ENCTS Smart Permits
Technical Guidance for Travel Concession Authorities

Moving Britain Ahead

February 2016

Contents

Introduction

This document aims to provide Travel Concession Authorities (TCAs) in England with best practice guidance to help in the administration of concessionary travel smartcard permits issued under the England National Concessionary Travel Scheme (ENCTS). Feedback on this guidance is welcome to help improve future editions and should be sent to the Department for Transport (DfT) at the email address below.

This guidance is specifically aimed at the issues concerned with permit production, handling data, managing hotlisting and other smart related issues. Separate guidance is being prepared on eligibility and reimbursement and will be published at a later date.

Free off-peak bus travel for older and disabled passengers is delivered by the national scheme. It is administered on a day-to-day basis by 89 Travel Concession Authorities and the London Councils. DfT retains responsibility for national policy. All ENCTS permits are by law issued as smartcards and there are almost 10 million in circulation. About £1 billion annually is reimbursed from local authorities to bus operators for concessionary travel.

This guidance has been developed with the assistance of the ENCTS Working Group, consisting of TCA and operator representatives. The ENCTS Working Group advises ITSO Ltd on matters concerning ENCTS smart permits.

ITSO Ltd is guardian of the UK's technical specification for interoperable smart ticketing. The specification defines the key terms and interfaces required for both ENCTS and commercial schemes. The specification is Crown Copyright and can be used by any entity relating to smart ticketing in the UK for no charge.

The ITSO website offers a wealth of up-to-date information on the specification and related matters. An introductory guide to ITSO and smartcards is set out in **Annex I**.

This document only provides technical guidance. It is not a definitive guide to the law. TCAs and bus operators should take their own legal advice where necessary.

Guidance previously issued by the DfT is superseded by this document. For the avoidance of doubt the following guidance documents are no longer current:

Concessionary travel passes guidance for travel concession authorities	18 August 2009
Technical specification for the production of concessionary travel passes in England	18 August 2009
TAN 1: Helping blind and partially sighted concessionaires to apply for and use their passes	3 January 2008
TAN 2: Fare stage boundary allocations to TCAs for concessionary travel reimbursement	3 January 2008

Concessionary travel passes guidance for travel concession authorities	18 August 2009
TAN3: Data recording and provision by on-bus ETMs for concessionary travel reimbursement	3 January 2008
TAN 4: Guidance for TCAs and bus operators on the use of concessionary travel passes in England	11 March 2008
TAN 5: Procedures for stop listing and hot listing concessionary travel passes in England	9 January 2009
Guidance for Travel Concession Authorities on the England National Concessionary Travel Scheme (paras 1.28 - 1.42 only)	December 2010

Legal framework

A mandatory bus concession for older and disabled people has been in place since 2001. The scheme has gradually been extended since its introduction and since April 2008 has provided free off-peak local bus travel to eligible older and disabled people anywhere in England.

The scheme is enshrined in primary legislation through the Greater London Authority Act 1999 and the Transport Act 2000 (as modified by the Concessionary Bus Travel Act 2007).

Concessionary travel is administered locally by Travel Concession Authorities (TCAs). Since 1 April 2011 County Councils, Unitary Authorities, Passenger Transport Executives and London Boroughs have been classified as TCAs.

In addition to the mandatory bus concession TCAs are also able to make use of powers provided by the Greater London Authority Act 1999 and the Transport Act 1985 to offer discretionary concessionary travel schemes.

The form of ENCTS permits is set out in the Concessionary Bus Travel (Permits)(England) Regulations 2008, which, amongst other things, require all concessionary permits to be issued as ITSO compliant smartcards. The Public Service Vehicles (Conduct of Drivers, Inspectors, Conductors and Passengers) Regulations 1990 (SI No.1020, 1990), as amended in 2015, require passengers using 'smart media' (smartcards and other media) to present them to 'smart equipment' (so that they are electronically validated) where the bus operators terms and conditions so require.

This guidance applies only to England. Concessionary travel is a devolved policy; legislation and assessment of eligibility with regard to concessionary travel in Wales, Scotland and Northern Ireland are matters for the appropriate devolved administration.

Contacts

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1. Accessibility

1.1 The national travel concession for older and disabled people is used by a high proportion of people with additional access needs. It is therefore vital that all aspects of the provision of information to potential applicants, the handling of applications and the fulfilment of permits is undertaken in a manner that is as accessible to as many potential users as possible. It is also essential that TCAs consider what alternative arrangements should be made for users with greater accessibility needs.

1.2 Detailed guidance on maximising accessibility is given in **Annex A**.

1.3 In addition to the technical guidance relating to accessibility provided in this document, TCAs should be mindful of their obligations under relevant legislation, including the Equality Act 2010.

2. Permit Design

Front of permit

2.1 The design requirements for national concessionary travel permits are set out in the Concessionary Bus Travel (Permits)(England) Regulations 2008 (SI No. 417, 2008). TCAs and permit producers must ensure that permits are produced in accordance with this Regulation and any subsequent amendments. A key feature is the rose and ribbon design on the face of the permit and within the security hologram.

Figure 1 The size and layout of the permit and each item on its face
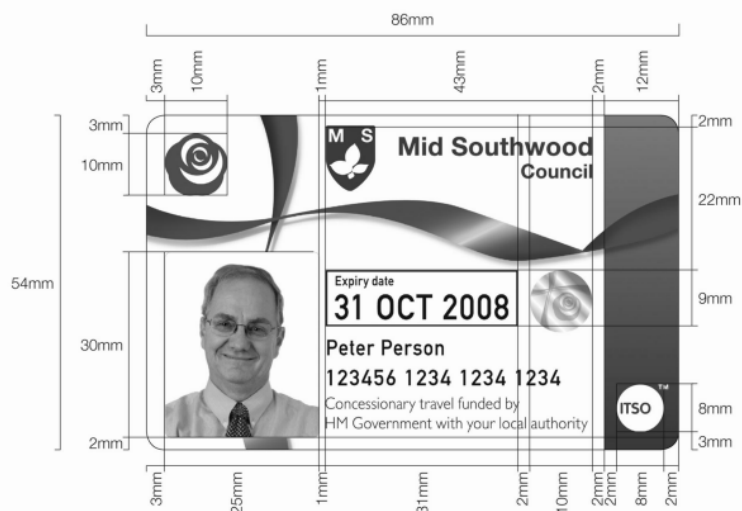
Expiry date

2.2 Permits feature an expiry date that must be no more than five years from the date of issue. The printed expiry date should match the electronic encoding.

2.3 Whilst the maximum life of a permit is five years from the date of issue, there is no recommended minimum life. TCAs are free to set the exact expiry date, provided it is no more than five years, depending on their own policies. TCAs may wish to consider staggering the expiry dates to spread permit replacement. This could be done, for example, by setting expiry dates at set intervals by alphabetic distribution of surname.

2.4 With respect to disabled persons permits it may be appropriate for TCAs to set a shorter period of validity, for example, if an applicant has reduced mobility only for a limited period.

Photograph of the permit holder

2.5 The purpose of the photograph is to help bus drivers validate that the permit holder is entitled to the concession.

2.6 TCAs should inform applicants that photographs need to be taken against a solid grey or white background with facial features unobscured. Webcam photographs, used in an online application, are acceptable.

2.7 Hard copy photographs should be between 30 x 25 mm and 45 x 35 mm. For digital images a resolution of 200 x 240 is the optimum size. However, plus or minus 20% in the x or y dimension is acceptable with an aspect ratio of 1:1.2. In practice passport standard photographs are suitable.

Name of permit holder

2.8 The correct format for the name to be printed on the front of the permit is first name followed by surname (eg Peter Person).

2.9 If the name is too long to print in full as first name and surname, or if a TCA does not have the first name of the concessionaire, the first name may be substituted by an initial (eg P Person). Hyphenated names should follow the same format (eg Peter Person-Smith or P Person-Smith).

2.10 Middle names, middle initials and titles should not be printed on the pass, even if that information is held by the TCA.

2.11 First names and surnames should follow the format of initial capital followed by the rest of the name in lower case. However, some names have two capitals (eg Peter McPerson) and this should be shown on the permit.

18 digit permit number

2.12 Each permit features a unique 18 digit number that must be displayed in the format:

- 633597 1234 1234 1234

2.13 This unique number (known as the ITSO Shell Reference Number or ISRN) is generated when the permit is encoded by the permit producer and does not have to be supplied by the TCA.

2.14 The number is made up as follows:

- The first 6 digits is the International Issuer Identifier Number. The International Issuer Identifier is ITSO and this number is 633597 for all permits.

- The next 4 digits is the Shell Issuer's OID (Operator Identification) Number (a unique number identifying the TCA ITSO Licence number being used. Some TCAs may share an OID with another TCA.)

- The next 7 digits represent the ITSO Shell Serial Number (ISSN) - this will be allocated by the permit producer.

- The final digit is a check digit, which is calculated by the permit printer/encoder.

2.15 This number is not connected to the Unique Reference Number that we recommend TCAs store in their own databases and supply to their permit producers with their permit holder data (see 3.19 - 3.22 on Unique Reference Number).

Local customisation

2.16 Local customisation on the front of permits is only permitted in area 'C' as described in the 2008 Regulation. Area 'C' is the whole of the area above and to the right of the ribbon design. It must feature, as a minimum, the logo or the name (or both) of the issuing TCA so that bus drivers can recognise which authority has issued the permit.

Local concessions

Some TCAs provide free travel outside the off-peak times provided by the national scheme. Some also pay for companions to accompany concessionaires who would otherwise be unable to use public transport.

ENCTS permits should be encoded to include these local concessions to ensure accurate reimbursement. Where such local discretionary concessions are made available TCAs should also clearly explain to bus operators what and where local concessions apply, including when changes are made to extend or remove them.

Where, exceptionally, additional customisation on the front of the permit to indicate local concessions is felt necessary it should not distract from the overall design of the permit, making it harder for operators and others to recognise as authentic. The following identifiers may be included in area 'C' to denote that a local discretionary concession is available:

- C+ to denote that a companion may travel for free with the permit holder;
- The words "all day local" or a clock face to indicate 24 hour travel.

Where local concessions change TCAs should notify operators in good time and reissue relevant permits ensuring that both the face of the permit and the encoding reflect the change.

Reverse of permit

2.17 The reverse of the permit is largely for the TCA to add any information that is helpful to the permit holder. It must carry a telephone number for reporting that a lost permit has been found and there must be a statement that the permit is issued subject to the TCA's terms and conditions. The full terms and conditions cannot be reproduced on the permit but it is recommended that it refers to where they can be found (e.g. the TCA's website).

2.18 It is recommended that a statement is included that the permit remains the property of the issuing TCA and an address is included for returns.

2.19 If space permits, a statement on companion cards to the effect that a companion pass does not require the holder to be accompanied on every journey.

Guidance for permit holders

2.20 TCAs should provide readily understood guidance to permit holders on the use of their permit. A suggested format is given in **Annex B**. The guidance should include:

- scope of the national concession
- scope of any local discretionary concessions (a map may help here)
- dos and don'ts.

3. Data Collection & Storage

3.1 TCAs must satisfy themselves that data on individuals collected and processed as part of the permit supply chain is done so in accordance with the requirements of the Data Protection Act 1998, see section 4 below.

3.2 This section sets out recommended best practice for collecting and storing data about concessionaires.   Note that of the data described in this section only the ITSO Shell Reference Number (ISRN) should be encoded on the permit. If other data related to the holder are encoded it risks breaching data protection legislation. The ISRN links the permit to the holder and their details in the TCA's database.

Minimum data requirements

3.3 The following minimum data should be collected and/or stored by the TCA for each permit holder as a means for identifying the permit holder, issuing the permit and any subsequent communications:

- Name of permit holder

- Address of permit holder

- An Expiry Date for the permit

- A Photograph

- Entitlement Type (age or disability related)

- A unique concessionaire reference number

- ITSO Shell Reference Number (ISRN)

3.4 TCAs may also wish to consider collecting applicants' telephone and email addresses and gender as an aid to identification.

3.5 **Annex C** provides a format for storing this data.

3.6 In addition to the above minimum data requirements, TCAs may also consider, subject to their own legal advice, collecting the National Insurance number of the permit holder in order to assist National Fraud Initiative exercises. For further information see: https://www.gov.uk/government/collections/national-fraud-initiative.

Name of permit holder

3.7 The database should include separate entries for first name (or initial) and surname. Middle initials or names should not be shown on the permit although they can optionally be collected. If collected, they should be included as a separate entry on the database.

Address of permit holder

3.8 Permits do not show the holder's address. But this information will be needed for correspondence, verification of residence within the TCA area and in order for TCAs, or permit suppliers, to post permits to holders.

