DR: [00:00] I am Danielle Royston, and this is Telco in 20. I love Twitter. It connects you with people you'd never meet in your daily life. You can use it to look inside Elon Musk's head, uh-oh, find out what Barack Obama is reading on a summer vacation, and find random people who blend their unique skills, interests, and personality to become known as the best thinker on a particular topic, like today's podcast guest. Charles Fitzgerald, or Charles Fitz as he is known on Twitter, is a seasoned tech exec, strategic consultant, and founder of the Platformonomics blog.

[00:44] Every quarter, he writes about hyperscaler CapEx using their earnings filings to report the eye-staggering amounts being spent on the public cloud. He brings his witty, unfiltered, and super smart take on all the players in the cloud space. Every time I see his tweets, I like and retweet them, because they're not only insightful, but they also make me laugh out loud. Today we're going to get his thoughts on the bigs, the other guys, and the telco clouds – who's doing things right, who's falling behind, and does GAIA-X have a prayer? We're about to find out, so let's take 20. Charles Fitzgerald is managing director at Platformonomics and a prolific tweeter. Hi, Charles. Welcome to Telco in 20.

Charles: [01:29] Thanks, DR, for having me.

DR: [01:30] I'm so excited to talk hypercloud, hyperscaler, call them whatever you want to, CapEx spend today with you. So the way I found you was your Platformonomics blog and your "Follow the CapEx" series where you report on hyperscaler CapEx spend every quarter, and it's always an entertaining read. You're hilarious because you probably bash on Oracle and IBM more than I do.

Charles: [01:54] Well, you're going to have to step up your game.

DR: [01:56] So what led you to start tracking CapEx spend on the hypercloud?

Charles: [02:00] My awakening was near the end of my tenure at Microsoft, probably a little over 15 years ago, and I was sitting in a presentation. The company was just starting to do its data center build out, and having come from a

traditional software background where CapEx is"everybody gets a new laptop," it really made an impression; bulldozers and concrete and these giant buildings that you could see from space. So I filed that away and over the next couple of years, it was a phenomenal tell for who was serious about cloud and who wasn't serious. Then nine or 10 years ago, I finally got triggered by an IBM announcement where they announced they were going to spend $1 billion on cloud infrastructure. IBM has a long history of announcing they're going to spend $1 billion, which is a very round number, and they were hoping to scare people off, but at this point, a billion dollars over 15 plus data centers over multiple years was nothing.

[03:04] These were bonsai data centers at a time that Google was spending probably 10 billion a year. So I started writing about it and may have added not just the data, but a few jokes along the way, and I've been tracking it. It's no longer a great insightful tell for who's serious and who isn't, but it's still super interesting. It's a huge moat for these businesses where they've spent a hundred billion plus dollars on their cloud infrastructure. There are lots of interesting secondary questions, what's happening with AI and GPU deployments today and different geographies and everything else. So it remains a very interesting space.

DR: [03:42] Yeah, we've actually created a little tracker where we track all of the region announcements, put it all in one place because for the industry that I'm in, location actually does matter, and who's putting new regions where really matters to the telcos. So let's bring it back to the telco industry and compare the two. Telcos have historically been the big CapEx spenders across all the industries, building out their new networks, 5G or 4G before that. Sure, 6G will be around in a few years.

Charles: [04:13] 7G's going to be good too.

DR: [04:15] I know, 7G already announced by Trump, I think. But now you have the hyperscalers, which is another group that's doing super big CapEx spend. So when you compare the two, are the hyperscalers spending more than the telcos? Are they catching up? What do you think about the comparison of those two industries?

