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GP2GP UC1 Transfer EHR

Abstract

This document provides the use case for the GP2GP electronic healthcare record transfer between practices. The document assumes that this is an extension of a patient registration use case implemented by suppliers.

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Reviewers:

This document must be reviewed by the following. Delegate as necessary.

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Related Documents:

These documents will provide additional information.

Ref No.	Document Reference Number / URL	Title	Version
1	HSCIC-PC-BLD-0068	GP2GP R2.2 Requirements Specification	

Glossary of Terms:

List any new terms created in this document. Mail the NPO Quality Manager to have these included in the master glossary above.

Term	Acronym	Definition
	A-B-A	EHR integration scenario where the requesting primary care system already has a pre-existing record for the patient, but the patient has subsequently been a permanent patient at a different primary health care provider (See appendix 2). In a more relaxed meaning it includes A-B-C processing as key elements of A-B-A apply to A-B-C processing and no distinction is made.
Accredited System ID	ASID	Reference to a single instance of supplier software in a non hosted environment, where services (e.g. GP2GP) can be enabled or disabled. In a hosted environment this definition breaks down as a single instance of supplier software supports multiple practices (ODS) some of which may require GP2GP to be disabled (e.g. lack of training).
Broken Chain		A term used to describe the loss of GUIDs when a patient record is exported to a system that does not support GUID propagation and A-B-A processing, and then returns to a system that does support A-B-A processing.
Data Transfer Service	DTS	Mailbox orientated service for transferring data across N3 network where there may be more than one recipient.
Common Content Messaging	CCM	Point to point messaging service across TMS designed to forward unspecified messages.
Electronic Healthcare Record	EHR	A record of a patient's primary care transferred between primary care organisations using the GP2GP solution.
Electronic Patient Record	EPR	A patient's primary care record held electronically within a primary care system.
Health Level 7	HL7	XML based messaging standard for transporting health care information.
Message Handling Service	MHS	Messaging layer application that provides an application interface to the Spine.
Message Implementation Manual	MIM	Definition of messaging services, messages and interactions for each service using the TMS.
	MIM 7	
	MIM 3	
Organisational Data Service	ODS	ODS codes provide a unique identifier for any organisational entity providing NHS services, whether a trust, PCT, a hospital, a ward within a hospital, a treatment centre or mobile unit. These were previously known as NACS codes.
Party Key		An address for an access point to the Spine associated with a message handling service.
Safe Exchange Framework	SEF	Message filtering service that can inhibit messages between suppliers / software / versions. Allows central shut down of specific GP2GP interactions in the event of (clinical safety) problems.
Transaction Messaging Spine	TMS	A subsystem of the Spine that provides the interfaces between Spine data, end-systems and services external to the Spine

Term	Acronym	Definition
Electronic Healthcare Record	EHR	A record of a patient's primary care transferred between primary care organisations using the GP2GP solution.
EHR Request		The extracted information from a patient's old GP practice electronic patient record that is to be sent to the patient's new GP practice.
EHR Extract		The message sent by the Requesting system to the Sending system requesting the EHR Extract
EHR Response		Used synonymously with 'EHR Extract'
Requesting system		The system that requests an EHR Extract, i.e. the system of the patient's new practice.
Sending system		The system that sends an EHR Extract, i.e. the system of the patient's old practice.

The keywords MUST, SHOULD and MAY are to be interpreted as described in RFC2119:

- MUST: This word, or the terms "REQUIRED" or "SHALL", means that the definition is an absolute requirement of the specification.
- SHOULD: This word, or the adjective "RECOMMENDED", means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications MUST be understood and carefully weighed before choosing a different course.
- MAY: This word, or the adjective "OPTIONAL", means that an item is truly optional. One implementer may choose to include the item because a particular implementation requires it or because the implementer feels that it enhances the implementation while another implementer may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides).

1   Use Case: Transfer Electronic Healthcare Record

1.1   Overview

Most Detailed design documents include system use cases (or similar):

- Request EHR
- Acknowledge EHR Request
- Send EHR
- Acknowledge Receipt of EHR

This business use case has been created to demonstrate the overall GP2GP process being executed and where different parties contribute. It assumes that both the registering or requesting practice and the sending practice are GP2GP enabled and it assumes that there is a pre-existing use case that registers a new permanent patient within the supplier system – referred to here as *"Register New Permanent Patient"*, which is extended by this use case. The premise is that the use case *Register New Permanent Patient* includes the change in status from a temporary to permanent patient and involves the update of PDS to reflect the change in the patient's current practice.
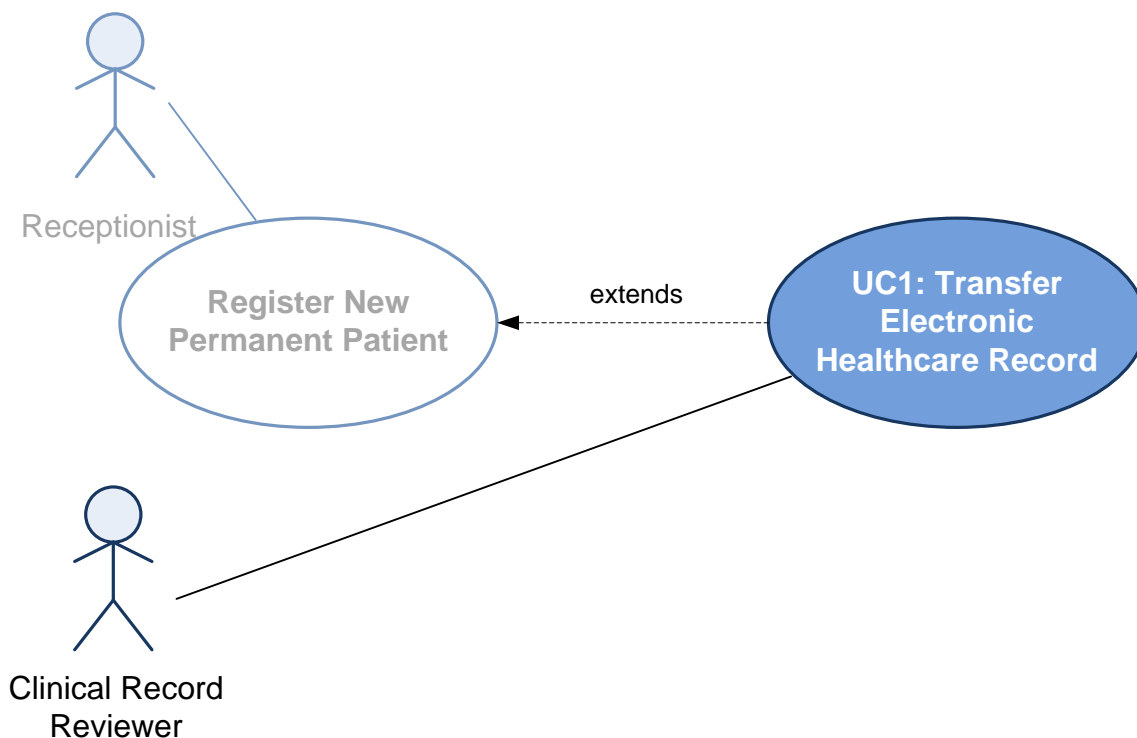

Figure 1 - Use Case diagram

On receipt of a positive acknowledgement of the update of patient's current practice code from PDS, the supplier system tries to perform an Electronic Healthcare Record (EHR) transfer using the GP2GP processes and this is where this use case begins.

The GP2GP EHR transfer process starts with the Requesting practice requesting the EHR Extract from the Sending practice. The main change to the process from baseline 1.1a is that the Sending practice responds with either a negative Application Acknowledgement or the EHR Extract itself within the

EHR Response message. The positive Application Acknowledgement of the EHR Request is to be discontinued. The principal reason for this is that some systems have positively acknowledged the EHR Request and prior to despatch of the EHR Extract have discovered it is not possible due to checks not run at the point of acknowledgement such as exceeding the supported message size. At this point a negative Application Acknowledgement cannot be sent to replace the positive one so the Requesting system is expecting an EHR Response but will never receive it. Deprecating the positive acknowledgement in favour of the EHR Response is preferred.

