SageBridge: Patient Portal Interface Design

Last Updated: 2/19/2014 V2.0 - BASELINE

Introduction

This document describes version 2.0 interfaces between Sophrona's patient portal and the EMR. It does not describe portal functionality itself.

History

Date	Version	Comment
1/8/2014	V1.0	*Initial version of document.*
2/19/2014	V2.0	*BASELINE Extensive updates to specification for SBDataContainer Structure added by Alex Murzin.*

Scope

In this initial version, the scope is to provide interfaces between EMR and Sophrona's certified MU2 Portal Technology in support of the following:

- Allow patients to View, Download, and Transmit their patient health information.
- Allow patients to register online and send demographic and medical history from portal to the EMR for reduced staff data entry.
- Ensure that MU metric counts (secure messaging and chart VDT) are transmitted back to the EMR for reporting.

Later other interfaces will be evaluated.

Out of scope:

Sophrona will not address Transition of Care Summary requirements of MU2 (physician to physician exchange of CCD document using DIRECT method).

Interfaces

Name	Description	Technology
Get Patient	This is a patient query needed to get patient ID and demographic from PM. It might be for an individual patient by patient ID, by patient parameters, or for any number of patients meeting certain criteria. *This can be used to get patient ID for subsequent updates or it can be used as basis of portal enrollment campaign.*	Sophrona webservice (called 'remote webservice' in Sophrona-speak) on client server calls stored proc in the EMR database to return matching patient(s).
Update Patient Demographic	For a particular patient, update demographic, insurance, guarantor, address, emergency contact, etc. collected during online registration.	Stored procedure.
Update Past Medical History	For a particular patient, update medical history collected during online registration.	Stored procedure.
Post Patient Data	Used to post any number of documents. In this case the patient chart info in CCD format. Later this might also include clinical summary CCD, send recall reminders, patient education CCD, etc.	Webservice posting from client application to Sophrona datacenter webservice.
Update MU Metrics	For all MU transactions (Secure Message composed by patient, Chart viewed, downloaded or transmitted, Chart sent), metric will be sent by provider.	Stored Procedure.

Interface: GetPatient Stored Procedure

Technical Detail

A stored proc (GetPatient) will be provided within the EMR's database to be used by SageBridge to look up patient IDs, email, and patient demographic with simple inputs: (Name and DOB) or (Patient ID and DOB).

- When input is patient ID + DOB: Proc returns demographic for specific patient.
- When input is patient name, DOB, and other authentication criteria: Proc returns patient ID + demographic for individual patient only if unique match is found.
- When input is date range of appointment dates or date range of birth dates: Proc returns all patients that meet the criteria.

Authenticating Criteria:

Recommendation is for authentication criteria to be as follows:

1. Patient's first name + last name + DOB (must match);
2. AND primary phone number must match;
3. AND if SSN is on file in PM, SSN must match;
4. AND if patient's middle initial is in on file in PM, middle initial must match.
5. Patient ID and demographic is only returned if one unique record is identified.

Possible modification on this approach may include (and may be adjusted over time):

1. Instead of requiring that primary phone number match, allow any PM phone number to match patient's primary phone.
2. Ignore SSN.
3. Ignore middle initial.

Interface: UpdatePatientDemographic Stored Procedure

Technical Detail

A stored proc (UpdatePatientDemographic) will be provided within the PM's database to be used by SageBridge to update patient demographic:

- Patient ID + DOB (must be validated against PM before doing any updates).
- Patient phone, address, race, preferred language, employer (free text)
- Guarantor name, address, phone, patient relationship
- Insurance policy holder(s) name, address, phone, patient relationship, carrier information.
- Emergency contact name, phone, address

Sophrona may provide stored proc signatures but PM/EMR vendor will need to complete the proc process inputs correctly and place as desired inside PM/EMR database.

