# Your London Card

# Web Services Design

## Prepared for
## London Connects

## Prepared By
## Consulting Smart Ltd
## Smart Citizen Ltd
## Smartran Ltd
## Unicard Ltd

## Version 1.2

# Table of Contents

# Version Control

| Version | Date | Changes | Sign - off | Date |
|---|---|---|---|---|
| v0.1 | 31/01/08 | Document outline | None required | None required |
| v0.2 | 05/02/08 | Technical input | None required | None required |
| v0.3 | 05/02/08 | Internal updates | None required | None required |
| v0.4 | 06/02/08 | Internal updates | None required | None required |
| v0.5 | 20/02/08 | Internal updates | None required | None required |
| v0.6 | 20/02/08 | Internal updates | None required | None required |
| v0.7 | 22/02/08 | Internal updates | None required | None required |
| v0.8 | 25/02/08 | Internal updates | None required | None required |
| v0.9 | 29/02/08 | Internal updates | None required | None required |
| v0.10 | 01/03/08 | Internal updates | None required | None required |
| V 0.11 | 02/03/08 | Internal updates | None required | None required |
| V0.12,14 | 04/03/08 | Team reviews | None required | None required |
| V0.15.1 | 19/03/08 | Team reviews | None required | None required |
| V0.15.2 | 21/03/08 | Team reviews | None required | None required |
| V0.15.3 | 24/03/08 | Team reviews | None required | None required |
| V1.0 | 25/03/08 | Final validation & formatting | GW, OM, KF, SB | 25/03/08 |
| V1.1 | 26/03/08 | Supplier Review | GW, OM, KF, SB | 27/03/08 |
| V1.2 | 17/04/08 | Post Supplier Feedback | KF, GW, OM,SB | 24/04/08 |

# References

| Ref | Document | Date | Author | Location |
|---|---|---|---|---|
| 01 | Single membership Card for London Public Libraries – Feasibility Study | 2007 | Price, Waterhouse Coopers | London Connects extranet |
| 02 | London Connects Vision | January 2007 | N. Tjaardstra & G. Everett | London Connects extranet |
| 03 | Pan-London Smartcard Strategy | August 2007 | SmartCitizen | London Connects extranet |
| 05 | Business Case Report | January 2008 | K. Farquharson & S. Beecroft | London Connects extranet |

# 1 Executive Summary

London Connects and the Your London Card Executive Group (YLCEG) accepted the recommendations in December 2007 to use standardised card numbering and define a standard set of web services for communication between multiple card management systems and library/leisure management systems.

The London Boroughs have an opportunity to introduce resident smartcards which can be used, with agreement, to access services in neighbouring boroughs. In the absence of a centrally funded initiative, as exists in Scotland and other regions around the globe, an approach is required to ensure that each council can contribute to, and be consistent with, a common approach.

This short assignment has been undertaken by a team of experts drawn from four organisations involved in this sector – Consulting Smart, Smart Citizen, Smartran and Unicard. The team brings together design and implementation experience from a broad range of LA card schemes.

There are working examples in a number of schemes which provide a proven technical approach - web-services (Dudley & Caerphilly).

Experience from Scotland, other schemes and suppliers points to the need to standardise methods and interfaces to ensure consistency and control implementation costs. It is expected that benefits can be unlocked and overall costs controlled if standard methods and interfaces are adopted.

Web-services are the preferred technical solution because they provide a real-time secure data transfer which Local Authorities are already adopting for other services. The team considered a messaging based solution, bi-lateral links and Central Repository (CR). The CR was found to minimise potential performance and dependency issues as well as being feasible to design and build.

A minimum set of functions have been defined which will allow cardholders to sign up to and use additional services (e.g. second library or third party managed leisure centre). Additional functions have been defined to maintain the data in the CMS and central repository. The design is flexible to allow additional functionality to be implemented locally within the borough or to be added in the future for the Your London Card.

The "two-way" nature of the web-service functionality is to offer as flexible a solution as possible. The main consideration for this was that libraries might offer themselves as "service points" for the local or wider scheme, having signed up to collective scheme rules (on training of operators/authentication requirements etc). It is recognised that this functionality is unlikely to be the case for leisure for the simple reason that, in London, many of the leisure facilities are managed outside direct local authority control.

The web-services have been specified in sufficient detail to allow schemes to be implemented in a consistent and repeatable way (i.e. CR data, messages and XML schema). This document will also form the basis for detailed design and implementation of the CR.

This document identifies the major business impacts on operational services and benefits arising from a standardised approach (i.e. cost savings, efficiency gains, non-cashable service improvements).

The recommended next steps are:

- Supplier and YLG adopt this approach and design for forthcoming schemes
- This document forms the basis for integration of new multi-application schemes
- Boroughs specify this design as the basis for future service procurement

- One or more boroughs implement a Central Repository on a trial basis
- YLCEG investigates the potential to extend into other areas (e.g. schools)
- The impact on operational services and requirement for scheme rules are considered
- Circulate to LASSeO for review and endorsement
- Publish via London Connects Website and the websites of the Authors of this report.

**Authors' Notes**

This document has been produced as a collaborative exercise by the following team of authors:

Steve Beecroft, Consulting Smart Ltd, www.consultingsmart.co.uk
Kevin Farquharson, Smartran Ltd, www.smartran.co.uk
Owen McLaughlin, Smart Citizen Ltd, www.smartcitizen.net
Gwyn Williams, Unicard Ltd, www.unicard-uk.com

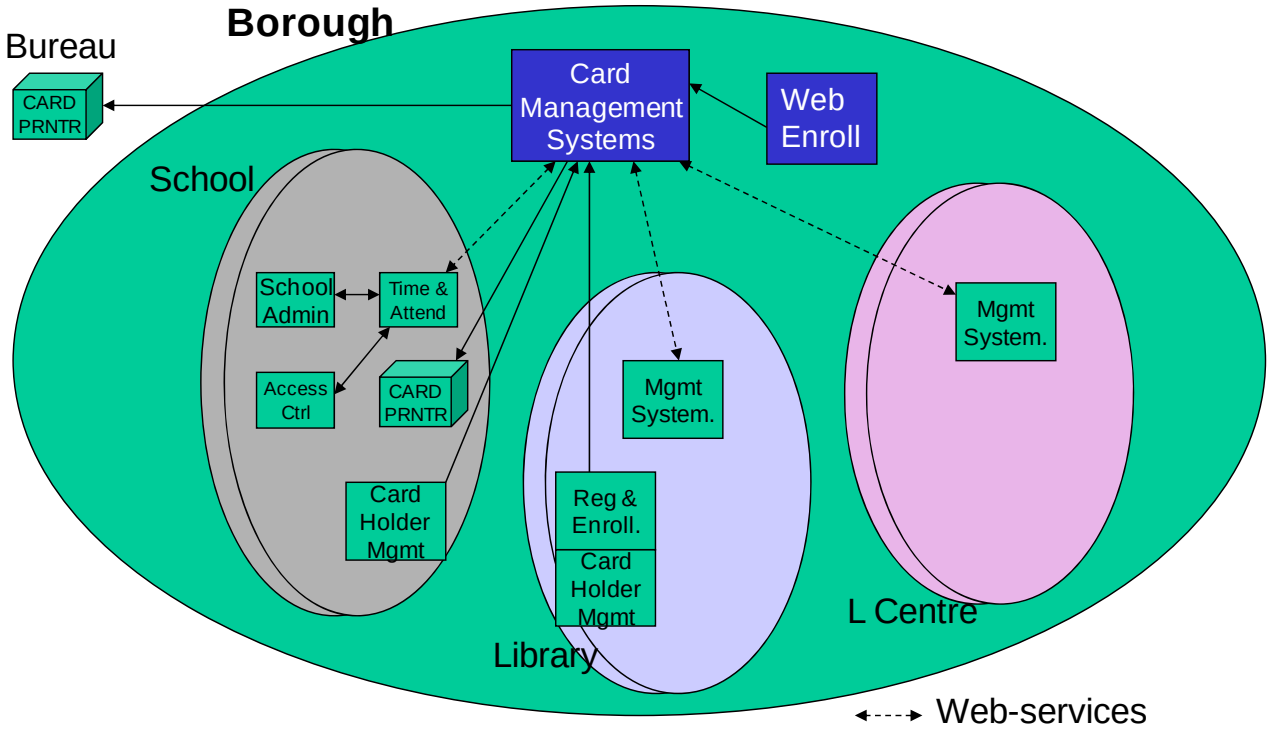
The authors would like to thank their colleagues, clients and London Connects for assistance and support in the production of this important document.

**Disclaimer**

*This design document has been prepared by Consulting Smart Ltd, Smartran Ltd, Smart Citizen Ltd and Unicard Ltd based on information provided by the YLCEG, London Connects, suppliers and their representatives. The analysis, conclusions and recommendations are believed to be valid at the time of publication. The authors cannot accept liability for decisions made as a consequence of information in this document where it is found that the source of information is incorrect or has changed.*

# 2 Background

Waltham Forest and Lewisham have already started implementing borough wide smartcard schemes; both have begun with pilots as part of a “soft launch” and both plan to incorporate a number of applications, including libraries and leisure. Hillingdon are also expected to start work soon on borough-wide smartcards in the very near future. If each borough implements a stand-alone solution, it will typically look like the following diagram:




These boroughs and other members of the YLCEG have considered the business case for a card scheme which will operate across borough boundaries.

