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Moderator:

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ALE: Hi all, thank you for joining us for this webinar on internationalization and localization. My name is Annabel Lee Enriquez, and I'm part of the Arches team at the Getty Conservation Institute and today's moderator. Presenting is Alexei Peters, who is the Director of Web Development at Farallon Geographics, and during the Q&A session, we will be joined by Dennis Wuthrich, CEO of Farallon Geographics.

Some housekeeping notes: If you have a question for Alexei about today's topic at any point, feel free to enter your question into the Zoom Q&A interface. Also—Dennis is here, and both Alexei and Dennis are developers on Arches. And so, if you have any technical questions, you can ask them, even if they're not about internationalization or localization. The chat function is disabled for attendees, so please do use the Q&A interface for your questions. If someone has asked the question that you also want to know the answer to, you can upvote a question and we'll definitely get to those. If you need captions, this webinar does offer live captioning, which you can enable by pushing the 'Show caption' button on the bottom menu. This webinar is currently being recorded, and we will make the recording available within a week; you will be notified of this if you registered for the webinar or if you follow us on Twitter, Facebook or LinkedIn or are a member of the Arches community forum.

Before I bring Alexei on for his presentation, I did want to preface his presentation by saying that when we're talking about internationalization and localization, which is the subject of this webinar, what we're really talking about is the interaction of the Arches software and different languages. Alexei is going to go into more about internationalization, how the Arches software handles the use of different languages, and how localization is about the translation process. Now Arches has always had the ability to incorporate different languages in its interface. To date, more than 30 different languages are used for various Arches implementations around the world. But today, we are going to highlight the new and enhanced language handling abilities that now come with Arches version 7. And this is an instance in Arches development where an Arches community member contributed to the development work. So thank you to the Arcadia Fund, as these new features were made possible through their generous support. Now I will turn it over to Alexei.

AP: Thanks Annabel, let me share my screen here. Hopefully all can see that. So yeah, we're going to talk about internationalization and localization in Arches. That's the main subject of this webinar. And part

of that will cover: what internationalization and localization mean; the language that Arches is currently localized in; we'll review a few examples of what Arches looks like when it is localized; we'll go over the RDM and any implications there; what we did to localize business data; what users might need to be aware of when customizing Arches; and then we'll just quickly review a few tools that you can use that can help users localize all the strings in Arches. So without further ado, let's jump in.

So internationalization versus localization. Internationalization really is the process of designing a piece of software so that it can easily display or be displayed in alternate languages. That is, rather than the old school way of maybe copying a webpage and then just changing all the text that you see on the interface to be in different languages so that now we have two webpages; internationalization, really, is the process of engineering the software so that a non-technical user can then supply an alternate language, and the interface will display in that language. That leaves us with localization, and localization really is just translation. Arches has many, many strings—I'll just say text really—that you see on the UI. So when I say localization, those are really- the text is really what we're talking about, we're talking about translating those text strings. Anything that you can read on the webpage needs to be translated or localized. And all those texts need to be localized. So, I kind of knew- so something that we were able to achieve with this latest release of Arches, Arches v7, was that Arches now is completely internationalized. That means it's ready to accept any alternate language that a user would like to display the UI in, and they'll be able to do that without any kind of expertise. So that they can just focus on translating all text in the UI and then supply it in a single file—put that into Arches, and Arches will now be displayed in that language. So currently Arches comes 100% localized in English. Of course, that is what it was developed in, but also now French, Urdu and Hebrew, and is around eighty percent localized into Arabic, Bulgarian, Russian, Mandarin and Spanish. Another thing that Arches—or that we were able to achieve with Arches—was that the user interface (the UI) fully respects right-to-left languages. I have a few slides later on I'll show you, but there are several languages that are read right-to-left. And if the UI wasn't updated, then you would be reading right-to-left strings in a manner—it would be presented in a manner [that] would be potentially confusing. So we have actually gone to the effort of making sure that the UI itself respects right-to-left languages and is presented in a right-to-left manner.

