**Open HIE Shared Health Record Community Call**

**Date:** 29 July 2014

**Attendees:**

Carl

Hannes

Linda

Joan

Larry

Ryan

Justin

Derek

The call recording is available for 30 days online here: <http://www.conferenceplayback.com/stream/62664254/70942801.mp3>

**Agenda:**

* Implementation update
* Review changes to the "What constitutes an OpenHIE SHR?" doc
* <https://wiki.ohie.org/pages/viewpage.action?pageId=19464697>
* Discuss the design of an XDS.b interface into OpenMRS
* <https://wiki.ohie.org/display/SUB/XDS.b+Interface+Module+Design>

**Minutes:**

* **Implementation update**

RC - In terms of the implementation updates, what's been happening this week been shifting focus from IL to SHR side of things, means that I will hopefully be able to get development work done on the SHR over the coming two weeks to try to drive that forward a little bit. Great to have Justin on board quite strongly now and doing some of that work so hoping to work with him a little bit more to drive this work forward. Specifically what I am going to be focussing on is the XDS.b interface into the OpenMRS SHR. There are two things we want to develop there it is a module to make OpenMRS act as an XDS.b repository and the other is another module to make it operate as a registry. The second module we might not need at this point we might just instead use a third party XDS.b registry and then just implement the repository function at this point, that will give us a first stab at having a XDS.b interface into MRS while minimising the amount of development effort required to get that up and running. This will be the new focus over the coming weeks so we will pick up some of the modules we have developed in the past and link that all together we can get a full end to end test of a XDS.b interface into OpenMRS and also move towards that new documents received and a whole document that you can just get and query for and also what Justin is doing focusing more on how those get processed and stored discretely.

RC - JF don't know if you want to give an update on the work that you have been doing.

JF - Start off with the CDA import. I added a page to the wiki that talks about the general way that CDAs are parsed by the prototype module that I have written currenlty it can process any level 2 CDA so we get section import currently only storing the section text. If I don't understand what the section is just a little snippet of the text element.I have a spreadsheet that contains a list of sections that are currently complete and supported at level 3 sections and entries,  will offload to the group to kind of see what pieces are still marked under to do.  One of the roadblocks that have been hit is with the medication and immunization section.   Told it may be a more complex process in the CDA. RC and JF to discuss further on calls about how to reproduce and store them reliably. The QED interface, have started it and was experimenting with web services in OpenMRS and  initiated  some discussion on how to do it. I found a way to do web services using a framework in OpenMRS however there is one little hicupp that I am still encountering so I've just put in a ...so that I can start testing the actual V3 message building from OpenMRS. Hopefully will post a doc on the wiki that will outline kind of a design that I am hoping to follow for QED. And that's pretty much it from my end.

DR - JF can I ask a couple of questions you went straight to saying you are able to do level 2 for any CDA and some of level 3. Two questions 1-Can you just give a drive by overview of what level 3 stuff is done and 2nd of all does that imply you are already able to store the doc as a doc

JF - my understanding of the design for XDS is to be an unstructured document  flow that would actually store the whole doc as verbatim and that the content handler that I would be writing would be then doing further processing on it. That's what I understood from the diagram of the SHR.

DR - what are some of the ones that you can do at level 3 do we have some of the usual suspects in there like weight, fondul height and blood pressure and stuff like that.

JF - what I will do is upload the spreadsheet, I'll just name off a few sections like some of the V3 are coded history of infections, that we can process we can process vital signs that are height weight blood pressure, pregnancy history the detailed physical exam and coded physical exam sections, allergies and active problems list. When I say allergies and active problems list that includes history of illness and present illness as well. What I am doing if it is a problem entry it goes into the OpenMRS problem list if it is an allergy entry it goes into the allergies in OpenMRS and then observations. The only two outstanding was substance administration, not sure where to put in the OpenMRS data model and the proceddure entries which aren't really all things that we did to the patient which I'm not very sure where to put that.

DR - so procedure would be a previous surgery or something

DR - what does "procedure" mean?