Charles:	[04:32] Yeah, the cloud guys over the last couple of years have outspent the telcos. So Amazon, Google, Microsoft, even AWS by itself have spent more on CapEx than AT&T, Verizon, T-Mobile over the last two years. Amazon is just the CapEx spend there is amazing because at the corporate level, they spend more on CapEx than almost any company in the world.
DR:	[04:55] Yeah.
Charles:	[04:55] TSMC spends more. Saudi Aramco spends more. Samsung spends more, and maybe some of the Chinese companies, depending on how much faith you have in their accounting, but they are one of the biggest CapEx spenders in the world. So you have the energy guys who've underinvested, and I think after the Ukraine invasion, we're going to see a lot more spending from them. You have the semiconductor guys where a new chip fab is $25 billion. Telcos are now at this point kind of in a tier below that. They're not spending as much.
DR:	[05:28] I think they still think of themselves as the biggest spender, and they're like, "Whoa, is me." I don't know how much you follow, they've been arguing that the three hyperscalers should contribute to building their networks, and they call it their fair share.
Charles:	[05:40] Yeah, it's insane.
DR:	[05:41] They're like, "It's not fair that you guys use our network, so contribute to it." The Netflix guy spoke at MWC in February in Barcelona. It was a little bit of a joke. He's like, "Then contribute to our content budget because that's driving the usage of the networks. People want our content, and so they use your data," so it was a little bit of a tongue in cheek.
Charles:	[06:04] Yeah, it's a crazy proposal.
DR:	[06:04] They don't realize that Amazon is spending so much on CapEx. So you put out an annual review, a big report looking back on the last four quarters. So again, give us a little bit of scale and understanding – what happened in 2022 across the big three hyperscalers?

Charles: [06:21] Well, CapEx spending slowed dramatically, so across Amazon, Google and Microsoft, they only spent $127 billion-

DR: [06:31] Only.

Charles: [06:32] ... which is a really, really big number. Amazon actually declined for the first time. They only spent 67 billion, and that was down about 9%, but the pullback was all on the logistics and the fulfillment and the warehouse side.

DR: [06:45] The retail side.

Charles: [06:46] Yeah. So Google and Microsoft were both up double digits. Google spent $31 billion. Microsoft spent $28 billion. That's roughly reversed from where it was the year previously. My guess is of that $127 billion, about $70 billion is going into the data center. Those numbers are still growing strongly for all three of those companies. AWS has started breaking out their CapEx spend and their CapEx spend, even as the company overall pulled back, was up 25% last year.

DR: [07:20] On just AWS side.

Charles: [07:21] On just AWS. The really stunning number is that CapEx spend is equivalent to 35% of AWS revenue, which is just a staggering number.

DR: [07:32] Yeah, that's insane. I don't even know if this is true, but I think they have a strong reason to build regions on the AWS side because of the logistics side. If you're trying to conquer the world of retail in every country and you're building all this logistics and warehouse, you're building a data center next to it, so why wouldn't you just sell that in that region? Whereas, Azure doesn't have as much of a reason to build up regions, and neither does Google.

Charles: [08:00] Well, Azure does. The two things that are really driving the regional data centers are one, people who care about latency, so they want the compute to be close to the job. The second one is regulatory. I think Microsoft actually figured that out first because they're ahead in terms of the

number of regions. There are a lot of countries that either have or will have various regulations that force people to keep their data in the same country, so that's really driving it.

DR: [08:26] Well, that's a super big topic in this industry because telco data is very coveted. Governments want it, bad actors want it. So that's something that I have to deal with in my business Totogi in terms of software and how do you handle data privacy and data regulations by the country.

Charles: [08:41] There have obviously been some big hacks on the telco side, so it'll be interesting to see if the cloud solves that problem for them or whether they're going to have to get a lot smarter on the security side.

DR: [08:51] Yeah, I think they're starting to realize that the hyperclouds are secure, and they have all these security and data in motion, data at rest, bring your own encryption key. I think there's a lot of great options there.

Charles: [09:04] Nobody's 100% secure, but the overall level in the hyperclouds is a lot higher than the average IT department is ever going to get.

DR: [09:12] Absolutely. Just the investment alone on security is massive at the hyperscalers. So given that, are you seeing Azure picking up steam against AWS? AWS has the biggest market share. I think they're at 50%, Azure at 30, and so will Azure overtake AWS? What do you think about that?