Finally, you may have seen this acronym i18n floating around, kind of intermingled with the concepts of internationalization and localization. And it's just a shortening of the word “internationalization.” Somebody must have been tired of writing out that long word, internationalization, and decided, “I'll just count the letters in between the I and N,” the first and the last letter, and i18n was born. You probably also see or come across l10n and that's just localization. Same deal. And there's one for globalization and so on, so you will see and encounter those if you get into the localization and internationalization realm. And that's what that means.

So let's move on. Here's a couple of examples of what the English site looks like, which we are all, I think, fairly familiar with, on the left. And here on the right, now, you can see the UI has been translated, and all the strings have been translated, all the texts have been translated into French. And here's how the UI presents: you'll notice that things like tabs and button names and even these buttons here, any labels, are all translated into French. And in fact, you know, as languages are, they can be of varying length and

width. Our UI respects the fact that languages can grow and shrink and accommodates those. So here you can see the button is quite a bit, or the text rather, is quite a bit bigger but the button stretches to fit that text. One thing you also may notice, though, is that these names right here, which are node names, are not translated. They are still in English, even in the French UI. This was done for a reason—it was done on purpose. Node names actually never really show up outside of the designer here. And because node names are used in APIs that support Arches (application programming interfaces which are ways for Arches to communicate with other systems), consistent naming is kind of key. So using consistent node names and fixing on a single node name was required. And again, they never really show up in the UI, and any user viewing a report or doing any editing or using a search page will never see these names.

So let's take a look at another UI here. OK, so here we have the UI now translated into Hebrew. And you'll also notice that, like I mentioned earlier, Hebrew is a right-to-left language, rather the printing is in that that direction, and the UI just mirrored itself. And we went to great lengths to make sure that the UI was consistent and reflected the nature of right-to-left languages. So here again, all the strings, as you would expect, are translated into Hebrew this time. But not only that, the UI itself now reflects the fact that it's a right-to-left language, and the navigation bar is now not on the left, it's on the right. And you read the whole site from right-to-left, just like you would read it from left-to-right if you're using English language. And then finally, we have the site in Urdu. Same thing here. It's a right-to-left language. Obviously, the scripts are different now, it's in Urdu, but everything is as you would expect it. If you are an Urdu speaker or native speaker, you would hopefully expect to see something like this, and it wouldn't be jarring. It would be just fairly natural. All the strings are translated, all the text is translated. And the site, again, is being rendered in a right-to-left fashion. So here's a more complete example of a complete UI that is—I'm now focusing on—I mean, all the bits and pieces that we've just previously discussed are, of course, still translated, but this time, I'm showing an actual card, and you can see cards do show up in the UI, and they do need to be localized or do need to be translated. And you can see that here, all of these are card names, and you can see that the cards, which are really just bits and pieces of the UI that that aggregate information together, they have labels. And they have things like help texts and labels for individual data elements, and they even show information for concepts localized. And you can see that here. Here's an example of a concept dropdown and the elements are, in fact, translated into Hebrew in this case. And I left one untranslated, I did this myself so forgive me if the translations are not perfect. But I left one untranslated just to show that, yes, if you don't have something translated as far as the concepts are concerned, you will still get a reasonable default. In this case, it'll fall back to English, the base language of the site itself.

But here you can see every bit and piece of the UI now is in Hebrew, really. So this is kind of a complete example. And that means we have to localize the resource model. Each model, again, has cards defined against it and widgets and all these little labels and strings. So that has to be localized and translated before you want to release a translated version of Arches. So here's a more kind of specific example or rather, I guess, a deeper example of the RDM. This is a way to manage thesauri, and the RDM has always allowed entry of labels in alternate languages. You can see that up here. Here's an entry for the concept copper, which is a metal, and it comes localized into several different languages: German French, and ... "pt," I don't actually recognize that. And it- so you can localize that or translate those

concepts, and then when the UI here on the left is a presentation of the English UI, and here's the English UI with the material collection of concepts, you can see that copper is one of the entries in here. It's in-copper is in this collection. But when I present the UI in French, now copper is actually, 'cuivre' (I don't even know how to pronounce that). But copper now shows up in French, as you would expect. Again, it respects the fact that this now UI is being presented in French, and it does its best to present all concepts in French, if available. So this is kind of an example of the RDM and how it integrates with all the localization and internationalization work that we did with Arches.