In order to achieve this, it is recommended that they implement web services to handle the required interactions between existing library and leisure systems and card management systems. The production of a common web service definition and schema is proposed to reduce the cost of separate developments and ensure reduced charges from suppliers where integration is repeated for the same system. This approach will also build in future compatibility for a multi-borough or London-wide scheme where cards can be used to “call down” cardholder data that was registered to a third party Card Management System or another London Borough.

As the London Library Consortium and the Scottish smartcard team have already looked at some of the issues around common functionality and cross-border usage, this study began by looking at libraries and then moved onto leisure.

Scope and Approach

To ensure that the best use of time and resources was achieved, this study covers the 10 major functions across the 3 key components of CMS, Library Management System and Leisure Management System. These functions were identified after research during the Discovery Stage and are listed in Appendix C.

The scope covered the design of a mechanism for multiple agencies, predominantly (but not restricted to) local authorities. The approach taken uses a Central Repository (CR) that sends messages to and from its member Card Management Systems (CMS) or Customer Relationship Management systems (CRM) via web services. This affords local authorities the flexibility to choose a bespoke CMS / CRM and build an interface to the CR, or simply add their application to an already existing CSM / CRM. This, in turn, allows any participating local authority in London to issue smartcards to its residents or visitors, and gives those cardholders the flexibility to use local authority delivered services from any other participating authority (for which the cardholder has entitlement).

So that the impact of this change is minimised, as much as possible is left at the local level (i.e. a change to membership type is not relevant to the CMS, but a change of address might be - depending on authentication provided).

Not in scope for this document are services such as cashless catering, building access and other locally distributed services, as these functions are less likely to have cross border applications. However, the infrastructure described for this solution does allow for such services to be handled within it, giving wider flexibility and even the potential for joint procurements from collaborating authorities.

This document does not produce a step by step implementation plan. It is recommended that any organisation/s wishing to implement a solution as described in this document should do so with the assistance of a professional smartcard application consultant.

Method

After initial discussions between Nick Tjaardstra, London Connects (Sponsor), and a core team of two Smartcard Consultancies and two Card Management System Suppliers, it was agreed to package the work into 3 small workstreams.

1. Organisational Framework
2. Web Services and Technical Architecture
3. Processes / Operational Functions

Workstreams 1 & 3 were assigned to Kevin Farquharson (Smartran) and Steve Beecroft (Consulting Smart), where their collective consultancy, analysis and project management experience in implementing smartcards within local authorities was used to design the architecture for web services within a multi borough, multi agent environment. Gwyn Williams (Unicard) and Owen McLaughlin (Smart Citizen) were tasked with defining the actual web services interfacing mechanism. Both Unicard and Smart Citizen have direct experience in this area most recently with Dudley and Caerphilly respectively.

# 3 Aims of this Document

The deliverable is a single specification document that can be passed to third party system providers to enable them to integrate between the CMS and their own library and leisure or CRM systems. This includes a defined, generic XML schema for passing data between systems.

This document will help the reader develop understanding of what is required to implement a Web Service for a multi-borough, multi-agency smartcard scheme. It also provides the building blocks required, such as indicative process maps, XML Schema and system architecture diagrams.

## *3.1. Document Assumptions*

In order to produce a workable proposal without wide consultation, the authors must make some assumptions on some of the conditions within which a technical solution can be framed. These are listed below:

1. There will be a single authentication framework for applicants to get a “Your London” branded card (i.e. that the same proof of address/ID will be used by all card issuers). This is the basis upon which other issuers and service providers can establish that the cardholder can be “trusted” to gain access to new services without the need for additional proofs.
2. Suitable business processes are devised to run alongside the technical services described – for example, what happens in practice when someone is told their card is hotlisted?
3. Diversity of library and leisure management systems used by boroughs will persist for the medium-long term.
4. Boroughs will not all share the same card management system, although some may choose to do so.
5. The approved pan-London card numbering scheme is adopted and accepted by each participating organisation.
6. Web-services are the preferred technical solution because they:
    a) offer real time, secure data transfer
    b) are likely to be widely used by Local Authorities in the near future
    c) can be used with CRM or CMS
7. A Central Repository (CR) is adopted. (The team considered a messaging based solution, bi-lateral links and Central Repository. The CR was found to minimise potential performance and dependency issues as well as being feasible to design and build.)
8. The presentation of the card by the cardholder, together with a request by them to acquire the service, authorises access to the Central Repository and data exchange with the service provider.
9. The Central Repository will be securely located and managed by a trusted party.
10. Messaging will be though Port 80 using https.
11. The revocation of a service by the “home” authority means that the service may not be delivered, via the issued smart card, in any other authority.

# 4 Standard Functions Definition

This Section describes the day to day functions which need to be facilitated by the proposed cross borough web-services solution. As described in the scope, we have primarily considered those functions relating to membership of, and access to, library and leisure services.

Based on the initial validation of service requirements with selected suppliers and CMS providers as part of the London Connects business case study (Reference 03), a minimum set of common functions was determined. The proposed web-services are intended to support these functions which enable a cardholder to access specific services offered by the London boroughs and their appointed service providers. The minimum set of functions will enable registration to a service, its subsequent use, and, if necessary, the removal of the specific service entitlement. Such services might be described as “Global” Services in that they may be provided or managed by any London borough.

Additional functions may be enabled for service providers who are closely tied to the cardholders own borough (described as “Local” services), which may be managed by the CMS or CRM in that borough.

For a cardholder to be able to make a walk-up request to have access to a “Global” Service, the required minimum set of functions available at the service point are:

1. Invoke a service (i.e. check card validity, check global service entitlement, download cardholder details & register new specific service entitlement)
2. Revoke a service (i.e. remove the specific service entitlement that is available via that service point)
3. Get card status (i.e. check card validity, check generic service entitlement, check this service entitlement, check cardholder details for recent change)

An example would be a resident of Borough A who is enrolled in their local library, but wants to use the library in Borough B, close to their place of work (it is assumed the libraries have independent systems). The minimum functionality will allow the resident to elect to use one card for both libraries, to use both libraries on a regular basis and for either library service or the resident to close each library account. This arrangement would work even if the libraries had different policies and/or did not allow return of each other’s books.

In the event that the resident’s card was lost or stolen, they would only need to report it to Borough A and know that it could not then be used in either Borough A or B libraries. If the resident moved house within Borough A and kept their card, they would only need to advise Borough A and their details on a specific service could be updated. If the resident’s card was reported lost or stolen and replaced with a new card, then the resident may need to request their card service registration is updated (an option to provide a link to the new number is recommended as an additional optional web-service).

In the future, additional web-services could be enabled to update the card holder details on the CMS/CRM via the Central Repository. In the interim, the same functionality can be achieved by providing local access to the CMS/CRM to update details directly which will then propagate via the Central Repository.

Functions for CMS/CRM are:

4. Create a new cardholder and make cardholder details available for other services
5. Update cardholder details - resident requests personal details are updated and provides necessary evidence (i.e. check card validity, download cardholder details & update cardholder details and service entitlements)
6. Set card as hot-listed (i.e. check card validity & update card and service status)

7. Unset card as hot-listed (i.e. check card validity & update card and service status)
8. Download details from the CR – this message is sent from the CMS/CRM to download the contents of a card record pertaining to its own local scheme. This will depend on the detail of information that the card issuer wants to hold in the CMS/CRM (i.e. to provide full helpdesk information on live services) and whether, in the future, accredited service points might be able to update cardholder data to the CR
9. Delete the card record – at cardholder or issuer's authority, marking the record as deleted indicating that no further cards will be issued on the account
10. Re-issue the card - a message is sent from the CMS/CRM to inform the CR that a card has been re-issued. The CR will delete the old record if this has not already been done and log the new card details to enable immediate use at service points.

