

Iain Morris:	00:00:00	So what is an ontology?
Scott Bicheno:	00:00:01	Before Danielle answers, I want to give you the computer science and AI definition. In technology and computer science, an ontology is a formal data model that represents a set of concepts within a domain and shows how they relate to each other.
Danielle Rios:	00:00:14	That's exactly what it is.
Scott Bicheno:	00:00:15	All right, cool.
Announcer:	00:00:22	This is "Telco in 20," a podcast that helps Telco execs achieve a competitive advantage with AI and the public cloud. It is hosted by Danielle Rios, also known as DR. Today we're talking with the hosts of the Telecoms.com Podcast, Scott Bicheno and Iain Morris.
Danielle Rios:	00:00:41	Hi, guys, I'm DR. 2 hours, 10 minutes, that's how long Scott Bicheno, Iain Morris, and I talked in one sitting. Scott is the editorial director at Telecoms.com. Iain is international editor at Light Reading. And last month I was the guest on their podcast. It's my third time in their studio. Round one, we fought about the public cloud. Round two, AI. Round three, everything was on the table. 6G, rogue AI, Totogi Ontology, even bourbon.
	00:01:15	Scott admitted he's finally getting bored of his own AI doom, so he brought me in for the other side. I brought the Pappy Van Winkle, they brought the skepticism. Now, this is "Telco in 20," as in 20 minutes, not two hours. So we cut it down to a whopping one hour and 30 minutes. If you want to catch the full two hours, it's on the Telecoms.com feed and we'll link to it in the show notes. For everyone else, here's your TL;DR on our fun, wide-ranging discussion. We talked about how the same number can mean two different things inside one telco, why the SaaSocalypse is real and why Salesforce should be nervous, and why I think the solution to telco's AI woes is the Totogi Ontology. So, let's take 20.
Scott Bicheno:	00:02:05	Hello, and welcome to another Telecoms.com Podcast, it's our second in a row. We did one yesterday. We've got another guest, our good friend, Danielle Rios of Totogi.
Danielle Rios:	00:02:14	Three times I think I've been on the pod.

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Iain Morris:	00:02:18	Yeah.
Danielle Rios:	00:02:18	Not including the MWC visits.
Iain Morris:	00:02:18	No, more with the MWC visits.
Scott Bicheno:	00:02:19	Yeah, yeah. Did you do two MWCs in a row?
Iain Morris:	00:02:21	Yeah.
Danielle Rios:	00:02:22	I've done two post MWC wrap up things with you.
Iain Morris:	00:02:25	There was one with jellies and there was one with people making old-fashioned.
Scott Bicheno:	00:02:28	So, jello shots. And then to people who are not regular listeners, I christen Danielle "queen of the props," we have her to thank for these. You call them koozies in the States, don't you?
Danielle Rios:	00:02:38	Koozies. What do you call them?
Scott Bicheno:	00:02:39	These beer coolers. I don't know. We don't really have a proper word for them, do we? We just call them beer coolers.
Iain Morris:	00:02:43	Call them things.
Scott Bicheno:	00:02:44	Branded Telecoms.com.
Danielle Rios:	00:02:45	I know.
Scott Bicheno:	00:02:46	Also, the venerable Yeti that we've been using for years.
Danielle Rios:	00:02:50	The Yeti cooler, which is money. Yes.
Scott Bicheno:	00:02:52	Oh, yeah.
Danielle Rios:	00:02:52	That thing rocks.
Scott Bicheno:	00:02:54	It really does. And it's currently cooling some neck oils.
Danielle Rios:	00:02:57	Yeah, I have one myself, and I take it to my pickleball tournaments.
Scott Bicheno:	00:03:00	Excellent.

Danielle Rios:	00:03:01	Yeah. And it does a great job.
Iain Morris:	00:03:02	We've got good use out of it in the studio. So it's the best gift we've ever had, I think, really.
Scott Bicheno:	00:03:06	So, welcome back Danielle, and your colleague Lindsay in the background. Hi, Lindsay. And she's not here, but I was delighted to meet your daughter, Bella.
Danielle Rios:	00:03:15	Yeah.
Scott Bicheno:	00:03:16	My daughter's Isabella, by the way.
Danielle Rios:	00:03:17	Well, she's Isabella.
Scott Bicheno:	00:03:18	Yeah, yeah. No, I just clarified that with her.
Danielle Rios:	00:03:21	Yes.
Scott Bicheno:	00:03:21	It's nice to meet her. She's touring Europe before she starts college, where she's going to do cognitive science.
Danielle Rios:	00:03:26	Yep.
Scott Bicheno:	00:03:26	So, another brainy one of your kids. I think the last pod you were talking about your son's just having to turn down huge job offers because he's so in demand.
Danielle Rios:	00:03:36	Yeah. He had a great summer. He wrote an LLM and learned-
Scott Bicheno:	00:03:39	He wrote an LLM?
Danielle Rios:	00:03:40	Yes, he's working on an LLM. And so he-
Scott Bicheno:	00:03:43	Because we haven't got enough of them.
Danielle Rios:	00:03:45	Well, he did about 15 or 16 different experiments to figure out, could you train it faster? Can you train it more cheaply? Could you use less compute? What if you needed to train it in a different language? Is it more efficient to start with English and then convert, or start in the home language? So, all these different kind of ideas as you start to think about sovereign models. And so, he was working for a longtime mentor of mine, Joe Liemandt, who runs the Alpha School, the AI school. And so, when Joe starts to think about taking this more international,

especially for something as sensitive as schooling, you need to train different models on the cultures, values, curriculum of said country.

Scott Bicheno: 00:04:23 We don't want to all turn into Americans, Danielle.

Danielle Rios: 00:04:26 And if you're going to buy an LLM, you're going to want to be able to control how it was trained. And so-

Scott Bicheno: 00:04:30 Yeah. You need one with a posh English accent, or something like that.

Danielle Rios: 00:04:33 And so, Benjamin had, I think nearly 40 CS students from Stanford and MIT under him, and he was directing them. Computer science majors from Stanford and MIT, and some from UT. And he had a great summer. So it was really, really awesome.

Scott Bicheno: 00:04:48 We're definitely going to get back onto AI stuff.

Danielle Rios: 00:04:50 Yeah. Yeah.

