

# **March 11 Mobile Discussion Series Hu. . . -**

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DENISE KENNEDY: Welcome to the Discussion Series webinar. My name is Denise Kennedy. And I'm going to run through a few brief technical reminders before we begin the discussion about the Self-Certification Initiative.

Your phone lines are muted. We'll be taking questions through the chat feature. If you're experiencing any technical difficulties, also please use the chat function that is available to you at the bottom left of your screen. To respect everyone's schedules we'll keep this moving so the session ends on time.

Today we welcome William Plew, Jane Robbins, and Eloise Lepasqueur from the Human Factors Engineering office, part of the Office of Health Informatics. As mentioned before, if you have any questions for our presenters, please use the chat feature and we will stop the presentation intermittently to answer those questions. If we don't get to your questions, we will send out an email following this webinar with any relevant answers.

To download the presentation, please click on the paper clip at the top right of the chat screen. With that, I'll turn it over to our presenter. Bill, over to you.

WILLIAM PLEW: Thank you. So first and foremost, welcome everybody. As was mentioned my name is William Plew. I'm part of the Human Factors Engineering office here at the VA. Today we're going to be presenting the Self-Certification Initiative, which is an initiative that myself and my colleagues, Jane Robbins and Eloise Lepasqueur, have been developing over the course of the last couple months.

So today's agenda, we're going to give you a quick background. Following that, we're going to go into a brief discussion of the compliance process and where the Self-Certification Initiative fits in there. Following that, we're going to go into the logistics and the process of the Self-Certification, as well as a discussion of personas which are a core aspect of it.

We're going to go in through the user interface evaluation portion, the heuristic evaluation portion, discussion on the rankings of findings, and then lastly, the peer review. Following that, we will mention some resources that are going to be available with this and then we will have an open question discussion section.

So as you know, we all want to build great health IT products for Veterans, caregivers, and clinicians. And with that in mind the initial goals here were to build a process that is going to be able to support the ongoing Self-Certification for any VHA mobile apps. And to accomplish that, we started producing training materials. So that project teams throughout the VA can check their own apps for user interface and heuristic issues.

So I'm sure a lot of you are wondering what is the purpose behind this? Why are we doing this? And, in short, this is going to save a lot of time in the compliance process for project teams.

It's going to help project teams to understand and use the same methodologies that are employed by human factor's professionals. And by bringing this usability thinking into the app development process earlier it's going to lead to better apps that are better built. On top of that it will free up HFE resources so that we're able to engage earlier with project teams and have more impactful interactions on the mobile apps.

So with these compliance process itself, as many of you may know, first an app will go through validation and verification. And this is the basic process that's going to occur when an app is being finished to ensure that it has basic functionality and it meets all basic needs. Following that, it goes through a set of compliance reviews-- including Section 508, Informatic patient safety, and then the human factors and engineering reviews. And this is where we perform our heuristic evaluations otherwise known as HE's and the UN mobile evaluations as [INAUDIBLE]. So the Self-Certification process is going to replace HSE coming in and doing HUs and UI certs by training the app teams to perform these evaluations while they're building the apps.

So from a high level the Self-Certification would involve reviewing the UI criteria and answering the questions that are in that section, This includes reviewing them from the perspective of included personas, applying rankings to any issues found as well as screenshots for documentation. Additionally it's going to involve reviewing heuristics and looking for violations to those heuristics. That's the HE portion.

Once again rankings, personas, and screenshots are included here. And then following those two primary aspects, it gets passed off for peer review and findings are agreed upon. So continuing on with the logistics, this will include an Excel workbook template. And this is going to be hosted up on VA Pulse.

You would simply download this, save a local copy of it with the app name. First you would go into UI tab. You'd end up going through the various UI related questions. Anything that requires a screenshot, you could add that on in, and you're going to rank all the issues you find.

Following that, you would go to the next tab on the Excel document, which involves the heuristic evaluation. Once again you would go through the app looking for criteria against these heuristics, add any findings that you find, and also screenshot and rank. And then following that, cognitive peer review, simply save it and upload it to the HFE SharePoint Repository where we have all documents that have gone through this process.

