



## HIT Standards Committee NwHIN Power Team Transcript May 29, 2014

### Presentation

#### Operator

All lines bridged with the public.

#### Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology

Thank you. Good afternoon everyone this is Michelle Consolazio with the Office of the National Coordinator. This is a meeting of the Standards Committee's NwHIN Power Team. This is a public call and there will be time for public comment at the end of the call. As a reminder, please state your name before speaking as the meeting is being transcribed and recorded. I'll now take roll. Dixie Baker?

#### Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates

I'm here.

#### Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology

Hi Dixie. David McCallie?

#### David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation

Here.

#### Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology

Hi David. Arien Malec?

#### Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation

I'm here.

#### Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology

Hi Arien. Cris Ross? Jitin Asnaani?

#### Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth

Here.

#### Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology

Hello. Josh Mandel? Keith Figlioli? Keith Boone? Kevin Brady?

#### Kevin Brady, MS – Group Leader, ITL Interoperability Group – National Institute of Standards and Technology

Here.

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

Hi Kevin. Ollie Gray? Wes Rishel? And from ONC do we have Debbie Bucci?

**Debbie Bucci – Office of Standards & Interoperability – Office of the National Coordinator for Health Information Technology**

Here.

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

Hi Debbie.

**Debbie Bucci – Office of Standards & Interoperability – Office of the National Coordinator for Health Information Technology**

Hi.

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

And with that I'll turn it back to you Dixie and David.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay, well we'd like to start by thanking Debbie for all the work she's done in preparing for this discussion. You'll recall that one of the items that was assigned to us was to – by the – actually it came by way of the interoperability working group not interoperability, information exchange working group of the Privacy Committee and that is to –

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

The Policy Committee.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Pardon?

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

You said the Privacy Committee, from the Policy Committee.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, I thought that's what I said, okay. That's what I thought even if it's not what I said. Okay, so the Policy Committee.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Hi this is Josh Mandel; I just had a little trouble joining.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Oh, okay, good, good, good. So, one of the topics was directories, provider directories and so today we're going to address potential standards to recommend for provider directories. Would you go to the next slide, please?

After discussions with – you'll recall that we had Micky Tripathi come in and discuss exactly what they meant by the tasking that they sent our way and after that discussion it sounded like it would be a reasonable thing to do to limit the certification requirement for Stage 3 to focus really on direct messages that would enable the exchange of patient information, in other words, finding the information that would be required to enable a provider to send patient information via the Direct messaging protocol. I can hardly see this let me bring it up on my own.

So, there were several questions, three questions that we wanted to discuss today and they're all on this one slide basically. The first is considering that the problem space is really a directory to find sufficient information to enable one provider to send health information to another provider.

So, the first question is what to certify and the second question we will discuss is the authentication that might be required to do this kind of provider directory query and then finally the standards that we would want to recommend.

So, what to certify, as a minimum the technology would need to be able to query an external provider directory for the information that we have listed there and to electronically process the response in accordance with the module specification provider directory's implementation guide which the ONC has developed.

And the three things, the three queries are query for an individual provider's Direct address, query for an organizational provider's Direct address, in other words an organization, and third is to query for relationships between individual provider's and organizational providers like if we wanted to be able to query for, you know, the – to find out what affiliation, what hospital a doctor might be affiliated with we'd be able to query for that.

The – let's see, notice that what we heard was that certification would not be certifying every, you know, EHR technology to actually implement a directory in itself, but rather to be certified with the ability to query an external directory for the information it needed to exchange the information. David, did you want to add anything to that?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

No, I think there was, well, yes, I guess, I think there was some discussion and I'm going to not recall exactly who said what, but some discussion that the certification ought to focus both on the ability to host the directory as well as the ability to query the directory and I, and others, I think have pushed back and said that it may well be that entities are hosting these directories that do not themselves fall into the EHR certification Meaningful Use process and that it would make little sense to drag them in or to force vendors to drag them in to prove that they could do both the hosting and the querying.

And so, I kind of am comfortable with this notion that the EHR side needs to be certifiably able to query regardless of who the hosting source is, because those hosts could be the state HIE, it could be the HISPs, it could be DirectTrust, it could be ONC we don't really know.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right, that's right we had considerable discussion over who is going to provide these directories and ultimately we concluded that it really shouldn't matter from a certification perspective so long as the EHR technology was able to query for the information it needed. Other thoughts?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Is everybody comfortable with that? I mean, it made sense to Dixie and I but we need obviously the full group's thoughts on it.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

This is Jitin; that makes entirely sense to me that we should not need to certify to that infrastructure if it's not providing – if it doesn't inform the value you get from the querying and the retrieving so it is just superfluous and unnecessarily restrictive to do so.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well that's a good point as well, yeah. Yeah, we don't want to even constrain how these directories are implemented because it's really not necessary from a Meaningful Use perspective but rather that whatever they look like, whoever hosts them it's able to be queried from an EHR.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

So, this is Josh, I would just go into that last point which is the proposal on the table I think, if I understand it right, makes an assumption about what the directories are and what they look like and how they work, maybe not about who hosts them, but it does assume that it works in a certain way.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yes.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

And it would be specifically certifying the vendor's ability to talk to directories that worked in that way.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's right, that's right. So, from a certain perspective we would be specifying the interface of any directory that – an interface, it could be more than one, you know, service interfaces, but we would be specifying at least one service interface that would be necessary so that certified EHR technology could query it. Yeah, that's a good point.

So, the second question here has to do with authentication. As I recall the HPD+ specification includes transport layered security and – which in transport layer security is by default authenticates the server so that when you go to Amazon or something like that, or PayPal, you know, PayPal is automatically authenticated through TLS, but – and TLS can be configured to do mutual authentication where both the client and the server are authenticated and in the HPD+ specification it specifies mutual authentication which means both the server itself and the client will be certified, will be authenticated.