3.9 Addresses should be stored with a separate entry for each of the following (**Annex C** provides a suggested format):

- House/flat number or, if no number, house name

- Building name (where appropriate)

- Street

- Locality (where appropriate)

- Town

- County

- Post Code

3.10 Addresses should be broken down into separate database entries which are each no more than 39 characters long.

3.11 TCAs should use available resources such as the National Land and Property Gazetteer to help identify recognised postal addresses.

Expiry Date

3.12 TCAs are free to decide what the expiry date should be for each permit, provided it is within five years of the issue date. They should include the expiry date in their databases as DDMMYYYY – eg 01042019 for 1 April 2019.

Photograph

3.13 Where permit production is outsourced, TCAs should identify in the tender process how they will transmit photographs to the permit production facility. For example, photographs are likely to be sent electronically as a JPG file. The filename for all electronic photographs should be the Unique Reference Number of the permit holder (as set out below); hard copies, if used, should have the Unique Reference Number written on the reverse and should be securely attached to the form without damaging the picture.

Type of permit

3.14 TCAs should record in their database those concessionaires that are entitled to an age related pass and those that are entitled to a disability related pass.

3.15 In the interests of standardisation, it is recommended that this is done by including a field in the database which clearly shows which concessionaires are entitled to an age related pass "A", and which to a disability related pass "D".

3.16 If "D" is selected, there is the opportunity to further distinguish (in a separate column) the disability type. This can be used by authorities to enable better data gathering and audit of permit holders.

3.17 Additional entitlement codes may be added if needed at a local level - for example if a TCA records additional disability categories (e.g. for blind people).

3.18 If a companion is allowed as a local concession, "Companion Allowed Locally" can be recorded as "y".

Unique Reference Number

3.19 In order to identify each permit holder, a unique reference number needs to be allocated.

3.20 It is recommended that this should be a 13 digit number made up as follows:

- The first 5 digits should be the TCA's Concessionary Pass Issuer Cost Centre (CPICC). The CPICC is a 5 digit number that has been allocated to each TCA and is available on the ITSO website (see also section 6).

- The next 8 digits should be a unique Pass Holder Number allocated to each permit holder by the TCA.

3.21 For example a TCA is allocated the CPICC number 12345. The TCA then allocates a concessionaire the Permit Holder Number 12345678. The Unique Reference Number for that concessionaire will be 1234512345678.

3.22 The Unique Reference Number will be important in matching an individual's data record to their permit.

ITSO Shell Reference Number (ISRN)

3.23 As set out in paragraph 2.11 above, each permit displays a unique 18 digit permit number. These are generated when the permit is encoded by a permit producer. TCAs should ensure that their permit provider returns to them the 18 digit permit number for each permit when permits have been produced and should also ensure that their database includes a field for the 18 digit permit numbers so that each number is aligned to the correct concessionaire record.

Other data that a TCA might want to collect

3.24 There may be other data that is not required for issuing a concessionary travel permit, but which a TCA may nevertheless wish to hold, for example to aid contact with the permit holder.

3.25 As set out in section 4 below, TCAs must adhere to all data protection legislation and should only collect and store data which they require. For the avoidance of doubt, none of the data fields included in Table 3 of **Annex C**, setting out best practice on additional data options, is a requirement for the England-wide concession.

Databases

3.26 TCAs should ensure their concessionary databases are kept up-to-date. One way to do this is to use a bespoke card management system. This can help a TCA issue their own permits, manage their permit holder data and can also be used by contact centre staff.

3.27 Guidance for developing databases on minimum data requirements, addresses, additional data options and exporting data from data sets is set out in **Annex C**.

4. Data Protection

Data protection responsibilities

4.1 TCAs are responsible, as "data controllers" under the Data Protection Act 1998, for ensuring compliance with all aspects of the Act, including the need to process personal data securely.   TCAs should seek advice from their data protection officer or legal services if they are in any doubt about their data protection obligations.

4.2 TCAs are responsible for ensuring, through a formal audit process, that any partner organisations, contractors or sub-contractors are registered with the Information Commissioners Office as well as complying with the relevant data protection legislation.

Data encoded on permits

4.3 Paragraph 6.34 gives advice on the data that must be encoded on the chip inside each concessionary permit. Our advice to TCAs is not to encode any other information unless there is a specific need for it. TCAs should be aware, for data protection purposes, that additional information encoded on the permit may be readable by both ITSO compatible equipment and non-ITSO compatible equipment.

4.4 No personal data (including names, addresses and dates of birth) should be encoded. There is no need for personal information to be encoded for the purpose of the concession. (This is, of course, separate from the requirement to display a name and photograph on the front of the permit.)

4.5 The ITSO Shell Reference Number can be used to link the record of permit use to the permit holder but this has to be done as a different process entirely separate from the day-to-day collection of journey data. **It should be remembered that bus ETMs[1] are not 'data processors' for the purposes of the Data Protection Act as they do not process any personal data.**

4.6 TCAs are responsible for ensuring that HOPS[2] providers comply with the requirements of the Data Protection Act. **TCAs should, therefore, include a data protection clause in their contracts with HOPS suppliers, similar to that with their permit suppliers.**

Permits produced by external permit producers

4.7 **TCAs must ensure that contracts with permit suppliers include an appropriate data protection clause.**

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[1] Electronic Ticket Machines
[2] Host Operator or Processing System

4.8   As a minimum, this should require the contractor to:

- be registered under the Data Protection Act and observe all of the Act's obligations

- comply with any notification requirements under the Act

- ensure that it has in place appropriate technical and organisational measures to ensure the security of the personal data (and to guard against unauthorised or unlawful processing of the personal data and against accidental loss or destruction of, or damage to, the personal data), as required under the Seventh Data Protection Principle in schedule 1 to the Act

- provide the TCA with such information as the TCA may reasonably require to satisfy itself that the contractor is complying with its obligations under the Act

- promptly notify the TCA of any breach of the security measures required to be put in place

- ensure it does not knowingly or negligently do or omit to do anything which places the TCA in breach of its obligations under the Act.

Data transmission

4.9   TCA's should be aware of how they transmit data (including photographs) to the permit production facility. This should include transmitting data through:

- secure FTP;

- HTTPS certified upload; and

- an encrypted web-based portal.

Data encoded for other purposes

TCAs will need to consider certain data protection issues if they choose to use permits for other purposes unconnected with concessionary travel (e.g. library membership). If TCAs need to encode personal information in connection with that other purpose they should ensure that any such information complies with all relevant data protection legislation. In particular, if a TCA wishes to include additional data it must ensure, through the fair processing notice that must be given under the Data Protection Act, that applicants are informed that this personal data will be encoded on the permit, with an explanation of why it is needed.

If, exceptionally, a TCA has a genuine need to encode personal data on the chip inside a permit, it must be aware that its HOPS provider will become a "data processor" under the Act and is responsible for holding the data in accordance with the Data Protection Act.

5. Integrity

5.1 This section sets out some steps designed to reduce the scope for counterfeit permits. It includes information on how TCAs can share best practice in preventing permits being misused.

Sharing best practice

5.2 As concessionary permits can be used for travel throughout England, there are issues to consider in order to reduce the scope for fraudulent use. DfT has set up a Concessionary Travel area within the Knowledge Hub in order to assist TCAs to share best practice on such issues.

5.3 The Knowledge Hub community allows members to share best practice and experiences. Members can communicate in a variety of different ways: by asking questions in the forum, uploading relevant files, collaborating on documents or posting blog entries.

5.4 The main function of the Knowledge Hub is to share and disseminate best practice and practical advice.

5.5 The Knowledge Hub is open to anyone. If you would like to join, please go to: https://khub.net .

Artwork

5.6 The base artwork for permits and holograms is supplied by the DfT to permit producers. TCAs must ensure that the information and artwork that they submit to their permit suppliers meets the Regulations.

Crown copyright

5.7 The permit design is crown copyright. This means that DfT has copyright control over the use of the permit design and is able to state what the design can and can't be used for.

Hologram security

5.8 All permits feature a standard hologram embedded in the card as a physical security feature. The hologram is circular, 10mm in diameter and features the rose and the ribbon logos from the permit design.

5.9 The security of the hologram is very important. The loss or theft of holograms could allow the production of counterfeit permits that would be very difficult to identify. We have therefore put in place controls on the ordering and use of holograms.

5.10 Hologram security is the responsibility of the approved permit producer (i.e. company or TCA) as outlined in **Annex I**.

5.11 To be able to order holograms, a company or TCA must first be approved by DfT.

5.12 DfT requires monthly returns from approved companies and TCAs detailing the holograms they currently have in stock, holograms received and cards delivered. Any holograms in stock must be returned to DfT if a company's contract to supply permits or blank cards with holograms attached comes to an end.

5.13 Holograms remain the property of DfT throughout the process.

5.14 The process for gaining access to holograms for permit production is described in **Annex I**.

Audit

5.15 DfT, or its agents may at any time audit how a company or TCA is ensuring the security of the holograms and may, if they have reasonable grounds for deciding that any of the procedures are not effective, refuse to supply further holograms until agreed improvements have been made.

Sending permits in the post

5.16 All concessionary travel permits display personal data – such as the photograph and name of the holder. As such, TCAs must be mindful of their data protection responsibilities if they choose to distribute them through the post, either directly or through their permit provider. TCAs and permit producers are advised to include a return address on any envelopes used to send out permits.

6. Smartcard Technology & Permit Production

Unique identifying numbers (OIDs and CPICCs)

6.1 ITSO maintains a list of Concessionary Pass Issuing Cost Centre (CPICC) codes and Operator Identification Numbers (OIDs), which provide unique identification of a TCA or scheme within the ITSO environment and are available on the ITSO website.

Concessionary Pass Issuing Cost Centre (CPICC)

6.2 This is a unique number provided to all TCAs and is used to identify the TCA responsible for issuing a concessionary product. The CPICC value is also used in electronic journey records to indicate which TCA is responsible for reimbursement. Where a journey begins in, or takes place wholly within an area that is not the permit holder's home authority it is referred to as the Concessionary Pass Reimbursement Cost Centre (CPRCC). The value is often, but not always, the same. For example in West Yorkshire there is one CPICC code but separate CPRCC codes for ENCTS journeys.

6.3 CPICC codes are only issued at a TCA level, they are not issued at a scheme level. A scheme with multiple TCAs may share a single OID but each TCA is required to have its own unique CPICC code. For example, the Centro OID covers seven area level CPICCs.

Operator Identification Number (OID)

6.4 OIDs are used to identify the scheme that owns a particular ITSO shell or product. In a concessionary environment most TCAs will have their own OID, however, in some areas multiple TCA's share the same OID.

6.5 The most visible example of an OID is that it is printed on the front of all national concessionary permits as part of the card number. The OID is shown in bold in this example: 633597 **0999** 1234 5678.

6.6 Every OID is associated to a HOPS. This means that all the information relating to shells and products from an OID will be sent to the HOPS associated to the OID. Each OID can only be associated with a single HOPS.

6.7 The OID and CPICC values are also used in ETM configuration data. This allows the ETM to distinguish whether or not a concessionary pass is valid. This is especially important where an additional local concession is issued which may have time or geographic restrictions that are different from a standard national concession permit.

Important things to remember

6.8 For the England-wide concession:

- each TCA has its own CPICC (CPICC number cannot be shared with other TCAs);
- each TCA or scheme has its own Product OID;
- each TCA or scheme has its own Shell OID (the Shell OID and the product OID can be the same).

6.9 The integrity of the OID and CPICC is essential to the efficient operation of local national concession schemes, therefore:

- permits must not be issued with OIDs/CPICCs that are not on the authorised list - TCAs , therefore, need to confirm their OIDs and CPICCs to their permit producer

- all permit producers should cross-reference the information supplied by TCAs against the list of OIDs and CPICCs published on the ITSO website as part of their QA process.

Where to find information about CPICCs and OIDs

6.10 An up-to-date list of CPICCs and OIDs is available for licensed members on the ITSO website. It is important that the latest list is used when encoding passes.

Changes to CPICCs and OIDs

6.11 Changes to the list of CPICCs and OIDs will be infrequent. But when this does happen guidance on managing change control can be found in **Annex D**.

ISAMs

6.12 ISAMs[3] are fundamental to the operation of smartcard schemes, including ENCTS. An ISAM is a secure electronic data processing module, the size of a mobile phone SIM card, which checks the card holder's permissions, authenticates and validates their electronic ticket or permit and stores journey data for further processing. The ISAM 'talks' to the back office system HOPS.

6.13 All ISAMs need to be encoded correctly. If not this can result in permit holders being denied their right to the concession, to inaccurate reimbursement and potential financial risk for TCAs. TCAs and bus operators should have robust management processes in place to ensure that any ISAMs they are responsible for are correctly encoded and kept up-to-date.

6.14 There are almost 90,000 operational ISAMs in the UK. They are found in all ETMs, mobile validators, smart enabled rail gatelines and point of service terminals[4].

