Small Steps, Giant Leaps: The Digital Transformation Experience

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KENNEALLY: Well, welcome, bonjour, bon gia, buongiorno, buenos dias, sabah al-khair, annyeonghaseyo, ni hao. It's a very international audience, and I want to be sure to try to say it in as many ways as I can. You're all very welcome to our program today. My name is Chris Kenneally. On behalf of Copyright Clearance Center and Ixxus, I'm very happy to welcome you.

Right away, let me apologize in advance should the phrase digital transformation come up too often in this discussion to suit your taste. It's not just publishing, though, that's stuck on digital transformation. Around the world, dozens of conferences on digital transformation are held every month. This evening, if you don't already have plans, you might want to attend an exclusive executive dinner on digital transformation in historic Trafalgar Square. But wouldn't you think by now that when it comes to digital transformation, we'd be all done?

As my colleague at Ixxus, Carl Robinson, has pointed out, digital transformation usually takes two roads. We can choose to have more digital products, services, and formats, or we can become digital organizations fit for survival in the fully digital world. In the 1820s, as the technology of steam ships grew more reliable, the shipping firms faced a similar choice, and they responded the same way, too. Some fitted clipper ships with steam engines. Those were hybrids, I suppose. Of course, others invested in purpose-built steam-powered vessels.

Lest you think such confusion is only for 19th century gentlemen in waistcoats and ruffled shirts, I have something to show you. As it happens, today, April 11th, 1976, is the birthday of the Apple I computer. Now, you can pass this around – you have a look at that. That's an Apple I computer. Of course, today we stand at the precipice of an entirely different digital world than Steve Wozniak and Steve Jobs could imagine in 1976.

Some interesting facts about that – to finance the project, Steve Jobs sold his VW Microbus for a few hundred dollars. Steve Wozniak sold his HP calculator for more than

that – for $500. So it gives you an idea of what that bus must have looked like. And the model of the Apple I that you're going to see in just a moment as it comes around was sold at auction in 2015 for $815,000.

I think it's important to understand that on recollection – on reflection, rather – small steps can be giant leaps. And we're going to hear about those small steps that will result in giant leaps from a really wonderful panel. I want to introduce them starting from the far end to my right here. Kiren Shoman is editorial director at SAGE London. Kiren, welcome.

SHOMAN: Thank you.

KENNEALLY: Kiren Shoman is responsible for SAGE London's textbook and reference program, and she's strategic lead of the recently launched SAGE Video portfolio.

To my immediate right is John Newton.

NEWTON: Ni hao, Chris.

KENNEALLY: Ni hao. Welcome indeed. John Newton is CTO and founder of Alfresco, and he's had one of the longest and most influential careers in content management. He founded Alfresco in 2005. It's an enterprise open source software company focused on advancing the flow of digital businesses for customers from Cisco to NASA. In 1990, John cofounded, designed, and led the development of Documentum.

And then to my left is Dr. Junaid Mubeen. Dr. Mubeen, welcome.

MUBEEN: Thank you.

KENNEALLY: Junaid Mubeen is director of education at Whizz Education. He's a research mathematician turned educator. Dr. Mubeen is working at the nexus of education, innovation, and technology. He oversees the educational strategy and development of the Math-Whizz virtual tutoring service.

And then to his left is Kathryn Earle. Kathryn, welcome.

EARLE: Thank you.

KENNEALLY: Kathryn is managing director of digital resources at Bloomsbury Publishing, where she is responsible for large-scale digital products for the academic library market. Before that, she was head of visual arts at Bloomsbury.

And we have a sort of a last-minute substitution, but very much welcome indeed is Tom Morris at the far end. Tom, welcome, first of all. Tom is CTO and a cofounder of Ixxus, where he has spent more than 20 years in IT as a principal architect in publishing systems integration projects. Looking forward to contributions from all of them, and we will get to questions from you towards the end of the program.

But John Newton, I'd like to start with you, because you were there at the beginning – not quite in 1976 with the two Steves, but not very long after that. This new planet of content management that you discovered and have been exploring for more than 25 years – it seems to me that we've come full circle in a way. You were telling me that in the early days, it was content was king. That went away for a while. It's coming back. And I think that's important for a publishing audience to hear, because I'm sure they wonder about the value of their content. Tell us about that.