Interface: UpdateMedicalHx Stored Procedure

Technical Detail

A stored proc (UpdateMedicalHx) will be provided within the EMR database to be used by SageBridge to update Medical History. This stored proc will simply park the CCD document and additional XML in a database table for MDOffice UI process to pick up for processing.

- Patient ID + DOB (must be validated against EHR before doing any updates).
- Patient CCD + other medical hx provided during online registration. (See Appendix B)

Sophrona may provide stored proc signatures but PM/EMR vendor will need to complete the proc process inputs correctly and place as desired inside PM/EMR database.

Interface: UpdateMUMetrics Stored Procedure

Technical Detail

A stored proc (UpdateMUMetrics) will be provided within the EMR database to be used by SageBridge to update MU Metrics used within the EMR for MU reporting. This stored proc will provide rows of data (insert) for each MU transaction completed on patient portal.

- Patient ID + DOB
- MU Metric Type
    - Secure Message Created
    - Chart Sent
    - Chart Viewed
    - Chart Downloaded
    - Chart Transmitted
- Provider ID
- Timing

Sophrona may provide stored proc signatures but PM/EMR vendor will need to complete the proc process inputs correctly and place as desired inside PM/EMR database.

Interface: PostPatientData Webservice

Technical Detail

Every outbound call from the EMR on chart close to the SageBridge webservice PostPatientData should probably be logged to a local DB table for traceability. Sophrona will provide encryption and message digest specifics along with WSDL and other specs for calling the Sage Bridge webservice. Every call will include the practice billing identifiers (billing acct#, facility ID, EIN, etc.), machine name/IP, login/pwd assigned by Sophrona, a unique msg ID, timestamp, patient info (Unique ID, acct#, name, DOB, email and/or address), room for a national patient identifier, and the data payload.

Assumption:

Each patient message is processed one transaction at a time.

Interface Description

SBDataContainer Structure

This document describes version 1.2 SBDataContainer XML structure used in PostPatientData web-service implementation.

Technical details:

The interface will be implemented as a Web service on Sophrona servers:
https://sagebridge.clinicalgateway.net/ExternalPatientData.asmx

Test environment URL:

https://sagebridgedev.clinicgateway.net/ExternalPatientData.asmx

Set of web-methods to debug specific items and see examples of XML structures available at:
https://sagebridgedev.clinicgateway.net/sbsagedatahelper.asmx

The only method **AcceptData** will take 1 parameter of type string, which is an XML representation of SBDataContainer structure, described in this document.

Security

Payload hash is calculated by SHA512 algorithm with base64 output.

SecureData is encrypted with 128 bytes key, generated from the password as MD5 hash value.

```
ChipperMode=ECB
Padding=3(Zeros)
Algorithm :AES

The temporary password used in test methods:
04bd260e476943e6b21a7e4c6525bda3
```

SBDataContainer structure:

```
<?xml version="1.0" encoding="utf-8"?>
<SBDataContainer>
  <billingType>BillingAcct</billingType>
  <billingId>123</billingId>
  <systemType>PMorEMRName</systemType>
  <messageId>04bd260e-4769-43e6-b21a-7e4c6525bda3</messageId>
  <timestamp>2014-02-14T11:11:40.8916658-05:00</timestamp>
  <clientId>127.0.0.1</clientId>
  <clientType>IP</clientType>
  <serviceRequest>timelyAccess</serviceRequest>
  <version>1.2</version>
  <secureData>--- Encrypted SBSecureData, base64 encoded string. See attached
06SecureDataExample.xml file with not encrypted example of SecureData element----
</secureData>
</SBDataContainer>
```

The meaning of the fields (XML nodes) is the following:

Field	Type	Description
billingId	String	Unique practice identifier (PM/EMR billing acct #, facility ID, EIN, and/or other pieces of data).
billingType	String	Describes what kind of values is found in billingId. For now, only value will be “BillingAcct”
systemType	String	Describes nature of originating system.
messageId	String	Unique message ID, for example, Guid or Integer values
clientId	String	Unique identifier of calling machine (machine name, IP, FQDN.)
clientType	String	Describes what kind of value is found in clientId. Initially, only value will be “IP”.
serviceRequest	String	Defines type of request. Use “timelyAccess” as only one type supported by now to post PatientData (Chart) For summary “clinicSummary”
Version	String	Describes version of secureData format. Use “1.2” value for now.
secureData	String	Message data. This is base64 string representation of enctypted SBSecureData XML document described below in this document.