DR - the medications administration means we don't yet have the immunizations because it is a medications administration, right?

JF - yes that is correct

JF - have about 8 CDAs on the branch of github we are working on 4 of them are APHP documents and the other 4 HPSR/IHE other CDAs I could find on line. We can process if it has vital signs  it doesn't matter if it is APHP or HPSR it will process the vital signs. Also one of the things we should talk about as this might help SK is the Terminology mapping one of the hardest parts is the terminology management. Managed to map a lot of the terms used in vital signs and pregnancy history to the ...... concept dictionary but  there are still gaps or places where the codes in CDA are broader than the OpenMRS codes and how we are going to handle that would be a good discussion for RC and the implementation team to have.

DR - can we create a 'catch all" kind of concept and say that if there is something that comes in coded but we don't have an OpenMRS concept for that can we just bring it in and identify it's code set?

JF - what happens is say for example there is in OpenMRS there is reference terms so say in the CDA the importer encounters a code where it doesn't have a reference for that code or it is not mapped to an OpenMRS concept it creates a reference term it creates a concept and then links the two together and then puts it into a classification of auto code or auto created code and in any OpenMRS you can query on the code that you missed in the CDA and it will bring up that code, then you can go through and actually reconcile those. The goal would be how do you want the CDA processer to work. Do you wnat it to be super smart and say I don't understand this so I'm not gonna process it because I don't understand reliably  what it is or a catch all scenario where it auto creates concepts and you can control it there is an auto create flag that you can turn on or off in the module.

DR - is that kind of the way that you are getting level 2 done if there is something coming in that is a particular section that you're not sure exactly what it is you're just able to save it in OpenMRS using an auto create kind of thing

JF - Yes the section codes are actually  the biggest gap and I think SK on the OpenMRS dev group so the section codes are ...... and if I don't have a handler, because the way that this works is there is kind of like a processer that implemented a template ID and if it cannot find a processer for the template ID in a particular section it stores it like a section concept and then puts the concept complex and then puts the text in there because it does not know how to process the entry. And also some entries in APHP is level 2 sections where they don't have any entries they just have text. History of hospitalisation is an example where there is no code and no level 3 data it's just level 2 so we can just store that textual content and then pull it back out.

DR - we're at level 2 for everything because of the catch all capability

JF - yes there is a generic level 2 processor that can just store the text, it stores the section code and then it stores the section as xml

LL - what happens when the catch all term is stored first and say two days later you get another document or the same document but this time you are able to translate it to a reference term will the catch all term be changed or what do you plan for that?

JF - currently because the complex OIDs can only be linked to a concept the reference term wouldn't change it will create a reference term and connect to the concept term if you want to create a concept or reference term to the proper OpenMRS concept the importer on the next one would use that concept that you just mapped to, I'm not sure how if then all the previously linked could be linked to the concept and then migrated over to the new concept. Not familiar enough with how OpenMRS would reconcile that.

RC - There isn't any easy way within OpenMRS to do that sort of migration, hope that once things are created in the concept dictionary you shouldn't really be changing the reference term. There is no easy way to do the migration but hopefully it will be sorted in each case

JF - also when you go to deploy this you wouldn't want auto creating concepts, you would want to have a way of basically queueing up any invalid CDAs that you couldn't process and then have a human go in and reconciling them and then replaying them through. When it comes to a section level there are only a few dozen codes that you would encounter as section codes so it is not insurmountable to pre load them in when you do deployment. What I will do when I upload that spreadsheet I do have in there, there is a third sheet that does have the reference terms that I discovered in the CDAs that I've encountered and then theremapping to the concept dictionary.

DR - i think all the CDAs that are on our radar are from the specialization care document the HL7 CCD and so once we've been through those and found them a happy home in OpenMRS we will not find anything in the PCC list of CDAs that we cannot parse. I do think that really there are only three kinds of CDAs there are all those in the Patient Care Coordiantion portfolio, then there are the ones for Labs orders and results then there are the ones for medication orders and dispense and once we can do those three base kinds of CDA we've probably got dozens of specific profiles that we could support.

