



## HIT Standards Committee Architecture Services & APIs Workgroup Final Transcript June 4, 2015

### Presentation

#### Operator

All lines are now bridged.

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

Thank you, good afternoon everyone this is Michelle Consolazio with the Office of the National Coordinator. This is a meeting of the Health IT Standards Committee's Architecture, Services and APIs Workgroup. This is a public call and there will be time for public comment at the end of the call. As a reminder, please state your name before speaking as this meeting is being transcribed and recorded. I'll now take roll. David McCallie?

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

Here.

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

Hi, David. Arien Malec?

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

Hello.

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

Hi, Arien. Al Bonnema? David Waltman? Gajen Sunthara? George Cole?

#### George Cole – Principal Scientist, Community Solutions – Allscripts

Here.

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

Hi, George. Janet Campbell?

**Janet Campbell – Software Developer – EPIC Systems**

Here.

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

Hi, Janet. Jeff Gunther?

**Jeff Gunther – Vice President – Foundations at Premier, Inc.**

Here.

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

And Josh...oh, hi, Jeff.

**Jeff Gunther – Vice President – Foundations at Premier, Inc.**

Hi.

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

Josh Mandel?

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

Hello.

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

Hi, Josh. Okay now is Debbie Bucci on the line from ONC?

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

Debbie is, thank you.

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

Hi, Debbie. And I’ll turn it back to you David and Arien.

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

All right, I think we've got an exciting meeting today as we discussed last time we're going to kind go out with a bang and tee up what we think would be a reasonable and accomplishable work effort for some future Task Force based on the reorganization that ONC has announced of the Standards Committee Workgroups to be more of a Task Force structure, so, you know, we're going to look at some orchestration patterns that we believe would be useful in the achievement of the national interoperability plan as expressed in ONC's strategic plan and interoperability roadmap. And then see if we can tee up some useful next work efforts for, you know, some potential reconstitution either of this group or some other group that's much better than this group.

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

I agree about the interesting work ahead not about that last sentence.

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

There's no group that could be as good as this group.

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

I...yeah, exactly. All right, so let's so to the next slide. Here's who we are. All right, next one. All right, so, you know, I think we looked at two orchestration patterns one of which...both of which we mentioned in our transmittal letter and mentioned as having not been as fully fleshed out as the pluggable App orchestration pattern.

There is another orchestration pattern or another kind of coupled orchestration patterns peer-to-peer and a peer-to-peer with delegated auth that are likely to be the next iteration of the Argonaut Project efforts. So, we think that they're well taken care of and curated.

But these are two that have come up as being highly interesting but don't have yet the kind of mass and body behind them in order to make significant progress, one is the notion of clinical decision support as a service and the other is the more generalized notion of pub/sub where ADT notification is a trivial exercise or trivial specialization of pub/sub but where the general pattern of something happens and somebody else wants to know about that something that happened has proven, in more broad industry, to be a very useful orchestration pattern and I think there are a number of interesting potential use cases of that orchestration pattern in healthcare.

**Janet Campbell – Software Developer – EPIC Systems**

Hey, Arien?

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

Yes?

**Janet Campbell – Software Developer – EPIC Systems**

This is Janet, I was wondering, you said that these use cases don't have much force behind them yet, much momentum, I wondering and maybe George can comment on this as well, if IHE is, you know, getting their profiles out there I know that they will then have implementation at connect-a-thons and, you know, move on from there, I'm wondering do we still not think that that's sufficient or could IHE become another Argonaut if we're all as committed to it as we would be to Argonauts?

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

Good question, I'll defer to George.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

I can't answer on behalf of Argonaut, however, I was going to comment and I'm sorry this is going to not directly answer your question Janet, but I was going to comment here that clinical decision support as a service might be...in my mind it's an example of maybe a more generalized orchestration pattern that maybe we could find a different name for the pattern itself and of course clinical decision support is the first instance that's of primary importance but maybe the pattern has a different...and I'm struggling, I don't have a good suggestion for the name. I think we all kind of have in our minds what that pattern or some of the features of that pattern, but I was just hoping to find a different name. In terms of IHE

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

So...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Yes there was a recent publication asking for public comment, I sent that all to you all, you've seen that. They did have a different name...