See attached 07SageDataExample.xml file for the full SBSageData example, include enctypted SBSecureData content.

SBSecureData structure:

SBSecureData is an XML document representing secure portion of data. The content of this structure is an XML, for example

```
<?xml version="1.0" encoding="utf-8"?>
<SBSecureData>
  <userName>user1</userName>
  <password>pass1</password>
  <version>1.2</version>

<hashCode>j4to5bU3HJgGIGuzCBsoHL6W0tTGGwr+QQdJThDR4yP+NVbXQG4XzmjBfZ4sNr0xrhz
HB3FSe9iAmxXlFTpA/g==</hashCode>
  <payload>--- SBPayload structure here. See attached 05PayloadExample.xml
file for full example----</payload>
</SBSecureData>
```

Field	Type	Description
Username	String	Username – Web service application level authentication. May vary by client implementation.
Password	String	Password – Web service application level authentication. May vary by client implementation.
Version	String	Version of encapsulated payload structure. Use “1.2” for now.

hashCode	String	The resultant hash value, code or “checksum”of the payload which includes the CCD and all other elements. This should be used to verify the integrity of the payload:
		`SHA512("The quick brown fox jumps over the lazy dog")`
		`= 07e547d9 586f6a73 f73fbac0 435ed769 51218fb7 d0c8d788 a309d785 436bbb64 2e93a252 a954f239 12547d1e 8a3b5ed6 e1bfd709 7821233f a0538f3d b854fee6`

Payload	String	Encapsulated XML document with XML header to represent actual data. The format of this data to be determined depending on the **serviceRequest**.

See attached 06SecureDataExample.xml for full example of SBSecureData structure.

Payload Structure

The Payload structure represents actual data needed to execute specific serviceRequest. Format and structure of this element depends on serviceRequest value and from the version specified in SBSecureData structure. The example below describes Payload structure for “timelyAccess” serviceRequest version 1.2

The common structure shown below.

```
<?xml version="1.0" encoding="utf-8"?>
<SBPayload>
  <patientInfo> -- XML elements to represent Patient information. See attached 03MDAccountinfoExample.xml file for example of patient data. Please note, this element does not have XML header---
  </patientInfo>
<providerInfo> -- XML element with provider info -- </providerInfo>
  <relatedContacts />
  <attachedDocuments>
    <document> -- XML elemtend to represend Document strucure. See attached 04MDDocumentInfo***.xml for examples of Document Info structures.Please note, this element does not have XML header ---
    </document>
  </attachedDocuments>
</SBPayload>
```

Field	Type	Description
PatientInfo	XML Element	Encapsulated XML structure to keep patient information. Structure of this element is described below in this document. See SBAccountInfo structure example below
providerInfo	XML Element	Encapsulated XML structure with Provider information
relatedContacts	XML List	The list of related contacts to represent AuthorizedUsers, Gurantors or family member etc. Each item is SBAccountInfo XML structure Out of scope in this version.
attachedDocuments	XML List	List of “document” XML structures to represent attached files. This is a container for a list of “document” items.
Document	XML Element	Encapsulated XML structure to represent actual data. The format of this data to be determined depending on the **serviceRequest**.

See attached 05PayloadExample.xml for full example of Payload structure.

SBAccountInfo structure

SBAccountInfo structure is used to represent patient information and, if used as item in "relatedContact" list to represent authorized users, guarantors, primary insurance holders etc.

