frequencies on core corridors. The Qualifying agreement has also allowed the bus operator partners to co-ordinate routes and timetables, within the rules of the Competition Commission, to ultimately develop a joint smart ticketing initiative. The effect of this partnership on overall passenger numbers has not only arrested the decline in bus use prevalent in England outside London, but has actually seen a growth in patronage (Parkhurst & Dudley, 2004). This positive benefit, coupled with extremely high passenger satisfaction levels relating to bus services in Oxford by SmartZone users of 89% (Passenger Focus, 2013a), has resulted in the scheme being judged by the Department for Transport as a good example of “effective multi operator collaboration” (2013a, p.6). The effectiveness of the Oxford scheme is explored in some detail by those participating in this research as evident in subsequent discussion chapters.

Aside from the few examples of ITSO schemes introduced in recent years, the five main bus operators of First, Stagecoach, Go Ahead, Arriva and National Express (see section 2.3.4) have not been tardy in introducing smart ticketing as part of their offerings to their customers. Go Ahead have been the most proactive through the introduction of their Key card, which has been adopted in their eight subsidiary companies, each with local brand identities. These smartcards contain different products which can be 'topped up' either online or in designated travel offices. The products are in the form of season tickets, multiple journey tickets and in some cases 'pay as you go' products (*Go Ahead* 2015). Stagecoach has a similar offering in the form of Stagecoach Smart for its various subsidiaries (*Stagecoach* 2015) and First Bus has introduced an ITSO interoperable smartcard called …touch… in Bristol, with the slogan "touch and go", working in partnership with the local authority, with on paper commitments to achieve integrated interoperable ticketing for passengers in the Bristol area (*First Group*, 2015). This marks one of several initiatives for First Bus and whilst their commitment to the delivery of smart ticketing has been behind the curve in relation to the other main bus operators in the UK, they are now advocating the

continued expansion of such schemes, as evidenced by this observation from the Managing Director, UK Bus:

> *"We've launched smartcard ticketing schemes with partners in Bristol, West Yorkshire and in the Solent. In addition, in partnership with other bus operators we are working hard behind the scenes to introduce smart ticketing across England's largest regions" (Fearnley, 2015, p.14)*

Whilst the smart ticketing offerings of the major bus operators display the ITSO logo, they are largely proprietary schemes in that they principally offer their own products. Alongside these examples, there are several small scale smart ticketing schemes up and down the UK which are not ITSO interoperable schemes. Like London's Oyster card, they are wholly proprietary schemes, utilising the facility offered by the electronic ticket machine industry, to enable smart ticketing on a closed platform, for the purchasing operator. Good examples of successful small scale proprietary schemes are the Glo Card on Yellowbuses in Bournemouth (*Yellow Buses*, 2015) and Arriva's Connect Card introduced to coincide with the launch of the Luton and Dunstable Busway in 2013 (*Arriva Bus*, 2015). The key benefit of such schemes is their speedy introduction, requiring only a decision by the bus operator to introduce, off the shelf technology guaranteed to work as it is manufactured by the same ETM producer, and local marketing. In terms of passenger loyalty, the Glo Card has been shown to be of commercial benefit to the operator who is entirely in control of their market and products (*Yellow Buses*, 2015). The downside of these schemes, of course, is that they are not interoperable, so the customer only derives benefit within a defined area and for a specific operator.

### 3.5.3 Oyster Card in London inspired by Octopus of Hong Kong

The evolution of transport policy and governance in London explored in section 2.3, described the policy context for the decisions taken to introduce 'soft' and 'hard' measures concurrently to achieve the overall transport policy aim of modal shift. Alongside the pursuit of congestion charging in London, simultaneous efforts were directed at the enhancement of the public transport system, with the introduction of additional bus services, new vehicles, extensive marketing campaigns and ticketing improvements (Glaister, 2006; Hendy, 2005). The Mayor's powers included the ability to set fares for the network and the promotion of the Oyster smartcard, at the same time as the introduction of the congestion charge "revolutionised the way people purchase[d] tickets in London" (Hendy, 2005, p.p196). Transport for London was inspired by the success of the Octopus card in Hong Kong and through their Prestige Project developed the 'contactless' smartcard, as designed by Cubic, which was originally planned to be a season ticket, with the later addition of an epurse facility (Markantonakis *et al.*, 2009; Newman & Sutter, 2002), and with an ultimate aim of "having a cash free transport network" (Ford, 2007, p.30). Whilst inter-operability was seen to be desirable at that stage, the technology was not yet available, Oyster operated as a closed scheme, or proprietary scheme, developed by a large private finance initiative contract (Ford, 2007), and was not ITSO and hence not inter-operable, other than within London. The success of the Oyster scheme is unquestioned with over 70 million Oyster cards having been issued with more than 9 million in regular use. Over 85% of all public transport journeys in London are made using Oyster and its success has been measured through reductions in costs, reduced queuing time, faster throughput of passengers, reduced boarding time, or dwell time,

and reduced loss of revenue through fraud (Hendy, 2005; TfL, 2009b; Turner & Wilson, 2010).

The government, in identifying its funding allocation of £20 million to nine of the ten congestion target areas in the UK, of which London was one, confirmed that £60 million had been committed to the ITSO on Prestige (IOP) project, to make the Oyster estate compatible with ITSO (DfT, 2009a), see section 3.4.3. In addition, London Freedom Passes were required to be re-issued as dual Oyster-ITSO passes from April 2010. The successful migration of Oyster is seen as crucial to the overall objective of seamless travel in the UK as 70% of rail journeys start or finish in the capital (Bryan & Blythe, 2007; Robertson, 2012).

### 3.5.4 SmartRider in Perth, Western Australia

Whilst the London Oyster proprietary scheme is on a huge scale and is largely outside

the scope of this thesis by virtue of that fact, its governance structure and aligned policy of bus franchising is a model shared with a much smaller, yet equally successful, smart ticketing initiative, in Perth, Western Australia, called SmartRider. Provision of public transport has been an integral part of the State Government's transport policy since the early nineties, and in its 1992 publication, *Transporting Perth into the 21st Century,* (Transport Strategy Committee, 1992) the Department of Transport in Western Australia identified a target of increased public transport usage, walking and cycling and predicted that the share of trips by car would fall from 75% of all trips to 58%. (Bray, Taylor & Scrafton, 2011). Bray et al (2011) observed that government support for public transport across all Australian states had been considerable, and this is certainly true in Perth where investment in huge transport infrastructure projects reflect "balanced, integrated, managed and sustainable

approaches to transport" (p.531), an approach which resonates with the rhetoric of UK transport policy of modern times in line with the scale of the promoted Smart Cities and the importance of city sub regions. In 2011 the Western Australian Department of Transport published a visionary plan (2011) which envisaged the public transport system carrying twice as many people by 2031, with public transport being the preferred method of travel as opposed to the highly congested road network in the state capital. Smart Ticketing was regarded as one 'soft' measure alongside a raft of others in the form of education and persuasion to achieve this desired modal shift away from the car.

Transperth is part of the State Government's Public Transport Authority (PTA), and is the brand name through which the Western Australian Government provides public transport services, buses, trains and ferries in the Perth metropolitan region, similar to the way that TfL provides public transport services in Greater London, with over 131 million passenger boardings per year (Government of Western Australia, 2015). The most recently published statistics reveal that 72% of fare paying boardings were SmartRider users (The Government of Western Australia, 2014) and in terms of passenger satisfaction levels, the 2014 Passenger Satisfaction Monitor results showed that 97% of passengers are happy with SmartRider (Public Transport Authority, 2014).

In relation to this thesis, and the reason for researching Perth is that it has a very similar governance model to that of London, with an integrated public transport system including the franchising of all of its bus services. This model is also distinctly similar to the Quality Contract model advocated in current UK transport policy, as discussed in section 2.2.6. Perth is of a similar size to those conurbations included in the Smart Cities smart ticketing initiative reviewed in section 3.4.3 and it has an internationally acclaimed smart ticketing scheme in the form of SmartRider.

## 3.6 Future developments

Smart ticketing is well embedded in current transport policy, as evidenced by the latest publication from the Department for Transport *Door to Door – A strategy for improving sustainable transport integration* (DfT, 2013b). This builds on the policy initiatives detailed in chapter 2 and provides for assistance to local authorities and operators outside of the capital in implementing inter-operable ITSO smart ticketing schemes through the availability of pump priming in the form of LSTF grants, BSOG uplift payments and DfT special projects. All of this revolves around ITSO. The ITSO specification lies at the heart of the interoperable smart ticketing schemes encouraged and promoted by the government. The government has nailed its colours to the mast through its legislation and funding programmes to ensure that interoperability becomes more than a vision outside of the capital. Local authorities and bus operators have, through partnership working, battled with the technical limitations of ITSO to introduce concessionary travel on an ITSO platform, but the move to introducing commercial interoperable smart ticketing is proving a slow and painful process.

A significant output of ITSO in promoting growth of the supplier market was a defined technical standard for new entrants to the market place. One such entrant, Ticketer, has enjoyed huge growth at the expense of other ETM suppliers in recent years, as their flexible and operator-led philosophy has found new openings in Reading, Ipswich, Cardiff and NESTI (the North East Smart Ticketing Initiative) who have purchased equipment for all their smaller operators as well as the majority of the smaller SWSAL operators. This development has opened up possibilities for operators and bodes well for their customers in terms of interoperable offerings in all parts of the country.

At the time of writing, these issues have been recognised by the government who are beginning to undertake a consultation process on a proposed New Bus Services Bill.

## 3.7 Summary

This chapter has examined the place of smart ticketing within the wider transport policy landscape and in particular, has examined the mechanisms for delivery and the role of ITSO in delivering the interoperable smart ticketing vision of government. The governance of smart ticketing on a national scale, as orchestrated by the Department of Transport, with its wide remit of responsibilities was examined and the delivery of interoperable smart ticketing was investigated at a local and regional scale, as achieved through the model of partnership working, with particular focus on the personnel involved in making such delivery happen.

The deregulated market outside of London with its disintegrated range of bus operators and lack of common infrastructure (Shaw & Docherty, 2014) was identified as the principal determinant in the formation of ITSO as an organisation and a standard specification to enable the extension of interoperability beyond the remit of just one supplier (Blythe, 2004). The most significant development in the evolution of ITSO smart ticketing in England was that of the English National Concessionary Travel Scheme, first introduced in 2001, and indeed the extension of free bus travel across England in 2008 resulted in the government mandating the ITSO platform to enable the interoperability of ENCTS cards (Andrews, 2012; HMSO, 2007). The technical interoperability of ITSO smartcards presented difficulties to operators and local authorities alike in realising government policy due to the complexity of the ITSO specification and potential mis-interpretation by suppliers in relation to the delivery of interoperable schemes. In line with observations made by Pemberton (2000), Healey (2006; 2010), Hull (2005) and May, Page and Hull (2008) the difficulties associated with partnership working at a local level, in combination with the technical complications of interpreting and implementing the ITSO specification, have proved to be a significant hurdle to the delivery of interoperable schemes. The negative effect on confidence in the market has impeded the expansion of commercial schemes, where the business case was more relevant, than was the case with the concessionary

scheme. However, the application by government of a series of policy levers, both legislative and financial, to encourage involvement on the part of both local authorities and bus operators, through grant funding and pump priming, has had a significant positive effect on the number of interoperable smart ticketing initiatives across the country (DfT, 2009a). Alongside this, the promotion of specific projects such as SEFT, Smart Cities and the National Pilot for a Managed Service by the Department of Transport, with their appropriate funding injections, have served to kick start smart and integrated ticketing schemes in those areas, with the longer term vision of joining them together in order to achieve the vision of seamless travel without the need for a single national ticketing scheme (DfT, 2013b).

The chapter concluded with a review of ITSO scheme implementations in this country, with particular emphasis on the work done by SWSAL through the Managed Service facility provided to its Members. These schemes, coupled with the smart ticketing offerings of the major bus companies in England, could be perceived as a disintegrated ticketing facility on a national scale, albeit meeting customer needs on a local scale. When set aside the glowing examples of larger successful integrated smart ticketing schemes, such as Oyster in London and SmartRider in Perth, it is difficult for those outside of the industry to understand why they don't work in the rest of the UK outside London. The deregulated world of the private bus operators in England is not an easy environment within which to apply an integrated ticketing offering and one means by which that should be overcome, ITSO, has proved a complicated process.

Having explored the available literature relating to transport policy and specifically Smart Ticketing policy which frames the area of study for this research project, chapter 4 will now turn to the methodology which informs the empirical work required to capture the requisite information on the core themes identified which in turn will be reviewed in the subsequent discussion chapters of this thesis.

# 4 Methodology

Chapters 2 and 3 have set the context for this research project as determined through the examination of current academic literature and industry documentation. The conclusions drawn from that review have channelled my focus on those aspects of ITSO smart ticketing policy and practice which require further investigation, and the approaches necessary to ensure the procurement of good quality, reliable data to answer the research questions, devised to achieve the aims of this project, namely, a critical evaluation of the process and policy delivery of ITSO Smart Ticketing and an assessment of key outcomes. Evaluation Research, whilst being a recognised form of social research (Pawson & Tilley, 1997), adopts principles of policy evaluation which align with the aims of this research project. The application of these research principles in the 'real world' advocates an overall pragmatic approach to the research problem and it is this which shapes the whole research strategy (Bryman, 1984; 2012; Robson, 2011). Evans et al (2014) define "methodology" as "the branch of knowledge that deals with method and its application in a particular field of study" (p.88), and this chapter will outline the approach and ethical principles which underpin the appropriate research method before moving on to explain the reasons for the choice of method and specific tools employed.

This piece of research is funded by the Department for Transport and SWSAL, and both organisations have a vested interest in its outcome. Pawson and Tilley (1997) draw attention to the critical issue in funded research as being whether "he who pays the researcher calls the methodological tune" (Pawson & Tilley, 1997, p.14). The methodologically rigorous research strategy has been devised to mitigate any potential criticism of ultimate findings in this respect. This approach is also echoed in the ethical stance adopted overall and the meticulous attention to ethical practice in dealings with professional participants.

In seeking answers to the research questions identified in section 1.1, it was clear that I needed to acquire very deep but quite narrow data both from primary sources, key personnel involved in smart ticketing policy and delivery, and from secondary sources, such as government and industry documentation. The requirement for such specific data has governed the overall approach to this research in that, pragmatically, interviews and focus groups were considered the most appropriate data collection method. In relation to the first four questions, data was required from the smart ticketing community in England focusing on the insights, views and perceptions of key industry and government personnel. The same method was then employed in a case study undertaken in Perth, Western Australia, in order to answer the fifth question regarding comparisons between schemes. .

This chapter proceeds by first considering reasons for the adoption of a pragmatic approach. It then explores the philosophical foundations underpinning the way in which the data will be interpreted, before considering Evaluation Research and Ethical Research standpoints. The next section relates to the specific methods of choice, detailing the process adhered to in the course of this study before moving on to recount the way in which the data collected were organised, managed and subsequently interpreted.

## 4.1 The Epistemological Position

Typically, the starting point of any piece of academic research is an understanding of the philosophical assumptions which underlie the approach taken by a researcher which in turn shapes the design of the strategy to be adopted to investigate that problem (Creswell, 2013). However, in his review of the philosophical debate, Bryman (1984) argues that in practice, it is the problem to be investigated that directs the choice of method and hence the approach to be adopted, which can be termed a pragmatic approach. These differing views represent the opposite ends of the research origin continuum, philosophical considerations through to pragmatic

considerations and in this research project the fundamental approach was influenced by the necessity to collect specific data to answer specific research questions. This determined that I adopt a pragmatic approach to the research problem.

Following examination of a range of social research writers, Bryman (1984) concludes that there is no specific relationship between methodology, which he defines as the epistemological position, and the techniques, or research methods, employed. Rather he makes the point that a combination of appropriate methods, largely determined by the specific problem requiring solution, may be more relevant. The practical application of research principles in the real world is termed a pragmatic approach and in his work in tourism research, Pansiri (2005) observed that such an approach produces enhanced research insights as it allows for mixed methods, in essence using whatever works best for a specific problem. In his definition of a pragmatic approach to social research, Robson (2011) sees it as middle ground between philosophical paradigms and more akin to the solving of problems through specific actions.

> *"Pragmatism is almost an antiphilosophical philosophy which advocates getting on with the research rather than philosophising hence providing a welcome antidote to a stultifying over concern with matters such as ontology and epistemology" (Robson, 2011, p.30)*

The adoption of a pragmatic approach utilising mixed methods is considered unacceptable in some paradigmatic traditions, particularly those of a purist standpoint (Clarke, 2012). Nonetheless, it is an appropriate approach in relation to this project as the research problem calls for a variety of research methods although I recognise that the way in which any data is interpreted will be rooted in well-established philosophical foundations and those will now be reviewed.

## 4.2 Philosophical Foundations

In their attempt to make sense of the ever growing complex world of social research, Lincoln and Guba (2003) identified four philosophical approaches or paradigms,

namely positivism, post positivism, critical theory and constructivism, with a fifth relatively new addition of a participatory paradigm. They reflect a movement within the world of social sciences away from the conventional scientific model, to a social model of a more interpretative practice and they maintain that an understanding of the basic ethical, ontological, epistemological and methodological assumptions of each paradigm is a necessary prerequisite of any reputable researcher (Lincoln & Denzin, 2003). Positivism, the long standing philosophical view of natural science, is defined by Robson (2011) as being one where scientists view all realities in the same objective manner, and that the researcher and researched are independent of each other. Post positivists vary in as much as they acknowledge the influence of the researcher in the process.

At the other end of the paradigm spectrum from positivism is interpretivism. A simple definition of the interpretivist, sometimes referred to as constructivist, view, centres on how the world is interpreted by those involved in it (Robson, 2011). Bryman goes further in his definition of interpretivism as being "an epistemological position that requires the social scientist to grasp the subjective meaning of social action" (Bryman, 2012, p.712). In contrast to the positivist stance which requires an objective view on the part of the researcher, the interpretivist stance requires the social scientist to look for a subjective meaning (Bryman, 2012). It is this direct involvement of the researcher in the research process, and in particular the search for deeper understanding and lived experiences, termed phenomenological or a hermeneutic approach, which is of significance in this piece of research (Patton, 2002; Robson, 2011). These approaches, identified as two of Creswell's (2013) five main approaches to qualitative inquiry, share features with interpretivism, also referred to as social constructionism.

Before moving on to consider the methods or techniques to be employed in this research project, the field of Evaluation Research will now be reviewed followed by a consideration of ethical requirements of a piece of social research and potential ethical issues for this research project.

## 4.3 Evaluation Research

A characteristic element of this particular piece of research is the intention to critically *evaluate* ITSO smart ticketing policy, practice and outcomes. A useful definition of policy evaluation, as distinct from policy appraisal, is the "ex post analysis of an intervention to establish how successful it has or hasn't been and what lessons may be taken from the experience" (Johnson, Shaw & Berding, 2015, p.15). Evaluation Research has evolved as a recognised form of social research from its beginnings in the 1960s, where it essentially referred to the appraisal of social programmes, to a situation today where it is a recognised form of social research (Pawson & Tilley, 1997). Many social researchers have questioned its status as valid academic research (Bryman, 2012; Clarke, 2012) for reasons including diversity of output, and purity of method, but increasingly it is regarded as being the application of academic social research procedures to ultimately improve policy making. It is principally concerned with "determining the merit, worth or value of an established policy" (Clarke, 2012, p.3) and consequently it has "political effects" and is potentially influenced by "political forces". This 'political' aspect of evaluation research resonates with the findings through the literature review where the politics of activity and personality were identified as significant avenues of investigation in relation to the subject under scrutiny. Pawson and Tilley (1997) maintain that "evaluation has fought for its status on the basis of the rigor of its research strategies and methodologies" (p.xi) and Clarke (2012) refers to the issue of credibility in cases of evaluation research where he recommends that the role of the researcher should be one of the "expert witness" (p.167), who is "well informed, technically competent and trustworthy" (p.166). A key outcome of a piece of evaluation research is that of action (Clarke, 2012), and for the research findings to have an ultimate contribution to policy and practice (Bryman, 2012). In this context of this thesis, the application of a pragmatic approach to evaluating smart ticketing policy in action, through the interpretation of the views of

research participants, has enabled the formulation of conclusions and recommendations to enhance that policy and practice.

## 4.4 Ethical Research

A key aspect of ensuring credibility and worth is that a piece of research must be designed and implemented in an ethically sound manner (Lincoln & Denzin, 2003). Ethical practice is concerned with beliefs, morals and values, and behaving in a manner which upholds the same (Bryman, 2012). Awareness of the potential ethical issues which could arise at varying points within the research process is necessary on the part of the researcher to plan to avoid or address them (Creswell, 2013).

This piece of research is being conducted under the auspices of Plymouth University and as such the correct protocol has been followed throughout in order to comply with the requirements of the Human Ethics Committee within the Faculty of Science and Environment. Application to the Committee was made early on in the research process which required the submission of Interview Schedules and Consent forms (see Appendices B and C), all of which were subject to scrutiny by the Ethics Board prior to the awarding of approval for the research to continue. This approval gave weight to the research project which in turn served to give additional confidence to the participants who were advised of this process and invited to give their formal consent to participation through the signing of the consent form prior to any interview or focus group.

Ethical practice is much more than just gaining a signature on a consent form. The moral principles of a researcher should be evident in their practice. Principles such as respect for persons and justice are inherent and should permeate through all aspects of the research process (Rubin, 2004). The most significant element of these moral principles in this project is the minimisation of potential harm, non-maleficence, to participants (McLeod, 2001). The protection of vulnerable participants from exploitation is a key purpose of ethical regulation and in this piece of research, the decision to

pursue face to face interviews with elite participants has its own ramifications in relation to the concept of 'harm', in terms of potential damage to reputation (Bell & Bryman, 2007). The participants were all advised, through written documentation, supported by the consent form (Appendix C), that their contributions would be anonymised and that no commercially sensitive information would be published. Therefore the 'trust' established between myself as the researcher and the participant was essential to reassure all parties that the information imparted would be dealt with in an honourable manner. I am conscious, having a background in counselling training, that to be able to extract honest, deeply held beliefs, opinions and insights, participants must trust me in order to open up fully within the relatively short period of the interview itself. Therefore, good preparation with credible and compelling evidence of the authenticity of the research project, endorsed by a reputable institution such as the University, helped to ensure the willing and enthusiastic engagement of the prospective participants.

Ethical practice does not stop at the end of the interview. Within the documentation and during the interview itself, the participants were advised that the recording of the session would be personally transcribed verbatim. They were advised that they would be given the opportunity to review the transcription and make changes if required, or indeed delete any of the narrative with which they were not happy. Subsequent interpretation of that text in the course of the analysis process to be described later in this chapter, is in itself an ethical issue and adherence to ethical practice to uphold respect for the participants throughout is essential (Rubin, 2004).

In terms of focus groups, potential ethical issues that may arise in these sessions centre on the dynamics of power and influence that can occur in any group. Therefore sensitive, skilled handling of such groups is required in order to avoid any pitfalls. (Marshall & Rossman, 2011).

## 4.5 Data Validity

Perri and Bellamy (2012) in identifying the principles of methodology, maintain that "the simplest standards of soundness in methodology are those of reliability and validity" (p.21). These aspects of the research process are of critical importance for the resultant findings to have any credence in the academic world or indeed that of the bus industry itself, indeed Bryman (2012) identifies validity as being "concerned with the integrity of the conclusions that are generated from a piece of research" (p.47). One definition of rigour in the context of qualitative research is "the extent to which a piece of research is believable and hence worthy of attention" (Baxter & Eyles, 1997, p.506) another defines the term 'rigorous' in qualitative research as akin to being thorough (Richards, 2002). Richards also observes that in social research "if reliability requires exact replication, this will be difficult, arguably impossible" (p.428), but it is by such replication that research is usually validated.

Lincoln and Guba (2007) in their consideration of the issue of rigour in evaluation research, questioned the application of criteria for rigour in a conventional scientific paradigm to a naturalistic or interpretivist paradigm arguing that the well-established and recognised criteria were "quite inappropriate and even irrelevant" (p.18). They proposed the adoption of alternative validation terms to the accepted internal validity, external validity, reliability or replicability and objectivity to be instead described as credibility, dependability, confirmability and transferability, which collectively they referred to as "criteria of trustworthiness" (p.18). Each of these criteria has associated techniques for assessing data validity, for example in terms of credibility, they suggest that lengthy engagement with, and observation of, participants, triangulation with various data sources, peer debriefing, negative case analysis and member checks would all serve to demonstrate the credibility of the research (Agostinho, 2005). In terms of transferability, the production of extensive narrative, cross checked against other narratives is a suitable technique. Whilst in terms of dependability and

confirmability, these criteria can be tested by external audit (Schwandt, Lincoln & Guba, 2007).

One process of validity checking is through triangulation, which involves the use of more than one method to cross check findings (Agostinho, 2005; Bryman, 1984). This concept is more usually associated with quantitative methods, however there is a school of thought which suggests that the validity of findings is enhanced by the employment of multiple sources and a variety of data collecting methods (Creswell, 2013). In their analysis of eight studies employing multiple methods, Baxter and Eyles (1997) urged caution in assuming that this guaranteed more rigorous results and Creswell (2013) observed that different methods employed in the data collection process should be complementary, and not simply a case of more is better. In considering the application of such trustworthiness criteria to this piece of research, triangulation, or cross checking, has been employed to 'test' data collected during the face to face interviews. In addition, participant checks during the course of interviews were employed as an informal, ongoing means of checking information. Yeung (1995) maintains that qualitative personal interviews are more likely to be a reliable source of information, especially from business personnel because any validity issues which may emerge are more easily resolved through an immediate checking out of understanding and interpretation on the part of the researcher, during the course of the interview. This latter form of validation is questioned by Mikecz (2012) in as much as he queries whether it is possible to achieve complete reliability and validity in the face of ensuring rigour in the research process. An interesting validation technique employed in this study, was a comparison of the English data with that of the 'control' case study in Perth which will be discussed in more detail in section 4.6.1.

In their investigation regarding use of travelling time, Watts and Urry (2008) concluded that the combination of various data gathering tools such as surveys, focus groups, individual interviews and ethnography were necessary in order to arrive at their findings. They employed the concept of triangulation, using different means to check-

out and validate the evidence collected from different perspectives. Mikecz (2012) utilised such a technique along with "lengthy self-critical reflection to improve trustworthiness and to ascertain a critical evaluation of the findings" (p.491). The cross checking of one set of data against another, is a concept that underlies the strategy in this piece of research.

In relation to the validation of information secured through focus groups, the very nature of their operation ensures a self-checking process, as the participants endorse or contradict each other, arriving at a consensus (Marshall & Rossman, 2011). Marshall and Rossman (2011) argue that "this concept of interpersonal validity inextricably intertwines ethics with trustworthiness" (p.50) as discussed in section 4.4. Bryman (2012) maintains that a representative sample is one which "reflects the population accurately, so that it is a microcosm of the population" (p.715).

## 4.6 Research Methods

Bryman (2012) describes research practice in the real world as often 'messy', rarely conforming to the neat process described in methodology text books. Indeed, flexibility is a characteristic of qualitative research, as it allows the research to "unfold, cascade, roll and emerge, and still present a plan which is logical, concise and thorough" (Marshall & Rossman, 2011, p.90). This sentiment is echoed by Kvale (2006) who argues that "social scientists … attempt to understand the world from their subjects' points of view and to unfold the meaning of their lived world" (p.481). Whilst a mixed methods approach is becoming more widely accepted in the world of social research, it has caused some dissent, primarily with those who regard the philosophical stance of each 'pure' method as being sacrosanct. In this research project the research questions determined the overall pragmatic approach and also determined the employment of mixed research methods. A qualitative approach was required in relation to the primary aim of gathering insights and perceptions of key actors along with a quantitative approach in relation to the aim of assessing the impact of

technology on key outcomes of an ITSO smart ticketing project. Taken together, the merging of these approaches would result in a dataset which is "mutually illuminating" (Bryman, 2012, p.628) and a "superior piece of research" (Whyte as cited in Bryman, 1984, p.86) has emerged as a result of the combination of techniques. It was recognised that it was essential to preserve the integrity of each method, true to their respective epistemological and ontological commitments, in order to maintain the necessary academic rigour (Silverman, 2013).

The principal tools of qualitative data collection methods are individual interview, focus group, participant observation and qualitative examination of texts such as discourse analysis (Silverman, 2013). The research questions highlighted the requirement for deep and narrow data as opposed to shallow and wide, therefore the source for such data was identified as key senior personnel involved in the organisations associated with the policy formulation, delivery and successful operation of ITSO smart ticketing, supported by data from focus groups where appropriate. Looking to the literature, several instances of the employment of similar interview methods in the transport context were to be found. Mackinnon et al (2008) in their study assessing the relative merits of transport policy implementation utilised a semi structured interview for face to face interviews as did Meek et al (2009) in their small, but targeted study into the popularity of Park and Ride schemes and Mikecz (2012) also employed this tool in his work on Estonian policy makers' decision choices. In each of these instances, the research purpose was the pursuit of views and perceptions as to the implementation and delivery processes of some form of policy.

Closer examination of these studies revealed that each employed a non-probability sampling technique, known as purposive or purposeful sampling. This is recognised as valid in those cases where a strategic approach yields the best sample for the purpose of the research (Creswell, 2013). Mackinnon et al's study (2008) identified key actors in the field who were selected due to their position and knowledge, specifically, senior government and organisation officials. Meek et al (2009) targeted eight key

stakeholders involved in UK park and ride, Herod (1999) selected elite participants who held positions of power in the Trade Unions and Mikecz (2012) selected his sample from senior government officials, chief executive officers and senior managers in public and private organisations. Each of these cases reported the collection of high quality material from knowledgeable sources, giving credence to the proposition of this investigation to target key industry personnel. In his international business research, Yeung (1995) came to the conclusion that the qualitative personal interview is a better technique than surveys or telephone interviews when seeking information from senior business executives, due to its flexibility. In relation to his interview schedule, he found it was possible to adjust his questions or approach to suit the individual, giving more explanation or less, as required.

This section now proceeds by considering the methods and techniques employed in this research project.

### 4.6.1 Case Study

The use of case studies in social research allows for the intensive study of a single case, indeed a whole research project could be regarded as one case study (Gomm, 2000). Social scientists are divided on their opinions as to the usefulness of the study of a single case where the generalisation of results is customary (Flyvbjerg, 2013). However, Flyvbjerg argues that to understand a complex issue an in depth study of that issue is necessary. Usually a 'case' is associated with a particular topic, location or organisation and the study may involve a range of different research methods including "interviews, observations, historical and document analysis and even surveys" (Marshall & Rossman, 2011, p.94). Creswell (2013) regards the case study as one of his five designated approaches to qualitative inquiry and in particular cites it as applicable in evaluation research, but his preference is to use the term to refer to an unusual or diverse case relative to the main area of study.

In the course of the literature review, several examples of the application of this method of social research were evident, notably the extensive research on the use of soft measures in traffic reduction undertaken by Cairns et al (2008), work on performance targets in transport policy undertaken by Marsden and Bonsall (2006) and Baker and White's (2010) case study on the impacts of free concessionary travel in an English rural region. Clark (1998) in setting the context for his qualitative work in economic geography involving industry respondents maintains that "close dialogue is a mode of case study research, one that uses structured and unstructured interviews in the context of relationships between nominal equals to reveal the actual logic of decision making" (p.73). Extending that decision making to policy decision making, Alan Clarke (2012) identifies the concept of case-control study, where study units are selected in a targeted manner as to whether they feature, or not, the subject under evaluation. Closer investigation of this concept is revealed in Zucker's (2009) in depth analysis of case studies as a valid means of research; she contends that in the health sector, the use of a "negative" case study, ie that which has contrasting characteristics to the focus of the research, acts as a 'control' in terms of the incorporation of rigour into the study design.

In chapters 2 and 3, London was identified as being significantly different to the rest of the country in relation to the way smart ticketing was governed and delivered. However, its size, scale and dominance in the UK context argued against attempting to draw comparisons between London and the rest of the country in this thesis. As a consequence the idea was conceived of selecting another smart ticketing scheme, with a similar governance regime to London, but without the potential cross contamination which could result from a closer examination of Oyster in London. Perth is a much smaller metropolitan area than London, as reflected in the numbers of passenger journeys per year; in 2013 the annual patronage on public transit in Perth was 149.7 million (Australian Government, 2014, p.5) and in London the annual patronage for the year 2012/13 was recorded as 2,320 million (DfT, 2015a) some fifteen times greater

than Perth. In terms of institutional support the spend per head of population in London was recorded by HM Treasury (2014, p.35) as £511 for 2013/14, as opposed to £307 for the UK as a whole. The smart offering in Perth (WA) is called SmartRider and is an internationally acclaimed scheme (Millar, 2013). This provides a diverse case as advocated by Creswell (2013), and acts as a case control-study as advocated by Clarke (2012). Whilst Perth is comparable in size to Birmingham or Manchester, it is different in that it is divorced from UK governance practices and environment and therefore offered a way to contrast with the rest of England outside of London and importantly, does not, nor ever has done, operate in a deregulated environment. This approach was mirrored in Preston and Almutairi's work (2013) on bus deregulation in the UK where they viewed London's regulatory system as "a form of experimental control" (p.209) against the rest of the deregulated country. The study of the smart ticketing system in Perth illustrated how a successful smart ticketing scheme was developed and implemented in a less encumbered environment than is the case in the UK, providing a sound basis for comparison with similar sized schemes in England.

### 4.6.2 Focus Groups

In order to gather in depth information relating to the practice of smart ticketing schemes, in support of the principal dataset from key senior personnel, focus groups were considered as a way of obtaining data from users. A focus group can be described as a means of 'interviewing' a group of interested persons at one time on a specific topic or theme. The concept came originally from the world of market research, but has been adopted by social scientists and social researchers (Bryman, 2012). They are normally comprised of 8 to 10 people across a spectrum of age and gender with an homogeneous link. The purpose, in a social research context, is to acquire insights into attitudes, perceptions and opinions of the participating members of the group or groups through relatively unstructured means (Krueger, 1994). One of the positive benefits of a group discussion is the knock on effect of such participation stemming from the social interaction between the participating members (Patton, 2002). The stimulation of ideas and different points of view that the participants offer, which in turn trigger further ideas in others, makes for a productive and animated session. The researcher acts as a moderator, being non-directive, listening to and observing all that is going on and intervening, or not, as required to ensure the flow is maintained and is not derailed or side tracked in any way (Longhurst, 2016). Krueger (1994) argues that analysis of a focus group session requires the utilisation of inductive techniques and "an inductive researcher derives understanding based on the discussion as opposed to testing or confirmed a pre-conceived hypothesis or theory" (p.20).

In considering the applicability of focus groups to this piece of research, attention was given to available literature regarding similar areas of study to this research project. Transport for London have used focus groups to gather information on the impact, and use of, the Oyster Card in London (2010b) as have Passenger Focus in their work on the passenger perspective of Concessionary Bus Travel in England (2009) where they recruited 8 focus groups in Manchester, Bournemouth, Norwich and Hartlepool as well as organising a survey of 2000 pass holders and non-pass holders in Birmingham, Bath,

Scarborough and Newark on Trent. Similarly, the Department for Transport commissioned Newcastle University to undertake a piece of research to evaluate the pilot of the Yorcard project (Newcastle University, 2010) which employed the use of focus groups to look at boarding and journey time perceptions, ease of product purchase, customer support and public transport appeal, all in relation to ITSO smart ticketing.

At the commencement of this research project, the intention was to use information from user focus groups to support the data derived through interviews. Therefore the case study work in Perth involved a focus group of eleven SmartRider users, recruited through the TransPerth website. The data gathered supported the published Passenger Satisfaction Monitor and the interview data gathered from the TransPerth participants (Public Transport Authority, 2014). In view of the wealth of similar user focus group data available in the UK, most prolifically by Passenger Focus (Passenger Focus, 2013a; Passenger Focus, 2014b; Passenger Focus, 2015), the decision was taken not to continue with them in England.

### 4.6.3 Face to Face Interviews

Structured interviews are very much the domain of quantitative research along with self-administered questionnaires (Brannen, 1992). Anable (2005) in her assessment of travel behaviour, utilised self-administered questionnaires of a large sample of users, as did Graham and Mulley (2012) in their study of pre pay tickets in Sydney. As these studies were intent on identifying specific information relating to pre-determined issues, this tool was not considered to be appropriate in this research project. However, semi-structured in-depth interviews, or “conversation[s] with a purpose” (Kvale, 2006, p.483) usually on a theme of mutual interest between the interviewer and participant, appeared to be much more relevant because the intention was to elicit deeply held views and perceptions (Creswell, 2013). The formulation of an interview schedule, paying close attention to the research questions was designed in such a way that the answers would collectively serve to satisfy the demands of the overall research questions (Appendix B). This

schedule was used as a guide only, to provide a list of memory prompts, allowing management of the interview, for example, bringing the interviewee back on topic after any digression on their part (Berg & Lune, 2013). This concept of the "interviewer as a choreographer" (Berg & Lune, 2013, p.144) subtly controlling the interview process, ensured that the aims of the interview were achieved, with minimum apparent direction on the part of the interviewer.

The purposive sampling of key senior personnel is referred to as Elite Interviewing, and it has increasingly been used by researchers to capture valuable data from those decision makers responsible for the design and operation of systems under review (Herod, 1999; Marshall & Rossman, 2011; Rice, 2010; Schoenberger, 1991; Welch et al., 2002). Schoenberger (1991) used the term Corporate Interview in the same context describing it as a means of gaining "unique access to certain kinds of knowledge" (p.182) which only the elite participants would possess. Mikecz (2012) goes further in his definition of such elites in describing them as "dynamic and heterogeneous, as people can gain and lose elite status over time" (p.485). He goes on to say that by very definition those in senior and often powerful positions are very often dominant characters who can easily hijack an interview if allowed to do so. This implication that the personalities of those in so defined elite positions, are of equal significance to their position in the organisation is an interesting one in the light of the review of the literature concerning smart ticketing and its political context in the UK. This is particularly relevant in relation to a key point of this research project – partnership working, and it makes a strong argument for utilising this data collection tool. Schoenberger (1991) reinforces this when she cites the open ended corporate interview as being a means to pursue direct investigation of strategic decision making, through skilful and subtle management on the part of the interviewer.

Elite interviews by their very nature imply a power differential (Kvale, 2006) and it is largely down to the strength of the researcher in terms of anticipating and reading the response of the participant to ensure that appropriate action is taken during the course of the session to keep it on topic, should that become necessary. Schoenberger (1991)

makes the point that the objective of such an interview is to achieve a “collaborative dialogue that engages the respondent in working through the research problem” (p.182) and in order to maintain that dialogue, if intervention should be required, then the researcher has to be able to maintain the conversation at the appropriate level. Kvale (2006) concurs with this view, describing such dialogue as Socratic, where the power distribution is to some extent equalized. He further contends that the definition of an interview as ‘dialogue’ can be misleading because it implies that the conversation is a two way process, whereas the object in a research context is to extract information from the participant. This would suggest that the researcher has to be quite manipulative to achieve that end, giving the impression to the participant of collaboration, to elicit more revelations on their part. This use of power to extract such knowledge is seen by Kvale (2006) as “a valuable and legitimate way of conducting research” (p.485) but requires sensitive handling.

The practicalities of the decision to pursue elite interviews are complex, from identifying who to interview and why, how to access them and the format of the interview itself (Herod, 1999; Mikecz, 2012; Rice, 2010). In terms of the ‘who’ and ‘why’, this was largely determined by the need to access knowledgeable persons in the ITSO smart ticketing world and I was privileged to have access to a range of relevant knowledgeable personnel across the breadth of the transport sector, courtesy of my positionality in the bus industry. My involvement in the industry has spanned twenty nine years including eight years with the National Bus Company and twenty one years jointly owning and managing a private bus company which has resulted in many personal contacts. My experience is similar to that of Mikecz (2012) who referred to his access to participants as being through “personal contacts, inside knowledge of culture, etiquette and perseverance” (p.490). Welch et al (2002) argue that in the context of interviewing elites, the interviewer needs to emphasize their academic and/or professional credentials in order to “reduce the status imbalance” (p.485). Maintaining a form of ‘power balance’ in such a scenario is a challenging issue for an interviewer to manage, once an interview is underway (Smith, 2006). The tendency for such elite participants to

be dominant or strong personalities can then result in a directing of the subject away from the main theme. The potential for the elite participant to try 'to blind [the researcher] with science', using their knowledge in a way designed to overwhelm or wrong-foot is a very real possibility, which could result in a swinging of the power pendulum away from the interviewer, and with it, the control of the interview itself (Clark, 1998).