# 5 Architecture

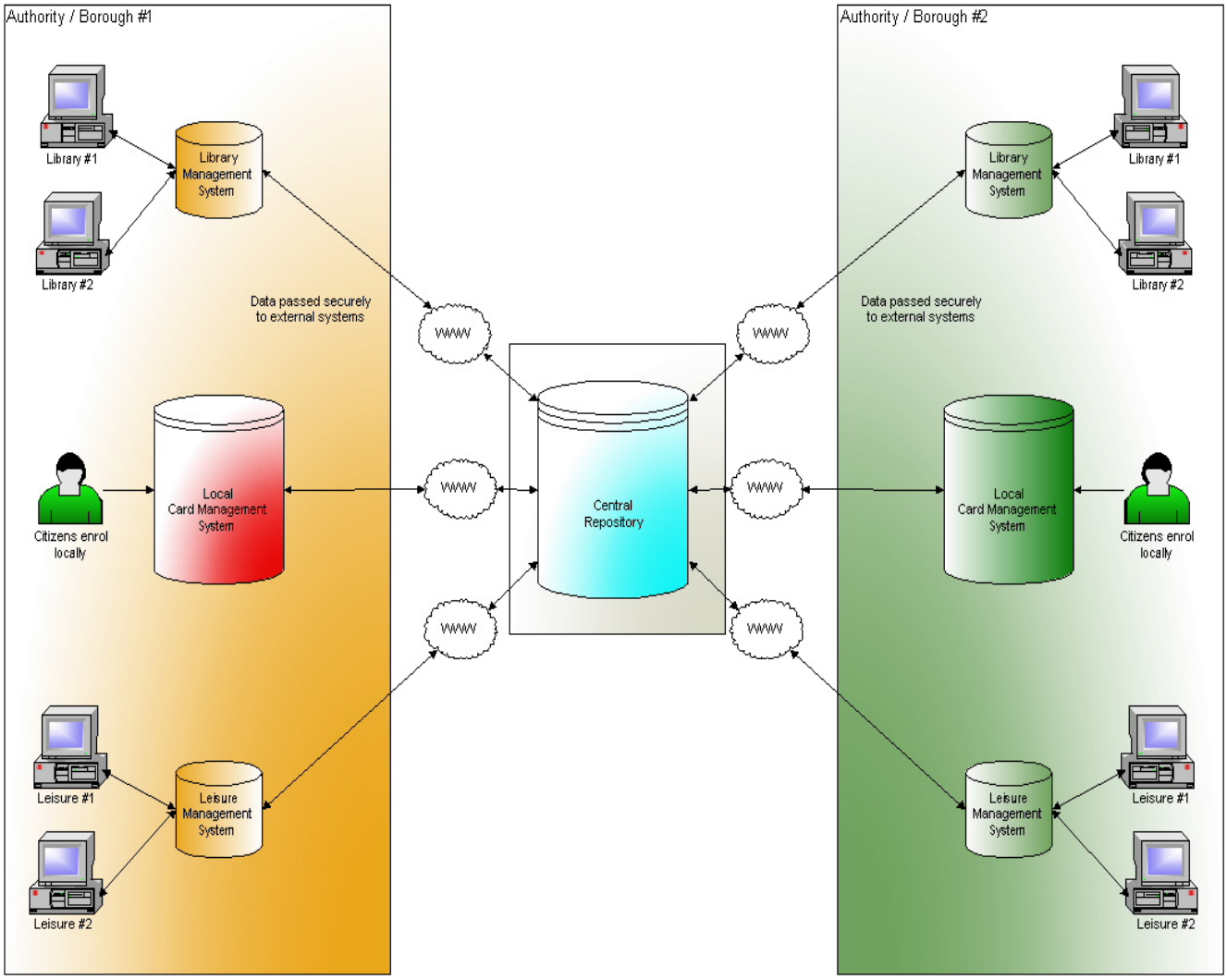
One of the first tasks was to consider the method of communication between different systems. “Web-services” were selected as the technical solution because they provide a proven real-time secure data transfer which is required for communication between diverse borough systems. Both CMS suppliers represented in the team had positive experience implementing web-services. In addition, Local Authorities are already adopting web services for other services and are expected to use them more widely in the future. It was also anticipated that web services could be used with either a CRM or CMS as the primary repository in the borough.

The next task considered was the basic architecture and hierarchy of systems. The team considered a messaging based solution, bi-lateral links between systems and a Central Repository (CR). A messaging based solution would make each function dependent on the availability and response time of systems specified and implemented by other councils, which might prove inconsistent and unreliable. Bi-lateral links were quickly dismissed as infeasible for more than 5 councils with 2 or more services (i.e. at least 50 links would be required). It was decided that a Central Repository offered the most practical and feasible solution as each service would only require one logical link to the CR. The CR solution was found to minimise potential performance and dependency issues as well as being realistic to design and build.

## *5.1. Basic Design*

The system is built around a Central Repository (CR). This CR is essentially a database for storing cardholder details. It is connected to disparate Card Management Systems (CMS) via web-services. There is no prescription on the nature or functionality of these local CMS’s beyond their ability to communicate with the CR via web-services.

Similarly there may be many and various library and leisure systems in use in the boroughs. Once again the only requirement on these systems is to implement the set of web-services which allow communication with the CR.




## *5.2. Web Services*

A Web Service is defined by the W3C as "a software system designed to support interoperable Machine to Machine interaction over a network". Web Services are frequently just Web APIs that can be accessed over a network, such as the Internet, and executed on a remote system hosting the requested services.

The W3C Web Service definition encompasses many different systems but, in common usage, the term refers to clients and servers that communicate using XML messages that follow the SOAP standard. Common in both the field and the terminology is the assumption that there is also a machine readable description of the operations supported by the server written in the Web Services Description Language (WSDL).

The initial Web Service methods are summarised in this section and are finalised subject to detailed design.

### *5.3. Messages*

## Local CMS (or CRM) to CR Web Services

| | |
|---|---|
| **Service** | Add_Record |
| **Overview** | This service will be invoked by a local CMS to add a new record to the CR. A full record must be sent with this message. |
| **Parameters** | XML (Message 1 ) |
| **Response** | CR XML (Message 101) |
| **Function** | 4 |

| | |
|---|---|
| **Service** | Update_Record |
| **Overview** | This service will be invoked by a local CMS to update a record in the CR. Any omitted fields will not be updated. |
| **Parameters** | XML (Message 2 ) |
| **Response** | CR XML (Message 101) |
| **Function** | 5 |

| | |
|---|---|
| **Service** | Delete_Record |
| **Overview** | This service will indicate that, for whatever reason, the citizen is being removed from the Central repository. The relevant record will be logically, not physically, deleted. |
| **Parameters** | XML (Message 3) |
| **Response** | CR XML (Message 101) |
| **Function** | 9 |

| | |
|---|---|
| **Service** | Hotlist_Card |
| **Overview** | If a card is marked as lost or stolen, this service will be invoked. The card will be marked as hotlisted within the Central Repository so that the information can be disseminated to all other systems. |
| **Parameters** | XML( Message 4) |
| **Response** | CR XML (Message 101) |
| **Function** | 6 |

| | |
|---|---|
| **Service** | UnHotlist_Card |
| **Overview** | This service will be invoked to alert the Central Repository that a card marked as lost or stolen has been recovered. The Central Repository would then remove the hotlist indication from the card record. |
| **Parameters** | XML (Message 5) |
| **Response** | CR XML (Message 101) |
| **Function** | 7 |

| | |
|---|---|
| **Service** | Re-Issue_Card |
| **Overview** | This message is sent from the CMS to inform the CR that a card has been re-issued. The CR will delete the old record if this has not already been done. |
| **Parameters** | XML (Message 7) |
| **Response** | CR XML (Message 102) |
| **Function** | 10 |

| | |
|---|---|
| **Service** | Get_Card_Details |
| **Overview** | This message is sent from the CMS to download the contents of a card record. |
| **Parameters** | XML ( Message 8) |
| **Response** | CR XML (Message 103) |
| **Function** | 8 |

## Local Service Point to CR Web Services

| | |
|---|---|
| **Service** | Return_Card_Status |
| **Overview** | This message is sent from a trusted service point to the CR to request the data on a card. |
| **Parameters** | XML ( Message 9) |
| **Response** | XML (Message 104) |

| | |
|---|---|
| **Function** | 3 |

| | |
|---|---|
| **Service** | Invoke_Service |
| **Overview** | This message is sent from a trusted service point to the CR to register a cardholder's entitlement to a global service. |
| **Parameters** | XML (Message 10) |
| **Response** | CR XML (Message 101) |
| **Function** | 1 |

| | |
|---|---|
| **Service** | Revoke_Service |
| **Overview** | This service is invoked from a trusted service point to inform the Central repository that the entitlement to a particular global service for a cardholder has been revoked. |
| **Parameters** | XML (Message 6) |
| **Response** | CR XML (Message 101) |
| **Function** | 2 |

The XML Schema is attached in Appendix B.

## *5.4. XML Security*

The use of Windows Service Extensions is recommended. These specifications (such as WS-Security) cover message confidentiality and integrity (i.e. encryption and digital signing). The exact versions of these specifications to use have yet to be confirmed, but it is likely that those which correspond with Microsoft WSE 2.0 are the most appropriate. Whilst it would be possible to defer this to the transport level alone using HTTPS or a VPN, it is felt that doing this at the message level will give the most flexibility going forward.

Details regarding the encryption method itself (e.g. symmetric or asymmetric), along with authentication requirements, would be confirmed in the detailed design of the CR.

## *5.5. Central Repository*

The Central Repository consists of a server and database with a web-service interface. Processes within the CR are instigated by the web-service messages received. Messages can be received from either a CMS (or CRM) or any number of card service points.

| Message | Origin | Central Repository Operation |
|---|---|---|
| New Card Issued | CMS | New card record created within the CR |
| Card Re-issued | CMS | Creation of a new record and deletion of old record |
| Cardholder Details Updated | CMS | Details of a cardholder changed within a card record |
| Card Record Deleted | CMS | Card record labelled as deleted in CR |
| Card Hotlisted | CMS | Card labelled as hotlisted in CR card record |
| Card Unhotlisted by CMS | CMS | Card hotlisting removed in CR card record |
| CMS requests card record | CMS | Card record details sent to local CMS |
| Card read by terminal | Service Point | Full status of card returned from CR card record |
| Service Revoked | Service Point | Entitlement to global service removed within CR card record |
| Service Invoked | Service Point | Entitlement to global service added within CR card record |

## Card Record within the Central Repository

The data items shown below indicate what is likely to be required, but the final contents and format will depend entirely upon agreed processes and DPA requirements.

