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>> DIRK: Listen, there are people that cannot distinguish between your red and your green. I mean, keep it in there. Just don't expect anybody to pick it up. It's sometimes as easy as that.

>> TAMZIN: Accessible design and development is good design and development.

>> DIRK: Believe it or not, there are over 1 billion people with a disability. Figuring out how to make your app or game accessible to all can often be a challenge, often both from an organizational and a technical perspective. As a public broadcaster, A central part of the mission at the BBC is to be accessible and inclusive, no less so in the apps it uses to reach listeners and viewers outside traditional broadcast channels. Welcome to the sixth episode of our podcast, "Apps, Games, & Insights."

>> TAMZIN: And we're your hosts, Tamzin Taylor and Dirk Primbs, and we're both from Google. Top developers like Airbnb and Intuit have made accessibility a core part of their app development process and company culture. To give us some insight into how the BBC is addressing this incredibly important topic, we're pleased to welcome Android Software Engineer for the BBC iPlayer Ceri Lindsay and Senior Android Developer for the Sounds app Rosalind Whittam. Hi, Ceri and Roz. Welcome to our fun podcast.

>> ROZ: Hiya.

>> CERI: Hi. Nice to be here.

>> TAMZIN: I was quizzing Ceri and Roz about what they did before they joined the BBC, and it turned out they were both studying pretty interesting stuff.

>> ROZ: Yeah, so I did a computer science degree, but my specialism was totally different to what I'm doing now, which is developing mobile apps. I specialized in really low-level systems, so the kind of things you get on, like, radiator controllers and fridges, so I had, like, a tiny, little bit of memory to work with, and I'd be working in Assembler, so just instructions, moving digits from one register to another, but now I'm in this, like, world of mobile development, so it's a big change.

>> TAMZIN: So will you be designing the future IOT devices when our fridge tells us not to eat things and--

>> ROZ: Oh, yeah.

>> CERI: I'm looking forward to the day that my fridge tells me not to eat things. Please, Roz.

>> DIRK: I actually like my fridge to go and fetch it for me, not to tell me what to eat or not to eat.

>> TAMZIN: And Ceri, tell us about your fascinating background.

>> CERI: Yeah, I guess it's as unconventional as most people who come into tech, really. I did a pure maths degree, so by the end of my degree I was focusing on fuzzy logics and all the strange ways that you can construct predicates and sentences and languages within maths.

>> DIRK: Oh, man, I feel totally at a loss here with my little computer science degree and some business stuff on the side, [laughs].

>> TAMZIN: That's why I'm in business development. So to both of you, what was your journey going from maths and engineering into the BBC?

>> ROZ: Well, so we both actually joined at the same time. It was called the Digital Media Graduate Scheme at the time, and I had the chance to try out a few rotations in a few different parts of the BBC, so I worked for CBBC Games for a while, and then I worked on the design

and engineering side of the Olympics where we were doing sort of the live feeds and the content appearing as the different things were happening in the Olympics, which was really exciting, and then I ended up in iPlayer Radio, which was our radio app which has since been retired, and I really loved it there. I loved the people and the way they worked and mobile engineering in general, so I took a full-time job there and ended up helping build the new music, radio, and podcasts app, BBC Sounds.

>> TAMZIN: Excellent. And I was saying I listen to it every day, which I'm sure many of our listeners do. Ceri?

>> CERI: Basically, somewhere like the BBC has such a wide variety of products and different types of engineering going on, not even touching on the kinda broadcast engineering amazing stuff that they do, really, but within software engineering I had opportunities to work on backend syndication of content. I worked on children's games. I've worked on iPlayer, on TV applications on iOS and on Android now.

>> TAMZIN: How do you apply your high-level maths degree to your current job?

>> CERI: IF statements [laughs]?

>> TAMZIN: I'd love to know what I'm missing out on.

>> CERI: FOR loops?

>> DIRK: I guess if you study math, it also--it's a school of thinking, right?

>> CERI: Oh, definitely.