The participants in this study were sourced from different sections of the smart ticketing world in England, as shown in Table 4, which allowed for the triangulation of responses across the spectrum of participants. A total of 61 participants in England was drawn from a wide range of relevant sectors including the Department for Transport, Transport for London, Bus Operators, Passenger Transport Executives, Local Authorities,

Table 4: Research Participant Summary

| | | Final Completed Interviews | Final Number of Participants |
|---|---|---|---|
| **UK Fieldwork** | **Broad Category** | | |
| **Bus Operators** (incl 2 SWSAL) | Operators | 13 | 15 |
| **Local Authorities** (incl 4 SWSAL) | Policy Makers | 7 | 10 |
| **PTE's** | Policy Makers | 5 | 8 |
| **Transport for London** | Operators | 2 | 2 |
| **Department for Transport** | Policy Makers | 3 | 3 |
| **Passenger Focus** | Commentators | 1 | 2 |
| **ITSO** | Commentators | 2 | 2 |
| **Consultants** (incl 1 SWSAL) | Commentators | 8 | 8 |
| **Suppliers** | Suppliers | 7 | 8 |
| **Academics** | Commentators | 1 | 1 |
| **SWSAL** | Commentators | 2 | 2 |
| **England total Interviews** | | **51** | |
| **England total Participants** | | | **61** |
| **Australia Fieldwork** | | | |
| **Transperth** | | 7 | 7 |
| **Brisbane** | | 2 | 4 |
| **Australia total Interviews** | | 9 | |
| **Australia total Participants** | | | **11** |
| **GRAND TOTAL INTERVIEWS** | | **60** | |
| **GRAND TOTAL PARTICIPANTS** | | | **72** |

Suppliers, Consultants and Academics were chosen for interview along with a further seven from Transperth in Perth and a further four in key senior roles in public transport in Brisbane. Before moving on to review the process followed for the interviews, consideration will now be given to the positionality of myself as the researcher in this research.

### 4.6.4 Researcher Positionality

The positionality of the researcher in a project relates to his or her subjectivity and positioning which impacts on their construction and interpretation of the data. (Cloke, Cook & Crang, 2004). This aspect of researcher benefit through positionality was highlighted by Mikecz (2012) in his work with Elite participants, as will be explored in more detail in section 4.4.1. He maintains that interviewing Elites is indeed enhanced by the researcher's knowledgeability. Herod echoes this sentiment in his findings working with foreign elites where his positionality of an outsider gave him an advantage (Herod, 1999). Belhassen and Caton (2009) in their review of a "conversational, human-based view of knowledge production" (p.335) maintain that this positionality or personhood of the researcher has a significant impact on the resultant conclusions of such research and I acknowledge from the outset that my background in the bus industry certainly impacted on the way in which I designed the project, managed the interviews, and interpreted the resultant data. However, being aware of the potential problems possible as a consequence of my positionality, "being self-aware and even self-critical of one's own attributes, biography and social contexts" (Cloke, Cook & Crang, 2004, p.330), has led me to establish sufficient safeguards to minimise any potential adverse effects. One such safeguard has been the regular upkeep of a reflective Research Diary, which has crystallised concerns, ideas and understandings that have emerged during the process (Smith, 2006).

The converse argument relating to positionality is that of existing knowledge. My experience and understanding of the industry provides a scenario where the participant realises that they are talking to someone who understands their operational 'language', including the technical jargon and this leads to more disclosure and revelation than might have been the case with an interviewer who was not so familiar with the industry. This was evidenced by an observation recorded in my Research Diary:

> *"He seemed to appreciate that my operational background meant that I understood the terminology and the environment, and warmed to me when I indicated my knowledge of key players in the field." (Researcher Note, 27/11/13)*

Robson (2011) recommends the keeping of a diary to record personal reflections on oneself as a researcher as well as pertinent information on the actual process, which together form an informal audit trail of the whole research project. This is further supported by Marshall and Rossman (2011) who advocate that research designs should "include reflection on one's identity and one's sense of voice and perspectives, assumptions and sensitivities" (p.96). I have become aware, through interview experiences, of the balance required to minimise my involvement in the conversation and to 'go with the flow' as very often this reveals rich territory in the way of new perspectives. It is difficult always to adhere to a recognised format when caught up in the excitement of a positive flow of information, and notations to this effect are a feature of the diary entries for positive interviews. Rubin (2004) advocates the need for an interviewer to avoid revealing any agreement or disagreement with a research participant and to be flexible and non-judgmental as far as possible. However, I found the opposite can also be true, as when I showed a positive reaction, the effect was that of encouraging even more revelations on the part of the participant as they responded to my engagement as the interviewer. I was conscious throughout the sessions of ensuring that, as far as possible, I held back from introducing any of my own insights, based on experience of the subject under discussion. This 'bracketing' of such personal

experiences is difficult to achieve, but is important in order to not skew the data collection in any way (Marshall & Rossman, 2011).

### 4.6.5 The Interview Process

Once an interview participant list was established, the process by which interviewees were engaged in the research, in terms of the practicality of finding mutually agreeable dates and times, necessitated careful planning and patience in the face of diary clashes and geographical limitations in terms of location. The potential participants were, by the very nature of the research project, located across the length of the country and also in Australia. Part of the programming difficulties revolved around the need to plan interviews as close together as possible, bearing in mind that each interview was expected to last approximately one to one and a half hours (Mikecz, 2012). An experience of the pilot interview, detailed later in this chapter, led to the realisation that such interviews are mentally tiring and require such concentration that to do more than two in one day when coupled with lengthy journeys to and fro becomes difficult and potentially detrimental to the quality of the data gathering.

Part of the process of arranging such interviews, involved the communication of research purpose and process to the potential participants. Whilst this was undertaken in a relatively informal way in those instances where personal contact had initiated the arrangements; in referred introductions, careful thought was given to the communication of such information to encourage participation. For both interviews and focus groups, this took the form of the preparation of a leaflet (Figure 9) and the ITSO version of this was approved by ITSO senior management. It served to explain to participants in an attractive format what was required of them, and was intended to engender some informality and a relaxed impression of the interview process. This included the promotion of the interview as a ‘conversation’ (Kvale, 2006).

**Figure 9: The ITSO Smart Ticketing Interview leaflet**
**Source: Alison Rumbles**

During the interview, the characteristics of the researcher play an important role in the session itself and the role of the interviewer before and after the session can be as important as in the interview itself (Smith, 2006). The personality of the interviewer can be crucial at this point as acquiring trust and establishing rapport with the participant can, in these first few minutes, affect the course of the whole session (Mikecz, 2012). Kvale (cited in Bryman, 2012) suggests the interviewer will be "knowledgeable, structuring, clear, gentle, sensitive, open, steering, critical, remembering and interpretive", to which Bryman adds two more, namely "balanced and ethically sensitive" (p.475). It is a tall order for those undertaking a research project to be gifted with all these personal characteristics, especially as "working with elites often places great

demands on the ability of the interviewer to establish competence and credibility by displaying knowledge of the topic" (Marshall & Rossman, 2011, p.155).

### 4.6.6 Pilot Study

A pilot study is usually carried out in advance of the principal body of research in order to test the data collection tool to ascertain its effectiveness, and to incorporate any necessary changes at an early stage, before the main body of research is carried out (Creswell, 2013). In this research project, a pilot interview was conducted utilising an interview schedule similar to that included in Appendix B, which was subsequently modified, following experience of that interview. The pilot proved extremely useful on a practical level, as it provided a rehearsal of the format of the session which included introduction of self and an explanation of the project as well as the more mundane practicalities such as the operation of the recording equipment. In addition, and very importantly, it allowed the rehearsal of an explanation of the formalities required in relation to the Ethical Research Guidelines, as required by the University, which included the signing of the Consent form to participate in such research. A pilot interview was conducted with an elite participant, very much involved in the delivery of ITSO smart ticketing. As a consequence, the pilot interview was not just a practical test, but proved to be of great benefit in refining the questions, and the way in which the interview schedule could be referred to in order to 'steer' the session if it became appropriate to do so. An important finding which emerged from the pilot concerned the idea of using prompts which picked up on statements made during the course of the conversation and involved reflecting them back to the participant to check out an understanding on my part as the researcher, and also to encourage further development of the point by the participant.

To some extent the first few of the main interviews were also pilot interviews, as I effectively learnt 'on the job'. An important discovery at the end of the very first interview in Perth resulted in a question that was subsequently posed to everyone participating in the study. It emerged as a natural concluding question, namely, could the participant

sum up in three “top tips” their best transferable advice to others implementing a smart ticketing scheme. As is discussed in section 4.6.2, this resulted in the compilation of all such “top tips” for dissemination across the industry. The Perth study was undertaken relatively early on in the research process and as each interview progressed I relaxed more into the process, which, as a general rule, reflected in the ease of participants. This was not always the case, as is to be expected when dealing with different people with different personalities, and in some cases my skills were severely tested in maintaining a relaxed, and hopefully productive, environment for the conversations.

### 4.6.7 Quantitative Data

One of the original aims of the research project was to assess the impact of technology on key outcomes of a multi operator, multi modal, ITSO smart ticketing project taking account of boarding times, emissions and passenger use. With respect to passenger use and perceptions, Passenger Focus (2009; 2013a; 2014a; Passenger Focus, 2015) have carried out several in depth research projects on behalf of the Department for Transport which will be considered alongside the primary qualitative data. As the research project progressed it became apparent that suitable data on all aspects of smart ticketing implementation and outcomes, specifically boarding times and emissions was not readily available from participating Local Authorities and Operators in order to derive useful conclusions as to the relative impacts. Therefore, in respect of boarding times, I organised a small scale on-bus survey to record boarding times before the implementation of a Smart Ticketing scheme on Norwich Park and Ride services in Norfolk, the holdall® card. This information, together with work completed by TRL on behalf of the Department for Transport some six months after the introduction of the scheme has allowed for comparisons to be drawn as to the impact on boarding time by the introduction of this Smart Ticketing scheme.

## 4.7 Data Analysis

In advance of the qualitative data collection process, an impression was formed in the course of the literature review as to the range of possible themes that would potentially emerge from the resultant data set. The flexibility of a qualitative approach is such that this range of themes could be further enhanced during the collection process as new themes emerge. The way in which the data set is then subsequently analysed is the next step in the methodological decision process. Coding of such data is an essential link between the collection and explanation of meaning (Charmaz, 2006). In his work on coding, Saldaňa (2013) describes 32 coding methods to facilitate this process of explanation, leading ultimately to interpretation on the part of the researcher and the forming of theory pertaining to the study itself. Saldaňa (2013) defines a code in this context as "a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language based or visual data" (p.3). This means of organising the data into comprehensible segments allows the assembly of a coherent assessment of the findings which in turn will lead to the formulation of policy recommendations in line with the research aims and objectives.

The production of the transcripts themselves proved very revealing in terms of a first line of analysis. As I listened to the interviews again, the impression gained was from the viewpoint of an observer, as opposed to an interviewer engaged in the interview. As an observer to the dialogue, during the transcription process, it was exciting to discover new impressions which possibly had not been immediately apparent during the course of the interview itself. As a consequence notations were made during the course of the transcript which aided the subsequent NVivo 10 coding and initial formation of ideas as to what were the dominant themes to pursue.

### 4.7.1 Coding of data using NVivo 10

The narrative analysis was planned to be undertaken utilising NVivo 10 qualitative data analysis software, a recognised toolkit which facilitates rigorous scrutiny and

interpretation of qualitative interview transcripts and other documentary evidence (Bazeley & Jackson, 2013; O'Neill, 2013). Coding is described by Saldana (2013) as the first step to a more rigorous analysis. It is a term that is more usually associated with quantitative work in that codes are used to tag certain variables for subsequent computer analysis (Bryman, 2012). In a qualitative inquiry, the word coding relates to category creation, into which pieces of narrative are organised (Richards, 2002).

The coding of the 60 interview transcripts in NVivo 10 proved a lengthy and evolving process. The principal themes which emerged from the literature evaluation were extended to 15 subject areas, defined as nodes in NVivo terminology. The list then evolved further during the actual coding process to result in a top tier of 23 nodes, with a further 146 nodes in tiers below those principal nodes. Each of the sub nodes, was populated with pieces of coded text and the sheer volume of data coded in these nodes, (5739 pieces of coded text coming from over 567,000 words of original narrative) was such that an initial high level review of the coding to derive main avenues of study for this piece of research was necessary in order to focus attention and derive meaningful results. Table 5 summarises the total number of nodes and sub nodes and includes an aggregation of the top seven broad heading nodes, as determined by the numbers of pieces of coded text assigned to each, which were ITSO, Governance, Bus Operations, Customer Proposition, Partnership Working, Technology and Staged implementation.

Table 5: NVivo 10 Node Coding Summary

| Principal Node Name | # of Sub Nodes | # of Coded texts |
|---|---|---|
| Benefits of smart | 3 | 81 |
| Bus Operations | 19 | 662 |
| Clear Objectives | 1 | 38 |
| Communication | 1 | 26 |
| Consultants | 1 | 94 |
| Customer Proposition | 12 | 474 |
| Financial | 6 | 240 |
| Future proofing | 1 | 47 |
| Gaps | 2 | 94 |
| Governance | 17 | 716 |
| History | 1 | 153 |
| ITSO | 33 | 1238 |
| Legal Issues | 5 | 49 |
| Partnership Working | 3 | 342 |
| Politics | 1 | 163 |
| Products | 5 | 187 |
| Seamless Vision | 1 | 51 |
| Staged Implementation | 11 | 282 |
| Suppliers | 6 | 209 |
| Sustainable Transport | 1 | 11 |
| Technology | 12 | 333 |
| TfL | 3 | 198 |
| Worldwide Smart Ticketing | 1 | 51 |
| **Totals** | **146** | **5739** |

| Top 7 principal nodes | # Sub Nodes | # Coded texts | % of total |
|---|---|---|---|
| ITSO | 33 | 1238 | 22% |
| Governance | 17 | 716 | 12% |
| Bus Operations | 19 | 662 | 12% |
| Customer Proposition | 12 | 474 | 8% |
| Partnership Working | 3 | 342 | 6% |
| Technology | 12 | 333 | 6% |
| Staged implementation | 11 | 282 | 5% |
| ***Percentage of total coded texts*** | | | **71%** |

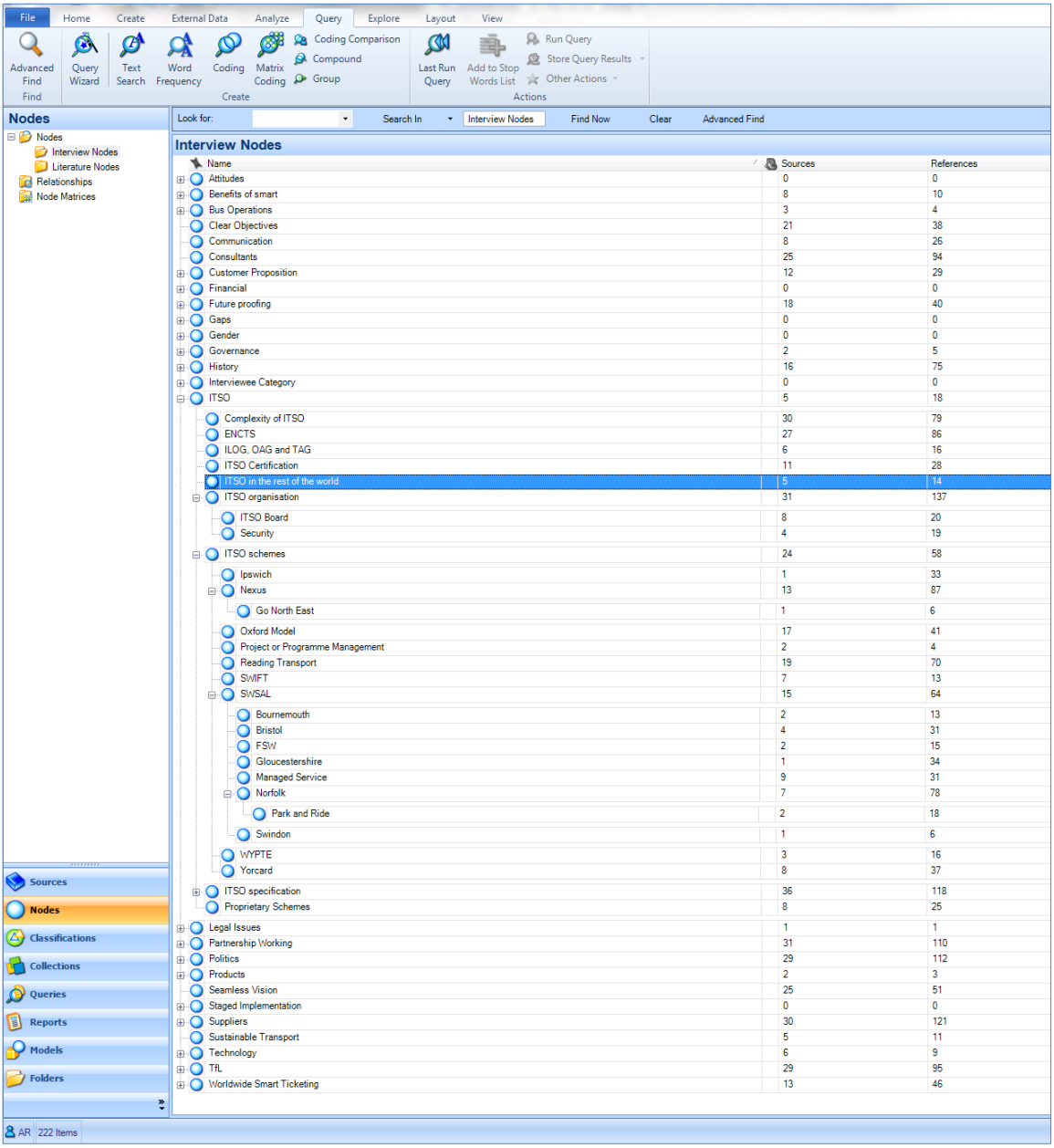



**Figure 10: NVivo Interview Nodes Structure (with expansion of ITSO Node)**

Figure 10 shows a sample screen displaying a fully expanded sample node, in this example the ITSO node, including its sub nodes. Each piece of coded text was assigned to at least one node. In some cases, it was appropriate to assign it to several different nodes, as is evident through the vertical coding stripes shown in Figure 11.

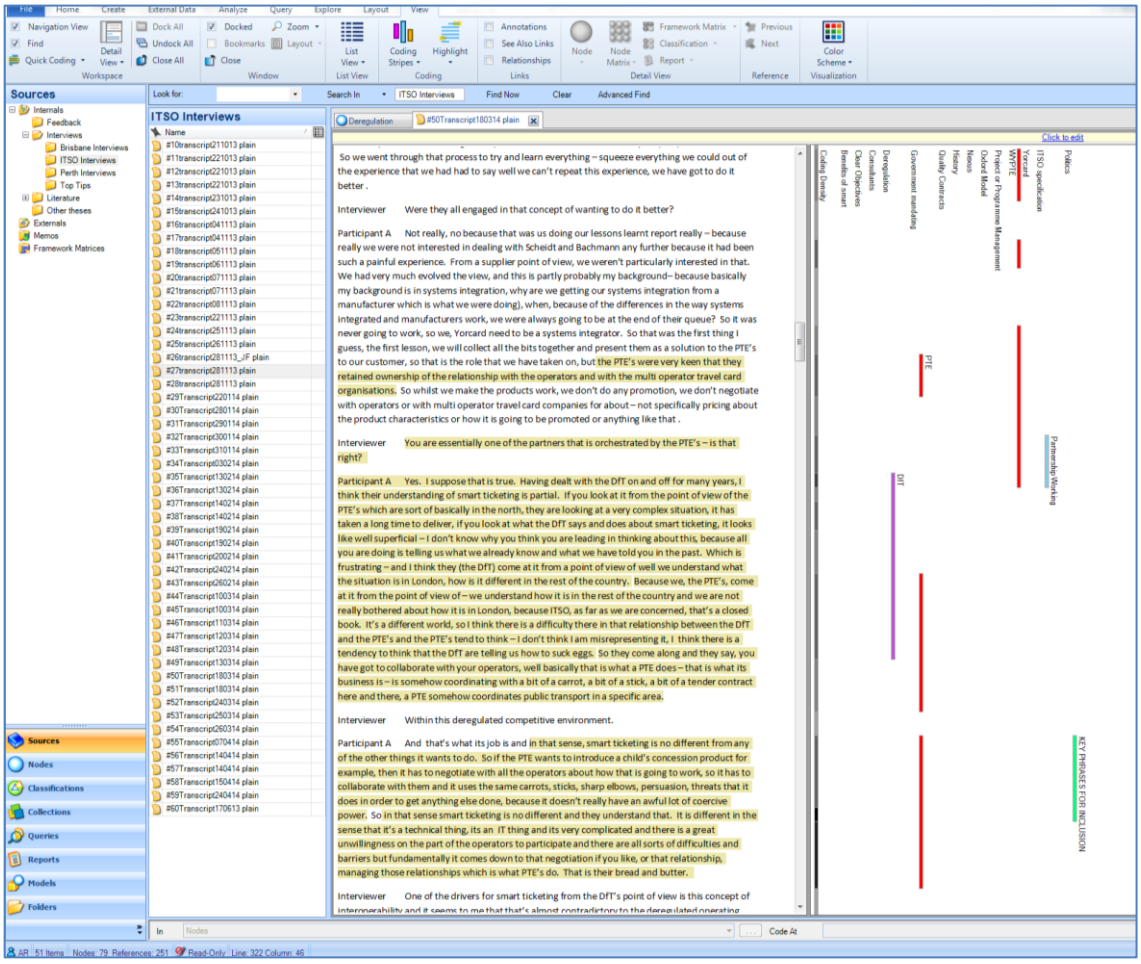



Figure 11: NVivo Coding Example

In her appraisal of computerised qualitative methods, Richards (2002) suggests that "coding is analysis" (p.428) as opposed to Sarros et al (2014) who describe NVivo as a software program that helps the researcher to identify emerging themes and manage the data "to enable more robust and comprehensive analysis of the data" (p.226). In work commissioned by the DfT on the *Evaluation of the Cycling City and Towns Programme* (2012) AECOM used NVivo 8 to assist in the analysis of 140 face to face interviews, enabling the production of a matrix of themes which aided comparisons to be drawn. The key word in my research process is management; NVivo 10 has aided the management of data into manageable portions, which was then readily accessed to order into a coherent argument. I have used NVivo 10 more as a means of organising the data rather than analysing the data, drawing on the node content as appropriate to develop my argument, building on the foundations established during the literature

review. The potential of NVivo in visualising (see figure 12), cataloguing, conceptualising, exploring relationships and building theory (Bazeley & Jackson, 2013)

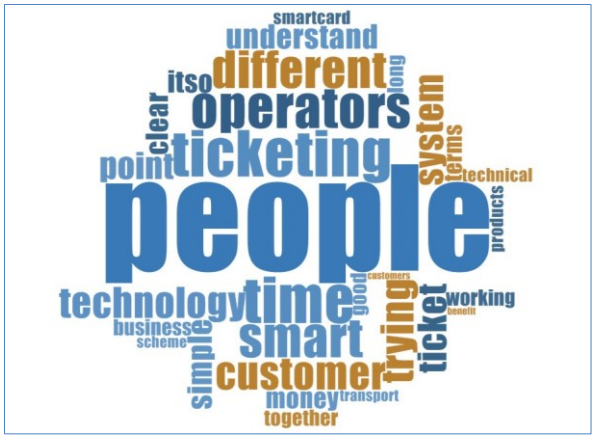



Figure 12: NVivo Word Cloud

is recognised, but possibly not exploited to its full in this project. The value of key phrases, which were coded alongside subject specific nodes during the course of the transcriptions, produced the key themes for discussion in subsequent chapters and this was an important means of focusing on those elements of significance to this project.

An unexpected and extremely useful aspect of NVivo in the production of this thesis has been the way in which literature sources have been managed and accessed. The software has facilitated speedy retrieval of relevant material such as academic peer reviewed journal articles and government publications in the form of pdf documents as well as web pages, press articles and conference presentations which has greatly assisted in the analysis process (Bazeley & Jackson, 2013).

### 4.7.2 Data Dissemination

The completion of the transcripts was quickly followed by a first line of analysis in relation to the "top tips" asked of, and offered by all participants as discussed in section 4.4.1. These pieces of advice on best practice, served to satisfy one of the principal aims of the research, namely the investigation of smart ticketing "practice". These tips were categorised according to the principal themes of Technical, Partnership and Sharing, Customer Proposition, Clear Objectives, Operations Governance and Simplification Tips. A summary of these responses is included as Appendix F for both

England and Australia. A summary document of the "top tips" offered in the England interviews was produced in September 2014 (Figure 13) and distributed to all those who had participated in the research, along with a link to download a full copy of all the tips offered. The importance of doing this early on in the research, as opposed to the same time as the thesis production was significant as the timeliness of the information was pertinent in an ever changing technical world. Some very encouraging feedback was received, and although the majority of the "tips" were not introducing any new or exciting revelations, it was clear that not everyone knew everything, so the dissemination of this information in one document was welcomed.

Figure 13: Top Tips for Policy Makers
Source: Alison Rumbles

## 4.8 Summary

The methodology of large scale research projects has traditionally been influenced by both epistemological considerations and pragmatic considerations. In this project the nature of the data required dictated a pragmatic approach to data collection. This took the form of interviews and focus groups because detailed narrow data was required,

which questionnaires or other kinds of quantitative methods would not have rendered possible. At the same time I was heavily reliant upon the theoretical underpinnings of interpretivist approaches in order to maximise the value of the data analysis. In this sense I have drawn upon both pragmatic and epistemological influences in the design of my research methods.

The decision to utilise a case study approach, has enabled the contrast of a smart ticketing scheme delivered within a regulated model of governance with those delivered in a deregulated model of governance in England outside of London. Perth was chosen as its regulatory model is similar to that of London, and has delivered an internationally acclaimed smart ticketing scheme. However because it is completely divorced from London in both geography and scale, the case study has proved clean and manageable.

The data collection is the essential empirical element of this research, and interviews with elite participants were identified as being the most appropriate means of collecting the data required to answer the research questions. Schoenberger (1991) in her work with elites, concluded that the depth of detail that can be obtained from such an approach "can greatly amplify and complement information derived from more conventional approaches" (p.188) and this has proved the case both in England and in Perth. A comprehensive and balanced list of participants was drawn from a wide range of relevant sectors in England including the Department for Transport, Transport for London, Bus Operators, Passenger Transport Executives, Local Authorities, Suppliers, Consultants and Academics in England, alongside key senior participants in both Perth and Brisbane in Australia. The interpretation of the full datasets gathered informs the discussion framed in subsequent chapters.

Throughout the research process I have been conscious of the need to be flexible to achieve the research aims and objectives, whilst at the same time maintaining a balance between the demands of the funders and academic practice. Finally, the ethical stance of myself as the researcher, supported by the procedural requirements of the University,

combine to ensure that the participants and their contributions are treated with sensitivity and respect leading to responsible interpretation of data and reporting of findings.

# 5 Partnership Working and Governance

The Governance structures in place for the management of government policy in the context of interoperable smart ticketing, identified in section 3.2, focussed on the high level administration, delegating responsibility for the actual implementation to local authority level. The administration of implementation at that level is then encouraged through collaborative means. At a presentation entitled "Learning to Share in the ITSO Playground" given to the Transport Card Forum in 2013, the diagram shown in Figure 14 illustrated the relative positioning of the partners potentially involved in such partnerships. What is not reflected here is the potential number of organisations within each of these categories, for example in Greater Manchester, Davison and Knowles (2006) reviewed the effectiveness of a Quality Bus Partnership which involved a PTA, 10 District Councils, 54 bus operators and others. The scale of these partnerships varies considerably from one to another, but the complexity of bringing together such divergent groups is undeniable.

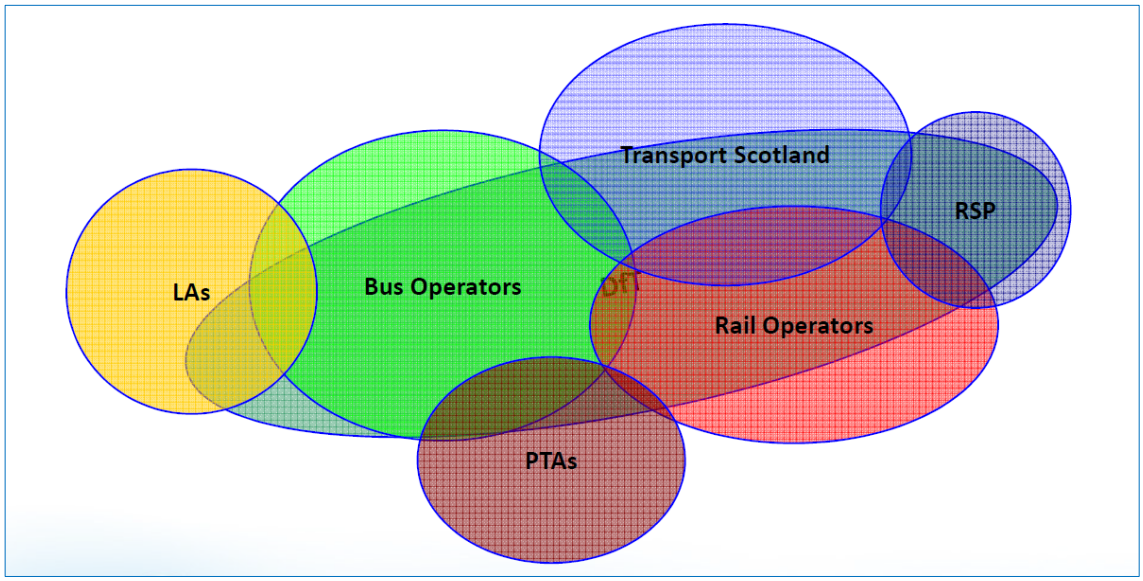



Figure 14: Potential Bus Partnership Members
(With thanks to Sue Walnut)

Partnership Working was one of the three areas of interest identified during the course of the literature review that required further scrutiny, and it was pursued during the course of the interviews with all participants, with varying levels of interest, dependent on the type of participant. One of the questions in the interview transcript was aimed specifically at this subject, however, it was only asked in those interviews where the conversation did not naturally tend towards that subject:

> The delivery of the government's policy on smart ticketing in the public transport sector hinges on partnership working. Can you describe your experience of partnership working in relation to smart ticketing schemes?

As could have been expected, those involved in local government or indeed the Department for Transport, were more focused on the principle of partnership working than operators or suppliers and required very little encouragement to offer opinions and experience. Before proceeding with these views, the definition of the term partnership is identified firstly, as it became apparent that interpretation of the term was not necessarily universally understood to be the same. This will be followed by an examination of responses relating to the establishment of Partnerships in different public transport environments for the delivery of interoperable smart ticketing schemes. The working of those Partnerships and the positive and negative aspects of each are illustrated with comments from all angles, then this chapter will address responses regarding the governance structures within which these Partnerships function and consider their implications. Finally, comparisons with the way in which the differences in governance and delivery of Perth's smart ticketing offering will be drawn which serve to emphasise the positive and negative aspects of each system.

## 5.1 Definitions

Hall (1999) observed that the concepts of partnership, collaboration and co-ordination, are all closely related and tend to be used interchangeably in the public sector. Healey (2006) in her work on the concept of Partnership Working in relation to Planning policy, concluded that it encouraged the delegation of responsibility for the formation and

implementation of policy to a potentially reluctant group of organisations, generally coordinated by the relevant local authority or lead agency. The extent to which the concept is welcomed, or indeed embraced, by such lead organisations can be an indicator of its potential success. The varying reactions to the concept of Partnership Working illustrate the level of commitment that is felt towards this means of working together and delivering smart ticketing initiatives, generally as a by-product to the more high profile purpose of network provision overall.

The word partnership is used extensively in Department for Transport documentation, most particularly in relation to statutory Quality Partnerships, as legislated in the 2000 Transport Act, as was discussed extensively in relation to the literature in section 3.2.2. Before examining the range of responses from participants in this research in relation to their views on partnership, a definition of the term is a useful starting point in this chapter: The Oxford Dictionary defines being a partner as one "who takes part in an undertaking with others … with shared risks and profits" (*Oxford Dictionary*, *2015*) and then defines partnership as "an association of two or more people as partners". Another source defines a partner as one "who shares or is associated with another in some action or endeavour" (*Dictionary Reference*, 2015) and then defines partnership as being "the relation… the contract .. an association of persons joined as partners". The concept of sharing risk and reward is one which is fundamental to a partnership, and it is clear from many of the participant responses in the course of this study that the perception of what it is actually all about is not universally understood by all involved. The following response from a PTE participant is a stark reflection of a perception of imbalance between the members of their partnership arrangement with operators:

> "If I am being frank, I think bus companies like to use the word partnership because it sounds nice. I personally have talked to our chair about do we really mean a non-aggression treaty, because if you look at any kind of definition of partnership it typically involves shared risk and reward. Where is that actually shared risk and reward in any bus partnership in the country". *(Policy Maker)*

The reference within this response to a 'non-aggression treaty' was intended as a humorous, almost flippant, remark, but one which is reflective of the perceived difficulty experienced in engaging with potentially more reluctant partners. In order to overcome such difficult key stakeholders within a partnership, if not all stakeholders, require skills of diplomacy, "the art of dealing with people in a sensitive and tactful way" (*Oxford Dictionaries* 2015) in order to achieve the required outcomes. Amol Rajan, editor of the Independent, in a debate aired on the BBC topical debate programme, Question Time, said "diplomacy is about personal relationships" (Rajan, 2015). This was certainly evident in the experiences of those participating in this project, where positive relationships yielded positive results.

Another PTE participant seemingly more conscious of the need to work with their operators in a more harmonious way, sees the partnership in terms of a relationship connecting the participating partners:

> "I do think we have got that relationship behind how we work in partnership, not for such a long period of time, but there is a really good understanding through the joint teams, …. that is not to say nobody ever changes, but there is something similar, so I buy into the relationship bit" *(Policy Maker)*

Indeed, it became evident during the course of the interview with this participant, that it takes a good deal of hard work to maintain that relationship through the life of a partnership. This is an important aspect of partnership working in the context of bus partnerships delivering integrated public transport solutions within a deregulated environment. The requirement is not a 'one off' outcome, it is an ever changing evolving situation where the emergence of new technology, a change in personnel or a shift in policy emphasis can effect a change in direction which has to be bought into by all partners and the management of that is a challenging responsibility for the leader or leaders of any such partnership. The psychology of partnership working is clearly relevant in assessing the degree of success of any such arrangement, and the complexity of the partnership in terms of the number of stakeholders and their varying

underlying remits in coming together in that partnership can ‘rock the boat’ in terms of achieving the planned outcome.

In her welcoming speech to the Transport and Ticketing 2015 Conference, the then Minister of State for Transport, Baroness Kramer, made reference to her experience of chairing two industry round tables as part of the Smart Cities Partnership. She likened the stages of partnership to that of team development stages first identified by Tuckman (1965), as illustrated in Figure 15. This diagrammatic representation of his theory clearly shows how personal relationships mature during the development of the team, which is mirrored in its achievements from the identification of problems through agreement over roles and processes to the ultimate delivery of solutions.

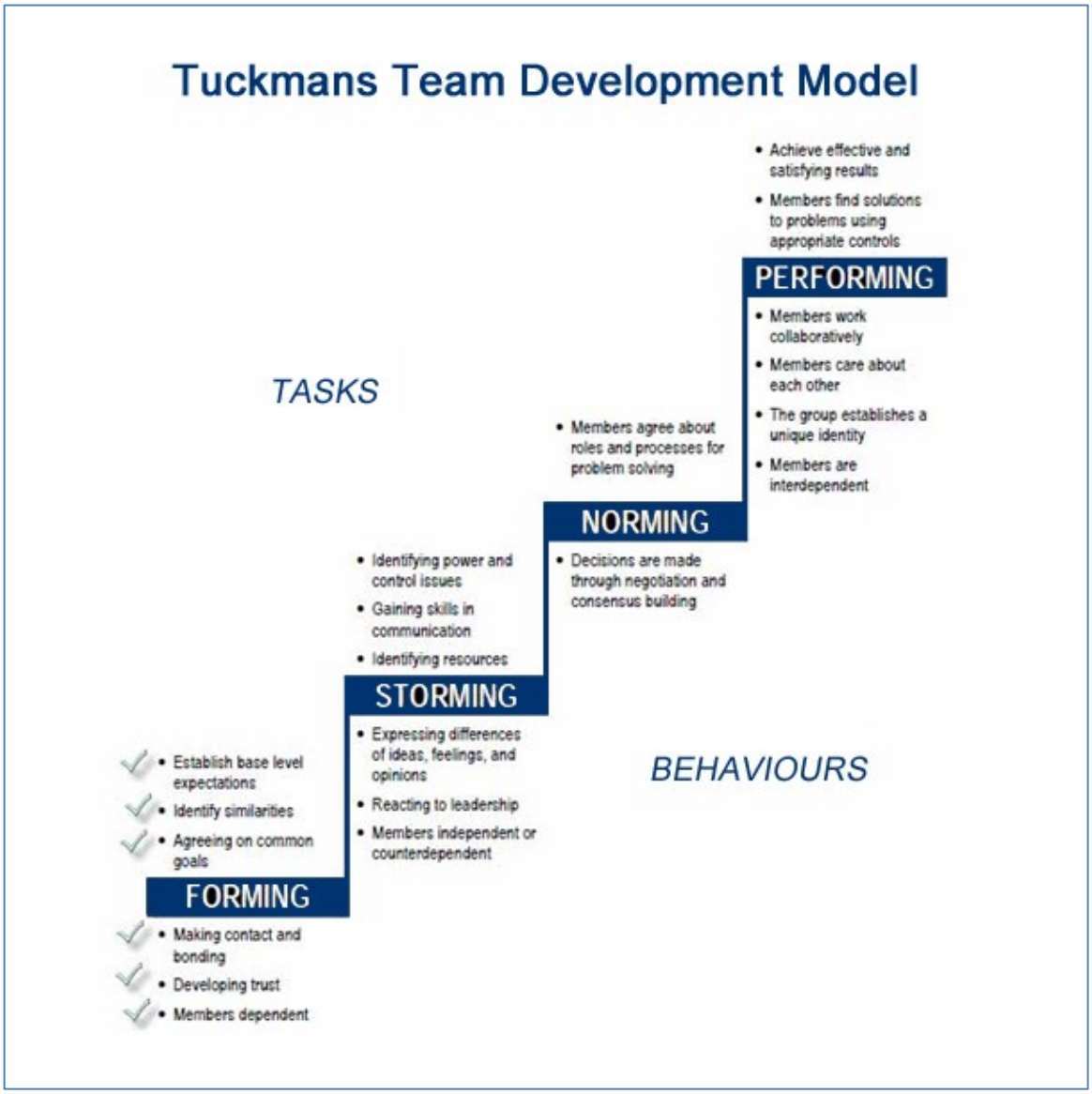



**Figure 15: Tuckman's Team Development Model (1965)**
**(Source: https://aacecasablanca.wordpress.com/2012/03/19/)**

This is an interesting parallel to draw in terms of partnership, as teams, in a business context, are generally drawn from within the same organisation to achieve a mutually desired objective. In the transport policy context, partnerships are usually made up of representatives from different, and often competing, organisations coming together to achieve the aims and objectives of government. Therefore, alongside the difficulties associated with the bringing together of individuals, with their varied personalities, to achieve an end objective, there is the added level of difficulty imposed by the conflicting agendas of the competitive organisations – specifically the bus operators.

