LILY BOND: Thank you, everyone, for joining us today for a fireside chat with Larry Goldberg. He pointed out I do have a fireside right beside me. So we're ready to go. I'm joined today by 3Play Media's Co-Founder and co-CEO, Josh Miller, and by Larry Goldberg, an Accessibility Media and Technology Consultant and the former head of accessibility at Yahoo. We're really excited for a fireside chat between the two of them, covering the evolution of closed captioning. And with that, I will pass it over to Josh to kick off the conversation.

JOSH MILLER: Awesome, thank you, Lilly. Larry, always fun to chat. I think for people here, worth pointing out that not only are you a pioneer in the industry, but you are a true member of the community who is looking to do everything possible to make more stuff accessible. And we realized you were a pioneer in the industry early on, and visited you in the early days of 3Play.

You were nice enough to show us how captions were actually created. And so for everyone here, this is a long standing relationship that has had an enormous amount of value for us-- so always fun to be able to talk. And the fact that we get to share this with everyone else is fantastic.

So let's dive in. Now, as I said, you're recognized as a pioneer in the captioning industry. Tell us about that. How did you get there, or how do you have this title that I think you have so appropriately earned? Can you tell us a little bit about your career?

LARRY GOLDBERG: Yeah, you know, I do lack in modesty. So I'll admit that. But its all been fun for me. And I came at it because I just love technology. I just love playing with the toys and every new device and software. I was not a person with a disability when I first started in this field, joining the Caption Center at WGBH in 1985. And that's where captioning was invented.

And I know 3Play knows that because you've got a giant mural of Julia Child on your wall. Excellent trivia question, what was the first captioned TV show? And because I knew about what captioning was, and hiding data in a TV signal, I was hired by GBH. And it just all went from there, meeting people in the deaf community, and then expanding to our descriptive video service for blind and visually impaired folks.

And every step up was really a question of, what can we do next? What can we say yes to? And we started watching technology immediately evolve. We watched the advent of DVDs and decided we had to deal with the accessibility there. We watched streaming come about, standards and legislation. We put together an R&D group called the National Center for Accessible Media at GBH.

And every time we saw a new challenge, we said, there has to be ways to pull people together, engage the community, engage new companies and technologists, and see how we can conquer it. And we've had such, just, wonderful successes by collaborating with so many different people, particularly the user community. And then interestingly enough, I don't know by coincidence or fate, I started losing my own hearing.

And I had been watching captions anyway. It's my job. And now I rely on them like anyone else does, in watching captions. And when you walked into my office at NCAM at WGBH, and said, we're thinking about starting a new company, and I was running the caption center as a pretty adventurous entrepreneurial activity at a nonprofit, I looked at you.

And I said, you want me to help you compete with us? And you said, famously, well, you're a mission-driven nonprofit, aren't you? Shouldn't you be doing everything you can to advance it? I was like, oh, you got me there. And everything flowed from that in our relationship.

JOSH MILLER: Absolutely, so on that note, when you're thinking about innovation. And that is one of the things that I remember you saying, that if you can't innovate, don't bother, right? It's not going to be very fun. So what have you seen? What are the changes in the industry that have moved captioning forward the most in your opinion? And is there anything that you think is, technology-wise, holding the captioning industry back?

LARRY GOLDBERG: It's been a remarkable change. Back when I started, particularly when I moved from an operations manager to directing the entire division, our job was basically begging producers, begging people to caption their programming, trying to put forward every possible argument. Fast forward to today, and certainly, my time at Yahoo proved this. People were expecting us to just deliver it to our users. And that was not as much a technological change as a mindset.

Now, companies like yours and others came along and made it so easy for content owners to get their content captioned. And yeah, it was a little technically challenging on the delivery path-- the ingests, the standards, the different kinds of formats, making sure they made it from the origination point to the end user, all those different streaming platforms. And that was something that we were able to conquer through activity at the FCC, industry collaborations, the standards bodies. So what's really changed is the ease of use.

