

**NwHIN Power Team**  
**Draft Transcript**  
**June 28, 2012**

## **Presentation**

### **Operator**

All lines are bridged.

### **MacKenzie Robertson – Office of the National Coordinator**

Thank you, good afternoon everybody, this is MacKenzie Robertson in the Office of the National Coordinator. This is a meeting of the HIT Standards Committee's Nationwide Health Information Network Power Team. This is a public call and there will be time for public comment at the end and the call is also being transcribed, so please make sure you identify yourself when speaking. I will now take roll call. Dixie Baker?

### **Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I'm here.

### **MacKenzie Robertson – Office of the National Coordinator**

Thanks, Dixie. Tim Cromwell? Floyd Eisenberg? Ollie Gray? David Groves? Arien Malec? David McCallie?

### **David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Here.

### **MacKenzie Robertson – Office of the National Coordinator**

Thanks, David. Nancy Orvis? Marc Overhage? Wes Rishel?

### **Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Here.

### **MacKenzie Robertson – Office of the National Coordinator**

Thanks, Wes. Cris Ross? And are there any staff members on the line?

### **Todd Parnell – 5AM Solutions – CTO**

Todd Parnell.

### **MacKenzie Robertson – Office of the National Coordinator**

Thanks, Todd. Okay, Dixie, I'll turn it back to you.

### **Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

All right, I want to thank you guys very much for dialing in today. We're going to resume our work on developing metrics for assessing standards and implementation specifications for possibilities as national standards. I want to start by introducing Todd Parnell. Ellen Lengermann, who has been doing a great job working with us, has left, gone to a new job. She has left the company she was with and she's gone to a new job, and Todd Parnell is the CTO for the company she worked with called 24-Hour Solutions, and I do know, I can tell you firsthand that Todd has been working very closely with Ellen all along, so this will not in any way be a disruption of what we've been doing.

I personally really appreciate Todd stepping up into this position, because he is so intimately familiar with what we are doing, you know, any other change could have been disruptive, would have been disruptive, but I don't think that his stepping in is going to...I think, you know, we're going to proceed as rapidly as we can. So, my thanks to Todd for doing that for us, and with that, Todd, why don't I turn it over to you?

**Todd Parnell – 5AM Solutions – CTO**

Thank you, just one quick correction, we work 24 hours a day, but the name of the company is 5AM Solutions.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Five AM, well I got them mixed up with SAIC, ours is 24 hours a day.

**Todd Parnell – 5AM Solutions – CTO**

No problem. So, why don't we just go to the next slide or do I have control of that?

**Caitlin Collins – Altarum Institute**

Not yet, but I can give it to you.

**Todd Parnell – 5AM Solutions – CTO**

Excellent, thank you. All right, let me see if I understand how this works.

**Caitlin Collins – Altarum Institute**

The bottom left, there we go.

**Todd Parnell – 5AM Solutions – CTO**

Yeah, all right. So, this is a recap of the agenda, it does have a little bit more detail about the review of the metrics, the attributes and the metrics, so we will be...last meeting that we were working on the metrics and attributes we went over market adoption and intellectual property, so we will be looking at the changes that were suggested and how they were incorporated and verifying that those are what was the intent of the team, and then we will be introducing for the first time ease of implementation and deployment, and then ease of operation, so that would be the details about the attributes and metrics, and that would actually take us to the full set in completion at that point and hopefully we'll have time to get to review of the evaluation process and select a candidate for the validation exercise.

So, what we want to start with here is this is a visual representation of where we have been and where we're going. We are completed with maturity of specification and maturity of underlying technology components. The last meeting where we went over the evaluation criteria was actually May 4<sup>th</sup>, so it has been a little while and what we're going to do is go over those drafted ones that will be the changes in red.

Then, as Dixie pointed out, we had a little detour for the RFI and we are going to be looking at ease of deployment and ease of operations. The final piece is not an evaluation criteria itself, but it is the evaluation process. So, those are the things that we will be working on today. Dixie, I'm going to hand over to you to talk about the summary of the RFI work. Dixie, if you're speaking, you're on mute.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, yes, thank you very much. This is the diagram that I developed after our meeting with the full committee and it was intended to depict our recommendation that there be a public private standards entity, which could be the HIT Standards Committee that would do the assessment of standards and implementation specifications for their readiness, and basically that process is what we're...is what this work is all about, it feeds right into that.

So this is a picture that went to ONC, as part of our Power Team's recommendations and we incorporated all of the other comments, and they're now in MacKenzie's hands. MacKenzie is integrating all of the comments from both the Policy Committee and the Standards Committee so that they can be formally sent to the ONC.

If you'd like to see...you know, the final comments that I sent to MacKenzie let me know and I'd be happy to send to everybody. I did send it to a couple of people to look over, you know, a couple of the answers that were theirs but I haven't sent it to the whole Power Team, if you'd like to see it I'll be happy to send it to you. I don't hear anybody saying yes I need it so let's keep going.

**Todd Parnell – 5AM Solutions – CTO**

All right. So, let's jump in, we'll look at attributes of market adoption. So, the text in red, as I said, is what was changed in response to the feedback from the May 5<sup>th</sup> meeting and what you'll see here is very few user bases, detectable references, numerous users and percentage of market here for installed user base.

I'm not going to read each section, but I do want to highlight the inclusion in other standards which was one of the recommendations coming out from the team and we came up with low, moderate and high for this, and inclusion in other standards we had not referenced, referenced in at least one other with a moderate the installed user base, and referenced in at least one standard with a high installed user base as our initial recommendations for that particular attribute.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

This is David, so it's a little confusing. I see the way the bullet points work but I was thrown off when I read the low metric for future projections and anticipated support to see well established standard projected decline in future use. I wonder if you need a "but" or something like that. It's like, what? What's that there for?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

So the point is that it's a declining standard, even though well established. So, maybe even invert the sequence of it.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Maybe delete "well" as well, just establish standard, but projecting.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, yes, I like that. It doesn't change what we meant it just changed the way it reads when somebody is scanning it.

**Todd Parnell – 5AM Solutions – CTO**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And, Todd, my notes from that last meeting had that first upper left going just few, not very few.

**Todd Parnell – 5AM Solutions – CTO**

Yes, and I thought that I changed it through our discussion yesterday, but, Dixie, I will make sure that we change that. I'm just taking notes here.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I think that very few just, you know, invites dispute. Few I think is less likely, a bit less.

**Todd Parnell – 5AM Solutions – CTO**

Yes, I already took that note; I don't know how I managed to get that one back.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

So, this is Wes, I'm looking at the bottom row, inclusion in other standards, and I'm... obviously I butterfly in and out of these meetings, so I've missed the discussion, but it's... is it really included in other standards or is it co-referenced with other standards and profiles that we're interested in here? What would be an example of being included in another standard that we'd use for this measure?

**Todd Parnell – 5AM Solutions – CTO**

So, I believe that there were two examples that I recall from the meeting. The first one was something like SMTP being used as a building block for something like Direct, but then there was a discussion within the domain, one standard being foundational to another or two, to be referenced in that way. And I think that both... I believe... let me see if I get this right. I believe that we were anticipating the second as the intent of this, is that within the domain, one standard was referenced and then used by another standard within the domain.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay, so under that metric, a total stack with no modularity whatsoever, like the... like I guess I could say the current, but certainly the prior NwHIN profile, would that generate a lot of good points on here, because you have to use XDS with CDA or not? I mean, it strikes me as being a little bit counter to the goal of using... I mean, right now we don't mention any application standard in Direct, all right? And no application standard mentions Direct. So, is this...I'm just trying to figure out is this a useful metric or is it actually counter to what we're trying to decide?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

That's a good point, because when people are just trying to push for their own standard they sometimes put it in other standards that are also their own. Is what we want here maybe... I don't know...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I thought...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Maybe in implementation or profiles, or something, of course, that's the same point isn't it?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

This is David, I thought that what we were trying to capture here is that a candidate standard being evaluated for use in health care might not currently be widely used in healthcare, but it's in wide use in other standards or its part of other recognized standard approaches. Maybe we're capturing that somewhere else and don't need this, but I thought that was the intent is to say it maybe brand new to healthcare but if it's widely used elsewhere it might be appropriate.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, but that's not the same as inclusion, that's more use in other domains, which I think that might be a good attribute to add, but it's not the same as inclusion in other standards, I don't think.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I agree, it doesn't read that way and maybe we... I don't remember exactly what we were trying to capture.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But that's a good idea, you know, we often bring up in...especially in the privacy and security group, we bring up like what banking is used, you know, for security. Maybe use in other domains or markets, whatever we want to call it might be a good thing to put here.

