
Document filename: PDS - Spine Mini Service Client Requirements-v1.0.docx			
Directorate / Programme	HSCIC - Architecture	Project	Interoperability
Document Reference		HSCIC-ITK-ARCH-301	
Project Manager	N/A	Status	Final
Owner	George Hope	Version	1.0
Author	George Hope	Version issue date	23/06/2014

PDS – Spine Mini Service Client Requirements

Document Management

Revision History

Version	Date	Summary of Changes
1.0	23/06/2014	First version issued by HSCIC

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Reference Documents

Ref no	Doc Reference Number	Title	Version
1.			
2.			
3.			

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1 Introduction

Spine Mini Services are a specification to enable suppliers of third party software to provide solutions that provide a greatly simplified interface for accessing a subset of Spine services. The intent is to thus lower the “barrier to entry” to the Spine.

This document forms part of the overall document set for the Interoperability Toolkit (ITK).

1.1 Purpose of Document

This document is a specification for the implementation of services that are expected to be provided by a Spine Mini Service Client. There are also requirements in here for the design and assurance process. The implementation specification provides some requirements for some non functional behaviour of the SMSP as well as some guidance for implementation decisions.

Some of the requirements in this document will be assured using the Common Assurance Process and some will be assured using the ITK Accreditation process.

1.2 ITK Documentation Set

The position of this document in relation to the document set is shown below.

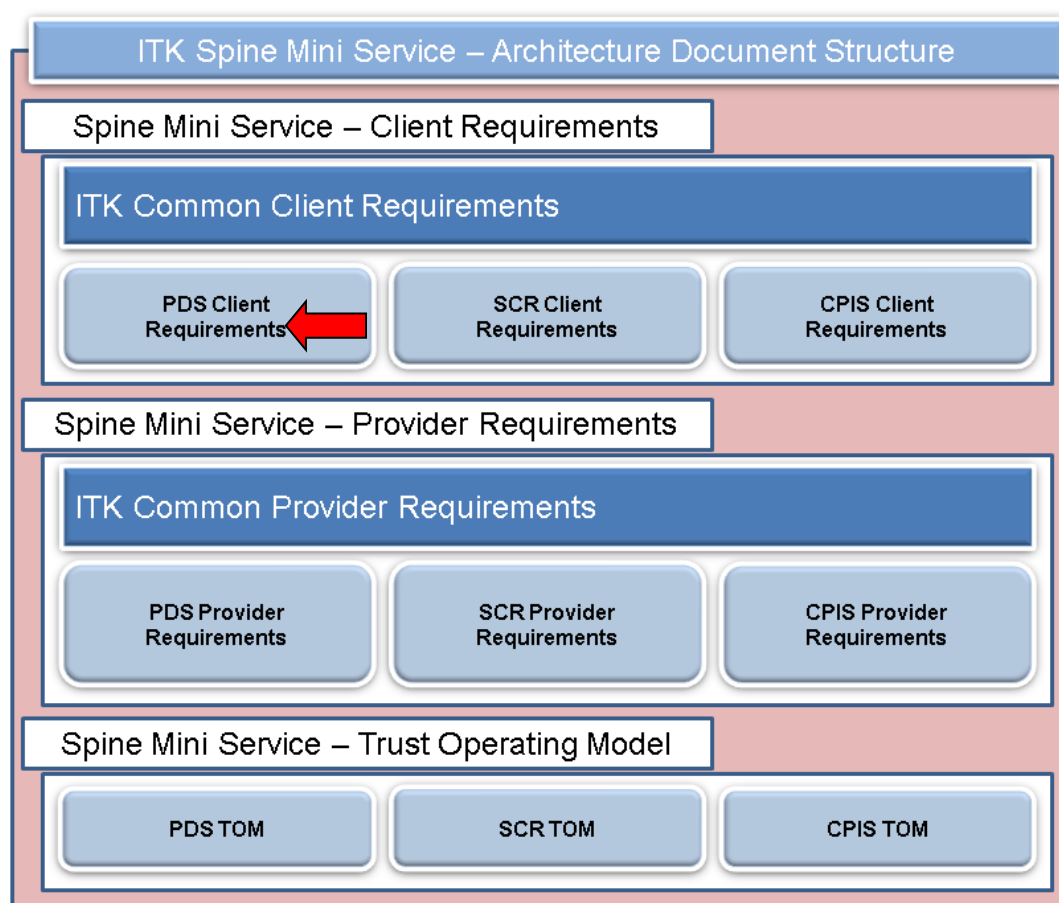


Figure 1 – The ITK Spine Mini Services Architecture Document Set.