Oh, and I should mention the price. When I started, for rush jobs-- and rush meant 24 hours. I know if someone says to you guys rush, that means basically a minute, at most, of a delay. We were charging $3,400 an hour. And now the price has come down so low. How could anyone even think about not saying yes to captions?

And at Yahoo, when we approached the executives and said, we've got content from so many different content providers, all the networks, Condé Nast and Bloomberg, some of it we're required to caption by law. Most of it, we were not. And we went to our senior vice president and said, we need to be more consistent.

And she said, let's not try to figure out what we need to, what we're required to. Let's just do it all, 100%. And within just a month, we were launching that. So it's a mindset as much as anything.

JOSH MILLER: So that mindset, I think that's so interesting. That mindset of saying, let's just do it all, that had to have started well before that conversation. So how do you actually establish that within a large enterprise like a Yahoo, where you definitely don't need to caption all that content by law, but from, like you said, from a user experience perspective, it is much better and consistency matters. So how do you get there? How do you make it so that conversation is actually a pretty easy conversation?

LARRY GOLDBERG: Well, it takes patience, which I do not have. I'm a very impatient person. So we started proposing this pretty early on. When I first joined Yahoo in 2014, I was hired to deal with this new regulation that I helped write and get passed, and wrote the regs at the FCC that required captioning on a certain type and degree of programming.

And I immediately started pushing as much as possible, more and more and more, making sure our content partners were providing it. And we began to see that some partners were great. Certainly, the major commercial networks and PBS knew they had to caption. So they started delivering. But then some didn't. I think part of it is a generational change. And I have to really give a tremendous credit to the newer generation coming up who just expect captions.

I heard the other day from Netflix that more than 40% of their members turn on captions. And that's way more than the number of deaf and hard of hearing people. When I used to commute to work, back when we were working in offices, I would ride the red line in. And I would pass through Davis Square, which is one of the hipper neighborhoods with a lot of young people. And I would do my own user research by looking at what everyone's got on their phones, what were they doing.

And a lot of them were watching videos. And they had the captions turned on. Like, all of them just expected it to be there. And I really have to give credit to the expectations of what has sometimes been known as the ADA generation. They grew up with the expectation that everyone would be served equally. And the younger audiences are who the major streamers want involved, even though the older folks are some of the most dedicated.

And so it was a matter of really listening pretty carefully to our users, and watching all the different channels that would come in on user feedback basically saying, not only do we want captions. We want them very accurate. And we want them fast-- no delay, no latency. And don't make me wait. And the technology and the service side of things really helped make that happen.

JOSH MILLER: Yeah, it's interesting. I think you touched on something that's really important, with the way awareness has evolved. And we've definitely noticed this with the way social streams are fed to people, with video and the captions being on automatically. I think Yahoo did that as well, is have the captions on automatically with the sound off so that people wouldn't get thrown back, or they could watch their videos at work, whatever it was that was happening.

But that really brought a new level of awareness to captions, and how much people actually enjoyed using them. So we definitely found that that was almost an epiphany for a lot of people. It's like, oh, I like captions. Look at that. So it's really quite fascinating.

LARRY GOLDBERG: For sure. And then you have to know that, of course in the past two years, when so many of us were working from our Zoom environments-- and from what I remember, at first, Zoom did not have captions, and how fast they got up to speed. And now it's just, again, table stakes, default.

JOSH MILLER: Absolutely, absolutely. So we've talked about your career to start, for the most part, and kind of what you've been able to accomplish. At this point in your career, you're calling it a rewiring as opposed to a retirement, which I think is great. Looking at your career, though, what are some of the accomplishments you look back on and really say that you were really proud to have accomplished?

LARRY GOLDBERG: Well, I love the fact that we were able to create a market, and that we didn't have to rely on, as much as you'd want to, people being altruistic and doing the right thing and being inclusive-- but in fact, became a good business, which I guess you're realizing now that you're growing so big, that it's just good business. And I'm really interested in the B2B aspects of accessibility.