NEWTON: Yeah, I can't really say that content has ever gone away. You know, just the total volume of content goes up with the total capacity of storage on the planet right now, which continues to grow exponentially. What's happening, though, is that that content is getting richer, has greater context, and is just more involved in more processes. So basically, where once upon a time we had created software to manage millions of pieces of content back when we started Documentum in 1990, now you can't even find anything on your laptop, right? Your laptop is a mess. You can't find anything. That's true for any consumer of your products trying to find information. You're there in a morass of content that's out there, and context is as much – maybe is the queen to content as the king.

KENNEALLY: John, it's important that you can share with us your perspective from publishing but also beyond publishing, because everywhere today this notion of digital transformation and content management is having an impact on organizations – government, for example.

NEWTON: Yeah, so in content management, process management, and a lot of digital services, that's some of the area that we invented at Documentum back in 1990. Actually, some of the first companies to pick up the software were publishing companies. Anybody who had to manage huge amounts of information needed to be able to manage that information, and more importantly, publish and distribute the information as well.

Over time, that process has just gotten faster. And it isn't just the publishing industry. It's being revolutionized in so many industries. As Chris mentioned, government – government is a huge publisher of information, and they're doing it in such a way that that information is actually becoming more actionable as well, serving citizens more effectively. Also, financial services is streamlining entire processes of moving not just money and not just transactions, but actually all the information that clients need in order to be able to make intelligent decisions about their investments. So we're in a time that it's really transforming again at an exponential rate – taking up all that disk space, taking up all that compute, but becoming more engaging over time.

KENNEALLY: You call it engaging and discoverable, but really it's about relevance. It's about making that digital asset, whatever it may be, of value.

NEWTON: Yes. I mean, look at all the books that are out there. I'm amazed. I didn't quite expect this, but I can go online and probably find as many pieces of information as well. How do you get through just the noise that's out there? You do it by focusing and being relevant. That's true for anybody in any industry, and that is the crux of digital transformation is just cutting through the noise to become more competitive, more relevant, and deliver more relevant products that are out there. There's a lot of ways that you can do it. In fact, the technology on this, including things like artificial intelligence, is evolving so fast that it's going to be really tough to keep up with it. But if you don't keep up with it, you're just going to fall behind, and the company itself and all their products become irrelevant as well.

KENNEALLY: Well, Kiren Shoman at SAGE, keeping up with this has been your charge for a number of years right now. It's important to remind people that SAGE is an academic publisher with a very specific target market but really mission-driven. Because you care about research, you care about the content and always have, how do you confront that challenge of maintaining the relevance, delivering the information, but also being sure that the content is the best quality?

SHOMAN: I think at the end of the day, it's about really remembering who it is that you're publishing for. I totally would echo that whole notion of content is king but context is queen. I love that, because I think that it's true. Ultimately, we need to be always cognizant of who is it that wants the material regardless of how we're sending it out to you – so the challenge of discovery and of finding, but also making sure that we are pushing out there really matters. So thinking about who is the learner and how do they learn? Who is the reader and, if not reader, the watcher and viewer? In terms of us launching SAGE Video, it's in response to an acknowledgement that students and faculty wanted video alongside textbooks as a part of the whole learning endeavor.

KENNEALLY: Right. And I think you talk about that as building bridges to knowledge. That's very difficult, especially in the academic publishing environment, because of so many audiences you have to suit. Right? You've got the faculty, who may be teaching a textbook, the students themselves, who have their own expectations, the librarians, who are collecting this material. How do you juggle all of that?

SHOMAN: Yeah. I mean, when we talk about building bridges to knowledge, we're talking about recognizing our role as a publisher is often not about creating the content. We do do some creation, but generally we are working alongside academics as our key partners, enabling the transference of their ideas, their knowledge claims into the minds of the student or the other academics that want to further their own research and their own work.