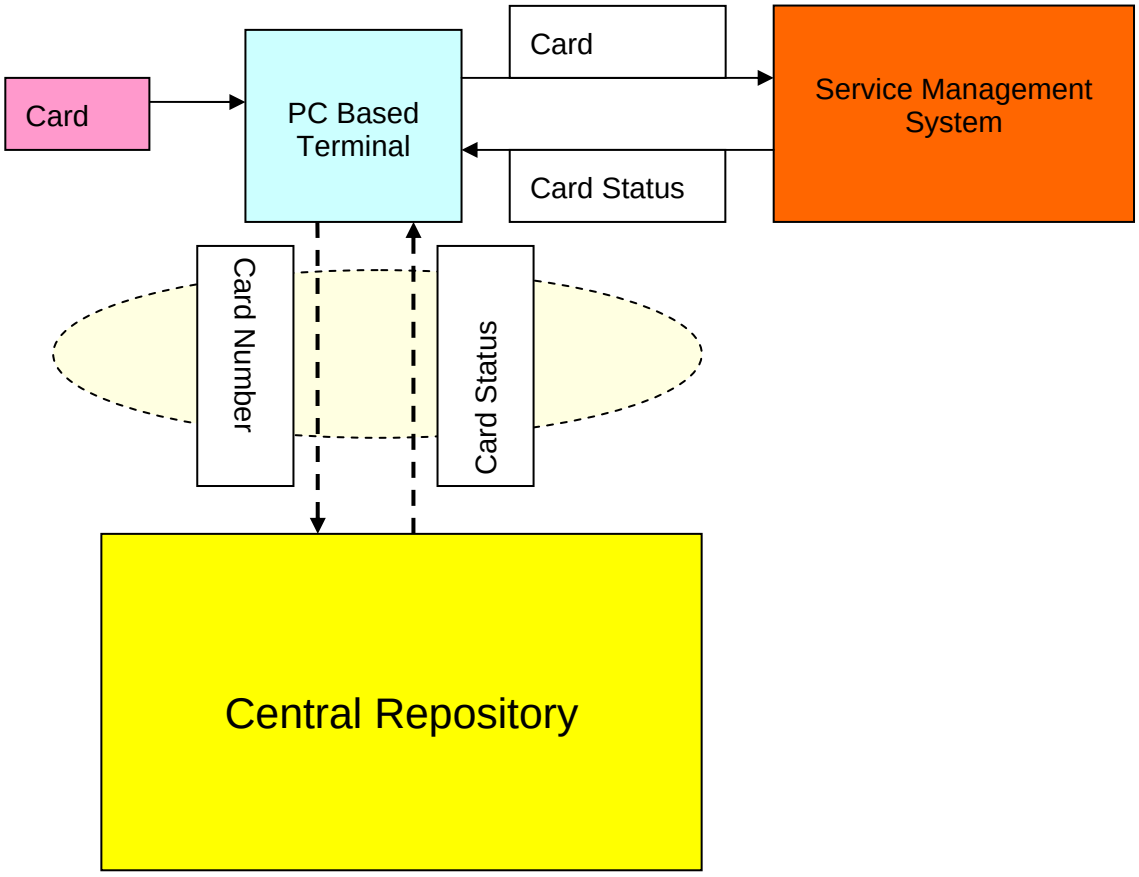
| Category | Field | Description | Format |
|---|---|---|---|
| | | | |
| Card ID | Card Number | The unique card identifier | APACS/LSEG |
| Personal ID | Name | The name as printed on the card | E-GIF |
| | Title | Cardholder's title | E-GIF |
| | Forename | Cardholder's first name | E-GIF |
| | Surname | Cardholder's surname | E-GIF |
| | Initials | Cardholder's initials | E-GIF |
| Address | Sub-dwelling | Flat etc | E-GIF/ BS 7666 |
| | House Name/Number | House Identifier | E-GIF/ BS 7666 |

| | | | |
|---|---|---|---|
| | Street | Street Identifier | E-GIF/ BS 7666 |
| | Town | Town | E-GIF/ BS 7666 |
| | Post Code | Postcode | E-GIF/ BS 7666 |
| Services | Library | Library Entitlement | Boolean |
| | Leisure | Leisure Entitlement | Boolean |
| | E-purse | E-Money Entitlement | Boolean |
| | *Other services* | *Service Entitlement* | *Boolean* |
| CR ID | Account Number | A unique ID assigned by the CR | Undefined |
| Card Status | Card Hotlisted | Hotlist Indicator | Boolean |
| Origin | Card Issuing Authority | Entity that issued the card. Local authority or other organisation | Derived from Card Number. |
| Date Information | Date Created | Date when the record was first created | E-GIF |
| | Last Edit Date | Date when the record was last modified | E-GIF |
| Status | Status of the Record | Indicates if record is active or deleted | Boolean |

### *Terminal Functionality*

The requirement to avoid disruption of existing services and systems can be met by providing a single software module that performs two roles. Firstly, the card number is read and placed in the keyboard buffer where it can be accessed by the legacy system. Normal lookup within this system can then take place. Secondly, a web-service is invoked which sends the card number to the CR. The data relating to the card number held within the CR is returned.

| Web Service | Description |
|---|---|
| | |
| Get Cardholder status | Invoke a method in the CR to download latest cardholder details |
| Invoke New Service | Invoke a method in the CR to provide global entitlement to a service |
| Revoke Service | Invoke a method in the CR to remove global entitlement to a service |




On presentation of a card at a service terminal several actions can result:

1. If the card number is recognised within the local management system, then normal operation ensues.
2. If the card number is not recognised by the local system, but the account number within the CR record is known, then the card has been re-issued and the local record must be updated
3. If neither the card number nor the account number is recognised, then a new record can be created within the local management system.

## *5.6. CMS/CRM Functionality*

Every CMS/CRM connected to the CR would need to implement the range of web-services required.

| Web Service | Description |
|---|---|
| Add Record | Invoke a method in the CR to create a new card record |
| Delete Record | Invoke a method in the CR to delete a card record |
| Update Record | Invoke a method in the CR to update a card record |
| Reissue Card | Invoke a method in the CR to create a new card record and delete an old one |
| Hotlist Card | Invoke a method in the CR to hotlist a card |
| Unhotlist Card | Invoke a method in the CR to unhotlist a card |
| Get Card Details | Invoke a method in the CR to download a specific card record |

There is no prescription as to the functionality of the CMS as long as it can support the services required.

## *5.7. Data Flows*

Detailed data flows are included at Appendix C.

# 6 Business Impacts

## *6.1. Process Re-engineering*

This section describes the key areas where potential operational changes should be made to ensure that process efficiencies and benefits are realised over the long term. It is not intended as a definitive list of every process and will require some analysis pre and post implementation. It focuses on library and leisure, as these are the two most prevalent services. However, it is important to highlight that the Web Services solution can be used for other services.

### 6.1.1. Libraries

Whilst the concept of a library service is simple, delivering it is complex and when this moves to the next level of providing a multi-borough, multi-agency library service, the complexity increases. While we have described how to handle membership technically, it is the day to day operation that can be the most challenging (e.g. book returns, library membership, renewals etc). This can be addressed in the RULES which are covered in the Operational Impacts section (below).

In terms of re-engineering processes, it is best to follow the life cycle of a membership:

**Registration**

- the process remains the same - however, the agreement/contract will be different and if a library does not currently have any type of formal agreement/contract, then this will be the first change.
- a process will be required for non residents that wish to join a scheme and consideration given to those whose local boroughs are not party to the scheme.
- when a citizen attempts to join the scheme and is already a member from another borough, but without a library service enabled.

**Services**

- when “global” library members request a service, the library providing the service will need to consider recording the location and repatriation of the loaned/hired items.

The above is not an exhaustive list, but gives examples of the areas where re-engineering of processes may be required. During the research for this document very few significant process changes have been identified, which reinforces the benefits of web services.

### 6.1.2. Leisure

Leisure service providers would experience much the same impacts as libraries, but with that added complexity that they are often semi-commercial organisations and any process changes would require sanction at a higher management level than perhaps libraries would. Also, there is likely to be greater scrutiny with regards to cost efficiency and Return on Investment. That is not to say that libraries would not want efficient processes, but there will be less focus on the cashable benefits and more focus on social inclusion etc.

**Registration** –

As libraries – plus

- if a cardholder was already a member of leisure service A and then joined leisure service B, wanted to remain a member of both, but wanted to swap the leisure details on the Scheme to the second Leisure service provider (leisure service B) then careful planning of this process will be required to ensure that scheme rules are conformed to.

**Services**

- As libraries

**Promotions**

- Would these be available to all members and, if not, would the rules be scheme wide or for the service provider to decide?

The above is not an exhaustive list but gives a flavour for the areas where potential re-engineering of processes may be required. During the research for this document very few significant process changes have been identified, which reinforces the benefits of web services.

## *6.2. Costs*

This section does not detail any costs, but it does list the areas identified by this research where funding may be required:

- The technical build of the Web Services Solution, including CR database
- Project management for the build and interface of the CMS/CRM to the CR
- Integration of Library and Leisure management systems using this standard method
- Consultancy for the development of Scheme Rules
- Legal fees

## *6.3. Operational Impacts*

During the research for this document, areas of impact on the Service Provider were identified and are listed below.

- Training and awareness of personnel for the new technical approach
- Promotion and public awareness
- Scheme rules
- Scheme governance and rule-making. For example, any area where there are scheme rules required for interoperability of service provision across boroughs (i.e. level of proof of id required for eligibility of service)

The task of building scheme rules is a significant one, and one which is outside the scope of this technical document, but it would be impossible to operate a successful multi-borough service without them. Scheme rules are important in many respects. They form the basis for the agreement or contract that the service providers within the scheme have with the citizen. They may be difficult to agree as they will cover entitlement, proof of identification etc, which may differ from one authority to another, although the benefits of harmonising to a single set of scheme and/or service rules are significant. Rules also provide: clarity of service for the citizen; simple implementation of technology; ease with which new boroughs can join the scheme; and easy to manage business processes.

