

**HIT Standards Committee
Clinical Operations Workgroup
Transcript
July 19, 2013**

Presentation

Michelle Consolazio – 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 Clinical Operations Workgroup. This is a public call and there will be time for public comment. This meeting is being transcribed so please remember to announce yourself when speaking and I'll now take roll. Jamie Ferguson?

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Present.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

John Halamka?

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

I'm here.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Martin Harris?

C. Martin Harris, MD, MBA – Chief Information Officer - Cleveland Clinic Foundation

Present.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Chris Chute? Donald Bechtel? Liz Johnson?

Elizabeth Johnson, MS, FHIMS, CPHIMS, RN-BC – Vice President, Applied Clinical Informatics – Tenet Healthcare Corporation

I'm here.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

John Klimek? Joyce Sensmeier? Kevin Hutchinson? Cris Ross? Becky Kush? Wes Rishel? Dan Vreeman? Stanley Huff? Marjorie Rallins? Floyd Eisenberg? Jeremy Delinsky? Kim Nolen? Jay Crowley? Karen Trudel? Nancy Orvis? Terrie Reed?

Terrie Reed, MS, MSIE – Associate Director, Informatics – Food & Drug Administration

Present.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Clem McDonald? And Marjorie Greenberg? Are there any ONC staff members on the line? Well, I know Farrah is on.

MacKenzie Robertson – Federal Advisory Committee Act Program Lead – Office of the National Coordinator

This is MacKenzie Robertson from ONC.

Farrah Darbouze, MPH – Program Analyst – Office of the National Coordinator for Health Information Technology

This is Farrah, I'm on the line.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Thank you and I'll now turn it over to you Jamie.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Okay, great, thank you very much everybody for joining us here today. As I think you all know we have had two previous meetings discussing opportunities for standardization of image sharing as directed by the ONC priorities and so we're here today to continue that discussion with additional and other input from lifelIMAGE and very excited to have this presentation and discussion. Is there anything else that we need to have on the agenda for this meeting?

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

So, Jamie, no addition to the agenda, but certainly an interesting way to frame the lifelIMAGE discussion is that at the Standards Committee on Wednesday, which you participated in so you probably heard this comment, they said, you know, you had some very interesting testimony from Keith Dreyer and Dave Mendelson but it seemed to imply that there were edge servers and that there were central repositories, and there wasn't a Direct query of the image at its source, are you, you know, Clinical Operations Workgroup, going to prescribe an architecture?

And of course I said, of course we are not we are going to get testimony about all kinds of architectures and what I hope as we hear from lifelIMAGE that they'll give us some experience of multiple different kinds of architectures so that we can report back to the whole committee, yes, here is what IHE's pilot was like, here are a couple that lifelIMAGE has experimented with so you can see that we can hopefully come up with standards that in some way will empower many architectures.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Exactly, great perspective to add, thank you. So, I think without further adieu then I think we're ready to hand this over to our presenter and Hamid do you want to do an introduction?

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

I'd be happy to. First and foremost thanks for inviting us here, my name is Hamid Tabatabaie, I'm CEO of a company called lifelIMAGE. I've spent the last 15 out of my 27 year Healthcare IT experience in Direct imaging and image sharing and PACS environments. I'm accompanied by my colleague Mike Baglio who has the job of being the architect for our entire image sharing network, as a company that's all we do. We're funded by Venture Capital and started in 2009 and I'd like to tell you more about what we've seen in the industry and the standards if I may today. I've shared a number of slides that hopefully will get us started in the conversation. Mike would you like to briefly introduce yourself, please?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Yes, my name is Michael Baglio I've worked and been in the IT field for a little over 20 years. Prior to joining lifelIMAGE I was the Chief Architect on the Mass Medicaid Project. I've also done some other large transactions, other large implementations such as the GE Financial Systems where you call in and activate and find out the status of your credit cards. So, my experience is not just related to healthcare or even imaging but it's across the spectrum. But, I have been with lifelIMAGE for 4 years and I'm very familiar with the domain.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

If that serves as a good enough introduction if we may use the slides that would be great, we can go directly to the next slide, please. I know that Doctor's Mendelson and Dreyer gave testimony last week, I attended and listened in. I'll share with you why image sharing is important to lifelIMAGE and why we think it's overall important to healthcare.

