

**SOFIA LEIVA:** Thanks for joining this webinar entitled How McGraw-Hill is Formulating a Unified Approach to Digital Accessibility. I'm Sofia Leiva from 3Play Media, and I'll be moderating today. And today, I'm joined by Lin Mahoney, Accessibility Lead, and Scott Virkler, Senior Vice President and Chief Product Officer from McGraw-Hill Education. And with that, I'll hand it off to Lin and Scott, who have a wonderful presentation prepared for you all.

**SCOTT VIRKLER:** Thank you, Sofia. Good afternoon, morning, evening, wherever you might be around the world. This is Scott Virkler with McGraw-Hill Education. I'm pleased to be here to share with you guys our road to accessibility at McGraw-Hill Education.

First, I just want to start off with a little, minor correction on the titles. I am just the product person for higher ed at McGraw-Hill Education. Lin is the Accessibility Lead for all of McGraw-Hill Education. So she covers K through life. And I'm just touching those years of higher education.

**LIN MAHONEY:** Specifically, I'm with our digital platform group. So we have other accessibility experts in other parts of the organization, too, but I run the digital platform accessibility effort.

**SCOTT VIRKLER:** So as we get started and go through this, what we're going to do is take you through what has our journey been, particularly over the last three years or so, as it relates to accessibility? What are the actions we've taken? Why are we taking them? What are the challenges we've faced? We'd like to think we've made some progress. We'll share some of that.

But we're not perfect by any stretch or means. As Bill Okun, our president, likes to say, "We're not pitching a perfect game, but we're out there trying pretty hard." And we are making a lot of progress.

So we did this presentation at the Accessibility Conference in Boulder in November. And Sofia sat in on it and said, jeez. And there was a lot of interest from a variety of different folks on it. So we thought we would share this with [INAUDIBLE] groups.

**LIN MAHONEY:** All right. So as Scott said, we're going to walk you through our accessibility journey as it's been over the last, about, three years or so. So we're really starting with our transition of how we've moved from a traditional publisher to more of our digital focus, how we've tried to implement accessibility as we've been dealing with bringing digital accessibility to the forefront of

everything that we offer.

I'm going to talk about a particular case study around one of our teams, who've had some great success incorporating accessibility improvements in an older form. And then what's our future mean? How are we going to scale our experience so that we can develop more accessible products more rapidly?

**SCOTT VIRKLER:** So Lin, before we go any further, I want to go back to the poll answer, my answer, which is, is this the presentation where you're going to surprise me and say, we're done already and we're all the way there with accessibility? Because there were some others who wanted to know the answer to that question, too. So is today the day?

**LIN MAHONEY:** I would love nothing more than to put myself out of a job and have 100% accessible materials for everyone. But unfortunately, as you well know, we are still in the middle of a very long journey there.

**SCOTT VIRKLER:** And you assure me this isn't about job security for Lin.

**LIN MAHONEY:** I promise you.

**SCOTT VIRKLER:** [LAUGHING]

**LIN MAHONEY:** But it seems that there is no end in sight there.

**SCOTT VIRKLER:** All right. So let's just shift gears. For those of you who aren't as familiar with McGraw-Hill Education-- some of you, probably most of you, at least have heard the name-- but we want to take you through just a little background over the next few slides, just Lin and I are giving you base-level understanding.

So we are all about unlocking the full potential of each learner. We want to do that by having affordable choices that deliver value to students. Obviously, over the years-- we're a 100-year-old-plus company that started in the book publishing world-- we're shifting and becoming more of a learning science business.

As we're doing that, obviously digital is becoming a bigger and bigger part of the marketplace as we do that, and not only for us, but obviously for customers and for students, not only in the US, but globally. But how that happens and how students interact with learning materials is evolving and changing, particularly obviously how things are taught in the classroom, or flipped

classrooms, or whatever that might be. There's a lot of things moving in between that as we go forward.

But I think everyone on the phone would probably understand and know that technology is a key piece of where we are going forward. And just as a proof of that, from McGraw-Hill, in 2016-- so now it's two years ago-- the digital side of our business became more than the print side of our business. And the digital side continues to grow.

Print is continuing to shrink some. I'm of the opinion it's not going to go away during my career-- maybe during Lin's career, but not my career. But print's going to be a key part of what we do going forward.

**LIN MAHONEY:** So this slide really shows you the 129-year journey. And we only have a 45-minute presentation, so we're not going to walk you through some of it. But I wanted to go through a few highlights about how our digital strategy has shifted, how McGraw-Hill is approaching our technologies.

So since around 2013, we began a series of strategic acquisitions on a bunch of different platforms with amazing learning science technologies. But unfortunately, they were all disparate code bases. And they were all built by different people, so they all had very different user experiences.

We have shifted all of those different groups under a single platform group, the Digital Platform Group-- DPG, as we call it internally. And just to give you guys a sense of how big this is, we have over 50 technical product development teams. Each team is six to 10 people. We have hundreds of people in products-- the various business units, K-12, higher ed, which is Scott's area-- who are really defining what our customer needs are.

So we're getting input and different business needs from everyone and trying to align those along with the different technologies. But we've embraced digital technology because we believe that it has the potential for reaching every learner. Digital accessibility has progressed so rapidly in the last few years. And it's our hope that by being such a digitally focused company that we are able to bring learning to every single student.