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

So...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

I don't happen to like their name either, but, yeah.

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

So, my...Arien and Janet, and George, my take on this is that the IHE work in that profile that you did circulate, George, and thanks for doing that, is a useful exemplar or exemplar of this general pattern but it's too specific to be the actual general pattern.

I would look at it as a proposed implementation of the pattern, but at least on my very preliminary reading of it, which is I'm going to carry it with me on the plane this afternoon and read it more thoroughly, but, my preliminary read is that it's too specific for it to be the general pattern.

In other words, it only really works for the use case of essentially radiology appropriateness screening but it wouldn't work for pharmacogenomics screening or for a more advanced version of InfoButton, or for some of the other use cases that are also...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Gotcha.

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

That fit under this general pattern. So, I agree with you we need a more general pattern and a better name, but...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Yeah, so, it's tied not to radiology but to any place where an order needs to be reviewed for appropriateness.

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

Yeah, I mean, I think...

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

And in particular...call it an agnostic order so not a prescription for example not that it couldn't be tweaked but the way it's written today.

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

Yeah.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Right.

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

It's still written pretty narrowly and I would argue that...I mean, again, I need to read it more carefully, but I would argue that the focus on FHIR questionnaires is too narrow as well. I would say that's an entanglement of concerns that needn't be pushed into the vendor's space but...

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

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

I think that's the debate that we want to have. I don't want to say that we have the answer but I think we do know what the question is.

**George Cole – Principal Scientist, Community Solutions – Allscripts**  
Right.

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

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**  
Not, you know...

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**  
The generalized question is, is like the pluggable App pattern is a relatively multi-purpose, you know, it's a multi-purpose tool that you can use to do a lot of things and I think we've found a lot of different applications of the pluggable App pattern to do a lot of very interesting things.

Is the particulars of this order, review workflow, are the particulars of this a trivial elaboration of some more general underlying orchestration or do we need more, is the scenario where we need more purpose specific workflows.

And I think the hypothesis is that, and I'm looking at the IHE profile, I think the hypothesis is there is a more generalized orchestration pattern of which this could be an instance.

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

Right, that's my hypothesis and that's what I would propose is the Task Force target is to assess that and either identify that more generic pattern or to reject the hypothesis and say that it's not worth it.

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

**Janet Campbell – Software Developer – EPIC Systems**

Okay, that makes sense to me, I think the only thing that I just am continually aware of is that we shouldn't meet, if this is getting taken care of someplace else...

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

That's right.

**Janet Campbell – Software Developer – EPIC Systems**

But it sounds like there is there is a possibility of a use case.

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

Yeah, Janet, I mean, I agree, I think the...I mean, you know, it's the hubris of having done what we've done and been able to step back and zoom out and come up with these broader patterns, it's relatively unusual in our standards body's world right now, so, I think we have...

**Janet Campbell – Software Developer – EPIC Systems**

...

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

Again, pat ourselves on the back, I think we've done a really nice job of asking questions that haven't been asked very well before, you know, triggering off of the, you know, the great work that Josh and his colleagues did by fleshing out the, you know, the pluggable App's pattern and sort of I think convincing most of us that it's...that's a very powerful and highly reusable orchestration pattern.

It may well be that Argonaut is the group that flesh this out or it should be IHE but I think we can raise the question of is there a more generic pattern and perhaps, you know, put out for a bid in a sense for the appropriate groups to flesh out or ratify the more generic pattern.

I mean, I've talked to a half a dozen CDS vendors and every one of them is very close but none of them are quite the same, but every one of them so far could be sent into a slightly broader pattern that would I think both reduce the complexity of the work of those organizations that are building those services as well as reduce the work of the vendors that have to be able to plug them in by the handful in some future state when that's expected of them.

I haven't seen anything to scare me off. But, I don't...I agree it's not...it needs a lot more thought and broad input.

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

Just in terms of how we try to frame this question, if we are going to think about who is addressing it and whether we should address it. One way to pop up a little bit from the level of abstraction in the IHE proposal might be to talk about calling external services in the context of a Health IT workflow. So, I kind of like the word “hooks, service hooks” but anyway, some way that the system you’re using, that a user is interacting with, can call out to an outside system. It may be more general than what people usually consider to be clinical decision support but I think the notion of an outside service does sort of fit what we’re talking about.

