EPISODE 337

[INTRODUCTION]

[0:00:00.4] JM: We all have certain experiences when a product solves a problem so thoroughly and eloquently that it lifts a weight off of our shoulders that we didn't even know was there. Dropbox did this with file storage; Slack did this with group collaboration; Zencastr does this for recording podcasts.

Before I used Zencastr to record my podcasts, like most podcasters, I used a Skype plugin. There were a number of inconveniences in the podcaster workflow that you get from using Skype and Zencastr solved all of these by creating a podcast recording tool in the browser and presenting a simple user interface.

Josh Neilson, who built Zencastr, joins this show today to talk about the challenges of building a podcasting tool in the browser and the new technologies that make it easier, such as WebRTC. We also discussed a whole lot of other things around the podcasting industry and some other things. Josh and I got along really well, obviously, because this tool is awesome and he built it for people like me.

We'd love to get your feedback on Software Engineering Daily. If you get a chance, please fill out the listener's survey which is available on softwareengineeringdaily.com/survey. Also, Software Engineering Daily is having out third meet up, Wednesday, May 3rd at Galvanize in San Francisco, and the theme of this meet up is fraud and risk in software. We're going to have some great food, some engaging speakers, and a friendly intellectual atmosphere. You could find out more at softwareengineeringdaily.com/meetup.

Now, let's get on with this episode.

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[0:01:46.4] JM: For more than 30 years, DNS has been one of the fundamental protocols of the internet. Yet, despite its accepted importance, it has never quite gotten the due that it deserves.

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[INTERVIEW]

[0:03:43.5] JM: Josh Neilson is the creator of Zencastr. Josh, welcome to Software Engineering Daily.

[0:03:47.7] JN: Hey, thanks for having me, Jeff.

[0:03:49.5] JM: Zencastr is a way to record podcast episodes from the browser. Before I found out about Zencastr, I used Skype to record my interviews. What are the problems that come with podcasting on Skype?

[0:04:04.6] JN: A; Skype has been really cool for podcasters because it lets you have a guest from anywhere in the world, but the problem is when you record, the preexisting tools to record Skype calls, recorded you in really great quality, but your guest sounded as if they're being recorded through Skype, which would have compression artifacts, or if your internet is having

problems, you could have compete dropouts. It was really a big pain point for podcasters to have these remote guests or cohosts and get really high quality audio.

[0:04:38.6] JM: Podcasting has been around for more than a decade. Why was Skype the standard for so long, or arguably still is the standard?

[0:04:47.8] JN: Basically because there weren't a good alternative solution. There has been something called the double-ender, people in radio have done this for ages where instead of recording through the phone or through Skype, you record each person on both ends, which that works really well. You can record in studio quality. The problem is if you've got one off guest each time, it's hard to train them as to how to do that on their end, and then you had a hassle of getting them the audio and back and forth, and exporting it, and sending it.

It's not that you couldn't do this, it just wasn't easy to do. The reason why there wasn't a better solution up until now is that, basically, the browsers didn't have the option, the ability to record from the microphones until just the past couple of years. That was the inflection point that made it possible so that now you can just send a link, it records them — They don't have to install anything, they don't have to learn anything. You hit record as the host. Records everybody locally, sends it to your Dropbox account, friction free.

[0:05:52.9] JM: Before you started working on Zencastr, you were trying to build a browser based digital audio workstation. Why was that too hard?

[0:06:01.4] JN: I think building any kind of digital audio workstation is pretty challenging, but there's still — The Web Audio API and the browser is still shaping up. There are still some things that you just can't do and there's

[0:06:15.6] JM: Like what?

[0:06:16.5] JN: For instance, there's not a way to — They're working on this. I think they're calling them audio worklets. There's a lot of things with audio. You need to hop in really fast and you need to hop in on time, and JavaScript doesn't do that very well. What you need to be able

to do is to basically handoff that part of the processing to the native implementation on the computer to run it in native code.

Right now, there's not a way to build your own custom audio node that runs natively. You can build your own custom node that runs in JavaScript, but there's inherent performance issues with that. They're working on fixing that.

[0:07:01.3] JM: Also, sounds like something web assembly could help with.

[0:07:04.0] JN: Yeah. There's a lot of cool stuff coming out. I think within the next two years, five — Depending on how things — Things move a little bit slowly with web standards and stuff.

[0:07:17.6] JM: That's true.

[0:07:18.5] JN: Eventually, I think you're going to have Ableton Live in the browser, because it just makes a lot more sense to have it all connected. You can much more easily collaborate and share and do all those things. It's an exciting time, but it's a little bit early.

[0:07:34.6] JM: Not to mention — Gosh! Cross-platform — I still use FL Studio, and that's a Windows only tool, so I have to switch to my Windows machine every time I want to work on music, but I guess we're still a ways off from that.

You eventually started Zencastr because you were looking for a more feasible and focused project. Describe the process of transitioning off of that digital audio workstation project and starting Zencastr.

[0:08:03.3] JN: I basically just kind of left it on the side. The process of actually making that decision was — I'd probably still be working out to this day, except for I found out I was having a kid. That totally changed the calculus in my mind as far as how much time I had to get to a path to revenue and all these stuff. I started thinking, "Okay. How I can take what I've learned and what I'm doing and apply it to something that is maybe a bit simpler, something that has a more well-defined business model."

There was a point in time as I was working on this stuff that someone had mentioned that they weren't sure about the direction I was going, but they know podcasters have a problem collaborating and sharing audio and this and that. I had kind of just stuffed that in the back of my mind. It was more fun to me to work on this music stuff, but once I was like, "Okay. Maybe I need to worry more about just making some money." I went back to that idea and I started interviewing some podcasters and really learning about the problem.

I realized that, A; there's a really big problem here. B; there's a brand new opportunity to solve it that didn't exist before, and that's a great time to get in to a problem, because when the technology changes, there's a vacuum in the market, and Zencastr was literally the very first player to build something like this in the browser.

[0:09:28.8] JM: What were the problems that the podcasters you spoke to enumerated?

[0:09:34.0] JN: Basically, that generally it was the people who had one off guest that were the most frustrated with this, because it was hard to teach those people how to redo the double-ended recording themselves and get the audio and all these and that.

Also, they were coming into the — I had one guy tell me it was like we were thinking about, basically, we want to have a guest this week, but it's going to be such a pain to teach them how to do it, the recording with Skype quality sucks so bad. They're like, "Oh, we'll just not have a guest this week."

They were not having people on their show and just doing their cohost chat, just because it was — They didn't have time or they didn't want to take the effort to do it. I was like, "Oh, okay. I think we can solve that."

[0:10:18.0] JM: Was there a browser innovation that allowed you to build this? Because you would imagine that people have looked at this problem before and said, "No, it's too hard," or "I can't think of a right way to do it." What had changed around that time technology that gave you the wind at your back?