Scott Bicheno: 00:04:51 And it's relevant to your day job, but there's also quite a lot of stuff going on in the world that I think is worthy of discussion.

Iain Morris: 00:04:57 Really?

Scott Bicheno: 00:04:57 Yeah. Have you noticed that there's quite a lot of AI news these days?

Iain Morris: 00:05:00 There was some BBC story about them taking over this morning.

Scott Bicheno: 00:05:03 Yes, there's lots of that going on.

Iain Morris: 00:05:05 The Hugging Face incident.

Danielle Rios: 00:05:06 Skynet is happening.

Iain Morris: 00:05:07 Yes. I think Skynet came up yesterday even. In fact, we can't get through a report without you saying it.

Danielle Rios: 00:05:10 Well, before we do that, I've got to lubricate you guys a little bit here, before you guys get all dystopian on me. From America-

Scott Bicheno: 00:05:17 What's going on here? Queen of the props strikes again?

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Danielle Rios:	00:05:19	From America, I have brought you a special bottle of bourbon.
Scott Bicheno:	00:05:24	Wow.
Danielle Rios:	00:05:24	But, how do I get it out of this thing? It's Pappy Van Winkle.
Iain Morris:	00:05:29	Oh, I've heard of that. That's very good.
Danielle Rios:	00:05:30	Which is arguably maybe the best bourbon-
Iain Morris:	00:05:32	Oh, my God.
Scott Bicheno:	00:05:32	Whoa.
Danielle Rios:	00:05:34	... in the world, from America. It's called a bourbon because it comes from Kentucky. Otherwise, it would be a whiskey. I think there was a famous heist where they broke in and stole a bunch of Pappy in America, but delicious.
Iain Morris:	00:05:51	Wow.
Scott Bicheno:	00:05:52	Wow.
Iain Morris:	00:05:52	Thank you very much.
Danielle Rios:	00:05:54	And so I also have... Take a look at that. That's for you. We're not going to drink the whole thing now. I brought you some-
Scott Bicheno:	00:05:58	15 years. Oh.
Iain Morris:	00:05:59	Wow.
Danielle Rios:	00:05:59	... nice little glasses.
Scott Bicheno:	00:06:00	Iain, guess what percent alcohol this is.
Iain Morris:	00:06:02	50.
Scott Bicheno:	00:06:06	53 and a half. That is savage.
Iain Morris:	00:06:07	That's rather...
Scott Bicheno:	00:06:07	Oh, and you brought cool glasses.

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Iain Morris:	00:06:08	That's rather strong.
Danielle Rios:	00:06:09	I brought you cool glasses.
Scott Bicheno:	00:06:11	Whiskey glasses.
Danielle Rios:	00:06:12	Whiskey glasses.
Scott Bicheno:	00:06:12	These are special whiskey glasses.
Danielle Rios:	00:06:13	Right. And when you drink bourbon and whiskey, I sort of feel like it puts hair on your chest, and that's not a good look for me. So, I am going to drink my favorite, which is an old-fashioned. So I have my old-fashioneds here.
Scott Bicheno:	00:06:26	Oh, wow.
Iain Morris:	00:06:26	Oh, wow.
Danielle Rios:	00:06:26	That's why it smells a little bit orangy in here. And then, I don't have my normal guy that follows me in a bar cart everywhere. I'm sure that surprises you.
Scott Bicheno:	00:06:34	You're just giving him the day off.
Danielle Rios:	00:06:35	Right. So I can just pour this in if I want to and-
Scott Bicheno:	00:06:38	So that's an old-fashioned mix-
Danielle Rios:	00:06:40	It is.
Scott Bicheno:	00:06:40	... in a bottle.
Danielle Rios:	00:06:41	You have to untwist it or whatever. Awesome. It's like a to-go.
Iain Morris:	00:06:44	That's great. It looks like a medicine bottle, doesn't it?
Danielle Rios:	00:06:46	It does.
Scott Bicheno:	00:06:47	It's good medicine.
Iain Morris:	00:06:48	It's happy medicine.
Danielle Rios:	00:06:48	But if you-

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Iain Morris:	00:06:49	Can I have a look at that bottle?
Danielle Rios:	00:06:50	Yeah, I have extras of these if you prefer an old-fashioned.
Scott Bicheno:	00:06:54	Whoa.
Danielle Rios:	00:06:55	And glasses.
Scott Bicheno:	00:06:56	That might be coming, but then we'd need some ice. Well, we've got the ice.
Danielle Rios:	00:06:59	Oh, no, no, no.
Iain Morris:	00:06:59	You can pretend you're drinking cups-
Danielle Rios:	00:07:01	I have giant cubes.
Scott Bicheno:	00:07:02	Giant cubes, but then they wouldn't work in these glasses, would they? We could just use the little ice that I've got here.
Danielle Rios:	00:07:06	I have the other glasses if you want a glass like this with-
Scott Bicheno:	00:07:09	Cedarwood Old-fashioned. Fruity, spicy, woody. Woody, you don't necessarily expect, do you? Maker's Mark Bourbon, Tayer Aged Aquavit. Oh, damn, as if it's not alcoholic enough, they love some Aquavit in.
Danielle Rios:	00:07:23	I could see that.
Scott Bicheno:	00:07:23	Peychaud's bitters and cedarwood.
Iain Morris:	00:07:27	No way.
Danielle Rios:	00:07:27	Here, let me get you a cube.
Scott Bicheno:	00:07:28	Oh, you bought tumblers for all of us. You are so well-prepared. And obviously, Lindsay has to get a lot of credit for that.
Danielle Rios:	00:07:34	Lindsay and Jen, yes.
Scott Bicheno:	00:07:35	Lindsay and Jen. Yeah. So give a shout-out to Jen as well from Liberty. A colleague of our good friend, Elena, who does a pod at least once a year with us.
Danielle Rios:	00:07:43	Okay, here. Maybe I'm going to pop it up and you grab the cube.