The other change since baseline 1.1a is that the Sending system needs to identify whether the EHR Response message exceeds the size or number of attachments limitations imposed by the Spine sub-system TMS (currently 5MB / 100 attachments from restricted list of attachment types) . If these limits are exceeded the Sending practice has to use the new Large Message Protocol solution. The remaining parts of the process are unchanged, the Requesting system receives the EHR Response and the result of attempts to file the record is returned to the Sending system in the form of a final Application Acknowledgement.

The Response Codes for negative Application Acknowledgements have been extended to provide greater granularity and improve the value of Management Information collected in the use case - GP2GP UC2 – Harvest and Prepare Management Information.

The UC1 use case is to be realised in a way that supports backward compatibility and continued interoperability with baseline 1.1a systems. It has been identified that:

- A baseline 2.2 compliant system should no longer send the positive Application Acknowledgement on receipt of the GP2GP EHR Request when the version of the message is from DMS 1/MIM 7.2.02 or later (Release 2.2c).
- A baseline 2.2 compliant system must send the positive Application Acknowledgement on receipt of the GP2GP EHR Request when the version of the message is from earlier than DMS 1/MIM 7.2.02 (Release 2.2b or earlier).
- A baseline 1.1a compliant system responding with a positive Application Acknowledgement on receipt of the GP2GP EHR Request can be received and ignored by a release 2.2c or later compliant system.

The way in which management information is collected and stored is for the supplier to decide but must meet UC2 and the Harvesting Management Information supplementary specification. The baseline 2.2 compliance requirements are only concerned with the availability of data about each transaction. It is worth noting that Management Information should already have begun to be created for this process before this use case is triggered. The Requesting system should have already identified the practice information, the results of PDS dialogue screens (patient tracing) and whether an NHS Smartcard is being used. Clearly if no NHS Smartcard is in use the PDS dialogues will not take place and this use case will not be triggered but Management Information for these failing activities still needs to be reported. Every permanent patient registration must have a Management Information record created even if this GP2GP use case was not triggered. This is detailed further in the supplementary specification Harvesting Management Information.

1.2 Trigger

When registration is undertaken with Spine TMS services available, the trigger is the receipt of a positive acknowledgement from PDS General Update PRPA_TE150000UK01 (PDS Successful Update Response in MIM 2.3 or the equivalent from the MIM version supported by the GP system for PDS) regarding registration of a new, permanent patient to the GP practice.

If the user carrying out the registration is not NHS Smartcard authenticated or the Spine PDS service is unavailable, registrations should not be made as the system cannot perform the necessary PDS interactions and may not be able to identify the previous practice before the local NHAIS system updates it. Under these exceptional circumstances, the supplier may provide a high-security function to allow a limited number of registrations to be made but must also inform users that this will prevent the GP2GP process from happening.

1.3 Preconditions

- The Requesting system registering the new permanent patient is GP2GP enabled and Sending practice details are known.
- The supplier has configured the practice application to allow access to the Transfer EHR (*Electronic Healthcare Record*) use case
- If the patient has historically registered with this practice, the registering practice must not be the current practice.
- The user must be authenticated with an NHS Smartcard with the appropriate business activities to run PDS Advanced Trace and General Update queries.

1.4 Main Flow

1.4.1 Scenario

A successful request and transfer of the EHR Extract, creation of a new or updated record within the requesting system is achieved. The EHR Response, and where appropriate to the baseline of the Requesting and Sending systems, the EHR Request are acknowledged. Management Information and audit trails are created.

1.4.2 Post Condition

- EHR Response received and EHR Extract integrated into a new or updated EHR by Requesting practice.
- Positive Application Acknowledgement received to EHR Response by Sending practice.
- Management Information and audit trails recorded in both Requesting and Sending practice systems.

1.4.3 Flow Detail

1.4.3.1 Requesting Practice Sending EHR Request

The following activity diagram illustrates the use case flow up to the despatch of the EHR Request to the Sending practice.
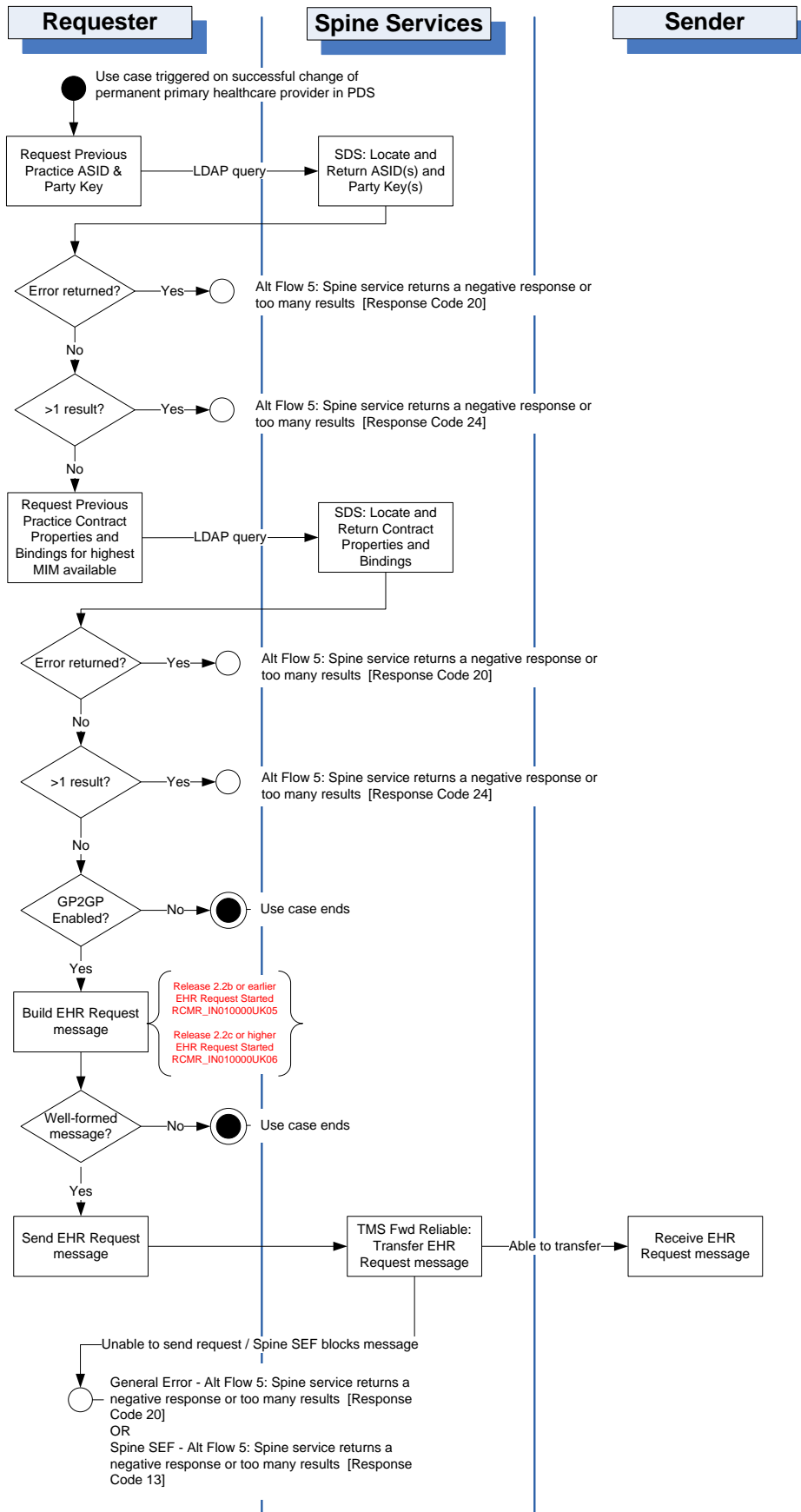
Figure 2 - Main Flow Part 1

If figure 2, the Requesting system retrieves the patient's previous practice ASID, Party Key and support for the EHR Response message from SDS using the previous practice ODS code (see Spine Technical Design) retrieved during the PDS Advanced Trace.

If an Error is returned flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

If more than one result per interaction is received flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 24]

If multiple MIM interactions are returned in the SDS query, the highest MIM version of the interaction is used. E.g. MIM 7/DMS 1 rather than MIM 3.

Using the previous practice Party Key the requesting practice system makes a further call to SDS to return the contract properties and bindings (see Spine Technical Design).

