

**HIT Standards Committee  
Nationwide Health Information Network (NwHIN) Workgroup  
Transcript  
June 6, 2013**

**Presentation**

**Avinash Shanbhaq – Office of the National Coordinator**

Thank you. Hello, everybody. My name is Avinash Shanbhaq from ONC. This is a meeting of the NwHIN Power Team of the Health HIT Standards Committee. This meeting is open to the public, and there is public comment built into the meeting. Just please note that the public comment is limited to approximately three minutes per commenter. And the meeting is being recorded, so please make sure to identify yourselves when speaking. So now I think I'm going to go through roll call for the NwHIN Power Team, starting with Dixie Baker.

**Dixie Baker – Martin, Blanck & Associates**

I'm here.

**Avinash Shanbhaq – Office of the National Coordinator**

David McCallie?

**David McCallie – Cerner Corporation**

Here.

**Avinash Shanbhaq – Office of the National Coordinator**

Thank you. Floyd Eisenberg? David Groves? Arien Malec? Marc Overhage? Wes Rishel? Cris Ross?

**Christopher Ross – Mayo Clinic**

Present.

**Avinash Shanbhaq – Office of the National Coordinator**

Thank you. Tim Cromwell? Ollie Gray? Nancy Orvis? All right. Dixie, with that, I wanted to turn over the meeting to you.

**Dixie Baker – Martin, Blanck & Associates**

Okay. Okay. Thank you to those of you who were able to dial in. You can go to the next slide, Caitlin. The – what we want to do today is to continue our discussion of transport – potential candidates for transport standards for enabling consumers to send their EHR data to a third party, and we're going to have two discussion topics. One is a review of the HL7 FHIR standard that is under development, and Lloyd, we really appreciate you're dialing in for – to give us that overview.

And then we're going to have David and Arien Malec talk about how CommonWell is using FHIR, the FHIR standard, in their work. We'll leave some time at the end for discussion of the FHIR with respect to the attributes that we've – the maturity/readiness attributes that we've defined, and then open it up for public comment. Next slide, please, which is just a reminder, this is the task assignment. We're to look at additional standards to support the transport of data to and from patients, and the ONC has further clarified that we're really talking more about the push kind of a transport than the current pull – strictly the pull.

We were asked to consider the Automated BlueButton initiative, or BlueButton+, as it's now called, which we reviewed on May 22nd. Today, we're looking at HL7 FHIR, and then at our next meeting on the 12th, we'll look at the RESTful health exchange standard that's being developed by MITRE.

David, did you want to add anything before we turn this over to Lloyd?

### **David McCallie – Cerner Corporation**

No, other than that I think Lloyd, we are thinking about these standards really broadly as part of the building blocks that would make sense in future NwHIN related architecture. So even though the specific use cases that we were exploring are around communicating to the consumer, obviously, these particular standards that are listed here would be valuable in other settings as well. So I don't think you should constrain the focus to anything specific, just give us your broad overview of how the standard would be useful in the long run.

### **Dixie Baker – Martin, Blanck & Associates**

Good. Yes. Good point. Thank you. And thank you, Lloyd, for joining us. We really appreciate it. Okay. With that, Caitlin, we can move on. Lloyd McKenzie is on the HL7 FHIR project team, and he's on – he's from Gordon Point, and – Informatics. And Lloyd?

### **Lloyd McKenzie – Gordon Point Informatics**

All right. Thank you. Appreciate a chance to speak with you today, and we'll try to get as much as I can in in the time that I'm able to join your call. Next slide.

So first, we're going to give a really quick introduction to what FHIR is, for those of you who may not have seen or heard of it before, and perhaps this is a bit of a refresher for those of you who have. It's going to be a very fast intro, because we don't have a lot of time. Next slide.

So FHIR came about within HL7 because we were finding challenges in healthcare-centered environments. It was taking too long to develop standards, and it was taking too much effort for implementers to understand how to use and use consistently the standards that we were producing. It tended to require a fairly significant learning curve in order for people to be able to implement or to develop or to constrain. We had specialized tools that we were having trouble maintaining, and they weren't tools that were broadly used anywhere else.

And all of those things contributed to a fairly high cost for both standards development and standards implementation, and it was also affecting adoption of the work that we were producing. So we went out and looked at industry best practices and tried to figure out what it would look like if we applied those in the healthcare setting, and the result was the FHIR methodology and standard. Next slide?

So FHIR standards for Fast Healthcare Interoperability Resources. Basically, we went out on the internet and tried to come up with an acronym that wasn't going to generate a lot of hits on anything inappropriate, and that was easy to pronounce and easy to remember. Next bullet. FHIR is based on industry best practices in the interoperability space. It's very much focused on keeping things simple and focused on implementability. With FHIR, we are placing the needs of implementers first, which we haven't necessarily done in some of our other standards, and that's seen in both what text we write in the specification. It's all focused on what does an implementer need to know, not on what modelers or data architects or others might be interested in.

From a simplicity perspective, we look at only including those elements that most implementers – most implementations are actually going to make use of. So we don't try to solve all of the edge cases within the specification. Instead, we architect the specification to allow extensions to accommodate those edge cases that not everybody is going to need to make use of. Next bullet.

FHIR leverages, although it does not require, the use of web technologies, so things like HTTP and the whole security stack that can sit on top of that, making use of XML, making use of JSON, all of those things that are well-supported in most programming languages with significant libraries and easy, out of the box technology to use. At the same time, if you wanted to use FHIR using something else, Direct over a socket or wrapped up in a SOAP header or something like that, you could certainly do that as well. Next bullet.

One of the lessons that HL7 has learned from successive CDA is that having a base level of interoperability that's human to human is an essential stepping stone. It's one of the things we have in CDA, is that even if you don't understand any of the discrete data, at least you can display the information to another clinician and they will be able to read and understand what's going on. And so FHIR introduces that everywhere. Regardless of whether you're using a document type architecture or messaging or services or a RESTful approach, the human readability aspect is therein required. Next bullet.

One of the most significant things about FHIR is that it brings all of the different communication paradigms together. So if you have a document-centric architecture using XDS, or you want a messaging approach because you have more real time exchange requirements, or you want to build a lightweight services infrastructure, or a heavyweight services infrastructure, for that matter, or if you want to take full advantage of web technologies and make your solution a RESTful architecture, FHIR supports all of those, and it supports all of those using exactly the same \_\_\_\_ syntax. So the way that you represent a blood pressure or the way that you represent a patient record, anything else, looks exactly the same.

And furthermore, if you're developing constraints, templates or profiles, or other layers that you want to put on top of your specification, you can design those in a way that is totally agnostic as to what the architecture of the solution is. So a blood pressure template works just fine whether you're looking at it as a document or as a message or as a RESTful solution. Next slide.