[0:10:36.3] JN: It was basically two things; it was the Web Audio API which allows you to kind of chain and process audio through audio nodes. Then, it was the WebRTC API which allows you access the microphone and get a live stream of audio from there, and then subsequently, you can connect people in a VoIP call similar to what Skype does when you hop on with someone in Skype.

[0:11:01.7] JM: I had Feross Aboukhadijeh on the show a while ago and he was talking about WebRTC. That was the first time I had heard of WebRTC, and he built WebTorrent, I think is the name of it. It's a torrent player in the browser so you can get any torrent link and play it in the browser, like a video, or a song.

Then, you're talking about using it for Zencastr. It makes me think that WebRTC is something that's quite important. Can you talk more about what were the difficulties to getting WebRTC to work? Why did it take so long? It seems like microphone and audio in the browser — Shouldn't this have been around since a long time ago?

[0:11:45.5] JN: Yeah. We've actually met and I actually used one of his libraries in Zencastr. He's a prolific programmer and very good at what he does. Simply, WebRTC stands for web real-time communication. That can mean a variety of things. Basically, instead of having — If you want to have a really snappy connection to a peer, before WebRTC was out, you had to have a socket server that would connect everybody and all messages would go through your server and it would shoot them back to all the people in your session, or whatever.

WebRTC lets you basically introduce to peers and then let them connect directly to each other. At that point, you can — It has channels that can be dedicated for video, for audio, and just for data as well. It's kind of a lot of things going on. Because it's going to try and do a lot of these video and data channels, it allows you to get access to the microphone and the camera on the computer, which was never possible before without a plugin. It gives you that.

The first version of Zencastr did not even use any of the peer-to-peer signal in. It didn't connect you on a VoIP call or anything like that. All it did was use WebRTC to access the microphone and just recorded you and you still were intended to use Skype or Hangouts to actually hear each other in real-time. Just that was really cool; being able to access the microphone without

the plugin, but it made sense to go ahead and use it more fully and actually do the VoIP call and remove the need for Skype at all.

As you've seen, there're lots of other applications, because you can basically create a peer-to-peer mesh network using this technology, and so things like WebTorrent are possible, which is really neat.

[0:13:38.2] JM: You started Zencastr is 2014. How long did it take you to build a minimum viable product?

[0:13:46.0] JN: It took longer than I had hoped. I think I had something that I guess you could call it a prototype. I don't know if you'd call an MVP within three months of starting. I think I'm really bad with time and dates, but I think I started in February or March-ish, and by May I had something that I was showing the really early people that I had talk to about it.

The hard part was it was really — It only took two or three months to get something that worked in ideal circumstances. The real difficult part was getting something that worked and was reliable and under all the situations where things could go wrong, like the internet goes out, or somebody's computer crashes, or whatever it may be.

I had to spent a lot of time to figuring out, "How do I make this redundant? How do I make it fail like an escalator, not an elevator?" In the end, that's why I have — There's several kind of fallback plans built into the system to where, now, at this point, your computer could get struck by lightning and you'll still have all your audio. You'll still have all the audio backed up up to the last 30 seconds, because — As we're talking right now, it's actually streaming the audio to your Dropbox account every 30 seconds.

[0:15:07.2] JM: It is. Okay. Then why — Streaming the MP3, and then it's storing the WAV file in my browser cache, or what exactly is going on with the WAV? Tell me more about that.

[0:15:20.6] JN: Okay. As we're talking, it's saving two versions of the — It's saving the raw PCM version of the audio in 16-bit WAV format to an IndexedDB database in your browser. It's taking that — Then, it's taking that audio and it's transcoding it to MP3 on the fly using an MP3

encoder. Then, it's saving that to another IndexedDB database in your browser. Then, every 30 seconds or so, it sends the latest piece of the MP3 to your Dropbox account so that you've always got that as a backup. It's also just saving all the stuff into memory. If your memory gets wiped, you still got an IndexedDB. If your hard drive crashes, you still got that MP3 backup on Dropbox, in a nutshell.

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[INTERVIEW CONTINUED]

[0:17:36.6] JM: Interesting. You mentioned the fail like an escalator, not like an elevator. That's a pretty good phrase. I have not heard that before, but I understand what you're saying. If the power to the escalator turns off, you can still walk up the stairs, but that's not true with the elevator. An elevator just has a complete failure.

To me, this just seems like the entire thrust of what Zencastr is. I look at the interface and it looks like the same thing it was in 2014 — Or, I think, 2015 is when I first started using. I know

that this is like a Dropbox. It's like you look at it and you're like, "Oh, that's just so simple, I could build this in a weekend."

Of course, Google made the mistake of saying that they tried to copy Dropbox. Google Drive is not nearly as good as Dropbox. I think Apple and Microsoft had done the same thing. You can't copy Dropbox. You probably can't copy Zencastr.

[0:18:34.2] JN: It's not easy. It's more complicated than it looks, but it's not impossible. It took me probably — I ran the service for free for about two years before I started charging for it, just because there is so many — Part of the thing was is when I started building Zencastr, it actually wasn't possible to make it happen at the time. It became possible as I was building it, and I didn't know that at last in its current form.

There's been a lot of kind of going back and forth with, "Okay. What updates are coming, and what browsers, and how am I going to make this work?" Big props to the developers at Chromium and Mozilla. They've done a really good job of moving this forward in a way that keeps it stable. There's been a few hiccups here and there.

I've actually kind of had to really keep an eye on things, and that's been a big part of the — Why it took a while, is I was kind of waiting for the browser ecosystem to mature as I was building it. I could have started charging probably sooner than I did, but honestly, I was a little bit comfortable, more comfortable in a beta because there's less pressure. When things went wrong, I could just be like, "Ah — Beta."

[0:19:57.2] JM: For sure. Things went wrong for me occasionally, because I was using it in beta. I was like, "Well, I have no right to go blame —" I never lost anything, because I do client-side backups and it did scare me a little bit, but once you switched off the beta after going for so long, I was like, "Okay. It's probably in a state where I can trust it at this point."

[0:20:19.2] JN: Yeah. That was pretty important to me, because it's a service that if it fails, it's a big deal, because you're never going to have that same conversation again, and so something has been lost. If something gets lost, it's lost for good. That's a lot of pressure.

[0:20:39.3] JM: How long would it take you to write it? If you're writing it from scratch today, how long would it take you?

[0:20:45.3] JN: I was thinking about this theory, because finally, enough — A lot of open-source projects have kind of risen to the surface around this type of thing. If I had probably waited six months to start building it, I probably could have shaved six months off of my time that it took me to build it, because I had built a lot of stuff myself that nowadays you can just go grab a library that does it for you.

Now, I understand a lot of the working bits better, so I was probably better off for it. I was to rebuild it now — I'm not a very productive person, to be honest. It takes me a while to tinker around and get things done. I would say — This is funny, because this is what I originally thought it would take me, is three months to build it. That was way off. I don't know —

[0:21:34.3] JM: You think three months at this point.

[0:21:36.3] JN: I think so now that I know all these stuff that I know, probably, maybe three, four and a half, something like that.

