

EPISODE 615**[INTRODUCTION]**

[0:00:00.3] JM: Crocodile Browser is a fast browser built by Osine and Anesi Ikhianosime, a pair of brothers from Nigeria. I interviewed Osine and Anesi about three years ago. In this episode, I caught up with Osine to learn about what he and his brother have been working on since then. Osine and Anesi have become friends of mine since we had a conversation several years ago. Osine for the first time at the Facebook F8 conference last year, and it was one of the first times that I've met someone from another continent on the internet and then got to hang out with them in person.

There were some issues with network connectivity, so I decided to release this show on the weekend with no ads, but I hope you enjoy the show nonetheless. If you like it, you can also check out the previous episode that I did with Osine and Anesi about Crocodile Browser.

[INTERVIEW]

[0:01:03.5] JM: Osine Ikhianosime, welcome to Software Engineering Daily. It's great to have you.

[0:01:08.0] OI: Thank you. Great to be here.

[0:01:09.2] JM: You are one of the founders of BluDoors. You founded it with your brother and you're the creator of Crocodile Browser with your brother Anesi. You're both from Nigeria and we spoke about three years ago. Well, how have both of your lives, I guess, I know Anesi couldn't join us today, but how have your lives changed in those three years? I think people who are curious can look back at that past episode, but how has your life changed in the last three years?

[0:01:37.9] OI: We've gotten offers to be interviewed by a bunch of news organizations. We were invited to Google. Now I know people at Facebook, Google and different big tech companies. It's strange.

[0:01:55.8] JM: What's strange about it?

[0:01:57.3] OI: I didn't know any of these people just a few years ago.

[0:01:59.5] JM: Yeah, when you were just hacking in your bedroom, building Crocodile Browser. I think you dreamed of hanging out with these kinds of companies and meeting these kinds of people, and now you know some of these people.

[0:02:15.3] OI: Yeah.

[0:02:16.2] JM: Why did you create an internet browser?

[0:02:18.4] OI: Well, at the time, Google Chrome was too slow for us, so we needed something that will work on our phone. We created a browser that could work for us.

[0:02:27.1] JM: This was created three years ago. We talked about some of the engineering in that previous episode. What have you added to the browser in the last three years since then?

[0:02:37.6] OI: Well, the major thing we've added to the browser were quick links and an upcoming feature called CrocData. CrocData is a way for users and data world abroad. It's in beta right now. Quick links are just a way for users to save sites they frequently visit to the top of the browser's homepage.

[0:02:59.8] JM: What have been the biggest challenges in product development as you've been working on a browser?

[0:03:05.0] OI: You're into something that users would actually not complain about, because where would sometimes when we launched some new features, we get lots of pushback. We need to survey the user feedback to find out how – how to find a middle ground between the pushback and what we want to add.

[0:03:22.9] JM: It's hard to get consistent feedback from that user base?

[0:03:27.2] OI: Yeah, because they all want different things.

[0:03:30.7] JM: What are some conflicting requests from users?

[0:03:35.3] OI: Well, some users wanted the design to be more simple. We did that. When we did that, some other users requested that we add something that we removed from the design more simple back to the app.

[0:03:47.5] JM: The trade-off between minimalism and complexity.

[0:03:51.0] OI: Yeah.

[0:03:51.5] JM: Is your process for building new features based entirely on the user feedback, or do you sometimes build things that are completely dreamed up by you and Anesi?

[0:04:03.5] OI: 80% of what we build, we get it from user requests. The remaining 20% we'll build on in our spare time. Like things we think the users will use.

[0:04:14.3] JM: Croc Zero is this privacy-first browser that you built, this privacy-centered version. Is this like an incognito entirely browser?

[0:04:25.0] OI: Yeah. Like it has no history, so you can't even go back in the browser.

[0:04:29.2] JM: You can't even go back?

[0:04:30.4] OI: Yeah.

[0:04:31.0] JM: Why is that an important feature?

[0:04:32.7] OI: Well, further if there were some history available, hackers can somehow get the history. If there is no history, there's nothing to go back to. There's no prior record of what you have done before on the browser. Each page, it's like you're starting afresh.