Analysis of a sample set of scheme rules is demonstrated in the following table:

| no | Rule Area | Sub Heading | Rule | Rule Example | Comments |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 1.1 | Charging Policies | Charges leveled to users for issue of card | *The cardholder may be charged £xx.xx for card issue* | *"The policy of charging for the card itself, irrespective of the applications placed on the card" On issue of the card the cardholder may be charged £xx.xx. The e-purse application on the card will carry a debit balance £xx.xx when the card is issued. A flexible direct debit mandate may be completed or the cardholder may be asked to provide cash or a guaranteed cheque.* | The policy of charging for the card itself, irrespective of the applications placed on the card. This is very much a matter of policy and may be controversial - especially on social inclusion grounds. It may be introduced as a flat one-off admin fee or as a form of refundable "deposit" as is done in Hong Kong with the Octopus card. |
| 1.4 | Charging Policies | Charges leveled to users for upgrading card (where available) | *The cardholder may be charged £xx.xx for upgrading from card product "X" to card product "Y"* | *"This may include a migration from a minimum functionality card with the core CCN applications to a more sophisticated card which may be capable of higher levels of functionality / security etc." On issue of the new upgraded card the cardholder may be charged £xx.xx. The e-purse application on the card will carry a debit balance £xx.xx when the card is issued. A flexible direct debit mandate may be completed or the cardholder may be asked to provide cash or a guaranteed cheque.* | This may include a migration from a minimum functionality card with the core CCN applications to a more sophisticated card which may be capable of higher levels of functionality / security etc. This is purely for cases where the cardholder requests the upgrade. |
| 2.11 | Central Application Business Rules | Refunds | *The cardholder will be refunded any charge levied if the charge is deemed unfair or as a gesture of good will* | *"Scenarios in which a user may receive a refund on purchases and mechanisms by which this may be done" If, within the original Terms & Conditions agreed with the Service Provider, the cardholder has successfully challenged the appropriateness of the charge levied or has cancelled a service/membership, the e-purse application on the card may be credited with a full or partial refund of the the original charge.* | Scenarios in which a user may receive a refund on purchases and mechanisms by which this may be done. |
| 3.11 | Card Management | Locations entitled to collect cardholder information | | *All participating Service Providers or other participating establishments, such as a Post Office will be authorised to collect cardholder information.* | This is a rule that the Card Community must decide for itself - based on its own requirements. It should look to the "T" scheme for initial guidance as well as deciding whether to impose a generic requirement or allow the rules used by one application service provider area (e.g. libraries) to be used. For, example, all applications for a "Citizens Account" can be made at all participating Service Providers or other participating establishments such as a Post Office. |
| 3.3 | Card Management | Card reissue | *The Scheme Operator may replace to the cardholder any damaged card* | *If a card is damaged the Scheme Operator must decide using previously agreed parameters, output from any testing and analysis conducted and good judgement if the damaged card should be replaced or not. Continual offenders and deliberate damage may need to be addressed.* | The Card Community to decide on statistics to accumulate and rules for card replacement (for example after 10 temporary failures). In essence, all the Card Community can do is set a rule for replacement criteria, the rest is implementation dependent. |

| | | | | | |
|---|---|---|---|---|---|
| 4.3 | Scheme Management | Service Provider – Scheme Operator dispute resolution mechanisms | | *A Service Provider may dispute an item allegedly to have taken place through their establishment and the Scheme Operator must follow up that dispute until resolution following the process agreed within the Card Community.* | This is a rule that the Card Community must decide for itself - based on its own requirements. For example, the Service Provider must be able to dispute a transaction with the Scheme Operator that is alleged to have taken place through establishment or not as the case may be. |
| 7.5 | Application Management | Application shortly to expire | *Applications shortly to expire and do not revalidate automatically will require manual handling* | *The Service Provider may authorise revalidation on the cardholder's behalf or the cardholder may require some form of contact, i.e. for a Fee payable application where payment for re-validation has not yet been received or Cashless catering for the final year of schooling it may be required to establish if the Pupil is continuing to 6th Form College.* | The operational cost of manually contacting may support the requirement for electronic reminders to be displayed at POS or even text messages for some cardholders may be appropriate. |
| | Branding | Use of CCN Logos and Brand | | | This is a rule that the Card Community must decide for itself - based on its own requirements. |

# 7 Benefits

This section identifies the areas where potential Cost Savings and Efficiency Gains can be made by using a Web Service to connect to several CMS, as opposed to individually interfacing to each CMS directly. The Business Case Report (Reference 01) identified the following benefits arising from the introduction of a resident card

| Cashable Benefits | Non-cashable Benefits | Other Benefits |
|---|---|---|
| Increased use of services | Staff time savings | Social inclusion |
| Efficient linkage between boroughs | Reduced transaction costs | Borough brand/image |
| Economies of scale | More efficient management | Better management information |
| Reduction of fraud | | Meeting performance objectives |
| Cost of receiving cash | | Cross-boundary services |
| Improved debt collection | | Milestone towards Olympic card |
| Less existing cards issued | | Strengthen relationship with residents |
| Sponsorship/advertising | | |

The implementation of standard web-services will unlock a number of cost savings and efficiency gains which are described in the following sections. Implementation of the CR will significantly improve the business case for each successive borough rolling out a resident card.

## *7.1. Cost Savings*

The cost savings are expected to arise in the following areas:

- CR & web-services approach will prove more cost effective than multiple bi-lateral links
- Reduction in the number of cards issued and maintained for use of services
- Increased likelihood of securing sponsorship and advertising
- Makes it more cost effective to add other applications (i.e. less cards to support)
- Increase use of service resulting in increased revenues

## *7.2. Efficiency Gains*

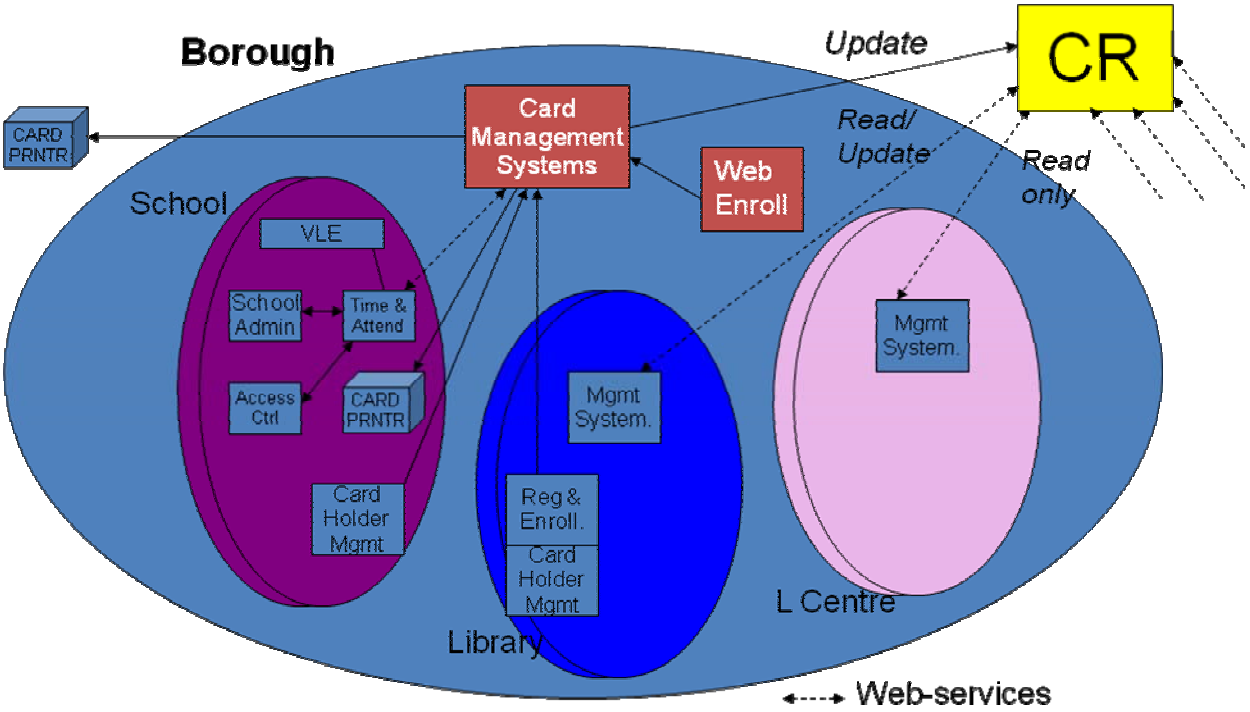
Efficiency gains are expected to be realised in the following areas:

- Economies of scale in issuing cards and managing service entitlements
- Potential to extend card issuing to schools and other community groups
- Reduction in the effort required to action a change of circumstances
- Easier access to a wider range of services
- Residents use services most convenient to their regular travel around London
- Card details more likely to be up to date making customer support easier
- Lost and stolen cards less likely to be used successfully

# 8 Next Steps

## 8.1. Local Authorities

The draft of this document has been presented to the YLCEG for review. It is recommended that the CR approach and web-services are adopted for any resident card scheme. London Boroughs should reference this document in their specification to suppliers. The following diagram shows how a borough might implement this approach.