>> DIRK: So, like, no messing around with you. Logic.

>> TAMZIN: How did you guys get involved in the accessibility area?

>> DIRK: Can we define the word maybe? I also feel if you ask five people what it probably means, you get, like, five answers.

>> ROZ: So I guess I'd say it's making sure that your technology is available to the maximum number of people in the maximum number of circumstances.

>> CERI: Yeah, definitely second that with at the BBC we kind of have a charter which says the audience is at the heart of everything we do, and the best bit about my job is understanding the diversity of that audience and the diversity of needs, so, like, understanding how people creatively use all of the technology that's put in front of them, including the stuff that we're writing for them, and making sure that everyone has equal access.

>> DIRK: And how did you end up focusing on this? Is this a natural line of thinking and always has been in BBC engineering, or is it something that grew up over time?

>> ROZ: Oh, for sure, yeah. I mean, personally, I feel like as a developer, part of my job is making sure that the things that I'm developing are available to as many people as possible with all their different needs, but certainly in the BBC we've been focusing on accessibility for quite a long time. We've got quite a long history. We've had accessibility working groups for around 15 years, and we've certainly had our mobile accessibility guidelines for around ten years, which is ever since iPlayer Mobile first started. We've always had a focus on it, so I'd say really, we've kind of been leading the way, especially in mobile accessibility.

>> CERI: Yeah, the BBC's in a fantastically unique position that we're a public service, so that kind of lends to idea that actually not being commercially-driven, we can understand who and what is our main focus. So both Roz and I have come into working in this organization with such a long history of prioritizing this, and it's definitely something that's really infected the way that

we have learnt how to be software engineers, and it--to me, it's a mark of quality of being a software engineer. It's part of the bread and butter of being a software professional.

>> TAMZIN: You both work on different apps, don't you?

>> CERI: Yup.

>> TAMZIN: Which apps do you work on?

>> ROZ: So I'm still working on BBC Sounds, so I was there from the outset, building the first parts to now, and it's been out for over a year now. I don't know the exact amount, but we're still building lots of features, and there's still a lot to learn from our audiences and a lot to add, so I'm still in there and still learning a lot.

>> CERI: I've gotta add, I'm quite envious of Roz's position on a greenfield app like this because they basically have the audience direct your roadmap, right?

>> ROZ: Oh, yeah, yeah, for sure. We did a MVP release, and then we ended up getting a lot of feedback from that, and before we marketed Sounds a lot, we had a lot of things that--feedback to learn from and add to the app, and ongoing we have our Sounds user panels, which we get people with all kinds of requirements and needs to come in and talk to us and use the app in a lab environment, so we, even as engineers, get an opportunity to witness that, and we have, like, a two-way mirror situation where you can see the researcher chatting to the user and talking about what they like and don't like, and we get--we're all making notes and thinking about how we can make things better, so it's been really interesting journey.

>> TAMZIN: That sounds like heaps of fun. Is it a consistent approach across--

>> CERI: So I work on iPlayer, which is, I guess, a bit of a household name within the U.K, but having traveled abroad and people going, "What?" it's basically a video-on-demand service akin to YouTube or Netflix for BBC content, and it's been going for about ten years, so we've got quite a lot of audience expectation, and that includes kind of really high-quality accessibility, and yeah, it's been something we've deliberately tried to foster, especially in my position within the BBC. We've started doing recently on this latest project, making sure that we have good relationships with charities and ensuring that we're doing user testing with screen reader users, which has happened quite recently, in order--really early on so that it's influencing prototype stage and, like, our absolute MVP and making sure we're getting things right really early on.

>> TAMZIN: And do you find that there are common issues that you pick up across both the apps? Do you guys talk to each other during the day?

>> CERI: We actually sit beside each other at the moment.

>> ROZ: Yeah.

>> CERI: Which is great, but.