[0:04:52.8] JM: Was there anything that was particularly difficult about implementing private browsing?

[0:04:57.9] OI: The trade-off between functionality and privacy, because Anesi told me that.

[0:05:03.4] JM: How does that trade-off manifest?

[0:05:05.4] OI: No back wasn't then, like experience-wise it's a bit terrible, it's a bit terrible. Anesi told me I should remove the feature and I do backwards, because experience-wise users will not like it. There's some trade-off like that.

[0:05:21.4] JM: Is this, Croc Zero, is this bundled in to your browser, or it's an entirely separate browser?

[0:05:27.7] OI: It's an entirely separate paid browser.

[0:05:30.0] JM: Oh, it's a paid browser?

[0:05:31.2] OI: Yeah.

[0:05:31.9] JM: Okay, interesting. What about the competition with Chrome? Chrome is a hard browser to compete with. How do you compete with it?

[0:05:42.2] OI: For Chrome, I wouldn't say we compete with them directly. We just kind of build stuff we think our users want. If it ends up competing with Chrome, we don't really know. We just build what we think our users want to use and want to request for.

[0:05:59.5] JM: How has the usage been in the last three years? Have you been steadily growing the user base?

[0:06:06.3] OI: Yeah, the user base has been grand, and these events base has been growing. Last year, we had about two million pages viewed in the browser.

[0:06:15.1] JM: Amazing. Are there people who use both Chrome and Crocodile browser and they used Crocodile browser for browsing specific types of sites?

[0:06:23.6] OI: I don't know about that. I know of people who use Crocodile browser over Chrome.

[0:06:28.5] JM: Okay, and they just use it for all of their browsing needs?

[0:06:31.7] OI: Yeah.

[0:06:32.1] JM: What do you think of the Brave browser?

[0:06:33.9] OI: I think Brave is amazing.

[0:06:35.5] JM: What's amazing about it?

[0:06:37.0] OI: The ad blocker is just amazing. The whole back, basic concession shortened that you give to – used to pay publishers. It's a great way for content creators to be get paid.

[0:06:50.0] JM: What do you think of micro-payments in the browser, more broadly speaking?

[0:06:55.1] OI: I think micro payments are fine, as long as they don't harm for user experience.

[0:06:59.5] JM: How would they hurt user experience?

[0:07:01.3] OI: If more attention is paid to the micro-payments, then is paid to the actual browsing.

[0:07:09.0] JM: If the developers were focused more on the payment side of things, than the actual browsing side of things.

[0:07:15.4] OI: Yeah.

[0:07:16.1] JM: You also have CrocData, and you talked a little bit about what CrocData is. It's a way for people to make some earn data by browsing and I think seeing some ads, and so that if you run out of data at the end of the month and you want to earn a little bit more data so that you don't have to pay money for a little bit of extra browsing, you can look at ads.

Explain why you built CrocData.

[0:07:45.2] OI: Well, we found out that a huge problem of – a huge problem that face our use is that they are not able to stay online to do what they want for long enough, because lots of services are struggling for the data on your phone. We built CrocData to help you accumulate some CrocCoins as we call it. At the end of a particular period, you are able to cash out those CrocCoins in exchange for data. This data will be kept separately for you. When you're done with your days in, you can cash out, so like extend your plan, data plan.

[0:08:22.6] JM: How often does this happen? Are there are a lot of people that this happens to, where they run out of data in an average month?

[0:08:29.2] OI: Yeah. It happens to me.

[0:08:31.2] JM: Okay. How do you earn the money back? Are you looking at ads?

[0:08:36.0] OI: We get paid for the ads. We are giving users 30% of our ad revenue to fund – about 30% of our ad revenue to fund the data.

[0:08:47.9] JM: Right. Do you have to find specific advertisers who will strike that deal with you?

[0:08:53.3] OI: At the moment, we're using AdMob and maybe Audience Network. In future, we're going to have specific advertisers that will pay, that will pay to run ads on Croc Zero, CrocData.

[0:09:07.8] JM: How many ads do I have to look at in order to earn enough money to be able to have a good browsing experience?