6.15 Similarly, each machine that is used to produce permits needs to include an up-to-date and specially profiled ISAM[5].

6.16 Digital encryption 'keys' within individual ISAMs ensure that transactions are secure and need to be updated periodically. The majority of ENCTS IPE encryption keys expire in August 2017 but it has been decided that the keys will be extended to 2040

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[3] ITSO Secure Application Modules
[4] POST - a terminal where the smartcard (or other smart media) is read or written to as appropriate e.g to check validity, add products/value.
[5] Known as a PersoISAM within a PersoPOST in ITSO terminology. 'Perso' refers to personalisation of each blank smartcard.

(the quality of the encryption was assessed to be high and the risk of compromise low, as such it was decided that extension would be less disruptive than wholescale renewal). However, TCAs and operators will need to ensure that all ISAMs are updated by August 2017 to reflect the extension of the encryption keys. ITSO will lead a programme to ensure that all licensed members take the necessary action before August 2017, similar to the successful Transaction Keyring Roll, undertaken in 2015, to update four separate encryption keys.

6.17 ITSO supplies Test ISAMs (commonly referred to as I2F ISAMs) to test equipment before it is installed in a live scheme. But the security keys on I2F Test ISAMs are incompatible with the live ITSO environment. Therefore, equipment suppliers must ensure that they are using ISAMs that have been correctly supplied and commissioned for the live environment (i.e. not Test ISAMs). This is essential both for use in the personalisation equipment that is producing users' cards and for the bus ticket machines that will accept those cards.

Products

6.18 Encoding for products is known as the ITSO Product Entity (IPE). This is the electronic form of the permit (or ticket in commercial schemes), i.e. the data structure used within the ITSO Shell to store formatting and other product details. ITSO maintains the list of IPEs; these are uploaded by operators to their ETMs so that all ENCTS products can be recognised by any smart enabled bus in England.

6.19 In the ITSO specification IPE TYP16 is used to denote the national concession for both the age-related and disabled permit holders. TYP14 should be used only to denote locally available concessions e.g. companions and additional time further to the off-peak national concession.

6.20 It is important that the distinction between TYP16 (national) and TYP14 (local) is maintained to ensure consistency across the national scheme.

Permit production

6.21 TCAs may choose to produce permits in house, to arrange for another TCA to produce permits on their behalf or to employ a specialist permit producer. Whichever option they choose, there are some technical details which TCAs and/or their permit producers need to understand in order for their permits to be correctly encoded. A permit production checklist for TCAs is set out in **Annex E**.

Producing permits in-house

6.22 To be able to produce permits in-house TCAs should use ITSO certified and tested hardware/software and follow all the associated DfT and ITSO guidance, if not there is a substantial risk of incorrectly coded permits being produced.

6.23 TCAs are contractually obliged by the terms of their ITSO licence to ensure that any equipment purchased for an ENCTS scheme is ITSO certified. It is not sufficient that the company they purchase from has an ITSO certificate – they must have a certificate for the specific equipment that is being purchased.

6.24 TCA's should ensure that any combinations of ITSO certified hardware and software they plan to purchase can work together as intended, including interfacing with their own HOPS.

6.25 In addition, TCAs need to ensure that their IT systems can send and receive the messages that will be sent between their permit production equipment and their HOPS. Some firewalls may block such messages unless they are specifically programmed to allow them.

6.26 TCAs should seek advice from ITSO Ltd (info@itso.org.uk), prior to purchasing equipment, on how to ensure that all such equipment is properly certified.

6.27 TCAs wishing to produce permits 'in-house' will require:

- ITSO certified hardware and software to produce the permits
- A link to their HOPS
- SSL certificates, issued by their HOPS provider, for each card printer which certifies that the printer can connect with the TCA HOPS
- ITSO certified card supply
- Access to the concessionary travel hologram supply
- Detailed permit design specification
- ISAMs
- Embodiment specifications for permit encoding
- A range of ISSNs (see para 2.13)

6.28 Any TCA considering bringing permit production in-house should ensure they have the capacity to produce accurately coded permits before their existing supply contract ends.

6.29 In the first instance, TCAs considering this approach should talk to suppliers about what they can supply and the timescales involved. TCAs should be aware of the technical elements that affect ITSO card production and may wish to seek advice from ITSO Ltd before taking a final decision.

Using a permit production company

6.30 TCAs must ensure that their chosen supplier has the ability to interface properly with an ITSO certified HOPS. Permit producers may be unable to produce permits correctly if they are not compliant with the latest version of the specification.

6.31 In addition, the chosen supplier will need to confirm that they have a working link between their permit production equipment and the TCA's HOPS.

6.32 TCAs should ensure that the PersoPOST being used by their chosen supplier has been certified as capable of writing TYP16 ENCTS products for the England-wide concession and TYP14 if the TCA intends to add discretionary concessions.

Testing and permit validation

6.33 TCAs should also consider carefully and agree with their supplier what testing or card verification is needed to ensure that the permits produced are correctly encoded. This applies to both the physical coding structure of the card and the data-content.

6.34 ITSO offers TCAs an independent permit validation service to check that permits have been configured correctly. This service is open to all TCAs, on payment of a fee. We strongly recommend that any TCAs that are changing their permit provider, or that are taking permit production in-house, takes advantage of this service to ensure that their permits are configured correctly before bulk permit production starts. Details of the service can be found in **Annex F**.

6.35 Where permits have been issued and are subsequently found to be incorrectly coded, TCAs should reissue the permits at the earliest opportunity to remove the potential negative impact on other TCAs and on reimbursement.

Data encoded on permits

6.36 The ONLY information that MUST be electronically encoded in the concessionary travel permit chip is:

- An ITSO shell

- A type 16 England-wide concessionary product

- The type of concession - age or disabled

- The expiry date of the concessionary product

- National Stored Travel Rights IPE

6.37 An ITSO shell is necessary to load any ITSO products on to the smartcard. The shell contains the 18 digit number shown on the front of the pass and allows passes to be uniquely identified, but the shell itself does not contain any personal information about the permit holder. (The ITSO Shell Reference Number (ISRN) can be used to link the permit to the permit holder in the card management system database.)

6.38 The concessionary product is the electronic "ticket" that is loaded on the ITSO shell. It is this product that is recognised as entitling the holder to the England-wide concession.

6.39 The type of concession - older person or disabled - needs to be encoded on the permit for the same reason that there is a different coloured stripe on the side of the permit, blue for the older persons permit and orange for the disabled persons permit - many TCAs have different additional concessions for disabled or older people. Encoding this allows smart readers to distinguish between the two and which benefits the holder is entitled to.

6.40 The expiry date of the concessionary product and shell encoded in the permit should be the same as the one printed on the front of the permit.

6.41 Having the national Stored Travel Rights (STR) IPE stored-value product on the permit is an ITSO requirement. It ensures that if STRs are introduced there is space on all ITSO cards. TCAs do not have to encode any specific extra information in this product and it therefore contains no personal information about the permit holder.

6.42 If a TCA wants to add a local stored travel right product to their permits (for example to allow payment on other transport modes, on cross-boundary operation into Wales/Scotland, or when the England-wide concession is not valid) they will need to ask their permit producer to encode their permits with a local STR. Such a local STR would need ITSO Board approval prior to going ahead and may require Financial Conduct Authority (FCA) approval[6] where money (credit) is being held by the scheme.

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[6] See more at: https://www.the-fca.org.uk/authorisation-and-registration-electronic-money-institutions?field_fcasf_sector=231&field_fcasf_page_category=unset#sthash.1vQFFybR.dpuf

Smartcard media

6.43 There are a number of different ITSO smartcard media available to TCAs. A list of certified card media is available on the ITSO website.

6.44 TCAs should carefully consider the card type that is most appropriate given the intended purpose of the permit and their potential future needs over the lifetime of the card. For example, generic microprocessor cards have greater capacity and can be encoded to carry additional products making it possible to use these cards for multiple purposes, for example as library or leisure cards, in addition to use as concessionary bus permits, but they are likely to have slightly longer read times on bus ETMs.

ITSO Ltd voluntary compliance checks

ITSO Ltd plans to introduce a voluntary scheme to quality assure TCA ENCTS schemes. The purpose of this is to give TCAs the opportunity to confirm that their schemes are established correctly and follow best practice guidance. Further details will be published by ITSO in due course.

7. ITSO Certified Equipment on Buses

7.1 Concessionary travel permits are required to be ITSO smartcards but it is for individual bus operators to deploy ITSO smartcard systems.

7.2 The majority of buses in England have ITSO compliant electronic ticket machines. There are substantial advantages to bus operators and TCAs in going 'smart' – including reduced fraud and much better journey data – which helps make reimbursement more accurate.

7.3 Since 2010 Bus Service Operators' Grant (BSOG) has included an 8% additional incentive for operators with buses fitted with smartcard technology and meeting other smart-related criteria. Up-to-date detail on BSOG can be found on the DfT website.

Can ITSO readers recognise all permits?

7.4 All concessionary travel permits issued outside London are ITSO compliant smartcards and have a concessionary fares product loaded that identifies the local authority that issued the permit. This means that they are capable of being read on any ITSO reader.

7.5 However, it is not enough simply for a bus to have an ITSO reader – the reader must also be configured to recognise all concessionary travel permits issued in England.

7.6 Any bus operator that is considering becoming smart enabled must ensure that their smart readers are configured to recognise all concessionary permits; this is a requirement for claiming the BSOG smart uplift. A Master Reference List is available on the ITSO website, which contains the scheme details such as the product OIDs and product types.

7.7 TCAs and bus operators should work together to ensure that valid permits are always accepted and that ENCTS schemes are operating correctly. For example, if a permit cannot be read on a smartcard reader, and is not identified as being hotlisted, is in date and the driver is satisfied that the user is the person shown on the face of the permit, then it should be accepted as a valid permit and a manual record made. TCAs should recognise that in such circumstances manual recordings are valid for reimbursement purposes.

London

7.8 ENCTS permits issued outside of London cannot yet be read by smartcard readers on Transport for London buses. This is being addressed and it is expected that smartcard readers on London buses will accept other ENCTS permits in 2016. The London Freedom Pass (the ENCTS permit issued by the London Boroughs) is ITSO compliant so can be read by ITSO smartcard readers outside of London as well as Oyster standard readers within London.

8. Data Collection for Reimbursement

8.1   Robust smart journey data is essential for TCAs to accurately reimburse operators.

Background

8.2   Smart journey data provides accurate reimbursement and potential savings for TCAs. Research by the Smart Cities Partnership indicates that ETM (Electronic Ticket Machine) data may over-represent ENCTS journeys by anything up to 5%. Reimbursement is currently often made on the basis of manual ETM recordings.

8.3   Guidance within this document on administering ENCTS schemes will help TCAs ensure that smart data is accurate and robust and fit to be used as the principal data source for reimbursement or to validate operator provided data.

8.4   As part of the transition to smart data TCAs may choose to apply a tolerance level. For example, a tolerance of up to 3% between the smart journey data and ETM data may be considered acceptable in order to account for manual transactions. This means that the TCA would only pay for reimbursement based on ETM data that are no more than 3% over smart journey data. These tolerances may then be lowered over time until the eventual adoption of reimbursements based solely on smart data.

8.5   Smart ENCTS data also has the potential to make savings by more accurately matching the journeys actually made with the corresponding adult ticket price. This is done by grouping together journeys recorded by individual permits and calculating the necessary reimbursement on the basis of better value higher frequency tickets, such as weekly tickets. These require lower reimbursement levels compared to the equivalent, more expensive single or day tickets (which are used in the methodology presently).

Getting the data

8.6   The minimum data fields required to build a report on ENCTS journey data are:

- Concessionary Authority
- CPICC
- Origin Stage Number
- Products
- Service Number
- Service Provider
- Smart Date
- Transaction Date

- Transaction Type

8.7 TCAs should ensure that their HOPS provider is required - ideally as part of the procurement process - to provide journey data reporting to the standard required by the TCA. The guidance here can be used in the procurement process. Additional data fields to those listed above can be included in reporting, if wished, for example, for audit purposes or to provide more detail on specific routes.

8.8 Detailed guidance on data requirements can be found in 'English National Concessionary Travel Scheme (ENCTS), local companion and time-based and mode-based enhancements ITSO Message data requirements', 13th October 2014, available on the ITSO website[7].

8.9 **Annex G** gives more detailed background on reporting for reimbursement purposes. It has been produced by the Smart Cities Partnership and, therefore, reflects experience in the larger metropolitan authorities.

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[7] https://www.itso.org.uk/members-home/committees-and-groups/oagandtag/encts-wg-published-papers/ (zip file).

9. Hotlisting

9.1 ITSO has established a working group to adapt and develop guidance on hotlisting that is being used by the SWSAL[8] authorities so that it can be implemented by all ITSO members. The output from this working group will be published on the ITSO website in 2016.