In one way or another it's about 120 billion dollars of what we spend and give or take a few percentages, 30 billion dollars of it goes to waste for repeat or unnecessary exams simply because you don't have access to a patient's prior exams. It certainly causes bad decisions to be made. There are certainly delayed decisions in care, additional errors or unnecessary exposure to radiation and its due time we solve the problem because our aging population is going to consume more imaging and the problem is going to get worse if we don't solve it today. Next slide, please.

As a commercial entity we've been very successful, we have a very big footprint in the market right now, this slide hopefully serves to tell you that it's used. Today it's almost used by 9000 active users on a monthly basis and about 150,000 cases a month are exchanged using our network and we're growing, this is just the beginning of utilization. If we may go to the next slide, please.

The use cases are in three general buckets, one is very radiology centric, frankly imaging has been radiology centric because that's where images have been and radiologists are known as the experts. So, whether it's teleradiology or radiologists being able to use a wide area network for reading or accessing priors that's what the sharing is used for but the majority of uses, by virtue of the fact that the majority of clinicians are non-radiologists, is used anywhere from ED, trauma and stroke as you would imagine, outpatient or follow-up visits and most promising is the referral consults, e-Referral and telemedicine part of it, lots of our customers use it so they can have access to the patient's data before the patient arrives, A to decide whether this is an appropriate referral or not and B to better be prepared and triage the patient appropriately.

Certainly transfers and transplants, and surgeries and such, the rest of it you can imagine. There has been an emphasis on the consumer centric aspect, we are a component of the RSNA Image Sharing Project that was funded by the NIH or NIBIB and there is good evidence that that's a practical approach to the market, albeit that as an opinion from our end it probably will lag behind the provider use cases, and it will probably be a better use case once the providers prescribe the use case, as if it were, to their patients. No doubt patients that have critical conditions or chronic conditions will be attracted to the capabilities but consumers in general will probably be better users if their doctors had access to the data. Next slide, please.

Generally, for purposes of architecture we simplify things in our heads at lifeIMAGE and think about things as either ad hoc or network aware capabilities. We think of ad hoc similar to iTunes you upload things to one central area and from there you provide access to others whether it is to transfer the data or to primarily have access to it. The other is more of a Napster model it lets you know where the data is and will move it around as we need to. I think, as a matter of fact, iTunes and Napster were Dr. Dreyer's analogy, so I need to give him credit for that.

On the ad hoc side the requirement seems to be fairly straightforward in that it needs to have a simple workflow, it needs to be secure and it needs to allow someone to decide whom they want to share with, the persons who have access to it for visualization purposes and download.

It's possible to use standards like Blue Button and Direct, we at lifeIMAGE do our best to support those. But, frankly those, as you well know, are standards that were not built around imaging data and as a result of imaging data being very large files I would call those as ideal places to build up. We need to add to those standards the capability of adding a link inside that secure message that goes to the recipient can use a standard and what is that link mean, how do you stream the data and how does the recipient store the data. Those are obviously present in the CDA approach but they are not for imaging purposes. So, it's possible to use the standards but we need to give it more depth. In the lifeIMAGE world we add to it ourselves what is missing and clearly we do it in our own proprietary way but nothing stops us from contributing to a set of standards.

I believe the larger goal would be the network aware approach and that's when we know where images are and on demand we can access it. From a commercial view-point HIEs are starting to have a revitalized life, they're starting to find or at least look for ways to be sustainable and people are looking at them in light of the ACO growth as rails that they can use. So, we're seeing our customers who have signed up for ad hoc purposes asking us to image enable their HIEs. Similarly image enabling the EMR.

We tend to have customers in the larger size market and those typically are a few brands of EMR that we image enable and that basically means right from the context of the EMR we'll either upload data or use shared data.