[0:09:17.0] OI: You have three ways you can earn CrocCoins and CrocData. You can earn by using – use by browsing, you can earn by watching video ads, and you can earn by looking at static ads, like image ads. You earn the most CrocCoins by watching video ads. You earn about five CrocCoins per video ad. One for every – for every search you do on the browser, and about two for the image ads. To cash out, you need about 50 CrocCoins.

[0:09:48.4] JM: 50 CrocCoins converts to how much data?

[0:09:51.6] OI: In Nigeria, it converts about a 100 megabytes.

[0:09:56.0] JM: Okay. Watching the video ads, that sounds like a bandwidth-intensive activity. Does it pay for itself? We try to compress the video, so it doesn't use as much bandwidth.

[0:10:07.4] JM: Okay. If you're at the end of your data, then you're going to get charged for that video ad, even if it's compressed, right?

[0:10:14.6] OI: Yeah, you can choose if you want to watch the video, or view the image. It's your your choice. You choose where you want to earn. If you don't want to earn, we don't show you any ads.

[0:10:24.2] JM: Got it. How does the price of internet connectivity in Africa compare to that of the US?

[0:10:30.2] OI: The price is getting cheaper, but still really expensive compared to the US. Most people's like, I don't know the exact statistics, but it takes a huge chunk of many people's earnings to pay for data.

[0:10:44.2] JM: How do you implement this, this feature where people can watch ads and look at ads in order to earn money? It sounds like kind of complicated. If you need to get these – well, I guess it's not that complicated if you just display ads to people, using something like

AdMob. You get to make money from it, and then you reallocate some of those – some of that money into CrocCoins. Are there any complexities to building that CrocData product?

[0:11:14.8] OI: Well the only hitch is actually sending the data to the people. For that, we have to use an API.

[0:11:20.8] JM: What's that API that you use?

[0:11:22.7] OI: At first, we were using TransferTo, but it's a bit too complex. But we're using Africa's Talking.

[0:11:29.6] JM: These are APIs for transferring data to people?

[0:11:32.4] OI: Yeah.

[0:11:33.3] JM: Interesting. What are some of the bugs that you've encountered while developing CrocData?

[0:11:38.4] OI: The ad keeps on going even while you're browsing, like the video ad, the audio going around while you're browsing. A lot of static for using AdMob and with low fuel rates, the ad doesn't get displayed.

[0:11:52.8] JM: CrocData is a form of a gamified experience. You're incentivizing people to watch ads in order to earn data. Have you found that the gamification process is difficult, or what have been your discoveries while working in gamification?

[0:12:15.8] OI: Well, most people like games. To gamify Croc Zero, we have to make a way that actually incentivizes people. For instance, you can build a whole point system, but there is no incentive for people to actually use the system. So we actually have to do something that people want in exchange for the points, like the CrocCoins. I see something similar to what Snapchat does with their trophies.

[0:12:47.0] JM: What does Snapchat do with trophies?

[0:12:49.1] OI: A lot of people want to earn more trophies. You can earn trophies by screenshots and different snaps, sending lots of snaps and sending a lots of — and going on streaks.

[0:13:01.0] JM: We talked a little bit last time about the process of working with your brother on the product. How has the working relationship with your brother advanced since you started working on Crocodile Browser? Have your guys' workflow changed?

[0:13:22.1] OI: Well right now, we discuss about the user feature. He does a wireframe and then converts it to a design, and I'll write the backend.

[0:13:31.7] JM: Okay. It's pretty well partitioned, where he does the front-end design and development and you do the backend.

[0:13:37.7] OI: Yeah.

[0:13:39.0] JM: I think he's in college now, right? Is it harder to collaborate when you're no longer in the same city all the time?

[0:13:45.3] OI: Over the past three years, he was in South Africa, so it's not really so difficult anymore.

[0:13:50.9] JM: Oh okay. How is the African tech sector developing? We spoke three years ago, and I think a lot has developed, a lot has changed since then.

[0:13:59.9] OI: Yeah. Mark Zuckerberg came here, invested in my friend's company Andela. Well, it failed because he won't — have gone do voice in Nigeria, to be specific. Sundar Pichai came to Nigeria, Michael Sabo of [inaudible 0:14:17.6] came to Nigeria. Like, African tech sector is exploding, and Nigerian government is starting to take more notice of it.