**Todd Parnell – 5AM Solutions – CTO**

Right, if we were to simply align the word in other standards and change it to domains.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, we wouldn't want inclusion, that's the difference. What we're talking about here isn't inclusion; it's really a different topic from inclusion in anything. It's really use in other domains or markets, or whatever.

**Todd Parnell – 5AM Solutions – CTO**

Yes, right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, I think, you know, if a standard has been adopted by another industry or whatever, I think that that is something that we should consider.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I think so, and I think it's particularly...I guess it's most useful as a measure for structures that associate what I think of as infrastructure which is connectivity and security.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

You know, it's less likely to be a characteristic of an application standard.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, if we add, what use in other domains, what would be our low, medium, and high?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, not used in other domains would be low.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I have a question maybe that we can subvert having to answer that hard question. Would it work to, on the installed user base just to put a footnote that user bases outside of healthcare count? In other words, aren't we really just sort of talking about use...what we're really saying is these criteria don't have to be measured just within the healthcare domain.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But if we had a high user base in banking.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And no use in healthcare then would you want to give it a high as a... I think its two separate...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

But the question of market adoption would be the answer is "yes" there's high market adoption if banking uses it. The fit healthcare is an independent assessment. So, we're sort of saying what market adoption is there of this standard period and then secondary question, covered elsewhere is how well does it fit use cases in healthcare?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, I have to say that at first glance, looking at the slide, I read healthcare into the term market adoption. I inferred healthcare into the term market adoption.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, I think we all have and I think what we're wrestling with now is the notion that, you know, something like say SMTP, you know, which for transfer of PHI was not well adopted in healthcare at all, but was incredibly widely adopted elsewhere, so in terms of market adoption, it would score high. In terms of security it scores low, so you have to pair it with something else. I don't know.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, so, again I tend to come at it more from an application point of view and maybe that's just not germane to this discussion, but, you know, the idea of someone coming and saying, hey, you should use a core, because it's so widely used in the insurance industry, I'd like to be able to differentiate that from other.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

But, again, market adoption doesn't mean that we should use it, it's just an axis, it's a measure.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I just think there are two measures there. I think one is installed user base in healthcare and another is its use in other industries or domains, or...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Okay, then just duplicate the criteria and have two...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I think the middle criterion is...I don't...when you say duplicate the criteria you mean duplicate the ones from installed user base down?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I would say, you know, install user base within healthcare and then install user base outside of healthcare with the same criteria for the two, very few users.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I think...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

...detectable references, etcetera.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, okay that's fine.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

We're looking for parsimony of effort here.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I like that, yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

It's nice to have a long phrase for lazy like that, it really...I'm going to tell my wife about parsimony of effort.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Touché.

**Todd Parnell – 5AM Solutions – CTO**

So, I just want to make sure my notes are accurate, so we're saying that installed user base within the healthcare domain, add installed user base outside of the healthcare domain as a second row and what does that do to what is currently the final row, inclusion in other standards?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

It goes away.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think we're saying drop that.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Maybe when we come back and revisit the whole thing we might realize we're missing something that that was intended to capture, but it doesn't fit right here.

**Todd Parnell – 5AM Solutions – CTO**

Okay. All right, I was going to move onto the next slide, unless there were additional comments? Alright?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think we're ready.

**Todd Parnell – 5AM Solutions – CTO**

Attributes of intellectual property, the change to this one is only on the last line item and it was in response to a discussion about needing to say something about patents, and so this is what I believe that we came up with, and Dixie you know who was the motivator who spoke last time about this?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

David, David you talked about this and you said that Cerner had done some work around this in this area?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, yeah, it was me who spoke about it. We didn't do the work so much as respond in our UK office to...I don't know if it's an EU-wide directive or if it was UK specific directive, but there is an ongoing debate in the UK, well I should say in the EU, I'll assume it's EU-wide, I'm not sure, about whether open public standards should exclude patent encumbered standards and it was a heated debate, and we were asked to weigh in as a vendor who sells products, and so that's why I brought it up, because I had just helped craft our response.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, I think it's certainly a point to be aware of. The only comment I would have with respect to it is that there is sort of this special category of, if you will, patenting to protect openness. So, IBM for example has taken a number of its patents and made what they claim is a publicly binding commitment not to assert the patent except against anyone else who tries to assert the patent...I'm going to have to go off-line and take a call. I'll be back in a minute.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

That's a good point, though. That's a very good point, yeah. How could we...maybe in the high we put no known or anticipated patents required, or patent protects openness, or something?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Or how about no patent barriers to widespread open use? Yeah, it's really more than patents, probably, too, you know, because there may be licensable technologies that are...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, but that's above. I thought that too, but see the two lines above cover the other ones.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I gotcha, right, yeah, so no known patent obstructions to widespread use.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

In fact, I think we could change the attribute to patent barriers.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes, yes.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And then you'd have to ask the question of whether is what we just described the same as RAND.

**Todd Parnell – 5AM Solutions – CTO**

Yes, I was about to ask that question myself and I was doing a bit of quick research. I believe that RAND was in response to the Rambus patent around DRAM is anyone familiar with that case and how that went out with... I believe that, that was OSI. I'm sorry not OSI, the National Laboratory.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, although I think a number of other patents have fallen into that category. I think even things like JPEG and MPEG are in that space now, where there's an agreed upon so-called reasonable license fee that applies if you produce more than x number of units of software that incorporate those standards. You know, we could make the distinction of a RAND covered patent does have a "reasonable" fee maybe our third category on the far right, our high is that there is no fee or no barrier. I mean, we're making the distinction essentially one has fee associated with it and one doesn't, that seems to me to be a differentiator.

**Todd Parnell – 5AM Solutions – CTO**

Right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, we already have another row; row 2 is accessibility and fees.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Well, that's accessing the standard though, if you see...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, accessing, yeah, you're right not to use, but...no but the metrics include use high cost for use and...yeah it does include use.

**Todd Parnell – 5AM Solutions – CTO**

Yes, it does, it mixes the two together there.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

What's to say that we have to have all three categories populated, we could just have a low and high and the one in the middle is no care, it goes to high? In other words, patent barriers exist, potential patent barriers exist, no patent barriers exist.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, yeah.

**Todd Parnell – 5AM Solutions – CTO**

Right, well what if we were to... I like the... I'm trying to fit in I believe what Wes brought up of the idea model where there are patents, but it's been declared to be open and available.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I thought that was what we were trying to capture in the notion of a barrier. A patent barrier is a patent that inhibits use. A patent that actually makes it easier to use would not be considered a barrier.

**Todd Parnell – 5AM Solutions – CTO**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I mean we could footnote it I think.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, in the third column, Todd, I think we're saying change it to no known or anticipated patent barriers.

**Todd Parnell – 5AM Solutions – CTO**

Yes, right. Right, but then I do think that we actually have three levels then. Known to be patent encumbered available under reasonable potentially costs and then free of costs from a patent perspective.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

The costs shouldn't be here, because we cover it elsewhere.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

But maybe this is patent cost, Dixie, as opposed to licensing costs or...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, oh, I see.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

You could have a trade secret cost.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, that's true, yeah, yes I agree, yes, yes, yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

So I think we like that Todd.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes, I think so too, good.