So that sort of metaphor of the bridges really helps us. But generally, having to think about the different people that, if you like, are on that bridge as well – sometimes we talk about them as the fact that we have different gatekeepers that we have to be aware of and that we have to really appeal to. So in some cases we need to be persuading the faculty member that the student wants that product and it would help them most to learn, but it's the faculty member that has to make that decision about whether or not to recommend it to the student.

Likewise, in other contexts, we're often talking about the librarian being the person who's got the purse strings – needs to be convinced that the content that we're offering is being delivered in a way that they find useful and accessible that will enable them to offer their patrons something that they really can use and can access, and accessibility is a massive thing from that perspective. A librarian has thousands of patrons across the university system that want to have this ubiquitous learning experience, want to be able to just find it wherever they are – off campus, on campus. So just all of these different, if you like, stakeholders for us to be aware of – I think the digital aspect of it is what really gets us to turn on the content for a lot more people than perhaps we would have been able to do in the past.

KENNEALLY: And I wonder, Kiren, when you're talking about that kind of feedback, that two-way communication that you're talking about – for me, at least, that's what really categorizes the digital world. It's an opportunity for everyone to contribute. You hear from customers, you hear from the audience in ways that you didn't before. And that is data, isn't it?

SHOMAN: Yeah.

KENNEALLY: So you're collecting data along the way that is going to influence the product development. It's going to influence perhaps whether you decide to branch out into a new area of research, that kind of thing. But do you think of it as data? The bits – when we use the word data, we think of bits and bytes, but is it more or different?

SHOMAN: No, I think it is data. And the biggest piece that we talk about and that many people here will talk about all the time is usage data. This is the thing that is quite exciting and that's quite different in terms of digital versus print. We can tell a lot more about who is watching our videos – what videos are they watching, how long are they spending watching them? Likewise, in our book platform as well, we can tell how many downloads certain chapters have had. We want to be able to do even more than we currently are, but that is data that we assess, that we analyze, that informs our commissioning strategy, informs our marketing strategy as well – gets us to really understand our customers and our users. So I have no problem with recognizing the huge value of data there.

KENNEALLY: Junaid, that allows me to turn to you, because without data, you wouldn't have much of a business at Whizz Education, because it really is about the whole adaptive learning cycle that you have been exploring and discovering the potential of. Perhaps it's worth telling the audience a bit about how that works at Whizz Education.

MUBEEN: Yeah, I think that's a fair characterization. So we've been around for about 14 years, and actually when we started out, we were just a digital publishing company. We wanted to help children to learn maths and we wanted to help parents and educators to support that learning. So we created a bank of 1,200 lessons, and the first thing we recognized was that because we were starting out with digital, we had the opportunity to exploit the unique affordances of digital. We could make content interactive and engaging in ways that may not have even been previously conceived.

So that was a successful time for the business, but then we made our own leap when we realized that the way to really transform a child's learning is to adapt the content to their individual needs. We know that learning maths is like stacking up concepts on top of one another. If students haven't secured a good understanding of the foundational content, it makes some of that more advanced material impossibly difficult. So we underpinned our product with some intelligent tutoring algorithms using some very basic applications of artificial intelligence. What that relied on was the ability to then track how each of our students is progressing along each lesson, how long they're taking to respond to item, whether they're getting a question right or wrong, and so many other things.

So for the last 12 of our 14 years, for us data has really helped to shine a light on where our students perhaps need more help, but also where the content perhaps needs to be improved. So we thrive on that rapid iteration cycle. And for us, data is really a conversation starter. It can trigger a very interesting conversation. But you will only ever get the context from actually engaging with those users firsthand.

KENNEALLY: That's interesting, because again it gets back to that two-way street that I referred to. And for a publisher hearing directly from the consumer – the reader, the student, whoever they are – about your content, that can be, I'm sure, a humbling experience.

MUBEEN: It certainly is. We certainly have the ambition to produce the perfect lesson for a given learning objective. The reality is whether it's print or digital, you're not going to nail every facet of the pedagogy or the engagement elements the first time. But what you can do with data is continuously iterate around that feedback, so you no longer have that burden of a perfectionist approach that says (audio cuts out) release cycle and make sure that we get everything right the first time around. So this concept of an MVP, a minimum viable product, has really taken off recently on the recognition that we're not going to get everything right the first time. As long as the experience is complete and compelling enough, we can iron out the details based on the feedback that we actually get once the product is in market.