[0:21:43.6] JM: What's the most time-consuming stuff along the last mile? Is it browser compatibility with Safari on Windows or something?

[0:21:52.3] JN: The stuff that I've been working on recently — I actually recently hired a JavaScript performance expert to come in and audit the whole recording pipeline, because we're still having problems with — If someone comes on in Windows 7, and that generally tends to mean they've got an older and slower computer. There can be issues where they're missing samples and things like that because just it can't keep up.

There's still stuff to work on. I definitely wouldn't want to start over now. That's actually going live this weekend. There's a huge performance update.

[0:22:28.0] JM: That's great. Is that why — There are occasional times where I do a recording with the guest and I think that this is correlated with the guest being on Windows or perhaps

Linux, where the MP3 is fine, but the WAV file will be a 15-second audio clip repeated over and over and over again. It's like, "What kind of corruption happened there?"

[0:22:52.3] JN: That's what this update is suggesting. What happens there is —

[0:22:59.3] JM: By the way, to our listeners who are skeptical of Zencastr after I say that, that's the only egregious bug that I've encountered, that I can recall. It's not even egregious, because you get an MP3.

[0:23:07.8] JN: Yeah, the MP3 backup isn't affected by that, but the WAV recordings can be. What happens is the end memory copy of the WAV is fine, but the version that's getting saved IndexedDB was having some — On slower computers, it was having issues because it wasn't executing fast enough. Some of the buffers were getting overwritten in chunks. I don't want to get too technically into it, but it was a misunderstanding. I made some bad choices on how I was gathering this audio and then merging it together to — Because you have to kind of collect these chunks until you have a big enough chunk to save it. Then, inside of there is some stuff was getting overwritten. Now, we've figured out exactly why.

[0:23:51.1] JM: There were some performance bounding on worst computers that prevented the buffering process from working as well as it did when you were testing it.

[0:24:00.2] JN: Exactly. Yeah. It only manifest itself if your WAV upload originally failed and you had to rely on that IndexedDB backup to retry the upload. It didn't happen very often, but, yeah, when it did, it was a big bummer because, yeah, your WAV is basically unusable. I couldn't figure out why it was happening and I got on Hacker News a while ago, someone was talking about JavaScript performance, and I was like, "Hey, if any of you guys want some contract work. I need some help." Yeah, I found a really great guy that knocked it out in like less than a week." He's like, "Yup, here's your problem. We'll get it fixed for you." It was great.

[0:24:40.8] JM: You've hired somebody as a contractor fulltime. Are you giving him equity or anything?

[0:24:46.9] JN: No. No. This was just a temporary contract for hire kind of a thing.

[0:24:50.8] JM: Okay.

[0:24:52.3] JN: I can't afford him full-time.

[0:24:54.6] JM: Right. Okay, you released it as a beta product and what happened in between the beta release and the production release? Was it fixing small things and shoring up small errors, or was there any major shifts that you made?

[0:25:13.0] JN: It wasn't a lot of major things.

[0:25:16.4] JM: I guess WebRTC is in that timeline.

[0:25:18.7] JN: Yeah. I added the ability for — I completed the loop where you could do the calls. A lot of it was evolutionary rather than revolution. The main core idea behind the app stayed the same, and the architecture did. It was just dotting the t's, or dotting the I's and crossing the T's and adding more functionality and features that people were asking for. Nothing crazy changed.

It took me so long to go from beta to being paid impart, because there was just a lot of little — Writing an app is like writing a novel. You have to so many little decisions to get through the end point. Also, at this point in time, my life was really busy. I gotten married, I had a kid, I moved — Lived in Australia, New Zealand, and Thailand, traveling. I didn't have funding for this, and so I was doing contract work part-time the whole time through this until maybe just three months before I launched. I didn't have — I was still working over 40 hours a week on Zencastr, but I would have been working 60 or 80 if I hadn't had the other job.

[0:26:34.9] JM: The way Zencastr works today, I open up an account, I connect it to my Dropbox, I make a new interview. I send a link to that interview to my guest and then we have an hour-long conversation. You mentioned some stuff around the streaming and the IndexedDB. Is there anything else interesting going on in the backend during that process? What are some of the failover things that are going on while that setup is occurring and while that hour-long

conversation is proceeding? What are some things that might occur maybe during times of network blips or — Yeah.

[0:27:10.8] JN: I kind of covered the fallback plan of it, right into the memory. and then to the database, and then to Dropbox. I'm trying to think of what other interesting bits are going on as well as that.

The WebRTC connections are a bit more fragile than, say, your socket connection to the server. I actually don't use — I don't make heavy use of the data channels in WebRTC to send stuff, because I could do that chat and all the other messaging through that. You still have a web socket connection that handles like send in the record event to everybody, and the mute, and raising your hand, and the chat, and all that stuff. In theory, it's architecturally not too complicated, to be honest.

[0:27:59.7] JM: Interesting. What are the bugs that you know that still exist? Are there anything, or do you feel like you're just in the mode now where you can just expand feature-wise?

[0:28:09.9] JN: No. There are still some — I would say is a pretty high priorities issues right now. One of the problems that we're having is VoIP — If someone gets disconnected from the VoIP call because their internet connection drops out or something. Occasionally, people can get stuck into this loop where they keep trying to reconnect. I think the reconnection signals are getting out of sync and it never reconnects successful unless they refresh the page. That's one that we're kind of dedicating this week heavily to getting that resolved.

Last week we had a bunch of issues with the post-production service, which I guess that's something I haven't brought up yet. Zencastr just records all the tracks separately. Then, after that, you can opt to have them mix together and have the audio conditioned and make it sound nice in one final track for you to publish with. A use a third party service for that, called Alphonic.

[0:29:05.9] JM: I've used Alphonic. Good service.

[0:29:07.4] JN: Okay. Yeah, they're really good.

I've written FFMPEG audio stuff in the past and I was tempted to do that with Zencastr as well. Alphonic has done a really good job of adding a bunch of kind of AI powered audio enhancement to your track that would have probably taken me a lot of time if I could have even accomplished to do.

One of the things a lot of people really like about Zencastr is how good the post-production stuff sounds, and that's basically because I've paid someone else to do it who's focused solely on that piece. I had a bunch of issues with Dropbox, because I'm using each person, each host's Dropbox account, you can run into a lot of issues where like — I've uploaded the audio to the Dropbox account, but then they move it or they reconnect to a different Dropbox account by accident. Then, the audio is inaccessible from me when I'm trying to run the post-production.

I'm actually in the process of moving away from using Dropbox as the canonical storer of the audio.

[0:30:10.4] JM: Really?

[0:30:11.1] JN: Yeah, because it's caused too many problems like that, and Dropbox doesn't have any meaningful response to support requests.

[0:30:19.3] JM: Are you switching to S3?

[0:30:20.7] JN: I'm actually going to start using Google Cloud Storage.

[0:30:23.6] JM: The Google equivalent of S3.