An essential feature of any successful relationship, in any walk of life, not just a business setting, is that of trust (Yang, 2014). The word 'trust' occurred some 72 times in the course of the interview transcripts, most often in the context of partnership working. In her work on effective teams, Yang (2014) considers the issue of trust in the dynamics of team development and concludes that it is a basic requirement for effective teams, rather than an outcome. She identifies differing forms of trust, from "swift trust based on shared team membership…. at the team formation stage" (Yang, 2014, p.860) to that which is borne out of history and practical experience. In relation to one of the few successful interoperable smart ticketing schemes in the UK outside of London, Oxford, trust was a principal feature of the responses from scheme participants:

> "First of all I think you have got to have in partnership – you need history, you need to be able to draw on things that you trust." *(Policy Maker)*
>
> "We had to find a way through it and there was lots of mutual trust between the personalities involved, so it was the high level people in the business that were doing it *(Operator)*
>
> "There is nothing holding it together so that is why it does require a great deal of trust and confidence in your partner" *(Operator)*

This last quotation further illustrates the fact that there is no legally binding means by which the partnership exists in this case, merely a resolution on the part of the partners to maintain its existence and purpose. Although in this particular instance, there was a specific incentive to maintain the partnership in the form of a 'threat' to the bus operators.

Trust also featured in other responses, where it was seen as fundamental to successful relationships, in all aspects, not just in relation to specific partnership working. The following quotation serves to illustrate how relationships need to be nurtured holistically, ie not in isolation. The local authority in this example was working to improve the whole environment in which their bus operators functioned, and as such appreciated the value of trust in those relationships across all activities.

> "I say you trust everybody once don't you – and if you get let down or basically shafted by someone – it's going to be a really difficult relationship to build back up again. So we are not in the business of creating difficult situations for operators, we really want them to succeed." *(Policy Maker)*

> "That is what life should ideally be like and in the effective Quality Partnerships I think it is like that. The ineffective ones, very often haven't got that degree of trust between the officers and the managers." *(Policy Maker)*

Without exception, all the bus partnerships encountered during the course of this research were voluntary agreements, although some of the participants were involved in one of the areas of England considering the prospect of pursuing a Quality Contract Scheme.

## 5.2 Reasons for partnership

There are varying motivations for the different stakeholders coming together to work in partnership. The legislation deems that local authorities and bus operators work together through the vehicle of partnerships to deliver services and infrastructure. The government stated in their 2012 publication 'Green Light for Better Buses", that they will:

> *"Incentivise partnership working between local transport authorities and operators to improve the quality of bus services and attract more passengers" (DfT, 2012b, p.9)*

This aspect was not lost on one of the bus operator participants in this study who said:

> "It is also bad news to have a bad relationship with somebody who is running a lot of your infrastructure" *(Operator)*

This comment was made somewhat flippantly, but is particularly pertinent as a good deal of the infrastructure is paid for and maintained by a third party, usually a public sector organisation, which expects something in return for expenditure from the public purse. In section 3.2.2, this concept of a "bargain" being struck between participating partners in a partnership was identified by Goodwin (1999) and in practice, this is clearly a fundamental expectation revealed in this study. To balance this, a comment from a local authority participant, illustrates that the provision of infrastructure for the benefit of the

customers, and the bus operators is their part of the bargain within the partnership – part of the 'give and take' philosophy underpinning the concept of partnership working.

> "if you can create an area where you work really hard, so we will invest in the off bus stuff if you like, often, which is about the environment, it's about priority routes, it's about decent infrastructure, creating good waiting facilities, investing in information - that sort of thing, the bus operators will invest hopefully in vehicles, drivers, training and products so that they – it is a real partnership and we provide a unified front then to the customer." *(Policy Maker)*

A key financial incentive for participation in interoperable smart ticketing schemes, and hence the partnerships, is that of an 8% uplift in the Bus Service Operators Grant (BSOG) conditional on the installation of operational ITSO smart ticketing hardware and, separately, a 2% uplift for the fitting of automatic vehicle location (AVL) apparatus on their buses (DfT, 2012b). This incentivisation was indeed a major reason why most of the bus operator participants in this study saw commitment to ITSO smart ticketing as essential in order to obtain their BSOG, as highlighted in section 3.4.2:

> "We were being steered in that direction with 8% uplift on BSOG which is a not an insubstantial sum of money for operators to benefit from." *(Operator)*
>
> "The BSOG was the bribe that DfT has used to get people onto it." *(Operator)*
>
> "We have no enthusiasm for it, we are doing it because we are being pushed into doing it by BSOG, by political relationships - that we would always want to keep – so I wouldn't want to be the one that spoilt it, by the incentives, by just being seen to do the right thing, but we have got no enthusiasm for it." *(Operator)*

These comments were generally made in relation to pursuing the line of smart ticketing per se, but the last quotation illustrates how interlinked such provision is with the political relationships, or partnerships, required in the delivery of public transport. Importantly, in relation to commitment to making partnerships work effectively, the reference to a lack of enthusiasm for pursuing smart ticketing is significant. This is clear evidence of the use of policy instruments such as 'sticks and carrots' to achieve policy aims with BSOG being a very attractive 'carrot' (Goodwin, 1999).

Interoperable smart ticketing schemes are delivered within these partnership arrangements, principally between Local Authorities and Bus Operators for the benefit of the travelling public. Consideration has to be given to all the participating stakeholders within those partnerships, not least the commercial requirements of the Bus Operators and the funding limitations on, or by, local authorities. There are many undercurrents of expectations and requirements within a collaboration of varying stakeholders where the balance between their individual expectations and the aims and objectives of the whole partnership, which align with government policy, mean that there is an amazing range of possibilities of things that can go wrong, or don't come to fruition in the way that was originally intended or envisaged at the outset of the establishment of the partnership.

> "There are differing motivations, when people come together to enter into a partnership arrangement and clearly the money was a motivation, but still from our perspective was a motivation to ensure that they participated in something which might give you the kind of sense of a joined up smart ticketing arrangement, even if it's not quite Oyster." *(Policy Maker)*

This view, of a PTE participant, recognises the "differing motivations", but identifies the greater good principle of a "joined up smart ticketing arrangement" as specified and defined by the Department for Transport in their expectation of improved boarding times and "more seamless through journeys on a single ticket or travelcard" (2012b, p.26) for the passenger. This aspiration on the part of government in delivering a better travel experience for the passenger, or customer, was echoed by local authorities and bus operators throughout this research, and indeed this 'alignment' with government policy was encompassed in a quotation from a senior representative of a major bus operator:

> "The bus operators' agenda and the local authorities' agenda in terms of transport are absolutely aligned, so absolutely understand that and through that you can often help to inform somebody else's agenda, by opening their eyes and pulling them forward." *(Operator)*

> "In terms of trying to work in partnership to make it all happen – I guess recognising that, and not underestimating the fact that – you have got different – some partners are perhaps a bit more influential than others, some partners are perhaps motivated by different things, and so you know – you need a fair degree of pragmatism as well." *(Policy Maker)*

Alongside this desire to make partnerships work to the benefit of all sharing in that partnership, the following response is from an operator who acknowledges the necessity of sharing or 'give and take' in such participation. There is an expectation that in order to achieve what is beneficial or required from their point of view, something will have to give from someone else.

> "You have got to be realistic about what you are giving up and what you are getting in return". *(Operator)*
>
> "if you work well with somebody, like a local government or a local authority, they are more likely to give you advantages here and there and I am not talking about turkeys at Christmas . I am talking, maybe they will – if you are co-operating with them, then maybe they will pay for something that they wouldn't ordinarily have done, which is helpful". *(Operator)*

This awareness that there has to be a reciprocity within a partnership is a fundamental prerequisite to a successful outcome and it is easy to understand that if any member of a partnership is not disposed to do that, then again, the partnership is likely to fail.

To a certain extent there is a feeling on the part of local authorities and PTE's that the bus operators are opposed to participating in Partnership arrangements be they voluntary or compulsory. The belief that the commercial factor outweighs all to the detriment of the social benefit desired for the customer is not necessarily the case as most of the operators participating in this research appreciated the direct relationship between happy customers and profit. This is what was meant by these participants who in making the customers happy so achieved the aims and objectives of their company, which also then satisfied the requirements of government:

> "We are happy because customers are happy and they are using the bus more so therefore our products are seen as more attractive" (#12)
>
> "If the customer finds it more attractive then you are going to get the numbers through and the financials will come through." *(Operator)*

The local authority role in these Partnerships is essentially to facilitate the successful working and outcome, and to achieve that involves all manner of means. This could

take various forms from encouraging or persuading to cajoling all the participating operators of all sizes to engage in that process.

> "The hardest thing I think is actually persuading people and getting everybody round the table to have the same understanding of what is going on which is a major issue". *(Policy Maker)*

Another PTE representative viewed this process of engagement as essential to the ultimate success of any output from the Partnership:

> "It's about engaging all the relevant people in creating the outcomes as early as possible so that everybody has signed up to, and agreed, what those outcomes are at the earliest stage, because then that's much easier to then keep them engaged through the process, in terms of working towards delivery because then from that minute onwards, you are then engaging them in their outcomes and not yours." *(Policy Maker)*

This view of engaging all partners in the process by ensuring agreement as to the outcomes and viewing those outcomes as 'their outcomes' displays a deeper understanding of the psychology, or mind set, of the stakeholders as individuals, rather than making an assumption that by being part of a partnership, the stakeholders will automatically have a commitment to its success.

As will be discussed in chapter 7, the implementation of smart ticketing is difficult enough, but the environment within which it is planned and managed, through the vehicle of partnership working is also difficult as encapsulated by the following quotation:

> "This is not straightforward, it is pretty difficult, there are lots of challenges, technological challenges as well as kind of partnering challenges and so on, so from their [bus operators] perspective a bit of patience and a bit of flexibility around funding" *(Policy Maker)*

The emphasis on partnership working will now consider the barriers to effective collaborations. In analysing the responses from participants, there are many areas of overlap between reasons for, and barriers to, partnership. Indeed what can be

considered a reason by one individual, could well be viewed by another as a barrier or negative aspect.

## 5.3 Barriers to partnership

The expectation, implicit in the legislation concerning partnership working, does not take account of the dynamics as determined by the varied personalities involved in the partnership. It is not always a given that because a partnership is convened that it will succeed. As noted earlier in relation to the comparison drawn with team working, the blending of differing personalities can be a winning formula or indeed a destructive one.

> "It's the personalities that drive the project not necessarily anything else. If people are involved that want to deliver – it will be delivered come hell or high water, but if you have people who just think well - you know – we'll get around to it – not a chance. You need to get the right people geared up to do it and that's difficult." *(Commentator)*

Positive personalities, those with a 'can do' attitude are necessary to produce results, the converse of that, of course, is that negative personalities, usually strong voices within a partnership scenario can wreck a partnership resulting in failure, and that experience was one that several participants acknowledged.

> "My view is if people want to do something, maybe they can, if they don't want to do it – they won't! persuading people so you have to have that kind of team." *(Policy Maker)*

> "One of the issues, still is of course, is the odd operator who doesn't want to play ball." *(Operator)*

Awareness of the 'politics' in the scenario of Partnership working was evident in many of the responses, the interaction between the stakeholders was recognised as a major reason why partnerships did not function effectively. The following observation from a commentator illustrates how this added level of difficulty impacts on the delivery, the actual output of the partnership, where to actually achieve an outcome and move forward, is hampered by those participants who are not engaged in a positive outcome.

> "It's the politics – politics rules everything. I think that is one of the most frustrating things when you have got this technology that is difficult enough to implement and then you have got personalities and politics and if you have the wrong people on a call, you are going to get nowhere." *(Commentator)*

This negative viewpoint in terms of politics, with a small 'p', was probably more prevalent than the reverse. However, one participant, in referring to the politics impacting on partnerships, viewed it in a positive light by looking for ways in which to understand why partnership members reacted as they did, and consequently working around that to find a common purpose:

> "I have talked a lot about politics, what is driving people, but I think on the plus side, politics always sound so negative and I have not made it sound very positive generally, but my feeling is that if you understand what is driving people you are in partnership with, then it's easier to work out a way that might suit both of you. If you think OK, well I know that this is what their ambition is, it's their ambition both politically and commercially, this is our ambition politically and commercially, we seem to be poles apart how can we fix it so that we both get part of what we need and everybody keeps smiling. *(Operator)*

This theme of differing personalities impacting on partnership working was an undercurrent in nearly all the interviews, and was reflected in field notes in which I recorded several comments made 'off the record' by participants expressing their frustration at having to cope with 'difficult people'. One local authority participant, observing how a partnership member employed skills of diplomacy in managing a difficult person said that he himself had 'learnt to cope' with such people for the sake of achieving the desired aims of the partnership.

The conflicts between commercial and aspirational motives, or political versus personal motives, in terms of company objectives, appear to be barriers to complete commitment to interoperable smart ticketing scheme partnerships. Having explored the personal and political aspects of relationships in partnership, the next section illustrates "the elephant in the room" *(Operator)*, the unseen barrier to partnerships, which is deregulation.

### 5.3.1 Partnership and Regulation

The oversight of public transport outside of London is largely under the control of local authorities, or in the case of the major urban areas, the Integrated Transport Authorities (ITA's) as discussed in section 2.2.6. When considering the requirement for interoperability within a defined area, controlled by one authority, the implications for the availability of ticketing across multi operators is a potential difficulty within a partnership controlled by the one authority. However, if interoperability is required between areas, therefore between different local authorities, then a further dimension is added to the mix, as highlighted in this subsequent quotation.

> "The problem with transport is it spans boundaries and having a totally local decision could mean that you have got an extremely nice network with a hole in the middle because this Local Authority gives it zero priority and the others give it massive and so the whole thing is ruined. I think localism in transport, broadly speaking is a disaster." *(Policy Maker)*

The comment made regarding localism in transport in this latter quotation links in with a presentation given by the DfT in 2001, entitled *Smart Cards in the Public Sector, Interoperability within, across and beyond transport* (Sentinella, 2001), and another given in 2003, covering aspects of the Department for Transport's work on Intelligent Transport Systems and Smart cards (Sampson, 2003) where both used the map shown in figure 16, headed 'Patchwork or Network'. Whilst it illustrated the local authority areas in 2001, its intention was to highlight the potential fragmented nature of interoperable smart ticketing schemes focussed at this level. It is a blunt visual indicator of this complex jigsaw of schemes which could develop outside of the capital, linked to the local authority and ITA areas in which they were administered (Headicar, 2009). Figure 17, illustrates the anticipated rollout of smart ticketing in England between 2009 and 2012, in seemingly disjointed chunks, reflecting these fragmented networks.

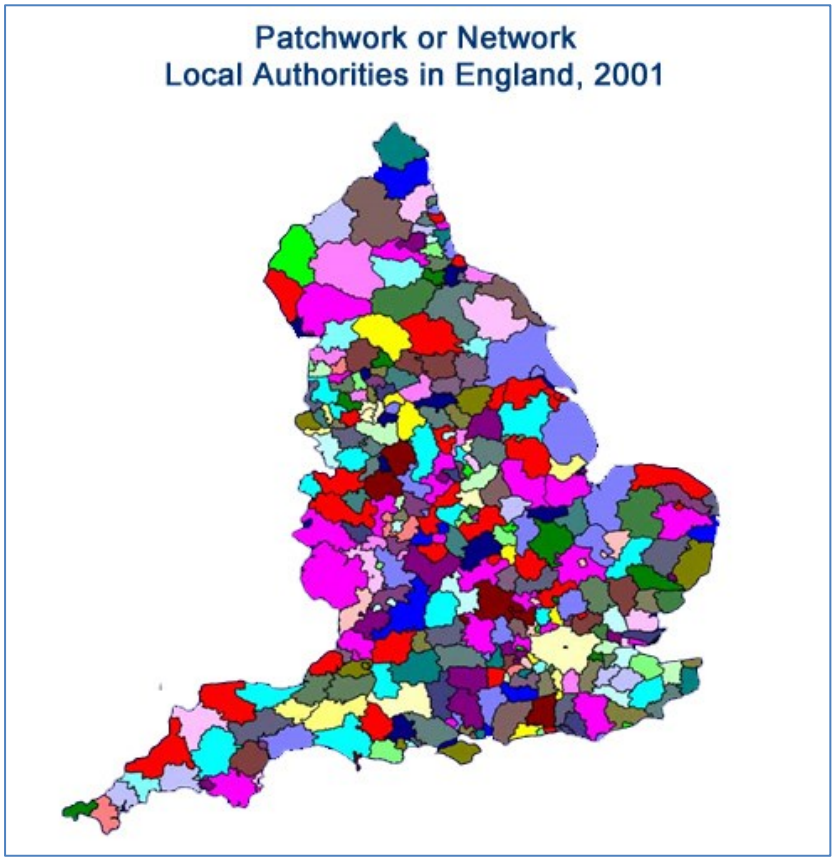



Figure 16: Local Authorities in England, 2001
Source: (Sampson, 2003, p.14; Sentinella, 2001, p.27)

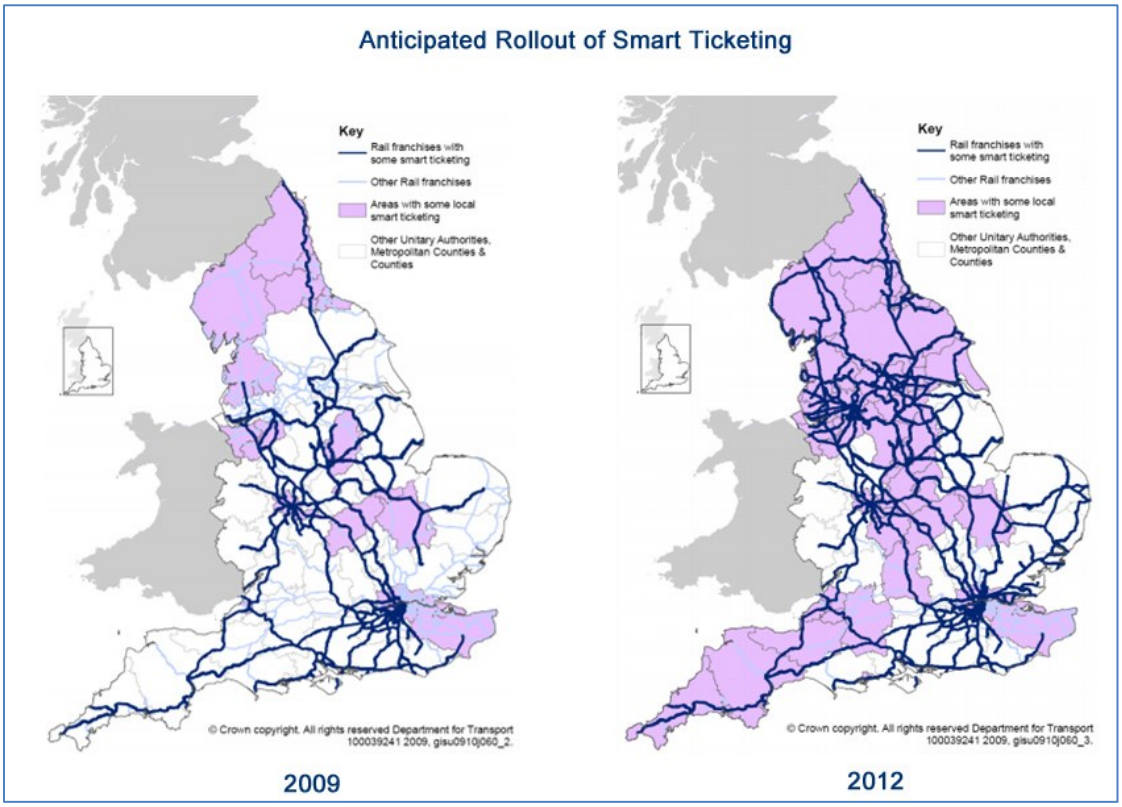



Figure 17: Anticipated Rollout of Smart Ticketing in England in 2009 and 2012
Source: (DfT, 2009c, p.49)

There was abundant evidence gathered during the course of this study to support the view that all participants engaged in bus partnerships the length of the country are fully aware of the legislative framework within which transport policy operates as revealed in this quotation:

> "We have a legal duty to pursue safe, secure, integrated transport to, from and within our regions, it's section 108 of the Transport Act, 2000. How do you do integrated transport in the deregulated market place – I don't know, because some of the things we want to do, operators have no interest in doing". *(Policy Maker)*

The legal framework within which the privatised bus companies are obliged to operate, post deregulation, places additional constraints on their participation in such partnership working scenarios, as advocated in transport legislation, despite the fact that ITA's have:

> *"consistently made it clear that in their view the deregulated system did not work and they required more control over bus services in their areas in order to grow patronage." (Butcher, 2010, p.13).*

However, in their publication, Green Light for Better Buses (2012b), the DfT promotes the recommendations of the Competition Commission which closely monitors the activities of Bus Companies:

> *"The Competition Commission has recently recommended that local transport authorities introduce partnership agreements to increase the quality of bus services. That is why we are retaining the current regulatory structure that has been in place since 2009, which permits the full range of local transport authority interventions, from voluntary agreements through to statutory Quality Contract Schemes." (DfT, 2012b, p.32)*

As referred to in section 5.3, the existence of partnerships does not necessarily guarantee delivery of outcomes, and the achievement of outcome without any legislative authority to support it is by no means certain. The same PTE participant who quoted section 108 then went on to say:

> "If the PTE wants to introduce a child's concession product for example, then it has to negotiate with all the operators about how that is going to work, so it has to collaborate with them and it uses the same carrots, sticks, sharp elbows, persuasion, threats that it does in order to get anything else done, because it doesn't really have an awful lot of coercive power." *(Policy Maker)*

Rather than relying on legislative means to achieve a common objective, the relevant authorities have to employ any means necessary to achieve, in the absence of 'coercive power'.

### 5.3.2 Quality Contracts

As identified earlier in chapter 2, successive government transport legislation from 1998 onwards has encouraged, firstly voluntary partnerships, and then statutory voluntary partnerships (Mackie, 1998; Mackie, 1999). The introduction of legislation allowing the establishment of Quality Contract schemes (QCS) went a step further by offering local authorities a degree of partial regulation if operators were failing to deliver and hence not achieving the desired patronage growth targets. As described by one of the participants:

> "The Quality Contract is about arresting the decline in bus patronage and it's also a way of making savings so that we can preserve the network that exists today as opposed to, unless a partnership can deliver the same outcomes as opposed to what we see would be a downward spiral in terms of reductions in bus patronage and also cuts to secured bus services."*(Policy Maker)*

In this particular context, the participant, was not averse to the concept of partnership working to achieve the principal aim of improving bus patronage, but rather saw the Quality Contract as an option to "arrest" decline which otherwise was seen to be out of control, in a "downward spiral". Indeed, Hine and Preston (2003) suggested that Quality Contracts were more likely to be pursed in challenging urban areas. The move from a Voluntary Partnership or Statutory Quality Partnership arrangement to that of a Quality Contract was understood by this participant to be one which would not necessarily win friends within the operator community, indeed shortly after the

completion of the interview, the following field note extract records my impression of his feelings on this matter:

> "He made reference to relationships and how those had ensured that partnership working had worked, although he was fully aware that the QCS proposal was dictatorial and had had the effect of getting up the backs of the key operators." (Researcher, 27/11/13)

It is clear from the following quotation that the Department for Transport are aware of the varying views within PTE's of the consternation around the pursuance of the Quality Contract option. The very fact that the legislation exists for this to happen is not a prerequisite for it to happen, rather it should be a case of the end product of what is required should determine the means.

> "I think there are different views within the PTE or ex PTE community about the extent to which legislative backing is required and the extent to which you can work in partnership and the extent to which you need to bring it all back in and franchise it out to get what you want." *(Policy Maker)*

In contrast with the approach being adopted by the PTE just referred to, another PTE participant, reflected that their approach had been to "engage with operators" to gain their active participation in joint initiatives to achieve the same objectives as those of other PTE's and local authorities across the country, of improving bus patronage.

> "One of the experiences that we gained from our Statutory Quality Partnership scheme which is the first Statutory scheme that obligated operators to do anything in this region since 1986. So it was about, because we already had partnership agreements in place, what we actually did was engage with operators about what they wanted to see in the city centre, what do you want, what do you think represents quality in the city centre, and so then going forward, we could always bring them back to their objectives that they had signed up to and we use that in various partnerships now." *(Policy Maker)*

Their fundamental ethos was to protect that hard fought relationship, achieved over many years of successive working together, to achieve their aims of increased bus patronage in their area. Interestingly, this interview also revealed the potential resort to

a Quality Contract as a threat to its operators, should partnership working fail to produce the desired results for the conurbation:

> "Whilst we said that this is the way we are working in partnership, our Chairman has used on regular occasions with operators that QC's are in the back pocket and are to be pulled out." *(Policy Maker)*

A similar view, but this time from a rural local authority participant, saw the loss of a good working relationship with partners as prejudicial to a productive mutually beneficial arrangement, viewing the 'contractual relationship' as a contentious one:

> "First of all it is going to take you ages to get over the line, lots of bad blood if you like, spilt getting there and then you have got a very contractual relationship, which is you do this and I'll do this and that is when you start arguing about the bits around the edges all the time, whereas actually, if you can agree on a voluntary basis, what the right thing to do is and then work out how you are going to get there, it might take the same amount of effort, but you have more often than not got both the goodwill and the intention and you can have really adult conversations and you can agree and you can disagree on things, but you find the common ground and that is what you go for." *(Policy Maker)*

This same local authority participant, mindful of the current pressures on a political level to take advantage of the available legislative powers and pursue a Quality Contract course, saw another potential difficult outcome, which would certainly be alien to any productive relationships with stakeholders:

> "I have spoken to Ministers before, government ministers and they say – well Quality Contracts – they are the way to go – and I say well – you could have a view, but my personal opinion is that isn't the way to go. Why not? Because you could very much create a litigious kind of environment." *(Policy Maker)*

The implementation of interoperable smart ticketing within a Quality Contract scheme, however, was presumed by one of the participants to be potentially easier to achieve within such an environment as a consequence:

> "Notwithstanding how difficult it would be to achieve a QCS, if you did achieve a QCS, then with the infrastructure in place, then I think a smart ticketing solution

> would be something that you could achieve, perhaps easier than you can in the current environment." *(Policy Maker)*

This belief was echoed by another participant from the consultancy sector who stated: "ticketing is at the heart of the debate about Quality Contracts" *(Commentator)*. The success of Oyster within the regulated franchised Transport for London model is strong evidence of the truth of this statement. This participant went on to elaborate on the positioning of Quality Contracts within the context of regulation and their exasperation was clearly apparent at a situation where the option to pursue such a path was a local decision rather than a clear mandate.

> "As long as Quality Contracts are on the agenda, we are never going to get this resolved because an authority going down the potential Quality Contract route without government saying that is what we really want, just leaves the industry in uncertainty and therefore people can't plan." *(Commentator)*

The commerciality of the bus operator stakeholders involved in either a Voluntary Partnership or Quality Contract is an important facet. The bus business was viewed by many interviewed in this research as being just that, a business, and consideration of the customers of that business in relation to Quality Contracts and their effect on the customer is particularly important. One participant, formerly involved with a PTE was strongly against the concept:

> "Why do you really want a Quality Contract, think this through. You wouldn't say because we want a higher standard of service from Marks and Spencer's or Tesco we must run Marks and Spencer's or Tesco, because if you do that it means that the customer who wants to complain – ultimately comes to you and says it's your fault – you sort it out." *(Policy Maker)*

The balance of commercial versus public service is one which will be revisited in chapter six as the customer proposition is discussed, but it is relevant in the context of Quality Contracts as the managing authority of the Contract, which could be compared to Transport for London in their role as managers of the franchise, is ultimately responsible for the whole show.

### 5.3.3 Commercial Considerations

Reference was made in the previous section to the commercial requirement of those bus operators outside of London in this interoperable smart ticketing scenario. The privatisation of the National Bus Company in the mid-eighties, saw the end of the wide reaching public service provision by the public sector, aside from those municipal operations which have to a large degree over the intervening years been sold off to private concerns, notably to one or other of the five major bus operators (HMSO, 1985).

The major conurbations, overseen by the ITA's, and the other local authorities rely on the coordination of service provision and ticketing through working in partnership with operators whose primary motivation is that of any business, the making of profit.

> "I don't blame the bus companies here, the bus companies operate in the environment that they have been put and they have been put in a commercial environment where their only aim and remit and goal is to make money for their shareholders, so why would they do an interoperable ticket unless it is going to make them more money? *(Commentator)*

One of the participants from a major bus operator made the point that despite the necessity of making money, this was not focussed on to the detriment of the provision of a good public service:

> "The 'nay sayers' will say well commercial operators – this is the elephant in the room of deregulation – our commercial operators only want to make money, they are not interested in the services, and I have never met an operator, a good operator, one of the big ones, for whom that is true. It can be true of some of the 'rinky dink' ones, the ones who will operate a competitive service by being three minutes ahead on a half hour service. *(Operator)*

Clearly there is a balance to be found here, between service provision, an element which is closely aligned with the concept of 'public good', defined as "a commodity or service that is provided without profit to all members of a society, either by the government or by a private individual or organisation" (*Oxford Dictionary*, 2017) and

profit, where one is not jeopardised, but a significant statement in this latter quotation is that relating to the interest in service provision as well as profit by an operator. This can be illustrated by reflecting the concept as a balance scales, with each side of this balance being Profit, an ultimate aim of any business, and Public Service, an ultimate aim of a local authority in relation to public transport (see Figure 18). At the risk of oversimplifying a situation, which is by no means black and white, in essence the focus on profit to the detriment of public service provision is perceived as the bus operator's position, and that of public service over profit is perceived as the government position. The reality needs to be a compromise between the two, maximising profit on the one hand with public service provision on the other as reflected in these quotations from an 'impartial' consultant:

> "The government would like a public service but offered by commercial organisations." *(Supplier)*
>
> "Operators are obliged to provide a public service and are paid to do so, but they are commercial so they need to make a return." *(Supplier)*

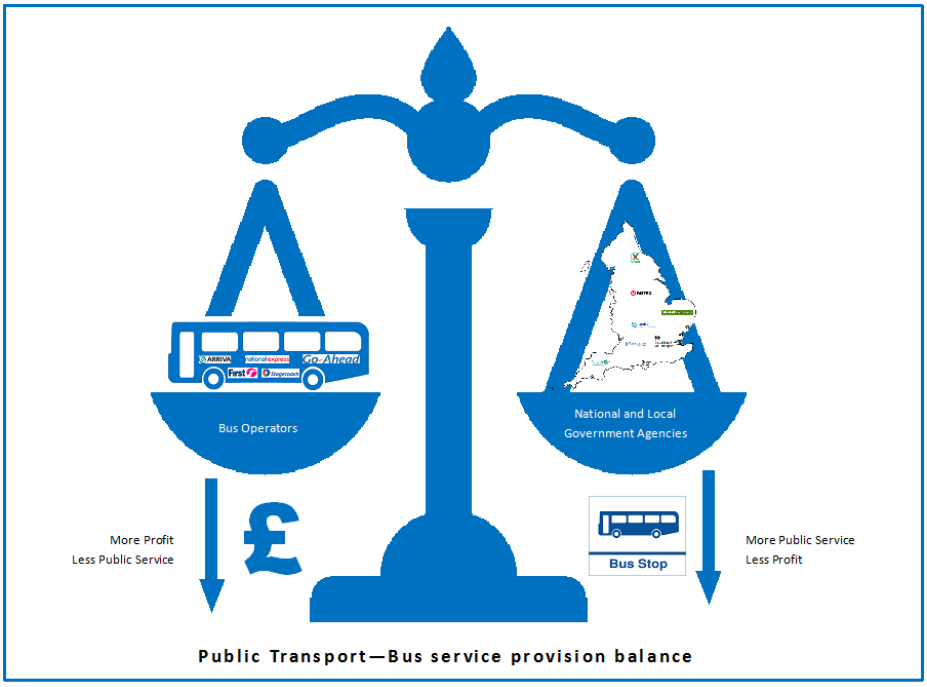



Figure 18: Public Transport - Bus Service Provision Balance

Deeper investigation into the commercial requirements of the operators reveals the competitive nature of them, which was a principal objective of the original drive to deregulation in the early eighties. This competitive philosophy emerged in many of the interviews from all sectors:

> "Out there in the deregulated world if it doesn't add a penny to the bottom line – why would you and I think that is where it has gone wrong." *(Commentator)*
>
> "At one level it's obvious that having that interoperability is important, but at the business level, bus companies quite often don't care unless there is some incentive in it for them." *(Commentator)*
>
> "I think we need to grow public transport for the actual commercial cash benefit of operators but the social benefit of the society fully aligned with the aims and policy aspirations of government. But we are not there and they won't do it." *(Commentator)*

Reconciling the profit motive with public good is fundamental to the development of interoperable smart ticketing initiatives. If bus operators are competing, then the sharing of tickets, and hence the sharing of customers is contradictory to that objective, why would they risk their revenue in so doing? Bus operators are commercial organisations, so why should they adopt an altruistic approach to the provision of interoperable ticketing, what is in it for them? If the bus companies cannot see a financial reason for implementing interoperable smart ticketing – why should they?

> "If it's about competing in a free market, then why would we share tickets? I mean you don't go to Tesco's and get a Sainsbury's voucher." *(Operator)*

This latter quotation, comparing the bus companies to major supermarket chains, reinforces their commercial foundations, which, whilst core to the businesses themselves, are not necessarily recognised by the customers, and sometimes local authorities, whose agenda is focused on network provision overall. This participant then went on to further illustrate his commitment to the competitive bus market producing the best results for customers and hence to his organisation:

> "If you believe in the competitive economics, the idea that improvements you have got in this conurbation are because we have got two quality bus companies competing, so you have got lower fares, you have got quality in vehicles and you have got frequent reliable services, it's because you have got competition – why would you want to take that away and say well OK, now let's all just work together – I don't know if that makes any sense to me really." *(Operator)*

Competition, as highlighted in the previous comment was seen by this participant as necessary to improve the market overall for the profitability of the operator as well as the benefit to the customer, but lack of competition in an area can lead to complacency in provision and hence a dis-benefit to the customer.

A somewhat cynical point to note at this juncture is that of how commercial are commercial bus companies? If you take out fuel duty, ENCTS, subsidised route payments and grants, then just how commercial are they? Supermarkets do not receive nearly 40% of their income from the public purse, yet bus operators interviewed in the course of this research reflected the comparison.

This dilemma of service provision versus profit is nurtured by the deregulated environment within which bus services sit. This following, somewhat cynical, observation from a commentator, encapsulates his perception of the dilemma where interoperability as a vision is threatened by the resistance of large bus groups, who see it as contrary to their commercial objectives, albeit that they 'play the system' to their own advantage as far as possible:

> "I would suggest that the large bus groups in the UK have no desire whatsoever to support interoperability and the more you can frustrate the delivery with ITSO the longer that continues. They are quite happy to claim as much cash as possible out of the system but are very reluctant to support interoperable ticketing solutions for being simple and easy to deliver. I personally believe that goes all the way back to bus deregulation in 1985 and the desire not to have any interference from the public sector in the commercial domain. I think that is a very negative and narrow minded position and works completely against the aims and the incentives for customers." *(Commentator)*

This section has considered regulation in so far as it impacts on partnership working, a more in depth review, in relation to the operation of interoperable smart ticketing in regulated environments, is presented in chapter 7.

### 5.3.4 Business Case

In order for commitment to partnership working for the delivery of interoperable smart ticketing by the bus operators to be effective, there has to be a belief on their part that there is a viable business case. That is a view that was held by many operators and representatives of other sectors during the course of the interviews.

> "The bottom line is there never has been, and I doubt there ever will be, a commercial business case for bus operators to have smartcards" *(Commentator)*

> "Out there in the deregulated world if it doesn't add a penny to the bottom line – why would you and I think that is where it has gone wrong……. the techies have made a beautiful system that nobody can afford in business case terms." *(Commentator)*

> "I guess if you are an operator then first and foremost you are thinking about the margins of running your business and someone comes along with a smart system and says to you look at what it can do for you. The first question is going to be – yes, but how much – what is the investment – how much does it cost to implement. It's got to be cost effective to begin with and individual operators on their own, unless they are very big are unlikely to have the ability to make that kind of investment." *(Supplier)*

No business case, which in essence means no way of contributing to the company's overall profit, generally means that there is no reason for pursuing such a course of action, even if the other incentives are present such as government funding in the way of BSOG or other financial incentives. If collectively, those incentives make the business case, then that would change the argument, but in essence profit rules the day, with interoperability being secondary, considered to be a bonus should it be achieved.

> "It's a multi stakeholder, multi-level, political environment – operators are obliged to provide a public service and are paid to do so, but they are commercial so they need to make a return." *(Supplier)*

> "We are now doing commercial schemes and that's real money. It's got to work, so everybody needs to dig deep – that's operators, suppliers, scheme, and government to make this happen. I think it's getting there, but it's a bit late." *(Supplier)*

It became apparent during the course of the study that there was widespread awareness of the conflicting requirements of stakeholders within the partnerships by the partners. The conflict of commercial versus political is generally known and understood. For example, the following quotation from a PTE participant illustrates his perception of the pressures exerted on the Operator within his partnership.

> "Bus companies do what they have to do because that's what the law says. Their job is to reward their shareholders, so they do things to reward their shareholders – now get over it! …… actually if I was a shareholder of First and they did some altruistic things to be nice to their councillors, I would go – come on; this is my money you are playing with." *(Policy Maker)*

However, there was an understanding on the part of this policy maker that there was a mutual benefit in the operator pursuing his profit motive:

> "If you are hugely successful then we get a financial profit, we get some payback and that is a partnership" *(Policy Maker)*

In the SWSAL context, the partnership of stakeholders from several local authorities and bus companies derived benefit from a shared business case, which was seen as a means of making interoperable smart ticketing a viable option.

> "The business case that was done for SWSAL was between SWSAL and the government, DfT. It was SWSAL's best guess at if you make this investment you will get these benefits. The operators who are implementing it are doing so only because they can get some money out of the government to take their business forward, they see it as a worthwhile thing to do." *(Commentator)*

The implication in this latter quotation is that without the shared business case, implementations would not have been a worthwhile option for the operators. The

function of the partnership in this scenario was to find a way forward into the world of interoperable smart ticketing, by accessing pots of funding, unattainable by the local authorities or operators involved, on an individual basis, because of resource limitations:

> "We are talking about a group of authorities and bus operators [SWSAL] where there is no PTE, where there is no money allocated at the time for smart ticketing investment in a fully deregulated commercial bus market. So when a fund comes along with available bidding cash, you have to put the best foot forward to get your hands on that cash. The best way of doing it was constructing a cost benefit analysis as closely aligned with the existing appraisal framework for major schemes and that's why we did it."
> *(Commentator)*

Without the partnership that is SWSAL, this funding would most likely not have been accessed and the consequent interoperable smart ticketing schemes not actioned.

## 5.4 Governance

Chapter 3 considered the governance structures in place, on both a national and local scale, which impacted on the way in which the delivery of smart ticketing initiatives was overseen through partnerships. In lessons learned from an evaluation of governance through partnerships (OECD, 2001) the mixed results suggested that "improving governance through partnerships is not an easy task" (OECD, 2001, p.15) but in so doing offered a partnership strategy to improve governance which included making policy goals consistent, strengthening accountability and providing flexibility in the management of public programmes. The role of the DfT in those partnerships is for the most part very 'hands off', except for those projects where direct funding calls for the monitoring and feedback on their investment. The perception of this level of involvement of the Department in interoperable smart ticketing schemes by those involved in delivery across England varies, but there was a definite impression from participants in this study that there was a lack of direction at the national level.