KENNEALLY: Right. You observed to me earlier that the conversation is the story. That's what's critical to the way you do your work. And that is reflective of other areas of the web. So for example, in Twitter, it's really – you know, the news gets reported, something has happened, but then what engages people on Twitter isn't that headline. It's how everyone is reacting to it.

MUBEEN: Yeah, and I think it's important not to blindly defer to data. Data has its own fake news problem, where if we assume that the only things to be valued are the things that we can measure, and we base all of our judgments, particularly in the context of a child learning – if we base it purely on what we're able to capture, we trust too much in the technology. The technology can capture the basics. It can capture how long your students are spending on your material and their basic levels of understanding. But certainly with where technology is today, it doesn't even come remotely close to substituting for the judgment of a human educator or indeed a parent. So we're very clear that while data is the starting point, the context only comes about through that human conversation, and quite often that means actually exposing yourself to the realities on the ground.

KENNEALLY: And for you, that human conversation has taken you far afield. I mean, you work in the UK, but you have a project in Kenya where just that has been sort of been a proving ground for, right? Because you have gone out to very rural Kenya in areas that probably for the very first time the students there are seeing a computer, having a link to the world beyond. It must be a real challenge even for the technology itself. But how you have seen how they have learned – the data that they have given you – has helped you to respond to them, to give them the learning they need in that environment, and then to bring that back to the UK. Tell us about that.

MUBEEN: Yeah, so quite often you will see similar learning profiles for students across the world, but you know, based on the environment that they're in, that the context is entirely different. So what we always make sure we do is we will never make a product decision based on data alone. That always has to be sense-checked and validated by the team that we have on the ground, who can really extract the human story behind those data points.

Rural Kenya has proven to be a very valuable and challenging experience for us, because it really pushes us to the extremes. We're having to deal with the reality of one computer in a one-room schoolhouse with 100 students at a time. And if you can start playing at the extreme ends of those infrastructural challenges, it really then lends you insight on how you might transfer some of those practices over to the UK or the US, and indeed vice versa.

So what we make sure we do every month or so is to gather those perspectives globally. We have the data dashboards at the drop of a hat, but it really then takes time to have that conversation individually with each of those teams and then to bring them together. That's certainly the most exciting part of what we do is understanding what are the nuances in each environment and what are the common practices that we can spread throughout that network.

KENNEALLY: Kathryn Earle at Bloomsbury, you told me before we met that – before today that the very first step for you is a vision when it comes to managing a digital transformation project. This means probably assembling the right kind of team, bringing the right kind of people together. Expand on that. You've had several interesting projects you have worked on. Is there an example of where that sort of first moment is so critical to the rest of the project?

EARLE: That's a great question. So we are a startup within Bloomsbury, but I have experience from a previous business of setting up a large-scale digital product. I would

say that the vision is absolutely integral, and that's where there is some tension really between imagination and data. Because the data, which is vitally important and I think is absolutely essential – I mean, we're really on top of a new initiative even within our startup to make sure that our data is clean and comprehensive and up to date. But there is a tension between relying on data and knowing what the data tells you and having a vision for something.

So the first project I ever – digital product, large-scale digital product – I ever worked on was something called the Berg Fashion Library. It really came about because we'd had a lot of experience as a business working within fashion, which wasn't well served by academic products. Now, knowing what I know, I would say that this is a product that would be hard to get through some of our publishing committees, just because it was more about having a big-picture vision and seizing an opportunity than actually having the data there to support it. But I think that both of those things are absolutely vitally important.

When you're undergoing any kind of transformation, digital being the case in point here, it's really, really important to know what it is that you want to accomplish and to have a very, very clear sense of where you're going and why you're going there and to communicate that effectively and to get people on side. So you really – the communication I think is absolutely vital, and I would say that that has to happen really early in the process.