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

Yeah and so that one...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

And Josh that...

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

Go ahead, George.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Well, I think thinking about it that way also really helps people focus on one of the major issues that we have historically had in this space, and I think it needs to become a part of the solution and maybe it’s a part of the pattern, but when you work with external source there’s always been the challenge of how to get content back without opening firewall ports and things of that nature.

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

Yeah and that’s a big challenge I agree but that’s one we ought to solve in as robust a way as possible. I mean...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

But I like the idea of thinking about it as...even if we use the word “hooks” but it is workflow triggered calls to outside sources.

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

So, George, it seems to run with Josh’s thing, it seems to me that there is...that’s one component of it is you need to be able to hook and call an outside service. Second component is that outside service needs to be primed with some data and to have the ability to get additional data if it needs it. A third...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

To drop into conversational mode...

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

Right.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Yes.

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

You have a FHIR conversation in the background and then the third component, and again these are all conceivably optional but build them out in the fully fleshed out case and then decide which ones you flag as optional.

The third notion is that remote service may need to have a conversation with the human, meaning you've got to go into user experience space.

And then the final is that it needs to leave behind some trace of what it did and what it recommends at a minimum. And if you take that as the broad pattern, hook, converse in the background, converse with human, leave behind a recommendation...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Yes.

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

That covers dozens of really interesting use cases. And that's the one that I think we ought to flesh out. How do you do that? How do you set that up such that you could profile a particular product and say, this is what we send across as our initial message or this is the conversation that we need to have asynchronously, here's how we deliver our user experience to you and here's how...here's what we want to leave behind.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Right and I...

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

And you might have a different...

**George Cole – Principal Scientist, Community Solutions – Allscripts**

So, that's the idea I was trying to get to with thinking that clinical decision support as a service is just an example of an implementation.

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

Yes.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Of components or pieces of that pattern.

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

Yes, agree.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

It's an instance.

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

Yeah, it's a useful example but it's not the full space. Do the four components make sense? I mean, again, you can reach some things to be so generic as to be a meaningless statement, you know, and maybe that's...I'm still stuck in meaninglessly generic land, but, you know, so hook, background conversation, optional visual or user experience conversation and I don't know we'll call it output or recommendation or leave behind or something.

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

This is probably inappropriate for the context of this meeting, but I'm wondering whether this is actually kind of an elegant combination of pub/sub and pluggable App where I think the missing element is some kind of event triggered App invocation.

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

Well, no, I think you're right Arien. I would have just said it's a combination of pluggable App and trigger or hook, I don't know that I would have brought in pub/sub, but I think the pluggable App part seems totally obvious.

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

Well, so what I'm thinking of is the background processing is based on some stuff that's happening in the EHR and you're not necessarily pre-coordinating all the stuff that the background App needs or wants to listen to. I think it's a better pattern for the background App to subscribe to the stuff that it needs in order to do its decision support.

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

Yes...

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

That's where I was seeing the, you know, potential greater generality there.

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

Yeah, yeah and I think that's a good debate to have, you know, the subscription to things that you might be interested in is a little bit scary based on the potential volume and, you know, the ones that we've implemented and I suspect is true of Janet and George, you know, is we use our own built-in triggering mechanism to determine whether it's likely that the remote service is going to be interested or not so that you can eliminate a ton of the traffic that you just...you know the service isn't interested in at all.

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

Yeah, no doubt you're implementing...

**Janet Campbell – Software Developer – EPIC Systems**

And...

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

You're implementing the subscription framework locally.

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

Exactly, exactly, yes. The hooking is done locally. Somebody got...I interrupted somebody, Janet was that you?

**Janet Campbell – Software Developer – EPIC Systems**

Oh, I was just saying we do the same, yeah.

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

Yeah.

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

Yeah.

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

So, I mean, you can almost imagine there are an underlying set of potential actors, there is an event admitter, there is the subscription matcher and there's the, you know, event consumer, and you're playing the first two roles in that example. But, I maybe at too a high-level of generality in which case...

**Janet Campbell – Software Developer – EPIC Systems**

Well, in any case, I think that it sounds like we could probably go on about this...

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

Mature...