**SCOTT VIRKLER:** So one thing for everyone out there, just to give you a sense of the scope and scale-- there are roughly 50 Agile product teams across the DPG group that Lin's part of. Each of those teams are roughly six to 10 people. They're probably at a dozen different locations or more,

not counting those who work from home. And then in addition to that, there are hundreds of, then, product people within the business units that are figuring out what we need for economics, what we need for fifth grade math, or whatever it might be.

So the point of this is it's at significant scale. It's very similar to-- you know, if you're at a big university and you have multiple campuses, there's a lot of parallels to that. And one of the challenges is getting everybody on the same page.

So Lin, one of the questions on this that I had for you is-- there's a lot of words that you and I just put together in a couple slides about who McGraw-Hill is. but what kind of-- money talks, right? Money talks and something else walks. I'm not going to say it. What kind of financial investment is McGraw-Hill making in digital? And what does that mean?

**LIN MAHONEY:** We've been very upfront about the amount of investment that we're putting toward digital platforms. We've publicly disclosed that we're spending over \$150 million a year on our digital platforms and product developments. We believed in the future of digital learning, and part of that is making sure that that's accessible for all of our listeners.

**SCOTT VIRKLER:** So not cheap.

**LIN MAHONEY:** No.

**SCOTT VIRKLER:** One other baseline thing I want to make sure we understand. So from a product strategy approach perspective, there's a couple of phrases you can hear Lin and I throw around. One around roadmaps and sprints.

So we map out our platforms and our products, basically, over a three-year, 36-month period. The things that are closer in are the things we're more sure we're going to do. We do three cycles a year, so every four months-- not quarters, but three cycles. And as we go into the next cycle-- so we know obviously what we're building these first four months of this year-- we know kind of what we're going to do the next four months of this year and then directionally, we know later in 2018, in 2019. So our roadmaps are not set in stone. They give us a general sense of direction of where we're headed.

And then inside that development, we do what are called two-week sprints. And so for any of you that are familiar with software development, that's fairly common when you're doing Agile development. So the team's lockdown requirements-- they go off and they do work for two weeks. We do testing and acceptance testing at the same times.

Toward the end of that week, there's people who are planning out the next two weeks, and so on and so forth. And that allows us to adjust and be flexible with our builds. So that's how we're doing this. And so that becomes important to accessibility, because as we're doing testing, we're taking those results and getting those back in real time.

Now, depending upon what it is, we may be able to make a change right away, the next sprint. But more times than not, it's getting planned out sometime in the sprints to come. And if it's a larger thing, then it's going to be probably more in the next cycle. And that's just directionally how we do that.

**LIN MAHONEY:** So all that to say that we are constantly iterating on our efforts and making incremental improvements in everything that we do.

**SCOTT VIRKLER:** So basically, as I said, about three or four years ago, there was a group of us that got together. And we said, look, we've got to get better at how we're thinking about accessibility, both on the software side, the content side, the sales side, and everything that goes with that.

So what we did was we pulled together the need, or defined the need, for a centralized group. And we'll talk more about that in just a second. But our first challenges were just to get a shared definition of, what is accessibility? How are we going to define success?

And to the jokes we were talking about earlier, is it a do it one time and I'm done? Or is it an iterative thing over time? Or what does that mean, and how do I know when I'm done? And frankly, where do we begin?

Because we were all over the place. To Lin's point, because we had technology that was acquired from a variety of different places and teams that had been working disparately across the company. We had some teams that were doing much better than others, and others, like myself, who had trouble selling accessibility a few years ago until it became pertinent. That's not a joke. That's true.

**LIN MAHONEY:** That's very, very true.

**SCOTT VIRKLER:** And how do we make it part of our lives? And how do we make it part of our teams' lives? So with that, we formed an Accessibility Council. And so this was senior leaders across the company.

And a shout-out to Lisa Nicks of McGraw-Hill, who's in the higher education team. And Lisa was instrumental in us pulling that group together. Many of you may know her and know how passionate she is about accessibility. But we sat down to address these things on the screen. And we collectively made the decision at that point in time, we're going to go become compliant with WCAG 2.0 AA.

Now, the first thing we had to do was explain what that is to everybody and why two As, not one A, and why two As, not three As. And so that then led us to a variety of things we're going to talk about in terms of, how did we get that out across not only the school group in K through 12, but the higher education group, the professional group, through the product development teams, and everyone that lived and breathed this? So the Council was a key part of this, so we could at least have a centralized function that could get us on a shared definition and shared understanding what it was we were trying to accomplish and why.

**LIN MAHONEY:** So we met and really developed the MHE Accessibility Philosophy that is shared across the organization. We use this as our benchmark for when we're doing any sort of accessibility training, making sure that people understand what criteria we're looking at. And yes, we are keeping an eye on WCAG 2.1, which is right around the corner, but also talking about how our end-to-end user experiences work together.

From registration, through login, to task completions, we have different groups working on all these different platforms. How can we make them work well together and produce a more cohesive user experience? It's always a challenge that we face across these six major platforms. We have thousands of authors. We have even more subject matter experts. We have a frightening number of ISBNs of various book titles. And all of those have to be accessible.

Tons of legacy products. That's just something that's a reality of a company as old as ours, that we have a lot of content. And we are blessed with a lot of content, but we also knew that we could not fix everything at once. So we had to figure out the best way to move this forward.

