# Webinar: Describing Images in Publications

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Full details about this webinar including links to related resources can be found on our website:

<https://daisy.org/news-events/articles/describing-images-in-publications-w/>

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>> Hello everyone, and a very warm welcome to you. My name is Richard Orme from the DAISY Consortium and I am your host for today’s webinar.

OK, let’s get started! DAISY webinars are on the theme of accessible publishing and reading, and we are always pleased to hear from you about the sessions you’d like us to feature. Today we’re bringing you our most frequently requested topic that of Describing Images in Publications.

This is work that's being done for many years by special libraries and adaptation services. It's great that many of you are attending this webinar.

What's a relatively recent development is that publishers are producing books that already include alt text and extended descriptions. We thought it would be interesting to ask some of them how they organize this and what advice they would have for publishers who are starting out. So I will be back after the presentations to share what they have told us. At this point I will hand over to our expert panelist who will tell us about guidance and best practices but explore the promise of technology.

>> Valerie: Hi, this is Valerie Morrison. I work at the Center for Inclusive Design and Innovation at Georgia Tech. I've worked at CIDI for about 9 years now and our team specializes in converting text books and course materials for higher Ed into a variety of file formats. I taught for 10 years at UGA English composition and literature previously. So my writing skills come in handy today when talking about how to write and describe images with alt text.

>> Charles: Hello, everyone. My name is Charles LaPierre. I work at Benetech. We have a number of experience in working in technology.

>> Gregorio: I'm a computer engineer. I'm in charge of research and development projects from Fondazione. Fondazione is an Italian organization that helps companies and end users and we are part of the DAISY consortium. I will tell you about automatic image description using the tools available. Thanks.

>> Valerie: So today we are going to be covering the basics of image descriptions for different publications, training and best practices, using AI to automate image description and if we have time we will talk about publisher approaches to alt text. I will start today. And what I'm going to be covering is offering some practical tips and advice for writing effective alt text. I'm going to start with some basic examples and give some specific images and basic charts and infographics to get us started on best practices for alt text writing.

So I always start my trainings on writing alt text with this which might be my favorite image of all time. This is a cat obviously maybe not so obviously because when I have used this image in different trainings you would be surprised how many people failed to mention that there's a cat in this photo.

So when you start approaching writing alt text, people ask me how do you start? Where do you begin? I try to tell people to first summarize what you see in one general sentence. Try to capture all that information up front. It's very helpful for someone to have a framework right at the beginning and then build details. Work from general to specific. It helps in information retention and from getting something from working memory to long term memory.

So when I've used this image in the past, people often get lost in the details. They will talk about the city scape, people will mention this boat in the foreground, the buildings, they might get around to the cat. I've had people mention that there's a cat in this photo, but they never talk about how big he was. So really you want to make sure you are foregrounding the most important person the most important content right away in the first or second sentence.

So I have written my alt text for this image and my example is an enormous cat Photo shopped into the water front of Istanbul. The cat is reclining on one elbow in a human pose. I could talk about how funny I think this is, how cute and fluffy he is. The fact that people have told me this is a real cat and it's a she. Her name is Tombili. I could write a dissertation about this cat. But I will keep it short and sweet and concise.

So knowing where to start is half the battle. Knowing when to stop is the other half.

I usually tell people best practices is the length of a tweet. I want you to keep in mind that JAWS and NVDA are the most popular screen readers out there. So often the default settings cut off reading the alt text out loud after a certain number of characters.

So you really do want it's imperative to include the most important information first if you want to make sure that it is read aloud.

That being said, of course, depending on the context or audience especially with complex graphics or educational materials you can get longer and longer. So I have tips on how not to go too long in your alt text. Maybe take it out of alt text and we will get to that in a minute.

So, general tips. Always use proper grammar, spelling and punctuation. Do not include hard line breaks in your image description. Hard line breaks are when you hit enter. If you hit enter you are creating a new paragraph and the screen reader may stop reading. Screen readers also recognize capitalization and punctuation. So if you write in correct language of course I taught English so I'm all about that. Just be consistent and clear in the way you write things out. Try not to include acronyms or symbols. Write them out if possible. Again, work from general to specific to provide a framework for the listener. Provide information in multiple modalities if possible. This is when your alt text starts creeping up on you and you are 6 sentences in. Think of instead of writing it as alt text, if you have the ability to edit this publications, providing some of that information as a caption so your alt text doesn't have to go as all in detail. Take some information out as a table or a graph. I'll show you examples of that as well.