So FHIR is focused on something called resources, the last letter in the acronym, and resources are small, discrete chunks that are used for exchange. Each resource has a defined set of behavior and a defined meaning. They all have a natural identity, and live in a particular network location. They're the smallest unit of transaction within FHIR, and given HL7's focus, they are things that are of interest to healthcare, although there's nothing specific to the methodology that would prevent you from adding other things in as well. And of interest is of course interpreted quite broadly. So claims and administrative functions, anything that might be involved in any sort of healthcare IT system, would fall under that banner. Next bullet.

Some examples of resources, patient, provider, specimen, drug, lab results, all those sorts of things. If you're familiar with some of HL7's other standards, they sort of map to the idea of segments. They sort of map to the idea of version 3 CMETs. They sort of map to the idea of CDA entry templates. There's some differences, but all of those things are chunking mechanisms. It's just that those other specifications aren't built quite the same way around the chunking mechanism as FHIR is. Next slide.

So there's three parts to a resource. The first is the structured data, so discrete codes and quantities and other information that you're wanting to make accessible for computation, for search, for analysis, that sort of thing. All of those have funnel definitions, have mappings into HL7's reference information model, and quite often have mappings into other things as well, OpenAIR and other types of specifications. We have mappings to C-CDA as well. Next bullet.

The second piece is a framework for extensibility. The only way we can get away with saying we're going to keep things simple is to provide a safety valve for when the world inevitably gets complicated. Every system that I've ever encountered, every jurisdiction, every problem space, has its own unique data elements that they need captured in a discrete way, or with additional granularity, or whatever. And we have a way of doing that.

And the way we do that is by allowing extensibility, but we allow extensibility through a framework that doesn't break CMS, so it doesn't break generated code, and it's transparent to existing systems. So you can receive data that has extensions that you don't recognize, pass it through onto somebody else who might well recognize them.

And we also try and ensure the safety of that by including the ability to identify those extensions that might impact the meaning of other elements, and therefore can't safely be ignored by a recipient. We also have the mechanism for formally defining those, and a requirement that the definitions of those are electronically available in a computational form, so you don't have a circumstance where you receive an extension and have no way of finding out what it means from an analyst perspective, obviously. The computer system isn't necessarily going to be able to figure out what to do with it, but we at least want to make sure that the humans who might have to decide, well, this is a must understand extension, I need to understand whether I need to care about it or not, have – that they have a way of doing that easily. Next bullet.

And finally, as mentioned, we have narrative. So every resource instance has a human readable component to it. That won't necessarily represent every single piece of discrete data, but it represents the portion that you would expect to be signed if you were going to be signing the resource, and you would expect to be rendered to another clinician or human being in the circumstances where they couldn't necessarily make sense of the discrete data. Next slide.

So that was probably the fastest intro to FHIR I've ever done. Hopefully, that helped give you a sense of what it was, and I will have a couple of minutes at the end of my presentation to answer questions. But you had asked for a current state of FHIR and what our future plans were, so that's going to be what I'm going to talk about now. Next slide.

So from HL7's perspective, FHIR has definitely taken hold. We've got significant support from the HL7 board and from the technical steering committee. Most of the main workgroups are focused on doing FHIR development right now, and that's of course redirecting some of the energy that we'd previously been expending on HL7 version 3. At our last working group meeting, we had 50 different sessions throughout the week on FHIR, and for those of you doing the math, given that there's only 20 sessions – 20 normal sessions during the week, we had lots of things going on in parallel, so a lot of focus on FHIR development. And FHIR is also leading the effort within the organization to improve some of our governance processes and structures to ensure coordination across groups, and getting the content that we want completed in a timely fashion, and targeting what development needs to be done, and getting that QA-ed and out the door as quickly as we can. Next slide.

From an approval process, HL7 has two different levels of approval. One is draft standard for trial use, or DSTU, and the second is normative. All development that has happened thus far in implementation even of FHIR has happened before we've actually gone to formal ballots. We've had a couple of informational ballots to just give people a chance to look at it, but the specification itself doesn't actually have any formal status yet. We're going to our first ballot in August, for first DSTU. We might go to a second ballot that we'll complete in January. We are quite certain that it will not take us longer than two ballot cycles to get the DSTU approved.

We have 48 resources in scope. Ten of those are infrastructure things, like message and document and conformance and profile, things like that. There's 25 resources that we included to make sure that we had complete coverage of everything that's in C-CDA. We also have some resources in there to support some XDS joint initiatives on representing ATNA and XDS within FHIR, as well as representing some DICOM ... within FHIR. And then we've got seven additional resources with – there was time interest in bandwidth to get in, so those are going in as well.

We've had significant QA on that content already, and our expectation when we go into ballot is that the content is actually ready for implementers, which hasn't necessarily been true of some of the other content that's gone forward to ballot at that level. One thing to note is that within HL7's process, there is no guarantee of backward compatibility between what gets approved as a DSTU and what gets approved as a normative specification. That's actually the purpose of the DSTU, is to allow us to get implementer feedback. And if we find that there is – that there are problems, that we can address those without feeling that our hands are tied by backward compatibility requirements.

That doesn't mean that we're going to make changes willy-nilly. If we don't need to break backward compatibility, and we can still address the problem, we'll certainly try to do that. But our focus is on making the specification as useful as possible in its normal – in its normative form, and if that means that some changes are necessary, then we won't hesitate to make those. Next slide.

So we're expecting to have at least one additional DSTU. That may involve some changes to the resources that are published as part of the first DSTU. We'll also be bringing in some additional resources that we didn't define this time around, things like referral appointments, stuff related to diet, radiation treatment, that sort of thing. We'll probably also be bringing in some additional domains. So we've got some basic stuff on insurance in the first round, but we don't have invoices and some of the other financial components, things related to public health tracking, things related to clinical studies, that sort of thing. Some of that will depend on the interest of those respective workgroups, but we're certainly expecting some of those to be part of the second DSTU.

We'll also be bringing in some profiles, basically patterns of use of resources in combination to solve particular problems, including possibly a C-CDA equivalent expressed in FHIR, and defining some of the standard extensions that we're finding lots of implementers just have a need for.

We may have a third round of DSTU. That hasn't been determined yet. We'll sort of see where we're at in terms of content in the 2015 ballot. Next slide.

We're not expecting FHIR to go normative until around 2016. It might be a little bit sooner than that, probably won't be much later than that. The rationale for that length of time at DSTU is that we want to be very certain that we've got widespread implementation, so implementation in multiple countries, in multiple contexts of use, so that we really have a solid feel for what are the elements that most people are needing, that the extensibility mechanism is working well, and that there aren't any weak areas in the standard, because once we commit to normative, we are making strong commitments to backward compatibility and forward compatibility, and we don't want to have a large amount of baggage overhead caused by workarounds to things that we have locked in stone too early.