So when I set up the division at Bloomsbury – I got the job in September of 2016 – one of the first tasks was obviously to put the infrastructure in place and to get the right people in the right roles and to define those roles. But the next project was to work with them to create a business plan, to create a vision, and I think that's essential.

KENNEALLY: Right. And it's funny – we're not talking about technology here.

EARLE: No.

KENNEALLY: To Junaid's point, we're talking about human interaction, getting the right team, getting the vision put together. How do you manage the technology piece of it? Because you're managing technology, you're managing content. That must be a hard balance.

EARLE: I'm probably going to get shot for saying this, but I actually think the technology is the easier bit. Because you can get expertise – people who really, really know what they're doing – and get advice on that. But it's the cultural angle – and

maybe that says more about me, but I think the cultural angle is really, really important and cannot be overstated.

It's very easy for someone like me to be an evangelist for digital and say, oh, it's fantastic. You can chunk this, you can XML that, you can have new business opportunities, blah, blah, blah. But unless you've got people who are on side and feel the same way you do about it, then you're going to have a problem. Because even if they're open to digital and they're open to all of these ideas, probably a lot of them have a day job, and they're going to go back to doing their day job. So I think you really have to engage people. It's really hard to over-communicate, but communication in and of itself isn't enough. You have to share a vision.

KENNEALLY: We have brought up data in various contexts here, and you have as well, but you were telling me before about a very creative approach to data. And that's the thing – data can perhaps be overwhelming. We hear about big data, and it may seem big, no matter how much there is, for anyone who's facing it. But how do you be creative about it? There's a project that is for a drama database online.

EARLE: Yeah, so this is a project I wasn't directly involved in, but at Bloomsbury we have a library product called Drama Online. And we had a consultant – a data consultant, Dan Barker, who's absolutely brilliant, and he had an idea for managing that data that would enable us to create character grids. The way that drama is taught, it's important to know things like the number of lines a certain kind of character has. The data underpinning the project allowed for the creation of that feature, and that feature has been very, very popular. So there was a person who was able to combine that really sort of creative vision with a data mindset to deliver something that really works for us.

KENNEALLY: Great. Tom Morris, you probably have had more than one publisher come to you and say, Tom, I need data-driven products. They've been to a session like this and heard about the value of data, and they're ready to hop on that bus and get going, and they come to you and say I need data-driven products. How do you respond to that?

MORRIS: Well, looking at it through a lens of people, process, and technology, digital transformation – I kind of agree technology is possibly the easiest aspect. The people is the hardest. The change is – you know, there has to be vision and business plan-led. So how can we address the technology bit to be just a straightforward exercise?

This is probably a bit corny, but I remember watching a TED talk which was very inspirational. It was about what is the definition of intelligence? This chap boiled it down into an equation, which was summarized as, well, the definition of intelligence is

maximizing future freedom of action. So if you're going to build a digital transformation initiative on a technology platform, it has to be open-ended, because the variable is going to be the people and the change behind it. So the platform you build, as straightforward as it could be, you're likely to build the wrong one if it's not flexible enough to adapt to change as you're targeting that target.

KENNEALLY: That brings up another question that I'm sure people ask, and we've heard it in other discussion here at London Book Fair – is about platforms. People want to build platforms. If someone says to you, Tom, I need a platform, what's your response to that? I mean, that sounds rather monolithic. It sounds as if we're imposing a very strict code of discipline on people, at least internally, that they have to use for everything from manuscript submission to the editing to the production, distribution, and so forth. How can a platform work for you in a way that allows for that freedom of action?

MORRIS: That's quite a contentious area. Everybody wants their spot solution, their vertical. Am I getting a bit of feedback?

But I think you can have both. So the idea is that if you do have the intent to have a platform, it's for unification. It's for a common vocabulary. Sorry, it's a bit distracting.

KENNEALLY: But carry on, as they say here. (laughter)

MORRIS: Yeah, the show must go on. So I think you can have both. The real question that people are trying to answer when they build a platform is solving the problem of silo unification. Silo unification is inevitable. You may as well embrace it. You're going to have spot solutions. Every line of business is going to have their own kind of problem that they need to solve in a way they need to solve it. We shouldn't really stop that. We should embrace it and bring in the data from those silos and address it as one.