If an Error is returned flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

If more than one result per interaction is received flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 24]

The Requesting system identifies that the Sending system is GP2GP enabled.

If the Sending practice is not GP2GP enabled, determined by no results in either SDS query, this is recorded in the Management Information and the use case ends.

For a GP2GP enabled Sending system, the Requesting system will construct and address the EHR Request.

If the message cannot be successfully constructed, this is recorded in the Management Information and the use case ends.

The Requesting system validates the EHR Request against the schema and XML to check it is well-formed.

If the message is not valid, this is recorded in the Management Information and the use case ends.

Note: The version of GP2GP supported (e.g. R2.2b) is determined by the MIM version used (MIM 3 is R2.2b or earlier, MIM 7/DMS 1 is R2.2c or later). Whether Large Messaging is supported by the Requesting system can be determined as required by the Sending practice through a query of SDS for the Common Point to Point interactions (see Spine Technical Design)*.*

The EHR Request is sent to the TMS addressed for the Sending system and Management Information is updated.

If an Error is returned or the message is not successfully transferred to the Spine flow continues in Alt Flow 5: Practice system receives an error from Spine or negative acknowledgement from an application. [Response code 20]

If the Spine rejects the message due to restrictions by the Spine Safe Exchange Framework (SEF), this is record in the Management Information and the use case ends.

1.4.3.2 Sending Practice Receives EHR Request and responds

The following activity diagram illustrates the use case flow from the despatch of the EHR Request to the despatch of the EHR Response to the Requester.
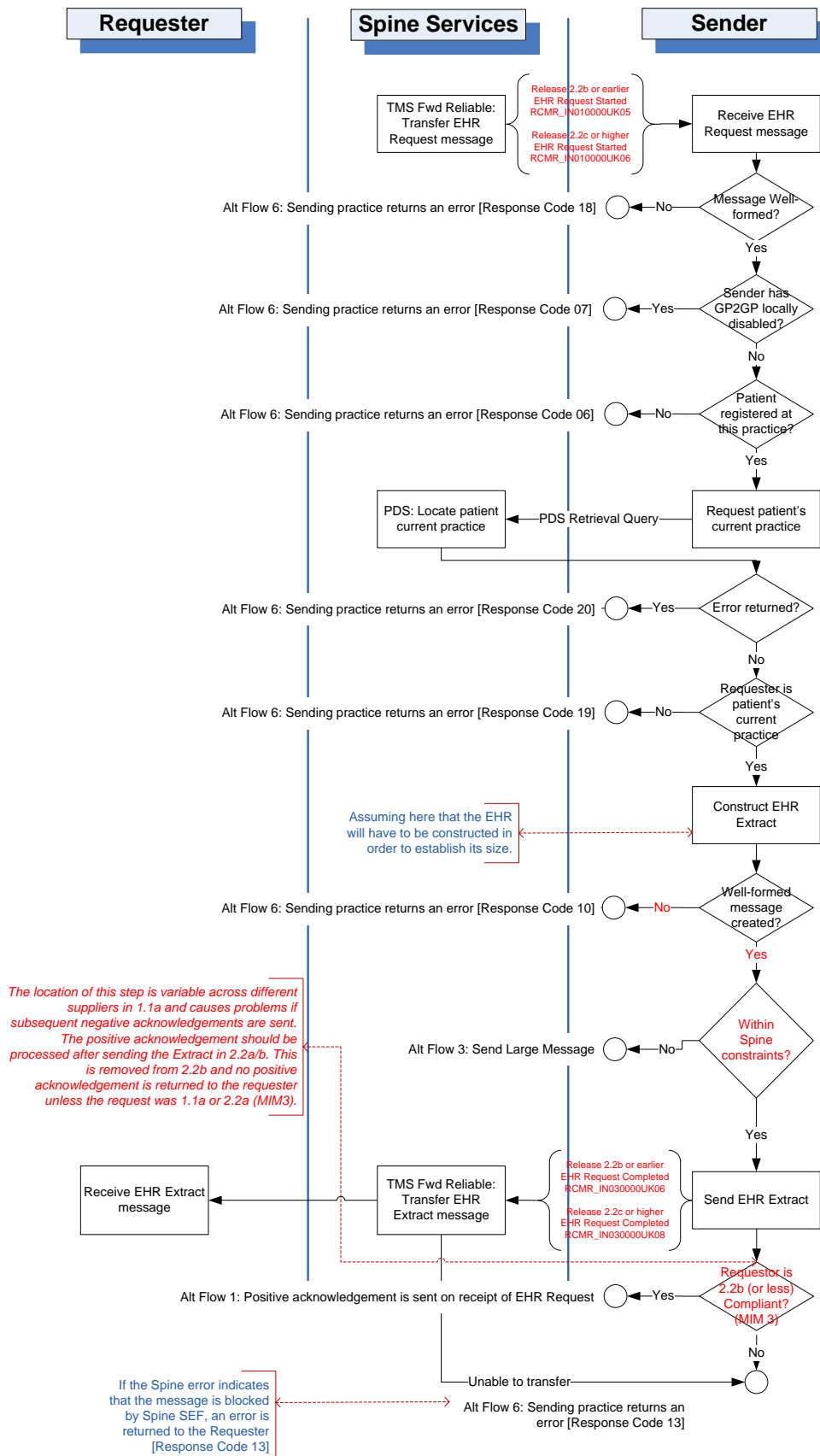
Requester	Spine Services	Sender

TMS Fwd Reliable: Transfer EHR Request message

Release 2.2b or earlier EHR Request Started RCMR_IN010000UK05

Release 2.2c or higher EHR Request Started RCMR_IN010000UK06

Receive EHR Request message

Message Well-formed?

Alt Flow 6: Sending practice returns an error [Response Code 18] — No

Sender has GP2GP locally disabled? — Yes

Alt Flow 6: Sending practice returns an error [Response Code 07]

Patient registered at this practice? — No

Alt Flow 6: Sending practice returns an error [Response Code 06]

PDS: Locate patient current practice — PDS Retrieval Query — Request patient's current practice

Error returned? — Yes

Alt Flow 6: Sending practice returns an error [Response Code 20]

Requester is patient's current practice — No

Alt Flow 6: Sending practice returns an error [Response Code 19]

Construct EHR Extract

Assuming here that the EHR will have to be constructed in order to establish its size.

Well-formed message created? — No

Alt Flow 6: Sending practice returns an error [Response Code 10]

Within Spine constraints? — No

Alt Flow 3: Send Large Message

The location of this step is variable across different suppliers in 1.1a and causes problems if subsequent negative acknowledgements are sent. The positive acknowledgement should be processed after sending the Extract in 2.2a/b. This is removed from 2.2b and no positive acknowledgement is returned to the requester unless the request was 1.1a or 2.2a (MIM3).

Receive EHR Extract message

TMS Fwd Reliable: Transfer EHR Extract message

Release 2.2b or earlier EHR Request Completed RCMR_IN030000UK06

Release 2.2c or higher EHR Request Completed RCMR_IN030000UK08

Send EHR Extract

Requestor is 2.2b (or less) Compliant? (MIM 3) — Yes

Alt Flow 1: Positive acknowledgement is sent on receipt of EHR Request

If the Spine error indicates that the message is blocked by Spine SEF, an error is returned to the Requester [Response Code 13]

Unable to transfer

Alt Flow 6: Sending practice returns an error [Response Code 13]

Figure 3 - Main Flow Part 2

The Sending system receives the EHR Request message from Requesting system via Spine, checks the message is not malformed or otherwise unreadable and records the request in Management Information.

> If the message is corrupt, badly formed, using an incompatible message version or otherwise unreadable, flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 18]

For a well formed, readable message where the Sending system has GP2GP functionality locally disabled, the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 07]

The practice Local Patient Index is checked and the patient located as a current patient.

> If the patient is not in the Local Patient Index as a current patient, flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 06]

Note: Batch processing has been deprecated and should not be used.

Note: Local SEF has been deprecated and should not be used.

With the patient identified as being in the Local Patient Index, the Sending system requests the patient's current practice registration from PDS. PDS responds with the ODS code of the patient's current practice and Management Information is updated.