That doesn't seem to be a barrier to implementation. We have people are implementing right now, even though the content hasn't passed the DSTU level, and we're expecting a heavy degree of implementation once we hit DSTU. Another thing to keep in mind is that even when we go normative, we won't necessarily bring all resources forward as normative. If we find that some simply aren't being broadly used, we may hold off on locking those in stone for a little while. And we're also looking at the possibility of providing transforms between DSTU versions and normative versions, and that will be driven both by resources within HL7 as well as probably demand from the implementation community. Next slide.

In terms of support for implementers, we have multiple reference implementations that they can look at and leverage. There's actually work underway now on an open source implementation where people were able to just take the code. We auto generate interfaces for FHIR in four different programming languages right now, and may introduce others in the future. We have publicly available test servers that are seeing heavy use. One of the servers has had 60,000 hits since it went up, which is actually causing us a bit of angst, because we're paying for that, and looking at ways of making that not a voluntary thing. But those are available.

We have automated test tools that we can point at servers, and identify places where they're not conformant. We have draft tooling in place to convert C-CDA documents into FHIR documents, and we'll be working on doing the reverse as well. And we also have three developers working on building tooling for authoring profiles and templates on FHIR resources and combinations of them. Next slide.

In terms of experience, we've had three connectathons so far. Our next connectathon will be in September at our working group meeting. We've had 30 different organizations represented across all of those connectathons so far, and we're seeing increasing attendance with each iteration that we hold, and we've actually started to see EMR vendors joining up at those, which was a bit of a surprise to us. We didn't expect to see penetration into that community quite so soon.

I'm aware of at least 20 different projects and companies that are working on FHIR implementations for production, which is quite impressive, given that it hasn't formally gone to ballot yet. Obviously, those aren't necessarily in broad environments. Some of them may be. We've got significant interest in the interface engine community, so those who are sort of building – who already have offerings in the healthcare space to manage exchange of information, are very much looking at adding support for FHIR into their solutions. So we're expecting most interface engine vendors to have FHIR support shortly after DSTU is declared. Next slide.

In terms of long range plans for FHIR, we're expecting grand total for there to be between 100 and 150 resources, ever, and we've got almost 50 of those defined now. So we're not going to be in the resource development space for a long period of time. We're going to be transitioning. And we're expecting that the focus within HL7 is going to move from defining resources to defining profiles to defining extensions and maintaining those, vetting profiles and extensions that are defined by external organizations, and providing support to implementers, because with FHIR, the base specification is really your toolbox for what kinds of solutions you want to build. It's a toolbox where you've got interoperability and usability out of the box, but you can take those pieces and put them together in different ways, and add on extra bits to address specific problem spaces in more precise ways. Next slide.

So this is where you can find more information about FHIR. First, there's the URL for the spec. We do have a Twitter feed where we make announcements. We now have a tag on stackoverflow, which is a place where developers commonly go to get help for development problems. We're pointing developers there as well for FHIR issues. The solution – the specification still is in flux. We're locking it for QA going into the first DSTU ballot in mid-July, but there's still some chance to influence it before that happens. And, of course, ballot feedback will influence it as well.

I certainly encourage people to come and to participate in the connectathons. It's a chance to actually see how easy it is to get a FHIR implementation up and running. We've had quite a few implementers come to a connectathon with some knowledge of sort of what FHIR is about, but haven't really played with it at all, and walk out after a day and a half with a functioning conformant FHIR solution, which is pretty cool. And of course, there'll be a great deal of discussion happening around FHIR at the next working group meeting in Cambridge.

So I've gone really fast, because I need to depart in a little over ten minutes, but I wanted to leave some time at the end for questions.

**David McCallie – Cerner Corporation**

Dixie, can I start?

**Dixie Baker – Martin, Blanck & Associates**

Yeah. That's – thank you, Lloyd. We really appreciate this. David?

**David McCallie – Cerner Corporation**

Yes. David McCallie. First, thank you for the great, very thorough, even if it was rapid, presentation. Second, congratulations to you and the rest of the FHIR team for producing this. I think the unexpectedly rapid and enthusiastic uptake is testimony to the fact that in a desert, even a cup of not yet completely pure water will be well-received by the community. So we are – we – I speak as an EHR vendor, but I think broadly, the HIT Standards Committee sees this as a long-overdue output from the SDOs, and HL7 in particular. So this is really exciting, in my opinion.

I have a question about mapping to the RIM, number one, and number two, a little bit more detail, if you would, about the way you distinguish between an extension and a profile. So my RIM question is: Is a RIM mapping required before a resource can be approved as a part of FHIR, or is that an optional component? So let me start with that one.

**Lloyd McKenzie – Gordon Point Informatics**

Sure. And the answer is, of course, it depends.

**David McCallie – Cerner Corporation**

Yeah.

**Lloyd McKenzie – Gordon Point Informatics**

There are some resources that we have, such as profile and value set and conformance, that operate more at the meta level, where they're defining what kinds of things can be sent or what systems are capable of, and the RIM doesn't play in that space. From HL7's perspective, that's MIF space, our Model Interchange Format, which defines what our standards look like in the V3 area. It's – that's more that level. So we wouldn't expect RIM mappings to exist there.

We do expect RIM mappings to exist for all of the elements within all of the other resources. However, unlike our other efforts, the V3 mapping isn't a precursor to being able to do any other work. We're seeing most of the design happening before the RIM mapping takes place. We're requiring the RIM mapping just to make sure that we've got a solid semantic underpinning, because mapping things to the RIM often does cause people to realize that they haven't defined things as well as they thought they had, and may raise some other questions about, well, we're including this component, but we don't have this other piece. Is there a reason why? And it's good to have those questions asked and answered.

We are looking – right now, the level of RIM mapping that we're expecting going into the DSTU I call a hand-waving mapping, meaning that it's basically just a blob of text that explains roughly how this corresponds to RIM, but is not something that you could compute based on. We're looking to have a slightly more robust representation that we could at least validate to make sure that the RIM attributes and classes people are talking about in their mappings do in fact exist. Before we actually publish the DSTU, we're hoping to have the tooling in place to do that in the next few months.

And we're also looking at doing some experimentation in the RDF/OWL space to formally, computably represent our mappings, and that will give us some ability to do things like detect duplication across elements and overlap, detect duplicate extension definitions, and some other really cool things, if we can actually make it work. But that's not critical path, and it's more of an experimental thing. If we can make it work, that'll be awesome. If we can't make it work, I don't think the vast majority of the implementation community will care or notice.

**David McCallie – Cerner Corporation**

Yeah. That – I would second that last thought. You know, I understand RIM as a check of sanity that you've done it right, but I'm happy to hear that the RIM doesn't have to precede the experiment on the development of a new resource, because the RIM has been nothing but headaches to anybody outside the consulting industry.