Charles: [09:32] I don't know if they'll overtake them, but if you look at the numbers, Azure has been growing faster than AWS consistently for years, so they are taking share. They've gone from probably less than half the size of AWS a few years ago to now they're probably about two thirds the size. It really as enterprises have started to embrace the cloud that has totally played to Microsoft's strengths.

DR: [09:57] I think the big strength there is developers know the Microsoft tools they've been coding with.

Charles: [10:01] Well, it's tools and it's also just those enterprise relationships. AWS has a line they use about there's no compression algorithm for experience, and they're really talking about the development in the operation side. But there's also one of those for the enterprise relationship side. In the early days of cloud, Microsoft would lose the product evaluation and they'd still win the business because these enterprises have been doing business with Microsoft for 30 years and trusted them. It's not purely a product evaluation.

DR: [10:32] Interesting. Now switching to Google Cloud, I don't think Google Cloud has ever been higher than third. They've always been in third place. So do you think they're going to be able to keep up? What's going to happen with Google Cloud?

Charles: [10:42] I'm pretty skeptical, and I've written about this. I don't see them rising higher than a pretty distant third. The reason is it's a hobby for Google. Apple made it cool for trillion-dollar companies to have hobbies with Apple TV, and Google Cloud is a hobby for Google, and hobbies are great in good times. I used to say that when Sundar, the CEO of Google woke up, Google Cloud was maybe sixth on his list of things to worry about, and they got a whole bunch of new things to worry about.

DR: [11:15] Well, yeah.

Charles: [11:16] I've lost count at the number of antitrust suits. They've got competition in the ad business like they haven't had historically. Ad revenue actually shrunk last year, and then they're having this code red crisis around AI. So Google Cloud is pretty far down the list. It's less than 10% of overall revenue, so they've got other things to worry about, and it's a very different business for Google. There's no synergy with the ad business. It requires different employees when it comes time to build it and sell it and support it. It's a different type of customer. It's a different channel. It's different partners. It's a different business model. Even the infrastructure that's required for cloud is starting to diverge. On the search and YouTube side, they're pretty happy with a small number of really big data centers. As they have to start pushing into different

regions and different countries, it starts to diverge from the overall infrastructure investment for the company.

DR: [12:14] Their primary moat of search being threatened by, as you said, the ChatGPT thing, the investment by Microsoft, and that was a pretty big thing that happened a couple of weeks ago.

Charles: [12:23] It's not just there. You have TikTok chewing away at YouTube. For the first time, we've actually seen the ad duopoly of Facebook and Google. They've dropped under 50% of revenue, so they're getting chipped away from a lot of different directions, and you got to pay attention to the franchise. So we'll see how much love and attention and investment Google Cloud gets as they really have to go back and focus on the core business.

DR: [12:49] Yep. So this may not be on your radar. I know it's not because I read your blog, but telcos don't know if they can trust the hyperscalers, so they've formed a consortium, which they love to do. They're trying to build their own public cloud called GAIA-X. It's a European initiative to develop a secure and federated data infrastructure for Europe. It's going to be all the things. It's going to be no vendor lock-in, all open sourced, also cheap, completely amazing. So what would your advice be to this Gaia-X group that's trying to compete with the big three hyperscalers?

Charles: [13:25] My advice would be good luck. GAIA is, or I probably should say, was one of these EU industrial policy things, and they were going to whip up a European competitor to AWS and Google and Microsoft by federating a bunch of teeny data centers in Europe. They haven't updated their website for a year-and-a-half. So even if you buy into the technical premise, and people should be very cautious about betting on EU industrial policy press releases, particularly when they're competing against the biggest technology companies in the world.

DR: [14:00] Yeah.

Charles: [14:01] Do you remember the EU search engine? No. You probably don't.

DR: [14:04] I don't.

