

# Lessons Learned Report

## South East Flexible Ticketing

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## Document History and Distribution

### Document Version Control

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### Key Reference Documents

Ref. No.	File name:	Description: <i>e.g. Business Case, Terms of Reference, etc.</i>	Location <i>Full path</i>
KR001	GIAA SEFT Programme Assurance Report	Independent internal assessment of Programme undertaken February 2016	DfT SEFT PMO
KR002	DfT Master Lessons Learned Log	PPM document	As above
KR003	CDT Lessons Identified Log	PPM document	CDT (RDG) PMO
KR004	Audit Actions Tracker	Evidence of lessons learned	DfT SEFT PMO
KR005	Story of SEFT	Timeline 2011 - 2014	As above
KR006	Programme Definition Documents	Versions:	CDT (RDG) PMO
KR007	SEFT MoU and other legal agreements	Roles and Responsibilities of DfT, TfL, RSP, Indemnities, Deeds of Amendment.	DfT SEFT PMO
KR008	SEFT Outline Business Case (April 2013)	Approved case for investment	As above
KR009	SEFT Outline Business Case (June 2014)	(Revised) approved case for investment	As above
KR010	Submission to Rail Minister April 2016	Recommendation for 'De Minimus' scope (approved)	As above
KR011	Story of SEFT	Narrative timeline produced by original team members	As above
KR012	151113 Potted History of Programme and Franchise Approach	Further narrative produced by original team members	As above
KR013	Requirements for SEFT Project Closure and Transfer to Business as Usual (Scenario post 1 April 2017)	Industry agreement status and follow-on actions	As above
KR014	Full Product Set	SEFT complete product set (16)	CDT (RDG) PMO
KR015	Customer Proposition	Distinct work stream to SEFT	CDT (RDG) PMO
KR016	TfL Proposal to DfT	December 2011 bid for SEFT funds	DfT SEFT PMO
KR017	SEFT Quality Management Strategy v0.02	Initial Draft, March 2013 – not approved	DfT SEFT PMO

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# 1. Executive Summary

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## 1.1 Purpose of this Document

The South East Flexible Ticketing (SEFT) Programme has been the largest smart ticketing on rail initiative in the UK. At the time of writing the roll out of the ITSO smart ticketing solution to participating Train Operating Companies (TOCs) in South East England is substantially complete.

The purpose of this Lessons Learned Report is to pass on any lessons, while the delivery teams remain mobilised in the Department for Transport (DfT), Rail Delivery Group (RDG, specifically, Rail Settlement Plan Ltd (RSP)) and in the TOCs that might improve organisational capability in designing and delivering changes of this magnitude. Lessons on:

- effectiveness of methods used
- obstacles that were unforeseen
- problems and how they were resolved
- metrics for actual effort required

This report is designed to be a summary, by theme, of the overall lessons learned by the Programme over 4 distinct periods: the set-up period (November 2011 to April 2012); concept development (to December 2012); solution development (to June 2014) and finally delivery (July 2014 to current, October 2016).

The details of the lessons can be found and filtered within the Master Lessons Learned Log maintained within the DfT SEFT PMO.

## 1.2 DfT Lessons Perspective

DfT guidance on the capture of lessons instructs: *The text should focus on the following: What didn't go as well as we had hoped/planned and what could we have done differently?*

**Our Lessons Review has also considered what we have learned on the way and how we have used this knowledge to make improvements to the quality of SEFT.**

## 1.3 Key SEFT Learning to Date

SEFT was created in response to learning from the ‘franchise only’ approach adopted by DfT previous to 2011, which had not affected a significant shift to smart ticketing.

Since its inception, SEFT has provided further lessons on how DfT can empower the industry through its commercial arrangements to make further progress on smart take-up.

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Among the diverse opinions the Lessons Learned exercise has captured, there seems to be consensus among respondents on four key aspects of the challenge that were either under-estimated or over-looked:

- The critical importance of engaging with the Train Operating Companies from the very earliest pre-Programme stage to build a commercial proposition that they could support and which could be reflected within a clear scope.
- The difficulties of delivering a system to interact with TfL's 'walled garden' and also establish a common customer proposition.
- The significance of DfT retaining control as funder and sponsor and not appearing to displace its delivery agents and their expertise.

Additionally, a Government Internal Audit Agency at the beginning of 2016 gave only 'limited assurance' in its assessment of the Programme's governance and management controls. The Programme and Project Management (PPM) lessons learned derived and action taken since are shown in Section B.

**Since the Programme transferred to Passenger Services in April 2016, it has sought to rebuild from these conclusions. Positive TOC feedback to the Rail Minister on 17<sup>th</sup> October 2016 reflected recent efforts and also, TOC readiness to own SEFT as a going concern after the Programme closes in March 2017.**

The SEFT Programme will now deliver under half of the TOC scope in DfT's Outline Business Case of June 2014, due to the difficulties of the initial years 2012 – 2014. None of the key milestones identified initially in 2012 were met to plan.

Following the re-base-lining of the Programme in 2014 (which was documented in the Outline Business Case June 2014), there has been greater evidence of achievement against plan:

- c2c launch in December 2014 as a proof of concept for the overall scheme.
- The Central Back Office (CBO) was delivered in July 2015.
- Onboarding of our first TOC customer of the SEFT infrastructure - Virgin Trains West Coast in September 2015.
- In 2016 2 TOCs have been on-boarded (so far).
- South Eastern (LSER) is on schedule to launch in December, 2016.
- We have the 'know-how' to successfully bring different types of TOC 'on board' the ITSO smart ticketing infrastructure and have proven processes to fully migrate TOC smart ticketing systems, including existing data, to be entirely supported by the Central Back Office.

While implementation continues, take-up overall is low, both in terms of extent (limited to seasons but with capability for a full product set) and market penetration. Section D of our report considers both lessons learned on take-up and our future strategy to maximise it. Formal reporting routines are now in place to monitor take-up every 4 weeks. Our management information shows passengers are switching to smartcards in growing numbers. SEFT TOCs believe we are approaching a tipping point. Recent take-up figures support this view.

We have also learned from further analysis of take-up. TOCs using the Central Back Office are now achieving stronger take-up growth on seasons, more in line with that required in

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the Outline Business Case (OBC), which was based on status 18 months after launch. SEFT take-up also compares with that of another smart technology rollout by government. We are building our take-up strategy on analytical insight, working closely with the Commercial Managers, TOCs and RDG.

## 1.4 Participants

This Review has sought to canvass a broad range of perspectives on SEFT, from individuals both directly engaged and indirectly involved, as key stakeholders, in the Programme. The authors are grateful to all those who contributed from the respective organisations - ATOC (RDG), DfT, C2C and AGA franchises, that have migrated to the Central Back Office (CBO).

30 people completed a survey questionnaire (response rate was excellent at 84%). A total of 16 individuals have been interviewed to date to explore emerging themes. The Central Delivery Team and DfT Lessons Logs have been distilled into 180 separate lessons, covering the themes below:

1. Funding and Sponsoring SEFT
2. Programme and Project Management (PPM) Lessons
3. TOC Lessons to Maximise Take-up
4. Lessons for Other Smart Programmes
5. Lessons from Smart Technical Execution
6. Ways of Working across Organisations to Deliver SEFT
7. Drafting SEFT Requirements within DfT Franchise Agreements.

## 1.5 Audience

The information within this report will be used by DfT management, the PPM Community of Practice and the PPM Centre of Excellence (COE) to refine and improve PPM standards and future projects or programmes.

It will also provide insight to commercial management in overseeing franchise performance and to delivery teams engaged in smart ticketing business change and execution.

## 1.6 Further Follow-on Actions

The Central Delivery Team and DfT PMO have addressed each lesson in the Lessons Logs, to consider how it might be taken forward.

A handling plan for communicating the ‘top ten lessons’ to key internal stakeholders will be included within the SEFT update submitted to Rail Investment Board at the end of November, 2016.

Following the Lessons Review, senior management in the Central Delivery Team have conducted a final wash-up workshop to summarise key delivery learning points.

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## The ‘Top Ten’ Lessons for a Take-Up Strategy

Wherever practicable, we are building on the following lessons in work being taken forward within the individual TOC strategies for take-up.

*Do differently*

- 1. ‘A strong, S.M.A.R.T objective is required.’**
- 2. ‘Define and agree the programme objective before finalising legal or commercial tasks.’**
- 3. ‘The Delivery Agent feels a sense of ownership for the project – they see the benefits (to themselves) at the outset and want to deliver it’**
- 4. ‘You need a supply-chain with adequate capability and capacity’**

*Avoid*

- 5. ‘In the past, a lack of buy-in from influential partners threatened the SEFT programme’**
- 6. ‘The programme lacked effective governance’.**

*Build and improve upon*

- 7. ‘A sense of ownership is often the best motivation.’**
- 8. ‘Delivery needs to be controlled and incentivised.’**
- 9. ‘Complicated programmes need clear communication channels.’**
- 10. ‘In the context of the nine lessons identified above, effective resourcing took on a criticality it otherwise wouldn’t have had.’**

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# SEFT Learning – Document Suite

## Learning is summarised within 7 distinct sections

Note that in each of the 7 sections of the report, the following conventions apply:

**Conclusions are shown thus...**

Lessons are shown thus

### **IMPORTANT**

This Lessons Learned document has been compiled primarily based upon the personal testimony of those involved in the SEFT programme (either in the delivery team or at ATOC, or as a customer of SEFT).

As a consequence, much of the ‘evidence’ is essentially personal recollection and opinion. The programme relationships were at times poor, and such opinion cannot therefore be assumed to be ‘neutral’. The detailed lessons are therefore unreliable, and in any case are too specific to be of considerable use to a future programme.

The high level conclusions however are pertinent, and are evidenced not least by the considerable volume of consultees who made similar points.

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# A. Funding and Sponsoring SEFT

## A1 Funding SEFT

In the following section, we have quoted content from the *Story of SEFT* timeline narrative, which was produced by the original SEFT Programme team between 2011 and mid 2014; also, a *Potted History of the Programme and Franchise Approach*, produced in November 2015.

**We have been unable to source control documentation to support individual recollection of some key events herein.**

On 11<sup>th</sup> November 2011, the Secretary of State for Transport sought ideas that could be included in the Autumn Statement to support the Growth Agenda. A proposal was conceived to roll out smart ticketing on London-facing TOCs at an estimated cost of £45m. Due to the very short notice (one day) DfT generated an estimate using, inevitably, broad assumptions, without engaging with the TOCs and other delivery agents.

In the Autumn Statement on 29<sup>th</sup> November, the Chancellor announced funding for the creation of a £45m programme to extend smart ticketing for commuters in the South East of England. Work began in DfT on scoping the programme.

SEFT was therefore born as a new programme and the TOCs learned of it on the day of the announcement.

There is an opportunity for DfT to approach the scoping of future smart Programmes differently, engaging with the industry early in identifying a range of options for passenger services improvement, so that when funding becomes available, concepts are ready to be translated into effective programmes, having developed sufficient rationale.

### 1. Initial Funding Approach

Following the Chancellors announcement the DfT initially looked at where to lodge the £45m, considering commercial arrangements with one of two prospective delivery partners: ATOC or Transport for London (TfL).

Shortly afterwards, in December 2011, TfL submitted a bid [KR016] to DfT proposing that the funds be invested in the extension of Oyster in the South East and the upgrade of infrastructure for ITSO and EMV. TfL would act as delivery partner. The proposed geographic scope was limited (extending only as far as Colchester in the east, Bicester and Oxford in the west and Ely and Huntingdon in the north). TfL proposed spending [REDACTED]

[REDACTED] operational expenditure per annum on a station fit-out programme. Their proposal also excluded the necessary back office systems to support the live scheme, such as the TOC retailing and customer service processes.

Given these factors, and the prohibitive costs associated with indemnifying TfL to operate beyond its operational jurisdiction, the proposal was rejected (note: the

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authors of this report have been unable to find any Programme documentation confirming the decision to reject the TfL proposal).

A Programme Sponsor and Programme Board were appointed in January 2012 and Memorandum of Understanding (MoU) negotiations between DfT, ATOC (RSP) and TfL commenced. Discussions concluded by the new financial year, 2012-13. DfT would continue to act as funding sponsor, controlling the release of money to ATOC (RSP), TfL (for impacts on TfL) and the TOCs to an agreed schedule.

### **Memorandum of Understanding (MoU)**

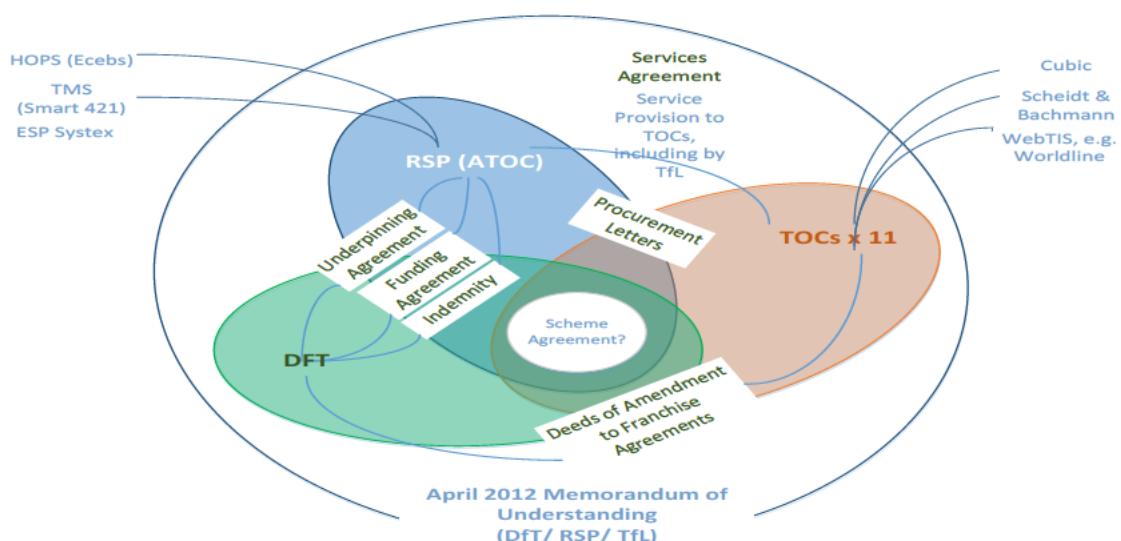
DfT formalised these arrangements in the MoU in April 2012, giving ATOC (RSP) the lead delivery partner role.

The MoU *[KR007]* provided:

- The overall objectives the Programme;
- The split of responsibilities between DfT, ATOC and TfL;
- The day to day working arrangements for the Programme;
- Conflict resolution procedures; and
- Procurement principles.

## **2. Formalising Funding Arrangements**

The MoU was subject to a subsequent Funding Agreement, *solely* to fund the Central Delivery Team (CDT) based in ATOC; an Indemnity Agreement, which was required by RSP from DfT prior to RSP initiating procurement and; an Underpinning Agreement, which contains a number of provisions regarding how RSP is to manage the central SEFT contracts (including terminating them if the DfT so requires). There is no requirement on the TOCs to maintain the CBO after the DfT's funding ends. Diagram A1 below, shows The Different Players and the Main Agreements.



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The high-level approach, i.e. RSP delivering the programme office function, was first approved by Rail Investment Board (RIB) in June 2012. Funding was further endorsed thereafter in April 2013, when the Outline Business Case (OBC) for SEFT was approved: RSP would deliver the overall management of the scheme and provision of common services, with ongoing governance through the scheme agreements and RSP standards.

### **3. Notable Omissions from Initial Funding Arrangements**

When the MoU was signed in 2012, DfT had intended to follow it up with SEFT Funding Agreements for the TOCs (additional to the one for the CDT at ATOC) and separate to the commercial Franchise Agreements overseen by the Department.

This strategy was abandoned due to a desire to avoid a shadow stand-alone commercial contract arrangement within DfT, outside Franchise management control.

**This was a direct response to previous lessons from the ‘Franchise Only’ approach, 2006 – 2011**, when DfT had been unsuccessful in securing smart take-up and a degree of system integration through the Southern, East Midlands, South West Trains and London Midland franchises.

While in hindsight there were good reasons not to overlay commercial franchises with a SEFT contract vehicle, the decision created a further key issue for the Programme.

**Key early issue for the programme: there was a MoU, but not an agreed vehicle through which to engage with the TOCs as a whole.**

Items that would have been incorporated into the standalone agreement were deferred to a future agreement or further arrangement:

- Competition Act and legal implications;
- Ongoing operational costs, which would be included in the base costs of running the new franchise (at re-franchise);
- TOC cost saving (or pain/ gain share) with DfT;
- SEFT funded infrastructure to become franchise assets;
- ATOC operational remit, e.g. to operate the Central Back Office and act as the central registering body for ITSO products, cards and to enable any TOC to make use of these central services;
- High level programme plan baselined within Funding Agreement.

Agreements concerning TfL and the services it would commit to provide to participating TOCs were also left to be established at a future date.

***“If you need an integrated multi-operator system, then you need agreements first. Take care of these first”. Original SEFT team member***

It was counter-productive to SEFT's quality and delivery interests to under-estimate the extent of the commercial and legal agreements required. Consents and agreements to support programmes of this type are substantial and can be complex.

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In spring 2016, an overview and plan for the whole legal and contractual landscape was produced – for the first time - by the new Programme team in Passenger Services. **Scoping and planning this work stream ought to have been the earliest programme task.**

See KR007.

It has been suggested to the lesson compilers that due to time pressures, some areas for agreement were not broached. The small team negotiating the raft of eleven Deeds of Amendment (DoAs) in one go had little capacity to close all aspects out. Some respondents felt the initial scheme design was being rushed with decisions being made without the required amount of effort being spent on them.

They were also driven by uncertainties over when the money had to be spent. Notwithstanding these viewpoints, **the contractual vehicles necessary to deliver and sustain SEFT as a scheme need to be complete, if they are to avoid putting lasting constraints on what can be achieved within the funding available.**

#### **4. Evolution of Funding Arrangements to Enable the TOCs**

##### **TOC Funding Requirements**

Initially, it was thought that the DfT would fund the capital expenditure for Central Back Office (CBO), CDT, RSP system changes and certain TOC retail system changes via ATOC (RSP). Gate upgrades, network upgrades and TOC project team costs would be funded via the TOCs themselves for those TOCs which did not already have any franchise obligations to implement an ITSO smart ticketing scheme. Ongoing operational costs would be borne by the DfT directly via ATOC until DoAs were in place and then by the TOCs for the initial two years from go live (it was not clear what “go live” meant) after which the TOCs would have to fund themselves. This was the case unless a TOC was re-franchised in which case they would be included in the base costs of running the new franchise. The two year point was chosen due to state aid considerations and the view that after two years the benefits of the system to the TOC should be such that the costs would be fully offset.

The initial list of TOCs in scope for funding were:

- East Coast
- c2c
- South Eastern (LSE)
- First Great Western (GWR)
- Chiltern
- First Capital Connect (merged with Southern to form Govia Thameslink Railway, GTR, at a later date)
- Greater Anglia

It was anticipated that the following additional TOCs who had existing ITSO obligations would be part of the SEFT scope:

- London Midland

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- East Midlands (Stagecoach was clear that it was not in scope)
- Southern
- South West Trains (SWT)
- 

There was also a view that Virgin Trains (West Coast), Cross County (retailing of tickets on their flows, as they already had an obligation to accept other operators' smartcards/products) and London Overground (LOROL) could potentially be in scope as they provided services within the expected geographic scope of SEFT.

During 2012 to 2014, the funding of TOC contracted retail systems was discussed on a number of occasions. Following procurement and legal advice it was agreed that by funding via ATOC, the suppliers could be considered as receiving state aid. Funding would be granted through Deeds of Amendment (DoA) to existing TOC Franchise Agreements, against a set of requirements developed by the CDT.

The existing ITSO TOCs also approached the DfT to get funding for upgrades to their system to enable them to deliver against the Customer Proposition [KR015]. These were granted as DoAs to SWT in October 2013 and Southern, in September 2014.

### **Deeds of Amendment (DoAs)**

Annex 2 of the April 2016 Ministerial Submission [KR010] describes the Maximum Total Amounts (MTAs) granted to each TOC in their DoA schedules.

**Since assuming sponsorship of the Programme in spring 2016, the new programme team has actively monitored and reported on TOC expenditure to date and anticipated final costs against the MTAs at the SRO Review, Programme Board and Central Delivery Board governance meetings, in order to realise cost efficiency and accelerate take-up opportunities.**

DfT's performance expectations of the TOCs in the DoAs were non-specific<sup>1</sup> as TOCs were not certain about costs, scope and delivery timescales.

**Compromises were made by the programme team in order to make progress.**

**DfT released funding to the TOCs without setting provisions within the DoAs that tied payment to project delivery milestone evidence or take-up performance.  
As a consequence, DfT was unable to exercise control after the funding was released.**

None of the SEFT contracts contained an overall Programme Plan.

**DoAs should have been signed after the programme had established what was required of its supply chain requirements, i.e. its commercial partners and TOC delivery agents.**

<sup>1</sup> The Government Internal Audit Agency in its review in February 2016 found a number of deficiencies in the contractual clauses of the DoAs that render the DoAs 'toothless' (see *Key Document References* for more information and *Key Finding 3* in its report). Our lessons identified for drafting SEFT requirements in Franchise Agreements are described in Section G.

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**This was a fundamental oversight in a disaggregated industry where much delivery has been taken out of the direct day-to-day control of government.**  
**c2c's DoA in August 2013 was the first agreement to set out a firm way forward for the SEFT solution.**

**The DoAs were negotiated separately from SEFT Programme governance, on a TOC by TOC basis. Collectively, they were therefore not a coherent means to deliver the funder's objectives.**

The requirements in the DoAs should have been connected and aligned with the Programme's critical success factors and the stated take-up trajectories in subsequent business cases.