So there are different ways of doing that – through asset registries, building up knowledge graphs through the business. But the key part of this is the people again, because without a common vocabulary, you can't communicate within your business, let alone between businesses.

KENNEALLY: Right. John Newton, I'm sure that's a very familiar point to you, because again, I imagine whether there's a publisher that comes to you or a government agency or whoever they may be – Ford Motor Company, whatever they are, NASA – they come to you and they say I need data-driven products. I need a platform. I need all of this. Are those the right kind of questions? Tell us here what are the right kinds of questions to be asking.

NEWTON: Yeah, so we did a survey of a bunch of CIOs and chief digital officers who were involved in digital transformation, and we asked them, what made you successful? And also measured those that were successful based upon how quickly they were growing, what was their revenue like, big and small. Generally, most of them were over $1 billion. But there were some clear themes that came out. And we talk about the cultural aspects, but you can overcome those when the initiative comes from the top.

Those digital transformations that were most successful started from the CEO down. It became a systemic change in the corporation saying we want to create new businesses. We want to transform our business. Digital transformation isn't just transformation of technology. It's transformation of the business model. It's transformation of the business itself. Coming from the top down, it does make the cultural change easier. It's never easy, but when you're all behind it, it absolutely works.

So industry after industry, those are common themes. Whether it's financial services that they want to – you know, basically they went from buildings with vaults and money inside of them, to databases with lots of people, to the point where they're just a mobile app now. That's part of that digital transformation. How the technology gets consumed is an ever-changing process. But the fact that you can make money more effectively is the driving factor behind that. How can you be a more effective organization – in fact, transform your organization from a 20th century model into a 21st century model?

KENNEALLY: John, I have to say – I mean, I'm sure there might be a CEO or two in this audience right now, but for the rest of us who aren't CEOs, what's our role in digital transformation? I think there's an argument to be made that while certainly there should be buy-in at the top, there should be a direction from the top, but it has to happen in the middle levels, doesn't it?

NEWTON: Yeah. I think it's about creativity. It's thinking about how can the world be different, based upon the technology? The technology isn't the most important part, but it's certainly kind of fundamental to some of these new business models. We talk about platforms. A lot of companies – in fact, the most valuable companies in the world right now are platform companies. It's Google. It's Facebook. It's Apple. It's Microsoft. It's also the telcos. The banks are becoming platforms. Even health care companies are becoming platforms. Certainly publishing is going to become a platform as well. So I think it's worth rethinking, how can your business run differently?

If the CEO doesn't get it, you've got to kind of raise the interest level by looking out in your own industry, but also adjacent industries and very similar industries to see what's

different. You can see that the transformation – in some industries that are struggling to make that transformation to be relevant in a mobile world, in a voice-driven world, in a highly cognitive world are just kind of withering away, but those that stay ahead of it are actually growing tremendously.

I mean, look at the music industry, which is very similar to the things that are going on right now. It used to be first discs that were pressed on vinyl – and by the way, vinyl's coming back, my teenagers love it – but then it was CDs, and now it's totally platform-driven. Spotify is like hugely valuable right now compared to even the music companies that are feeding through it. The power of the platform is core to that digital transformation.

KENNEALLY: Right. Kiren Shoman, thinking about the world we live in today, John was referring to people who are thinking about getting their content in a mobile device or may not be readers first, but may be consuming their information in other ways. You briefly referenced the video project that you've been involved in at SAGE. Tell us a little bit about that, and tell us how, though, it still returns back to some of the core principles of publishing. It's about storytelling.

SHOMAN: It's about storytelling. That's true. What we've done is we were recognizing that increasingly video was being used in the classroom and being used as a tool to learn. And we have been thinking – like in terms of what other people have been saying as well – in how much what we've traditionally done can retain its value, and yet we needed to start thinking about creating a new class of digital products that would go alongside our book program and our journal program, which also are able to be delivered online.

