

# 1. SUMMARY

## 1.1 Overview

- 1.1.1 The AMS-HOPS is the core ITSO component which will act as the key conduit between all other elements of the ITSO System. There is a great importance on the ability of the system to provide a reliable means of generating, hosting and exchanging data with various ITSO and non-ITSO components but which at the same time ensures that there is full transparency of the activities which is undertaken through user accessible views into the HOPS and high quality reporting and data outputs.
- 1.1.2 The glossary of terms for this Technical Requirement document are enclosed as Appendix D of the ITPD & Descriptive Document.
- 1.1.3 Figure 1 below illustrates the functionality within the HOPS and shows the central function that it has within an ITSO smart card scheme.

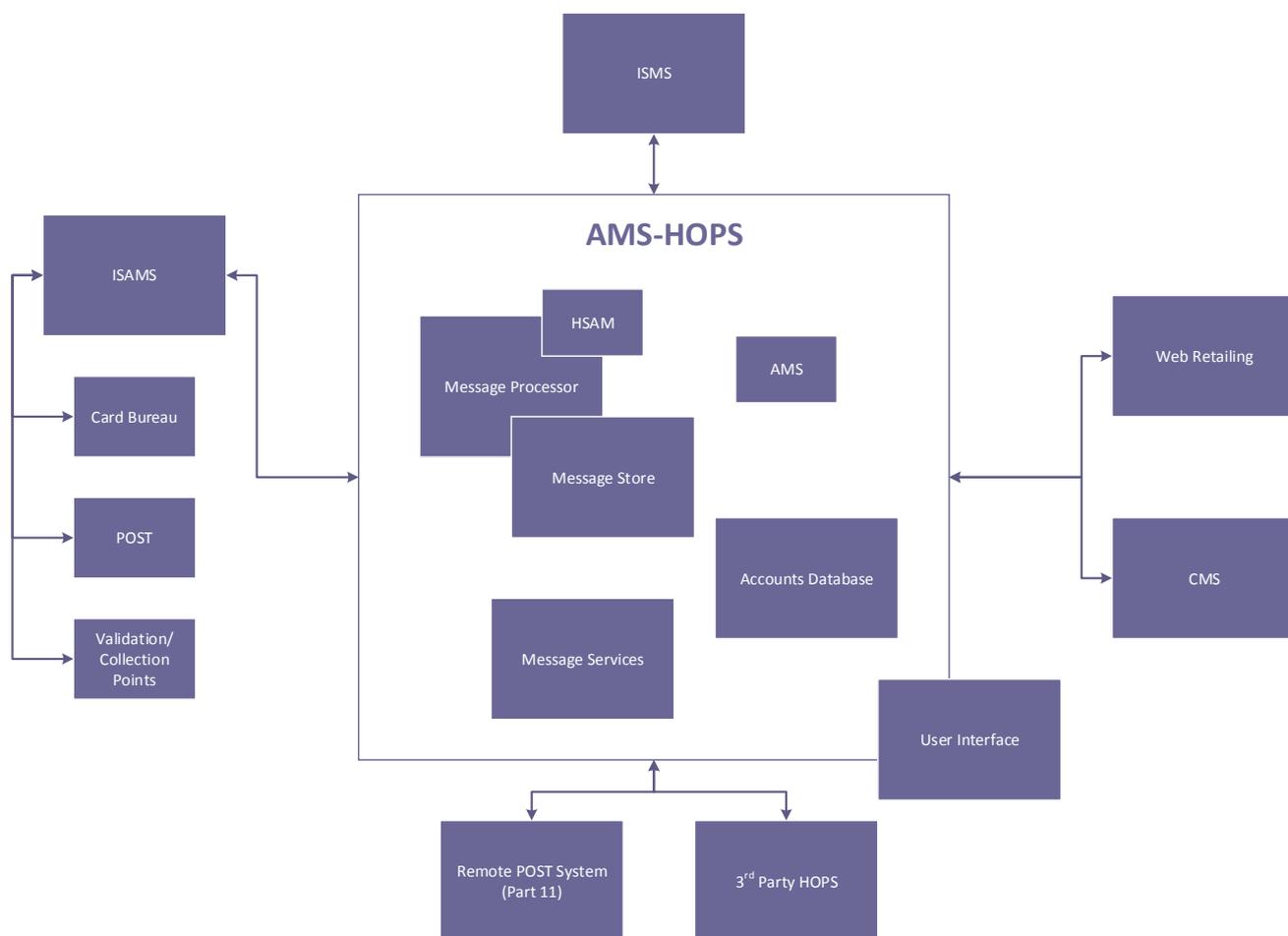
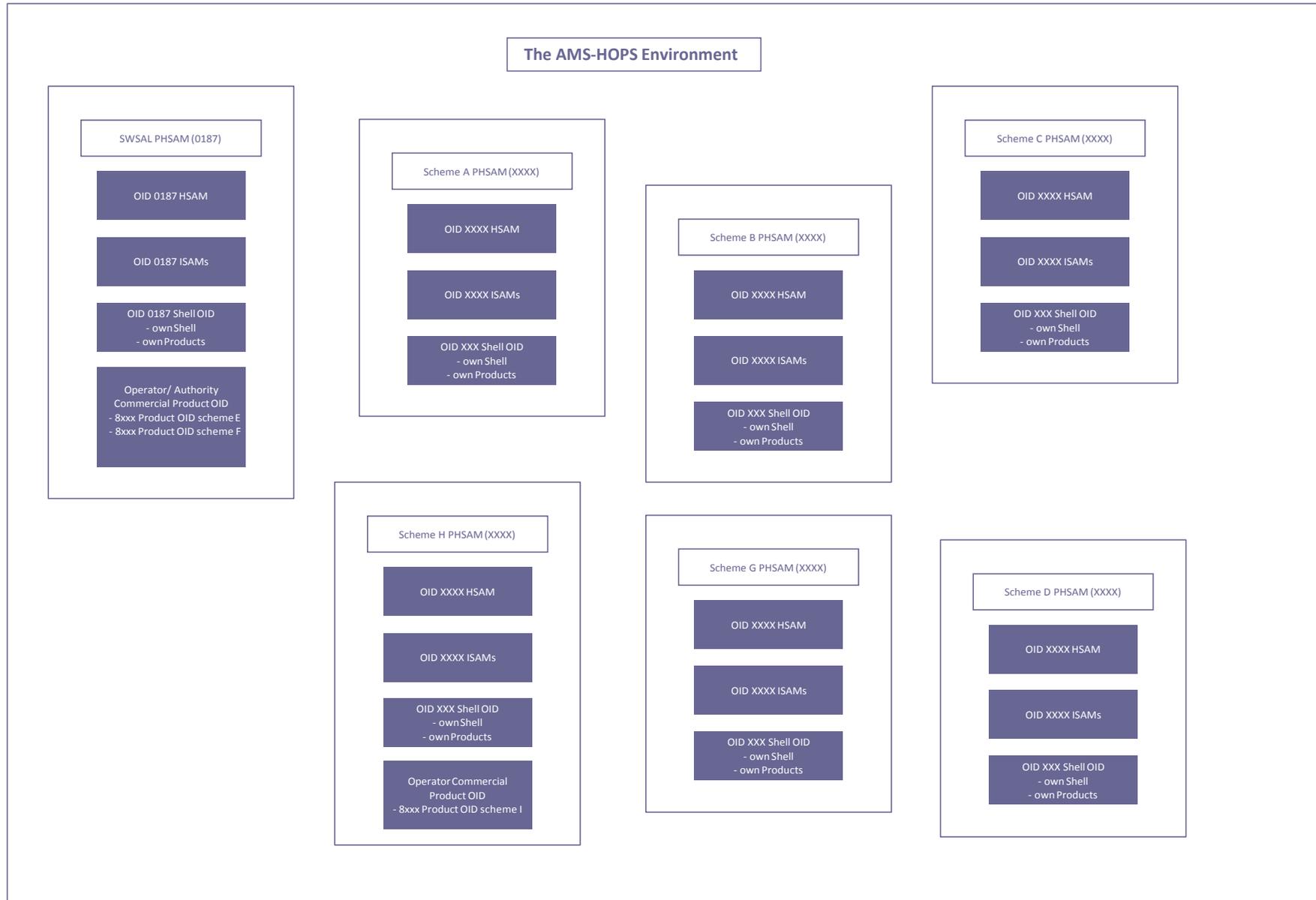


Figure 1. Overview of HOPS

## 1.2 Summary of AMS-HOPS Provision

1.2.1 The core of the document details the specific AMS-HOPS requirements and deliverables, with the following key functionality:

1. The AMS-HOPS will be a data repository and processor for ITSO data. It must be able to control and collect transactions from POST devices that are managed directly by the AMS-HOPS and those that are managed by third party systems. (Section 5)
2. The AMS-HOPS will allow multiple shell owners, retailers and product owners to co-exist, to have independent access to the AMS-HOPS human-machine interfaces, and to be managed within agreed data protection and sharing parameters. (Section 4)
3. The AMS-HOPS will allow the Contracting Body to host ITSO shell and product OID for third party ITSO Licenced Members who do not wish to own their own HOPS. (Section 4)
4. The AMS-HOPS will act in a management role for the processing and collation of Hotlists and Actionlists for the OIDs within the AMS-HOPS and for any data coming from third party sources. (Section 5 and 6)
5. The AMS-HOPS will function as an Asset Management (AMS) tool for its own HSAMs and ISAMs. (Section 5)
6. The AMS-HOPS will interface with any number of third party systems using published and industry standard interfaces, including but not limited to any number of types of Customer Management Systems, Card Bureaus, remote Perso POSTS, Web Portals, POSTs, Remote POSTs and retail devices. (Section 7)
7. The AMS-HOPS will have a GUI for SWSAL and SWSAL Members to access to enable governance and management of the data stored. (Section 9)
8. The AMS-HOPS will be capable of adding further OIDs, for any ITSO function including ISAM ownership, the import of existing data from another AMS-HOPS, and the transfer of ISAM ownership. (Section 7 and 8)
9. The AMS-HOPS will allow Standalone OIDs and Product OIDs to leave the AMS-HOPS and move to another AMS-HOPS with minimal disruption. (Section 8)



**Figure 2. The AMS-HOPS Environment**

Please note that Figure 2 is for illustrative purposes only and the quantity of schemes shown in the diagram shall not be taken as an indication of the eventual quantity of live schemes supported by the AMS-HOPS, nor shall it be used to define a limit on the quantity of such schemes.