[0:30:26.2] JN: Yeah. I actually did sign up for S3 and I was going to use it, but because Dropbox is just a wrapper around S3 anyway, but they made it kind of difficult to do what I need, which is upload files in a streaming manner that have an unknown length ahead of time. There's no easy way to do that with AWS or with S3.

[0:30:51.7] JM: Fascinating.

[0:30:52.6] JN: Yeah. You have to start using their Lambda service and copying the chunks over and then —

[0:30:57.6] JM: Oh! What a disaster.

[0:30:58.5] JN: Putting them together your own at the end. Whereas Google —

[0:31:01.6] JM: At Google, you can just stream it.

[0:31:03.0] JN: Yeah, Google has this thing where you can basically just say, "I don't know how big this file is, but I'm just going to keep sending you chunks, and then I'm done, put it together."

In theory, I haven't actually done it yet, but it looks like I can do that. That's the direction we're heading.

[0:31:17.4] JM: Is that the big architectural thing — Because that was one thing I was going to ask about, is like, "Why do you use Dropbox?" I understand why you would use it for the MVP, but once you scale it where you have a bunch of people, like, "Maybe you should put it in S3." Obviously, Google Cloud Search makes more sense if you can stream it to that. Is that the big architectural thing that you're focus on right now, or the big feature that you're focused on?

[0:31:40.3] JN: Yeah, that's definitely one of the big out coming things, because one of the pain points for podcasters aside from just getting the recording stuff done, is, "Okay. What do I do with my audio now?" If you're not a seasoned podcaster, there's still this byzantine process involved of like getting your audio hosted, and the RSS feeds, and getting it onto iTunes, and all these stuff.

So I'd like to be able to help with that as well, which I can't really do with the audio being on all these different Dropbox accounts. I'm also trying to offer networking service for podcasting networks, and so I need more control over the audio and I'll able to offer more and better services once I do that. Yeah, that's something I'd like to get done this quarter.

[0:32:22.5] JM: Interesting. What does the roadmap look like for that? If you'd get people recording in Zencastr, the audio is getting streamed to the Google storage, which is just basically like S3. You've got the files hosted now. Then, what do you do? What's the next thing on the product roadmap?

[0:32:40.5] JN: After we've moved our storage solution — I'm still trying to decide a little bit. There's so many different directions that it could go. There's a lot of — The podcasting ecosystem — There's tons of business around it, and trying to figure out — Because I have people at the very beginning, it's easy for me to just add follow on services that as needed. People seem to prefer to now have to use all different kinds of services if they don't have to.

There are opportunities, I think, to —

[0:33:14.2] JM: What services do you think are the most onerous — Because I'm very familiar with some of these external services that are annoying to use. What are the ones that seem the most annoying to you?

[0:33:25.0] JN: I don't know if this is — One of the pain points that I think a lot of podcasters have is they can't get deals with advertisers because they're not big enough. A survey that I sent out a while back, I asked — One of the questions I asked is, "Do you advertise and do you want to?" 80% said they don't advertise and 60% said they do want to.

That sounds like a pretty big gap of what people want versus what they're getting. I think there's maybe some opportunity to help out there. I'm still weighing that out, because it's a totally different type of business than what I'm in right now and I don't want to lose too much of my identity there.

I think there's a lot of opportunities to make more interesting — It'd be cool if you could have an audience in your Zencastr recording, and people are already doing that, but it doesn't work that well if you get too many people in the show and they have to —

[0:34:21.7] JM: So are you talking about the twitch? The twitch approach?

[0:34:23.8] JN: Yeah, kind of. I did a podcast yesterday with a guy who he has premium subscribers to his podcast and one of the benefits they get is he invites them to the Zencastr session so they can listen live while the recording is happening. One of his major requests for is, "Can you make it so that people are muted right when they join, because as it is right now, when someone joins, it starts recording them and you can hear them in the thing." Obviously, that sounds like it'd be an interesting avenue to try and do something like that.

[0:34:54.8] JM: It sounds like such a better adjacency, because if you go in the direction of the dynamic ads or the small podcaster that needs advertisements, that is such a different area than the audio recording segment, and there's all these entrenched players, there's all these complexities of negotiating the relationships with the advertisers. It sounds like a mess.

[0:35:21.2] JN: Yeah, it is. The only reason why I have draw towards that is basically — It doesn't sound fun to build so much. The biggest growth in the podcasting space is not in podcasting creators, although that is growing quite well. It's in the listeners. Being able to monetize the listener's side of the podcast team is — There's financial benefits to that. I'm going to try and not get too lost in the weeds on that and make sure I get a really good solid recording platform and build more features and stuff around that before I get on that direction if I do.

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[INTERVIEW CONTINUED]

[0:37:26.4] JM: This is an interesting question from the point of view — You're a "indie hacker". I read your Indie Hackers' interview. It's pretty interesting. I think one of the interesting challenges that an Indie — It's not really a challenge, but it's a — It's a challenge — That an Indie Hacker has is how do you maintain focus? Because especially once you get a cash cow, like Zencastr, that makes enough money to, I mean, I assume it makes enough money to sustain you. You've got this project that you're excited about, you're passionate about it. A question is; how do you maintain focus and how do you police yourself?

I'm sure having a kid helps with that in some sense, but how do you divide — Because the podcasting space is, like you said, so — There are so many opportunities There are so many directions you could go. How do you focus and do you spend your weekends drawing up designs or while you spend your weekdays just focusing on the bread and butter product. How do you assess that from a workflow perspective?

[0:38:25.9] JN: I don't know that I have a great answer for you. I do sometimes just let myself wander and see where I end up for better or worse.

I think maybe the most grounding thing in my day-to-day is my emails, customer support emails and future requests. I try and make a conscious effort whenever I'm thinking about something to say to myself, "Are people asking you for this or not?" because it's so easy to think, "Oh, this could be cool, and what if I did this?" At the end of the day, a lot of the stuff I come up with is really not something that people are asking for.

One of the things that I do get a lot of people asking for that I'm actually trying to hire some help with right now — Wink, nod, if you're out there. Is an iOS app for Zencastr, because there's a lot of times that people are either aren't going to be at a computer, or they're too busy, or they just don't have a computer, or they just want the ultimate mobility.

Actually, I get a lot of people not so much asking if I have a mobile app, but they ask if people can call in via phone and be recorded, which is going to sound horrible if I actually did specifically that. I think the better solution would be to make a mobile app so that someone could get on their iPhone or whatever and then log in from there and then do the recording.

[0:39:53.4] JM: Would that just be a web view? Because I've had people — I've had somebody who has done the episode by opening up the browser on their phone and opening up Zencastr in the browser, and it was okay. It came out okay. I think we had the WAV issue that I referred to earlier probably because of the memory constraints of the phone. If you're solving that with the Windows 7 fix that we mentioned earlier, then what do you need them — Would the iOS app just be like a nice web view?

[0:40:26.6] JN: No. I'd go native with it, and here's why. Even on the desktop, you run into problems with storage space for the backups. The browsers, justifiably so, limit you to only giving you a quota of about 10% of the existing free hard drive space on the computer, which generally is okay, because people generally now have pretty big hard drives and show warnings if they're getting low, but people don't have that much space on their phones.