But thinking about what that new class looks like, video was a very obvious example for us, recognizing that it had this massive, as you say, storytelling opportunity. In other words, students who wanted to learn some concepts could learn it better – there's research that we've also been carrying out that is showing how much some particular video styles can enable students to learn better than simply reading. That's not to say that they shouldn't be reading, but that that's just another mode that they should engage with.

So for us to think how do we enter into that world was a really big decision, because we had no skills in video, I would say, although now I'm pleased to say we do have some. But the question was how to transform ourselves into a publisher of video. For us, it enabled thinking about new partners, and those were actual people who do do video for a living and to be able to work with them, and also to some extent thinking about how we

could learn to make video, too, but ultimately never forgetting the why. The why is what does the student need or what does the academic need to use video for?

So we would take a subject area – for instance, sociology – and what we called blow it open and just look at all of the different modules and the different key learning objectives and concepts that need to be understood by the student and ask ourselves, would that make a good video? Would that be useful if we tried to figure out how to teach that using video? And then working with our academics and our authors as well as our advisory boards and our video producing partners to try and figure out whether that was a good idea, and if it was, what kind of video? Should it be a tutorial? Could it be a case study? Should we try and do a little mini-documentary? Should we do a whiteboard? And making sure that we're always thinking, how does the student or the lecturer, the faculty, the researcher – how do they want to consume that information?

KENNEALLY: Right. Kathryn Earle was talking about that balance between technology management and content management. You were giving us an idea of what it was like in those first days with that video project, so you had to go to partners. Talk about, as a publisher, the relationship with your technology partners.

SHOMAN: Yeah, I mean, it's massive – in fact, one of them in this audience today – because that relationship really matters, because they are the ones who end up needing to also understand our mission, our vision, know who we are, but also know how to work with our content providers – the academic or the actor even – to get that mission across. For us, we had a number of different partners that we were using and we continue to use as we go into doing more video collections. And I think the relationship with the – you might call them a vendor or a partner has been absolutely core for us to be able to do this well.

KENNEALLY: Junaid, I want to get your thoughts on this, because Kiren was speaking about the video form and sort of giving the students the kind of information in the format that they're looking for. And you have certainly, I think, learned over time that there's less appetite out there for longform. How has that knowledge then informed what you've done with your content?

MUBEEN: I think, generally speaking, there are two things to consider when you're creating online content. The first is what aspects of offline instruction do we want to imitate – instruction that we know works reasonably well in an offline format, but is just difficult to scale because it relies on a human presence?

The second choice you have is to – and this really requires imagination – is to envision the type of instruction that a digital medium can facilitate that just wouldn't be possible. I'm always on the lookout for new representations of maths concepts that I'd studied years ago, and I'm convinced that for 99% of learning objectives in the curriculum, we haven't yet discovered the most compelling representations. They will come when we get to a point where technology is ready and humans are ready to really understand how we can bring some of those representations to life.

The approach we took it was to try to achieve that right blend – to make sure that we weren't throwing the baby out with the bathwater, and that if there were proven ways of teaching how to add fractions, that we would try to bring that to digital. But we've also challenged ourselves to come up with new approaches.

But the one commonality between all of our learning objectives and all of the lessons in our system is they are relatively short. They're bite-size. That helps for a whole host of reasons, and I'll just give one. It means that when a student struggles on a particular lesson, you can pinpoint where their misconception is, and then you can adapt the content accordingly if you can understand where their knowledge gap is. I think that short form of content has its place. I have no doubt that longform content has its place, too. It really depends on what your objectives are.

For us, it's being able to pinpoint students' knowledge gaps and really then understanding that some of the other modes of instruction really are the preserve of the offline environment. There are certain things that digital just isn't capable of, and that's what we have human teachers for.

KENNEALLY: So from the micro level with Junaid Mubeen to the macro level with Kathryn Earle, because the kinds of projects that you're working on on the academic side at Bloomsbury – they're not chunked up pieces of content, they're not simply a book itself, but entire catalogs, large-scale digital products. In fact, one just a few months ago won the Prose Award from the AAP. It was the Arcadian Library project.

EARLE: Yes, that's right.