We believe, from the experience we've had in the last 4 years, at this point we're now blessed with 190 some odd very large hospitals, there needs to be a combination of a centralized model and federated model. VNA is an abused term these days, but if you were to think of it as a repository where everybody dumps their data not every participant in an HIE is willing to use a centralized VNA whereas typically the smaller participants do take advantage with VNA offering if it is offered in an HIE or in a community. If we combine that with a federated model that lets you know where the data is those who don't want to join the VNA will benefit from an infrastructure just as much as those who do.

At the moment the best standard that we have seen out there is XDS, particularly an extension of it with XDS-I, but that too is incomplete and we certainly can use better standards. In our own fun way at lifeIMAGE we call our implementation XDS++ to account for the components that are missing. Why don't I pause for a moment and ask Mike to make a couple of comments about the technical aspect of the standards based on what we've been talking about. Mike, please?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

Sure, so in regards to XDS, XDS and even XDS-I is not complete as Hamid was saying, it does not make searching and finding exams easily not in a standard way. Of course people have implemented it that way but it's not standardized as a whole. So, for example if somebody says "I would like to find John Doe's CT of the head that was done last week" that is not easy to do and it's not something that's standardized across all implementations, each implementation has to come up with their own way of doing that.

It also, even once you find the study, it doesn't make retrieval of the study easy in a viewer friendly way. Viewers often want to see images one at a time, they don't want to receive the complete set of images all at once, they want to...because it's such a large amount of data the best way for the viewers is if the images are retrieved one at one and they're rendered as needed as the user of the viewer needs those images.

So, standards like WADO are incomplete. Another thing is it doesn't address the sharing aspect of it so if I want to share this study with someone else and having a nice end-to-end way of tracking who saw it, the specific user at the other site who has access to it that is not done in an easy way as well.

So, XDS, XDS-I are incomplete, there has been some other work on XDR which is where you push the data from the site that has the study and they put them into a central location. One of the things at lifeIMAGE they received a grant to build...in a clearinghouse and it's the same model. The XDR model is what we're using there where the sending site takes the images puts them into a central place and then those sites who want to receive it are able to then pull it, but even there, again it's incomplete because it doesn't address the images one at a time, it does put them in a central location in a way that is palatable for certain facilities, but then once they are there the retrieval of them is done typically through a couple of other protocols either WADO or RAD-69 and that, as I mentioned, is not complete. So, that's what we found with XDS.

In regards to DICOM itself that would be another option is well why not just send the images using DICOM and the problem with DICOM is DICOM is the binary protocol so it doesn't work well with Internet devices such as load balancers and routers and things like that. So, if you want to leverage some of the advanced features of some of these devices DICOM is not a good way to do it and also DICOM is very heavy.

So, in DICOM every image is wrapped with the header information and when you're sending that over the Internet that's a lot of baggage, that's a large tax to pay for each study. So, ideally you would look at something that's a little lighter and only send the information once.

There is something out there called MINT and MINT may not be what should be used as a standards but something like that. And in the case of MINT the header information is only there once for the whole study.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

Mike we can wait to answer some questions after the slides, if you are done with your comments maybe we can go to next slide?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

Yes.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

Generally what's missing is that technology can be better as we said. We want to emphasize that it works. What we have can be made to work we're a good example of that and maybe even until such time that we have better standards and implementation of those better standards we can focus on image enabling the HIEs so we most efficiently use what we have.

Current standards, as Mike mentioned, are ideally things as payload, as Mike was saying, DICOM is too heavy, MINT, WADO as better ways of visualization, getting rid of redundancy that Mike suggested is in every image with DICOM making it searchable, and most importantly it needs to be an inclusive standard. There are a lot of existing imaging data out there and we need to be able to retrospectively include them. Next slide, please.

We don't know whether or not this is an appropriate topic for today's discussion, but I would imagine no prescription is worth writing if it's not practical. Who pays for it is always a question. We believe the cost of this, if you do it well, is somewhere between \$1.00 and \$2.00 an exam on a fully loaded cost and that includes managed services not just acquiring technology but also somebody to fix what's broken and un-jam a log when you need to do that, that's what we do.

We believe reimbursement should be built in as a compliance component. So, if you are providing a service of scanning an inpatient you should pay for it, particularly if you are compliant with standards and particularly if you're getting paid for doing the imaging exam.