[0:14:26.3] JM: Are there startups that are coming out of — Andela by the way, for people who don't know, we've done a couple shows on it. But it's this education — it's a boot camp, plus a

consultancy service. I think, do they also have startups that come out of it? Did they have an accelerator program too, or is it just a boot camp plus a consultancy?

[0:14:46.7] OI: It's just a boot camp plus consultancy.

[0:14:49.6] JM: Okay. Has an ecosystem developed around that, where people who are coming out of Andela are starting their own companies?

[0:14:55.6] OI: I haven't heard much about people coming out of Andela to start their own companies. Andela developers are widely sought after, because they're really good.

[0:15:03.8] JM: When we spoke three years ago, I think we talked a little bit about Facebook. We talked a little bit about free basics. In the United States right now, there is some changing sentiment about Facebook. People — some people are starting to vocally dislike the company. My personal feelings about the company have not really changed that much, but are people in Africa turning against Facebook, or has usage just been the same?

[0:15:34.9] OI: I personally I don't think they care.

[0:15:36.8] JM: They don't care.

[0:15:37.4] OI: I haven't really — Yeah, I don't think they care, because the average Nigerian doesn't even know about these issues or reason, like they don't care. They don't care about if Facebook is still in the data, or is selling their data to another company, they don't care.

[0:15:53.5] JM: Do you care?

[0:15:54.4] OI: Well, my usage of Facebook has dropped within the last three years. I don't really post personal stuff on Facebook. When the news about Cambridge Analytical thing came out, I was really indifferent to it, not because I know personally these Facebook are data, so it is a data leak. What do you expect?

[0:16:15.9] JM: Exactly. Do people in Africa think that Facebook is the internet, or is it their main portal into the internet?

[0:16:26.9] OI: I don't know. But I know a lot of people, and I'm curious Facebook, as like the main – your main thing to do on the internet. But Twitter is coming up though.

[0:16:39.6] JM: Twitter is coming up.

[0:16:40.9] OI: Yeah.

[0:16:41.6] JM: Isn't that interesting that Facebook and Twitter start – I think they started around roughly the same time. Maybe Twitter was a little bit earlier, and it seems like Facebook grew in popularity, but then Twitter more recently has really gained a lot of traction. I think, I don't know, at least in America, had something to do with Trump, ironically. I think a lot of people came on Twitter, because they were angry about Trump. Other people just to watch Trump and to see him, but why is Twitter growing in usage in Africa, or in Nigeria at least?

[0:17:16.4] OI: The Nigerian market is very strange, I don't know. There's some things you can't – I can't predict in a Nigerian market.

[0:17:23.5] JM: Like what else?

[0:17:25.1] OI: For instance, in a Nigerian market, there's some ads that work in Nigeria that will not work anywhere else. Nigerian market is very complex.

[0:17:34.6] JM: What ads would work in Nigeria that wouldn't work in other places?

[0:17:38.6] OI: In Nigeria, majority of the ads are jingles. The jingles are there, so you can remember them, and think of the product when you remember them. The jingles are really long, so I don't think it would work many other places.

[0:17:55.3] JM: Facebook has the free basics product. I think we talked a little bit about free basics last time. Are people using free basics, the zero-rated Facebook service, in Nigeria?

[0:18:09.6] OI: Yeah. Sometimes I use it. Well, I don't want my data to go down.

[0:18:14.4] JM: I think you don't necessarily like zero-rated services, or the idea of zero-rated services yourself, right? You don't have, for example Crocodile browser is not a zero-rated browser.

[0:18:24.9] OI: My only issue with zero-rated services is they only give you a taste of what the web is. They don't expose you to the full thing. My only free basics for example, like makes it seem, at least to my understanding. Make it seem that the entirety of what you see on a few basics is the internet. That's my only issue of zero-rated services.

[0:18:50.2] JM: There is a problem with fake news spreading in certain places in the world. Is fake news an issue in Nigeria? Do you talk to people who are affected by fake news?

[0:19:04.4] OI: In Nigeria, fake news mostly spreads through Whatsapp.

[0:19:09.1] JM: Through Whatsapp?