Obviously, authenticating the client is much, much more involved than authenticating the server itself. So, the server authenticates itself to the client and then they have a handshake, and they exchange information about what encryption they're going to use and what integrity protection they're going to use, what algorithms they're going to use. So, all that's done in the TLS specification itself so the basic TLS handshake, in other words, the default in TLS, is that it authenticates the server.

So, our question that arose was, does a query of a directory service include any data elements that would be – that would necessitate authenticating the client or the querier, I don't know how to spell querier, but the client as well as the server.

We did have Debbie Bucci investigate this and she looked at the data model and she could find no information that's likely to be sensitive in the HPD specification, HPD+, but we'd like to have some discussion on is it sufficient to authenticate the server that yes indeed this is a legitimate directory service or do we also need the capability for the client to authenticate itself which is the EHR technology, to authenticate itself to the service as well.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, Dixie, this is David, let me add some color to that. Micky, when we pushed him on this on the last call, as you may recall, basically said that the HSPs that they had talked to were requesting this capability.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And when I pushed him a little bit on what were they worried about the only answer that came back was fear of spam and, you know, we got off into a little bit of a side rut about the fact that Direct kind of makes spam impossible if you mean by spam, you know, random e-mails from random people and so I wasn't very convinced that there was a clear understanding of what would be gained by having the clients authenticate but Micky did not relent and he made a pretty strong statement that he felt like it was a requirement for the service.

Now, you know, that's the backdrop. My opinion on this is that the complexity for deployment goes through the roof if we require the mutual trust across all of the potential sources of the query service and all of the potential clients, but if that's what people want then so be it, just be aware that you can kind of radically increase the complexity because of these now well understood and somewhat thorny trust issues that are, you know, making Direct kind of fizzle on the launch pad.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, this wouldn't be a Direct, the query itself wouldn't be Direct, the query itself would just be, you know, a RESTful query over TLS.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

No, no my point is that the same kinds of trust issues of who do I authenticate with, who do I trust.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

We would create parallel trust complexity because now we have trust complexity around the ability to query the directory as well as do I trust you from a HSIP point-of-view.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Yeah, that actually, I think – this is Arien, I think that would be okay because each directory provider would presumably have the ability to trust a limited subset of edge client certificates.

Where the trust issues become thorny is if there is anything associated with federation and anything associated with which directories can pull information from which other directories where you get the any to any kind of trust problems which is exactly what we're seeing in Direct-land right now.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And I'm assuming that in the long run everybody is going to want to be able to look up from any directory and that federation is a part of this strategy.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Right.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, you're right that's when the complexity shows up.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But could they use a Direct certificate to authenticate themselves over TLS?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Not legally not according to the –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

–

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Well, yeah, so, wait there are a couple of issues. The organizational identity assurance policies that are associated with DirectTrust could also be used to issue a TLS cert, right now they're being used to issue a signing and encryption cert for the purposes of S/MIME. You could use that exact same certificate policy to also issue a TLS cert or a cert that could be used by TLS, it's just a different set of –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Certificates.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

A different set of usage, key usage parameters.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But would you have to – doesn't the certificate have to be issued with that in mind up front?

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Right, that's what I'm saying, it's a different set of – it's the same certificate policy, it is a separately issued certificate with different key usage policies and signals in it.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, which to my point –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

So, this is Josh –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

That increases complexity and cost substantially.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

That's right.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

So, this is Josh, it seems to me that since we're only contemplating a certification requirement that these certified EHRs be able to query these directories, ultimately, in the real world it's going to be up to the directory to decide what kind of authentication they use.

So, it seems premature and really unhelpful to certify that the EHR products can do one kind of mutual TLS or another, I mean, maybe it will come around that in the real world somebody is going to do application level security on these things and it will be totally useless that we all spent a lot of time doing mutual TLS.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

This is – so, this Arien, this is a central problem with certification.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Right.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

If we certify a certificate, sorry if we certify a directory query and response we also need to certify the means of authentication and authorization for that query otherwise you won't have the ability for EHRs in the wild to query, configure and query certificate providers in the wild.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

So, if that's the case then why are we having this discussion? That should be the end of the discussion.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I agree with Josh, because especially knowing TLS works. Because, I think if you certified it and I agree with Josh completely I believe it's up to the directory service provider to determine whether it needs client authentication, but if you certified a product as having implemented TLS for directory query and authentication of the directory service end of things it's just a matter of configuring TLS in a different way to enable it if the directory service is so required to do mutual authentication. But it would simplify certification because all you would need to do is a certified capability of setting up the TLS channel with authenticating the service.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, so I think, this is David, I think, you know, Josh is sort of correct in the sense that the market can figure this out, but what we don't want is the vendors having to implement many different authentication models. So, the simplest one that everybody could do which is a no-brainer would be mutual TLS, is that what you're saying Dixie?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

No, no not at all. The simplest is TLS and TLS out of the box authenticates the server not the client.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Right –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But TLS can be – so I'm saying, okay, certified to be the basic TLS capability and then because the way that – if the TLS is the standard by definition it's capable of being configured to authenticate the client if a directory service in the future decides that they want that done it's not a matter of implementing a whole different protocol, it's just a matter of configuring it that way.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And that's what I mean by mutual TLS. If you want it to be mutual you configure it that way.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

No, no mutual TLS explicitly means, mutual TLS, the term, means both ends are authenticated and that's not what I'm suggesting.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

But it seems Dixie like you are suggesting that if we certify to one direction where only the server has to have a strong time certificate in place, if we certify that way, you seem to be saying that just on the basis of the TLS spec itself then, you know, magically later a client will also be able to do mutual TLS and that's not necessarily true, it's very easy to build a client that can't do mutual TLS if that's not a design requirement –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right, right, right, no I'm saying –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

–

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I'm not saying it's a simple thing, I'm saying the protocol, the TLS protocol, when you implement TLS you can use the same protocol you don't have to implement something entirely different, you can use the same protocol and just configure it and make sure the client has the certificate, etcetera, etcetera. But you don't have to implement a whole different interface you can use the same TLS but configure it to require mutual authentication.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Isn't that the same as mutual –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