>> ROZ: I suppose being completely different apps, we have completely different sort of requirements and needs, and sort of our experience have been quite different, but at least in Sounds, the way we sort of keep track of our issues, we have the idea in the tech industry of technical debt, which is where you've got things that are less than ideal in the code that you'd like to change, and you keep track of that. In our team we have what we'd call the accessibility debt, and you can think of that as things that we owe the users, like functionality that's not quite perfect or missing, so we keep track of that, make sure that we keep that to a minimum, and regularly work on it, so that gives us a good way to compare.

>> DIRK: So how do I have to think about this? If you track accessibility debt, if I got that right? I

was not sure if I really heard that the right way.

>> ROZ: That's true, yeah. That's right.

>> DIRK: What falls into that category? What would you say qualifies as accessibility debt, and how do you identify that?

>> ROZ: So if we are working on a feature and we find that something that we've--has come up in testing, for example, like something on the screen reader is reading incorrectly or is confusing, we'll make a note of it and make sure that that is flagged up in our accessibility debt and these bugs are just as important as any other functionality issue that you would come across, so another example might be that if it doesn't behave well with some of the Android accessibility options like text sizes or if you find that you can turn on a feature where it reduces the motion in the app and you need to ensure that all your animations and all your transitions are dear to that and reduce the amount of motion happening on screen, so things like that. If you find that it's broken when you're coming in testing, that would certainly be one of your accessibility debt things that you need to add to the list.

>> CER1: Yeah. In addition to what Roz is saying, it's a--shared across teams, really, is the idea that as Android engineers, we're adhering to material design guidelines, which are fantastic, and lots of information online, and to what Roz was alluding to earlier in that we were--at the BBC, our mobile accessibility guidelines predated material design, so actually, now we're, you know, updating them so that they're always complementing material design and WCAG's new mobile accessibility guidelines too, so although I think it's really, really important, what Roz is saying, that it's very context-specific, it's very subjective, it's got to be based on how a team is working and what those expectations of that particular audience is. Underlying all of that, there are particular guidelines as an industry we ought to adhere to, and we also have some tooling--well, Google has some tooling that we integrate with in a bunch of different ways, so there's an accessibility scanner app which kind of picks up some of the things that Roz is saying, for example, text target sizes and color contrast and things like that, but also that you can integrate with those in a bunch of different ways, so we're both engineers here, and we want to make this part of our everyday experience and try and make it as easy as possible, and that accessibility scanner app is also available as an accessibility checks API, which is available within Espresso, so you can run automated testing. In fact, my colleague, who's absolutely brilliant, was the person to recognize an issue with the accessibility checks API and raised it with Google, which means that this now works for anyone who wants to do automated testing in our industry.

>> TAMZIN: Thank you, BBC.

>> CER1: Thank you, my colleague.

>> DIRK: So in your developer team or in the testing team, are there any colleagues with special requirements as well? Like, is that something that you can catch sometimes even in development phase, or is it more often a matter of solid testing and user--user feedback?

>> CER1: It's an interesting question, I think. The majority of time what we have in the BBC is an accessibility champion network where rather than rely on particular members of staff with particular accessibility needs, although they exist and are quite often--they do more and above their day jobs to be able to spot some of these things and help us along the way. It's more a case that we want to try and get into a culture of having people with a specialism embedded within each team, which is what I am for Android within iPlayer, but for every different project

too, and with the right amount of training and the right amount of resources and support. I'd like to think that we can humbly speak for our audiences as best we can.

>> ROZ: And it's worth saying as well that I really feel like the more everybody in the team feels like it's their responsibility, you know, from the developers and the testers and designers, the better the experience will be. The accessibility champions enable us to think about it all the time. There are people who encourage everybody else, but it's not just all down to specific people or people in the teams that have specific needs to have to flag these things up. It's something that we all think about and all care about.