So looking at a detailed process flow here, we can see at the start you would begin with your US Certification. Any items that don't meet the criteria-- there's the comment section where you can add some context regarding the issue. If it's one that requires a screenshot, you can of course capture that and integrate that into the workbook. And then write the priority of how high priority that issue is to fix. After adding comments, there is reference guidance and a design tab reference to help you along there.

Following the UI process, when you go through and check through all those criteria, you go in to the HE. You're going to compare everything against the provided heuristics. Anything that doesn't meet a heuristic, of course, you would add the finding. Following that, you would add

what specific heuristic was violated, which [INAUDIBLE] as well. And then you can make a recommendation on what you feel will be the best course of action to fix this issue. Of course, capture and add screenshots and rankings. And then after those two primary proxies, you go over and do the peer review, reconcile and combine the peer review document and the original. At that point you have a complete certification where you can save it and then upload it to the repository.

So at this point this is a quick halfway point. If there's any questions right now, please ask and then we're going to go more in depth into the process.

DENISE KENNEDY: Great, Bill, thanks. We do have two questions that have come up. Before we get into those, we are getting a little bit of feedback on your voice line. I don't know if maybe there's an electronic close to you. It sounds on a few different times a little bit choppy, but with that Pauline wants to know when the MS Excel spreadsheet will be available on VA Pulse.

WILLIAM PLEW: The workbook template will be available at the end of the month.

DENISE KENNEDY: Excellent, thank you. And Alexis wants to know how will peer review work?

WILLIAM PLEW: Well, you complete the process among your peers. And generally you want somebody that is a part of the [AUDIO OUT] developer to help accomplish it. So once you're done reviewing the app, it would end up being passed off to a project manager. From that [AUDIO OUT] Anyone who's familiar with the app being created, but just not the developers. They couldn't have eyes during [INAUDIBLE]

Peer review involves that person going in and completing their own review, comparing their findings against yours. And then the two reviewers would basically decide upon the rankings together and just make sure they're in agreement for all issues that were found.

DENISE KENNEDY: Thanks, Bill. That is-- we'll move on. And we'll come back to some more questions that are coming in now. So you can just continue on with the presentation.

WILLIAM PLEW: Sure, so before we go into the actual review process something I want to touch on which is important is persona. Personas are artificially created individuals, and these individuals represent the needs and the expectations of a larger group. So the number of personas that are also included in the workbook that you all have access to these were developed by Human Factors engineering needed in the regulatory research. And they're used to represent a particular population that the app may be targeted towards. And the benefit of this is doing an evaluation or using a persona perspective, it's going to help you in evaluating it and producing an experience much closer to what the end user is going to experience in going through the app.

In some course these are going to be integrated into the workbook. You can see kind of little screen shots of those. But it's important to mention that they are integral to the process.

So the first part of the Self-Certification is the User Interface Evaluation. Now this goes against a set of A-criteria. [INAUDIBLE] which [INAUDIBLE] standard navigation layout. One of the examples is [INAUDIBLE] used to [INAUDIBLE] application. And there's a number of different criteria points for each of these course A elements.

Device orientation-- stuff that shows that the app can properly rotate between corporate and landscape if it's applicable. Errors-- are errors described is their recovery possible when errors occur? Frequent interactions-- is navigation clear? Are you able to continue forward within the app, and go back as specifically intended? [? Motoral ?] tasks-- when you're presented with something that you typically have to go all the way through is task abandonment available? Are the buttons that you would need to exit [INAUDIBLE]?

Readability-- our own external links that you properly denoted as instances of [? communication ?] avoided, text size, scrolling, things of that issue. Now [INAUDIBLE] is going to be in here because it's adjustable. Then lastly user input-- and this is making sure we have the proper size on any elements that are capital, any entry [INAUDIBLE] type of indicators. Things of that nature.

So here we see a high level example, of the UI Evaluation sheet. As you can see here-- if I can get my maps-- we have the categories of consistency. These are six of the consistency ones. The first one, is terminology use consistent throughout the application? The finding of that. This was not met here. That was marked as moderate.

There are issues with the use of the words login and tool. And per each one more guidance is needed. For example if [INAUDIBLE] does the application include standard navigation? You can see here for HTML5 you want a back button included within the app that goes up one level in architecture, if not back one step. A browser base that will be able to go back one page of browser.

