eCR Projectathon 2016

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Background

Acute and scheduled care is a regional business, where hospitals and physicians closely cooperate based on established processes and shares of responsibility. In most settings the care participants are nominated in advance by the patient (e.g. family doctor, specialist, hospital).

Electronic Case Records (eCR) define a core IT support infrastructure for sharing medical patient data within such regional, organized and managed care scenarios. eCR takes advance of the clear purpose definitions and the closed user groups inherent to these settings, which allow for many optimizations related to the implementation of even rigid privacy and security regulations. In particular patients may nominate the care team once by giving informed consent instead of being obliged to authorize every single data access. Even more from a data privacy perspective an electronic Case Record is treated as a single document due to the strict definition of its purpose of use. By this there is no need to manage permissions on a single document level – all care providers share the same permissions which hold for the full set of data within the record.

From a technical perspective eCR is a profile on top of existing IHE profiles. Generally spoken, the eCR technical specifications only define configuration settings and constraints on IHE XDS which allow taking advantage of the enhanced usability features related to a strict purpose definition and closed user group. The eCR specifications are property of the eCR Association which provides them to the public for open and free use at http://wiki.hl7.de/index.php?title=cdaefa:EFA_Spezifikation_v2.0. The (further) development of these specifications is a joint effort of the eCR Association and the German Healthcare IT vendors' Association (bvitg). Fraunhofer FOKUS is supporting these efforts by taking the role of the technical editors of all eCR specifications.

For the 2016 IHE European Connectathon in Bochum, eCR Association and bvitg got in touch with IHE Europe for implementing a dedicated eCR Projectathon as part of the IHE Connectathon. At the eCR Projectathon vendors may proof their solutions for compatibility with the defined eCR constraints on existing IHE profiles and thus can demonstrate to their customers that their solution can be configured to optimally support regional care networks.

Projectathon Storyboard

A patient has a chronic sinusitis. His otorhinolaryngologist recommends to go for a surgery which she will do herself at a local hospital. In advance to the surgery the patient has to provide a CT, a blood test and an ECG. In order to manage this flow of documents, she as well recommends to setup an electronic case record where the radiologist and the family doctor may store the CT, blood test, and ECG results so that she and the anaesthetist at the hospital can easily access this data.

The patient agrees and consents to setting up an eCR with the otorhinolaryngologist, the resident radiological practice, his family doctor and the hospital being named as authorized users. The sole purpose of the eCR is the treatment of the patient's sinusitis. Using her IT system, the

otorhinolaryngologist sets up a new eCR by uploading the consent. Additionally she stores information sheets for the radiologist and the family doctor into the record in order to provide them with clear guidance on the pre-surgery tests.

The patient immediately goes to the radiological practice where a CT is done and – together with the findings – stored within the eCR. The otorhinolaryngologist oversees the findings and confirms to the patient that a surgery is the best treatment for his case. Two weeks before the surgery the patient visits his family doctor to get a blood test and ECG done. Again the doctors stores the respective data into the patient's eCR. The anaesthetist at the hospital oversees the results and confirms that the surgery can be performed as planned. A day before the surgery the patient is admitted to the hospital. The admission clerk loads all medical data within the eCR into the local IT system such that all medical staff involved in the surgery can easily access all information. After the surgery is done, the surgery report and a discharge letter are uploaded to the eCR. Through the eCR the family doctor now has all information available that is needed for the patient's follow-up treatment. In case of complications he can easily contact the otorhinolaryngologist as both have access to the eCR and therefore share the same information on the patient.

Use Cases for the Projectathon

The storyboard sketched above can be implemented by combining 3 modular sets of eCR transactions. All of these eCR transactions are profiles on existing IHE transactions.

eCR Transactions

Module 1: Initialization of the an eCR

Storyboard:

- otorhinolaryngologist sets up new eCR

Implementation:

See http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_ResourceManager#EFA_XDS.2FXDR_Binding:_createECR for the eCR profile on IHE ITI-41 and http://wiki.hl7.de/index.php?title=cdaefa:EFA_Identity_Assertion_SAML2_Binding for the eCR profile on IHE XUA identity assertion.