One of the final pieces that we had to tackle was the ability to localize actual data, so this is data- this is information that people will enter into the UI and save off as information that they want Arches to manage. And string data or texts that people enter, we would like to have them- give them the ability rather, to save those texts in alternate languages. And we've done that. The original text input was just a simply a text input previously, and we've added this little dropdown. For example, Dennis likes to use this example a lot, but the Mona Lisa, the painting we're all familiar with, has or is known by many different names. And in English, people know it by Mona Lisa and when I type it in, I can save it and if I'm viewing the site in English, then by default, it'll just save that associated with the English language. Alternately, I can save it in other languages, and I have this little gif here. So I can save it as Mona Lisa and the other is in English, so it'll naturally default to the English language, but I can then save it in French. And I can enter the name it's known as in France, 'La Joconde,' and save it in French. And you can see I can go back and forth. I just selected the English, and there it is in English and there it was in French again. So I can save multiple- I can save the string in multiple different ways with multiple different languages, depending on how it's known in that language. And previously this would have to be done with an actual model; you'd have to- the model would have to be designed in such a way to accommodate this. And now we just given the end user a little more flexibility. They don't have to change the way they model their data to accommodate alternate languages for these strings of data that people would enter in the UI. So that kind of covers the core changes that we've made to Arches and how Arches responds to all the internationalization and translation efforts that we put into it.

And if you are creating a project in Arches and you're not doing anything custom, for example, then really all you have to do is- but you still want to, of course, display the UI in alternate languages, all you really have to do then is translate your resource models. That is, all the labels that show up in the UI. But you don't have to do anything other than that. And that's a relatively straightforward process. But if you are customizing Arches, that is, if you're creating a project and need to use, let's say, a custom plugin or anything like that, that relies on additional files to render correctly, then you will need to go through a mini effort of what we went through, by internationalizing those bits and pieces, the custom bits and pieces of an Arches project that you would not want to present in alternate languages. So, for example, in an HTML file you're going to have to wrap your strings in kind of a simple way to denote to the system- that informs the system that this is a string that needs to be translated. And that's kind of the same pattern throughout these alternate files, these other files as well. If you're in a Python file, it's kind of the same idea. You're wrapping it in this specific way that just informs the system, "OK, this is a string, it's going to need to be translated," and we'll expect and will allow for that that text to be substituted with an alternate language if an alternate language exists.

Same thing for anything that needs to show up in a JavaScript file. There is a very similar way to tag a string as being localizer or translatable. And again, you'll have to go through all those things. I'll just say there is in the documentation, it goes through a few of the things like this that will guide users and all the things they will have to do to make it possible.

Finally, I just want to review a few localization tools. We've used an online system called Transifex, and Arches relies on a pretty common format for storing internationalized or translated strings in the system. It's a .PO file, it's a pretty common format, it's just really a text file, there's nothing magical about it. But it defines all the strings and defines their translations. And you can, in fact, edit that file directly if you wanted to. But there are tools that help and assist the translation of all these text strings, and Transifex is one of them. It's an online tool. We've used it, and rather Arches has used it. It simply allows you to kind of manage the languages that are being translated and also allows you to collaborate or users to collaborate on the translation of all these text strings, so that it's not just done by one person in isolation, but it can be done publicly. And the translations can be shared and viewed publicly and even commented on if necessary. But it's a very kind of open and again, a public way to manage and translate strings. It's not the only thing that you can use.

There's another piece of software called Poedit. I believe it's a free piece of software; it's just something you download. It just really, again, makes it easier to manage all these strings. And there are quite a few. I think there's over a thousand strings, almost two thousand strings I believe. But it allows you to compare the strings and see where things are translated, where they're not translated. And again, it just assists you in managing the translation. It doesn't do the translation for you. Finally, there was actually a piece of software that somebody related to the Arches project created. It's called po2excel, and I'll just mention this quickly. This is this piece of software essentially puts all the strings into a spreadsheet and then leverages the Google Translate engine really to translate the strings for you. And your mileage may vary as far as the quality of the translation goes, but at least it's a start and can be a good way maybe just to kick off a translating effort and probably still require somebody to review them at least, but this piece of software will really translate things for you and allow you to input and output .PO files essentially via an Excel file. So there's software out there that can help make the task of translating all these strings less daunting. And with that, just thanks for attending the webinar. Again, if you have questions about translation or internationalization or really anything related to Arches, there is a forum at community.archesproject.org. You can go there; you can also find that link directly from the archesproject.org page. And like I said, there is documentation about localizing Arches in our documentation, [readthedocs](#), and you're welcome to, again, post on the forum and ask questions. That's really what that is for.