After drafting the DoAs direct with individual TOCs, the SEFT team sought sign-off of each agreement from the DfT rail commercial management. Given the context, this was an invidious and resource intensive endeavour. The commercial teams were disinclined to be involved. Tensions arose and were exacerbated by the volume of requests for change to the Rail Commercial Board from the Programme. Further issues arose due to insufficient clarity over the Programme's scope, which the TOCs picked up on in their commercial dealings with DfT: one respondent recalls a SEFT DoA becoming embroiled in a car park revenue issue.

**Diagram G1**, at the end of Section G, shows the time that elapsed before conclusion of each DoA. **They were signed in the end but it took over three years from the initiation of the Programme in January 2012.**

**Crucially, the DoAs did not reflect the full scope of the Programme, as determined by the Customer Proposition and associated use cases and set out in the Outline Business Cases. SEFT delivery thereafter was therefore fragmented, driven by individual deployment plans rather than a clear single specification of high level outcomes and funded outputs from DfT as the Sponsor.**

**This specification would have set the parameters for the establishment of an overall 'Accepted' or 'Target' Programme by the CDT, to which all other agreements aligned.**

**None of the contracts to which DfT is a party on SEFT contain such a programme, particularly one that establishes integrated milestones across the delivery agents (TOCs, ATOC, TfL) in order to meet common critical deadlines.**

*"Visibility of a central plan for the delivery of all central and non-central SEFT schemes would have been helpful in identifying possible pinch-points/ risks to individual TOCs within the overall SEFT programme" ('TOC A' page 40, GIAA report).*

The MoU required delivery of the DoAs to be co-ordinated by the CDT at ATOC. However ATOC could not hold the TOCs to account (as the contractual relationship was owned by DfT franchise managers). Moreover, it had not been party to the DoA negotiations and content. .

Similarly, the agreements as created, gave DfT no authority to instruct TfL's supply chain with regard to how and when it delivered system design and enhancements, or to prioritise SEFT over other TfL business.

DfT's authority and control would have been much stronger if the roles and responsibilities in its key governance agreements (e.g. MoU and ATOC Funding Agreement) had mirrored the jurisdictions of the organisations who owned the contractual relationships.

### **CDT Funding Approach**

During the first few years funding for the ATOC (RSP) controlled elements was released in 'chunks'. RSP/ ATOC respondents felt that there was room for improvement in how DfT structured its delegated authority levels for payment. Approval to make payment was required from the Rail Investment Board (RIB) and this practise in itself introduced uncertainty of funding for the CDT and caused delays.

To avoid these issues, the Funding Agreement with RSP should have specified pre-defined conditions for payment (e.g. task order, payment milestones) and the named individuals authorised to instruct the RSP team and/ or make payment.

Following the 'Re-boot' of the Programme in 2014, the DfT payment approval procedure changed to be within the control of the Senior Responsible Owner (SRO), with the Programme requesting authorisation from the SRO for any new or changed requirements. While this was a more agile approach, it meant funding decisions were less transparent and weakened oversight of finances for the Programme as a whole.

The CDT only saw the finances for their team and the CBO until the 2014 'Re-boot', at which point a process for financial control was put in place which allowed the CDT to keep track of forecast spend as well as actual spend. The cost model for the whole Programme was managed thereafter by the CDT, with DfT retaining ownership of the figures themselves.

Since assuming control of SEFT in April 2016, DfT has greatly strengthened the financial controls in place within its PMO and at RSP, having learned from the earlier funding approach for the CDT.

For example, a more rigorous process for sign off of invoice payments ensures that all the parties are in agreement over payment amounts in a timely way.

## Validating Funding for Programme Resources (CDT and DfT)

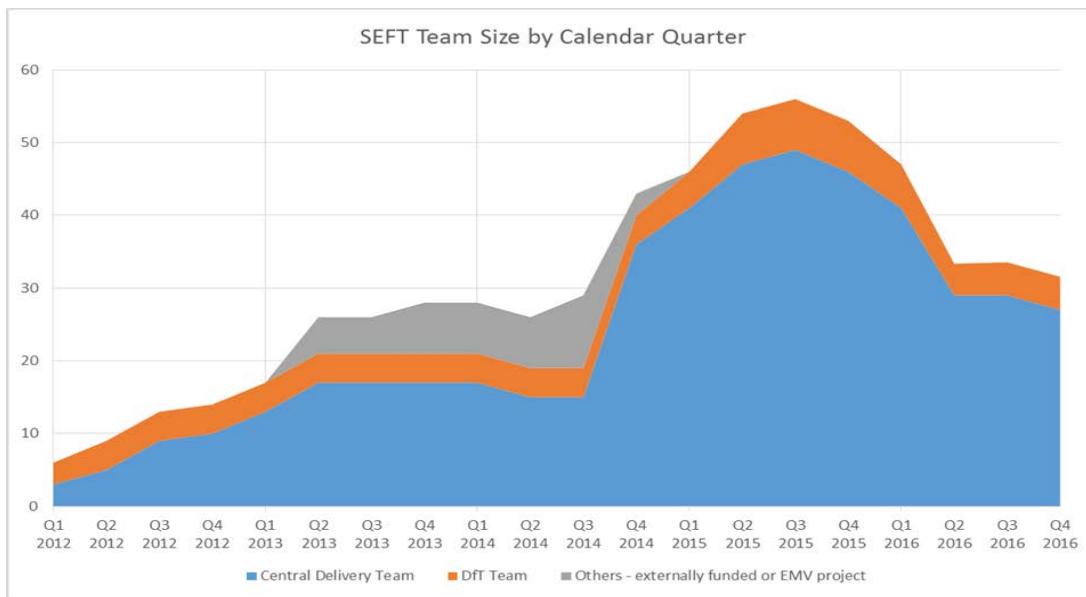


Diagram A2 – Resource Allocation across CDT, DfT and Other Parties Over Time

When the new DfT Sponsor took control of SEFT in April 2016, he initiated a complete review of resource allocation and expenditure to the end of the Programme. Forecasts and actuals are subject to monthly review for further opportunities. The Sponsor has been able to reduce costs to complete the Programme by ten percent as a result of this initiative. **This is an example of learning good practise in sponsorship being transferred into SEFT.**

## Commissioning Funding for a Europay, Mastercard and Visa (EMV) Payment Card - the Chiltern Trial

The EMV trial was not in the original scope of the Programme and was never fully scoped. However, there was a strong desire from both the DfT and TfL that a trial should be undertaken to see how the TfL back office systems could be extended to provide longer distance travel across multiple schemes (i.e. TfL and TOCs). A formal funding line was included in the 2014 Outline Business Case and a project was initiated between Chiltern and TfL to undertake a trial.

But cost estimates for the trial became prohibitive. No alternative options were pursued, e.g. via an open competition for TOCs to submit response to a DfT Request for Proposals.

## A2 Sponsoring SEFT

### 1. DfT's Role -Delivery Project Manager or Sponsor?

In 2013, it was decided that a bigger programme team was required to strengthen the existing CDT within RSP, due to shortfalls in capacity. Following Departmental Approvals Committee (DAC) sign-off in May 2013, PA Consulting were appointed in June 2013 to further define the Programme.

In the opinion of some respondents, importing external consultants had an adverse impact on the effectiveness of the programme. They grew in numbers between 2013 and 2014. Rail colleagues became uneasy about the size and cost of the new resources and the way experienced team members in RSP were replaced by the newcomers.

Furthermore, in the opinion of some, this development resulted in the TOCs and RSP stepping ‘back from the Programme’ in October 2013, having formed the impression that DfT had taken charge of delivery directly, through ‘its’ augmented team.

Respondents have spoken about the Programme becoming increasingly isolated between 2013 to 2015, due to the perceived concentration of delivery decision-making at DfT. In their opinion, the consultancy support “acted to buttress the SROs views”. As with the DoAs, respondents voiced the opinion that programme sponsorship seemed to be more focused on the inputs, rather than the outputs.

DfT was perceived to have also lost influence at TfL. Improving the links with TfL was an urgent requirement in the opinion of the TOCs.

Since April 2016, Programme Sponsorship has sought to unify effort and set direction by communicating a few top priorities to all parties engaged in SEFT – with TOCs, at TfL, RSP (RDG) and within DfT. These priorities run through all programme governance.

### 2. A Rail Programme, But Not IN Rail - Shifting Internal Sponsorship

The SEFT programme was one investment in the Smart and Integrated Ticketing (SIT) team portfolio. Bus and multi-modal ticketing were additional areas. The team was initially co-located from November 2011 with High Speed 2 – “*for pay and ration reasons*” (original SEFT team member). In 2012, the SIT division moved to the Local Transport Directorate, which included a buses and taxis division, in order to link it to the expansion of local schemes. From November of that year, SIT transferred to Strategic Roads, where there was no natural strategic fit with other work *per se*.

From March 2015, over four years after it was initiated, SIT joined Rail Group (Rail Executive then), residing in the Major Projects Group Directorate. When this Directorate was re-organised in January 2016, the SIT team was disbanded. The SEFT Programme itself lived on, transferring to Passenger Services. In April 2016, In-Franchise Change assumed SEFT sponsorship.

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Lessons respondents have indicated that it felt like the SIT team and in turn, the SEFT Programme, was 'an orphan', a 'bolt-on' to the DfT.

The organisation has learned that to empower rail smart ticketing programmes, they should be located within rail organisationally.  
Also, that they can progress when embedded as commercial initiatives within the functions closest to serving the Passenger, through active management of the franchise agreements.

## B. Programme and Project Management (PPM) Lessons

### Source Documentation available to the Review for the purposes of drawing PPM lessons

Primary source of findings: Government Internal Audit Agency, February 2016 Audit.  
Economic and Management Cases within 2013 and 2014 Business Cases.

13<sup>th</sup> March 2012 Programme Definition Document v1.0

10<sup>th</sup> May 2012 Programme Definition Document v2.0

1<sup>st</sup> August 2012 Programme Definition Document v3.0

### Did the SEFT Programme Go to Plan?

#### Original Programme Plan

The following key milestones were identified in 2012:

Key Milestone	Target Date	Actual
Memorandum of Understanding	30 Mar 2012	19 Apr 2012
TOC & ATOC Funding Proposals to DfT	20 Apr 2012	31 May 2012
DfT Agreement of TOC & ATOC Funding Proposals	25 May 2012	13 Jul 2012 – ATOC only
RSP Launch OJEU Process, as appropriate	December 2012	August 2013
PVAL procurement complete	June 2013	Withdrawn
HOPS procurement complete	June 2013	Apr 2014
IDP2 – IoP+ Software available for testing	21 Dec 2012	Cannot verify
First Early Adopters Launch	March 2013	Jan 2014
IoP+ Infrastructure Rollout on TOC Estates	July 2013	Various – cannot verify
IDP3 – IoP+ Infrastructure & Software Rollout on TfL	December 2013	Sep 2014
Launch of Flexible Seasons on all South East TOCs	March 2014	Withdrawn

**Based on the original 2012 milestones, SEFT was not delivered to schedule.**

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There were 3 points when the Programme baselined its plans:

- Quarter 2 2012/2013
- Quarter 1 2013/2014
- Quarter 1 2014/2015

These baselined plans either followed or preceded three periods when progress on the programme was ‘paused’.

### **Key Factors and Events Triggering Revisions to Programme Plan**

The findings of the February 2016 Government Internal Audit Agency point to the following root causes:

- Lack of collective clarity/ buy-in to a defined set of objectives (business case)
- Deficient programme controls, e.g. cost control
- Deficient resource planning and management
- Poor stakeholder relationships.

*“Since the announcement in Autumn 2011, the programme has therefore been paused three times to re-evaluate its direction:*

- *December 2012 to March 2013 due to disagreement over the central system architecture following objections by Stagecoach and Go Ahead to the SEFT CBO proposal.*
- *November 2013 to June 2014 due to a review of the OBC following increased cost estimates and delivery risk and concerns over the capability of the Central Delivery Team.*
- *November 2015 to the time of audit due to a policy review in the summer of 2015, following the General Election, over the future of the programme due to concerns over progress and approach”. [GIAA Report](#)*

The Rail Minister’s decision in April 2016 to de-scope SEFT to existing commitments only could be viewed as occasioning a further re-plan, but it did not entail re-base-lining.

### **A Note on the Structured Methodology Employed to Plan the Programme**

It should be noted that for the purposes of capturing lessons under DfT’s PPM headings, the reviewers structured SEFT into 4 time periods, which follow the generic Managing Successful Programmes Programme lifecycle. These stages were artificial, having been applied retrospectively to the Programme. Respondents did not recognise them. They told us that they did not have visibility of a structured plan in the early years of the Programme, 2011 – 2013.

*“In future a clearer distinction should be made between project and programme plan”, a TOC.*

**If the Programme had been planned from the outset using an established good practise methodology, there would have been less room for uncertainty around its scope and it would have been better able to withstand the subsequent challenges to cost and benefits.**

**Strong ‘PPM’ practise and experience could have reduced the likelihood of re-plans.**

## **Programme Success Criteria and End Results Set in June 2014**

**The Programme would have had greater ability to manage the expectations of its key stakeholders and contain scope if it had established its key success criteria from the outset in January 2012.**

A revised Outline Business Case was approved in June 2014 by the Rail Investment Board which increased the SEFT budget from £45m to £80m, including the £11.5m spent and committed at that date, and set out criteria defining what would constitute successful delivery of the programme objectives.

**The specific 2014 success criteria against which the Programme is measured are:**

- The ATOC/RSP back office is operational by mid-2015

The back office was commissioned May 2015 and operational with the first TOC in September 2015.

- ITSO smart ticketing infrastructure is rolled out to over 300 stations by mid-2016

The programme's scope was reduced from 11 to 5 TOCs by the previous Rail Minister, in April 2016. This reduced the total number of stations from 590 to 377.

By mid-2016, there were 253 stations operating SEFT smartcard seasons (63%), against the target of 300 (which represented 51% of the total).

- Take-up of ITSO smart cards within season ticket holders is 50% by end-2017

2 of the 4 TOCs operating SEFT smartcard seasons are on track to meet this target. The other 2 TOCs believe this level of take-up is still attainable (though it looks very challenging based on current levels). The final TOC, LSER, will launch in December 2016. See Section C for more on the current likelihood of the TOCs meeting this final success criterion.

**The Programme's delivery performance against the success criteria in the June 2014 OBC seems broadly in line with plan, in contrast to performance in earlier years.**

## **B1 Programme Management Approach**

### **The PPM key lessons:**

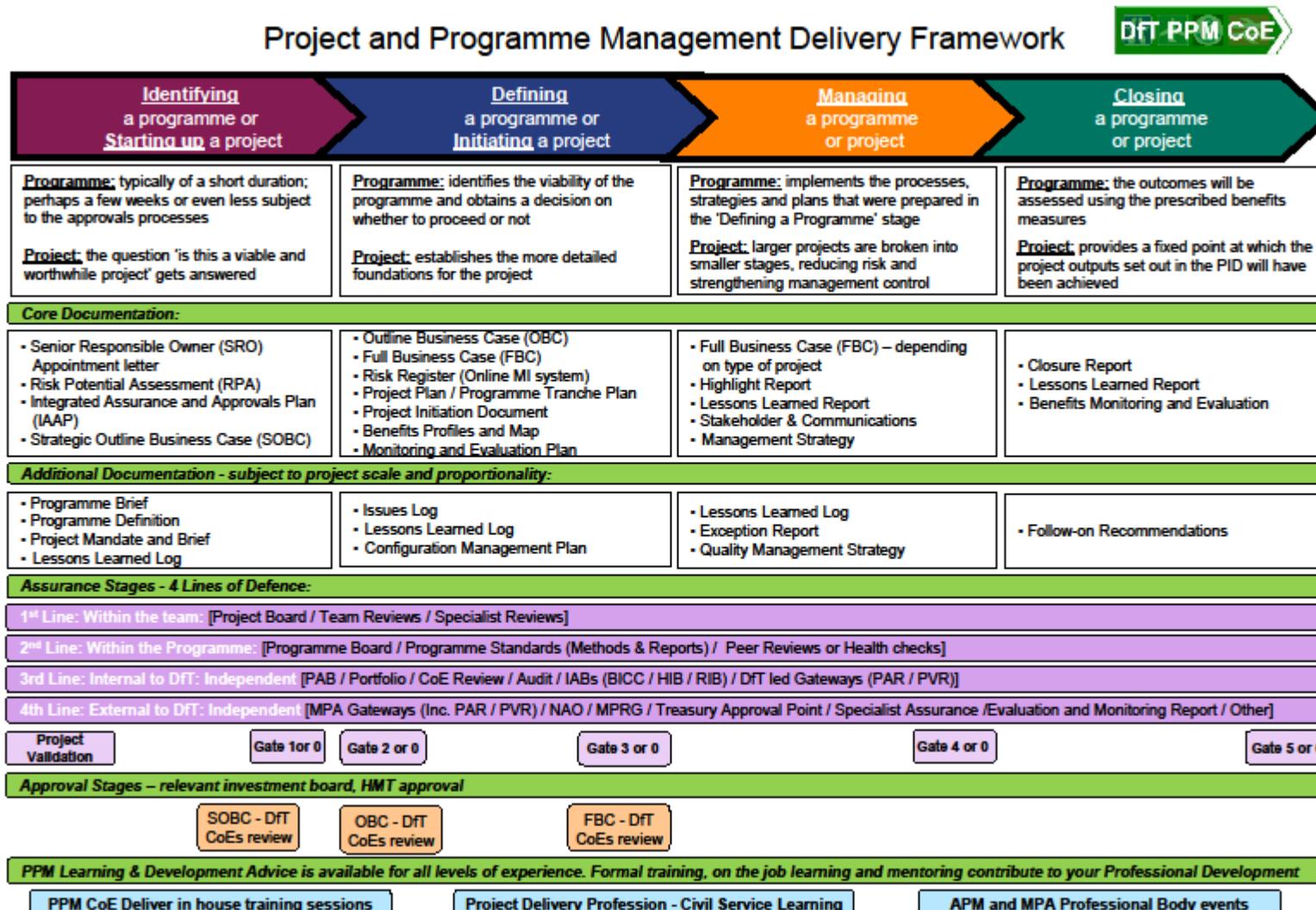
**SEFT should have adopted and strictly implemented a recognised delivery management model which built programme organisation around the roles outlined in the MoU (funder, client and delivery agents) with suitable gateways and controls.**

**SEFT did not follow good practise government guidelines on how to identify, define, establish, deliver and realise benefits from a programme. As a result, several critical foundations were not identified.**

Figure **B1** describes the recommended framework for the Programme, based on lessons identified. The lifecycle includes the appropriate assurance and approval controls.

The rest of Section B looks at aspects of these 2 lessons, under PPM headings.

Figure B1



**Approvals to Proceed** – The ‘hold’ points above give control over scope and funding and thereby help to ensure value for money. There are ‘Go/ No Go’ decisions at the end of each programme phase.

**Programme Phase** – Using clear programme stages maintains control and focus over activities as tasks are completed in an optimum sequence. The respective parties – funder, client and delivery agents- have back to back plans for these.

**Gateway Reviews** – Using clear programme stages maintains control and focus over activities as tasks are completed in an optimum sequence.

## B2 Oversight and Governance

The April 2012 Memorandum of Understanding (MoU) set out a single Programme Board governance, with DfT as chair, with responsibility for overseeing delivery. This single steering board approach imported additional risk to DfT as the Department took on direct accountability for delivery for a new and highly complex initiative across multiple organisations.

The single board approach also over-looked other key requirements in governance design – the existing contractual relationship owners (over an extended supply chain) and DfT's over-arching interests – franchise performance management, investment assurance and funder due diligence. Adoption of good practise delivery planning guidance, such as that produced by UK Infrastructure, drawing on the Olympics and other transport programmes at TfL (such as Cross Rail), would have strengthened DfT's authority and control – through the appointment of a distinct client delivery role, to unify delivery governance and performance. This role was not adequately specified:

- RSP would 'co-ordinate' the progression of the Programme through participating TOCs, provide project management services to the Board and align the outputs of the Programme systems across TOCs;
- TfL would act a supplier and advise the Board;
- The TOCs would be responsible for their individual project board governance and plans.

It was intended that the MoU would be followed up with a number of binding agreements. Of itself the MoU was non-binding, it simply set out the intention of the parties and their respective roles/ responsibilities in what has been described as a 'partnership' of the Department, RSP and Transport for London (TfL).

**A significant proportion of subsequent issues were due to inadequate governance design.**

In February 2016, SEFT governance was assessed by internal auditors, who found that:

***"The Programme governance structures and commercial agreements have been ineffective in holding the Programme team, the TOCs and TfL to account for delivery of the Programme's objectives and resolving issues outside the Programme team's control"***

Government Internal Audit Agency – SEFT Programme Assurance Audit, February 2016.

On appointment in April 2016, the new SRO acted on the audit findings and instructed the DfT Programme Management Office to review all governance boards with the CDT, with particular focus on programme steering arrangements.

As a result, SEFT applied learning from the audit and review to re-introduce a new and commercially focused Programme Board from spring 2016, within a much clearer decision making board structure (new terms of reference were approved for all key boards).

## B3 Financial Controls

Until 2016, the Programme Sponsor was supported by a Programme Management Office that covered the Smart and Integrated Ticketing Programme (which contained many other projects, apart from SEFT).

**The Government Internal Audit Agency found that there was insufficient financial visibility at the main governance boards.**

The following case study, overleaf, sets out some of the lessons learned since the transition of the Programme to Passenger Services in April 2016. When control of the finances transferred, financial control processes were reviewed and improved.