This is Josh again, when you say configure what I hear is you have to rewrite your software, you have to go back to the source code and make changes, you know, in the way that you're creating an HPD connection to do –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's the way you configure TLS, yes, the way you configure TLS.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

No, it's – yeah, so Josh is exactly right. You can certainly configure your web server at the transport layer to accept mutual TLS and authenticate to any trusted certificate that you have in your web server transport layer, web server and transport layer trustor.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

That does not authenticate at the application level and typically what you need to do at the application level –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Oh, yeah it can be –

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Pull out the actual certificate that was handshaked and determine whether you do or do not trust it.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I don't agree, I don't agree with that, because if you go to a website and buy something, you know, you're buying application doesn't let you know about TLS and what it's authenticating, it does that at the transport layer in the server, it doesn't do that at the application layer, it does it below the application, it does it at the transport layer in the server, the application –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Yeah, so when you buy something from Amazon –

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

That's right, if –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Amazon authenticates you at the application level.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's right.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

That's right and if all you're doing is looking – the level of assurance that TLS gives you at the Amazon level is that you have an encrypted connection to a URL that is trusted to be at that domain.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, that URL does have a – TLS doesn't work unless that URL, that end, the service itself authenticates itself to the client. It doesn't work unless it does that, that's the first thing it does.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

That's right.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Right, I think what Josh – what I think – what I'm pointing out and I think Josh is pointing out the same thing, is there is a difference between that and the application level security that says that the directory service actually trusts the organization or if there is any federation, the actual user, who is accessing the directory service.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I don't think that's at the application level because it's a certificate, it's under the – you know, it's in layers, it's under the application, it's at the transport inception level not the application.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But it has to be set up which means somebody has to fiddle with files to make it happen.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

In the service, in the server, in the web server not in the application.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

No in the client, the EHR that is talking to the web server is going to open up a secure connection, it's going to initiate an HTTPS connection and that connection either will present a client certificate as part of opening that connection or will not.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's right, right.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Okay, so the software – the client's software has to be written with that in mind if it's a requirement. I was earlier suggesting that I don't think we should bother because I just can't just predict what the real world is going to look like, but David says, well, that's silly because if we don't have one consistent way that all EHRs can authenticate then lots of different provider directories will use different kinds of authentication mechanisms and we won't have a working system, which seems true to me, it's just not clear to me that we'll have a working system in any case.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, this is David, let me ask a slightly tangential question that probably doesn't have any bearing but I'm not technically good enough to know. The fact that HPD+ is a SOAP-based service from the point-of-view of the EHR vendor's implementation let's assume that for example some of the HPD directories they connect to don't require client authentication but some of them do, you know, in some bizarre world that we might likely end up in.

What's the difference from the EHR's implementation of that SOAP service so that some of the times it uses mutual and it has to pass a client certificate over and sometimes it doesn't, is that trivial or is that hard?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's a completely different interface actually because it's SOAP. It's SOAP-based it's not RESTful.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But this is SOAP-based, right? HTTPS?

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

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**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

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**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

No, we – and we should, actually, but we really hadn't gotten to the third question about what standards to recommend. I think if we recommend HPD I think you're right then we're stuck with the SOAP interface.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah and SOAP uses HTTP but I just don't know how you configure the difference between when I connect to you I know I have to present a certificate that you have to validate versus I don't have to present that certificate.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Maybe, is it smart enough to fall back and you present your certificate?

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

No, no, no, yeah, so that's at the transport layer. The certificate proffering is at the transport layer but definitely the client code has to be smart enough to configure the transport layer to proffer the appropriate certificate.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And it could be different depending upon who it's connecting to, right, and it has to somehow know that.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Yes.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I think it would always present the certificate it's just that the server wouldn't expect it, so it would ignore it.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Well, there's a formalized handshake where the server asks for the – I forget which order it is, there is a formalized handshake where –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes, the server authenticates itself first and then it asks the client to authenticate itself, but if it doesn't ask then if the client has a certificate the server just ignores it. But, you know, if you did –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, we have conflicting opinions here it sounds like. It would make sense for the client to just ignore or the server to just ignore it if it didn't care but Arien you're sort of suggesting you don't think it is that way?

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

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**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

It may depend on whose code base you use –

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

No the standard is – there is a formalized handshake that is well standardized, but – so this is my – this is our experience in implementing other SOAP-based stacks like XDS that do use mutual TLS, you definitely need to have a certificate store where you are holding the actual certificates that are used by the service provider that you're connecting to and present the appropriate certificate for the appropriate handshake, for the appropriate service that you're using.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, Arien and I and David are in complete agreement it's just that what we're saying is, if both – if the TLS SOAP is configured to expect a client certificate then TLS won't work unless it's there, right?

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Right.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But all I was saying is, if the TLS doesn't expect the client certificate then it just – then it doesn't even use the client certificate. But, I don't know what else SOAP adds to it is the thing, because –

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

It doesn't add anything to it. You can add on top of SOAP WSSE and depending on which WSSE profile you add on top you may or may not do other things to authenticate and our other experience is that that's a total pain because everyone has implemented everything slightly differently. So, once again –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

If we just recommended HPD+ as a standard, going back to either Jitin or Josh one of the two mentioned that we would be, by definition, specifying some standards for the service not for the client, right, so do we really want to step up and say it must be an HPD directory? Isn't that placing the requirement on the directory service and not just on the client or –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Yes. If we don't specify it –

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

So, this is Jitin, my understanding, although it's probably outdated at this point, but my understanding was that at some point the HPD specification was being revised and was then dubbed HPD+ as you have here where we were creating a firm separation between the storage layer and the presentation or access layer, and Dixie, exactly to your point, my recommendation is that if there is a standard it really points to the access layer whatever that may be and it maybe the access layer described in the HPD+ specification but certainly not the underlying implementation or storage layer that I agree does not make any sense at all in terms of enabling flexibility.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Yeah, but I think we're talking about different, Jitin this is Arien, I think we're talking about different topics which is HPD+ definitely uses SOAP as it's wrapper, as it's messaging wrapper, and then I think Dixie was asking whether specifying these SOAP as the messaging wrapper would that by necessity specify additional things on top of it like WSSE.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Dictate the whole architecture and everything of the service itself really.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, it dictates the exposure of the service as an RTC but as per –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Jitin what you do with the data behind the scenes is up to you. It has to respect the behavior as defined by HPD+ but you could use active directory or you could use Mongo that's up to you.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But doesn't it also –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

– ABI –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

– I think the next slide talks to that. Yeah, go to the next slide, this is an overview of the mod specification of HPD+, H-P-D+, and it talks about all the things that are in the specification itself. Let me see where I can see it. So, it includes individual and – so that's the content, the first one is the content, the end point addresses.