> If Spine or PDS responds with an error, flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

The Sending system ensures that the PDS returned patient's current practice ODS Code matches the ODS code of the requesting practice.

> If the match is not made, Management Information and audit are updated and the use case ends. Flow continues in Alt Flow 6: Sending practice returns an error. [Response Code 19]

On successfully matching, Management Information is updated.

The EHR Extract is generated and validated. The Sending practice constructs an EHR Response message to transport the EHR Extract as specified in the appropriate MIM.

> If the EHR Response is not successfully constructed or fails to validate, the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 10]

The system checks that the EHR Response message is within current Spine message constraints– currently total size <5MBytes, has less than 101 attachments and no Spine TMS unsupported MIME type attachments including the HL7 payload

> If the EHR Response is outside the Spine TMS constraints, flow continues in Alt Flow 3: Send Large Message.

If it is not a Large Message scenario, the EHR Response is addressed and sent to the Requesting system.

> If the message is blocked by the Spine Safe Exchange Framework, the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 13]

> If the message is blocked by the Local Safe Exchange Framework (where the Sending system is a 1.1a baseline compliant system), the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 08] *Note that Local SEF is deprecated in 2.2 but a 2.2 Requesting system must be able to log the response code returned and record Management Information.*

> If the message is not successfully transferred to the Spine, the flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

If the EHR Request used the MIM3 message set, the Sending system will send a positive Application Acknowledgement on successful sending of a GP2GP EHR Extract and Alt Flow 1: Positive acknowledgement is sent on successful send of the EHR Extract and flow returns to this point.

Note: The position of this positive acknowledgement is variable in existing supplier implementations and causes problems if a subsequent process step requires that a negative response should be sent. This is the reason for the removal of this positive Application Acknowledgement in MIM7/DMS1 (R2.2c onwards). MIM3 positive Application Acknowledgements shall be retained for backward compatibility.

1.4.3.3   Requesting Practice Receiving EHR Extract

The following activity diagram illustrates the use case flow from the despatch of the EHR Extract to the Requesting system to the end of the use case.
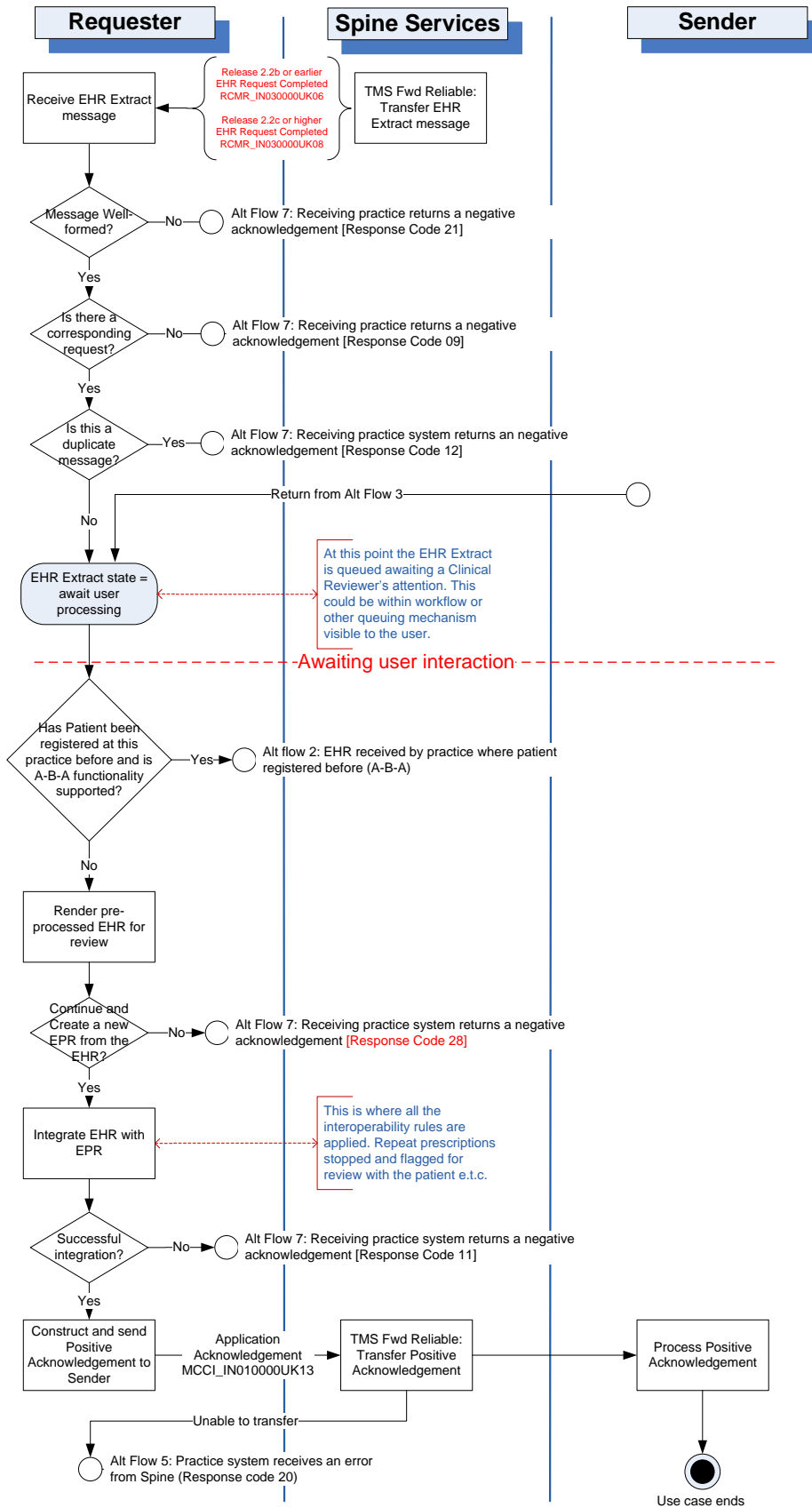
Figure 4 - Main Flow Part 3

[Application Acknowledgement received – not shown in Figure 4]

If the Requesting system receives a negative Application Acknowledgement, Management Information is recorded and the use case ends.

If the Requesting system receives a positive Application Acknowledgement, Management Information is recorded and the Requesting system awaits the EHR Extract. Release 2.2c systems (utilising MIM7/DMS1 message set) should not expect positive Application Acknowledgements to the EHR Request if using MIM 7/DMS1 and these can be safely ignored.

[Start of Figure 4]

The Requesting system receives an EHR Response carrying the EHR Extract and checks that it is well formed. Management Information is updated.

> If the received message is not well-formed, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 21]

The EHR Response is checked to ascertain that the EHR Extract has been requested. Management Information is updated.

> If the received message does not have a corresponding request, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 09]

The EHR Response is checked to ascertain that it is not a duplicate of one that has already been integrated into the patient's record. Management Information is updated.

> If the received EHR Extract is a duplicate of a previously integrated one, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 12]

[Return point from Alt Flow 3]

The Incoming EHR Extract record is placed in a task list or queue for the attention of a Clinical Record Reviewer (The Clinical Record Reviewer could be a GP or an individual to whom the GP has delegated the responsibility of reviewing incoming EHR Extracts and deciding whether to integrate them into the existing record). Consult the RBAC requirements in the Requirements Specification [Ref: 1].

The Requesting system identifies that the patient has previously been registered at the practice and that A-B-A requirements are not supported. Management Information is updated.

> If the patient has been previously registered at the Requesting practice and A-B-A requirements are supported, the flow continues in Alt Flow 2: EHR received by practice where patient registered previously (A-B-A supported).

The Clinical Record Reviewer (consult RBAC section of Requirements Specification for access controls) accesses the received EHR Extract and it is rendered for viewing. No editing can be

performed at this stage. The Clinical Record Reviewer decides to accept the record for integration into the system.

> If the Clinical Record Reviewer decides to reject the record because it is the wrong record or the wrong patient, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response codes 28]

> If the Clinical Record Reviewer decides to integrate the record into the system but the systems fails to be able to integrate, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response code 11]

The Clinical Record Reviewer's action, date/time and record identifier are recorded for audit purposes.

The Requesting system processes the received EHR and incorporates it into the practice data set and records this in the Management Information.