**SCOTT VIRKLER:** And I think, inside of that, is also-- you know, if you're just in a software business, you only have one of the variables to deal with, which is essentially the software. In our world, we've got the end user software. But then before you even get to that, you've got the content that has to feed into the software. And before you get to the content, you have to have the authoring tools which will create content, because you've got a gazillion different authors that are creating the

content. So if you don't have authoring tools that can create accessible content, you're stuck.

Once you have that, then you've got to train the people who are doing the authoring, ensure they know it. Then you've got to have a way where you're going to test that. And then that better ought to be able to be delivered through software that is addressing accessibility. So we had to break this down into those three chunks. And before we did that, we even had to get into just, what is the cycle of development?

**LIN MAHONEY:** Yeah. And I think that one thing that we've really learned and all acknowledged is that accessibility is only as strong as the weakest link. So how do we bring this into our development cycle? We've really tried to use the same model that we have for our learning science work. We're driving continuous innovations and improvements by focusing on research, methodology, solutions, and focusing on the data and then really trying to always constantly evaluate, iterate, and figure out what we can do better.

So in our first phase, when we were trying to focus on things, we had to, one, define that accessibility policy. We had to train our employees and our vendors. And that is really a huge hurdle, as we had those many people that we're working with, making sure that we all understood that philosophy. We also need to focus on some baseline gap analysis.

We worked with some third-party auditors to focus on understanding where we were currently and where we needed to go in order to make that accessibility. And a lot of that required reaching out to our customers, talking to the disability services offices, talking to campus, talking to students with access needs, and finding out how could we make the biggest impact.

So once we had this researched to inform our methodology, we had to start coming up with the solutions. So we worked on methods to build in purchasing criteria to make sure that, if we were going to partner with anybody, they had to be an accessible vendor as well. We had to focus on how we were going to update those authoring systems, that we can create that accessible content. And then we had to be really strategic about how we were going to remediate our existing products. And then, of course, we needed to make sure that we brought this back to the users. And we're trying to validate, really, is what we're doing working and making sure that that's there.

Next, we had to go in to start building and deploying. We had to make accessibility a core business acceptance requirement. If it wasn't going to be accessible, would we be able to release it to the market? And then so we had to really test, iterate, and then deploy that, and

then communicate to our users where we are, recognizing where those gaps are, how we're going to try to move that forward, and keep evaluating and iterating.

You see here, it looks like a nice little cycle, but I have to say that phases three and four should have about 15,000 different arrows going back and forth, because we are constantly trying to go through multiple ways of testing, building, deploying, and trying to make that improvement. And as Scott described before with our Agile development method, it's about making those incremental improvements. So even when we're so excited about our latest release-- we're constantly like, yes, this is what we've done-- we still know that we have a backlog of future improvements that we can make. So it's about fitting those into the roadmap and where we can fit that work in.

**SCOTT VIRKLER:** So, Lin, I'm trying to monitor the Q&A chat, where we're going there. One of the questions was a statement that A and AA are really distinct, individual of each other. So when we say AA, are we forgetting about A?

**LIN MAHONEY:** We are absolutely not. They are a cumulative practice. We are paying attention to all 38. You cannot be AA if you're not single A.

**SCOTT VIRKLER:** Yeah. Thanks. Now, that's a lot on this slide. I'm going to ask you how did we get the teams on the same page? But before we do that, I'm going to answer a question that relates to that. So one of the questions that came in was, when I said senior leaders, what did I mean? What's a senior leader?

**LIN MAHONEY:** You. [LAUGHING]

**SCOTT VIRKLER:** So we have a roadmap board which is made up of the presidents, the highest level positions in the company. And in that roadmap board, I could tell you accessibility gets discussed every time we meet. And the Accessibility Council essentially got the nod from that entity. And so we had the most senior level sponsorship within the organization.

And I think to maybe the point of the question, that is a key to success, is you need to get the senior leaders to understand why this is important, what the issue is, and what are the actions we need to take. And so we had some good success with that. And then within the Council itself, we had a variety of different levels in terms of people throughout the organization. So it was very matrixed. So that gave us a good cross-business and cross-functional representation as we go forward.

But back to my question now. So what does this mean in terms of educating the teams? If you've got 50 teams of six or seven people, that's 300, 400, 500 people. How are you getting them on the same page?

**LIN MAHONEY:** We've done a lot of work, especially in our first year of training. And still this continues to be one of our biggest, one of my biggest efforts, is making sure that we have enough workshops, that we have webinars for our remote participants. We recently invested in an accessibility platform that's going to bring digital learning for-- every single McGraw-Hill employee will go through the same accessibility training.

But really, we've gone out there, and we've talked to people, and we've visited all our remote locations. We talk to the product development teams, and we try to help teams understand what these requirements mean for them in their job functions, because it's different. What applies to an author is very different from what applies to a developer.

**SCOTT VIRKLER:** So one of the questions that just came in-- so what did we do to get attention of the senior leaders?

**LIN MAHONEY:** That came before me, which thankfully then created my job.

**SCOTT VIRKLER:** So I will ask and answer that question. So what we did was we gave an overview of, here's what's going in the marketplace, here is the trend. And frankly, it comes from customers. If our customers at the universities, instructors are asking about accessibility and/or requiring it, we're going to react to that. And it's really that simple.

The customer behaviors are what drove our behavior, as well as when you explain the problem that you're trying to solve for, that frankly, we're building the stuff, and not all students can use it, and here are the reasons why. That builds empathy. And then that by itself also pick picks up its own energy and drives these things forward. So a combination of those two things, the customer requests, as well as people just understanding we're not serving the needs of all of our customers the way we're currently doing it.

