Transcript

HTI-1 PROPOSED RULE TASK FORCE 2023 MEETING

GROUP 3: ONC HEALTH IT CERTIFICATION PROGRAM UPDATES – INSIGHTS CONDITION, STANDARDS UPDATES, AND RFIS

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VIRTUAL

Speakers

Name	Organization	Role
Steven Eichner	**Texas Department of State Health Services**	**Co-Chair**
Steven Lane	**Health Gorilla**	**Co-Chair**
Hung S. Luu	**Children's Health**	**Group Lead**
Hans Buitendijk	Oracle Health	Member
Clem McDonald	National Library of Medicine	Member
Naresh Sundar Rajan	CyncHealth	Member
Fillipe Southerland	Yardi Systems, Inc.	Member
Michael Berry	Office of the National Coordinator for Health Information Technology	Designated Federal Officer
Dustin Charles	Office of the National Coordinator for Health Information Technology	ONC Program Co-Lead
Michael Wittie	Office of the National Coordinator for Health Information Technology	ONC Program Co-Lead
Alex Kontur	Office of the National Coordinator for Health Information Technology	Presenter
Brett Marquard	WaveOne Associates	Discussant

Call to Order/Roll Call (00:00:00)

Michael Berry
Hello, everyone, and welcome to the HTI-1 Proposed Rule Task Force. I would like to welcome everybody, and we do have a guest discussant with us today, and I would also like to welcome Alex Kontur, who will be providing a review of the RFI up for discussion. All of our Task Force meetings are open to the public, and your feedback is welcomed, which can be typed in the Zoom chat feature throughout the meeting or can be made verbally during the public comment period that is scheduled toward the end of the meeting. I would like to begin rollcall of our Task Force members, so when I call your name, please indicate if you are here, and I will start with our cochairs and Group 3 lead. Steven Lane?

Steven Lane
Good morning.

Michael Berry
Steve Eichner?

Steven Eichner
Good morning.

Michael Berry
Hung Luu?

Hung S. Luu
Good morning.

Michael Berry
Hans Buitendijk?

Hans Buitendijk
Good morning.

Michael Berry
Clem McDonald? Naresh Sundar Rajan? Fil Southerland?

Fillipe Southerland
Good morning.

Michael Berry
Good morning, everyone, and please join me in welcoming Steven Lane, Steve Eichner, and Hung Luu for their opening remarks.

Steven Lane
Do you want to take it away, Hung?

HTI-1 Proposed Rule Task Force Charge (00:01:13)

Hung S. Luu
Sure. Thanks, Mike, and welcome again to another session of the Group 3 Task Force. We are in the final leg of our journey, and I am really excited to have some presenters who will be helping provide some information to guide us on our fulfillment of the charge. Also, as always, we welcome public comment, either through the chat or verbally during the public comment session. Steven or Ike, do you have anything to add?

Steven Lane
No, you are doing great.

Steven Eichner
Absolutely.

Hung S. Luu
Okay. As always, next, we will briefly go over the charge. So, I think the pertinent one to today is on the next slide, which is the RFI on program standards, certification criteria, and information blocking to form potential future rulemaking, so today's session is mainly on the requests of information on the FHIR subscriptions, FHIR standard for scheduling, and SMART Health Links request for information. So, at this time, I would like to turn it over to our first speaker, Alex Kontur from ONC.

Alex Kontur
Hi, can you hear me all right?

Hung S. Luu
Yes.

FHIR Subscriptions, FHIR Standard for Scheduling and SMART Health Links Request for Information (00:03:06)

Alex Kontur
All right, great. I will jump in, then. Can you go to the next slide, please? Again, my name is Alex Kontur. I appreciate you all having me on today. I am going to come and speak about the three remaining FHIR-related requests for information in HTI-1. As we have already mentioned, I am going to be talking about three of these RFIs, one on FHIR subscriptions, one on SMART scheduling links, and one on SMART Health Links. For each one of these, I have a bit of background, just to introduce the underlying standards, and then we will do a quick overview of the request for comment itself. So, getting started with FHIR subscription, FHIR subscriptions are actually a framework that is defined in the base FHIR specification. It is not like a separate implementation guide or anything like that.

The basic concept here is to enable FHIR servers to send event notifications to other systems. So, rather than following the query response paradigm where you have a system that is constantly asking a FHIR server for updates to information that it cares about, the server can actually proactively send notifications when certain content has changed. So, FHIR subscriptions use a couple of different resources for processing and sending these notifications. The first one to call attention to is the subscription topic

resource, which is really a server's way of advertising the types of subscriptions that it makes available to clients.

Each subscription topic is going to define things like the trigger that will actually trigger the sending of a notification from a server. For example, that might be something like the creation of a patient resource or some system-level event like a patient being admitted, and it also has some information about how clients can filter those notifications so that they only receive the data that they care about. The subscription resource itself represents the client's actual request to be notified based on a subscription topic that has been advertised by the server, so, really, it is a thing that the client signs up for and information about what that subscription looks like. So, the subscription resource is going to carry things like what filters the client wants to apply to its subscription and its notifications, for example, if it only wants encounters of a certain type as opposed to all encounters, it has information about the communication channel that the client prefers to receive notifications through, and it also has some information about what kind of content the client wants to receive in the body of the notification.

The subscriptions framework actually defines three basic types of content for these notifications. There is this concept of a ping-only or an empty notification, which has virtually no content. This is important because there is going to be no PHI that is actually carried in the message, so it is a little bit more privacy-preserving, but the client then has to go out to the server and query for additional information to figure out what actually triggered a subscription and get information back on those resources. Somewhere in the middle is this ID-only type of notification, which has a limited set of content, being the identifier for the resources that triggered the subscription, and the notification provides a URL so that the client can go back and query to fetch additional information on those resources.

Finally, there is the notification that includes everything, the full content of the resources that triggered the notification, so the client does not have to go back and actually query for that information. It has it right there in the notification bundle. So, notifications do come as a bundle resource. They also include what is called a subscription status resource, and that resource provides some additional metadata and context about the notification. The last thing I wanted to note on this slide is that the subscriptions framework changed significantly between FHIR Release 4 and FHIR Release 5. Many of the concepts that I just talked about, like subscription topics, did not exist at all in FHIR R.4, but there was work in an interim release of FHIR, FHIR R.4B, which included a methodology for mapping between the different approaches, and of course, FHIR R.5 has the full subscriptions framework as we know it today. Next slide, please.