### **1.3 Delivery Partnerships**

- 1.3.1 Success in the development and delivery of an integrated public transport ticketing system depends on many factors. Experience shows that one of these factors is partnership working and if addressed correctly will provide a fundamental platform for building a successful scheme.
- 1.3.2 The Supplier must co-operate and work seamlessly with third parties who provide the interfaces within the Solution. All parties must work collaboratively to achieve a working solution that meets the requirements of SWSAL and SWSAL Members.
- 1.3.3 The Supplier must co-operate and work closely with SWSAL and SWSAL Members to ensure that ISAM and message management is handled in an appropriate and timely manner.

## **2. THE ITSO ENVIRONMENT**

### **2.1 The ITSO Environment**

2.1.1 The Supplier must be totally conversant with the ITSO environment and ensure that they provide a service which meets the requirements and obligations of ITSO. This includes the Specification and Operating Licence and the requirements of SWSAL and SWSAL Members with respect to the exact collection, processing and forwarding of messages and the appropriate operation of the Managed Service as a whole.

### **2.2 ITSO Operating Licence**

2.2.1 SWSAL and SWSAL Members are ITSO Licensed Operators who will utilise the AMS-HOPS solution provided by the Supplier.

2.2.2 It is the Supplier's responsibility to ensure that they are familiar with the terms of the ITSO Operating Licence.

2.2.3 The Supplier must, through no action or inaction either directly or indirectly be responsible for SWSAL and SWSAL Members being or being at risk of becoming, in breach of its Operating Licence.

2.2.4 Should the Supplier or any sub-contractor become aware of any event or situation that may cause a potential or actual breach of the Operating Licence then the Supplier shall notify the Contracting Body immediately and provide the following:

- Full details of the nature of the breach and its potential implications to SWSAL and SWSAL Members;
- A plan within 1 elapsed Working Day which will remedy the breach within a timescale which shall be set out in the plan and shall be agreed with the Contracting Body; and
- The Supplier shall remedy the breach within the shortest timescale possible at their cost.

2.2.5 Should any Contracting Body identify any event or situation that may cause a potential or actual breach of the Operating Licence then the relevant Contracting Body shall notify the Supplier who shall provide the following:

- A plan within 1 elapsed Working Day which will remedy the breach within a timescale which shall be set out in the plan and shall be agreed with the Contracting Body; and
- The Supplier shall remedy the breach within the shortest timescale possible.

### **2.3 Integration with other ITSO Schemes and Suppliers**

2.3.1 A key feature will be the need to work with other ITSO schemes.

2.3.2 It is also important that the system delivers interoperability outside the ITSO Specification, particularly in respect of customer management and where appropriate any interfaces that allow SWSAL and SWSAL Members to develop strategies that are not entirely dependent upon the systems offered by one Supplier.

- 2.3.3 The Supplier must ensure the system's ability to deliver and receive messages across the complete ITSO environment and ensure that ITSO data received is processed and acted upon appropriately.
- 2.3.4 The Supplier shall detail the proposed system's interoperability outside the ITSO Specification as well as the proposed system's ability to allow the development of strategies that are not dependent on systems offered by another supplier.
- 2.3.5 The Orders will require on-going support of these interfaces as part of the Service. The Supplier shall describe how this requirement will be fulfilled and how they will work with SWSAL, SWSAL Members and their supply chain.
- 2.3.6 The Supplier shall describe the approach to system integration that will be used and give referenced examples of where the Supplier has successfully completed integration support for ITSO and non-ITSO systems in a live scheme.

## **2.4 ITSO Compliance (AMS-HOPS)**

- 2.4.1 The AMS-HOPS system supplied must be fully certified to the current version of the ITSO Specification. This is taken to be v2.1.4 at the time of tender. Such ITSO certification shall be maintained throughout the Term, subject only to clause 2.4.2.
- 2.4.2 The Supplier shall ensure that the AMS-HOPS system is maintained and fully certified by ITSO to the latest version of the ITSO Specification as it is issued, throughout the Term. In order to fulfil this requirement the Supplier shall have submitted the AMS-HOPS software for and completed certification within 6 months of the publication date, by ITSO, of an updated version of the Specification. Furthermore the Supplier shall update the version of software running on the test version of the AMS-HOPS and use this to demonstrate the suitability, reliability, security and conformance, to the satisfaction of the Contracting Body. Following such agreement the Supplier shall on a date agreed with the Contracting Body, update the software running on the live AMS-HOPS system.
- 2.4.3 If there are extenuating circumstances entirely outside the Supplier's control that might prevent certification within the required timescale then this shall be notified for consideration to the Contracting Body.
- 2.4.4 In the event that a Supplier fails or chooses not to certify or implement within 12 months of publication a version of the ITSO Specification without the written agreement of the Contracting Body, then this shall be considered an irremediable breach of the Framework Agreement and all Orders pursuant to clause 12.1.1 (Termination) of the Framework Agreement. The Contracting Body reserve the right at their discretion to withhold service payments until the breach is remedied and / or to terminate the contract with the Supplier and transfer the service to an alternative contractor with full costs of migration and the increase in cost of the Services for the remainder of the Term being borne by the Supplier.
- 2.4.5 Where ITSO implements changes to the Specification through the Technical Note process and this is signed off by the ITSO Board and the DfT, the Supplier shall implement these expeditiously and within a 3-month timescale of the documents being made available or within the next scheduled software release, whichever is soonest. This shall be discussed and agreed in advance with the Contracting Body.
- 2.4.6 The Supplier shall document all changes made to the AMS-HOPS under this clause 2.4, through the change control process set out in clause 26.1 (General) of the Framework Agreement and the changes shall be implemented on a no additional charge basis.

- 2.4.7 If required the Supplier shall seek confirmation from ITSO that re-certification is not required or a derogation is not needed, as appropriate and in advance of formal inclusion in a new version of the Specification.

### **2.3 ITSO Technical Notes and Specification Revision Process**

- 2.4.8 The Supplier shall provide the Contracting Body with a technical summary outlining the implications of all relevant Technical Notes issued by ITSO during the Term and their proposed solution and timescale. The summary shall outline the content, scope and impact of each Technical Note upon any ITSO certified component or service and any changes that need to be made, with time-scales, as a result of it being implemented.

### **2.4 ITSO Derogations**

- 2.4.9 The practicalities of implementing or migrating an ITSO scheme are such that derogations may be required from the Specification, particularly where the Specification is found to be inadequate for the required business function. Where ITSO approves such derogations requested by SWSAL and SWSAL Members, the Supplier shall implement the required functionality at no additional cost, once it is practical to do so or where a solution has been established by ITSO and published via Technical Notes, Developer Guidance, Operator Guidance, Answers to Frequently Asked Questions, or other modifications to the Specification.

### 3. GENERAL REQUIREMENTS

#### 3.1 ITSO Compliance

<b>Core Requirements</b>		
GR-000	A	In no more than 500 words please provide detail of what the Suppliers definition of a Managed Service is.
GR-001	A	The AMS-HOPS shall meet all requirements for all modes of transport set out within the latest version of the ITSO Specification, currently version 2.1.4, including all optional elements and all currently issued ITSO Technical Notes that have been signed off by the ITSO Board and the DfT.
	B	The Supplier shall provide details of the versions of the ITSO Specification against which the AMS-HOPS product has been formally certified by ITSO and provide copies of the ITSO certificate(s) including schedule A and B.
	C	The Supplier shall furthermore identify any requirements of the ITSO Specifications for an AMS-HOPS with which the Suppliers' system is not compliant or which have not been implemented.
GR-002	A	Where ITSO implements changes to the Specification through the Technical Note process and this is signed off by the ITSO Board and the DfT, the Supplier shall implement these expeditiously of the documents being made available or within the next scheduled software release, whichever is soonest.
	B	This shall be discussed and agreed in advance with the Contracting Body.
	C	After delivery, the AMS-HOPS shall be maintained and developed throughout the Term in accordance with the tender specification and in a manner that ensures that all functionality added or modified by ITSO is made available to the Contracting Body through migrations or upgrades to the relevant version of the ITSO Specification within the times specified in the key performance indicators.
GR-003	A	The Supplier shall ensure that the AMS-HOPS is maintained and fully certified by ITSO to the latest version of the ITSO Specification as it is issued, throughout the Term.
	B	In order to fulfil this requirement the Supplier shall have submitted the AMS-HOPS software for and completed certification within 6 months of the publication date, by ITSO, of an updated version of the Specification, subject to any ITSO constraints.
GR-004	A	The Supplier must be totally conversant with the ITSO environment and ensure that they provide a service which meets the requirements and obligations of ITSO. This includes the Specification and Operating Licence and the requirements of SWSAL and SWSAL Members with respect to the exact collection, processing and forwarding of messages and the appropriate operation of the Managed Service as a whole.
GR-005	A	The Supplier shall confirm the ability of the AMS-HOPS to provide a reliable means of generating, hosting and exchanging data with various ITSO and non-ITSO components but which at the same time ensures that there is full transparency of the activities which is undertaken through user accessible views into the HOPS and high quality reporting and data outputs.
GR-006	A	The Supplier shall document all ITSO changes through the agreed change control process and the changes shall be implemented on a no additional charge basis.
	B	If requested the Supplier shall seek confirmation from ITSO that re-certification is not required or a derogation is not needed, as appropriate and in advance of formal inclusion in a new version of the Specification.
GR-007	A	Evidence shall be provided that the AMS-HOPS is certified to support multi-record hotlists and actionlists together with support for POST Systems to HOPS controlled download requests.