So with that, I will hand it back over to Annabel.

ALE: Thank you, Alexei, for that. This is just a reminder now to- if you do have any questions for Alexei and Dennis regarding internationalization and localization or any other Arches technical question, definitely type your question into the Zoom Q&A interface, and I will be monitoring that to see what

questions pop up there. But before we address any questions, and I'm going to give you some time to enter your questions, I'm going to ask Dennis: do you have any anything to add to Alexei's presentation?

DW: Thanks Annabel, and thanks Alexei. That was really, really good. Very informative. I thought that was a really nice summary of what we mean by internationalization and what we mean by translating or localization. I just want to add one little bit of additional detail, and that is: those of you with really sharp eyes saw that Alexei was really focusing on, I think, one of the key aspects of Arches, which is its ability to let you define the content of your Arches application. Like you can define your database models, so [that] your models are really something you know that better than anybody. And the real trick here with supporting internationalization and localization is allowing the community to do a translation of the base Arches application and then giving you the tools to translate your own models and data entry forms directly. So that, I think, is one of the key and amazing parts of the work that we've done.

AP: Yeah, I can just add a little bit to that. That's exactly right, Dennis. I may be kind of glossed over that, but you know, Arches is a complicated piece of software and what makes it complicated is the fact that, yeah, users can essentially define big chunks of the user interface when they create resource models. And I don't want to toot our horn necessarily but that's how- how to manage these strings on basically bits of the UI that we can't know ahead of time. So the translation of the strings and the text related to resource models, it is kind of a technical, I think, challenge and something that we overcame. But again, [Arches] allows users the ability to translate those models, either via the UI or outputting via these .PO files.

ALE: Great. We have some questions that I will go ahead with, in order. OK, so the first question is- looks like it's about Arches for Science: "Greetings, Stéphanie and Damien from LRMH (France) here. I am mostly interested in Arches for Science. Any information about the roadmap and do you know when it will be released?" I think this is a question for me and Dennis. Yeah, so just to give you an update on Arches for Science—I mentioned Dennis and I are both on that team and we're currently in the process- we're still in development but we're also in testing mode, and we're hoping to have more information about [a] release or any more information about the roadmap next year. So we'll be updating the community on when we expect to release Arches for Science to the community. Dennis, did you have anything to add to that?

DW: Yeah, a couple of things. Firstly, I'm pleased that people have actually heard of Arches for Science. So thank you for the question. It's a project that we're pretty excited about. For those of you who don't know, we're building an Arches application that is meant to extend what Arches can do, particularly in how Arches can be used to manage the digital data created by laboratory instruments. So imagine Arches managing not only objects like works of art and the artists that produce them, but also the instruments used to examine them and the activities used to investigate works of art. And ultimately, the sampling of a work of art and the results of that sampling effort, which oftentimes is really a series of digital data files. They might be the files produced by GCMS or by Raman spectroscopy or XRF. There's a whole universe of laboratory instruments that scientists use to investigate materials. Arches for Science is designed specifically to extend the ability to manage and visualize the data that comes out of a

laboratory instrument. And what I can tell you is: we have version 0.9 of Arches for Science working. It's being actively tested right now by a select group of conservation scientists. We are- we have some workflows in place to manage conservation data. We have a few more workflows to finalize. And as Annabel said, we would expect to have a final roadmap and release date available for people some point earlier next year.