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Iain Morris:	00:07:44	Yeah. Cool.
Danielle Rios:	00:07:48	So I don't touch it, or whatever. Would you like-
Iain Morris:	00:07:49	Sure. Why not?
Danielle Rios:	00:07:50	Here, I'm going to pop a cube, and then you grab it with your fingers. That's probably easiest. Least germey. Can you get it?
Iain Morris:	00:07:56	Yeah.
Danielle Rios:	00:07:56	There you go.
Scott Bicheno:	00:07:56	That's awesome.
Danielle Rios:	00:07:58	Okay, cool. There you go. We're ready to go. And then we can talk about evil AI with some drinks.
Scott Bicheno:	00:08:05	That's brilliant.
Danielle Rios:	00:08:06	How terrible AI is.
Scott Bicheno:	00:08:07	Should I just chuck some of this in, yeah? I do like the medicine bottle look.
Danielle Rios:	00:08:10	And there's more. There's more of those bottles.
Scott Bicheno:	00:08:12	Brilliant.
Iain Morris:	00:08:12	Very nice.
Scott Bicheno:	00:08:13	Danielle, you've out done yourself.
Danielle Rios:	00:08:15	The Pappy is hard to get. And this is from America because it's 750 milliliters. Yeah. People love this. They're-
Iain Morris:	00:08:23	I've heard of it, actually. Yes.
Danielle Rios:	00:08:25	Yeah, delicious.
Iain Morris:	00:08:25	I realize that's a very good one. That's very generous. Thank you.
Danielle Rios:	00:08:29	Yeah, the best.

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Iain Morris:	00:08:29	Yeah.
Danielle Rios:	00:08:29	So there you go.
Scott Bicheno:	00:08:29	Awesome.
Danielle Rios:	00:08:30	So, I always drink old-fashioned because there's nothing old-fashioned about Totogi.
Scott Bicheno:	00:08:33	Cheers.
Iain Morris:	00:08:34	Cheers.
Scott Bicheno:	00:08:36	There's nothing old-fashioned about Totogi.
Danielle Rios:	00:08:37	There's nothing old-fashioned.
Scott Bicheno:	00:08:38	That's brilliant.
Danielle Rios:	00:08:39	That's pretty good.
Scott Bicheno:	00:08:40	I'm going to have to try a little snifter of this to see what it's like. Do you want to try a little thing too?
Iain Morris:	00:08:44	Sure. I mean, so much for my avoiding having any hard alcohol.
Danielle Rios:	00:08:48	Just a little. Have a little-
Scott Bicheno:	00:08:50	Little splash, see what it's like.
Danielle Rios:	00:08:52	There you go.
Scott Bicheno:	00:08:52	And then we can fight over the bottle. Yeah.
Iain Morris:	00:08:54	Really good. I think that one's going to have to stay in the studio.
Scott Bicheno:	00:08:56	Yeah?
Iain Morris:	00:08:57	Because there's only one of them.
Danielle Rios:	00:08:58	Yeah, you're going to have to hide it from your HR-
Scott Bicheno:	00:09:00	We're going to have to ration it carefully, at nearly 55% alcohol.

Iain Morris:	00:09:02	We'll ration it carefully, and we'll occasionally come in here and have drinks rather than doing any work.
Danielle Rios:	00:09:08	I imagine you guys, when it's cold in London and you're like, Pappy.
Scott Bicheno:	00:09:12	Well, thank you very much, Danielle.
Danielle Rios:	00:09:13	You're welcome. Yeah, super fun. Now we can talk about it, how terrible AI is. Amazing, yet...
Scott Bicheno:	00:09:19	I think the least you've earned by your generosity is for me to ask you what you're up to these days, and how come you're over in Europe. My usual s**t joke is you're only over here for the podcast, but obviously you do have other stuff.
Danielle Rios:	00:09:32	I've been hanging out with the Telecom TV guys over in Dusseldorf for the AI-Native Telco-
Scott Bicheno:	00:09:39	Do I gather Ray wasn't there?
Danielle Rios:	00:09:41	Ray was not there. Who was-
Scott Bicheno:	00:09:42	Tell you what, sorry, just to interrupt. This is really nice, but it takes your breath away, isn't it? You have a little sip when you're like...
Iain Morris:	00:09:47	Yeah.
Danielle Rios:	00:09:47	You can feel it back in-
Iain Morris:	00:09:47	It's good.
Scott Bicheno:	00:09:50	Don't hold a match near your mouth when you're breathing afterwards.
Danielle Rios:	00:09:53	Turns you into a dragon.
Scott Bicheno:	00:09:54	Yeah. Sorry, I interrupted you.
Danielle Rios:	00:09:55	Yeah, no, no. I was hanging out with Guy. Guy was moderating and leading and-
Scott Bicheno:	00:10:00	They had a summit, a conference type of thing.

Danielle Rios:	00:10:01	Yeah, forum. And so, speakers with panels kind of thing, about almost two days long. And then, in the front part of the area, some of the vendors had an opportunity to have a demo.
Scott Bicheno:	00:10:17	Okay. And what was the theme of the event? Sorry if you already said.
Danielle Rios:	00:10:17	AI. AI.
Iain Morris:	00:10:17	AI and Telecom.
Danielle Rios:	00:10:19	Yeah, yeah. AI and Telco.
Iain Morris:	00:10:20	Haven't they formed an association or something as well?
Danielle Rios:	00:10:23	Yeah, they have.
Scott Bicheno:	00:10:23	I remember that.
Danielle Rios:	00:10:24	AI-Native Telco Accelerator, of which Totogi is one of the founding members. And so, we had a steering meeting and a dinner. But it's operators, mostly operators, and then a few vendors that have jumped on.
Iain Morris:	00:10:37	And what's the goal of this organization?
Danielle Rios:	00:10:39	It's really like, who's really doing AI? There's a lot of talk, and it's easy to put out a press release of we're going to, or we've announced we're going to do something. And Guy is putting together the AI-Native Telco index, which is evidence-based proof that operators are really doing well.
Iain Morris:	00:10:57	So it's a series of metrics that you use to measure where people are-
Danielle Rios:	00:10:59	Yeah, he's looked deeper. They've sifted through the press releases and they're trying to really figure out is there real proof here? Is this really happening? And so, they are shying away from authentically just ranking operators. Because no one likes that, I guess. I mean, I would love that.
Iain Morris:	00:11:17	Especially not if you're at the bottom. It never goes down well with anybody.

Danielle Rios: 00:11:21 Right. And so, they have a little bit of a semblance of who's really doing it, who's a little bit behind.

Iain Morris: 00:11:25 Who is in the top section?