GR-008	A	Evidence shall be provided that the AMS-HOPS is certified to support multi-frame Class 3 messages in order to update ISAMs in an efficient manner and with the fewest number of messages possible.
	B	Detail shall also be provided on how the AMS-HOPS would recover from a failed multi-framed message application.
GR-009	A	The AMS-HOPS shall deliver a fully backward ITSO compatible solution, from version 2.1.2 onwards irrespective of the wording of any future versions of the ITSO Specification that does not mandate this.
GR-010	A	All hardware versions of the ISAM must be supported.
	B	The Supplier must provide a commitment to support all future hardware ISAM versions at no additional cost.
GR-011	A	All ISAM firmware patches shall be made available for collection within 24hours of these being available in the live ISMS thus maintaining up to date compatibility and functionality.
GR-012	A	The AMS-HOPS shall be able to handle data where required including data that may come from or be sent to equipment that is certified to an earlier or later version of the Specification.
GR-013	A	The Supplier shall ensure that any potential compatibility issues arising from future changes to the ITSO Specification are identified and reported to the Contracting Body as soon as they become aware of them.
GR-014	A	The Supplier shall provide details of their approach to the adoption of ITSO Specification Amendment Documents (ISADs) and ITSO Technical Notes (TNs) into the AMS-HOPS system and the application into the “live” AMS-HOPS environment. So as to avoid doubt and notwithstanding the previous sentence, Section 3.4 (ITSO Compliance (AMS-HOPS)) applies throughout the Term.
GR-015	A	The AMS-HOPS shall support configurable scheme rules including but not limited to auditing and list prioritisation which can be accessed through a GUI and/ or through external interfacing using API's.
GR-016	A	The AMS-HOPS shall be registered with the ISMS.
GR-017	A	The AMS-HOPS shall be able to control any number of Shell and IPE owners and Service Providers (see Figure 2).

### 3.2 ENCTS (& the Welsh & Scottish Concessionary Fares Schemes)

Core Requirements		
GR-018	A	The AMS-HOPS must be able to support the statutory requirements of concessionary travel schemes in the United Kingdom. This includes the English scheme, the Welsh scheme and the Scottish scheme.
	B	The Contracting Body's scheme may interact with several English schemes, the Welsh scheme and the Scottish scheme where buses operate cross border services. The AMS-HOPS shall be able to process Anonymous But Valid (ABV) transactions that have been created in the Contracting Body's scheme but which are reimbursable by Welsh local authorities, Transport Scotland and English local authorities in line with ENCTS requirements despite the product belonging to a third party ITSO scheme (e.g. a Northumberland issued concessionary card being used for travel in Shropshire on a bus operator who is managed within the Contracting Body's ITSO scheme).
GR-019	A	The Supplier should note that there is the potential for substantial change in coming years in respect of how concessionary scheme transactions are handled (possibly arising from scheme changes e.g. changed geographical validity, quantum of charge, currently free, etc.). The Supplier shall confirm that their AMS-HOPS will cope with any such changes so long as the resultant messages are correctly addressed and encoded by the

		creating POST.
GR-020	A	The Supplier shall ensure that all concessionary transactions are correctly distributed to the required scheme(s) based on message destinations.

### 3.3 System Integration

<b>Core Requirements</b>		
GR-021	A	The overall Solution being delivered will be one in which there are many links between systems particularly those associated with operators ETM's and where SWSAL and SWSAL Members are using other suppliers for differing elements of the overall scheme. The Supplier of the AMS-HOPS shall undertake the lead role in respect of integration proving via testing and will ensure that any components that have not previously been connected to the AMS-HOPS are assessed for their correct operation of ITSO functionality before being deployed into the live environment.
GR-022	A	The Supplier must co-operate and work effectively with all third parties who provide the interfaces within the Solution. All parties must work collaboratively to achieve a working Solution that meets the requirements of the Contracting Body.
GR-023	A	In circumstances where the Contracting Body requires the specification for an interface to third party equipment, for the purposes of integrating that equipment with the AMS-HOPS, then the Supplier shall promptly provide this in an industry standard format, in accordance with Good Industry Practice, to the Contracting Body and the relevant third party, together with a reasonable level of support during the integration process.

### 3.4 Data Ownership

<b>Core Requirements</b>		
GR-024	A	All ITSO data stored within, transmitted and received by the AMS-HOPS shall at all times remain the property of SWSAL and SWSAL Members who are using the AMS-HOPS. The Supplier acknowledges and agrees that at no time shall any of the ITSO data stored within, transmitted and received by the AMS-HOPS be owned by the Supplier.

### 3.5 Ease of Use

<b>Core Requirements</b>		
GR-025	A	The AMS-HOPS human-machine interfaces to be provided to the Contracting Body shall be easy to use, and shall be easy to learn how to use.

### 3.6 Geography

<b>Core Requirements</b>		
GR-026	A	The AMS-HOPS shall not be limited by geography and be available to any SWSAL Member current or future.

## 4. ITSO MESSAGING

### 4.1 Message Processing – Data Flows and Function

Core Requirements		
IM-001	A	The AMS-HOPS must be able to receive and process data and command messages that will be arriving from a wide variety of ITSO sources including POSTs, ISMS and other HOPS.
IM-002	A	The AMS-HOPS will allow multiple shell owners, retailers and product owners to co-exist, to have independent access to the AMS-HOPS human-machine interfaces, and to be managed within agreed data protection and sharing parameters.
IM-003	A	The AMS-HOPS must be able to receive and process data and command messages that will be arriving from a wide variety of non-ITSO sources, in a generic standard data exchange that include but are not limited to Settlement Systems, Customer Management Systems, Retail Systems and Apportionment Systems.
IM-004	A	The AMS-HOPS must be able to send data and command messages to POSTs, ISMS and other HOPS.
IM-005	A	The AMS-HOPS must be able to send data and command messages to a variety of non-ITSO sources in a generic standard data exchange that include but are not limited to Settlement Systems, Customer Management Systems, Retail Systems, Data Analysis and Reporting Systems and Apportionment Systems.
IM-006	A	The AMS-HOPS must support the latest and all format revisions of all ITSO message types from ITSO version 2.1.2 onwards.
IM-007	A	The AMS-HOPS must support all versions of hotlist and actionlist messages.

### 4.2 Message Processing – ITSO Message Classes

Core Requirements		
IM-008	A	<p>ITSO defines a number of message types and the AMS-HOPS shall be capable of receiving and processing, storing, forwarding, creating and receiving all ITSO message types as defined in the ITSO Specification which are appropriate for it to do so. For the avoidance of doubt the ITSO message types are:</p> <ul style="list-style-type: none"> <li>▪ Class 0 – ACK1 (HOPS to POST), ACK2 (POST to HOPS), NAK1 (HOPS to POST), NAK2 (POST to HOPS).</li> <li>▪ Class 1 – Transaction Record Data.</li> <li>▪ Class 2 – Query, Query Response, Configuration Data List, Parameter Table, Miscellaneous Messages, Hotlist, Actionlist .</li> <li>▪ Class 3 – ISAM Security File, ISAM Security Acknowledgement (including messages originating from the ISMS or the AMS). The AMS-HOPS shall be capable of receiving and processing, storing, forwarding, creating and receiving all ITSO message types as defined in the ITSO Specification.</li> </ul>
IM-009	A	The Supplier shall provide an outline of the processes and capability of the AMS-HOPS to create and handle the ITSO defined message classes and the management tools (for both the Supplier and the Contracting Body) that are provided to oversee the processes associated with distribution. This shall include descriptions of tools or facilities used to confirm the receipt (of messages at the POST or the HOPS) and to identify and potentially resend messages that have not been confirmed as received.