This section of the chapter will now examine those aspects of the narratives which reflect on the governance arrangements, in particular in relation to leadership and direction.

### 5.4.1 Leadership

Evidence cited in literature (May, Page & Hull, 2008) suggested that strong leadership was essential for the success of partnerships and, as was explored in sections 5.2 and 5.3 relating to reasons for, and barriers to, partnership, strong leadership within a partnership scenario was cited by many participants in this study as essential for them to perform or function properly. The same appears to be true at the overall administering level – in this case the national level, as embodied within the Department for Transport. Docherty and Shaw (2011), as cited in section 3.2.3 drew attention to the employment policies of the Department, which worked against deep subject knowledge, exacerbated by brevity of tenure of office, which conflicts with the notion of leadership.

An interview with a former PTE official, whose involvement in ITSO smart ticketing went back to its very inception, identified leadership as being a core requisite for the working of partnerships and hence the results required from them:

> "Identify some strong leaders, ideally at least one from the operator's side and at least one from the authorities' side and build partnerships round them. In other words what I am saying is we were really too late in recognising that what we needed was smartcard champions." *(Policy Maker)*

The suggestion of 'smartcard champions' or "an evangelist" *(Policy Maker)* to take up the baton and run with it is pertinent as it identifies the need to encourage take up of the concept of interoperable smart ticketing and drive it through the often lengthy process from inception to delivery. The persistence required to maintain the momentum to see through such delivery, often over considerably lengthy periods of time, is a necessary prerequisite for a successful delivery. A leader can inspire others

to want to participate or can be so dominating that it causes everybody just to do the bare minimum and not participate fully. As identified by Healey (2006; 2010) in section 3.2.2, participation by everybody is particularly relevant and in this project, it was considered by many participants that this was particularly true of those stakeholders representing the local authority, as it is usually their remit to facilitate the partnership coming together in the first place.

In terms of the individuals within a partnership, their individual personalities, as well as their calibre in terms of ability, teamed with their expertise and knowledge is undoubtedly important when it comes to the effectiveness of any outcome of that partnership. Whilst the importance of effective leaders was not denied, across the board, during the interviews, the ability and expertise of those involved at delivery stage was recognised as being equally important. The converse of that, ie poor quality personnel was highlighted in one interview:

> "I think if you have any lighter touch of regulation those people get involved and they can't run a piss up in a brewery – local authorities – or this lot can't and invariably they are failed bus operators who have gone for local authorities and for some reason they now think they can run a bus company, because they work for a local authority and not a bus company and they couldn't do it when they did it." *(Operator)*

In this context, the poor opinion held by a bus operator of those members of the local authority who were in effect former Bus Company employees, did not auger well for any future collaborative projects. Respect between partners, be it in one organisation or indeed a partnership of several organisations is essential, as reflected in the literature (May, Page & Hull, 2008), but like the concept of trust referred to in section 5.3, is by no means guaranteed merely through the establishment of such a partnership, it has to be earned and maintained for the duration of the collaboration.

### 5.4.2 The concept of the Fat Controller

In the course of the conversations with participants, the positioning of the Government through the Department for Transport as the principal overseer of transport policy, and hence smart ticketing policy, featured prominently. There was a view from many of the participants that there should be more leadership from the Department in making interoperable smart ticketing happen, backed up by some legislative ruling:

> "We need to have some more teeth linked to the fat controller who is in charge idea, and somebody needs to settle some of the big pictures about ticketing within Quality Contracts – what is, if any, the national perspective on national interoperability as opposed to saying it is only as the markets develops around these overlapping areas of interoperability and everybody is on their own – regional solutions." *(Commentator)*

> "If there was an ideal solution, it would be that I think government had more teeth and could actually make it happen. But they deregulated everything away, all our national infrastructure is controlled mainly by four operating companies now. We are really screwed actually. The government has so little influence over so many of these things that happen. They have got rules for public procurement, bus companies aren't public so they can basically do what they want, whether the …. cards of the bus companies … will ever interoperate, I have no idea." *(Commentator)*

> "I can see that if you are going to dream about one system for everything then someone has got to make that happen and probably the DfT is the only organisation that exists that is able to do that." *(Operator)*

There were several responses that drew parallels with the situation in London, which will be considered in more detail in chapter 8, however, in this context, the comparison with the 'Fat Controller' which is Transport for London, is stark.

> "Is it the DfT or are the DfT stepping back now and saying – well the market will decide, but if we are a deregulated environment, well – who's going to do that. If you are in London, you know who the Fat Controller is and the Fat Controller decides how London works – and it works. They have got their system set out." *(Commentator)*

Funding is at the heart of any government policy, and in terms of interoperable smart ticketing, it is no exception. By delegating responsibility for the implementation of policy to local partnership arrangements, central government also relinquished direct funding responsibilities. In those areas where funding has been made available, there

is evidence of more involvement from the Department in their desire to see that the funding is well used. For example in their Smart Cities Programme (DfT, 2012c), and in the SEFT Programme (DfT, 2013b) the Department is motivated to see a return on its investment and is therefore more dictatorial over the outcome, as is the case in the rail sector:

> "Public transport does not stand on its own two feet anywhere in the country. There are subsidies for this that and the next thing. Rail franchising doesn't stand on its own two feet, there are massive contributions from government through tax payers money into rail generally, therefore if government in the widest notion is going to put that amount of money into these things, it should dictate what kind of an output it wants from it." *(Commentator)*

The following comment takes that concept of matching direction with funding a stage further, by suggesting that strategic means are required to match the available resources with specific projects, otherwise 'funding envy' will result in local authorities and bus companies not blessed with their share, arguing that they should be.

> "I am sure the only way government can make these things happen is that it pours more money in, put more incentives, a sprat to catch a mackerel – money to say it is worth doing – we will subsidise this, we will subsidise that to make it happen. But that has got to be done in a very strategic way. If you just do it to help out a local problem then all the other bus companies and local authorities elsewhere will say well we are not going to do it unless you give us the same" *(Commentator)*

In terms of the commitment from local authorities, it would not be unreasonable to have an expectation that they will all operate on a similar platform, with similar commitments in terms of the public they serve, but that is most definitely not the case. In some areas, even adjacent councils, with different political agendas have differing investment criteria and different policy priorities and therefore bus companies have to accommodate those differences when working in those different partnerships.

> "I think we should all work in partnership, but you have got to get everybody on board haven't you. We are flogging a dead horse with partnership [here], it really is hard work. You look at things that are happening in [*neighbouring authority*]…– their quality criteria initiatives – when you bid for stuff – its stuff they want to know about the organisation, to make sure it is a quality operator –

> this lot don't - they just go for cheapest price every time and its – you want to build some quality into it don't you." *(Operator)*

This observation also serves to illustrate frustration felt by an operator who desires to offer a quality product and adopt innovative ways of attracting more customers to his services, he is aware of such advances in neighbouring authorities, but is conscious of not having that option within his own local authority.

In section 5.4.3 attention focussed on the requirement of bus operators to achieve a profit for their shareholders ahead of the government objective of providing a better public transport service to customers. The provision of interoperable smart ticketing for those customers, as an important part of the customer offer, is seen as an additional benefit, which has been an ongoing vision of successive Ministers of Transport:

> "I think the Ministerial wish has always been interoperability, flexibility, different types of ticket …. So Ministers have been pushing the flexibility angle, but there's at the same time, is this wish to not to interfere too much, so rather than push, it's been a little bit of pull, if you have got an imaginative experiment we will try and support you." *(Policy Maker)*

This latter quotation illustrates a long held interoperable vision, but the achievement of which has been expected with minimum interference. This lack of commitment to matching expectations with the necessary funding and legislative ruling has meant that take up of interoperable smart ticketing schemes has been somewhat piecemeal and then only by partnerships with driven and determined leaders fortunate enough to be joined in partnership with forward thinking and brave operators. This is a shortcoming on the part of the Department which is recognised by some, as the following testifies:

> "What DfT has to do is take ownership of bossing the – boss is the wrong word – but we can be firm with the industry." *(Policy Maker)*

Not everyone engaged in the industry outside of the Department sees that they are capable of sorting out the problem. Section 2.4.1 highlighted the situation regarding the

high turnover of civil service staff within the Department for Transport, (Docherty & Shaw, 2011), and the reluctance on the part of successive incumbents to take advice from those who are experienced in delivery and understand the breadth of the difficulties involved, this was of particular concern to some participants involved in the actual implementation of policy :

> "I think there are two things here about DfT is one it doesn't provide leadership and two it doesn't understand the problem. So one of the things that we get upset about is we say the reason we keep shouting at you is because we actually know what it takes to run a smartcard scheme. Sorry but this is the latest DfT official who is on the fast-track civil service route where you do six months here and then you do a year here and then you go off to ….. Is this any way to run a country? …… There are cases when people turn up and do their six months stints in the smart ticketing unit, then move on" *(Operator)*

> "No difference between the two governments by the way – they have both been equally stupid about smartcard ticketing!" *(Operator)*

An interesting footnote to this section is that given in the following observation. He surmises that in all those sectors where privatisation has been effected to remove the responsibility from central government, the risk remains, but at the cost to the tax payer:

> "It's regulation. You give these things to private companies because of private company innovation, but the risk is still held by government, if one of these bus companies went bust and 2 million people couldn't get to work, I know who would bail them out! The risk - it will come from public sources. So it's a bit of a bust market I think. But it's not just that, energy Infrastructure, water Infrastructures, telecoms – they are all the same, none of them work well." *(Commentator)*

One conclusion that can be drawn from this statement is that if the government see public transport provision as a necessary service, then why are they not funding it more globally and mandating how and when it should be delivered? If that is the case, surely mandating for interoperable smart ticketing is the next logical step?

### 5.4.3 Mandating for Interoperable Smart Ticketing

Within a deregulated bus world, the jury is still out in respect of the dilemma of whether there should be mandating of smart ticketing. A question posed to a panel of eminent figures in the world of smart ticketing at the Transport Ticketing 2014 conference was "Should central governments prescribe a smart ticketing blueprint for transport operators and local authorities to follow?" The very fact that the question was posed illustrates the uncertainty prevalent in the industry around the degree of success that can be achieved within the current regulatory structure. In terms of responses to this question, there was a reluctant admission on the part of several participants in this study who responded that in order to make interoperable ticketing a viable option; some sort of regulatory direction was required:

> "There are certain things the government mandates for the right reasons and there are certain things that it mandates for completely spurious reasons that nobody can ever understand, but I think in the ticketing context, there are some things that they could mandate and we would benefit from." *(Commentator)*

> "I have long held the view that there isn't one solution for everything. There are different layers if you like and some layers need to be mandatory and other layers are optional to be used according to the market according to customers and ITSO because of ENCTS essentially needs to be mandatory. But it doesn't have to do much more clever things than that." *(Commentator)*

> "Instinct tells me I would rather leave it to the market to prescribe, but with something like smart and interoperability and availability and everything else, one has to accept there have to be common standards otherwise we just will never ever get there and the costs of getting there will be so great that we won't do it. So in this case there has to be." *(Operator)*

## 5.5 Comparisons with Perth

During the course of the interviews in Perth, there was widespread acknowledgment from participants that history had served them well in the development of an integrated transport network, but the creation of the Public Transport Authority (PTA) was equally acknowledged to be of particular relevance to the maintenance and further development of that network.

> "If you were to pick a good decision by a government, the creation of PTA – on Monday we celebrated ten years. So it has only been around for ten years, but it was a great decision to bring the operational components of public transport and bring it all together into one agency and then to say right you own it, as an agency you own it. So we own the system, I think we talked to you before, we own the buses, we own the depots, we own the ticketing system, we own the information and so we are able to say, we want to make this decision and then we can flow it through the system." (#6)

> "Because we own our world, if we think it's a good idea, if someone puts something up and we think it's a dumb idea we will say well that's a dumb idea and we are not going to do it, go on give us a good one. They come back, they give us a good idea we like that one, go to it, and we will implement it when you have got it ready." (#5)

The ownership aspect is a key point as with ownership comes absolute control. Alongside that tenure of infrastructure and contracting of the operators, the PTA makes policy recommendations to government, and is then responsible for carrying it out. Ownership of that policy reinforces the commitment to making it happen. This does not preclude the government from injecting differing requirements.

> "Really we are the policy maker. It is our system and we determine how we want that system to be operated. When we go out to tender, we give the operators all the services that we want them to run, we say these are the timetables that you will operate for us. Their expertise is in how they get efficiencies out of the shifts that they operate, but we tell them the timetables that we want them to operate." (#6)

> "We are all beholden to the politicians unfortunately, we are public servants and we are there to serve the public, but we get our instructions from the government of the day, and if the government of the day says no I want this type, I want this ticket or I want that, unfortunately you have to comply, but you know those things do need to be ironed out." (#7)

At the commencement of this chapter reference was made to the delegation of responsibility to the local authority level for the implementation of policy through collaborative means. In Perth, the governance structures in place support the integrated system, and the implementation of transport policy and operations are under one umbrella in the PTA, the transport arm of the State Government. The significance of this was clearly appreciated in this response from a senior manager in Transperth:

> "Why does it [smart ticketing] work here and hasn't worked so successfully in other places, because we have one integrated public transport system. So a

> fair bit is about the structure that sits behind the public transport system, and in some ways you could argue in a city where there is a Department of Transport or something equivalent and it has a little bus empire that works to it and a train empire that works to it and so on, you could argue well couldn't that same structure exist, probably could and that's sort of where we were before Public Transport Authority, but to be honest, having it all under one roof with one organisation with one set of people in charge means that you just – you can just steamroll through any issues and just say 'no, this is what we are going to do' and there is no rail group who are saying no we are not going to do that, there is no bus group saying we are not going to do that, the ability to have that integrated design of a system, both from a planning sense and a ticketing system sense." (#5)

The phrase "steamroll through" is one which stands out in stark contrast to the responses from participants in the England study, where the emphasis on collaborative working between local authorities and commercial operators to achieve a similar outcome involves hard won cooperation and agreement by all concerned. The implication in the phrase is also one of speed of delivery, once a decision had been made centrally; the constituent operators would then have to do what they were told, which compared to the way in which the process operates in the UK, meant a consequential time saving. The concept of Partnership Working in Perth is, by virtue of their integrated regulated model, almost irrelevant, however one of the respondents described the *relationships* that existed with the respective bus operators contracted to the PTA to deliver services. These relationships bear a close resemblance to the 'partnerships' in the England context, and indeed they were regarded as important to maintain rapport with the bus operators in order to achieve the desired outcomes:

> "The contracts we have with our bus companies are very much relationship based, they are strong relationships, there is still a contract behind them, it is very rare that I have had a meeting with one of those bus companies over the years where it's been 'thou shalt …' I can probably think of a couple of occasions where I have been at cross purposes – it has generally been very much a co-operative relationship." (#5)

In its 2013-2017 Strategic Plan, prepared by the Department of Transport of the Government of Western Australia, a section entitled 'Relationships' referred to the importance of engaging "with stakeholders and build effective partnerships with local

and State government and private industry to ensure DoT meets community needs" (p.5). This subtle, yet telling, synonym reflects the need for personal rapport between participating partners, interesting in an environment where actually the Department, being the owner of the contracts, is in charge and can dictate what happens.

> "Also having good relationships if you don't already, again we were very lucky we owned all the fleet, if you don't do that, getting those things in place, so you have an understanding – you don't get tripped up, before you have spent a dollar or a pound, or whatever, you make sure you have a very good understanding with the owner of the vehicle, what you are going to do." (#7)
>
> "I think that is part of our model. We either do it ourselves, or we get someone else to do it, but we very much control the specification. So you have a strong feel that you can direct things to happen and they happen." (#5)

During the course of the interviews held with participants in England, a strong theme relating to inter personal relationships emerged, as reflected in section 5.1. The impact of personalities was also acknowledged to be important by the Perth participants who reflected on the importance of understanding other points of view, both in dealing with suppliers as well as their contracted bus operators.

> "People have got different personalities, they have got different views, some of them very strong views, completely different to yours and it's really important to understand where they are coming from and you can do any of that before a dollar is spent on buying an electronic ticketing system." (#7)

The significance of differing personalities, impacting on relationships between those individuals involved in partnerships is clearly less relevant in Perth where policy can be "steamrollered" through. How much more relevant in the UK it is where decisions have to be reached which crucially affect delivery.

## 5.6 Summary

This chapter has examined the concept of partnership working in relation to the implementation of policy as delegated by government. It has focussed on the means by which partnerships are established, and managed, through which interoperable

smart ticketing schemes are organised and implemented. The existing deregulated environment in the UK is the one in which the industry currently operates, and has done so for some thirty years, with the obvious exception of London, and the potential move to more regulation, in the form of Quality Contracts was resisted by many participants in this research. Indeed, the responses from UK participants across the range of stakeholders, serve to endorse the view that whilst partnership working is difficult, the option of voluntary partnerships was a preferred one on the part of the bus operators and most of the local authorities interviewed, over that of Quality Contracts, and it was seen as the best way forward for productive, effective delivery of successful interoperable smart ticketing schemes.

The concept of leadership within partnerships, and indeed from the Department of Transport and local authorities, was explored, both in respect of delivery and policy. In respect of the latter, the 'Fat Controller' notion, of one office directing policy, or perhaps "steamrollering" it through, to use a phrase from a Perth respondent, is definitely one which was debated by prominent individuals, but there was equal recognition that the large bus operators would strongly resist any such interference in their commercial undertakings. An emerging theme from participants in both the UK and Australian interviews centred on inter personal relationships, indeed 'relationship' was the favoured term in Perth when working with operators, and clearly the personalities and behaviour of those individuals involved in partnership working is fundamental. Positive personalities, those with a 'can do' attitude, are necessary to produce results whereas negative personalities can sabotage a partnership, and an understanding of that psychology of partnership working, particularly by those managing the partnership is an essential ingredient for the success or otherwise of smart ticketing initiatives.

In terms of comparisons with Perth, with a similar regulatory environment to London, the relative insignificance of partnerships in relation to delivery was in stark contrast to the UK outside London. Whilst there was recognition of the importance of relationships

with operators to ensure smooth implementation, the idea of having to collaborate on delivery was simply not an issue. The ownership of the policy and the ability to drive it through was a huge benefit in Perth and its PTA achieving the implementation of their smart ticketing offering in timely fashion, in exactly the same way that London achieved the implementation of Oyster.

The following chapter will now turn to the consideration of the customer in this debate, both the customer as 'end user' and those participating customers in the delivery process itself.

# 6 The Customer Proposition

The importance of the customer on the smart ticketing agenda was evident throughout this study. Indeed, Baroness Kramer, the then Minister of State for Transport, in her speech to the Transport Times Bus Summit in February 2015 ended with the comment:

> *"Where there's pragmatism. A willingness to negotiate. And an understanding of customers' needs. That's the challenge the bus industry has itself in 2015" (DfT, 2015c).*

The bus passenger, or customer, is fundamental to the debate and whilst chapter 5 focussed on the environment in which interoperable smart ticketing schemes are organised and administered, this chapter now turns to the principal reason as to why they are introduced. This concept will be explored in this chapter in relation to the end user, the local authorities and the bus operators, and the relative benefits and dis-benefits to each party will be reviewed.

The chapter will start with some definitions of terms and consider the relationship between customers before reviewing those observations from the participants in this study which centred on the customer. Firstly, in terms of the benefits to the customer, before moving on to reflect on the ways in which the technical aspects of the delivery of interoperable smart ticketing conflict with the customer proposition. The chapter will then consider the relevance of customer behaviour before drawing comparisons with the Perth study in terms of their consideration of the customer.

## 6.1 So what is a Customer?

Before this chapter investigates the customer proposition and its benefits or otherwise, a definition of the term is necessary in order to frame the context. One dictionary definition of customer is "a person who buys goods or services from a shop or

business" (*Oxford Dictionary*, 2015) and another, "a person who purchases goods or services from another; buyer; patron" (Dictionary Reference, 2015). These definitions align with the notion of customer in the bus business as being the bus passenger, the purchaser of travel from the operator. Another dictionary definition of a customer embraces the concept of "a person one has to deal with" (*Dictionary Reference*, 2015) or "a person of a specified kind with whom one has to deal" (*Oxford Dictionary*, 2015). This broadens the debate in relation to the consideration of the customer in this study, as the parties identified in chapter 5 involved in the delivery of smart ticketing through partnership, the bus operators and the local authorities are, by this latter definition, 'customers' themselves.

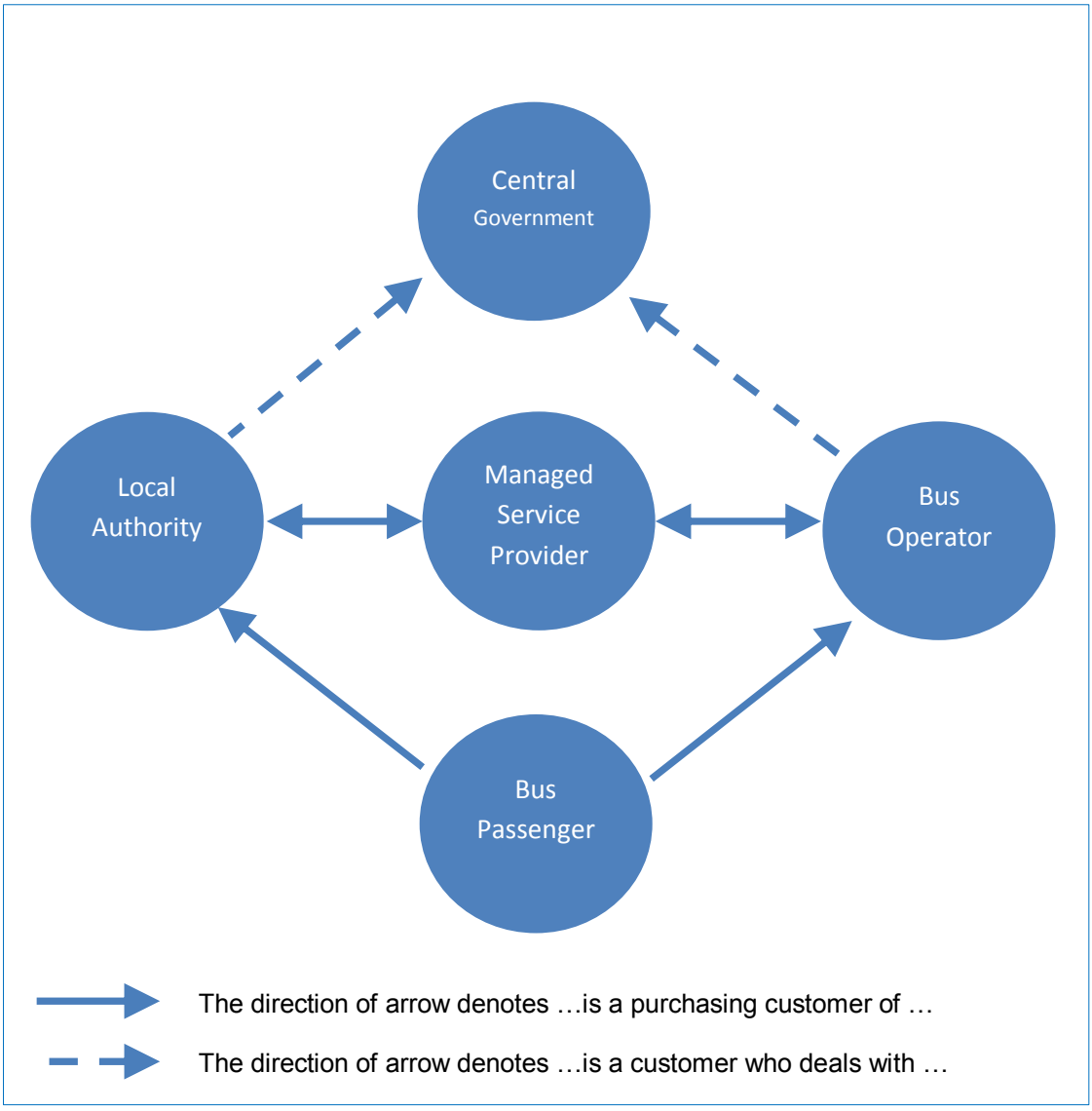



Figure 19: Customers in the Smart Ticketing World

Figure 19 illustrates the customers in the smart ticketing world and their relationship to each other. The complexity of these relationships and the expectations of each clearly has an impact on delivery, in a way that is not the case with other commercial organisations who have a direct, simple relationship between themselves as supplier and their customers who purchase their products.

The term proposition, is defined by one source as “a statement or assertion that expresses a judgement or opinion” or “a suggested scheme or plan of action, especially in a business context” (*Oxford Dictionary*, 2015) and by another as “an offer of terms for a transaction, as in business” or “the act of offering or suggesting something to be considered, accepted, adopted, or done” or “a thing, matter, or person considered as something to be dealt with or encountered” (*Dictionary Reference*, 2015). The perception gained throughout the course of this study, both from conference presentations, as well as the face to face interviews, as to the inherent understanding of the term proposition, was principally that of an offer or deal which was attractive to customers:

> “Customer proposition in some ways – it’s a very popular term and everything, but actually its – smart is only half of any proposition, to different customers. So for a particular passenger type, the attractive proposition to them is a three day season ticket that is saving them money … and the delivery mechanism for it is via smart so that is their proposition.” *(Commentator)*
>
> “Oyster was one of those, it was a very simple offering, the customers could understand it.” *(Supplier)*

The phrase “customer proposition” became more commonly used throughout the life of this study, as evidenced in conference presentations (such as the Transport Card Forum regular quarterly meetings and Transport and Ticketing Conferences in 2014 and 2015) as well as the face to face interviews with those in all sectors identifying it as being fundamental to the design, planning and implementation of schemes. Indeed the phrase occurred some 33 times during the interviews alone.

> *"There are real benefits: a better customer proposition can bring in more passengers, encourage greater use of the network, reduce ticket costs and through this promote a healthy competitive transport industry. We are now prioritising the areas where we can align the passenger benefits, the operator business case and the wider public interests. Our aim is to arrive at a tipping point where the move to smart and integrated ticketing gains significant momentum across England, as it has already in several of our major cities." (DfT, 2013b, p.27)*

Having defined the customers in this study as the bus passengers, the bus operators and the local authorities, this chapter will now consider each group in turn. However, in the context of this study, the bus passenger is clearly the principal customer when the term customer proposition is employed and the chapter will now focus on that, exploring the proposition and whether it is aligning with delivery.

## 6.2 The Bus Passenger as the Customer

The bus passenger is primarily the customer of the bus operator in terms of their buying the services on offer, be it directly on the bus or through the purchase of special tickets including those on smart media. However, some bus passengers are also customers of their local authority in that they are in receipt of subsidised or free travel, courtesy of the National Concessionary Ticketing Schemes; see section 3.4.1, or school transport provision. The relationship between the suppliers of services, be it the operator and/or the local authority, with the bus passenger as the customer is one which is generally expected to yield benefits to both parties.

An interesting link between the context of chapter 5 and the focus of this chapter was summarised in a recent Passenger Focus publication, "Giving passengers a voice in bus services" (2013b)

> *"Passengers liked and expected operators and local authorities to work together. They were, however, less interested in the precise model of doing so – the legal nuances between a Quality Partnership and Quality Contract not being top of passengers' minds. However, they were clear that any agreements needed to backed up by 'teeth' in the form of penalties should performance not meet passengers' expectations" (Passenger Focus, 2013b, p.4)*

This very neatly encapsulates the point that to the travelling public, the 'how' of bus service organisation is somewhat irrelevant, it is the delivery of service and the enforcement behind securing that delivery which is paramount. This sentiment is borne out from a bus operator:

> "Sometimes we look stupid to the customer, the customer thinks – what are you lot doing. We have got a 10 minute frequency in [town], [bus operator] have registered a 10 minute frequency in front of us every 2 minutes – the public can't see – what are you two doing – why don't you just sit down and talk to each other, why can't we have a ticket and whilst deregulation is great because it gives them more choice and more value and opportunity, they can't see why we can't get together to offer better products overall just by talking." *(Operator)*

This response concludes, even after more than thirty years of deregulation, that a bus service is still viewed by a large majority of the travelling public as a public service. It is considered to be there to meet the transport societal needs of its customers. The travelling public are the customers and it is those users that the government are committed to providing a service to, but through provision by private companies – that is the fundamental dilemma. Responses from policy maker participants indicate an appreciation of that dilemma but they are constrained by the policy of the day – which is still committed to private delivery.

It is important to note that the customer's perception of bus services, and by connection, interoperable smart ticketing, is fundamental to the way in which they react to its provision. The following response, from a Commentator, illustrates the commonly held perception that a bus service is a public service, provided by the local council, in the same way that they get their rubbish collected or expect the roads to be mended:

> "It's still seen as a public service – I mean even though buses are largely deregulated, when we speak to bus passengers most of them think most services must be - the council must be behind most of them in some way. It doesn't realise the council probably has a control over a proportion and probably a shrinking proportion of bus services, that's not the common perception." *(Commentator)*

Indeed customers' perception of services provided by TfL in London is reinforced by its high profile on the national stage and the contrast with services in the provinces is therefore more marked as a result.

In chapter 5, focus on the commerciality of the bus operators emphasised their requirement to make money for their shareholders and it is important that this context is borne in mind when considering this so called 'customer proposition' as the customer clearly does not view the 'product' in quite the same way as the bus service providers. The operators need to understand their customer in order to make their commercial return from them, a basic requirement which was acknowledged by several operators and encapsulated in this comment from a supplier:

> "It's a multi stakeholder, multi-level, political environment – operators are obliged to provide a public service and are paid to do so, but they are commercial so they need to make a return. So ultimately, if they don't understand the customer, really if they don't understand that customer base then they can do neither." *(Supplier)*

### 6.2.1 Bus Passenger Expectations

Before moving on to consider the relative benefits of interoperable smart ticketing that accrue to the bus passenger customer, it is worth acknowledging that the medium of a smart proposition to many customers is irrelevant compared to its function, indeed a response from one participant presents a view that actually the customer does not have high expectations of smart. As long as it works and they can see a tangible benefit in those key areas which affect their decision to travel by bus, such as convenience, "the state of being able to proceed with something without difficulty" (*Oxford Dictionary*, 2015) and value, "the regard that something is held to deserve; the importance, worth, or usefulness of something" (*Oxford Dictionary*, 2015), those were all that ultimately mattered to the bus passenger:

> "to them it's all new and it all sounds great and it's like – it doesn't really matter as long as however something is introduced is logical, works well, offers them

> some of the benefits of smart – things like convenience, saving money, things like being able to tailor it and all those kinds of things. " *(Commentator)*

This observation, supported by extensive research carried out by Passenger Focus (2013a; 2014a) serves to put not just smart, but all ticketing in perspective relative to other facets of bus travel. This approach is widely recognised in the bus world, be it in local government, operations, consultants or suppliers, who see smart in one form or another, being an important way forward and to some degree a 'must have' in the transport future, particularly in relation to dealing with the customers' expectations of value and convenience.

> "The customer side is where it should be focused, I don't see the customer at the moment getting an awful lot of value out of smart ticketing and I want them to have value out of smart ticketing." *(Commentator)*
>
> "I think it's the benefits to the end customer that really matter because technology for technology sake has really got no place unless it is kind of serving some kind of useful benefit for an end customer and unless they can see that benefit – you are really going to struggle." *(Supplier)*

The supplier response, illustrates this real awareness of the customer needing to be at the core of what should happen in terms of benefits to them. The underlying key theme of not just pursuing technology for technology sake recurred in several interviews, and is explored in chapter 7. One commentator pointed out, and the sentiment was echoed by others, though not across the board, that the demand from the customer for a smart card is not necessarily as widespread as some in the industry believe, who may have become blinkered in terms of provision:

> "There just isn't this huge wave of demand from passengers like – can I have a smartcard, please can I have my bus ticket on a smartcard. *(Commentator)*

Whilst this response signals caution in the provision of smart for smart sake, the argument could be made that unless customers know about a product, they are not necessarily aware of its potential benefit to them. The concept of good marketing will overcome this as identified by a Supplier:

> "Marketing always seems to be forgotten in any of these schemes and brand awareness and brand volume – how do you get the consumer to want to take that card or that ticket and use it. Nothing to do with technology and it still seems, I think it is something they should spend a lot more time on, and money to re-innovate around". *(Supplier)*

In Norfolk, where a pilot interoperable smartcard scheme, holdall®, was introduced in April 2014 (section 3.4.3), under the watchful eye of the DfT who had committed funding to its implementation the customer proposition was placed firmly at the 'front end':

> "We had the discussion, right at the beginning about what Norfolk's product was going to be and what the customer offer was going to be, and we got that set down very early on, so from day two, if you like – if day one was getting the product right – from day two, everyone has been very clear what we are aiming for and the fact that the customer is up there at the front end and therefore, we won't settle for anything less that will meet that customer objective." *(Policy Maker)*

Passenger Focus were commissioned to undertake a survey on the implementation of the Norfolk holdall® (2015), before, during and after implementation.

In pursuing its customer proposition, Norfolk showed when you do it correctly with the right products in a multi operator environment, smart works. Within eighteen months of implementation they went from zero to 800,000 transactions a month with over 600 integrated products. These statistics clearly show when you put the customer first and give the customer what it wants in terms of simplicity, then the take up is positive, and smart media is the way that helped them achieve it.

### 6.2.2 Ease of use for the Bus Passenger

A Passenger Focus presentation to the Transport Card Forum in September 2014 entitled 'Smart Ticketing in Public Transport - What do Passengers Think' revealed that making smart easy for pasengers was a key objective:

> *"London, Oxford Smartzone and others show how when a scheme (whether smartcards, EMV or even paper) is well-designed and works: take-up is good*

*and improved perceptions of public transport can be a result. Using smart can make passengers lives easier, which should be the aim for us all..." (Passenger Focus, 2014b)*

This view is not confined to literature, those involved in the delivery of bus services and indeed the ticketing facilities provided are more than aware of the appeal of the London system in terms of ease of use of Oyster:

> "The reason the public like Oxford, the reason the public like London is because you don't have to think – you just tap it on the reader and it takes your cash – simple, easy." *(Operator)*

It emphasises that making life easier for the passenger should be a primary aim for those providing ticketing schemes for public transport because the customers have used it. To a large degree, that message was understood and appreciated by all involved in this piece of research, but it was also apparent that the message can get lost in the technical quagmire that surrounds the implementation of interoperable smart ticketing systems:

> "I was committed to the customer proposition and there were periods in those days, going back to the 2000's, where clearly the technical was completely taking over what ultimately would work for the customer. As the operator, we were bringing it back to that and also, I think, in our simple way trying to simplify the proposition, so we could actually deliver something, whereas at every turn, it was getting ever more complex." *(Operator)*
>
> "Make it easy to use which is probably partly the technical stuff so it doesn't go wrong it is not slow, I am not embarrassed standing there at the gate or on the bus it is not working, and it is easy to find out how much I have spent." *(Commentator)*

To make interoperable smart ticketing easy to use for the customer, calls for all aspects of design, manufacture and marketing to be made simple. A tall order for what has been shown over the last 17 years (see section 3.1.2), since the creation of ITSO, to be a complex technical process. The concept of simplification of ticketing was a recurring theme in this study, indeed the word simple occurred some 124 times during

the interviews, demonstrating that the ambition to achieve it is there, if the ability to realise it is somewhat thwarted :

> "The biggest lesson we have learnt is that people take up smart if you simplify it." *(Operator)*
>
> "Customers want simple ticketing, customers like smartcards, customers want interoperability and that view is not shared by the majority of the bus sector." *(Commentator)*
>
> "I think that is most important, get it simple and also make it understandable so people actually understand it, so the technology – you don't think about, you don't worry about using these things, this works for me, I don't need to know anymore." *(Commentator)*
>
> "Simplicity is a key. Don't get obsessive with the technology - it's something that is there – just use it. It's like using a pen; you don't think about a pen you just use it. Make the whole process and operation simple." *(Commentator)*

The irony of course is that the complex technical platform of smart to deliver a simple customer proposition has developed as a result of a failure of governance and legislation to deliver and support non smart based multi operator multi modal customer friendly products. However, the challenge of defining the technical platform has been significant with numerous examples of schemes which haven't delivered their intended outputs, or have been delayed beyond their planned implementation dates (eg: Newcastle's Pop Card, Liverpool's Walrus Card, and Manchester's Get Me There Card). These have largely been because of the complexity of the technical issues involved, and are testament to the "it's incredibly difficult" *(Operator)* message. The communication of these 'failures' to the customers is inevitable, as their legacy in terms of ticketing vending machines and signage lie unused and are perceived as 'not working' which only serves to convince the customer of its fallibility. A response from a supplier reinforces this dilemma for the industry:

> "There have been lots of successes that have never hit the PR, lots of successes, there have been a lot of failures that have and so it's had to manage that, so perception versus reality – two different things. If they could just get strong marketing, strong PR galvanising..." *(Supplier)*

The schemes highlighted above as having struggled through implementation are those that have been planned as large scale interoperable smart ticketing offerings. There are a number of very successful offerings, (Blythe, 2004; Ford, 2007) adopted by specific operators, such as Stagecoach's Smartzone card, Go Ahead's Key card and Yellowbuses proprietary scheme, Glo card, although all of the above are highly restricted to the company's own products only, rather than multi operator, customer focussed products. Whilst similar to the Oyster concept of being limited to specific equipment, the customer would not understand why there was a difference:

> "There are lots of very small microcosms that are working well, but the big policy thing, and I suppose to some extent from a passenger perspective, or customer perspective is being able to use it elsewhere." *(Commentator)*

Aside from interoperable smart ticketing being difficult to introduce from a technology standpoint, it is also a difficult concept to get across to the customer from a usage point of view. If the customer is to be the main driver for the provision of interoperable smart ticketing, then ease of use is a must for take up and continued use. The example on our doorstep, of Oyster in London, is a glowing testimony to this principle, and several responses during the course of this research made reference to the simplicity of Oyster being fundamental to its success

> "The smartcard schemes which have been really successful, and are not overspent and overrun delivered nothing, or less than they wanted are those that come with the huge simplification, and do just one thing – really. They have a very simple ask to start with, they really do just that. Oyster was one of those, it was a very simple offering, the customers could understand it. *(Supplier)*

> "I think when people see schemes like Oyster, which are very successful, around the UK, they are thinking well why can't we have the same thing." *(Supplier)*

The literature review, in section 3.1.5, identified that 70% of rail journeys start or finish in the capital (Bryan & Blythe, 2007; Robertson, 2012), which is reflective of the fact that a large proportion of the population in England are aware of Oyster through experience. This knowledge and awareness, developed over time, generates

comparisons with other 'smart' offerings around the country which are then found wanting by comparison. Several participants from local authorities indicated that their councillors wanted Oyster like schemes locally, without necessarily appreciating the reasons why it wasn't a directly transferable model:

> "Councillors would like to have a Devon Oyster – like any council." *(Policy Maker)*
>
> "To have something akin to an Oyster card, now London is different because London operates differently with TfL, we all recognise that, but nevertheless the principle in terms of what the customer sees is the same one." *(Policy Maker)*
>
> "The success of the Oyster card of course, has helped push things along, if that had been a failure, then probably none of us would be trying to develop smartcards now, but there has been a huge amount of pressure from politicians and the general public - we want an Oyster card." *(Policy Maker)*
>
> "If you want to get more people to use buses – you have got to offer them what they want. The public say they want an Oyster type card, they can use everywhere then why can't we deliver it." *(Policy Maker)*

An observation from a bus operator, based just outside the TfL operating area speaks volumes for the boundary issue of differing governance environments impacting the offer to the travelling public:

> "I think someone said there are 11,000 Oyster cards registered to addresses in Reading, so people knew about Oyster and therefore wondered why we weren't doing it." *(Operator)*

The perception of usage of smartcards by customers is clearly affected by experience of Oyster, and indeed of cards in other parts of the world. In the Perth study participants who were involved in the delivery of the smart ticketing scheme identified ease of use as the most significant benefit:

> "It just comes down to ease of use, if it's easy to use our system, then people will use it. If you make it difficult to use the system, then they won't. That includes the ticketing system. That is just paramount." (#7)
>
> "In terms of customer benefits, in terms of the ease with which they can use the system and so on, lots and lots of benefits with that. We probably are at a point where not SmartRider per se, but public transport is being held up as the solution to what is becoming a more and more congested city. Not by world

standards, certainly acknowledged that, but certainly by Perth standards, and for people that have lived in Perth for a long time, congestion is the new word on everyone's lips in terms of we have hit a tipping point." (#6)

This was also reflected in the responses from the Focus Group gathered from SmartRider users to ascertain first-hand customers' opinion of smart ticketing for this piece of research. An output of the discussion was a list of what they offered as positive and negative attributes of SmartRider, and a summary of those, with the top five of each shown in order, is included in Table 6.