9.2 One of the major benefits of smart ticketing is the ability to stop lost and stolen permits being used by electronically blocking them, this process is called hotlisting.

9.3 As such, hotlisting forms an essential part of the England-wide concession, even in areas that do not yet have hotlisting enabled

Key elements of hotlisting

9.4 TCAs need to actively manage the hotlisting process to ensure that it is effective. Only TCAs can take action to put ENCTS permits on the hotlist.

9.5 TCAs should co-operate with one another and seek agreements to share data on hotlisted permits. As a minimum TCAs should have agreements with their neighbouring TCAs to share data on hotlisted permits.

9.6 As much of the process as possible should be automated and TCAs should be mindful of operators that may have limited capacity to accept electronic hotlists and to make alternative arrangements with them.

9.7 For ENCTS hotlisting it is appropriate to hotlist the shell rather than the individual product so that the smartcard itself is disabled. Where the permit holder has a separate commercial product on the card the TCA should make arrangements to repay any outstanding balance.

9.8 The hotlisting process is made up of number of different elements, the two key elements are the lists themselves and a rules engine, which decides which cards go on each list, these are briefly described below.

Master List

9.9 A Master List contains details of all the cards hotlisted by a scheme together with details of hotlisted cards received from other ITSO schemes, where a reciprocal arrangement and technical solution has been implemented. The master list may include commercial cards as well as concessionary cards depending on the scheme.

Active List

9.10 The Active List is a sub-set of the Master List of hotlisted permits; it lists those permits that have been detected in use. The Active List is much smaller than the Master List; cards are added and removed from it on a daily basis depending on the business rules of a scheme.

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[8] South West Smart Applications Ltd, www.swsal.co.uk

9.11 An example of a common business rule would be as follows: every night the usage data in the HOPS is checked against the Master List for any cards that have been used but are not already on the Active List. Where there is a match these cards are promoted to the Active List so the next time they are used they will be blocked. Similarly cards may be demoted from the Active List after, say, 10 days, of not being seen to ensure the size of the Active List remains manageable.

Distributed List(s)

9.12 The Distributed List is the active list that is sent out to ticketing equipment on a daily basis. This may be the same as the Active List but because the amount of storage can vary between different equipment the Distributed Lists can be slightly different in size or content.

9.13 The exact content of the Distributed Lists is dependent on a number of factors including the scheme business rules and the requirements of the service operator, for example they may be using some of the hotlist storage space on their ticketing machines for their own commercial products, reducing available memory on the ETM.

Rules Engine

9.14 The Rules Engine is a generic term for a piece of software that manages the movement of card details between the Master List, Active List and Distributed List(s). These rules can be very complex, depending on the size of a scheme. It is here that any cross-border arrangements with Scotland and Wales for the sharing of data should be incorporated; border authorities should have arrangements to recognise permits on cross-border services.

9.15 As the national concession scheme is England-wide it is important that a whole country approach is taken to hotlisting. The fact that permits are used across England means that TCAs and schemes need to actively share hotlisting information in a consistent format between schemes to ensure that lost or stolen passes used outside the geographic area of a TCA can still be prevented from being used.

Annex A: Accessibility

Introduction

Versions

1   The earlier version of this document was published as Technical Advice Note 1 (TAN 1) "Guidance on helping blind and partially sighted people apply for and use their bus pass" in October 2007. This version replaces TAN 1 and broadens the scope of advice provided, helping authorities to ensure that all service users are able to access the national concession.

Purpose

2   The statutory concession in England was implemented in April 2008 in accordance with the Concessionary Bus Travel Act 2007. Travel Concession Authorities (TCAs) are responsible for administering the concession consistent with all applicable legislation and giving appropriate consideration to official guidance. This Technical Guidance is provided to help authorities do this, although ultimately they remain responsible for all aspects of its implementation.

3   This annex on the accessibility of the national concession is intended to help authorities ensure that potential applicants for the statutory concession are able to access it, including using application processes and presenting their permit on board buses. It does not replace any legislative provision with regard to equality, and should be read in conjunction with other requirements.

Over-arching principles

4   There are around eleven million people in the UK with a limiting long-term health condition or disability. Whilst the disability criteria for the national concession provide a narrower interpretation than used for these statistics the nature of the concession means that a high proportion of applicants are likely to have additional access needs.

5   Of all disabled people around 19% have a communications-related disability, 21% have impaired concentration, memory or learning, and 24% have affected physical co-ordination[9]. Applicants in any of these groups may have difficulty accessing application processes or communications provided in standard formats without some form of adaptation.

6   Ensuring that application processes are accessible for all of their potential users, and making specific adjustments in response to individual needs, needn't be expensive or complicated. Often providing information in an electronic format will increase its potential reach considerably, whilst offering to explain processes or complete forms over the telephone will help others. Sometimes it may be

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[9] Family Resources Survey 2011/12, Table 4.2 (https://www.gov.uk/government/statistics/family-resources-survey-201112)

necessary to provide information in less commonly used formats, such as Braille or audio, however these are likely to be a minority of cases.

Standard formats and accessible alternatives

7   In order to be truly accessible to as many people as possible, regardless of access needs, services should be designed with inclusivity at their very core. Such an approach promotes independence and equality whilst avoiding the need for retrospective adjustments in the majority of cases. This annex refers to it as the "standard service".

8   Even the most accessible of services are unlikely to meet the access requirements of absolutely everybody who needs to use them. In such cases alternative arrangements or "reasonable adjustments" may need to be put in place. An example might be providing Braille versions of printed material for visually impaired customers without access to the internet. These arrangements are known in this guide as "alternative services".

Technical guidance recommendations

Information about the scheme

Standard service

9   Where information is made available about the national concession the DfT recommends that both printed and online media are used in order to ensure it is accessible to as many people as possible.

10   Printed material should be produced with readability in mind. It should:

- Use a clear sans-serif font no smaller than 12pt;
- Use colour schemes which enhance contrast, and avoid printing text over images; and
- Include information on obtaining a copy in an alternative format.

11   Online information should be provided on a web page which conforms to the Web Content Accessibility Guidelines (WCAG) 2.0.

12   All information, irrespective of medium, should use plain English, avoiding jargon and acronyms.

13   Further information on accessible printed and online information can be found at: http://www.abilitynet.org.uk/quality/documents/StandardofAccessibility.pdf.

Alternative Services

14   Some people may find it difficult to access either the printed or online versions of the standard service, including visually impaired people without internet access. For these people TCAs should consider providing alternative services such as:

- Reading information over the telephone or using a textphone
- Producing a version in Braille, Easy Read or in an audio format.

15   The customer is likely to have a preference as to the alternative service used and authorities are encouraged to be as flexible as possible in responding to such

requests.

16   Information on producing alternative formats can be obtained from the UK Association of Alternative Formats (UKAAF), at http://www.ukaaf.org.

Application process

Standard service

17   It is recommended that concessionary permit applications are accepted using online forms in order to ensure that the process is accessible to as many people as possible.

18   Many people with additional communication needs are able to access material using specialist software on a computer, and enabling them to submit their application online promotes their independence.

19   It is noted however that in 2014 28% of people aged 65 and over had never used a computer[10]. The DfT therefore recommends that, in order to promote independent living whilst minimising the need for alternative services, applicants are also able to submit applications using a paper form.

20   Printed materials and websites should conform to the standards described above.

Alternative services

21   Some people will find it difficult to complete a form regardless of whether it is printed or online. Such people might include those with a visual impairment but without internet access, and people who find it difficult to understand complicated information.

22   For such people TCAs should consider:

- Interviewing the customer in person or over the telephone in order to gather the information required

- Providing the customer with a list of required information and allowing them to submit it in an alternative format (such as on an audio cassette or as a typed list).

23   Where customers are required to visit a particular location in order to be interviewed or have their photograph taken it should be noted that some people will find it difficult to reach unfamiliar locations without assistance. In such cases the DfT recommends considering alternative approaches, such as agreeing a location with which they are more familiar or visiting them at home to complete the application process.

24   The application process should include the ability to declare a preferred format for correspondence and have this stored by the authority.

Providing the permit

Standard service

25   Whether providing permits by post or in person at a specific location care should be taken to ensure that the chosen approach is accessible to as many customers

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[10] Release: Internet Access - Households and Individuals, 2014, Table 1 (http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-322080 , accessed 23/07/2015)

as possible. The recommendations stated above with regard to the presentation of printed materials and the selection of physical locations should be followed wherever possible.

26   In addition to information recommended in other sections of the Technical Guidance, reference should be made to the avoidance of altering or defacing permits, even where this is for reasons of accessibility. Permit holders requiring help in identifying or orienting their permit should be advised to contact the authority for further advice, or to use non-destructive approaches, such as using a distinctive ticket wallet.

Alternative services

27   Any information accompanying permits, whether issued by post or in person, should be provided in the customer's preferred format (see above). Care should be taken to ensure that such information reaches the customer ahead of, or at the same time as, the new permit – although the issuing of the permit should not be delayed unreasonably in order to ensure this.

28   Some visually impaired customers will need help orienting the permit correctly when presenting it to a bus driver. Care must be taken however not to deface any official marks on the permit or to damage its electronic components. The DfT therefore recommend that tactile marks, such as notches and Braille labels are added by, or in liaison with, permit manufacturers or fulfilment companies. Cut away corners or punched holes could damage the chip or aerial and should not be used.

29   Providing customers with distinctive wallets in which to store their permit, ensuring that it is correctly oriented when presented on board buses, may be an acceptable alternative to adapting the permits themselves. A brightly coloured wallet with appropriate labelling might help some customers to safeguard, identify and present their permit more readily, including some visually impaired people, or people with impaired cognitive ability or memory. In all cases however, it is recommended that TCAs discuss specific requirements with the respective customer as some may prefer not to draw attention to their particular disability.

Permit renewals and ongoing correspondence

Standard service

30   Where communications are maintained with customers during the life of their permit, such as to undertake mid-term reviews or reissue permits upon their expiry, the DfT recommends that they are conducted consistent with the principles above.

31   In particular, it is recommended that non-personal communications, such as marketing campaigns aimed at alerting customers to permit reissues should be designed to be accessible to as many people as possible, including utilizing both printed and online media.

32   Where personal communications are used, such as letters to specific customers, these should be produced in the customers' preferred format (see above). Some alternative format producers work with large corporations, including banks and utility companies, to provide large volumes of accessible correspondence to tight deadlines, and the UK Association of Adaptive Formats (http://www.ukaaf.org) should be able to help identify one which can respond to respective TCAs'

requirements.

Alternative services

33   Mass marketing exercises, however inclusively designed, are liable to exclude people with certain categories of access need. Care should therefore be taken to ensure that customers with such needs do not miss key messages affecting their access to the national concession. Consideration might be given, for instance, to contacting customers directly by telephone or accessible letter where they have an identified communications-related access need.

Sources of further information

34   Guidance on the accessibility of publications, websites and general communications can be obtained from a number of organisations, including:

- AbilityNet:
  http://www.abilitynet.org.uk/quality/documents/StandardofAccessibility.pdf
- Department for Work and Pensions:
  https://www.gov.uk/government/publications/inclusive-communication/accessible-communication-formats
- European Blind Union:
  http://www.euroblind.org/resources/guidelines/nr/88#Websites
- NHS Accessible Information Standard:
  http://www.england.nhs.uk/ourwork/patients/accessibleinfo-2/

For further information on organisations that can provide printed material in alternative formats please contact:

- United Kingdom Association for Accessible Formats
  http://www.ukaaf.org

Annex B: Standard Text of Permit Holders Rights & Responsibilities

The text below provides core guidance that TCAs can consider giving to permit holders each time they are issued with a new permit. The text can be adapted and added to as is appropriate for individual local schemes. But the aim is to provide simple guidance to permit holders on the day-to-day use of their permit. It has been kept as short and focussed as possible.

[..] refers to the name of the issuing authority.

[..] National Concessionary Travel Scheme Dos & Don'ts

The enclosed permit grants you free travel on eligible local bus services in England between 0930 and 2300 Monday to Friday and at any time at the weekend and on bank holidays.

You may also travel for free on these services [details of local discretionary concessions, including geographic scope], provided by [..] for our residents.

The enclosed permit remains the property of [..].

Do
- Place your permit against the smartcard reader on boarding each bus then show it to the bus driver. The reader will indicate when it has successfully read your permit. (Some bus operators may also issue a paper ticket.)

- Always show your permit to the bus driver where there is no smartcard reader present or if it is not working.

- Keep your permit separate from other smartcards and contactless payment cards when using it, to avoid "card clash".

- Contact [..] immediately if your permit is lost or stolen or you move home.

- Contact [..] if you believe your permit is faulty (for example, it is frequently rejected by smartcard readers).