We recently launched a collaborative called Procure Access. And it's a collaborative of major organizations, companies, tech companies, big pharma, fintech, who all were frustrated by the fact that the stuff we would buy for our employees wasn't always accessible, actually, frequently was inaccessible. And we just decided we're going to band together and use the pressure of the marketplace to create change. We brought Disability:IN to help manage this.

So if you know Disability:IN, you can go to their website and see all the people who signed a commitment letter, and all the major companies that are pushing the business side of accessibility. I see what captioning did was a phenomenal example that we need to extend to other accessibility technologies and services. That is, make it a business. Make it something that investors would be interested in putting their money into, and that people get very used to just expecting.

And they'll push back on companies that don't provide description, for instance, alt texts that we talked about. And so I really like, among all the technologies and fun we had with captioning in movie theaters and descriptions on DVDs, I love the fact that this became a reliable business and created a whole ecosystem.

JOSH MILLER: Yeah, that's great. And I'm going to turn this around now and say, what did you not get to? What are some of the things you wish you could have achieved at this point? And maybe you still will through some of your advising work. But what comes to mind?

LARRY GOLDBERG: Well, I love the alternate uses of the technologies we're developing. And so even though we have a lot to be proud of-- me and everyone else I've been working with-- and I've always felt that if you get 51% wins, you're a winner. It's kind of like baseball. You've got a winning record, unlike what we have in Boston this year. So all you need is 51%.

And that means 49%, you didn't quite get there. We worked on this wonderful idea of being able to search all your entire corpus of video streams for keywords, call up a result that shows you every single video, among hundreds of thousands that use this word or phrase, go right to that point in the video across the board, and use that as a search engine. Now, we know captions help search. But not enough people are taking advantage of that.

And I don't know who it was that came up with this notion of calling YClips, Y for Yahoo-- but the notion that Yahoo had hundreds of thousands of videos available. And you really could search them by word. Some others have picked it up a little bit-- the Internet Archive. CNN used to do some of it. YouTube, you can sort of search to locations. But I like exploiting technologies that were created for a very particular audience, and see how they apply to everyone.

So we didn't get around to really exploiting the search. I think it can still happen, absolutely. And I think the same can happen with description. I think that looking for a whole series of movies from one studio, and say, I want to search for images of people shoplifting from a store, for example. Boom, you'd be able to call that up because a description was written for that. That would be so interesting.

JOSH MILLER: Yeah it's really, really interesting, and points to just the derivative benefits of making content accessible. And there's so much more you can ultimately do with it because of the way things are created that way-- so definitely with you there. There's a lot that can be done on top of captions or descriptions, something that we've always preached. And I think it's just a matter of time till it's adopted more widely.

So to the rewiring concept, and I think it's got this nice kind of tech connotation with it. You've gotten involved with some startups in the accessibility space. Can you tell us a little bit about some of the technology you're seeing and getting really excited about?

LARRY GOLDBERG: Well, I've always loved science fiction. And I think I'm getting into that world even more and more. I'm a member of the Brainiac Council for a company called Cognixion. That's C-O-G-N-I-X-I-O-N. And they do brain computer interface work. This stuff is amazing. And it's specifically designed for people who had strokes, who have ALS, CP, who have trouble communicating.

But when I first saw what they were developing, I thought, this has amazing implications across the world. They actually use the term, not accessibility, but human augmentation, which I kind of like, aside from the fact it feels so science fiction-y. Human 2.0 is a concept that came out of Hugh Herr at MIT. But the idea that some of these technologies, like another company I'm working with, has enabled-- you can control your computer or your phone with facial recognition. So you can map facial gestures to controls on your computer. I love that concept.

Another company working on ways of scaling up alt text-- too many static images across the web. And apps just aren't accessible. And I find myself drawn to some of these folks. Some of them-- this one woman who reached out to me, she listed on her LinkedIn page as she was the Stanford class of '27. And I said to her, oh, that must be a typo. And she said, no, actually, I'm taking a gap year after high school. And I'll be starting at Stanford in a year. But I've raised $1,000,000 for my startup.