>> CERI: Definitely. We're trying to change the culture around this kind of thing, really. So one of the successes that the accessibility champion network have seen is easily measured in the lead of the network actually saying, "Within the last six years, teams used to ask us why, why do we do this? And actually, now they're asking us how? How do we implement accessible apps?" and I think for me, fundamentally it comes down to the fact that we can't talk about binary groups of people here, coming back to my maths degree. Ultimately, 18--well, within the U.K, 18% of our adult population have declared disability, but more so than that, you could talk about up to maybe 1/3 at any one time having a situational or temporary disability. You know, carrying a heavy box and trying to use a voice assistant could be seen as a disability, or using assistive technologies, and actually, my advice for any organization or anyone who's trying to get their organization on board for this is accessible design and development is good design and development. I could have fun about that for a while. I'm a bit enthusiastic about it, really.

>> TAMZIN: I'm--I'm enthralled by the temporary idea.

>> CERI: I mean, that's kind of boundless, really, isn't it?

>> ROZ: Oh, yeah.

>> TAMZIN: It is.

>> ROZ: There's tons of things, like, if you think about it, if somebody's got a migraine, they might need to switch to a dark mode, for example, and these are all things you can think about, or you might need reduced motion on your screen in that particular circumstance. My teammate who's got children pointed out that if you've got a baby in one arm, it's really useful to have voice assistant, and--

>> TAMZIN: Yeah.

>> ROZ: Yeah.

>> TAMZIN: I can relate to that 'cause my cat just wants to be carried all the time like a baby, and so I'm often just one-armed.

>> CERI: BBC's R&D department--I think this is an amazing stat. Of our audience who uses subtitles or closed captions, 80% of those people do not identify as having a hearing issue because ultimately, so many people in their day-to-day lives--and not to detract from the fact that obviously in supporting an accessible design, you're enabling things for those users who have no other choice, but it also gives so many people so much choice.

>> DIRK: Something you said earlier resonates a lot with me, when you said if you design for accessibility, you ultimately design for quality in your product in general. It's a common mistake, I believe, that people assume that you either have accessibility built in or not, but actually, it's a design choice, and not having spent time thinking about it doesn't mean you don't have a decision baked in. It just means it's a bad decision, very likely.

>> CERI: Oh, definitely.

>> DIRK: So if you design for accessibility, you're basically more inclusive to everybody around. So I'm nowhere near having any disability in my hearing, yet I have moments when I cannot really distinguish between voices, for instance, or where I have--because I'm stressed, I'm not as receptive, and that may be just enough that--to be receptive to a good voice interface that helps me balancing that, and having that baked into design should be a sign of quality in engineering and not just an add-on that you try to bake in.

>> CERI: I totally agree with that. Something one of my colleagues said to me recently really resonated, in that if you design for accessibility to begin with, everything else is easy. So if you're trying to bake it into the first part of this process, no matter how talented your engineers might be in implementing a bad quality design accessibly, we should never get to that point. So again, best advice would be to not try to create custom experiences for different parts of your audience, but in fact create the same experience well for everyone, you know? The visual way of interacting with an app is just one way, and we need to be considering all of them equal.

>> DIRK: So if you think about your own accessibility efforts and the fact that it's so deeply rooted in BBC engineering philosophy, how do you measure how well the things you do actually land or work or impact your audiences? Is there any measurement that we can learn from?

>> ROZ: For sure. I mean, we certainly don't measure by the numbers of users using certain features because to us, it's not really a consideration. We're trying to reach as many people as possible overall, but we certainly take user feedback very seriously with regards to accessibility, so through all our channels, through App Store reviews but also tweets and feedback but also these user panel sessions that I was talking about. There was a lot of work done to ensure that there was a wide range of users on these panels, including people with motor function disabilities, people who were neurodiverse, and people who had various visual impairments, you know, not necessarily people that needed screen readers but people that struggled with certain contrasts and colors, and all that feedback has fed into our design going forward.