With all of that in mind, a quick summary: FHIR subscriptions provide the ability for a FHIR server to proactively notify a client or other system when new information has been added or existing information has been updated. These subscriptions can help reduce server load by reducing redundant queries, and they can also help automate certain system workflows. So, in HTI-1, we request comment on a few things, one being the maturity of subscription-related resources in the FHIR R.4 standard, and then, whether alignment with the FHIR R.5 standard would help avoid costly refactoring of these resources and/or help give more time to the industry to test the various features and capabilities under development, whether we should define a minimum set of description topics so there is a consistent implementation instead of expected behaviors for clients to build around, and finally, any other considerations related to security, the communications channel by which clients can receive notifications, notification payloads, or anything else that might require additional specification in the subscription framework or a subsequent implementation

guide. So, I think the plan is to pause after each one of these to allow for discussion, so that is what I will do, or I can just jump right into the next one if that is preferred.

Hung S. Luu
Let's keep going, Alex, and then, after you are done with all three, you and Brett can answer questions from the Task Force.

Alex Kontur
All right, sounds good. If you can go to the next slide, then, we will start on SMART scheduling links. So, the next RFI we want to discuss today is SMART scheduling links. This standard is aimed at a relatively narrow use case, which is enabling the discovery and booking of appointments, and one of the ways that you can think about this is the way that we use travel aggregators to be able to book flights from the airlines to compare the types of flights that are available. The basic workflow here starts when a client queries an appointment service, known as a slot publisher by the lingo of the standard, to discover some basic information about which appointment slots are available.

The standard supports some basic search capabilities, things like filtering appointments by geography, specialty, which health system is providing them, and that sort of thing. Once a client finds an appointment slot that works for the user, it can follow a link from that slot to the provider's booking portal, and that will enable the user to actually book the appointment. In the process of booking the appointment, the booking portal might ask the user to supply some additional information, but the scope of this information and the content of this information is really out of scope for the scheduling link standard itself.

Looking under the hood at some of the technical components here, the slot publisher appointment service publishes a series of JSON files. These include an overall manifest of all of the information related to appointments and appointment slots, and a client can use that to iterate through and discover appropriate appointments. There are also location files which describe the physical locations at which these appointments are available, there are schedule files, which help map specific services to appointment slots that are available at locations, and then, finally, there are the slot files themselves, which provide the discrete data about the available appointment slots. These slots can be pretty specific, something like an appointment at 2:00 p.m. on such and such day, or they can be more coarse-grained, such as an appointment somewhere between 9:00 and 5:00 p.m. Next slide.

So, just to recap here, SMART scheduling links enable providers to advertise things like available vaccine appointments using a lightweight, scalable API, and also enable clients to go in and book appointments. In HTI-1, we do request feedback on a few things, including the maturity and scope of the SMART scheduling links implementation guide. The comments on the guidance from the implementation guide about how publishers can advertise API endpoints, and whether there are any approaches that we at ONC could take to ensure the discoverability of APIs, whether there are any other appropriate scheduling-related activities to consider led by the industry as potential models or approaches for this, for example, we know that there is an Argonaut scheduling implementation guide out there, how to best ensure the accuracy and timeliness of appointment information when it is made available, and finally, how to support the scalability of the standards for use in a variety of different healthcare settings. Next slide, please.

So, the last RFI to cover today is SMART Health Links, and you might already be familiar with the concept of SMART Health Cards, and I am going to be talking about both of them here because they are conceptually very similar. Basically, the idea behind both of these standards is to enable users to take a limited set of information and to make that information portable so that it can be stored or presented by the user at a later time for whatever purposes that they need. So, a really common example of this to help wrap your mind around it has to do with vaccination records, especially when we are talking about providing or demonstrating proof that an individual has received a COVID vaccine.

Basically, what can happen is that SMART cards enable the vaccination site to take a digital record of the patient's vaccine. You can encode it as a QR code and then provide that QR code back to the patient, whether on paper or additionally, so that the patient can go take that QR code and share it freely with other parties, whether that is a mobile health application or some other entity that needs to verify that the patient has received a coded vaccine. There are some drawbacks to the SMART Health Card model because we typically associate these health cards with QR codes. There are some size limitations inherent to the QR code standard that we need to worry about, and so, if we have a larger set of data or a more expansive set of vaccination records, for example, it can be hard to fit all of those into a single QR code and make that available.

Likewise, we tend to think of health cards as more static in nature, that the data is not necessarily expected to change over time, but to address some of the limitations of the health cards model and the QR code approach, and just to offer a little bit more flexibility to implementers, SMART Health Links build on top of the SMART Health Cards framework. I am not going to get too deep into the technical details of each of these standards because they are fairly complex and not terribly pertinent to what we are talking about today, but I did want to drive home some of the vision behind both health links and health cards, and that is really to put more control into the hands of consumers or patients in terms of what information they want to share, and then how they can actually share that information.

So, by turning FHIR resources into these cards or making them links that are otherwise accessible, the consumer can more readily share specific sets of information for specific use cases however they please, and that is by doing things like opening a link to that information in a browser or otherwise integrating with a mobile application. One thing to note also is that these are both framework standards, again, so they do not specifically detail any use cases that are required for implementers to follow. Next slide.

So, just to summarize here, SMART Health Links uses a very similar approach to that used by SMART Health Cards to provide individuals with deeper control over with whom and how they share their health information. SMART Health Links itself is designed to overcome some of the limitations of the SMART Cards paradigm and to enable even more robust sharing of information. So therefore, with all that in mind, we do request feedback on the value and feasibility of the SMART Health Links standard, any concerns regarding its implementation, approaches that ONC could take to encourage the rapid advancement and implementation of SMART Health Links, and finally, any other promising industry-led activities that we should consider that are aligned with the FHIR standards that could help improve interoperability using health IT. So, that is my overview of these three RFIs, and I am happy to turn it over to Brett for any additional remarks or discussion from the workgroup.

Hung S. Luu
Ike, you have your hand up.

Steven Eichner
Yes, I do. I guess this is both a question and an observation. One of the issues around SMART Card utilization, and this is not necessarily strictly a technical issue, but a usage issue, is discrimination based on the application of SMART Card components. For example, looking at a SMART Card that happens to contain vaccination information may not include information about an individual's disability, pushing the person with the disability into separate manual screening and denying them timely access to the same venues. Again, that is not a technical issue with the technology, but it is an implementation challenge, and I am wondering if there is something in our proposed regulation that helps address that and cut those implementation issues off at the knees because it is a real issue in looking at discrimination. That may be something that we want to bounce to the Annual Report Workgroup, but I think it is a related issue.