**Janet Campbell – Software Developer – EPIC Systems**

Which means it might be a good Task Force item.

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

Yeah.

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

Yeah, I like it, we should explore it. I mean, maybe we tease it into two separate, you know, halves and suggest that you can combine them if it makes sense, but you don't need to combine them.

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

Yes.

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

I mean, and so assuming there is to be a Task Force focused on this I think, you know, one approach that the Task Force could take would be to, for example, have a virtual hearing where we have a number of companies who have products in this space come and describe how their products work and maybe have pre-seeded them with a proposed, you know, approach to say, do you think you could fit into this approach.

I mean, there are things that we can do, you know, with a bully pulpit of the Standards Committee and the certification process behind us, at least until congress decides to change the rules, that would get a lot of attention, maybe, you know, jump start the process in a way that just waiting for connect-a-thons to go through isn't going to get you there.

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

Yes.

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

I don't know, I mean, it strikes me as a really important pattern and high value to the vendor community as well as to the nascent service community and...

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

Yeah, I...

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

I think it's in the realm of what we're trying to do with core APIs and it fits our rubric.

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

I could certainly say from my perspective I think this is important and it's something that I'd like to work on and I'd like to figure out how to work on it in the right setting where we can be effective and make progress and be implementation focused and I don't know yet what that means.

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

Yeah.

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

But I'm enthusiastic about figuring out that, you know, how we think we can give this thing the best chance at success.

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

Yeah and just by...I mean, just by starting the conversation amongst us we've already done a little bit of that, right, we're going to carry this conversation into other discussions that we all participate in Argonaut included and I think we've accomplished a lot already just by framing the question but I think we can do more before we quit, before we hand it off. But, again, maybe it's...I mean, we're not prepared to do it today, we don't know that there will be a Task Force.

I think Arien and I would be happy to make the case for the Task Force at the next Standards Committee meeting and explain, you know, what the target is so we can register it with ONC that says, you know, we think this is worth your while, that's easy to do and then we can stop and see what happens.

They may decide it's not worth it in which case, you know, we pursue it through our other channels, we can do it through Argonaut or through IHE, or through SMART platform or HSPC there is no lack of groups that would probably ante up and say they're interested.

Arien, do you want to walk through the pub/sub idea more generically, I think you've...I have not thought about that one as much, you have, do you want to just kind of catch us up on what you've been thinking about with that, what the generic case is there?

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

**Yeah, so, let's start with the trivial case, there are a number of organizations that have implemented ADT-based notification services which are better titled encounter notification services. There is some encounter that happens and there is some provider or set of providers, or set of clinical stakeholders who want to know what happened.**

The classic example is an ED admit where the primary care provider would want to know and those services tend to be fairly bespoke, that is you pipe an ADT stream into some service, it does something and then it either sends out a Direct message or it sends out an alert on a portal that, you know, that a provider looks at.

There is a more general pattern there in the context of accountable care workflows where you can imagine a patient shows up and is discharged for a preventable re-admission and a care manager wants to know that information or as another example of this a patient who is enrolled in a diabetes care management program shows up with a hemoglobin A1c that is over a certain threshold and needs to be more actively managed.

I know of at least one organization that did something like this, again, on a very bespoke level for hypertension management, you have a previously well-controlled hypertensive who shows up at some setting of care, has a BP measured and that BP triggers an indication that the patient is potentially no longer well-controlled and so needs some active intervention.

All of those seem to fit an underlying pattern which is across a distributed network of care something happens and somebody wants to know. So, the question is, you know, is that pattern useful and important enough, is it a general underlying orchestration and can it be done in a way that is interoperable as opposed to something that by nature has to be fully integrated or fully bespoke.

You know I'd note that pub/sub or, you know, event consumer or, you know, there's a whole bunch of names for this underlying pattern are a general large scale messaging architectural pattern in a whole bunch of domains. So, anyway that's the thesis for this as an underlying orchestration pattern. It may be at too high a level of generality for anybody to sink their teeth in. I happen to think it's pretty darn neat.

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

Josh, do I recall that there is a FHIR placeholder for the notion of subscription, did you tell me that or do I remember reading that?

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

I did tell you that, so, I guess the first question is, Arien, have you seen this FHIR resource called “subscription?”

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

I have not seen the FHIR resource called “subscription.”