The example of SBAccountInfo structure:

```
<SBAccountInfo>
  <acctType code="0" name="patient" />
  <relationship code="1" name="self" codeSystem="internal" />
  <firstName>Test</firstName>
  <lastName>Sophrona</lastName>
  <middleInitial />
  <salutation>Mr.</salutation>
  <nickName />
  <birthDate>1963-08-12T00:00:00</birthDate>
  <email>test@soprhona.com</email>
  <addressLine_1>777 Heaven Ave</addressLine_1>
  <addressLine_2 />
  <city>Paradise</city>
  <state>NY</state>
  <zip>99999</zip>
  <sex>M</sex>
  <SSN>999885555</SSN>
  <primaryPhone>9145551212</primaryPhone>
  <primaryPhoneType>home</primaryPhoneType>
  <cellPhone>8885551212</cellPhone>
  <homePhone>9145551212</homePhone>
  <workPhone />
  <workPhoneExt />
  <contactPhone />
  <accountMRN>N/A</accountMRN>
  <accountId>2938742</accountId>
  <maritalStatus code="2" name="married" />
  <preferredLanguage code="en" name="english" codeSystem="W3C" />
  <race code="-1" name="unknown" />
  <ethnicity code="-1" name="unknown" />
</SBAccountInfo>
```

The list of possible values for dictionary items such as acctType, Relationship, MaritalStatus, PreferredLanguage, Race, Ethnicity etc would be provided later.

Example of SBAccountInfo structure is provided in attached in 03AccountInfo.xml file. Please note – XML header has to be omitted when this structure included into Payload element.

SBDocumentInfo Structure

SBDocumentInfo structure has information about the document(s) attached to payload.

```
<document>
  <documentName>Artice for you to read</documentName>
  <documentType>EducationArticle</documentType>
  <XSLTType>XLSTPDF</XSLTType>
  <MimeType>application/pdf</MimeType>
  <fileContent> ---- Document content here---  </fileContent>
  <createdTS>2014-02-04T16:46:01.9918516-05:00</createdTS>
  <contentSize>266858</contentSize>
</document>
```

Field	Type	Description
DocumentName	String	Name of document to show to the patient on UI
DocumentType	String	For internal use, some sort of “Category”
XSLTType	String	Describes a name of XSLT file, if needed
MimeType	String	Standard mime types
fileContent	String	*See explanations below
createdTS	DateTime	DateTIme when document was created
contentSize	Integer	Size of content in bytes/characters

FileContent element:

- for binary content use base64 encoded string. See attached 04DocumentInfoExample(PDF).xml file with example of SBDocumentInfo structure with binary (PDF) file included.
- For text/string context base64 is preferred but not required. Please note – if fileContent element represents another XML document (i.e. CCD), it has to be “escaped” before. See attached 04MDDocumentInfoExample(CCD).xml file with example of CCD(XML) document included.

SBProfiderInfo structure

XML structure to keep provider information

```
<providerInfo>
    <firstName>Some</firstName>
    <lastName>Doctor</lastName>
    <middleInitial>V.</middleInitial>
    <credentials>MD.</credentials>
    <addressLine_1>1 Park ave</addressLine_1>
    <addressLine_2 />
    <city>Somewhere</city>
    <state>NY</state>
    <zip>10000</zip>
    <phone>8885551212</phone>
    <email>demoProvider@sophrona.com</email>
    <physicianId>PR12345</physicianId>
  </providerInfo>
```

Field	Type	Description
physicanId	String	Provider ID (as it is defined in the practice)

Appendix A - CCD Details & Sample

A sample CCD needs to be added here. It should represent a patient with all medical history information provided including differentiation of 'systemic' vs. 'ophthalmic' for meds, problems, surgery, etc.

This would be used for the EMR posting chart to the portal.

Appendix B - Augmented CCD Details for Online Registration

Need to define how CCD or CCD envelope might be modified to contain things such as ROS and other information provided by patient during online registration but that may not be typically contained in CCD (e.g. contact lens solution?).