While integrating the incoming EHR Extract, the Requesting system takes into account the following:

> If the incoming EHR Extract is coded in a different coding scheme to the one the Requesting system uses, authorised UKTC code translations are to be used to translate (where required by the Authority) as defined by the Requirements Specification and supplementary specification: *Coding Scheme Translation* document.

> If the incoming EHR Extract contains Archetypes (groups of related coded information), these must be translated using the mapping tables as required, but the relationships between the codes within the archetype must not be lost. Further detail on Archetypes can be found in the supplementary specification: *Handling Archetypes*.

> If the incoming EHR Extract contains Summary Care Record preferences and/or GP Summary include/exclude flags, these must re-instated within the patient's record. Further detail on Archetypes can be found in the supplementary specification: *Handling the SCR Indicator*.

Once the EHR Extract has been successfully integrated into the GP practice system, the Requesting system sends a positive Application Acknowledgement to the Sending system to indicate that the EHR Response has been received and processed and records this in Management Information and audit.

> If the message is not successfully transferred to the Spine, flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

Any remaining Management Information and audit is recorded.

1.4.3.4 *Sending Practice Receiving Application Acknowledgement*
The Sending practice receives the positive or negative Application Acknowledgement from the Requesting system and updates any remaining Management Information and audit.

The GP2GP EHR transfer is successfully completed and the use case ends

Note: subsequent amendment or change to the updated EHR is within the scope of this use case as updates must be passed on to the patient's next GP Practice.

1.5 Alt Flow 1: Positive acknowledgement is sent on successful send of the EHR Extract

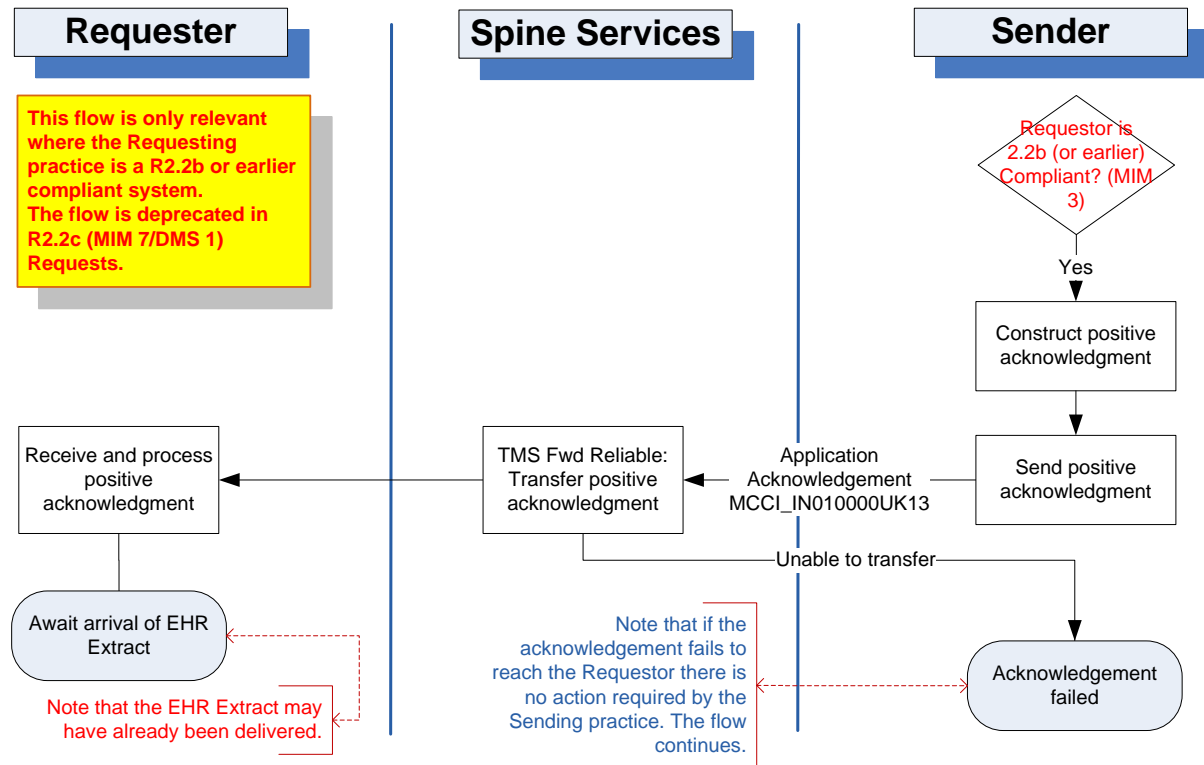The following activity diagram illustrates the alternative flow.

Figure 5 - Alternative Flow 1

1.5.1 Scenario

The EHR Request used the MIM3 message set and the Sending practice returns a positive Application Acknowledgement on successful send of the EHR Extract.

1.5.2 Post Condition

- EHR Request positive Application Acknowledgement is sent.
- Management Information and audit records are recorded in both Requesting and Sending practice systems.

1.5.3 Flow Detail

The Sending practice, having sent the EHR Extract without a failure from Spine (such as Spine SEF block), creates a positive Application Acknowledgement.

The positive Application Acknowledgement is returned via the Spine to the Requesting system and Sending system records Management Information.

> If the Application Acknowledgement is not sent to the Spine, flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

The positive Application Acknowledgement is received and processed by the Requesting system. The Management Information is recorded.

Note: The Requesting system must not prevent processing of the EHR Extract if this positive Application Acknowledgement is not received.

Flow returns to the calling use case.

1.6 Alt Flow 2: EHR received by practice where patient registered previously (A-B-A supported)

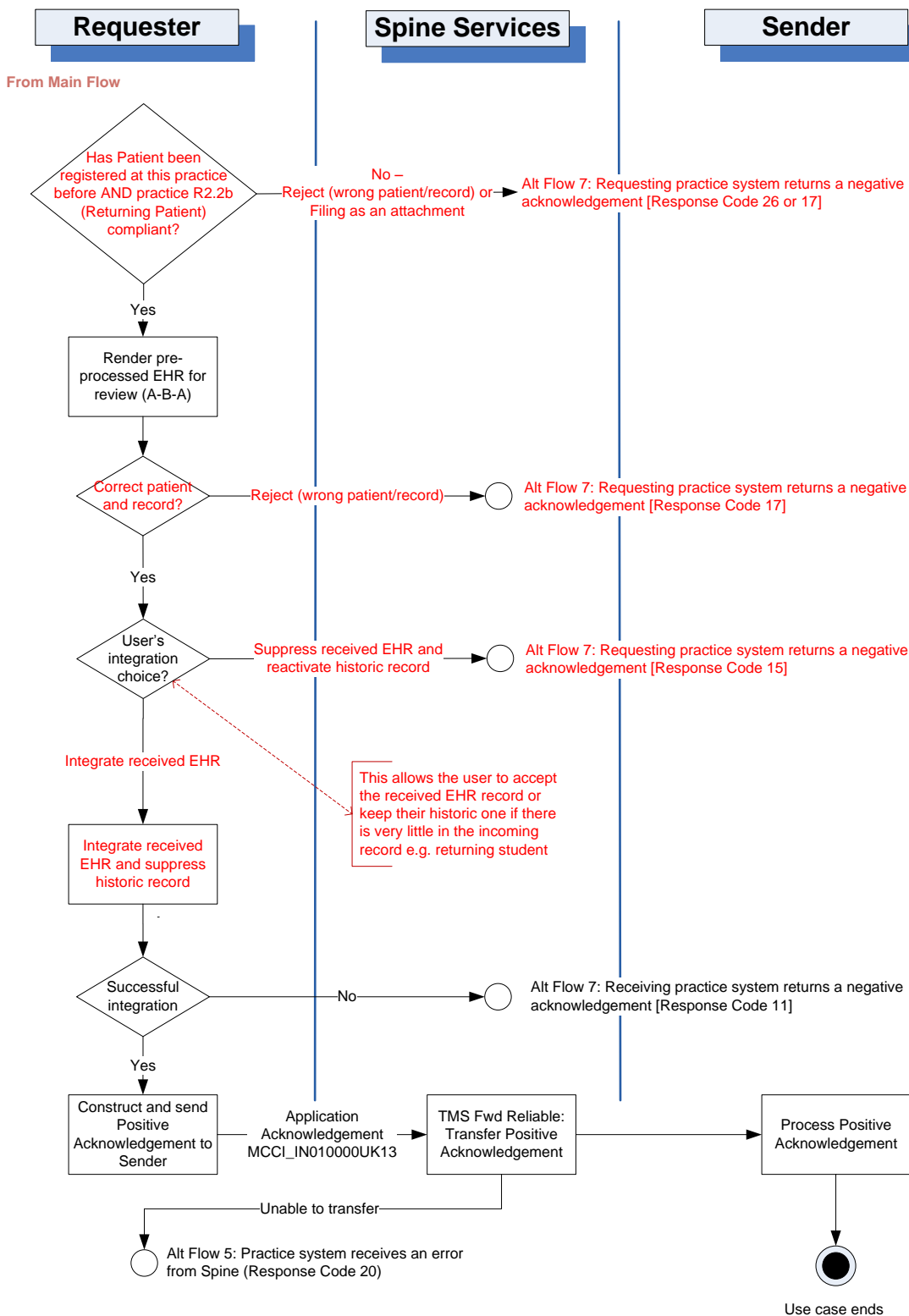The following activity diagram illustrates the alternative flow.