Hans Buitendijk
This is Hans. I am just curious. Part of the capabilities that were agreed were that you would necessarily have all data available based on what was actually agreed to be on the card, but there is opportunity, not that it is currently necessarily done, but there could be enough information on it as well to get more information to query for that. So, would it be a suggestion to look at that implementation guidance around the use of this, where not necessarily all data can be included, to consider that there is opportunity to go back to the source to potentially get more? But even then, the source of the cards that provide that information may not have that information either, so it is a larger challenge of how much you can put on and where you know to query to get more information if it is not on, but you need it.

Steven Eichner
Right. As I said, I do not think the issue is a purely technical one. It is certainly not about providing the data. The issue is looking at how the SMART Card or how the SMART Link is actually being used in practice so that you are not creating an additional for folks where a decision is being made based on the content of the SMART Link or the SMART Card and putting an unnecessary burden on a subset of the population. Again, it is not a technology challenge, it is a usage challenge.

Hung S. Luu
Steven?

Steven Lane
Is there an inherent technical limitation in the quantity of data that can be tucked behind the QR code? Brett, you are shaking your head yes.

Brett Marquard
Yes, there is. I cannot remember where the cutoff is, but it is kind of a fun project, actually, with SMART Health Cards. As the barcodes get denser and denser, it actually gets harder for people to even scan them, so if you see an ad on the front of a store, they have big, thick blocks, but as you pack more information, they get tighter, and there is actually a limit. I do not remember how many immunizations it was when we were testing it, but it was not very many. I can get you the exact number before the call is over. So, no, you

could not embed a C-CD or a full three years of data unless there was a very healthy patient, so that is where SMART Health Links was born, to be able to reach back and download a specific set of information.

Steven Lane
So, a card itself, Brett, actually contains the immunization data in this case, whereas the link sends you back to the source.

Brett Marquard
You got it.

Alex Kontur
It would not necessarily send you back to the source. It could also send you to a static webpage where the information is hosted, so there is a lot of flexibility inherent in the standards. You can have a tighter integration to an API so you can go pull the full set of data back from the source, or it can go to some other statically hosted point, sort of like when you go to a restaurant these days and they give you the QR code for the menu. The QR code does not usually fit the full menu, it is just a link to their website where you can go view the full menu.

Hans Buitendijk
We do need to keep in mind that with these contexts, the source being referenced, depending on what kind of source you are trying to get to, may not have the data that you are interested in either, based on the nature of the data of interest in the healthcare context, so in that regard, we always have to be a little bit aware that yes, we can link back to a source, maybe multiple sources, but there is no guarantee that they have everything, either.

Brett Marquard
Hans is right. Let me just talk about what I know about SMART Health Links and where I see it going to give folks something to think about. So, SMART Health Links grew out of the idea of wanting to include more than just the COVID vaccine in the cards, and more information, and in the current state of the industry today, there is a group that has done some pilot work in the International Patient Summary, where a traveler is moving across borders and wants to be able to share a summary of their record with a new provider, so there was actually pilot testing at the May connectathon where somebody was actually able to have a SMART Health Link, which then was linked out to a server to download that information, and that has some potential in the U.S. market. I think the part where I get very excited about SMART Health Link, and there has also been some private work around this, is around immunizations. There are a few state registries with enabling SMART Health Links to immunization records.

So, when I think about SMART Health Links, the opportunity of what they can do is huge, and the idea is the patient is helping mediate, saying, “Hey, here is where my record is,” but of course, there are all kinds of complexities, like when they send a whole health industry or what is included at that SMART Health Links location. For me, when I think about what we could actually do with SMART Health Links today, I think an immunization manifest from providers would be enormously helpful. For those of us with small children, signing up for schools and camps and trying to get immunization records through those people is not a small feat, and the idea that you would be able to share a QR code with which that particular school nurse could download that information would be an incredible benefit to communities.

Steven Eichner
Except, Brett, that is exactly the problem. I happen to have a disability that limits my ability to be immunized, and unless that immunization information contains information about my exemptions that is legal, then when I go to present the information, you look at it and say, "Oh, you are not immunized, you cannot come in our front door," even though I may have a perfectly valid and legal exemption, but that is not reflected in that record, so now you are putting a burden on me to have to go through a different process to provide this exemption information. Again, this is not a technical issue, but the application of the technology is putting a huge, unbalanced burden on a separate set of individuals.

Brett Marquard
That is a really important thing that the technology needs to accommodate, and my immediate response is that I do not necessarily immediately think it could be more of a burden. Maybe there is a SMART Health Card that is issued to folks that are not able to be immunized, so it is all embedded right there, and there is no SMART Health Link, and that is something you display in that workflow, or maybe in the SMART Health Link callback when you get that payload, and in that payload, there is a signed indicator that you are not able to get that, or maybe it is that the process you use today continues.

Steven Eichner
As I said, it is not a technical issue, it is an implementation issue, and the standards here are looking strictly at the technical implementation. I am suggesting that in conjunction with the technical guidelines, there need to be guardrails in place so that you cannot use the technology to actually create a framework that is discriminatory.

Brett Marquard
Sure, I totally understand. That is reasonable.

Hans Buitendijk
This is Hans. Just to comment on that, I think this is actually a very good example that applies to Health Links, and you go to CDS Hooks, you go to subscriptions, and you go to a couple other ones. We have to be very cautious suggesting certifying to these "base" standards. They provide a key capability of descriptions, Health Links, CDS Hooks, etc., but not until you have the context well defined and can address issues like this as well on how to do that, what is expected minimally, and what to include at minimum. Having a consideration of certification is hard. It is along the lines of certifying against HL7 Version 2, HL7 CDA, or HL7 FHIR R.4. We can all do it in 10 different ways or 100 different ways using the same constructs, similar constructs, slightly different for the same use case, and in examples like this, we might miss something. So, I think generally, a lot of these fundamental capabilities are starting to be mature technologically, but do we have sufficient implementation guidance, depending on the use case's different needs for that that are sufficiently ready, and that is really what is supposed to be the focus of certification, so that we can consistently implement that and that we therefore can communicate with anybody seamlessly.

I do not think just pointing to these base standards does it, and that does not mean that they are not mature enough, as they are quite well along to be able to do that and provide that context, but that needs to be built out to make sure that we do that and do not run into these kinds of challenges unnecessarily and grow

into that. So, the general feedback that I would suggest is that standards sufficiently mature should start to really work with it and get clear, but build the implementation guide and focus on that and on a number of use cases for each one of these where it would make sense to consider certification because we want to have consistent adoption, wide adoption, easily scalable, etc. to get interoperability without special effort. Otherwise, it is going to take special effort every time around.