We think that the same entity that produces the images pays for sharing and at the far end who wants to consume it if they need to download it into their infrastructure then there should be a way for them to pay for that component.

So far what we've seen, that is practical both from a vendor who provides this or a service who provides this as well as people who want to pay for it, is somewhere less than 20 cents for registering every exam when you're in a network environment and a network aware environment so people know about the existence of the exams that you have possession of.

Somewhere around \$2.00 or less than \$2.00 for unlimited amount of viewing, just because we make something unlimited people aren't going to view images for fun so there is a cap to how many times something is going to be viewed and give or take a few percentages that's a financially sound number.

And then somewhere less than 50 cents in the event a provider needed to download it at their end to take possession of it for whatever the reason may be. So, when you do the math and how many times something is registered and never viewed and something that is registered viewed and how many times it's viewed and how many times something is downloaded it all ends up being somewhere in the \$2.00 range. And frankly, it costs somewhere between \$5.00 to \$7.00 now to produce a CD so it is a viable financial proposal and standards will no doubt make it far less painful. That's all the slides we have prepared. Happy to answer any questions or just listen.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

So, Jamie, if I might start?

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Please.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Okay, so I'm going to ask this very funny controversial question and that is we obviously know why DICOM is a very important standard if you want to actually do measurement on an image, you want to do grayscale adjustment on an image, zoom on an image, I mean, there's a whole variety of things that DICOM does well far beyond the standard what I'll call PNG or GIF-type formats. But, imagine that if you were an engineer at Google, Amazon, Facebook or Flickr and you wanted to share image data chances are you would not implement any of the transport standards that are being used today for image sharing typically the modality to PACS or VNA kinds of standards.

And so what you wonder, again controversial question, is there sort of a best of both worlds approach you might imagine where could we use REST as opposed to Direct for dealing with very large payloads, you know, could we use OAuth2, could we use some Internet friendly social networking kinds of transport approaches with a package whether that might be MINT or some other format that still affords us all the goodness of being able to do things like do measurements on an image because you actually have absolute understanding of reality of the sort of baseline what is the, you know, the inch, centimeter precise distance between two points on an image.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

I'll give you my answer, John, and then ask Mike to give you the real answer. It will be a long time from today when you take PACS out of the hands of radiologists as they have made a lot of investment in it. I agree that both RESTful APIs, the appropriate web services all of those can be used today. The DICOM piece as long as we manage to get the data from point A to point B they can still consume it as DICOM. We have solved the transportation problem we don't need to fool around with what's working inside the PACS.

I see PACS as the equivalent of a local call and image sharing as a long distance call. The problem is we're using tools for a local call to accomplish long distance calls. If the standards you named, all the modern Internet engineering achievements to do the transportation the DICOM will take care of itself at least for the foreseeable future. Mike? Mike we can't hear you. I'm sorry maybe he thinks my answer was good enough.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Mike are you muted? So, oh, well, but a good answer and so you wonder as we heard from Keith Dreyer and Dave Mendelson, you know, maybe the right answer is, oh, you're going to have what you've described as local call this need to have modalities and PACS within a say given network and then you have an edge server or middleware or something that allows you to go from what is clearly a DICOM centric transporting content environment to a more wide area Internet friendly environment and that could be, you know, a VNA for a community, it could be, as you've described it, a record locator service, an index of where images may live, it may or may not involve edge servers.

I have the feeling that, as you've described it, there is a desire among radiologists to have edge servers and not offer Internet connected pulls directly from hospital-based DICOM repositories and therefore, as you sort of describe it, it's DICOM is maybe used to go modality to PACS and then PACS to VNA or edge server or some other place where the transaction volume to pull those images is actually disconnected from the transactional system being used by radiologists for clinical care.

So, as we talked at the beginning about architectures, I mean, any comments on what you've seen or sort of workable architectural approaches that bring long distance and local calling, so to speak, together?

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

At the moment we have limited ourselves to making XDS a workable thing for the long distance portion. I'm sure there are alternatives but it's a reasonable baseline for indexing things in a central directory. Its missing components and the standard can benefit from outside influence to improve the standard. I see it very much the same whereas you're accomplishing taking data from one EMR into another EMR we're not really asking EMR vendors to change their formats, we're asking them to be able to do a long distance call the right way and consume it at the far end the right way. This is very much the same way.