**LIN MAHONEY:** And I have to say that having senior level sponsorship is absolutely huge because accessibility can require some big trade-offs. Do you want to have this fancy new feature? Or do you want to make it accessible? How do we really meet those in the middle so that we're able to really address all of our business needs?

**SCOTT VIRKLER:** So all that training sounds like a lot of money. You already talked about the millions you're spending on development. So how did you get support for that?

**LIN MAHONEY:** You. And that's why I'm saying having a senior level business stakeholder who truly believes in the mission is critical. So that's, I have to say, one of the biggest takeaways that I've had, is that if support comes from the top, it really has to flow down at every single level to successfully execute.

**SCOTT VIRKLER:** Well, if I knew we were going to give smiley faces to Scott, I would have been here earlier. All right, let's keep going.

**LIN MAHONEY:** All right. So as we talked about, phase 1 was busy. That was that level setting where we really had to focus on building that solid foundation with our accessibility policy. We also recognized that we didn't necessarily have everything that we needed in-house. We needed to focus on some external expert partnerships, working with some accessibility auditing firms, working with some consulting firms, working with a lot of usability and accessibility testing, which has been huge, and really talking to our faculty in those disability services offices.

In the last 18 months, we have completed more than 20 product audits at this point. So we are constantly taking a look at where we are and recognizing that it's really a gap analysis for many of these. And then the best part is that we're finally moving into a phase where we're validating our work, and we're really able to really document how far we've come.

**SCOTT VIRKLER:** So Lin, one of the questions that's come up, which is a great question, is, so as we are doing all of this, how do we think about legacy content, legacy product, legacy software, versus new?

**LIN MAHONEY:** A lot of it is focusing on, if we're going to build something brand new, it needs to be compliant. For some of our legacy stuff, we need to look at what improvements can we make given the technology that exists. We can talk about Connect, for instance, which is a Flash-based platform, or one of our versions, an older one.

**SCOTT VIRKLER:** One was.

**LIN MAHONEY:** [LAUGHING] Was.

**SCOTT VIRKLER:** Yeah. So one of the things we do-- for example, we made a decision. The council made a recommendation, and it went up to the roadmap board. And we said, look, for any new software development, for it to come out of release and go into production, it's got to pass the

accessibility criteria. And so there was some discussion about the pros and cons of that, but that became basically a must-have.

So we treat accessibility just like we would treat privacy and security. There's some other things around user experience that fit in this criteria where they're absolute must-haves for the teams to be able to release a software code. We're applying that same methodology for new content being developed.

And to Lin's point, we're going back, and we have to look at the old stuff. And we have to look, quite frankly, at the cost benefit of, is it worth making the investment of trying to fix something that we know is going to be retired in 24 months? Or something like that. We had to look at whatever the situation is. Obviously, every one of the situations is going to be slightly different.

**LIN MAHONEY:** And so we'll talk about that a little bit in the next part where we talk about our case study that we have. But so, really, phase 1 was focusing on our external partnerships, how we're going to bring that learning in-house and direct our internal efforts. And then next, we have to go out and start talking to our customers and making sure what we're doing makes sense.

**SCOTT VIRKLER:** Yeah. So another key part of this is, then, just ingraining this in our product managers and ingraining it in our user experience groups so that they just live and breathe this. It just becomes something you're not thinking about also/and, it's just part of our day-to-day, of how we develop a product. And so part of how you do that is-- in my opinion, in what we've done-- is you have to engage your user community. And for us, that's primarily students and instructors, or administrators, whatever it might be.

And then you need to make the investment to be able to go out and engage them, listen to what they have to say. It's not going to all be good. There might be some good in there. There will be the good, the bad, and the ugly.

**LIN MAHONEY:** So when you hear some really negative product feedback-- you're head of product, how do you share that with people? Do you really share the worst of the worst with your teams?

**SCOTT VIRKLER:** I love the negative feedback. And it's a really weird thing to say. But frankly, as a product person, while I certainly like a pat on the back once in a while, I don't need people telling us the product's good. When I'm doing user testing and with customers, I can see if it's good or not. But what I really need is healthy criticism on what could be better and why this doesn't work.

Because if I can understand and document that use case, I can write that down, and then it's much more easy to share that in what we call a user story to a much broader group of developers or product teams. So yes. And I think transparency is absolutely critical. And frankly, I mentioned the word "empathy" before, but transparency also enables you to be able to build empathy so the teams start to naturally get it and understand this.

**LIN MAHONEY:** And I think that's-- another big takeaway I've had is that-- a shout-out to our user experience teams who have gone out and done these user testings, and then package up all of this feedback. They do a ton of different user interviews, ton of different experiences. And then they summarize, what does this really mean for the big picture? And how does this impact our development?

**SCOTT VIRKLER:** So yeah, data testing, as I mentioned before, is making it work or making it usable. And if we're doing our job right as it relates to accessibility, we're making the product better for all of our customers. It's not we're doing it just for a select group, these improvements will work across the board and make for a much better experience.

**LIN MAHONEY:** So some of the examples that we've had with engaging with our users is just-- you know, we like hearing the things that tell us what we do well, but again, reiterating where we really need to improve-- the focus is around maximizing that user value.