Requester	**Spine Services**	**Sender**

From Main Flow

Has Patient been registered at this practice before AND practice R2.2b (Returning Patient) compliant?

No – Reject (wrong patient/record) or Filing as an attachment → Alt Flow 7: Requesting practice system returns a negative acknowledgement [Response Code 26 or 17]

Yes ↓

Render pre-processed EHR for review (A-B-A)

↓

Correct patient and record?

Reject (wrong patient/record) → ○ Alt Flow 7: Requesting practice system returns a negative acknowledgement [Response Code 17]

Yes ↓

User's integration choice?

Suppress received EHR and reactivate historic record → ○ Alt Flow 7: Requesting practice system returns a negative acknowledgement [Response Code 15]

Integrate received EHR

This allows the user to accept the received EHR record or keep their historic one if there is very little in the incoming record e.g. returning student

↓

Integrate received EHR and suppress historic record

↓

Successful integration

No → ○ Alt Flow 7: Receiving practice system returns a negative acknowledgement [Response Code 11]

Yes ↓

Construct and send Positive Acknowledgement to Sender

Application Acknowledgement MCCI_IN010000UK13 →

TMS Fwd Reliable: Transfer Positive Acknowledgement →

Process Positive Acknowledgement

Unable to transfer →

○ Alt Flow 5: Practice system receives an error from Spine (Response Code 20)

● Use case ends

Figure 6 - Alternative Flow 2

1.6.1   Scenario

The practice (Requesting system) receives an EHR Extract for which they already have a patient record and A-B-A requirements are supported (R2.2b compliant).

1.6.2   Post Condition

- EHR Extract received and integrated into an existing patient record by Requesting system.
- Positive Application Acknowledgement received by the Sending system.
- Management Information and audit recorded in both Requesting and Sending systems.

1.6.3   Flow Detail

The EHR Extract is pre-processed and displayed in such a way that the user can compare it with the existing patient record according to the A-B-A and Broken Chain requirements

The user may choose one of the following options:

Returning Patient without A-B-A support (pre-R2.2b)

1. Reject for wrong record or wrong patient – Response code 17
2. File as an attachment – Response code 26

Returning Patient with A-B-A support (R2.2b or later)

3. Accept and integrate EHR into the existing record, suppressing the previous record – positive Application Acknowledgement,
4. Reject for wrong record or wrong patient – Response code 17
5. Store and suppress the incoming EHR, reactivating the previous record – Response code 15

[Accept for Integration]

The user chooses to *Accept and integrate the EHR* (option 3).

> If the system fails to integrate the EHR Extract, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 11]

The EHR Extract is integrated into the existing electronic patient record and the patient's previous (historic) record is suppressed.

Once the EHR Extract has been successfully integrated into the electronic patient record, the Requesting system sends a positive Application Acknowledgement to the Sending system to indicate that the electronic patient record has been received and processed and records this in Management Information and audit records.

If the message is not successfully transferred to the Spine, the flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

The EHR transfer is successfully completed and the use case ends.

[Reject Extract]

Alternatively the user chooses to *Reject the EHR for the wrong patient/wrong record* (option 1 or 4), flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 17].

The EHR transfer is unsuccessfully completed and the use case ends.

[Reject and File as an attachment]

Alternatively the user chooses to *File the EHR as an attachment* (option 2) for a Returning Patient where R2.2b is not supported, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 26].

The EHR transfer is unsuccessfully completed and the use case ends.

[Store and suppress the incoming EHR, reactivating the previous record]

Alternatively the user chooses to *Suppress the incoming EHR, reactivating the previous record* (option 5) for a Returning Patient, flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 15].

The EHR transfer is unsuccessfully completed and the use case ends.

For all options, the Clinical Record Reviewer's action, log-in ID, date/time and record identifier is recorded for audit purposes.

Any remaining Management Information and audit are recorded.

Note: subsequent amendment or change to the updated electronic patient record is within the scope of this use case.

1.7 Alt Flow 3: Send Large Message

The following activity diagram illustrates the alternative flow. Management Information is indicated in the red blocks.

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Figure 7 - Alternative Flow 3

1.7.1 Scenario

The constructed message exceeds Spine constraints on message size, number of attachments or an attachment that is a MIME type not supported by the Spine TMS sub-system.

The Sending system supports the GP2GP Large Messaging solution (R2.2a LM).

The Sending system has validated that the Requesting system is the patient's current practice on PDS.

1.7.2   Post Condition

- As main flow.

1.7.3   Flow Detail

If the **Sending** system does not support the Large Message the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 23]

The Sending system ascertains that the Requesting system supports Common Point to Point interactions from MIM 7 (see Spine Technical Design) by querying SDS.

> If the **Requesting** system does not support the Large Message Protocol and it is required due to the size of the EHR Extract or the number of attachments, the flow continues in Alt Flow 6: Sending practice system returns an error. [Response Code 14]

> If the **Requesting** system does not support the Large Message Protocol and it is required due to the an attachment with a MIME type that is unsupported by Spine TMS, the flow returns to the entry point for Alt Flow 3 from the Main Flow and a placeholder replaces the unsupported file types.

Attachments are removed from the message to create EHR fragments in Common Point to Point messages.

Any attachments that are greater than the Spine maximum message size are divided up (bitwise) to create fragments that fit within this restriction which are put into additional Common Point to point messages.

Common Point to Point messages are created with the ConversationID set to that of the EHR Extract ConversationID.

The core EHR Response message is sent to the Requesting system via Spine, and the system records this in Management Information and audit records.

> If the message is not successfully transferred to the Spine, this is recorded in the Management Information and flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]

The Requesting system receives and validates the core EHR Response message and identifies it as a "large message". It immediately responds using a Common Point to Point message indicating that the Sending system can "continue" to send the additional fragments using Common Point to Point messages. This indicates the successful receipt of the core message with attachment references.

> If the EHR Response message is not valid, this is recorded in the Management Information and flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 21]

The Requesting system checks that it sent a corresponding EHR Request for the EHR Response received.

If a corresponding EHR Request is not found, this is recorded in the Management Information and flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 09]

The Requesting system checks that the EHR Response received is not a duplicate of an unprocessed or already integrated one.

If a unprocessed or already integrated EHR Response is found, this is recorded in the Management Information and flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 12]

Once the Common Point to Point "continue" message is received, the Sending system then sends all the remaining message fragments using the Common Point to Point message. Acknowledgement of the "continue" message is not required as it serves no purpose.

The Requesting system receives and acknowledges each fragment received using Application Acknowledgement messages with positive or negative responses.

If the overall calculated timeout of the EHR Extract transfer (including Large Messaging) is reached, the Requesting system returns a negative acknowledgement for any further Common Point to Point messages and flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 25 for the Common Point to Point messages]

If an attachment or HL7 cannot be re-assembled from multiple Common Point to Point messages the Requesting system returns a negative acknowledgement for the Common Point to Point messages that cannot be re-assembled and flow continues (for this Common Point to Point message only) in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 29 for the Common Point to Point messages]

If an unexpected error occurs with a Common Point to Point, the Requesting system returns a negative acknowledgement for the Common Point to Point messages and flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 30 for the Common Point to Point messages]

If any of the 3 previous errors occur (25, 29, 30), the EHR Extract is not allowed to be integrated and the Requesting system must automatically reject it. Flow continues in Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 31 for the EHR Extract]

The Requesting system receives all the message fragments and the system records the Management Information and audit and reconstructs the message.