Having been a CEO of a PACS company I can tell you that PACS is unraveling in the next 10 years. So, the DICOM piece itself maybe something that over a somewhat medium term and longer term will have an impact, but there are enough adoption of XDS in the PACS world whether they put a translator called and edge server in front of it or they natively talk XDS there is enough support for it for us to believe that at least it is a good start.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Well, very helpful, thank you. Did I hear Michael return?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Yes, sorry, about that, I was listening on my cell phone and I had some problems. I'm all set now.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

As soon as we said long distance he fell off.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

So, Michael did you want to comment on John's question as well?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

I'm sorry, I didn't hear it, sure.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Okay, so really the question, just when you fell off the network so to speak, was if you were in a Greenfield and your were just parachuted to the earth in 2013 and you looked at Facebook, Google, Amazon and Flickr chances are you would design transport of images a little different than we are currently doing it.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Sure.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

And Hamid answered in a very thoughtful way that, well DICOM is not going to go away in the next couple of years you probably have this challenge of having a DICOM centric local exchange with then conceivably alternative standards and architectures for a long distance exchange.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Right, so, I mean, I think that one of the realities of also the hospitals though mandates that some hospitals will allow you to access images directly from within those hospitals, other hospitals will not, they want to let you know about the images and only then when there is consent or some type of approval and then like I say the other ones, typically the smaller community hospitals, are willing to let you get directly at the data. So, any model that is put forth needs to take into consideration both modes.

And so, you know, and that's what we've done, you know, when you look at what we've done is we do have that federated model where you can reach directly in and so going to your point I think the first thing is that when you look at pushing the data something like an XDR and XDR-I where you take the images and you allow them to be moved outside that makes sense in the situation where the hospitals will not allow you to reach into their PACS.

But, whether you're talking about getting into the hospitals directly or whether they were moved outside to a central clearinghouse, at that point the way to get to the study needs to be done in a way that you can ask for it by study but when you get the images they're streamed to you one at a time, because that's the most efficient way and that's how the viewers can use them. So, I agree with you, it would be done in a very different way, but...and certainly DICOM once you get outside the wall of the hospital I don't think is the way to go.

I think it does need a completely new specification, a new standard, something that is geared specifically around how do I find images, then how do I access those images, how do I share those images and how do I download those images? So, did I answer your question or did you want more detail?

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

No, no that was perfect, thank you.

Clement J. McDonald, MD, FACMI – Director, Lister Hill National Center for Biomedical Communications - National Library of Medicine

You mentioned, this is Clem, you mentioned that...you said the word PACS is unraveling what did you mean by that?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

PACS is...I'm sorry, say that again?

Clement J. McDonald, MD, FACMI – Director, Lister Hill National Center for Biomedical Communications - National Library of Medicine

I thought I heard you say PACS is unraveling, the PAC System is unraveling. What do you mean by unraveling?

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

That was me.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Oh, no, yeah, Hamid said that or must have said that, I didn't hear it.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

What I mean by that is that the EMR is starting to have certain aspects of what a radiology information system component can do from a workflow and work list component. The repositories, called VNA, are starting to do what the guts of a PACS for storage and archival can do. So, PACS is starting to get intermediated as a unique component. You can assign its responsibilities to other existing components to remove yet another moving part.

Clement J. McDonald, MD, FACMI – Director, Lister Hill National Center for Biomedical Communications - National Library of Medicine

Okay, thank you.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

I think when it comes to accessing the images directly you need to look at something like a MINT. WADO, like I said, is not sufficient and pushing the data all at once is not sufficient.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

So are there other questions, controversies here? Well, if there are no other questions, hey, Jamie, I'll jump in with a few more.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Yeah, please? I'm surprised, Clem is unusually quiet today.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

So, in general our use cases have included, as you describe in your slides, provider to provider, provider to patient, provider to group, patient mediated provider to provider interactions and what we've heard from the Policy Committee is there is a desire to not only have the entire uncompressed full featured DICOM image available, you know, where you need a radiologist to do a primary read and you're sending it from place to place but also a low res so to speak where a patient with a very thin client who, you know, maybe running, you know, a Firefox on Linux, you know, it shouldn't matter what operating system or browser they're running they should be able to get at an image and so one wonders as you think of DICOM, and I think of DICOM as a, you know, somewhat what I'll call client server approach, you require a download for some kind of DICOM viewer and often our friends in the world of PACS extend DICOM in ways that it's sometimes hard to create vendor neutral viewers.