**SCOTT VIRKLER:** Absolutely. I think we can keep going.

**LIN MAHONEY:** OK. So beyond the user feedback, it's really reaching out with the communication and outreach to our customers. So it's sharing a lot internally. We talk about as technologies are updated and how that shapes our new requirements and keep building. Our marketing teams are trying to constantly keep people apprised of, if we have big, new release and there's a new functionality in there, it's all about this-- how do we partner with people and make sure that we're representing what is most important for our users?

So all this to say, we like to hear from our customers. We love to be able to actually work with the individual users and have them test our products. And we like hearing from you about what is working, but more importantly what isn't necessarily working so we can improve.

**SCOTT VIRKLER:** Yeah. One of the questions in chat is around transparency, and how do we encourage that when sometimes there's a natural tendency to want to hide mistakes and failures? And I would say, one way of doing that is recorded video.

**LIN MAHONEY:** Yeah.

**SCOTT VIRKLER:** Doing recorded user testing-- as they say in sports, "The big eye in the sky doesn't lie." And when you can show-- now, it's hard to get everyone to live user testing. But if you can record it and then show it, I've seen it dozens and dozens of times where the engineer who swears their product is the best product ever watches a film and just shrinks or errors in horror that that's how someone's experiencing their product, because that's not at all what they intend. But they don't know what they don't know. And so that's clearly one way to help with that transparency. And not treat it as a failure, but treat it as an opportunity for improvement.

**LIN MAHONEY:** And I think that we've created a lot of that internally with our communication methods. We have an internal social network where we are constantly posting articles or experiences that people have had and sharing with the wider groups you don't necessarily see every day. And that's, again, where our user experience teams have done a great job of sharing those findings more widely.

**SCOTT VIRKLER:** Yeah. And the flip side of that is when we do get that occasional pat on the back-- we had one just a week or two ago, where a customer who had not been too thrilled with us took a deeper look at where we were and came back thrilled and took us from the naughty list to the nice list. But we're also very nice now. And so we take things like that and we share those.

And we share those on that network because, frankly, if you're buried in one of those teams and you're just grunging away day to day, trying to make this stuff happen, sometimes it's hard to connect that work back to what's really happening with the customer. So the onus is on us to share the customer feedback-- as I said, the good, the bad, and the ugly.

**LIN MAHONEY:** Yeah. I do have to say, those nice notes do make a big difference. Because we sometimes feel like we're pushing that big boulder up a big hill. And then knowing that, hey, we are making progress-- it feels really good. And so that's why we wanted to talk about our case study around our update of one of our Connect platforms.

**SCOTT VIRKLER:** So in the market today, we essentially have two versions of Connect. One is what we call classic, and one is what we call new Connect. And this is about what we call new Connect.

So in '16, we did a deeper audit-- not just a regular VPAT, but a deeper audit across new Connect. Now, inside of Connect, that includes everything from an ebook to an adaptive

reading experience, light assessment-- meaning multiple choice, true/false, that kind of thing-- to very complex assessment, videos, PowerPoints, learning resources. You name it. It's pretty much got the kit and kaboodle of everything in digital learning.

So we then basically took one of our Agile teams and said, OK, we've got some challenges. We've got to make this better. And so that team was given that task. And they came up with-- what was the name they came up with?

**LIN MAHONEY:** The [? KiloWATs ?] Team. And we need to give them a huge shout-out, the [? KiloWATs ?] Team. And the WAT stands for Web Accesible Technology. And they took these accessibility standards-- they were all very new to accessibility, had no background in it, really-- and threw themselves in learning everything that they could, translating the requirements in really amazing, usable ways. And then now, they are a cornerstone of our training and scaling up across our teams.

**SCOTT VIRKLER:** Yeah. And So that team really took on a goal, delivering improvements for keyboard navigation, color/contrast, UI zoom abilities, further increased screen reader support. And they basically did that in a five-step approach.

**LIN MAHONEY:** So they learned those standards. They learned those user behaviors. They focused on how they would apply it. They prioritized the highest areas of impact, because we can't hit on everything. They knew that. And they tested, tested, tested, and really embraced that.

So their biggest takeaway-- and this comes from Emili Bergland, who is our Technical Product Manager of that team. And she is an accessibility powerhouse. I cannot sing her praises enough.

But she shared some really important insights that the team had as part of their retrospective. And that's another thing that really is an important part of our Agile development teams. We share those retrospectives. When we close out a sprint, we talk about what went well, what didn't go well, and how it can be improved the next time.

So Emily talked about how, quote, "We learned to use our product end-to-end with assistive technology. We researched online. We collaborated with external and internal accessibility resources. We tested with users. We embraced that Agile tenet of inspecting and adapting every step of the way."

And that iterative approach really led to significant UI improvements. Many of you may not be

familiar with the old version, but we had icons in here that weren't properly labeled. There was no visible keyboard indicators on there.

And we recognized that when they were doing these accessibility updates not only to make it compliant, there was a lot of UI updates that could be done to update everybody's user experience. And that was an amazing collaboration between our designers and user experience teams, our technical product developers, our engineers, our QA teams. And it made a big difference, just focusing on that agility.

**SCOTT VIRKLER:** I mentioned before that, in our case, and really for anyone who's in education, you're going to have to deal with the authoring tools, content, and the user experience to be compliant. Because one of the traps you can fall into very easily is, if you're on a team, is, well, my team, we made our stuff accessible. And if your part of the solution is step five in a 12-step process for a student, who cares? Right? That doesn't make any difference. It's got to be accessible from the beginning all the way down through.