ALE: That's right. And I don't think you mentioned this, but for some of you who have been in the community for a while, you might have heard about this version or this version of Arches as DISCO, and it's the same thing. So essentially Arches for Science is- if you've heard of DISCO, that's what Arches for Science is, and DISCO is actually a specific implementation. It's actually the implementation that we are testing out at the Getty Conservation Institute at our labs. So hopefully- we don't have more information about any specific dates but definitely make sure to follow us on social media and join the forum and be part of the announcements list because that's definitely where we will be announcing when we have more information on Arches for Science.

Thank you. All right. The next question is from Thomas Huet: "If I recognize typos in the French translation, for example, how can I correct them once the stable version of Arches has been released?" Alexei?

AP: Thanks Thomas. Yeah, that's a good question. I guess the short answer is the translations are stored in Arches like any other, honestly, like any other file that we manage with the codebase. So keeping that in mind, and the fact that we use GitHub to manage all our files, the simple answer, I guess, is you can simply clone Arches and make the changes locally and then submit a pull request (PR). That would be—sorry for the technical jargon but—that would be the way to submit corrections to translations. And I'll just say also that translations aren't static. They will go out of date as Arches software gets updated over time. So what's been released now will work again with this version of Arches, but once new functionality comes online and new text in the UI becomes available, those will have to be translated. But submitting a PR is really a way to do that, and the way that we should do that, to manage these things effectively

ALE: Dennis, did you have anything to add?

DW: Yeah, this actually touches on a bigger question and maybe even is the beginnings of the answer to the next question, which is, I believe, about availability of Arches in other languages, I think the example here is in Ukrainian. And the key idea here is: the community- can you as a member of the Arches community, and maybe even a member of a specific part of the community, [such as] the community of Arches users who want to support French, can work together to keep the translations of Arches up to date. And that means essentially managing the .PO file. And you can do that. You can do that as shared work, it doesn't have to be done by a single individual. You can do it by yourself, but there's value in sharing the effort, the idea that many hands make lighter work I think is part of this. But also Alexei is bringing up a key point here, which is Arches is not static. It's going to continue to grow and evolve. And as we add new capabilities—that implies new user interface—there will be a need for members of a particular language group to continue to update the translations for Arches. It would be good to get in that

habit. So if you really care about Arches in French or Ukrainian, it's an invitation to roll up your sleeves and look at the translations that have been done already or begin [a] new translation. And as new versions of Arches continue to come out, making sure that they- that the translations are in sync with the new capabilities of Arches as they're released.

AP: I could also add something. Everything that Dennis said is, of course, true. And I want to just point out that the only reason Arches comes with the languages it does is because people in the community did step up and actively volunteer essentially to take on the task of translating all these strings for Arches, so that Arches could come with these languages. We don't have a bunch of language experts on our team to translate Arches, and really, we are relying on the community for that work. So if you have a specific interest in a specific language—and you have the time and ability—don't hesitate to volunteer. And it just helps the broader community and provides an interface in Arches for people in that language group.

ALE: I think all of those are good points. And that's a good reminder of how, you know, the Getty Conservation institute funds a lot of the development, but I mentioned at the top of this presentation that all of the internationalization, the new features that you saw in version 7, were the result of a community member, the Arcadia Fund, contributing to the development effort to make that available for the whole Arches community. The same is true for translations and other aspects of Arches and Arches community resources. So we have community members who are also involved in the documentation efforts for Arches, as well as, not just translations of the interface, but also translations of materials on our website for information for other people who are new to Arches. So really, the beauty of the Arches open-source community is that it is a community, and we're able to leverage that for the better- the betterment of everyone in the community. Hopefully, Ellena, that answers your question.

If you are available to volunteer services to translate in Ukrainian, we absolutely would welcome that. OK, and then, Stéphanie, there is a clarification or at least expansion: “Stéphanie is a scientist evaluating Arches for Science as the support tool to organize your own research, as well as for the full laboratory. And Damien has done some Django development external to LRMH. If you need more testers, we will be pleased to be involved. Thank you for the information.” We'll definitely keep that in mind. And thank you, thank you for volunteering. You're welcome, Ellena.