>> CERI: Yeah, I definitely agree. I think there are ways within the industry of marking out and creating statistics for people using accessibility services, but that is not the way to go in this industry. I think everything that Roz has just been mentioning, actually, this stuff is very user by user, and in fact, if it's being used as a way to prioritize this kind of way of working, then I think fundamentally there's an issue with the culture in the organization. My advice in that situation would be if you're passionate about this kind of thing within an organization and you want to see change, statistics aren't the way that you're gonna make that change happen. It's just gotta be embedded into each of your processes as naturally as possible. In a similar way, you know, putting it into automated testing, making sure it's in your scenarios as you're writing it to begin with, in your testing strategies, in your user research, in your QA responses, there are a number of brilliant tools, for example, using the Talkback screen reader, there's shortcuts with your volume keys, so you can turn it on and off with ease. There's text to speech output and everything so that you don't have to have high volumes in the office. Even if you don't have access to a switch for motor disability assistive technology testing, you can use your volume keys on your mobile phone. You've got it in your hand.

>> TAMZIN: Let's imagine there's a developer out there who is super keen to implement some of these techniques and tooling in their business and would love to do some of this stuff. How

would you advise they go about getting buy-in from their leadership?

>> ROZ: So at least at the team level, what we've done in Sounds is that we recently defined our top priorities with regards to how we develop the app, and we've called these our foundational areas. So the idea is that these'll be regularly assessed going forwards and be given a red, amber, and green rating. Basically, the idea is that all these things have an emphasis, and for us, accessibility is certainly one of those. We've put that down. That is one of our priorities, and what that means is that it allows us to be given that time to develop and test and continuously improve on that and make sure that we don't slip down in that rating going forward, so it's a really good way of saying, "This is something we care about as a team, and this is something that we're gonna need the time to work on and improve all the time alongside the obvious things like feature requests and things that the users want to be added to the app."

>> CER: Obviously we're in a very privileged situation to work in an organization where we have this buy-in already, but I think from speaking to product owners and people in control of the roadmap who are bought into this, they're talking about the fact that naturally you'll make mistakes, and it's about having a honest and self-critical atmosphere in the workplace and fixing forward, so although it's really important to recognize and lay a line in the sand, for example about where you're at so that you can get better from there, it's about trying to embed into all of your processes, and least from the accessibility champion network that we have at the BBC, their experiences in speaking about this at conferences and trying to get this as a industry pattern, they've spoken to a number of organizations, really, and their advice is if you're passionate about it, find other passionate people because all of this starts organically, and from there embed these people within your teams and your processes and incentivize people to consider this an important thing. So offer some training that will go towards career progression, and actually, just recognize its value.

>> ROZ: I think what you find is people in the tech industry really love to learn things, so hopefully by sort of encouraging people to get on board on this, you'll find that people do want to jump in and do want to learn about it, and there's lots of resources available online. I mean, the Google developer docs have lots of different tutorials and points around that, so you can start simple and start building that sort of repertoire of--at least as an engineer of things you can use to improve your accessibility in your app.

>> CER: And in fact, we could probably link to our BBC mobile accessibility guidelines. They're open source. They're for designers and developers and testers alike, in fact, dedicated sections for all of the disciplines.

>> DIRK: I'm still curious for one more thing. I imagine you being professionals in this space, there are moments when you open an app, and you're like, "Oh, God, can I ping that developer to give two or three suggestions?" What are the most common things that you come across where you feel like people could have a low-hanging fruit harvested right away instead of just going full way, just for the easy start, so to speak?

>> ROZ: Oh, my goodness, that--yeah, absolutely. We have found this. I think one of the ones that really stands out is sometimes we try and look at other apps to get examples of how they might make a certain component behave with a screen reader, and we find that it jumps all over the place. The ordering is wrong. They don't put any effort into making sure that the readout works in the context, or they--I mean, just simple things like content descriptions. If they haven't

put a content description on something specific like a switch or a button, it will just say it's a button, and a screen reader user might not know what that's for, so we do come across that quite a lot.