I was like, oh my god, I love that. And she's got some great ideas, too. And this venture is being formed. One organization called Enable Ventures is having a big tech summit in San Francisco in November. And they're pulling in VCs to invest in this world, both startups by and for people with disabilities. And I love this idea, that it's going to be part of the venture capital stream to develop these new technologies.

So I'm jumping into those areas, doing some speaking at a variety of events. I'll be at the M-Enabling Conference running a panel on the latest advances in captioning, which you'll be sitting on. I don't know how I'm going to keep myself from shutting up on that panel. It will be a challenge. And a few other really interesting adventures I'm going on. I'm still trying to be not working a day job. I'm partially succeeding in that.

JOSH MILLER: Well, at least partially, that's good. So thinking about all the technology that you're getting exposed to and everything you've seen, is there anything that you're still surprised hasn't happened when it comes to media accessibility?

LARRY GOLDBERG: We all went through this just in the past year. It is periodic that the big companies and a lot of the social ventures and issues pay attention to diversity, equity, and inclusion issues. And I've seen it happen over the years. I think it's risen up more than ever in corporations. But where was accessibility? Where was disability there?

And so many people who work in our field and the people we work with were like, oh, here we go. They left out people with disabilities. And it was both obvious and frustrating. We know what happened. It's happened before. But very quickly, people got up to speed. Very quickly, these major corporations and all kinds of other ventures said, you know, we blew it.

We left out what is one of the biggest intersectional groups. People of color, people of various ethnicities, and the whole range of under-served audiences, all of them include people with disabilities. And that's finally, I think, being addressed a bit. I've actually seen people use DEI&A, which is a symbol of inclusion of the community that we serve.

JOSH MILLER: That's really interesting. And I think that was something that we were trying to figure out early on, especially in the pandemic as well, is kind of, where does accessibility fit into this? And we certainly did our best to include it in the story. But yeah, I think you're right. It sometimes gets kind of separated out as it's online.

You mentioned standards at one point, when it came to conversations with the FCC. I think from our perspective, we often think about styling standards, right? So we see, in the OTT space, or in the broadcast space in particular, there are many different style guides and preferences from different publishers all creating their own spec, if you will.

What's your view on that? Should companies have their own spec? Should it be streamlined? Will it be streamlined? Will it ever be standardized, in a way, to simplify things?

LARRY GOLDBERG: You know, I've captioned a lot of material myself when I was working at GBH. I know a lot of captioners. I like captioners. They are some of the smartest, most literate people there are. I really feel like they should be given the freedom and the art. Once they really know what communicates best, I don't really feel strongly that-- and I was part of this orthodoxy.

Sound effects captions must have paren, space, italics, speaking loudly, space, paren. And boy, did we get heated about that when it wasn't that format. Oh, you used square brackets. You used capital. I don't think that's necessary. I think that let 1,000 flowers bloom. Look at what happened with the captioning of *Stranger Things* recently, with how descriptive those captions were-- squelching wetly. And some people thought that was a little extreme.

Well, it's partly, get a sense of humor. And it's partly, people are working these jobs. They should have a little freedom to express themselves. So I don't see, also, the commercial, mostly commercial caption agencies, coming together and all agreeing that speaker ID should be this format, and sound effects should be that format. I'm not bothered by that. And I don't see that you need to put a lot of energy into it either. There's a lot of other challenges to tackle.

JOSH MILLER: Yeah, it brings up an interesting question, especially, you mentioned the idea of a B2B business and accessibility-- often selling to people who are buying and owning content, but not actually the end user. So how do you think that translates? Who should be making that decision? It sounds like the captioner, in your opinion, to some degree. But how do you think we bridge that gap between getting the end user feedback to the right people so that these decisions are being made in the most optimal way for the people who need it?

LARRY GOLDBERG: Well, you mentioned the end user, of course, always, always spending time, and listening, and doing it programmatically to the users of captions. And even though a lot of people who have full hearing capabilities are watching captions, I would still always focus my attention on people who are deaf and hard of hearing who need captions to be able to comprehend programming. I believe every major streamer or cable company broadcaster hires out anyway.