### 4.3 Message Processing – Class 2 Messaging (Hotlisting)

Core Requirements		
IM-010	A	The AMS-HOPS shall manage hotlisting of ITSO shells and IPEs that are not valid or not to be accepted. This process shall be based upon the hotlisting of all shell and IPEs on to a master hotlist and the elevation of such hot shells or products that have been incorrectly used to an active hotlist which is then further processed to create a distributed hotlist which is transmitted to all appropriate POSTs (distributed hotlist) and to other HOPS.
	B	This process must be able to be scheduled for both the elevation on to the active hotlist and elevation on to the distributed hotlist.
	C	This process must be able to be run on an ad hoc requested basis for both the elevation on to the active hotlist and elevation on to the distributed hotlist.
	D	Hotlisted shells and products will be promoted from the master to the active list with any ITSO message type related to that shell or product. This should be configurable by the Contracting Body.
IM-011	A	Hotlist instructions shall be accepted from 6 potential sources: <ul style="list-style-type: none"> <li>▪ SWSAL and SWSAL Members CMS linked directly to the relevant Contracting Body's HOPS supplied via this Framework Agreement pursuant to an Order.</li> <li>▪ SWSAL and SWSAL Members web ticketing portal integrated with SWSAL and SWSAL Members CMS linked directly to the Contracting Body's HOPS.</li> <li>▪ From a third party CMS integrated with the HOPS.</li> <li>▪ From a third party HOPS as an ITSO message.</li> <li>▪ From a third party e-purse system.</li> <li>▪ From a third party database.</li> </ul>
IM-012	A	Hotlist instructions should be fully configurable to allow the item to be promoted immediately to the active and distributed hotlist where appropriate.
IM-013	A	The information export process from SWSAL and SWSAL Members hotlist to other scheme HOPS shall ensure that only relevant information is distributed to other third party HOPS.
IM-014	A	Active shell and IPE hotlist entries shall be distributed to all other HOPS in accordance with the ITSO Operating Licence.
IM-015	A	In order to manage the finite capacity of POSTs to handle distributed hotlists the following capabilities to process the active hotlist shall be in place for those ISAMs managed by the HOPS: <ul style="list-style-type: none"> <li>▪ Differential distributed hotlist distribution by individual ISAM (potentially all ISAMs within the ISAM estate) or by ISAM group (operator, OID, POST Sets or a logical group);</li> </ul>
	B	<ul style="list-style-type: none"> <li>▪ Geographical distributed hotlisting based upon the allocation of operators to specific areas (or multiples of);</li> </ul>
	C	<ul style="list-style-type: none"> <li>▪ Variable distributed hotlist size to reflect different POST capacities;</li> </ul>
	D1	<ul style="list-style-type: none"> <li>▪ Configurable rules for prioritisation of products (and shells where appropriate): <ul style="list-style-type: none"> <li>▪ by OID/IPE/PTYP.</li> </ul> </li> </ul>
	D2	<ul style="list-style-type: none"> <li>▪ by CPICC.</li> </ul>
	D3	<ul style="list-style-type: none"> <li>▪ by the product value risk ratio.</li> </ul>
	D4	<ul style="list-style-type: none"> <li>▪ date/time of last use.</li> </ul>
	E	<ul style="list-style-type: none"> <li>▪ Manual intervention to re-order critical priorities of specific shells/products, with audit trail of changes</li> </ul>
F	Multiple rules can be assigned against individual ISAM groupings	
IM-016	A	The duration on which entries remain on the active hotlist must be configurable but shall typically be between 10 and 21 calendar days. If the item is not blocked during this

		period the entry shall be transferred back to the master hotlist. Appendix 4 provides, by way of example only, a copy of the guidance document that has been produced by SWSAL that details the functions and process that are currently in place within the SWSAL area.
IM-017	A	Incremental refreshes and absolute replacement of hotlists transmitted to POSTs shall be supported.
IM-018	A	Imported shell and IPE hotlist instructions from third party HOPS shall be placed onto the active hotlist.
IM-019	A	Notifications received by the HOPS that shells or IPEs have been blocked by a third party HOPS shall be passed to the Accounts Database within the HOPS and then made available for passing to the relevant CMS and/ or Web Portal and the entry on the master hotlist marked for deletion.
IM-020	A	The HOPS shall be configured to export information that it receives when a hotlisted ITSO shell or IPE is blocked so that this can be sent to the CMS that created the instruction.
IM-021	A	Hotlists shall be addressable to any ISAM, published POST Set or OID grouping for any ITSO OID.

#### 4.4 Message Processing – Class 2 Messaging (Actionlisting)

Core Requirements		
IM-022	A	In order to support the delivery of information associated with new products, amendments to products and the addition of value to existing products, the HOPS will support an efficient means of delivery of <b>all</b> Class 2 Action to Take messages.
IM-023	A	The HOPS will be capable of both generating and transmitting to other HOPS and receiving from other HOPS, actionlists and be able to distribute them to POSTs or other HOPS.
	B	A user interface shall be provided to the Contracting Body that is capable of varying the collective list prioritisation according to pre-set priorities and with a manual intervention capability, and with an appropriate audit trail that can be used to manage issues where they arise.
IM-024	A	All Action to Take types, as detailed in the ITSO Specification, shall be supported, noting the recommendations in ITSO Developer Guidance DG0039.
IM-025	A	Actionlist management prioritisation rules must be configurable based on the following: <ul style="list-style-type: none"> <li>▪ POST location.</li> </ul>
	B	▪ ISAM grouping.
	C	▪ POST Sets.
	D	▪ Action to take code.
	E	▪ Product start date.
	F	Multiple rules can be assigned against individual ISAM groupings.
IM-026	A	The HOPS will be able to process and compile ITSO actionlists following requests from third party interfaces including but not limited to web portals and CMS.
	B	The HOPS will be able to support a mixture of Action To Take types when creating and compiling actionlists.
	C	This will include the ability to target these messages to a specific ISAM and specific ISAM groups based on OID, logical group, area or operator.
IM-027	A	The HOPS will be able to process and forward ITSO action match event details to third party interfaces including but not limited to web portals and CMS, including detail of where this match event took place.

IM-028	A	Actionlists will be addressable to any ISAM and any published POST Set or OID grouping for any ITSO OID.
IM-029	A	Incremental refreshes and absolute replacements of actionlists shall be supported.

#### 4.5 Message Processing – Class 3 Message Handling

Core Requirements		
IM-030	A	The HOPS shall be able to support and handle the processing of ISAM LOG1 files, in accordance with the latest ITSO guidance.
IM-031	A	The HOPS shall support multi-frame Class 3 messages in order to update ISAMs in an efficient manner and with the fewest number of messages possible.
IM-032	A	The Supplier must liaise with the Contracting Body regarding the abandonment of Class 3 messages prior to any abandonment occurring.
IM-033	A	When a NAK is received by the HOPS this should generate an alert.
	B	When an ACK is not returned within a configurable time period this should generate an alert also.

#### 4.6 Message Processing – Supplementary Data Messages

Core Requirements		
IM-034	A	Supplementary data messages are used to provide additional information that has been captured as part of the journey transaction and can then be used as part of the end analysis processes. The AMS-HOPS will be required to handle supplementary data messages in conjunction with any message. These messages will be Parsed in the HOPS accounts database and made available and included with the data extraction.
IM-035	A	The Supplier shall provide flexibility in regard to this supplementary data to enable future amendments.

#### 4.7 Message Processing – ITSO Message Distribution

Core Requirements		
IM-036	A	The AMS-HOPS will be able to process and distribute: <ul style="list-style-type: none"> <li>▪ “on-us” and “not-on-us” transaction messages received (from POSTs) including the proper distribution of messages with multiple recipient addresses. Please note that POST to HOPS batch files will only be addressed to the HOPS managing the ISAM however the individual messages may have multiple recipient addresses;</li> </ul>
	B	<ul style="list-style-type: none"> <li>▪ Standard ITSO messages with 3 or more message destinations e.g. ENCTS ABV (“Anonymous But Valid”) POST to HOPS transaction messages ;</li> </ul>
	C	<ul style="list-style-type: none"> <li>▪ Lists (HOPS to POST) – supporting both individually sealed data items and whole message Hash/MAC checksums as required;</li> </ul>
	D	<ul style="list-style-type: none"> <li>▪ Class 3 update messages; and</li> </ul>
	E	<ul style="list-style-type: none"> <li>▪ HOPS-to-HOPS messages and lists.</li> </ul>

#### 4.8 Message Processing – Data Processing

Core Requirements		
IM-037	A	The AMS-HOPS shall be able to process data arriving from a wide variety of sources both within the ITSO environment and from other external sources.
IM-038	A	It is not required that User Defined messages be decoded in the HOPS. This will be done by third party systems following data extract. Hence the data shall be transferred unchanged in the data-extract.

#### 4.9 Message Store – HSAM & ISAM Commissioning and Profiling

Core Requirements		
IM-039	A	The Supplier must undertake on-going ISAM profiling for the scheme, both for new ISAMs and for ISAMs that are already in the field.
	B	The Supplier must demonstrate processes that support handling large volumes efficiently and accurately.
IM-040	A	The structure and layout of ISAM files must be agreed with the Contracting Body and where there are trade-offs for example relating to sizing or parameter settings (flags, sizes of files, etc.) arising from recommendations from the Supplier these must be explained together with the advantages and disadvantages for each setting.
IM-041	A	The Supplier must provide an outline plan for the commissioning, profiling, testing and verification of ISAMs including indicative times for the process and the anticipated rate per day (with variations for non-Working Days).
IM-042	A	In the event that there are issues with the ISMS that interrupt the commissioning process or reduce capacity, the Supplier must collaborate with ITSO to confirm the position and then detail how this is to be handled and what technical risks exist to ISAM commissioning.
IM-043	A	The Supplier must have processes in place to update ISAM profiles promptly and in accordance with the Contracting Body's requirements on receipt of notifications from the ISMS of new Customer Media and/or Products being available.
	B	This process must be documented and agreed with the Contracting Body prior to contract commencement.
	C	The Supplier must be able to provide the Contracting Body the ability to update ISAM profiles remotely from the HOPS without the ISAM being in a physical POST.
IM-044	A	The Supplier must have processes in place to reallocate ISAMs between operators within the same OID in both technical and administrative terms and implement as required.
IM-045	A	The Supplier must have processes in place to migrate and re-parent ISAMs from the existing AMS-HOPS supplier to the Supplier's AMS-HOPS and implement as required.