Steven Eichner
Hans, I would like to thank you for saying it in a much more eloquent way than I did. I think I would like to add one more phrase, that it can be used without special effort.

Hans Buitendijk
Fair. I completely agree.

Fillipe Southerland
This is Fil. Maybe this is a segue as we are talking about use cases. There was a comment from Mark in the chat about the FAST shared care planning use case, and I was wondering how this would interplay with some of the FAST initiatives and maybe getting a little information on your comment there, Mark.

Michael Berry
Mark is a member of the public, Fil, so he cannot speak until the public comment period.

Fillipe Southerland
Okay, maybe we can wait until that point, then.

Brett Marquard
I was going to add on a little bit to Hans's comment about baseline functionality. I listened to the CDS Hooks chat last week and thought it was very good. What is interesting about certifying base functionality is that there is an assumption that when everyone reads that… Subscriptions is a great example, actually. "I will be able to subscribe to my care team updates and ADT events, I will be subscribed to public health case reporting or specific conditions, I will be able to subscribe to all these things!" So, if you create the certification criterion that is just wide open, different EHR vendors approach it slightly differently, and every reader thinks it solves their problem, but in the end, you have sort of enabled this functionality, but it is not enough for us all to grab and coalesce around a use case. So, for each of the subscriptions, SMART Health Links, CDS Hooks, it is great to specify to support the base standard, but then to be very specific in one area so that we at least know everyone is rowing in the same direction on that piece, and then, over time, you can expand what people do.

Hans Buitendijk
To amplify that further, as we do in a number of cases, we are pointing in an implementation guide to one or more underlying technical specifications, and therefore there is agreement on how to interpret in that context that unlike specification, you really do not need to then point to the underlying specification as a separate certification card anymore because the only way you can test and adhere to the implementation guide is that you correctly and consistently interpret the underlying standard. Yes, in some certification requirements, you need to support Version 2.5 or whatever, and then the LRI or ELR implementation guide, and that is all good, in a way, but ELR is sufficient. It will pull in what it needs, and once you do that, you

start to get a lot more consistent in the way that you are applying the standard to begin with. So, it is typically much more important to focus on the implementation guide to get **[audio cuts out] [00:34:59]** than the standard. We are seeing all the varieties of Version 2, we are seeing all the varieties of FHIR, and we are seeing all the varieties of CDA. That is what happens if you point to the underlying standard.

Steven Lane
Hung, you have your own hand up. You have the chair's prerogative.

Hung S. Luu
Yes. So, I was actually very intrigued by the FHIR subscription because of the fact that… Is this intended only towards patient information, or is there more flexibility in its application? Because I can definitely see it dovetailing with some of what the SHIELD Initiative is trying to accomplish. I will lay out some background. So, the strategy for SHIELD is that there would be a central repository of curated standard codes for basically every test that has been approved by the FDA, and so, the thinking is that by having these codes pre-curated, we can decrease the burden on laboratories and have an authoritative source of truth so that it would be easier for laboratories to go and look up the source of truth in terms of the correct coding for their test based on the manufacturer, but also have a way to pull that information down, maybe by API, and be able to encode their local menu with the curated codes.

One of the issues is, of course, standards never stay static, and there may be changes that are made to the code necessitated by evolving standards, and so, one of the things that is really exciting about our description is the ability subscribe and be able to be informed of any changes in the codes that have occurred and to pull down those specific changes rather than having to download everything each time. Is that a possibility with this, or is this more intended towards patient information?

Brett Marquard
No, that is a great use case. A lot of use cases within the HL7 community talk about patients as the primary target, but you are right. The way it is designed is to support subscribing to any FHIR resource change, and so, a topic could be defined to do what you described.

Steven Lane
So, my understanding is that our goal here as a workgroup is if we want to provide specific input regarding the readiness, suitability, or utility of any of these three FHIR tools… Hans, I heard you that we may not be ready as an industry to really see broad adoption of the SMART Health Links, but these other two, the subscriptions and the scheduling links, certainly seem very appealing and could provide a lot of value if they were broadly available across certified health IT. Brett, I am really interested in your sense as our invited expert. Do you feel that these first two are sufficiently mature to be considered by ONC for a future round of updates to the certification criterion?

Brett Marquard
Just to make sure, were subscriptions and scheduling the two you zoomed in on?

Steven Lane
Yes. Maybe just start with subscriptions. One at a time, right?

Brett Marquard
So, I looked back through my notes to remember… So, the Argonaut community ran a subscription project two or three years back, and was part of the refining of the design, and so, there was targeted input and there have been several connectathons. I think the idea of this committee recommending subscriptions proceed is a good idea, and I am little bit careful in my wording here. Because we have this interesting situation at HL7 in that there is kind of an R.4 approach, an R.5 approach, and an R.4B approach, and I have my own opinion, but I think it would be wise to direct the industry on a specific topic and decide which version they think is best.

I know that is a little loose, Steven, but I rewind back to 2015, when the CURES rule came out, and ONC said, "Hey, create open API, create documentation on your APIs to meet these core common clinical data elements." The industry rallied, came up with the Argonaut Project, and wrote some guides around that. I think subscriptions is one of those cases where I am not sure I would name a specific version of it right now. I would name the capability, and I would name the specific topic that you wish to enable. I will pause there for hands before talking about the schedule.

Hans Buitendijk
Building a little bit further out, looking back at having open-ended functional certification go out and then fill it in, that has been helpful in a number of areas to do that and make that progress, and for some, but not all, there was a collaboration to identify at least the start of a common approach, but I also recognize that quite a few did not, and the rework that needed to go into this overall from that perspective, if we look at our EHRA members as an example, needs to be considered as well. So, it is a balancing act that, at this point in time, particularly if we look at subscription, where we have three alternate ways to go about it, you do the R.4 way, the R.4B way, or the R.5 way, would not necessarily lead to it content-wise, maybe, but technically, they would lead to different things. I cannot do it consistently across the board.

So, I think we need to be very careful with that. With the combination of it, I would be more inclined not to go to the open-ended for subscription, but am more focused on ONC working with the community to establish which one of the three. Ideally, we can work with R.5, which is still able to work with R.4 content, which everything else is pretty much in. Can that work, and can we then rally around an initial couple of particulars to really move forward on that, and then others can start to build on top of that and snowball? So, I would be a little stronger in the perspective of how ready it is, kind of, but not enough to open the floodgates by just saying subscriptions and stopping there. I think that is too wide open, too much of a variety that would not be helpful at this point in time.