IOS and Android handle this very differently. And simply the navigation is not standard. This is marked as serious. Then you can see numbers here denoting what screen capture these issues would reference. And that's kind of an overview of what the sheet with the US certification work looks like.

To look at a more in depth example here, this is of the error category. Do error messages plainly and precisely describe how the problem or describe the problem and how to recover? Can see criteria not met was minor. Error message was not received on the help for home screen where [INAUDIBLE] put the zip code. And yet no facilities were found. And we can see here referencing the screen shot, the user had entered the zipcode while testing, tried to pick five facilities nothing would have happened.

You would expect some kind of context provided here given that an error message or even some [INAUDIBLE] there's no facilities. So this ends up getting denoted. There's guidance here, of course, to help you understand properly on evaluating the error message.

And that's kind of the gist of how the-- you might start going through. The criteria are fairly straightforward. And, of course, there's guidance provided in all of the columns to help ensure that you are judging it correctly.

On to the Heuristic Evaluation-- the Heuristic Evaluation [AUDIO OUT] whereas the US are following strictest criteria. Performing a heuristic evaluation involving going through again this list of heuristics. Now these are an industry standard that have been developed. They've been part of the Human Factors Engineering community in general, for, I believe, 10, 15 years now.

So we have visibility of systems status lasting between a system and the real world-- user control freedom. Consistency in standards, error prevention, recognition rather than recall, flexibility and efficiency of use, aesthetic and minimalist design, help users recognize, diagnose, and recover from errors, and, lastly, help in documentation. And each heuristics course has much more context in it.

Just for the sake of the presentation we ended up pulling that out to give you a base idea of them than in the actual documentation that's provided as part of the training. All of these heuristics are elaborated on much more in depth.

So to look at an example this one, heuristic [? I ?] to help you recognize [INAUDIBLE]. On this finding the reviewer received a 403 error message when attempting to log in. Looking at from the perspective of Dana and Joey, two of our personas, this message may just cause them to give up and not try and access the app. So trying to log in, they don't receive any info here. All they get is error 403 forbidden and a big wall of text relating to the server.

And in the context of the personas, those two particular personas-- that's the users group the less tech savvy-- and something like that to them that's just going to be [INAUDIBLE] any server error. They're not going to know if maybe it's something with their internet-- [INAUDIBLE].

The point was just giving them error 403 forbidden isn't going to help the end user to understand what they did wrong. So, of course, we have the example recommendation here. Discover the reason for the error and tell people how to fix it. And that's an example of a [INAUDIBLE] during the HE process certification.

So here we have another task recognition rather than recall. Now this on involves minimizing the user's memory load by making the object action the options are visible. The user should not have to remember information [INAUDIBLE] dialogue to another. Instructions for user systems should be visible or easily retrievable whenever appropriate.

So in this example finding we can see some graphs here. We have some lines on these graphs, but there's no actual information. The finding was that the lack of labels on the different graphs prevent users from accurately interpreting that data.

Any of the personas who were [INAUDIBLE] in this case they may have trouble just remembering what those values would have been, and what the ranges would have been. So this

ends up getting rated as moderated. Example recommendation here, have x and y-axis labels to provide exact context for the [INAUDIBLE].

So you've seen a couple rankings up until now. And they're clearly not all issues are equal in terms of importance. So to discuss the ranking system-- and there are five particular rankings-- the three primary minor, moderate, and serious, and, of course, not applicable, and not evaluated.

So with minor findings, these are things that they may cause user hesitation as they're interacting with the [AUDIO OUT] They may impede task or decrease efficiency, but these are things that users can work through. They may get a little annoyed. They'll still continue to likely use the app.

They should be resolved. But they have a lower priority. An example, this is the use of click here for more just to take the user out for an external link.

They might not know. There should be ways to provide that context if necessary. It's just something where we're forcing them to do more work than they should have to.

Looking on from there, we have moderate issues. Now they're moving a little bit higher up the ladder here. And these are things which they start to call [INAUDIBLE] task failure. Instead of just creating irritants for the end user, they could actually make them fail the task or cause some delays.