**Lloyd McKenzie – Gordon Point Informatics**

Yeah. I mean, the RIM is useful for HL7, and it's useful for a very small subset of implementers, but it's not something that most people need. And with our implementer focus in FHIR, we've tried to bury it as deep and far as we can, so that the first thing that an implementer sees is this is what your XML is going to look like, because that's what they care about. And what the underlying modeling constructs are is available to them, so that if they have RIM-based solutions and they're interested in that, they can go look at that in exactly the same way as if they have an OpenAIR-based solution, they can go take a look at that.

But if they don't have those solutions and they don't care, they don't need to look at it, and they won't in any way feel like they're missing something if they don't understand that aspect of the specification.

**David McCallie – Cerner Corporation**

That's good to hear.

**Christopher Ross – Mayo Clinic**

So David –

**David McCallie – Cerner Corporation**

Go ahead.

**Christopher Ross – Mayo Clinic**

David and Dixie, this is Cris. Given that – what is a short period of time, I've – you know, David, you're familiar with this and you're pretty deep into it. I have just like maybe one or possibly two kind of meaning of life questions here that I'd be interested in asking before we lose Lloyd.

**David McCallie – Cerner Corporation**

Yes. Go ahead, Cris.

**Christopher Ross – Mayo Clinic**

Do you mind if – do you mind if I blurt in here?

**David McCallie – Cerner Corporation**

Yes. Absolutely. Go ahead.

**Christopher Ross – Mayo Clinic**

Excuse me. So –

**Arien Malec – RelayHealth Clinical Solutions**

And this is Arien. I'd love to get in the queue as well, just for the note.

**Christopher Ross – Mayo Clinic**

So I think I understand the specification. We've got a problem of needing to define standards, and standard and specification don't necessarily mean the same thing. Can you just describe to me – first, FHIR is really interesting, no question. Can you explain to me what the attributes of it are that make it a transport standard? I get the vocabulary and interoperability standards, but I'm not quite getting the transport standard that's embedded in FHIR.

**Lloyd McKenzie – Gordon Point Informatics**

FHIR defines a RESTful transport. So – and it defines a couple of simple mechanisms for document and message transport in a RESTful context. So it's basically saying, here is how you use the HTTP protocol to perform different types of operations on FHIR constructs, be that individual resources or packages of resources that are sent together as a message or a document or some other collection.

**Christopher Ross – Mayo Clinic**

I thought I understood earlier that HTTP was optional.

**Lloyd McKenzie – Gordon Point Informatics**

It is. So you can use –

**Christopher Ross – Mayo Clinic**

So from a standard –

**Lloyd McKenzie – Gordon Point Informatics**

You can use the FHIR resources with a whole bunch of other transports. So you can send them using the same transport you use for HL7 version 2, which is MLLP. You can send them over SOAP. You can send them over MQ series. You can send them over any transport you like. But we –

**Christopher Ross – Mayo Clinic**

So there is ...

[Crosstalk]

**Lloyd McKenzie – Gordon Point Informatics**

– define a specific transport for REST.

**Christopher Ross – Mayo Clinic**

Okay.

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. Cris, this is Arien. I like to think of it as a content spec that is RESTful friendly, as opposed to REST included in the – in the overall specification, if that helps.

**Christopher Ross – Mayo Clinic**

It sure seems like a – exactly. Content standard that RESTful makes a lot of sense. I'm just trying to get my head wrapped around where is the transport specificity or how does this create a viewpoint for us about transport that we wouldn't get from some other content standard. So I get it. Thank you.

**Dixie Baker – Martin, Blanck & Associates**

Well, this is Dixie. Following up on that, Cris, is the way – is the RESTful transport that is to be used sufficiently specified that it's always implemented in the same way?

**Lloyd McKenzie – Gordon Point Informatics**

Yes. So if you are using the FHIR RESTful transport, we're quite clear about exactly what operations are supported and how – what are the URL paths to accomplish different things. There's quite a bit of flexibility in terms of how much you choose to implement, so you might choose to implement search, but you only support three of the possible seven parameters, or something like that. That's fine. We explain how you declare that, and also like even how you go off and define additional parameters that you might choose to support that aren't part of the base FHIR spec. But where you're implementing something that FHIR has defined, there is only one way of doing it.

**Dixie Baker – Martin, Blanck & Associates**

Arien, you had a question?

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. Thank you. So you mentioned that you were surprised that EHR developers were interested so early on, and I agree, that's a testament to the success and the need. What's your sweet spot for DSTU adoption? What do you think the problem domains are that are uniquely useful? And where do you expect let's say V2 replacement or CDA replacement or those other things to be maybe longer time?

**Lloyd McKenzie – Gordon Point Informatics**

So when we embarked on FHIR, we figured that our target environment was mobile, because there was very little in that space, and you certainly didn't want to be passing around CDA XML or version 2 or version 3 messaging in that space. And we were also looking at some of the web-centric social media type applications, because those again were sort of greenfield, and we thought that our approach would have a significant degree of appeal to them, because it was leveraging the same technology they would already be working with.

We looked at – in version 2 terms, we expect to see FHIR under the covers probably before we see FHIR over the wire. Under the covers, FHIR is quite attractive as a means of modernizing the internals of version 2 systems, and it aligns pretty nicely with how version 2 does things already. But, I mean, inside of a hospital, you're not going to mess around with interfaces that are functioning and have been functioning for the last 10 or 15 years just because there's something new and exciting out there.

But certainly all of the interface engine vendors are going to be able to take V2 content and turn that into FHIR, it looks like in fairly short order, so if their hospital wants to be able to expose something in the social media space or in a mobile space or whatever, they will have a means to do that.

In terms of CDA, again, if you've got a significant investment already in the CDA space, you're not necessarily going to jump at FHIR, although we're seeing a fair bit of consternation from CDA implementers in terms of some of the complexity there. So we may see movement in that space sooner than we had initially predicted. We're trying to make it easy as possible for movement to happen in that space, but I'm hesitant to say exactly how quickly it's going to happen, or how slowly, because in the end, it's determined by the market.

We're wanting to support the same kinds of constructs that CDA can do, and there's certainly a number of things that FHIR can do more easily than CDA can. But how quickly that will happen I don't know. My personal guess is that we won't see a lot of uptake of CDA release 3, simply because FHIR's going to be ready at pretty much the same time, and if you're going to be looking at making a major change, as you would to go from CDA release 2 to release 3, moving to FHIR is probably going to be more attractive.

**David McCallie – Cerner Corporation**

It can't happen fast enough.

**Arien Malec – RelayHealth Clinical Solutions**

Very helpful. And just as an inappropriate side joke, I think that value set should be renamed code value subset.