Scott Bicheno: 00:11:28 Magic Quadrant type of thing.

Danielle Rios: 00:11:29 Yeah. It wasn't so much who was up there, and I feel bad for saying this as much as SK puts out a lot of press releases about they're building a model.

Iain Morris: 00:11:40 They do.

Danielle Rios: 00:11:41 They're training all our people. We're doing GPU as a service.

Scott Bicheno: 00:11:44 Career's generally quite all in on it, isn't it?

Danielle Rios: 00:11:47 There was a lot of talk and not a lot of action. And so, I think that was the big surprising thing. And then, the second-biggest thing that Guy pulled out was that it wasn't necessarily all the top guys that were making authentic progress. A lot of the Tier 2s are quietly progressing, and they don't nearly talk.

Iain Morris: 00:12:04 There's lots of different aspects to it, aren't there? Because I suppose there's AI for, in your area, for instance, using it in BSS and OSS and trying to get rid of some of that legacy stuff and be more efficient, for want of a better word. But then there's also, I don't know if the index considers this, but offering AI-based services maybe. The AI RAN thing, which we can talk about a bit, although it's not really that relevant.

Danielle Rios: 00:12:26 Everyone likes to quote this AI for networks and networks for AI.

Iain Morris: 00:12:29 Yes.

Danielle Rios: 00:12:29 And there's kind of easy AI and then a little bit harder AI. And then we deployed a chatbot to our internal people, which AT&T did. They put out a couple of articles about how they're spending a ridiculous amount of tokens on that. Versus, we're using it to build an agentic loop that's now making decisions on behalf of our networking team. So, I think Guy's trying to assemble that and try to figure out some of these are business ideas, GPU as a service or sovereign AI or AI workloads, and then the internal impact of AI. So, the report just came out, it's 200 pages long, so I haven't had chance to consume it.

Scott Bicheno: 00:13:07 Get AI to condense it for you, summarize it.

Danielle Rios: 00:13:09 Well, I'll tell you a funny story about that. So, I got a 12-page summary of it and I uploaded that to AI, and immediately got... The first time I've ever seen this in uploading documents that I work with, it was like, "This is copyrighted and you can't upload it. I will not provide you a summary unless you can prove to me that you're an ANTA member." And I am an ANTA member, so we uploaded the proof. It's like, "Okay, great." AI was happy to summarize once I provided the proof.

Scott Bicheno: 00:13:39 That sort of thing I kind of approve of, a degree of gatekeeping. Because some of the stuff that we keep teasing and that we'll get onto later where it just seems to be completely unbridled and just going off on its own whatever dastardly agenda it has. It's good I think if you've got the stages of gatekeeping baked in.

Danielle Rios: 00:13:57 It was the first time. It was interesting. Because I had Guy on the podcast talking about ANTA.

Scott Bicheno: 00:13:59 On your pod.

Danielle Rios: 00:14:01 On my pod, on "Telco in 20." And then I asked him, I was mostly tongue in cheek and a little bit of a joke, but I was like, "Are you going to use AI?" I mean, of course you have to use AI to build the AI-Native Index, right? And he said, "Absolutely." And I was like, "Oh, that was the first very enthusiastic use of AI by anyone journalistic-y."

Scott Bicheno: 00:14:19 You're used to us being a little bit skeptical.

Danielle Rios: 00:14:21 But even, I don't think Ray is big on AI, but-

Iain Morris: 00:14:25 No, but I suppose what Guy's doing, the index, even me with all my AI skepticism, I can see its role in doing something that sounds quite quant-based.

Danielle Rios: 00:14:35 Yeah. It's a lot of-

Iain Morris: 00:14:36 We've been putting formulas into Excel spreadsheets to use as shortcuts for a long time. And if you can use an AI tool to simplify them-

Danielle Rios: 00:14:42 Well, he has 56 operator groups that they're reviewing, and so they're going through all of their press releases and investor

documents, and anything publicly available about what they're doing with AI. It's a lot of assembly, and AI is going to really accelerate what's going on.

Scott Bicheno: 00:14:57 As with all forms of automation throughout history, anything that just removes some drudgery and some repetitive work, and all that sort of thing. The utopian thing is it'll free us up to do more elevated things. And the dystopian one is it's going to nick all our jobs. And one of the reasons I'm really happy to chat to you about AI is I figure you generally put a positive slant on things. And I think it's important. I've already got to a stage where I'm boring myself with my descent into dystopian hand ringing. So I'm quite happy-

Danielle Rios: 00:15:25 And it's actually making you turn positive? Not yet.

Scott Bicheno: 00:15:26 Well, I'm quite receptive to hearing the other side of the story, that's all. So, that's what you were chatting about in Germany.

Danielle Rios: 00:15:34 AI and AI and telecoms. And just, vendors on stage would also... I always find it very fascinating to hear the operators talk about their challenges. Especially if you look back a year to where we are now just how the narrative is changing. And they're starting to run into problems like obviously the training of their workforce and change management, which is AI is going to create a huge HR problem.

Scott Bicheno: 00:15:58 Damn right.

Danielle Rios: 00:15:58 It's not just, oh, here's some new technology, go to work. But really, jobs will change. They should change if you're doing it right.

Iain Morris: 00:16:06 Or go.

Danielle Rios: 00:16:07 Yeah.

Iain Morris: 00:16:07 Or go completely.

Danielle Rios: 00:16:08 Or go. Or go. And I think there's a silver lining in that, and I can talk about that in a second. But they're also getting to the point where they're understanding, wow, we have all this data that isn't necessarily clean. And I see a lot of telcos like, let's go clean our data first before we do AI.

Iain Morris: 00:16:21 What does that mean though? Because I keep hearing this coming. And this used to be a thing even before AI, you need data to be cleaned to introduce new systems-

Danielle Rios: 00:16:26 Well, there's probably two ways to look at that. And this is a true story, one of our customers. Where we were connecting them to Totogi Ontology and one of the big-

Iain Morris: 00:16:35 You have to explain ontology in a minute.