>> CERI: Oh, definitely, and I'm quite enthusiastic about this sort of stuff, so I hope to be the optimist to a question which is like this, but I think in this space you have to be really optimistic and, in fact, that when you come across an app that has really considered this kind of stuff really well, it's really fantastic to see, and, you know, there's almost, like, a kinship with those developers, and what I strive to find are kind of gold standard apps that I can kind of have a look at their paradigms and learn from them. So I could name a bunch of people who are fantastic in this space, but my advice to people in wanting to look for those gold standards are generally, because naturally, Google are creating the Android APIs, you know, to look to YouTube, for example, or the Google Play Store as kind of example apps of fantastic. I'd like to consider the BBC apps up there, but, you know, we're open to, you know, the fact that we can always be better, basically.

>> DIRK: Absolutely. Sometimes people are surprised at how low the bar even can be, right? So the other day I told somebody maybe to get rid of that red and green in their slides as highlight colors, and that guy--you know, it totally blew that colleague's mind when I said, "Listen, there are people that cannot distinguish between your red and your green. I mean, keep it in there. Just don't expect anybody to pick it up."

>> CERI: Definitely.

>> DIRK: And it's sometimes as easy as that, right? So it's being thoughtful about it.

>> CERI: There are some fantastic tools around that, so obviously there's a lot to consider here because accessibility is a blanket term for a variety of different considerations, and there's plenty of tooling that a designer can just integrate with with their software on a regular basis so that as they're making these wireframes, they're not relying on things like this, you know, for color contrast and color blindness but also that a good design would put a tick and a cross and a green and a red button too so that it's not just reliant on--you know, because some people prefer monochrome. I know I do.

>> ROZ: Yeah, it's been part about getting the message out there. Like you say, not everybody knows these things. It's really good that this podcast is happening and people can listen and hear about it 'cause it's not always at the forefront of everybody's minds.

>> TAMZIN: So if we think about all the devices that we have accumulating in our world, phones being one, TVs, your smart speakers, where do you see the biggest opportunity to make a huge difference in accessibility, in the living room, for example?

>> ROZ: Voice interfaces are a fantastic opportunity there. I know that phones themselves have the Google Assistant built in, and just by having the ability to access your app via the Google Assistant, obviously talking from the point of view of an app developer, is just one little step you can make to make things a lot easier, and obviously people have things like Google Home in the home, and they're just fantastic. You know, they're used by everyone, but it's starting to get voice interfaces at the forefront of things so these things are considered by everybody and not just considered at all for people who need that solely for their interaction.

>> TAMZIN: Yeah, I actually--I taught my uncle how to use the voice commands on his Android phone because he's having trouble using his right arm, and yeah, he was pretty impressed.



Case example of where it's making a difference. I still feel I have to look at my Google Home device when I speak to it. I can't help it.

>> CERI: And say thank you, right?

>> TAMZIN: Yes.

>> CERI: And--yeah.

>> ROZ: Habits and all that, yeah. If I'm walking fast and I need to send a message, the voice interface is so useful for that. It's fantastic, yeah.

>> CERI: I think in general with that question, the difference that I want to happen within the way we think about accessibility is that we have really, really exciting opportunities here, so just recently with Google talking about Live Captions, that's such an amazing technological advancement that's gonna help so many people, and I think we just need to keep broadening our horizons around what we can do in technology because it really does influence how people live their lives.

>> DIRK: In the scale of tools you can use, do you have any recommendations aside from looking at the toolkit and anything? Is there any tool that you found very useful, like a pro tip or something that you feel like you don't want to miss in any type of engineering project anymore ever since you encountered it?

>> ROZ: For me, it's Demystifying the Accessibility Service, which is an API that you use every day in Android. There was an amazing talk at Google Dev Summit just this year, talking in plain terms about the roles of different parts of the accessibility service, and I think that speaking quite basically about that has really changed my mind about how scary these things have to be or how difficult they could be.