JF - my strategy when I turn auto create concepts to true import CDA and I'll see what new concepts are created and if I can map them and this gets smaller and smaller the more you process because you're right they're all based on C32s and there are only so many section codes. One of the things I do encounter though and I don't want to get too much into the terminology is unit mismatch for example in OpenMRS the units attached to the concept where as in CDA the unit's attached to the value and right now there are some basics if it's an SI unit I can convert it if the incoming measurement is in metres and the OpenMRS concept is in centimetres then we can convert that. There are things that are a little more difficult where you need the units match but that is something more detailed converssation that we can also have.

DR - actually I think that is going to be a problem because the concept should be decoupled from the unit, shouldn't it?

JF - well it depends that is more of an OpenMRS concept question

LL - I think they should be tied together because if you are going to do any kind of clinical decision support you need apples to apples all the time, and the minute you disconnect the units you don't have that.

DR - good point but if there are allowed options that are known like BP in kilopascals and BP in ml mercury, given that you could directly map those two dif units to each other

JF - that's what the insider of the importer does if it finds a term say for example height in centimetres if I get a height in metres and what I'll do is I'll search the OpenMRS and try and find a reference term and a concept reference and if it says centimetres not metres I can convert those easily and to the concept before storing them as an OID. When you start getting to the units that you can't convert that's when you get to deployment and submit an observation it will be in x units.

DR - that is basically what it will mean that we would have to be able to enforce units of measure across an entire health system that maybe we can

LL - I agree that the translation is fine but it's when people start sending units that can't be converted that's when you get in trouble

DR - Agreed and I totally get that when you have someone who sent you something in cubits per furlong you should send an exception that this is not an allowed set of units of measure but the thing is

DR - there is a standard of units of measure and HL7 went through the process four or five years ago of completing harmonising their specs with the ISO standard. So if we just said adhere to this spec then we should be fine

JF - it is computable for most of the units for some of the units it's not but the majority of things that I've encountered that causes problems is when I've gotten things like temp in Fahrenheit and I can do a conversion to Celsius.

DR - it was a pretty big deal at the time it was done and I remember vividly because at the time I was the vice chairman of the architecture and infrastructure group and we had to get our arms around the fact that no legacy systems could continue to be in the wild that didn't support the standard for units of measure. Which units of measure you use we didn't have to be prescriptive about because as long as it was from the family of ones we understood the mappings between those were pretty readily accomplished.

RC - In general JF it sounds like you've done some great work, just have a few questions about looking to specifically support something like the APHP I know you've some of the generic templates in that just wanted to find out what you think how much more effort is involved there how complete is that imports getting when could we expect to import a full document or is that still a while away?

JF - currently in OpenMRS you can import a full document and again the immunization, medications and procedures it will not understand it will just store them as text. Once we found a home for them it's a matter of writing a processor for that particular piece of data and mapping it into OpenMRS and the hard part about importing CDAs is the testing. There are so many paths you can potentially have with a CDA for testing it actually is the biggest challenge. For the full APHP and once I get a home for the medication or the substance administration and the procedures then it's just a matter of saying this template is one of these

RC - in terms of medications what is stopping you for finding a home for that is it just there's no good space for that in the OpenMRS model at this point?

JF - in OpenMRS there's regiment tables but they aren't as granular as the substance administration so it's just a matter of finding a home for the substance admin where it would be understood on the QED side. For the imports I am trying to use the marker that if the OpenMRS doesn't understand it then QED exporter probably won't understand it too. So finding a way to import it into OpenMRS so that OpenMRS understands what it is that was conveyed in a CDA

DR - how do you put substance administration info into OpenMRS if you're only in the UI

RC - usually you use a concept of a program in OpenMRS but talking specifically about medication and drugs OpenMRS has done a revamp of their drug ordering system maybe we should look at the code they have done for the latest version. They've been doing decent work there but not sure that all of it has been documented not sure if it is what you are looking at now ...... we could stimulate discussion on the openMRS developers list on mappings and how you would store those things. Have not been involved in OpenMRS too much. Maybe if we just bring the type of data we need stored maybe we can get a conversation around that.