1.3 Audience

The primary audience for this document are the developers (analysts, architects, developers) working on the ITK Component of the Spine Mini Service being developed. Within a Trust, the Project Manager and technical team will find the entire document set relevant.

These requirements are common/generic to all ITK Spine Mini Service Provider implementations.

2 High Level Overview

2.1 Level 0 view

A SMSP is an application which handles the complexity of dealing with the Spine TMS boundary yet provides a simplified interface to its clients. The complexity saving can be expressed both in terms of relaxed requirements for certain system calls and or syntactically and semantically more concise messaging.

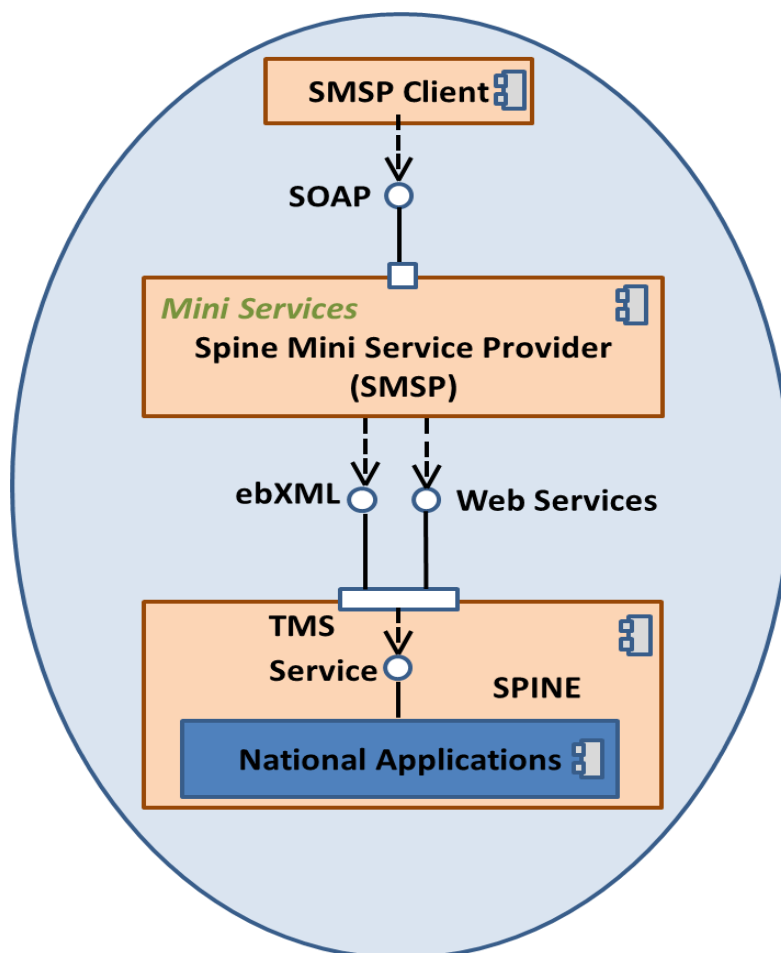


Figure 2: High Level view of an ITK Spine Mini Service

A SMSP MAY (and indeed, in some cases MUST) provide internal business logic above and beyond simple adaptor logic (e.g. filtering, protocol translation etc.). The following sections in the document are logical groupings of related principles of the architecture of an SMSP that must be considered and have some additional requirements.

This document specifically focuses on a subset of PDS services that are of potential wide use in increasing adoption of the NHS number and/or getting access to more authoritative information regarding the patient's name, address and registered GP Practice details. The diagram below illustrates the PDS services which are elaborated in this specification. The services to Spine are guidelines only, not prescriptive.