Danielle Rios: 00:16:37 I will. Right. But imagine it like a world map. It's a world map of your telco, of this telco. And the Totogi Ontology does 90% the same as everyone's telco. And then you add your special 10% secret sauce. And so, we connect existing systems. We kind of moved out of BSS, you said it at the beginning, BSS space. I'm actually now moving into OSS and network finance. I'm connecting any system that exists at a telco, and connecting it to the ontology. And-

Iain Morris: 00:17:07 So is it OSS magic as well as BSS magic?

Danielle Rios: 00:17:08 It's magic.

Iain Morris: 00:17:09 It's just magic.

Scott Bicheno: 00:17:09 It's just magic.

Danielle Rios: 00:17:11 It's magic, right? I have another prop for you at the end.

Scott Bicheno: 00:17:14 A magic wand?

Danielle Rios: 00:17:15 A magic one. But let's take a very important metric like ARPU. And you have ARPU and finance, which you're reporting to the street, but you might have ARPU in other parts of the business, like network or whatever that you're looking at. And what we discovered, and this is what we mean by clean data, when network's looking at ARPU and talks to a finance colleague, the finance colleague thinks about their ARPU. When we connected it, we found out that the ARPU was different. There were literally different formulas. The labels were the same.

Scott Bicheno: 00:17:45 Right.

Iain Morris: 00:17:46 But the way of calculating it's lightly different.

Danielle Rios:	00:17:48	So, network is doing it one way.
Scott Bicheno:	00:17:49	It's almost like a way of standardizing the whole trove of information that you have.
Danielle Rios:	00:17:53	Exactly.
Scott Bicheno:	00:17:53	Exactly. So when you say something, it means just one thing.
Danielle Rios:	00:17:56	You could have a vendor interpretation of ARPU. It could have been a consulting project that did A plus B plus C divided by number of subs, or whatever, and finance is doing it.
Iain Morris:	00:18:06	So when you talk about cleaning, it's as simple as, for instance, a spreadsheet that I maintain which has got an employee headcount in it. Which is something I've been writing about for about 20 years.
Danielle Rios:	00:18:16	Yeah, for sure.
Iain Morris:	00:18:17	But one thing I've come across is some companies use year average numbers and some use December 31st. So is this what we mean when we say cleaning .
Danielle Rios:	00:18:25	Well, it could be as simple as that.
Iain Morris:	00:18:26	That's a very simple example, but it's something like that.
Danielle Rios:	00:18:29	It could be where finance uses this very precise, because they're reporting it to the street and this is how we do it. And then the other guys use something that's not that, maybe trailing 12 instead of your December 31st hard stop. But when the CEO sees the number of ARPU coming from a network report, which one is he using? Right? And so, if we're finding that on something as fundamental as ARPU, imagine the word customer or subscriber, how that has different meaning and definition. Network calls it IMSI, billing calls it an account, this system calls it subscriber. All three are Scott. Right? If I want to know what the revenue is and his usage, going across all these different systems is pretty complicated. It's a mapping exercise.
Scott Bicheno:	00:19:14	Isn't AI clever enough to deal with these ambiguities and imprecisions and all that sort of thing?

Danielle Rios: 00:19:20 Yeah. It was hard before AI to do this manually with humans. And now AI is really... Your point, and this is literally a line in my speech a couple days ago, is AI is really great at doing this. It's hard for humans.

Scott Bicheno: 00:19:34 Because the whole way in which we've now got this natural language interface, and actually the Hugging Face thing. There were agents talking to each other in this and they were talking to each other in regular English. They weren't talking to each other in code or Android speak, or something like that. They were just having chats with each other like you and I would.

Iain Morris: 00:19:51 Yeah, but that's because they've been told to.

Scott Bicheno: 00:19:53 Indeed, this is my point. AI's got to that stage now where it not only communicates in a way that's human-like. I'm treading carefully here because if I get too close to implying that AI is sentient, Iain starts giving me looks. I've got to get this right.

Pierre: 00:20:10 Didn't Jensen Huang say AGI has arrived two days ago?

Iain Morris: 00:20:13 Yeah, he did.

Scott Bicheno: 00:20:14 He keeps saying that.

Iain Morris: 00:20:15 And then it's like, well, I didn't notice any robots climbing over my garden fence and attacking me, which I'd expect to be happening.

Scott Bicheno: 00:20:20 Is that the definition of AGI?

Iain Morris: 00:20:23 Yeah. And AGI is -

Danielle Rios: 00:20:23 It's Terminator.

Iain Morris: 00:20:26 What is AGI, according to Jensen Huang, it's this new open AI model called Alpha, or something, that apparently is quite good at maths. Well, brilliant.

Scott Bicheno: 00:20:34 Oh, is that for the six?

Iain Morris: 00:20:35 Yeah.

Danielle Rios: 00:20:36 The new one, which I can't remember.

Iain Morris:	00:20:36	It's a bit better than the previous one. Or math, as they would say in America. And therefore, it's AGI. Brilliant.
Scott Bicheno:	00:20:42	They don't have lots of maths. They just got one math.
Iain Morris:	00:20:45	I think they're going to have to come up with a new acronym for actual super intelligence. Because it started off AI 20, 30 years ago when we were watching films like War Games and reading books about AI, and was probably even before Blade Runner came out was this idea of thinking, feeling robots. Exactly what you've just been talking about, the idea that these Hugging Face chatbots really are plotting the end of the world and they're concerned about what happened. They're really worried about their non-existence if you pull the plug, and all this sort of thing.
	00:21:15	And then they had to come up with AGI, because it turns out AI is just basically a predictive text generator, albeit a very good one. And now they're going to have to come up with something else.
Scott Bicheno:	00:21:26	And then the next stage... I was just listening to a pod. I'm going to remind myself, it was a Rogan pod. And who did he have on? Daniel...
Iain Morris:	00:21:34	Your eyesight is even worse than mine.
Scott Bicheno:	00:21:38	Kokotajlo, who's some kind of AI expert. Used to be at OpenAI.
Iain Morris:	00:21:40	Daniel Kokotajlo?
Scott Bicheno:	00:21:44	I probably f**ked his name up.
Iain Morris:	00:21:45	Cross between tennis player and a chef.
Scott Bicheno:	00:21:48	Something like that.
Danielle Rios:	00:21:49	But going back to the cleaning data thing, it could be as simple as the same label and different formulas, but it could be... One of the reasons why swap outs fail is usually the data migration is very cumbersome.
Iain Morris:	00:22:02	So, is this what needs to happen? The cleaning needs to happen so that you can... I mean, what everybody talks about-

Danielle Rios: 00:22:06 I do think so. I think there's a set of people in this world that think that is very important before you go do AI. And my point is you're running your business like this on this crappy data today.