**Todd Parnell – 5AM Solutions – CTO**

Excellent. Is Wes back to let him finish his thought before we move on to the next slide? No, okay. All right, so that finishes the review of the attributes that we have already seen and now we will move on to new ones. So this is the metrics for ease of implementation and deployment. So, development from scratch, implement with existing infrastructure, off the self-infrastructure to support the implementation, deployment costs itself, how much it costs to test for conformance and reference implementations. I believe that there's a second slide. Let me just go to it briefly. Yes, there is a second slide with additional metrics.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And our scoring system is low is bad and high is good in this case?

**Todd Parnell – 5AM Solutions – CTO**

Yes, it's always, I think we normalize such that that was always the case.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

All right, so high ease of implementation means it's easy to implement. Okay, got it. You know, these are so arbitrary how can you possibly say they're right or wrong?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think that's especially... yeah, for these years business, yeah, because it's...I mean, it depends on how large this system is, you know, how much it's integrated with other things and there are so many factors.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And, you know, the tricky phrase there is from scratch, you know, I mean, if I could pull down an Apache mirth project and implement a SOAP-based protocol in, you know, 5 minutes, but that's not from scratch, does that count as easy to implement or not? It took them years to get it to work. So, I mean, I know what we're trying to capture here, but it just starts to seem pretty arbitrary.

**Todd Parnell – 5AM Solutions – CTO**

Right and I guess that that question is, is what is scratch, because am I building the compiler that writes for the language that I need or, you know, how far up the stack do we allow versus a mirth with an HL7 engine as a starting component.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Right, that's what I mean, is it, you know, you have to define what...I mean, I think we know what we mean by that is if you wanted to do a clean room implementation to the spec, how long would it take? But, nobody does things that way.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, I think maybe...here's what I think, I think maybe we should delete the first two rows because the third one, the availability of off the shelf infrastructure to support the implementation, that's the biggest factor, you know, how many things you could just grab and reuse.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And, by the way, this is another point, but the third column of availability of off the shelf infrastructure should not just say can be purchased off the shelf, but also it could be open source.

**Todd Parnell – 5AM Solutions – CTO**

Available or can be purchased.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I was going to ask about are we going to score something based on its open sourcedness, I mean, that's an interesting criteria that is all of a sudden, you know, much more relevant than I think we would have guessed a few years ago.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I mean, between two protocols, if one of them is open source and one of them isn't, the open source is going to win.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Going to win. We captured that somewhere, right?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Which row are we talking about now?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think, Wes, we decided that the first two rows we would probably try to delete simply because it's so arbitrary as to what it means to implement from scratch and we were hoping that the third row would essentially capture the sentiment of the first two rows.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It's not exactly the same measure, but it's sort of close.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah. Well, okay, so we're talking about the third row now?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Availability of off the shelf infrastructure and the discussion was that...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

We got on the side discussion because of the high metric where it says can be purchased. We said that needs to include open source, as well.

**Todd Parnell – 5AM Solutions – CTO**

Right, available. I believe that the few metric includes the term components are available or could be purchased and I believe that we just need to carry the language available or can be purchased.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I think that's fine.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

So you're not necessarily trying to give more weight to open source, you're just not trying to exclude it in this metric?

**Todd Parnell – 5AM Solutions – CTO**

I believe the intent of this metric is to be neutral with respect to that.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

But do I think that the question raised about whether there should be a separate weight or whether that is appropriate...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, if that discussion comes up, I have some thoughts. I'll wait till it comes up.

**Todd Parnell – 5AM Solutions – CTO**

Dixie, do you want to have that conversation now? Because we can change this into attributes, we can actually split, just like we did on the last slide, we can split this availability for open source, you know, available for free, open source and then availability for a fee or purchase. So, you could have two lines here.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Don't we address open source somewhere else or not? Maybe not.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think we had a discussion at one point where we were trying to value the existence of multiple implementation choices on different platforms, but that's not quite the same as open source. It really isn't, never mind. I remember we were debating, you know, for example, Direct was from the beginning built with Java and a C Sharp implementation in parallel, so that, you know, two major desktop computing camps could have equal access to it and to me that's a plus, a standard that's been implemented that way should get, you know, bonus points, but they could have done that with closed source just as well, so...

**Todd Parnell – 5AM Solutions – CTO**

To answer the one question that was asked, is do we, in any of our criteria explicitly reference open source. I did a search through the presentation and all of the other attributes and criteria and open source that term does not appear in any of our criteria today.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Or open? Does the term open?

**Todd Parnell – 5AM Solutions – CTO**

Open appears in several. Open appears under attributes of intellectual property, and, yes, that's where it appears.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So that's what we just now talked about?

**Todd Parnell – 5AM Solutions – CTO**

Yes, I can go back, right there, openness, right there under intellectual property.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, Wes, are you okay with what it says about openness there?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I don't even see the word "and."

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Top row, Wes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Oh, open to public, openness, oh, okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And you remember this is protocol definition, not necessarily source code, so this was the context of this discussion.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, no, I don't have any problem here. It was the notion of giving extra credit to open source that I thought needed some...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I totally agree with you, open source can be harder to implement, yeah. So, let's go back to our implementation one, oh, that is it there, yeah, yeah, yeah. So, we've changed... so, we've deleted the first two rows. We've carried the language of the third row under low into moderate and high, and now we're at development costs? Deployment costs, I'm sorry. You know regarding the first one, the time it takes to implement, I remember when we got our public inputs about implementing the exchange specifications, one guy said it took him four hours to implement and other people said, well, two years.

**Todd Parnell – 5AM Solutions – CTO**

So, he downloaded connect?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, he implemented it in four hours.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, you know, I think what's going on with connect is that people download it and they implement a relatively narrow piece of functionality from it. It meets their needs and they say, hey, it worked, you know.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

It did it, yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Right, yeah, that's not to say that they implemented a consent model capable of supporting an HIE.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

That's exactly why we're recommending deleting those first two rows.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Because it's just...so on deployment costs...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, I don't know how you're going to get numbers like this, but particularly since it's input through testimony is going to necessarily be a small and selected sample, you know, input through voluntary statements is going to be a self-selected sample, so, you know, I guess, to me I actually think of an IT project that only goes 30% over its original estimate as being a pretty good project, I mean, you know, and I don't know how you separate out the implementation, the cost of deploying a standard versus the cost of the project that was involved. I mean, you know, most of the projects I talk about the delays aren't particularly related to the... sometimes they might be, but generally they're related to business issues or integration issues between software packages, or...

**Todd Parnell – 5AM Solutions – CTO**

But I believe...sorry, finish.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

No, go ahead.

**Todd Parnell – 5AM Solutions – CTO**

I was just thinking that the integration issues, delays of integration issues I believe would be a valid metric for us to understand, right?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

A standard that didn't have those sort of problems or organizations that implemented it, inoperability was there out of the box, that's more preferable, but the business side problems in terms of...I was actually thinking more in terms of schedule rather than costs, but those would seem to be not ones that we would want to bring into this line.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay, so a business issue is we want data element X, but the sending system doesn't include data element X, so we now have to go through an implementation cycle, where the code has changed, the users are trained, it's part of a release cycle with other things in the release, you know, I mean, to me, those are the major sources of delays. I mean, I'm not saying that there aren't delays associated with a standard or particularly implementation of a standard, but I don't know how to pull that signal out from the noise.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Could we, this is David, could we say something like deployment costs considered higher than average, about average, less than average where, you know, again we're passing on to the eyes of the beholder what average means, but you kind of know, you know, this is an expensive protocol to implement, compared to other similar protocols. That's a negative for it.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

You know; usually how we find this sort of thing out is from chatter, you know, hear that's an expensive protocol to implement.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah. So 2000 tweets negative or?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I guess my biggest concern is that we're using phrases here that imply a degree of objectivity that I don't think we can achieve.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yeah, I agree.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

So, I would say... I'm going to throw something out here and then afterwards I'll tell you whether I believe it or not. The low is successful implementers attribute project delays to the use of the standard. The medium would be successful implementers attribute... say delays associated with the standard are no more than usual, and the high is successful implementers say deployment wasn't a factor in project timing.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, that's the same as the medium, isn't it?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

No, no, that depends on whether you think usual is... I mean my belief is that very few projects come in on time.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I could be wrong.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, we've never been late; I don't know who you're talking about?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I could be thinking of only my own projects, right?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

No more than usual...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I mean, I think the spirit of what you're saying, Wes, is the same as what I was saying.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

You're just putting it in the context of actual, you know, successful implementations.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, that's right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, and he's also... what I like about it is it does remove this fake objectivity, you know, successful... we can get successful implementers to testify and tell us, you know, they'll step up and tell us that. The 30%, etcetera, I don't think we can realistically expect to find out. So, I like what you said, that sounds good to me.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay. So, if Todd can remember it, because I can't.