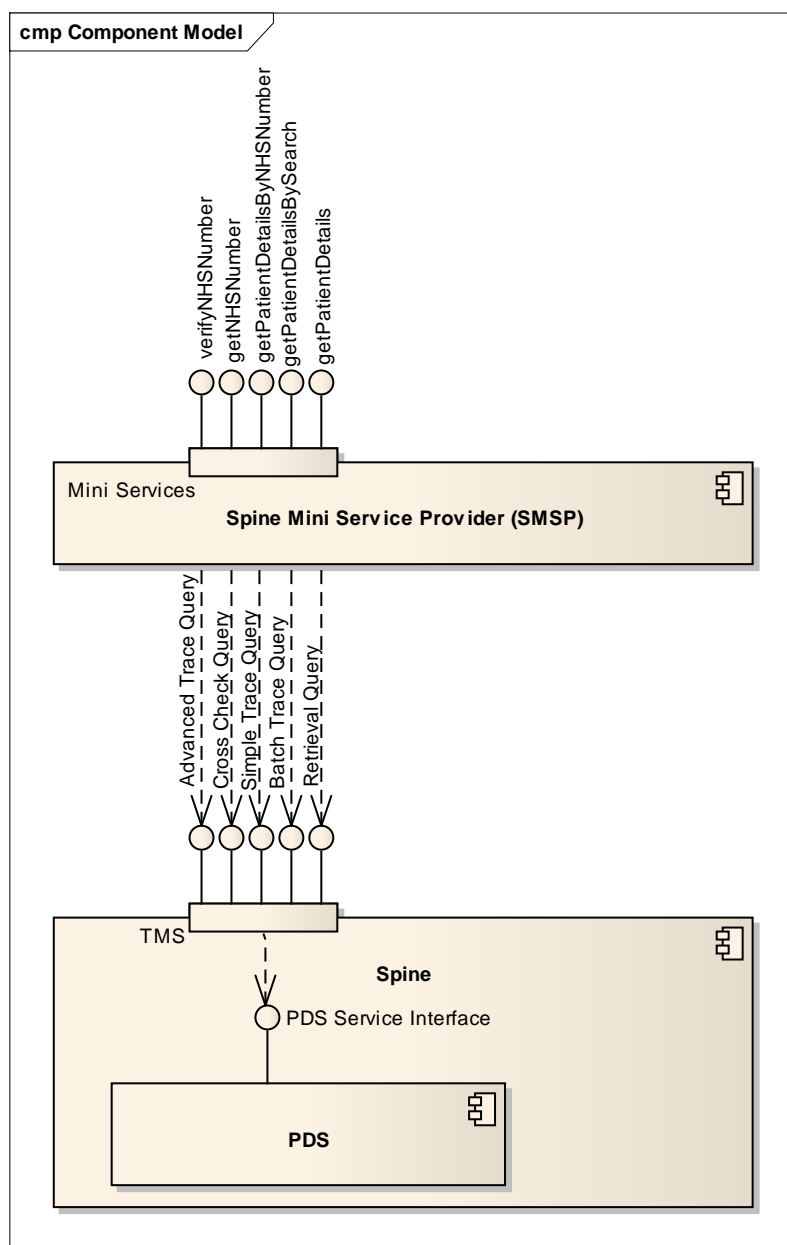


Figure 3: PDS Services in scope of this document

A SMSP MAY (and indeed, in some cases MUST) provide internal business logic above and beyond simple adaptor logic (e.g. filtering, protocol translation etc.). The following sections in

the document are logical groupings of related principles of the architecture of an SMSP that must be considered and have some additional requirements. Some areas may overlap areas that are covered in other related documents from the Mini Services pack.

3 PDS Service Definitions

All the services will be SOAP services and will be synchronous over HTTP. A given response object is deterministic for any given request object to a given endpoint. The following diagram shows an overall view of the request and response message pairs in scope of this document.

Note, in any service response some elements may be either *blank* indicating that the Spine has this information and *it is blank*, or may be *omitted* indicating that the Spine has simply returned no information about this field.