>> ROZ: One of the things we use quite a lot is the ability--with the accessibility node info toolkit you can add an action description to all your items, so if you think an action description is sort of like, "Play button," there's also an action description that you get with specifically Talkback where you get, "Double-tap to activate," and you can override that and give a little bit richer information, and in response to some feedback we got a while ago, essentially, in our app you can play from the bottom player, like a mini player, to resume what you were already listening to, but there's also play buttons all over the place for playing lots of different content, and we had some feedback. This was back in iPlay Radio, actually. A user had said that they're just being told, "Tap to play," or--well, it was play button, "Double-tap to activate," and that didn't--they didn't know what that was gonna do, so it felt like a bit pot luck. Is it gonna play something new? Is it gonna resume what I was playing? That kind of experience you can really enrich by adding this description, so we now actually have on our sort of accessibility best practices list that all our actionable elements have to indicate an element type and what it does, and also on top of that, just if it opens an external page or a modal, where it's gonna take you so that the user understands contextually where they're going. So this action description for a play button, you'd be like, "Double-tap to play Greg James," rather than just "to activate," and then you know where you're going with that.

>> CERI: And I think just in general there's some everyday tips when developing. I'd probably say that you're wanting to try and keep consistency with official experience where possible, and that includes if a button is right in the middle of the screen and it's a bright color and it's saying, "Click me," that you don't want your accessibility traversal order for screen reader and switch

users to go through the top-level items before you reach this big "click me" button, right? It's about using a button where a button is needed. Don't over-customize because that is going to add to your tech debt and your--your ability to maintain that going forward. Think about your traversal order. Try it out. Just make sure that you're constantly having these things at hand where you're testing out on a standard Talkback screen reader but also Samsung's version of voice assistant and being aware that there are variations between those two things, and using the switch functionality on your phone just to make sure that you're not trapping users accidentally in an experience.

>> TAMZIN: One question which often many businesses face is what is the impact on the bottom line? How do you go about measuring your success and the impact of the work that you do?

>> ROZ: So I guess, as I was saying before, I feel like for us, the numbers and the amount of people you might draw to the product isn't particularly a consideration for us as a public service. Part of our remit is just to make sure that audiences have access to us from all over the place and also with all their different needs, so I wouldn't say that we focus on those kinds of business metrics that are trying to work out what the impact on audience numbers would be because I feel like you might find that when you're talking about that, it's not sort of the way forward to encourage this kind of thing. It's more, like I said before, that we like to measure the feedback from that portion of the audience and the positives and negatives and find out what it is that will make their experience better.

>> TAMZIN: It's fascinating 'cause you must have all such rich information from not only the user reviews but the--the in-person double-sided screen. I know I've done that in the past. It's actually fascinating.

>> CERI: Oh, yeah.

>> TAMZIN: You know, if you get frustrated watching people behind the glass, do you feel like yelling? Sometimes I do.

>> ROZ: Not at all.

>> CERI: [laughs].

>> TAMZIN: Most of the time it's a, "Oh, I really hadn't considered you using it that way. Wow."

>> ROZ: Yeah. Honestly, sometimes they'll make a comment, and I'm so used to seeing the app as it is every day, I make parts of work, and sometimes I find that someone will try to do something that I just did not expect, and I write that down, and I'm like, "Oh, fantastic." You know, that kind of feedback is really useful.

>> CERI: I know definitely from working for an organization like the BBC, that the U.K. public feel like it is theirs. You know, it is a public service. It is for them. We tend to get very, very strong feedback from that audience, and it's really fantastic. Every day when I get into the office, just reading the latest App Store reviews is a truly fantastic and sometimes incredibly funny experience, and I'd just like to add that, yeah, when people are vocal, it's not necessarily a criticism. We need to be looking to constantly improve and serve these people better.

>> TAMZIN: That's a great attitude to have towards user reviews for sure. Context gets lost in text.

>> CERI: In terms of answering your question more directly, I think it's a bit frustrating for me at this moment in time because I'm itching to have a feature out to the public, and it's--it's soon

gonna be out there, and hopefully at that point we'll be able to measure some stuff, but I have to keep quiet about it at the moment, so.

>> TAMZIN: Could you give us a hint into what kind of metrics might be relevant?