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

Okay.

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

I’ll just say briefly what it was designed to do. The idea is for anything that you might be able to request with a FHIR search, anything you could pull on, you could build pub/sub where the client just issues the query every hour or every day, or every micro-second in order to get results and depending on what the actual timing is like for your needs that might be acceptable and it might not be acceptable. And if you’re in that category where it’s not acceptable because the polling frequency would be too great wouldn’t it be nice if you could just ask to get notified about changes instead of having to pull for them all the time. So, the subscription resource does just that.

You create a subscription resource instance on the server and you basically tell the server here’s the search that I’m interested in and here’s the channel that I want to be notified on when something new matches this search and the channel can be, send me an e-mail or text message, or the channel can be post the resource to this URL or the channel could be just ping me at this URL don’t send me any actual data but just give me a ping and I’ll know to get the data for myself.

And so that gives you kind of a building block for building a limited set of subscription services, you know, in particular...

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

For any...

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

No it is a really nice building block and, you know, we designed it to be somewhat general. It hasn’t been tested out much. I haven’t implemented it myself. I think Grahame actually has a copy running on his server where you can actually send text messages as the channel which apparently he doesn’t want people to send too many of because he pays for them personally. But, it might be worth checking out because it sounds pretty neat. So, yeah, it does a limited set of stuff.

It would be hard I expect to express something like one of my patients who is hypertensive and had been controlled well and now is poorly controlled, I don't think you can really fit all that into one FHIR query...

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

**Joshua C. Mandel, MD, SB – Research Scientist – Boston Children's Hospital**  
And so you couldn't fit all that into on FHIR subscription, but there is a limited set of stuff that you could fit and for that it would be nice to think about fleshing that resource out.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**  
Right, so you would in that case just look for new results and then you'd have to implement some local matching logic relative to that. As usual, in these things there are a set of, you know, again if this is fully bespoke no problem, if this is designed to be interoperable there are some security and policy considerations that need to be applied in terms of who can be a subscriber and how do they authenticate to register their interest and those kinds of things.

If this was deemed something that was important enough to, you know, get done at that level of more generalized orchestration pattern there would probably be some additional work besides just the FHIR resource.

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

**David McCallie, Jr., MD – Senior Vice President, Medical Informatics – Cerner Corporation**  
Yeah, I mean, not the least of which is the fan out notion, I mean the subscribed part is one piece but then how do you register the fan out, is that part of the orchestration itself or is that actually...

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**  
No, in this mode I register a query and then I register a hook for that query and so every time I get a match to my query I get poked with my registered hook and then it's up to me to figure out what to do next.

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

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**  
And I think typical invocations would probably combine pub/sub with peer-to-peer for example.

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

Yeah, I was thinking though, and maybe this is just a different...completely different space, but imagine a consumer who wishes to set up a distribution of, you know, encounter summary messages that are...

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

Yes.

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

Pushed to their portal.

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

Trivial, I think that's a trivial elaboration of this.

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

Well where would the...

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

I...

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

...destination...

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

To push that one out you would register your interest in encounters, you would get notified every time an encounter happened. If that encounter met your interest you would then use peer-to-peer likely to go request the FHIR bundle or the Consolidated CDA document that represents the snapshot corresponding to that encounter and then you would do what you wanted to do and this would be the framework for doing...in our discussion of more advanced data portability that we posited could be done through an API that would be the framework for doing that.

So, again, you just...there is a level at which the query gives you kind of a basic register of interest and then you've got to do some local processing so it's not going to...it's not going to solve all the elements of magic for you but you can combine an compose.

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

And then to answer what might have been one more part of David’s question, I’m not sure, it is as a patient if I was seen at five different hospitals I would register five subscriptions one with each and then my portal would be notified when anything happened at any one of them.

**Arien Malec – Vice President Strategy & Product Marketing – RelayHealth Corporation**  
Or I might...there might be an aggregator that I could register with.

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

Sure.

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

Yes.

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

But that would be...on top of these products.

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

Yes.

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

Yeah, I was thinking more along the lines of, you know, I want a copy of my encounter sent to my health record bank, I want another copy sent to my population health service that gives me a discount if I set up the feeds for them, you know, on my insurance plan and I want a third copy sent to a multiple sclerosis research society because I’ve got a family member with MS and I want my data to contribute to their research protocol. So, you know, the consumer wants to set up the fan out such that they don’t have to worry about it happening in the future.