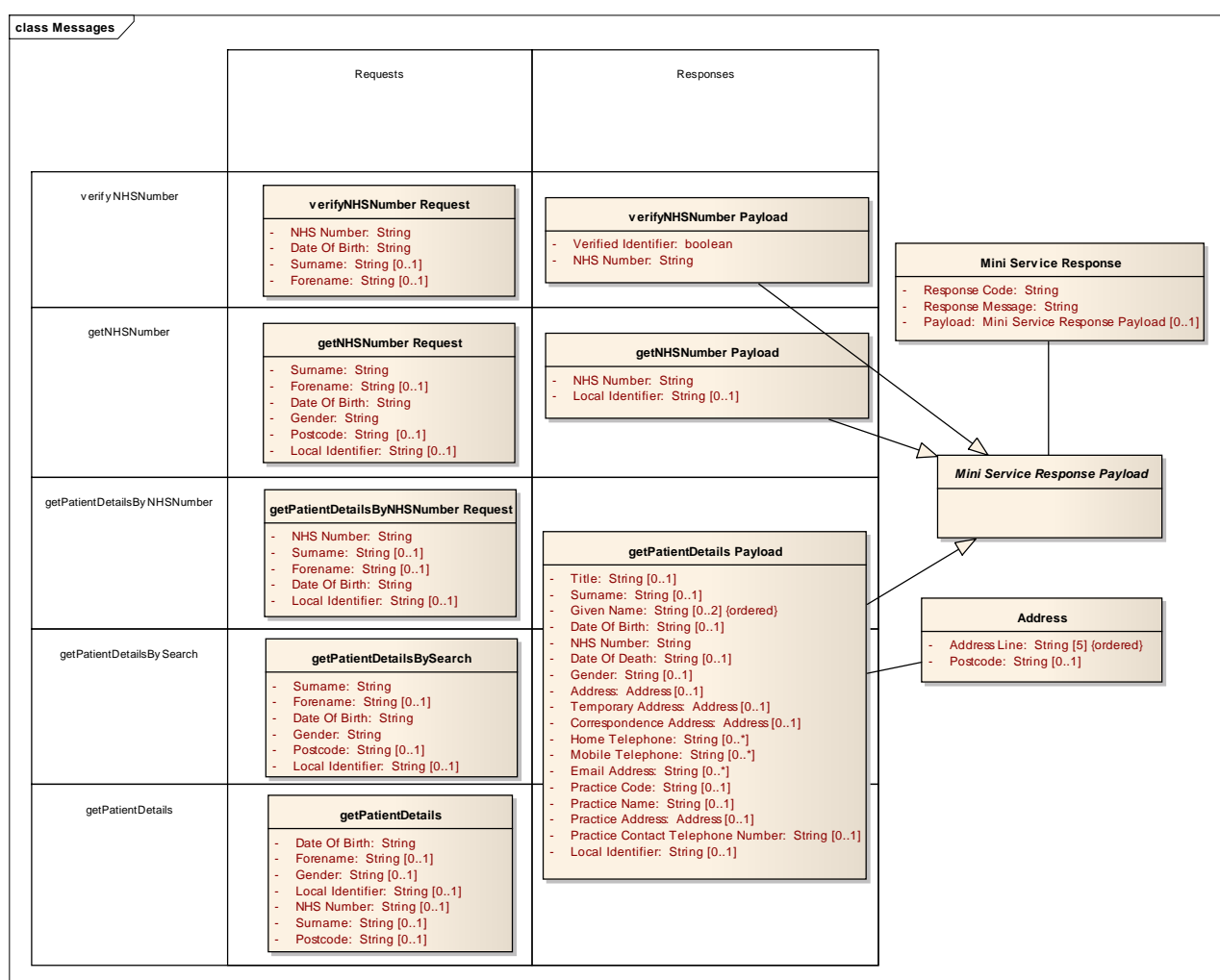


Figure 4: PDS Spine Mini Service Messages

It is mandatory to implement all of the mini services.

3.1 Mini Service to Spine Service mapping

Ref	Description
SMSP- MESSAGES-001	Appropriate usage of National Application services MUST be elaborated in documentation
(1)	The SMSP MUST provide documentation that elaborates the message mapping from the SMSP API to the MIM messaging used to access National Applications in order for DHID to assure suitability. This must also take into account how these messages interact in the context of any caching that may be implemented (see SMSP-CACHE-002: Design documentation MUST consider caching)
NB:	<p>Note: Suppliers SHOULD use MIM 6.2.02 for Spine Mini Services. However, in practice the Mini Services interface does not mandate any particular MIM, though the following MUST NOT to be used:</p> <ul style="list-style-type: none"> • MIM 1.x • MIM 2.x • MIM 3.x <p>Suppliers SHOULD NOT implement messaging using MIM 4.x</p>

The following table is a suggested set of service mappings indicating which Spine services (some whose responses maybe cached) COULD be used to fulfil the required Mini Service. It is the supplier's responsibility to demonstrate accurate and performant usage of PDS.

Whilst this is a suggested mapping, other services may be possible for use but there may be compliance implications of choosing other services. Ultimately any choice of Spine services will need to be justified.

Mini Service	Suggested Spine Service(s)
verifyNHSNumber	Cross Check Trace Query
getNHSNumber	Advanced Trace Query – Alphanumeric or Simple Trace
getPatientDetailsBySearch getPatientDetailsByNHSNumber getPatientDetails	Advanced Trace Query – Alphanumeric or Simple Trace or Cross Check Trace Query Retrieval Query SDS/ODS Lookup