**LIN MAHONEY:** One keyboard trap can lock in users so that they wouldn't be able to complete their work.

**SCOTT VIRKLER:** Yeah. So one of the lessons learned here is ensure that someone is responsible for looking at the experience from the beginning to the end, particularly if you're a bigger entity. And let's say, if you're a university and you're building some tools yourself, someone's got to be responsible for that complete end user experience. Because an instructor may build a PowerPoint or Word document by itself, which is fine. But if they can't get to that from the LMS, or whatever it might be, then it's not going to matter. So that's definitely critically important.

The other thing is, within McGraw-Hill, we like to think we have a lot of experts. And we do, from a variety of different fields. The teams utilized all that we could internally. But as Lin mentioned earlier, we don't have all the answers, and we know we don't have all the answers. So we think it's really important to reach outside the company to other experts, whether they're other independent companies, potential partners, vendors, schools, and even sometimes those nosy competitors.

Because sometimes, these are bigger industry issues. So none of us have solved accessibility for math end-to-end yet. And different people are doing different parts of it. But frankly, some of the progress that's being made in that area is really because there's industry initiative and effort on it. So I think that's understanding and having the humility to recognize that you're not

going to solve all these problems by yourself.

**LIN MAHONEY:** Absolutely. There are a ton of industry groups that we are part of, and we work with, and we're just trying to work with everybody to find better solutions.

So just to summarize a little bit-- we're not perfect. We talked about this amazing effort that we made. We are not fully perfect, but we are making some serious progress.

**SCOTT VIRKLER:** Yeah. So if you look back in '16-- and you can see on this chart-- so there were 315 errors in this particular audit that was done. And then if you move forward a year ago, or now back in '17, we were obviously able to reduce this significantly down to less than 100. And I don't know the current number, but I know it's less than that.

**LIN MAHONEY:** We are planning a big release. That one's going to knock that even down significantly further. And that's the other important thing I wanted to underscore, is that we're happy to see a 73% reduction. We were celebrating, but we were also immediately building that backlog of, where else can we improve? What other gaps can we close?

And so we have a team working on some significant improvements now, that we will have further updates to drop this even further in 2018. So that's really what we're working to do. We're trying to really point out internally the progress that we're making and then sharing, how are we able to do this with one team? How do we spread this for other teams?

**SCOTT VIRKLER:** So Lin, one of the questions that's come up-- when we talk about test, test, test, test, so who does that testing? And do we even have anyone who has a disability doing any of that testing?

**LIN MAHONEY:** We do. We have a mix of different resources. So our quality engineering teams have gone through a huge amount of accessibility training, so that they are now using automated testing tools, manual testing tools, using the assistive technologies that our users use. We also partner with accessibility auditing firms who employ people with disabilities to do the really hard hammer testing for us.

So we're making sure that our work goes in front of people who use the technologies that they have. So we're still learning, though. We're not perfect. We have recognized that. You know, we've done a lot in 2017, but 2018 means even bigger accessibility tools for us. We're integrating with new tools that will allow us to bring more testing in-house. We're focusing on more training. We have new guidelines for both our internal and external content partners, making sure that we're all developing with the same cornerstones, with the same guidelines in

mind. And we're expanding our consulting circles, and that especially means around user testing.

And I think the biggest one to swallow, Scott, for you, is budgeting. We know it is time- and resource-intensive. And in the early days, I think we were like, sure, we can tack that on. And then we realized that it really must be taken into account when you're planning. It makes a big difference.

**SCOTT VIRKLER:** Here, here.

**LIN MAHONEY:** [LAUGHING]

**SCOTT VIRKLER:** Yes.

**LIN MAHONEY:** So yeah. So Now that brings us forward to, what do we have for our future? I mean, our goal is to-- right now, we talk about our assistive technology. Alternate formats are sometimes necessary. We still have requests coming in all the time there, but our goal is to decrease the need for that accessibility support and really focus on bringing accessibility central into everything that we offer. So that we're exploring different ways of having individual student profiles, different instructor settings, different flexible, universal design for learning-focused flexible formats, allowing user choice, and really keeping an eye on the market and what our customers need.

**SCOTT VIRKLER:** So our collaborations-- I think we've made this point strong, that we're not doing this all by ourselves, that we need help across the board. We're going to continue to do that. But then there's still challenges for us. And as you mentioned already, number one on my challenge list is our costs.

And how do we build this into the budget? Because frankly, it is an incremental cost, both on the software side and the content side, for something we weren't always doing before. So we now have to build that essentially into a new baseline. But we're in the middle of doing that and accomplishing that over a period time. It's not going to happen all at once.

And we're under constant pressure. Because on the flip side, what we hear from customers are things like, well, no thanks, we don't need your stuff. We're going to build our own thing, or we're going to use free content.

And when I hear that, all sorts of red flags go up for me. Like, ah, if I were at the university, I'd

want to be asking, who's going to test this free content for accessibility, initially? And then ongoing, because it's going to change. Who's responsible for testing that? Who's testing the tools they're going to use to create it, to ensure that it can even create accessible content?

And then who's going to fund and make sure the training's occurring for those folks and for the instructors who are creating the content? And/or if you have a vendor of the digital tools, who's going to ensure what they're delivering? And who's doing that testing? We have those problems ourselves. And then when I hear it in the marketplace, that really makes me concerned, if I were in other people's shoes, about how we're going to address those things.