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

Yeah, I think that’s actually...the intersection of the pluggable App and the pub/sub. So, in particular, I might allow my insurance company to subscribe to my clinical data, I would do an OAuth authorization process to say, yes, you have the ability to create new subscriptions on my account, you know, with the following limitations and then my insurance company would have an OAuth token, it would use it to write a new subscription to the server and then it would get notified.

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

Yeah, so you would say, let the consumer, the potential consumers each create a subscription with your OAuth permission?

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

Yeah, it wouldn’t be wrong to say that I as the patient could do it too, but in terms of usability I expect most folks would want to go the route that would shepherd them through the process.

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

Yeah, I just...I guess you’re saying that instead of a one to many fan out it’s a many subscriptions to one force.

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

That’s the notion of...yeah, that’s the notion of pub/sub is that it’s the subscriber who is responsible for saying what their interested in and they get fan outed based on their matching of the underling query.

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

Yeah, I guess I was thinking of it with an intermediate step, but that’s why I said I don’t know very much about the pattern, I haven’t ever implemented it. So, but the subscription pattern itself seems like...the subscription couples to an appropriate authorization seems like a powerful pattern.

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

Yes.

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

Okay, so I would say we’ve got two good interesting use cases and Arien you and I could pitch them to the Standards Committee as future Task Forces, it’s either two Task Forces or I think probably in this case one Task Force with two targets because these are so similar and they may in fact evolve to a single master pattern orchestration as you suggested at the beginning.

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

Or a composition of, you know, it’s a...

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

Yeah.

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

It’s a composition of pub/sub...

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

Yes.

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

Peer-to-peer and pluggable App.

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

Yeah, so we could certainly just pitch that and then, you know, we'll have to just wait and see what comes of it and we have to wait and see if they follow it up whether any of us would be invited back and whether any of us would accept the invitation, right? You may have had enough of this stuff that's always possible.

What else is that...can we say this is a stopping point we've got enough groundwork to throw the question over and wait and see what happens? If nothing comes of it then we'll all go an address these things on our own...in our own personal ways with the other groups that we participate in?

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

That's right, I would hope that if we think this is important enough I would hope that if the ONC chose not to convene a Task Force we would do our own convening.

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

Yeah, we can find...we've got other...we're all...we intersect in many other places to pursue this. So, we'll dare them to ignore us.

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

That's right.

**Janet Campbell – Software Developer – EPIC Systems**

Maybe it would be good if they ignored us because then we could prove that the free market can solve these problems.

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

That would be crazy.

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

Yeah, please don't throw me in the briar patch. Okay, all right, do we have anything else that we need to get done? ONC folks are we...are we settled on everything else we owe you?

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

No.

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

No?

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Uh-oh.

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

We are here.

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

Do we owe you anything else?

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

Not that I know of, are there notes or anything? This is Debbie.

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

I'd say we just...

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

Are we ready for public comment?

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

Let's go to public comment.

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

I think so.

## Public Comment

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

Okay, operator, can you please open the lines?

### **Lonnie Moore – Meetings Coordinator – Altarum Institute**

If you are listening via your computer speakers you may dial 1-877-705-2976 and press \*1 to be placed in the comment queue. If you are on the telephone and would like to make a public comment please press \*1 at this time.

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

So, while we wait for public comment the one last item for this group, at least deliverable, we cancelled the June 11<sup>th</sup> virtual meeting and so at the June 24<sup>th</sup> in person meeting we will ask this group to review the prioritization slide that you all did the last time, you just had one quick slide, but we'll ask you to just review that with the committee on the 24<sup>th</sup>.

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

As we said last time, we say it again.

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

Yeah, okay.

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

Yes.

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

We can do that.

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

And there is no public comment.

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

Sounds good. Thanks everybody. Thanks for your service.

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

Thank you, everyone.

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

Indeed.

**George Cole – Principal Scientist, Community Solutions – Allscripts**

Thank you.

**Janet Campbell – Software Developer – EPIC Systems**

Bye, take care.

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

Till we meet again whenever, wherever.