3.2 PDS Mini Service to Spine Service - Error Mapping

SMSP-ERR-005	Error codes MUST provide sufficient detail about the outcome of calls to national applications
<p>There are many scenarios where a final outcome of one or more calls to PDS is that a business error is returned from PDS itself. This is important information to pass back to the SMSP client so that it has the opportunity to handle it appropriately and/or inform the user about the nature of the problem.</p> <p>Whilst the precise details of error handling and mapping are a responsibility of each supplier's implementation, the following business error scenarios MUST be distinguishable by use of the appropriate SMSP error code:</p>	
Business Error Scenario	SMSP Error Code
No match found The parameters supplied were not a match to any Service User record in the PDS database. Error code 1 is a typical example of one error code which could have been returned by PDS in this scenario.	DEMOG-0001
Multiple Matches The parameters supplied were not able to identify a single match in PDS – rather multiple potential matches were found. Error code 7 is a typical example of one error code which could have been returned by PDS in this scenario.	DEMOG-0007
NHS Number Superseded The NHS Number supplied as a parameter was matched with a record in PDS, but identified as an NHS number that has been superseded via a merge and is no longer a current valid NHS Number. However, a replacement (superseding) NHS number is available and is being returned. Error codes 17 or 44 are typical examples of two error codes which could have been returned by PDS in this scenario.	DEMOG-0017
NHS Number Invalid The NHS Number supplied exists on PDS but is no longer in use and no replacement (superseding) NHS Number is available. Error code 22 is a typical example of one error code which could have been returned by PDS in this scenario.	DEMOG-0022
NHS Number Not Verified The NHS Number supplied exists on PDS and is still in use but the demographic data also supplied does not result in the correct degree of matching. Error code 40 is a typical example of one error code which could have been returned by PDS in this scenario.	DEMOG-0040
Not a new style NHS Number The NHS Number supplied is not a 10 digit new style NHS Number. Error code 42 is a typical example of one error code which could have been returned by PDS in this scenario.	DEMOG-0042
<p>Note that with the examples given above there may also be another accompanying error code returned by PDS, as specified in the error base, and that the examples above are illustrative not exhaustive. Alternative mappings by suppliers may be considered. The examples given do not imply specific behaviour of the SMSP system.</p> <p>For business error scenarios returned by PDS other than those listed above then a generic code of DEMOG-9999 MAY be used as a default.</p> <p>NB: Validation errors detected by PDS are however a special case – see SMSP-ERR-006 for more</p>	

about this.

4 PDS – General

Ref	Description
MSCA-PDS-01	The Mini Services Client Application SHOULD have an easy-to-use User Interface, which encourages best-practice usage of PDS
(1)	<p>Factors to consider include:</p> <ul style="list-style-type: none"> • Minimal keystrokes needed, tab between fields possible etc • Uses a consistent set of search criteria for both local and PDS traces • Makes it easy for the user to perform a basic trace (e.g. NHS Number, Surname, DOB, Gender, Postcode) • Allows the user to refine their search if unsuccessful initially • Also allows the user to make more advanced searches if they really need to (e.g. use of wildcards, partial dates) • Provides client-side validation to catch obvious input errors immediately
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-PDS-02	The Mini Services Client Application SHOULD coordinate seamlessly between local and PDS tracing
(1)	The preferred approach would be to attempt to trace locally first, and then to transition seamlessly to a PDS trace if no match is found locally
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-PDS-03	The Mini Services Client Application MUST support the user in ensuring that patients are accurately traced
(1)	<p>To provide this support, the application MUST display sufficient data to enable the user to confirm an accurate match</p> <p>NB: There is also an obligation on the user to perform appropriate business processes and best-practice when confirming a patient's identity</p>
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-PDS-04	If the patient cannot be traced then the Mini Services Client Application SHOULD allow the user to create a new local record
(1)	This allows the patient to be registered without delay to the provision of care

NB:	See Section 6 for full details of relevant PDS Requirements on this topic
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MSCA-PDS-05	The Mini Services Client Application SHOULD provide for synchronisation of local data with PDS at as many relevant events as possible
(1)	<p>Recommended events for consideration include:</p> <ul style="list-style-type: none"> At the commencement of an episode. This includes: <ul style="list-style-type: none"> Registering or reception at a GP surgery Reception at an outpatient clinic Beginning of any episode of unscheduled care where patient identity is known
(2)	<ul style="list-style-type: none"> Prior to using patient communication information. This includes: <ul style="list-style-type: none"> Prior to using locally-stored patient telephone numbers or addresses Prior to sending correspondence to a patient
(3)	<ul style="list-style-type: none"> Prior to inpatient admission and discharge. This includes: <ul style="list-style-type: none"> Prior to the generation of messages containing new or changed demographics to downstream, local systems

MSCA-PDS-06	The Mini Services Client Application MUST display the NHS Number correctly
(1)	<p>The Mini Services Client Application MUST display and print the NHS number in 3-3-4 format on all screens and printed material, e.g. 123 456 7890</p> <p>Bar-coded NHS numbers MUST be in the Information Standards Board ISB/0061-00/2004 format</p>

MSCA-PDS-07	The Mini Services Client Application SHOULD use wildcards appropriately
(1)	<p>The SMSP client application may use wildcards in the tracing criteria. If wildcards are allowed, then the deploying organisation MUST review this as part of the clinical safety assessment of the application.</p> <p>Client applications using wildcards in tracing criteria, where a user and/or patient can confirm that the returned candidate PDS record is the correct one (known as an ‘attended’ scenario), present a lower risk of false-positive matches.</p> <p>A false-positive match is one where a single candidate PDS record is returned which meets the tracing criteria, but is not in fact the record being sought. User training in the confirmation of record matching will be required.</p> <p>Use of wildcards in other ‘non-attended’ tracing scenarios (i.e. where a user and/or patient is not present to confirm the possible match), is likely to increase the risk of false-positive matching of patients with inherent clinical implications. See guidance below for further details.</p> <p>Any organisation considering wildcard use must undertake a structured safety</p>