KENNEALLY: Arcadian Library here in London is one of the greatest collections of Muslim literature and architecture and art and so forth. How do you tackle – how do you go from that micro level that Junaid was just talking about to embracing this enormous collection of material?

EARLE: I guess we really do both things. I mean, it depends on – it's horses for courses, really. So we do have some products that we develop at a very granular level and we build them up from short form, and one of them is in development now. It's a business case studies approach. So that we're commissioning very short articles and case studies, and it's really a student product. But we've also digitized archives, so the Arcadian Library being a case in point but also the Churchill Archive. And again, we sell all of that content to academic libraries.

Coming back to the point about context, I mean, that's really what we supply as publishers. We add value through the application of metadata, essays, content around the archive.

KENNEALLY: And your primary audience is libraries. You sell to librarians. Tell me about what their relationship with technology is like.

EARLE: So librarians – they have solutions at the library end that are very important to them, so things like discovery services, for example. So we have to integrate with their solutions. My impression – and it's a bit from a distance, because I'm not really close to the sales call phase – is that librarians are really very much about serving their constituency. I am sure that a lot of them have deep technical knowledge, but first and foremost they're about their students and their researchers, and they want to make sure that any product that is developed or purchased at their end really serves those needs. So I think it's really very much coming back to culture – a people profession.

KENNEALLY: Tom Morris, before we go to questions from the audience – you've been listening to all this again, reflecting on what was being said here on the stage and what you've heard said over the years yourself working with publishers. Again, one of the phrases – I'm sure people sort of gobble up a lot of catchphrases and things at the London Book Fair, and then they go back and say, well, we need data-driven platforms and so forth. We also need smart content. Can you decipher what that should mean to a publisher today? What is the nature of smart content?

MORRIS: Yeah, that's a very good question. So I guess from what I'm hearing today, there's an obvious connection about the data that we can gather to improve the content and linking that to the content that it was connected to in the first place, which effectively means that content was always about data in the first place. In fact content is data. So how do we make sure that content is in a smart enough condition to be data-able, if you like?

I guess there's generally about five or six steps you could take – practical steps to make sure that your content is smart. They range from things like richly decorating it with metadata, not just around the content, but within the content – contextual. And that includes videos as well, especially when it comes to identifying which aspect of a long-running video clip, for example, is related to the highest feedback in relation to a learning objective. So how do you tie data back to the original content? It has to have meaning. I could happily go through these six steps and enumerate them, and I'm happy to do that after the session, but it's essentially about changing it from presentation structures to meaning structures within the content.

KENNEALLY: All right. John Newton, the doyen here on stage when it comes to content management – we've been hearing a lot about data. The last word on data is that at one point maybe in the very early stages, it was the code that mattered – getting the coding right. Today, it's really about the data.

NEWTON: Yeah, so code has been the basis for our technological revolution since before Apple I and whatever.

KENNEALLY: NASA and everything, yeah.

NEWTON: You know, going back to the IBM mainframes and even going back to Colossus at Bletchley Park, there's code that's involved in there. But now it's really about learning. New systems are being learned as opposed to coded, and that learning is based upon the data. The data that you collect today is going to be the basis for systems going forward in the future. When customers ask me what should they be doing to be prepared for the next-generation software, it's to – is to collect as much data as possible, because that is the context in which you use all this information.

What's going to happen next is artificial intelligence, deep learning, whatever you want to call it is actually going to start to learn against it, and you will start to build models based upon the information – and in fact, self-learning models – as opposed to hiring a lot of coders and developers to make this stuff work. That is the basis for the platforms of the future. That is the basis of products of the future. You know, we're talking about smart content. Smart content will (audio cuts out) – self-learned content based upon systems that learn as opposed to code.

KENNEALLY: All right. Well, I want to thank our panel today. From the far end, Kiren Shoman, editorial director of SAGE London, John Newton, CTO and founder of Alfresco, Junaid Mubeen, director of education at Whizz Education, Kathryn Earle, managing director, digital resources division, of Bloomsbury Publishing and Tom Morris,

CTO at Ixxus. My name is Chris Kenneally for Copyright Clearance Center. Thank you very much for joining us.

(applause)

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