Steven Lane
Sorry, Hans, what specific guardrail or topic would you recommend?

Hans Buitendijk
There can be a couple of different topics that I think ONC and others can start to focus on. I would not say it should be considered for certification in the next round. Consider it as identifying, with the industry, what to then focus on, how to do it, and then being ready to do it.

Steven Lane
Are you suggesting introducing a functional requirement or naming the FHIR spec?

Hans Buitendijk
I would suggest working on defining the spec, the implementation guide that uses the subscription with the agreed-to, underlying format. Is it R.4, R.4B, or R.5? So, I would recommend they define what the subset is with the industry, very particularly with the HL7 community.

Steven Lane
So, basically, just a recommendation to continue to work on this and move toward a requirement, but with the input of industry?

Hans Buitendijk
Correct. I think an open functional requirement is going to be too wide open and lead to a lot more rework than necessary, and between now and the next round of certification, I think there should be ample time to explore that and have a much more focused discussion on what that would be, as opposed to leaving it open.

Steven Lane
So, I see you have actually already entered some recommendations in the spreadsheet, which is great.

Hans Buitendijk
Right, because I believe that when we are talking realistically and start to look at this, it is about two or three years out. Now, there is generally going to be a lot on our plate already with whatever is going to be subject to certification now, but two to three years' time, give or take, is a substantial amount of time to be able to explore or get more experience in that space and really understand what is now the real focus we need to have, so I think we can go further than just the functional.

Steven Lane
And you feel like you have captured that adequately in your recommendation in the spreadsheet?

Hans Buitendijk
Close, but based on today's discussion, we can refine it further.

Steven Lane
And then, you also put it in for the scheduling as well.

Hans Buitendijk
Same theme. It is essentially the same theme in that, but here, it is different for scheduling in that we have seen over the last couple of years, as there was interest in getting access to slots, that there are two techniques that can be used. One is the one that is being proposed here. The other one is that you actually use the FHIR appointment slots and do the queries there. There are pros and cons to either one. In one approach, you have to be very cautious that as you make slots available, by the time that somebody comes around, are they actually still open?

The other one is dynamically that you can maintain that so that you know it is open, but depending on the context, performance and volume may make that challenging. So, we have not seen consistently that

everybody needed this and could do it the other way and vice versa, that some needed it and did not know how to make it work, so the question is is this something that everybody needs to support, or is it more that you have a couple different ways to get the exact same information, but not necessarily this technique? That is where I would be concerned, requiring one over the other at this point in time, as both directly using slots to query or making a list of slots available are valid.

Hung S. Luu
I guess my concern with that is the longer we do not settle on something, there is going to be fragmentation. If we continue to have alternative ways, that is not always the best approach for interoperability, so I guess my preference would be to have everyone rally around a preferred method moving forward rather than to have all these alternative methods continue to proliferate which may not play well together.

Hans Buitendijk
The content and the resources that are in play are exactly the same. It is the technique that you use to identify the open slots that is different, but it is the same data, the same format, the same FHIR. I think that is where the challenge is in this case. It is not that you are dealing with different data expressions, it is a different way of going about finding the open slots.

Steven Lane
So, Hans, I think Sheryl's input on the scheduling tracks with yours. Would you agree?

Hans Buitendijk
Yes.

Steven Lane
Basically, more work needs to be done, we support continuing work on this, but not adding it yet to the standards for the certification requirements.

Hans Buitendijk
Correct.

Brett Marquard
For anyone who is interested, a few years back in the COVID scheduling craziness, like March of '21, we did do an evaluation of what everybody supported from the Argonaut scheduling IG. For background, that guide was published in 2018. One Argonaut vendor implemented all the features of it and the other Argonaut vendors implemented pieces of it, which is okay. It did not go through the HL7 standards process, it did not go through the certification piece, and sometimes that happens. So, what that page does is help scheduling building blocks. It summarizes the capability of exactly what some of the vendors that were willing to share did, and it is a little interesting in how there is a fair bit of variability in how the vendors share appointment types and availability, but many of them have core functionality to meet third-party scheduling.

It is tricky because this idea of the Kayak example comes up a lot. I know Alex and I presented it, but in my head, it hurts me to think about insurance, visit types, provider types, and all kinds of special considerations that may have to go into scheduling a visit, so I love the idea of being able to log in and search for scheduling, but I think for it to be successful, it would have to be scoped to some types of visits or some

specific area to start because if it is just wide-open, enabled, remote third-party scheduling, I do not think that is clear enough to get to the finish line.

Hans Buitendijk
I completely agree with Brett, and maybe that can be the focus of the recommendation, that there is that alignment on consistent expression of the data, what is needed, what is not, etc., and keep that somewhat distinct from the technique in which to query for slots, where one technique is better than the other, depending on the environment, but we want to end up looking for the same data. How do we do that, what is needed, and what is minimally required? So, perhaps that is the focus for ONC to look at and they can build on the guidance that has been built in Argonaut and can focus on stepping that up to R.4 for further aligning it so that the building blocks that you work with are consistent. And then, the way you can query for it depends on the context as to which one is most appropriate and what everybody needs to support that and distinguish the two. Brett, would that also align with how you are thinking about it?

Brett Marquard
Yes, but it is funny. With scheduling, what is hard about it Hans, is that scheduling as a concept has been around for 20 years. I talked to Steven for five minutes last Friday and said, “Hey, how long has Palo Alto been doing this?” I think he said over 20 years, through the portal.

Steven Lane
A long time.

Brett Marquard
Yes. So, Hans, I think about this one a bit. I understand why the portal works, as you are an authenticated user, maybe you have another insurance, and you can require these rules, but I sometimes scratch my head a little bit, thinking about how we move this scheduling piece further forward, and with sharing slots, we learned a lot in the COVID vaccine piece of SMART scheduling links for people to publish their slots, but across the EHR community, not everybody adopted that because there were a lot of third-party pharmacies, grocery stores, and others that got in to do some of the work around that. Not every EHR saw a need to build on that. Sorry for going around here. I struggle with scheduling because it has been around so long, and to get to the vision of Kayak or some similar type of model of scheduling, it is tricky because there are so many pieces out there. This is a comment I had while chatting with Josh. It is always easier to drive adoption when we have these new capabilities rather than reworking existing mechanisms, and this is one of those cases when there are a lot of existing mechanisms that are really hard to rework.