The projectathon will cover both eCR consumer and provider actors:

For vendors implementing the consumer actor Fraunhofer FOKUS will provide an IHE XUA compliant Identity Provider which vendors may use to obtain the required SAML assertion. The consent information provided with the ITI-41 request may be any valid CDA document (recently it is assume that participants within a regional network agree on the format of the consent; a profile proposal for standardizing electronic consents has been submitted by Intercomponentware and GE healthcare for the recent IHE cycle).

For the eCR provider actor Fraunhofer FOKUS will provide configuration information for the eCR to set up. By this the provider side solution only needs to proof that that received CDA is valid but will take the predefined configuration information for setting up the record.

By this, the most prominent constraint on ITI-41 is that a folder with a given classification has to be created.

Module 2: Providing Data to a Known eCR

Storyboard:

- otorhinolaryngologist provides information for other physicians
- radiologist provides findings
- family doctor provides blood test and ECG
- hospital provides surgery report and discharge letter

Implementation:

See http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_DocumentRepository#EFA_XDS_Binding:_provideData for the eCR profile on IHE ITI-41 and http://wiki.hl7.de/index.php?title=cdaefa:EFA_Identity_Assertion_SAML2_Binding for the eCR profile on IHE XUA identity assertion.

The projectathon will cover both eCR consumer and provider actors:

The consumer side solution uploads a PDF document to the previously created eCR. Again Fraunhofer FOKUS will provide an Identity Provider for obtaining the required XUA User Assertion.

The provider side receives, registers and stores the document.

Again, the most prominent constraint on ITI-41 is that the document is registered to a defined folder.

Module 3: Browsing an eCR and retrieving data from an eCR

Stroyboard:

- Radiologist retrieves information sheet and validates consent
- Family doctor retrieves information sheet and validates consent
- Otorhinolaryngologist oversees CT and findings
- Anaesthetist oversees lab test and ECG
- Hospital copies all data into the local IT system

Implementation:

See http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_ResourceManager#EFA_XDS_Binding:_listPartitions for the eCR profile on IHE ITI-18 for discovery the eCR and its folders,

http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_DocumentRegistry#EFA_XDS_Binding:_listPartitionContent for the eCR profile on IHE ITI-18 for obtaining document metadata,

http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_DocumentRepository#EFA_XDS_Binding:_retrieveData for the eCR profile on IHE ITI-43, and

and http://wiki.hl7.de/index.php?title=cdaefa:EFA_Identity_Assertion_SAML2_Binding for the eCR profile on IHE XUA identity assertion.

The projectathon will cover both eCR consumer and provider actors. All vendors just need to implement the defined constraints on ITI-18 and ITI-43 to pass this module of the projectathon.

Option 1: Peer-to-Peer Networking of eCR Providers

Vendors of eCR provider actors may choose to implement the eCR P2P-Option which allows for distributing data of a single eCR instance among multiple domains.

This option requires two additional functionalities to be implemented by the provider actor only:

1. If data to an existing eCR is to be registered within a second domain, the provider at the 2nd domain must provide and register a respective link (specific data object, called "ecR Mount Point") at the primary domain. This is performed using a profile on ITI-41: http://wiki.hl7.de/index.php?title=cdaefa:EFA_XDS_ResourceManager#EFA_IHE-ITI-Binding:_registerRecordLocation
2. Module 3 (see above) is extended by forwarding an incoming query to all domains that hold further data for the identified eCR.

This option can only be tested at the connectathon if at least 2 vendors of an eCR provider actor (eCR resource manager) confirm to implement this option.

Option 2: Digital Consent

Various German stakeholders jointly developed a specification for a digital consent document that may be used for transmitting consent information for authorizing named parties to use an electronic health record. This specification is an extension to the German "IHE Cookbook". The recent draft for comment can be found at: http://wiki.hl7.de/images/EPPC-G_Draft_for_Comment_v04.pdf

For the projectathon, vendors implementing eCR client and provider actors may choose to implement the "eCR Digital Consent" option. In this case the CDA document registered and provided during eCR setup must comply to the CDA implementation Guide and attribute mapping tables as defined in http://wiki.hl7.de/images/EPPC-G_Draft_for_Comment_v04.pdf.