#### 4.10 Message Store – ISAM Management

Core Requirements		
IM-046	A	The AMS-HOPS must be capable of managing at least 10,000 active ISAMs.

<b>IM-047</b>	<b>A</b>	Detailed management tools shall be in place to ensure that all smart card transactions at POSTs, ISAM update transactions, and any exchange of data between the HOPS and other units can be monitored on a day to day basis by the Contracting Body and the Supplier (in particular for the application of ITSO changes to the ISAM profile or firmware).
	<b>B</b>	In addition where changes are being applied to ISAMs for the purpose of updates (by the Contracting Body, third parties or ITSO) a documented process shall exist to ensure that ISAMs continue to function and can be identified for immediate attention if a problem arises during the application process.
<b>IM-048</b>	<b>A</b>	The Supplier shall provide user friendly functionality that enables up to date exception reporting so that issues with specific ISAMs are automatically flagged based upon user configurable priorities.
<b>IM-049</b>	<b>A</b>	The Supplier shall provide a configurable tool that will enable SWSAL and SWSAL Members to have visibility within the HOPS of their own OID ISAMs.

## 5. ACCOUNTS DATABASE

### 5.1 Accounts – General

Core Requirements		
AD-001	A	In order to support the implementation of third party systems that utilise data which is produced through smart transactions, the AMS-HOPS shall provide an accounts database from which information can be simply extracted in an industry standard format, in accordance with Good Industry Practice, to external systems such as the reimbursement payment system or systems managing STR balances and commercial products (operator-own or interoperable, requiring revenue sharing).
AD-002	A	The structure of the accounts database shall allow relevant data to be sorted and exported in the appropriate industry standard format and file structure.
AD-003	A	The accounts database shall include an ABV account and a Supplementary Messages Account as well as handling all ITSO products reflected in the range of IPETypes.
AD-004	A	The Accounts Database shall support and deliver all optional data structure and data elements as required.
AD-005	A	The Supplier shall highlight any firewall, security implications and restrictions of their system.
AD-006	A	The Accounts Database shall store and provide an audit trail for all managed data.
AD-007	A	A human - machine interface shall be provided allowing SWSAL and SWSAL Members access to their data stored within the HOPS noting that SWSAL Members shall only be able to access their own data.

### 5.2 Accounts – ITSO Shell Accounts

Core Requirements		
AD-008	A	In accordance with the ITSO Specification, the content of the Accounts Database shall include but not be limited to the core data requirements and the ITSO Shell Account (ISA) history data store.
AD-009	A	The Accounts Database must store and process shell creation messages received by the HOPS in the defined ITSO format.
AD-010	A	The Accounts Database shall have the structure to support multiple shell owners under a controlled, umbrella or standalone configuration.
AD-011	A	The Accounts Database must support the creation, management and control of all ITSO certified media.
AD-012	A	Provision shall be provided for reporting on third party IPEs loaded to ITSO Shells owned by SWSAL and SWSAL Members.

### 5.3 Accounts – ITSO IPE Accounts

<b>Core Requirements</b>		
<b>AD-013</b>	<b>A</b>	In accordance with the ITSO Specification, the content of the Accounts Database shall include but not be limited to the core data requirements for an IPA for all ITSO IPEs.
<b>AD-014</b>	<b>A</b>	The Accounts Database must be able to link the ISRN, and where applicable the MCRN, to all IPAs.
<b>AD-015</b>	<b>A</b>	The Accounts Database must have a clear link to the History Data Store.
<b>AD-016</b>	<b>A</b>	The Supplier shall provide reporting on IPEs, issued by SWSAL and SWSAL Members which have been created on ITSO Shells which are not owned by a user of the HOPS.

## 6. INTERFACES

### 6.1 External Interfaces

Core Requirements		
I-001	A	The AMS-HOPS will be required from the outset to fully interface with a number of external systems, not all of which are ITSO components. The Supplier's system shall therefore have the ability to interface to the following, as a minimum: <ul style="list-style-type: none"> <li>ITSO certified POSTs used by transport providers for the processing of tickets and products.</li> </ul>
	B	ITSO certified POSTs used for the creation and issue of ITSO shells and products.
	C	Card Production Bureau services.
	D	Payment Systems (including Transit Settlement Systems).
	E	Third party Customer Management Systems for the direct import/export of creation data and other post creation instructions that will become ITSO messages and the export of transactions or ITSO message acknowledgements.
	F	On line ticketing web sites used for the fulfilment ticket purchases and top ups.
	G	Data Analysis and Report Packages.
	H	The ISMS system.
	I	Other ITSO certified third party AMS-HOPS systems.
I-002	A	The Supplier shall, upon request, promptly provide details of how these interfaces detailed above can be connected to the HOPS services, providing reference examples in each case (max 500 words). <ul style="list-style-type: none"> <li>ITSO certified POSTs used by transport providers for the processing of tickets and products.</li> </ul>
	B	ITSO certified POSTs used for the creation and issue of ITSO shells and products.
	C	Card Production Bureau services.
	D	Payment Systems (including Transit Settlement Systems).
	E	Third party Customer Management Systems for the direct import/export of creation data and other post creation instructions that will become ITSO messages and the export of transactions or ITSO message acknowledgements.
	F	On line ticketing web sites used for the fulfilment ticket purchases and top ups.
	G	Data Analysis and Report Packages.
	H	The ISMS system.
	I	Other ITSO certified third party AMS-HOPS systems.
I-003	A	The AMS-HOPS shall be designed and operated in a manner that allows all data created through all ITSO processes to be exported daily, in an industry standard format, in accordance with Good Industry Practice that can be manipulated to suit the required input structure of the receiving system.
I-004	A	The Supplier shall provide a degree of flexibility regarding structure and content of data that is exported or imported to/from external non-ITSO systems and shall detail in their proposal how this is to be achieved e.g. using ETL (Extract, Transform, Load) processes that do not require manual intervention.

## 6.2 ISMS Interface

Core Requirements		
I-005	A	The AMS shall interact with the ISMS on an always-on basis (minimum at least daily interaction basis) and in a manner that ensures that all updates (new products, withdrawn products, updated products, key creations, extensions, roll-overs or any other relevant ITSO notification) are collected on the same day as they are issued, unless the ISMS is unavailable in which case they shall be collected on a next opportunity basis.
I-006	A	Once received by the AMS the secure frames (or similar) shall be processed and made available as Class 3 messages (or other if appropriate) within 24 hours after being received for other ITSO components to collect.
I-007	A	In order to ensure that new instructions or messages made available by the ISMS are acted upon promptly the HOPS shall have an automated reporting capability to ensure that the Supplier and the Contracting Body are aware of these at the earliest opportunity.

## 6.3 Third Party HOPS Interface

Core Requirements		
I-008	A	The HOPS shall interface with third party HOPS operated by other schemes and provided by other suppliers for both the distribution of ITSO transaction data and other ITSO messages (including active hotlist and actionlist instructions) that may be required by another HOPS or ISAMs that are not under the control of the Contracting Body's System.
I-009	A	Reciprocal functionality shall be in place to receive and transmit inter-HOPS messages from and to all other HOPS in the wider ITSO environment.
I-010	A	Transaction data received by the Contracting Body's HOPS, which is also addressed to a third party HOPS shall be despatched within 1 hour of receipt.
I-011	A	ITSO messages (including active hotlist and actionlist instructions) shall be despatched no later than 22:00 on the day of creation by the Contracting Body's HOPS. This shall be configurable per HOPS instance.
	B	Messages received from third party HOPS that require action by the Contracting Body's system shall be processed and shall be actionable immediately following receipt.
I-012	A	The Supplier shall explain and describe the processes and interfaces that will exist to manage the exchange of data with third party HOPS and provide reference examples where they have implemented HOPS to HOPS interfacing in a concessionary and commercial scheme (max 500 words).
I-013	A	The Supplier must work with a third party HOPS suppliers to define, publish and test the interface between the AMS-HOPS and third party HOPS, noting that it is a requirement of the ITSO Operating Licence that the HOPS communicates with all other HOPS, without exception.