Hans Buitendijk
I think if we can get to better alignment and agreement on what needs to be part of an appointment, of the slot definition, or of those different elements of it, the techniques in which you are going to access it, whether you do it dynamically or directly against the slots and query for them as needed or whether you publish them, in essence, you are still displaying the same information. So, can we get agreement on that and align there? The other ones will follow as needed.

Brett Marquard
So, maybe here is a crazy question. What if you pick the specific visit type, like PT? Taking Hans's comment about standardizing a specific data element, pick a visit type that does not have the restrictions of a specialist but that is hard to schedule and require that as a starting point. Is that too crazy?

Steven Lane
Could it just be a PCP visit?

Brett Marquard
Right, PCP, physical therapy, lab-only encounter… I am thinking of the times I am searching… There is another EHR vendor I talked about this with too, and they just said, "Gosh, the logic complexity we have around scheduling patients is pretty high," but if you could zoom into ones that do not have that, then maybe this could grow into something bigger.

Steven Lane
I know that we allow patients to schedule their own visits with PCPs, and there is just a simple logic that says if there are more than two items, you get a long visit, otherwise you get a short visit, or if you are over such and such an age… You could bake that in. So, Brett, you are saying you think the industry could be prepared for that as a certification requirement, something really focused.

Brett Marquard
I do.

Steven Lane
Hans, could you live with that? We do not want to put too many brakes on these things, right?

Hans Buitendijk
No, but I think it would be helpful to work towards that to be clear on what that would look like because we then need to understand for that kind of slot appointment, what is the essential information, and everybody can then aim for that in an agreed-to format, FHIR R.4 or whatever, when we are at that point in time. I think that would be helpful, and again, we can snowball from there. Whether you need to make that available in both ways, directly accessing the slots to find them or a published set, or that you can have a choice, or do one or the other, but the client needs to support both, that can be part of that as well because really, that depends on the underlying sources as to which one of those techniques is most suitable, and the client can support either. Currently, we are doing multiple supports of the same information in other places as well, like patient reporting or other places. It should not be just anything, it should be very well defined.

Brett Marquard
So, the way the Argonaut community works is every year, we pitch new projects, and there is a vendor who continues to pitch the scheduling project as something they want to continue to progress, and again, the whole community did spend a year on it in 2018, but then other things took priority, but I definitely think there is still interest in this area.

Steven Lane
Hung, do you feel like you have captured enough of this discussion to be able to draft some recommendations?

Hung S. Luu
I think so.

Steven Lane
Great. Brett, do you have anything else to add before we try to make use of the last half hour here?

Brett Marquard
No, thank you.

Steven Lane
Thank you so much for making the time to join us, and for coming last week as well, just to get up to speed on the process.

Brett Marquard
Thank you for having me.

Steven Lane
Great. Hung, do you want to try to get us through some of your draft recommendations?

Hung S. Luu
Sure. One question I have, though, to begin with is I have concentrated on recommendations where we are making a specific recommendation beyond supporting the movement of the ONC, and so, in the case that is on display, the Task Force is fully supportive of moving to USCDI Version 3 as the baseline level, and so, I guess my question first to Mike Berry is is there value in also drafting that as an official recommendation or having it implied, given the fact that we did not comment on it specifically?

Michael Berry
I am not sure, Hung. We have not run into that before. Let me give it some thought.

Steven Lane
We actually have, Mike. In past Task Force reports, I think we have gone item by item and said yes, we support this, yes, we support this. It does take a bit more time, but it does allow participants in HITAC and the public to see that we thought through things line by line. I could personally go either way. We will have a slightly longer presentation if we include "we support," though it does seem to…

Michael Berry
I agree, Steven. I misunderstood the question. You are right, we have done this in the past. Just to acknowledge that the Task Force worked on it, as you said, I thought we were talking about this one here, things that might be out of scope. How would we word that? Would we just say it is out of scope and refer it elsewhere?

Steven Lane
Yes, it was more this underlying item for Row 3, which was updating the standard to USCDI V.3. So, it sounds like you are saying yes, let's essentially have a slide for at least every row in our spreadsheet, every item we were asked to review, and in this case, have it say that we support the update.

Michael Berry
Yes, that is right. We would assume that that would address it.

Steven Eichner
Or at least concur with the proposal. Think about if it is enthusiastic support, an acceptance, or an acknowledgement of an issue with a suggestion.

Hung S. Luu
That is good. Hans, you have your hand up.

Hans Buitendijk
Thank you. I have two comments, one related to Row 2 and one related to Row 3, in context of this discussion. On Row 2, does that mean, Hung, that the sense is that since there is not a recommendation in Column J yet, it is intended to be a signal of general agreement and support, or is that one to be worked on? I just want to be sure because of the other comments that were made in there.

Hung S. Luu
No, that particular one needs to be worked on.

Hans Buitendijk
Okay, I just wanted to be sure. The main comment is on Row 3, then, where it indicates it should not be part of the annual report. Actually, this would already be very pertinent to the final rule for consideration, where, already, this is increasingly a concern and should already apply to the interpretation of how certification is done against USCDI Version 3. So, I believe that that comment cannot move to an annual report comment. It is very specifically about how USCDI Version 3 relates to a (g)(10) or a C-CDA (f)(9), or whatever that one is. It is already a concern, and should not be persisted much longer. That is why I would not put it out.

Hung S. Luu
Fil, you have your hand up.

Fillipe Southerland
My comments are pretty closely mirrored to Hans's. I think this transition from V.1 to V.3 is already an issue for specialty EHRs, so I was wondering if, as an alternative to saying we are fully supportive of moving to V.3, saying we are supportive of moving to V.3 with the condition that ONC survey the landscape of specialty EHRs and consider burden and mitigating factors to allow their participation within the full USCDI. Speaking as a specialty vendor, USCDI is rolled into the base EHR criteria, and so, it is a major issue for us to be able to apply to this.

Hans Buitendijk
Using that very simple example of EHRs, the solution to it needs to be done that it supports specialty EHRs plus other HIT that otherwise would not be able to certify against what they would like to certify against, and that they could, but they cannot today. So, the EHR has a couple of very good examples and other HIT of interest also has those kinds of examples.

Hung S. Luu
I am not particularly comfortable with the language of "condition." What about if we say that the Task Force is supportive of moving to USCDI Version 3, with the recommendation that the ONC develop a simultaneous strategy, so on and so forth?

Steven Lane
Does that satisfy, Fil? There will be two recommendations, or one support and one recommendation.