London Boroughs are likely to utilise the LPSN for the communication links between service providers, boroughs and the CR.

Each Local Authority will need to consider its plans in the context of a future Pan-London card scheme and the plans of neighbouring boroughs. Early adopters will be able to implement the web-services in their local scheme and migrate to the Central Repository architecture when a service becomes available. A number of councils are already considering how to take advantage of this standardised approach.

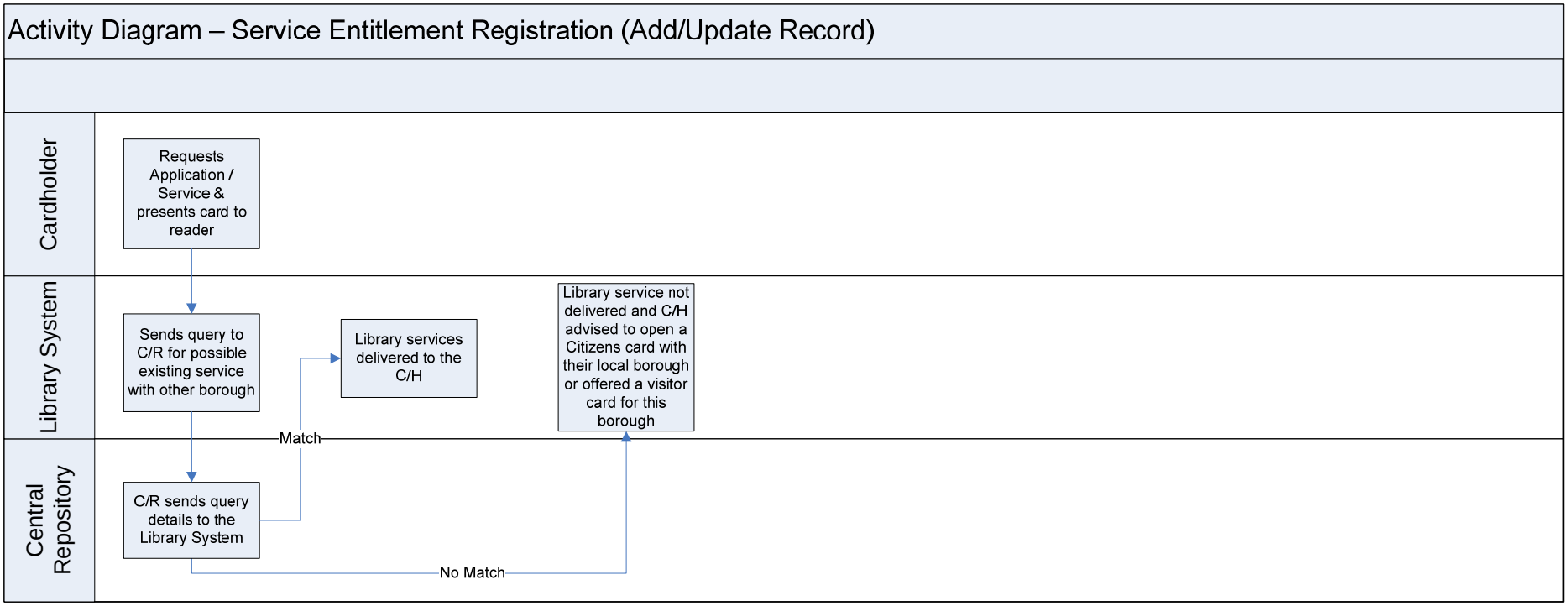
This document is to be submitted to LASSeO for comment and acceptance on 30th April 2008.

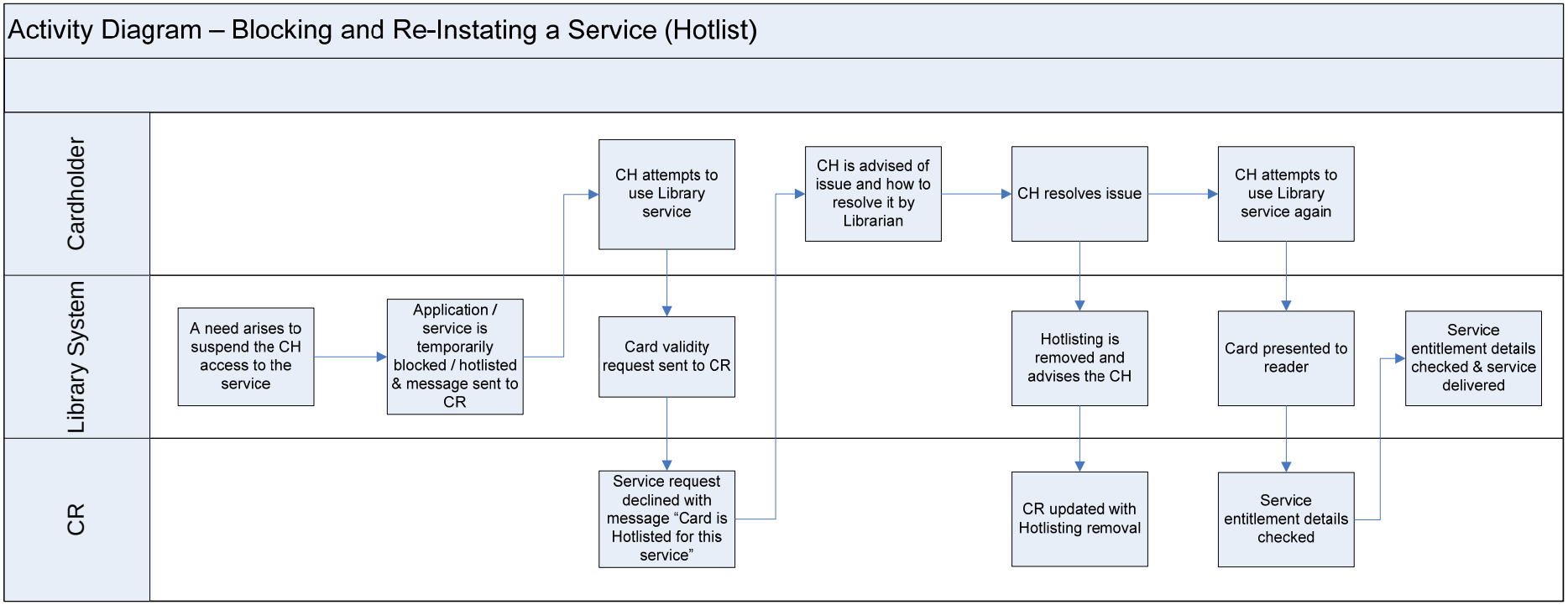
## 8.2. Suppliers

Key suppliers have been given a limited time to review and comment on this document. There were not any fundamental causes for objection as it will help them reach a wider market and demonstrate their commitment to help authorities implement more effective resident card schemes.

# Appendix A - Process Diagrams

These are example process diagrams based on the technical design. (Subject to revision)




Activity Diagram – Blocking and Re-Instating a Service (Hotlist)
Cardholder
Library System
CR
A need arises to suspend the CH access to the service
Application / service is temporarily blocked / hotlisted & message sent to CR
CH attempts to use Library service
Card validity request sent to CR
Service request declined with message "Card is Hotlisted for this service"
CH is advised of issue and how to resolve it by Librarian
CH resolves issue
Hotlisting is removed and advises the CH
CR updated with Hotlisting removal
CH attempts to use Library service again
Card presented to reader
Service entitlement details checked
Service entitlement details checked & service delivered

# Appendix B - XML Schema

The chosen method of integration is based on xml web services (SOAP). This is a commonly used mechanism which is reasonably mature, well standardised and documented and allows for a variety of platforms to interoperate.

The data contents of the XML scripts shown below are intended purely as examples.

## New_Card_Record – Message Id 1

```
<CR Message>
        <Message ID>1</Message ID>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
        <Cardholder ID>
                <Title>Mr<Title>
                <Name>John Smith</Name>
                <FirstName>John</FirstName>
                <Initials>P</Initials>
                <Surname>Smith</Surname>
        </Cardholder ID>
        <Address>
                <SubDwelling>Flat 7</SubDwelling>
                <House Name/Number>Fantasy House<House Name/Number>
                <Street>Southwark Street<Street>
                <Postcode>SE1 5HY</Postcode>
        </Address>
        <Services>
                <Library>True</Library>
                <Leisure>True</Leisure>
                <E-purse>False</E-purse>
        </Services>
</CR Message>
```

**Message 1 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
                <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
          <Ack>Record Added</Ack>
```

```
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## Updated_Card_Record – Message Id 2

```
<CR Message>
        <Message ID>2</Message ID>
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
        <Cardholder ID>
            <Title>Mr<Title>
            <Name>John Smith</Name>
            <FirstName>John</FirstName>
            <Initials>P</Initials>
            <Surname>Smith</Surname>
        </Cardholder ID>
        <Address>
            <SubDwelling>Flat 9</SubDwelling>
            <House Name/Number>Fantasy House<House Name/Number>
            <Street>Southwark Street<Street>
            <Postcode>SE1 5HY</Postcode>
        </Address>
        <Services>
            <Library>True</Library>
            <Leisure>True</Leisure>
            <E-purse>False</E-purse>
        </Services>
</CR Message>
```