### B3 Lessons Learned Case Study – 2016 Improvements to Financial Controls

#### Background

Since the establishment of the SEFT PMO in 2014 there has always been strong financial control at a working level within the Central Delivery Team. The Cost Model is carefully versioned and provides accurate forecasts of the cost of the programme. Invoices are thoroughly scrutinized once received from RSP, before submission to DfT for payment. There was room for improvement in how the DfT interfaced with and used the information supplied.

#### Initial Findings

The problems identified were:

- A lack of clarity around the exact amount spent to date between DfT and SEFT
- Differences in the way that spend was categorized
- A lack of traceability within the DfT

The key changes made were:

- Re-establishing the financial baseline
- Simplification of finance documentation and reports to create a single source of the truth
- Revised process to put in place formal sign-offs.

#### Details

##### Re-establishing the financial baseline

SAP is the only complete record of everything spent on the SEFT Programme. A complete, line by line review of almost 960 items was completed to ensure accurate categorization and correction of historic accounting errors. With an agreed baseline position in place a process was established to provide regular, scrutinized copies of the SAP transaction listings to update the actual spend in the SEFT Cost Model.

##### Single Source of the Truth

Whereas previously the DfT had maintained its own forecasts and actuals sheets, the decision was taken to combine these with the cost model, creating a single reporting tool and preventing version control issues.

##### Revised process to put in place formal sign-offs

Historic invoices were haphazardly stored. A process was agreed whereby the invoices would be submitted to the DfT with a cover sheet confirming that they had been checked by RSP and the SEFT Central Delivery Team and capturing any variances. These are then filed both in the DfT Approved File Plan and the SEFT Finance Record Folder.

*Source: Narrative provided by DfT PMO Finance Manager*

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## B4 Assurance Planning

The Lessons Review has been unable to find an Integrated Audit and Approvals Plan (or similar) for the SEFT Programme. While respondents have not raised any specific lessons concerning the independent assurance of the programme during this exercise, they have pointed to the frequent ‘pauses’ where SEFT was reviewed and business case approvals by Rail Investment Board/ Board Investment and Commercial Committee as evidence of working audit and assurance practise.

**An Integrated Assurance and Approval Plan (IAAP) should have been developed at the outset of the Programme, by the Sponsor, alongside the Programme Definition Document produced by the CDT. From then on it should have been integral to the overall programme plan (with an explicit audit and assurance work stream, driven by the Sponsor’s PMO, within it). The IAAP should have formed part of the Management section in the Business Case for SEFT.**

The DfT PPM Centre of Excellence recommends that the initial IAAP is independently validated by them and in the case of some major projects (Tiers 1 and 2) by the Infrastructure and Projects Authority and HM Treasury - in advance of the submission of a Strategic Outline Business Case (SOBC).

*“An IAAP should cover 2 year assurance and approvals; it should be periodically reviewed at least every 6 months and updated after each assurance review, change in scope or in significant risk potential of the project”. (DfT PPM Centre of Excellence).*

It should be noted that the Central Delivery Team have a number of tools to assure testing and commissioning implementation activities, developed from previous lessons learned.

## B5 Identifying, Defining and Managing Programme Scope

**In general, 2011 – 2013, progress was impeded by a lack of clear documented scope and requirements.**

The scope of the SEFT Programme was developed from the (non-‘SMART’) objectives in the 2012 MoU – mainly, roll out smart ticketing on the commuter routes into London; introduce flexible season tickets for part-time commuters; build on the investments already made through IOP; address the suboptimal outcomes of the rail franchise approach.

The Programme sought to achieve these objectives through funding the individual TOCs providing commuter services in the south east with the necessary infrastructure: upgrades to station gates, ticket vending machines (TVMs) and to their existing retail systems (WebTIS) to introduce smart rail tickets, using the ITSO specification. Other kit, handheld devices for station staff and validators at all ungated stations was included along with the establishment of central card issuance and back office services for the seven TOCs that did not have them. Funding for marketing and staff training was made available.

The scheme sought initially to establish a “Customer Proposition” to guide delivery. This was good practise and should have been pursued to its conclusion.

**A Customer Proposition, to which all operators agree, is the critical foundation for establishing the scope of the programme and a successful passenger experience.**

At that stage, the DfT and RSP view was that it did not matter if the equipment was commissioned separately by the TOCs as the ITSO specification would provide sufficient interoperability.

Further scope was subsequently identified following the delivery team's analysis. To support smart ticketing, the card bureau and back office would be best provided centrally by RSP as a shared service to TOCs. In addition, a scheme was required, to establish the service level and wider scheme agreements needed between the participants (TOCs and TfL) to ensure that the then Government's objectives in terms of good quality customer experience and interoperability would be attained. These agreements were additional to the Deeds of Amendment (DoAs) to each of the eleven TOC franchises, which was, of itself, a challenging aspect task: *"The programme entered into multiple negotiations with eleven TOCs with insufficient regard to the complexities of endeavouring to switch them all over in parallel to smart"*, a team member.

Respondents have provided other examples where it felt like DfT was attempting to 'cover all the bases' and beyond, within SEFT, e.g. consider and design an EMV trial; look at mobile applications, PlusBus.

**The full scope to deliver SEFT was not understood at a high level at the outset. Resources, such as for consents and approvals, and funding, such as for PVALs, later came under intense pressure as a result.**

## B5 Business Case

**The Programme was initiated without clarity on its business case (SOBC) and it struggled thereafter to gain buy-in from key players to its cost and benefits.**

See Diagram B3 on page 28

In April 2013, an Outline Business Case was approved by the Rail Investment Board. The Economic Case was primarily based on accelerating roll out of smart ticketing (as against doing it at franchise renewal) and associated WebTAG benefits such as time saved at gates and TVMs. The Strategic Case picked up the wider benefits of rolling out smart ticketing, including better data supporting better service and customer management by the TOCs, and the ability to introduce innovative new products to attract more revenue. The Management Case was based on delivering through a programme with central coordination and procurement of common infrastructure items by RSP, with each TOC managing its individual upgrade project.

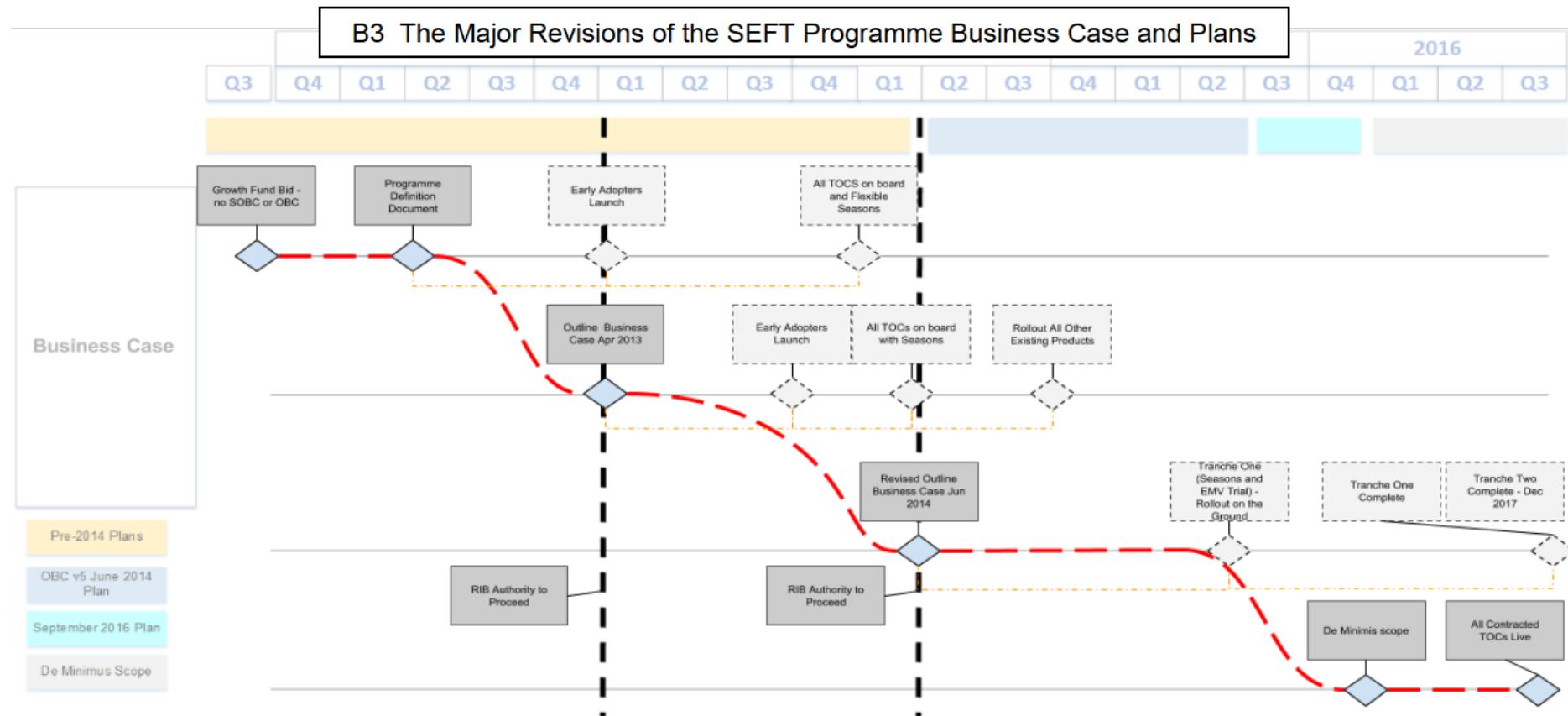
But by November 2013, *"following increased cost estimates and concerns over the capability of the Central Delivery Team, a full review was commissioned to re-examine the scope and drivers of cost compared to the DfT's objectives regarding smart ticketing"* (February 2016 GIAA Audit Report).

A further revised OBC was approved in June 2014 by the Rail Investment Board which increased the budget from £45m to £80m, including the £11.5m spent and committed at that date, and set out criteria defining what would constitute successful delivery of the programme objectives. The table B2 overleaf assesses progress against objectives.

**Figure B2**

Objective	Outcome
To provide the necessary equipment at stations, on trains and at retail points within the geographical scope of the Programme (broadly the Network South East area but with lines of route agreed with each TOC) by mid- 2016.	As a result of requirements within various franchise agreements; SWT, Midland, Southern, AGA, C2C, and LSER have all installed ITSO equipment across some or all of their routes. <b>In line with De Minimus scope.</b>
To provide back office systems to participating TOCs to facilitate smart ticketing (either through direct ownership, shared facility or contracted in arrangements); such systems to be operational by mid-2015.	<b>Achieved when CBO opened July '15</b>
To roll out a product catalogue that includes smart season products, and supports future roll out of contactless bank card-related (EMV) products, where this best matches individual business, passenger, and operational needs as determined by DfT in consultation with TOCs.	<b>Achieved when CBO opened July '15</b>
To achieve, by the end of the Programme, a significant transfer of passenger usage to smart ticketing, from negligible levels of usage at present to 50% of relevant season ticket holders.	The TOC that is most advanced with the Programme, C2C, has currently achieved a take-up of [REDACTED] for annual seasons.
To provide the infrastructure to enable the offering of discounted season tickets to incentivise passengers to travel outside of the high peak periods thereby making better use of the available capacity and delaying the need for expensive infrastructure enhancements, if that should become future Departmental policy.	<b>SEFT has provided the infrastructure to enable this objective should rail commercial policy require TOCs to offer discounted season tickets.</b>
To establish enduring governance arrangements to operate the scheme into the future.	<b>In progress for when ATOC/RDG agreed to take over operation of the CBO on 31 March 2017.</b>

**While the Programme is on track to deliver the majority of its 2014 OBC objectives, it will be challenged to achieve its Benefit to Cost Ratio, due to (a) Ministerial decision to reduce SEFT scope to existing commitments only, in April 2016 (referred to as ‘ De Minimus’ scope) and (b) the approach taken in 2011 – 2013, whereby DoAs were agreed and funding released to the TOCs without regard to what was required to realise the business case benefits.** PPM lesson: Define/agree the OBC benefit objectives before finalising the delivery contracts. *“The non-binding targets set the TOCs are at most 50% 18 months after the launch of smart ticketing. The June 2014 OBC BCR required 95% take-up”* (A lessons respondent).



## B6 Delivering the Programme

The Programme is still in delivery at the time of this Review. The Reviewers recommend a Post Implementation Review (PIR) is conducted in Spring 2017, in order to validate the execution lessons captured to date in the Central Delivery Team and DfT Lessons Logs, while also reflecting on LSER on-boarding lessons learned.

It is apparent from our lessons capture to date that SEFT delivery was constrained by a lack of clarity on scope and an attempt to “eat the whole elephant in one go” in the early days. Specific examples given by respondents include:

- Insufficient clarity on what was required for delivery – it seemed to be “do what Southern have already done”.
- Limited insight on how or when the flexible part of SEFT was going to be delivered, despite it being within the scope of funding from the beginning.
- Critically, not all TOCs participating in SEFT were empowered by the DfT to make decisions in first few years of the Programme. They felt lesser partners to the two large owning groups who had been invited to sit on the Programme Board.

If the Programme had established an agreed scope before endeavouring to deliver, it might have been able to achieve more, faster. There were several occasions when the Programme had to step back or suspend certain activities (i.e. the PVal procurements) as the resources were not available to undertake the design work required for the continually changing scope.

Also, procurement of key back office systems was broadly delivered on schedule once scope of services had been defined in early 2013.

## B7 Realising the Benefits of the Programme

*The Programme will revise this section from lessons identified following the commencement of the main benefit realisation period - after the launch of the last TOC LSER in December 2016 (the largest in terms of stations in scope).*

An independent exercise to evaluate the benefits has also been scoped with DfT's Monitoring and Evaluation team and scheduled within the Benefit Plan.

In summer 2016 the Programme undertook an analysis to map all the benefits stated in the June 2014 OBC, in order to ensure that wherever feasible, the impact of SEFT investment is understood in terms of improving the passenger experience, operational efficiency and innovation in the industry.

Benefits can now be traced back to their key drivers (inputs) and outputs. Outcomes have been defined (within a Benefits Management Strategy and Benefits Model). **Table B4**.

Further improvements have been made to planning for benefit realisation and management.

Through this process, additional benefits have been identified. All identified benefits have been categorised and grouped as follows:

Benefit Group	Benefit	ID
Group A <b>Providing capability to the railway to enable innovation in retailing of tickets</b>	A scheme and underpinning technology platform will be in place to enable the SEFT scheme members to introduce new ticket types	SEFT-BenA1
	Scheme members will use the new scheme to roll-out new ticket types	SEFT-BenA2
	Scheme will enable seamless smart ticket travel across TOC boundaries	SEFT-BenA3
	The scheme will not require a major upgrade due to obsolescence or due to increase in volumetrics growth or performance targets in 5 years following launch	SEFT-BenA4
Group B <b>Increasing operational efficiencies in the railway</b>	There will be a reduction in fraudulent travel	SEFT-BenB1
	There will be a reduction in the costs associated with retailing tickets	SEFT-BenB2
	Management Information will be available that could be used to inform future ticketing strategies	SEFT-BenB3
	TOCs will not have to spend time replacing worn out tickets	SEFT-BenB4
	TOCs will not have to spend time replacing lost tickets	SEFT-BenB5
	TOCs will spend less on OPEX costs associated with magstripe ticket management (e.g. printing costs, replacing worn ribbons etc.)	SEFT-BenB6
Group C <b>Improving passenger experience</b>	There will be a reduction in the time spent by passengers at ticket offices replacing worn tickets	SEFT-BenC1
	There will be a reduction in the time spent by passengers at ticket offices replacing lost tickets	SEFT-BenC2
	There will be a reduction in time spent purchasing & collecting tickets	SEFT-BenC3
	Develop a solution which enables faster entry and exit through the rail networks	SEFT-BenC4
	Improved customer satisfaction surveys relating to smart ticketing.	SEFT-BenC5

**Table B4 Analysis to Support Benefits Realisation Activity**

Benefit profiles have also been developed, but have not been formalised in the majority of cases with the TOCs due to constraints imposed on the Programme when the 'aspirational' non-binding targets were set in the DoAs.

The Programme's Benefit Realisation Plan has scheduled checkpoints when the Benefits Model will be refreshed with the latest take-up, tap volumes and other base data supporting the measures. Take-up benefits are being regularly measured, analysed and reported consistently for each TOC on an ongoing four weekly basis.

By de-scoping singles and returns, and reducing the number of TOCs, it will be very challenging to for benefits to achieve the levels planned in the approved benefit to cost ratio in the June 2014 OBC.

Benefit achievement is dependent on take-up levels of the smartcard season and the active use of the cards through the loading of products. See Section C for our learning so far on take-up.

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The new team in Passenger Services has been actively engaging with each TOC to identify its opportunities and barriers to increasing take-up. A tracker has captured this learning and it has been used in the development of the emerging Take-up Strategy.

In addition to the tracker tool, the Programme's Lessons Learned Log also captures individual observations on take-up. Below are a few of the opinions therein:

*"TOCs have told DfT that SEFT take-up requires consistency in the product supplied to passengers"*

*"Take-up potential has been proportionally greatest where the TOC has committed to deliver smart ticketing as part of the ITT franchise competition"*

*"Take-up benefit potential has been greatest to date where the TOC has a simple, totally gated network".*

*"Smart programmes require operators to agree how they will honour each other's smart card ticketing products when they are presented in their network estate".*

Section C considers take-up lessons.

The Lessons Review did not capture any points for the other benefits stated in the OBC.

## B8 Closing the SEFT Programme

As currently planned, the Programme enters its final stage, the phased transition to business as usual service operations over the period December 2016 to March 2016.

Lessons will be captured during this time in the Lessons Log and Section B of the SEFT Lessons Learned report will be revised accordingly in late spring 2017.

DfT has developed a standard approach to closing down TOC DoAs, which includes capturing their lessons for future process improvement.

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# C. TOC Lessons to Maximise Take-Up

**Source documentation available to the Review for the purposes of drawing take-up lessons:**

- RDG – ‘How we are making it easier to buy a train ticket’.
- DfT – SEFT Take-Up Calculation Guidance Notes
- FOI in 2011 – Spreadsheet of Oyster and Paper Sales
- ATOC/DfT - SEFT Customer Proposition
- Annex A – Franchising Only Approach 2006 to 2011
- MoU for the SEFT Programme
- LENNON and RDG provided the quote in the opening paragraph ‘70%...’

## C1. Introduction

70% of rail journeys in the UK start, finish or pass through London. 43% of those journeys are on season tickets. The potential for delivering a sea change in ticketing through the current SEFT Programme is therefore very real.

Smart ticketing started in earnest in 1998, with the development of Oyster and ITSO and the current SEFT Programme has been running since late 2011. During that time, a great deal has been learned about the technology, deployment methods, the commercial environment, the supply chain and the levels of public acceptance of smart technologies.

In a sector where the technology is developing at a rapid rate, the improved capability to manage such technology-based change Programmes is itself a significant benefit of the SEFT Programme.

Experience varied greatly by TOC, but the principal lessons learned from the early development of the SEFT business case include the need to set TOC targets which are specific and time based, the need to consult fully with stakeholders beforehand and the need to adequately facilitate, incentivise, or compel, take up by the TOC and the passenger.

## C2. Defining and Measuring Take-Up

Take-up is a key, possibly the key, measure of the success of SEFT. In forming an opinion about the performance of SEFT, it is clearly important to set the right metric.

The 2014 Outline Business Case (CBO) does not fully define what is meant by ‘take-up’, so determining a current status against a baseline expectation is difficult, but we know that it currently takes 12-18 months for a TOC to move from commencement to ‘product in use’.

**It is important to define metrics with a knowledge that data can actually be collected to easily validate progress against them. It is also important to keep a metric as simple as possible so that its meaning can be clearly understood by non-specialists stakeholders.**

Currently, SEFT collects ticketing data from the TOCs and calculates take-up as the number of season tickets issued on a smartcard as a percentage of the total number of seasons issued. In the medium term, this number will not achieve 100%, since a residual of paper tickets will remain, for example, where passengers have a particular need or where low passenger volume stations are not suitably equipped.

**Collecting ticketing data is simple when a TOC is signed up to the CBO, but difficult (time consuming and costly) when the TOC uses its' own back office HOP. Consideration should be given to mandating use of the CBO.**

The railway is a complex environment and there will always be routes, journeys, or customers for whom a change will be problematic. Within SEFT, there is a sense that the complexity of delivering this residual, has jeopardised delivery of the easy-wins. For example, there will probably be a small residual usage of magnetic stripe tickets for some time yet, but a change programme should not be hindered by this and should instead target the vast majority of users that can adopt tickets in the short-term and transfer or address the residual in due course.

**In designing a programme such as SEFT, there is value in setting initial targets to achieve the ‘low hanging fruit’, whilst acknowledging that a subsequent phase of the programme will need to tackle the remaining ‘legacy’ percentage.**

Early in the process of rolling out smart ticketing a range of targets were set on a TOC-by-TOC basis within the relevant Franchise Agreements and Deeds of Amendment (DoA).