Fillipe Southerland
I think that seems reasonable. I think the last survey for specialty EHRs by ONC was something like 2012, so I think it is important to understand where we sit with specialty EHRs and other HIT, as you said, Hans. We just need to get a snapshot of where we are at as part of this, but then roll in these version upgrades, roll in specialty EHRs and other HIT considerations, and really understand where ONC is targeting uptake of USCDI. It cannot just be acute and ambulatory.

Steven Lane
What do you think of this wording, Fil?

Fillipe Southerland
That sounds great.

Hans Buitendijk
Can I make a suggestion? I think a resurvey would be helpful as a tool to understand what the scenario is, but I think the emphasis should really be that ONC identifies for the upcoming certification rule how it can enable specialty EHRs and other HIT that need not support all of USCDI, that it still has the opportunity to be certified. I understand Hung's concern with putting the term "condition" in there, but we really want to make sure that every avenue is being explored, executed, and acted upon so that in this next round, that relief is already visible.

Steven Lane
That seems pretty prescriptive, Hans.

Hans Buitendijk
It is, but it is a recommendation that they focus on that and work on enabling that.

Fillipe Southerland
Right, and I have trouble watering it down, just coming from an industry that has historically been overlooked with this, so I do want to make sure, as you are saying, Hans, that we get ONC's attention with this.

Hung S. Luu
Are you comfortable with the language? What is your suggestion?

Hans Buitendijk
Can we work on that a little bit more? We do not have it exactly right now, but we are trying to find something that is not stating a condition, but can be stronger than this, because I am not sure whether we can find the exact word right now by wordsmithing, but if we want to get as strong as is reasonable, and I understand, Steven, where you are coming from and that we do not want to be too prescriptive in how they are going to do that, but there is a problem and a concern that needs to be addressed so that it enables more EHRs, more HIT to be certified of these kinds of capabilities of making the data available, particularly around (g)(10) and, if I am not mistaken, (f)(9). I always get confused on C-CDA.

Fillipe Southerland
Right, and I will add there is a framework in place for ONC that they developed as part of their pediatric recommendations that targets these specialty use cases that could potentially be extended.

Steven Lane
Well, Fil and Hans, why don't you guys work on some additional language for that one, and hopefully we can revisit that next week?

Hans Buitendijk
Yes.

Fillipe Southerland
Sounds good.

Steven Lane
Do you want to do the next one, Hung?

Hung S. Luu
Why don't we move down to J8, Row 8? So, this is the recommendation of the Task Force for the pharmacy interoperability request for information. We heard from our subject matter experts that they feel strongly that Version 13 is more appropriate for certification than Version 12, due to the fact that there is functionality and patient demographic information that is available in Version 13 that is not available in Version 12. And then, there is the recommendation that the ONC should require support for both NDC and RxNorm because they are complementary and provide different information, and also that both the XML and EDI formats should continue to be supported while the developers move towards the JSON format, so, rather than having an intermediary migration, we can continue to support both, with the final destination being JSON format, and then, lastly, to continue requiring ICD-10 with the addition of SNOMED as a complementary addition, but not a replacement for ICD-10.

Hans Buitendijk
I have a clarification question on the third. Is this meant to be that the source needs to support both XML and EDI or that the source can use either, but as part of the intermediary, it moves into whatever other format is there? So, that is the way to support the migration.

Hung S. Luu
Yes.

Hans Buitendijk
I want to support both, which is fine, but that the source is not required to support both XML and EDI.

Hung S. Luu
So, "require support of either"?

Hans Buitendijk
That would be fine, because then the source only needs to support one, and they can migrate over however they can get there, and the intermediary can pick it up.

Hung S. Luu
Yes.

Steven Eichner
This is Steve Eichner. Another modifier that we probably want to include is an opportunity for ONC to collaborate or confirm that the changes are compatible with PDMPs, prescription drug monitoring programs, and that PDMPs are suited or resourced to also support the change when it is implemented.

Steven Lane
That is not going to be up to ONC, to resource PDMPs.

Steven Eichner
No, but it is, again, tied to that piece of looking at noncertified technology that is impacted by these changes.

Steven Lane
Hung, how do you want to address that?

Hung S. Luu
Can we refer that to Annual Report? I feel that is outside the scope.

Steven Eichner
Well, the challenge is that if ONC puts up this rule and PDMP is not on the same page, they are going to have an incompatibility with what the certification criterion are and the entities that are receiving data that providers are required to report, so you are potentially opening a major issue.

Steven Lane
But isn't that true for all exchange? Any recipient is going to see the evolving functionality of certified health IT and have a period of time to adapt to that.

Steven Eichner
You are assuming that there is going to be adoption of the certified criterion, and public health or other data receivers may simply not have the resources to do it and say, "No, that may be certified technology, but I am not charged, as a public health entity, with supporting certified technology." I am not mandated to do it. I can choose to do it, and it may be economically efficient or wise for me to do it, but if I do not have the financial resources to implement the changes, I cannot do it.

Steven Lane
No, I get it, I am just not sure what we are recommending to whom here.

Steven Eichner
Again, the recommendation is that the alignment in changing standards be coordinated with public health and other entities to ensure that there is the opportunity for noncertified technology to receive this data.

Steven Lane
Is that a recommendation for ONC to work with CDC?

Steven Eichner
Yes, and the STLTs, because it is not just the CDC, as CDC does not mandate the standard. CDC does not dictate to STLTs what data standards they use for state-based transactions.

Hung S. Luu
So, what is the recommendation, then? That ONC work with whom?

Steven Eichner
Work with CDC, CMS, and itself to ensure that sufficient resources are available in PDMPs who meet the changed standard.

Hung S. Luu
I struggle with that because that basically means we should add that to every single one of these, right? That is going to require some investment by someone.

Steven Eichner
Not for every recommendation, but if you are looking at elevating or changing the version of a prescription drug standard, that information, where appropriate, is transmitted to prescription drug monitoring programs, often using the same data format. If you are changing the data format, all receivers need to be elevated to receive the same format.

Hung S. Luu
Can we work together offline to draft a recommendation to that effect?

Steven Eichner
Absolutely.

Steven Lane
What do you think of this, Hung?

Hung S. Luu
Sure.

Fillipe Southerland
With the prescription drug monitoring programs, is this essentially a broadening of the net of certification? So, are we asking these programs to participate as certified HIT, or are we saying that certified HIT must participate with these programs?

Hung S. Luu
I think Ike is saying that this program receives information from certified IT, but does not have sufficient funding to ensure that they do.