Despite that, these are still things that the user can recover from. But it is going to negatively impact their use. And that's moderate issues, could lead someone to just deciding that what they're using isn't worth their time.

[INAUDIBLE] they should get pretty high priority and resolution. An example of this is inconsistent access to app navigation. The menu buttons and the [INAUDIBLE] alternating between left and right side depending on page. A prime example something where, somebody working with an app, and just that inconsistency is enough that eventually they may just get fed up with it and decide they don't want to use that app anymore-- find something else.

The top tier are serious issues. Now serious issues-- they always have the highest priority of resolutions.

And, in general, we recommend that anything that is identified as serious is always mitigated or results in some way before app deployment. The reason for that is serious issues, in general, they will always cause users to abandon the task. There's potential for diminishing the credibility of the VA. Things that could crash the app altogether, kick the user out, anything of that nature is going to be considered serious.

So, some examples here are pages in an app that are important that are completely blank-- missing all information on them-- broken links within the app that are required for primary function, constant crashes within the app and zero explanation. All of these are instances of problems where if the user encounters them, almost guaranteed, they're going to decide the app is

not worth their time. And they're going to abandon it. So, obviously, the highest priority of resolution because we don't want to spend time making these apps [INAUDIBLE] only to have them jump into the app, get fed up with something, and decide they don't want to use it.

The other two types of rankings are not applicable and not evaluated. [INAUDIBLE] in general they can be either strengths, or in some cases they're just unsolicited suggestions. You know, things that may be [INAUDIBLE] but they're not necessarily usability issues.

And just to help differentiate, there isn't [INAUDIBLE] between not applicable and not evaluated. So with the UI particular, for example, if an app doesn't have sound features, you click your [INAUDIBLE] of S01-- which is on your application functioning-- that would be considered a case of not applicable. Not evaluated, however, is something where while reviewing the app the user didn't come across it [INAUDIBLE] doesn't mean it's not [INAUDIBLE].

A prime example is error messages. You could never say an app has zero error messages. Just because you haven't been able to find it at the point doesn't necessarily mean it isn't there.

So a prime example of an issue that's been not evaluated-- [INAUDIBLE] just the one regarding error messages because, like I mentioned, you can't be so sure that you have not encountered one.

So moving on from the HE, UI and review, let's talk a little bit more about peer reviews. So as mentioned previously, taken a question, a peer can be any other person on the project team who did not develop the app. So this includes project managers, business sponsors, Scrum Masters-- has to be anyone involved in that process.

Additionally, if at all possible, it's always good to have the peer review performed on a different device, or different OS, from the initial review. Just because this is going to help you to gain additional insight. And on top of that, there are many cases where something you encounter on-- you can take apps that are HTML5-- there may be something you encounter on an Android device that's quite different on an Apple device. And for issues that exist on one platform that don't exist on the other. So that's another reason why peer reviews are so important.

So let's actually go into the process. The peer reviewer--they typically look at the first evaluators findings. And they're going to see if they ended up having the same result, that they agree with them. Following that, they would go through the app and also look for any additional findings that the initial reviewer may have missed. Then following this, each reviewer would come together, agree on all findings, and all severity rankings on said findings. Then, following that, they report those things [INAUDIBLE]

So following that, [INAUDIBLE] resources a little bit. We have the Self-Certification SharePoint site where everything will be uploaded when it's finished. On top of that all training materials will be posted on the VA Pulse. [INAUDIBLE]

DENISE KENNEDY: Bill, I don't want to interrupt. Bill, I'm sorry to interrupt you here. But we're losing audio for you. We can barely hear you on this side. Just as we hit this slide on

additional resources. And if you're on a headset, sometimes it might be better to take the headset off.

WILLIAM PLEW: No, I'm not on a headset.

DENISE KENNEDY: OK, I can hear you now. Thank you.

WILLIAM PLEW: Strange. All that I mentioned, all training materials will be hosted on VA Pulse. This is a site that's external from the firewall. So even contractors that are just being bought in, they'll be able to access this. The only thing required is just a VA signed email.