**Table 6: Focus Group SmartRider Attributes**

| Positive Attributes of SmartRider | Negative Attributes of SmartRider |
|---|---|
| • Convenient<br>• Ease of use<br>• Fast<br>• Streamlined/Seamless<br>• Secure<br>• Quick<br>• Record keeping<br>• Direct Debit<br>• Pay Friendly – top up<br>• No worries about coins<br>• Forgiving<br>• Unique<br>• Free Transit<br>• No hassles<br>• "Pay Way" approach<br>• Excellent<br>• No need for change<br>• 25% saving | • Limited Tag off facilities<br>• Gates get stuck at stations<br>• Too personal (not family friendly)<br>• Some places only 1 tag off<br>• Near proximity only<br>• Too crowded<br>• Outside – no cover<br>• What will happen if electricity will not work<br>• On-line top up limited availability |

*Focus Group carried out in Perth on 9th July 2013*

Again, as with the UK, convenience and ease of use were the top two positive attributes and the remaining list of positive points is considerably longer than those cited as negative attributes. Indeed the group had to be encouraged to identify negative aspects for the purpose of this study.

### 6.2.3 Value for money for the Bus Passenger

Value for money has been identified as one of the main aspects of bus travel which is considered by customers as a reason for choosing to travel by bus (Passenger Focus, 2014b). The presumption that smart ticketing equals value for money is not necessarily a given and indeed in the Perth Focus Group results summarised in Table 6, value for money was identified as a positive attribute in relation to savings obtained when purchasing auto top-up online, albeit that it was last on the list in terms of importance. In the UK study, several commentators identified the importance of value to the customer:

> "The customer side is where it should be focused, I don't see the customer at the moment getting an awful lot of value out of smart ticketing and I want them to have value out of smart ticketing." *(Commentator)*

> "Value is so important to passengers, so if it can save me money then I will seriously consider going smart, as long as other things are all OK." *(Commentator)*

In addition to the impression that going smart could offer value for money in terms of savings, the concept of additional benefit obtained through the use of a smartcard is engendered by the widespread use of 'loyalty' cards by major retailers, in the form of plastic credit card looking cards. There was a view expressed by several in this study that a smartcard should offer something more the customer than merely the cash equivalent:

> "Smart means discount, to the general public smart means discount." *(Operator)*

> "I have got a points card for my nectar, I have got a clubcard points for Tescos – yes they are closed systems, they only work on their kit, they only do what they have got to do, but unfortunately the expectation of the public is that that card that they have got is a similar type of card to those and they don't know all the ins and outs." (*Policy Maker*)

> "If I was the customer would I put £10 on a card, when I could have a £10 note in my pocket? I suppose the answer is, well if that £10 is going to turn in to £11 worth of value or I am going to get something because of that, whether it's a free mince pie in Greggs or a coffee, or there's something extra for it, then I might do that." *(Operator)*

The positive aspect of this perceived loyalty benefit associated with smartcards was appreciated by several participants, particularly bus operators, who recognised the marketing value of capturing customers and retaining them, and understood the benefit of smartcards in achieving that:

> "If somebody has a piece of plastic that says they can take our bus, they are more likely to use our bus than they are to use somebody else's bus." *(Operator)*

> "We try as much as possible to create a need if you like or to create a relationship with them that they value us and you can't do any of that with a card you can use anywhere you want – there's no relationship between you and the customer then, you just become a commodity don't you." *(Operator)*

This commercial aspect of smart ticketing provision by operators is quite contrary to the altruistic vision of interoperable smart ticketing which was intended to facilitate seamless travel between operators, desired by the government (DfT, 2012b). A commentator pulled no punches in their assessment of the reasons behind why the aims and objectives of commercial bus operations are completely contrary to the aims and objectives of interoperable smart ticketing:

> "I would suggest that the large bus groups in the UK have no desire whatsoever to support interoperability and the more you can frustrate the delivery with ITSO the longer that continues. They are quite happy to claim as much cash as possible out of the system but are very reluctant to support interoperable ticketing solutions for being simple and easy to deliver. I personally believe that goes all the way back to bus deregulation in 1985 and the desire not to have any interference from the public sector in the commercial domain. I think that is a very negative and narrow minded position and works completely against the aims and the incentives for customers." *(Commentator)*

Clearly, in a commercial bus company, reconciling the value for money aspect with the profit motive is a difficult one, but the fact that there is a correlation between the two did not go unnoticed within the bus operator community:

> "For us it is: what does the customer want and as a commercial company how do we make sure that we get out of it what we want to get out of it but at the same time being seen to offer a value for money product." *(Operator)*

### 6.2.4 Customer Behaviour of the Bus Passenger

Study of the literature relating to travel behaviour suggested that the designers of smart ticketing schemes should endeavour to understand the reasons why users make specific travel choices (Anable, 2005; 2006; Stopher *et al.*, 2009). Indeed, a response from a participant in the Perth study, echoes that sentiment and it is absolutely pertinent when considering the customer in the England context:

> "Go and ask your punter, go and ask them how easy is their current ticketing system to use, if it is difficult to use now, making it electronic is not going to make it any easier, it just makes it electronic! It's still difficult to use, it's just not in a paper form, now in a card form, so that's really important." (*Operator*)

This sentiment was echoed by a participant in the England fieldwork who advocated dialogue with the customer to elicit their requirements and aspirations:

> "Define what you want the consumer proposition to be – write it down and test it with the consumer – that is number one. It is classic – we all sit in a little bubble in a little room and say – I'll tell you what would be really good and nobody ever asks the consumer – so go to them." *(Supplier)*

The change that has evolved in the bus industry in considering passengers as customers is reflected in an observation from a Policy Maker participant, where they perceived that their own personal viewpoint was relevant to the argument:

> "I would always try and look at it from this point of view – what does it mean for me as a customer, how is that going to change my life, how am I going to travel, how am I going to do whatever – what is it I want out of it and how do I then, as a transport planner, meet that persons expectations." *(Policy Maker)*

The idea of ascertaining customer's reasons for travel choices was prominent in the minds of several participants, particularly in relation to the interpretation of the data coming out of such schemes:

> "It's the data and the ability to use data to manage transport better, to manage public transport better and hopefully get more people using public transport, but it's also about giving benefits to the end customer as well." *(Supplier)*

> "We think that by obtaining that data we will be able to better plan our services so that they are way more cost effective and we can actually give people services that they want to use at times they want to use them and go to places that they want to go to." *(Policy Maker)*

These responses which involve the utilisation of the outputs from smart ticketing, ie the data, do not align with the recommendations suggested by Anable et al and Stopher (2006; 2009) mentioned above, which advocated investigation into the reasons for travel choices, and hence ticketing choices, as a precursor to provision, and this response from a Commentator captures this conundrum in an appropriate idiom:

> "That of course is one of the benefits of introducing smart that you suddenly start learning about how people are using your buses or trains in a much better way and you have got information about them and you know it's the same person that has bought – travelled that journey, whereas normally you would only know that 5 tickets were bought – you don't know if it is 5 tickets one person, all that kind of information that you don't even have that at the moment. So in some ways it's chicken and egg, but if you have got all the information that was available from smart, you could then do much more clever design stuff. It's complicated."
> *(Commentator)*

As the concept of the customer proposition or offer has become more prevalent in the smart ticketing world, the move from the 'technical' to the 'market', and the actual practical application of that theory is a little slower to track, as reflected in an observation from a supplier participant:

> "Very few are looking at the consumer proposition – they are saying well we are trying to get it to work, we are trying to get a ticket on the card, we are trying to get the ticket out in the field. Well that is great but did anybody ask the customer whether they wanted it or not and that is where you will see the gap and I think that successful companies are the ones who realise that and are trying to do what we call an 'S' curve jump, so jump to where the consumer is and take a look back. Have you got the solutions and the services to give them what they want?" *(Supplier)*

This is indicative of the dilemma facing the architects of interoperable smart schemes, what comes first. Historically, bus operators have been experienced in designing networks which provide, what they consider is required by the travelling public, and are as efficient as possible in terms of the use of resources.

> "The bus industry has got to get its mind set changed – the marketing departments of bus companies used to write timetables, the marketing departments now have got to start going – you know what I can do some interesting pricing here, I can do something with the data to get people to keep coming back to my Arriva or my Stagecoach bus or my First Bus." *(Operator)*

The development of ticketing within that model has evolved from single tickets purchased from a conductor with cash, to the current huge range of ticketing options, available from multiple sources, by multiple payment methods.

> "I am looking at it from the commercial point of view. Obviously operations and engineering are fundamental to the business, we can't run without them, and we have to fit in with them, but they shouldn't drive the business. What should drive the business in my mind is the consumer and what the customer wants – where does the customer want to go to – how does he want to go there, what is he prepared to pay for, what is he not prepared to pay for." *(Operator)*

That level of complexity of offerings reflected in complex business rules, different for each operator, conflicts with the requirement to simplify for the sake of the customer. The following reflection, from a TfL participant, employs the same idiom as quoted earlier in respect of this issue:

> "So there is a real sort of chicken and egg problem here. Should you simplify the fare structure and simplify the business rules that allow a simpler specification or should you say – you know what we are not going to do everything for everyone – we are going to meet the needs of the core market and everything else. Frankly – people will either sort themselves out or they won't adopt this product. You have to make a choice somewhere. I think the answer is a bit of both." *(Operator)*

This shift, or different approach to simplify structures and rules within the operating side of the industry is one that is taken up by a Commentator, who is advocating that a complete fundamental change in approach is required, a notion that is taken up in relation to the operational style of companies in section 7.7.

> "That's why I say it is a complete change project, it impacts finance section, the whole business rules because you can create, with the new technologies, you can create new fare products you didn't think of before." *(Commentator)*

The impression gained from this perspective is not necessarily one of abandoning all current practices in terms of ticketing, but to reassess priorities in terms of what the customer requires, paring down, to make the absolute best use of available technologies. "The 'keep it simple stupid' thing" *(Policy Maker)* whilst a cliché, is nevertheless still appropriate, and easier said than done, especially when already on the roller coaster that is the current smart ticketing agenda in England.

A significant benefit expected from the use of smart ticketing generally, not just interoperable smart ticketing, was a reduction in dwell time as a consequence of speedier boarding, a benefit of time saving to the customer and also (and hence cost) to the operator. (DfT, 2009a; DfT & Detica, 2009). In order to assess the impact on boarding, a passenger survey was undertaken on the Norfolk Park and Ride scheme, both before and after the launch of its holdall® interoperable smart ticketing scheme. Stopher et al (2009) maintained that the success of otherwise of policy is determined through the monitoring of outcomes, but concluded that it was difficult to do this accurately. In their summary report of findings, Passenger Focus reported that pre implementation investigation had resulted in a positive expectation on the part of customers:

> *"for urban users, the benefits of shorter queues, faster boarding and not having to interact with drivers (especially for commuters and users of peak-time buses) made them feel positive about the idea." (Passenger Focus, 2015, p.4)*

However, when the reasons for purchasing holdall® were analysed, only 21% of those interviewed cited boarding more quickly as a reason for purchase, against 73% citing the expectation of cheaper fares. This would suggest that speedier boarding time for the holdall® customer was not nearly as important as value for money.

### 6.2.5 Technology as a Customer of the Bus Passenger

Technology was one of the most frequently used words throughout all the transcripts (see section 4.7.1), which in itself is indicative of the emphasis placed on the technical issues. Chapter 7 will consider the operational issues apparent during the course of the interviews, but in this section the impact of technology in relation to the customer will be reviewed. The following observation from a Policy Maker is interesting in that it reflects a change of emphasis that has evolved over recent years to that of putting the customer at the heart of the interoperable smart ticketing agenda.

> "The wonderful customer proposition is absolutely central, that's the bit that you have got to be kind of clear about and focused on and then what you need to do in terms of technology flows from that." *(Policy Maker)*

The literature revealed that investigations into early developments in smart ticketing were primarily driven by technology, rather than the market, (Blythe, 2004), indeed a former Policy Maker said:

> "I think we were slightly naïve in the sense that we were looking at this very much from the technology point of view and how do you make it happen and we didn't spend enough time going sideways to colleagues, but the problem is that DfT or DoT as it then was, gives out money to Local Authorities to do things, but in the sense doesn't enforce it." *(Policy Maker)*

The latter part of this statement links in with the theory promoted in section 5.4.3 where in order to ensure that an output is achieved; some direction or enforcement is required. A Supplier reinforced this:

> "So output prescription – agree a good thing, because it doesn't really matter how you do it – it's by outcome and that's the bit that I think we have all got lost, the consumer never buys technology – they buy what it delivers – simple as that." *(Supplier)*

The change of emphasis to focus on the customer, or 'the market', to use the terminology promoted by Blythe (2004), was widely acknowledged to be the right approach by participants from all sectors, as reflected in this comment from a supplier:

> "I think it's the benefits to the end customer that really matter because technology for technology sake has really got no place unless it is kind of serving some kind of useful benefit for an end customer and unless they can see that benefit – you are really going to struggle." *(Supplier)*

The Department of Transport, in pursuing their 'technology driven' approach in the early days of the development of smart ticketing, identified that an industry standard was required, initially for reasons other than interoperability:

> "It was all about privacy, that was our motive, we then got a secondary motive of interoperability." *(Policy Maker)*

The interoperable motive, became the overriding purpose for ITSO, to allow for products from different operators to be loaded onto the same card, for the benefit of the customer. This was viewed as a way to solve the dilemma of different competing bus operators, utilising different ticket equipment with different business rules. (Blythe, 2004). Those involved in the industry understand this dilemma, because they live with it all the time. The Department for Transport understand this dilemma because they oversee the implementation of the policy which created this situation in the first place. However, the customer, the individual around which the Department for Transport has stated, in their publications (2012b; DfT, 2013b) is "central" to the commitment to interoperable smart ticketing has no real understanding of the meaning of the difference between the provision in London and the rest of the country.

The word interoperable is used throughout these discussion chapters, as opposed to ITSO smart ticketing, with the intention that it encompasses the range of available technologies which facilitate interoperability to the end user, the customer. This has evolved over time, in response to the evolution of the technology. In the same way as the customer is unaware of the differences between operators, they are equally unaware of the technology involved:

> "If you are an end customer, you might well have never have heard of ITSO or EMV in fact you probably never have. You might have heard of chip and pin or

> pay wave, but that is a branding thing. All you care about is – OK I can use this thing to do what I want to do – that is really it, so if you can walk up with your card and underneath it has got ITSO or EMV or whatever, but you tap and go or you buy your ticket and it does what you expect it to do – that's all you are really interested in." *(Supplier)*

Marketing has already been referred to in relation to ease of use, section 6.3.1, and the importance of raising awareness in the travelling public was identified in the literature relating to Oyster in section 3.1.5 as a significant contributor to its success (Glaister, 2006; Hendy, 2005), and it is equally relevant in relation to the awareness of the technology as evident from a supplier:

> "ITSO is like, for me, just like EMV was, only EMV had loads of funding, loads of funding – so it got its consumer proposition out first before its technology proposition and ITSO has got its technology proposition out and no consumer proposition – none – and that's the difference." *(Supplier)*

The interesting point of this view is that relating to funding, which is a major reason why schemes have struggled to succeed in the shadow of the Oyster success (see section 3.4.2). Earlier in this chapter, attention was drawn to the shining example of successful smart ticketing, literally on the doorstep of the English bus market and adequate funding as the means by which that success has been achieved:

> "We constantly say about Oyster, it is a great scheme – absolutely brilliant – but it's in London, its massively buoyant, it's never had a recession in its life and I think people have got to grow up and realise that you can't have what London's got because you haven't got the economic base of London and you haven't got the subsidies or the funding that London has got." *(Operator)*

Of course, this is not a revelation, and those in the industry and the government interviewed during the course of this research are well aware, and indeed have been working within tight financial constraints for a long time now, with no prospect of any freeing up of the national purse strings to any great degree for public transport to expend what is required to achieve an 'Oyster' like solution across the breadth of England, leaving aside the commercial dilemma of competing bus operators and their reluctance to relinquish control of 'their' customers. Into the mix now though, is the

expanding list of alternate technologies which potentially could achieve the aim of interoperability, as revealed in this response from a Commentator:

> "Time may have passed, but I can't help thinking there has to be some nugget in there that can be used to help stitch all those competing technologies together on behalf of the passenger and that is where the DfT interest should come in for me – they should be hunting the interest of the passenger, the customer, that is what they are there for as far as I am concerned." *(Commentator)*

This again serves to focus attention on the customer and the fact that they should be the prime concern of the government, through the Department for Transport. Certainly in the last few years, technology has raced on, particularly in terms of mobile phones and tablets and the use of 'apps' (Ford, 2007; Passenger Focus, 2013c) and this had not escaped the notice of participants in this study:

> "I think technology in itself has helped in that there are a lot of new ways of buying tickets and using them, like mobile phones and tablets and obviously wave as well and the use of internet and web has just exploded in the last five years." *(Supplier)*

The following reflection from a bus operator participant highlights the associated difficulties that operators face when trying to balance the provision of online services with delivery in terms of making things work properly:

> "On line top up has completely changed the rules as far as we are concerned, and makes it a much more attractive prospect and makes the fact that reading the tickets is a slow process, much more of an issue than it used to be." *(Operator)*

The actual operational issues associated with developments in technology will be explored in more detail in chapter 7.

## 6.3 The Bus Operator and Local Authority as a Customer

In relation to the whole smart ticketing debate, the bus operator, whilst principally a commercial supplier to its customers, the bus passengers, is also a customer itself

being a partner in the delivery of smart ticketing alongside the Government, both national and local. In terms of partnership working, the bus operator as participating partner is indeed one of the customers at the table, and is usually required to make compromises in order to achieve the desired outcome of the partnership as a whole.

> "You have got to be realistic about what you are giving up and what you are getting in return". *(Operator)*

Another customer at the table in a partnership scenario is the local authority. More often than not, they are the organisation chairing the partnership, but in terms of achieving the goals of any partnership agreement. As identified in section 3.5.1, the role of SWSAL, as a provider of a managed service to local authorities to enable the delivery of smart ticketing schemes is a specific example of where the local authority is indeed the customer. In its provision of advice and administrative support for local authorities, there are quantifiable benefits to the local authority in the delivery of smart, which are accrued from the information derived through smart leading to savings as evidenced in this study.

Notwithstanding the value for money benefit available to the customer as an individual, the 'smart' element of interoperable smart ticketing was seen by some participants as of wider relevance to communities through the sharing of electronic information derived from smart ticketing, within local authority departments.

> "That's one of the things that has been encouraging within the organisation here where we have come out of our silos to say right oh, let's have a look at adult social care, children and families, strategic planning, highways development – the whole lot. They now understand that, not only what it does from the customer point of view, but what it can do with data and information to make informed decisions rather than I have got a hunch or we will go out and do a snapshot, that's the other thing, you get so much data now." *(Policy Maker)*

This extends the concept of value beyond that of just to the individual, in terms of pounds in their pockets, to value on a grander scale, benefiting the coffers of the local

authorities as a whole. This can get lost in the process of evaluating schemes, as the benefits are, in effect, outside of the immediate vicinity of users. There were other examples of wider use of smart ticketing in the community from participants which again would have a contributory value to a community or local authority and a tangible benefit to customers, if they could be made to work properly:

> "We were trying to get them on board and then following that I think we moved on to a couple of the Districts car parking machines, so it became a multi-application card quite quickly in some areas, although I think some of the applications were slightly redundant in the fact that they didn't work particularly well, so the bus ones, we did struggle with." *(Policy Maker)*

## 6.4 The Seamless Vision for the Customer

The seamless vision promoted by Norman Baker, then Minister for Transport, but prevalent before this pronouncement (DfT, 2009a; DfT, 2011b) is one that has been advocated in subsequent government documents (DfT, 2013b; DfT, 2013c). At the launch of South West Smart Applications Ltd in October 2010, Mr Baker expressed a personal wish that by 2020 he would like to see "seamless travel on one smartcard throughout the country." (*extract from launch speech: 8.10.10 in Exeter*). This vision is one which was widely understood and appreciated by a number of participants, but viewed with some cynicism by some:

> "Grand aspirations of Lands' End to John O'Groats and things like that kind of stopped the development of something that just works in Lands' End." *(Operator)*

> "People were saying for a long time what we would really like is a ticket that enables us to use the network as if it is one whole network." *(Operator)*

> "One striking thing is the gap between the rhetoric and the reality. I will come back to London because it is an interesting perspective, but the rhetoric can get very very ambitious, very golden, not just in Ministers' words, but lots of people's words. Because it is very easy to talk about the vision is … of an integrated transport system with the ability to take your card, buy a local transport ticket in London to get you to the railway to get your ticket on the rail to Liverpool to then do an onward journey, maybe on a multi operator onward journey, so it's very easy to talk that – or to take your card on holiday with you. It's a grand vision. I think it has become starkly evident; the gap between the vision and the reality was chasm like." *(Policy Maker)*

This latter response is very significant in that it tempers the vision in terms of a reality that has come to be known and appreciated after the long period of time which has elapsed since the inception of ITSO as a necessary industry standard, put in place to achieve that vision. This is discussed in greater detail in chapter 7, but the significance of this seeming 'toning down' of aspirations in terms of the seamless vision is pertinent to the specific aims of this research project, concerning the evaluation of ITSO, as expectations were clearly moulded by such aspirations.

The desire to improve the travel experience for the customer is not exclusively the expectation of government stakeholders; the bus sector is equally committed to that objective, albeit within the confines of its commercial objectives, simply because more customers equals more profit. Participants from two of the major bus companies responded:

> "I think you have got to go to the customer and the customer is the common piece through all this. What is their experience and what is their requirement at the start because, fundamentally you are trying – from a private organisation, we are trying to generate growth of revenue out of them. So actually how do I get them to use my services more. So I need to put them at the centre of that decision making. If you are looking at the public bodies like your TfL's and that, I am putting my customer at the centre of it because actually I am providing a service to them and it's a public service and I want that experience to be as good as possible." *(Operator)*

> "I think that most sensible bus companies these days listen to what their customers are telling them and will listen to what non-bus users are telling them." *(Operator)*

The key point raised relates not only to present customers, but also potential customers, which for an industry experiencing year on year overall decline in bus passengers, outside London (DfT, 2015b; Docherty & Shaw, 2008), the attraction of new customers is essential to reverse that process.

In section 5.4.3, the commerciality of the bus operator partners was highlighted in relation to the potential conflicts in working together to achieve interoperable smart ticketing objectives; this is inextricably linked with the customer:

> "The people who are going to keep us in business are not the public authority or DfT it is actually the consumer, because they are the people who are going to use it, no usage – no joy." *(Supplier)*

This is the principal reason why developments in ticketing are promoted, for the customer to use, and this mantra, 'no usage – no joy' is a pertinent sound bite in the ongoing smart ticketing debate.

## 6.5 Comparisons with Perth

In Perth, it was clear from participant responses that a prime objective in terms of the Perth smart ticketing offer was to increase the take up, as reflected by one participant "we would love to crack the 80% barrier, 80% of users." (#6). There was a recognition that encouraging users to switch to SmartRider was not enough on its own, but specific action was required to "push" more customers to use the card as opposed to cash fares, and the experience of both London and Brisbane, with their respective smart offerings had been examined in this respect and they were looking to use similar tactics to encourage more take up.

> "London cash fares are very high compared with Oyster, Go card, same thing, so they have gone – a huge differential. Really price now, and we have just had a recent promotion of SmartRider – heavily, heavily promoted it, we were out there handing out discounts to get cheaper cards and it made a slight, slight difference to the overall numbers, but not a huge difference at all. Mainly its price now, it's come down to price, the only way to push these people onto using SmartRider is through the pocket is to making cash fares much more expensive." (#7)

In the case of SmartRider, the entire scheme is commercially relevant, but in England, up until relatively recently outside of London, smart ticketing was predominantly only in relation to concessionary schemes where those in possession of a smartcard had not parted with money for it, so actually, under those circumstances the situation was not quite so critical, as reflected by a Supplier participant: "we are now doing commercial schemes and that's real money". When individuals have to part with real cash, then it has to be right:

> "When it goes well people don't notice it I suppose, but it is an aspect of travel that if it doesn't go well, it really causes people angst. I mean you are talking about their money, it's their money, so you can't muck around with that stuff." (#7)

From the commercial standpoint of bus companies in England, the risk of not getting it right, taking account of the potential fragility of customer loyalty, is a major factor in their reluctance to forge ahead with new smart ticketing schemes on their own behalf, never mind the commercial risk of entering into agreements with competitive operators. The nervousness evident on the part of those orchestrating the SmartRider scheme is interesting to note, bearing in mind the competitive element is not an issue in their circumstances, except maybe from the private car.

## 6.6 Summary

This chapter has explored the position that the customer, by whatever definition, holds in the smart ticketing debate. The customer as the 'end user' is what many questioned in this research termed as the object in the term 'customer proposition' but as has been demonstrated, within a partnership delivery, different stakeholders equally satisfy the criteria of customer in the way they interact with one another.

The original developments in smart ticketing were technology led and not customer led, and that philosophy underpinned the approach to smart ticketing for many years. However, customers don't buy technology, they buy what it delivers and this chapter also showed that effective marketing was necessary in order to define what customers actually want. With the benefit of hindsight, that was the fundamental mistake, smart ticketing was not customer led. The customer proposition, or offering, when put at the forefront of scheme planning, has been shown to be successful, as in the case of the Norfolk holdall ® scheme. Norfolk had a simple and very clear customer proposition, 'buy online – collect on bus' (*National Managed Service Pilot, Project Briefing Paper dated 10/12/13*) and evidence of customer approval of that has resulted in a significant

level of usage. The comparisons with Perth and its SmartRider scheme revealed similar success.

In terms of customer expectations, the question was raised as to what they expected from smart ticketing. However, many customers across the UK are aware of, and indeed have experience of Oyster and are therefore aware that they get a better deal with smart than with cash. Operators felt they needed to offer more and, particularly for their own smart ticketing offers, engender customer loyalty.

The operators in the UK, outside London, view the debate from a commercial point of view whereas the customer regards the bus as a public service, a chasm like difference in perception which to some degree mirrors expectation of smart. In addition from an operator's perspective there was an expectation that there would be a benefit derived from speedier boarding times that would lead to a benefit of time saving to the customer as well as to the operator in terms of cost, conclusive evidence for which has not been forthcoming.

In terms of the local authority being the customer, the provision of support throughout the UK by the managed service provider, SWSAL was clearly an aid to delivery of smart ticketing. In addition, the exploitation of the 'smart' data collection for the benefit of local authorities in areas other than transport was evidenced in this research.

An overriding conclusion from those interviewed in this study is that the customer is looking for simplicity, a simple ticketing solution that enables them to travel where they want to go. However, the technology behind that simple offering requires a complex set of business rules to cope with the huge range of ticketing options and the complexity around apportionment and data has come about because the deliverers won't work together on these issues.

The only reason smart ticketing is so complicated is because it needs to solve a challenge that the industry has created to maintain the status quo. The Department of Transport in pursing their technology driven approach in the early days of the development of smart ticketing identified that an industry standard was required to overcome the difficulties created by deregulation. The subsequent visionary aspirations of seamless travel throughout the country have been steadily toned down over time as schemes have fallen by the wayside or been subject to delay.

Chapter 7 now turns to the means of delivery of smart ticketing in the UK outside of London through the vehicle of ITSO, the method committed to by the Government to facilitate interoperability in a deregulated environment.

# 7 The ITSO Question

Having examined 'how' interoperable smart ticketing schemes are organised and administered through partnership working in chapter 5 and the 'why' they are required – for customers in chapter 6, this chapter now turns to focus on the means by which that is achieved, through operationalisation, the mechanics of delivering the schemes. It will begin by looking more deeply into the concepts of interoperability and integration, as revealed in the opinions of those participating in the study, along with where ITSO sits in relation to those views, giving attention to the specific areas of timescales and complexity. It will consider alternative technologies to ITSO and where participants feel they fit into the whole policy debate on interoperable smart ticketing. The chapter will end by considering the DfT's position in relation to the discussion.

## 7.1 Interoperability

One of the first points to consider is that of definition. Over the period of time occupied by this study, the definition of terms has become somewhat muddied. Everyone assumes they are talking about the same thing, whereas actually, small differences creep in, and as time passes, these can evolve to a point where a difference in standpoints, a local authority as opposed to bus operator, can be vast:

> "Of course what the DfT and people mean when they say interoperability – they mean I want my ticket product to work on this bus and they don't really care about the technical stuff." *(Policy Maker)*

This latter opinion cites a view which is condemning of the Department for Transport for being rather short sighted in its vision of interoperability, whereas one of the DfT participants in this study indicated a growing awareness of the complexity of the

concept of interoperability, identifying the diverse types of interoperability which are often conflicting – technical and commercial:.

> "We put far too much emphasis on ITSO, massively too much emphasis on ITSO. That is not to say that ITSO is not a good thing, at all, but it is only part of the picture, so you can have, as I am sure you have sort of covered, with other people's discussions, technical interoperability is not synonymous with commercial interoperability." *(Policy Maker)*

This became a feature of conferences and industry specific forums during the period of this project, where ITSO, which was designed, and much promoted by the Department, as the means by which interoperability would be achieved, was to a degree 'side-lined', not through any specific announcement or policy, but quietly and subtly. This participant went on to say:

> "I think possibly the worst bit of confusion has been around interoperability, because signing up to the ITSO standard means that you have signed up to technical interoperability. It does not mean, like lots of people thought it did mean, that you will accept anybody else's product on your card." *(Policy Maker)*

> "It's about these commercial agreements because if they are not going to accept commercially, each other's tickets – doesn't matter that technically they can." *(Policy Maker)*

This acknowledgement of the absolute importance of commercial interoperability is fundamental to the whole interoperable smart ticketing debate in England. This flows from the deregulated environment where competition is positively encouraged, as is clearly articulated in this statement from a bus operator participant:

> "If you don't believe in competition, if you think buses are just a public service and you just want one bus company, which in a lot of places that is what you have got – haven't you. How does interoperable work in Weymouth where there is only First – you don't need one there, so all you are trying to do here actually is get it down to one bus company in one conurbation – effectively – because you wouldn't see any difference would you, you would have the ticket and it wouldn't matter what bus came along – you'd be blind to it. I don't get why they want to do that." *(Operator)*

This very clearly illustrates the conflict between the commercial aspirations of an operating company and the benefits to customers. This same participant, again

looking at the overall picture from a commercial standpoint – bemoans the lack of market drive for a countrywide interoperable offering:

> "I come from outside the bus industry and everywhere I have worked it's all been about competing and beating the opposition. If you are then going to be a public service – with an ITSO card that you can use anywhere – what's going to drive it – the market has got to drive it hasn't it – and the market isn't driving it – because at the end of the day, there aren't many people in Manchester who want to use the same ticket in Manchester as they use here – because a local bus ticket is a local bus ticket." *(Operator)*

It is not however, only the industry providers that recognise the conflict of interoperability with profit, as evidenced by this observation:

> "At one level it's obvious that having that interoperability is important, but at the business level, bus companies quite often don't care unless there is some incentive in it for them." *(Commentator)*

This same argument is reflected by a local authority participant, but from the opposite point of view – where customers will want to have that interoperable flexibility:

> "People are going to travel around in their sphere of three or four counties around the whole of the country aren't they and they have all got to link together in some way shape or form, you can't have a sphere over here that are operating one system and another over here that is operating another system because there will be an overlap somewhere and somebody has still got to travel from one sphere into another." *(Policy Maker)*

In section 5.4.1, reference was made to the 'patchwork' of local authority areas where potentially differing smart ticketing schemes could result in a fragmented network, making life very difficult for the customer wishing to travel cross boundary. As schemes have continued to be developed in different areas across England, this fear is becoming a reality as illustrated in the following comment from a consultant participant, involved in numerous schemes the length of the country:

> "Whereas for a while it was we have a Cheshire scheme and you had something in Yorkshire and you had something in the South West, they are all starting to meet up…. it's like a mosaic – they are all joining up now and – complications arise from that because what you can do in your own little patch

> is fine, but when the bus has to be cross boundary and goes into another scheme, that's to do with their rules and well as your rules." *(Commentator)*

In the south west, SWSAL territory, commercial interoperable schemes have been a long time coming, and have been subject to numerous delays as discussed in section 7.4:

> "The only interoperable tickets that happen voluntarily between two commercial operators, hens teeth, we haven't got any in south west England." *(Commentator)*

### 7.1.1 The Oxford Model

An interesting interpretation of a definition of interoperability was offered by a consultant participant who seized on the example of Oxford as being a successful model of interoperability.

> "I think one of the things they talk about in Oxford – it depends on your definition of interoperability, as to what interoperability is. It's like what is your definition of success, what's your definition of anything. If you define it in such a way that you will meet it – then you will meet it." *(Commentator)*

The Oxford interoperable smart ticketing scheme is generally accepted as a success, particularly by its customers, as evidenced by the survey work undertaken by Passenger Focus (2013a). That was achieved by an 'integrated' approach by the incumbent operators – working together, not in contravention of the law, but by negotiation with the Competition Commission in order not to do so.

> "It was about the fact that [Go Ahead] were now having to integrate with First and Stagecoach and local authorities and if we didn't get our act together as an industry, we wouldn't integrate and therefore we wouldn't have the second benefit of smart ticketing, which was Oxford. Have you seen the survey – the passenger survey from Oxford? Why have people not just taken that blueprint and repeated it? I don't get it, it is held up as the scheme, believe you me, it's the simplest thing ….. because it's the same – we agreed to be the same and we put it in and the customers loved it." *(Operator)*

A successful interoperable smart ticketing outcome was not an initial objective of the bus operators and local authority in Oxford, it was rather a beneficial by-product, as evidenced in a response from an ITSO participant:

> "The objective was not to deliver Oxford Smartzone or whatever. The objective was get the traffic out of the city centre, reduce the number of buses and make it better for the passenger." *(Commentator)*

The benefit derived by the city was seen by the local authority as being achieved through the reduction in vehicles, hence improving congestion and air quality – specific benefits which are cited in SWSAL's bid document: Smart Ticketing throughout all south west England (SWSAL, 2011) as being attributable to introducing smart ticketing in the south west.

The way in which the interoperable smart ticketing was achieved in Oxford was described by a consultant participant, who incidentally was also part of the team of original ITSO authors, in rather derogatory terms:

> "Oxford is such a fudge! Very clever, lets register a product for Go Ahead, lets register a product for Stagecoach and they are separate in ITSO, let's pretend they are the same product, and accept each other's. That wasn't what was intended, very clever, but it wasn't what was intended. That isn't interoperability of the same product – and we have now got the situation that because those operators are in another scheme, that I will keep nameless to protect the innocent parties, you are then in a situation where, with the authority running a managed service, you have four sets of operator OIDs and three sets of test OIDs to mutually accept and test to implement a ticket. It might be fine doing two separate OIDs - integrating them, ITSO intended there to be one that would accept the one set of keys for the one product and you test one product." *(Commentator)*

This way of making ITSO work is generally understood amongst those members of the bus community who are technically fluent in ITSO, but it was not universally condemned by those, as illustrated by the following observation from a bus operator participant, who in contrast to the previous statement, applauded those involved for finding a solution to the problem, by any means possible:

> "A fudge – yes! but hats off to the two people in there who have actually come up with something." *(Operator)*

Essentially, the answer lies in the impact on the customer, as shown in the Passenger Focus survey results and as reflected in a comment from a bus operator participant:

> "The reason the public like Oxford, the reason the public like London is because you don't have to think – you just tap it on the reader and it takes your cash – simple, easy." *(Operator)*

Therefore, fudge or no, the scheme worked and it was applauded by its users, which in most people's view, deemed it to be a success.

### 7.1.2 Alternative Technologies

The Coalition government, through its legislation, advocated that the interoperable way forward is through ITSO as evidenced by their decision to employ the ITSO platform to promote the use of smartcards for the English National Concessionary Travel Scheme (ENCTS) (DfT, 2010a; Turner & Wilson, 2010). In addition the ITSO specification is a requirement in ongoing rail franchises:

> *"In the near term, smart ticketing on the rail network means ITSO smartcard ticketing. ITSO was designed to provide an open, interoperable and national ITSO specification which can accommodate the full range of transport ticket types on train and bus. Current smart ticketing schemes use ITSO and we will continue to use the ITSO specification." (DfT, 2013c, p.59-60)*

Evidence gathered through the course of this study, progressively endorsed through evolving industry specific literature and conference presentations (McCullagh, 2014; Passenger Focus, 2014b), extends the options for achieving an interoperable solution, beyond ITSO to that of alternative technological solutions such as contactless bank payment cards such as EMV (Eurocard, Mastercard, Visa), mobile phone applications through developments in Near Field Communication (NFC) technology, bar coding, and BIBO technology (Ford, 2007). This would appear to further complicate the story for bus operators and local authorities who are struggling to make the ITSO technology

work in the way that it was intended, and to some extent it dilutes the commitment to ITSO on the part of those involved in making the technology work and gives those who lack the technical understanding, which is a large proportion of the actual decision makers in those organisations, even more to worry about.

> "I would have no problem with that if it wasn't getting in the way of good things, but its tying up very limited management bandwidth into forcing a technology which nobody would invest in on its own merit." *(Supplier)*

The difficulty of diluting the options is reflected in a comment from a bus operator participant, who in reflecting on focusing on alternative technologies, emphasises the importance of everyone doing so together, into order to gain the objective of interoperable smart ticketing:

> "If it does move on to EMV or it does move onto mobile phone, better to move together, having got a platform, than fragment it, because this to me is a one off opportunity to get smart ticketing into UK public transport – true interoperable smart ticketing." *(Operator)*

There were echoes of this view point in a comment from a TfL participant, who, with their experience of working with contactless providers, clearly saw that avenue as a viable future path:

> "That is our view, and obviously we work very closely with Visa and Mastercard and the payments industry and that is basically what we are telling every city around the world and if you are looking at investing in new ticketing today, think very carefully about whether you need to go through that stepping stone of having a smartcard phase in between, because it is not clear that you need it anymore." *(Operator)*

However, when the complexities of ticketing in public transport are taken into account, outside of the capital, where a flat fare system made for a relatively easily adaptable model, an Operator participant was conscious of the shortcomings of a contactless system to meet the requirements of a public transport world not blessed with such a structure:

> "EMV will never be ITSO because transport needs complexity, it does need complexity, it needs travel before 9, travel after 10, it needs school holidays, it needs types of people, child, OAP all that sort of thing – can't get that on an EMV card and the people who are looking to EMV are the same ones that said I want Oyster in Manchester, I want Oyster in whatever. You can't have Oyster anywhere else other than London because London is unique, it's a fixed scheme and a flat fare bus service, you can afford to do that." *(Operator)*

In terms of other options, over and above that of contactless, there were several reflections on the progress made with achieving interoperability by other means. The most commonly occurring comments were in relation to mobile phone technology, and a growing interest in bar coding technology.