**Todd Parnell – 5AM Solutions – CTO**

Yeah, for my... I'm trying to take notes, and I have successful implementers say dot, dot, dot and then I took deployment harder than expected?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I said something like deployment contributed substantially to project delays. In other words, I'm trying to set the sort of the basis for this is overall complex... you know, it's the whole...if it's a two-year project and it takes a couple of weeks to get the standard implemented it may not be on a critical path. If it's a two-year project and it took six months to get the standard working then it's probably caused the critical path to go out.

**Todd Parnell – 5AM Solutions – CTO**

Sure, so, then I'm taking out the word costs and just calling it deployment.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes, yes.

**Todd Parnell – 5AM Solutions – CTO**

All right, so we contributed substantially to project delays, that's low.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Now we had trouble distinguishing between medium and high or moderate to high.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay. So, why not just say... I guess it would be not so good to reuse moderate in the phrase.

**Todd Parnell – 5AM Solutions – CTO**

Well, let's just go with high to say that we don't think that it... it did not contribute...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Successful implementers did not experience delays due to deployment.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

See, I think the medium should be that any delayed experience were not attributed to the standard, and then high should be that successful implementers actually said that this standard helped prevent delays in the project. Use of the standard helped to prevent delays in the project.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, that's a possibility, just to me that... you're almost saying how hard did the people try to sell this not that that's not true anyways it's just that wording tends to...

**Todd Parnell – 5AM Solutions – CTO**

Perhaps high could be just cited as a success factor for the project?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Standard.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

The standard, yes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes, that's good. I don't know what we call this category, but...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

We just called it implementation I think, right? Took off costs?

**Todd Parnell – 5AM Solutions – CTO**

I was just calling it deployment.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Deployment, deployment, right, yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, okay, but that's not an attribute.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Deployment experience.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yes, deployment experience, perfect.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

How to add a word without adding any content.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, exactly.

**Todd Parnell – 5AM Solutions – CTO**

All right, so are we moving onto conformance criteria and test?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Good for me.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It looks pretty good to me.

**Todd Parnell – 5AM Solutions – CTO**

If we're going to get arguments on this one, I think you'll get arguments between moderate and high, and the availability of the tools, and how well the criteria are described in available.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I'm thinking of where... I would rather say something more about the use of the conformance criteria, rather than the availability of testing tools. My take is that just like the standard itself, the conformance criteria, you know, doesn't begin to have that much value until release 2, and, you know, so if some organization writes some standards and says here are some conformance criteria, that probably makes the standard better, but it doesn't necessarily show the value... well, look at high I would rather see high involve industry experience with conformance testing tools, and moderate be just conformance criteria exists.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I agree. I agree.

**Todd Parnell – 5AM Solutions – CTO**

Yes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I mean, for example, I think IHE does a lot of really great work in... but at the end of it that doesn't mean that you can take an IHE profile and get two vendors to deploy it, and it works plug and play. I guess that's not... I mean nothing in my high criteria would change that though. So, I guess we've got what we've got.

**Todd Parnell – 5AM Solutions – CTO**

Perhaps we could go with moderate...if we add in some methodology type stuff, so if we were to say that conformance criteria exists, but either conformance testing tools or a methodology to assert conformance does not exist and then high would be that not only do the conformance criteria exist, but the methodology and/or tools have been used on at least one implementation.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Not at least one, there's at least one of everything.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

On one operational implementation? I mean, but I think that's a good idea, that probably gets more to the vagueness I was worried about than anything else, which is, you know, in the lab conformance criteria and testing scripts and so forth can be everything from almost everything you need in the world to just a nominal thing that checks the box and you don't know, because the criteria of success is you passed the conformance test.

Where the tools have been used in production they ended up having to really get it working. Now, it maybe that they didn't have good tools, but it's also quite possible there was a good feedback loop that improved the tools as a result of it. So, I would say that high should be conformance tools have been used in implementations for production and medium should be conformance tools exist.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And criterion tools, yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Right, right, yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, that's good.

**Todd Parnell – 5AM Solutions – CTO**

So, then the gap between low and moderate would be even bigger because in moderate you have not only conformance criteria, but tools.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, you know, we should never have a no there anyway because there's always one of it, you know, we should say few or something like that, few conformance criteria or tests are available, or...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Incomplete?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I think...go ahead, David.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I was just going to say the word incomplete maybe or...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Incomplete, yeah, yeah.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

How about incomplete or untried?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Incomplete, untried, right?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, okay, yes.

**Todd Parnell – 5AM Solutions – CTO**

Or no automated test.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

That encompasses untried I think.

**Todd Parnell – 5AM Solutions – CTO**

Right. Well, we just said that moderate would be conformance tools exist. How would we distinguish untried in that instance between a moderate and a low?

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay, so...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Tried.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Tried, yeah. Have been used at least in laboratory settings.

**Todd Parnell – 5AM Solutions – CTO**

Okay, great, all right, so what I have for there... now conformance criteria and test I have low, conformance criteria incomplete or no automated tests. For moderate conformance test exist, tried in a laboratory or I'm sorry, low was conformance test incomplete or untried, moderate conformance test exist in a laboratory and tried in a laboratory setting and high was industry has experience with conformance tests and methodology applied in at least one operational implementation.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Except I was sort of kidding about using the word tried, put it used in laboratory settings.

**Todd Parnell – 5AM Solutions – CTO**

Okay, yeah, I will... these are my notes, handwritten as I'm listening. I will make sure that the language is consistent between.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Good, thank you.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

You're using old-fashioned technology.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**Todd Parnell – 5AM Solutions – CTO**

Otherwise, my typing would carry on the line.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I searched for a... keyboard. I like the last row as it stands.

**Todd Parnell – 5AM Solutions – CTO**

Moving on.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I do too, excellent.

**Todd Parnell – 5AM Solutions – CTO**

Sorry, I didn't mean to shut down the conversation that quickly.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

No, I was trying to do that.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

It looks fine.

**Todd Parnell – 5AM Solutions – CTO**

I think my job is actually to accept that some people want to close and continue the conversation.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, yeah.

**Todd Parnell – 5AM Solutions – CTO**

Are there any comments on the reference implementation line? All right, moving to the next... this is continuation of ease of implementation, ease of deployment.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I'm just wondering about the time. Do we have to do public comments and are we out of time or is there more time?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, we have a two-hour meeting.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Oh, okay, all right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, we're fine, but thank you.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I'm sorry; I just had it as an hour in my thing. I'm going to try to hang on as long as I can.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Thank you. These are did pretty good, actually, complexity of specifications.

**Todd Parnell – 5AM Solutions – CTO**

The one that we struggled with between these is the second bullet point in this list, is the number of incorporated standards.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, that's one that I was kind of tripping over as well, because what does incorporated mean? You know...

**Todd Parnell – 5AM Solutions – CTO**

Right, and I can just say that something like... and you also have the question of the closure when the standard references another and that standard references...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, exactly right, yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

We're having trouble with the numbers 6, 4, and 3, or?

**Todd Parnell – 5AM Solutions – CTO**

I was just commenting that when these were under development the top bullet point in each of these was something that we felt more comfortable with, but the second bullet point we felt was capturing something important, but the numbers and how that was worded was... we were less certain of.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And the indirection, the indirection is really a good point. It incorporates only one other standard but that standard references 16 other standards, you know, you sort of...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, I'm going to... oh, boy I hate to do this... what's a standard as opposed to implementation profile? Is... or what are we evaluating here?