- Return your permit to [..] if a new permit has been issued in its place (in such circumstances your original permit is no longer current and cannot be used to obtain concessionary travel).

- Pay for your journey if you are told that your permit is no longer valid for travel. The transport operator may retain your permit in such circumstances, and you should contact [..] to request a replacement.

- Return your permit to [..] if you are no longer eligible for concessionary travel.

- Keep this guidance for future reference.

Don't
- Let another person use your permit. Your right to free travel is not transferable.

- Damage your permit, for example, by bending it or punching a hole in it. Damaged permits should be returned to [..] and a replacement applied for, which you may have to pay for;

- Use the permit after it has expired or has been replaced. The transport operator may retain the permit in such circumstances and require you to pay the full fare for your journey.

Full details of the [..] Concessionary Travel Scheme Terms and Conditions can be found on the [..] website [and are available… etc]

Contact details for [..] [address, phone etc]

Annex C: Minimum Data Requirements for National Concession Permits

The table below shows how a database can be set out to store the minimum data required in a card management system to record concessionaires.

Data requirement	Format	Number of characters	Notes
CPICC	Text string	5 ASCII Characters	Number should be right justified with leading zeros as required.
PassHolderNumber	Text string	8 ASCII Characters	Number should be right justified with leading zeros as required. Together with the CPICC number above, these make up the UniqueReferenceNumber.
FirstName	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
Surname	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
Address	Text string		Text should be left justified, no commas. It is recommended that TCAs should split the address into separate fields as shown in the table below.
ExpiryDate	DDMMYYYY	8 ASCII Characters	Written as DDMMYYYY
Photograph	JPG photograph file or hard copy	16 ASCII Characters	JPG file names should be UniqueReferenceNumber.jpg. (ie CPICCPassHolderNumber.jpg) Hard copies should have UniqueReferenceNumber on reverse.
TypeOfConcession	"a" or "d"	1 ASCII Character	(upper or lowercase)
ISRN	Text string	16 ASCII Characters	Number should be right justified.

Table 1 Minimum data requirements for National Concession Permits

The table below shows how concessionaire address data should be set out.

Data requirement	Format	Number of characters	Notes
HouseOrFlatNumberOrName	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
BuildingName	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
Street	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
TownCity	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
County	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
PostCode	Text string	8 ASCII Characters	Correct structure should be: LN NLL; LNN NLL; LLN NLL; LLNN NLL; or LLNL NLL. There should be a space in front of the last three characters. Where post code is less than 8 characters (including the space) additional spaces should be included at the end.

Table 2 Recommended format for permit holder addresses in the CMS

The table below shows how additional data may be set out in a card management system to aid contact with the permit holder.

Data requirement	Format	Number of characters	Notes
Title	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
MiddleNames	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas
TelephoneNumber	Text string	16 ASCII Characters	Numbers should be left justified – with trailing spaces as required.
TelephoneNumberType	"h", "w" or "m"	1 ASCII Character	(upper or lowercase)
EmailAddress	Text string	Up to 39 ASCII Characters	Text should be left justified, no commas or spaces.
Gender	"m", "f" or "u"		"m" – male "f" - female "u" - unspecified (upper or lowercase)
DateOfBirth	DDMMYYYY	8 ASCII Characters	Written as DDMMYYYY

DisabilityType	"n", "a", "b", "c", "d", "e", "f", "g"	1 ASCII Character	"n" - not further specified "a" – Blind or partially sighted "b" – Profoundly or severely deaf "c" – Without speech "d" – Long term disability/injury preventing ability to walk "e" – No arms or lack of use of both arms "f" – Has a learning disability "g" – Deemed unfit to drive pursuant to section 92 of the Road Traffic Act 1988 (upper or lowercase)
CompanionAllowedLocally	"y" or "n"	1 ASCII Character	(upper or lowercase)
ConcessionTradedForAlternative	"y" or "n"	1 ASCII Character	(upper or lowercase)
TradedFor	"t", "r"	1 ASCII Character	(upper or lowercase) "t" = tokens & "r" = railcard

Table 3 Best practice additional data options

Exporting data from databases

Data needs to be exchanged between TCAs and permit producers. The following guidance suggests how this might be done. An export of the database should, wherever possible, be made in XML format. Where it is not possible to output an XML file, a CSV formatted file should be produced instead.

The extracted database should be given a name which starts with the CPICC number allocated to the TCA in text form followed by the word "extract".

e.g. (where CPICC=12345) and entries 0 to 122399 are included:

12345extract00000000_00122399.xml

or

12345extract00000000_00122399.csv

Each entry in the database will contain the filename of a photograph. A matching photograph file will be required and these should be contained in a folder. The convention for the folder name is:

Database entries	Folder name
00000000 – 00000499	photos0
00000500 – 00000999	photos500
00001000 – 00001499	photos1000
00001500 – 00001999	photos1500 etc.

Annex D: Changes to OIDs & CPICCs

Why OIDs and CPICCs might change

1   Over time, there is likely to be a need to amend the list of OIDs or CPICCs. This is most likely to be needed where the composition of a scheme changes or a TCA wishes to introduce its own ITSO smart scheme.

2   A Shell OID is most likely to change when a smart TCA or Scheme changes ITSO licence numbers. This will involve the TCA or Scheme becoming full ITSO Licensed Members and being allocated their own Shell OID number(s).

3   A Product OID is most likely to change when an ITSO Smart TCA leaves an existing scheme.

4   As each TCA has its own CPICC, there are likely to be fewer changes at this level. In particular, CPICCs will not change when a TCA leaves a scheme or joins a different scheme. However, changes may be needed as a result of any future local government changes.

Change control for OIDs and CPICCs

5   The following process applies to control any OID or CPICC changes:

- Any TCA wishing to change its CPICC will need to write to DfT at smartticketing@dft.gsi.gov.uk, detailing the change(s) that it wishes to make and the reason for the proposed change.

- The DfT will consider the need for each change proposed which may involve further discussions with the TCA.

- Once the need for the change has been established, the DfT will notify ITSO Ltd.

- ITSO Ltd will update the list of OIDs and CPICCs – the version number of the document will be incremented and the current (updated) version of the list will be published on the ITSO website to ensure that all potential users of the list have the current information. ITSO Ltd will also inform all Licensed Members of the change.

- The DfT will confirm the new details to the TCA which requested the change.

- The TCA will notify its pass provider and, if appropriate, its HOPS provider, with the new details.

- The HOPS provider will request the ITSO ISMS to issue new product notifications to all smart schemes for the automatic distribution of the new product or shell information to all existing ITSO smart readers.

6   If an ITSO smart TCA wishes to make a change, it does not need to go through the above process. It may inform ITSO Ltd directly and request a new OID or CPICC. ITSO Ltd will issue the new OID or CPICC to the TCA and will reissue the complete list to the DfT highlighting the changes made.

Implications when a change is made to an OID relating to a TCA

7   It is unlikely that a TCA which is not part of a scheme will ever need to change its Shell or Product OID. However, if a TCA wishes to leave an existing smart scheme, it will need a new Shell OID and a new Product OID.

8   All new permits issued from the date on which a TCA receives its new OIDs will be issued using the new details. All permits already issued by the TCA will continue to work with the existing OIDs. Over time, as they expire new permits will replace them using the new OIDs.

9   ITSO smart TCAs will receive transaction information relating to all permits issued using their new OIDs. They won't automatically receive any data relating to permits with their old OID as that will continue to go to the previous scheme's HOPS system. If they wish to receive these data, they will need to make arrangements with the other members of the original scheme and may need to pay a fee. Alternatively, an ITSO smart TCA leaving a scheme may choose to reissue all its permits at that point - it may wish to do so anyway if the permit design shows that it is part of the old joint scheme.

Implications when a change is made to a CPICC

10   Where one or more TCAs merge to form a new single TCA, one of the already allocated CPICCs can be adopted while the other(s) are discarded. Where an existing TCA is spilt into one or more new TCAs, each new TCA will be issued with its own new CPICC.

11   As with changes to OIDs, no permits will need to be reissued as they will continue to work with the existing CPICCs.

Annex E: Permit Production Checklist

- Ensure all hardware and software is ITSO certified and chosen combinations work together as needed.

- All legal requirements are met, in particular:
  - Concessionary Bus Travel (Permits)(England) Regulations 2008
  - Data Protection Act 1998
  - Equalities Act 2010

- Data Protection provisions included in contracts with HOPS supplier and permit producer.

- The reverse of the permit includes:
  - Contact number
  - A reference or link to the TCA's Terms and Conditions
  - Statement that card remains the property of the TCA
  - "If found please return to …."

- Unique Reference Number created to link CMS record and permit.

- Data collected and stored in line with guidance.

- Photograph meets requirements.

- Agree with permit producer how photographs will be transmitted to the permit production facility.

- Encoded date matches that printed on face of the permit.

- Coding follows this guidance and maintains difference between TYP16 (national) and TYP14 (local) concessions.

Annex F: ITSO Validation Service

What is the ITSO permit validation service?

1 ITSO can validate that permits are correctly encoded. This means that a TCA can send to ITSO a sample of permits together with the encoding requirements (in other words, what ITSO products they should contain). ITSO will then check the permits, validating whether or not they have been produced in accordance with the TCA's instructions.

2 TCAs should bear in mind that the validation service is not intended to remove the responsibility of the permit suppliers to supply them with fully functioning permits. Nor is it intended to replace any testing that has been agreed between TCA and permit supplier. TCAs should discuss this with their supplier if they have any concerns.

3 There is no requirement for any TCA to use the ITSO permit validation service - it is completely at the TCA's discretion.

When might a TCA use the ITSO permit validation service?

4 TCAs that make changes to elements of their permit production process may wish to use this service before they start producing the bulk of their permits, to validate that the change has not adversely impacted the integrity or functionality of the permits they are issuing. For example, TCAs may wish to use this service if they:

- Change supplier(s)

- Change the scheme layout that results in a new OID and/or CPICC being issued to the TCA

- Change an element of the permit ordering process, such as implementation of a new 'Card Management System'

- Add new products to the permits

- Change the card type used to produce the permit

- Bring production and encoding of permits in-house.

5 In addition a TCA may wish to use the ITSO permit validation service to confirm that the permits already produced by their supplier or in-house are correctly encoded to their specified requirements. This might be because:

- A TCA wants additional independent assurance, on top of that provided by their supplier, that their permits are encoded correctly

- A TCA has received report(s) that their permits are being rejected by readers in a fully 'smart' area somewhere else in the country

- An ITSO smart TCA is encountering problems with a number of their permits not being recognised by readers on buses, and this problem is unable to be resolved

by their supplier. It could also be used to help a TCA check whether the problem was with the permit or the smart reader.

Cost

6   The ITSO permit validation service is currently charged at a fixed rate according to the number of permits being submitted by the TCA, including administration, management and shipping. ITSO will provide details of charges.

How many permits should be validated?

7   This may be dependent on the reason for using the validation service; TCAs should therefore discuss detailed requirements with ITSO. It is recommended that, at a minimum, two permits for each product combination are tested (e.g. 2 x permits holding the basic concession, 2 x permits holding companion entitlement (if applicable), 2 x permits holding any other application).

How long will it take?

8   ITSO will confirm the service timescales when an order is taken. Depending on demand the indicative timescales are:

- A minimum of ½ day to validate a batch of 10 permits

- A minimum of 3 days following validation for permits to be returned to TCA

What information will a TCA receive from the permit validation service?

9   On receipt of completed service request documentation ITSO will log the request, sending a receipt acknowledgement and an expected completion and report/permit return date.

10   Following validation ITSO will provide a short standard validation report which explains, in non-technical language, whether or not the permits have been produced in accordance with the TCA's requirements. ITSO will also provide a short technical report of their validation.

How can a TCA take up the service?

11   To use the ITSO permit validation services TCAs should email ITSO at kim.clarke@itso.org.uk for the service request documentation.

Annex G: Reporting Template

Purpose

1   This paper is designed to define a standardised template for the reporting of data standards for reimbursement of concessionary travel through the English National Travel Concessionary Scheme (ENCTS). This is ultimately aimed at refining the existing reimbursement process/ reporting pathway from bus operator to Travel Concession Authority. The key outputs are an outline set of minimum data fields that must be included in any reimbursement submission and a standard format operator report

Introduction

2   A request was made for input to the ENCTS Technical Advisory Note in order to provide a standard template for reporting smart data. This is to be developed so that TCAs would have guidance on how to specify a standard set of reports at the HOPs procurement stage and would take the form of a prescribed, essential data set. This should be presented as part of any reimbursement submission/settlement request from bus operators that have taken part in the England National Concessionary Travel Scheme. In addition, it has been necessary to formulate a simple, functional guidance paper to provide a best practice methodology for this reimbursement process. Also included is a brief overview of analysis and settlement tools in terms of functionality and benefits analysis that were encountered as part of this study. The development of this document has been jointly aided by the regional transport authorities within Smart Cities Partnership (SCP), the ITSO Operational Advisory Group (OAG) and ITSO Ltd.