Then also another way to keep things concise is to read around the image and see if the content is described by the surrounding text, and then your alt text can just fill in the gaps and be more brief.

Here are examples of simple images. A photograph of Martin Luther King, Jr. When I'm training people, I try to recommend that if it's a photo of a person, all you need is the person's name. Unless they are doing something very specific or contextually important. Of course, I would be tempted especially considering everything going on in the world right now to talk about his pose, about the gravity of the image. Maybe insert some of my own feelings or thoughts. Maybe speculate about what he see thinking about. I always try to encourage people to stay neutral and objective and just describe what they see.

If it's a person, all you need is the person's name. On the right I have a magnified image of the human coronavirus. That's the alt text I have written for that image. You can describe it in one sentence but depending on the audience if this were appearing in a biology text book or a journal article in science, you might need to add further details about the spherical shape or the projections depending on your audience and your purpose.

So here's an example of a very simple bar graph. It's a lot of information. It's very simplified in its layout and has muted colors which I appreciate but there's a lot of information in this graph. So, you want to start with general. You would name what kind of graph it is and then the title. So a bar graph titled U.S. population by race. Then describe what's on the horizontal and vertical axis. Then once you have set the terms and described what the graph concerns, then move into the specific data. So my last sentence here is going to start parsing the specific data set in that first bar. Here's an example of where I would say multiple modalities would be even more accessible for someone. So, I would like to see this chart accompanied by a table full of data for each of these different ethnicities and the percentages. That way someone could scroll through or tab through the different cells and not have to listen to long paragraphs of alt text. It's more accessible for the user.

>> Richard: Do you want to read out the alt text that you have on the screen there?

>> Valerie: The alt text I have written I haven't completed it. This is the first bar. A bar graph titled U.S. population by race that compares the percentages of black, Hispanic, white and other races in the United States for the years 1990, 2000, projected 2025 and 2050. In 1990 there were 76% white, 9% Hispanic, 12% black, 3% other. In 2000 there were dot dot dot. If I kept going this would not all fit on the slide. This is where I would have the alt text just be the sentence if possible and then accompany it with a table so that someone could scroll through that table and tab through the different cells and parse through that data in a more leisurely way.

Another thing that I would like to advocate is when you are approaching alt text especially if you have never written alt text for the first time, is that you are always focusing on the meaning and not so much on the appearance. So if there are symbols in this example we have a physical reaction in my image. Whenever I I use this as a training image. When people start writing alt text for me. I get a lot of information about the redness and the squigglyness of this arrow and the symbols and the circle with the sign and the circle with the minus sign. It's much more clear to someone just to describe this as a gamma ray, a positron and then you are not caught up in all the details of the appearance of the arrows or the appearance of the symbols and you are focusing on the meaning. When you finish your alt text, take a step back and think about what the visual implications are. What is the overall visual impression of the graph. Often someone has graphed this data to make a point. In this example I have a bar graph titled maternal mortality in selected states. Georgia, the state that I'm in right now is by far and away has the highest maternal mortality. More than double any of the other states listed. The reason being is someone was probably trying to make statement about Georgia's mortality rates. So once you are finished, step back and think what is the impact of this graph, what relationships are implied and try not to leave out the visual impression for the listener.

Finally I want to talk about cognitive load. It's often called auditory fatigue. If you were describing images and writing out all those descriptions, you are providing a lot more listening material for someone using screen reader software. Try not to over load them. This is why I advocate for being concise whenever possible because of all the research we have done on how information gets from working memory into long term memory.

So, this infographic is probably one of the more complex infographics I have come across. It contains everything in the universe. The title is universe infographic elements. It contains so many different charts and bar graphs and figures and diagrams. I could describe this very simply in one sentence just saying an infographic naming the title and then describing the range of different graphs and elements contained. If I were to go through and comprehensively provide all the data, it would take several hours. So this might be another good candidate for where you provide that information in multiple modalities. Working from general to specific and then filling in the details as needed. With that I will pass things over to Charles.

>> Charles: All right. Thank you Valerie. Today I'm going to talk to you about our DIAGRAM center and the number of resources we have available to you on image description and images in general. On our DIAGRAM center.org website, we have a making images HTML page. Here we have our POET image description training tool link, our image description guidelines, a sample book and training modules.

I want to dive into our POET image description training tool which I think this will be a great asset to anyone doing image descriptions, especially for the first time.