**Message 2 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
            <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
            <Ack>Record Updated</Ack>
        <Card Number>
```

```
            <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## Delete_Card_Record – Message Id 3

```
<CR Message>
        <Message ID>3</Message ID>
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
</CR Message>
```

**Message 3 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
            <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
            <Ack>Record Deleted</Ack>
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## Hotlist_Card – Message Id 4

```
<CR Message>
        <Message ID>4</Message ID>
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
</CR Message>
```

**Message 4 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
                <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
                <Ack>Card Hotlisted</Ack>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## UnHotlist_Card – Message Id 5

```
<CR Message>
        <Message ID>5</Message ID>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
</CR Message>
```

**Message 5 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
                <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
                <Ack>Card Unhotlisted</Ack>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## Revoke_Service – Message Id 6

```
<CR Message>
        <Message ID>6</Message ID>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
          <Services>
```

```
                <Library>False</ Library>
            </Services>
</CR Message>
```

**Message 6 Response**

```
<CR Response>
        <Message ID>101</Message ID>
        <STATUS success="true">
                <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
                <Ack>Service Revoked</Ack>
        <Card Number>
                <CardID>6337680500987675</CardID>
        </Card Number>
        </STATUS>
</CR Response>
```

## Reissue_Card – Message Id 7

```
<CR Message>
        <Message ID>7</Message ID>
        <Card Number>
                <CardID>6337680500987675</CardID>
                <Last Card ID>6337681200987675</Last CardID>
        </Card Number>
        <Cardholder ID>
                <Title>Mr<Title>
                <Name>John Smith</Name>
                <FirstName>John</FirstName>
                <Initials>P</Initials>
                <Surname>Smith</Surname>
        </Cardholder ID>
        <Address>
                <House Name/Number>127<House Name/Number>
                <Street>New Street<Street>
                <Postcode>NW5 4JK</Postcode>
        </Address>
        <Services>
                <Library>True</Library>
                <Leisure>True</Leisure>
                <E-purse>False</E-purse>
        </Services>
```

</CR Message>.

**Message 7 Response**

<CR Response>
<Message ID>102</Message ID>
<STATUS success="true">
<TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
<Ack>Card Reissued</Ack>
<Card Number>
<CardID>6337680500987675</CardID>
<Last Card ID>6337681200987675</Last CardID>
</Card Number>
</STATUS>
</CR Response>

## Get_Card_Details – Message Id 8

<CR Message>
<Message ID>8</Message ID>
<Card Number>
<CardID>6337680500987675</CardID>
</Card Number>
</CR Message>

**Message 8 Response**

<CR Response>
<Message ID>103</Message ID>
<STATUS success="true">
<TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
<Ack>Card Record</Ack>

<Card Number>
<CardID>6337680500987675</CardID>
</Card Number>
<Cardholder ID>
<Title>Mr<Title>
<Name>John Smith</Name>
<FirstName>John</FirstName>
<Initials>P</Initials>
<Surname>Smith</Surname>
</Cardholder ID>

```
        <Address>
            <SubDwelling>Flat 7</SubDwelling>
            <House Name/Number>Fantasy House<House Name/Number>
            <Street>Southwark Street<Street>
            <Postcode>SE1 5HY</Postcode>
        </Address>
        <Services>
            <Library>True</Library>
            <Leisure>True</Leisure>
            <E-purse>False</E-purse>
        </Services>
        <Last Date Edited>20070908</Last Date Edited>
        </Status>
</CR Response>
```

## Return Card Status – Message Id 9

```
<CR Message>
        <Message ID>9</Message ID>
        <Card Number>
            <CardID>6337680500987675</CardID>
        </Card Number>
</CR Message>
```

**Message 9 Response**

```
<CR Response>
        <Message ID>104</Message ID>
        <STATUS success="true">
            <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
            <Ack>Card Status</Ack>
        <Card Number>
            <CardID>6337680500987675</CardID>
            <Last Card ID>6337681200987675</Last CardID>
        </Card Number>
        <Cardholder ID>
            <Title>Mr<Title>
            <Name>John Smith</Name>
            <FirstName>John</FirstName>
            <Initials>P</Initials>
            <Surname>Smith</Surname>
        </Cardholder ID>
        <Address>
```

<SubDwelling>Flat 7</SubDwelling>
<House Name/Number>Fantasy House<House Name/Number>
<Street>Southwark Street<Street>
<Postcode>SE1 5HY</Postcode>
</Address>
<Services>
<Library>True</Library>
<Leisure>True</Leisure>
<E-purse>False</E-purse>
</Services>
<Last Edit Date>20071019</Last Edit Date>
</CR Response>

## Invoke Service – Message Id 10

<CR Message>
<Message ID>10</Message ID>
<Card Number>
<CardID>6337680500987675</CardID>
</Card Number>
<Services>
<Library>True</Library>
</Services>
</CR Message>

**Message 10 Response**

<CR Response>
<Message ID>101</Message ID>
<STATUS success="true">
<TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
<Ack>Service Invoked</Ack>
<Card Number>
<CardID>6337680500987675</CardID>
</Card Number>
</STATUS>
</CR Response>

## Error Messages

<CR Response>

```
<Message ID>199</Message ID>
<STATUS success="false">
        <TIMESTAMP>09/14/2004 00:00:00</TIMESTAMP>
        <Ack>Reason for Failure</Ack>
</STATUS>
</CR Response>
```

# Appendix C – Data Flows

## Add Record

**Data In:** **XML 1**

**Data Out:** **XML 101**

For the record with the Card Number specified in XML 1

| Field in Record | Action |
|---|---|
| | |
| Card Number | Populated from XML 1<br>Returned in XML 101 |
| Name | Populated from XML 1 |
| Title | Populated from XML 1 |
| Forename | Populated from XML 1 |
| Surname | Populated from XML 1 |
| Initials | Populated from XML 1 |
| Sub-dwelling | Populated from XML 1 |
| House Name/Number | Populated from XML 1 |
| Street | Populated from XML 1 |
| Town | Populated from XML 1 |
| PostCode | Populated from XML 1 |
| Library | Item Initialised to FALSE by CR |
| Leisure | Item Initialised to FALSE by CR |
| E-purse | Item Initialised to FALSE by CR |
| *Other services* | Items Initialised to FALSE by CR |
| Card Hotlisted | Item Initialised to FALSE by CR |
| Account Number | Generated by the CR |
| Time/Date Created | Generated by the CR<br>Returned in XML 101 |
| Last Edit Time/Date | Item Initialised to NULL |
| Record Deleted | Item Initialised to False by CR |

## Update Record

**Data In:** **XML 2**

**Data Out:** **XML 101**

For the record with the Card Number specified in XML 2

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | Populated from XML 2 if present |
| Title | Populated from XML 2 if present |
| Forename | Populated from XML 2 if present |
| Surname | Populated from XML 2 if present |
| Initials | Populated from XML 2 if present |
| Sub-dwelling | Populated from XML 2 if present |
| House Name/Number | Populated from XML 2 if present |
| Street | Populated from XML 2 if present |
| Town | Populated from XML 2 if present |
| PostCode | Populated from XML 2 if present |
| Library | No Change |
| Leisure | No Change |
| E-purse | No Change |
| *Other services* | No Change |
| Card Hotlisted | Populated from XML 2 if present |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Generated by the CR<br>Returned in XML 101 |
| Record Deleted | No Change |

## Delete Record

**Data In: XML 3**

**Data Out: XML 101**

For the record with the Card Number specified in XML 3

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | No Change |
| Title | No Change |
| Forename | No Change |
| Surname | No Change |
| Initials | No Change |
| Sub-dwelling | No Change |
| House Name/Number | No Change |
| Street | No Change |
| Town | No Change |
| PostCode | No Change |
| Library | No Change |
| Leisure | No Change |
| E-purse | No Change |
| *Other services* | No Change |
| Card Hotlisted | No Change |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Time/Date inserted by CR<br>Returned in XML 101 |
| Record Deleted | Value set to TRUE by CR |

## Hotlist Card

**Data In:** **XML 4**

**Data Out:** **XML 101**

For the record with the Card Number specified in XML 4

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | No Change |
| Title | No Change |
| Forename | No Change |
| Surname | No Change |
| Initials | No Change |
| Sub-dwelling | No Change |
| House Name/Number | No Change |
| Street | No Change |
| Town | No Change |
| PostCode | No Change |
| Library | No Change |
| Leisure | No Change |
| E-purse | No Change |
| *Other services* | No Change |
| Card Hotlisted | Value set to TRUE by CR |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Time/Date inserted by CR<br>Returned in XML 101 |
| Record Deleted | No Change |

## UnHotlist Card

**Data In: XML 5**

**Data Out: XML 101**

For the record with the Card Number specified in XML 5

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | No Change |
| Title | No Change |
| Forename | No Change |
| Surname | No Change |
| Initials | No Change |
| Sub-dwelling | No Change |
| House Name/Number | No Change |
| Street | No Change |
| Town | No Change |
| PostCode | No Change |
| Library | No Change |
| Leisure | No Change |
| E-purse | No Change |
| *Other services* | No Change |
| Card Hotlisted | Value set to FALSE by CR |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Time/Date inserted by CR<br>Returned in XML 101 |
| Record Deleted | No Change |