They don't have their own captioners on staff. So it does mean that they're outsourcing. It does mean those outsourced companies should absolutely be spending time with users. Now, every user is different. You will absolutely hear a variety of opinions. And you have to take that into account and try to combine what answer is best. I haven't seen much research at all.

For instance, what is the best format for sound effects-- a large scale research project on what will really not just make people feel better or like captions better, but help them understand what's going on. And I think it's the same thing for description-- too much description, too little description. I'd love to see some research that says you're going overboard.

It's too many words. Three lines are maximum. Don't go any further than that. The bottom center default that we're all used to, is that really the best way to display it? We think so. But where's the research? So I think it's a combination of quantitative and qualitative research that's going to really help answer that question.

And if some client of yours says, well, Josh, I know what you think is the best style. But we want everything in the upper right corner-- you can explain. You can tell them why it's not a great idea. And then they're going to be writing the check. And that might be the end of it.

JOSH MILLER: That's exactly right. For better or for worse, that is the way it goes. So let's get into the future a little bit more. So we've spoken a little bit about XR accessibility over the last year or two. And it's becoming a little bit more mainstream, I think it's safe to say. How does captioning fit into that? And who owns the responsibility to actually figure out what the standard should be for captioning, and how it should be implemented? How is that going to play out?

LARRY GOLDBERG: There's a wonderful solution that's being worked on right now. We put together this group called XR Access, xraccess.org where a bunch of academics, advocates, and industry people came together to try to figure out solutions for virtual reality and immersive media. And Chris Patnoe from Google put together a W3C Community Group. And they meet every two weeks.

They are professors from NTID, National Technical Institute for the Deaf, and Gallaudet. There are users. There are people in England who are developers. And they are actually developing some amazing solutions for how would you actually present captions when you could be turning your head every which way? How do you identify who's speaking? What happens when you move in closer or further away?

And they have actually created what is getting close to a best practice for captioning in virtual reality, including such questions of, what about use of haptics? What about use of iconography? So I'm really encouraged by the amazing work that this community group is doing. And they've done some demos that afterwards, I'll make sure I'll share the link, where this notion of, should captions follow your eyes, should you have a little arrow pointing to who is speaking, where do you put the captions, it's a whole wide open territory, which means you can be as creative as you want.

But once there's some really good specs together, and a lot of the immersive reality companies are part of this, they'll be able to confidently say, we will put the captions in our content. And we have heard the community. And most of those people in the community group, I think 95% of them, are deaf or hard of hearing. And they will have some very good best practices for how to display and how to have the look and feel of captioning within those environments.

JOSH MILLER: It's great. It's a really fascinating challenge, for sure. So speaking of challenges, what do you see as the future challenges, or even current day challenges, for captioning in particular, or media accessibility?

LARRY GOLDBERG: Yeah, I think that we're still hearing some glitches around the fact that, when you produce a movie or a TV show, you're producing many, many versions-- the version with ads, the version without, the one for airlines, which means that the captions are going to need to be reformatted one way or another. And the same thing happens for descriptions. And I think the streaming companies are still a bit frustrated about what to do in a facile, automated way, to make sure that the nine versions of a program all carry the captions, no matter which way they go, and that they stay at the high level of accuracy, quality, and synchronization that we expect.

I think there are automated solutions to that. I've reached out to a few folks who are looking for help on this. But they do need to figure out the best way to be able to present when they've got so many different versions. And some of it is going to be manual work. And some of it's going to be automation. I'm so pleased by the fact that there's so much description going on now.

When we worked on the 21st Century Communications and Video Accessibility Act, the amount of description that was required under that law is very, very small. And yet, lo and behold, we've got so much description on the organizations that are not even required. So all the streamers-- Netflix, and Hulu, and Apple, and Prime, all of that description is either done because they realize they have to, or they were pushed into it by advocacy organizations.