Background

3   The provision of enhanced quality smart data relating to concessionary (ENCTS) journeys made has the potential to lead to reductions in reimbursements by the Local Transport Authority/Travel Concessionary Authority in the long term. Currently, within the SCP community regions, these reimbursements to operators are calculated primarily on the basis of ETM recordings from the manual button pressing by the bus drivers. However, it is believed that the ETM data over-represents the number of ENCTS journeys given that the more accurate smartcard recordings give consistently lower figures in comparison. Extracted ETM data has been found to be approximately 5% higher than smartcard data for ENCTS boardings on the large bus operators within city regions in the SCP community for 2013/14.

4   It must be stated that any future savings in reimbursements are aspirational

because ETM data remains the accepted source on which ENCTS reimbursements between the majority of SCP partner cities/Transport Concessionary Authorities and the operators are based. Additionally, there are a range of other factors that are taken into account when working out reimbursements, including any change in boarding figures between years.

5   As part of the possible future transition to reliance on smart data only, there may be tolerances applied in the calculation of reimbursements. For example, the local transport authority may apply a tolerance of 3% to smartcard boarding if the ETM boarding figure is greater. This means that the LTA would only pay for reimbursements based on the ETM data that are no more than 3% over the smart card data. These tolerances may then be lowered over time until the eventual adoption of reimbursements based solely on smart data.

6   Smart ENCTS data has the potential to make savings by more accurately matching the journeys people actually made with the corresponding adult ticket price. This is done by grouping together journeys made by an individual and calculating the necessary reimbursement on the basis of higher frequency tickets, such as weekly tickets. These require lower reimbursements compared to the equivalent, more expensive single or day tickets (which are followed in the methodology presently).

Reporting Template

7   This section will provide a template for the standard concessionary reimbursement form and the basic format for the essential supporting journey and transaction data. In addition, the common audit interfaces and data pathway between operator and TCA will be outlined and best practice defined.

Fields for Reimbursement

8   The following tables outline all the available journey record fields that may be collected as part of the reimbursement reporting process. These have been assessed against common utilisation within the SCP City regions and relevance of concessionary reimbursement requirements. A quantitative approach as then been applied to provide a shortlist of recommendations, which is then further truncated to provide a minimum data requirement from operators when submitting their claim returns.

Journey Record Field	What information does this provide?	Utilised?	Relevance?	Recommended?
Amount Paid	Journey Transaction Cost	N	N	NO
iBatch header sequence number	Reference for the collection of transaction records over a session via multiple class 1 messages. The iBatch Header is automatically computed / updated by the ISAM when its services are used to seal a Transaction Record within a (Class 1) Data Frame.	N	N	NO

Journey Record Field	What information does this provide?	Utilised?	Relevance?	Recommended?
Batch ID	Identifier for packaged data record of actions taken by the POST. Batches are stored in Files on the ISAM and must be delivered to the HOPS in order to receive valid delete parameters. Batches are generated by the delivery to the ISAM of one or more Transaction Messages	N	N	NO
CPICC	Indicates the starting point of the journey.	Y	Y	YES
Card (ISRN)	Unique identifier for the smart card media (shell) used	Y	Y	YES
Concessionary Authority	Log of which authority the transaction had taken place in- The TCA for which the card was produced	Y	Y	YES
Currency code	Transaction currency marker (£)	N	N	NO
Destination	Identifier for travellers intended destination- alighting point	Y	N	NO
ETM Service Number	Ticket machine designator with Service reference: #88 Bus for example	Y	Y	NO
End Stage	Alighting stage for journey	N	N	NO
Format Version Code	The definition of the data organisation corresponding to a CMD (Card)	N	N	NO
ISAM ID	The unique identifier of an ITSO Standard Access Module- identifier for a bus- made up of the OID of the operator to whom the ISAM is registered and a unique ISAM serial number	Y	Y	YES
IPE Iteration Number	Marker to indicate which version of the travel product (IPE) is being handled	N	N	NO
IPE ID (Product)	Identifier for IPE (travel product on card media) handled during the transaction.	Y	Y	YES
ISAM Op code	Operation code for ISAM response	N	N	NO
ISAM Sequence Number	ISAM sequence number. This number is manages by the ISAM and incremented each time the ISAM creates a new IPE.	N	N	NO
ITSO Shell Reference Number	Unique identifier for the smart card media (shell) used. This is a concatenation of the following four data elements that uniquely identifies each instance of an ITSO Shell: IIN + OID + ISSN + CHD	N	N	NO

Journey Record Field	What information does this provide?	Utilised?	Relevance?	Recommended?
Key Strategy Version	Security- encryption marker reference	N	N	NO
Key Version	Security- encryption marker detail	N	N	NO
Last Updated Time	Record of the most recent time of activity on the card media.	N	N	NO
Ledger Entry Type	Status of record completion- have all records from a particular day been received and included by the required report date?	N	N	NO
Location (Origin)	Origin of recorded journey	N	Y	YES
Message Type	Four digit Marker to identify the purpose of the message. Sealed data structure delivered between ITSO terminals (POSTs and/ or HOPS). Messages are used to deliver information about terminal activity to the HOPS and to send control information to a POST. (eg 0209)	N	N	NO
Normal Price	Non-discounted fare detail, price for non-concessionary journey	N	N	NO
Payment period	Peak or off peak pricing marker	N	N	NO
Product Retailer	Specified retailer of a product (IPE)	N	N	NO
Record format Revision	Adaptation for additional analysis information	Y	N	NO
Remaining Uses	Validity marker: irrelevant for concessionary product	N	N	NO
Report Date	Date to which a transaction is attributed to.	N	N	NO
Response Date	The date that a transaction record is received by the settlement system.	N	N	NO
Response Time	The time that a transaction record is received by the settlement system.	N	N	NO
Sealer ID	Security- encryption marker	N	N	NO
Service Number (New)	Service reference: #88 Bus for example	Y	Y	YES
Service Operator ID (OID)/ Provider	A unique digital identification given to an organisation which is an operator or participant in an ITSO compliant scheme	Y	Y	YES
Shell Iteration Number	Which version of the card media has been presented?	N	N	NO
Smart Date	Date associated with operational window of product/scheme. 0400 hrs until 0400 hrs the following day.	Y	Y	YES
Staff ID	Staff pass reference- non-standard data	N	N	NO

Journey Record Field	What information does this provide?	Utilised?	Relevance?	Recommended?
Start Stage	Boarding stage for journey	Y	Y	YES
Supplementary Data	Additional information that may be tagged at operator's discretion	N	N	NO
Terminal reference	Identifier for the Point of Service Terminal (POST)	N	N	NO
Transaction adjustment reasons	Code that specifies why a transaction value was altered- e.g. Operator A paid rather than Operator B. By default this is the original record.	N	N	NO
Transaction Date	The calendar date and time at which a transaction took place	Y	Y	YES
Transaction Time	The time at which a transaction took place	Y	Y	YES
Transaction Information	The record of a Transaction transmitted as a class 1 message from the POST to the HOPS.	N	N	NO
Transaction Sequence Number	Record of the position of the specific journey/transaction within the dataset	N	N	NO
Transaction Type	Record of the transaction method used: ITSO smart, manual, pass creation etc.	N	Y	YES
Trip or Train Number	Service reference: #88 Bus or National Rail reference	N	Y	YES
ISAM Op Code1	Alternative log- Operation code for the response: Logs error code	N	N	NO

What fields are to be used and what are the minimum data requirements?

Fields in Analysis/Reimbursement engine	Commonly Used	Minimum Reimbursement requirement	Comments
Concessionary Authority	✓	✓	**To filter out non-TCA boardings**
CPICC	✓	✓	**Used for analysis of scheme use by non-residents**
Destination Stage Number			Not populated in majority of cases due to no requirement for destination request for concessionary passengers.
ISAM	✓		Used in pass misuse investigations
ISRN	✓		Used to identify individuals' journeys
Origin Location		✓	Origin of recorded journey
Origin Stage Number	✓	✓	**Confirms boarding is within the TCA region**

Fields in Analysis/Reimbursement engine	Commonly Used	Minimum Reimbursement requirement	Comments
Products	✓	✓	**Reimbursement rates vary by product type**
Service Number	✓	✓	**To eliminate non-eligible services**
Service Provider	✓	✓	**Reimbursement rates vary by provider**
Smart Date	✓	✓	**Allows the allocation of early AM journeys to previous day and avoid overlap.**
Transaction Date	✓	✓	**To allocate reimbursement to correct financial period**
Transaction Time	✓		Used in the investigation of pass-misuse etc
Transaction Type		✓	**Used to eliminate non-boarding (pass creation) messages**

Minimum requirement uses shown in bold.

How are journey records collected from bus operators and how are the transactions per operator calculated?

9   In general, the current process starts with operators submitting a return form showing the number of journeys either monthly or per (28-day) period, with a breakdown per service, per passenger type. This will highlight the number of journeys made by ENCTS passengers on the specific bus operators' services that began inside and outside the region, both smart and manual transactions, the total amount of cash collected from all other journeys, and any other regional nominal concession. This will be an authenticated record and will be submitted alongside smart data records.

10   Manually collected survey data has provided the foundation to outlining bus operators' reimbursement settlement levels in the past. A common interim step towards automation has been to undertake a period of parallel survey and smart data collection for comparative purposes. Following this, a removal of survey resource provision is common in order to move to primarily smart data backed reimbursement, within the bounds of operator agreements. Once adequate levels of data/survey corroboration have been achieved, smart data will be solely used to inform the operator/TCA concessionary reimbursement rate agreements. After this period has concluded, these return forms will no longer be required to include ENCTS passenger journeys for smart operators as payment will be based on smart data submissions plus a fixed percentage uplift.

11   Reimbursement agreements regarding settlement levels, query thresholds and bounds are made with operators, typically on an annual basis, but this is subject to regional variance. This is not always backed up by survey data, and can be solely based around operator's declarations. A standardised version of a reporting template is provided below.

12   The TCA analysis/technical services team will then perform data verification-

utilising appropriate reporting software and business information tools in order to undertake corroborative analysis. Data is taken from the operator submissions which have been processed through their POST through to back office. These are then commonly administered in house through technical services resource, with the TCA validating and cleaning the data- this is then issued to an Analysis team. The analysis team will then ensure that an appropriate, expected level of manual transactions have been submitted, and this may be subject to an agreed query threshold between the operator and TCA.

13   The reimbursement mechanism is typically against ticket machine records, utilising an ETM- POST data pathway as opposed to best practice HOP-HOPS data transfer which provides automation and an appropriate level of security for the transaction data.

Constraints

14   Due to the fact that it is unlikely that destination information can be collected for concessionary passenger travel, normal price information for the individual journeys cannot be calculated. Fare collection data- amount paid vs normal price can't be calculated without the alighting information. Currently bus operators do not currently collect this information, unless shadowing that particular route for audit purposes.

15   Currently TCA visibility is only for the issuing authority in terms of the ITSO Shell reference number (ISRN) card identifier. This provides a limitation to TCAs that have high frequencies of users that commence journeys utilising concessionary passes outside their distributary region, for example those subject to a high proportion of holidaymakers.

16   How are payments calculated for distribution to the bus operators from the ENCTS journey records?

17   Reimbursement rates are principally calculated each quarter based on operators' average fares using the DfT model (for ENCTS) and a local model for children and students at present. The TCA will complete an adaptation of the DfT's concessionary travel reimbursement guidelines and associated 'calculator' for each operator, then output the resulting rate/ per journey rate for each operator submission. Typically the TCA will have agreed fixed reimbursement deals with operators in advance.

18   The primary data used within the SCP regions for estimation of settlement levels is the number of trips from the ETM data. There are a number of other parameters that are also fed into the 'calculator'. Some of these parameters are obtained from our surveys, such as average fare, distance travelled, average speed and occupancy. The output from the 'calculator' is used in negotiations with operators (alongside discussion of some of the parameters), which results in the agreed reimbursements. Despite the fixed nature of the arrangement, there is still room for operators to claim higher amounts or for the TCA to claim money back. This is dependent on the extent of any changes in the number of trips indicated by the regular submissions of ETM data.

19   There is an onus on the bus operator to provide manual transaction data - typically automatically reimbursed only on smart data records, providing they fall within the agreed threshold. As part of best practice an agreed tolerance level should be established for manual transactions. These are button pushes by the bus drivers to account for boarding ENCTS pass holders as opposed to electronic validation-

scanning passes of ITSO compliant products.