[0:19:10.2] OI: Yeah. I finally was sitting and I finally strange that people would actually believe what they read without facts checking. I feel that with Whatsapp, it's more difficult to check if the fake news, like Whatsapp needs to build, like something that you can – is the fact check with talking the vendor up, because majority of Nigerians, they just read it, believe it, and turn off their phones. They don't go deeper to understand what is actually going on or anything like that.

[0:19:44.9] JM: Can you think of an example of a story that was fake that spread?

[0:19:51.3] OI: Yeah, a lot. An example? Well like remember the time when Whatsapp was actually a paid app. They give a year free and you pay for, like I think \$1 or something for the remaining of the service. Two years ago, people had started sending messages that Mark Zuckerberg recently acquired Whatsapp. I had to do, like click on some link or something to keep your Whatsapp account active, stuff like that. People believed it and you were clicking on

the link. I personally find it ridiculous that someone will actually believe something like that. Some people have to ask me to check if it was real.

[0:20:35.4] JM: That's pretty bad fake news, but I think there are places where the fake news is leading to violence, which is much worse.

[0:20:44.3] OI: Yeah.

[0:20:44.9] JM: You've spent a little bit of time in both Nigeria and the United States at this point. How did the two countries compare from your point of view?

[0:20:55.6] OI: The US has much better infrastructure than Nigeria. For me, that's a major difference. In Nigeria, right now there isn't power. There isn't electricity. I'm on lots of battery. Stuff like that don't happen to US. It's easier for you to build your stuff, because the infrastructure is already there.

[0:21:20.0] JM: I completely agree. Are there enough entrepreneurs in Africa that are working to solve problems like that?

[0:21:27.5] OI: Yeah, but in Nigeria for instance, it's difficult to do stuff like that, because of government regulations.

[0:21:36.7] JM: Does the government try to control those kinds of developments, or to get money from those kinds of developments? Do you have an idea of how government regulation affects that?

[0:21:46.8] OI: Well, a lot of this product needs funding. They usually go to the government for funding, which sometimes and the government is following the work, following the work and not concerned with continuing it.

[0:22:01.5] JM: I see. You and I spent some time online talking about new technologies. I know you think a lot about new technologies. I just want to get your opinions on some different things.

The first one is progressive web apps. Progressive web apps are not very popular in the United States. Do you see much progressive web app use in Nigeria?

[0:22:24.7] OI: One company in Nigeria has – uses a progressive web app as a main product on the mobile web. That's Conga. It's an e-commerce company it uses a progressive web app as a main – as their main products on mobile web. That's the only one I know of. I personally find it's a more pleasant experience than other e-commerce websites and apps.

[0:22:51.4] JM: A more pleasant experience.

[0:22:52.6] OI: Yeah.

[0:22:53.0] JM: Then why aren't there more progressive web apps?

[0:22:56.1] OI: I think there isn't enough visibility for progressive web apps. In the app store, you can promote your apps easily. You can pay for people to download and there's this whole hype about apps that people haven't gotten out of. Like most we don't realize that not every service needs to be on app. Some things are fine just as a website, or even as a web extension. Here, most people want to build an app, because there's this whole illusion of the app billionaire.

[0:23:27.5] JM: Well, it's not an illusion in some cases.

[0:23:29.3] OI: Yeah, but some of those products are fine as extensions, or websites and it could easily make the money that we –

[0:23:36.9] JM: Right. That's true, that's true. Have you and Anesi been talking much about cryptocurrencies?

[0:23:42.9] OI: Yeah. I don't really understand so much about them.

[0:23:46.2] JM: Okay. Do you think they'll affect your world in Nigeria?

[0:23:50.3] OI: They're already affecting our world in Nigeria.

[0:23:52.5] JM: People use them?

[0:23:53.3] OI: Yeah. When I'm going down the street, I see people – I see flyers for and banners on how to train people to mine Bitcoin and how to use Bitcoin. Found it interesting.

[0:24:07.1] JM: You said there's people on the street in Nigeria who are teaching each other to use Bitcoin?

[0:24:13.1] OI: No, there are flyers on classes on how to use Bitcoin.