The query is based on DSML v2 so you've got that which we would be imposing on the service. So, all these things I think would be constraints on the service itself, no? That's all I'm asking.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

And it, you know, kinds of queries it supports, the transport we know is SOAP, we were at one time told that it supported REST as well, but lately we've been told that's not the case. The current – the security is mutual but HPD+ it's mutual TLS and limitations, no discovery and no incremental fetch.

So, all I'm asking is if we use HPD+ as a standard for the client query of the service would we, by definition, have overly constrained the service itself?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, but that's – I mean, this is David, isn't that the nature of what we're trying to solve for here? I mean –

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Right, what else could we do?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, what else could we do, I mean, short of actually being rationale and solving this whole thing with a very simple RESTful approach that somebody could write over the weekend, but other than that what else should we do?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well that's what we at one point recommended.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Well, can we recommend that again?

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Can we recommend FHIR and REST?

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Yeah, I would strongly support that.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, and –

**Keith Boone – System Architect – GE Healthcare**

This is Keith, you know, if you're looking to identify standards this is probably the right set of standards and if there is work, development work that needs to be done in the RESTful space certainly doing development work in FHIR on directory standards is a good approach, but I wouldn't make that the basis of a recommendation for Stage 3 in any way, shape or form.

I think we're seeing a lot of push back on readiness of standards and something that somebody wrote over the weekend in 2 or 3 days I think you'd get a pretty huge pushback on something like that.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, I think he was being a bit flippant.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, this is David; I'm being a little facetious.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

He was just saying to use RESTful instead of –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

I'm sorry, this is David, yes, certainly Keith being facetious, but my point is the complexity of this HPD particularly if it's expected to be federated, and particularly if it's expected to have mutual TLS across these warring trust parties almost guarantees that this isn't going to be very successful.

And you could easily imagine a much less complicated deployment that would require hardly any standards work. Now, I'm not saying that we can do that in time for v3 but I'm not saying when about the chances of success for this HPD+ with federation with mutual TLS. It's a well specified standard that's not the problem. The problem is the implementation is just going to be incredibly complicated.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

And this is Arien, one of the issues that I'm pointing to, and I agree with Keith that getting this done by Meaningful Use Stage 3 is problematic given how much time it takes to do anything, one of the issues that I have a pretty strong set of concern about is we've got Direct which uses SMTP and S/MIME and a DirectTrust or merging toward a DirectTrust certificate model for identity assurance of organizations that supports that.

We've got an existing infrastructure that's kind of patchwork on top of SOAP that uses some variant of the eHealth exchange authentication framework and our experience with that has been that you have to almost negotiate each time exactly what flavor you're using and not using.

We're talking about now a different content model using SOAP and a different security model using TLS and we're marching towards a patchwork approach constrained by the need to deal with the standards that currently exist as opposed to the infrastructure and standards that we wish would exist.

And the challenge we keep getting to is when we constrain to getting things done in the short-term we generate the patchwork and we never are able to get out of that. So, it's a general conundrum for the Standards Committee but it's certainly a conundrum for this particular issue as well.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

So, do we have a suggestion on how to minimize that likelihood?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So one of the – you know, one of the – this is David again, one of the notions of only requiring that the vendors certify for the client side of this was an attempt to simplify it a little bit to saying at least you don't have to worry about implementing a directory service under the assumption that most of those directories are going to come from somebody else anyway. So, that's a step in the right direction.

But, I don't, you know, if I was the czar and could tell people how to solve this problem I'd say send me your CSV file with the providers that you want to expose publically I'd load them into a website and give you a very simple search interface and say "here's your directory service."

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

And I think – I don't think we should recommend anything that would exclude that kind of an implementation.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, but if you're going to certify you can't keep saying you can do it this way or that way, or that way, right? I mean, the whole point of certification is to be rigid so that we can get through without all the ambiguity and overhead that we've been hearing so much negative press about.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

This is Josh, let me just ask for Dixie, if we did say that we were going to recommend this certification to the HPD+ specification, Dixie for you would that mean that vendors could and should also do other things like being clients to these RESTful provider directories that don't exist or would you think that if we certify to that criterion than that would be the way things should happen?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

No, I think that if we – if we use that specification it would require certification against that specification. If, in the future, directory service providers started to do it in a different way, a simpler way, a web search way the certified EHR technology still would need to be certified against a standard that may not help them all that much, that's the only – and I'm sure not arguing against HPD+. I'm just trying to not – we get this feedback all the time that vendors feel like, oh their products are having to be certified against something they don't really use and that's all I'm saying.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Yeah, well, in my opinion it's very much in that category.

**Keith Boone – System Architect – GE Healthcare**

There are people who have – I'm sorry, can I get in?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, who is trying to get in?

**Keith Boone – System Architect – GE Healthcare**

This is Keith.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay.

**Keith Boone – System Architect – GE Healthcare**

I've been trying to get into the conversation just a few moments ago several times.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Sorry.

**Keith Boone – System Architect – GE Healthcare**

So, HPD+ is something that I at least know that there are multiple vendors who have implemented it who have tested it and who have been involved in the development of it to serve this purpose. I'm not familiar with anything else that's been produced that sort of meets the criteria of its suitability for the purpose, it's been produced for this purpose and it's even vaguely mature.