On our website here the POET training tool we have a training module on when to describe an image. Not all images need to be described. Then we have how to describe images. Giving multiple different examples there. And then practice demonstrating what you have learned and then getting feedback from an expert. So I'm going to go into when to describe. There's a number of different examples here from math to images to cartoons, charts. I will pick the last one here which we have a map of the United States here with all the states are labeled with their names and then different colors associated with different states. So let's figure out what this is. If we need to describe it. Which of the following best describes this image is the question. Is this a photo, drawing, cartoon? Actually it's a map. I'm going to select map. Then I click on next. Now it's asking what's the purpose of this image? Provides visual interest only, need to understand the subject matter, is it functional, an icon or a button or header, does it provide information needed for understanding the subject matter? Yeah. That's what it is. Let's click on that. And then click next. Now it asks does the image provide information essential to understanding what's not available in the surrounding text? Well, this is just the image. I need to see it in context. Now we have a link to see the image in context. I'm looking at this article and it's showing me about national diversity of the death penalty. Texas is red, Florida is high. Other states are light blue or a purplish color. So looking around I don't see that information. That information is only in the image. It contains a legend key of what the different colors are for the states. So the answer to this question is absolutely we need to it doesn't the image is not described by the surrounding text of the document that is associated with it. So I click on yes and next.

Now it ask does this image contain embedded text? Obviously it does. It has a key and everything. I will click no though and if you click the wrong answer and click next it says wrong answer, please try again. So this forces you down the path to getting right to the correct answer. If you make a mistake, you are informed along the way. Yes this has text. Click next.

Then it ask would a text description convey the main idea in this image? Yes. Now it gives an overview and some comments from experts. Then it says does it lack details in this image? It describes why you need an image description. It says this image contains a key that also needs to be made accessible. With that, we you can go through these. Also we have how to describe as a training tool. We have general guidelines. Context. You need to have the context. Is this high school level, grade school or university level? Be concise. Be objective like Valerie was telling us.

General to specific. Again, what Valerie told us earlier. Start generally and get more specific. And then tone and language.

Then we have other resource here on how for different types of image. Art, photographs, cartoons, diagrams. You can go through here and see what and test your skills. All of these have what an expert would do as well.

In addition we have a resource called accessible image sample book which is also on the DIAGRAM center.org website. All of these links will be provided to you all. In here it shows how to put those image descriptions into an EPUB book or HTML page and then also describe some extended descriptions. That book is very informative. We have a number of different best practices for style and language for formatting and specific guidelines in different types of images from cartoons to drawings to photographs, et cetera.

Finally, I want to mention our DIAGRAMMAR which is a framework for making images and graphics accessible. So think of DIAGRAMMAR as an object that contains not only the image but associated alt text description, extended description, maybe a simplified description for a person with a cognitive disability. It could contain a tactile graphic or a 3D model.

This object of the DIAGRAMMAR you can send that whole thing to a person and based on their specific needs they can either pick out the image and its text or get a tactile graphic et cetera.

So parts of DIAGRAMMAR have made it into the W3C and web standards and we are thinking of including this in our image share project which is a repository of images. We would love to see this continue on that work.

With that I am going to pass it on to Gregorio Pellegrino.

>> Gregorio: I will tell you about how to use artificial intelligence to automate image description. Last year we carried out a pilot project in partnership with the University of Sienna that was developed by the student [Inaudible]. You can see who partnered on this slide. [Reading from PowerPoint]. To simplify the process of creating born accessible publications. To simplify the work for publishers and content creators. As I said, there are many tools available and almost all of them work well for photo recognition. Even if they confuse Chihuahuas with a muffin. Which is really funny. Some return human readable description. We try to figure out how to make automatic descriptions. In publishing we have many types of images other than photographs. We have art, charts, infographics, icons, flow charts and so on.

So we found that some tools are better than others to describe certain types of images. For example the work of arts containing texts, photographs and icons. Some tools are vertical on particular features like OCR or entity recognition or color and shape identification and et cetera.

So we thought of splitting the description problem into two parts. The first is to understand what category of images it is. The second part is to describe the image itself. Then we realize a prototype that [inaudible] from an EPUB identifies a category using a classifier that we trained and then tries to describe the image using the most appropriate tool. Images of text we choose one tool for photographs, another and so on. To end with the complete description. So the category and the description itself.

The accuracy of the results was 42% on the classifier and 50% on the description. So not really high but also not really low. We can improve that.