	<p>assessment of the clinical and governance risks involved.</p> <p>Further guidance can be found on:</p> <p>http://www.isb.nhs.uk/documents/isb-0160/dscn-18-2009</p> <p>The link below provides some guidance around the use of Wildcards that may be helpful, click the link and then select PX (PDS Stand-alone Trace) Screen.</p> <p>http://www.hscic.gov.uk/article/2021/Website-Search?q=wildcards+in+trace&go=Go&area=both</p>
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5 PDS - Data Quality

Ref	Description
MSCA-DQ-01	The Mini Services Client Application MUST provide safe handling and resolution of duplicate NHS Numbers
(1)	<p>Duplicate NHS Numbers must not be displayed to the user. Rather a back-office process must be triggered to resolve the problem.</p> <p>Following appropriate back-office resolution, the system MUST be able to support merge (and unmerge) of local duplicates.</p>
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-DQ-02	The Mini Services Client Application MUST provide for both logical and permanent deletion of records
(1)	<p>It MUST be possible to logically delete and undelete a record.</p> <p>There MUST also be a method for the permanent deletion of patient records as a result of a court order under the authority of the Data Protection Act, Section 10.</p> <p>The fact that a record has been deleted (whether logically or permanently) and the user that performed it MUST be audited.</p>
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-DQ-03	The Mini Services Client Application MUST provide safe handling and resolution of superseded NHS Numbers
(1)	<p>Superseded NHS Numbers will be identified by the Response Code returned from the Mini Services interface.</p> <ul style="list-style-type: none"> • An advisory message MUST inform the user that the NHS Number has been replaced, along with the replacement number • If the replacement number <u>is not</u> already present on another record in the local database then the superseded number MUST be replaced with the new • If the replacement number <u>is</u> already present on another record in the local database then a back-office process must be triggered to resolve the problem. (After investigation, this is ultimately likely to involve merging the records, and/or logically deleting the incorrect record). • While this local back-office resolution is in progress then there is a potential clinical risk due to mis-identification of the patient. Therefore the system MUST warn the user on every access that <ul style="list-style-type: none"> ○ the NHS number being used is no longer valid ○ the record is being referred to back-office for processing ○ all demographic and clinical information for this patient must be

	regarded with caution until the processing is complete
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-DQ-04	The Mini Services Client Application MUST provide safe handling and resolution of records marked as “invalid” on PDS
(1)	<p>Invalid records will be identified by the Response Code returned from the Mini Services interface.</p> <ul style="list-style-type: none"> • An advisory message MUST inform the user that the record is wrongly identified. • While this (national) back-office resolution is in progress then there is a potential clinical risk due to mis-identification of the patient. Therefore the local system MUST warn the user on every access that <ul style="list-style-type: none"> ○ the NHS number being used is no longer valid ○ the record is being referred to back-office for processing ○ all demographic and clinical information for this patient must be regarded with caution until the processing is complete • A local back-office process MUST be triggered to alert local administrators to the problem. This alert MUST contain sufficient identifying demographics to allow the back office to find the relevant record in the local database.
NB:	See Section 6 for full details of relevant PDS Requirements on this topic

MSCA-DQ-05	The Mini Services Client Application SHOULD provide data quality reports
(1)	These reports allow for proactive identification of local data quality issues, including duplicate NHS Numbers
NB:	See Appendix (A) for full details of relevant PDS Requirements on this topic

MSCA-DQ-06	The Mini Services Client Application SHOULD trigger a back-office resolution process where local discrepancies with PDS are detected
(1)	<p>The Spine Mini Services interface does not allow direct updates to PDS.</p> <p>Therefore where the data retrieved from PDS is believed to be incorrect, the Mini Services Client Application SHOULD trigger a local back-office process to resolve the problem. (For example this might involve a local Data Quality Administrator investigating, and potentially using separate full access to PDS to make updates if necessary)</p>

6 PDS- Spine Compliance Requirements

MSCA-PDS-01: The Mini Services Client Application SHOULD have an easy-to-use User Interface which encourages best-practice usage of PDS