JF - could send an email to the SHR group and the developer group to start the discussion

JF - are you referring to OpenMRS 2.0 or 1.10?

RC - 2.0 is just really a new user interface the platform behind it is the same so it would be the latest platform that I think is still 1.10

HV - mostly UI stuff so it shouldn’t affect us in API level

DR - what is the governance for bringing a request for changing the data model? I'm guessing that would be something that's got to go through quite a vetting process because of the danger that it could break existing routine. Because this sounds like it might be an issue right at the database level.

RC - it could possibly be something at the database level but I don't think so, it is abstracted away from the other code, so changes to the database would be okay and probably the best place to start at will be  the devs just talking through why we would need something new and if everyone is in agreement on the developers mailing list then we could just open and issue and we could either feed that back to OpenMRS so everyone is happy it gets signed off. It's not a huge process to go through to get something included in OpenMRS they are open to people contributing and adaptive to different people's needs of the software. Just starting the conversation with the community is the place to start.

HV - they have robust infrastructure in place for database updates, they use Liquobase that manages database changes, there may be less resistance than we think for adding new columns etc.

problem with CDA processing are the numerous paths that are included so testing could be the most challenging

* **Review changes to the "What constitutes an OpenHIE SHR?" doc**

RC - changes were made as discussed. As agreed removed level 0. left with three diff levels. Level one is provide a doc and query for a doc and support at least one CDA patient care profile. Level two you add referrals to that. Level 3 we add aggregated data recording sent information to the health information management.

A phase 1 OpenHIE SHR must support the following:

* XDS.b's provide and register document and query for documents
* Support for the at least one of the Patient Care Coordination CDA profile which profile the CDA Continuity of Care Document (CCD) specification.
* Support for the Query for Existing Data (QED) profile"

A phase 2 OpenHIE SHR must support the following:

* XDS.b's provide and register document and query for documents
* Support for the at least one of the Patient Care Coordination CDA profile which profile the CDA Continuity of Care Document (CCD) specification.
* Support for the Emergency Department Referral (EDR) PCC profile which supports referrals
* Support for the Query for Existing Data (QED) profile

A phase 3 OpenHIE SHR must support the following:

* XDS.b's provide and register document and query for documents
* Support for the at least one of the Patient Care Coordination CDA profile which profile the CDA Continuity of Care Document (CCD) specification.
* Support for the Emergency Department Referral (EDR) PCC profile which supports referrals
* Support for the Query for Existing Data (QED) profile
* Support for Quality, Research and Public Health (QRPH) profile for reporting of aggregated data to a HMIS

DR - level 3 even at level 2 I would be more ambitious for level 2, being able to do one of the PCC documents that gets us going at level 1 with something that can pull in PCC based CDAs and for any of the sections in that one that we choose, support discrete query using QED for that information. Level two recomendation is that now that we have something that goes end to end take on something that is a specialization of the patient continuity of care document, that will basically do all the ones that are in PCC. That will do referrals and discharges summaries and AP and LDS and the IC profile and all of those. And I think that would be a useful thing to do for level 2. Regarding Level 3 I think we should say now there are two other kinds of documents those related drug and lab information and we should do those. As far as the reporting of aggregate data to the HMIS I don't think we should support aggregate data to the HMIS. I think that we should report de-identified low level data to the HMIS because  our horse for the course right now is DHIS2 and the patient tracker module. If we just de-identified content out of our SHR I think we could leverage the API for patient tracker and then let DHIS figure out at what level it should be aggregated.

JF - to add on to that maybe the requirement for level 3 would be support for obtaining de-identified data from the SHR, you might want de-identified data for a multitude of reasons and that really is a level 3 function for any kind of public health or research that you would want to do. I think that is a good level 3 requirement to get de-identified data out of the SHR

DR - do you remember JF in 2010/09 there was that bit of prototyping that Mohawk did with the Canadian Institute for Health Information it is our National DHIS there was an example that we did at a national conference where we just basically put a t-valve in the HIM and said every time a transaction came in an identified version of it heads off to the SHR and then there is a de-identifier and the de-identified data headed off to the data warehouse then instead of supporting queries of the SHR we just did it at the transaction processer, that would be a very reasonable design for us it could be an IL issue not an SHR issue.