Steven Eichner
PDMP programs do not use certified technology. It does not meet the program needs because they are not electronic health records or other technologies, so they do not benefit from HIT vendors making modifications for certified technology.

Fillipe Southerland
Right, and I guess the reason for my question is I am wondering if this is just another form of specialty setting that has not adopted this certified HIT because we do not have standards and studies around that tech?

Steven Eichner
It is not a specialty care area, it is a government reporting program that actually is included in Promoting Interoperability requirements. So, this is another element where, like for ECR, there are requirements on certified technology to meet standards, and elevating to those standards is exactly what is in the certification requirements. There are no certification requirements currently in place for public health systems or other systems that are receiving this type of data, nor are there resources necessarily available to modify those systems to current standards or future standards.

Steven Lane
We need to cut to public comment, and then we can pick this up.

Public Comment (01:19:05)

Michael Berry
Okay, we are going to open up our meeting for public comment. If you are on Zoom and would like to make a comment, please use the hand raise function located on your Zoom toolbar at the bottom of your screen. If you are on the phone only, press *9 to raise your hand, and once called upon, press *6 to mute and unmute your line. I see Mark Savage has his hand up. Mark, you have three minutes. Go ahead.

Mark Savage
Thank you, Mike. I am just being available to respond to the question that was asked in the middle of the meeting. As I recall, when I put the comment about the FAST shared care planning use case and the applicability of the subscription approach, I think it was Fil that asked more generally about FAST use cases and whether they were applicable here, and I was on the ecosystem use case tiger team and I led the shared care planning use case. To my recollection, none of the other use cases contained a subscription function within them. That does not mean that a subscription function would not be useful to them, but I do not think they were designed at that time.

However, the shared care planning use case did do that. We were struggling with the question of what was the single point of truth, sort of version control for a dynamic longitudinal shared care plan, recognizing that not all members of a care team would want access to everything in a real time, so we recommended a subscription approach, thinking that the main doctor, which is not necessarily a primary care physician, would be the single point of truth and one could subscribe to updates based on individual preferences. So, that is my best attempt to answer the general question and provide a little more context on the specific example.

Fillipe Southerland
Mark, thank you for that. This is Fil. I am wondering what the deliverables of that specific workgroup were. Did you have a specific IG that was delivered for that, or were there specific standards referenced?

Mark Savage
We put out use cases, and I put the link to the shared care planning use case in the chat, and these were meant to guide the other tiger teams who were working on details of things, and I was not on those other tiger teams and do not know yet what they have done with that, and since then, FAST has transferred over to HL7, so there may be some further work in different directions that is happening. So, it was basically the document, the blueprint, if you will, specifying needs and approaches that the ecosystem use case tiger team did as a starting point.

Fillipe Southerland
Okay. So, maybe to Hans's point, this is a potential use case that may be a good starting area to look at as these standards evolve.

Mark Savage
Agreed. It would be an immense contribution.

Steven Lane
That is for subscriptions, right, Mark?

Mark Savage
Yes.

Steven Lane
I love that. Okay, well, Hung is going to craft a nice recommendation from all of us to consider. Do we have any other public comment, Mike?

Michael Berry
I am not seeing any other public comment, so we can go back to previous discussions.

Steven Lane
It would be nice if we could get through this item on Row 8 here. To be clear, Ike, I think adding in the specific reference to a specific recipient of PDMP data saying you need to keep up with the standards is pretty focused. As I think Fil was getting at, there are lots of folks who do not use certified technology that are going to be the recipients of data from systems that do use certified technology, and the world will keep turning.

Steven Eichner
Well, I am not envisioning a recommendation saying to direct the PDMP systems to upgrade, but again, the PDMP program is supported, but is a government program. It is supported by Promoting Interoperability, and there is the potential for a missed alignment between the certified program here and looking at the ability for providers to meet Promoting Interoperability requirements in the sense of not being able to maintain an interface with PDMP systems with the current technology, and that puts providers in an awkward position of not being able to upgrade their technology if PDMP reporting is required.

Steven Lane
So, how do you feel about the wording of the recommendation as it is?

Steven Eichner
I think we can tweak it just a little bit offline.

Steven Lane
Okay. Any concerns about the last one that Hung crafted regarding ICD-10 as the primary diagnosis code set with SNOMED CT as a complementary addition?

Steven Eichner
Is there any need to say “as updated” or “as maintained,” or is that inherent?

Clem McDonald
I like it too.

Steven Lane
You said you like this, Clem?

Clem McDonald
Yes, the last one, talking about ICD-10. One of these days, ICD-11 is going to creep in, but I do not think it is relevant yet.

Steven Lane
No, not yet. Okay, so, Ike, you want to make some further suggestion on this piece here in red, or soon to be in red, but other than that, I think we have had our way with this cell. Do you want to try to do something in the last three minutes, Hung, or should we hang it up for now?

Hung S. Luu
I think perhaps we can do 4.

Steven Lane
Yes, 4 would be good. "The Task Force is supported of the recommended adoption of C-CDA Companion Guide R.4." Going once, going twice?

Clem McDonald
Well, just clarify where the different levels of R are. I thought some of them were skipping to R.6. Does anybody know the details on that?

Hans Buitendijk
Yes. If you really want to get the full name, this one is HL7 CDA 2.0 C-CDA 2.1 Companion Guide R.4 for the C-CDA Document, and Brett can correct me if I am wrong. He is way deeper into it than I am. R.6 is in the context of FHIR, where there is talk about where they would go after FHIR R.4. That is where R.6 comes into play. This one is R.4 Companion Guide.

Clem McDonald
Okay, thank you.

Steven Lane
Did I get that, Hans? I do not think I got every word.

Hans Buitendijk
I think that is fine. Brett, are you comfortable with that? I think you are still one of the key owners of that area.

Brett Marquard
Yes, I can paste the title **[inaudible] [01:27:56]**.

Hans Buitendijk
Okay. Yes, that is the real, official one.

Steven Lane
All right. Well, that brings us to the top of the hour.

Hung S. Luu
And we got one done.

Steven Lane

Did we get two? No, you are right. It is just one. I cannot copy from the chat, so do not turn us off yet, guys, so I can retype that. Well, thank you, everyone. Thank you, Hung. We still have lots of work to do to get all of these finalized next week. Please, everyone, pay attention. Keep an eye on the spreadsheet, see how they are evolving, and come with very specific recommendations for how to improve them. We will see you next week.

Hans Buitendijk
Thank you.

Fillipe Southerland
Thank you.

Adjourn (01:29:10)