## 6.4 ISAM Interface

Core Requirements		
I-014	A	The AMS-HOPS shall manage all the Contracting Body's ISAMs including those where the Contracting Body is acting on behalf of other third parties to provide an ITSO AMS-HOPS service. This includes any national/ regional products owned by the Contracting Body's Scheme and those which have been applied at the request of third party schemes via the ISMS.
	B	The Contracting Body is open to approaches from third parties to host ISAMs on those third parties behalf.
	C1	The management interface with the ISAM includes: <ul style="list-style-type: none"> <li>▪ Transaction data.</li> </ul>
	C2	<ul style="list-style-type: none"> <li>▪ ISAM profile data.</li> </ul>
	C3	<ul style="list-style-type: none"> <li>▪ ITSO product and media data.</li> </ul>
	C4	<ul style="list-style-type: none"> <li>▪ Message application data.</li> </ul>
	C5	<ul style="list-style-type: none"> <li>▪ Firmware application data.</li> </ul>
	C6	<ul style="list-style-type: none"> <li>▪ ISAM Read-back (ability to read back the contents of a deployed ISAM to allow AMS re-sync).</li> </ul>
I-015	A	The Supplier shall ensure that the HOPS-ISAM interface will be implemented and managed in order to ensure that data is collected and distributed seamlessly and that processes are in place to validate this.

## 6.5 Card Production Bureau Equipment Interface

Core Requirements		
I-016	A	Cards are produced either via bureaus or standalone PersoPOSTS locally. A separate Tender has been issued that will provide a call-off contract for bulk blank smart cards and printer equipment should this be needed for future card replacement or issuance. The interface between the card production equipment, the CMS and the AMS-HOPS shall be seamless and the Supplier shall ensure that all data relevant to card production is captured and passed to the appropriate destination. The Supplier's AMS-HOPS shall have and deliver a 2-way interface with an ITSO compliant personalisation card production system.
I-017	A	The Supplier must work with card production suppliers to design, build, test and implement the 2-way interface between the AMS-HOPS and the bureau, and with standalone PersoPOSTS.

## 6.6 Actionlist Fulfilment Interface and Virtual Store

Core Requirements		
I-018	A	The AMS-HOPS must fully support actionlist fulfilment open interfaces for receiving fulfilment requests and responding with status updates. This must be in accordance with the ITSO Specification and include support for all Action to Take codes including 1 to 16, excluding those codes which ITSO has recommended not be used in DG0039.
	B	This capability shall include all variants of Action to Take code 15.
	C	The AMS-HOPS must be able to act as a retailing HOPS.
	D	The AMS-HOPS must be able to generate and send messages to detached IPEs and to

		foreign IPE and Shells, where permissions are in place.
	E	The AMS-HOPS must be able to trigger and process the following ITSO messages: <ul style="list-style-type: none"> <li>▪ 0804</li> <li>▪ 0805</li> <li>▪ 0806</li> <li>▪ 0807</li> </ul>
	F	When a request is made to the HOPS to create an actionlist item, this shall be created in Real-Time and made available for distribution.
I-019	A	The Supplier must work with the provider of the actionlist fulfilment and/ or virtual store to design, build, test and implement a 2-way interface between the AMS-HOPS and the actionlist fulfilment service.

## 6.7 Customer Management System (CMS) Interface

Core Requirements		
I-020	A	The ITSO environment is intended to facilitate both integration and competition between suppliers and the AMS-HOPS shall be capable of seamless integration with third party CMS's in the event that SWSAL and SWSAL Members wishes to procure or operate a CMS which is not provided by the Supplier.
	B	In particular, the Supplier's AMS-HOPS shall be capable and is required to import and export all message types and data in an industry standard format and in accordance with Good Industry Practice from/to a third party CMS system.
	C1	Including the following ITSO events: <ul style="list-style-type: none"> <li>▪ Card creation events;</li> </ul>
	C2	<ul style="list-style-type: none"> <li>▪ Card updates (including product purchase and top up);</li> </ul>
	C3	<ul style="list-style-type: none"> <li>▪ Hotlist instructions for shells and IPEs;</li> </ul>
	C4	<ul style="list-style-type: none"> <li>▪ Actionlist events; and</li> </ul>
	C5	<ul style="list-style-type: none"> <li>▪ Transaction messages.</li> </ul>
	D	The AMS-HOPS must be able to send ITSO messages to multiple locations depending on the product OID (i.e. two or more CMS).
I-021	A	The Supplier shall make a full and detailed specification available, within 30 days of contract award, enabling a stable, 2-way connection to one or more third party CMS's to the HOPS as required by the Contracting Body
I-022	A	The Supplier must work with CMS suppliers to design, build, test, implement and monitor the 2-way interface between the AMS-HOPS and the CMS.
I-023	A	A specification of the 2-way data transfer between the HOPS and CMS is currently being detailed through the OAG process. Although not published yet it is expected that this will be defined in accordance with Good Industry Practice. The Supplier must acknowledge this ongoing work and will be required to deliver to this standard if requested.

## 6.8 POST Interface

Core Requirements		
I-024	A	The AMS-HOPS shall fully interface with POSTs and their associated back office systems for the exchange of ITSO data provided that the manufacturers of said equipment hold a valid ITSO certificate of compliance for the POST type.
	B	The Supplier shall work with any POST supplier identified by the Contracting Body to

		achieve prompt and efficient compliance with this requirement.
I-025	A	The AMS-HOPS shall fully interface with ITSO retail devices and their associated back office systems for the exchange of ITSO data provided that the manufacturers of said equipment hold a valid ITSO certificate of compliance for the POST type.
	B	The Supplier shall work with any POST supplier identified by the Contracting Body to achieve prompt and efficient compliance with this requirement.
I-026	A	The AMS-HOPS shall be able to support the ITSO version of software that the POST or retail device that it is interfacing with is operating. Note different POSTs and retail devices may be using different versions of ITSO software.

## 6.9 Reporting and Analysis Interface

<b>Core Requirements</b>		
I-027	A	The ITSO data contained within the AMS-HOPS shall be able to be decrypted and exported in an industry standard format to be used within any analytical data package software.

## 7. SERVICES & OPERATING STANDARDS

### 7.1 Sizing

Core Requirements		
SO-001	A	The AMS-HOPS shall be capable of handling the quantity of transactions per annum, as detailed in the pricing matrix with the capacity for expansion during the Term in accordance with the percentages as defined within the pricing matrix to allow for new concessions and commercial or integrated ticketing initiatives to be developed or to accommodate growth in existing schemes.
SO-002	A	The Supplier shall ensure that the AMS-HOPS is scalable to process and manage the appropriate number of ITSO messages that may be generated, which varies between events and ITSO product types.
SO-003	A	The AMS-HOPS shall be able to own and manage up to a set number of ISAMs and shell OIDs as defined in the pricing matrix.
SO-004	A	The AMS-HOPS shall be able to expand to handle further ISAMs and OIDs as defined in the pricing matrix.
	B	The Supplier shall detail the transaction volume capacity of the system and shall detail how the solution can be easily expanded and the timescales required.
SO-005	A	The Supplier shall confirm that they are able to manage the level of ISAMs as detailed in the pricing matrix at the outset.
SO-006	A	The Supplier shall provide details of any limitations of the Solution with regards to data transmission including but not limited to firewalls, concentrators or other network equipment.
SO-007	A	The Supplier shall detail the extent of redundancy that is built into the Solution Including but not limited to multiple transmission paths or other network equipment.
SO-008	A	The Supplier shall detail system performance of data transfer components, including but not limited to daily upload and download times.

### 7.2 Escrow

Core Requirements		
SO-009	A	The Supplier shall place all relevant software in an ESCROW agreement which shall be maintained with the current versions of software throughout the Term in accordance with the terms of the Framework Agreement.

### 7.3 Migration to the new AMS-HOPS service

Core Requirements		
SO-010	A	The Supplier shall import all data from the current AMS-HOPS if required by the Contracting Body, shall re-parent existing ISAMs, and implement a smooth transition from the current AMS-HOPS to the Supplier's AMS-HOPS. The Supplier shall work efficiently and effectively in partnership with the current AMS-HOPS provider to fulfil the requirements as detailed below.
	B	The migration process including all the requirements set out below shall take no more than 16 weeks from an agreed start date contained within the Project Implementation

		Plan.
	C	The Supplier shall detail a migration methodology as part of the Project Implementation Plan from the current AMS-HOPS identifying all issues that need to be considered to meet the requirements below (SO-012 to SO-015).
SO-011	A	The Supplier shall also import additional Licensed Operators ITSO data into the AMS-HOPS, and re-parent their ISAMs, when those Licensed Operators agree to join the service, according to the requirements detailed below.
	B	This process including all the requirements set out below shall take no more than 16 weeks.
SO-012	A	The Supplier shall: <ul style="list-style-type: none"> <li>Transfer existing PHSAMs to their AMS-HOPS to enable the creation of new ISAMs and the re-parenting of existing ISAMs.</li> </ul>
	B	The Supplier shall: <ul style="list-style-type: none"> <li>Implement a process by which existing ISAMs are re-parented to the new AMS-HOPS, without removing those ISAMs from the POSTs within which they are currently installed.</li> </ul>
SO-013	A1	The Supplier shall import all data from the current AMS-HOPS, including but not limited to: <ul style="list-style-type: none"> <li>data records for issued cards, ITSO Shells, IPEs, and POSTs;</li> </ul>
	A2	<ul style="list-style-type: none"> <li>Hotlists;</li> </ul>
	A3	<ul style="list-style-type: none"> <li>Actionlists;</li> </ul>
	A4	<ul style="list-style-type: none"> <li>data relating to ISAM Groups and POST Sets;</li> </ul>
	A5	<ul style="list-style-type: none"> <li>configuration data relevant to the Licensed Operators using the AMS-HOPS; and</li> </ul>
	A6	<ul style="list-style-type: none"> <li>any other data necessary for a smooth transaction to the new AMS-HOPS.</li> </ul>
	B	The Supplier shall work with the current provider to implement an effective and efficient data transfer mechanism.
SO-014	A	All transaction records shall be transferred to the new AMS-HOPS.
	B	The Supplier shall indicate how this will be achieved and what issues this will raise.
SO-015	A	The Supplier shall detail a migration methodology from the current AMS-HOPS identifying any issues that need to be considered.