To improve this work, we are now working with the Italian national research Centre to create an all comprehensive taxonomy which will help us define more accurate data sets that will enable us to train the classifier. I think that with new taxonomy and new data sets the overall accuracy of the classifier will improve a lot. Thank you. I leave the stage to Richard.

>> Richard: Thank you. We heard a great introduction from Valerie and benefited from her experience of teaching people image description skills. Charles showed free tools and resources at the DIAGRAM center. We heard about the promise of technology from Gregorio. We are going to hear from Kogan Page and others.

Kogan Page says that the creation of image description is part of their default work flow is handled by the vendors. One vendor has their own image description team and the other one uses free lancers with different subject matter expertise. The vendors handle the outsourcing at agreed rates. At Kogan page they have discussed to involve authors but they felt this had disadvantage. It would be difficult to get a common methodology to be applied between different authors. The method at Kogan are not specialized. So these could be medical or stem publishing where this is a requirement. So the author level expertise is not so required.

Moving then to the recommendations from Kogan page, martin says it's important to develop your own vendor guidelines. This helps to clarify your own thoughts as there may be issues specific to your publications and would benefit from the publishers take on those and how they may impact image description. His second point is developing a small library of figures and tables can be helpful. You can use your own descriptions and use this library to get vendors to provide their descriptions to them and compare the two and see where the fit is. This ensures the vendors understand what you want them to do. Descriptions can quickly become expensive. So martin mentions to control cost think about imposing limits on that and also having limitations on the number of long descriptions. His point is you have to manage this process and carefully make sure that costs don't over run.

For quality assurance martin mentions spot checking vendor descriptions on each of your publications. This could be done at the proof stage.

We heard from Rachel at Macmillan Learning. Image description is part of the mix. Having them originate by authors, they outsource by part of the ebook creation. They have description specialist with subject matter expertise and also in house authoring. What are their tips? Rachel shares that they found iterative improvement rather than aiming for perfection has allowed them to make impact for a far larger number of users. Then they are able to use customer feedback on what they have done already and then they can improve on what exists and their processes. Rachel advice is not to err on the side of too much or too little. If you describe an image just to get it done, the description is likely not sufficient. Similarly if you have written a novella about the shade of blue in a naval officer's uniform during battle you have probably gone off on a tangent.

This is still your content. Remember you need to apply the same rules you use for anything else you publish. Think about how you justify traits to gender and race.

We heard from John Wiley and Sons. For all the alt text is written by subject matter experts who have been trained in how to write appropriate alt text descriptions. All image descriptions need to be written by someone who understand the particular subject as well how Assistive Technology and the U.S.er experience impacts the writing. Also they go through a QA process and adheres to their own Wiley requirements. The QA validation can require many hurdles but it's important to speak to end users. That type of validation can help you uncover whether there are gaps in your policy. They don't do in-house authoring and it's mainly out source as part of the e book creation. Under lying the complexity of the publishing industry there are images that are reused in other supplements or questions. So these go through additional editing process to adjust to fit to that question. If an EPUB image is reused in a question, the alt text is adjusted so it doesn't give away the answer and modified to give a more detailed description.

Tzviya mentions that all alt text needs to be validated. We heard previously about the recommendation around involving end users. Tzviya recommendations are become familiar with the different image concepts. Understand the differences between short and long descriptions and when to apply these to an image. Create those internal requirements around style and language to create that consistency in the learner’s experience. Remember that alt text shouldn't be used to teach but to describe and don't forget that spelling, punctuation and grammar. Validate, validate, validate.

From WW Norton, we asked them how they currently manage image descriptions. They said that normally these are out sourced to description specialists. They said that they auger that authoring good image description is more difficult to scale than meeting other requirements because it requires specialists. They do this towards the end of the book's production cycle since images and context around may need to be finalize. It needs to be final before producing descriptions. Some of their editorial assistance do sometimes author the image descriptions. It's not the norm though. They tend to do it when the non STEM book is revised or a small number of images are changed.

They say that STEM and complex materials always require a specialist. He gave a shout out to the editorial team at Norton who are doing more in-house description at Norton.

On the question of whether the alt text can be originated by the author, we heard it happened once or twice and that's because the author volunteered to writing the descriptions themselves. They don't tend to ask authors to create image descriptions themselves because they don't have a good handle on how to write them. It can be difficult enough getting authors to meet their challenging deadlines to ask them to add image description on top of that isn't feasible.