I think that the challenge that we've got is that nothing that meets the specific requirements we're looking for to meet has really a whole lot of maturity in any sense one way or the other, the closest thing that I think we've got and where people have focused their attention has been, you know, on HPD+.

I would look at a directory somewhat in the same way as we're starting to see the attention focus on health information exchange. There is a functional capability of being able to do exchange and there are replaceable components on the stack where you can do it via SMTP, you can do it via SOAP and, you know, maybe sometime soon you could do it RESTfully.

And I think what we would want to look at is functionally what are the necessary capabilities? Meaningful Use has got a lot of functional requirements for EHRs and some standards-based requirements for here's how you can implement those functionality innards.

And I think it might be appropriate to look at saying, well, here's the basic functionality that is required and here is an acceptable mechanism by which it can be done and certified against and as better, more easy to use, more implementable standards become available that's something that can move into, you know, the next phases.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But do we think, this is David, and I think Keith that's well said, what makes me uncomfortable is that just because we have a standard and just because, and even though that standard has been piloted to, you know, a reasonable degree, are we confident that it's going to solve the problem enough to incur the overhead of building regulatory framework around it's expected use and I'm not sure we're there yet.

**Keith Boone – System Architect – GE Healthcare**

I won't argue that point, but I would certainly argue that we could substitute something else in place of it.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

So, Keith, let me see if I can – this is Arien, let me see if I can understand what you're advocating for, I'm going to repeat it in my own words and see if there is a level of agreement.

I would imagine you're proposal as being there is an optional certification requirement that an EHR vendor could choose to certify to, that this certification requirement would give the generalized behavior that must be certified to and would include at least one but potentially more functional implementations of that behavior in reference to a named standard.

And so, an EHR vendor could choose not to certify for a directory query, could choose to certify for a directory query using one of the named standards, but if there are additional standards that are out there it could choose to certify to that standard as well.

If I'm understanding well that would give regulatory flexibility, it wouldn't solve for the any EHR is plug compatible with any directory – but it potentially would solve for, I could choose to buy an EHR that's plug compatible with the directory provider that I also choose to use.

**Keith Boone – System Architect – GE Healthcare**

Yes and that's a quite accurate statement and one of the things I think you'll find, Arien, is in the infrastructure space one of the things that we've seen for example with cross enterprise document sharing and that family of profiles from IHE is that, then also with EMPs, and PIX/PDQ which has multiple variants, the people who are developing the infrastructure aren't hesitant to support multiple protocols because they've implemented the functionality in a product that's designed to support that set of functionalities and it's really, for them, building the interface simply broadens their market. And so they're not hesitant to do that.

So, your typical HIE today has multiple ways to connect to it to support broad interoperability to the infrastructure whereas the EHR itself or more properly the certified electronic medical record system, which we keep thinking of as being part of the EHR, is, you know, maybe not going to support multiple standards in that sense.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

So, if the HIE piece has – if a typical HIE as you said has multiple ways to connect to it then how can we justify constraining the client to one way to connect to it?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

He was making an analogy.

**Keith Boone – System Architect – GE Healthcare**

It's not – I'm making an analogy and I'm saying you've got one way that's ready to be certified right now and other ways that you can work on that could be ready to be certified subsequently.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, I did get that. I got that.

**Keith Boone – System Architect – GE Healthcare**

Yeah. So, you know, what you're saying is right, yes we're constraining it if they want to be certified, but with the modular certification that we're looking at we actually do have a little bit more freedom.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

That's right, yeah.

**Keith Boone – System Architect – GE Healthcare**

And if you're not required in the incentive context or in the penalty or the avoidance of penalty context to work with that particular standard –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah.

**Keith Boone – System Architect – GE Healthcare**

To implement – so today to exchange – to do transitions of care you don't have to use the certified capabilities of EHRs if you already have a way to exchange the documents.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, let's come back, we need to get back to this issue.

**Keith Boone – System Architect – GE Healthcare**

But that's the point I'm making is that you –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, I think that –

**Keith Boone – System Architect – GE Healthcare**

Are actually providing some of the flexibility.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, I think that's a good point.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But what's the point, this is David, what's the point of forcing people through a certification process even if you put the word "optional" on it if we don't actually expect that it's good enough for real world use, we can just skip it and let the market figure it out if we think that's where we are, otherwise we're just making work for the certification bodies and for the vendors who will then have to go and do all of the hassle to get through certification for something that they might not actually use.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

David, the point that Keith was making is that the new, you know, the new approach to certification there is no such thing as certain optional criteria it really is that every single thing becomes optional and they can choose to be certified against any one criterion or not. So, if they choose not to be –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But what's the point?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I mean, should – we picked HDP+ and in the future it's not used anymore then nobody would just certify their product against it.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, why would we ramp up the machinery to make it optional to certify something that we don't think people are going to actually use? If they're going to use it they'll use it.

**Keith Boone – System Architect – GE Healthcare**

Well, this is where I think you and I differ is that there are people who have invested enough in it to do development, put it into product to take it to connect-a-thon and demonstrations at significant expense that I don't think it's quite at the point where nobody is going to use it.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But Keith earlier you said, you didn't say connect-a-thon, you said it's been implemented by multiple vendors and I automatically assumed you meant implemented and operational not connect-a-thon am I right?

**Keith Boone – System Architect – GE Healthcare**

Okay, so when I say implemented I mean people have built this into some level of product whether that product is released and publically available is information I don't have because I haven't done the investigation and anything I was told at connect-a-thon I can't tell you.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, you know –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

–

**Keith Boone – System Architect – GE Healthcare**

There were vendors there I can't tell you who tested what.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

But we don't consider connect-a-thon implemented.