TOC	Target	Status
South West Trains Up to Q1 2015	<ul style="list-style-type: none"> <li>Provide ITSO equipment</li> <li>Provide back office</li> </ul>	[REDACTED]
South West Trains From Q1 2015	<ul style="list-style-type: none"> <li>Upgrade back office and Equipment</li> <li>Include travel cards into London</li> <li>Take-up (Annuals): [REDACTED]</li> </ul>	[REDACTED]
London Midland Up to 2009	<ul style="list-style-type: none"> <li>ITSO tickets made available by Jan 2010</li> <li>Back office in place</li> <li>Take-up: [REDACTED]</li> <li>Take-up: [REDACTED]</li> </ul>	[REDACTED] [REDACTED]
c2c From Nov 2013	<ul style="list-style-type: none"> <li>Procure back office</li> <li>Migrate to CBO once available</li> <li>Automatic Delay Repay</li> </ul>	[REDACTED] [REDACTED]
Southern Up to 2014	<ul style="list-style-type: none"> <li>Provide ITSO equipment and back office</li> <li>Take-up: [REDACTED]</li> </ul>	[REDACTED] [REDACTED]

TOC	Target	Status
Thameslink, Great Northern and Southern (Previously Southern and separately First Capital Connect (FCC)) From 2014	<ul style="list-style-type: none"> <li>Provide some ITSO equipment (across old FCC estate)</li> <li>Upgrade back office</li> <li>Extend smart ticketing</li> </ul>	[REDACTED]
South Eastern (LSE) From Feb 2015	<ul style="list-style-type: none"> <li>Upgrade ITSO equipment</li> <li>Use CBO</li> <li>Launch smart ticketing</li> </ul>	[REDACTED]
Abellio Greater Anglia From Feb 2015	<ul style="list-style-type: none"> <li>Upgrade ITSO equipment</li> <li>Use CBO</li> <li>Launch smart ticketing</li> <li>Take-up: [REDACTED]</li> </ul>	[REDACTED]
Abellio Greater Anglia From Oct 2016	<ul style="list-style-type: none"> <li>Additional ITSO equipment</li> <li>Use CBO</li> </ul>	[REDACTED]

Table C1: Current TOC by TOC take-up vs take-up specified in their FA/DOA

When viewed against the targets set above, it can be seen that lessons have been learned and that the three latest TOCs to roll out smart seasons are achieving considerably better results than those achieved by the earliest TOCs.

In addition, the above mandated targets have contributed to 253 SEFT stations having ITSO equipment installed.

The term 'take-up' can also be ambiguous and could be taken to mean, for example, the number of smart season tickets issued, the number of smartcards loaded with a season ticket, or the number of journeys undertaken using the smartcard tickets. Currently, take-up is measured as the number of season tickets sold onto smartcards, as a percentage of total tickets sold, on a rolling year-on-year basis.

**Diagram C1: Comparing the required take-up profile in the 2014 OBC with c2c delivery to date, showing the extrapolated rate of take-up required.**

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Diagram C1 shows in blue the original requirement to achieve 95% take-up by 2020. Given that no programme could start delivering take-up before a degree of development, construction and marketing had taken place, the main function of this graph is to indicate the lengthy period before effective take-up commenced and the rate of take-up required from 2016 until 2020 in order to meet the 95% target.

Experience to date suggests that TOCs require 12 to 18 months of development before a product roll-out can commence. Likewise, roll-out tends to follow an 'S-curve' with the early stages showing relatively slow take-up until a critical mass is achieved and take-up accelerates.

**To represent the 95% target as a straight line progression is misleading, since take-up will be influenced by factors such as time of year and the time required to install physical infrastructure before rollout of tickets can begin.**

Diagram C1 does not represent the totality of progress. Smart ticketing is bigger than SEFT and DfT Commercial Managers tell us that non-SEFT smart ticketing products are being rolled out across the network by a number of operators. By raising the profile of smart ticketing across the industry and providing what would be considered to be seed-corn funding, SEFT has played a significant part in accelerating this activity.

The roll out of new technologies has a chequered past across many different industries. To get a feel for the success of SEFT, we can compare against the take up of other transport ticketing schemes and, by reference to National Audit Office (NAO)/Department for Energy and Climate Change (DECC) documents, a rollout in the utilities sector. The utilities sector has considerable similarities with the current rail sector (for example the need to deliver through private sector). DECC mandated the installation of 53 million smart meters in November 2012 and by June 2015, 1.7 million had been installed. The work is staged over two phases, a trial phase from 2011 to 2016 and a mass roll out phase from 2016 to 2020.

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**Diagram C2: A comparison of the time taken to roll-out smart technology programmes.**

Diagram C2 shows that the take-up required by the SEFT Programme and the DECC Smart Meter Programme is similar to that previously achieved by the Oyster Programme.

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These graphs are based upon a limited dataset using the start of the Oyster Programme to currently available take up numbers. We are currently carrying out research with the aim of obtaining a more complete picture of the take-up profile for Oyster.

**By reference to the Diagram C2, the take-up performance of SEFT to date can be seen to be comparable to similar smart roll-out programmes.**

### C3. Lessons Learned to Date - Successes So Far

Based upon 2011 data, Oyster reached a plateau at circa 75% of TfL tube tickets, with the remainder being paper based. Once SEFT TOCs have been instructed, progress has not been drawn out in comparison to the rollout of Oyster (see Diagram C2) which is widely accepted to be a successful product. For instance, for SEFT annual season tickets:

- In a period of just over 2 years (DoA: August 2013 - Roll-Out: December 2015) c2c has achieved a [REDACTED] take-up.
- In a period of less than 12 months (DoA: March 2015 - Roll-Out: February 2016) Abellio Greater Anglia has achieved a [REDACTED] take-up.
- South Eastern are expected to achieve roll out 20 months after issue of the deed of amendment (DoA: Mar 15 - Roll-Out: Nov 16).

**The above timescales compare favourably to those experienced during the roll-out of Oyster and the rollout of smart meters by DECC.**

#### Related Success

The CBO in particular reduces future industry costs, as the one facility can now provide the back office capabilities required for the industry, thereby reducing replication and interface costs and simplifying future interoperability. Non-SEFT TOCs such as Great Western, have expressed an interest in using the CBO either in full or in part.

c2c have developed and Abellio Greater Anglia (AGA) plan to develop new functionality for the customer in the form of delay repay and already offer the intrinsic benefits of features previously only available on Oyster.

**In addition, a defined set of 16 ticket products now exists, via the CBO, for adoption by the railway and bus network and therefore for multi-modal deployment. This set offers the potential for rationalisation, for example, according to ATOC, South West Trains currently operate a basket of 36 ticket types and will be able to adapt these to the 16 standard CBO ones should they adopt the CBO.**

## C4. TOC Perceptions of SEFT (FOR INTERNAL DFT USE ONLY)

Throughout the Programme, the inherent technical, commercial and strategic challenges to take-up have been exasperated by the multi-organisational nature of the industry, the sometimes strained nature of the interfaces and the contradictory objectives of industry partners.

The lesson from this is to be proactive in stakeholder management, the related topics of TOC expectation management and TOC reputation management (in the context of their customers perceiving SEFT to be a TOC initiative).

Some industry commentators believe that the investment in smartcard and other current 'new' technology may be overtaken, in the relatively short-term, by better emerging technology. Nevertheless, RDG are currently promoting the idea of seasons on smartcards being at least a medium term solution.

TOCs believe that smart ticketing is useful in preventing fraud and delivers time/cost savings when processing lost/stolen tickets. It is also useful in hot-listing 'withdrawn but not physically recovered' staff passes.

**From a TOC perspective, there often isn't any immediately apparent commercial imperative to adopt smart ticketing. (The cost of a smart ticket is potentially 10 times that of a paper ticket, if you exclude sunk costs such as staff.) Equally, whilst closing ticket offices could generate significant cost savings, in reality staff are usually re-assigned to other duties and no cost benefit materialises.**

Testimony in the lessons learned consultation indicates that some attempts to introduce SEFT smart ticketing resulted in a poor customer experience, causing the TOCs involved to incur additional costs and potentially brand damage. As a result, some TOCs may view SEFT as a reputational risk.

- Anecdotally, TOCs often have little confidence in government's ability to lead complex and wide-ranging programmes such as SEFT.

**Based on the early SEFT roll-outs, smart ticketing was seen anecdotally as a product with complex delivery processes, no supporting TfL SLA and no inter-operability agreements.**

- We have been told that the TOCs felt that ATOC was disenfranchised by DfT and shut out of the decision making process.
- A few TOCs felt that DfT could have done more to assist with differential pricing, to make smart tickets attractive to customers.

DfT need to ensure that ongoing and future programmes manage stakeholder (TOC) expectations and needs more effectively.

## C5. Assessment of Relevant Take-Up Assumptions in the Business Case

This assessment will be delivered as part of the ongoing production of a smart ticketing take-up strategy, which is expected to be available before the end of 2016.

**The original scope and approach of SEFT were ambitious and the delivery was not achieved in full. Nevertheless, SEFT has achieved success in raising the profile of smart, in providing the CBO and test facility and with promising results from the last two TOCs to roll-out smart products.**

## C6. Lessons Learned Pertinent to Take-Up

This section is divided chronologically to consider the lessons that have already been adopted and those that remain to be adopted going forward.

The CDT report a number of issues that could have been avoided by effective testing of the Programme at feasibility stage, the development of an accurate passenger proposition and the maintenance of constructive stakeholder relationships. There is more detail on this aspect in [Section B].

**As a result of these shortcomings, a programme was commenced that had not fully considered the customer offering, the marketing and communications plan, or how to measure the metrics by which they choose to measure progress. A more formalised Programme Management approach should be adopted in future.**

### C6.1. Lessons Learned from Pre-SEFT Programmes

SEFT was conceived as a programme in response to the poor take-up results from the inclusion of mandated smart ticketing requirements in Franchise Agreements and the inherent difficulties in each franchise delivering smart ticketing on inter-available routes.

In a situation where DfT wishes to achieve an objective in a highly controlled manner, the principal lessons learned from this stage of the Programme include the need to set targets which are tightly specified and time based, the need to consult fully with stakeholders beforehand and the need to adequately incentivise, or compel, take up. An alternative strategy would be to set high level objectives and timescales and then allow the TOCs to determine the method and rate of delivery.

SEFT was established, in a vacuum and lacked a programme road map based on bespoke TOC by TOC plans. This lead to the scheme being predicated on a common specification based on the previous Southern franchise-based scheme. This meant that there was uncertainty over the objectives of the Programme, which reduced buy-in from stakeholders.

### **Case Study 1**

In 2007 SWT had an obligation in their Franchise Agreement (awarded in September 2006) to implement ITSO and provide a back office. No take-up targets were set. This obligation resulted in very disappointing take-up levels, in part because of impacts from the IoP project.

Successes: Some station and back office ITSO equipment was rolled out.

Lessons: Very low passenger take-up. The interface with the IoP project was not managed effectively.

### **Case Study 2**

In 2007 London Midland were given an obligation in their Franchise agreement to make ITSO tickets available by the end of January 2010. Take-up targets were specified as 20% of passenger journeys using ITSO by February 2012 and 50% of passenger journeys using ITSO by February 2014. Early on it became clear that London Midland would not meet the targets and a reduction in the targets was agreed - reduced to 5% up to Feb 2012 and 30% up to Feb 2014. Even so the targets were missed and the franchise became subject to financial penalties within the contract. This roll out failed primarily because of impacts from the IoP project, which took place between 2009 and 2014.

Successes: Some station and back office ITSO equipment was rolled out.

Lessons: Very low passenger take-up. The financial penalties in the franchise were insufficient to incentivise compliance. The interface with the IoP project was not managed effectively.

### **Case Study 3**

Southern were obligated to adopt ITSO smart ticketing by the end of January 2012 under their Franchise Agreement in 2009. This validates the decision to measure take-up with reference to the number of smartcards in use, rather than the number issued.

Successes: Station and back office ITSO equipment was rolled out. The ticket product types developed by Southern have been used extensively across the wider SEFT Programme.

Lessons: Very low passenger take-up. No take-up targets or financial penalties were stated in the franchise terms.

### **Case Study 4**

The consensus is that Oyster take up was successful because of the price discount, the multi-model nature of the offering, the convenience – no need to queue to buy tickets or to carry cash and the option of a PAYG version.

Deployment was easier because of the single supplier, the simplified supply-chain, the degree of policy autonomy, the relatively low cost of the most expensive journey and the restricted geographic scale. Many of these enablers are difficult to replicate on the national rail estate.

Successes: Wholesale take-up. Popular with passengers.

Lessons: Roll out took a long time and had numerous technical issues to overcome.

## C6.2 Lessons Learned from SEFT – Pre-2014 Business Case

At this stage, the Programme was notionally run by ATOC, but the DfT was felt by many in the industry to be too controlling and therefore to be undermining the efforts of ATOC, in particular by over-specifying the nature of the deployment. The subsequent imposition of a combined DfT/PA Consulting Programme team has left a legacy of mistrust.

The lesson from this has already been adopted, namely that DfT should facilitate but not manage the deployment of smart ticketing.

## C6.3 Lessons Learned from SEFT – Post-2014 Outline Business Case

This Outline Business Case was predicated upon TOC buy-in and the use of commercial incentives.

One principal conclusion from SEFT revolves around the provision of a poor customer experience with smart tickets. Although it is improving, ATOC research has apparently shown that it can be difficult to locate the product on the TOC websites and can also be complex to apply for. There is also an issue related to staff training, in that customers find that when travelling there is the uncertainty about whether the ticket will be accepted when you get to the other end or meet a RPO on route.

**This reinforces the lesson that a robust, clear, customer proposition must be central to the programme from the very earliest stages.**

There is anecdotal evidence (in the AGA Jungle Green Survey [see Bibliography]) of different messages to passengers from staff because of poor training and a limited range of journey routes available. In addition, a smartcard ticket product can take up to 2 hours to become available for collection, which is too long from the customer perspective. It is hoped that Part 11 infrastructure could resolve this last issue.

Further issues include inconsistent branding, passenger confusion about the geographic scope of a ticket, different offerings across TOCs (for example, delay repay is not available everywhere) and TOCs that don't promote the product enthusiastically. As a result of all the above issues, customer and to an extent TOC, confidence has been impacted.

During 2012, there were issues with TOC acceptance of SEFT, reportedly as a result of the poor performance of the product to that date and concern about the proposed system architecture. In particular, two of the seven TOCs did not want to be involved with the CBO concept. This highlights the need to trial new technology on a (very) small scale before large-scale roll out, something that was done by DECC during the Smart Metering Programme. It also suggests the need, wherever possible, for a roll out to be sufficiently flexible to accommodate different routes to the same outcome.

The levers used so far to compel or facilitate smart ticketing have proved ineffective in many cases. We are evaluating what worked for c2c, AGA and LSER, in order to build bespoke TOC by TOC plans that extrapolate these lessons to the other TOCs. It is anticipated that at some point, a critical mass of TOCs will be using smart ticketing and this will incentivise take-up by other TOCs.

## C7 Responses to Lessons Identified

The responses to lessons identified since the Programme transferred to Passenger Services in April 2016, are stated below; In particular, as a consequence of the previous smart ticketing initiatives outlined above, we now have a good feel for the best way to deliver a migration Programme from paper seasons to smartcard seasons, an understanding of the need for the roll-out to have a commercial imperative for the TOC and a critical mass of successful TOC deployments developing.

Give the TOCs fair notice of some future measurable milestones; for example, the installation of smart technology by 20xx e.g. gateline upgrades, the issue of smart cards to 95% of existing and all new season ticket holders by 20xx, the utilisation of smart cards for xx% of all season journeys by 20xx. These objectives should then be written into franchise terms as renewal becomes due.

A key lesson about SEFT is that it should not be considered as predominately a technology programme. Rather it is about delivering a business change based on a compelling customer proposition, which is itself enabled through technology, marketing and programme management.

### C7.1 Programme Level Recommendations

The SEFT Programme is in part an exercise in marketing; DfT/ATO marketing the concept to the TOCs and in turn the TOCs marketing the product to their customers. There are four stages in the process of 'buying' a concept or product;



To move a prospective 'buyer' from the first to last stage, we use persuasion. There are six forms of persuasion; Reciprocity, Commitment, Social Proof, Authority, Liking and Scarcity. Persuasion can be further classified as 'client-push' and 'customer-pull'.

A policy to improve the take up of SEFT by the TOCs could therefore be based around a strategy of understanding where each TOC is in the hierarchy of buying, for example, ‘Interest’ and then determining which of the six types of persuasion to deploy to move them to the ‘Action’ stage.

The identified methods of persuasion suggest various strategies that DfT could use in isolation or combination.

Reciprocity – People tend to return a favour; DfT could negotiate to resolve a non-SEFT concern of the TOC and ask for SEFT implementation in return.

Commitment – If people commit, orally or in writing, to a goal, they are more likely to honour that commitment, so DfT could confirm agreements via the exchange of letters, issue a press release, or otherwise publicise the agreement.

Authority – Compel compliance with SEFT via a franchise agreement or otherwise.

Social Proof – People will tend to do things that they see other people doing, particularly if they respect those people, so DfT could use peer pressure in the form of other TOCs demonstrating successful SEFT roll out. They could also use publicity in some form, to draw attention to those TOCs that opt out of SEFT or deploy it slowly, in order to mobilise passenger pressure.

Scarcity – Perceived scarcity will generate demand. For example, DfT could say that SEFT seed-corn funding will not be available after a particular date. Passengers could be offered discounted travel for a limited period when they swap to smartcards, before a deadline date.

The strategy so far has been to require the TOCs to respond to a commercial imperative or to be compelled through franchise agreement or deed of amendment terms. It is apparent that the commercial imperative does not work as there is no (immediate) ROI for the TOC. Take up has been markedly less successful where the target is poorly specified in a franchise agreement and not tailored to the circumstances of that TOC’s market.

In consultation with the RDG, DfT should state unambiguously what it expects from the industry in respect of smart over the medium term, both generically and TOC specific, to allow the industry to absorb and get comfortable with the operational and commercial implications. This Strategic Overview Statement needs to be achievable commercial and technically. In particular, DfT need to specify entry criteria for SEFT, (for example, adoption of the CBO,) and criteria that a scheme must meet to be considered feasible and receive DfT funding, (for example, a well-thought through customer proposition and marketing plan.)

## C7.2 TOC by TOC Recommendations

With respect to the SEFT TOCs, we are in the process of developing TOC-bespoke strategies for improving the take up of season tickets.

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## C8 Conclusions

The principal lessons Learned in the context of take-up are:

- Mandating smart take-up on TOCs when achievement was impossible either because of unrealistic targets, or because of impacts from the IOP Programme.
- Setting TOC take-up targets that were difficult to independently verify.
- Not effectively addressing train operators concerns and lack of enthusiasm.
- Not building a compelling passenger offering and then not marketing the product in an effective way, resulted in low levels of passenger awareness that the product existed. Take-up was impacted by glitches in the systems for buying the product and no use of 'hooks' such as delay repay or discounted pricing.
- Technology that was not available to the original team, such as Part 11, has the potential to make take-up easier in future.
- SEFT is not a failed Programme when compared to similar Programmes such as Oyster. This is especially so when taking into account the take-up of non-SEFT products which has arisen in part because of the existence and investment of SEFT.

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# D. Lessons for Other Smart Programmes

In the following section, we have paraphrased content from the recollections of ATOC staff members, publically available historical news articles and the *wiki* pages for ITSO and Oyster.

## D1 Historical Context

### 1. The Start of ITSO and Oyster

ITSO originally started in 1998 as an open specification for smart ticketing for use across all public transport modes.

Around the same time, the Oyster Prestige contract had been awarded to the TranSys consortium as a Private Finance Initiative (PFI) contract to implement smartcard based ticketing across the London Transport (as it was known at the time) network. Oyster was a proprietary system, designed, built and operated by TranSys. The original design was based on a zonal fares structure with two basic products, Travel Cards (period passes) and PAYG.

The initial ITSO implementation was designed around concessionary travel but included functionality for commercial ticketing on most forms of public transport.

The initial implementations for concessionary ticketing schemes allowed each local authority to have their own products and cards, this mirrored the underlying legislative framework which was considered as an oversight by many industry commentators and resulted in over 200 different products all essentially offering the same customer experience (free travel on buses during off peak hours). This multitude of product owners caused a number of issues which had also been replicated by the, up to that point, franchise by franchise approach.

All local authorities who had moved to using ITSO cards for their concessionary tickets began to accept them on each other's local jurisdiction (by country) in 2008, this meant all buses across England, Scotland and Wales accepted ITSO tickets, some of which were used as a flash pass.

Commercial bus schemes started around 2007 with Stagecoach and Go-Ahead taking a lead on new ITSO based products.

### 2. ITSO and Franchise Requirements

In September 2006 the South West Trains franchise was awarded to Stagecoach. The Franchise Agreement included obligations on Stagecoach to implement ITSO based smart ticketing. Subsequent franchises between then and the start of the SEFT Programme had progressively clearer requirements around ITSO ticketing

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implementation and take-up targets. However, it became clear that the fragmented franchise by franchise approach led to very little uptake after significant investment, with no clear customer proposition which would work across operators. Even with some overlap between operators with ITSO schemes, the actual customer proposition on offer was not as good as the equivalent paper magnetic stripe versions of the products.

### **3. ITSO Central Services Proposal from ATOC (RSP) 2007**

ATOC were asked to provide a cost estimate to provide a centralised ITSO system for rail across Great Britain in 2007. This was carried out by ATOC but had push back from owning groups who already had plans of their own for smartcard systems based on ITSO obligations they had in their franchises. In the end the DfT did not wish to 'rock the boat' and initiative was never followed up.

### **4. ITSO on Prestige (IoP)**

The ITSO on Prestige (IoP) Programme was initiated in mid 2003 (not as a programme/project at that stage).

All the operators with ITSO commitments during 2006 and 2008 had concerns over how they would deliver their commitments without integration with TfL, where the majority of journeys started, ended or went through. TfL did not at that point have any capability of reading ITSO smartcards.

In 2009 the DfT and TfL came to an agreement to update all the Oyster card readers connected to the TfL Prestige system to be able to read and accept ITSO smartcards, this was known as the ITSO on Prestige (IoP) Programme. Its initial target date for starting operation was 2011 with actual completion in 2014.