Once reconstructed, flow returns to the main use case flow.

Note: The positive Application Acknowledgement will be used to indicate that the EHR Extract has been successfully delivered and integrated in its entirety. This will be one of the factors used in

deciding if the EHR does not need to be printed and sent in paper format. This means that the positive ACK cannot be used to indicate receipt of the first fragment of the transfer sent using the usual EHR Response message.

1.8   Alt Flow 4

Removed from document.

1.9   Alt Flow 5: Spine service returns a negative response or too many results

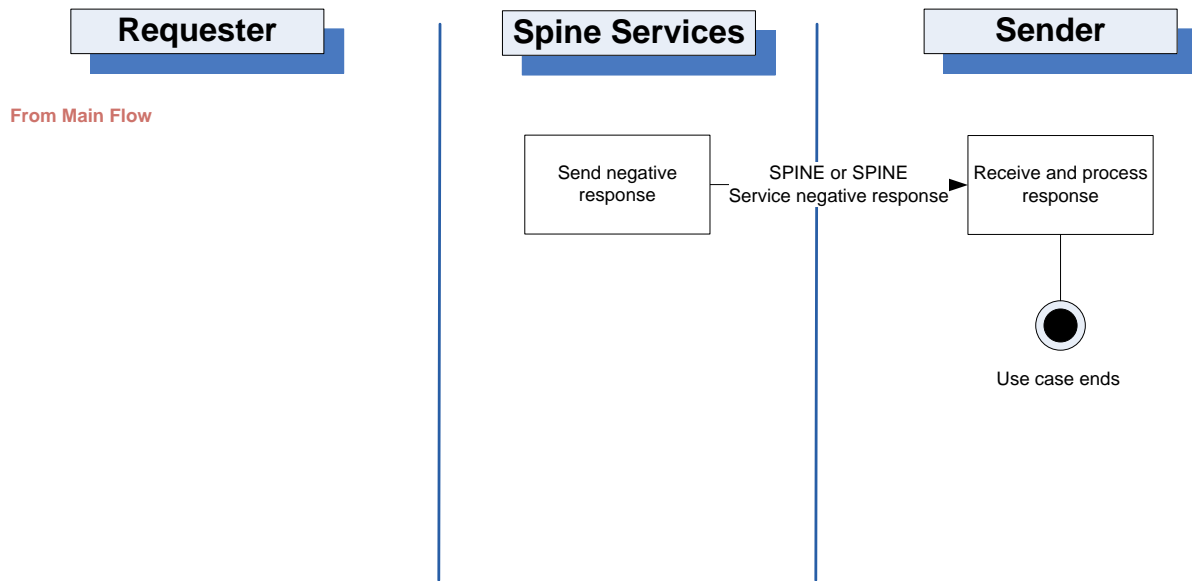The following activity diagrams illustrate the alternative flows.
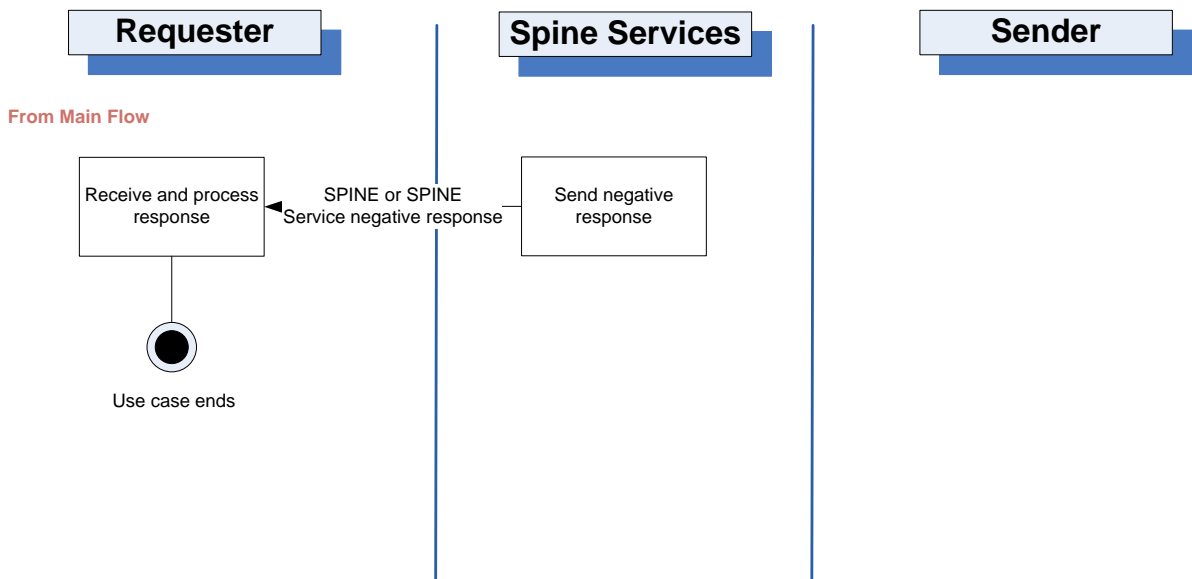

Figure 8 - Alternative Flow 5 option 1

Figure 9 - Alternative Flow 5 option 2

1.9.1   Scenario

The application making the service request may receive two types of errors:

- A messaging response from the Spine.
- No response due to Spine unavailable.
- SDS lookup provided more than one result to the query for each interaction

1.9.2   Post Condition

- A message is displayed on screen to the user
- A negative Spine or Spine Service response is received by the system requesting the service.
- Management Information and audit recorded in the system requesting the service.

1.9.3   Flow Detail

Spine errors:

These are defined in the External Interface Specification. Messages may be rejected by the Spine because they are not well formed, corrupted in transit or a range of other reasons. The submitting system must record the failure for Management Information purposes against the conversation and the use case ends.

If messages are accepted by the Spine they may be undeliverable because the endpoint service is unavailable. The Spine messaging layers will attempt to deliver the message by retrying or queuing. If this fails the system requesting the Spine service may receive a message indicating that the end point was uncontactable, the submitting system must record the failure for Management Information purposes against the conversation and the use case ends.

Application responses:

A variation of this is rejection by the Spine Safe Exchange Framework (SEF). Spine SEF blocks unauthorised message interactions and is explained further in the parent document *GP2GP V2.2 Compliance Module – Baseline Index*.

Another variation is that the system requesting the SPINE service may receive a negative response for the request (e.g. Organisation not found on PDS).

In all cases Management Information and audit are updated and the use case ends.

SDS responses:

SDS may return more than 1 result for a query. These are not valid configurations for GP2GP and shall be treated as an error. A negative Application Acknowledgement message is created with Response code 24 and sent to the Sending system, Management Information and audit trails are recorded.

No response:

In the event of no-response, the supplier should not rule out a response being returned some days later. Management Information should reflect the fact the no response has been forthcoming,

perhaps as a default Management Information value, to be overwritten if and when a response is received.

In all cases Management Information and audit should be in a state that indicates that there is an incomplete dialogue and this should not end the use case.

The following activity diagram illustrates the alternative flow. Management information is indicated in the red blocks.