But vast amounts, I don't know that I ever expected to see that much description out there. Carrying it through to other platforms, caption once, play everywhere, that was always the goal. Describe once, play everywhere. Don't recaption things. Don't have to redo it over and over again. I'm sure you have that frustration. I think that there are solutions to that as well.

JOSH MILLER: Yeah, that's an interesting one, and the idea of almost like a captioning clearinghouse, if you will because if you think about the way content is licensed these days onto multiple platforms. And as you said, sometimes the captions come with content. Sometimes it doesn't-- and kind of dealing with that issue. It feels like there are some improvements that can be made to content that has been around for, at least for many years. That's for sure.

LARRY GOLDBERG: Maybe blockchain will help us. The notion that you embed this data and it cannot be separated could be one of the solutions to look at. It's the only thing I've seen of value in blockchain myself so far. I'm no fan of crypto or NFTs. But what about embedding accessible data and tracing it back to the source? You don't necessarily need the clearinghouse if you can actually find that original file.

JOSH MILLER: Interesting. So we're going to take some questions from the audience. Larry, for you, given you met the 3Play founders thinking it could be competitive, but had the insight for the greater good and inclusion, could you have ever conceived of how the market would grow? One might say you to be an oracle to foresee the streaming wave. But more specifically, how would you compare your view of total addressable market at that time to where it's going? And what are other harbingers of further adoption to drive global addressable market beyond where we are today? What do you think of this?

LARRY GOLDBERG: I'd like to think I was so foresighted back then that I really saw the day that it would be pervasive and omnipresent. I'm not so sure I really was that foresighted. I was pushing that every single program regardless should be captured, no matter what. I don't think I really imagined it would ever get, especially before the CVAA was passed in 2010, that we'd see this level of volume.

Now of course, the question is, what else? What are we missing? Certainly other languages. Translation happens sometimes. And automation works sometimes, automated translation. It's not good enough, far from good enough. And of course, user-generated-- we are seeing more captioning in social media and user-generated there. But it's not really pervasive yet. And I think it's assumed that the only solution there is use of automatic speech recognition.

I suppose that's probably true, with the vast number of hours uploaded every minute. I'd like to see ASR improve as well. I think there's a long way to go on use. And I use the term automatic speech recognition, I don't see this as AI. People love to call it AI. No, it's just speech recognition. It's been around since the 50's, that people have been working on this-- pattern matching. So it's not quite as futuristic as AI makes it sound.

JOSH MILLER: I would agree with you there. That is a topic that our data science team and head of R&D would be happy to talk about for hours, and definitely be aligned with you on. So another question here. First is, thank you for the presentation. Regarding some earlier comments on research and individual preferences, what are your thoughts on having some sort of intermediate application layer that would allow for end users to program their own specifications or styling for display, and then send that data back anonymously for analysis, if you will?

LARRY GOLDBERG: Well, I love the idea of the feedback loop. I think we need a lot more feedback. We never got enough feedback at Yahoo. We'd beg for it. Please, tell us how we're doing. But the control over display was built into the CVAA. And you can adjust the size, the font, the color, the positioning. So that's built into every media player.

Now, if you want to also adjust the verbosity, that's going to take some doing in terms of technology development. [INAUDIBLE] would be willing and interested. Settings are used. By the way, I'm seeing my internet connection slowing down. Are we OK?

JOSH MILLER: I think we're OK. We can still hear you.

LARRY GOLDBERG: I have heard, through my time in high tech, that settings aren't often used at all. I think Google has data on how many people go into their settings for captions. It's really, really low. Now, we can make it easier to adjust your captions. YouTube made it possible years ago, where you can click and drag and move the captions around the screen. I thought that was amazing.

Then they took it away. And I think they brought it back. I'm not sure. So I love the feedback loop. I'd love for people to be able to express what they think about the way captions are displaying, and the accuracy and latency. The user control over them, we'd have to make sure that people can get access to those controls.

JOSH MILLER: Yeah, for sure. I think, yeah, there's definitely an education and awareness issue with, as you said, the fact that some of these settings can be altered by the end user. And not to call any companies out, but I think the reality is that some media players do allow for the settings to be played with. And some still don't, unfortunately. So still a little bit of work to do. I think that would be good for everyone.