While I might be a little too — Especially with these performance updates, get it to work well in a web view on a mobile device under ideal circumstances, you'd have a lot of issues in times where if things went wrong, they didn't have room to save the backups and there's no way for me to really get around that well in the browsers right now. Just for reliability's sake and performance and everything, I'm going to do a native app.

[0:41:29.4] JM: Speaking of iOS, what do you think of the fact that Apple controls so much of the podcasting space, but they do not have much reason to lean into it because they are the most profitable company in the world?

[0:41:49.4] JN: It does seem like they've upped their interest a bit in the podcasting space since it's kind of gotten its recent revival, but I think their — I wouldn't be surprised if you see some big acquisitions from Apple at some point, but, yeah — I don' know. I'm not a businessman. I don't understand this type of stuff. Whatever — I don't know. Who know as well of what they'll do if they do anything.

[0:42:13.5] JM: Speculate. Who would they acquire?

[0:42:16.6] JN: It just seems really weird to me that they're basically just sitting — They've just sat on their podcast directory for like — What? Since 2005 or something. It's been 10 years and not much has changed. Maybe it would be something that they integrate — Maybe they'd want to — I don't know. Maybe they'd buy somebody like Acast, or somebody who has a really big podcast distribution platform, enroll it into their iTunes somehow and integrate things better.

Right now, it's quite archaic the way podcasts work. You have to download the files and the analytics are crappy around it and all this stuff. You don't know if anybody actually listened. You just know that they download, but those get on like auto play. They auto download.

I think, ideally, you'd be moving more towards like a streaming type of situation where you'd be getting good analytics going back and forth about how long did someone listen to this and where they at when they listen to is and all that kind of stuff. I think there's a lot of value in that and I wouldn't be surprised if — Because they're already like basically in control of this ecosystem. I wouldn't be surprised if just because they don't want to let go of it, they decide to double-down.

[0:43:35.6] JM: What you're referring to is the fact that if somebody listens to my podcast episode, it is opaque to me whether they have streamed through the first 15 minutes of it or they have downloaded the entire episode. The analytics don't show if they have listened to, for example, the third ad in the show.

I've done surveys that show the people listen to most of the entire show, or, most at times, they listen to the entire show. The questionnaire is obviously biased towards the power listeners, those are the ones that even responding to the questionnaire. You don't have good analytics on who is listening to what ads, so we have no idea how to price the ads, so we have this weird inflation when it comes to pre-roll ads except people can skip the pre-roll ads, except we don't have analytics on who's skipping the pre-roll ads for the same reasons we've mentioned earlier. It is kind of a disaster, and something like Acast does try to fix that.

I've had Acast on the show. I've talked to Acast. I consider them friends. Katelyn at Acast is a friend, and I think I've told this to them, "It sounds like you're trying to boil the ocean with what you're trying to do with Acast," trying to handle — You're basically trying to dominate the entire iTunes ecosystem or you're trying to make a new iTunes. Are you biting off more than you can chew? I guess we'll see.

[0:44:58.6] JN: Yeah, I think if Apple ever decides that they want to maintain control over the podcast ecosystem that they probably would have to make some acquisitions like that, because people are now working around it and making their own distribution platforms that are better and to — Better for the podcaster, better for the listener.

One of the things that drives me crazy — I always have to get on my wife's phone and go in and delete all of her podcasts, because it totally fills up her —

[0:45:27.6] JM: Oh my God! I've had to do this twice in the last two months.

[0:45:31.2] JN: Yeah, she subscribes to all these ones. She doesn't even listen to half of them anymore, but she's still subscribed. They fill up all the space in her phone and she goes to try to take a picture when my kid is doing something cute it tells her, "No space."

[0:45:43.2] JM: You never have to do that on Netflix.

[0:45:45.3] JN: Right. Exactly, just in that regard. There needs to be some change in it. I think it would be Apple's best interest to make sure that just so the people enjoy using their devices that they help change the way that that all happens.

[0:45:58.6] JM: What's so absurd is that what you're focused on with Zencastr is so rare in this ecosystem, the tools for the podcaster. What does the podcaster want? It seems like the big companies don't even really care. Ironically, the lack of focus on the creator and it's led to this weird broken ecosystem where stuff is not indexed well, discovery sucks, but it makes it so that it's like this indie sort of thing where it's not like the long tail. It's not like, "Oh, there's the fat head and a long tail." It's just like the really long head, or I don't even know what it would look

like, because you have a total variety of listenership amount. I don't think that it's like if you took one of the charts — Somebody could easily prove me wrong on this. Actually, they couldn't, because we don't have good analytics. I don't think it would be a parallel distribution of listens. I think it would be a linear thing where they — Anyway, I should focus my question; what tools do the podcasters need?

[0:47:04.5] JN: I think they certainly need to get recording tools, and that's what I'm attacking. Like we kind of already discussed, is the analytics tools. I think another thing is the advertising stuff, I think a lot of more people would like to have relationships where — Podcasters are such a great source of highly targeted audiences. The audience —

[0:47:28.1] JM: Yeah.

[0:47:30.2] JN: Since they're so niched, a lot of them are so small that the advertisers don't want to take the time and effort to deal with such small players individually. I think there's an opportunity to kind of — I think Acast has kind of done this with their dynamic ad insertion and stuff with their platform. The problem is Acaster is very much like, "If you want to use our tools, you have to be completely inside of our ecosystem and embrace it completely."

There's a lot of people that might already have relationships with their own advertisers or don't want to — For whatever reason, don't want to —

[0:48:08.7] JM: Such as myself.
[0:48:09.8] JN: Right. It wouldn't make sense for you to go run your show on them and let them just —

[0:48:14.0] JM: That's exactly right.

[0:48:15.7] JN: I think there's opportunities there —

[0:48:17.0] JM: That was my issue with Acast. I was like, "Who wants this?" I guess maybe if you're a brand new podcaster and you have an audience and you're just starting to get ads, then you're okay onboarding with them and moving everything to their infrastructure. It's just like

— I think it's like a perfect example of not talking to the customer. You look at Acast and you're like, "Cool. You built this, because this is the vision of podcasting that it works for you." This is not something that works for the podcasters."

[0:48:47.4] JN: Right. One of my overarching kind of principles with Zencastr is I do want to add more follow on services for podcasters to use just at a convenience, but I don't want to wall people in, because I know for a fact that there's a lot of people that you Zencastr because it doesn't do too much. A lot of the seasoned podcasters, they already have a host. They've already got advertisers. They're already got a whole workflow with their own audio editor that they love. They don't want all that stuff again. They just want really high quality recordings and then go do all that other stuff.

On the other hand, you've got the brand new podcaster who doesn't know what any of that stuff is and would be quite happy to just have you hold their hand through the entire process. Trying to find a good solution to where you're able to hold the hand of the people that want it, but let the other people just use you for what you do really well and then move on. That's my goal.