>> CERI: It wouldn't be necessarily a metric, but we are modernizing our player UI, and accessibility has been at the forefront of that conversation, so there are definitely things for every single feature that are considered, and they are ingrained and just good practice, but there are definitely some features that are specifically trying to address some of the shortcomings that we've had in the past.

>> ROZ: Yeah, so getting that feedback when that comes out and hearing what people have to say'll be fantastic. I know when we released Sounds for the very first time on the first day, one of the first bits of feedback that I saw on Twitter was a girl saying, "Oh, thank you for making this accessible with my screen reader. I can use this, and it's really intuitive," and I was just really pleased with that. That was one of my favorite pieces of feedback we ever got, and it was on day one, so we're hoping to continue with that.

>> CERI: Definitely. With a feature that we have at the moment, it's in an opt-in. It's in a beta sort of situation, and the traction we're already getting is fantastic to see, especially for the accessibility updates that we've made in that way. I just can't talk about it yet, unfortunately.

>> TAMZIN: No worries. Is it open beta or closed beta?

>> CERI: It's an open beta.

>> TAMZIN: Ah, so anyone can join?

>> CERI: Yup.

>> TAMZIN: Cool. Excellent. And so a burning question our team had was we love getting feedback, of course, here at Google, so if you can tell us, what are the--you know, the Android resources that your team utilizes for accessibility? What are the most useful ones?

>> CERI: So as anyone doing any work in Android space, they ought to have come across the accessibility service APIs, and as many people are aware, Google has become more and more opinionated in the last few years, and actually, within a space like this where there are lots of different voices talking about what is best practice, it is quite useful to recognize that yes, an audience is diverse and has diverse needs, and there is no one size fits all, but in terms of the APIs that we're creating, we need to be able to use those and demand if necessary that a piece of functionality gets added to those APIs. I think there is an open conversation to be had with Google there, and it's really good. I think in terms of just going about exploring, on your device in hand, what is under the accessibility settings on your device because what you'll find is there is a suite of tooling and particular developer options. No node tree debugging, for example, for screen readers is fantastic, and also in addition there's an accessibility scanner up which can be used for testing and QA that is the same API that powers the accessibility checks for Espresso, but it's also the same API--if the minim you take away from this podcast is to use the prelaunch tooling that's on the Google Play Console as you're about to press "go live," that in itself will tell you some of the low-hanging issues that might be present within your app for accessibility.

>> TAMZIN: Awesome. I love the pre-launch report.

>> ROZ: And you were saying about looking at the accessibility options that you can see in settings. People are often quite surprised by how many there are 'cause everybody's minds tend to jump towards screen readers when they think about accessibility, and obviously that's part of

it, but there's all sorts of other options that you can play with and that can give you an idea of different things that you need to tweak and change in your app, which is fantastic.

>> CERI: Definitely. As Dirk alluded to, one in eight men in the world have some color blindness, and the three most common types of colorblindness are actually available as options on your Android device, so you can literally just switch the setting on and experience what life is like to be an Android device user with red-green colorblindness.

>> DIRK: That's a pro tip for every developer with no problem of that sort herself or himself, so they can at least immerse themselves in that world for a test or something.

>> CERI: Yeah.

>> DIRK: Very cool. Awesome.

>> TAMZIN: Thank you both so much for coming into Google and sharing your expertise, and it's been fascinating hearing the depth of work that you guys are doing to make BBC applications accessible to everyone.

>> CERI: Thank you, Tamzin. Thank you, Dirk, for having us.

>> ROZ: Yeah, thank you so much.

>> TAMZIN: Thank you so much, Ceri and Roz, for your insights today, and thank you to our listeners for joining us for this "Apps, Games, & Insights" podcast. If you have any thoughts on the topic raised, we'd love to hear from you, @googleplaydevs on Twitter. Join us for a new episode next week where we'll be talking technical and UX challenges of taking your app or game to a larger screen. Offering his unique insight will be Maxi Rodriguez, platforms operation director at leading game developer GameLoft.