AP: I'll just pop in and say, yeah, I mean, Arches is open source. And although we're doing the bulk of the work and maintaining the software and upgrading the software, it is really a community piece of software, and we really would love to have more members involved in taking on certain aspects of the software if that's what they want to do. And they shouldn't feel afraid, I guess, of contributing, if they have good ideas or can contribute fixes to things or suggest new functionality. Again, I think it's all good and something we would love to have.

ALE: So we have a question from Samuel Scandrett: “Has the database/ORM output changed now [that] multiple strings can be saved in different languages, or is it represented as e.g. {“UUID”: “EnglishStr”, “UUID”: “FrenchStr”} for one tile?” I don't know if you can see that, Alexei...you see that? For one tile.

AP: Yeah, yeah. So this is a pretty technical question, but previously, of course, when Arches was a single language system, we would just store, in a tile against a single node, just the value of that string that object or that- what we're storing now really is just an object key to language, honestly. So that seems like a very specific and technical answer. But what used to be a string and what we used to save as a string- so if somebody typed in Mona Lisa, for example, all we simply do is save the string, *Mona Lisa*. Now, it's tied, of course, to a language and in fact, a directionality, so what we store now is [a] slightly more complicated object. And again, like I said, it's keyed to language.

ALE: Hopefully that answers your question, Samuel. Definitely follow up if you have additional questions regarding that. And I do have some questions here for me, for myself. Alexei, is there a limit to how many languages you can represent in a single Arches interface?

AP: There isn't really a technical limit, no. I mean, you know, I guess if you had hundreds of languages, that would be a long drop down to select from as far as the UI is concerned. But there is no technical limit on the number of languages that Arches can be represented in.

ALE: And I'm assuming the answer is yes to this, but you can tell me: I'm assuming that you can have a mix of like right-to-left and left-to-right languages in the single Arches instance, that it will just toggle between the two directions?

AP: So you can certainly have multiple languages in Arches, as I just demonstrated, and one of the languages can be in left-to-right and the other language can be in right-to-left and the user interface will flip and will accommodate either language. If you're actually speaking about a single language with a mixture in that - a single language of right-to-left and left-to-right, that does become a bit more tricky. And I would have to actually come back to you on that, on how we can render that. Well, I know in fact that works because, for example, Hebrew has intermingled into it some English words. The word "Arches" for example. I believe that renders properly, so you can mix within a single text string both right-to-left and left-to-right.

ALE: OK. Another question I had, and this is just more of- along the lines of tips for localization: If someone is either using or wants to use Arches and knows that they are going to be using languages other in English, how would they start? What would be the first thing that someone should do if they want to localize their version of Arches? And probably, I will say, that the first thing I can imagine would be to make sure that they're using version 7 or upgrade to Arches version 7.

AP: Yeah that would be step one. Once you've done that, there are commands- I mean, so, what you'd want to do essentially is, to not make this too much of a burden on yourself, you would want to make sure that your models are as final as they can be. If you start to do this work before your models are finalized and you continue to revise your models, then you'll end up having to redo translations of strings that have changed as you're redoing your models. As long as things are mostly finalized, that that will pose the least amount of work for yourself. And then, once those things are finalized, there are commands in Arches, that Arches comes with, to essentially generate an empty .PO file for a specific language. So, if

you wanted to do it in Portuguese, for example, you could create a .PO file that was ready to go for Portuguese and then translate with that file in hand, you could then, using Transifex or a local editor, translate all those text strings into Portuguese then simply place that file back into your system. And now you have Portuguese. One final step would, of course, be hopefully you would commit that back to the community itself so that Arches in the future could come bundled with it. But that's what you want to do.

ALE: So your last point goes back to the question we had about the availability of different languages, and so now you both alluded to that earlier, about how the committee members can submit and contribute translations. And it's not just for that particular community member. If the community member donates a translation in Ukrainian, then it will be available to everyone in the community. And it would be helpful that, if you are translating your implementation of Arches, if you could make your .PO files available to core Arches, that would be very helpful to the whole community and very much appreciated.

AP: Yeah and even if you're not a developer and you're not quite sure how to do that, you can always pop on the forum and say, "You know I have this, I've translated, and I've gone to all this effort and I want to share it with everybody else. How do I do that?" We can help facilitate that, so if you're not familiar with GitHub or anything like that, somebody can help you out and we can make that available to everybody else.