All right. So this brings us back to where we began, which was we wanted to share with you guys our transition and the journey that we've been on, how we're defining accessibility and how we're sharing and educating internally, as it relates to that definition; how we're implementing as we're executing that, both on the software side, and the content side, and the inclusive product.

We talked a little bit about Connect as one example. And hopefully, we shared a little bit [INAUDIBLE] the future. So I've been trying to get the questions as they've been coming through. We certainly can take others now.

**LIN MAHONEY:** Oh, yeah. So we had a question about whether we're making our materials accessible to [INAUDIBLE]. Yes. Yes, we are. Our K-12 has a very established system there. So yes, we are participating there.

**SCOTT VIRKLER:** And the question, is Connect and LMS available to corporations? So first of all, Connect's not an LMS, per se. It does have overlapping capabilities with it, with an LMS. We do have a group, called The Learning Science Group, that provides our tools and platforms in the corporations.

I don't know if anyone's using it as an LMS. I don't actually know the question. It's funny because the people who would know that are right around the corner, but I'm not going to step out to answer that. You can certainly send a note in to us with your contact information, and we can get back and answer the question.

**LIN MAHONEY:** And yes. So we just had a question. Is AMP a product of the consulting services that we're using? Yes, that is one of them. That's the one that we're bringing further in-house and partnering with level access on doing further training. But they're not the only accessibility

consultants we're working with. But yes, we've embraced the AMP platform for a lot of our audit reporting.

**SCOTT VIRKLER:** The next question is around essentially what percentage of instructors at client institutions are using authoring tools, compared to doing it themselves? How is this policed? How long does it take to make their content accessible? You know, I can't really answer those questions.

Look, I think all of us know that, particularly in smaller institutions, all the instructors are using some of their own materials to some degree. And it's just a variation of how much. But yeah, it's an interesting question. I don't know how many of them are actually doing that. And when it comes to the policing on the campuses, I think that's, frankly, as an industry, one of the things we struggle with.

**LIN MAHONEY:** Yeah. Let's see. So we have some questions around our-- for software products, like using math equations, like ALEKS, will you be using MathML, providing image descriptions, and/or supplementing with raised line images?

So right now, ALEKS focuses around using a combination of MathML and image descriptions. It's a custom version, so it's mostly focused on image descriptions. We're doing some research around raised line images.

One area that we have some challenges in this is where we're constantly keeping an eye for evolving technology is how our algorithmically-based questions that are constantly updating, have so many variables, could be presented as a raised line image. We are not aware of technology that can do that and integrate in this way. But if you know of it, please send it our way. That's an area we are actively wanting to explore.

**SCOTT VIRKLER:** Lin, do we have written processes for our teams in terms of giving them instructions, including how to do things, including accessibility?

**LIN MAHONEY:** Yes, and they're constantly evolving. We're always looking to improve our documentation, because we know that teams have different needs, but that we can all share and learn from our baselines of what has been successful for other groups.

**SCOTT VIRKLER:** There's a question here. Are your ebook and Connect development groups separate from one another or integrated? So I guess I would say they're independent teams.

So our Connect team is primarily based out of New York. Our ebook team is a combination of

Seattle and Boston. So locations are definitely separated, and the teams are independent of each other.

**LIN MAHONEY:** We have another question about, what recommendations do you have for increased value-added [INAUDIBLE] collaboration and promoting accessibility best practices? We've definitely seen this, the alignment that's come around ePub and accessibility requirements there. It's been a function of the industry collaboration and sharing best practices there.

I think that the expansion of universal design for learning and representing that every student has different learning needs and different learning preferences and finding systems that are able to support those are critical. And I think that that's really where reaching across groups and reaching across industry can bring better alignment for how we can better succeed with that.

**SCOTT VIRKLER:** Yeah. As I really got in to understand this better-- I'm still a novice-- a few years ago, one of the things that frustrated me as a business leader and product leader was, what was the field of play? What were the rules? What was the definition of success? And so it just seemed there was so much grayness in, if you do this, well, you were sort of compliant, but not quite. Yeah, that's good. It's better than what you were, but it's not quite done yet.

And so I think, as an industry-- to answer your question-- I think the more we can drive to crisp clarity on what exactly meets the different criterias, that that's going to be much better.

Because if you can remove that ambiguity, then that will allow organizations to organize that and say, OK, we need to accomplish-- here's the goal and the task at hand. If we do these things, we can say we've now met criteria. That will be immensely helpful, I think, to allow people to scale up.

**LIN MAHONEY:** Yeah. Accessibility is messy. Assistive technology support is messy. But the more that we can standardize and work towards the specs is where we're going to have the best alignment and making sure that we're all playing on the same level.

**SCOTT VIRKLER:** Have we been able to benchmark our accessibility progress against our competitors? I think at the highest level, yes. We're not going to ask for the VPAT for MindTap or any other platform from Pearson, or WileyPLUS, or whatever it might be. But generally speaking, we have a feel for where we are.

Quite frankly, we had such a long ways to go a few years ago, we were more worried about us

and the challenges we had in front of us, versus exactly where the competitors were. So we've made a lot of progress, but I still think our primary focus is on-- we know what we want to get done really independent of what the competitors are doing. We're getting a very, very clear message from customers on what the task at hand is.

Has it surprised you what standard tagging screen readers do-- that standard tagging screen readers do not recognize or do not recognize well?