Let's look at the advice they would give to others. Aim for an equivalent experience of how people consume images visually. Think about a short description as the experience of glancing at an image in passing and structured extended descriptions as the experience of deciding to closely look at an image.

Another piece of advice is write guidelines for yourself and for other authors so that your chosen nomenclature is clear. So that the usage is clear and consistent in your practices. There's no single solution. Best practices will help but authoring alt text requires a lot of executive functions and decision making. So thank you to the publishers who took time to talk within their teams and summarize their current practices and advice they would give to other publishers who are starting out.

So that brings us to the end of the presentation slot itself. I'm putting up contact information. This is Charles LaPierre from Benetech can be reached at charlesl@benetech.org. Gregorio Pellegrino can be reached at gregorio.pellegrino@fondazione.org. Valerie can be reached at valerie.morrison@design.gatech.edu.

Thank you to our presenters. Now we will move to the Q&A session.

First question is to the panel is there any difference in writing image descriptions that will be consumed by speech using a screen reader as we heard several times referring to in the sessions or reading through a braille display? Who would like to tackle that?

>> Charles: Whatever is spoken through a screen reader will automatically be sent to the braille display as is. They are in sync with each other. The text to speech of the screen reader drives the braille display. So they are in sync. There's work being done to actually have what's spoken be different than what's on the braille display. So you can have shorter abbreviations because braille displays are limited in the number of characters displayed at one time. So there's work being done in the standards space on that but that hasn't happened yet. So they are the same for now.

>> Richard: Valerie, the image descriptions that are done in your unit, are they used for embossed braille as well as digital publications?

>> Valerie: The ones that we are creating in our e text department are primarily used just in digital format and not in braille. Often when we are faced with material that someone is going to be using braille display or braille, we have a braille department. So we collaborate with them on that. There was another question about the anatomical images and that's something that the braille manger would talk about extensively how to describe an image using a tactile image verses text. So these are decisions we are making with the end user in mind.

>> Richard: Thank you for that. It's a kind of link one about that. The testing that they do, screen reader software reads alt text but the large majority of text to speech does not. So this would be read aloud products. What's are the panel's thoughts on whether alt text should be read by text to speech software and thinking about whether or not that would support comprehension.

>> Charles: We have been seeing that even some read aloud functionality allows the reader the ability to turn off or speak the alt text which going past an image that has alt text which I think is great. Put that into the hands of the user preference. I know we are working with WW Norton on this progressive enhancement of image descriptions so when an image has a description like an alt text as well as an extended description that for some users they want to see that in context with the image and see both the alt text as well as the extended image description. So we are working on ways to provide both of that to a user so you can see it for low vision users, for cognitive users and traditionally for the visually impaired user as well. So that is work currently being done and hope to see some exciting news on that in the next few months.

>> Richard: Valerie, any thoughts for you on the use of image description by folk other than those using a screen reader?

>> Valerie: I agree with Charles. If it's possible to provide more information and then allow the user to decide whether or not they want that extra information if they have the option to opt in or opt out that's the perfect scenario. Sometimes when someone is using text to speech software they are a sighted individual. A lot of people who order e text from us are sighted. The vast majority of our users are those who have learning disabilities such as ADHD or dyslexia. They are potentially going to prefer not to hear the extra information and opt out but if you are going to the trouble of adding the extra information for some users, those people who are auditory learners who are using e text would benefit from it.

>> Richard: Thank you. I have a couple questions that relate to the artificial intelligence. Gregorio, these are coming to you.

James ask how does the same used to review the AI created descriptions compare to a human doing the descriptions in the first place?

>> Gregorio: First of all, our work we have done is just a pilot project. It is not ready for production and we are not testing it for production. I think the first part of the tool which is the classifier could be really useful. If we can get to a good level with the classifier, a good level of accuracy with the right data sets then we can speed the workflow. If by category classifying we are forward the image. For some images we could try to use automatic description for icons for example. For other images for graphs we may require a human description. So I think if we will improve the classifier we can benefit in terms of time. But for a full automatic description it will still take time for the technology to improve. Also the description always it is not a standalone text but it depends on the context. So the tool as to understand not the image itself but the context where the image is inserted.

>> Richard: Julie ask the question computer vision is used for decades. Do you see the potential of combining OCR together with machine learning with AI?

>> Gregorio: Sure. Actually OCR some already use artificial intelligence to manage the text. We tested the Google [inaudible] which is cloud vision API and it does a great recognition. I think both technology can work together to get the best results.