So all the training materials will be hosted there. That's going to include the Excel template that was previously discussed as well as a [? job aid ?] which will help and train in performing this whole process.

Following that, all completed evaluations should be uploaded to HFE SharePoint site. And then we also have a support email that will be available [INAUDIBLE] start with myself, and Jane, and Eloise-- the fore founders of this process-- will be handling any support questions that come in at all. And following that, I'd like to open it up to any questions and discussion.

DENISE KENNEDY: Excellent, thanks. We have a couple of questions here that has been building up. So the first is what role on the project team is expected to do the initial Human Factor Self-Certification? I think you talked on this a little bit, but thought we should reiterate.

WILLIAM PLEW: There's no one exact role that can do it. The only real stipulation is you shouldn't have the actual developer of the app do it. Aside from that, it really comes down who had the resources at the time. But any member of the project team, aside from the developer, is appropriate for both the peer review or the initial review.

DENISE KENNEDY: Excellent, thank you. And the next question was, "Has this process been piloted? And, if yes, were the results satisfactory?"

WILLIAM PLEW: The process has been dry run. It hasn't necessarily been piloted. This is actually kind of the first instance of something like this being developed in the VA-- just based on what we were able to find and the research we did. So we have done rigorous testing in house with people on our team, at least, that are unfamiliar with the process, having them go through the materials and looking for areas in the training materials that seemed inconsistent or confusing at all to make sure that when these materials are distributed they are as concise and informative as possible.

DENISE KENNEDY: Excellent, and we have a couple of questions around Pulse. How will we be notified that documents are on VA Pulse?

WILLIAM PLEW: All the documents will be hosted by the end of the month. In addition, there's going to be a series of communications emails that are going to be sent out just to keep everyone updated on the progress as well as informing everyone of when the materials are available.



DENISE KENNEDY: Excellent, and the next one around Pulse is, "How do we report issues that come up before documents are on VA Pulse?"

WILLIAM PLEW: Could I get a little bit more context into the question?

DENISE KENNEDY: Yeah, we'll ask that and come back to that. Victoria wants to know, "Will Human Factors be reviewing the reviews that are uploaded to this SharePoint?"

WILLIAM PLEW: Human factors will not be reviewing the reviews are uploaded. The whole point of the process is so that project teams are able to certify themselves. That being said, of course, if there are difficulties or if you've gone through the process and you've gone through the peer review and you're still not sure about a particular issue, of course, our team is always available for support. Any questions, or difficulties, during the process we're still going to be available.

But the primary reason for that having all that stuff uploaded so that during our future app interactions we have the documentation for what was already looked at on the app, what was already reviewed, and that will provide additional context that will help during any project studies that are established.

DENISE KENNEDY: Excellent, and so we have a follow up from that original question. "We are beginning our any [INAUDIBLE] this week. The document to report issues will not be available for several weeks. How do we report app issues in the interim?"

WILLIAM PLEW: Well, in that particular case-- that's a really good question. I would say-- the best thing I can say-- is that has to [INAUDIBLE] with my team. I know we've had some people in HFE that are already involved in [INAUDIBLE] projects then I was, previously, so if there's not already interaction it may be one we get involved with. But just feel free to send me a follow up email and I can provide additional information after touching base with everyone.

DENISE KENNEDY: Excellent, thank you, and we have a couple questions just sort of swooping in here. One of them is, "Is there a current Human Factors presence on VA Pulse that attendees can explore?"

WILLIAM PLEW: Currently the materials are still being finalized before being uploaded to the website. We have a page established, but none of the actual training materials are currently hosted.

DENISE KENNEDY: Excellent and is this expectation that this process will be implemented as soon as the Excel document is available at the end of the month?

WILLIAM PLEW: That's correct.

DENISE KENNEDY: OK, and Alexis wants to know, "To help with budgeting our time, how many hours does it take to conduct a review?"

WILLIAM PLEW: The training itself would probably run approximately three to four hours-- just to learn the whole process. Now your very first app, like anything, my estimate-- and, of course, this does vary depending on how big the app is and how much there is in the app-- but I would expect someone's very first review after being trained to take anywhere between two to three hours. Once you become more familiar with the process a single review of the app can be accomplished in as little as about an hour to 90 minutes-- just depending on your level of familiarity and confidence while going through.