**Keith Boone – System Architect – GE Healthcare**

Oh, okay. So, what I can tell you is people have invested money and dollars to bring it and have tested it, and it's a significant effort.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah and Dixie –

**Keith Boone – System Architect – GE Healthcare**

Now I'm not saying that that's implemented in product, I'm not saying that it's commercially available and as a matter of fact I'm telling you I don't know how commercially available it is.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, I think we should assess –

**Keith Boone – System Architect – GE Healthcare**

But all the stuff that you're looking at is stuff that is all readily commercially available in product and can be put together today.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, this is David and I'll concur that, you know, sample of two here Keith's company and my company we've implemented HPD+ well enough to know what it takes to implement it, have not deployed it anywhere in production, quality that I'm aware of, but have implemented it and understand what it cost and what it takes, that's not my point. I mean, sure it can be implemented.

The point is are we comfortable that it's going to actually solve this pressing problem that is inhibiting the acceptance of Direct which is that people are bellyaching that they can't find the Direct address and then of course when they do find it they can't send the message because there is not mutual trust, but that's a different problem, in which case let's push forward HPD+ and just expect that people will use it, but if we're not comfortable that it's going to solve the problem because of the fact that it doesn't deal with federation cleanly and because of the mutual TLS complexities then I would say we don't push anything and we just say more work needs to be done.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, I think, you know –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

–

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

This Power Team is the group that developed the criteria to determine readiness to become a national standard and I know those criteria pretty well and I happen to know that something that's been implemented for a connect-a-thon but really isn't implemented and operational and broadly used would never pass muster as ready for a national standard.

So, I don't think, especially because this team developed those criteria it sounds to me like this standard is not ready to become a national standard. I haven't heard one thing that says it's ready.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

I won't argue with that.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

This is Jitin I would totally agree with that.

**Keith Boone – System Architect – GE Healthcare**

Yeah, I don't think you're hearing anybody argue with it from a readiness perspective. Something that was developed last year from my perspective is hardly ready, there are precious few standards that come out that are in trial implementation or draft stage that have any commercial implementation that is even closely approximating readiness in a 6 month timeframe this just barely if ever happens. The closest I've ever seen is with FHIR and, you know, FHIR is still not quite close enough to what I'd call ready. There are commercial implementations and there are real world people actually doing stuff with it today.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yes.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

So, let's –

**Keith Boone – System Architect – GE Healthcare**

But it's a lot farther along than I would say with HPD+.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, Dixie are we comfortable then saying that we think we're not ready to endorse this as a certification test and let the experiments continue to see what sticks in the market? I'm happy with that.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, my next question, I absolutely think that we've said HPD+ is not ready to become a national standard. I don't think there's any question about that.

I think then we come back to what Keith was suggesting earlier is, are there functional capabilities that we think should be included as a certification criterion for query and directories. Do we think that there should be anything there that, you know, about querying directories? Do we fall back to the, you know, functional testing of the ability to query over TLS for example?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Dixie, I think that – I mean, from a certification point-of-view if you don't have a testable standard to certify against I think why bother.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, just not worth it.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

The market will make it useful to certify or not. This is not an incentive measure. I mean, the reason to do this, from an ONC perspective that wants success from the Meaningful Use Program, the reason to do this is that they think the lack of access to directories is an inhibitor to the use of Direct in which case somebody ought to solve that problem, but I'm not sure that we think HPD+ in the EHRs as a client only requirement for certification in 3 years is going to solve that problem.

Somebody is going to solve that problem with more urgent action using ad hoc approaches that will be validated in the market. I mean, because Direct is going to live or die not waiting for Meaningful Use 3, it's going to – it has to be used now.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Maybe what we should do, and this is what the – you know, our methodology says we should do is make a recommendation on what ONC should encourage and what I'm hearing, I'm hearing three things here, number one, this HPD+ isn't ready to become a national standard, but it's the best thing out there at this point except for two things, number one it's only SOAP interfaced, SOAP-based, there is no RESTful interface to it and number two, it, as it stands now, it requires mutual authentication and we think that it shouldn't necessarily dictate that the connection be mutually authenticated.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, Dixie, my concerns with that is I would not suggest that adding a RESTful wrapper around the existing dismal and those things is necessarily the way to go. So, I don't want to lead people to believe that if they just finished wrapping it inside REST that they'll solve the problem.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Because that doesn't address the federation, it doesn't address a lot of other things.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Right.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And, you know, as per Keith I would much rather, if somebody is going to start with a fresh approach to this to start thinking in terms of FHIR which just simplifies the world enough much that it seems like it's going to get traction in places that previous standards didn't. So, you know, not yet proven, but it sure does look like it's headed in the right direction.

So, you know, I would favor saying that the market is going to have to figure this out sooner than a Meaningful Use Stage 3 certification process would get us to. We're they proposing this for 2015 optional or 2017 now that I think about it or did they specify that for us?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Seventeen.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

This is 2017.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, so that means the first actual deployment of HPD in real world products, if you wait for that, would be some time in 2018 or 2019, or something. I mean, I'll be retired on a boat somewhere. It's a long way off.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

What kind of interface will you build in two years?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Telepathic that's the next big wave.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

So, the conclusion is, I think we've agreed on that it's not ready for a national – to become a national standard. The market needs to figure it out so you don't want to say anything about provider directories once again?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

I mean –

**Keith Boone – System Architect – GE Healthcare**

I think we want to provide some feedback to ONC regarding readiness criteria. I mean, as you said, you know, this is the committee that developed readiness criteria and I know the Quality Workgroup was looking at principles for standards selection as well and, you know, I think that that's something that we should be asking ONC to consider when they propose material.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, they do, that's actually a little – something that's happening before your very eyes, they are...you know, you saw earlier today that our readiness criteria were published in JAMIA on line today and will be in the paper in the journal in the future and that's not just an independent action.

ONC has indicated to us that they're, you know, they're taking those criteria much more seriously than they have in the past. So, that is happening. But how does that effect this – how do we respond to this?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, so one response is, we could say, HPD+ is the right, we believe it's a good start it just needs more proof in the marketplace and we encourage providers of directory services to implement it and find users of it that's one approach.

We could say, given the delays that we're not going to be able to standardize this for Meaningful Use 3 we would favor development of a simpler FHIR-based approach and urge that the best of HPD+ be pulled into a FHIR-based approach in terms of, you know, data elements in a profile or we could say nothing.