TRCGEN-1	It MUST be straightforward for a user to enter the required search parameters into the local system, e.g. - single key stroke, such as TAB, to move between search fields - another single key stroke, such as ENTER, to confirm and action the search
TRCLCL-2	Local systems MUST mandate the use of Simple Trace criteria (surname, gender, birth date) on a local trace, except where an NHS number or local identifier is being used.
TRCLCL-2.1	Local systems SHOULD allow local searching on NHS numbers.
TRCLCL-2.2	Local systems MAY allow local searching on local identifiers (e.g. medical record number).
TRCLCL-2.3	The local systems MAY allow local searching on additional, local-only data.
TRCPDS-5	Local systems MUST ensure that the additional search parameters to perform Simple Trace or Advanced Trace (alphanumeric / algorithmic) are also accommodated on any search screens.
TRCPDS-5.3.1	The mandatory nature of these fields MUST be reinforced by means of user interface design.
TRCPDS-5.5.1	The mandatory nature of these fields MUST be reinforced by means of user interface design.
TRCPDS-5.6.1	Where Primary care data is added to the request, the user interface SHOULD NOT allow free-text entry of coded data, but provide lookup functionality.
TRCPDS-6	For alphanumeric search types, the local system MUST allow the use of wildcards in surname/forename and post code search parameters.
TRCPDS-6.1.1	This constraint MUST be reinforced by means of user interface design.
TRCPDS-7.1.2	The mandatory nature of one or more of these combinations MUST be reinforced by means of user interface design.
TRCPDS-10	Local systems SHOULD be capable of tracing on full or partial birth and death dates as defined in the MIM. Partial dates are for Advanced Trace only.
TRCDPY-3.1.2	The system MUST offer them the option to refine their search.
TRCDPY-5.1	Local systems SHOULD at these points encourage users to refine their search.

MSCA-PDS-02: The Mini Services Client Application SHOULD coordinate seamlessly between local and PDS tracing

TRCLCL-1	For systems with their own MPI, the local system SHOULD always trace locally for candidate records, prior to initiating a PDS Trace.
TRCLCL-4	Any local trace where no 'candidate' record is found MUST continue to trace on the PDS.
TRCLCL-4.1	A trace referred to the PDS in this manner SHOULD be sent to the PDS without further user interaction.

MSCA-PDS-03: The Mini Services Client Application MUST support the user in ensuring that patients are accurately traced

TRCLCL-3	In response to a local search, local records MUST NOT be considered a 'candidate' record unless they contain, as a minimum, - either a locally-held SCN and/or an NHS NUMBER STATUS INDICATOR showing the record is 'Traced and Verified' - or new-style NHS number, surname, gender and birth date
TRCLCL-3.1	Any local record which does not contain these criteria MUST NOT be displayed on a pick-list of trace results.
TRCPDS-12.1.2	A PDS record located using the PDS Cross-Check Trace Query MUST NOT be considered as pertaining to the patient until the identity of the patient has been confirmed using the business process outlined in Tracing Best Practice & the Confirmation of Identity. See also TRCPDS-2.1.
TRCCNF-1	The system MUST display appropriate data so that prior to selecting a patient record from a trace results screen, users can confirm that the displayed record does indeed belong to the patient.
TRCCNF-1.1	This confirmation of identity SHOULD be carried out in line with the principles outlined in Tracing Best Practice & the Confirmation of Identity.

MSCA-PDS-04: If the patient cannot be traced then the Mini Services Client Application SHOULD allow the user to create a new local record

FLGINV-4	After receipt of an error code 22, if the patient cannot be traced on the PDS using demographic details, then the local system SHOULD allow for the creation of a new record and NHS number allocation to support the provision of care.
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MSCA-DQ-01: The Mini Services Client Application MUST provide safe handling and resolution of any duplicate NHS Numbers

TRCLCL-3.2	Where records with duplicate NHS Numbers are found locally, these records MUST NOT be displayed on a pick-list of trace results.
TRCLCL-3.2.1	Duplicate local NHS numbers discovered in this manner MUST be forwarded to local administrators for resolution.
TRCLCL-3.2.1.1	This notification MUST be a system alert, such as an 'inbox notification' to local back-office administrators/service desk and NOT a paper-based referral.
TRCLCL-3.2.1.2	For primary care registration system, the alert SHOULD be raised automatically in the Primary Care Records Management event list.
FLGGEN-2.2	A local-only duplicate, i.e. where only one record for the patient exists on the PDS, MUST be merged locally after an appropriate investigation by local back-office.
FLGGEN-4	Local systems MUST be capable of merging 2 records where it has been identified that they are duplicates.
FLGGEN-5	Local systems MUST provide the facility to unmerge records merged in error back to

	the original unique patient identifiers.
FLGGEN-5.1	Unmerging such records MAY be an entirely manual process, e.g. requiring skilled database administrators.
FLGINV-10.3	Local systems MUST provide the ability to merge in their entirety the two records on the LPI, where the business investigation reveals the record to have been invalidated because of a duplicate investigation by national back-office.