[Laughter]

**Lloyd McKenzie – Gordon Point Informatics**

You've been following the lists way too much.

**David McCallie – Cerner Corporation**

Yeah. You couldn't miss it. It dominated the darned thing for a week. Can you –

**Lloyd McKenzie – Gordon Point Informatics**

Those conversations happen.

**David McCallie – Cerner Corporation**

Can I come back and ask a question about extensibility, Lloyd, before you have to go?

**Lloyd McKenzie – Gordon Point Informatics**

You bet.

**David McCallie – Cerner Corporation**

You know, the – you obviously described extensibility that can happen fairly quickly, and then you described a much more, you know, lugubrious DSTU cycling out through 2016, a process of sort of formalizing those extensions. How do those interplay? How does somebody do a quick extension for a specific use case? Do they just do it and document it and let other people use it if they want?

**Lloyd McKenzie – Gordon Point Informatics**

Yep.

**David McCallie – Cerner Corporation**

Or how does it work?

**Lloyd McKenzie – Gordon Point Informatics**

So, I mean, the 2016 timeframe or whatever, doing things through a standards process, the timelines for that are driven a little bit by what you have to do in the tools, but particularly in terms of FHIR. It's driven a lot more from the how do you get consensus. So that's the timeframe for creating both the resources and for creating any kind of profiles that you want to drive through some sort of standards process, is getting the consensus on what is best practice for doing an oncology referral, if you're wanting to create a profile for that. Or what is best practice for representing lab orders or anything?

But profiles aren't limited to only being created by HL7. They can be created by other SCOs. They can be created by IHE. They can be created by a particular project. And as I mentioned, we're looking at getting tooling out there that will make that all a lot easier. Right now, you create your profiles in Excel, which is a widely available tool, but it's not necessarily that pretty, and doesn't give you instant feedback in terms of where you've got problems. You have to run through a build process that will then yell at you.

Anybody can define extensions. Anybody can define a profile. They're both identified by a URI, so so long as you use a URI that's based for your organization, you shouldn't have collisions. And you put it up, and people can access it, and so long as they're able to access it on the web, your conformant if you are using that profile.

**David McCallie – Cerner Corporation**

And there's no licensing restrictions that make what you said hard to do? I really like what you said. I'll just double check about licensing issues.

**Lloyd McKenzie – Gordon Point Informatics**

There aren't any. FHIR is released under a license that basically says the only you're prohibited from doing is redefining that it means to be FHIR conformant.

**David McCallie – Cerner Corporation**

Okay.

**Lloyd McKenzie – Gordon Point Informatics**

So you can take the FHIR specification that we host, download it, give it a different logo, publish it, and you're well within your rights. There's an extremely open license for FHIR.

**David McCallie – Cerner Corporation**

No, that's really good to hear as well.

**Dixie Baker – Martin, Blanck & Associates**

Lloyd, I know that you said you could – you only had till 10 – or 1:45, and I think we've already gone over, so we appreciate what you've done and your presentation. We also see you've given us your contact – your email address here, so we can contact you if we have further questions?

**Lloyd McKenzie – Gordon Point Informatics**

You certainly can. I'm happy to chat with you whenever. And if you want follow-up or more detail at some point, I'm happy to come back and chat more.

**Dixie Baker – Martin, Blanck & Associates**

We really appreciate it. Thank you very, very much.

**David McCallie – Cerner Corporation**

Yeah.

**Lloyd McKenzie – Gordon Point Informatics**

You're most welcome. Thank you. Bye bye.

**Dixie Baker – Martin, Blanck & Associates**

Okay. With that, let's move on to Arien and David, and I know that both of you have, you know, considerable experience with FHIR yourselves. So if there – Cris, if you have any further questions about FHIR that, you know – and me, I do – I happen to have one. So could I ask it of you guys and see if you happen to know?

**Arien Malec – RelayHealth Clinical Solutions**

Sure.

**Dixie Baker – Martin, Blanck & Associates**

It's – Lloyd mentioned they were converting C-CDA documents into FHIR documents, and I was wondering, it wasn't clear to me what is required to do that. You know, to me, a document can be passed through a RESTful transport, so what is involved in all this – what conversion is really required? Do you know? Or should I –

**Arien Malec – RelayHealth Clinical Solutions**

I don't know. I can speculate, but I don't know.

**David McCallie – Cerner Corporation**

I can speculate as well, and who wants to go first?

**Arien Malec – RelayHealth Clinical Solutions**

The speculation that I'd have is you can take a template in a C-CDA document or a CDA document, and you can create the equivalent RESTful FHIR component within a FHIR document.

**David McCallie – Cerner Corporation**

And I think what I would – what I'm guessing is similar to that, although maybe one step further, which is if you look at a C-CDA document and remove everything that's meta and organizational, and just focus on what's actual clinical data, that you'll remove most of the XML, because most of a C-CDA is not in fact the actual clinical data. And if you were to just preserve that clinical data, but use the FHIR-defined resources and the simplified XML, glue it back together, you'd have all the content of the C-CDA, but you'd have it without the what I would personally call useless organizational framework of the template hierarchies. So I think it's like the green CDA model, really.

[Crosstalk]

**David McCallie – Cerner Corporation**

In fact, I wanted to ask him, does this essentially make green CDA a no-op? Which I bet it does.

**Dixie Baker – Martin, Blanck & Associates**

But you would still need the tags for the – for the fields, right? To come –

**David McCallie – Cerner Corporation**

Yeah. Yeah. But that's included in the resources. The resource definition for something like a patient –

**Dixie Baker – Martin, Blanck & Associates**

I see what you're saying.

[Crosstalk]

**David McCallie – Cerner Corporation**

– includes all that –

**Dixie Baker – Martin, Blanck & Associates**

You said remove all the XML. You don't mean all the XML.

**David McCallie – Cerner Corporation**

No, no. I mean, remove the stuff that doesn't contribute to the actual clinical information in the CDA.

**Dixie Baker – Martin, Blanck & Associates**

That doesn't have to do with the content. Yeah. Yeah.

**David McCallie – Cerner Corporation**

So it would thin it out. I think it would be very like much – very much like the green CDA effort. The difference is in this case in general, not with respect to CDA specifically, but in general, you can define FHIR resources ahead of the RIM process, and then map to RIM for a sanity check, whereas the green CDA, you have to start with a RIM-defined element and then try to simplify it. And they got all tangled up in, you know, well, if you're going to do that, why don't you just send the original RIM along, you know, anyway, and then the question is why do you have green in the first place? With FHIR, you eliminate the requirement that there is an existing RIM model underneath it. That becomes an optional post hoc sanity check.