This next question is, I think, an interesting one for you, Larry, because I think I know the answer to this. And it's a good story. So do you have experience working with deaf or hard of hearing people as consultants during the production process, or-- and I'll expand that to, the evaluation of other accessible technology?

LARRY GOLDBERG: Always, always, whenever I was in a position to make sure that could happen. And back when we started at GBH, our head of marketing was deaf, and a great friend from then and now, going to every deaf conference, becoming very close with the major deaf and hard of hearing organizations, listening a lot and participating a lot-- so absolutely. And then when we do user testing, when we had a major user testing division at Yahoo, we would always be seeking out people with disabilities to give us their insights on any new app, any new website.

We would always make sure that they were part of the user group. But before all of that is the hiring. And we've always pushed that aspect-- never enough people with disabilities in these big companies, the ones particularly decision makers, engineers, and developers. But when we have people on staff who are end users, and particularly when they're decision makers, it has a massive effect. So yeah, I fully support that.

JOSH MILLER: That's great. Question here about some of the transcription or the automated transcription apps that have come about for in-person interactions. There are a number out there. They obviously need some work. Do you have an opinion on this? Do you see where the space is going? Any thoughts on that?

LARRY GOLDBERG: You could imagine that people reach out to me quite a bit when they've developed their latest AR glasses with captions in them. I hear from a lot of people. I think it's very promising. And then of course, the ones on the apps and on the phones, I think the user experience needs to be improved. I haven't seen any of those that are really facile, that are seamless. But I think they're very promising.

It makes me worry about companies like yours. Is what you're doing going to be replaced by something that just comes for free on every device you own? Will it be built [INAUDIBLE] TV, so it's automated, and you don't even need anyone on the outside worlds to be adding it? I think we're a few years away. I think maybe by the time you're ready to rewire, we'll be at that place.

But I like where it's going. I don't think it's all ready for prime time. Now I'll admit, I once felt strongly that ASR would never be useful for captioning. I was really opposed. But I had to drop that stance as long ago as 10 years ago, when I saw how much better it was getting. I think some of those apps were released before they were really ready for consumers.

They were kind of like, let's put the beta out there and see what people think-- or this notion of an MVP, Minimum Viable Product, the idea that you're foisting something that is minimally viable. It's a little painful. But I think they show a direction that we can see the business going in.

JOSH MILLER: Yeah, that's certainly something we talk about. We're certainly waiting. We're going to make sure it happens till after we rewire, for sure. So this may be our last question. And it's a good one. It might be a fun one to end on. So if you go back in time when you started your career, is there anything you wish you knew when we began this effort of scaling accessibility solutions?

LARRY GOLDBERG: I think I might have invested in 3Play. Yeah, I mean, like I said, maybe I had the foresight to think that this was really going to be as big as it has become. I always had the optimism. And everyone who works in the accessibility field has to be optimistic because there's always going to be setbacks and lack of awareness. And you have to have resilience to go up against all the challenges. [INAUDIBLE].

But I don't know [INAUDIBLE]. So somehow, when I started at GBH, I figured I would be there for a year or two, and stayed for 29. That was a surprise to me. So I think that the notion that the dotcom boom and bubble and venture capitalists would be interested, maybe I would have planned a little differently back then.

JOSH MILLER: Excellent, well, Larry, I want to thank you for your time today, but certainly for being the advisor, collaborator, and friend that you've been to me and to the company over the years. It's always fun to get a chance to talk with you about this. I think I learn something new every time. And I hope everyone else enjoyed it. So thank you.

LARRY GOLDBERG: You bet. I'm really pleased to see your progress, and to be embracing the companies that are now part of the 3Play family, people I know pretty well. So it's kind of cool to see everyone coming together. So thank you for inviting me.

JOSH MILLER: Great, thanks, Larry. Thanks, everyone.

LARRY GOLDBERG: Take care.