I don't know we could say a lot of things, I'm just off the top of my head those are kind of the two broad choices right, is finish HPD+ or rethink it in light of a FHIR-based future.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

You know the FHIR thing, the FHIR-based approach is kind of interesting because that, you know, the query in Blue Button Plus is FHIR-based and so, you know, that would be more consistent at least. Would you say anything about HPD+ mutual authentication requirement?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Well, I think that I would not, I mean, if you – I guess if you're going to go forward with HPD+ mutual authentication seems like the least invasive way if you insist on having both clients authenticate because you don't want physicians having to log into a directory service or something crazy like that, you want it to be automated.

But if you had done the FHIR route in the future you wouldn't be using mutual TLS you'd be using OAuth or some other approach probably.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I don't think that's the least – I think that's very –

**Keith Boone – System Architect – GE Healthcare**

Right, though OAuth you'd want to use TLS anyway.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

But not mutual.

**Keith Boone – System Architect – GE Healthcare**

So, I'm not understanding what the aversion to mutual TLS is here. Is that the issue of competing trusts?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

It's the client having to have a separate certificate or maybe we decided that this was an easy thing to do.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

It was an implementation concern Keith nothing wrong with the standard.

**Keith Boone – System Architect – GE Healthcare**

I was going to say, because I have a certificate that I got myself –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah, it's nothing wrong with the standard it was just from an operational perspective it poses an additional requirement that every client have a certificate for that purpose that's all.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, yeah, I mean, I've got no qualms about mutual TLS other than the headache of the trust battles that it will create as managing all those new – a new round of certificates and fingerprints to be tracked across thousands of pair-wise connections.

**Keith Boone – System Architect – GE Healthcare**

Oh, you know, that's – hopefully someday, you know, we'll have that PKI infrastructure we keep dreaming about.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes.

**Keith Boone – System Architect – GE Healthcare**

But until then people will be still fighting over well TLS is too hard but everybody will have done it at least 7 times.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yes.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

–

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

And right now the real world is real world HIEs are just storing thumbprints of certificates all over the place because we are supporting those pair-wise pair to pair trust links.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

David, I'd like to suggest one slight modification to what you said. The first one, you know, the part about HPD+ is not ready to be a national standard, it's a good start, needs proof in the marketplace, but I would not – I think that the FHIR-based approach we shouldn't compare it, you know, shouldn't say something as you suggested or favor a simpler but rather encourage exploration of other simple approaches such as a FHIR-based approach or something.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Oh, yeah, no I'm happy with that, I didn't – yeah, well said, well said, I didn't mean to, you know – I was being more – that was more personal opinion, but I think you'd write it up in a more neutral way.

You know it may be the case, and I would be delighted frankly, it may be the case that for example some group like DirectTrust will go and implement an HPD service and a number of major vendors like GE and Cerner will say "we can talk to that service and it meets our needs let's use it" and then we'd come back and revisit this in a few years and everybody is using HPD+, that would be a great outcome, but it would be because people are using it not because of anything else.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, you know, our metrics for, you know, for determining or assessing readiness one of the purposes of that, those metrics, are to decide what we want to encourage ONC to put resources on as well. So, if we say that this is a good start, needs proof in the marketplace, encourage ONC to, you know, support it or whatever that, you know, that's a reasonable outcome as well.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah. The other –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

How about –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

You know the other angle on this not to prolong our complicated conversation, the other angle is the federation question and, you know, the hard way to solve this problem is with federation be it using HPD+ or be it using FHIR all of those would be – the federation stuff is hard.

A simpler way is to just say, you know, we'll have a small number of centralized directory services and anybody who wants to publish their addresses can submit to that central service and tell them, you know, here's what I want you to expose for me.

I don't think we probably should weigh in on that, but if, you know, Karen DeSalvo walked into my office and said "how in the heck can we solve this directory problem" the last thing I would propose is a federated model.

**Keith Boone – System Architect – GE Healthcare**

No, my response to some of that would be "well, gee, you know, we already have an infrastructure to publish the NPIs for every provider in the country."

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yes.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yes.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yes, why not add Direct addresses?

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children’s Hospital**

Yeah, why don’t we recommend that at least?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, I did recommend that once but it includes only individual providers I guess or that’s what I was told.

**Keith Boone – System Architect – GE Healthcare**

No, so NPIs are issued to providers and to healthcare organizations.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Oh, really, I was told that that’s the reason why it wouldn’t work it only includes individuals.

**Keith Boone – System Architect – GE Healthcare**

Now there are affiliated healthcare providers who are not yet required to obtain National Provider ID.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, but, I think the deficit might be that it doesn’t have some of the additional query constraints that you might wish to say like a cardiologist or, you know, an associated with Jonestown Hospital.

**Keith Boone – System Architect – GE Healthcare**

Well, the NPI database does actually track specialty.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

So, it has some of those fields. The other concern is that it doesn’t have – some people are using Direct addresses for functional queues like consult referrals and things like that which wouldn’t have an NPI. I know that, you know, you could put that into a simple directory service but hey it would be a step in the right direction don’t get me wrong –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

It just might not cover all the bases.

**Keith Boone – System Architect – GE Healthcare**

I think that’s part of our challenge is, you know, we’re looking at the directory problem and saying, well you’ve got to have an all or nothing solution.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Keith Boone – System Architect – GE Healthcare**

And, you know, we would go a long way towards having an 80% solution.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah. So, do you think Keith that we should recommend that they explore the idea of incorporating Direct addresses into the NPI directory?

**Keith Boone – System Architect – GE Healthcare**

I, you know, I’m hesitant to suggest that the federal government build an IT infrastructure that the entire country is going to be reliant on because its success rate has been mixed in that particular space.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

That’s a very gentle assessment.

**Keith Boone – System Architect – GE Healthcare**

I'm on a public call so I'm being nice. So, you know, I think that it's something that they could consider.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, you said that maybe we should suggest incorporation into the – what are you suggesting?