Do you have comment on alternatives to existent DICOM that might be more browser friendly, patient friendly, understanding that they may be bringing inherent limitations to the usefulness of the image delivered?

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

Certainly, I remember back in 2000 when as a PACS vendor we came out with wavelet compressed and less compressed the villagers with pitchfork and such where out to take our heads, but the reality is things like JPEG 2000 have proven that there are alternatives, alternatives that can produce fidelity in various degrees of resolution for various reasons. So, the same file can be served to a radiologist with all the bells and whistles and every pixel appropriately lined up or it can produce a movie of an aneurysm for a patient that is being told show up for brain surgery next week and you can look at it just as you would look at your Nissan under the hood on a web page somewhere.

So, there is no doubt that there are better alternatives for serving what may originate as DICOM from a modality and there are fairly decent standards but unfortunately they're not common standards, that may be a weird term itself, but different vendors have propagated their favorite standard and now we have 31 flavors of those, but there is no question that one can find a common standard that serves just about everybody's purpose.

And John, by the way, I can't emphasize enough that this local versus long distance is a very important point here in that you can have a standard that is for transportation and viewing during transportation because radiologists aren't going to do measurements on the cloud they're going to want to have their own workstation at least for the foreseeable future. So, as long as we have DICOM for whoever needs it we have satisfied a constituent that may be very loud about it and everybody else can use a fairly straightforward standard.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Because you might envision again in this perfect world, oh, we have RESTful, OAuth-based JPEG transfer to patients and then because we have an XDS-I or whatever index you're describing we might have I can do a click and then download that object and hand it off to my provider and so I don't need to be able to do the measurements or have a thick client or anything but downloading the blob is something I should be able to do after I've done this more Facebook, Amazon, Google, Flickr friendly search of my images so to speak.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

That's exactly right. Today what happens hundreds of times a day at lifeIMAGE is that in urgent cases transferred from the source as DICOM to a lifeIMAGE listener we use our proprietary ways to show the images to a neurologist who was woken up out of their house on the cloud and while they're putting their pajamas on they say this image is useful go ahead and ingest it into the hospital by the time I get there it's in front of the radiologist and that blob is exactly what gets downloaded.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

And then you've described the architecture as iTunes versus Napster and I just want to make sure, Jamie, that for the record we clarify that, because iTunes and Napster means a lot of different things to different people. So would you describe...

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

So, yeah, I like the description of the Napster model as being network aware and location aware and I wonder if we can, you know, use some of those features as descriptors.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Right, so what I wonder is do we describe iTunes as there is a central repository and I, on demand, can pull something from that central repository and Napster is more of a, the content is federated and distributed and indexed and therefore I am not gathering it from a central repository I'm gathering it from the network on demand. Is that a fair description?

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifelIMAGE

Yes.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

It's the exact description with the following qualification, iTunes also talks about a repository to which you trust a payload on the way to someone else, so you upload to it as you need to it doesn't need to be a previously designated repository, it's a clearinghouse.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Okay.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifelIMAGE, Inc.