**Todd Parnell – 5AM Solutions – CTO**

So, one of the things I had in mind with this is the healthcare data types, the ISO 21090 data types that are part of the R2 HL7 data standard. If you read that specification or... I do not recommend reading in full, the first three pages are references to other standards that in order to implement the healthcare data types you need to either have knowledge of or have access to. So, for instance that standard references timestamps. So, you know, for the TS data type, it says it will be in the ISO date/time, you know, 8601 format and then they say that ISO 8601 is a reference standard.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I don't think, you know, we anticipate using these metrics to evaluate both standards and implementation specifications that's been kind of from the beginning. So, I think that we should assume that where it says standards here, it could be a standard or an implementation specification there.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I like that notion. I think that the difference between a standard and a profile are going to be so slippery, we just have to...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Exactly.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

...you know, whatever it takes to get this thing to work whether it's profiled, reprofiled, doubly profiled or a raw standard, that's sort of irrelevant.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Todd picked an example that actually talked me out of this. I mean, I agree with this editorial comment thing on the ISO data types, but in fact when I was trying to work on claims attachments it was one of my biggest frustrations trying to work with insurance industry analysts and explain, you know... I mean I could tell them that I could create an... I had to explain the difference between an open range and a closed range of dates, but I couldn't tell them, from reading the book, how to just represent a date, you know.

But, the part where they cite an ISO standard was the best part, I mean they didn't create some new standard, they used an existing standard. So, while I know that a significant issue with the HITSP profiles was the lack of an integrated format and display. I don't think we want to write something that discourages people from using standards and, you know, a time format is a perfect example of, you know, a wheel that should absolutely not be reinvented.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, but, you know, so how do we capture the fact that in some cases layering in other standards is a great idea, and in other cases it's a terrible idea? I mean, I agree with you that it isn't the fact that there's a layered standard reference. The question is whether it's good standard and whether it is well-suited for the way it's used.

So, you know, just for example some of the...there's a recent, you know, move to create some mobile health friendly variations of some of the IEG profiles and so you have this strange mixture of...structures that contain HL7 barred to limited data types embedded within them and it seems as though it's the most incredibly bizarre interplay of incompatible approaches to the limiting field that you just say that's a case where a reuse of a standard was a bad idea. But, you're right about time standards, why on earth would we want to invent yet another time standard?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, maybe...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well, you could even get into...put a few more angels on the head of this pin by saying that the reuse of the HL7 data standard might have been good. The reuse of the HL7 version to SYNTAX, given that it's a bear to parse, probably wasn't so good.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, and I may not even have it correct, so don't take me literally, but that argument was bandied about in some of the discussion groups. But the point is it's subtle, and I don't think you can just simply say that referencing another standard is a bad thing.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

On the other hand, you know, every additional externally reference standard is more work for the implementer to...at least in terms of understanding the current standard, that's the HITSP phenomenon, you know, there's no single way you can get all of the dependences on one piece of paper. No place where you can get them...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah and that indirection, you know, that indirection I think is a...I think that's a point...and I think that what you said, David, the suited, whether the standards...whether the specifications, I think we should change standards to specifications, whether other specifications that are incorporated are well suited and if...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, but that's...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Maybe complexity, you know, have complex interplay.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

And, I think these are all suitedness is in the eyes of the beholder.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And that may not be complexity anyway. That's something different actually. But the indirection is definitely complexity.

**Todd Parnell – 5AM Solutions – CTO**

Is there some way that we can try to distinguish appropriate layering from bringing in as an aspect to the specification that adds complexity? So, in other words I'm trying to come up with a way to distinguish the timestamp standard from bringing in a transport mechanism that might not be necessary and that there might be a different alternative that the standard should leave either undefined or with alternatives.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I mean, I'm right now not feeling that we have nailed it, and not coming up with ideas for nailing it, only because all of the things we're talking about are so subjective, appropriate, you know, so forth.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think that we should... here's what I suggest, I suggest we delete the second bullet in all three of them, leave the modular saying there and then discuss the other two rows, because some of the things we're discussing I think relate to the other two rows.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I think that's a good point.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Okay by me.

**Todd Parnell – 5AM Solutions – CTO**

All right, quality and clarity of specifications.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

What would be support to detect inconsistencies and ambiguities, a word search?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, maybe is it less about detecting them than that they are in fact inconsistently and ambiguously used? In other words a bad spec is one that uses terms inconsistently.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yeah.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

So, it's not support for detecting, it's just existence of inconsistent and ambiguous use of terms.

**Todd Parnell – 5AM Solutions – CTO**

Yeah.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And I wonder, on... maybe it's going to fall into the third one or maybe we need another category, another row, thinking about the layers standards. I know the HITSP problem was that you had to have joint access to many separate standards to understand the standard in front of you and it was availability and access to layered standards was a problem. It was very difficult to get them.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, and...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

They may have been well written and appropriately used, but you couldn't find them.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, see that's row three, that's why I was saying that ease of use of specification I think that's what you're talking about.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, but I'm... you know, ease of use... well okay, maybe it's a sub-bullet in there.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well on ease, quality and... does anyone have a...can anyone give me an example of what support for detecting inconsistencies and ambiguities mean?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

...yeah...

**Todd Parnell – 5AM Solutions – CTO**

Yeah, I believe that we replaced that bullet point with the language of inconsistent use of terms.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

All right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It's just our ambiguous use of terms, so it's not affecting them it's just actually... you know, when you read through the document you see these term being used inconsistently.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

You know, Wes once brought up a point, and I don't even know which of these it's related to, but it seems to go well here where people come up with new terms for something that's commonly referred to as, you know, they call something "b" when it normally is widely considered "a" you know, where they use new terms for common concepts.

**Todd Parnell – 5AM Solutions – CTO**

I believe that that is the intent of the phrasing user's point of view and environment.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I read that phrase as having applicability to understanding that a lab result was an act of a certain mood of a thing. In other words, the abstractness of the rim versus the specifics, the specific thought processes that application implementers go through. And I... although I thought the phrasing was subject to everybody interpreting it the way they want, because who is the user, I mean, you know, nonetheless, I thought it was a good thing to have in there.

**Todd Parnell – 5AM Solutions – CTO**

Could we try to work the word domain concepts defined in the natural domain specific language or common...

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Business language is the term that people use most I think. So, yeah, concepts are not defined in terms of the user's business language.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yeah, that's good.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

I'll say that for me, this whole row sounds more like a beauty contest than something that you can measure and make distinctions on. The third one, the one we just decided, I think is the most useful.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

But, Wes, how do we capture the universal negative reaction to the way HITSP presented those standards? Never was a good word spoken of that and it seems like that's something we should capture somehow.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I agree and I guess everyone may have a different take on what were the difficulties associated with the HITSP specifications. I think everybody agrees that they had a forced modularity according to the owner of intellectual property or a forced factoring according to the only intellectual property that made it very difficult to follow from one through to the other, because you were trying to make references in the middle of another standard. There are also those who felt, and I felt, that I had to learn a whole new hierarchy to deal with the HITSP standards, on the other hand you have to almost... HITSP specifications... on the other hand you almost always have to learn a whole new hierarchy anyway.