DENISE KENNEDY: OK, so it looks like there's a couple more people typing, but we don't have any additional questions just yet. I wanted to check in with Jane and Eloise to see if they had anything to add as I think we've gotten them unmuted now.

JANE ROBBINS: This is Jane. I just wanted to make it clear that this is not a [INAUDIBLE] kind of process. In other words, ongoing issues with apps won't be reported. This is a spot in time kind of process. At a time when, you know, the app was close to being released. So I think one of the questions it sounded a little bit like there was some kind of ongoing reporting of issues. And that's actually not the case. It's going to be a one time situation evaluation. And, you know, the reason is, folks, it's going to be really, really informational for everyone. Because you're going to learn a little about what Human Factors does. And then, hopefully, apply that to the apps that you work with.

DENISE KENNEDY: Excellent, thank you for that. And we have one more question here. "Patient safety requires Human Factors review before they start theirs. Have you worked with them to understand how their process may adapt to accommodate this?"

WILLIAM PLEW: Yes, we have. Patient safety-- we touched base with them to see if there was anything in particular regarding our process that they looked for before beginning theirs. And there weren't any particular items. So as part of the new process, basically, when it gets uploaded to the HFP SharePoint Server, that'll be the flag for Patient Safety to commence their review.

DENISE KENNEDY: OK, and Daniel wants to know, "Why can't the development staff perform the certification-- especially because they are more intimate with the details?"

WILLIAM PLEW: That's basically the real reason. Being somebody that developed the app, [INAUDIBLE] with the app and all the different process of the app, you also have some bias. And it's a little bit hard to approach from the perspective of a persona-- just because you've spent so much time. [INAUDIBLE] think about sending a document out for a white glove. And you typically send it to somebody that hasn't seen the document at all before to read it through-- just because after reading a document so many times there's things that you're bound to overlook. Just because the way our brains work. And it's very similar with the review process. Having somebody that's spent countless hours working on the app and putting in the code, there may be things that they just assume will work because of the code and not necessarily test, which is why it's always better to have someone who's not a developer perform the review.

JANE ROBBINS: Can I add a clarification? At least not a developer who's worked on that particular app. It could be someone who's worked on other apps, would be acceptable.

WILLIAM PLEW: Yes. [INAUDIBLE] One great way, assuming you have the resources, is to basically if you have a developer working on app A and a developer working on app B when those apps are done, B could review A and vice versa. You don't want to review your own app that you've been working on.

DENISE KENNEDY: So you talked a little bit about it being able to be additional developer team. We have a follow up question really about roles here. If it's not the developer team, are you thinking it would be the project manager? The comment is, "If they don't have the bandwidth, V and V could likely do this if the PM approved." Any other thoughts on the role of who could approve this beyond the additional developers.

WILLIAM PLEW: It really comes down to your project team and who's involved with it. But, I mean, the biggest thing is it's not the person who was developing the actual app. I'd have to get a little bit more context into everyone on your team to suggest an ideal person, but there really isn't a necessary ideal individual to perform the initial review.

DENISE KENNEDY: Excellent, thank you for that. I see a couple people typing. We don't have any additional questions. I wanted to just wait a second and see as the texts a little slow to appear. I didn't know, Bill, if you have any final thoughts while we wait for any additional last call for questions.

WILLIAM PLEW: Nothing really regarding the process. I just want to make a mention that probably the biggest benefit [INAUDIBLE] for everyone is getting this kind of usability thinking into action and training good project teams I feel it's going to lead to much cleaner and much more usable apps, which will be a big improvement for our user base.

DENISE KENNEDY: Excellent, thank you. Oh, I'm sorry was that someone else speaking? All right, we're getting a little feedback there. Well, I think we're at a good place to close today. I want to thank everyone for participating. We're going end the session, and ask that you fill out a questionnaire that will be sent to you following the presentation. Let us know how we're doing and any other additional topics that you'd like to hear about.

I hope everyone has a good rest of your Friday and a great weekend.

And thanks so much to our presenters-- Bill, and Jane, and Eloise. We really appreciate your participation today. Thanks all, have good a good day.