ALE: I have a question from Junaid Abdul Jabbar: "Are there any specific csv file requirements for bulk importing localized business data?"

AP: That's a good question. The requirements are- obviously the CSV file format changed a little bit to accommodate localized business data. But really what it is, what it boils down to, is you have language specific columns encoded in a specific way, or rather just the column header is encoded in a specific way. That really allows you to key incoming business data to a specific language. So previously, for example, if your CSV had a name, as a column, and that's where you stored your name information, now you'll have, I believe its "name_es" for Spanish, for example. But anyways, it'll be a specific column naming convention that you will then put your language-specific information to. So the requirements have changed a little bit, but they're still similar.

ALE: So regarding that, Alexei, say you've got name English, name Spanish, name Portuguese, do you have to- you don't have to fill in the name English, right? Or the default name if your interface is not in English. Or do you?

AP: No, you don't know. I mean, this is the business data. So really, it's up to you to determine what languages your business data should accommodate. So, yeah, you absolutely do not have to use English or provide English if you don't either have it or don't want to provide it. So no requirement for that.

ALE: Hopefully that answers your question Junaid. The next question is about the forum: "So volunteers can go to community.archesproject.org?" That is the URL for the Arches community forum that's powered by Discourse. Yes! Actually anyone in the Arches community, if you're new or if you've been in the

community for a while, you can go to community.archesproject.org and post any questions you have about Arches. So, do feel free to use that forum as a way to ask questions of your fellow community members. Also there are a lot of- you'll see that when you go to the community forum, there might be a lot of technical questions, but that forum- it's for technical questions, but it is also for any other questions that, whether they're technical or not, or any other announcements or just any kinds of interactions with the community that you might want to engage on. So, yes, absolutely. And I would encourage everyone to join the forum and to keep abreast of what's on there.

Hopefully that answers your question, Ellena, and if you have a follow-up question, do ask it. How are we doing on time? We're doing really well. Are there any other questions? Dennis, is there anything that you think people should know about the topic, about internationalization or localization that we have not yet touched upon?

DW: I think we've given people a nice introduction today, or I hope we've given people a nice introduction today. I suspect that questions will pop up as people pursue this in a little bit more detail. And the idea of going to the Arches community forum, I think, is maybe the best takeaway here. So that would be my recommendation: as you start to look at supporting additional languages in your Arches applications, if you do have questions or you have insight, the forum is really a great way to share that. I was actually just looking at the forum this morning, and there's a new contribution from a person who was looking at installing Arches v.7 for the first time. And that person came back with some suggestions for how to improve the documentation. So that's really valuable. Feedback, super helpful. And what's true for installation is true for internationalization. As you work on this and you see what the tips and tricks are for making it go smoothly, sharing that is a great thing. Or if you just have questions, the form is really the place to go. So that would be probably my biggest recommendation.

ALE: Yeah, I think as an open-source project, we're very dependent on the strength of our community and so the more that people participate in any fashion, the better our community becomes and also the better our software becomes, because the more eyes that are on the software and also the supporting documentation, the better it'll become.

OK, so I'm not seeing any other questions. So going once, going twice on the questions? Alexei, did you have anything to add before we close this out?

AP: No, not really. Hopefully everybody got what they were coming for when it came down to internationalization or the localization. But again, the forum is a place to go. We're on the forum quite a bit and hopefully can answer any questions that come up. But there's a lot of other smart community members out there as well. And we're grateful for them when they jump in and answer questions too, so appreciate them.

ALE: And again, the community forum, that's the URL there. And also, if you haven't already gone through the Arches project website, there's that website is pretty full of information on Arches. And that's also the sort of thing that- if you have any suggestions for how information is presented, please do feel

free to get in touch with us on the forum and let us know, because if the website can be improved, we would like to hear ways that it can help you better, in your Arches journey.

Great. So, thank you, everyone, for attending this webinar. This has been recorded and we will be providing this recording within a week, and we'll be letting you all know that it is out via the forum and via social media. And also, we will be letting people know who registered for this webinar. Thank you, everyone.