MSCA-DQ-02: The Mini Services Client Application MUST provide for both logical and permanent deletion of records

FLGGEN-6	Local systems MUST be capable of logically deleting a local record.
FLGGEN-7	Local systems MUST be capable of logically un-deleting a local record.
FLGGEN-8	Local systems MUST provide a method for the permanent deletion of patient records as a result of a court order under the authority of the Data Protection Act, Section 10.
FLGGEN-9	The fact that a record has been deleted (whether logically or permanently) and the user that performed it MUST be audited.
FLGINV-10.4	Local systems MUST also provide the ability to logically delete in its entirety the invalid record from the LPI, where the business investigation reveals the record to have been invalidated because of a confusion investigation by national back-office.

MSCA-DQ-03: The Mini Services Client Application MUST provide safe handling and resolution of any superseded NHS Numbers

FLGINV-5	On receipt of an error code 17 from the PDS indicating a superseded NHS number the local system MUST warn users accessing the patient's record, that the local record is wrongly identified.
FLGINV-5.1	The advisory message displayed by the local system MUST warn the user: <ul style="list-style-type: none"> - That the NHS number being used has been replaced - That the patient should be informed of the replacement number, where possible
FLGINV-6	On receipt of an error code 17, if the new NHS number returned in the response is NOT present on another record in the local database, the superseded number MUST be replaced with the new.
FLGINV-6.2	Suppliers MUST ensure that the local database referential integrity is maintained in this circumstance.
FLGINV-7	On receipt of an error code 17, if the new NHS number returned in the response IS present on the local database, then the superseded record MUST continue to be used for the purposes of this episode of care.
FLGINV-7.1	Local back-office MUST be notified and the two records concerned subjected to a manual merge.
FLGINV-7.1.1	This notification MUST be a system alert, such as an 'inbox notification' to merge administrators and NOT a paper-based referral.
FLGINV-7.2	The merge MUST ensure that the new NHS number becomes the Primary NHS ID of the active record.
FLGINV-7.3	The superseded record on the local database MUST be logically deleted or otherwise rendered inaccessible to normal business users.

FLGINV-7.4	Where the superseded record continues to be used while back-office is processing the merge, local system MUST warn users accessing the patient's record, that the local record is wrongly identified.
FLGINV-7.4.1	The advisory message displayed by the local system MUST warn the user: <ul style="list-style-type: none"> - That the NHS number being used is no longer valid - That the record is being referred to back-office for processing - That all demographic and clinical information for this patient must be regarded with caution until the processing is complete
FLGINV-7.4.2	Local systems MUST mark the record in such a way that EVERY TIME it is accessed: <ul style="list-style-type: none"> - all users are made aware that there are data anomalies on the record which could constitute a clinical risk - that the anomalies may pertain as much to the clinical as the demographic record
FLGINV-8	Suppliers MAY refer all records subjected to superseded record processing to local back-office for verification.

MSCA-DQ-04: The Mini Services Client Application **MUST provide safe handling and resolution of records marked as “invalid” on PDS**

FLGINV-9	On receipt of an error code 22 from the PDS indicating an invalid record without superseding NHS number the local system MUST warn users accessing the patient's record, that the local record is wrongly identified.
FLGINV-9.1	The advisory message displayed by the local system MUST warn the user: <ul style="list-style-type: none"> - That the NHS number being used is no longer valid - That the record is being referred to back-office for processing - That all demographic and clinical information for this patient must be regarded with caution until the processing is complete
FLGINV-9.2	Local systems MUST mark the record in such a way that EVERY TIME it is accessed: <ul style="list-style-type: none"> - all users are made aware that there are data anomalies on the record which could constitute a clinical risk - that the anomalies may pertain as much to the clinical as the demographic record
FLGINV-10.1	Local systems MUST notify local administrators/local back-office that a code 22 has been encountered.
FLGINV-10.1.1	This notification MUST be a system alert, such as an 'inbox notification' to merge administrators and NOT a paper-based referral.
FLGINV-10.1.2	The notification MUST contain sufficient patient demographics and/or identifiers to aid in record identification, i.e. the following fields where held on the local record: <ul style="list-style-type: none"> - Local identifier(s) - The invalid, local NHS number (clearly marked as being invalid) - Usual name - Any alias, previous or preferred names - Date of Birth - Gender - Usual address and/or post code

MSCA-DQ-05: The Mini Services Client Application MUST provide data quality reports

FLGGEN-3	Local systems MUST provide mechanisms for the pre-emptive identification of duplicates, for example the provision of data quality reports.
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