Charles: [14:05] So I'm sure they're working on a big AI initiative right now. But competing at the hyperscale level is a $100 billion ante, and these are companies that are full-stack technology companies. They are designing their own chips. They own more transoceanic cables than the telcos at this point, and they can write software, so be very cautious about getting into that game. We've seen a bunch of other tech companies who thought they were going to play in that game quickly fall by the wayside. So it's a big leap to go play in that game.

DR: [14:42] Well, there's two things that you said there. The full stack component I think is a really important point. I think Telco sometimes still looks at the hyperscalers as a mega data center. They don't really understand the software component or even the chip component. We've got Graviton3 over at AWS. Google has their own chip as well, but the software element that they're bringing, all of these tools that you can use as LEGO pieces to quickly assemble applications that are robust, enterprise ready, that's a piece that they miss. They sometimes just think it's about the compute or maybe the storage.

Charles: [15:15] It's definitely about software. The software industry has gone from putting bits in a cardboard box to now they put them in these buildings that you can see from space. But first and foremost, it is a software game. The telco industry in my career has over promised and under delivered and overestimated their abilities when it comes to software. So whether that was the internet, whether that was the smartphone, whether that was the cloud, they need to think twice about their software chops before they go down that path.

DR: [15:44] I totally agree with that. Speaking of other technology firms that think that they can catch up, like I said, you like to bash on Oracle and IBM, so do I. Both of these guys say that they have a public cloud, and you write about them all the time. So what would these two guys need to do in order for you to consider them a real player in this space?

Charles: [16:03] Well, I don't know that it's bashing if you just point out the numbers. The numbers are the numbers, but-

DR: [16:08] Facts.

Charles: [16:08] ... I've used CapEx to separate the clouds from what I like to call the clowns. The clowns are those companies that are talking a cloud game, but they don't back it up with CapEx spending and data centers. At this point, the clown car race is down to just IBM and Oracle. We've already forgotten about Cisco Cloud and HP Cloud and Verizon Cloud, and there are a whole bunch of others that have dropped off into the recesses of history. My view is there's no scenario where IBM or Oracle catch up with AWS, Google and Microsoft. They're both about $150 billion in cumulative CapEx behind the big three. That's an awful lot of ground to make up.

DR: [16:54] Yeah, that's a lot of ground.

Charles: [16:55] Oracle's actually woken up and have been ramping up their CapEx in the last couple of years. They got it up to $8 billion last year and are quite proud of that. But they're still spending on an annualized basis about a quarter of what AWS, Google, Microsoft spend, and they're $150 billion behind.

DR: [17:14] Behind.

Charles: [17:16] They needed to wake up 10 years ago and do that. It's touching that they finally realized that cloud is important, and for them, they realized that to keep the database franchise, which again, is the core of the company and the thing they have to protect, the only way to protect that is to move that to the cloud. They've lost a huge amount of database share over the last 10 years as databases have moved to the cloud. But I think they're too late to do that.

DR: [17:41] Yeah.

Charles: [17:42] Oracle's at least trying. IBM, meanwhile, not only is their CapEx not ramping, it's actually declining. So if you go back 20 years ago, dawn of the 21st century, IBM spent

over $5 billion on CapEx, and that was five times what Amazon, Google and Microsoft combined spent. In 2022, IBM spent a whopping $1.8 billion, which is about 1% of what AWS, Google, Microsoft spent.

DR: [18:15] Yeah.

Charles: [18:16] So IBM is not even remotely in the game. There was a really funny line. One of their execs was recently bragging that they had over 50,000 servers. Yeah, it's like the Austin Powers line of $1 million.

DR: [18:30] Exactly.

Charles: [18:31] They are a rounding error. I am sure there are development teams at AWS that have misplaced that many servers in their couch. We can also debate whether they really have the technology chops to play with the bigs. Oracle maybe can still write software, IBM not so much. It's been a long time since they've delivered any kind of technology that is competitive, probably have to go back to the mainframe in the 1960s. So they're kind of a mediocre consulting company that's wrapped around that mainframe business.