The initial IoP scope did not include any hotlisting or actionlisting capability which meant the customer proposition on offer in London would have been limited acceptance only. After a number discussions over the years between TOCs, DfT and TfL, it was agreed that a revised scope IoP+, called IoP+ would be delivered. IoP+ was agreed in the summer of 2011,

Unfortunately the formal discussions for IoP and IoP+ (informally they did have input on IoP+) were held between DfT and TfL, which meant that TOCs did not have an opportunity to highlight the service levels (which they themselves were unclear on at the time of IoP+) that should have formed the requirements between DfT and TfL.

### **5. The Birth of SEFT**

TOCs had no means to incentivise travel on smartcards and with the paper proposition being fully integrated between operators and TfL compared to smartcards, take-up was negligible on pretty much all TOC schemes.

At the time the DfT wanted a holistic overview of how smart ticketing should be developed and delivered, something that the TOCs were unable to consider for

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themselves as evidenced by the lack of take-up or consistent approach to delivery of smart ticketing to date.

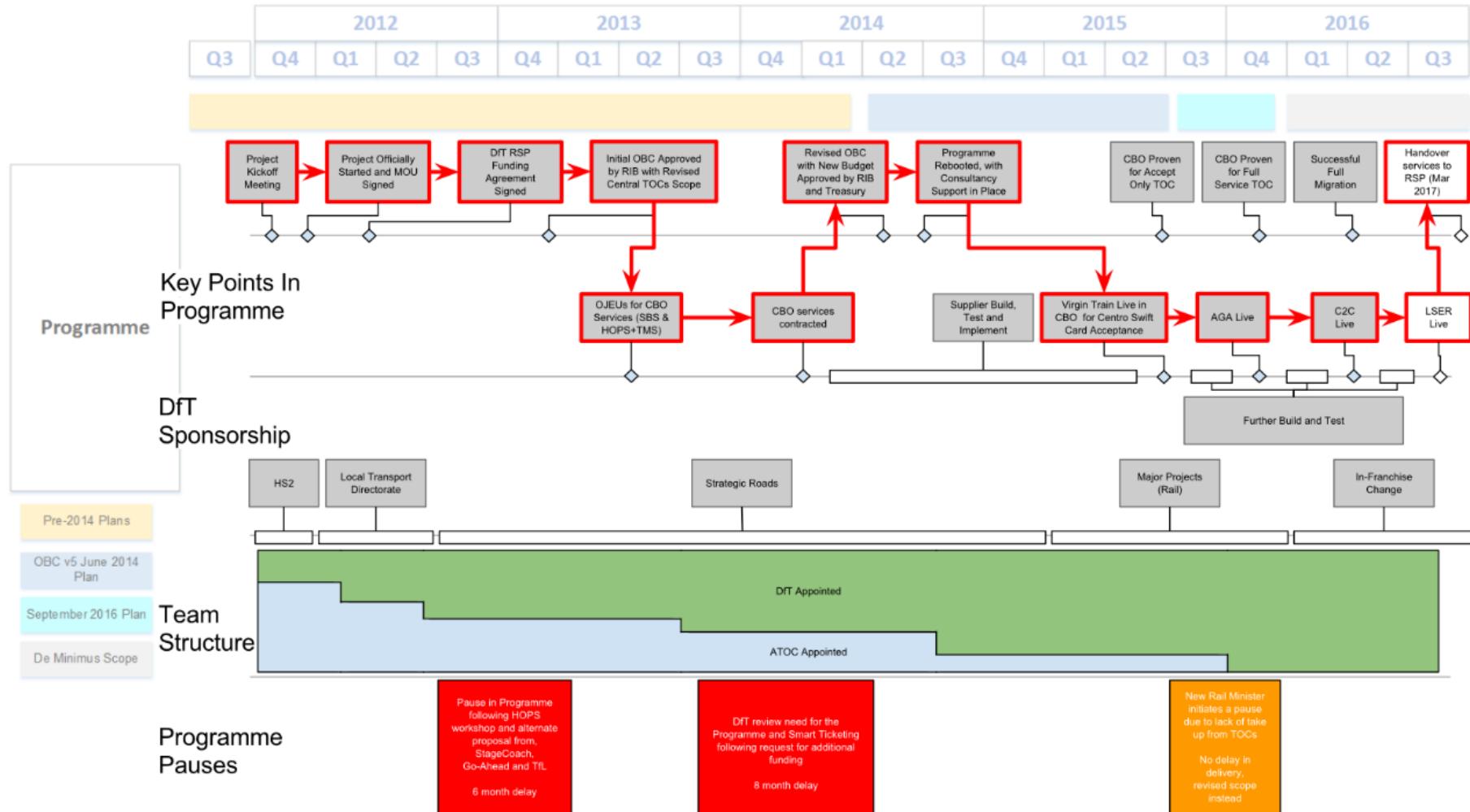
This factored with the significant investment in providing the infrastructure within the TfL estate and the TOC franchising process with very little, if any signs of use or likely use by train operators, led to the DfT instigating the SEFT Programme to manage both the customer proposition issues (identified over the years) and the full rollout of smart ticketing across the whole of the South East, which by virtue of the number of journey and value of journeys could drive significant numbers across on to smartcards.

**The DfT believed that a Programme delivered through the DfT, ATOC and TfL would ensure a consistent approach to delivery and take on learnings from ATOC's previous large scale system design and procurement and TfL's experience on smartcards to deliver what the TOCs had failed to do via the franchising mechanism.**

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## D2 Evolution of Programme Approach over Time

The following timeline shows the key activities of the Programme:



**Diagram D1 - key point during the Programme, changes in DfT sponsorship, makeup of the CDT and pauses in the Programme**

## **6. Changes in Approach to Ensuring Inter-operability**

Interoperability with TfL was not fully resourced in phases 1 to 3 (to June 2014) to enable successful integration and go live with full functionality. This led to:

- Sub-optimal customer experience (no ability to pick up from TfL managed stations, no ability to buy at TOC TVMs within TfL boundary, which were as a result of the scope of the underlying IoP project and functionality)
- TfL did not give enough priority to SEFT's needs
- service Level discussions took too long with TfL changing tact on several occasions.

To avoid delays to launching in external party estates, ensure interfaces to external parties are scoped and fully considered in design stage and followed up as a dedicated project.

**Allowing c2c to be the pilot enabled the central product set to be enabled in London, enabling shortened rollout times with AGA and other future TOCs making use of the central product set.**

The results of this pilots were:

- Product set and ITSO architecture defined and rolled out as part of c2c pilot.
- Allowed an opportunity to prove migration into the CBO.
- Only opportunity to get round the TfL moratorium (due to the renegotiation of TfL's ticketing contracts e.g. Oyster - which resulted in Electra), which could have delayed the delivery of the Programme by potentially a year.
- Provide some early success whilst waiting for procurement and implementation of CBO.

**Shortened time for future on boarding and migrations into the CBO by reducing amount of integration required with external schemes such as TfL**

With Go-Ahead and Stagecoach rejecting the use of single Central Product Set for their flows in late 2012 (which could have been deployed across all TOCS even if they wanted to retain their own HOPS for their assets and cards) a further compromise had to be taken in the form of additional shall owner messaging which was included in RSPS3002 to provide the required customer support by the card issuer [KR015] at the expense of additional changes in ITSO validation and retail points as it was not part of "standard ITSO". This was implemented on Cubic provided gates and validators as part of IoP+, however is not been included in any of the TVMs upgrades. As these changes have not yet been implemented the card issuer does not get all the information required for them to provide the customer support required by the Customer Proposition.

**The SEFT Programme could have avoided additional changes and ongoing costs by requiring all TOCs to make use of the single Central Product set, even if they were not migrating to the CBO itself.**

Future programmes need to ensure that any changes in technical approach are fully impact assessed before they are agreed.

### 7. EMV Trial

The initial scope of the Programme did not include any EMV capability (other than reader compatibility), however with TfL keen to get hold of some money and extend their plans for EMV across a wider geography, the Passenger Validator procurement was modified to include EMV capability at a greater level of functionality than had originally been envisaged.

After the initial disagreement with the TOCs and DfT over system architecture, TfL and Chiltern came up with their own proposal for a pilot to be run on the Chiltern route from Bicester into London, with TfL as the delivery partner for a Chiltern ‘owned’ scheme.

The project was handled as a separate project as neither Chiltern nor TfL were keen on being associated with the CDT due to their concerns over the CDT. This meant that the project was managed by TfL and Chiltern with no oversight from the CDT. As the trial was not originally part of the scope for the Programme, the additional scope which was not reflected in sufficient additional resources put additional pressure on existing DfT resources until the Programme re-boot.

Following several attempts at a business case which in all cases came in at a significantly higher budget for that allowed for in the re-booted Programme budget, the project was eventually dropped by all concerned in late 2015.

### 8. Changes to the development methodology

Due to the initial rush in defining scope of the Programme, the initial approach to scheme design was based on using the existing Southern product design and a basic customer proposition developed by a small group of ATOC, TOC, TfL and DfT representatives. This approach was not against any specific development methodology as the Programme was not ‘developing’ anything new.

**Within the first few months it became clear that the existing implementations could not deliver the early customer proposition. The CDT informally changed the approach to development, adopting a Software Development Life Cycle model.**

Ensure that a formal development methodology is adopted at the design phase of the Programme, even if it is copying an existing scheme in order to avoid confusion and lack of buy-in for the design of the SEFT scheme.

By October 2014, when the Programme re-commenced after review, this lesson had been learned. The CDT moved to the “V” system development model. For quality assurance, this approach incorporated the existing design work, even though it had already been largely completed.

See Diagram D3

The following diagram details the key development steps throughout the life of the Programme:

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## Lessons Learned Report – South East Flexible Ticketing

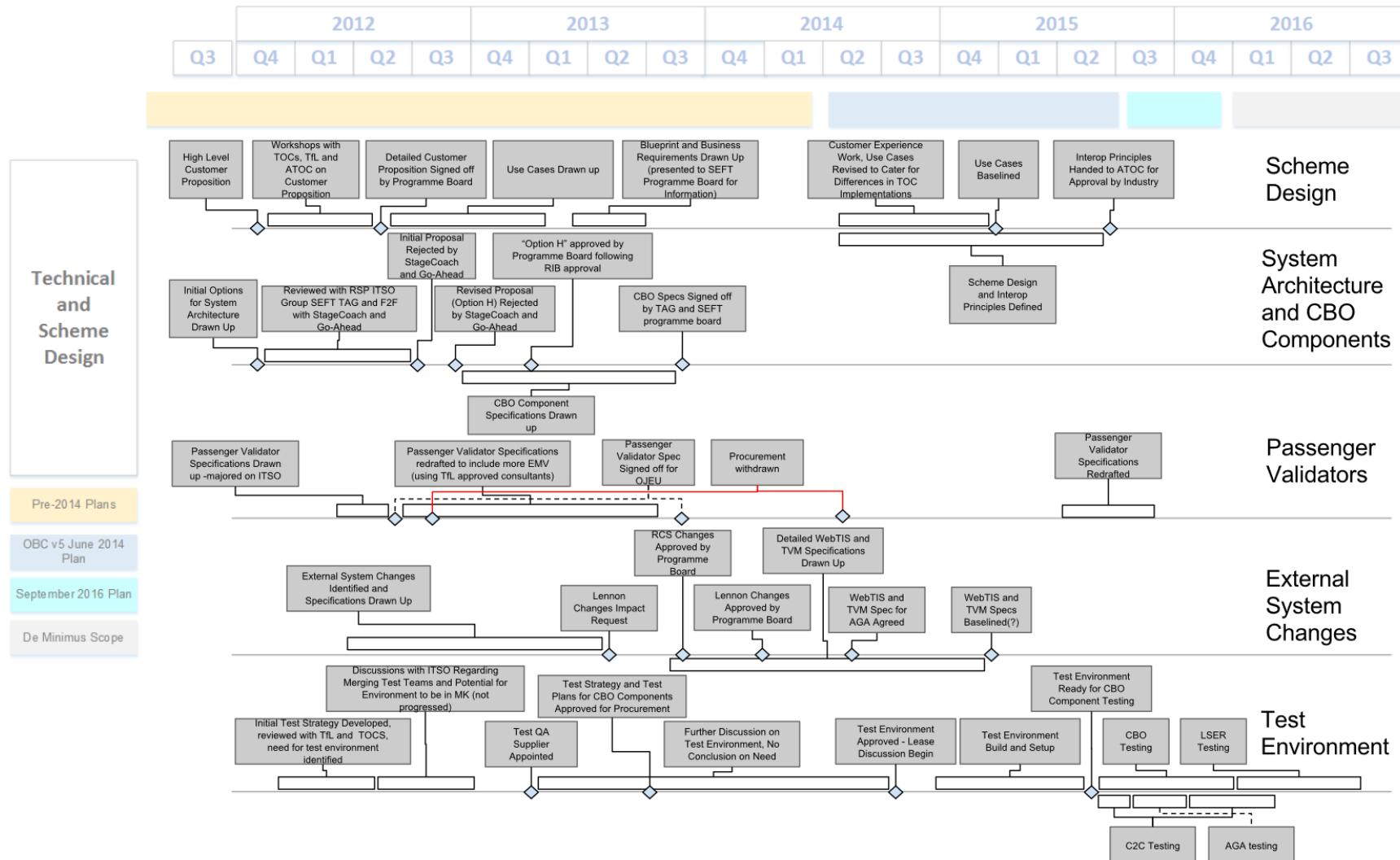


Diagram D2 – Technical and Scheme design events during Programme

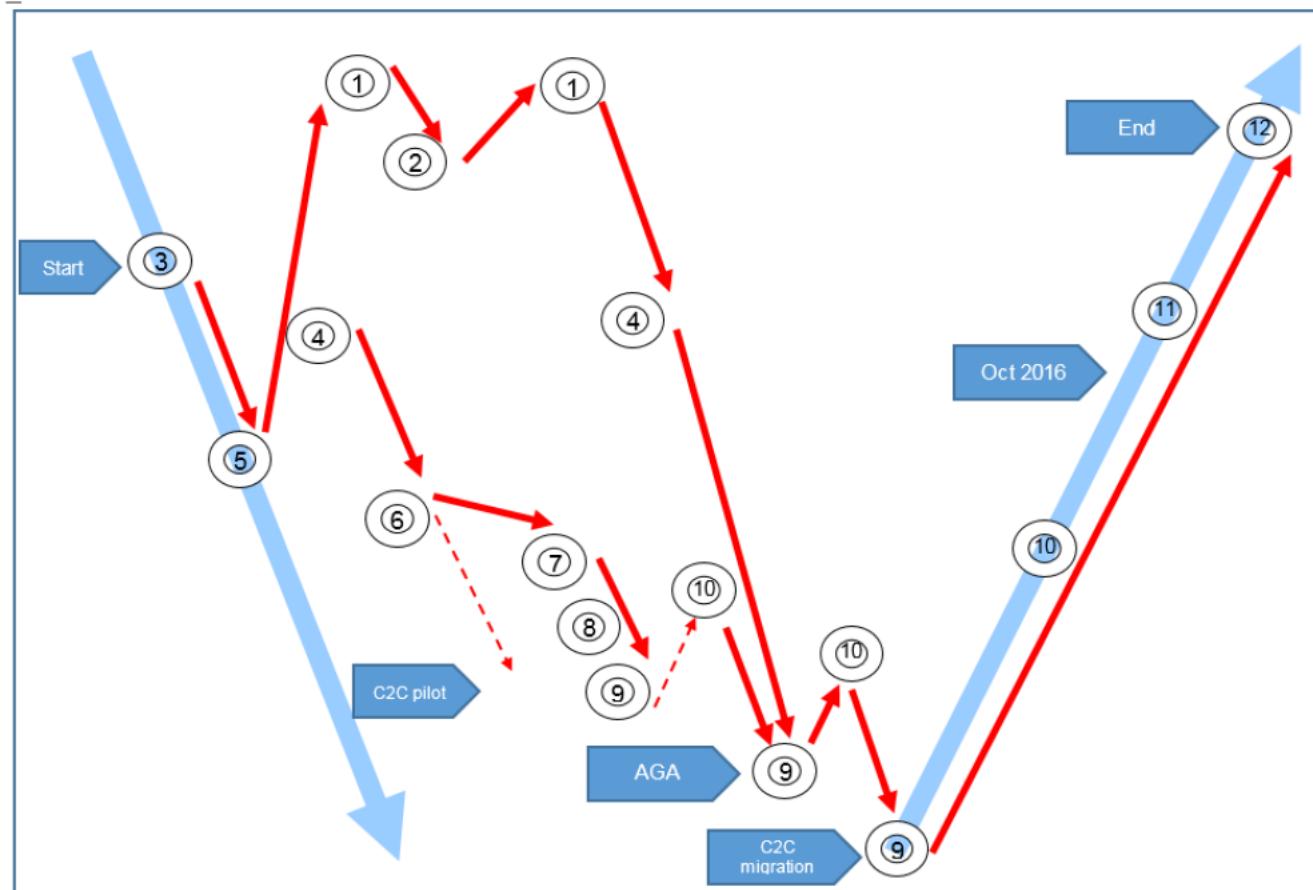
## Lessons Learned Report – South East Flexible Ticketing

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The following diagram shows the actual development timeline (in red) when overlaid with the V model.



V Model Step	Description Relevant to SEFT	SEFT Sequence of Steps *
1	OBC	4, 6
2	Blueprint and Business Requirements	5
3	Customer Proposition	1
4	Use Cases	3, 8
5	Details System Requirements	2
6	Procurement of CBO	5
7	System Development – supplier	6
8	System Testing	7
9	Implementation	8, 10, 12
10	Integration, Test and Validation	9, 11, 13
11	System Verification and Validation	14
12	Operation and Maintenance	15

Diagram D3 – V Model overlaid with SEFT actual development steps

\* Steps in **bold** were carried out in parallel with another step.

## 9. Changes in Procurement Approach Over Time

### **Passenger Validator Procurement**

The initial scope for the Programme included Passenger Validators (PVals). However, the scope for the level of EMV functionality was not so clear. Initially the Programme was asked to specify EMV Level 1 hardware compliance (as had been the case for other smart ticketing Programmes). A procurement was launched in Sep 2012 which later had to be pulled following the appointment of a new Procurement Lead who pointed out the lack of governance arrangements might cause legal issues down the line.

Suitable governance must be in place to scrutinise whether the procurements are ready to be initiated.

Following the withdrawal of the initial procurement the Programme used the opportunity to refine the EMV requirements, with support from TfL approved consultants who had supported them. This lead to a more detailed specification which should have been able to connect up to the TfL EMV back office.

The second procurement was launched in Nov 2013, however was also pulled following the reboot of the Programme in 2014 as the PVals were no longer in scope for the early phases of the rebooted Programme.

**This lead to the market feeling that the Programme did not know what it wanted to deliver and a reluctance to respond to future requests for information/services. With the ITSO smart ticketing market being relatively small this may have caused reputational damage for any future procurements which ATOC/RDG (RSP Ltd was the contracting party for the first two procurements) may wish to undertake on smart ticketing services.**

After push back from TOCs the Programme was convinced of the need for PVals once again and a revised specification (to bring it up to date) was drawn up in late 2015, however the Rail Minister intervention in late 2015 meant that the Programme did not go out to procure PVals for a third time.

### **Procurement strategy**

The initial strategy was for a centrally managed and funded programme which included the following items (full details of the need and outcomes for each can be found in Section E):

- Host Operator or Processing System (HOPS)
- Transaction Management System (TMS)
- Smartcards
- Test Assurance
- Handheld inspection units

These were to be procured on a competitive basis.

In addition:

- Gate Reader Upgrades
- WebTIS Upgrades

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- TVM Upgrades
- RSP System Upgrades

These were to be procured on a single supplier basis.

After discussions around the risks and issues over state aid (see Section E) and the differing requirements for each TOC for handhelds it was agreed that the WebTIS upgrades, TVM upgrades and handhelds units would be procured by the TOCs themselves and funded via the DoA's.

### **10. Systems Integrator Role**

Following advice from smart ticketing schemes that had gone before and the fact that the Programme was not scoped down to the level required for a system integrator to be able to accurately price as well as the lack of ITSO scheme experience from system integrators, the Programme Board agreed on the Programme taking the system integration risk.

**Based on the position the Programme was in in terms of scope definition the decisions for the Programme to take on the system integrator role was the right thing to do.**

### **11. Addressing Issues with ITSO Collection Delays**

One of the failings of ITSO rail schemes implemented to date was the time lag between online purchases and pick up from stations. This had limited impact on the schemes due to the low take-up and limited product sets that were on offer.

However with the potential volume of collections going through the SEFT estate, the at 'order at least 2 hours before' collection would cause both issues and embarrassment for a 'Smart' technology which was significantly slower than that on offer for magnetic stripe Ticket on Departure (ToD) options available to customers. TOCs were already looking to a 30 minute proposition for ToD, with the majority of tickets ready for collection actually available in real time once payment had been confirmed.

This was recognised as problem by both the Programme team as well as the TOCs (the Customer Proposition had a target collection time of 15 minutes [KR015]) and alternate options for collection were drawn up. These options were:

- Using the existing ToD system to store ITSO transaction which could then be collected at TVMs.
- Deploying ITSO Part 11.

The Programme team recommended following the Part 11 route as it also allowed the option for customers to load their tickets using their own NFC enabled phones. As well as the ability to swap out paper season tickets with a smartcard at stations, without the need to wait for a replacement to be sent in the post.

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The Part 11 option was included in the original HOPS procurement but not taken up till Q2/3 2016.

**There was not enough resources or priority given to use ITSO Part 11 from first live use of the scheme to allow a better customer proposition.**

## 12. Technical Back Office Implementation (System Architecture)

The original CBO (ITSO back office in particular) design remained largely unchanged throughout the Programme, it was designed to cope with all ticketing types required by rail for the foreseeable future without the need for any front office equipment changes (apart from device based configuration/base data changes).