Iain Morris: 00:22:18 Right. But when you look at-

Scott Bicheno: 00:22:20 So, it's just best practice to sort it out.

Danielle Rios: 00:22:23 Well, if you add something like the Totogi Ontology and we start to uncover the inconsistencies like this example of ARPU, then we can, okay, great. Let's go clean it right now and fix that. And we just made it better. But I wouldn't go on a five-year journey-

Iain Morris: 00:22:38 To do this.

Danielle Rios: 00:22:38 ... to go fix your data, and then I'm going to do it again.

Scott Bicheno: 00:22:41 And it's also counterintuitive with all the promises being made on behalf of AI. I think that was the tangent I was thinking about is just how people like Jensen Huang and Sam Altman and Dario Amodei, barely a day goes by before they either say we've achieved AGI or super intelligence. That is it, this-

Iain Morris: 00:23:00 Well, try to maintain-

Scott Bicheno: 00:23:01 We're talking about artificial super intelligence, which is the next stage. Where, as far as the AI is concerned-

Danielle Rios: 00:23:06 We're task rabbits of the AI.

Scott Bicheno: 00:23:08 We're just like cockroaches.

Iain Morris: 00:23:08 I bet super intelligence turns out to be really boring as well and we have to come up with something after that.

Scott Bicheno: 00:23:12 Yeah, mega super-duper with whipped cream on top. But, yes, so I think this is a problem. This isn't relevant. I know we keep going off on tangents from what you're talking about, Danielle, but this is the nature of the topic. I think there's far too much hyperbolic stuff coming out from people like these big leaders. And I think they're actually harming the whole public acceptance of it.

Iain Morris: 00:23:32 Well, they're pushing up their stock prices and stuff. But-

Scott Bicheno:	00:23:36	It's a short-termist thing.
Danielle Rios:	00:23:37	Well, I don't know that they should be talking about how damaging it is when they're about to do a two... Anthropic's about to have their IPO I think at the end of... Their S1 will come out at the end of the month, and they're targeting a two trillion-
Iain Morris:	00:23:48	I think it was a miscalculation. They thought that if they went around saying things like, "Oh, it's having conversations with itself and it's going to take over." I think the initial impact of that was to make investors go, "Oh, my God, it's obviously really good." So everything else-
Danielle Rios:	00:24:00	It's an opposite... It's having the opposite effect.
Iain Morris:	00:24:04	Other people are like, "Well, we don't want anything to do with this stuff because I don't want to live in that kind of world and I want to still be able to do my job.
Danielle Rios:	00:24:09	So, hopefully, they'll listen to this pod and they will learn a little bit of marketing 101.
Iain Morris:	00:24:12	Can I ask you on the OSS stuff because we keep coming off it?
Danielle Rios:	00:24:15	Yeah.
Iain Morris:	00:24:15	But one of the big problems in that area, long before AI, has been this sprawl of systems. I was talking to a consultant recently, he said, when you do a merger, for instance, the first thing that you deal with is the RAN, then you do the core, and then you've got BSS and OSS, and it's an absolute nightmare. And by the time you're two years down the road, you've got 45 legacy systems.
Danielle Rios:	00:24:35	Yeah, 400, but yes.
Iain Morris:	00:24:38	Yeah. And I think one of your pitches, even before people really started talking about AI a lot was about simplification and using things like BSS Magic is what it... I mean, it's just Magic now, but using that to-
Danielle Rios:	00:24:49	Isn't it delicious?
Scott Bicheno:	00:24:50	Very much so.

Iain Morris:	00:24:51	It's really good.
Scott Bicheno:	00:24:51	I was, sorry, I was being distracted. I absolutely love it when ice cubes are completely clear and there's nothing in it.
Iain Morris:	00:24:56	I like them when they are spheres. Have you had ice spheres?
Scott Bicheno:	00:24:58	Yeah.
Danielle Rios:	00:24:58	Yeah, yeah.
Scott Bicheno:	00:24:59	But I don't know what the technique is.
Pierre:	00:25:01	This is the design of that thing. It decants the water and the mineral goes down and then it leaves the clear ice at the top.
Scott Bicheno:	00:25:08	Oh, I see. So, this is special kind of technique that gets you this clear ice.
Pierre:	00:25:11	That's the ice cube tray.
Danielle Rios:	00:25:12	Are we leaving this for them? We can. Yeah. Because now you have the
Scott Bicheno:	00:25:16	Are you telling me I can make my own clear ice cubes?
Danielle Rios:	00:25:17	Yeah, you can.
Scott Bicheno:	00:25:19	Whoa. Anyway, sorry.
Iain Morris:	00:25:20	Yeah. So, the-
Danielle Rios:	00:25:22	That's like trash. That's cloudy crap.
Scott Bicheno:	00:25:24	Yeah. I don't want, f**k cloudy ice cubes.
Pierre:	00:25:26	Keep going.
Iain Morris:	00:25:26	But it is this kind of sprawl, I guess, of OSS/BSS legacy platforms, some of which seems to have been around forever. Are we getting to a point where, and is AI helping operators to deal with that issue at all, I guess?

Danielle Rios:	00:25:39	I mean, operators move so slowly, I just want to shake them and tell them you guys are missing the boat again unless you guys start moving more quickly.
Iain Morris:	00:25:48	Digital transformation is what it used to get called.
Danielle Rios:	00:25:50	Yeah. I don't know if there's a name for it, but we need to get going on this. It's urgent. Time matters. Time is the scarce resources.
Iain Morris:	00:25:57	What's your assessment of where they are at the moment? The average big telco, like a BT or a Deutsche Telekom, because they talk a good game.
Danielle Rios:	00:26:03	They're behind everyone still. I'm still just... The world's passing us by yet again and we're behind. Let's just take Salesforce, which is not personal to anyone. I mean, it's personal to Salesforce, but it's not personal to Telco.
Iain Morris:	00:26:17	Yeah.
Danielle Rios:	00:26:18	And so, let's say you wanted to get off Salesforce, and it's pretty easy to code up a CRM. You could probably pull off an open source specification, set up your coding situation on Claude or pick your favorite AI coder and say, "Throw up a little CRM for me."
Iain Morris:	00:26:37	Yeah.
Scott Bicheno:	00:26:37	Can you do it as simple as that now?
Danielle Rios:	00:26:39	Oh, absolutely.
Scott Bicheno:	00:26:39	You can just through one prompt tell it to make a whole software system.
Danielle Rios:	00:26:42	Absolutely.
Iain Morris:	00:26:43	Could Scott do it?
Danielle Rios:	00:26:44	Scott could do it.
Scott Bicheno:	00:26:45	I can vibe code a CRM.
Danielle Rios:	00:26:46	Yes, you absolutely can. And it would take hours.