It can be both a clearinghouse and a central repository.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Very good, well, so Jamie, I mean, I think with today's testimony we've heard some important concepts and as you describe it, you know, there is the clearinghouse/central repository versus network aware, federated the difference between local and long distance, the fact that DICOM is absolutely very important to local institutions but may not be ideal in an Internet world especially given the complexity of Internet appliances, routers or web application firewalls, load balancers, etcetera, and that we do have to wonder over the next 10 years if there is going to be an evolution of architecture that goes away from monolithic PACS and goes to more EHR centric vendor neutral archive kinds of architectures. I mean, I think all those were very interesting concepts.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Yeah, absolutely. You know, at the same time, I mean, I think that just as there are multiple business models and multiple care team models this is a good time for there to be potentially multiple models for image sharing with something that maybe a best fit for different use cases for different models of care and then as those evolve along with the technology parameters that you just enumerated, you know, you can shift over time from one to the other.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

The other...another point that I would like to bring up is in regards to security. Security has not been in the forefront of some of the existing standards also, especially when you start going across facilities. You may know I want to share it with this other facility but exactly who within that facility...you may be able to get an audit trail from an ATNA log, but in terms of authorizing who can see what that's something that should be taken into consideration I think also. So, there is a security at the network layer, which I think is dealt with but then security in terms of authorization in particular is not as clearly spelled out.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Right, so certainly our committee is very interested in provenance, data integrity, role-based access control and the question is always how much of this do you build into the content layer, the transport standard, how much of it is a feature of the health information exchange architecture and we certainly think that metadata should probably contain some aspects of data segmentation that would enable other layers to allow access or deny access.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

Yes, I think that's an excellent way of putting it.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

And again, just one...

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

And then there is also the idea of, you know, often that might come into play, such as non-repudiation and knowing that somebody has in fact seen something, I don't know if that would be part of a standard. I'm not sure where exactly that fits in, but that is often part of what we have to take into consideration.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Well, one last question I have, Jamie, and that is whenever I criticize DICOM in any way generally pitchforks and torches greet me at my doorstep, and so I want to make sure I don't say the wrong thing, are there perfect vendor neutral thin client DICOM readers that work great on my iPhone or am I, you know, correct in thinking that DICOM is a wonderful format for radiologists who have dedicated workstations inside an institution but does have challenges in an Internet enabled, mobile enable, Android and iOS kind of world?

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Yeah, so I don't...I personally don't know the answer to that. I know that we did hear references from the RSNA folks to the existence of multiple open source DICOM viewers that are available freely for download, but I don't know them and I don't know how they work.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

The problem with DICOM is that it likes to have possession before visualization. So, if you have a repository of DICOM and you want somebody's other favorite viewer not just the one that works with it to look at it then DICOM is not very happy. So, DICOM to me has been a wonderful standard, it has made radiology be years ahead of all the other ologies in ability to transfer and share files, but now that we are years after we have run out of lipstick to put on the pig and we can use a new thing.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Well, very good, I will not fear as many pitchforks as in the past.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

I don't believe you will John.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Yeah. Okay, well this has been a very useful discussion. Are there any other questions or comments from the Workgroup members? It's a quiet bunch today.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

So, right it off to the heat it's currently heat index of 110 degrees in Boston.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Well, it's 65 here in San Francisco. So, nanya, na, nanya. Okay, I really...Hamid and Michael I really truly appreciate you spending time with us here today and I also appreciate the participation of the Workgroup members here. I do think this has been very important and the concepts I like the way John described the framework for our future deliberations. So, thank you very much. If there are no other comments from the Workgroup members I think we're ready to see if there are any public comments.

Public Comments

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Operator can you please open the lines?

Ashley Griffin – Management Assistant – Altarum Institute

If you are on the phone and would like to make a public comment please press *1 at this time. If you are listening via your computer speakers you may dial 1-877-705-2976 and press *1 to be placed in the comment queue. We have no comment yet.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Okay, well then we get a few minutes back at the end of the hour. Thanks very much everybody for participating today.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

Thank you for inviting us.

Michael Baglio – Chief Technology Officer & Senior Vice President of Engineering - lifeIMAGE

Thank you bye-bye.

John Halamka, MD, MS – Chief Information Officer – Harvard Medical School/Beth Israel Deaconess Medical Center

Have a great weekend, thanks.

Jamie Ferguson – Vice President, Health Information Technology Strategy & Planning, Fellow, Institute for Health Policy - Kaiser Permanente

Thank you.

Michelle Consolazio – Office of the National Coordinator for Health Information Technology

Thank you.

Hamid Tabatabaie – Founder and Chief Executive Officer – lifeIMAGE, Inc.

Thank you, bye-bye.