> "There's full interoperability with all of the [mobile phone] schemes. But that didn't happen by accident, that was mandated by the government and so I think there is a role for government or some kind of regulation role within the industry, not to force operators but to encourage in the right way something that will grow and to a certain extent BSOG has been doing that, but there needs to be some incentive for the operators because what will happen is eventually interoperability will gain enough momentum and enough critical mass that it will just happen and then it will be a massive benefit to the consumer and hopefully a benefit to the operator too, because the use of public transport will have grown enough for it to have been worth their while." *(Supplier)*

> "I am just shocked that the government's view is that the bar code stuff is not interoperable. How they can preside over a network that big, and think that is a shame. There is interoperability without government legislation" *(Supplier)*

### 7.1.3 Proprietary Smart Ticketing Schemes

In England, we have one of the most successful proprietary smart ticketing schemes in the world in the form of Oyster in London (Hendy, 2005; Turner & Wilson, 2010). The government, in their 2009 consultation document 'Developing a strategy for smart and integrated ticketing' saluted Oyster in its acknowledgement that:

> *"smart and integrated ticketing can make public transport more attractive and so encourage modal shift … Oyster has consistently enjoyed approval ratings of around 98% amongst passengers, an extremely high figure." (p.6).*

The government, as evidenced through interviews with DfT staff, are fully aware of the comparisons that are constantly drawn between Oyster and the rest of the UK, and

over the last 15 years have tried to disregard that and focus on finding a solution to achieve the delivery of smart and integrated ticketing to overcome the disparity between the two, as opposed to tackling the seemingly impossible task of marrying the two. In section 5.4.1 comments from a policy maker, involved in the establishment of ITSO as a means of overcoming this disparity, saw that the success of the proprietary scheme in London, could have been taken up across the country by commercial operators all doing their own thing, supported by the various suppliers:

> "This is the potential mess, that all these Local Authorities could behave quite properly, but unless they took steps to ensure there was interoperability with next door, it wouldn't happen, and to be candid it is not in the manufacturers interest to sell interoperability because if you can sell a proprietary solution, then that's what you do." *(Policy Maker)*

This "potential mess" is what ITSO was designed to avoid, as encapsulated by an academic participant:

> "Why do we need ITSO, because we know Oyster works very very well, Oyster is a proprietary system, by EDS and Cubic and others, and DfT can't be seen to support that in its current form" *(Commentator)*

Of course, in a deregulated environment, the government could not be seen to discourage the take-up of proprietary schemes outside of London, rather they hoped to encourage a means which enable interoperability between operators and schemes, which was what ITSO was intended to facilitate.

> "While people should put independent systems in because you couldn't dictate one size fits all to everybody in terms of the overall system, there should be a level at which somebody's card for one city could work in another city and that was the whole genesis." *(Commentator)*

Whilst ITSO was designed, remodelled and endorsed by the government, it was not mandated, and so some operators, notably those outside the main five of Arriva, Go Ahead, Stagecoach, First and National Express, did opt to follow a line of least resistance to achieve a smart solution for their own commercial needs:

> "A lot of bus companies who run non interoperable schemes are saying why go through all the cost and the hassle of ITSO, we might as well go with the proprietary smartcard schemes and actually that feeds back now I think about it, into the debate we were having just now about transaction times. The ETM suppliers would prefer to supply their proprietary smartcard scheme because it locks in the customer. It makes it very difficult to change ETM supplier when ETMs come up for renewal and therefore they make their own system look cheap, effective and fast and they are quite happy if ITSO is slow, there is absolutely no incentive at the moment for them to make it fast because that would then compete with their own proprietary system which is what they would rather sell." *(Commentator)*

This latter comment was from a consultant involved in assisting operators in the mechanics of the design and implementation of schemes whilst the following is from an operator who opted to pursue a proprietary scheme for its own commercial ends, alongside that of ITSO for concessionary purposes and also an interoperable ITSO solution in partnership with a local authority and other bus operator.

> "For us it's a very local market and that is why my scepticism around the ITSO card comes because we are very much about local operator, it is about what we can do for this conurbation. So it is about supplying a service to people here, really we are not that bothered about somebody who lives in Newcastle who may one day want to use their smartcard on our bus – it is very unlikely to be honest and so that is why we are focusing on a proprietary system, which works for the people here and which actually, because its proprietary, its smaller, its more flexible, its less expensive, a bit like us as a small business really, we can duck and dive and nip in and out of things in a way that a large operator perhaps can't because it has to fit everybody." *(Operator)*

These participants were generally very sceptical about ITSO and this scepticism was shared by others, particularly operators, and is in itself an important point to note in terms of delivery, because if people are reluctant participants in a project of any kind, success is potentially limited.

### 7.1.4 Ticketing or Payment

A dictionary definition of ticketing is a "card or piece of paper that gives its holder a right or privilege" (Dictionary Reference, 2015). In that sense, ticketing and payments can be viewed as interchangeable. However the way in which fares, defined as "the price of conveyance or passage in a bus, train, airplane, or other vehicle." (Dictionary

Reference, 2015), have evolved over the last century has resulted in a highly complex set of business rules, which govern a range of elements determining price such as time of day, age of passenger, frequency of travel to name but a few. This complexity of rules, and the potential for different interpretations in different circumstances, has become a huge barrier to overcome.

> "The whole idea was just getting everyone to understand what is happening, understand the terminologies that each person uses, what do you mean by open payments, what do you mean by interoperability, what do you mean by Wednesday, what do you mean by time of day , because you know in transport – 2 oclock in the morning the next day – how do you cope with that in a – coming from a retail environment where you do a transaction today and that is between midnight and 12 oclock, that is today. Whereas in the transport world, as you are no doubt aware – it could be 2 oclock in the morning the next day is the end of day." *(Commentator)*

Fares were cited by several participants as key to the mission of interoperable smart ticketing:

> "Whatever integrated ticketing should mean, or does now mean, it should mean integrated fares. This is the heart of, one of the hearts of the problems in the UK. An integrated fare is that somebody is not discriminated against in terms of the fare that they pay, if they happen to live on a route that has a direct bus service versus one that has two journeys to be made to get to a destination or might link to a railway or to a bus service." *(Commentator)*

This comment was made with some fervour by a consultant who was a former member of the original team of authors of ITSO. His view was clearly influenced by his extensive knowledge of the technical origins and purpose of ITSO, but also by the potential benefits which would accrue to both the operators and the customers as a result of its successful implementation:

> "We should be creating an equitable fare system with whatever premiums are required so that we can actually (a) get data on how to plan the network and (b) we can actually plan the network and bring that cost saving out. If you aren't putting a ticketing, fancy ticketing system – that's costing millions – if you are not bringing that in with some substantial savings for the operators, you will never pay for smart ticketing, unless you have got some other reason like concessionary fares and all of these things." *(Commentator)*

In relation to payment methods for ticketing, operators are not held back by a focus on ITSO technology, there are numerous avenues they are pursuing in order to attract and retain their customers.

> "Part of my 'horses for courses' and other options. You have got mobile, you have got smart, you have got web, retail, we sell through Paypoint and Payzone and EPay, so whatever is right for you *(Operator)*

> "You just say however you want to pay – we have got a range of options – choose what suits you and welcome aboard! I think smartcard sometimes gets in the way of that. I think smartcard and ITSO sort of somehow they become a barrier." *(Commentator)*

With regard to the future of interoperable ticketing, a plea on the part of a supplier participant, was aimed at the government enabling the availability of ticketing to the consumers:

> "I would wish the government to .. enable interoperable ticketing .. to obligate bus companies to open up their tickets for retail by other parties - **then** we could finally offer a joined up journey planner and joined up purchase. The market could sort out the ticket media to suit afterwards on commercial merit." *(Supplier)*

## 7.2 Integration

The issue of integration is fundamental to the whole debate on interoperable smart ticketing, as became apparent during the preliminary fieldwork undertaken in Perth, on the SmartRider scheme. There, the integrated transport network, operated by one organisation, allowed for everything else to flow from that:

> "To be honest, having it all under one roof with one organisation with one set of people in charge means that you just – you can just steamroll through any issues and just say 'no, this is what we are going to do' and there is no rail group who are saying no we are not going to do that, there is no bus group saying we are not going to do that, the ability to have that integrated design of a system, both from a planning sense and a ticketing system sense." (#5)

A dictionary definition of integration reads "*an act or instance of combining into an integral whole*" (*Dictionary Reference*, 2015). In the transport context, as shown in the

Perth example, this could be translated as combining all transport modes to operate as an efficient whole. The only real example of a truly integrated transport system in the UK is that of London. Whilst other cities and authorities have integrated transport policies on how operations should integrate, the actual service providers are privatised organisations who feel obliged to work in partnership to achieve that policy, but are not legally compelled to do so.

Angela Hull in her work on Integrated Transport Planning in the UK (2005), presented a 'ladder of integration' which consisted of eight levels, from level one which she described as "*the physical and operational integration of public transport*", to level eight, which she determined to be integration of policy measures, between all policy sectors (p.22). Hull maintained that "*the impact of the 1980s privatisation measures was to wipe out previous achievements at levels 1 and 2 on the ladder*" (p.321). This assessment was echoed in several responses from participants in this study:

> "How do you do integrated transport in the deregulated market place – I don't know, because some of the things we want to do, operators have no interest in doing. …. It's an enormous contradiction." *(Policy Maker)*

By extension to that fundamental assertion, integrated ticketing was also considered to be unachievable in a disintegrated, deregulated public transport arena.

> "Integrated ticketing and deregulation are mutually incompatible – end of story." *(Commentator)*

> "If you look at ticketing systems and, even in this country, where you have got a regulated environment in London and a deregulated wild west outside of London. Deregulated environments are not conducive to integration, by their nature. Regulated environments are." *(Commentator)*

In considering how to make ticketing work beyond the boundaries of a particular operator or geographical area, a whole host of other considerations need to be taken into account, not least the ownership of the 'ticket' in terms of marketing and revenue

apportionment, but also, as reflected in this statement from a Passenger Focus participant, the kudos attached to a successful scheme by the relevant promoting authority, is something which, in a political world is too valuable to dismiss lightly:

> "I think the whole idea of integration goes way beyond the ticketing, but also a classic example of not being able to pick up Oyster and spread it around the country is – transport generally, particularly in this country, is not as – it's an old cliché but it's that – not invented here syndrome and I think that is not just the UK versus other counties – it is within the UK. I think every major conurbation wants to have its own thing – it's part of the local identity almost. There is a lot of local pride involved I think." *(Commentator)*

This links with an original fear of the first proponents of interoperable smart ticketing who, with apologies to Headicar (2009), saw the country being divided into a "patchwork quilt" of proprietary schemes as explored in sections 5.4.1 and 7.2 .

## 7.3 The trouble with Timescales

Timescale for implementation was a recurring topic throughout the interviews. This involved the timing of the whole process as well as the timing for specific elements associated with the developing technology. In terms of the interoperable smart ticketing process, it became apparent in many instances that it is an ongoing one. It is not just a case of persuading stakeholders to come to the table for a point in time, this is an ongoing process so it is constantly having to be worked at, keeping everyone on side and keeping focused on those end objectives when things don't necessarily always go to plan. Experience has been shown in all of the PTE areas how long it takes to effect the delivery of Smart Ticketing schemes and to maintain relationships and trust through that long process is very difficult and takes particularly adept personal skills, on the part of key individuals, if not all stakeholders, in ensuring that that carries on, as was highlighted in section 5.4. A response from a local authority participant reflects that the partnership working element is time consuming in itself, never mind the complexity of the technical aspects:

> "Don't underestimate the amount of time it will take has got to be number one. You go at the pace of the slowest – and because you are working with a variety of partners, just to elaborate on why I have chosen that, you can't control everything, it is not like you are delivering the project on your own, with your own paid staff, because if you are, obviously you can be very clear about what the priorities are and you know what else they are doing. Whereas if you are working with third parties who are external to the County Council, particularly if you haven't had a relationship with them before, and you are building up a whole new relationship, with no real history at all, you have to take people at face value, and you have to assume that if they say they are going to do things by a certain deadline that they will. If that doesn't come to fruition, and that is a key deliverable, then it tends to push other things in the project back." *(Policy Maker)*

and then a postscript …..

> "So if you think it is going to take six months – it is probably going to take eighteen!" *(Policy Maker)*

Fundamentally, interoperable schemes, which in England are primarily ITSO schemes, are technically complex and take a long time to implement for a variety of reasons, not least the lengthy testing process that is necessary in order to ensure that the customer is presented with as infallible a system as it is possible to achieve.

> "I think these interoperability schemes are, by definition, a lot harder because there are just more parameters – more things to check and test, and these checks and tests take time." *(Operator)*

> "I think, it's been a learning curve to me how – just this project we are working on now that the delivery timetable has stretched itself out, I think probably at least more than a year now past what we originally thought we might be going live, so I think the lesson from that is to be realistic and to be very flexible about how long it will take before your project is actually ready to be exposed to passengers." *(Policy Maker)*

In contrast with the timing of interoperable ITSO schemes, the implementation timescale for Proprietary schemes is much speedier, as evidenced by the reports of a small proprietary scheme adopted by one of the main operators during the summer of 2013 at the behest of a local authority who did not wish to have to fund or oversee any partnership arrangement for the delivery of an interoperable scheme:

> "It made sense for us to use [supplier], who have their own proprietary scheme, that we have used before, and is pretty much an 'off the shelf' package, we put these products in so we were able to, in fact we really only bottomed it out with them at the start of July, we gave them the heads up in sort of May that we wanted to do this, …. and by the third week in September we had a scheme up and running." *(Operator)*

In total this scheme was implemented inside five months, the downside is:

> "It is not interoperable. From that point of view, it is not the best product for the people of [town], but it hit a market need – speed, getting the product up and running" *(Operator)*

The actual working of the technology is one side of the coin in terms of implementation of an interoperable ticketing scheme, but that can only happen if the infrastructure, of which there is a massive requirement, is in place and is functioning correctly, on buses and, where relevant – trains.

> "But even down to engineering solutions to get cables into stations, and hook up ticket machines and gatelines and the painfully slow progress that we made in that regard and the complexities around the contractual and commercial elements that you have with a supplier of all of that kind of kit." *(Policy Maker)*

The old adage 'time is money' is an inevitable link which the commercial bus operators are very much aware of and the impact of such on the business case, as reviewed in section 5.4.4, is particularly concerning to the designers of interoperable schemes, and has become more so as the industry has come to realise through the experience of those who have gone before, just how timescale delays can impact on the business case:

> "So both roads lead to there and what you are then trying to extrapolate from that is right – where are the benefits going to come and how do those benefits hit my business case piece, is really quite striking. That level of understanding of what it takes to run one of these things and the ongoing piece and the time to get the return." *(Operator)*

Much has been made so far of the comparison with the London Oyster experience and a comment from a senior policy maker, reminds us that Oyster has taken a long time to arrive at the place it is today, and it has not been without its issues.

> "The big contrast is between the London regulated environment and outside London and while London has clearly taken a very very long time to evolve from where it was ten years ago. I think in a previous guise, I remember other people putting in place the first PFI contract for London ticketing. That must be fifteen years ago, so clearly a lot of time has elapsed in London, but they have come a long way incrementally. A number of reasons for that, but one reason is they are operating in a regulated environment." *(Policy Maker)*

## 7.4 Where is ITSO now?

Prevalent in the bus industry is a belief, as dictated in current transport policy (DfT, 2011b), that ITSO is the mast to which all colours should be nailed. During the course of this research project, the emphasis on this commitment to ITSO has waned somewhat, as evidenced by a response from an official in the Department:

> "I will probably start by saying the Department I see is not a Department that is religiously kind of focused all on ITSO." *(Policy Maker)*

ITSO is the name of the organisation and of the specification (Blythe, 2004) and in the course of this study, comments and criticisms of both were plentiful. Looking first at ITSO the organisation, a recurrent topic was that of the makeup of the ITSO board, which consists of representative Members of its respective customers, a situation that some found rather difficult to contend with:

> "You would argue that a Board of Directors should be there to enhance and ensure that the objectives of the organisation are fulfilled. We meet our objectives, but we rather suspect that some of the Directors are actually there for their own vested interest, and to protect their part of the scheme." *(Commentator)*

The inference seems to be that rather than serving the interests of all the Members of ITSO, the Board looked to their own interests to the detriment of the greater good. This was acknowledged by a DfT participant as making for a potentially difficult

scenario, aligned with an acceptance of some degree of responsibility for the lack of direction given both to ITSO and perhaps by association – the industry as a whole.

> "We were fixated on the technology standard; we were also fixated on ITSO as an organisation as being the answer to everybody's prayers. That was never going to work because – the reason it was never going to work is because it is a consensus organisation, it is a Membership owned organisation, it hasn't got the teeth to be able to say – no and to be an enforcer. That's tough. That is a very difficult position for them to be in." *(Policy Maker)*

> "It's [ITSO] owned by its Members and it makes the governance of the organisation very very tricky for them to be tough and business focused and kind of move things beyond where they were when it was established. So that kind of structural thing I think was perhaps a bit of a… we have form – a bit of a derogation of responsibility by the Department in saying ah well we won't be the bad guys – we will push it over there – they can do all the enforcement stuff over here." *(Policy Maker)*

Aside from the politics of the functioning of the Board itself, the effectiveness of the Board through the number of Directors was contentious as reflected in comments from a bus operator participant and a SWSAL participant:

> "Perhaps there are too many people on there [ITSO Board], because committees don't work – I don't think. Somebody needs to drive it; I don't get any sense that anybody is driving it." *(Operator)*

> "The answer is a restructuring of the ITSO board, the removal of suppliers from the ITSO board and making the board as it is legally obliged to do, in the interest of the actual company itself and not the vested interests of individual Members of the ITSO board." *(Commentator)*

A solution to the Board makeup debate was presented by a consultant participant who argued that:

> "There shouldn't be a raft of people on the Board, it should be 2 or 3 people with a clear mandate and a clear budget and the ability to behave for the good of its members, but to market the life out of ITSO." *(Supplier)*

The reference to a 'clear budget' was a point that featured in another criticism of ITSO the organisation, but one which was considered to be a fault not of their making, and that was in respect of funding:

> "The difficulty, having been on the inside of the Board, has always been funding, it's a Quango, and it's had no money, so you can't spend and fix if you have no money. The government, its crown copyright and it's funded – all these cities – its pump primed all these cities, but it has not pump primed the spec. so it has been a bit of a disaster waiting to happen in that, if you give Manchester £20 million, Newcastle £20 million, Liverpool £20 million and Birmingham £20 million, and you don't give the organisation responsible for the spec any money – and they are expected to sort the grey areas – and criticise them because they haven't had consultants, well they had no money to have consultants, so there is a whole vicious circle of things." *(Operator)*

Lack of funding lies at the root of many of the problems identified within the interoperable smart ticketing programme, but lack of funding within ITSO itself was seen by many taking part in this project as having a consequential effect. One of the issues identified in section 6.3.3 in relation to a lack of funding holding back the development of ITSO technology against that of a contactless option is attributable, in this participant's opinion, to that of lack of sufficient funding:

> "ITSO is like, for me, just like EMV was, only EMV had loads of funding, loads of funding – so it got its consumer proposition out first before its technology proposition and ITSO has got its technology proposition out and no consumer proposition – none – and that's the difference." *(Supplier)*

The impact of funding issues was not only shown as being instrumental in terms of consumer proposition, but on a technological front, a lack of funding meant that there were shortcomings in the area of the development of the specification in terms of issues around ITSO administration such as Hot and Action Listing and the Specification in terms of simplification and compliance to name but two. Figure 20 shows the key work package tasks originally identified as requiring attention which were tackled by volunteer run workgroups reporting to the ITSO Board (Lynch, 2013):

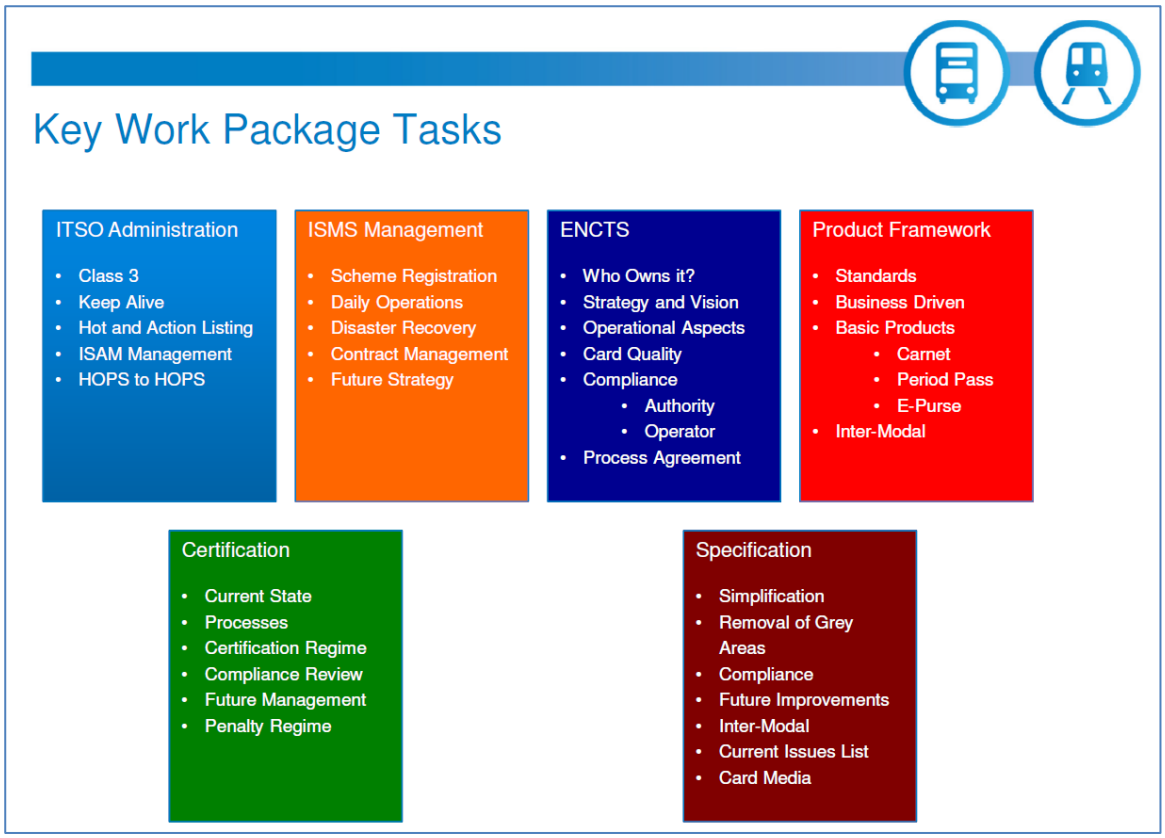



Figure 20: Extract from Page 11 of 'Purpose of Commercial and Technical Advisory Groups'

The use of its own Members to provide the answers to many questions raised in the industry over the 'how' and 'what' of ITSO was viewed by one participant as incongruous, to say the least:

> "It is a nonsense that the ITSO board relies on volunteers and customers to come up with solutions for core specification. It is criminally inefficient and wasteful and has undermined the ability for interoperability which was the aim of many Ministers." *(Commentator)*
>
> "Fundamentally it should not be customers who should be telling the standards organisation and it is weak and pathetic for the ITSO board Members of ITSO to say, oh it's a Membership organisation that is what it needs to do. NO, it's a company limited by guarantee and the company needs to deliver against the objectives of the company, its memorandum and articles and the objective of the company is interoperable ticketing and maintaining the spec. The spec is crown copyright and it's pathetically useless as crown copyright unless it works." *(Commentator)*

It does seem bizarre that against the payments industry which has invested huge sums in the development of contactless in the ticketing world, that ITSO should be short-changed in this context when expected to fulfil the interoperable dream by the government.

Aside from those issues listed amongst the key work package tasks of the voluntary advisory groups to the ITSO Board, marketing was also identified by some participants as lacking:

> "I think it has lost a few opportunities along the way, perception to reality – ITSO hasn't marketed very well, I don't think at all to be honest – it relies on the successes of its Members and going back to what should ITSO be doing as an entity, it should have a bigger funding pot, it should have stronger leadership – all those things, and it should promote it being the Visa or the Kite mark of the industry." *(Supplier)*

Linked with that, educational opportunities in the way of informing Members of exactly what the ITSO specification meant and how it should be implemented was seen as wanting. Indeed an acknowledged lack of knowledge and technical expertise was evident across the spectrum of participants, and bearing in mind that a large proportion of these were key decision makers in their respective organisations, that in itself was a major impediment to the widespread take up and development of ITSO in a commercial setting. A former ITSO participant was well aware of the difficulties in this area when he said:

> "Just taking PR/marketing, because I think it is different to education and support, we had specifically no budget for it because the Board/Operators feel that we should not be spending money on that kind of thing, that is for them to do to educate their users, ie the passengers, but I think that is missing the point, because I don't deal with or sell to the passenger, my PR and marketing is effectively business to business. ….. the fact that I don't have the cash to build a small education team supporting, is a frustration because a lot of it then falls on compliance, which is the wrong angle, this is – it's not working properly and we can't understand why." *(Commentator)*

A parallel to the argument regarding a lack of knowledge and technical expertise is that of sharing within the industry. Some operators were keen to share their experiences

and knowledge with others to achieve the goal of interoperability but this view was not held by all and indeed some were particularly precious about keeping such knowledge and learning to themselves in this commercially sensitive area.

In terms of the inadequacy of the ITSO organisation in an educational capacity, this was echoed by a consultant participant who drew attention to an expectation gap on the part of the customers and ITSO.

> "If I was to be critical of ITSO, it is always drawn its brief to be the minimum. It is always really set a minimum set of standards to provide interoperability and it has always been the expectation gap between the wider public and what ITSO felt as though it was there to deliver." *(Supplier)*

As a concept, 'expectation gap' was recurrent in other areas of the transcripts, notably in terms of infrastructure functionality. Expectation on the part of bus operators that ITSO certified equipment would work with other ITSO certified equipment and on the part of the customers that they would "put it on the machine – beep – excellent" *(Policy Maker)*.

> "There is a huge gap between the expectation of what it will do and how it will do it and what we as a group do in reality and leaving people to go and find their own way through it, be that through the small number of HOPS providers and leaving them to say well it's got a blue badge certificate, therefore this device from Init is just the same as this one from Ticketer is just the same as this one from Parkeon isn't good enough." *(Commentator)*

However, to satisfy that expectation the resources have to be in place to achieve that, and as illustrated in this rather frustrated statement – the resources are clearly not available for ITSO to do what is expected of it.

> "There is something fundamentally wrong in what it is ITSO can do as a £2.5m company and the expectation of what it should be able to do." *(Commentator)*

An interesting point to note in relation to resources is revealed in the following statement which cites the suppliers and consultants as being winners in terms of financial reward when ITSO fails to work as expected:

> "The more ITSO doesn't work, but politically required to work, the more money is made by suppliers doing upgrades and refinement, the more money is made by operators in claiming entitlements but not having to do anything and the more money is made by consultants in finding solutions because the specification is not fully defined." *(Commentator)*

There is abundant evidence in the transcripts of criticism of ITSO ranging from those relating to the organisation to those more specific comments relating to timescale difficulties and justification of a business case. Nevertheless, little is served by highlighting its inadequacies; the nub is, what needs to be done to ensure the promotion of interoperability, assuming that is still a necessary requirement. There was a belief on the part of some participants that efforts should be made to find a way to recommit to ITSO, particularly in view of the amount of money invested thus far in its development.

> "I would hate to think that all the passion and the expertise and the excellence that has been poured in to ITSO was wasted, not used. I find that so frustrating that I really think now it is a case of saying, OK we have got this thing, now how can we adapt it to the modern world and get ahead of the curve – we are just so far behind the curve." *(Commentator)*

There are green shoots of success in terms of commercial ITSO interoperable schemes which need to be capitalised on, as revealed in a transport industry publication, Eurotransport Ticketing Supplement :

> *It may have been a long time coming but ITSO works and is, after all, a world first in that its aim is to offer national integrated smart ticketing in a deregulated environment. British local and national governments and our transport operators have taken the strain and the pain. We are now on track (and road) to start reaping the benefits. (Robertson, 2012, p.11)*

ITSO's place in this future is not as prominent as it was considered to be in the past, but as this participant emphasises, it is still an important part of the future:

> "What is important not to lose about ITSO is that it is a very important part of the picture, because it is the one thing that can do everything. But it is unlikely to dominate in some segments." *(Policy Maker)*

## 7.5 The Complexity of Smart Ticketing

An overriding comment from participants about the working of ITSO was that relating to its complexity. Complexity in terms of the technology, complexity in terms of the commercial agreements necessary between commercial partners engaged in an interoperable scheme and complexity of partnership working as evidenced in chapter 5. In terms of the technology, the mystery that surrounds the actual working of ITSO is known and understood by relatively few experts in the field. In the beginning, the ITSO specification had to start somewhere and comments from participants involved in the early days of ITSO encapsulate the start of the complexity within the specification:

> "[They] produced its specification and it was given to the suppliers and they all laughed their socks off because it was so weak and inadequate and so we then went through this process of developing a specification which is still ongoing and the thing has got thicker and thicker and thicker, but it's all because, unless you tie down every possibility, people will do it in different ways. It is as simple as that and if they do it in different ways then the system components won't talk to each other, so this is the inevitable consequence of it." *(Commentator)*

> "It was going to be three parts, then four parts, then ended up being 7 parts including the secret safety part. It became a much more complicated beast than it ever needed to be. But because it was there, that's what people had to use and that's why, I think, technically, it took the people who tried to implement ITSO an awful long time to iron out all the bugs." *(Commentator)*

The complexity of the programming is part of this complex scenario that is a mystery to a large proportion of those involved in interoperable smart ticketing delivery and the level of that detail is reflected in this comment:

> "The level of complexity of ITSO and the level of things that no-one even knew existed that you put x on this line, but someone else puts y, means nothing can work." *(Commentator)*

The question arising from this, however, is, why do the majority of decision makers need to know the detail? The answer has got to be that they don't, in the same way

that the majority of users of mobile phone technology have no idea how it works, rather it is what they can do with the finished product.

> "There is a real question here about the role that technology itself has played and the quite hard ideas about technology and what it should be and how it should pick up – what I call the theology around the technology. How that has really driven people off in various directions." *(Operator)*

The evolution of the specification, over the last fifteen years, has seen that complexity increasing, more so since the emphasis has moved into the commercial arena, away from the concessionary schemes, where financial settlement through reimbursement is organised outside of the smart transactions to compensate operators (Andrews, 2012). As referred to in section 5.4.4, in relation to operators needing to identify a business case to justify their involvement, money makes a difference: "We are now doing commercial schemes and that's real money" *(Supplier)*, and the same principle applies in terms of needing to make the technology work reliably and simply.

> "This isn't as simple as you think. I hate being the prophet of doom, but I am sorry – experience elsewhere shows that the current level of maturity with the suppliers and some of the operators where they have chosen to implement things, it is not all just going to work seamlessly and mesh together, it is going to need some careful testing." *(Commentator)*
>
> "It has become a very complicated thing, it has become a thing that I think, if you look at successful and unsuccessful IT projects, it is beginning to have a litany of the things that make it, from a technical point of view – incredibly difficult to land. From a financial point of view – highly unlikely to be anything but a massive overrun, from a customer experience point of view … clunky" *(Supplier)*
>
> "With ITSO, the complicated thing, you can have a card that will do a dozen different things in theory, it could be your purse, it could be travel tickets like identifying you as being entitled to concessionary discount or concessionary travel and that is something that system operators have trouble getting to grips with never mind the people who hold the card and my belief is that the majority of people will use the card for one thing only." *(Commentator)*

The antonym of complex is simple (*Dictionary Reference*, 2015). Therefore to aim for simplicity in the face of this seemingly complex world of smart ticketing would seem a logical solution as evidenced in numerous responses from participants in this study, Indeed in an evaluation of the 'Top Tips', simplification was a principal topic of advice

offered, and "the old KISS principle" (#5), as referred to in section 6.4 applies. Advice on how to achieve this was forthcoming:

> "Restrict the amount of location zones that you use, the simpler that you can make it – I think that's the message. As simple as you want to make it – that's the way you should go. Don't try to over complicate it because it does become too complex, not just for the technology but for everybody to understand what it is you are actually trying to do." *(Operator)*

> "Start off with something very simple and let it grow – don't start off with a complicated scheme. There are a lot of schemes that we are aware of that throw everything in including the kitchen sink and it can be pretty difficult to get it off the ground. I think it is a lot easier to start off simple and let it grow – then you build up your own experience and you know what works and what doesn't work." *(Supplier)*

Simplification of fares was a recurring topic, particularly in relation to Oyster, where the simple flat fare system meant that Oyster was an easier offering as a result. The same is true of the Perth Model, in its offering of SmartRider, which also illustrates how simple fares make smart ticketing happen.

> "If you can simplify the fares, you can really really use smartcards very effectively. If you can't simplify the fares, the smartcards are a bit of a shoehorn – you end up doing a lot of compromises to make it fit." *(Supplier)*

Simple sounds simple, but in reality, nothing is ever simple and it is difficult to resist adding to or tweaking a system to satisfy additional criteria, and changes usually means an increase in cost and time, both of which are demonstrated in various planned implementations across England. It is incredibly difficult to be simple, another paradox of interoperable smart ticketing.

> "Oyster was one of those, it was a very simple offering, the customers could understand it – it also had a huge price benefit as they doubled the price of traditional ticketing. That went really well, so then use that to say well – Oyster for the whole of the UK would be fantastic wouldn't it – it would be if the model extended of simple ticketing. But it has ended up being a system designed to try and make a small area simple ticketing scheme like Oyster – stretch to encompass lots of other requirements around school lunches and long distance travel and advance purchase travel and variable pricing and all sorts of other things which – from a technical point of view – they are possible, but every time one of these is added, it makes the implementation more expensive, and oddly

> it slows down the implementation of the simple things that it would have been good at in the first place, because all the software has to be updated and all the participants have to agree and it is the slave of a thousand masters." *(Supplier)*
>
> "I think there's been continuity of direction, of aspiration which has also – continuity is a great thing when you are delivering something complex." *(Policy Maker)*

During the course of the interviews, when a participant raised the subject of complexity or indeed of the need for simplification, they were further prompted to offer an opinion with regard to a solution. Several participants responded by suggesting that a complete 'change project' was required.

> "We can't just deploy a smartcard scheme if you don't change the way you do things." *(Supplier)*

The concept of Change Management is a recognised process and is defined by Moran and Brightman (2001) as:

> *"the process of continually renewing an organization's direction, structure, and capabilities to service the ever-changing needs of external and internal customers" (p.111)*

Therefore, taking into consideration the concerns highlighted by participants as discussed in the preceding chapters, there are several links with difficulties experienced and the prospect of changing, not just processes, but the approach to those processes by the people involved in executing them:

> "That's why I say it is a complete change project, it impacts finance section, the whole business rules because you can create, with the new technologies, you can create new fare products you didn't think of before. Give one example – when they introduced Pay As You Go on Oyster, the number of single journey tickets on buses disappeared, nobody bought single bus tickets any more – why would you?" *(Commentator)*

There was evidence that changes in process were starting to happen, which in a resource strapped industry, where huge investment in appropriate infrastructure has already taken place is an encouraging step along the road to success.

> "Schemes are now starting to resource up, so we have operators that we supply who have got teams their side of the fence who understand ITSO and they understand smartcards, they have made it their purpose to build some knowhow and not have this – well suppliers are meant to sort it out, when in actual fact they have to change their business process, so they have done that and all of a sudden you have some successful schemes starting to happen." *(Supplier)*

In chapter 3, successful smart ticketing schemes from across the world, including Oyster were cited as examples of best practice, to be emulated. However, it has become clear during this study that no one system, no one city is the same as another, no bus operator or partnership is the same and as a result each scheme has to be, to use the words of one participant 'almost bespoke':

> "You can't just pick up a system from one country and drop it in another, the political, the commercial differences are so huge that they are almost bespoke. The technology of the readers in the front are fine, but everything that sits behind it is completely different, because each projects are big change projects, they are not technology projects, they are organisational changing projects, because this stuff impacts on organisation at every single level in the whole organisation." *(Commentator)*

## 7.6 The Department for Transport – a way forward

The DfT was the butt of some criticism in relation to lack of direction, section 5.5, lack of support of ITSO, section 7.5 and lack of funding, section 7.5.

> "DfT should have taken a much stronger line with ITSO – where it was going and looked at, in a much stronger way about how it was being managed – they tended to try and keep at arm's length from it on the basis that they liked to let a thousand flowers bloom and see which ones come to fruition and it think they have done that too long in the case of ITSO. Well they have missed the boat." *(Operator)*

> "I don't think the DfT have really covered themselves in glory over smart ticketing from the word go, but you can't change – you can't change the past." *(Policy Maker)*

However, there was a strong belief amongst several participants that allocation of blame served no purpose and that there were ways in which the DfT could emerge from what was described above as 'missing the boat' with some degree of dignity. The

DfT have already shifted their stance on ITSO being the panacea, a description given by a senior DfT participant after the tape was switched off, however, that view may not necessarily have percolated through the industry, to those who have already invested large sums in basic ITSO enabled infrastructure.

There was an acknowledgement by some taking part in this project that despite the investment in smart ticketing by government thus far, "they have spent half a billion pounds on it already, and they don't want to lose face" *(Commentator)*, enough may well be enough. Instead of continuing with such investment to make interoperable smart ticketing work with ITSO, the courage should be found to take the decision to stop.

> "I mean – the problem here is people are caught in the sub cost paradox here. What has happened has happened. The question is, from where we stand today, what is the best path to get a successful outcome. What the DfT and the transport industry is unable to do is to ignore the fact that they have made mistakes in the past, but they are kind of perpetuating it … we have invested in these readers. Well they are useless. Move on. But they are unable to do that and that is one of the big sources of this problem." *(Operator)*
>
> "I feel for DfT because they have sunk so much money into this that they have got a tiger by the tail and obviously it's OK for the TfL area because the operators are given the equipment. Yes they have to invest in training and time and all the rest of it – but they are given it and told to use it – fine." *(Commentator)*

One participant offered a 'way out' of the ITSO trap for the government, by using the evolution of technological advancement as a reason, but sticking to the core principal of moving to interoperability between all modes of transport in mainland Britain. As a consequence the Door to Door strategy is not abandoned, rather achieved by other means. The core ITSO principle, is not abandoned, but achieved by other means:

> "Ask Virgin, ask First Group, ask Stagecoach, ask Arriva, ask Abellio – would you without the government's requirement for ITSO – invest in ITSO if it was not a franchise requirement and why – the answer is no. Without a government subsidising a scheme like that you wouldn't put in 15 year old technology to do this. Without government money and without government franchise commitments would you do mobile ticketing – they are already doing it. Would

> you do internet ticketing – already doing it. Would you be looking at contactless bank cards – already doing it. Would you make it interoperable – already doing it. So the government can save itself a billion pounds and deliver interoperable e-ticketing faster if it takes out one word from its stipulation. It isn't a back track, they are not reversing anything – they are just saying it has to be interoperable e-ticketing." *(Supplier)*

This participant, from the supplier community, so could be viewed as biased to that community, was seeking the doors to alternative technologies, as discussed in section 7.2.2, to be held open by the government.

> "Legislate the outcome, not the technology, which moves too quickly. By legislating the technology they are holding the whole industry back, because this stuff – NFC, phones, Bluetooth – all these things are coming out far faster than any government can legislate. If you just say the outcome I want is interoperable smart ticketing, flexible season tickets, whatever it is you decide is the public benefit – legislate the public benefit. What they are currently doing is legislating a manufacturer benefit." *(Supplier)*

As stated at the beginning of section 7.5, the message that came from this study, was "the Department I see is not a Department that is religiously kind of focused all on ITSO." *(Policy Maker)*. A similar idea was reflected in a presentation to the Transport Card Forum in December 2013, when rather surprisingly the whole concept of interoperability in relation to rail franchises was publicly questioned:

> *"Interoperability is not universally accepted as must have within the sector" (DfT, 2013a, p.5)*

This would appear to be in contrast to the current policy which still encompasses the ITSO stipulation for new rail franchises and was a major feature of the recent Fares and Ticketing Review (DfT, 2013c), albeit that alternative technologies such as contactless bank cards and NFC technology were also encouraged. The argument made by a Supplier participant was based on the premise of the market being allowed to find the best solution for itself. This same participant questioned why the government continues to push ITSO, which, in the face of the impression gained

through Conferences, industry specific journals and indeed from comments from participants in this study that focus is waning.