[0:49:40.7] JM: Okay. The different areas of the advertising that you could fit yourself into, right now you've got the beginning of the podcasting workflow already in Zencastr. You can record your podcast. you can edit intro. You can add a little music. You can put aphonic filtering and perfection on it.

The next place you could go is you could say, "Okay. Here's the timestamp where you insert an ad," and you could have a way to dynamically replace that in the future and that you also could get into the space where you're brokering relationships with advertisers somehow. What would be the ideal sequence? Assuming you were going to move into that space, what would be the ideal sequencing?

[0:50:28.8] JN: Matching up advertisers.

[0:50:30.6] JM: No. In terms of your business. If you wanted to move into that space where you're adding in the ads, you're facilitating dynamic insertion for the users and you're somehow

brokering relationships with the advertisers themselves. What would be the way that you would sequence that businesswise and have you thought about the interface into that world?

[0:50:54.6] JN: Yeah, I've put a little bit of thought into it. Again, I haven't even decided if I want to go in that direction. One of the nice things about Zencastr is because I have kind of a small niche market. There's only maybe one or 200,000 active podcasts in the world. I don't get competition from big funded players with tens of millions of dollars.

Because one of my — The reason why I built this company was to be financially independent, geographically independent and also independent in the decision making process. I don't want to have to raise money and have a board and have all these other stuff. Businesses can really take on a life on their own and runway with them. You have to really aim them properly to get what you want out of it. Those are some of the considerations around that.

If I was going to do it, something that I've envisioned is maybe a way for — Maybe I would send out a — Maybe whenever you went to your dashboard, I would have a popup that says, "Hey, you're in a desirable niche for advertisers. Would you be interested?" If you click yes, then I add you to a directory that I give access to ad fulfillment agencies to log into and let them browse through all the different — I would kind of bundle these up into topic niches, topic verticals, basically. Then, I could say, "Hey, we've got 1.2 million downloads a month in this vertical.

They're not seeing individuals. They're seeing a vertical that I have ads and each one of these is like a targeted type — This is a group of this targeted audience.

[0:52:47.3] JM: If I'm Squarespace and I want to advertise to burgeoning entrepreneurs, I can log in and I can say, "Okay. I'll choose the vertical burgeoning entrepreneurs. I want to get 100,000 pre-rolls across burgeoning entrepreneurs," and then Zencastr fulfills that order by inserting those ads on to podcast that use Zencastr.

[0:53:11.6] JN: Yeah. One of the things that I think is really important for advertising and podcasting is the human — The read in by the hosts more impromptu. Most people don't want for podcast advertising to be like the radio where it's a break to the sponsors. They want to hear

what did you as the host, the person who I'm developing a relationship with by listening to your show, what do you recommend? What are you endorsing personally?

What I would kind of want to do is make it so that the advertiser could give some outline instructions of what needs to be said and what needs to be covered, but then still have them all be like organic read-ins by the host. When they select this vertical, they give me the instructions. I send that out to all the hosts and then the hosts would then do their own read-ins and then insert that into the show. I think that's what I would like to see, and I think that's what would be cool for podcasters and for listeners, because I feel like that's one of the bit — What's one of the really cool things about podcasting is you don't feel like you're being advertised to. You feel like your host is giving you a great tip on what service you should use. If you're just doing a break to a sponsor with a prerecorded ad, you lose that, I think.

[0:54:37.1] JM: How do you think about pricing?

[0:54:39.1] JN: It's hard. Nobody is ever going to be happy. You're always going to have people telling you you're charging too little or too much. My pricing strategy came from some of the first interviews I did with podcasters when I was asking them, "Okay. Here's the problem. Here's what I think the solution could be. How much would you pay per month?" The first guy who gave me a number said 20 bucks a month, and I just stuck with it for better or worse.

[0:55:07.7] JM: It's not related to costs, or anything. It's just like — Because I pay $20 a month. I'm absolutely happy for it. I'm like — I'm totally content to pay $20 a month to have Zencastr running my business. I'd probably pay $80 a month for it.

[0:55:23.6] JN: See? There's the thing. I think obviously you need to cover your costs. That's a no-brainer, and then you need to be reactive — You need to think about how much this is worth, because you don't want to base your pricing on just your cost. You want to base your pricing on how much value you're brining. If you've done contract web development and stuff, then, that's kind of one of the principles that you kind of try to stick with.

I don't know. I think I am going to start to try and offer more higher value services so I can charge more for people who have more needs. I like the idea of making something that's

affordable for even the hobbyist. I don't want to force them out. That's why I have a really great liberal free plan that most people that use Zencastr don't pay for it. I've structured those preplans in a way where they don't cost me hardly anything, and so I can do that.

Yeah, I'll play around with pricing, but what it'd like to do instead of just raising my prices is adding better services and reasoned prices for those ad on services basically.

[0:56:39.4] JM: Right, like advertising related stuff.

[0:56:42.9] JN: Yeah. If I could start doing that, there's value in that. Also, the advertising stuff could help me monetize some of the people that aren't paying. One of the reasons why I have the free plan is I think that I'm definitely — I think I'm going to be able to find ways to monetize those users later, and I don't want to drive them away now.

[0:57:03.4] JM: Right. That makes sense. Okay. We're running up against time. I want to ask one or two things about music, because you said you were working on this digital audio workstation. You've probably thought about this space. I've done a couple of shows — I did a show called GitHub for Musicians about a company called — The name is escaping me right now.

One of the things I find super strange about the internet right now is like you can collaborate on almost anything and yet most of the music that we have on the radio is still one to five people that have created it together. You look at a piece of software, and software is so much harder to create than — I would argue, it's harder to create than music, like Linux. What piece of music can rival the complexity of Linux? If there were some tool where you could have mass collaboration on a piece of music, then I think it would be totally game-changing. Do you think we're going to get that anytime in the future?

[0:58:06.8] JN: The company that I was working on before Zencastr was Robot Audio, which was the DAW in the browser. Before that was a company called Soundkeep. Our unofficial tagline was like, GitHub Free Music. That was our elevator pitch for it.

[0:58:20.9] JM: Yes.

[0:58:23.7] JN: I've spent a lot of time in this thinking about this and exploring it, and it's a totally —

[0:58:30.3] JM: Because the potential is so tremendous.

[0:58:33.1] JN: Is it though? Here's is why I have reservations about that. One is programmers are able to make enough money with their code to not have to worry about — Musicians don't make money. They're all hoping that they get this one in a million breakthrough. Even excellent musicians don't make money. It's like the lucky ones that get — It's so rare that you actually breakthrough, even being able to make a living with it, much less becoming rich.

There's so protective of anything they've touched, that they're not — They don't want to share. Anything they have, "This is mine. This is copyrighted." I'm speaking in general terms. Obviously, there are outliers around here. Especially programmers here or musicians, I think see this differently, because it would be amazing for, especially electronic musicians, because it's such a derivative art form. You can't sell your music that you make if it samples other audio because there's so many licensing restrictions around it.