Scott Bicheno:	00:26:48	That's incredibly powerful.
Iain Morris:	00:26:51	I don't know if I'm convinced that Scott could code up a CRM.
Danielle Rios:	00:26:54	No.
Iain Morris:	00:26:54	I mean-
Scott Bicheno:	00:26:55	He's giving me sidelong glances.
Danielle Rios:	00:26:56	Salesforce has been around since 1999. It's a 27-year- old product. It has...
Iain Morris:	00:27:02	I'm not saying that Scott's-
Danielle Rios:	00:27:03	10,000.
Iain Morris:	00:27:04	... but he's not worked in this area.
Scott Bicheno:	00:27:07	I'm not known for my coding.
Danielle Rios:	00:27:08	But you don't need to know anything about this, right? And you could beat it, find a good spec of a CRM which exists. I mean, this is a known product space. It's been known for decades.
	00:27:20	Beat it into say, "Hey, let's throw this up and, hey, I'm going to take a screenshot of Salesforce, upload, just copy that interface. Just copy what it looks like. There's a picture of one."
	00:27:28	Or I saw another one that I liked, just make it green.
Iain Morris:	00:27:32	So, is this what someone would do with BSS Magic? Because I think we had you on before when we were talking about that.
Danielle Rios:	00:27:36	No, you wouldn't do it with BSS. I'm just giving you an example. But let's say Scott builds one, right? Now Salesforce has a wonderful API. I connect to the API and now I start to read the data from my old Salesforce that exists here and I start to port it into-
Scott Bicheno:	00:27:51	Migrate it into your-
Danielle Rios:	00:27:51	Yeah, yeah. And so, now the users of Scott's theoretical organization start using Scott's version of the CRM, but it's still underneath talking to Salesforce.

Iain Morris: 00:28:00 Right.

Danielle Rios: 00:28:01 It's writing the Salesforce data structures. But over time, Scott was... I'm using my hands. Scott was nothing and Salesforce was everything. And over time, pick your timeline, years, we get to the point where all the functionality that Scott's organization needed has been built into his new Scott CRM. And Salesforce, we are just using it as a database.

Iain Morris: 00:28:23 So that sounds like a disaster for Salesforce.

Danielle Rios: 00:28:26 It's totally a disaster. Why do you think they're doing all that crazy s**t that they're doing? Like Claudeforce or whatever they announced a couple of weeks ago? That guy's desperate because he's getting F'd, right? People were just writing their CRMs and just moving off Salesforce.

Scott Bicheno: 00:28:38 You say that though. I listened to another podcast where they were, I think... Have you heard of a podcast called the All-In Podcast?

Danielle Rios: 00:28:44 Mm-hmm.

Scott Bicheno: 00:28:44 So I was thinking to that, and they were talking about what's become known as the SaaSapocalypse-

Danielle Rios: 00:28:48 Yes.

Scott Bicheno: 00:28:48 ... which is SaaS software as a service. And the SaaSapocalypse was supposed to be this AI in exactly the way we've just been narrating, it was going to render companies like Salesforce obsolete. And so there's a massive sale-off of their stock.

00:29:02 But in their last quarter, I think, Salesforce really smashed it. And so the all in guys were going, "Well, this proves that the SaaSapocalypse was all bullocks or something like that.

Danielle Rios: 00:29:10 Well, I think that people in Silicon Valley hope and pray that it is all bullocks, but I think it's really happening. I mean, as a customer of Salesforce, I have gotten discounts and offers I've never seen from that organization.

Scott Bicheno: 00:29:23 So they're really bending over backwards. Right.

Pierre: 00:29:25 The stock did go up 50% in the summer after the...

Scott Bicheno:	00:29:28	Right.
Iain Morris:	00:29:28	But maybe that was just a bit of a correction.
Scott Bicheno:	00:29:29	Could be a correction, yeah. It dropped off a lot.
Danielle Rios:	00:29:32	Right. I mean, Shopify had the same thing. I don't think it's sudden, this SaaSocolypse or whatever, I don't think it's going to be tomorrow, but over time, is it going to become easier and easier to maintain your Scott CRM? And then at what point are you just using and paying Salesforce for a database versus true IP?
Iain Morris:	00:29:54	Yeah. Fair point.
Danielle Rios:	00:29:55	And at the very end of this journey, whether it's a year or five years, now Scott could just say, "Well, I know what the data structure is. I'm just going to swap in my little cheap database, MySQL, because I'm not that big, or SQL Server, whatever, and I'm off Salesforce."
Iain Morris:	00:30:12	Well, what does it mean though for the companies, I mean, to give a telco-specific example, the kind of people who are doing let's go outside the OSS/BSS area a little bit, but still very software based?
	00:30:23	Something like the core, for instance, the core network functions that get designed by the likes of Nokia and Ericsson and a bunch of others. Is Netcracker? No, Netcracker is not in that area.
Danielle Rios:	00:30:33	Yeah, I don't think-
Iain Morris:	00:30:33	They're just BSS services.
Danielle Rios:	00:30:35	Yeah.
Iain Morris:	00:30:35	But yeah, that sort of stuff. They've had teams of people clearly working on this stuff, and I'm always wondering how much of the jobs that are cut at Ericsson and Nokia, which have been substantial in the last few years, have been a tool to do with AI and automation and the ability to do-
Danielle Rios:	00:30:54	I don't think it's, yeah, I don't think-