> "The problem is that the new franchises that are coming out still, are stipulating you must force customers to use ITSO, doesn't matter what the customer wants to do, somehow the government is pushing to force customers to use ITSO and that the train company must try and get this many hundred thousand ITSO interactions to go through the central ITSO computer per year in their franchise, which I am sure is fantastic for an ITSO manufacturer, but doesn't necessarily benefit the public. I am just wondering why is it the government is writing things which are so specific to drive things through a particular technology rather than saying we wish for this public benefit" *(Supplier)*

> "I have banged a drum in rail for a long time that we can't be separate because of the interoperability." *(Operator)*

The biggest debate, referred to as "the elephant in the room" by an operator is that of deregulation versus regulation. This fundamental policy initiative of deregulation and the subsequent privatisation imposed on the bus industry in 1985 (HMSO, 1985) has proved the roadblock to an integrated public transport network as reviewed in section 7.3. This was recognised as a prerequisite for a successful implementation of smart ticketing, not necessarily without difficulty, but certainly with the prospect of making an implementation a good deal easier, as suggested by this comment from a participant commenting on the implementation of the TransLink system in the Netherlands, which is the first national smartcard ticketing system across all modes, enabling travel around the entire country on the rail network or in each of the major cities using one card.

> "It is easier to do because you have got a degree of integration already, rather than try and integrate something that is disparate, which is where, arguably where we are here." *(Commentator)*

In the UK, the DfT has to deliver policy objectives such as interoperable smart ticketing, or as declared in all recent publications – smart and integrated ticketing (DfT, 2011b; DfT, 2013b; DfT, 2013c), against a largely disintegrated transport network, a daunting task at best. However, as in the Netherlands, and in London, Perth has the benefit of an integrated transport network and the significance of this is now considered.

## 7.7 The future for ITSO

During the course of this thesis, questions have been posed in different sections around ITSO. In chapter 3, the smart ticketing literature review, the question was posed, why ITSO? In chapter 7, a discussion on operationalisation, the question posed was where is ITSO? Now, at this point in the document, within the context of deregulation versus regulation, the question to be posed is what is the future for ITSO? Responses from participants have revealed a strong belief from all sectors that interoperable smart ticketing is the right way forward for the government in terms of achieving the vision, for the customer in terms of ease of use and for the operator in terms of customer loyalty and data mining. However, these responses have generally been tempered with the proviso that integrated smart ticketing is "a contradiction" (#50) within a deregulated environment, or that the two are "mutually incompatible" *(Commentator)* or at the least is "incredibly difficult" *(Supplier)*.

The issue of timing was raised in section 7.3 in relation to the concurrent implementation of Oyster with the development of the ITSO standard and subsequent incorporation of ITSO schemes. The lapse of some fifteen years since the start of both is relevant to the debate over whether each is still appropriate in today's market place. Several participants drew attention to the point that ITSO has outlived its usefulness due to the time taken to deliver what it has achieved so far, particularly in the face of newer developing technologies:

> "Back in 2002 or whenever it was – round about then, ITSO was a great product, great specification waiting to be picked up by someone who would give it leadership and give it governance. I think this year we are seeing that nothing like that has happened, ITSO the organisation has sat on the fence for years, DfT has kept its hands off until recent years, when it was going wrong, but still hasn't given it any leadership. By now I think it's well past its sell by date, because we have new strategies for ticketing coming out, using account based on line systems, so my view is that ITSO was good for its time, but government and various people have let it slip." *(Commentator)*

> "The trouble is the time it will take us from here to get ITSO to a point where it will actually deliver something really useful, will be so far beyond where it could have been useful, it's a white elephant." *(Supplier)*

> "I really think it has missed the boat in terms of being taken seriously as a viable system unless it can change itself to adapt to the new types of thinking that are coming forward like mobile ticketing, like 3D bar code ticketing, like contactless EMV which is starting to drive the market on a cost base." *(Commentator)*

An alternative view of the timescale was that ITSO needed to be given time to prove its maturity in the field, and that the expectation of it needing to work in the commercial environment would be the catalyst to further commit to making it work by all those involved in the collaborative venture.

> "There's a way to go yet, but I feel that the ITSO framework for want of a better word, is starting to mature a little bit so that it can operate – it should have been there five years ago. Half the reason being that there has been no – it has all been a collaborative, best endeavours – everybody in the club approach, and that works for a while, but we are now doing commercial schemes and that's real money. It's got to work, so everybody needs to dig deep – that's operators, suppliers, scheme, and government to make this happen. I think it's getting there, but it's a bit late." *(Supplier)*

The notion of persisting with ITSO is an interesting one, because in the absence of any legislation compelling the commercial take up of ITSO by bus companies, other than the 'carrot' of BSOG (see section 5.3), there is still an underlying sense of obligation to adhere to the aspirations of government through the Department for Transport.

> "It is not easy and I can't see how it's going to pan out in the long term, will we have a completely national working ITSO scheme that meets the original tenets of ITSO that you either have a card that works in your area, but you can buy other products or services to access in other areas, I don't know. The answer is probably not. There aren't that many of the companies have a real interest in ITSO I think. They are doing it because they feel they have got to pay lip service to it for one reason or another." *(Commentator)*

> "So in the UK the transport ticketing conferences – at both of them, there were 300 delegates, both times, there were people from ITSO who had the microphone and gave their talk, but all of the other people who stood up were transport providers like Oxford buses, Reading buses or First Group, there were suppliers like MasterCard and there were people from consulting companies who consulted on transport …. some of the big integration companies and a lot of the people who took the microphone were saying you know we are doing ITSO because we have to or we are not doing ITSO because we don't want to and if you talk to any of them over the coffee or the lunch, it's almost like an elephant in the room in like ITSO is there but we are hoping we don't have to look at it. That still is the case even in 2013. You have got a big disparity between what the government wants and what actually is practical and real for the transport providers." (#2)

This latter comment, from a Perth participant, familiar with the situation in England, reflects an impression gained at the international Transport and Ticketing Conference in 2013, of the distance he perceived between the government and operators in terms of ITSO smart ticketing. He went further in his assessment of this 'dilemma', placing ITSO within the context of their everyday operational requirements:

> "There is a genuine dilemma for transport providers in the UK because they really want to support ITSO, they want to support interoperability, they are mandated to do so by the Department for Transport. So they know that there is this requirement, they want to be co-operative, but they have got customers getting on buses and they have to be able to get on quickly, so there is a gap and it is hard for them to plunge into an ITSO scheme if it's going to adversely affect their day to day performance because they are measured on their on-time running and whether the buses are arriving on time and if a bus pulls into a stop and 10 people get on and they have all got a very slow time to get on, the bus is at the stop for one minute longer than it should be. It's hard for them." (#2)

Participants from all sectors argued that the customer was at the centre of the debate on interoperable smart ticketing, and whilst there is abundant evidence of their satisfaction with existing schemes such as Oyster and Oxford Smartzone (Hendy, 2005; Passenger Focus, 2013a) there is no seeming outcry for the extension of that facility across areas or indeed the country. The following comment arose in relation to the rail franchise position but the sentiment is equally applicable in the bus sector:

> "I think if the right answer is ITSO, then if the franchise said – you must fit interoperable e-ticketing, if the right answer is ITSO, they would pick ITSO. But by forcing the answer to be ITSO, the government is costing itself, I reckon in the end, probably best part of £1-2 billion, that I think will be better spent elsewhere, that they have no need to spend here. There would be interoperable e-ticketing coming out of this anyway." *(Supplier)*

In section 7.6 in relation the DfT's position, reflection on the investment to date in ITSO suggested that enough was enough and perhaps now was the time to stop throwing good money after bad, albeit that there are some discrepancies between the amount of money involved by different participants in this study.

> "Governments are singularly unable to accept that they have done something wrong. They have in this instance. The total amount of investment that has

> gone into ITSO is in the hundreds of millions, £2-£300 million maybe more, there is nothing to show for it. The total investment in Oyster, from its inception to today is about £140 million. We have 9 million active users, we have 15 million journeys every day – that is the difference." *(Operator)*
>
> "ITSO kind of is a bit of square peg in a round hole and I am sure faith and money and time may eventually get us there – but years after the other technologies would get there first." *(Supplier)*

As highlighted in section 7.4, in pursuit of the answer to the question, where is ITSO, some positive reaction from participants was forthcoming and the key elements of that were its maturity and the very fact that, at the current time, it is "the one thing that can do everything" *(Policy Maker)*

> "If we want to achieve true interoperability for the consumer, if that is what we really want - a national infrastructure where you can get on any bus, any train, with a ticket or card and it happens, if that is what we are trying to do as an industry and as a government and all of those things – ITSO is the only choice at the moment. Because EMV won't get you there." *(Supplier)*
>
> "One thing I would say about ITSO – to save it, is that ITSO itself is a technical standard. So you can have a debate about what is a technical standard. It isn't a scheme – it was never intended as a scheme. There is the Oyster scheme, there is the *iff* scheme in Cardiff, the Swift scheme – you have to start thinking about the schemes." *(Operator)*

We are of course, a long way down the ITSO road already, with the majority of vehicles owned by the five major operators already equipped with ITSO compliant ticket machines, by virtue of the requirement to accept ITSO ENCTS cards, as mandated by government. The challenge of commercial ITSO smart ticketing may be a hurdle too far, but without brave, and decisive direction to alter the status quo vis a vis the regulatory system, it is difficult to envisage how things could change.

> "I think there are generally issues around the concept of smart ticketing and ITSO would be part of it, but I would say there are great challenges from the commercial side of smart ticketing, getting all your operators in the same place for example, it could be any other specification, and those challenges would still be there in a deregulated environment. There are a number of challenges that we face with ITSO." *(Policy Maker)*

## 7.8 Comparisons with Perth

Perth is one of the most isolated cities in the world and even in terms of Australia, it is over 4000km from Sydney on the East Coast, so the argument for an interoperable solution in the country is weak, to say the least:

> "I might be exaggerating but there is no case for it and when they tried to do an inter-operability standard here in Australia back in 2004, they had several meetings and they just disbanded there was no case for it, no business case for it." (#2)

This was not to say that they had not considered the concept, but the market, or lack of it for such a solution was the reason why it was not pursued. One of the participants had coincidentally worked with ITSO prior to coming to Transperth and his view on interoperability was an interesting one, bearing in mind he had had first-hand experience of both environments:

> "A lot of people question who needs inter-operability from a traveller's perspective. Where there is more of a case is commonality of suppliers, like readers. You can say to a supplier we are in the market for 2000 smartcard readers that accept ITSO cards and then that's all you have to do. So it is a nice standard, which gives maybe commercial benefit to the transport providers because they can get a good deal because anyone can make a smartcard reader that is ITSO compliant. But people do question the whole commercial viability of interoperability – who gains from it." (#2)

> "I am just talking about the UK being a difficult environment to work in because you have got the government wanting ITSO everywhere and you have got the transport providers who don't really want it because it is too slow and you have got ITSO who want to make it fast but can't because of other reasons, because of the government mandate. They have to try and make the ITSO card flexible, so it can cater for all of the requirements, but the more flexible you make it the slower it becomes." (#2)

## 7.9 Summary

This chapter has focussed on the principal object of this piece of research, namely the delivery of ITSO smart ticketing schemes. The diverse observations from participants in relation to interoperability and the reasons for pursuing it, would suggest that there is not an overwhelming demand, either from customers, or providers, to engage in

making this happen, never mind the difficulties to be overcome in achieving it. The one scheme, in Oxford, which was held by many in the industry and government as a glowing example of successful interoperability was shown to be an ITSO “fudge”, and indeed was a ‘happy accident’, a by-product of the original intention in Oxford to rid the city of congestion and poor air quality. It is pertinent to note that critics of the scheme tend to be ITSO purists and designers.

The terms integration and interoperability are sometimes used interchangeably, indeed the government uses the phrase smart and integrated ticketing, yet many participating in this study expressed the belief that integrated ticketing is unachievable in a deregulated environment. The definition of these terms has become muddied over time, everyone assumes they are talking about the same thing but differences have crept in which has led to differences in standpoint. Technical interoperability is not synonymous with commercial interoperability and signing up to the ITSO standard means you have signed up to technical interoperability. It does not mean that operators would accept everyone else’s card. The absolute importance of commercial interoperability is fundamental to the whole interoperable smart ticketing debate in England. This flows from the deregulated environment where competition is positively encouraged. Integrated ticketing implies integrated fares, which is not the same thing, indeed the multitude of ticketing offerings, whilst a benefit for customers, makes for a complex set of business rules, and as has been revealed in this research, is hugely limiting in terms of making schemes work. Ownership of the ticket is also important, particularly when a scheme is not customer led, and the link back to the arguments reviewed in chapter 5 relating to the need for partnership working to achieve delivery hinges on this point and the commitment by all partners in achieving success.

The flat fare system in London was so simple that in turn that made the technology simple, yet even there Oyster took a long time to be adopted. Contrast that with the rest of the UK with its multiple operators and multiple fare offerings, the associated

complex business rules led to complex technology and a multitude of partnerships required to effect delivery. These were hindrances that London and Perth did not have to contend with to the same degree, but even there the respective schemes took years to be implemented. The National Concessionary Ticketing Schemes were a key catalyst for ITSO. Operators were obliged to install ITSO compatible equipment in England, Scotland and Wales in order to accept their respective concessionary cards, but lack of direction from the government with regard to the specification of that equipment was identified as another limiting factor in the widespread take-up of ITSO. Winners in this scenario were undoubtedly the suppliers and consultants, as the longer these schemes took to be designed and implemented the more money they earned. ITSO needed time to mature but it was generally recognised as being the only option for interoperability, basically because there was no alternative to making all systems work together. However, what has also emerged over time is that schemes almost need to be bespoke, even though there is a standard, what is learned in one implementation won't necessarily work in another because of different combinations of operators, business rules, product offerings and partnerships .

The enticing "shiny things" in the form of alternative technologies, all touting their interoperability headlines, appear to have diluted the commitment to ITSO in terms of making a universal interoperable facility work. However, the value of EMV or contactless payment was seen to have merit by the evidence of its success in London and in other retailing developments across the UK and Europe. This form of payment, as opposed to ticketing, would facilitate interoperability for the customer by virtue of paying for travel, but would not in itself give the additional value for money, achieved through conventional ticketing offers such as season tickets. Also, and importantly from the commercial operators point of view, they would lose the personal contact with the customer for valuable data collection and marketing opportunities. The London experience of EMV or Contactless payment certainly raises the question of whether the smartcard phase is needed at all. The diluting effect of these alternative technologies

on the commitment to ITSO, when coupled with limits on its funding and the obvious scepticism on the part of operators does not bode well for successful delivery. If people are reluctant participants in a project of any kind, success is potentially limited, a point which mirrors that raised in chapter 5, where the conclusion was drawn that if people are not positive about partnerships they don't work.

Another important point to note from this chapter related to the role of ITSO itself, as an organisation, in the achievement of the interoperable vision. ITSO lacked funding at the time it needed it most; the regions were given money to deliver but very little funding went to the body tasked with designing the process. Several concerns were raised over the way in which the organisation served its Members and the involvement of volunteer Members in that process was questioned as was the complexity issue, which appears to have intensified with time, despite the numerous cries for simplification in terms of business rules.

It is clear from standing back and viewing the responses of the various participants that an insight can be gained as to the underlying ethos which informs their various views reflected in their many different standpoints. For example, there is a commercial standpoint, adopted by bus operators, particularly the smaller operators; an altruistic standpoint, adopted by the local authorities, Department for Transport, Passenger Focus and academic participants; a technical standpoint, adopted by those who are determined to make ITSO work as it was originally intended, such as some consultants and suppliers, and those who adopt a neutral standpoint – chameleon like in their desire to adhere to the party line – whatever that happens to be. However, one common feature from a large majority of participants was that of determining direction and sticking to it. This concept of one technology, one system which is adhered to at the expense of all others, be that ITSO, mobile, contactless or whatever, and the answer to the question, who would organise that, was prevalent, as revealed in this remark from a bus operator:

> "I can see that if you are going to dream about one system for everything then someone has got to make that happen and probably the DfT is the only organisation that exists that is able to do that." *(Operator)*

To actually achieve that would take courage on the part of the orchestrator, with dogged determination to see it through. A policy maker participant agreed to the idea of the Department taking control when they said:

> "What DfT has to do is take ownership of - bossing the – boss is the wrong word – but we can be firm with the industry." *(Policy Maker)*

# 8 Conclusions and Recommendations

This research project has sought to evaluate the role and scope of ITSO smart ticketing in the UK outside London. In order to achieve that aim, the initial focus, in chapters 2 and 3, was to explore the history and evolution of transport and transport policy in the UK. In particular, the political environment in which that transport policy was formulated and deployed was reviewed and considered in chapter 2, with specific emphasis on the key neoliberal developments in the Thatcher era relating to deregulation and privatisation, through to more recent policy developments over the last twenty years impacting specifically on smart ticketing as reviewed in chapter 3. UK transport policy has ebbed and flowed through changes in the colour of our governing parties with sustained periods of co-ordination and competition, regulation and deregulation, nationalisation and privatisation to a situation today, in a modern technological world, dependent upon a balancing act between the public and private sectors in striving towards a sustainable transport policy. This fluctuating policy landscape, where major reforms in policy, such as the deregulation and privatisation policies of the early 1980's, are followed by periods of relative stability or incremental change are described as 'episodic' by Dudley and Richardson (2000). They further conclude that time is a key factor in the process of radical policy change, and in this piece of research, that has been all too evident as technological change has had a significant impact on the development of smart ticketing, with the consequential impact of policy.

The origins of smart ticketing were considered in chapter 3 through an in depth review of current literature. It is difficult to separate the history from any current evaluation of ITSO smart ticketing in England, and interviews with those engaged in the early days of ITSO confirmed the literary evidence (Blythe, 1998) that the early developments were technology driven and not customer led. The decision taken to pursue Oyster as

a ‘closed system’ ticketing solution in London, at around the same time, prompted a reaction, notably between a group of experienced and knowledgeable individuals from the Department for Transport, PTE’s, Operators and Academics to find a more ‘open system’ solution which could be extended across England, that solution was ITSO.

The adoption of a pragmatic approach in this research utilising mixed methods was considered to be appropriate in relation to this project as the research problem calls for a variety of research methods. However the interpretation of the data was rooted in well-established philosophical foundations. The principal method of data collection, discussed at length in chapter 4, was face to face interviews. The emergent data was analysed by subject classifications from which three principal research themes emerged. These were Partnership Working, the Customer Proposition and the ITSO question. These formed the subject focus for chapters 5, 6 and 7 and each theme is reviewed in turn in this chapter which presents my own thoughts, deliberations and conclusions on each theme through a discussion which reflects my research up to three years after the completion of the interviews. Such considerations and discussion also takes account of the current political context, including important policy activity post interview completion.

The chapter then reflects on the methodology adopted throughout this piece of research and the positionality of myself as the researcher having reached the end of this process. My initial good intentions to remain impartial and objective are reviewed with the aim of identifying whether such partiality and objectivity were, and indeed could have been achieved.

The chapter concludes with a summary of my core conclusions and policy recommendations in so far as they are relevant to this research, albeit mindful of how the political situation has changed since the inception, design and research process transpired, along with suggestions for further research.

## 8.1 Partnership Working

In the absence of 'coercive power', partnerships are essential to achieve delivery, and in the UK, the government delegated responsibility for the implementation of smart ticketing policy to local partnership arrangements. This research has concluded that voluntary partnerships, as opposed to the more formal process of Quality Contracts, were viewed by the engaged participants as the way forward for productive, effective delivery of successful interoperable smart ticketing schemes, even though it is very clear that bus operators would prefer not to work together at all. However, they are pragmatic enough to understand that they are obliged to do so in order to secure their ongoing funding through BSOG, and at the very least it is this more than anything else which has driven the change to smart ticket operation on bus. Mackie (1999) in his work on Quality Bus Partnerships concluded that all partners bring something to the table and in this research bus operators, albeit in some cases reluctantly, all engaged in the process. It is clear my research demonstrates that Mackie's original conclusions are still valid today with ITSO and smart ticketing being a partnership between the state with the funding and operators with the services. The following statement from the DfT acknowledges the dilemma faced by the operators but reiterates their commitment to the seamless vision.

> *We understand that this co-operation can be challenging for operators, who compete with one another, and who for commercial reasons are keen for passengers to use their own ticketing systems. However, this runs contrary to the vision of seamless travel we are seeking to implement, and we are working hard with operators to put the necessary commercial arrangements and supporting systems in place. (DfT, 2013b, p.34)*

Amol Rajan, then editor of the Independent said "diplomacy is about personal relationships" (2015) and I believe the same is true of effective partnership working not only in the area of smart ticketing, but in general public/private sector relationships. Understanding the 'psychology' of partnership working, the interaction between participating partners, can aid the management of those partnerships. Indeed, positive personalities, those with a 'can do' attitude, are necessary to produce results whereas

negative personalities can very easily sabotage a partnership. That the findings of my interviews supported the importance of communication, resonated clearly with work undertaken by Hull (2005) as reviewed in chapter 3 which also reflected on the difficulties of communication in partnerships in a fragmented delivery sector in her case integrated transport planning.

My research also revealed that a 'give and take' philosophy, is required to underpin the concept of partnership working, particularly where those participating are aware of the conflicting requirements of stakeholders within the partnerships. This sharing of knowledge and information is another facet which is a determinant of a successful outcome, a finding which concurs with Timms (2011). This is an aspiration of many of those engaged in partnership working, but is not always achieved. It is not always a given that because a partnership is convened that it will succeed, a range of things can go wrong, or don't come to fruition in the way that was originally intended or envisaged at the outset of the establishment of the partnership.

Good partnerships evolve over time and the protection of such hard fought relationships, achieved over many years of successive working together, is a feature of long standing successful partnership management. The quality of the relationships was identified as being reflected in the degree of success of the partnership, findings in this research which agree with May, Page and Hull in their research programme (May, Page & Hull, 2008). In her extensive work on partnerships, Healey (2006; 2010) reached similar conclusions concerning the development of understanding between partners. The management of those partnerships is indeed a challenging responsibility for the leader or leaders who often have to contend with partnerships consisting of competitive organisations with conflicting agendas. A good leader has to encourage respect between partners, be it in one organisation or indeed a partnership of several organisations. As outlined in the literature, the importance of strong leadership in partnerships was identified by Pemberton (2000) in his work on partnerships in the

Tyne and Wear. He identified how the importance of strong leadership in the management of relationships within a partnership scenario was key. This research reflected those findings, in terms of the benefits to the co-ordination of policy and service delivery.

This important message clearly emerged from this research with multiple participants stressing the role that key individuals need to play and who can take up the mantle of 'smartcard champion'. This is essential to encourage the concept of interoperable smart ticketing and drive it through the often lengthy process from inception to delivery, consistent with the findings of May, Page and Hull (2008). This applies in any aspect of policy delivery, where strength of human personality can be the difference between success and failure.

> "Partnership is key to how the operator's success will be judged."
> *(Commentator)*

In addition, an understanding and appreciation of the need to balance the profit motive with public service provision is fundamental to the involvement of partners committed to the delivery of interoperable smart ticketing initiatives.

The comparisons drawn with Perth as outlined in chapter 5, highlighted the fact that partnerships were of significance in terms of relationships with operators, in that case the owners of the policy, were the drivers of implementation and whilst there were some participants in this research who would have welcomed strong direction from the UK government, the majority would resist what would be deemed interference in their commercial activities.

### 8.1.1 Partnership Working Discussion

In February 2016, the then Minister for Transport, Andrew Jones, in a speech to the Transport Times UK Bus Summit, introduced the forthcoming Buses Bill (DfT, 2016c).

In his speech Mr Jones stated that "Voluntary arrangements are only as good as the personal relationships between those involved" (DfT, 2016c, p.6) and without doubt one of the most important findings of my research related to the absolute importance of inter personal relationships between participating partners in a partnership. Within a scenario such as the Bus Industry my research has shown that this is particularly pertinent where the numerous conflicting constraints on the range of participants, as determined by their respective standpoints, provide for enough difficulty without the imposition of personality clashes. The Bus Services Bill information Sheet entitled "Partnerships and Ticketing" (DfT, 2016b) introduces the new Enhanced Partnership Schemes to encourage local authorities in partnership with local operators to better facilitate joint working, including multi operator ticketing schemes. It reinforces the commitment of the government to place more responsibility for the ongoing service delivery to voluntary partnerships but with reduced commitments such as the removal of infrastructure investment. Certainly in my interviews with prominent individuals engaged in orchestrating large complex partnerships the concept of reducing commitment to additional cost would be welcomed in so far as it goes.

It is also interesting to note, but not surprising in the light of the difficulties experienced in the north east of England in recent years, that the process of Quality Contracts are recognised as being "more time consuming, costly and challenging than anybody could ever have imagined" (DfT, 2016c, p.6). However, the need on the part of government to honour their devolution deal commitments is reflected in their ongoing obligation to franchising in local areas, the decision for which, as before, is left up to the local authorities. Bus operators are encouraged to play their part in such arrangements, but a clear message emerging from my research was the strong reluctance to enter into such arrangements where individual companies' profit and/or corporate autonomy were threatened in any way. There was indeed a 'line in the sand' which the large groups, in particular, were reluctant to cross. From the operators point of view, this is entirely understandable, and the fundamental deregulated bus industry, observed by Mr Jones

as “a success” (DfT, 2016c, p.5) is the principal reason why the situation is unlikely to change much in the years to come.

### 8.1.2 Partnership Working Conclusions

Partnership working became one of the core themes emerging from this research and the most significant theme in relation to lessons learned, and relevance to their application and understanding outside the specialist area of integrated smart ticketing. The research has led me to identify three principal conclusions in relation to Partnership Working:

1. Partnerships are tolerated by operators and are viewed as a ‘lesser evil’ of enhanced regulation.

2. Bus operators largely adhere to government policy on partnerships because they have to, and it is generally in their financial interest to do so. They are often reluctant partners, but nevertheless engage in the process.

3. Many local authorities also feel obliged to adhere to national policy and assume the burden, risk and financial responsibility of such partnerships, which they themselves may not have prioritised locally when their budgets are under significant pressure.

## 8.2 The Customer Proposition

The travelling public are the principal customers in receipt of smart ticketing and it is those users that the government are committed to providing a service to, albeit through provision by private operators. Those in the bus sector, be it in local government, operations, consultants or suppliers, see smart in one form or another, as being the way forward and to some degree a ‘must have’ in the transport future, particularly in relation to the customer. The concept of a ‘seamless vision’ was borne out of a belief

that the customer wanted to travel from Land's End to John O Groats, which whilst a bus geek's ambition, is clearly not that of the majority of bus customers across the UK. A clear message which emerged from the research, both in the UK and in Australia, is that it is important to ascertain customer's reasons for travel choices by asking them. Indeed, this finding resonates with the literature relating to travel behaviour which suggested that the designers of smart ticketing schemes should endeavour to understand the reasons why users make specific travel choices (Anable, 2005; 2006; Steg & Tertoolen, 1999; Stopher *et al.*, 2009).

This research has concluded that the customer does not view the concept of smart ticketing in quite the same way as the bus service providers. Customers do not have high expectations of smart, nor are they crying out for smart implementation, and for the most part, they are not necessarily aware of its potential benefit to them. As long as it works and they can see a tangible benefit in those key areas which affect their decision to travel by bus, such as convenience and value for money, then they would not necessarily be concerned. In particular, my research also confirmed that from a customer's perspective speedier boarding time is not nearly as important as value for money, which directly aligned with the national Passenger Focus findings on the Norfolk holdall ® card (Passenger Focus, 2015) as explored in chapter 3.

If the customer is to be the main driver for the provision of interoperable smart ticketing, then ease of use is a must for take up and continued use. This is not a new philosophy. The government in 1999, in pursuit of an integrated agenda, identified interoperable ticketing as needing to be "simple and easy to use to meet passengers' needs and to win new passengers onto public transport" (DETR, 1999, p.28). Making life easier for the passenger should be a primary aim for those providing ticketing schemes for public transport. However, to make interoperable smart ticketing easy to use for the customer, calls for all aspects of design, manufacture and marketing to be made simple.

### 8.2.1 The Customer Proposition Discussion

The customer, or bus passenger, as termed in the then Minister's speech in February 2016 (an interesting switch from the previous Minister's focus on "the customer", as detailed in the introduction to chapter 6), is indeed the focus for the provision of bus services and consequently the provision of ticketing, be it smart, mobile, contactless or paper:

> *The objective of this policy is to 'future proof' the LTAs power to make multi-operator ticketing schemes, by ensuring that ticketing schemes can introduce paper tickets as well as new technologies (e.g. smart cards, contactless payment).(DfT, 2016b, p.2)*

This was a strong message from my research, but with the recognition that it wasn't always the case, particularly in the early days of smart ticketing. In his speech, Mr Jones, as his predecessors have done, looked to apply the success of London's Oyster to the rest of the country:

> *Just as in London, passengers right across the country want Oyster-style ticketing, better access to information about timetables, better information on fares before they travel, and real-time data about when the bus is going to arrive at their stop. (DfT, 2016c, p.5)*

This research has reinforced the massive contrast, indeed polarity, between the regulated model found in London, as also reflected in the Perth findings, with that of the de-regulated model evident in the rest of the United Kingdom. The fact that successive Ministers of Transport continue to compare the two, and imply that the Oyster model can be transferred to the de-regulated environment after years of attempts to do just that have failed, is soul destroying for those observing the industry from the outside. The ITSO specification was created to overcome that problem but has failed to do so. Some participants argued that this was because the specification itself was incomplete, and therefore less robust than it needed to be as a result of underfunding by the government in early years. Many participants were of the opinion

that ITSO was on a 'hiding to nothing' in a de-regulated environment where its deployment could not be commanded. Where deregulation was overcome by the mandating of national concessionary schemes, requiring entitlement cards to be issued as ITSO smartcards, with operators financially incentivised to read the cards in smart form through enhanced BSOG, or equivalent payments, as discussed in chapter 3, then it has most definitely succeeded,

The success of the national concessionary schemes for elderly and disabled residents should not be under stated for the travelling customers, as well as the wider definition of customers in the ITSO supply chain, as defined at the beginning of chapter 6, namely bus operators, local authorities and national governments. Travelling customers find immense benefit in it, not only as a simple multi operator, easy to use and easy to understand travel concession as mirrored in the work of Andrews (2012; 2011) and Baker and White (2010) but also in terms of reducing social exclusion, improving well-being and enhancing mobility as reflected in the work of Shergold and Parkhurst (2012) on the wider 'accessibility planning' agenda. Stanley and Lucas (2013) recognised the importance of well-being through social policy as an integral part of transport policy. My research confirmed how the promotion of accessibility through concessionary travel was indeed helping to combat social exclusion, in support of the 1998 White Paper aspirations and Preston's (2009) wider reflections on Transport Policy and Social Exclusion as introduced in chapter 2. In addition the wider success of the national concessionary schemes for customers is clearly evident in the demonstrable benefits to additional state sectors other than transport, including Social Services, Adult Education and Health, the economic values of which I would recommend could be explored as an area for further research.

In terms of the success of national concessionary schemes for Bus operators, this was evidenced by operator participants confirming how ITSO had enabled the capturing of more detailed, personal information per trip, helping to identify from which local area

concessionary travellers had originated and in being able to provide detailed defendable evidence of actual trips made for reimbursement from the Travel Concessionary Authorities. Furthermore, this data could also provide strong evidence where additional burdens were being placed on operators by concessionary passengers, leading to the need for additional supported capacity.

Local authorities acknowledge the value of ITSO for concessionary travel, as for the first time they could align accurate usage directly to a concessionary customer, thereby reducing the likelihood of fraudulent reimbursement claims by unscrupulous operators. This meant more accurate reimbursement payments could be made based upon the enhanced data from ITSO, with such reimbursement data subject to rigorous financial audit processes. Again, for the first time, the local authority was able to fully understand both who was travelling in their area and where they originated from, and conversely where their own residents were travelling throughout the country. Lastly, as a fraud protection measure, ITSO enabled lost and stolen cards to be 'hotlisted' in the field, de-activating the ITSO card on bus, making its use null and void in line with the original aspirations of the Door to Door Strategy. (DfT, 2013b) .

At a national scale, the use of ITSO as the platform for the national concessionary schemes delivered a successful outcome in relation to financial measures such as hotlisting, as outlined above, accurate usage monitoring validating the state contribution to the concession, and its desire for more accurate concessionary reimbursements (DfT, 2010a). Additional determinants of success, detailed above, relate to the social, economic and health outcomes of the wider policy agenda.

Aside from the aspiration of ticketing benefits for the bus passenger in the forthcoming Bus Services Bill (DfT, 2016c), the Minister also made reference to improvements in data, which all operators will be required to make open and accessible. In a technological advancement which was only dreamt of at the commencement of this

research project, the use of such data to fuel apps for customers is now incorporated into legislation:

> *It will allow app makers to develop products that passengers can use to plan their journeys, and give people the confidence to leave the car at home and take the bus instead. (DfT, 2016c, p.6)*

The value of the acquisition of data through the medium of smart ticketing was another very strong emergent theme from this research. In particular, the Perth participants, with their longer experience of large scale smart deployment, regarded it as one of the most important aspects of their smart ticketing offering, and used the data collected to design their network, to guide marketing and, very importantly, to control fraud, an important feature of smart ticketing which was recognised by Bryan and Blythe (2007). Whilst all of these aspects were referred to in the course of the interviews in the UK, they did not appear to assume the level of importance that they did in Australia. This is quite simply because the operators, operating on a commercial basis, regarded their data as just that – theirs, and the operating network to be theirs also in full support of the underlying neo-liberal principles of privatisation as detailed in chapter 3.

The UK government in the new Bus Services Bill, appear to be pursuing a course of requiring operators to share data to achieve the level of value clearly capable of being provided through on bus smart equipment and which is optimised elsewhere in areas such as Perth. This will be an interesting objective to measure in any follow up research in this area.

### 8.2.2 The Customer Proposition Conclusions

Within this study, the customer takes multiple forms from a travelling passenger, to wider actors in the ITSO supply chain. This has led to two principal conclusions in relation to the Customer Proposition:

1. Travelling customers love and value the simplicity of smartcards, in providing multi operator, capped/account based ticketing as evidenced by Oyster and SmartRider closed systems.

2. The current and potential customer base in the UK is being short changed by the practical lack of detailed shared data being made available to optimise networks and services for bus passenger growth.

## 8.3 The ITSO Question

Chapter 7 turned to the principal subject of this thesis – ITSO. As described in chapter 3, ITSO is both an organisation and a Standard, which in itself has been confusing to an industry challenged with implementing schemes conforming to the Standard, which is administered by the organisation. Whilst ITSO was designed, remodelled and endorsed by the government (Blythe, 2004), it was not mandated, other than for the National Concessionary Travel Scheme, and the lack of funding within ITSO itself was seen by many taking part in this project as having a consequential effect on delivery.

In terms of the 'seamless vision' the scale of actual interoperable scheme delivery is particularly relevant. The original implication of the vision was centred on a national scale (DfT, 2012b), but the schemes introduced thus far have all been on a relatively small scale geographically. The issue of scale based integration and delivery is fundamental to the whole debate on interoperable smart ticketing. Integrated ticketing was considered to be unachievable in a disintegrated, deregulated public transport arena (Shaw & Docherty, 2014) and my research has outlined the challenges that need to be overcome to make interoperability a reality.

### 8.3.1 ITSO Constraints

An interesting point to emerge from the interviews was that technical interoperability is not synonymous with commercial interoperability. The absolute importance of

commercial interoperability is fundamental to the whole interoperable smart ticketing debate in England, and as detailed by key operator participant interviews in chapter 7, it should be recognised that there is an inherent conflict between interoperability and profit. Whilst many local authority participants yearned for an Oyster like scheme in their areas, most understood that it is impossible anywhere else other than London because London is unique in the UK, having a fixed scheme, absolute governance of the network, a flat fare bus service and a massive ongoing funding stream.

Furthermore a regular term occurring on numerous occasions during the course of the interviews was that of complexity. Complexity in terms of the technology and in terms of the commercial agreements necessary between commercial partners engaged in an interoperable scheme and complexity of partnership working. To achieve simplicity in the face of this seemingly complex world of smart ticketing would seem a logical solution as evidenced in numerous responses including simplification of fares. Many responses called for simplification of the business rules to make smart work efficiently and to meet the Customer Proposition, but that is a basic conflict with commercial objectives. In relation to payment methods for ticketing, operators are not held back by a focus on ITSO technology, there are numerous avenues they are pursuing in order to attract and retain their customers:

> "What is interesting is the phrase – smart and integrated transport. Often this gets interpreted by the politicians to say – you must have all buses accepting all tickets and they are all interacting, they are all interoperable and ….. and I keep saying – well OK lets paint a different picture which is if on every bus I can just tap my bank card that is in my pocket already and travel – is that integrated? …….. It's certainly interoperability, isn't it" *(Operator)*

In addition the research also explored the range of alternative technologies coming onto the market and how they have served to dilute and undermine the commitment to ITSO on the part of those involved in making the technology work and gives those who lack the technical understanding, which is a large proportion of the actual decision makers in those organisations, even more to worry about. Indeed, a lack of knowledge

and technical expertise on the part of participants in schemes was seen as a major impediment to the widespread take up and development of ITSO in a commercial setting. As a consequence the suppliers and consultants have benefited by having to take their knowledge and expertise to many different companies, rather than there being a one size that fits all solution. They are also winners in terms of financial reward when ITSO fails to work as expected as a result of a not fully defined specification in key interoperable areas. Another important point that emerged from the research relates to the role of ITSO itself, as an organisation. Lack of funding and poor governance were identified as principal reasons for many of the problems faced by the organisation in both design and administration and clearly that had a detrimental effect on the take up.

During the course of this research project, the emphasis on a commitment to ITSO has waned. ITSO purists argue the need to adhere to its original principals, but the evolution of technology calls for a more flexible approach to achieve the original aim of interoperability. The growth of schemes has seen a move towards that “patchwork quilt” or “mosaic” feared by the early designers of ITSO (see 5.3.1). No one city is the same as another, no bus operator or partnership is the same as another and as a result each scheme has to be ‘almost bespoke’. However, there was a belief on the part of some participants that efforts should be made to find a way to recommit to ITSO, particularly in view of the amount of money invested thus far in its development. There are green shoots of success in terms of commercial ITSO interoperable schemes which need to be capitalised on.

Over the last few years, increasing awareness of the problems surrounding the implementation of interoperable ticketing schemes in the UK has resulted in new schemes now starting being better resourced as operators have teams of people who understand ITSO and the potential pitfalls. A significant point to note is the fact that we are talking about schemes, plural. In order to achieve smart and integrated ticketing, it

has tended to be in pockets, where groups of operators, generally at the instigation of a local authority, or membership organisations such as SWSAL come together in a voluntary partnership to achieve delivery of an interoperable product for the customers within that geographical area. This is a long way short of the seamless vision of past governments, the idea that any customer could travel from any point to any point within the UK using one card.