**Dixie Baker – Martin, Blanck & Associates**

Yeah. It sounded like it was just an exercise to make the process more formal and –

**David McCallie – Cerner Corporation**

Yeah.

**Dixie Baker – Martin, Blanck & Associates**

– structured than it would be otherwise.

**David McCallie – Cerner Corporation**

Yeah. To add some computability after the fact that most people won't ever need to see.

**Dixie Baker – Martin, Blanck & Associates**

Okay. Well, thank you. I really appreciate that. I know we had limited time, and I – you know, that was my – one of my questions that I was holding, so –

**David McCallie – Cerner Corporation**

One other question that I would queue up for our own follow-up that I didn't get a chance to ask him, obviously, due to time – maybe we could follow it up on the email – is what's the relationship to other HL7 service-oriented architecture projects. There's a couple of SOA projects through the years at HL7 – I haven't kept deep – careful track of them, but does FHIR replace those, make them – are they synergistic with that? I'd be curious to know about that.

Because there is, you know, consistent sort of background drumbeat in the vendor community about why don't the vendors produce SOA compatible modules that could be woven together into a – you know, a complete EHR made out of modular parts at a much more granular level than the current certification process accommodates. And, you know, an answer is then the SOA model so far has just been inadequate to the real world of EHR complexity. And I wonder if that is changed by FHIR. That would be an interesting follow-up.

**Dixie Baker – Martin, Blanck & Associates**

Yeah. It would – yeah. It sure looked on his one slide, where he says most of the other efforts are going into this, you know, it looked to me like that's what happening, is most of the HL7 efforts are going into this.

**David McCallie – Cerner Corporation**

I think it's fascinating that he didn't hesitate to say that it essentially recapitulates the model of V2, you know, which is –

**Dixie Baker – Martin, Blanck & Associates**

Yeah.

**David McCallie – Cerner Corporation**

– the focus is on what's the content of the segment, making sure those are well-defined, and then giving you a fairly flexible way to string segments together and to extend. And, you know, it's – if you go far enough around the circle, you come back to where you started from.

**Dixie Baker – Martin, Blanck & Associates**

Yeah.

[Laughter]

**Dixie Baker – Martin, Blanck & Associates**

Yes.

**David McCallie – Cerner Corporation**

But, you know, V2 has been very successful, despite the headaches that it has caused around, you know, what's a standard lab interface look like. The actual messages work really well.

**Dixie Baker – Martin, Blanck & Associates**

Mm-hmm.

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. It's actually – in many ways, it was V2 without a lot of the optionality, which is interesting.

**David McCallie – Cerner Corporation**

Yeah. Yeah. But with the some composability. And that's – composability and extensibility is what is exciting to – you know, the vendor community that wants to innovate, and this can be a segue into CommonWell, you know, when you want to do something that's a little bit different from what the standard allows, but you want to preserve as much of the standard as possible so that the jump from where you are to where you want to be is tolerable, that's very difficult to do with the V3 world. In fact, I'd say it's essentially impossible to do.

This I think opens the door to extensibility with incrementalism in a way that doesn't inhibit innovation and experiment, but can result – and result in the long run in something that is easily consumable by everyone else, because their model accommodates that.

**Dixie Baker – Martin, Blanck & Associates**

It makes a leap from, what it is, 2.7, that has the XML in there?

**Arien Malec – RelayHealth Clinical Solutions**

Yeah.

**David McCallie – Cerner Corporation**

Yeah.

**Dixie Baker – Martin, Blanck & Associates**

Yeah. And it essentially sounds kind of – yeah. That's –

**David McCallie – Cerner Corporation**

Yeah, that would be interesting, wrapping 2.7 XML inside XML. Anyway, no.

[Laughter]

**David McCallie – Cerner Corporation**

So Dixie, do you want Arien to –

**Dixie Baker – Martin, Blanck & Associates**

Yes.

**David McCallie – Cerner Corporation**

– talk a little bit about how CommonWell is using FHIR?

**Dixie Baker – Martin, Blanck & Associates**

Yes.

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. So let me just go back to the problem domain that we were facing. We're building, as I think most people know, we're building a record and counter locator service that takes in an identity feed and then allows an EHR or other end point to pass in an identifier and get back a list of locations where that patient may have received care, with some additional metadata about those locations and about the confidence in the link itself, and then allows for that link to be traversed to find the address end point for eventual document discovery.

We had a goal – have a goal of mapping all of that work to existing standards, including IHE standards, as well as exposing a finer-grained service that really expresses some of the native concepts in as simple as possible terms. We wanted to do that work in a RESTful approach, and we had a choice of just going and building our own resource definitions or looking at something standard that existed. And fortunately, at the time, FHIR was well-enough developed where I was able to point our lead engineer at the spec and say, hey, I think you should go use this.

And what I can report out of that experience is that FHIR did everything you want a standard to do. And what I mean by that was that it reduced the lead time of creating the specification because most of what we needed was there and well-specified with strong semantics. So we used – we needed to have concepts for patients, persons, organizations, etcetera, and in most of the cases, we were just able to go pull the resource and all of the documentation about the resource, and all of the semantics that were defined for the elements of that resource, and just run with it. So it significantly lowered the lead time to get to a complete specification.

It was expressed in – it is expressed in domain language, which meant that I could point a lead engineer who understands technology and understands the domain, along with a product manager, at it, and they could understand everything they need to understand in order to get going. There wasn't any additional language or meta language or meta concepts that they needed to learn. They didn't to learn – they didn't need to learn what an ... and a class code and a mood code and all of that was before they could actually start to understand what the content layer looked like. So the – there was really nothing in between the understanding of the domain and the being able to pick up and use the resources.

In the few areas where we – where the concepts that we were looking for didn't exist, as Lloyd mentioned, there was a very clean way to add – extend the existing concepts to add those new concepts. And the amount that – I'm speaking off the top of my head and probably making it up, but I want to say something like 90 percent was existing concepts and 10 percent was extensions. And it was incredibly straightforward to do that.

And the resulting specification is – you know, does everything that we wanted that specification to do. It is a RESTful specification with well-defined semantics and well-defined resources. There's clear clarity in how you consume and update those resources. There were cases where, you know, we needed to do an identity feed, and the existing HL7 V2 messages weren't resource oriented, and we found that the FHIR team had very helpfully defined a message semantics and a message inbox semantics, and those, again, are very nice, RESTful approach for handling the V2 messaging and mapping that to the FHIR constructs.

The – what I – the amount of FHIR specific, I need to understand something about this project, was absolutely minimum. All of the work that we did was understanding our domain and putting together our specific implementation guide and specification. I can't report at this point about how easy it is or isn't to do the on the wire to serialize and de-serialize FHIR, but based on the experience of putting together the specification, our engineers don't believe that there's any significant – there's any significant concerns there.