The architecture (see Diagram D4) was based on a single back office system with segregated areas for each TOC for their own station based infrastructure to be attached to and card to be issued against. A single set of products which were common to all TOCs were created and housed in a separate partition. All data was then passed on to the customer support system (the TMS).

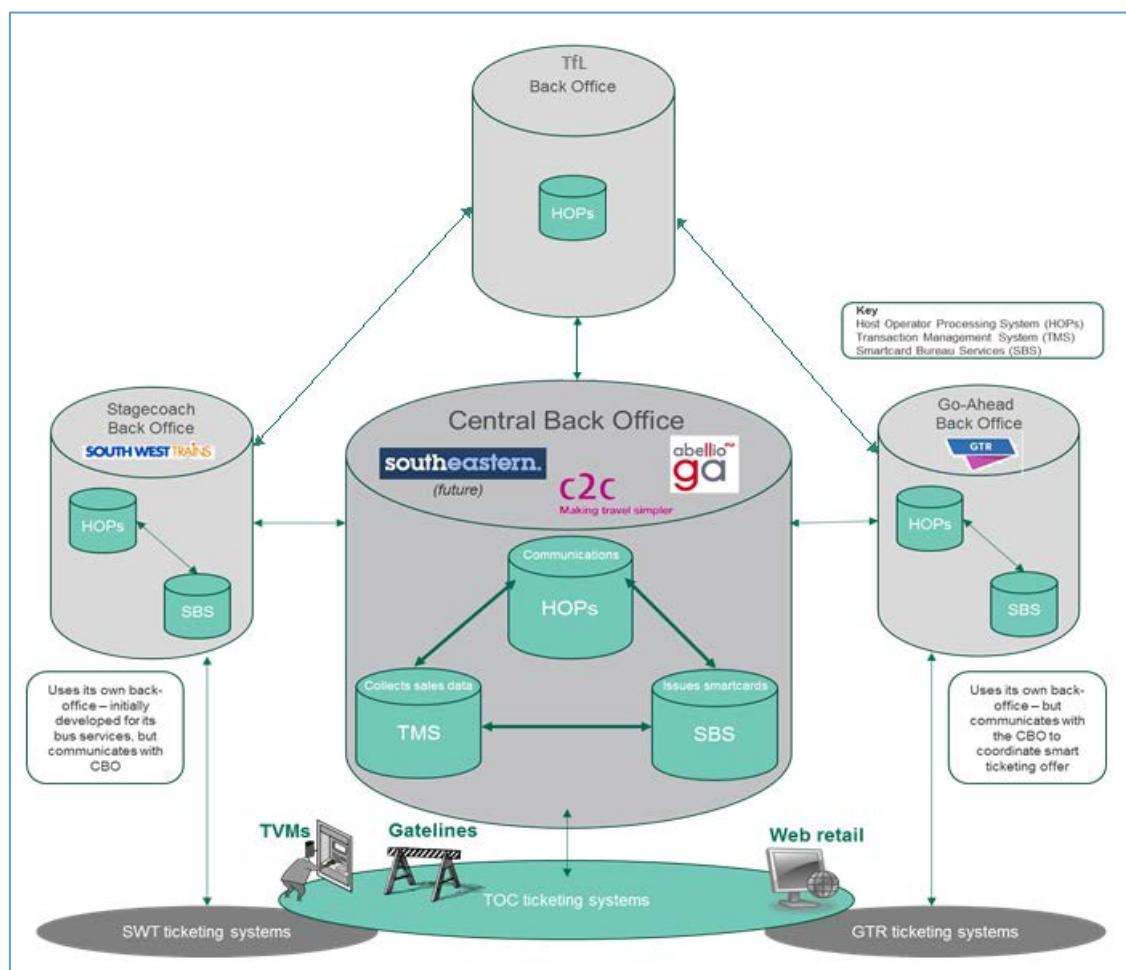


Diagram D4 – System Architecture for Whole of SEFT Scheme

The TMS could be extended to take on other ticketing data sources such as barcode ticketing or EMV ticketing.

The core systems delivered by SEFT have a life beyond the Programme and can be used to support the smart ticketing ambitions of the rail industry.

### **13. ITSO Product Design**

A single product set was designed to allow all possible rail tickets currently on offer and envisaged for the future [KR015]. This would allow integration with other schemes once, rather than for each new TOC that introduced ITSO using their own back office.

This has been proven in the case of AGA who were able to go live with TfL on the back of the original integration work carried for the central Product Set setup and tested with c2c in 2014.

**The use of a single product set reduced integration effort and time required for new TOCs to implement ITSO based smart ticketing and has been applauded by a number of respected industry commentators within the industry.**

Whilst the back office was created to handle the ticket products and transactions required for flexible ticketing, the commercial and financial elements of flexible ticketing remained tricky (question of fares reform and regulation impacting revenues and creating clear winner and losers) and did not have enough resourcing to overcome these issues to deliver a working solution for passengers or rail operators.

With flexible ticketing being both part of the name and mentioned in the chancellor's announcement in 2011 more resources should have been allocated to deliver the flexible element of SEFT.

## **D3 Development of the Smart Roadmap**

### **14. The Definition and Development of ‘Smart’**

Over the past 18 years the definition of “Smart” began with Oyster and ITSO and the work by TOCs and ATOC on cheaper alternatives using printed or mobile barcode tickets. All of these things had one thing in common, a unique and trackable ticket number.

In more recent years TfL had begun looking at the use of contactless EMV cards as means to lower the cost of ticketing even further by not having to issue as many cards or the added support the card would require throughout its life.

ATOC had over the period 2007 and 2012 advocated a mixed estate of ticketing technologies with season tickets on smartcards and barcodes for advance purchase and walk products.

**DfT had its own plans, which were fixed around ITSO and possibly contactless EMV using the TfL back office.**

Programme did not take into account the rail industry's desire to take a holistic view of ticketing which led to a certain level of disengagement with the Programme.

The development of Smart ticketing roadmap was left to ATOC (RDG in more recent years). There was some cross fertilisation, through the use of shared resource, between the SEFT Programme, ATOC and the RDG Future Ticketing Working Group, in the development of SEFT's technology and RDG's own roadmap.

The DfT Smart and Integrated Team looked at a number of alternative technologies throughout the SEFT Programme to look at how they might fit in to the mix of existing, SEFT provided and these new technologies. However the focus remaining on ITSO and contactless EMV.

## 15. Choice of ITSO Technology Solution

The choice of ITSO was discussed on several occasions in the early months, it was concluded that ITSO was still the best options based on:

- Existing investments already made with IoP;
- Existing ITSO franchise commitments that had been in place since 2006 and had been reinforced with each new franchise;
- Large number ITSO cards already in use with ENCTS;
- No other technology was mature enough to provide the range of fares and ticketing products required for the Programme; and
- Use of Part 11 would allow instant pickup with either an NFC phone or low cost collection devices, or even from local shops making use of PayZone/PayPoint devices.

## D4 Learning from Other Exemplar Schemes

### 16. Comparing 'SEFT' with the London Oyster Scheme

Link: [https://en.wikipedia.org/wiki/Oyster\\_card](https://en.wikipedia.org/wiki/Oyster_card)

#### The Similarities

- a. Large volume of passengers affected
- b. Interoperability across modes and operators
- c. Large amount of investment required (communication networks, gate readers, online capabilities)

#### Key Points of Difference

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- a. Open specification with multiple suppliers vs closed proprietary technology supplied by a single supplier
- b. Oyster was designed for urban travel whilst ITSO was designed for all types of travel, doing some well, others not so well, such as Pay As You Go (PAYG).
- c. Oyster was designed around a zonal structure with concentric zones around a centre. It had two main product types, PAYG and period passes (travel cards).
- d. Due to the low fares and mostly gated nature of the TfL estate, PAYG worked very well as there is always a smartcard reader available either at the start, end or at interchange points.
- e. Rail has a more complex range of products due to the higher fare and longer distance nature of travel. This had led to the following product range being available:
  - o Period passes (seasons)
  - o Walk up singles and day returns
  - o Walk up open returns
  - o Advance purchase singles (available for purchase up to day before travel in most cases)
  - o Carnets (low volume with no interoperability)
  - o Group ticketing
- f. **Due to the high fares and long distance nature of travel and the lack of validation points at all locations, PAYG is still not suitable for rail use (other than in urban environments).**
- g. Single point of control vs complex stakeholder map
- h. Funding, commercial risk, commercial control all under TfL, whereas SEFT had a mix of TOC/ATOC/DfT/TfL with differing levels of risk and control
- i. Hugely different budgets (£45m/£80m vs £190m)
- j. Heavy reliance on a few suppliers (mostly Cubic) vs multitude of suppliers with contractual relationships through a variety of companies (RSP or TOCs).
- k. TfL had buy in at political level, local government level and operators (business case) compared to SEFT's limited buy in from a subset of its key stakeholders.
- l. TfL were able to incentivise their customers to move across to Oyster by the means of price differentials between Oyster and paper tickets, in some cases 4 times the difference, making it cheaper to pay the deposit for card and then make just two journeys. TOCs and SEFT have not been in a position to provide such incentives due to Fares Regulations.

A single organisation with control over all aspects of the scheme from customer proposition to products and fares provides a quicker and more efficient route to delivery.

## 17. Comparing ‘SEFT’ with the Dutch OV-chipkaart Scheme

Links: <https://en.wikipedia.org/wiki/OV-chipkaart>

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<http://www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out- creeps-forward.html>

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## The Similarities

- a. Covered a large geographic area
- b. Covered multi modal transport
- c. Complex stakeholder environment
- d. Large amount on investment required in infrastructure and back office systems (100m euros by end of 2008)
- e. Local operators could have local products that needed to be supported
- f. Lack of clear leadership
- g. Complex fares structure making it difficult for passengers to know what they might pay for a given journey
- h. Hugely complex programme which was required additional funding and was delayed on several occasions.

## Key Points of Difference

- a. Single joint venture organisation, TransLink Systems (TLS) in charge of specification as well as majority of the delivery (back office, apportionment and settlement)
- b. Customer support provided by the TLS
- c. Political and organisational buy in from the very start
- d. Whilst an integrated scheme, customer proposition on usage significantly different.
- e. Single brand vs multiple brands in SEFT

A large stakeholder environment with limited control over a small number of aspects for the scheme has similar levels of difficulty and delays and cost overruns.

## 18. Comparing ‘SEFT’ with the Hong Kong Octopus Scheme

Links [https://en.wikipedia.org/wiki/Octopus\\_card](https://en.wikipedia.org/wiki/Octopus_card)  
<http://www.adcet.com/publications/category/10-carte-de-vie-quotidienne?download=25>

## The Similarities

- a. Covered a large geographic area
- b. Covered multi modal transport
- c. Large amount on investment required in infrastructure and back office systems
- d. Similar timescales to deliver initial offering (approx. 4 years)

## Key Points of Difference

- a. Very simple product (Pay as You Go) compared to complex set required for SEFT

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- b. Started very small with usage on the Mass Transit Railway (single operator) before expansion over a number of years to other public transport operators and general retailers.
- c. Single brand vs multiple brands in SEFT
- d. Small number of stakeholders at the beginning of the Programme

Starting small with a very simple product can lead to growing customer confidence and increased usage.

## 19. Comparing ‘SEFT’ with the Japanese Suica Scheme

Link <https://en.wikipedia.org/wiki/Suica>

### The Similarities

- a. Covered a large geographic area
- b. Covered multi modal transport (delivered over an extended time period)
- c. Large amount of investment required in infrastructure and back office systems
- d. Similar timescales to deliver initial offering (approx. 4 years)

### Key Points of Difference

- a. Very simple product (Pay as You Go) – can also support season ticket, but not singles, returns or carnets.
- b. Started very small with usage on the Japan Railways East (single operator) before expansion over a number of years to other public transport operators and station based vending machines and some station based retailers.
- c. Single brand (with localised customisations) vs multiple brands in SEFT
- d. Single stakeholders at the beginning of the programme

Starting small with a very simple product on small number of operators can lead to growing customer confidence and increased usage before further rollout to other operators/modes.

## 20. Learning from Other Case Studies

### Transport Scotland and Merseytravel

During the first few months of the Programme several exploratory visits were made by the core CDT to a number of existing schemes who were considered most relevant to SEFT, including Transport Scotland and Merseytravel.

The following considerations/lessons emerged as a result of these visits:

- Initial rollout were difficult given diverse levels of experience, size and engagement

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- Use fixed price contracts for supply and support
- Ensure that programme gets long term commitments from the supply base
- Ensure the programme carries out commercial analysis of changes
- Have informed leadership
- Ensure there are clear responsibilities (including a Partnership Charter signed by all suppliers)
- Ensure you have skilled integration resources
- The need for rigorous change control process
- Use forums with all parties to keep everyone informed and involved
- Single scheme with dedicated team delivering with shared vision delivers a much better proposition and implementation. It cannot be spread over lots of groups/teams/organisations
- Should try and get service levels built into initial contracts as they are made, to avoid having to wait for break clauses
- “More resources” – even with their small schemes they were resource hungry
- Ensure there is an integrated approach looking at retailing and integrated smart ticketing, it's not just another ‘ICT’ project

## Go-Ahead and Stagecoach

Whilst no direct lessons learnt exercises were carried with Go-Ahead and Stagecoach a lot of the material used for the initial scheme design was based on Go-Ahead's Southern scheme. Stagecoach provided expertise in developing the customer proposition.

There was also the Oxford Interoperability (acceptance only) project outputs (verbal via the Programme Board) between Go-Ahead and Stagecoach buses which was fed into the early scheme design work.

Greater consideration should be given at the beginning of programmes to look at other similar programmes.

SEFT looked to Stagecoach and Go-Ahead mainly for their smartcard learning. They had some experience in interoperability, but it was in hindsight insufficient to inform the breadth and level required for a scheme covering the entire South East. These owning groups were also actively promoting their own commercial interests.

**Opportunities were missed or taken too late to learn from previous multi operator and multi modal schemes.**

# E. Lessons from Smart Technical Execution

**Source documentation available to the Review for the purposes of drawing execution lessons:**

- CDT Lessons Log
- Interview notes for a number of past and present team members/stakeholders
- SEFT Procurement Strategy

## E1 Key Factors in Time, Cost and Quality When Onboarding a TOC

**Onboarding of TOCs with no existing ITSO smart ticketing is easier to manage and is less risky as there is no migration of data, infrastructure or customers required.**

This in turn leads to a more timely delivery as it does not need to deal with legacy issues associated with a migration. It does however require planning and an onboarding strategy should be defined with details of the key plans and activities that are required.

The supply chain for system changes required for the onboarding TOC can be involve a small number players, some of which are immature and not resourced adequately, this needs to be recognised and managed to ensure no delays are introduced. This however is an endemic problem across the board for rail and not exclusive to onboarding of TOCs with no ITSO smart ticketing in place.

The need to ensure all aspects of the business are aware and buy into smart ticketing is crucial to successful delivery. This will enable the organisation as a whole to promote the smartcards and their use.

A dedicated project team with representation from supply chain, TOC and programme, will ensure that all aspects are covered off and alignment between the various projects with the programme lead to successful onboarding.

Early engagement between the project team will ensure the required steps have enough time to be completed successfully. Use of online collaboration tools can support effective communications and ensuring all parties are working off the same material.

Skilled resources with knowledge ITSO smart ticketing are needed to support a quality delivery.

All of these factors can be seen to have been recognised and managed during the life of the programme which in turn supported the timely onboarding of both Virgin West Coast and Abellio Greater Anglia into the SEFT CBO.

## E2 Key Factors in Time, Cost and Quality When Migrating a TOC to the CBO

Migration of a TOC with existing ITSO smart ticketing needs to be treated as a project in its own right and needs consideration on all aspects of the business.

This will ensure successful delivery with support from all parts of the business. This was achieved for c2c which allowed a successful migration, with no impacts to passengers. A migration strategy should be defined with details of the key plans and activities that are required for successful migration.

Ensuring the freezing of system functionality on both sides makes the migration process more efficient and reduces the risk of delays or failure of the process.

Migrating into a test environment can flush out any peculiarities of existing implementations, which need to be resolved before the live system migration can be conducted.

A clear set out acceptance criteria need to be defined and adhered to during the migration of the test system and then the live system.

Sufficient preparation and planning time should be scheduled to ensure a smooth and to schedule migration.

With the experience of the C2C, the SEFT programme should be in a position to provide a reasonably accurate estimate of the amount of time required. Use of online collaboration tools and dashboards tracking progress can support effective communications and ensuring all parties are working off the same material.

A dedicated project team with representation from supply chain, TOC and programme, will ensure that all aspects are covered off and alignment between the various projects with the programme lead to a successful migration.

Skilled resources with knowledge ITSO smart ticketing are needed to support a quality delivery.

## E3 Critical role of the Test Facility

The test facility has allowed the programme to take ownership of technical assurance of both CBO components as well as the integration of TOC and other third party systems and services.

**Without the test environment the amount of additional testing and assurance activities required to ensure a successful delivery would have delayed the successful implementations of CBO components as well as the on boarding and migration of TOCs.**

Previous experience by RSP on introducing new functionality without the opportunity to carry out end to end testing in a safe environment has shown that the risk of getting it wrong can disrupt or even completely stop critical capabilities which can have significant revenue implications.

**The test facility is seen as a highly valuable resource by the rail industry, one which will further their smart ticketing roadmap ambitions. It has the necessary infrastructure in place to support the testing and integration of existing magnetic stripe ticketing as well as ITSO and in time barcode and contactless EMV and other technologies as they arise.**

## E4 “It’s Not A Technology Project”

It has become clear that whilst the programme should have been treated as a business change programme the initial focus around the use of ITSO and the back office architecture took the programme down a path which led to delay and antagonism from the TOCs.

The business requirements, roadmap, commercial elements lacked focus in the early days which led to the stakeholders venting their frustrations on the technical design work which did not have any scheme design material on which they could be referred to.

In reality the technology side was a small part of the programme and relatively straight forward to deliver but with different cost profiles, depending on the route decided upon.

## E5 Tips for Execution Planning and Readiness

The Programme’s Central Delivery Team has made further improvements to its execution planning and readiness activities, learning from the successful onboarding and migration of TOCs.

Overleaf is one example of process improvement, through the introduction of a tracker quality assurance tool to support TOCs in their readiness planning.

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**Execution Checklist of Key Agreements, Strategies, Plans and Documents Required:**

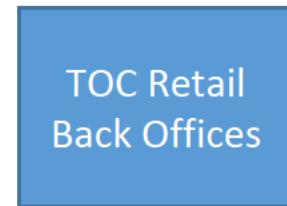
Item	
Agreement on overarching business needs for the scheme – Business Case	
Approved Blueprint and Business Requirements	
Approved Customer Proposition (including branding)	
Product Catalogue	
Cross Scheme Agreements	
Financial control and financial impact on organisation(s)	
Implementation Strategy <ul style="list-style-type: none"> <li>• Procurement (new and upgrades)</li> <li>• Schedule</li> <li>• Resourcing (including ensuring you have the right skills available at the right time)</li> </ul>	
Onboarding/Migration Strategy	
Testing Strategy <ul style="list-style-type: none"> <li>• Card issuance</li> <li>• Retailing</li> <li>• Fulfilment</li> <li>• Card and Product Acceptance</li> <li>• Hotlisting</li> <li>• After sales processes (e.g. refunds)</li>   <li>• Interoperability with external schemes <ul style="list-style-type: none"> <li>◦ Hotlisting and Actionlisting</li> <li>◦ HOPS to HOPS messaging</li> <li>◦ Service Levels</li> </ul> </li> <li>• Test environment</li> </ul>	
Marketing Strategy <ul style="list-style-type: none"> <li>• Advertising campaigns</li> <li>• Promotional material (at station, on website(s), email and postal)</li> </ul>	
Management Information Strategy	
Disaster Recovery and Business Continuity Strategy	
Business Case and Benefits Management Plan	
Staff Training Strategy	
Business As Usual Plans	

## E6 Service Processes (Below) and Enablers

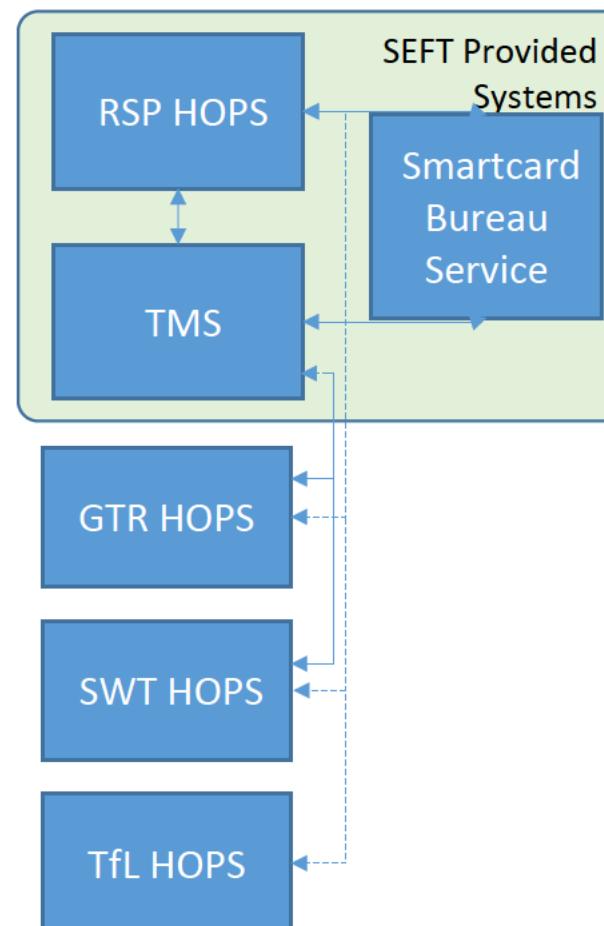
### Front Office



### Middle Office



### Back Office



In the following pages, the Service Processes comprising 'SEFT' on page 66 are reviewed for the principal infrastructure lessons.