Our idea was to try and make a massive repository of totally open-source music assets that you could then remix and make what you want out of it without having to worry about licensing issues. The problem on top of that as well is most of these guys don't want to just sample any old song or any old thing. They want to sample the hot tune that's on the radio. Theirs is a lot of dynamics in it that make it not work as well as it might seem like it could work when you think of it just from a programmer's perspective, like GitHub.

Another thing about it is music is so subjective. Programs do what it needs to do or not. Obviously, there are some design — If it has a UI, there's design and stuff that can be subjective. A lot of it is; this works or it doesn't. The work has a design and this is what needs to do, or it doesn't.

With music, what we've found when we built Soundkeep is that a lot of people were annoyed that someone else was messing with their music, or they might want to collaborate with

someone else, but they are very selective about who that might be and they had to have a very good stylistic kind of match with someone to even consider wanting to work with them.

Those are some of the problems with that idea. I'm not saying it's unsurpassable, and there have been some companies that have since then started to make some things like that work, but —

[1:01:15.5] JM: Splice.

[1:01:17.0] JN: Splice I think is one that came around after Soundkeep. There's a few of them out there. I think a lot of them have gone down the route of doing —

[1:01:26.0] JM: Is it Blend?

[1:01:27.0] JN: I've forgotten now.

[1:01:28.0] JM: Blend.io. That's the one that i interviewed.

[1:01:30.4] JN: Okay. Yeah. A lot of them has gone down the road of offering sample packs from big — Which is cool, but it's not that GitHub for music idea.

[1:01:41.8] JM: That's right.

[1:01:42.7] JN: I think Splice or one of them has an interesting thing where if you pay for their subscription, they basically let you rent-to-own softsynths, which is cool. It's a totally different idea than what originally — I think that's the thing, is to monetize that space is challenging. You have to find some interesting other ways to do it and having — Even doing that is tough, because someone can literally go in BitTorrent and download a 10 gigabyte pack of samples. You know how many samples that is and how free that is? Anyway, it's a tough space, but it's fun. It's interesting.

When I was still working on Soundkeep, I went to the SF Music Tech Summit, and this is when I started to —

[1:02:31.7] JM: I went to that.

[1:02:32.9] JN: Did you? Okay.

[1:02:34.6] JM: I actually went — I went this year. It was super fun. Super interesting.

[1:02:39.3] JN: Okay. This was maybe in 2012 or 11 I think. Yeah, really great crowd. Really fun and interesting, but this is when I started to realize maybe I needed to think about a different business to get into, because —

[1:02:54.5] JM: Wait. Unpack that please, because I think I know what you meant, but please unpack that.

[1:03:01.3] JN: The very first, the opening keynote of this event was basically the guy — I've forgotten his name, but the guy who runs the summit, got up there and he was basically saying — To preface this, the biggest sponsor of this event is BitTorrent, or at least it was the year I was there. Their banners were everywhere.

[1:03:22.6] JM: Wow! I didn't know that.

[1:03:23.5] JN: What's his name? I've forgotten his name. I met him there, but the guy who invented BitTorrent was there running around.

Basically, the keynote of this event was the guy who runs the event got up there and say, "How do we make money? Does anybody have any ideas?" I was like, "Oh, this is not good."

[1:03:48.6] JM: We're totally going over here and totally going into a random topic. I want to say my two cents on this. As much as I liked the conference, it was almost like the coalminers of middle America who are like; bring back our coal jobs, and it's just like a bunch of musicians that are pining for various versions of the past and some of them who are looking forward to the future and thinking of ways to form fit old technologies to slightly new workflows. I sensed in general a lack of understanding for the potential of technology. People were basically like, "Hey,

look. I've built a new synthesizer drum pad," or like, "Hey, I've built a drumstick where you could put a sensor on it and if you put on headphones, you can hear the drum playing in your ears." It's like, "Okay. That's kind of cool, but where is the harnessing the power of the internet and network effects and so on?" I don't know. I honestly came way a little disappointed.

[1:04:55.8] JN: I think it was similar when I was there. There was a lot of —

[1:04:59.3] JM: It felt antiquated. I was like, "Seriously? This is what music technology is."

[1:05:04.3] JN: Yeah, there was a lot of people lamenting the demise of the —

[1:05:09.1] JM: It was a pity party.

[1:05:10.4] JN: Yeah, and a lot of people are distressed about how are we going to — What are we going to do next year? Things are just getting worse."

Not a lot of — The one thing that I did see that I thought was nice is I saw a few talks about people saying — The people that were the most distressed, I think, were the middlemen, because they're the ones —

[1:05:31.3] JM: Yes. That's right.

[1:05:33.1] JN: They are the ones that are totally out of job, because now the way for a musician to make it is to connect more directly with your audience and share and be open, do live streaming, do live concerts. The distributers were not interested in that idea really. When I went, what I saw was a cash-starved market and that's not a great way to make money really.

[1:06:02.0] JM: I felt like the biggest start at the event, and this is strange, was DistroKid. You know what DistroKid is, right?

[1:06:08.2] JN: Yeah. He was there. The Pud, right?

[1:06:12.1] JM: Yes, Pud. This guy — Oh my God! I want to have this guy on my show. I forgot his name, but you should look up Pud on Twitter, and he's made all these different products. This guy has made a bunch of different products. I think he made TinyLetter, which was sold to MailChimp. He made a bunch of other stuff, and then he made this thing DistroKid, which is basically like anybody can put their music on Spotify and iTunes and Amazon and all these different things with one click, and it's kind of similar to Zencastr in the sense that it's like $20 a year, and you just never unsubscribe, because if you're a musician, you put out one album a year or a couple of albums a year and it's like when you put it out, you might as well throw it on Spotify if it only cost you $20 a year to do that.

It's funny, because that is our innovation. It's like distribution. He was the start of the show and he was distribution. What about the music creation? Where is the music creation? The collaboration? Why is that — Anyway. That is totally not the focus of this episode. We should totally wrap up.

[1:07:14.4] JN: I think that there is opportunity for cool stuff to happen. The reason why I got into doing Soundkeep and the GitHub Free Music was me and some friends did the node knock out 2011, I think, and we made basically a collaborative —

[1:07:31.9] JM: It's a hackathon?

[1:07:33.7] JN: Yeah, it's a hackaton for Node.js, JavaScript, basically. We won the hackaton with this thing called 8 Bit Beats. What it was is you could have up to eight people join this room and each one of them got basically a midi roll that was eight beats, or eight measures long, and each one of them got a different thing. One person got the drums. One person got the synth, melody, and some other things.

It was really cool. What we were watching was people making music online together. Obviously, it wasn't like fully fleshed out songs or anything, but it was just ever-evolving beat that people would come in and add things. Sometimes someone would come in and just draw a penis in the midi roll and it didn't sound very good. Often, it actually came together and there's this really crazy Amorphis beat that was evolving. We're like, "Wow! This is really cool." It's obviously fun for people to use and maybe we can do something here." It was really hard to take that idea and

move it into something that was truly valuable enough to pay for and not just like a fun novelty thing.