#### 7.4 OID Export Requirements

Core Requirements		
SO-016	A	On the expiry or termination of the Framework Agreement or an Order (as applicable to SWSAL and SWSAL Members), the Supplier shall work with the new AMS-HOPS supplier to ensure a smooth migration to the new service, shall provide full and complete AMS-HOPS ITSO data to the new provider, and shall assist with re-parenting of ISAMs, as detailed below. For the avoidance of doubt this shall be at no additional cost to the Contracting Body or to the new supplier and shall be in a format agreed by the Contracting Body.
SO-017	A	The Supplier shall additionally when so requested by the Contracting Body work with another AMS-HOPS provider to transfer one or more Licensed Operators data to that providers AMS-HOPS, and assist with re-parenting of their ISAMs, at no additional cost to the Contracting Body or to the new Supplier, as detailed below.
SO-018	A	The Supplier shall: <ul style="list-style-type: none"> <li>Transfer existing PHSAMs to the new AMS-HOPS provider to enable the creation of new ISAMs and the re-parenting of existing ISAMs.</li> </ul>
	B	The Supplier shall: <ul style="list-style-type: none"> <li>Provide all reasonable and prompt assistance to ensure existing ISAMs are</li> </ul>

		re-parented to the new AMS-HOPS, without removing those ISAMs from the POSTs within which they are currently installed.
SO-019	A1	The Supplier shall export all relevant data from the current AMS-HOPS, including but not limited to: <ul style="list-style-type: none"> <li>▪ data records for issued cards, ITSO Shells, IPEs, and POSTs;</li> </ul>
	A2	▪ Hotlists;
	A3	▪ outstanding actionlists;
	A4	▪ data relating to ISAM Groups and POST Sets;
	A5	▪ configuration data relevant to the Licensed Operators using the AMS-HOPS; and
	A6	▪ any other data necessary for a smooth transaction to and ongoing operation of, the new AMS-HOPS.
	B	Exported data shall be in a format which can be readily used by the new AMS-HOPS provider and in a format agreed by the Contracting Body.
SO-020	A	All transaction records shall be transferred to the new AMS-HOPS within 3 weeks of the instructions from the Contracting Body.  The Supplier shall describe how this will be achieved.

## 7.5 Test Environment

Core Requirements		
SO-021	A	The Supplier must provide a separate, dedicated test system which must replicate the live AMS-HOPS, including all interfaces to ensure full integration testing can be performed before the live use of new systems, systems upgrades, new software and software upgrades is accepted and deployed.
	B	The test system shall be maintained and kept available until termination of the Framework Agreement and the last effective Order.
	C	The test system shall link up with third party test systems to produce an end to end testing environment.
SO-022	A	The Supplier shall document the dedicated test system that will be provided as part of the Supplier's offering, including a system architecture diagram and a logical systems overview (including any proposed sub-contractor's systems) incorporating system topology, sizing and system interfaces (internal and external).

## 7.6 Back Up and Archiving

Core Requirements		
SO-023	A	The AMS-HOPS shall provide a full range of back up and archive processes. As a minimum the following requirements shall be met by the Supplier's solution: <ul style="list-style-type: none"> <li>▪ Automated back up in the event of any circumstances that result in the loss of the data on the HOPS;</li> </ul>
	B	▪ On-line access to 2 years of data, made up of either 24 calendar months or 26 four weekly periods at the discretion of SWSAL and SWSAL Members, including the ability to change period start dates and period length;
	C	▪ Ease of access to archived data for temporary restore and report running; and
	D	▪ All data shall be kept for at least 2 years in compliance with ITSO requirements. In addition archived data stored off-line shall be kept for at least 7 years from its

		creation unless it has been transferred to a third party system and the data owner has confirmed that the original data may be destroyed. The requirement to store off-line archived data, and to make this available to the customer shall survive termination of the contract.
SO-024	A	The Supplier will detail their Solution's typical system performance of data transfer components e.g. daily upload and download times and capacity.
SO-025	A	The Supplier shall describe the data archiving / retrieval functionality provided by the AMS-HOPS.

## 7.7 Business Continuity and Disaster Recovery

Core Requirements		
SO-026	A	The Supplier must have in place and share with the Contracting Body, an appropriate business continuity and disaster recovery (BCDR) plan which ensures business continuity for SWSAL, SWSAL Members, Customers and data in the event that the normal AMS-HOPS location is not available for a period in excess of 24 hours.
	B	The availability of the BCDR site shall be at least that of the main site if it is used for more than 28 consecutive days or 95% if used for less than that.
SO-027	A	The Supplier shall provide a detailed system diagram showing BCDR location identifying the physical distance between the locations, the computer hardware and communications links. This must comply with ISO/IEC 27001.
SO-028	A	The Supplier must demonstrate to the reasonable satisfaction of the Contracting Body the BCDR process prior to initial go live and then at least every 12 months thereafter with appropriate levels of reporting.
	B	A detailed overview of BCDR requirements is included within the Framework Agreement.

## 7.8 Technical Support

Core Requirements		
SO-029	A	The Supplier shall implement and maintain a service that provides: <ul style="list-style-type: none"> <li>▪ A technical helpdesk together with project and incident management, including categorisation and resolution for on-going software support</li> </ul>
	B	<ul style="list-style-type: none"> <li>▪ A helpdesk facility to manage incidents, problems, changes and queries for SWSAL and SWSAL Members</li> </ul>
	C1	<ul style="list-style-type: none"> <li>▪ These facilities shall be available within the following time band <ul style="list-style-type: none"> <li>▪ office hours support (Monday – Friday 0900 - 1700)</li> </ul> </li> </ul>
	C2	<ul style="list-style-type: none"> <li>▪ These facilities shall be available within the following time band <ul style="list-style-type: none"> <li>▪ weekend support (Saturday 0900 – 1700)</li> </ul> </li> </ul>
	D	These facilities will provide weekly summaries of open and closed calls with time since first raised and detailed status of any open calls
	E	This service shall be ITIL compliant or equivalent.
SO-030	A	The AMS-HOPS system must be resilient with a high level of reliability. The Supplier will provide a monthly summary of system availability showing when the system was unavailable, why, and with an indication of whether the downtime was planned or unplanned.
SO-031	A	The Supplier must provide and maintain a problem and incident management system, and shall respond to problems and incidents within 4 Office Hours of the problem or incident being identified, providing either a full report or interim report to the

		Contracting Body.
	B	The Supplier must monitor the AMS-HOPS in Real-Time to identify events which may cause a disruption in service.
	C	In addition there must be an automatic notification to the Contracting Body when an issue, problem or incident has arisen, which may impact either the System performance or the customer's ability to use the Scheme.
SO-032	A	The Supplier shall provide a comprehensive training package, including comprehensive and easy to use training materials and operating manuals.
	B	The Supplier shall be responsible for ensuring that training of SWSAL and SWSAL Members and their agents is carried out effectively.
SO-033	A	The Supplier shall provide a documented approach to change management which must be employed in relation to the AMS-HOPS. The exact mechanisms will form part of the quality assurance regime and performance monitoring of the Supplier.

## 7.9 Performance and Availability

<b>Core Requirements</b>		
SO-034	A	The Supplier shall attend and provide reports at a monthly performance review meeting with the Contracting Body that is the counterparty to an Order. At this meeting, key performance data will be presented and any issues identified and logged.
SO-035	A	The AMS-HOPS must be supported on an 'always on' basis in order to ensure availability to external systems.
	B	In addition to this there shall be a 'help' point of contact provided that is available should the need arise. The types of assistance required includes, as a minimum but not limited to: <ul style="list-style-type: none"> <li>▪ emergency Class 3 message application</li> <li>▪ AMS-HOPS communication issues (at the AMS-HOPS)</li> </ul>
SO-036	A	The Supplier shall ensure that the AMS-HOPS provides for a secure and resilient service, operating from best in class facilities with established and proven interfaces to all system components including third party systems as required by the Contracting Body.
SO-037	A	The Supplier shall ensure that the AMS-HOPS processes all messages in Real-Time.
SO-038	A	The Supplier must ensure that the AMS-HOPS is fully available for use by SWSAL and SWSAL Members for more than the Service Level % as defined in the Framework Agreement, 24 hours a day, 7 days a week (excluding planned downtime). This will be used for performance monitoring of the Supplier.
SO-039	A	The Supplier must provide a detailed description of the proposed Managed Service facilities including a systems architecture diagram that provides a logical systems overview (include any proposed sub-contractor systems) incorporating system topology, sizing and system interfaces (internal and external).
SO-040	A	The Supplier must detail the transaction volume capacities that the proposed AMS-HOPS are already operating to in a live environment such that performance stays within the Contracting Body's service levels as detailed within the tender.
SO-041	A	The Supplier must detail the quantities of Point of Service Terminals (POSTs), cards (shells), products (IPEs) and card issuers that their proposed AMS-HOPS are already operating to, providing referenced examples.
SO-042	A	The Supplier shall document their approach to delivering comprehensive integration testing including standards adhered to.
SO-043	A	The Supplier shall detail the systems management reporting capability and explain how multi-tenanted reporting within a complex, high volume ITSO transaction environment is serviced, providing current relevant referenced examples.
SO-044	A	The Supplier shall describe the process for monitoring service performance and ensuring