I mean, I agree that we're looking for a way of expressing the multidimensionality of the HITSP specifications that is subject to some kind of objective statement, but I haven't been able to really think of one. I mean, clearly the third row is going to get to a lot of this, you know, ease of use of specification. The...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, but I still think, you know, like the HITSP things, one of the things that jumped out when you tried to track everything down is that inconsistency problem is because it referenced so many other standards, those other standards use words in inconsistent ways, because they weren't written with the same focus and point of view, and that left the implementers with extraordinary ambiguity which to this very day we still haven't resolved despite now, you know, years of concerted effort to do so with consolidated CDA. And there is just something very wrong about doing a healthcare standard that way that we should capture. I mean there were reasons why they were forced to do it that way, I'm not blaming anybody on HITSP, I think it was a valiant effort, but it didn't work as a standard.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So, how would you take a stab at capturing it?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, I mean, I think it's...I kind of agree with Wes in a sense that it's a beauty contest, but, you know, that's what humans do is we make judgments that this is elegant and this isn't and this is inconsistent and this isn't, this is easy to understand and this isn't. I don't know that it has to be any more objective than what we've got.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Well...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I mean we could say something like maybe we could measure the consistency across referenced modular components, present, absent, you know, if you create an arbitrary modularization based on intellectual property the odds are pretty high that there's not going to consistently... the concepts are not going to be consistently referred to across the components. So, maybe that's... you know, kind of a coherency across all required sub-standards or sub-specifications, you know with high, low or missing.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, if we were just to apply that to most specifications that are built over RFCs, how well would the criterion work? I mean, I'm... it strikes me that there is a family of RFCs about e-mails that are reasonably consistent.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think you get, you know, one notion is how are the, you know, what I like to think of as, you know, from a medical point of view, the surgical cleavage plains, you know.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

There are certain places where the surgeon can cut without severing arteries and if he cuts in the other direction he causes a lot of bleeding and, you know, a layered standard where there's isn't leakage of concepts across the layers does well as a layered standard, but a layered standard where there's a lot of shared concepts that leak across the layers, the modular boundaries does very poorly unless you're really lucky and they are, you know, kind of rooted in some underlying standard nomenclature.

So, if you have, you know, two different standards you're referring to "a medication" but one of them is thinking of them from the pharmacist point of view and one of them is thinking of them from the patient's point of view, and one of them is thinking of them from an order entry point of view you're going to have a pretty lousy standard when it comes time to implement, because they're not going to agree on what a medication is.

So, I don't know, I'm rambling, but I think it's the kind of thing that if you were given a standard you could read it and describe it. I'm not sure we can set arbitrary criteria up front to tell you how to decide if something is elegant and clean, and well orthogonalized or not. Maybe you mean orthogonal.

**Todd Parnell – 5AM Solutions – CTO**

What about... how about this? Reference standards address different layers of the problem.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Is that a good thing or a bad thing?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, how about... I mean, okay I threw the word orthogonal out there because it's one of my favorite words, but it is actually the essence of what we're talking about maybe or separation of concerns if you don't want to use the fancy term, you know, layered components exhibit clean separation of concerns is a high score.

**Todd Parnell – 5AM Solutions – CTO**

Right, I've captured a few phrases here, consistency across referenced documents, cohesion between reference standards, separation of concerns, these are... I personally come from a software development and software architecture background and all of these things are what you look for in a modular or well-designed system. And what we're trying to say is somehow that this, from a standards perspective it has that architectural beauty that you look for in a software component or system.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

So, it's an architectural beauty contest?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes, architectural.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

So, I agree with everything that has been said except I don't see how to create low, moderate and high criteria for them that sound objective. I think that the last row clearly stands out as... you know; you could probably say requires highly specialized expertise in multiple disciplines or something like that to...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, that's a good point, yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, I mean I'll defer to other folks. I liked the notion of separation of concerns and I like the notion that composition of standards, which I think is probably redundant with the idea of separation of concerns, but where multiple... using multiple standards, where there's a clear separation of concerns is a good thing. Using multiple standards where there is a messy separation of concerns is probably a bad thing, but I don't know. Right now I'm not really feeling that we've really come to a good clean set of metrics for the first two rows.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

You know, we have... I'm kind of peeking ahead and there's another three in the next page that... you know, all of these attributes are important attributes, but they kind of overlap each other I think, especially the very next row, the degree to which specification uses familiar terms which is one that we've already discussed.

**Todd Parnell – 5AM Solutions – CTO**

Yes, the business language.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yes. Hey, I have to ring off now, you know, if you... but I think the notion of maybe being able to leave one or two things with question marks in them and go through it all and then coming back sounds like a good strategy.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, thank you, Wes.

**Wes Rishel – Gartner, Incorporated – VP and Distinguished Analyst**

Yeah, bye-bye.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Bye-bye. I think what we're trying to get to is what, you know, what Todd mentioned, you know, good practice in software engineering, you know, you're layering and abstraction data hiding, and separation, all of those things. I just think we haven't captured that well.

**Todd Parnell – 5AM Solutions – CTO**

Yeah, so let's... perhaps as a way to unblock is since this... I just brought back the previous slide, the one that we're just spending a bunch of time... there are a number of changes that I do think that we've talked through and that would change the shape of this quite a bit and I will be making those, and I think we can take another pass through, and what I propose that we do is move onto the next two sets, and that way we could have at least seen them all.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, yeah.

**Todd Parnell – 5AM Solutions – CTO**

So, I think this first row I will collapse with the business language and make sure that we have this in one place, and it uses the terminology business language.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay. And number of interfaces, are we there?

**Todd Parnell – 5AM Solutions – CTO**

That's what I think that we're on.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, okay, number of interfaces, okay. Additional interfaces outside those... what is outside of those participating in the exchange mean?

**Todd Parnell – 5AM Solutions – CTO**

I believe the intent is that if the business process at the highest level is to send a message from one party to another, how many other interfaces besides the exchange of that piece of data are involved in order to conform to the standard?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, I don't think this comment or this row has to do with just software that has to do with an exchange. The number of interfaces with external components and services, you know, applies to every software application you ever write. So, I think that that language is inappropriate.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Any additional interfaces are required to implement the standard specifications.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Are we referring to... is it the problem with the fact that interface might not be the right word to use in a healthcare context? Is that really modules or layers?

**Todd Parnell – 5AM Solutions – CTO**

Right, and I also think that the word exchange is somewhat loaded.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, participating in the exchange is the phrase that I don't think should be in there.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, yeah, I agree with that.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, interfaces, yeah, are we talking about...what are we talking about, service interfaces or you know...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, and I think that's so highly depends on what you're trying to accomplish. If you're trying to mediate some really complicated, you know, third-party consent management service it's going to have a lot of "interfaces" just to make it work.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think what we were trying to get at here was kind of coordination points, you know, where you really have to build, you know, if you're implementing the specification, you have to actually build a bridge, a service interface, you know, a remote call, whatever it happens to be, with another component that's outside your control, you know, so you have to do some, you know, coordination with somebody else's software.

But if it's just implementing a service interface and is just clean, you know, you just implement it, you know, the complexity is when you have to coordinate with somebody else I think, somebody who has control of an external component that you don't have control of.

**Todd Parnell – 5AM Solutions – CTO**

Right, are you a composition or an aggregation of additional services by specification or are you the...does the software that you're building act from the messages in response just back as part of the conversation. I'm thinking in terms of what would be...language. Is this a composition of services or a flow?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, if it's real clear to build a message, receive a message, send a message, right? Then that's an interface with an external component, but it's not hard to build. Actually, Wes referred to this as an operational ease, you know, where you had to coordinate on digital certifications let's say or something like that.

**Todd Parnell – 5AM Solutions – CTO**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But, I think that's in the operational slide, right? Ease of operations.

**Todd Parnell – 5AM Solutions – CTO**

Yeah, that's the next slide here. Peer coordination is there.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes, I think that's the same thing actually.