JF - what we ended up doing was having the SHR when it would receive it would receive data and then republish an identified copy to the bus that would then go. One of the things we had in the HIEL wasn't smart enough to understand some of the more complex identification scenarios things like redacting certain portions of a message that were potentially sensitive but I mean we could certainly put that logic into the IL it’s just that when we did it we put it in the SHR and had it kind of a republish back up to the bus. But you're right you could do a T as well it's just as effective.

DR - my point is to support the slicing and dicing we want the HMIS to do we should give them the most granular content we've got.

RC - I agree there but I guess some of the things that are going to drive that decision is the profiles that are available to actually do that because what we want to do is try to support some IHE profile to then send that data up not sure if that's how that is at this point. I don't know enough of the QRPH profile

JF - one of the things that is not really an issue that is related to the identification of data is the storing of forms data is there any kind of thing on the radar I know QRPH heavily utilises RFDP which is retrieve for data capture. The form based is when you then submit a completed form is there anything on the radar perhaps for the SHR that it would need to store those completed forms.

DR - not the way we are looking at it right now. Ic an see us the DXF the DHIS exchange format is it DXF **DXF** (Drawing Interchange Format, or Drawing Exchange Format).

JF - there’s also the identification hand book that is actually very helpful, that's probably as much as I would use on the de-identification piece

DR - QRPH is a committee it's like the PCC committee it's just that they are focused on a family of profiles that are largely related to some of the public health data recording in the US that has been their key focus, having said that one of the things I was able to do at the QERF meetings in February was they were working on a family planning and they actually hadn't referenced at all any of the WHO guidelines on family planning it was entirely US-centric and so we  were able to turn the boat around a little bit and get them to put into their volume 4 which is where all national extensions are supposed to go all of the stuff that was very HHS in the US they took all that stuff out of the family planning profile and left it as an internationalised version and then just put countries extensions for the things they needed in particular. So they're coming around on some of this stuff but I'm not sure how heavily we'd have to leverage those IHE profiles I think it’s at this point I'd say we would be well served to go with the DHIS profile or its API.

JF - the only one I can think of would be the BFDR the birth and fetal death record, might be something but you're right I think that not necessarily the highest priority.

RC - coming back to these levels maybe what we should do is remove that support for QRPH and not really think about doing that reporting until we've had discussions a bit further so then the question becomes how do we want to move on these levels. It seems like level 1 we are pretty much happy with and level 2 we should try to support all the PCC profiles and that would include the referrals as well. How do people feel about that?

JF - at level 1 I would say if you're only going to support one CCD profile  you might not be able to fulfill all of the options in QED because QED is broken down into a series of options based on the query that you support so you might want to look at that and restrict it down to a smaller subset of QED with level 2 if you don't say support for all PCC content profiles just qualify that support for all PCC profiles would be a very tall order because then you get into support of care management which might not fit within a particular point or model.

RC - maybe we should make then level 1 just supporting one of those profiles and perhaps not QED and then make level 2 support multiple content profiles that would enable a QED query to take place and then maybe have level 3 supporting all the content profiles with QED.

JF - i would still keep QED at level one just because it is very useful to have QED but if you're doing just immunizations for example and you pick immunization as your PCC profile you are going to support then inside of QED you only want the immunizations option and the medication option you probably don't want the diagnostic imaging option or the other options around QED.

DR - Just couple them whichever CDA document you have chosen to support then you're required to support the QED options that are carried by that document. It won't necessarily let you do them all but whichever ones are in the CDA that would usefully restrict it and regarding the level 2 I like the idea of restricting it to say only content profiles that are specializations of CCD because that would get us a dozen or a dozen and a half they've reused the CCD as the root of just about everything they did for quite a while.