That's the thing. Music is kind of jut a fun — The thing is is — Someone told me this a long time ago, and I think it's true. He said, "The business model behind music is that you can laid after the show." I think in a lot of sense is that's true. People are going to make music for free just for all the fringe benefits. It's not like something that has to be monetized and has to be a business. It's just fun.

It's an aspirational art. Everybody, yeah, imagines themself up on stage playing to a theater or whatever. When I go out and I buy a guitar or a synthesizer, it's a hobby, it's fun. It's not like a business investment. Trying to put too much money around it maybe just kind of —

[1:09:38.0] JM: Okay, but it's not even about money. I remember — I think was — I must have been 10 or 11 years old when — You know Postal Service, right? The brand Postal Service? Okay. Postal Service came out with their first album, and I remember seeing on MTV, it was like Kurt Loder, or one of these old MTV anchors. They're talking about how Postal Service made their first album. It was like, "Oh, yeah. We sent each other tracks over email and we just sent it back and forth until we got a good album."

At the time, that was like revolutionary. Here we are in 2017, and that is still the best that we can do in terms of collaboration. Instead of sending email, it's like you share over Dropbox. It's like; what has gone wrong where that is the best standard of innovation that we have in the music space?"

[1:10:28.9] JN: Here's the thing. There are collaborative DAW's out there. Let's see. I can't even remember what it's called, but there is one —

[1:10:36.8] JM: Ableton is. Splice is.

[1:10:38.8] JN: In a way, yeah, Ableton — Ohm Studio is one that's been around for a while. Really focus, that's their key feature, is like you can do stuff really collaboratively with other people.

The thing is, is people are so entrenched and attached. Learning the ins and outs of a DAW with all the plugins that go with it is like a very personal thing and it takes a lot of time and people don't want to move. Even if you're slightly better than the one, it's a hard transition for people to make.

There're these big entrenched players that you have to be really excellent even if you offer some cool collaboration features to get people to move away from it. I think what's more likely to happen is that you're going to see — Bitwig is, I think, one of the more promising players on the market. They're doing a lot of new cool stuff. I think maybe eventually they'll — They've been able to get a lot of the Ableton crowd to switch over to them, I think maybe they'll be the ones that kind of take it further into the future with the collaboration.

[1:11:42.0] JM: This is the thing I don't even understand, which is that — Okay. Blend tried to solve this problem by just making it so that the standard is you export all your stuff to WAV files or MP3 files or whatever and that's an obvious layer of interoperability, but nobody wanted to do it. I think this is like, "Okay. Sure. There's such a burden of the workflow. If you want to collaborate with somebody in a different digital audio workstation, okay, you have to export everything to different WAV files." What a headache to manage. It would be so much easier if you just collaborate with somebody who's using the same digital audio workstation as you.

Anyway, we've sort of covered this topic. There's a cultural problem as epitomized by the digital — What is it? The music future — Music of the future summit, or whatever it's called. I love that summit. Tech Music Summit. I want to have that guy on the show. I really want to talk to him again. You've got the cultural problem. You've got the technical problem; both these different walled garden digital audio workstations which are, basically, you might as well be talking about Windows versus Mac versus Linux in terms of walled garden and interoperability, and that is enough to partition people such that we have a completely stagnant music industry as far as I'm concerned.

When I look out and I listen to the music that is out there, I'm like, "Okay. This is completely stagnant, because you don't have the collaboration that we have in these other industries."

[1:13:05.7] JN: I don't know that I agree. I don't know that I disagree. I think you're definitely right in some regards, but I think the really cool thing now that's happening in the music space is — Perhaps this is impart, Pud is helping with this, is that it's a lot easier for people to get — I don't know that the big problem was so much the collaboration problem. That's an interesting problem and I hope that there's progress made there. I think the big problem is people who are making their music couldn't be heard as easily.

[1:13:41.0] JM: Or get paid.

[1:13:42.0] JN: Or get paid. Now, that's becoming easier, and I think that's cool.

[1:13:46.9] JM: Yeah, Pud is a hero.

[1:13:48.7] JN: There's never been a golden era of music where being a good musician meant you were going to make money. It's not like we've really lost that. That was never the case. Now, people through Soundcloud and through Spotify — I find bands all the time on Spotify now that nobody listens to, at least according to their listen counter, that I'm like, "Wow! These guys are great. I'm so glad that I'll be able to find them and hopefully they'll —"

I think there's been big improvements in that area, but the problem with the — When I was working on Soundkeep, I was in Boulder, Colorado, and I was working for Techstars, which is a tech accelerator there. I went to one of the partners of the fund behind Techstars foundry partners is — am I getting his name right? Jason Mendelson, I think. He has a band there in town and they do shows and everybody from the tech scene comes.

He was kind of the one that I looked to for advice on, "This is what we're working on. Do you think this is cool and what?" He wasn't having any of it. Here's why — He probably could play. He's like, "This is the complete —" This is also the type of musician that he is. He's not an electronic musician, but I still get why he said this. He's like, "This is the complete antithesis of what I'm looking for when I'm making music," He's like, "I want to be with my friends in the studio jamming together and I want the live interaction."

[1:15:13.8] JM: Oh my God! That's so retrograde.

[1:15:15.3] JN: It is, but it isn't. I love that too. I can't deny that that's more fun than looking at a screen and collaborating with some —

[1:15:22.7] JM: That is the equivalent of saying, "Okay. We all need to work in the office together."

[1:15:28.0] JN: Yeah. Still, if you could have your buddy there — I think it's much easier to riff off of each other —

[1:15:36.9] JM: No. Here's the thing, is that it's actually not, because — If you're talking about people who are working with, "Okay. Yeah. We are siloed into roles. I play guitar, you play drums, you play saxophone, you play piano. We've all got our partition of roles. That's fine."

If you've got people that grew up working at digital audio workstations like me, I need to control my workflow and my instrument is the computer keyboard, and that is not a two-person instrument. If I'm going to collaborate with somebody else who is a full-on digital musician, there's not room for two people in this studio.

[1:16:12.8] JN: Yeah. It's a fair point. I can see both sides of it I suppose.

[1:16:16.5] JM: Me too. Me too. Okay. Let's —

[1:16:18.4] JN: Anyway, what's this podcast about?

[1:16:20.4] JM: Yes, thank you for attending music engineering and debate and strong opinions radio, or — Yeah. Okay. We'll call it quits, Josh. Thank you for coming on the show. Thank you for producing a tool that has become a backbone of my workflow and thanks for staying on for so long. Usually, this only goes 60 minutes. Okay. Anyway, I'm going to stop the Zencastr recording now.

[END OF INTERVIEW]

[1:16:50.4] JM: Thanks to Symphono for sponsoring Software Engineering Daily. Symphono is a custom engineering shop where senior engineers tackle big tech challenges while learning from each other. Check it out at symphono.com/sedaily.

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