Many who participated in this research questioned the concept of 'seamless travel' which has been an underlying principle of the smart and integrated ticketing policy since 1999 (DETR), reaffirmed by Norman Baker's aspirational vision of the customer "seamlessly moving from one operator, or mode of transport, to another" (DfT, 2012b, p.5). Indeed the following quotation from a bus operator describes it as "utopia":

> "I think certainly it [seamless travel] is something to aspire to, if I take a step back and I am a bus customer using it, if I could use a single phone app or a single card to travel anywhere – that would be perfect, so as a utopia – it is right to have those aspirations"*(Operator)*

However, the same operator continued his response by listing in great detail all the associated complications of dealing with ITSO to achieve that vision:

> "When you come down to the nitty gritty and the reality of what is needed to be able to achieve that – there is a lot of work because you have got – just in the smart world alone, you have got different HOPS providers, you have got ticket machine providers, although there is a single standard in terms of ITSO, you have got different interpretations of that. Then you have got the consultants advising the local authorities and the operators, there is a lot of competing interests there and although everyone will say yes, we want it to be right for the customer, to actually get there – the practicalities make it, I wouldn't say impossible, but it's something where you have to have small targets and milestones." *(Operator)*

In an interview with the BBC in 2010, Phil Goodwin, one of the architects of the original transport vision of New Labour, lamented that "what you have is a continually repeated cycle of thinking we can do it without restricting traffic growth, being persuaded eventually we can't do it without intervening, backing off, forgetting the message, and

starting the whole cycle again" (Ledgard, 2010). Whilst Goodwin was not alluding specifically to smart ticketing transport policy, this message is equally applicable to the vacillating message from the Department for Transport in relation to smart and integrated ticketing, as they have been thwarted by the inherent deregulated environment which positively works against integrated ticketing. However, as was discussed in 7.6, an important message emerging from this research was to focus on the positive aspects and to look to solve the problem another way. There are ways in which the DfT could emerge with some degree of dignity, instead of continuing with investment to make interoperable smart ticketing work with ITSO, the courage should be found to take the decision to stop. The evolution of technological advancement is a reason to stop, but still adhere to the core principal of moving to interoperability between all modes of transport in mainland Britain. As a consequence the Door to Door strategy is not abandoned, rather achieved by other means.

### 8.3.2 Should ITSO continue?

There is no doubt that the use of ITSO for national concessionary schemes has clearly been shown to be a success and should continue. However, the notion of persisting with ITSO for commercial ventures is an interesting one, because in the absence of any legislation compelling the commercial take up of ITSO by bus companies, other than the 'carrot' of BSOG, evidence of which in this research concurs with the findings of the DfT and Detica (2009) there is still an underlying sense of obligation to adhere to the aspirations of government through the Department for Transport. Why are the government still pushing ITSO for commercial interoperability despite all this negativity? Presumably it is because their overall policy drive is for the seamless vision. One participant suggested that the government should "legislate the outcome not the technology" (*Supplier*) thus still achieving the desired result and not abandoning the Door to Door policy nor the core ITSO principle of interoperability, but achieving it for the customer, by other means. One strong message to come from all sectors in this research was that interoperable smart ticketing is undoubtedly the way forward, but the

market should be allowed to find the best solution for itself, with 'interoperability' being the government mandated aim.

In their 2014 publication "*Greasing the Wheels: Supporting and Improving Britain's Rail and Bus Services*" the Institute for Public Policy Research"(IPPR) think tank reported that that:

> *"Transport for London has been a great success, while the deregulation of buses outside London has largely failed" (IPPR, 2014)*

London was referred to by many in this research, hardly surprisingly bearing in mind the scale of its success, throwing into stark relief the shortcomings of smart and integrated ticketing development in the rest of the UK. Several participants as well as presenters at various Industry specific conferences and workshops described deregulation in the bus industry as being the "elephant in the room". By extension ITSO could be described as a 'white elephant' for commercial interoperable ticketing, particularly in the face of rapidly expanding alternative technologies such as EMV and contactless payments which, if not exactly satisfying the interoperable ticketing criteria, certainly offer the customer what they want in terms of ease and convenience. Contactless payments, as opposed to ticketing, would facilitate interoperability for the customer by virtue of paying for travel, but would not in itself give the additional value for money, achieved through conventional ticketing offers such as season tickets. Deregulation and the subsequent privatisation of the bus industry has proved the roadblock to an integrated public transport network and hence smart and integrated ticketing as reflected by Shaw and Docherty (2014):

> *"When the NBC and SBC were privatised in the 1980s, the concurrent deregulation of the bus market made it all but impossible for an integrated network of bus services, fares and ticketing options to exist" (p.89)*

The DfT were criticised by several participants for not giving out direction, despite investing relatively large sums of money in the regions for smart and integrated

ticketing projects (DfT, 2013d). The operators are pursuing the current policy because they have to and local authorities are struggling with the delegated burden of risk and financial responsibility. The opportunity of taking control, particularly in urban areas through the means of Quality Contracts is incredibly difficult to action, as evidenced with the ongoing situation in the North East of England, the experience of which has clearly been watched by other authorities up and down the country. Having the courage to acknowledge that a direction of policy is not necessarily what a consumer wants and to change tack might be seen as a U turn, but would be a brave decision which, on the strength of opinions voiced in this research, would be welcomed by the operators in the industry, if not the suppliers.

Whatever path is chosen for the future of ITSO interoperable smart ticketing, one particularly pertinent phrase from a participant in the Perth study encapsulates what is needed to make anything happen, irrespective of what structure you are working within, and that relates to the 'political will' of all involved. It was evident in the evaluation of partnership working reviewed in chapter 5 and the ITSO Question in chapter 7, having leaders on board to affect design and delivery is a fundamental requirement to provide benefit to the customer.

> "Regardless of whether you are in that single unified integrated structure, even if you're not, it's still possible I suspect if you have got the right people in the room and the right political will to simplify existing ticketing rules dramatically which benefits passengers." (#5)

### 8.3.3 The ITSO Question Discussion

The importance of data highlighted in relation to the customer is one of the most compelling arguments in favour of ITSO smart ticketing. Its security is undoubtedly superior to other media, in particular that associated with mobile phones. Markantonakis (2009) and Stoddart (2006) applauded the complexity of the security associated with ITSO, which were key requirements in the achievement of government transport policy objectives. However, it is this security for commercial interoperable

ticketing which has proved its nemesis as the complexity surrounding such security has been a stumbling block to many schemes up and down the country which have suffered interminable delays whilst the ramifications of technological changes are considered by those very few individuals versed in the ITSO technology.

Hand in hand with the complexity of its security, was the need for adequate funding to ensure the speedy solution of any technical problem. When ITSO needed such funding to achieve this, it was not forthcoming, indeed was directed to other areas (see section 7.4 and 7.6) and the organisation has struggled to continue to support and to develop the standard against other media, and has been judged a failure as a consequence, particularly by those champions of alternative technologies.

The term ITSO appears to be absent from the proposed Bus Services Bill for commercial ticketing, in stark contrast to previous Department for Transport publications of the last ten years. The government's commitment to ITSO might have decreased, but its commitment to multi operator ticketing is still evident, albeit that references to smart ticketing are quite limited in the bill proposals. The rapid development in recent years of EMV or contactless ticketing is likely to be an increasingly relevant aspect. Several of the big bus groups are embarking down this route, investing heavily in ticket equipment with appropriate readers, and indeed First have taken the proactive stance of not pursuing smart ticketing options in favour of contactless. The positive benefits for the customer in terms of convenience are balanced by the major negative dis-benefits of lack of genuine interoperability, lack of meaningful and composite commercial data in terms of passenger details and journeys undertaken, so important to improving network and service efficiency. The operators will, I am sure, welcome such advances as their commercial autonomous positions are preserved and the relatively simple collection of revenue could minimise fraud. Are the challenges of ITSO merely a reflection of 'a game well played' by the big bus and rail groups? Again, this would be an interesting evaluation to make in a few years' time.

### 8.3.4 The ITSO Question Conclusions

The title of this thesis is 'A critical evaluation of ITSO smart ticketing, policy and outcomes' and therefore conclusions relating to ITSO and its future are key. In this regard I have arrived at four principal conclusions:

1. The ITSO specification does work, as has been proved by national concessionary schemes. However, ITSO interoperable commercial ticketing has been constrained by a lack of a complete and mandated specification making multi operator platforms harder to deploy.

2. Where ITSO is mandated, such as ENCTS, WNCTS or SCTS, and managed properly, it delivers robust quality data ensuring value for money is achieved for the public purse, mitigates fraud and supports accurate operator reimbursement.

3. Where areas or schemes work together through managed service providers such as SWSAL and Yorcard, significant outcomes and value for money can be achieved over individual scheme delivery.

4. If the market in England had dictated that ITSO was the commercial solution which worked for operators and customers, then this thesis would be deemed unnecessary.

## 8.4 Conclusions Summary

This thesis has sought to critically evaluate ITSO smart ticketing policy, practice and outcomes and in summary, the principal conclusions are:

1. Partnerships are tolerated by operators and are viewed as a 'lesser evil' of enhanced regulation.

2. Bus operators largely adhere to government policy on partnerships because they have to, and it is generally in their financial interest to do so. They are often reluctant partners, but nevertheless engage in the process.

3. Many local authorities also feel obliged to adhere to national policy and assume the burden, risk and financial responsibility of such partnerships, which they themselves may not have prioritised locally when their budgets are under significant pressure.

4. Travelling customers love and value the simplicity of smartcards, in providing multi operator, capped/account based ticketing as evidenced by Oyster and SmartRider closed systems.

5. The current and potential customer base in the UK are being short changed by the practical lack of detailed shared data being made available to optimise networks and services for bus passenger growth.

6. The ITSO specification does work, as has been proved by national concessionary schemes. However, ITSO interoperable commercial ticketing has been constrained by a lack of a complete and mandated specification making multi operator platforms harder to deploy.

7. Where ITSO is mandated, such as ENCTS, WNCTS or SCTS, and managed properly, it delivers robust quality data ensuring value for money is achieved for the public purse, mitigates fraud and supports accurate operator reimbursement.

8. Where areas or schemes work together through managed service providers such as SWSAL and Yorcard, significant outcomes and value for money can be achieved over individual scheme delivery.

9. If the market in England had dictated that ITSO was the commercial solution which worked for operators and customers, then this thesis would be deemed unnecessary.

Four years on from the commencement of this piece of research, the commitment to ITSO for commercial ticketing has waned, this is not to say that ITSO as a concept, as a technical standard or as a company had been dispensed with, far from it, but that it has become to be recognised as only part of the answer, not the whole answer. Sitting alongside EMV or contactless, NFC and bar coding it is seen as a complementary way of achieving smart ticketing for the customer, giving the customer, the absolute choice of what suits them best to achieve their journey in as seamless a way as possible. Overall the technological platform to achieve interoperability can only be effective if it is supported with the appropriate powers, and adequate levels of funding, to make it happen.

## 8.5 Research Methodology Reflections

Chapter 4 detailed the rationale underlying the methodology adopted for this research project and the specific methods employed to gather the data. Face to face interviews were completed with 61 elite professionals engaged in the bus industry and/or associated with smart ticketing implementation in the UK and a further 11 such professionals engaged in the delivery of a successful smart ticketing scheme in Perth and Brisbane in Australia.

At the beginning of the research project I identified a list of prominent personnel in the UK, principally linked with SWSAL, along with those known to me personally through my links with the industry. This list was considerably enhanced by introductions effected by the DfT across the country, giving me unparalleled access to very senior, influential personnel, and some retired individuals whose knowledge of pertinent history relating to ITSO was invaluable. A wealth of material was gained through more

than 55 hours of interviews with these participants, many of which proved fascinating as well as informative. At the end of every interview I reflected on what had emerged and maintained a diary detailing my personal thoughts and observations on what had ensued during the course of the recorded conversation. Very often this included 'off the record' seemingly unfettered comments, frequently passionate, sometimes heated and even angry opinions on the subjects covered. These reflections, taken together with the transcripts affected the way in which I interpreted and categorised the different topics.

Having typed the transcripts myself, I scrutinised the resultant narratives and categorised them using the computer analysis tool, NVivo. It became clear during this analysis that my stance of being a former operator certainly came into play when making assessments as to how the data was sorted and classified. I had formed strong views as to the tone and underlying strength of feeling of participants, which brought more to the narratives than the words on the page. This combined with my inherent knowledge and understanding of the industry, inevitably contributed to the way in which the data was analysed, indeed the analysis was a natural evolution of the whole interview process. This apparent flavouring of my opinion, despite an initial desire to remain impartial and objective, was probably rather inevitable.

The counter balance to such partiality is that I believe I elicited far more information and insight from the participants than someone who had no knowledge of the industry may have done. The length of some of the interviews was in no way a reflection of my asking a long list of questions, rather that they were excited and keen to impart their knowledge to someone who completely understood the world in which they inhabited and had to contend with.

On balance, I think it is for the reader of this thesis to determine whether the value of additional information gleaned through my positionality in this research is worth any negative impact of potential partiality.

## 8.6 Policy Recommendations

Whilst this research project was formulated to evaluate ITSO, the evolution of the research has focussed on the concept of interoperability of ticketing on buses, with ITSO being only part of the story. Having spent many hours listening to the divergent views of local and national government representatives on the one hand and operators on the other, it has become increasingly clear that there is a chasm between the two factions, fuelled by, or rather perpetuated, by the regulatory environment. This, in turn, is underpinned by the political environment, and with the 2016 changes to another Conservative administration headed by Teresa May, a re-examination of the legislation pertinent to the industry has ensued.

At the time of writing the Bus Services Bill has received its second reading in the House of Commons (1st March 2017) and is awaiting the Committee stage (date to be announced) (DfT, 2016a). In his speech in February 2016, Mr Jones stated that the overriding aim of the bill was to increase bus passenger numbers, which, whilst implicit in previous legislation, was not necessarily stated so starkly. This has to be the principal driver for all participating individuals, organisations and companies engaged in the provision of public transport, and has, as was often cited throughout the interviews in my research, often got lost in the complicated technological, economic, political smart ticketing world.

This thesis ends on a very positive note which reflects the mood of the majority of the participants who revealed a positive confidence in the industry and in the future of smart ticketing, by whatever means, which augurs well for the future. To that end, the following policy recommendations are proposed:

- A legally binding partnership approach is the way forward for productive, effective delivery of successful interoperable smart ticketing schemes and should be encouraged and facilitated as far as possible.

- Quality Contracts should be abandoned with resources channelled into voluntary partnerships, adopting best practice from those local authorities with a proven track record of success.

- "Legislate the outcome, not the technology". Interoperability is the desired outcome and the means by which it is achieved should be left to the partnerships of local authorities and operators to deliver.

- The future of ITSO should be protected for the continuation of the National Concessionary Schemes in England, Scotland and Wales. The benefit to the customer extends far beyond a free bus trip, with the social and welfare benefits being fully recognised.

- More attention must be given to the need for balance between the conflicting aspirations of profit and public service to the benefit of the customer, within the constraints of competition law.

- The government should appoint a 'smartcard champion' well versed and committed to the smart and interoperable ticketing vision, to oversee delivery and drive through successful schemes.

- More use should be made of the 'Big Data' collected through smart ticketing – which can be utilised to the benefit of the local authority, the customer and the operator.

## 8.7 Areas for further research

The introduction of the new Bus Services Bill, currently going through Consultation, would provide a basis for refreshing this research in a few years' time to assess the impact of that against what has been revealed in this project. Central to this could be

an assessment of the value of genuine open shared data requiring operators to share data in optimising area based networks and services

In relation to the national concessionary schemes, the positive economic and social impact of take up of the concessionary travel in terms of health and well-being benefits and reduction in social exclusion would merit monitoring and evaluation, leading to potential changes in the funding of concessionary travel across government departments.

Finally, the lack of deployment of ITSO for commercial multi operator ticketing has often been blamed by the operators on specification weaknesses. Many observers consider this is no more than a lack of commitment to wanting to deliver multi operator ticketing full stop in protection of their neo liberal operating environment. With new technologies emerging, making interoperable ticketing easier, if such customer focussed ticketing is not extensively achieved in the next few years then research to consider whether non delivery of multi operator ticketing was ‘a game well played’ by the big bus and rail groups would make for an interesting piece of work.

# 9 List of Appendices

A. Abbreviations
B. Interview Schedule – prepared for interviews in UK
C. Consent Form – signed by all participants in UK and Perth
D. Top Tips Summary
E. Top Tips Publication
F. England Participants

## APPENDIX A: ABBREVIATIONS

| | |
|---|---|
| ATOC | Association of Train Operating Companies (now the Rail Delivery Group) |
| BSOG | Bus Service Operator Grant |
| DETR | Department of Environment, Transport and the Regions |
| DfT | Department for Transport |
| ENCTS | English National Concessionary Travel Scheme |
| EMV | Eurocard, MasterCard, Visa (Contactless payment) |
| ETM | Electronic Ticket Machine |
| ITSO | Integrated Ticketing Smartcard Organisation |
| LEP | Local Enterprise Partnership |
| LSTF | Local Sustainable Transport Fund |
| LTP | Local Transport Plan |
| PSA | Public Service Agreement |
| QC | Quality Contract |
| QP | Quality Partnership |
| RDA | Regional Development Agencies |
| SNCTS | Scottish National Concessionary Travel Scheme |
| SQP | Statutory Quality Partnership |
| TIF | Transport Innovation Fund |
| SWSAL | South West Smart Applications Ltd |
| WNCTS | Welsh National Concessionary Travel Scheme |

# APPENDIX B: INTERVIEW SCHEDULE

**Alison Rumbles, PhD Student**
**Plymouth University**
**Supervisors: Prof Jon Shaw and Dr Andrew Seedhouse**

**Interview Guide for Smart Ticketing Qualitative Research Project**

The principal questions are the lead questions shown below, with supplementary 'probing' questions included as bullets. It should be emphasised that these questions are a guide only, and the direction of 'conversation' will be largely determined by the 'elite' participant. (Marshall & Rossman, 2011)

A principal aim of this research is to focus on the ***insights, views and perceptions*** of key industry and government personnel.

| | |
|---|---|
| 1 | When did you first encounter 'smart ticketing' in your organisation, and in what capacity?<br>• Did you have a "decision making" role?<br>• If so – can you describe it? |
| 2 | What was your initial reaction to the concept of 'smart ticketing'?<br>• Were you in favour or a reluctant participant?<br>• Has your view changed – if so, why? |
| 3 | What is your opinion of ITSO?<br>• What is it?<br>• Why is it needed?<br>• What is it achieving? |
| 4 | I am particularly interested in assessing the benefits, or otherwise, derived from the take up of ITSO Smart Ticketing, what is your view in relation to smart ticketing schemes?<br>• Benefit or otherwise to passengers?<br>• Benefit or otherwise to the environment? |
| 5 | The delivery of the government's policy on smart ticketing in the public transport sector hinges on partnership working. Can you describe your experience of partnership working in relation to smart ticketing schemes?<br>• How do you think partnership working works in practice?<br>• In your view, could anything be done to improve it?<br>• If so – what? |
| 6 | Have you worked with any "partners" such as other government organisations, agencies or other commercial organisations?<br>• Who were they?<br>• How did this work? |
| 7 | In your view, were there any lessons to be drawn from that?<br>• With the benefit of hindsight, what would you have done differently? |

| | |
|---|---|
| 8 | Do you have any sage advice for other authorities/organisations wishing to<br><br>• Engage in partnership working?<br>• Implement ITSO 'smart ticketing' schemes? |
| 9 | Is there anything else relating to this subject which you feel is pertinent to my research? |

**References**

EC Smartcards Study Consortium (2011) *Study on Public Transport Smartcards - Final Report.* Birmingham, UK. Available.

Ipsos Mori (2010) 'Research into the impact of smart and integrated ticketing on traveller behaviour'.

Marshall, C. & Rossman, G. B. (2011) *Designing qualitative research.* ed. Rossman, G.B., Los Angeles: Los Angeles : Sage.

## APPENDIX C: CONSENT FORMS

### UNIVERSITY OF PLYMOUTH

### FACULTY OF SCIENCE AND TECHNOLOGY

**Participant Consent Form – In-Depth Interviews**

CONSENT TO PARICIPATE IN SMART TICKETING RESEARCH PROJECT

---

**Name of Principal Investigator:**

Alison Rumbles, School of Geography, Earth & Environmental Science, Plymouth University

---

**Title of Research**:

A critical evaluation of ITSO smart ticketing policy, practice and outcomes

---

**Brief statement of purpose of work:**

This part of the research project is looking to investigate the views and perceptions of senior professionals engaged in the delivery and operation of Smart Ticketing initiatives within the Passenger Transport sector, through in depth face to face personal interviews lasting approximately one hour.

---

I confirm that I have read and understood the information sheet for this research summarising the processes involved.

The objectives of this research have been explained to me.

I understand that I am free to withdraw from the research at any stage, and ask for my data to be destroyed if I wish.

I understand that my anonymity is guaranteed, unless I expressly state otherwise.

I understand that the Principal Investigator of this work will have attempted, as far as possible, to avoid any safety and health risks.

Under these circumstances, I agree to participate in the research.

Name: ……..……..

Signature: .....…….. Date: .....……..

**UNIVERSITY OF PLYMOUTH**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**Participant Consent Form – Focus Group**

CONSENT TO PARICIPATE IN SMART TICKETING RESEARCH PROJECT

---

**Name of Principal Investigator:**

Alison Rumbles, School of Geography, Earth & Environmental Science, Plymouth University

---

**Title of Research**:

A critical evaluation of ITSO smart ticketing policy, practice and outcomes

---

**Brief statement of purpose of work:**

This part of the research project is looking to gather information from existing Smart Ticketing users regarding the way in which they utilise the product along with their views and perceptions of Smart Ticketing. Voluntary participants will join a group of no more than 10 other users to share views in a session lasting one and half hours.

---

I confirm that I have read and understood the information sheet for this research summarising the processes involved.

The objectives of this research have been explained to me.

I understand that I am free to withdraw from the research at any stage.

I understand that due to the anonymous recording of the data from the group discussion, it will not be possible to withdraw my data after the session has been recorded.

I understand that my anonymity is guaranteed, unless I expressly state otherwise.

I understand that the Principal Investigator of this work will have attempted, as far as possible, to avoid any safety and health risks.

Under these circumstances, I agree to participate in the research.

Name: ……..…….

Signature: .....…….. Date: .....……..

# UNIVERSITY OF PLYMOUTH

## FACULTY OF SCIENCE AND TECHNOLOGY

SMART TICKETING RESEARCH PROJECT

---

**Name of Principal Investigator:**

Alison Rumbles, School of Geography, Earth & Environmental Science, Plymouth University

---

**Title of Research**:

A critical evaluation of ITSO smart ticketing policy, practice and outcomes

---

**Brief statement of purpose of work:**

This research project is looking to investigate the views and perceptions of senior professionals engaged in the delivery and operation of Smart Ticketing initiatives within the Passenger Transport sector, along with the views and perceptions of the users of Smart Tickets in order to draw overall conclusions on the design, implementation and delivery of such schemes.

---

**Description of procedure:**

Face to face in depth interviews lasting approximately one hour will be carried out, wherever possible within the working space of the participant.

Focus Groups lasting approximately one and a half hours will be carried out, wherever possible in meeting rooms in accessible public buildings.

**Description of risks:** None foreseen

**Benefits of proposed research:**

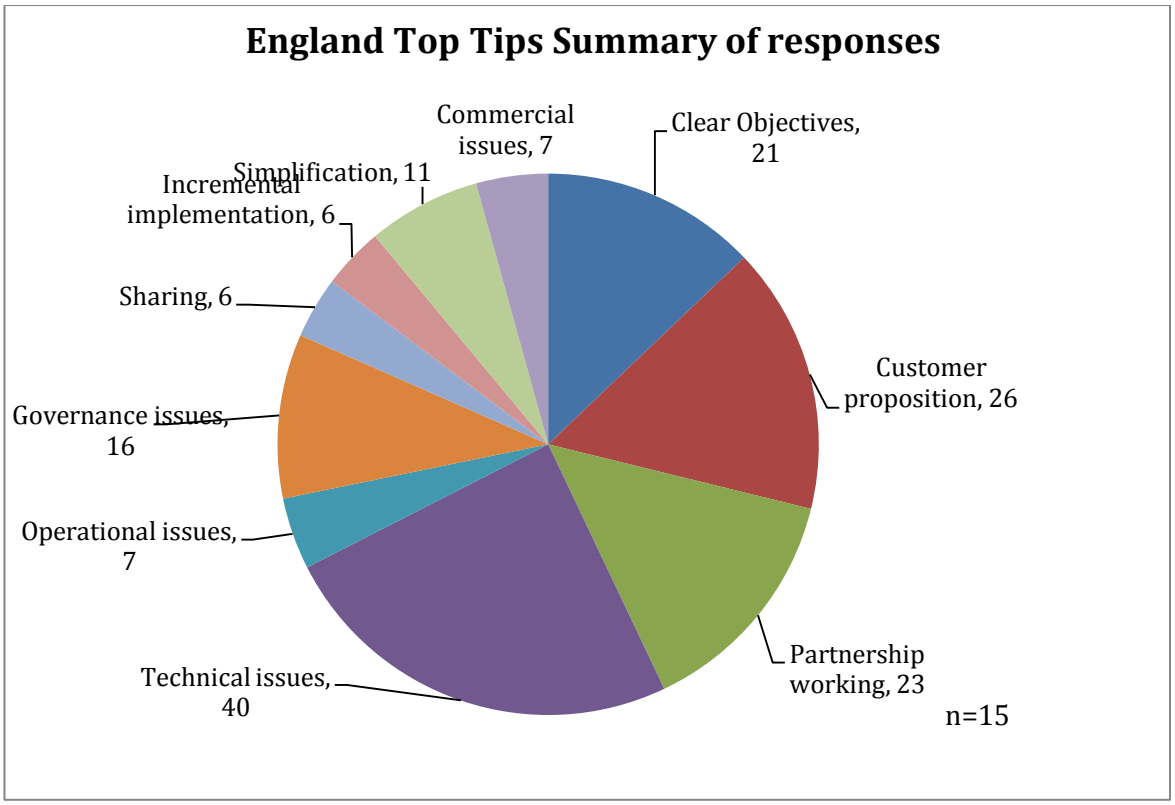
To gather evidence of the practicalities of design, delivery and operation of Smart Ticketing schemes to draw rigorous academic conclusions to inform 'best practice' and policy decisions.

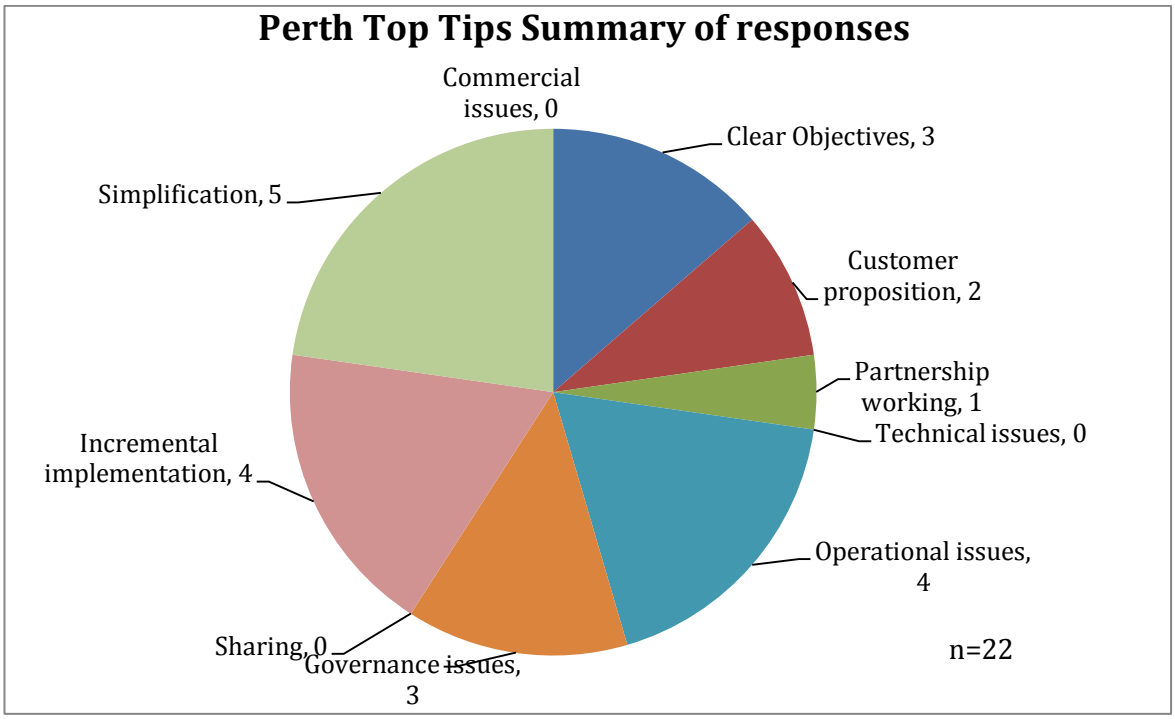
**Right to withdraw:**

Participants have the right to withdraw at any stage of the interview process. If desired, they can receive a copy of the transcript following the interview and have the right to withdraw any part thereof. Focus Group participants have the right to withdraw from the group, but not to withdraw any recorded data after the session has been recorded.

If you are dissatisfied with the way the research is conducted, please contact the principal investigator in the first instance: alison.rumbles@plymouth.ac.uk. If you feel the problem has not been resolved please contact the secretary to the Faculty of Science and Technology Human Ethics Committee: Mrs Paula Simson +44 (0)1752 584503.

## APPENDIX D: TOP TIPS SUMMARY



## APPENDIX E: TOP TIPS PUBLICATION

# ITSO SMART TICKETING

# Policy Makers' "TOP TIPS"

## FROM THE SMART PROFESSIONALS

**These "tips" have been extracted from a collection of some 160 reflections from participants during the course of a PhD research project. They are verbatim, and were offered in the spirit of sharing experience and advice within the wider Smart Ticketing community. The remainder are shown in a supporting document.**

## TECHNICAL

Recognise that it's complicated, probably more complicated than you think and it has limitations and it can be costly, because there are more elements to it than meet the eye.

**Being able to reconcile the data is important too …. you have got to be comfortable with the data you are getting.**

It's a general comment about all projects that involve quite a lot of IT, whatever resources you think are going to be enough, they never will be and you have got to have dedicated people to do this sort of thing.

**Ask the stupid questions - don't feel that you can't ask the stupid questions …. the majority of stupid questions are not stupid – but they bring out the bigger issues.**

Don't be a hostage to the status quo bias. Because you have a paper based ticketing system or whatever it is, don't assume that what you are doing is taking a paper ticketing system to a smartcard ticketing system. This is genuinely a new world, and you have got to think about what is it that is driving you towards this technology. If you can't answer that question, what is the operating need, if you can't answer that question, stay away because … a make do kind of implementation is never a good thing.

**I think the absolute core of this is test, test, test, test, test, test, test, test …. Because unfortunately you would be forgiven coming to this raw and thinking well if it's got an ITSO certificate it's all going to work together – because in IT that is how it works – No it doesn't.**

You need to vertically integrate systems from different suppliers who don't always work happily together. The testing is component testing so to get ITSO certification they have to have components tested, they never have scheme testing, so … just because that's ITSO and that's ITSO doesn't mean they will work together, it certainly doesn't mean they work together.

**Detailed scoping and planning – I think that is critical.**

Plan for failure – plan for failure – then adapt and survive. So don't expect it to be out of the box, shrink wrapped and work day one. To expect that is foolish. In a new technology, a new specification, a new environment, everything is new about all of this – don't expect it to be absolutely perfect.

**You must have IT people who have an understanding beyond IT and they understand the commercial realities of what various players are dealing with, because if you don't do that you won't get what you want.**

## CUSTOMER

**The public aren't necessarily bothered about smart ticketing, never forget that – because they don't care.**

Look at it from the customer's perspective ….. what does it mean for me as a customer, how is that going to change my life, how am I going to travel, how am I going to do whatever – what is it I want out of it and how do I then, as a transport planner, meet that persons expectations.

**The priority must be usage and everything that flows from that. There is a product there people want to use, they can use it, and that is the key metric.**

Don't underestimate how much time you need on the ground with passengers or potential passengers. Because they don't realise it is going on until it smacks them in the face.

**Make it understandable so people actually understand it, so the technology …. I trust it, it does what I want, I don't need to know anymore about it.**

The customer side is where it should be focused, I don't see the customer at the moment getting an awful lot of value out of smart ticketing and I want them to have value out of smart ticketing.

## GOVERNANCE

Maybe they all need someone from the DfT to actually start all these schemes off and make sure – almost like a smartcard Ombudsman – just to make sure they conform.

**I am not sure if the DfT have been prescriptive enough in terms of how the schemes should be set up and there probably does need to be some form of template to stop different schemes growing up or developing in different ways.**

Develop your own in house experience – I think that a lot of schemes have relied on consultants and a lot of the PTEs haven't developed their own in house resources. I think you have got to be in charge of your own destiny – you can't let other people steer your direction.

**Get the governance right – get your structures right – your programme, your projects. Understand how you are going to do it and how it is going to fit together and that brings in your stakeholders and your operators. The definition of your objectives, your success criteria, your risks and all the kind of basic stuff, but really get that right at the start.**

## OPERATIONS

Understand … 'it's a change programme' that affects the whole organisation – it is not an IT project – that is the last thing it is, because it impacts fare policy, it impacts finance, it impacts training, it impacts staffing, ….. you have got to have that relationship with your staff and say – look we are trying to make this better, and so those industrial relations need to be strong.

**Take yourself with you in this, don't underinvest in your drivers and obviously this applies to managers, in getting your drivers on board …. give them the messages and understanding so that they can actually help the passenger …. so never underestimate the value of your front line staff.**

## SIMPLIFICATION

**Keep it simple, don't make it too complicated, to make a scheme that is interoperable between different operators, can be made very very simple, simple fare structures, sharing of data etc.**

The 'keep it simple stupid' thing …. Doing the very basic stuff is actually quite hard, so be clear about – it is that classic thing you have – be clear about where you want to get to, be clear about, and scare yourself silly with all of the things that need to be true to get you there, all the things that have to happen to get you there and then work out what is the first step along that very long road.

## PARTNERSHIP & SHARING

**Dialogue – keeping the dialogue going, even if you are not particularly liking what one of the parties is saying – is important.**

First of all I think you have got to have in partnership – you need history, you need to be able to draw on things that you trust.

**Engagement and challenge – challenge yourself, challenge other people. Be wide open to sharing the experience - learning from other peoples experiences.**

Engaging all the relevant people in creating the outcomes as early as possible so that everybody has signed up to and agreed what those outcomes are at the earliest stage, because then that's much easier to then keep them engaged through the process, in terms of working towards delivery because then from that minute onwards, you are then engaging them in their outcomes and not yours.

**So that is the key to it … trusting your partner and having the drive to overcome problems that you come up against.**

Try as much as possible to go down a path that will allow you to learn from others and to interoperate with others, because if you do it on your own, it's going to be much harder.

**I don't think you should ever work in partnership with anybody unless you understand what you get from it, what you are giving up and what you are getting in return. If you are not clear on what you think that is going to be, then don't do it.**

Identify some strong leaders, ideally at least one from the operators side and at least one from the authorities side and build partnerships round them.

## OBJECTIVES

Know why you want to do smart ticketing. Understand why you want to do it, why you got yourself involved in it in the first place. Because it is hard, it's hard work and if you don't have a reason for doing it, it will be pointless pain.

**Articulate a vision of where you are going, because I think that is a really useful tool in being able to do your stakeholder management. So by being really really clear and direct about this is what we are doing and why we are doing it.**

Take small steps, don't try and take big ones, just do an incremental system, don't try and do a big bang. There are certain things you have got to do, you have got to get all the infrastructure before you do anything, but then small steps. The other thing is take time, and build on the system and learn as you go along.

**Make sure you have got everyone bought into it before you actually set off in terms of implementing it from an operational point of view and that you have clearly defined the objectives that you are trying to deliver and everyone understands what they are … are going to get from it.**

Managing the expectations is massive and being very clear about what things can and can't do at that stage, not what they can do in a years' time.

**Get the commercial agreements done first and really done – not just general intentions. Maybe not to the nth degree, not necessarily to the degree of a contract, but you have got to certainly tackle the thorny issues like data sharing.**

Before you go rushing ahead and spending money developing technical this, that and the other - establish the need, the business case, the proposition. Treat it like a proper project or programme.

**Take the art of the possible – aim for the art of the possible and not the ideal world and not the everything world because it can't be done and just take what you have got and go for something that you can achieve and then achieve it and then go to the next step.**

## APPENDIX F: List of England Participants

**(Interviewed between October 2013 and April 2014)**

| Participant | Organisation | Job Title |
|---|---|---|
| Barlow, Lesley | Cornwall Council | Public Transport Advisor |
| Barrett, Alan | Gloucestershire County Council | SWSAL Director |
| Blythe, Phil | Newcastle University | Professor of Intelligent Transport Systems |
| Bond, Pete | Centro | Head of Transforming Bus Travel |
| Borg, Jenni | Department for Transport | Head of Smart and Integrated Ticketing |
| Burden, Mike | Consult Hyperion | Consultant |
| Burke, Tim | Vix Technology | Bids and Proposals Manager |
| Carr, John | Retired WYPTE | former Director |
| Clarfelt, John | Ticketer | Managing Director |
| Disley, John | Oxfordshire County Council | Policy & Strategy Manager |
| Dowie, John | Department for Transport | Director of Strategic Roads and Smart Ticketing |
| Duncombe, Mike | Yorcard | Programme Manager |
| Egan, Laurie | Norfolk County Council | Travel Network Manager |
| Ellis ,Dave | Parkeon | Technical Director |
| Farquerson, Kevin | Smartran Ltd | Consultant |
| Fearnley, Giles | First Group | Managing Director, UK Bus |
| Fenwick, John | Nexus | Director of Finance & Resources |
| Freeman, James | Reading Transport Ltd | Chief Executive Officer |
| Henkel, John | WYPTE | Acting Director |
| Hall, Louise | Passenger Focus | Senior Researcher Adviser |
| Hartigan, Paul | Go Ahead, Go South Coast | Service Quality Manager |
| Hough, Peter | Vix Technology | Project Manager |
| Hudson, Matt | Transport for London | Head of Business Development, Fares & Ticketing |
| Jessop, Tracy | Norfolk County Council | Assistant Director Environment, Transport & Development |
| Johnson, Peter | PJAssociates | Consultant |
| Jones, Huw | Oxfordshire County Council | Director for Environment & Economy |
| King, Stephen | Go Ahead, Go North East | Marketing & Sales Manager |
| Leibert, Alan | Alco Consulting | Director |
| Lewis, Matt | Centro | Head of Information and Ticketing |
| Lynch, Dave | Go Ahead | IT Director |

| Participant | Organisation | Job Title |
|---|---|---|
| McCullagh, Russell | Ecebs | Managing Director |
| Meal, Jeremy | Systra | Consultant |
| Mills, Geoff | Bristol City Council | SWSAL Director |
| Morison, Andrew | Oxford Bus Co | Commercial Manager |
| Morrison, Debbie | Systra (formerly MVA) | Consultant |
| Nash, Peter | former Stagecoach | Retired |
| Rhodes, Stephen | Centro | Director of Customer Experience |
| Robertson, Lindsay | ITSO | Chief Executive Officer |
| Robson, Malcolm | Ipswich Buses | Managing Director |
| Rumbles, Geoff | SWSAL | Project Director |
| Sampson, Eric | former Department for Transport | Retired |
| Seedhouse, Andrew | SWSAL | Chairman |
| Shoukry, Chris | Alco Consulting | Consultant |
| Sibley, Alan | Bristol City Council | SWSAL Member |
| Sidney, Matt | Cornwall Council | Strategic Transport Manager |
| Smith, Andrew | Yellowbuses | Managing Director |
| Southall, Phil | Go Ahead, Oxford Bus Co | Operations Director |
| Stone, Clare | Devon County Council | Transport Co-ordination Service |
| Sutton, Martin | Oxford, Stagecoach | Managing Director |
| Tennant, Gordon | JGT Consulting | Consultant |
| Timperley, James | First Group | Director of Smart Ticketing |
| Verma, Shashi | Transport for London | Director of Customer Experience |
| Verrept, Peter | Unicard | Managing Director |
| Wakeland, Steve | ITSO | Governance Manager |
| Walnut, Sue | National Express | Systems Architect |
| Watts, Gary | ACT | Chief Executive Officer |
| Wevill, Michael | Centro | Smartcard Development Manager |
| Whittaker, Ben | Masabi | Chief Executive Officer |
| Wickham, Andrew | Go Ahead, Go South Coast | Managing Director |
| Woodhouse, Mike | Arriva | Marketing Manager |
| Wright, Ian | Passenger Focus | Head of Research |

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