So, you know, as a – as a real world case of trying to use the standard and just being able to, you know, point somebody to the website and say go do it, and have them come up to speed and understand everything and put together their own specification, and implement a specific profile of FHIR, the experience has been pretty much everything we've been looking for it to do.

#### **Dixie Baker – Martin, Blanck & Associates**

It also sounded to me like the basic specification is stable at this point, and what they're really working on are profiles. Is that right?

#### **Arien Malec – RelayHealth Clinical Solutions**

I think that's right. I mean, I think we've got – we've got an exposure point in that we could go run with our own specification and find that a year from now the underlying resources have changed. But we'd also face that exposure point if we created our own API. And I have much better confidence that if that happens, we have a pretty clean mapping from one to the other than I would if we created our own – our own spec.

So, I mean, I think we're doing that – we're doing this a little bit at risk, but it's an at risk that's pretty minimal relative to the at risk of creating our own specification and owning it.

**Dixie Baker – Martin, Blanck & Associates**

Have OIDs gone away?

**Arien Malec – RelayHealth Clinical Solutions**

There are some OIDs that are still around.

**Dixie Baker – Martin, Blanck & Associates**

Oh, really?

[Crosstalk]

**Arien Malec – RelayHealth Clinical Solutions**

Most of it's a URI. There are some cases where OIDs are around to identify value sets, for example, where they're there because there's an existing machinery for creating and maintaining value sets based on OIDs.

**Dixie Baker – Martin, Blanck & Associates**

So yeah. Yeah. That makes sense.

**Arien Malec – RelayHealth Clinical Solutions**

But it's not – it's not OIDs – so what was – what was – what is somewhat annoying about CDA is that each template is identified by an OID.

**Dixie Baker – Martin, Blanck & Associates**

Yes.

**Arien Malec – RelayHealth Clinical Solutions**

And to know what template you're talking about, you need to know what the – you have to map that OID to a human readable construct, and none of that exists. It's really just here's the – here's the SNOMED code set that you're looking for.

**David McCallie – Cerner Corporation**

And this is David. From – you know, from the vendor side, I think there is – there are mixed emotions about FHIR, and the mix simply comes from the fact that no matter how much better it is than what we are currently doing, if it's different than what we are currently doing, it's work to go accommodate it. And I think our developers would say this is much better than what we're currently doing, but we've put a lot of resource into what we're currently doing, and, you know, change is painful in the overall big picture vendor machine, trying to meet meaningful use deadlines and the like.

So there's a tension that we feel, and we felt it in the CommonWell work where the, you know, service provider that Arien was describing meets the EHR consumer of the service that Cerner would represent. We felt that tension to the point of actually positing the creation of ... software that would essentially be a translation layer, if you would, between the old school world of V2 and V3 messages, and the service providers' use of FHIR, with the expectation that over time, those shims would become less and less necessary.

But, you know, there's no free lunch. You've put in something that's new and better, and the new part may be more of a burden than the better part is a benefit. So it's not to say –

**Dixie Baker – Martin, Blanck & Associates**

I was thinking about that, because like a SOAP-based environment is not just complex to implement, it's really complex to maintain over time, too.

**David McCallie – Cerner Corporation**

Yeah, it is.

**Dixie Baker – Martin, Blanck & Associates**

How do you as a vendor kind of factor – you know, measure, you know, do the tradeoff between the efforts that are required to change for something to something that's simpler to maintain, versus just continuing on with a complex solution?

**David McCallie – Cerner Corporation**

Yeah. I mean, that's – you know, that's a – that's a point of a lot of discussion and contention. There's not an – there's not a generically correct answer. My guess is that we'll see newer projects that involve fresh code just start out with FHIR. Let's just say a patient portal that has to support ABBI+, you know, where they're already starting to focus, you know, as we heard from Josh Mandel on the last call, already starting to focus on FHIR, our team would, you know, happily, you know, adopt it there, and the developers would find it very familiar and comfortable, I think, because most of the developers these days aren't very comfortable with SOAP and some of the older technologies.

Whereas, you know, our transition of care meaningful use stage two requirement to produce a C-CDA, that code's not going to change any time near – in the near future, no matter how much better C-CDA models come out. That's much more complex –

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. The interesting – the interesting overlap here is when we're talking about mobile friendly patient portals that are interoperable. If you think about the patient portal as a – as a module that is mobile friendly out of the box, we've got this interesting mix of some of it with ABBI+ is – or with BlueButton+ is FHIR-based, and then you – then you've got to consume and manage the consolidated CDA. So the ability to create a nice, easy translation there I think would be – would be incredibly helpful, if you could just translate on the fly the consolidated CDA to an ABBI – sorry, to a FHIR document, would really help that whole – that whole tool chain considerably.

**Dixie Baker – Martin, Blanck & Associates**

Well, is HL7 doing that?

**Arien Malec – RelayHealth Clinical Solutions**

Well, that's what I heard Lloyd talking about, and to the extent that there was, for example, a meaningful use 2 or meaningful use 3 compliance translation, that could potentially help some of the ... mismatch that we're talking about.

**Dixie Baker – Martin, Blanck & Associates**

Yeah. Yeah. That's a good point. Because before –

**David McCallie – Cerner Corporation**

And I suspect some of the interface engine vendors will try to step into that space as well.

**Arien Malec – RelayHealth Clinical Solutions**

Sure.

**David McCallie – Cerner Corporation**

It's a natural for their business.

**Dixie Baker – Martin, Blanck & Associates**

Very interesting. Cris, are you still there?

**David McCallie – Cerner Corporation**

We scared him off.

**Dixie Baker – Martin, Blanck & Associates**

Were you guys surprised to see ATNA as one of the things that they're implementing?

**David McCallie – Cerner Corporation**

Yeah, I was. I was –

**Dixie Baker – Martin, Blanck & Associates**

I was – I was very surprised.

**David McCallie – Cerner Corporation**

Yeah. I was anxious to ask him why. I just knew we had limited questions.

**Dixie Baker – Martin, Blanck & Associates**

Yeah. I know. I know. Yeah. And it said there were six profiles between IHE and DICOM, but they in parenthesis only had ATNA and XDS. And I kind of wondering what the six things were. Okay.

**David McCallie – Cerner Corporation**

Well, the focus on XDS is a real positive. I'm glad to see that. As Arien described, we obviously can take advantage of that in CommonWell. And that's one of the more complex aggregates of data. So that's a good –

**Dixie Baker – Martin, Blanck & Associates**

Yeah.