[0:24:16.5] JM: Oh, flyers on how to use Bitcoin. Fascinating. Bitcoin is the currency that they talk about? They don't talk about Manero, or Ethereum, or something else? They're talking specifically about Bitcoin.

[0:24:29.0] OI: Yeah, because Bitcoin is actually the most popular.

[0:24:31.6] JM: Yeah, of course. Have you thought – I know you haven't gotten much understanding of Bitcoin, but have you thought about the useful applications for blockchains beyond cryptocurrencies?

[0:24:41.4] OI: I think blockchain can be used in the election system to prevent rigging, rigging of elections. I haven't thought so much in how that could work. Well, that's what I think at the moment.

[0:24:54.0] JM: What about voice interfaces? What applications do you see for voice interfaces in the near future?

[0:25:00.1] OI: The major application I see is the smart home. For mobile, for Siri and Google now and Alexa, I tend to prefer to text than use voice, because voice usually disturbs people in the environment. When you're at home, like it's actually – there are not many people you can disturb, so I think it's more suitable here. Or maybe in like some offices.

[0:25:27.5] JM: I feel the same way. I'm always asking my Google Home to set timers and asking it for definitions of things. I probably would feel less comfortable doing that in public.

[0:25:39.9] OI: Yeah.

[0:25:40.6] JM: How do African, or Nigerian specifically, developers differ from developers in the US?

[0:25:47.6] OI: I don't think they do. Because they all think about the same things, they follow the same processes. The only difference will be the infrastructure let's Nigerian developers down. Well we find – we'll find our way to go around it and boost that for developers.

[0:26:04.4] JM: Do you think the Chromebooks will overtake the usage of MacBooks in the near future?

[0:26:09.1] OI: I have used a Chromebook. I didn't think they were great. I have used the MacBook. The MacBook is like one of the most stable operating systems for me, on the laptop. We understand it's just terrible. The Chromebooks, the reliance on the Internet is the issue to me. Maybe with the new Android apps additions, it will be more useful, without the internet I really had a need to use the Chromebook.

[0:26:38.7] JM: What are the next products that we're going to see from BluDoors in the near future?

[0:26:43.1] OI: We are building a couple of games. We are also building a product that helps with smartphone addiction.

[0:26:52.8] JM: Are you concerned about smartphone addiction?

[0:26:55.3] OI: Yeah, it's crazy. Some people don't look up from their smart phone at all.

[0:27:00.0] JM: You know people in Nigeria that just use it all day all the time? I guess, there's a lot of people in the United States, I know people like that as well.

[0:27:08.3] OI: I know people who live inside their phones.

[0:27:10.6] JM: Really?

[0:27:11.2] OI: Yeah.

[0:27:11.6] JM: People who are your age or younger?

[0:27:14.3] OI: Yeah. Their phones are like their lives.

[0:27:16.6] JM: Do you have conversations with them? How are they sociologically different from people who are not addicted to their smartphone?

[0:27:25.7] OI: Well, in school my English teacher started to complain about seeing the world like text abbreviations in English essays, that's one of the differences.

[0:27:39.8] JM: Seeing the world like text, text what?

[0:27:41.8] OI: Text abbreviations, like LOL, BRB.

[0:27:45.1] JM: Oh, no.

[0:27:46.6] OI: It's that bad. Yeah, I guess the way they walk, like they don't think there's anything for them to do outside. I'm probably going to the extreme, but there are a lot of people like that. There's some people like that.

[0:27:59.7] JM: So you're working on a product to help with smartphone addiction. How could you help with smartphone addiction?

[0:28:05.2] OI: By locking up all your apps, so you can't use anything on your phone.

[0:28:09.5] JM: Simultaneously working on games, though. Do you feel a conflict there? Because games you generally are trying to make people spend more time in their phone.

[0:28:21.8] OI: Our games aren't designed to make people spend more time. Our games are designed to be played in shot sports. It's like 10 minutes at a time, 30 minutes at a time. Not that it's actually played over long periods of time at once.

[0:28:35.7] JM: Yeah, that makes sense. Well Osine, it's been really great talking to you. I always enjoy checking in and finding out what you and your brother are building. I'm excited to see what's next for BluDoors.

[0:28:46.4] OI: Thank you, Jeff. Been great talking to you.

[END]