DR - perhaps do them as a pair which ever you choose to support you must do the QED for that document

CDA document chosen to support requires the QED options carried by that document

JF - just to make sure this refers to the logical health record

RC - yes this is a logical health record that people would be wanting to support as a SHR

LL - like the way the levels are coming out. One question I have it would seem that, to me at least, the system as defined or explicit that discrete data will be supported. So you can have some vendors who may want to sneak in with an OpenHIE lite somehow and not even do discrete data. To me we all understand it but would be better to say explicitly that, that is involve at whatever level we want to put it if you can't do discrete data then you can't play.

JF - Yes that is a very good observation.

DR - need the distinction if we connect the QED requirement at level 2 that basically every QED option that could be carried by a continuity of care document must be supported otherwise someone could just cherry pick

LL - it is a small point and we all understand it but say someone with a lite SHR may try to come in and circumvent the system as it were. But I'm not sure how to really explicitly detail that.

DR - what's useful about it is when you do conformance test against QED you have to say which options you're supporting and so we could come with an articulated list of options.

JF - also if you put I would say phase one probably with the CDA profile say must implement the concept consumer or actor for a PCC CDA profile with the discrete data element import option. That will be very precise of what the requirement is for that implementation

RC - back to LL's point of the use of discrete data, wouldn't the use of the QED profile sort of imply the data has to be stored discretely? Do we really care how they are storing the data as long as they can respond to QED they somehow have to internally process that CDA to be able to understand them to do QEDs doesn't that sort of imply

DR - it does imply that but it doesn't pry open the black box and say this is how we need you to do it inside your black box. what we say is this is testable as a black box and we don't care how you do it.

JF - in my experience as a monitor at connectathons has taught me that things that you think are common sense are not necessarily common sense for everybody. Agree with DR make concrete tests for it kind of like where in the US the have the connectathon and then one level beyond that they have certification.

DR - one of the things that came out literally overnight is a request from PB for budget allocations and it would be useful for us as a community to decide whether or not we expect to bring any of our stuff to a connectathon test this coming year. We have gone from a successful connectathon in January for the CSD profile but we are going to have our first instances of IHE conformance SHR developed over the coming months and is that something we should hold ourselves to? A very open ended question. Don't have an opinion either way. Should we expect that we would go and pass one of these tests with our reference tool.

RC - that's a good point and for what we are building towards we would want to be able to conformance test the SHR and that is an option we should look into and see if it is possible.

DR - i would say it would be useful for us to place inside our black box both the OpenHIM and the OpenSHR because that is a better test of our use case and would just be a tour de force in terms of what our value proposition is in terms of potential users of OpenHIE

JF -  to add on to your thought DR if the comunity is not comfortable with the January timeline there is the April one as well to consider

DR - seen as so many of us come from Africa it may be cost effective to attend the one in Europe that should reduce costs quite a bit, well depending on which country it is in.

JF - for a developing and testing timeline it gives an additional two months of testing

CF - agree with JF.  Not to underestimate what the team can do and all that I am all for getting us to a connectathon again and getting our reference tool validated but it would be wise for us to put that as a mile marker and build backwards from that and since we do have two dates we can have a better understanding of how to use the community to get us where we need to be.

DR - I believe that the 2-3 months difference between the US and European connectathons we would be able to make huge progress in that amount of time we could even end up our SHR could literally be moving from one level to another in that time, I think.

RC - final comment, with the diff levels from the discussion today I am not going to be able to edit what everyone has said, will try to do some edits but would like to ask everyone who had a comment on where these levels should be please feel free to go and edit the document directly so that we can get your changes reflected and then we can work on it from there.

* Discuss the design of an XDS.b interface into OpenMRS
* <https://wiki.ohie.org/display/SUB/XDS.b+Interface+Module+Design>

RC - Sent it out on email to the SHR group and everyone can send comments on the email trail.

DR - just I'm so happy that we are making progress on this we've covered some miles and there is some momentum with this and I'm very happy about that.

RC - I am happy about it as well it is great to see the momentum