		that availability (for more than the Service Level % as defined in the Framework Agreement, excluding planned maintenance) will be met including emergency restoration, back up arrangements and disaster recovery.
SO-045	A	The AMS-HOPS shall be available at all times including weekends.
	B	When scheduled maintenance is required this shall be undertaken with the prior written agreement of the Contracting Body given at least 10 Working Days in advance of commencement of the work. Scheduled maintenance should not compromise key daily functions at critical times.
SO-046	A	In the event of the AMS-HOPS system failing, in any manner that prevents its normal operation for the receipt, acknowledgement and processing of data outside office hours the Supplier must alert the appropriate engineer and shall rectify the problem in line with the relevant performance criteria outlined in Schedule 2 of the Framework Agreement.
	B	A notification via email or text must be sent to the Contracting Body on initial alert and on rectification.
SO-047	A	The Supplier shall detail their existing Helpdesk facilities including standards used to govern the helpdesk operation, helpdesk response times and call classifications, opening times and out of hours services and provide 3 references where the Helpdesk facility is in operation for a current ITSO scheme and the services that this provides.

## 8. USER FUNCTION & REPORTING

### 8.1 ISAM Estate Management

<b>Core Requirements</b>		
UFR-001	A1	The ISAM management tools delivered as part of the AMS-HOPS will include a GUI to allow Asset Management and Tracking including <ul style="list-style-type: none"> <li>• ISAM Profile Database (maintained by the Supplier and fully accessible by the Contracting Body) including:               <ul style="list-style-type: none"> <li>○ Version type</li> </ul> </li> </ul>
	A2	<ul style="list-style-type: none"> <li>○ Date of profiling</li> </ul>
	A3	<ul style="list-style-type: none"> <li>○ OID allocation (operator identity)</li> </ul>
	A4	<ul style="list-style-type: none"> <li>○ Any other allocation for the ISAM (groups, services, operators, POST Sets)</li> </ul>
	A5	<ul style="list-style-type: none"> <li>○ Profile at commissioning (IPEs/Media/criteria/limits contained)</li> </ul>
	A6	<ul style="list-style-type: none"> <li>○ Current profile (IPEs/Media/criteria/limits contained)</li> </ul>
	A7	<ul style="list-style-type: none"> <li>○ Subsequent ITSO message summary (date of application, acknowledgement, etc.)</li> </ul>
	A8	<ul style="list-style-type: none"> <li>○ Number of batches on the ISAM</li> </ul>
	A9	<ul style="list-style-type: none"> <li>○ ISAM polling time</li> </ul>
	B1	<ul style="list-style-type: none"> <li>• ISAM Location Database (maintained by SWSAL and SWSAL Members and updated automatically using ITSO 0803 messages) including               <ul style="list-style-type: none"> <li>○ Operator</li> </ul> </li> </ul>
	B2	<ul style="list-style-type: none"> <li>○ POST type</li> </ul>
	B3	<ul style="list-style-type: none"> <li>○ POST serial number</li> </ul>
	B4	<ul style="list-style-type: none"> <li>○ List sizes</li> </ul>
	B5	<ul style="list-style-type: none"> <li>○ Operator group (where applicable)</li> </ul>
	UFR-002	A
B		<ul style="list-style-type: none"> <li>• Location last communicated from</li> </ul>
C1		<ul style="list-style-type: none"> <li>• Current status report (as part of ISAM profile database)               <ul style="list-style-type: none"> <li>○ What was last sent and when</li> </ul> </li> </ul>
C2		<ul style="list-style-type: none"> <li>○ What was last acknowledged and when</li> </ul>
C3		<ul style="list-style-type: none"> <li>○ What is outstanding</li> </ul>
D		<ul style="list-style-type: none"> <li>• Exception reporting</li> </ul>
UFR-003	A	The ISAM management tools delivered as part of the AMS-HOPS will include a GUI to allow ISAM Key management to enable the Contracting Body to monitor the status of the keys on ISAMs and ensure that updates are applied as and when required.
	B	The ISAM management tools delivered as part of the AMS-HOPS will include a GUI to

		allow reports to be run showing upcoming key expiry dates and rollovers happening within the next 24 month period.
UFR-004	A	The ISAM management tools delivered as part of the AMS-HOPS will include a GUI to allow the viewing of Class 3 Message logging (using LOG1 functionality where supported by the devices containing the ISAM) including general message catch up and history reconstruction
UFR-005	A	The ISAM management tools delivered as part of the AMS-HOPS will include a GUI to allow authorised users access to important files for day to day management.
	B	The AMS-HOPS will be able to allow or deny users access to these functions by using the permissions systems.
UFR-006	A	The AMS-HOPS shall provide a configurable means by which ISAMs that have not been seen for a number of days are highlighted to system users in order that their location, 'not-seen' and any other similar status can be ascertained. This shall include the situation where batches of transactions are missing and have not been received by the AMS-HOPS.
	B	Direct access to these reports will be available to the Contracting Body.
UFR-007	A	The Supplier shall ensure that the required reports and access are made available. The Supplier shall describe how this will be achieved.

## 8.2 Message Management

Core Requirements		
UFR-008	A	The Supplier shall provide a GUI that will allow the Supplier and the Contracting Body to track and export the status of ITSO Class 2 messaging including: <ul style="list-style-type: none"> <li>Number and type of Class 2 messages awaiting collection</li> </ul>
	B	<ul style="list-style-type: none"> <li>Number and type of Class 2 messages that have returned an ACK</li> </ul>
	C	<ul style="list-style-type: none"> <li>Number and type of Class 2 messages that have returned a NAK</li> </ul>
	D	<ul style="list-style-type: none"> <li>Number and type of Class 2 messages that have been collected</li> </ul>
	E	<ul style="list-style-type: none"> <li>Number and type of Class 2 messages that are still being processed by the AMS-HOPS</li> </ul>
	F	<ul style="list-style-type: none"> <li>Number and type of Class 2 messages that have not been collected due to errors.</li> </ul>
UFR-009	A	The Supplier shall provide a GUI that will allow the Supplier and the Contracting Body to track and export the status of ITSO Class 3 messaging including: <ul style="list-style-type: none"> <li>Number of Class 3 messages awaiting collection</li> </ul>
	B	<ul style="list-style-type: none"> <li>Number of Class 3 messages that have returned an ACK</li> </ul>
	C	<ul style="list-style-type: none"> <li>Number of Class 3 messages that have returned a NAK</li> </ul>
	D	<ul style="list-style-type: none"> <li>Number of Class 3 messages that have been collected</li> </ul>
	E	<ul style="list-style-type: none"> <li>Number of Class 3 messages that are still being processed by the AMS-HOPS</li> </ul>
	F	<ul style="list-style-type: none"> <li>Number and type of Class 3 messages that have not been collected due to errors.</li> </ul>
UFR-010	A	The Supplier shall provide a GUI that will allow the Contracting Body to track and export the status of HOPS to HOPS messaging including:
	B	<ul style="list-style-type: none"> <li>Number and type of message sent</li> </ul>
	C	<ul style="list-style-type: none"> <li>Number of resends</li> </ul>
	D	<ul style="list-style-type: none"> <li>Batch discrepancies (missing batches) in detail sent and received HOPS to HOPS.</li> </ul>
UFR-014	A	The Supplier shall provide a report on "unprocessed" messages. For instance messages that the HOPS cannot process due to incorrect formatting by the POST, corrupt messages or just a HOPS fault.

**8.3 ITSO Notifications**

<b>Core Requirements</b>		
<b>UFR-011</b>	<b>A</b>	A GUI reporting tool within the AMS-HOPS shall be provided that displays to the user the content and nature of any notifications that have been sent by ITSO via the ISMS that require implementation on ISAMs for example, but not limited to new shell and IPE notifications.
<b>UFR-012</b>	<b>A</b>	The notification list shall be actionable by the Contracting Body (with configurable date for implementation) or, if ignored, implemented by default after a configurable period of time. The reporting tool shall provide a full audit of actions taken on each notification.

**8.4 Reporting**

<b>Core Requirements</b>		
<b>UFR-013</b>	<b>A</b>	<p>In addition to the reporting described within each specific requirement it is essential that the Supplier provides SWSAL and SWSAL Members with high quality reporting including scheme specific aggregated and detailed reporting taking in relevant data.</p> <p>These reports, in the main, will relate to assets within the system and the movement of data and other ITSO messages around the system</p> <p>Specific attention will be given to exception reporting data analysis identifying trends, usage patterns and analysis</p> <p>A full suite of reports shall be made available by the system that ensures that SWSAL and SWSAL Members can access and manipulate data held within the AMS-HOPS on an as required basis</p> <p>Reports should be made available “on screen”, in printable form, as pdf files, and have excel or CSV files suitable for import into analysis systems</p>

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The SYSTRA logo is rendered in a bold, red, sans-serif typeface. The letters are thick and closely spaced, with a distinctive design where the 'S' and 'Y' are connected at the top, and the 'T' has a unique, slightly curved top bar. The overall appearance is modern and professional.