## Revoke Service

**Data In:** **XML 6**

**Data Out:** **XML 101**

For the record with the Card Number specified in XML 6

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | No Change |
| Title | No Change |
| Forename | No Change |
| Surname | No Change |
| Initials | No Change |
| Sub-dwelling | No Change |
| House Name/Number | No Change |
| Street | No Change |
| Town | No Change |
| PostCode | No Change |
| Library | Service if specified in XML 6 set to FALSE |
| Leisure | Service if specified in XML 6 set to FALSE |
| E-purse | Service if specified in XML 6 set to FALSE |
| *Other services* | Service if specified in XML 6 set to FALSE |
| Card Hotlisted | No Change |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Date inserted by CR<br>Returned in XML 101 |
| Record Deleted | No Change |

## Re-Issue Card

**Data In: XML 7**

**Data Out: XML 102**

Old and New Record specified in XML 7

| New Record | Action | Old Record | Action |
|---|---|---|---|
| | | | |
| Card Number | Populated from XML 7<br>Returned in XML 102 | Card Number | No Change<br>Returned in XML 102 |
| Name | Populated from XML 7 else inherited from Old record | Name | No Change |
| Title | Populated from XML 7 else inherited from Old record | Title | No Change |
| Forename | Populated from XML 7 else inherited from Old record | Forename | No Change |
| Surname | Populated from XML 7 else inherited from Old record | Surname | No Change |
| Initials | Populated from XML 7 else inherited from Old record | Initials | No Change |
| Sub-dwelling | Populated from XML 7 else inherited from Old record | Sub-dwelling | No Change |
| House Name/Number | Populated from XML 7 else inherited from Old record | House Name/Number | No Change |
| Street | Populated from XML 7 else inherited from Old record | Street | No Change |
| Town | Populated from XML 7 else inherited from Old record | Town | No Change |
| PostCode | Populated from XML 7 else inherited from Old record | PostCode | No Change |

| | | | |
|---|---|---|---|
| Library | Value inherited from Old Record | Library | No Change |
| Leisure | Value inherited from Old Record | Leisure | No Change |
| E-purse | Value inherited from Old Record | E-purse | No Change |
| *Other services* | Value inherited from Old Record | *Other services* | No Change |
| Card Hotlisted | Value set to FALSE | Card Hotlisted | No Change |
| Account Number | Created by CR | Account Number | No Change |
| Time/Date Created | Time/Date inserted by CR<br>Returned in XML 102 | Time/Date Created | No Change |
| Last Edit Time/Date | Value set to NULL | Last Edit Time/Date | Date inserted by CR<br>Returned in XML 102 |
| Record Deleted | Value set to FALSE by CR | Record Deleted | Value set to TRUE by CR |

## Get Card  Details

**Data In:  XML 8**

**Data Out:  XML 103**

Return the card record specified in XML 8.

| Field in Record | Action |
|---|---|
| | |
| Card  Number | Returned in XML 103 |
| Name | Returned in XML 103 |
| Title | Returned in XML 103 |
| Forename | Returned in XML 103 |
| Surname | Returned in XML 103 |
| Initials | Returned in XML 103 |
| Sub-dwelling | Returned in XML 103 |
| House Name/Number | Returned in XML 103 |
| Street | Returned in XML 103 |
| Town | Returned in XML 103 |
| PostCode | Returned in XML 103 |
| Library | Returned in XML 103 |
| Leisure | Returned in XML 103 |
| E-purse | Returned in XML 103 |
| *Other services* | Returned in XML 103 |
| Card Hotlisted | Returned in XML 103 |
| Account Number | |
| Time/Date Created | Returned in XML 103 |
| Last Edit Time/Date | Returned in XML 103 |
| Record Deleted | Returned in XML 103 |

## Return Card Status

**Data In: XML 9**

**Data Out: XML 104**

For the card record specified in XML 9

| Field in Record | Action |
|---|---|
| | |
| Card Number | Returned in XML 104 |
| Name | Returned in XML 104 |
| Title | Returned in XML 104 |
| Forename | Returned in XML 104 |
| Surname | Returned in XML 104 |
| Initials | Returned in XML 104 |
| Sub-dwelling | Returned in XML 104 |
| House Name/Number | Returned in XML 104 |
| Street | Returned in XML 104 |
| Town | Returned in XML 104 |
| PostCode | Returned in XML 104 |
| Library | Returned in XML 104 |
| Leisure | Returned in XML 104 |
| E-purse | Returned in XML 104 |
| *Other services* | Returned in XML 104 |
| Card Hotlisted | Returned in XML 104 |
| Account Number | Returned in XML 104 |
| Time/Date Created | Returned in XML 104 |
| Last Edit Time/Date | Returned in XML 104 |
| Record Deleted | Returned in XML 104 |

## Invoke Service

**Data In:** **XML 10**

**Data Out:** **XML 101**

For the record with the Card Number specified in XML 10

| Field in Record | Action |
|---|---|
| | |
| Card Number | No Change<br>Returned in XML 101 |
| Name | No Change |
| Title | No Change |
| Forename | No Change |
| Surname | No Change |
| Initials | No Change |
| Sub-dwelling | No Change |
| House Name/Number | No Change |
| Street | No Change |
| Town | No Change |
| PostCode | No Change |
| Library | Service if specified in XML 10 set to TRUE |
| Leisure | Service if specified in XML 10 set to TRUE |
| E-purse | Service if specified in XML 10 set to TRUE |
| *Other services* | Service if specified in XML 10 set to TRUE |
| Card Hotlisted | No Change |
| Account Number | No Change |
| Time/Date Created | No Change |
| Last Edit Time/Date | Time/Date inserted by CR<br>Returned in XML 101 |
| Record Deleted | No Change |

# Appendix D - Glossary

| | |
|---|---|
| Application | A piece of software that performs business functions. It can reside on a smart card |
| APACS | Association for Payment Clearing Services |
| Authentication | A security process that verifies that a person seeking to use an application on a smart card is the person who is entitled to use it for the purpose intended |
| BS | British Standard |
| Card Issuer | A institution that establishes an account for a cardholder and issues a card |
| Cardholder | The citizen to which a card has been issued |
| CMS | Card Management System |
| CMS “Home” | The CMS that issued the card being used in the transaction in question and it therefore the place where the data pertaining to the card is registered and hosted. |
| Contact interface | A means for allowing the exchange of data between a smart card and a reader that requires the card to be in physical contact with the reader |
| Contactless interface | A means for allowing the exchange of data between a smart card and a reader without any physical contact between the card and the reader |
| CR | The Central Repository. The central database advocated in this document to support global services |
| CRM | Customer Relationship Management (System) |
| e-cash | Electronic cash: Cash stored electronically and readily exchanged into monetary value |
| E-GIF | Electronic Government Interoperability Framework. Government standard for the inter-change of electronic data |
| e-mail | Electronic mail |
| e-purse | Electronic purse: A function on a chip card that allows e-cash (q.v.) value to be stored |
| “Global” Services | Services provided in a borough other than the resident’s home borough or by a third party who is “arms length” from the borough council. |
| https | Hypertext Transfer Protocol over Secure Socket Layer. A system to provide authentication and encrypted services on the web |
| IIN | Issuer Identification Number: The numbering system that uniquely identifies a card issuing institution in an international interchange environment, specified in ISO/IEC 7812 |
| Internet | A global collection of interconnected networks, used for the purpose of electronic communication |
| Interoperability | The ability for different systems to work together |

| | |
|---|---|
| Intranet | A private network |
| IP | Internet protocol: Specifies the format of packets, also called datagrams, and the addressing scheme |
| IT | Information Technology |
| LASSeO | Local Authority Smartcard Standards electronic Organisation. Local authority smartcard organisation |
| Leisure Management System | The software used by the Leisure Centre to manage the services it delivers to citizens |
| Library Management System | The software used by the Library to manage the services it delivers to citizens |
| "Local" Services | Services provided by the borough or organisation working under the council's control |
| Magnetic Stripe Card | A card with a magnetic strip of recording material on which data can be stored |
| MIFARE | A proprietary standard for contactless smart cards by Philips Semiconductors extensively deployed worldwide |
| .NET (Aka .NET Framework) | A software component that can be added to, or is included with, the Microsoft Windows operating system. It provides a large body of pre-coded solutions to common software development requirements, and manages the execution of programs written specifically for the framework |
| Online | Jargon for the process of obtaining information through access via a computer or terminal to the source |
| PDA | Personal Digital Assistant: A handheld device that can combine a mixture of computing, telephone/fax, Internet and networking features |
| PIN | Personal Identification Number |
| PIN Pad | A small keypad on which a cardholder keys in his/her PIN |
| PIN Verification | The security process that confirms the cardholder's PIN |
| POS | Point of Sale |
| Scheme Operator | The individual or organisation responsible for the day to day management of the Smartcard Scheme |
| Service Provider | An organisation that is responsible for delivering a service to the Cardholder |
| Smartcard | A portable programmable device conforming to ISO 7816 dimensions and containing an integrated circuit that stores and processes information |
| Smartcard Scheme | The operational mechanism for delivering services to the cardholder via a smartcard. |
| SNAPI | Special Needs Application Program Interface – is an assistive technology that places user preferences onto a smart card. |
| Stakeholder | An individual or organisation with a commercial or financial interest in the project |

| | |
|---|---|
| VPN | Virtual Private Network |
| Web-services | A software system designed to support interoperable Machine to Machine interaction over a network, such as Web APIs that can be accessed over the Internet |
| XML | Extensible Markup Language used to transport data |
| YLCEG | Your London Card Executive Group |