<b>Host Operating or Processing System (HOPS)</b>	
<b>Why Needed?</b>	<b>Outcome</b>
<p>A HOPS is needed to provide messaging, security of data (stored on cards and transmitted), asset management and functionality to enable collection of ticket products. It is the key back office component required to enable ITSO smart ticketing.</p> <p><b>Where Would It Be Used?</b></p> <p>It was envisaged that a single HOPS that all TOCs across Great Britain could migrate/on board to.</p> <p>The initial business case for the HOPS included options for a single HOPS across the whole region (including the migration of those that already had their own) to each TOC having their own HOPS.</p> <p><b>Identified Risks/ Issues</b></p> <p>TOC owning groups who already had their own HOPS would wish to have their own for their other franchises.</p> <p>The Programme had no powers to force those TOCs that already had a separate HOPS to give them up and adopt the central one.</p> <p>Multiple HOPS platforms significantly complicated the original approach and delayed scheme integration for timely delivery.</p>	<p>A single HOPS available to all TOCs and potentially other ITSO based operators.</p> <p>C2C, Abellio Greater Anglia, South Eastern and Virgin Train West Coast make use of the HOPS (following reduced scope in 2016).</p> <p>The approach to allow existing TOCs with their own HOPS led to the Programme introducing additional system interfaces and consequently, additional costs of ownership to asset owners.</p> <p><b>Lessons Learned</b></p> <p>The central HOPS approach has lessened the integration work required with TfL as well as with other TOCs.</p> <p>It also means that future integration/migration of other TOCs who use the central HOPS will have little technical impact on existing schemes such as TfL.</p> <p>Consider scalability requirements early in the development of solutions. This has proven valuable in maximising the potential of the CBO as an asset for wider industry use.</p>

<b>Transaction Management System (TMS)</b>	
<b>Why Needed?</b>  A TMS is a cut down customer support system which provides purchase and journey information for all cards and ticket products sold or used via the central HOPS. It also provides a number functions to enable the retailing and aftercare support of ITSO products.  A joined up customer proposition across all TOCs within the South East Region, is best supported by a TMS that captures customer transaction data at a central point.  The design considered the opportunity to capture customer profile data. This feature was not developed due to the TOCs' requirement that they retain control of customer relationship.	<b>Outcome</b>  The TMS was delivered for use by the TOCs making use of the centrally provided solution.  In addition changes were made to the specifications for IoP and RSPS3002 to require all smart card readers to also send back all transactions to the card issuer to support the TOCs who were not making use of the central solution. This has led to additional transactions being generated and being sent through the systems.
<b>Where Would It Be Used?</b>  Across the South East region for all TOCs making use of the centrally provided solution with capability and scalability to be GB wide. This would be available via their own WebTIS, customer support centres and TOC staff using a web portal to access the TMS.	<b>Lessons Learned</b>  The additional messaging required to support the non-central solution has increased costs for IoP and increased messaging volume across the South East over and above that required for standard ITSO transactions.
<b>Identified Risks/ Issues</b>  Without the TMS SEFT could not warrant customers would be supported effectively. This would have had serious impacts on customer confidence in the product and TOC appetite to promote it, leading to discontent with smartcards and the Programme benefits not being realised.  The TOCs who already had their own HOPS might not want to make use of the TMS, leading to less than optimal customer experience where interoperation between a central and a non-central TOC takes place.  There was a possibility that the TMS might not have been ready for live operation when the HOPS was available.	The TMS has enabled the TOCs making use of the central solution to quickly and easily access data for customer support purposes even though the customer may have a card issued by another TOC (using the central solution) or used their card across a number of TOCs' stations.  Consider scalability requirements early in the development of solutions. This has proven valuable in maximising the potential of the CBO as an asset for wider industry use.

<b>Application Programming Interface (API) to Support Apps</b>	
<p><b>Why Needed?</b></p> <p>An API is an interface to allow external systems and services to access data and functionality.</p> <p>The DfT gave early consideration to enabling other forms of smart retailing and support, this included mobile smartphone applications which it considered as becoming more important to enable customers to buy and get self-support through their smartphones.</p> <p><b>Where Would It Be Used?</b></p> <p>Across the South East by passengers wishing to purchase or received support through their smartphone.</p> <p><b>Identified Risks/ Issues</b></p> <p>The initial scope did not include any API requirements.</p> <p>The Programme team felt that the API should not have been included in the early phases of the Programme as there were more pressing issues to resolve.</p> <p>The TOCs were in parallel looking at their own smartphone apps and did not want the DfT providing a competing solution.</p>	<p><b>Outcome</b></p> <p>The API idea was dropped following consultation with the TOCs and the recognition that the Programme had other priorities to deal with.</p> <p><b>Lessons Learned</b></p> <p>Do differently.</p> <p>SEFT scoping would have been more straightforward if it had an agreed smart roadmap.</p> <p>While it is important to future proof smart solutions, this consideration did at times increase the time and effort involved, impeding progress on the short term solution.</p>

<b>Smart Bureau Service (SBS)</b>	
<p><b>Why Needed?</b></p> <p>A Smart Bureau Service provides smartcards with appropriate artwork printed on the card either to be sent in the post or for distribution by TOCs.</p> <p>The decision to base technology on ITSO, required TSO based cards to be procured for use by the passengers.</p> <p><b>Where Would It Be Used?</b></p> <p>Across the South East by all TOCs (including non-central) and passengers. Currently only being used by central TOCs.</p> <p><b>Identified Risks/ Issues</b></p> <p>The existing cards in use by other TOCs did not have sufficient capacity to hold the number of products estimated in the latter phases of the Programme. Existing TOCs with ITSO scheme were already experiencing such problems.</p> <p>Any new card type might lead to delays in rollout and additional integration work with both the SEFT Programme as well as existing schemes.</p>	<p><b>Outcome</b></p> <p>The final requirements for the SBS included the need for both existing card types as well as the new high capacity cards with the onus on the supplier for configuration work to enable the cards to work on existing infrastructure. The high capacity card has yet to be delivered. The SBS contract also provided cards at a significant discount compared to existing benchmark rates.</p> <p><b>Lessons Learned</b></p> <p>Repeat</p> <p>The use of a central framework contract reduced the cost of smartcards and enables other non-central TOCs to make use of it, reducing the cost of smart ticketing across the industry.</p> <p>Consider scalability requirements early in the development of solutions. This has proven valuable in maximising the potential of the CBO as an asset for wider industry use.</p>

<b>ISAMs</b>	
<p><b>Why Needed?</b></p> <p>All ITSO devices needing to write back to the smartcard chip (in the card) carry out the security functions via an ISAM.</p> <p><b>Where Would It Be Used?</b></p> <p>All devices (gates, validators, TVMs and some handheld devices) which needed to write to ITSO Smartcards across the South East (not TfL owned/maintained station as they already had ISAMS as part of the IoP project).</p>	<p><b>Outcome</b></p> <p>The Programme agreed to procure a large number of ISAMs at a cost saving for the business case due to the bulk discount ITSO Ltd provided for orders over 500.</p> <p><b>Lessons Learned</b></p> <p>Repeat</p> <p>In this instance the procurement strategy (to buy this component in bulk) saved the Programme money and worked well.</p>

<b>Identified Risks/ Issues</b>	
No notable risks and issues identified – mature process and technology.	

<b>Platform/Passenger Validators (PVals)</b>	
<b>Why Needed?</b>  PVals are small standalone units which enable customers to register the start or end of their journey. It reads and updates smartcards with appropriate transactions.  The need for PVals was driven by the requirements to touch in and touch out for certain product groups (those that had limited number/period of use but could be activated at any point in a potentially long period of time).  As the initial scope of the Programme included singles, returns and carnets products, there was a need PVals.	<b>Outcome</b>  The Programme went out to procurement for PVals on two occasions and on both occasions withdrew the before the invitations to tender were sent out.  PVals were removed out of scope for Phase 1 (season tickets) of the revised OBC in 2014.  Another procurement was scheduled to commence prior to the Rail Minister's intervention late in 2015.  <b>Lessons Learned</b> Avoid  The DfT should have listened to the operators (TfL and TOCs) who had experience in this area.  DfT's stance on this issue undermined the credibility of the Programme in the eyes of its key delivery agents.  The EMV requirements should have been scoped out better during the early part of the Programme or taken out of scope for the Programme.
<b>Where Would It Be Used?</b>  Across the South East for the TOCs making use of the central solution at station without any existing gating infrastructure.	
<b>Identified Risks/ Issues</b>  The immature nature of EMV across multiple operator controlled EMV back offices, which had not yet been tested operationally, meant that any PVals procured might not integrate with the existing EMV back offices available (i.e. TfL).  The need for PVals was questioned by the DfT on several occasions, TOCs and TfL were always of the view that PVals were required to realise the expected benefits of the Programme.	

<b>Handheld Inspection Devices</b>	
<p><b>Why Needed?</b></p> <p>Small portable devices which would allow the user (staff) to confirm the validity of any ticket products on a smartcard. Some devices would also write back to the card.</p> <p>Also known as Revenue Inspection Devices (RID) which were specific to London and were not capable of writing back to the card.</p> <p>As smartcard tickets could not be inspected visually there was a need to provide staff at stations and on board trains with a device which would be able to provide staff the ability to inspect the ticket products on smartcards.</p> <p><b>Where Would It Be Used?</b></p> <p>Across the South East for all rail operators accepting ITSO based tickets.</p> <p><b>Identified Risks/ Issues</b></p> <p>TOCs had different needs for their own routes, some needing barcode readers, others Oyster.</p>	<p><b>Outcome</b></p> <p>It was decided relatively early on in the Programme that TOCs should procure their own handheld devices.</p> <p>Funding would be provided direct to TOCs via their Deeds of Amendments (DoA) to procure the units against their own requirements.</p> <p><b>Lessons Learned</b></p> <p>Repeat at an earlier stage.</p> <p>By clarifying the procurement vehicles and packages early on, the Programme simplified the complexity of the task and ensured the TOCs could take ownership of procuring the correct devices for their networks.</p>

<b>Testing Assurance Consultancy Support</b>	
<p><b>Why Needed?</b></p> <p>With the Programme taking on the System Integrator responsibilities and with relatively small test team in the early days, the Programme recognised a need for assurance of the test strategy and test plans for the Programme.</p> <p><b>Where Would It Be Used?</b></p> <p>Exclusively to support the Central Delivery team in their test strategy and planning work.</p>	<p><b>Identified Risks/Issues</b></p> <p>Without such a function, best practice may not have been applied to such a large Programme for smart ticketing.</p> <p>The delivery of the Programme and the benefits may have been delayed or caused a catastrophic failure.</p> <p><b>Outcome</b></p> <p>Test Assurance Function was procured with experience of large scale smart ticketing schemes.</p>

	<b>Lessons Learned - Repeat</b>
<b>Ticket Vending Machine (TVMs) Upgrades</b>	
<p><b>Why Needed?</b></p> <p>To enable customer to purchase ITSO based tickets at TOC stations.</p> <p>The number of tickets sold at stations for the target market for SEFT was significant and with the view that booking office retailing would not be offered, the upgrading of TVMs was considered as the best option and followed best practice adopted by other smartcard schemes.</p> <p><b>Where Would It Be Used?</b></p> <p>Across all stations in the South East which had TVMs.</p> <p><b>Identified Risks/ Issues</b></p> <p>TVMs within the London zones (see Pearl upgrade).</p> <p>Centrally procured upgrades might have been seen as state aid.</p> <p>TOCs had their own storyboards for their TVMs.</p> <p>Suppliers had other priorities and with the moving feast that was SEFT, they were reluctant to commit to SEFT timescales.</p>	<p><b>Outcome</b></p> <p>Upgrades were procured through the TOCs, funded via their DoAs against SEFT developed specifications.</p> <p>Not all functionality was delivered by suppliers meaning the quality of the customer proposition as well as the data generated by the TVMs were compromised.</p> <p><b>Lessons Learned</b></p> <p>By allowing reduced functionality to be delivered by suppliers the customer proposition was inconsistent between operators and reduced the attractiveness of smartcards in the eyes of the public.</p>

<b>Gate Reader Upgrades</b>	
<p><b>Why Needed?</b></p> <p>To enable ITSO smartcard holders to enter/exit stations with ticket gates.</p> <p><b>Where Would It Be Used?</b></p> <p>Across the South East where stations had gates which did not have ITSO readers on them already.</p> <p><b>Identified Risks/Issues</b></p> <p>Allowing TOCs to procure their own, could mean that readers were not compatible with readers elsewhere in the South East.</p> <p>A single supplier market for gate readers (i.e. you could only get readers from the manufacturer of the gate) which meant a single route for purchasing and little room for negotiating on price.</p>	<p><b>Outcome</b></p> <p>The SEFT Programme procured the gate readers for Cubic gates via RSP using a specification drawn up by the CDT. The procurement activity required multiple resources and significant amount of time to negotiate with no reduction in the price of the units, in actual fact they increased by £1,000 per unit.</p> <p>Scheidt and Bachmann (S&amp;B) gate upgrades remained on hold until stations with S&amp;B gates needed to be upgraded and eventually fell away after the Programme moved to the de-minimis scope.</p> <p><b>Lessons Learned</b></p> <p>Do differently</p> <p>Ensure early market testing of key suppliers prior to finalising procurement strategy.</p>

<b>Pearl Devices and Upgrades</b>	
<p><b>Why Needed?</b></p> <p>Pearl units allowed TOC owned TVMs to retail onto Oyster cards. The original units were proprietary to TfL and not complaint with the recognised UK standard, ITSO.</p> <p>Fitting an additional ITSO reader would have caused confusion for customers so the upgraded Pearl device, developed as part of IoP, would need to be fitted onto the TOC owned TVMs in London.</p> <p><b>Where Would It Be Used?</b></p> <p>TOC owned or serviced stations within London.</p> <p>(Continued overleaf..)</p>	<p><b>Outcome</b></p> <p>The Programme de-scoped the Pearl device upgrades as part of the re-boot.</p> <p><b>Lessons Learned</b></p> <p>To maintain a consistent customer proposition the whole estate has to be upgraded to allow retailing at station.</p> <p>Ensure that scope of Programme is clear from the outset or revise using formal change control.</p>

<p><b>Identified Risks/Issues (Pearl Devices and Upgrades)</b></p> <p><i>(Continued from previous page..)</i></p> <p>TVM suppliers would need to make software changes to take advantage of the new Pearl device functionality.</p> <p>There was considerable doubt over whether the Pearl device upgrades were in scope for the Programme.</p> <p>The capability and performance of the devices had not yet been proven.</p>	
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<b>Web Ticketing Issuing System (WebTIS) Upgrades</b>	
<b>Why Needed?</b>  To support self-service retail channels. Also required due to capacity issues with TVMs.  TOCs already had a significant presence online for advance purchase tickets so it made sense to extend this to include smart ticketing options. This also followed best practice followed by other schemes such as Oyster.	<b>Outcome</b>  Significant delays in agreeing the changes due to the state aid issues and the level of functionality required for each TOC.  Near enough the full functionality required for SEFT was delivered for one of the suppliers. The other supplier was only funded to provide just enough to do season ticket sales.
<b>Where Would It Be Used?</b>  All SEFT TOC websites.	All funding was provided via the TOC DoAs rather than via the Programme directly.
<b>Identified Risks/Issues</b>  Competition issues as the Programme was only going to fund two WebTIS suppliers out of the 4/5 across the rest of the rail network.  State aid issues with Programme funding the suppliers through the Programme.  <i>(Continued overleaf..)</i>	<b>Lessons Learned</b> Do differently  Ensure that the state aid and competition issues are resolved early on in the Programme by dedicating suitably skilled resources during the feasibility and design phase of the Programme. Agreement on the minimum acceptable functionality required to deliver the customer proposition. Either all TOCs must meet the agreed customer proposition or the customer proposition

<p><b>Identified Risks/Issues (WebTIS Upgrades)</b></p> <p><i>(Continued from previous page..)</i></p> <p>One of the suppliers would need significant amounts of funding as their existing WebTIS smart ticketing functionality was minimal at best.</p> <p>Online retailing uptake may be low, as evidenced from existing schemes where smart ticketing sales on the WebTIS had not gained traction.</p>	needs to be tailored for each individual TOC.
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The remaining pages of Section E review the two key enablers to the successful delivery of the SEFT infrastructure – A capable and appropriately resourced delivery team and a ‘world-class’ facility for integration testing across the multiple process owners.

## Consultancy Support

<b>Why Needed?</b>	<b>Outcome</b>
<p>The CDT management team highlighted the lack of resources as an issue which was causing delays in late 2013. DfT also had concerns about perceived capability gaps within the team. The DfT decided that it needed to intervene by bringing in a core “spine” to support the Programme with the ability to call upon expert resources quickly.</p>	<p>Delay and disruption necessarily ensued to a degree. It took the new team members approximately six months to get up to speed, which in some cases delayed activities which were already underway and being managed by ATOC at the time (e.g. IoP service agreement).</p> <p>The costs of the CDT increased significantly with small increase in the speed of progress made (due to learning curve).</p> <p>The CDT effectively turned into two teams, the old and the new, with the old team feeling like they were being side-lined by the new team.</p>
<p><b>Where Would It Be Used?</b></p> <p>Within the CDT to deliver the Programme.</p>	<p>ATOC (informally) and TfL withdrew their support for the Programme, with ATOC repatriating their staff.</p>
<p><b>Identified Risks/Issues</b></p> <p>Any new resources would take a significant amount of time to get up to speed.</p> <p>The cost of running the CDT would increase.</p>	<p>The TOCs (including Central back office TOCs) withdrew their support of the CDT and began to put barriers in the way of progress, citing a lack of visibility of plans from the CDT.</p> <p>The CDT appeared to become overly defensive in its behaviours reducing communications and engagement with external stakeholders.</p>
	<p><b>Lessons Learned</b></p> <p>In difficult situations it's imperative to avoid loss of ownership, among those who are the “customer”/asset managers of the solution.</p> <p>Ensure adequate resource profiling and planning requirements are established at the outset – across all key delivery agents.</p> <p>Any major interventions during the middle of a Programme will lead to discontent across the board and will introduce delay.</p> <p>Anecdotal feedback captured during the lessons review indicates that these invidious situations like these can only be mitigated/recovered through effective stakeholder management.</p>

<b>Test Environment</b>	
<b>Why Needed?</b>	<b>Outcome</b>
<p>The level of integration required for the customer proposition meant that this could only be delivered by having a single test environment for use by the whole Programme. It would also serve as an ongoing asset for use by the rail industry for future functionality or expansion.</p> <p><b>Where Would It Be Used?</b></p> <p>Initially for the SEFT CBO integration testing and then integration testing with external schemes and the on boarding and migration of TOCs.</p> <p><b>Identified Risks/Issues</b></p> <p>Would TOCs want to make use of the test environment afterwards (ATOOC were keen but TOCs weren't keen on paying a premium for a test centre in Central London).</p> <p>An existing test environment of sorts was already available at ITSO in Milton Keynes but was not a viable solution for testing of any ticketing scheme.</p>	<p>After several attempts, it was agreed that the test environment would be housed in the basement of the ATOC building.</p> <p>It was operational in 2015 and provided integration testing of the CBO components, TfL and the on boarding process for AGA and C2C and is currently in use for the on boarding of LSER.</p> <p>ATOOC/RDG have indicated that they are keen to make use of the test environment for all forms of smart ticketing rollout once it is handed across to them in 2017.</p> <p><b>Lessons Learned</b></p> <p>Repeat</p> <p>Ensure that test environment is scoped as part of the early design phase of the Programme. It is a critical asset in its own right.</p> <p>In hindsight, the importance of the test environment should have been promoted sooner and more effectively, in order to avoid issues with buy in from all stakeholders.</p>

## F. Ways of Working across Organisations to Deliver SEFT

Creating an appropriate contractual framework to enable collaboration, govern delivery, sustain operations and build future service improvements is of critical importance to a Programme of this nature, which cuts across many commercial entities and interests.

**The importance of a comprehensive contractual framework, to underpin effective ways of working, has been a key lesson learned since the Programme transferred to Passenger Services in April 2016.**

Ways of working between the organisations involved in SEFT were complicated by the many competing priorities and agenda. Tensions frequently arose as a result (DfT-TfL, DfT- RSP, TOC on TOC), especially during the period 2011 - 2014.

Without an established contractual framework, the Programme was ill-equipped to withstand the challenges presented by TfL, the TOCs, their owning groups and internal stakeholders within DfT and RSP (RDG).

The nature of the rail industry and franchise competitions is such that programmes like SEFT, which were created outside of the commercial world, are unlikely to flourish unless the TOCs take ownership. This issue was exacerbated by the creation of a standalone Programme in 2011, which naturally re-doubled its efforts to drive for results when it encountered barriers. Latterly, there are indications that RDG/ the TOCs have now embraced SEFT as a going concern, however there were many battles on the way that programme management could not prevail over through relationship management alone.

The Lesson Review captured much anecdotal feedback and opinion on aspects of how the organisations interacted with one another. In general respondents seem to have focused on areas where there was either an apparent breakdown in communication, a dispute or a failure to co-operate to expectations. See the Master Lessons Learned Log for the instances given.