>> Charles: At Benetech we are doing that for book share. We are starting a project called math detective that will take a book that has mathematical equations as images in the book and going through a classifier like Greg said and then sending it through AI and doing that recognition, the OCR recognition and getting that text of the math and then putting it back into the book as math ML that can be spoken and understood. Instead of just hearing an image that usually didn't even have alt text descriptions for those mathematical equations. Being able to put that matte equation into the book is a project we are working on right now at Benetech. It's really cool.

>> Richard: We heard from our presenters and the feedback from publishers about the great guidelines that are produced and the care that's taken to craft image descriptions with subject matter experts. Lots of effort going in. Katie ask do you know whether there's any user center data or studies that look at user feedback.

>> Valerie: I can answer this one. Yes there is a lot of user centered data but of course when you talk to people, you are going to get as many different data points and opinions as there are people involved in the study. Sometimes more. So I would start with maybe googling cognitive load and auditory fatigue and that is where I like to concentrate my efforts because it really helps me in trainings and learn about user feedback.

That's one way to find information. There are lots of other different entities that conduct studies all the time on image description and over the years we have received feedback from students using our alt text and so have the publishers as well. So there's a lot of information out there. I'm currently working on a white paper on cognitive load and image description myself. There's a lot of data out there but there's a lot to wade through. Depending on the users disability there will be far different needs from one another. So when I'm writing my alt text or challenged with a project, I'm trying to find as much information about that end user as possible. It's hard to cover all the bases.

>> Richard: A question from Joseph is when including an extended description, what's the best practices for indicating this in the alt text itself. Some of this may need explanation in your answer. Charles, do you want to take this one?

>> Charles: That's a great question because you want a simplified description in the alt text and then usually the extended description follows it in some type of HTML summary details. In order to point out that there's a following description Valerie, I'm assuming you could say see the extended description following? Have you come across this in the past?

>> Valerie: Yes, so the way we do this is probably not going to answer Joseph's question the way he wants it answered. I'm in the business of remediating content for a specific user. I'm not making the final publications. In terms of how it would appear in the final professional publication, I can't answer to that. What we do is we in house will create we ask the user or the customer who comes to us saying I need this text book, we will ask them what level of alt text description they need and then that is what we provide.

So if for instance, they want a blind user would want their text book or course materials or publication converted into a Microsoft Word doc we ask if they want brief alt text or comprehensive alt text? If they want brief, we would embed it in the image itself and trust that the screen reader isn't going to cut off because we have brief alt text descriptions. But if they prefer a long comprehensive description, we leave the alt text of the figure blank and then in the document itself, we say begin alt text, write out the comprehensive description and then say end alt text. So it doesn't get cut off. That doesn't answer how it would appear in a professional publication.

>> Charles: The use of aria details is for this. You have the alt text with the image and an aria details with a link to the extended description. It's up to the screen reader to say there's additional information. I believe that's what Joseph is looking for in this case. That works in EPUB and on the web.

>> Richard: We are out of time. Kevin did ask a couple questions about extended descriptions. Charles, Kevin is asking the question about how you describe content without giving away the answer to a test question. Is this something that's covered in the POET tool or in the guidelines on the DIAGRAM center?

>> Charles: I'm not sure actually. I know that's something that we struggle with. Actually that's probably something ETS might have some insights in on how to craft those alt text descriptions and not give away the answer. We will have to take a look and see if there's any resources out there to help with that.

>> Richard: Great. We will see if we can find resources and post those to the resources page. Sorry Kevin, we didn't give your answer the time it justified.

OK, we’re coming to the end of this session. Valerie, Charles and Gregorio, thanks for sharing great information and insights. Thank you to everyone who joined us for today’s session.

Coming up in the next few weeks we have some more wonderful topics for you:

On June 24 we have another requested topic, “Metadata in publishing – the hidden information essential for accessibility”. On July 1 we will hear about initiatives that are underway in different regions of the world to bring accessible publishing to reality. We’ll contrast these different approaches and I anticipate an interesting discussion on which will be the most successful mode in our “World Tour of Inclusive Publishing Initiatives”. On July 8 pack your bags, we are going on a trip as we follow the journey from publisher to student and experience “The Accessible EPUB Ecosystem in Action” As always you can find out more information at daisy.org/webinars. I hope you will join us again next week. In the meantime, thank you for your time and have a wonderful rest of your day. Good bye.