Standard report

Figure 2: standard reporting template

		Services within the TCA Region	Other Services if applicable
FORM **Calendar Month** _____			**Return Address**
			Telephone: Email:
	OPERATOR RETURN ON TRAVEL CONCESSIONS		
	To be completed and returned to TCA every calendar month.		
	This form should be read in conjunction with the explanatory notes		
Note			
a	Total of Cash collected on bus	£ _____	£ _____
	Total number of journeys made by :-		
b	All Passengers	_____	
c	Holders of Free Concessionary Passes **(Boarding WITHIN the TCA Area)** (i) Smart Transactions	_____	_____
	(ii) Recorded by button press	_____	_____
	(iii) Total of (i) and (ii)	_____	_____
d	Regional nominal concessions (Children at half fare etc)		_____
	AGREED OTHER PASSES (Please read explanation notes)		
e	....	_____	_____
f	....	_____	_____
g	....	_____	_____
h	....	_____	_____

I certify that this information is complete and accurate to the best of my knowledge & belief.

Submitted by	_____	Date	_____
Name in Capitals	_____	Company	_____
Position	_____		

Reimbursement process & data pathway - current practice

ETM-HOPS national concession Reimbursement process

```
┌─────────────────────────┐
│      ETM records        │
│  transactions on ISAM   │
│  & SD card (removable   │
│        media)           │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│  Audit Data processed   │
│  then assessed against  │
│     the ITSO data-      │
│   Standard operator     │
│  return form* received. │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│   Analysis of data to   │
│  identify proportion of │
│   non-smart (manual)    │
│      transactions       │
└─────────────────────────┘
            │
            ▼
         ◇ Data
        Agreement? ◇
      Yes         No
```

| Reimburse operator according to specified ratio/agreement | Liaise with operators for further information to understand the discrepancy and for resolution |
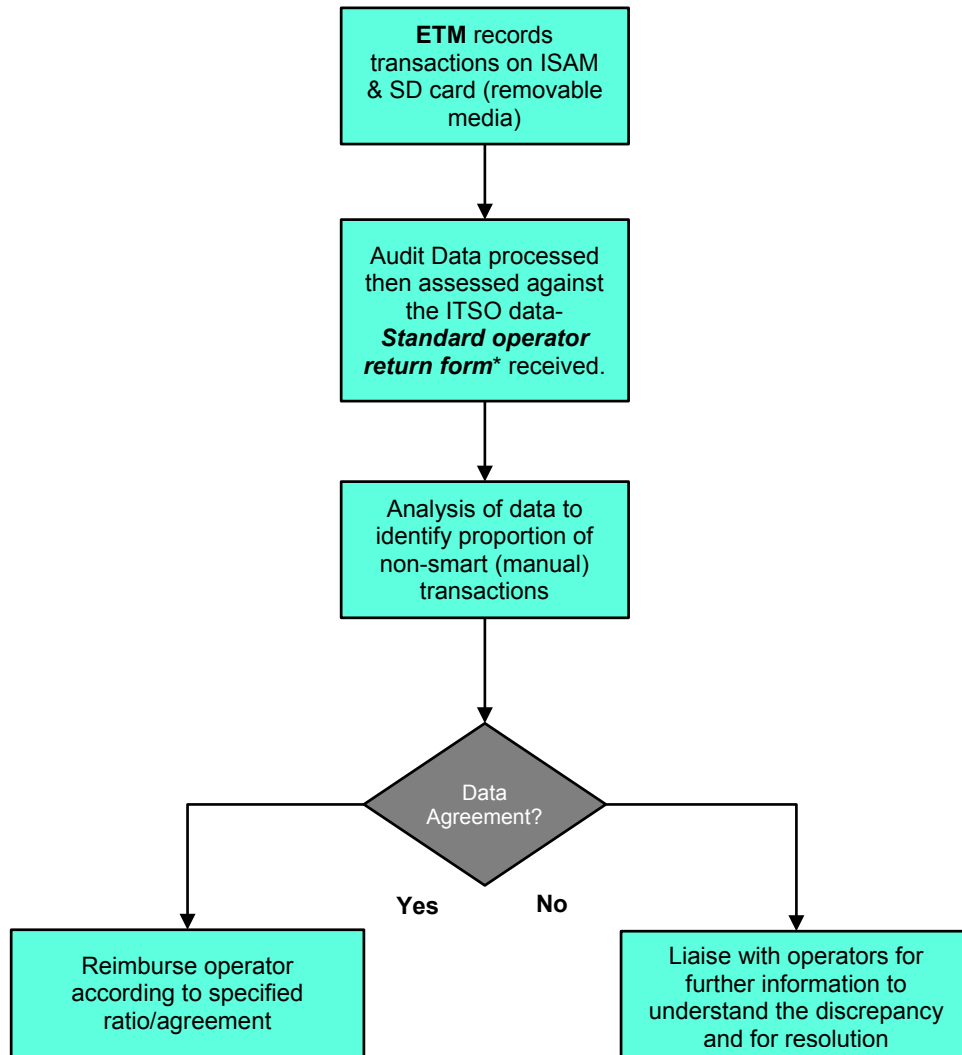
Reimbursement process & data pathway - best practice

HOPS-HOPS National Concession Reimbursement

```
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│  ETM records     │      │ Uploaded via     │      │   Automated      │
│ transactions on  │ ───► │ POST interface   │ ───► │ confirmation     │
│    ISAM only     │      │ to server at     │      │ check against    │
│                  │      │   the depot      │      │ current ISAM     │
└──────────────────┘      └──────────────────┘      │      list        │
                                                     └──────────────────┘
                                                              │
                                                              ▼
                                                     ┌──────────────────┐
                                                     │  Remote access   │
                                                     │ facility for the │
                                                     │ link to Operator │
                                                     │      HOPS        │
                                                     └──────────────────┘
                                                              │
                                                              ▼
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ Manual journey   │      │ Records uploaded │      │  Operator HOPS-  │
│ records captured │ ◄─── │       to         │ ◄─── │ TCA HOPS         │
│ and assessed     │      │ Reporting system │      │ interface-       │
│ against query    │      │  (Nero Cube etc) │      │ automated        │
│ threshold        │      │                  │      │ exchange of      │
└──────────────────┘      └──────────────────┘      │ transaction      │
         │                                           │ records from     │
         ▼                                           │ journey data     │
      ◇ Data within                                  └──────────────────┘
        tolerances?
```

Data within tolerances?

Yes — Reimburse operator(s) according to smart transaction data + specified manual transaction level

No — Liaise with operator(s) for further information to understand the discrepancy and for resolution

Annex H: Hologram Approval Process

1 A security hologram is embedded into each permit and remains the property of DfT throughout the permit production process.

2 DfT will only release holograms to:

- Permit producers or card suppliers who have been issued with a Certificate of Compliance from ITSO in respect of the provision of ITSO smartcards

- TCAs that will be producing permits in house.

3 In the case of permit producers, the ITSO certified producer will be responsible for ensuring the security of the hologram, whether or not that producer is the lead contractor in a consortium. In respect of TCAs they will be responsible for the security of holograms and are required by DfT to confirm what equipment they will use to apply the holograms.

4 In order to get approval, the company or TCA will have to provide to DfT:

- A completed declaration

- A copy of their ITSO certificate (if appropriate).

5 Permit production companies should also provide in a covering email or letter evidence of contracts or reasonable expectation of contracts (such as names of TCAs for card supply) while a TCA should include confirmation that they intend to affix holograms in house, and how they intend to affix the holograms.

6 The declaration states that the company or TCA agrees that it will be responsible for the safekeeping of the holograms and that it will treat them in accordance with industry best practice. The declaration also states that the company or TCA agrees to provide regular returns to the DfT and will return any holograms at the end of their contracts to produce permits or supply cards.

7 DfT does not require separate declarations where a supplier intends to supply holograms to sub-contractors. By signing the declaration the lead contractor assumes and accepts responsibility for the security of the holograms that are under a sub-contractor's control.

8 Once the completed paperwork has been received by DfT we will assess the application and notify the company or TCA when their application has been approved. The company or TCA will then be able to order holograms from our suppliers.

9 The request form and the declaration are available from DfT. If you would like a copy, please e-mail the DfT at: smartticketing@dft.gsi.gov.uk .

Ordering holograms

10 When a company or TCA receives their authorisation from DfT, they will also

receive an order form. They should use this form to order all holograms. They will also receive an e-mail address to which all orders should be sent. Each order must be approved by the DfT.

11   Once a company or TCA has been approved, they may also arrange for delivery to a sub-contractor (although they will still be responsible for the safekeeping of those holograms).

Monthly returns

12   As part of their declaration the company or TCA must agree to provide DfT with monthly returns detailing the holograms in their possession. This gives DfT a full audit trail of the holograms that it has supplied. Failure to provide regular monthly returns will result in the termination of supply.

13   DfT will supply forms to be completed by companies and TCAs. These should be returned to DfT at the start of each calendar month and be completed for the previous calendar month.

14   Each lead contractor or TCA is responsible for producing a return that details ALL holograms that they have ordered. The return should include the information for any sub-contractors used.

Return of holograms

15   At the end of contracts to produce concessionary permits or supply cards, and if no more contracts are in place, companies are required to return any remaining stocks of holograms to the DfT. Similarly, if a TCA ceases to personalise permits in house, it should also return any holograms it has in stock at the end of production. In these circumstances the company or TCA in question should contact the DfT to arrange for the return of the holograms.

Non-personalised permits with holograms attached

16   The security of cards which have had holograms attached but have not yet been personalised is just as important as the security of holograms. As such, TCAs that wish to take delivery of cards which have holograms attached but have not yet been personalised will also have to be responsible for the safekeeping of the holograms.

17   TCAs which take delivery of non-personalised permits with holograms already affixed will also have to complete a monthly return for DfT. DfT will supply forms to be completed by TCAs. These should be sent in at the start of each calendar month and be completed for the previous calendar month. If you need a copy of the form, please e-mail the DfT at: smartticketing@dft.gsi.gov.uk.

Annex I: Plain English guide to ITSO and smartcards

Purpose

1   The purpose of this Annex is to provide supporting information for Travel Concession Authorities (TCAs) on smartcards.   The information presented here is general and should not to be used as a technical specification for permit production.

ITSO

2   ITSO is a member-controlled organisation that maintains the ITSO specification for members and the Crown. The ITSO specification is designed to provide a platform for the implementation of interoperable contactless smartcards, public transport ticketing and related services in the UK. The ITSO specification has been kept as open as possible in order to maximise competition in the supply of systems and components to the commercial benefit of the industry as a whole.

3   ITSO also offers TCAs a permit validation service which can check that ENCTS permits have been correctly encoded, see **Annex E**.

What is a smartcard?

4   A smartcard is a plastic card with a memory chip embedded within it. In the UK most new debit and credit cards are smartcards that can be used both as a contactless card and as a "chip and PIN" card. When being used as a chip and PIN card it is inserted in a reader, which makes direct contact with the chip via the contact pad visible on the face of the card.

5   "Contactless" cards also have antennas embedded within the plastic so they can be operated by being passed near to a reader, to interact with it but without actually touching it.   In the transport sector ITSO cards and London's "Oyster®" are both contactless. The "SIM" card in your mobile phone is also a smartcard.

6   National concession permits have electronic data encoded into the chip and information printed on the card, including a name, photograph, expiry data and logo of the issuing TCA. The data in the chip enables the permit to be used on any ITSO enabled bus in England. The information printed on the front of the permit allows it to be used as a traditional "flash" pass on bus services that do not have ITSO smartcard readers.

Advantages of ITSO Smartcards

7   Smartcards have a number of advantages over traditional paper based permits. They are highly resistant to fraudulent duplication and can speed up boarding, helping to reduce bus journey times. Their main benefit is that they provide TCAs and operators with the opportunity to use much richer journey data to assist with service planning, demand management and providing improved customer service.

8   In addition to use as concessionary travel passes, smartcards are used for commercial ticketing on buses and other transport services and additional services at local authorities' discretion, such as allowing access to leisure or library services.

Why can't we just use bank cards or Oyster® cards?

9   Although a lot of people already have smartcards, such as their bank cards and/or Oyster® cards, these can't yet all be used together.

10   Smartcards are a way of storing electronic data in a very specific format. The way in which the data are stored will differ depending on what the information is used for e.g. bank cards need to hold PINs in a very secure way, and include account information, but it does not need to recognise which local authority the holder lives in as that is not relevant to using a bank machine.   On the other hand, concessionary travel permits need details of the holder's local authority to ensure that they obtain any additional concessions available in their area.

11   As a result, different smartcards work in very different ways and in the public transport world this can be challenging because of the large number of different operators and different local authority areas.

12   If transport operators were to design their own, separate smartcard systems they would have to invest a lot of time and money, with much duplicated effort across the sector and it would mean that passengers would have to carry a wallet full of cards to be able to travel on different services.