**Todd Parnell – 5AM Solutions – CTO**

Okay. So should we strike this entire row?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I'm not sure. What do you think, David?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Are we on row two still this interfaces?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yeah with external components or services. If you there at Cerner are building a new module, you know, a new application, and it has to interact not only with this, you know, your knowledge layer, but it actually has tightness of the integration that's really what this is addressing. It needs to have a very tight coupling between your application and something else that's a bad thing. If it's a nice clean service interface, that's a good thing.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, unless of course the tight coupling is necessary for, you know, ironclad control over security or consent, or authorization, or something like that. I mean, I think it depends, you know, a good engineer can tell the difference between inappropriate coupling and appropriate coupling, but it sure is hard to write it down.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Again, it comes back to words like separation...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, it's not number, yeah it's not number, it's really, yeah, yeah and even in security tight coupling is a bad thing.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, it is or it isn't, I mean in the sense that I'm working on some of this OAuth debate for the...stuff and, you know, the question is should authorization always be coupled with authentication and I think the answer is no, but there are times when you might build an interface that requires that the authentication carry the authorization with it.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And it might be...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

But we shouldn't implement it such that they can't be separated.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, in general, right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

So, I don't know how that translates to this notion of additional interface.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I'm thinking...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It just is too ambiguous to me to know.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, and it's definitely not number I don't think.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I mean...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And we're talking about the specifications.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And we could use words like inappropriate, code dependency's or inappropriate coupling, or...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Unnecessary.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah or mixing of concerns, unnecessary, again, it's a judgment call but it's a perspective. I think what we're trying to do with these metrics is to provide an evaluator with perspectives to consider, we won't always be able to provide iron-clad specific scoring models, but it's a perspective that you should consider and if you hadn't thought about it, these measures or these metrics, or these perspectives, will cause you to think and that seems like a worthy goal even if to some degree it's left to the eye of the beholder, at least their taking the perspective. So, it doesn't bother me to leave things in that are judgment calls as long as it's clear, you know, the access that we're judging.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, you know, I have no problem leaving this row in if we delete outside of those participating in the exchange.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Any additional interfaces are required to implement the standard specifications, a few and no additional interfaces are required to implement additional into what? External, just call it external. No external interfaces are required with the standard.

**Todd Parnell – 5AM Solutions – CTO**

Okay, let me just capture that, I'm running out of room on this sheet of paper.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, many external interfaces, a few external interfaces and no external interfaces and then it just, you know...

**Todd Parnell – 5AM Solutions – CTO**

Right, okay. So, do we need to talk about degree of optionality?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It could be good or it could be bad.

**Todd Parnell – 5AM Solutions – CTO**

So, I think we tried to tie this back to the use cases and I think that this does... I think that speaks to the it could be good or bad, but you have to have a model for what you're trying to accomplish and the degree of optionality in what you're trying to accomplish, and then look at the standard, and does it support that or not.

And this is where I think that there's a distinction between the standard author and the intent for the scope of how the evaluation is being performed, meaning that the standard could say I support use cases A, B, and C, and then the scope of the evaluation could be evaluate the standard in the context of use case A and then you would have perhaps a distinction between the degree of optionality in the standard and the desired degree of optionality.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I'm taking notes, this is, I am paying attention. You know where we got into trouble with optionality, I remember having this long conversation about optionality, when we were doing the direct review, remember, David? Is when the option...where we get into trouble is where the optionality is almost a result of an arbitrary decision, because, you know, you've got a bunch of people writing a specification, they can't come to agreement, and so they include everything, that's what you don't want.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, again though it's a judgment call as to when it's excessive.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

It's when it's arbitrary; it's when the optionality doesn't contribute to the utility of the... well these people would all say it contributes... yes a judgment call, yeah. But, David's right sometimes optionality... some optionality is a good thing, but the kind we don't want is when it's like...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, it's, you know, we keep coming back to words like inappropriate option.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

You know, so appropriately flexible optionality is a good thing, and inappropriate under constrained optionality is a bad thing. And, you know, it's up to the judgment of an implementer to determine when you've moved from appropriate to excessive optionality. So, you know, we heard robustly from the exchange implementation experience that there was excessive optionality, right?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Just implementers ran into excessive optionality. Hard pressed for them to say exactly what that was always, but it was excessive, but if you weren't allowed certain choices, you know, you'd get the similar complaint that it was too constrained, it was too narrow a use case satisfied, it wasn't flexible enough.

So, I don't know maybe we just put, you know, what we're really saying is that you have to make a judgment about the tradeoff between flexibility and excessive optionality and you're going to have to evaluate how you think this standard lines up.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, the other thing that we don't want, especially if these are national standards, if the optionality presents barriers to interoperability that's a bad thing.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, but again it's going to be words like inappropriate barriers to...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yeah, I think that's what we have to capture, Todd.

**Todd Parnell – 5AM Solutions – CTO**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

That we need, yeah...

**Todd Parnell – 5AM Solutions – CTO**

I don't know I'm coming back to the use case, because the way that you end up with optionality is often when you can't agree in the committee or the people who are creating something about whether a use case, whether all the use cases require a particular piece of data or particular operation.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Exactly right.

**Todd Parnell – 5AM Solutions – CTO**

Right? And...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

You get tired and so you just throw it in there.

**Todd Parnell – 5AM Solutions – CTO**

You include both, right, but that's... so that was the authors or the stakeholders of the specification as they were writing it. We would be coming in with a different set of use cases potentially narrower, potentially, you know, the Venn diagram could be a subset, a superset and overlapping set, right? And what you're trying to actually get at is where the choices for optionality that were included in the specification necessary and sufficient for the optionality required for the use cases that are under consideration.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, and that's what you've captured here. Yeah, I agree with you. Optionality exceeds the requirement for the use cases, exceeds requirement for use cases but does not result in additional effort... and you do have... I think you have the right things here, actually. And you do have no optionality exists to support, so you don't even have the optionality that you need, yeah.

**Todd Parnell – 5AM Solutions – CTO**

Right, but I think that the trick with this one is that...and we originally were talking about governance and how these metrics would fit into a governance model and we were supposed to be governance model free, but I think that for this degree of optionality wanting to make any sense whatsoever the governance has to provide a charge to the evaluators to say these are the use cases we want to fulfill.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I would...

**Todd Parnell – 5AM Solutions – CTO**

Otherwise...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I would capture what David's saying though; I would say appropriate optionality exists for use cases.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Because, it may not be... so that's important too.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And if you see other places where the appropriateness fits in there add it.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, how are we doing, are we almost there?

**Todd Parnell – 5AM Solutions – CTO**

We are very, very close. This is the last long slide.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, perfect. Okay, so we have comparison of targeted scale of deployment to the actual scale deployed. Let me look at this...

**Todd Parnell – 5AM Solutions – CTO**

So, we're out of deployment and we're into the operations phase.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes. So, the high is that the scale is documented in the standard, and evidence that scale has been achieved or exceeded in operation. What evidence would you... well, we don't have to...

**Todd Parnell – 5AM Solutions – CTO**

You'd probably... I think that if you were in the high category you would have vendor press releases saying that they were doing, you know, X number of transactions, or whatever it was, they would be very excited to tout how many or how much.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think these are fine, actually.

**Todd Parnell – 5AM Solutions – CTO**

Just that first row or where you commenting on...?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

No, the first row. What do you think, David?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I'm reading them and thinking about them. I mean, I'm pretty comfortable with them. The benefit to cost ratio seems like...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, I was just still on row one. So, you're happy with row one?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Oh, I thought you were asking for comments on all of them. No, row one I think is good.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, how about row two?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think it's good. I mean we don't have to define what few means, but...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Deployments, I would make deployments plural.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, well I think, yeah, that's yeah, I think that's true of all of them, right?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, yes. Degree of care coordination. Now I thought we decided to get rid of the term big O notation.

**Todd Parnell – 5AM Solutions – CTO**

I can strike that.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Just call it operational scalability.

**Todd Parnell – 5AM Solutions – CTO**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, and I'm...you know, do we really want to say exponential and linear?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And constant? I mean...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, we got somebody with their calculator on.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Well, and I mean, gee are there any constant...are there any that would ever meet constant order one?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, I would eliminate that big O notation; it's just a little confusing.

**Todd Parnell – 5AM Solutions – CTO**

Okay, okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It's, you know, it's an important consideration, but...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

It's, I mean it's important for some people in conveying the concept, but your words have conveyed the concept.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Right.

**Todd Parnell – 5AM Solutions – CTO**

Right, well I wanted to respond to the question of the high thinking of it in big O notation, the question like this is, is adding the hundredth node just as complex as adding the thousandth node or, you know, it has just as much operational impact and what we're trying to capture in moderate is adding the 100th node, you know, it scales up as you add each additional one.