**The purpose of this Review is identify learning that can be applied to improve programme delivery, whether it be SEFT or another third party smart ticketing programme which DfT sponsors. It is therefore outside the remit of this report to consider ‘one-off’ individual perspectives that cannot be readily transferred.**

In the remainder of this Section, the key elements of SEFT's under-pinning contractual framework are introduced, with reference to the organisations involved. The framework itself, which from our learning on what is required to create a sustainable scheme in business as usual for smart card seasons, is shown overleaf.

<b>Agreement</b>	<b>Description (Overview)</b>
Memorandum of Understanding (MoU)	Sets the vision and describes the aspirations, roles and responsibilities of the parties to the SEFT Project
DfT/RSP Resource and Funding Agreement	Details the RSP resources that DfT have funded
Indemnity Agreement	Confirms the circumstances in which RSP will procure the Central Back Office (SEFT CBO) services with the backing of the DfT
DfT/RSP Underpinning Agreement	Sets out how RSP will manage the various rights arising under the supply contracts they need to establish
Indemnity Agreement for testing lease (with RSP and ATOC)	Sets out how the DfT will cover the costs for the testing lease, including making good the facility (if decommissioned)
HOPS / TMS Contract	Contracts for the supply of HOPS/TMS which contain rights that authorised parties can use as 3 <sup>rd</sup> parties
Framework Contract (cards/PVALs/Handhelds)	Provides a set of prices, terms and conditions for the supply of cards/ Pvalves/handhelds pre-agreed for call off by authorised parties direct
STA Upgrade Contracts (WebTIS/TVM/Gates)	Contracts for the supply of other components (e.g. WebTIS, Gates, TVMs) as upgrades to existing contracts held by TOCs for such equipment
Call-Off Contracts	Call off contracts for the supply of commodities agreed to be provided under the relevant framework agreement
Scheme or 3 <sup>rd</sup> Party Licence Agreements	Arrangements between RSP and Authorised Parties to determine how the 3 <sup>rd</sup> party rights and any call off contracts are to be approved and co-ordinated. It is envisaged that this will be a SEFT scheme for RSP members, included within a retail licence for 3 <sup>rd</sup> party retailers and RSP are considering how to capture other authorised parties when they come along. It is intended that RSP will become the 'enduring authority' under this/ these mechanisms
Deeds of Amendment (DoA)	Franchise terms for the implementation of and adherence to SEFT as a franchise obligation. DoA's apply mid-franchise
ATOC SEFT Scheme	The scheme entered into between the TOCs to govern their participation of SEFT and under the terms of which the TOCs undertake with each other to comply with their respective obligations with ATOC setting out the principles for participation in SEFT and the customer proposition that underpins it
ITSO Services Agreement	Operation & Maintenance Agreement for the use of ITSO SEFT smart cards on TfL's estate - rules applicable to the integration and use of the TfL infrastructure including how the SEFT system is to work now and in the future via a Change Protocol
IOP Framework Agreement (2016)	Agreement under which TfL will carry out any work still required and in order to continue any obligations necessary following the end of the IOP agreement

**Table F1 – The Agreements Requiring Development and Finalisation by the Programme in Order to Create a Sustainable Scheme in Business as Usual.**

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## F1 Organisations Key to SEFT Delivery Success

### 1. Transport for London (TfL)

TfL is the lead commissioning organisation for transportation infrastructure programmes in the Capital and a multi-modal operator of services across surface, underground and rail over ground. Its Oyster smartcard broke new ground when it was introduced and it has been widely seen as a success. It therefore had expertise both in technology design and deployment when SEFT was first muted and could be viewed as the key delivery partner to both DfT and the TOCs in enabling smart ticketing on the commuter routes into London.

To deliver the technology compatible for use across London on TfL's Oyster network, the Department and TfL signed an agreement in May 2009, to integrate ITSO technology on London's Prestige estate. The Oyster card systems were provided through a Prestige contract. The ITSO on Prestige (IoP) Agreement was agreed to fund TfL to accommodate the Department led ITSO requirements and functionality.

The key technology assumption made at that time was that TfL would complete the ITSO on Prestige Programme (IoP) in order to enable the use of ITSO smart ticketing across its estate. SEFT was entirely separate to IoP but was reliant on it.

Other sections of this report touch on the challenges of integrating TfL/ SEFT technology and operations. Lessons captured indicate that clashing organisational priorities and contractual commitments were significant factors in these difficulties, rather than technology alone. SEFT was reliant on TfL's supplier to produce a number of deliverables and was unable to instruct that supplier direct.

DfT has dedicated commercial and project management resources to improving engagement with TfL senior management, to build a shared understanding of workload and priorities. SEFT TOCs recently reported to the Rail Minister that the TfL/ SEFT technical issues are largely resolved – this was before completion of the remaining fix, which was successfully implemented at the end of October (TfL upgraded its ISAMs and systems for action/ hot listing)

Only through proactive collaboration and alignment of delivery plans across the Department, TfL, RDG (ATOCH RSP Ltd) and TOCs, can effective and sustainable implementation of services be achieved.

Detailed discussions started in 2015 with the TOCs, DfT and TfL on the future contracting model for ITSO services in London and in principle was settled for the rail industry following presentations at the Industry Agreements Working Group to which all TOCs were invited. This introduced the concept of the ITSO Services Agreement, as between TfL and TOCs, with RDG (ATOCH – RSP Ltd) acting as agents for the TOCs, underpinned by the Department through an updated ITSO on Prestige Framework Agreement.

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To achieve a fully acceptable scheme for passenger journeys across the South East, all participants in the Programme, including TfL, must adhere to a common set of interoperability and service principles, irrespective of where the ticket was retailed or issued.

The final proposition will be adopted by the members (TOCs and TfL) under a SEFT Scheme Agreement, an industry scheme established by ATOC (RSP Ltd).

Under the rules of the scheme, all SEFT participants will sign-up to an ITSO Services Agreement for TfL in-boundary operations and maintenance support with TfL. This agreement shall have some synergy with Contactless Payment (CPay) and Pay As You Go (PAYG) arrangements already in place across London. The Scheme Agreement is not the only agreement foundational to the TOCs service smartcard offering in the South East. The other agreements required from TfL by TOCs are depicted in the Table F1.

The new 2016 IoP Framework Agreement supersedes the 2009 Agreement and provides for TfL to enter into an agreement with TOCs and with London Boroughs to provide ITSO services. It also provides for the Department to be responsible for ensuring the funding of the services, either via grant or other means. Costs are driven by transaction volume and therefore TfL's costs of service provision will vary over time, driven by take-up and ticketing product innovation.

On 12th August 2014 the Department signed off the IoP project as being complete. This was an entirely separate project to SEFT and it was done without regard to SEFT requirements. This event has led to some tension between TfL and the TOCs over the requirements within the ITSO Services Agreement. TOCs require the core functionality of IoP system to have been delivered and action has been taken by SEFT to confirm TfL's service provision. This situation should have been avoided at the early stages of programme planning, between DfT and TfL.

Programmes like SEFT that have so many commercial, contractual and systems interfaces, are vulnerable to any weaknesses in third party agreements, outside their management control. SEFT has incurred additional delays to technical delivery due to shortfalls in requirements specified in the separate IoP project, where quality acceptance criteria were inadequately drafted.

In order to assure quality and deadlines, programme management should undertake its own due diligence of the wider contractual landscape. A thorough review was undertaken by the new SEFT management team in April 2016.

There were points in the Programme where TfL directly challenged SEFT strategically as the way forward – in December 2011, following funding award to DfT; in early 2013, with Stagecoach and Go-Ahead. These examples serve to illustrate the competing commercial interests that seemed to cut across the progress of the Programme, long after initial discussions with TfL on its proposed Oyster expansion solution had finished. These interests could not be reconciled in a commercial strategy at programme level to the satisfaction of the parties involved.

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## 2. Train Operating Companies (TOCs)

Securing ownership and engagement from the TOCs (and their owning companies) from the outset has been a fundamental lessons theme.

Whether justified or not, respondents have indicated that at different times the TOCs felt disenfranchised in the design and progression of SEFT. For example, Stagecoach and Go-Ahead apparently walked out of the Programme Board when they felt their proposed solution was being ignored; the smaller TOCs felt disproportionate weight was given to the largest owning groups by DfT; RSP (ATOCA at the time) disengaged from the Programme following the growth in the size and influence of the DfT team, 2013/14.

There has been a considerable shift towards proactive and collaborative working with TOCs since the Programme moved to Passenger services in April 2016. Through engagement with the SEFT TOCs collectively and individually, at Project Boards and one to ones, it has been possible to start to nurture a level of industry enthusiasm and ownership for smart seasons in the South East.

DfT has commissioned a Behavioural Insight exercise to identify ways in which the level of collaboration and co-operation with the TOCs on programmes of this type can be improved.

Section G considers the approach to the contractual framework between DfT and the TOCs (via the adoption of the DoAs) and how it might be improved from the lessons.

## 3. ATOC (RDG)

Changes in the structure, make up and support for the CDT over time affected the level of engagement within ATOC for SEFT.

The intentions expressed in the original MoU, whereby ATOC would co-ordinate the TOCs and provide a programme management office did not alter in principle.

However, concerns over delivery progress created a gradual transition in the resourcing of activities, from being ATOC resourced, to being temporary consultants appointed via a DfT led procurement. Whilst the contract for delivery was managed through RSP, in practise day to day control was exerted from DfT a few years into SEFT. This caused poor working relationships for some time. RSP withdrew resources informally, to concentrate on its own programme of transformation work. Team structure and requirements evolved over time with the need to take on substantial extra resources at later stages to catch up on further technical scope identified.

Yet despite these challenges described by lesson respondents, the actual system architecture established in 2012 remained ultimately unchanged.

## 4. DfT

Based purely on survey and interview feedback it seems that relationships between the DfT programme team and other key stakeholders were challenging on times in the first four years. This is unlikely to be the whole picture as the lessons are drawn from a representative sample only, of those involved in SEFT.

Respondents have given examples where they felt DfT's behaviour seemed to be defensive or uncooperative, such as in the sharing delivery information on the project schedules appended to the DoAs.

Events mentioned elsewhere in this section suggest a breakdown in communications between the TOCs and the DfT after the departure of the two owning groups from the Programme Board in 2013. Undoubtedly, divergent commercial interests raised the stakes, putting the programme in an invidious position. For example, TfL could not favour ITSO over its own Oyster. They could support only if they got something in return (i.e. the future expansion of their Contactless EMV system to the South East).

Given the lessons identified by SEFT, and the unique circumstances surrounding its creation, it is unlikely that a future programme will encounter similar challenges in quite the same way again.

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# G. Drafting SEFT Requirements within DfT Franchise Agreements

## G1 The Initial Approach Adopted by SEFT

Three years elapsed between the 2011 Autumn Statement and the first TOC to pilot SEFT, C2C, launching a smart product in early 2014.

During this time the Programme endeavoured to develop SEFT from a very low base; from an idea to a fully integrated multi-operator system. The TOCs had different perspectives on the concept of SEFT and consequently the scope of the scheme was not determined prior to the Programme team commencing stand-alone negotiations with TOCs to formalise the funding and delivery of SEFT.

The ‘Deeds of Amendment’ (DoA) derived from this approach were therefore often written in advance of specific knowledge of the agreed scheme solution. The Programme accommodated the lack of certainty on the scheme, and its required implementation timescales, by keeping the drafting of the DoAs ‘loose’ in terms of what was required of the TOCs to deliver significant take-up. Moreover, by engaging with the TOCs individually, there was insufficient consistency in the requirements specified across the DoAs as a whole.

The DoA Programme team originally intended to establish a separate SEFT Funding Agreement with TOCs, that would sit alongside the Franchise Agreements, but this was abandoned in favour of DoAs that would set the SEFT requirements within the overall commercial governance of the Franchise Agreements.

With hindsight, those DfT staff engaged in drafting and negotiating the DoAs still favour them as the better contractual mechanism, in order to avoid creating a shadow contracts outside of the Franchise Agreement.

Others involved have argued the merits of simple letters or a standalone Funding Agreement as better means to ‘contractualise’ SEFT. The debate quickly gets overshadowed by the clear evidence of under-performance to date that both the ‘Franchise Only’ and SEFT DoA approaches have realised to date.

In summary, there is opportunity for significant improvement in the drafting of smart contracts so that they are fit for purpose as the ‘execution tools’ of government policy. All contractual mechanisms are required to unify requirements.

Furthermore, the timing and approach towards DfT/ TOC DoA negotiations was flawed. The timing was driven by financial deadlines and was in advance of clarity on what was being purchased. DfT should have formalised commercial terms with the TOCs after agreement had been reached on scheme design and scope.

*"If doing the DoA negotiations again, then we'd not do 11 TOCs all at once with 3 people. 2 people per TOC"* SEFT team member

By following scheme design and scope, the commercial drafting could have been tightened to best enable subsequent performance management by the commercial franchise management teams, and also to achieve the *Measures of Success* for SEFT set out in the Strategic Outline Business case, 2.5.1, page 7, Management Case, v05, June 2014. As written, the SEFT DoAs have been inadequate in support of the realisation of SOBC benefits.

## G2 How Might Contracts Be Written to Realise OBC Benefits

Learning lessons both from SEFT and other comparable Programmes, we can identify strategies that are more likely to result in significant take-up related benefits realisation.

**Within transportation in Great Britain.** Learning lessons from the Highways Agency, and their Early Contractor Involvement scheme (ECI) and London Underground's major capital procurements for Programmes like the Bank Station Capacity Upgrade and Northern Line Extension, we can understand the benefits of engaging the delivery agent in the detailed specification and detailing of the work package. Our recommendation is that this needs to happen on future smart initiatives.

**Wider, across other major government transformations.** During the roll out of smart metering, we understand that DECC utilised a two phase approach, where the first phase was a small-scale roll out to test the concept, and the second phase the bulk roll-out. In the railways context, our observation is that the SEFT Programme to date has been in many ways a test roll-out, albeit not small scale, and that the lessons learned from this will benefit future deployments.

In future, we would recommend that DfT roll out smart ticketing initiatives by asking the relevant TOC for a costed, time-based proposal, to achieve a DfT policy objective that includes a high-level deadline date, for example, 'roll-out smart ticketing in the TfN region by 2019'. In particular, the TOC would be asked to specify the level of take-up they could achieve, and any strategic barriers, such as a conflict with another Programme. This approach should be designed to give the TOC ownership of delivery, and thereby remove many of the reasons for non-delivery to date.

Once the proposal has been returned, and DfT/TOC negotiations have concluded, the proposal would not be abstracted into a FA or DOA, other than by direct reference to the proposal as a whole, for example, 'All aspects of your proposal are to be delivered as specified therein, and in return the Department will pay £xx.' In the event that the proposal is not delivered in full, the department could include a mechanism to claw back or withhold finance, if desired.

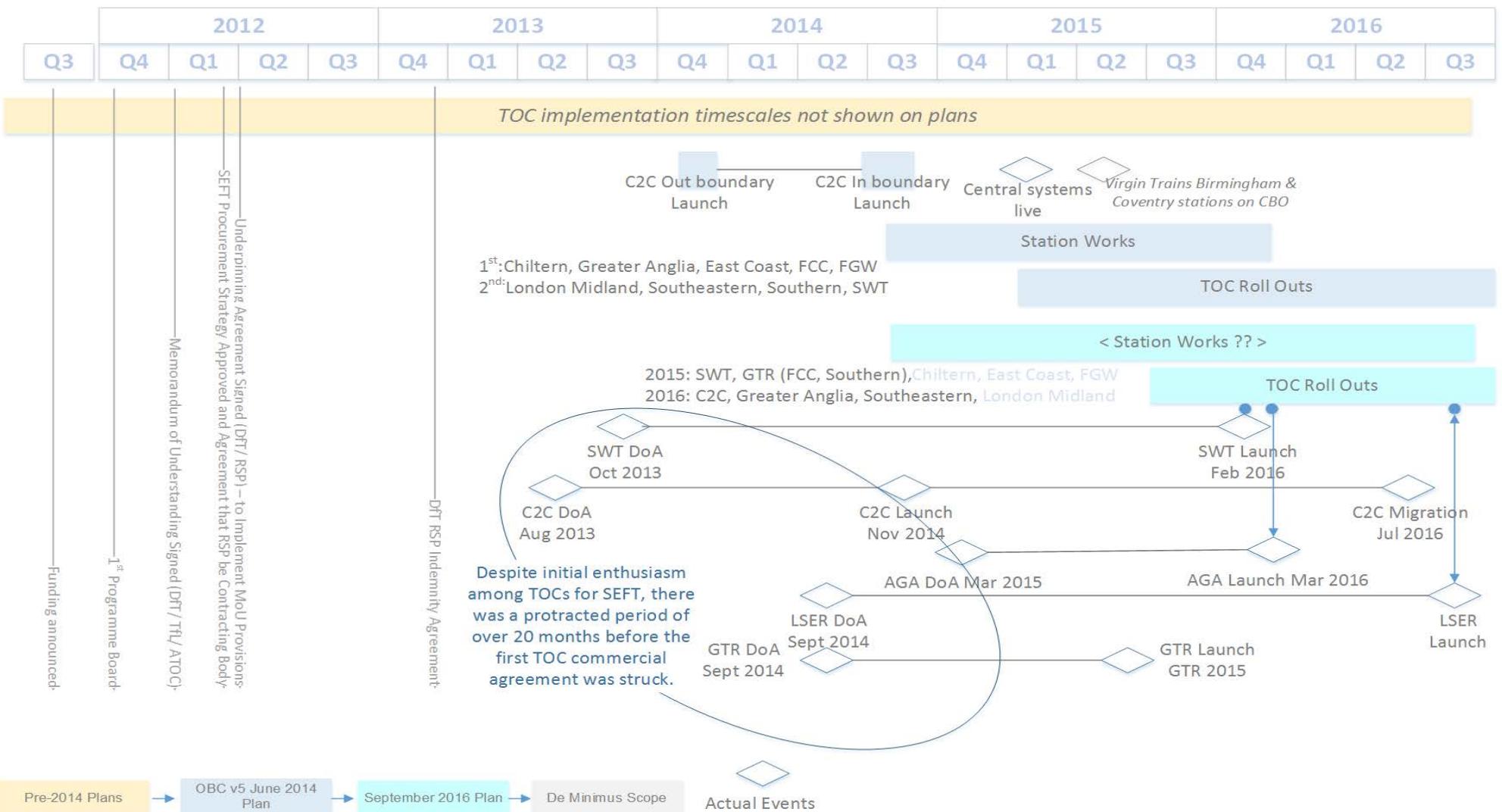
Any contract is only as good as the party's willingness to deliver it, and in the context of SEFT it is especially important that strong commercial management

takes place, to assure that the Programme is being delivered on time and to budget, whilst achieving the required outputs. Nevertheless, DfT should avoid being pulled into detailed problem solving, and should instead focus on managing strategic, policy and commercial level issues.

## G3 Some Potential Commercial Consequences of Placing Highly Specified Requirements in Franchise Agreements

In mandating very specific measures without an overall project strategy, or an insider's understanding of the TOC's operations and commercial models, the risk is that you specify the wrong measures or the wrong metrics, and that they therefore don't deliver the required output. They may in fact drive undesirable behaviours. Furthermore, highly specified requirements can be overtaken as circumstances change, and become redundant or indeed counter-productive. In addition, any failure can be blamed, rightly or otherwise, on the DfT specification rather than the TOCs performance.

**These lessons have been reflected in recent proposals to policy leads responsible for the development of rail ticketing and Passenger Services Design.**



## G1 – SEFT Agreements 2011 – 2016, Including Deeds of Amendment to Existing Franchise Agreements

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# Appendices

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BIB002	Initial TfL Proposal, Dec 2011
BIB003	Memorandum of Understanding, DfT, TfL, ATOC, Spring 2012
BIB004	GIAA Internal Audit Report – Jun 2016
BIB005	c2c Deeds of Amendment
BIB006	South West Trains Deeds of Amendment
BIB007	GTR Deeds of Amendment
BIB008	South Eastern Deeds of Amendment
BIB009	AGA Deeds of Amendment
BIB010	SEFT Customer Proposition August 2012 (ATO/C/DfT)
BIB011	Breakdown of TfL Ticket Sales/Use 2008-2011
BIB012	How we are making it easier to buy a train ticket (RDG)
BIB013	Smart and Integrated Ticketing Strategy – DfT Dec 2009
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BIB015	Smart Card Holders Survey Findings July 2016 (Jungle Green – Abellio Greater Anglia)
BIB016	Outline Business Case, Apr 2013 (DfT)
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BIB018	Franchising Only Approach (2006 to 2011) Paper
BIB019	Enabling SEFT for Contactless Travel Sep 2016 (DfT)
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## Addendum - 25 November 2016

Version 3.4 of SEFT PDD reviewed - no impact on this document.

### Notes from lessons debriefs:

- A programme manager in the DfT Smart and Integrated Team was needed to co-ordinate all the activities the team were involved in
- Alternate plans should have been devised and implemented if buy in from stakeholders could not be guaranteed
- Whilst it sounds sensible to consult with stakeholders before initiating programmes, the commercial relationships can cause problems when sharing too much information
- The DfT team were not in a position to make TOCs do anything, it had to be by negotiation
- Flexible ticketing had many things that needed to be sorted that it would not have been possible for the DfT team to deal with
- Cubic offered Oyster IPR to DfT in 2000, the offer was rejected – *It should be noted that it is highly likely that the design of Oyster would have been specifically geared towards urban environments and simple fares and products*
- The high levels of political buy in for oyster was to do with having a clear business case from the outset
- On the “why ITSO?” - SEFT was building on IoP, barcodes readers are not in London so would have needed additional investment across the whole of the south east
- Scheme board not fully bought into by all TOCs/owning groups
- Issues over the central spine of consultancy working for the SRO rather than the benefit of the programme seem to have been side stepped

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