**LIN MAHONEY:** Yeah. I mean, I think that's definitely some of the challenges that we've face is, what browser and assistive technology are we going to be able to test against? And we know we can't test for every configuration out there, but that's why we do try to be focused as much as possible on trying to be compliant to the specs and to hope that the assistive technologies are following those same, too. I mean, that's the beauty of WCAG, is that it is supposed to be device-agnostic and really future-proof as much as possible. It's not always perfect for everybody, but the standards are really our guiding practice.

**SCOTT VIRKLER:** Here's a good question for you, Lin. When we test or audit our products, how do we decide what level of testing gets conducted, i.e., dev testing, automated testing, user scores, or vendors/consultants for full audits?

**LIN MAHONEY:** Everything that we do gets developer-tested and automated testing and some level of manual testing. It's really when we can't afford to externally audit and use external vendors and consultants for every single thing that we have. But that's why we try to do periodic audits for those benchmarks for ourselves. And that is when we do those VPATs.

We're not going to necessarily get a VPAT document for our first effort. We will do that when we have then done a lot of regression work; remediated, addressed some issues; and then put out the best possible product for our customers. So we look at our audits as really a two-phase thing-- the gap analysis, informing our roadmap, what improvements that we can make, and then documenting our current status.

**SCOTT VIRKLER:** And if I don't know Lisa Nicks, where can I get a VPAT from us?

**LIN MAHONEY:** You just need to request them from your sales rep, still. We're working on updating and adding more transparency to our process.

**SCOTT VIRKLER:** Or if you know Lisa Nicks.

**LIN MAHONEY:** Yeah. Do not flood poor Lisa Nicks. She is an amazing resource, but you also have great sales reps and other people you can reach out to, too.

**SCOTT VIRKLER:** Lisa's IMing me, telling me to stop.

**LIN MAHONEY:** [LAUGHING]

**SCOTT VIRKLER:** Here's a question. These things are changing up. I just realized that I hit the wrong-- it's someone who came in late. Do you have a specific team of accessibility requirement writers, for instance? Or do you have an approach where everyone is in charge of accessibility?

**LIN MAHONEY:** We definitely have accessibility requirements that have been stated at more of the corporate general level. But we do require it. It is part of every step of the process where we know that it has to happen at content development, it has to happen at writing the actual code. It has to happen at every single stage. So we do rely on teams to adapt for what is their particular instance.

**SCOTT VIRKLER:** Who typically writes or fills out the VPATs?

**LIN MAHONEY:** We focus on having externally third-party-authored VPATs. And that's part of the expense that comes along with it. But we want to make sure that what we're putting out there has been fully vetted and externally tested, and that's our biggest focus.

**SCOTT VIRKLER:** And are there any questions that we would suggest, if I'm working at an institution, a higher education institution, that they should ask around accessibility before they go to contract with a product?

**LIN MAHONEY:** I think that asking for whatever documentation that we have, and then we will certainly share where we are and then also, as much as we can, with the roadmap and the expected improvements that we're going to have.

**SCOTT VIRKLER:** And I think I can answer this trick question. So does that mean all the content published by McGraw-Hill moving forward will be accessible? Not quite yet.

**LIN MAHONEY:** In a few years, hopefully.

**SCOTT VIRKLER:** Yeah. We mentioned math already. So math is an example of we haven't fully solved that. But with our copyright nine teams, we're making significant progress with making-- and part of what we're doing is we're going after the higher volume, higher usage titles first and getting

those knocked out, doing as much as we possibly can within the budget constraints that we have.

**LIN MAHONEY:** So we had somebody here ask about, one of your products has a screen reader-optimized version. Is that necessary for earlier products? No. That is a particular configuration for one of our complex math products, the ALEKS platform for higher ed. For our other products, there are not special settings at this time.

**SCOTT VIRKLER:** Outside of VPATs, who owns adherence to WCAG 2.0 AA? Is there accessibility team? Is it individuals? Is it you? Is it me?

**LIN MAHONEY:** I have to say, it is end-to-end, because it can't fall on one person's shoulders. Really, it's as strong as the weakest link. So we have accessibility team. We have a core team that works across the different parts of the group that includes content, every single stage of development. But it can't be one person. Accessibility cannot land on one person's shoulders, and I say that as the Accessibility Lead for this [INAUDIBLE].

**SCOTT VIRKLER:** [LAUGHING] And I would say also that the teams know they're not supposed to put out anything new that's not meeting the accessibility requirements. And if that's the case-- because there are always going to be exceptions. There might be something that's happening for a variety of different reasons, but they have to request an exception to that.

Do we have a style guide that includes accessibility guidelines? Or are we just turning the authors loose and let them do whatever they want?

**LIN MAHONEY:** Absolutely. This is an area where we are constantly developing and making stronger and more stringent improvements around there. We've talked about, yes, we need to be accessible. But now we're focusing on how can we really guide people more and more and be more stringent about how they're going to build the accessibility into their authoring. So yes, style guides are a part of it.

**SCOTT VIRKLER:** All right. Is that an hour?

**LIN MAHONEY:** Yeah. Oh, my gosh. We're over time already.

**SCOTT VIRKLER:** Well, thank you, everyone. Sofia, thank you for pulling this together. Hopefully, this was useful for people. Lin and I like to banter back and forth, so we enjoyed it.

**SOFIA LEIVA:** Yeah. Thank you, so much, Lin and Scott. That was really great and really a lot of information.

**SCOTT VIRKLER:** OK, Great. Thanks, guys. Have a good day. Bye.