So, I would say, and the question that I heard posed, was is there any standard to which O1 applies for addition of nodes, and I think that that is true for standards that you add a, like a mail style entry, because adding the thousandth node is just as hard as adding the hundredth in this. It would be when every pair of nodes in an exchange needs to know about every other pair, in which case adding the next node at 1,000 means 999.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, no I get you. On the other hand, you know, for something like Direct, you know, if everyone has agreed to a common trust fabric adding the n plus 1th node is no different than the n plus 1,000th node.

**Todd Parnell – 5AM Solutions – CTO**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

But in fact the debate and the slow up in the implementation of Direct has been completely about how complex is the trust network, so it ends up being actually much more complicated than it has to be, because people don't want to just trust everybody, they want to establish, you know, either peer-wise trust relationships or statewide trust relationships. So, it never ends up actually being as simple as order one.

But, I think...I actually am getting more comfortable with that, I mean, we don't say that you don't implement if you don't score a high, you know, but you could say, obviously the closer you are to simple the better. So, I'm actually okay with that.

**Todd Parnell – 5AM Solutions – CTO**

So, we strike the big O notation but leave the text?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I mean, you need a real computer scientist to weigh in, but in general, you know, I think it's appropriate to think of things as exponential, linear or constant and I mean there are more layers than that and more subtly than that, but that's not, why not, why don't we leave it in and see what kind of reaction we get?

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Is that okay with you Dixie?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, that sounds fine.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It does capture a really important consideration, you know, so a standard that requires peer-wise agreements is going to be much, much, much harder than one that doesn't.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I just...I think that this...what he has here captures the right concept. I just think that we should make it in terms that people will be easier for most people to comprehend and without them getting out their calculator to see if it's actually exponential or, you know, significantly more operational. And I know it's not as quantifiable, but...

**Todd Parnell – 5AM Solutions – CTO**

I actually am a computer scientist, so I can wordsmith this piece.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Good.

**Todd Parnell – 5AM Solutions – CTO**

And I feel pretty comfortable that I know how to put these into words. I just need to do it probably...load for a little bit.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes, yeah, but the concepts are right on.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, okay cost.

**Todd Parnell – 5AM Solutions – CTO**

This one is going to be tough.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, I was struggling with that, that cost benefit ratio is so...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, yeah, oh, yeah, you get in big time arguments here.

**Todd Parnell – 5AM Solutions – CTO**

So, should we just strike it?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I'd say let's strike it. I mean, we've captured all sorts of nonfinancial aspects of cost, which I think are the things that a standard evaluator should be worried about.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And that contribute to costs.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

And that contribute to actual financial...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I say we strike that row, yeah.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

All right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

There's never been anything that couldn't be cost justified with enough fiddling of the spreadsheet anyway, right?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Otherwise, no one would ever make a bad decision.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah.

**Todd Parnell – 5AM Solutions – CTO**

There is still uncertainty in the world, I think that's what risk means.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

That's an 80%...

**Todd Parnell – 5AM Solutions – CTO**

So, I think that this is capturing to overlap with the use cases.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, I would capture your use case terminology here and I wouldn't make it 100%. I would make it like over 95 or something.

**Todd Parnell – 5AM Solutions – CTO**

Okay.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Of a use case, so it's 50 use cases and there's also a precision of fit, too, you know, it might, it might speak to every one of the two use cases you have, but it also speaks to 20 others.

**Todd Parnell – 5AM Solutions – CTO**

Right and I think that the intent of that I will go back here... the degree of optionality I think is where we would capture the... where's its extra.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

And then fit to purpose is where we capture is it sufficient.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, yes, yes. David, did you have any other comments on that, otherwise we'll go to public comment in 5 minutes.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

No, I'm fine, I wasn't paying close attention, but I think you guys probably got it right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I think we're getting worn down here. Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes.

**Todd Parnell – 5AM Solutions – CTO**

Dixie, I would like to actually skip to a couple of slides ahead and then go to public comment?

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Sure, that's fine.

**Todd Parnell – 5AM Solutions – CTO**

I wanted to bring up this slide and see if there were any thoughts about which candidate specification we would walk through for the evaluation.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, we're going to take one specification, David, and just the Power Team is just going to do kind of a test to see how well our metrics work.

**Todd Parnell – 5AM Solutions – CTO**

Right.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes, that's an interesting set.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

I personally would like it not to be Direct.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I agree, we've spent too much time on Direct already.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah. Yeah, and we get into these political wills, you know, they're biased toward Direct, away from exchange, blah, blah, blah. I think the RESTful one, since it's in development I think it would be hard, it would be interesting and will be interesting, but I'm not sure... I don't know how far along it is, actually.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

No, I don't think it's very far along at all. I was in on the call this morning with the Mitre driven project, which is, as far as I know, the only one that's really advancing specifically with healthcare in mind and it's...you know, it's very promising, but they're doing their first pilot this summer. So, I think it's premature. Again, we could do it and we could just measure things and comment on stuff that they've settled on, but they've really only focused on essentially single sign-on authentication service. They aren't dealing yet with authorization or consent management, or any of the things that they will eventually want to take on. I think the HL7 InfoButton is an interesting choice.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, the reason I brought that one up, because remember we had that long discussion at the committee meeting about it.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Whether it belonged in Stage 2 or not and it's small enough to be, you know a handle for this kind of...we don't want this evaluation taking forever, you know. I think... remember how we debated on how widely it had been adopted and all that, I think it would be an interesting one to do.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah, it would be and it has changed quite substantially from its inception, so we'd have to be careful to be evaluating the right version of it. We'd all have to agree on what we were looking at. I wouldn't mind learning more about it, actually, getting deeper into it.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay, why don't we do that one?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

So, there is a side benefit that we learn something important.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah and we can...and I think ONC would appreciate...

**Todd Parnell – 5AM Solutions – CTO**

Dixie, it just occurred to me that I'm not certain that HL7 InfoButton may not be a public specification; you might have to be an HL7 member to have access to the spec.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

So what I'll get it... so we can talk to Chuck, can't we get Chuck to allow us to use it or something?

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah and I mean...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And all of us, all of us on this team are members anyway...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes, we're members.

**Todd Parnell – 5AM Solutions – CTO**

Yes, I just... I wanted to keep the... from the public comment and perspective since these are public meetings.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Well, I'll tell you something... they are... it looks to me like despite our committee's recommendation it sure looks to me like it's going to be part of Stage 2 anyway. So, you know... and that goes... that's one of things our evaluation considers besides.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Right.

**Todd Parnell – 5AM Solutions – CTO**

Well to be sensitive to...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

You can go and download the spec; I don't know how the HL7 restriction actually works, but...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Oh, yeah, I bet you just can't use it.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yeah...

**Todd Parnell – 5AM Solutions – CTO**

Okay, then that's fine.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I think it maybe that you can't influence it, you can't vote on it, but I'm not sure that...

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

And you probably can't use it in your solutions without a license.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

I don't think they actually require a license. I don't know, I'm not sure. We are licensed.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

We'll find that out in our evaluation.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Yes, good, exactly, I think that's a good reason to try it.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah...

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Because it will force us to, you know, categorizing those issues.

**Todd Parnell – 5AM Solutions – CTO**

All right.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Okay.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

You've got to move.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Public comment for a minute, MacKenzie?

**MacKenzie Robertson – Office of the National Coordinator**

Sure, operator can you open the line for public comment please?

## **Public Comment**

**Caitlin Collins – Altarum Institute**

Yes. If you are on the phone and would like to make a public comment, please press \*1 at this time. 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.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

We wore them all down I think.

**Caitlin Collins – Altarum Institute**

We do not have any comment at this time.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

All right.

**Todd Parnell – 5AM Solutions – CTO**

They had 20 seconds.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Yeah, thank you Todd for your great work. Thank you, David for dialing in, and Todd will update this and get it out for our review at our next meeting.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

It sounds good.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Thank you.

**Todd Parnell – 5AM Solutions – CTO**

Thank you.

**MacKenzie Robertson – Office of the National Coordinator**

Thanks everybody.

**Dixie Baker – Science Applications International Corporation – CTO, Health & Life Sciences**

Bye-bye.

**David McCallie – Cerner Corporation – Vice President of Medical Informatics**

Bye.