13   It is for this reason that DfT sponsored the ITSO "open-specification" for smartcards. Oyster® by contrast is a proprietary system using bespoke technology that is not freely available.

The benefits of smart systems

14   Smartcards and other smart systems offer many benefits. Smartcards are difficult to copy and can reduce fraud. Cards that have been reported as lost or stolen can be easily deactivated.

15   Another key benefit both to local authorities and operators is that of access to data.   A fully smart ticketing scheme provides a rich source of data about a population's travel patterns.   This can be used to help design new bus routes and to measure the impacts on existing routes of proposed developments. It also enables local authorities to reimburse operators on the basis of actual journeys rather than a formula based on manual recording.

16   Customers also benefit from faster boarding and a cashless transaction. But it also has the potential to make managing their experience with their authority more

streamlined and simple to manage, especially if other services (for example library access) are also combined within the smart system.

What does a smartcard actually do in practice?

17   Although there are lots of variants of what a smartcard system actually does, the following is typical of transport systems.   When a smartcard is touched on a reader on a bus or at a train station, the card interacts with the reader and the computer system connected to the reader. The card and reader together contain the necessary information to determine whether the customer has the correct ticket products, or concessionary eligibility.

18   Similarly, it can check the card details against a database of cancelled ("hot listed") cards.   Complex rules can be programmed into the computer systems, meaning that time of day and route conditions can be allowed for. The concessionary travel system will determine eligibility based on card validity and the time of day. If a "hot listed" card is presented to the reader, the reader will invalidate the card, "marking" it so that it cannot be used again.

What is ITSO?

19   ITSO (originally the Integrated Transport Smartcard Organisation, but now just ITSO) is a specification for approved smartcards and the ticket machines and back office technology needed to communicate with each other to make a scheme work.   It is an "open specification" which means that the details for encoding cards and equipment are freely available to any supplier, operator or local authority.

20   The ITSO website provides much helpful material on smart ticketing. A diagrammatic explanation of an ITSO ticketing scheme can be found on the ITSO website: www.itso.org.uk/itso-explained.

21   ITSO certifies the equipment that the cards interact with and also the systems that store and communicate data.   It also manages and specifies product types and information (data) formats.

The smartcard

22   As discussed earlier, an ITSO smartcard has a memory chip on it and stores data electronically.   The following diagrams illustrate how smartcards store information. Figure 2 shows a plan of a smartcard. The memory chip stores data and the antenna allows the chip to interact with a reader without touching it.

Figure 2: a smartcard cross-section
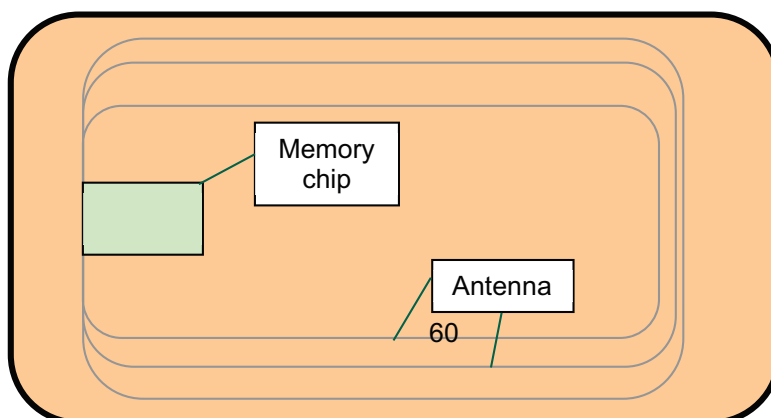
23   The memory chip stores data in a variety of formats and this memory can be used for a number of functions. Cards can also have different amounts (sizes) of memory depending on what they are used for. ITSO requires the card to be one of a number of certified types and the type can be chosen to suit their proposed usage. For example, a small or large memory size, low cost "throw-away" cards or high powered multifunctional cards.

24   All of these defined card types are capable of storing data in an agreed format. This agreed format is called a "shell".   This ITSO shell is a method of keeping a section of the card's memory for separate use in the ITSO format.   If the card has sufficient memory, the other parts of the chip can be used for other functions, meaning that an ITSO smartcard could also be used for other things, such as citizen applications. Memory is measured in quantity with its own set of units and abbreviations (similar to those used in the computer industry).

25   Whilst there are multiple interpretations/possibilities, figure 3 shows how a memory card might work.   The memory is arranged in sectors (a bit like pages in a book) with different shells or non-ITSO data sitting on the card. Every card will have manufacturer's identification and in this example the ITSO shell sits after that. Here we have also shown how a citizen card function might sit on spare memory on the card. Technically speaking, it does not matter what else is put on that memory, but there are some rules that determine where the ITSO shell sits within the card.

Figure3: a memory chip plan
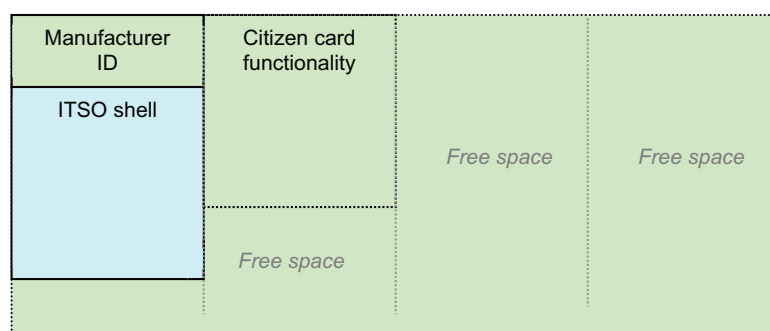
26   There are a wide variety of product types that can be used in more complex ITSO schemes but are not needed for concessionary travel.

The ETM (POST)

27   The electronic ticketing machine (ETM) is the machine that the bus driver logs on to at the start of a shift and uses to issue tickets to passengers.   ETMs can have an integral card reader or they can be added separately.   In the ITSO world it is called a Point of Service Terminal (POST).

28   When a smartcard is passed over a reader on the ETM, it checks that it can read the card.   If it contains a valid ITSO shell it will recognise the card.   It then checks with the software on the ETM to see that the organisation that issued the ITSO card has an agreement with the bus operator.   Assuming it does (which will be the case with the concessionary scheme) it will accept the card and store the transaction data from the card on the ETM.   All of this will happen in less than a second.   When the ETM is next synchronised (either by driver module, or wireless

data transfer in the depot etc) the transaction data will be passed to the HOPS.

The HOPS

29   The Host or Operator Processing System (HOPS) is a computer that records transactions. The HOPS is made up of a number of functions including:

- The Asset Management System (AMS) is the interface between the ISAM and the ISMS service - it looks after the distribution of the digital security keys that are necessary to ensure that only approved devices can function on the network.

- ISAM - every physical device within an ITSO network needs to have an "ITSO secure application module" which is a chip much like the one in the smartcard.   In ITSO language this is called the ISAM and is used to securely authenticate transactions.

- ISMS - is a part of the ITSO environment operated by ITSO Ltd to manage the secure digital keys and hidden digital codes, so that only valid ITSO products can work on the system.

Hotlisting

30   It is for TCAs to put hotlisting in place. Hotlisting minimises fraud and ensures that journey data is robust and is fit to be used for reimbursement purposes. It requires active management by TCAs with the operator community and other TCAs, in particular neighbouring ones, to agree on the sharing of data about hotlisted permits.

31   Hotlisting ensures that, just like a credit or debit card, when a smartcard is cancelled (e.g. reported stolen by the owner) all the ITSO equipment that the card could be presented to recognises that the card has been cancelled and does not accept it.

32   ITSO is developing comprehensive guidance on hotlisting, which will be published in 2016.

Communications between HOPS

33   One of the key benefits of an ITSO system is that it allows communication between ITSO licensed operators and their systems.   Any certified ITSO HOPS will allow electronic communication between itself and other HOPS which means that usage and card information can be passed between operators and TCAs for reporting, product updating and fraud protection.   This is essential if passengers are travelling on journeys across different operators.

34   ITSO is set up to transfer data between HOPS.   Scheme operators need access to a HOPs, which can be provided through a managed service, to communicate with other HOPS.

The ITSO lifecycle

35   The following diagram shows how a local authority needs to manage their ITSO scheme and information over time. This shows an initial deployment that may become more complex over time, especially in relation to the HOPS at stage 4.

Figure 4: ITSO scheme lifecycle
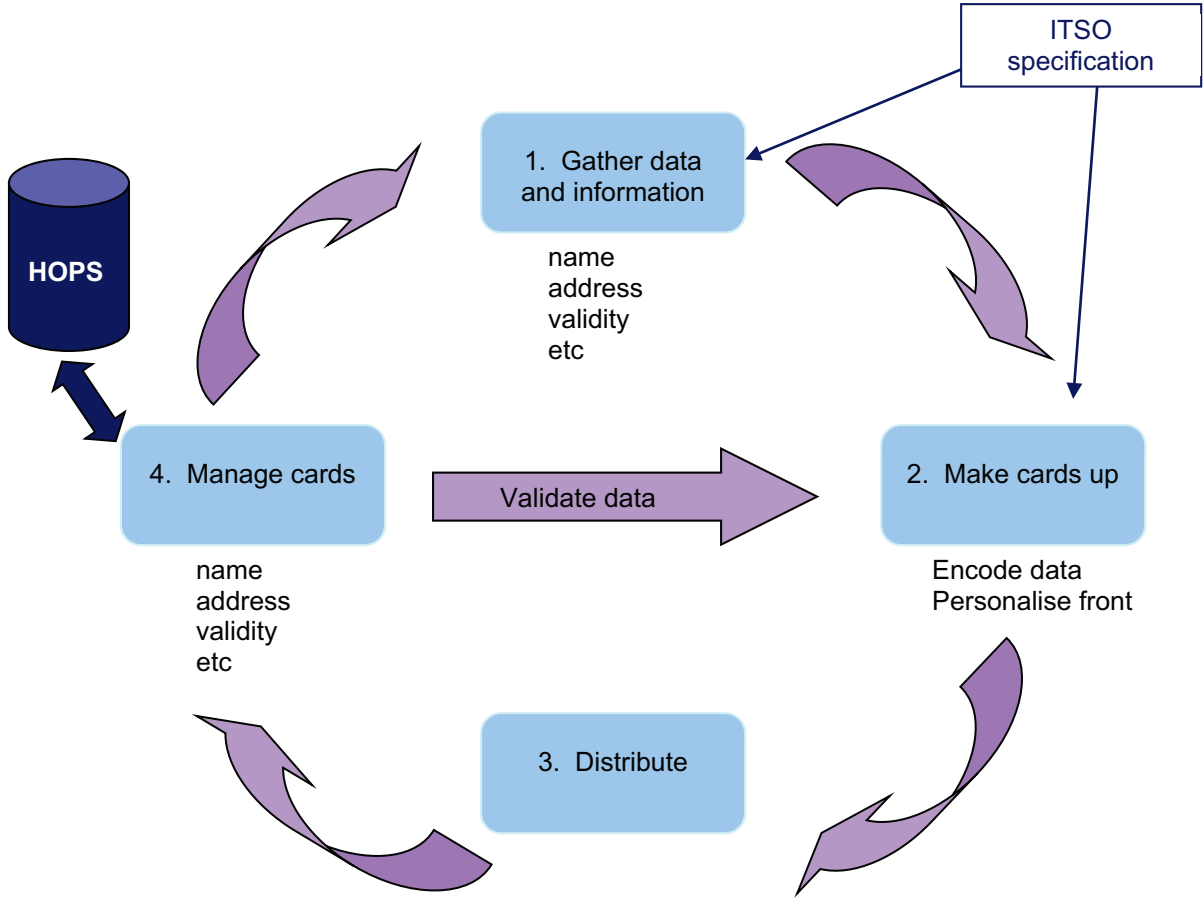
36   As an issuer of ITSO cards, there are a number of things authorities will need to do over the lifetime of the concessionary travel scheme.

37   Firstly, data needs to be collected from permit applicants. These data are in many ways similar to the data that is needed to issue any other permit (whether smartcard or not) but there are some peculiarities in the way that it should be stored and arranged to make card issuing more efficient.   The ITSO specification determines what formats the data take and contains the relevant information for the concessionary travel product.

38   Certain data then needs to be encoded onto the card and printed onto the front of the card.   This requires a set of specialist equipment including a card printer with ISAM installed.   Thirdly the permits need to be distributed to the concessionaires.

39   Finally, TCAs need to manage the data set and card population. As people reach eligibility age, move into and out of the local authority area, pass away, become entitled to disabled travel concessions or have their cards expire, the local authority will need to update the database, issue new cards and arrange for cards that are no longer valid to be returned or destroyed.   This involves the physical reissue (returning to box 2 in figure 4) and revalidation of data.   It also involves the management of the card data and product details via an ITSO HOPS (as per box 4) to ensure that national hotlisting is effective.