**David McCallie – Cerner Corporation**

– test case, to see if it –

[Crosstalk]

**Arien Malec – RelayHealth Clinical Solutions**

Yeah, that's –

**Dixie Baker – Martin, Blanck & Associates**

Yeah, that part made sense. The ATNA didn't – just didn't to me, but –

**Arien Malec – RelayHealth Clinical Solutions**

That's definitely one where the meta model around ebXML is far more complex than – orders of magnitude more complex than the data you're trying to represent, and where the well-defined extension mechanism gives you everything that they were looking to do with XDS meta data as being extensible without any of that overhead.

**David McCallie – Cerner Corporation**

You know, and Dixie, another thing – I'm changing subject on you a little bit here, but just to think about in terms of our write-up and report out or whatever it is, that I think appropriately, FHIR is not about security models at all. There's a clean separation for how you protect the message and transport, which is, you know, appropriate. They're not – they're not building that, you know, encryption or security or authorization models into FHIR at all. I don't think there are any ACLs in there, are there, Arien?

**Dixie Baker – Martin, Blanck & Associates**

Well, ATNA is the only exception.

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. And I think they're looking at ATNA as the audit log as opposed to the – as opposed to the maybe mutual TLS portion of ATNA.

**David McCallie – Cerner Corporation**

Yeah. It's the – it's the message part of it.

**Dixie Baker – Martin, Blanck & Associates**

It's probably just the –

**David McCallie – Cerner Corporation**

Content.

**Dixie Baker – Martin, Blanck & Associates**

Not really the structure of the message, but – I mean, even ATNA has the architecture for centralized audit collection and review, and it just seems kind of odd.

**Arien Malec – RelayHealth Clinical Solutions**

Yeah. I don't believe there's any ACLs or anything else that's built into it. The assumption is you're building this on top of a – of an OAuth kind of security infrastructure, and you're implementing all – you're basically implementing all of that. What it does give you is the standard HTTP status code, so you can – you have a standard way to say not authenticated, for example.

**Dixie Baker – Martin, Blanck & Associates**

But is has the PLS in it, in the RESTful transport, right?

**Arien Malec – RelayHealth Clinical Solutions**

I don't believe that they have – I just don't know. They're at the HTTP level and not at the TLS level.

**David McCallie – Cerner Corporation**

Right.

**Arien Malec – RelayHealth Clinical Solutions**

So they'll tell you that, you know, if you – if you're not authenticated –

**Dixie Baker – Martin, Blanck & Associates**

That's ...

**Arien Malec – RelayHealth Clinical Solutions**

– you do the – you do the appropriate HTTP status code, and then you're almost clear to be running this over a TLS transport ...

**Dixie Baker – Martin, Blanck & Associates**

I see what you're – yeah, yeah, yeah, yeah. Yeah. Yeah. Yeah. Okay. Speaking of where we go forward, David, you know, we have to – we have to report back something at the Standards meeting, so I was thinking about, you know, using our templates for assessing maturity and just, you know, within our own group, doing an informal assessment of these things, and saying, you know, here's the – here's the things I think that we think, you know, people – that the Standards Committee should be – or ONC should support, or look forward, or – because none of these are going to be ready for prime time.

**David McCallie – Cerner Corporation**

Right. But they very much fit with the innovation focus of ONC, particularly around mobile consumer engagement and the like. So you can't wait till 2016 before allowing this in ONC-supported activity, or they would really be acting very much like a big bureaucratic government –

**Dixie Baker – Martin, Blanck & Associates**

Well, ONC-supported activity doesn't – you know, that's for non-mature, so that, you know, that would be – that would be part of our recommendation, is to yes, encourage –

**David McCallie – Cerner Corporation**

Yes.

**Dixie Baker – Martin, Blanck & Associates**

– ONC support for these activities.

[Crosstalk]

**David McCallie – Cerner Corporation**

Yeah ... some way to work it into the – so that it can be part of the certification or regulatory process. I mean, I obviously –

**Arien Malec – RelayHealth Clinical Solutions**

Yeah.

**David McCallie – Cerner Corporation**

– believe that you put as little about the standard in those processes as you can, simply to avoid the process getting frozen in time, but find a way to encourage the development of this, rather than to stunt it because of some technicality around a regulation model.

**Arien Malec – RelayHealth Clinical Solutions**

Well, and for meaningful use stage 3, for the areas that FHIR is at least intended in the short term for, there's a real – there's a real need in the patient portal and mobility space. And I think we might want to consider thinking about that space differently from thinking about the EHR to EHR space.

**Dixie Baker – Martin, Blanck & Associates**

That's a good point. Yeah. Yeah. And this task we're looking at right now is focused on consumers, and transport to third party, which, you know, it would be ready for today.

**Arien Malec – RelayHealth Clinical Solutions**

Yep.

**Dixie Baker – Martin, Blanck & Associates**

Okay. Are there other comments that we want to – so let's – it's 2:15 your time, I guess, 11:15 mine. No, 11:15 mine and Arien's.

**Arien Malec – RelayHealth Clinical Solutions**

I'm actually on the East Coast, just to mix it up.

**Dixie Baker – Martin, Blanck & Associates**

Oh, okay. Okay. So are there other comments, or do we want to open this up? Okay. Caitlin, I think we could open this up to public comment. I guess we need to go to next steps – the next step is that on June 12th, we will be hearing from Ollie Gray and her team there at TATRC that are working with RHEX. I think there's a MITRE person that will participate. So that's when we'll look at the RHEX initiative and their test use of it at TATRC. And we'll also have on the agenda there some discussion of the observations we want to make and recommendations back to the – to the Standards Committee. Okay? All right. Now I think we're ready for public comment.

**Avinash Shanbhaq – Office of the National Coordinator**

Okay. Thanks, Dixie. This is Avinash. So before we go to the public comment, actually, I was told by MacKenzie to make sure I mentioned that – to remind that public comments should be limited to approximately three minutes per person. So with that, operator, could you please open the –

**Dixie Baker – Martin, Blanck & Associates**

And I don't think we heard you, Vanish. You said what?

**Avinash Shanbhaq – Office of the National Coordinator**

Oh, I just mentioned that I think – I was told by MacKenzie to remind the public comments are – should be limited to approximately three minutes per person.

**Dixie Baker – Martin, Blanck & Associates**

Okay. Yes.

**Avinash Shanbhaq – Office of the National Coordinator**

So with that, operator, please open the lines.

**Public Comment**

**Rebecca Armendariz – Altarum Institute**

If you would like to make a public comment and you are listening via your computer speakers, please dial 1-877-705-2976 and press star 1. Or if you're listening via your telephone, you may press star 1 at this time to be entered into the queue. We have no comment at this time.

**Dixie Baker – Martin, Blanck & Associates**

Okay. Thank you guys for dialing in, and we'll talk to you next week.

**Arien Malec – RelayHealth Clinical Solutions**

Thank you.

**David McCallie – Cerner Corporation**

Thank you, Dixie.

**Christopher Ross – Mayo Clinic**

Thank you, Dixie.