Requesting system:

If the entry point to this alternative flow was the Requesting system sending an Application Acknowledgement to the EHR Extract, go to Alt Flow 7: Requesting practice system returns a negative acknowledgement. [Response Code 20]

Sending system:

If the entry point to this alternative flow was the Sending system sending an EHR Extract, go to Alt Flow 6: Sending practice system returns an error. [Response Code 20]

1.10 Alt Flow 6: Sending practice system returns an error

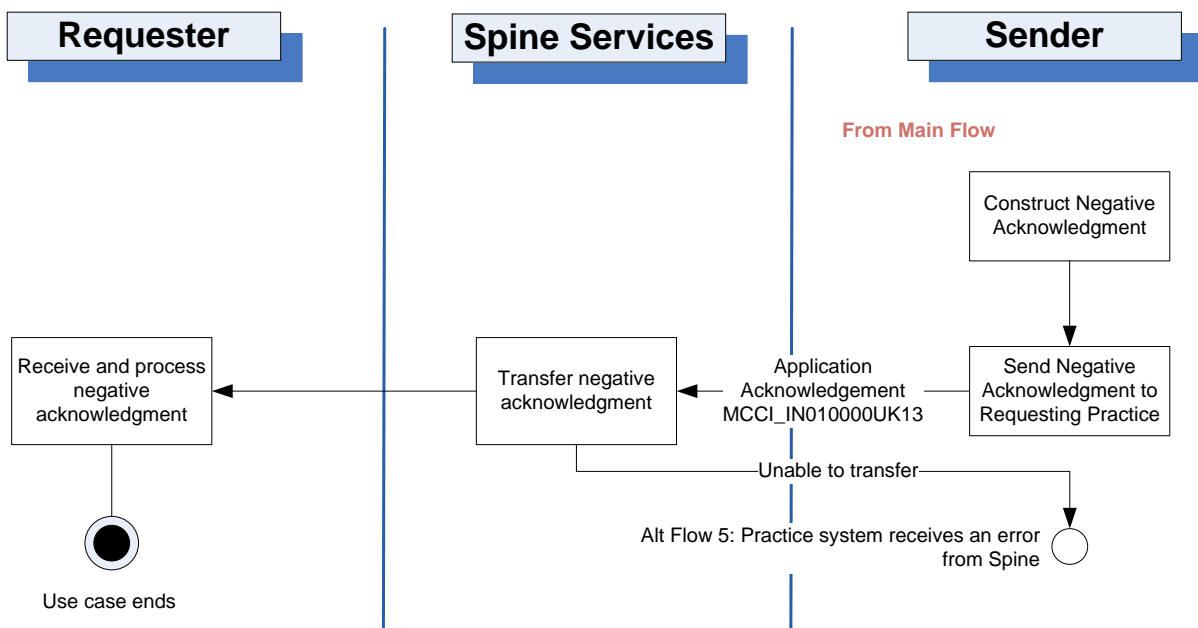The following activity diagram illustrates the alternative flow.

Figure 10 - Alternative Flow 6

1.10.1 Scenario

The Sending system cannot send the EHR Extract and returns an error to the Requesting system.

1.10.2 Post Condition

- An error message is displayed on screen to the user.
- A negative Application Acknowledgement is received by the Requesting system.

- Management Information and audit are recorded in both Requesting and Sending systems.

1.10.3 Flow Detail

The Sending systems cannot send an EHR Extract for one of the following reasons:

1. Patient not at Sending practice – Response Code 06
2. Sending practice has GP2GP locally disabled – Response Code 07
3. Sending practice has local SEF enabled (1.1a) and this prevents the EHR Extract being sent – Response Code 08
   Note that this has been deprecated but must be supported on receipt from a R1.1a system (MIM3)
4. EHR Extract generation failed – Response Code 10
5. Spine SEF prevented delivery of the EHR – Response Code 13
6. Large Message not sent as requester is not large message enabled – Response Code 14
7. Request not well-formed – Response Code 18
8. PDS indicates Requester is not current healthcare provider – Response Code 19
9. Spine returned an error – Response Code 20
10. Large Message not sent as sender is not large message enabled – Response Code 23
11. SDS lookup provided more than one result to the query for each interaction – Response Code 24
12. Something unexpected – Response Code 99

Response codes are detailed in the GP2GP Response Codes document.

The Response code and description are logged within the audit and Management Information records. The Response code is associated with the task being performed and is made accessible to the user.

A negative Application Acknowledgement message is created with the appropriate Response code.

The negative Application Acknowledgement is addressed to the Requesting system and transferred to the Spine.

> If the message is not successfully transferred to the Spine, the flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20]
> Note: If the message rejected by Spine is a negative Application Acknowledgement carrying Response code 20 the alternative flow 5 should not be followed to avoid an endless loop.

The EHR transfer process is completed and the use case ends.

1.11 Alt Flow 7: Requesting practice system returns a negative acknowledgement

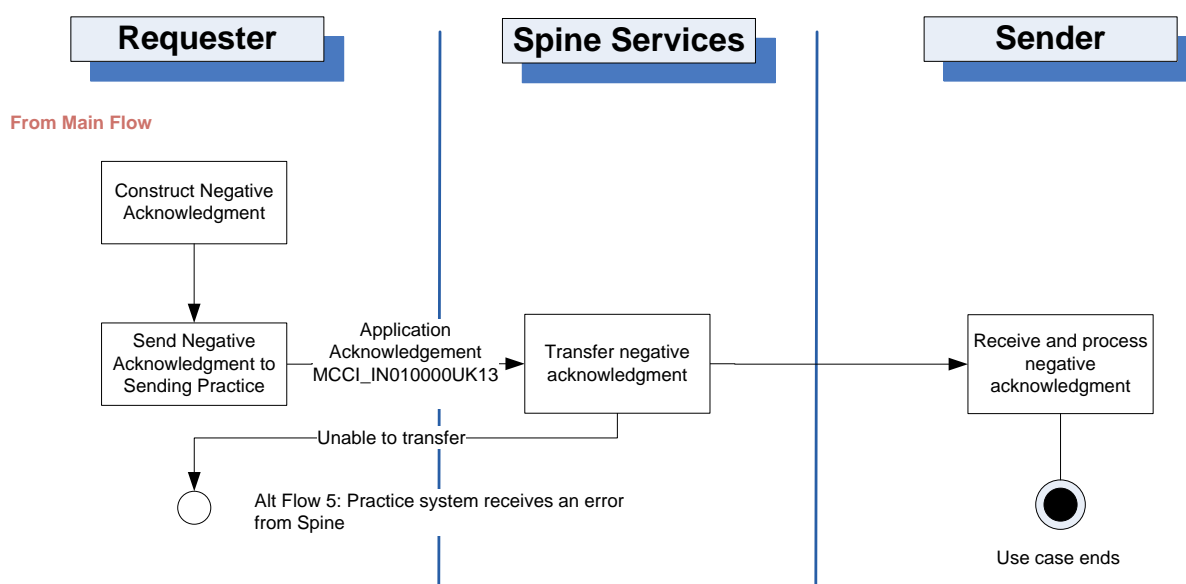The following activity diagram illustrates the alternative flow.

Figure 11 - Alternative Flow 7

1.11.1 Scenario

The Requesting system cannot process the EHR Extract OR the user decides not to integrate the incoming EHR Extract. In either case the Requesting system returns a negative Application Acknowledgement to the Sending system.

1.11.2 Post Condition

- A negative Application Acknowledgement is received by the Sending system.
- Management Information and audit are recorded in both Requesting and Sending systems.

1.11.3 Flow Detail

The Requesting system cannot process the EHR Extract for one of the following reasons:

1. EHR Extract received without corresponding request – Response Code 09
2. User tried to integrated but the system failed to successfully integrate EHR Extract – Response Code 11
3. Duplicate EHR Extract received when already **integrated** – Response Code 12
4. A-B-A EHR Extract Received and rejected due to wrong record or wrong patient – Response Code 17
5. Spine returned an error – Response Code 20
6. EHR Extract not well-formed or not able to be processed – Response Code 21
7. Overall EHR Extract timeout in a Large Message situation reached, this code is returned for Common Point to Point messages only – Response Code 25
8. Returning Patient EHR Extract Received and Requesting system is R2.2a compliant or earlier - EHR filed as an attachment – Response Code 26
9. Received EHR Extract rejected by Clinical Reviewer due to wrong record or wrong patient – Response Code 28
10. Large Message Re-assembly failure – Response Code 29
11. Large Message general failure – Response Code 30

12. The overall EHR Extract has been rejected because one or more attachments via Large Messages were not received. – Response Code 31

13. Something unexpected – Response Code 99

Response codes are detailed in the GP2GP Response Codes document [see Ref: 1 index].

A negative Application Acknowledgement message is created with the appropriate Response code and sent to the Sending system, Management Information and audit trails are recorded.

If the message is not successfully transferred to the Spine, the flow continues in Alt Flow 5: Spine service returns a negative response or too many results. [Response Code 20] Any remaining Management Information and audit trails are recorded.

The EHR transfer process is complete and the use case ends.