**Keith Boone – System Architect – GE Healthcare**

No, what I said is, you know, there is already a directory out there that keeps track of NPIs for providers, in other words, there is already existing infrastructure.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Well, there's already an open data mission for the federal government, so you don't necessarily have to provide a commercially available web accessible highly reliant infrastructure but there may be an interim path by which the federal government can provide an open data link –

**Keith Boone – System Architect – GE Healthcare**

Oh, very nice.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, I like that.

**Keith Boone – System Architect – GE Healthcare**

Very nice Adrian, Arien I like that.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, you know, the folks that are doing some of these websites to analyze all that Medicare data have –

**Keith Boone – System Architect – GE Healthcare**

Fred Trotter would die for this.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, Fred has built a national directory look up service and he'd be happy to add a field for Direct.

**Keith Boone – System Architect – GE Healthcare**

There you go.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Maybe not happy, but he'd be willing.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Fred is the NPI guy or who is Fred?

**Keith Boone – System Architect – GE Healthcare**

Look up Fred Trotter on Twitter.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Oh, I know Fred Trotter, I didn't know –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, Fred has built some nice –

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay so your suggestion is that, you know, the country already has an NPI directory and are we suggesting they explore the use of it as an interim path toward –

**Keith Boone – System Architect – GE Healthcare**

Well, explore the – explore providing the capability to capture Direct addresses –

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

As part of that database.

**Keith Boone – System Architect – GE Healthcare**

As part of that database and making that data openly assessable.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, I like that.

**Keith Boone – System Architect – GE Healthcare**

Because that's – I mean, what you're basically saying is, you know, here's all of the – here's all the pieces that you need to make that work.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay. Okay. So, what I recorded is our recommendation is we don't think that there is a standard that is ready to become a national standard for provider directories, HPD+ is a good start, needs proof in the marketplace and the second point is we want to encourage exploration of other simple approaches such as a FHIR-based approach and the third thing is we would encourage – we suggest exploring providing the capability to capture Direct addresses in the NPI directory –

**Keith Boone – System Architect – GE Healthcare**

Database.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Database.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Database, yeah.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

NPI database, yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

And make it publically available. Got it.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah make it publically available for – well we could just leave it at that.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Accessible, accessible.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, the implication is for other service providers to deploy but we don't need to say that.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Well, you want it software accessible in other words.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah, yeah, data accessible.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Software accessible is an open data service but not necessarily software accessible as a real-time production directory.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay, got it. Does anybody else have anything to – I know we've all been talking at once, let's see who haven't I heard from? Kevin, Josh are you okay with this, Jitin?

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**

Yeah, I am.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay, good.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

This is Jitin I'm okay with it on the surface even our recommendations there around an open data service, I feel like I don't know – I don't know how many different ways there are to make a – to get that wrong and I only wonder if we need to bake that a bit more before we recommend it, because I can imagine any task given to – any task interpreted incorrectly can turn into something that's actually unusable by everybody else. So, I only worry about that in terms of that recommendation for an open data service.

**Keith Boone – System Architect – GE Healthcare**

That was about as gently said as my comment.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

I was taking a cue from you Keith.

**Keith Boone – System Architect – GE Healthcare**

Nicely done.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

So, you're not fully comfortable with the third recommendation about the NPI database.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**

Well, we're not recommending they do it we're recommending they explore it.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Yeah.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

All right that's fair and as Arien has repositioned that I agree that it's worth exploring, it needs to be baked a little bit more before I can say I'm comfortable that that's going to turn into anything useful.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

And we'd be happy to provide that additional commentary if they ask us to on a future meeting.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Okay, that's a good edition that we recommend they're exploring the possibility of providing the capability to capture the Direct addresses. Okay, good, that's a good edition.

All right, is there anything else anybody wants to add to this? All right, I think we're set here, let's – I think we're ready to – David, do you want to add anything?

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

No, I think this has been a very productive meeting.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I think so too and I really appreciate you guys, we appreciate you guys dialing in.

**Debbie Bucci – Office of Standards & Interoperability – Office of the National Coordinator for Health Information Technology**

Dixie, I have a question, this is Debbie, are you going to be silent on authentication?

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

I think we decided we were.

**Debbie Bucci – Office of Standards & Interoperability – Office of the National Coordinator for Health Information Technology**

Okay, thank you.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

I mean, it is technically built into the HPD+ specification so I think that if there is further market exploration with HPD+ that would imply that mutual TLS is available to them.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

Yeah and I suggested that we make a statement about it Debbie, about HPD+, you know, by default requires mutual authentication and other said that they didn't really want to say that so I think we're just silent on that topic.

**Debbie Bucci – Office of Standards & Interoperability – Office of the National Coordinator for Health Information Technology**

Okay, great, thank you.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

And somebody, I think it was Jitin maybe that said that really whether it requires mutual authentication to access it is really a – no it was Josh, it was up to the directory service provider to determine that not us. So, but that the standard allowed it in any case.

Okay, so I think that it's probably worth mentioning that is that, you know, it's up to the – whether mutual authentication, because they asked that, it's part of what they asked, whether mutual authentication is required is really a decision to be made by the service provider. Okay, open it up for public comment.

#### **Public Comment**

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

Operator can you please open the lines?

**Caitlin Collins – Project Coordinator – Altarum Institute**

If you are listening via your computer speakers you may dial 1-877-705-2976 and press \*1 to be placed in the comment queue. If you are on the phone and would like to make a public comment please press \*1 at this time. We do not have any comment at this time.

**Dixie B. Baker, MS, PhD – Senior Partner – Martin, Blanck & Associates**

All right, thank you all and have a good weekend I guess we're close enough. Thank you all for dialing in.

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**

Thank you.

**Michelle Consolazio, MPH – Federal Advisory Committee Program Lead – Office of the National Coordinator for Health Information Technology**

Thank you Dixie.

**Jitin Asnaani, MBA – Director, Product Innovation – AthenaHealth**

Thank you.

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children’s Hospital**

Thank you.

**M**

Thank you.