DR: [19:03] Which is crazy, they were an infrastructure company. If anyone was going to make this play, it was IBM and they just completely missed the boat on this.

Charles: [19:11] Yeah. IBM is unique in that they had successfully navigated multiple generations of change in computing, but they missed the cloud transition, and it's too late to catch up. There's no bigger tell in the cloud era, if your CapEx is shrinking, you are not even remotely serious. You are not even remotely in the game.

DR: [19:33] Talk about a company like Microsoft, you were saying earlier, they had the enterprise relationships. IBM has enterprise relationships, but just the wrong strategy.

Charles: [19:43] Yeah, wrong strategy. You think about people used to say, "Hey, you'll never get fired for buying IBM." That's no longer true.

DR: [19:50] Yeah.

Charles: [19:51] IBM really hasn't done anything in the 21st century, and now I think you're at a much bigger risk where if you're betting on IBM, your company may go out of business. Look around, find the companies that are relying on IBM as a technology partner to help them compete with technology. You just can't find those kind of customers today.

DR: [20:11] Yep. So now let's give some advice to Arvind Krishna, the CEO of IBM for fun.

Charles: [20:17] Yeah.

DR: [20:17] You're $150 billion behind. You're shrinking your CapEx. Should we just milk mainframes for the rest of our lives? What should we do if we're IBM?

Charles: [20:25] Well, they're certainly going to milk mainframes. Arvind has backed them off from pretending they're cloud to they now talked about hybrid cloud, which in their case really is just a cloud washing exercise. They really are misleading customers in terms of what they have to offer. They're selling the same old legacy technology, and increasingly they're just a big systems integrator that will deploy solutions on AWS or Google or Microsoft. But the TV ads remain very misleading. So my first piece of advice to Arvind would be they should probably stop the misleading marketing.

DR: [21:02] Right. I see them all the time. I'm a big tennis player, so they're always sponsoring IBM Insights on the U.S. Open, and it's like Watson, and I'm like, "Those are just stats."

Charles: [21:11] Yeah. Yeah.

DR: [21:11] Right?

Charles: [21:12] It's a little misleading.

DR: [21:13] Yeah. Well, Charles, this is a great conversation about CapEx spend and just giving us great perspective on how much these guys are spending and who's doing what. So I hope everyone goes and reads your blog and keeps

up with your Follow the CapEx Series. I really appreciate you coming on the podcast today. Thanks so much.

Charles: [21:32] Thanks for having me. It was fun.

DR: [21:33] Awesome. Stick around because we're ending each podcast with a Telco in 20 takeaway. I have 20 seconds to tell you something you need to know. Charles is a straight shooter, maybe even more so than me. I really appreciate him telling it like it is, and telco leaders need to pay attention. He's simply tracking CapEx dollars. So he is the closest thing out there to an unbiased source. His point is, it matters how much you're spending when building a public cloud. If you're not putting your money where your mouth is, then you're not a true contender in this race. Charles reports that Oracle and IBM are $150 billion behind the big three. You heard his advice to IBM give up and become what you really are, a systems integrator. But the real surprise of his interview is how he thinks Google treats their cloud business like a hobby. Ouch. He made some solid points that make me think twice about moving critical business workloads to Google Cloud.

[22:30] With AWS and Azure running away with the prize, you got to ask what will happen to your big bet on Google when they're under attack in the primary areas of their business, like search. So your homework today is to follow Charles on Twitter and keep up with his Follow the CapEx blog. I retweet it every time it comes out. You know who else you should follow on Twitter? Me. Find me on Twitter @TelcoDR, and connect with me on LinkedIn. Listen to my other podcast episodes to keep up with everything public cloud and telco. Don't forget to follow us on Apple Podcast and Spotify and leave us a review and be sure to check out our awesome YouTube channel. Sign up for our email newsletter on telcodr.com. We just passed 3000 subscribers. I'm going to go brag about that on Twitter right now. Later, nerds.