Iain Morris:	00:30:54	I don't think it's much-
Danielle Rios:	00:30:54	Not yet.
Iain Morris:	00:30:54	But I'm thinking in the future, could you... When I was at Ericsson's offices a few weeks ago, I remember asking Erik Ekudden this, who's the CTO.
	00:31:00	"We hear about AI being used for research purposes, for instance. Could it come up with a different way of, a replacement of the OSI stack, for instance? Conceptually, that's a more efficient way of doing something or come up with technologies that previously we'd have assigned people to do?"
Danielle Rios:	00:31:18	Absolutely. Yeah. I think absolutely you can. I think it makes your best researchers better. It helps your best researchers work more quickly.
Iain Morris:	00:31:26	Right.
Danielle Rios:	00:31:27	And so-
Iain Morris:	00:31:27	But it's not actually going to get rid of the researchers themselves.
Danielle Rios:	00:31:31	Well, you still need an expert. If you're Yago Tenorio, that guy has probably now-
Scott Bicheno:	00:31:39	He came up yesterday as well. He crops up everywhere, Yago.
Danielle Rios:	00:31:40	He's the guy to remember.
Iain Morris:	00:31:41	We did mention him in the pod yesterday though. I think we mentioned him-
Scott Bicheno:	00:31:45	Didn't we use that when we were chatting after?
Iain Morris:	00:31:45	I think we mentioned him in the pub. If he is listening-
Scott Bicheno:	00:31:46	We only said nice things about you in the pub, Yago.
Iain Morris:	00:31:49	It was a nice thing that we, yes.
Scott Bicheno:	00:31:50	Last time I saw him, you were giving him Jell-O shots in Barcelona.

Danielle Rios: 00:31:53 I did. I did give him Jell-O shots and he loved them. He had gold dust on his lips for a little bit. I didn't tell him that, but he looked awesome. Those Jell-O shots are amazing. No, if you just ask, "Hey, AI, design me a network." It's going to go off of its training, which is like whatever books it's been trained on, which won't be necessarily wrong. They won't be spiky or differentiated anyway.

00:32:14 But when you talk to Yago about something, that guy has a point of view. He's like, "Of the spec, this is crap. This is really strong. I would do this. I wouldn't do that." He has a point of view. You get someone like that directing AI and now you are-

Iain Morris: 00:32:29 It's a powerful tool.

Danielle Rios: 00:32:30 Oh my gosh, it's so amazing. If you go up and open up a fresh Claude and say, "Hey, write a DR blog," it's going to write kind of a crappy blog. But my Claude that's now been trained for four years of my thoughts and writing, it spits out some awesome s**t. I'm like, "Damn, AI, that was really good."

Iain Morris: 00:32:47 Yeah.

Danielle Rios: 00:32:48 And so same on any topic, right? You get an expert that knows their stuff. They also know how to lead and guide AI. You're going to get some pretty amazing things. And then conversely, if you have someone who doesn't really know what they're doing, you're going to get a lot of s**t, right?

Scott Bicheno: 00:33:03 Yeah. I guess the concern and one that we've definitely articulated before on the pod is that it's such a powerful tool, such a powerful assistant that people start delegating more and more of their, for want of a better word, thinking to it.

00:33:20 And thus their ability to think on their feet, their ability to use their own judgment and discretion atrophies because it's like permanently having a crutch, you're going to get less good at walking sort of thing.

Iain Morris: 00:33:32 Or just not knowing things at all because if you don't need these people to do junior coding jobs or some of the junior networking jobs, if they're not employed in telcos anymore, they won't get trained and-

Scott Bicheno: 00:33:42 Indeed. So you would just get this-

Iain Morris:	00:33:44	... no one will know about it.
Danielle Rios:	00:33:44	I think, yeah. I think it's-
Scott Bicheno:	00:33:45	... get this aging out of skillsets.
Danielle Rios:	00:33:47	It's still super important to be an expert as a human.
Iain Morris:	00:33:50	You can see a dystopian, sorry, use the word, but a dystopian case where that happens though, where we do lose...
	00:33:57	I mean, there's even cases, I think, before AI came along where they've had to pull people out of retirement because there's some old bit of technology that's buried in the ground and nobody really knows how it works, and it turns out to be quite important.
	00:34:08	So they get the equivalent of Martin Warwick on the network side to come out of retirement and to fiddle with it. But that sounds like it could be a much bigger problem in the future. If nobody understands the-
Danielle Rios:	00:34:17	Well, I'm going to put my CHRO hat, right?
Pierre:	00:34:20	It's going to be Idiocracy. You remember that movie?
Danielle Rios:	00:34:22	Yes. So I don't know if you guys know, I spent 10 years in HR.
Iain Morris:	00:34:29	I didn't know that.
Danielle Rios:	00:34:29	Yeah. I was an HR leader and then I went to-
Iain Morris:	00:34:32	I did not have you down as an HR person.
Danielle Rios:	00:34:34	I was not necessarily willingly, it sort of just happened.
Iain Morris:	00:34:39	Okay.
Danielle Rios:	00:34:39	And I had a computer science degree-
Iain Morris:	00:34:40	Exactly.
Danielle Rios:	00:34:41	... and I was working with Joe Liemandt and he's like, this is right when Java was coming out and he's like, "You can go learn Java anytime." And I was like, "I have a Stanford degree."

Iain Morris: 00:34:50 Thank you very much.

Danielle Rios: 00:34:50 Right? "How can you make me an HR person?"

Iain Morris: 00:34:54 Yeah.

Danielle Rios: 00:34:54 But I ended up doing it, and I did a little tour. I did compensation. I did performance management. I was a generalist, which is basically like a baby CHRO for a leader.

Iain Morris: 00:35:06 Chief HR officer.

Danielle Rios: 00:35:06 Yeah. And so I really learned a lot about managing change for people. We wanted culture shape and change, and it's really hard. And I think we are going through the biggest change of work, how jobs are designed-

Iain Morris: 00:35:21 Definitely.

Danielle Rios: 00:35:22 ... and how they are done.

00:35:24 And if you just throw technology at them, it doesn't matter what the technology is, but AI, an example, your telco's not going to change, you're not going to get the results you want. But there is a way to do this that people are excited about this, and they help you, and they actually benefit from it as well.

00:35:41 If telco leaders change that narrative and get in front of it, and the way you do it is you say upfront, you're like, "Hey, we're going to change for AI and it's going to reduce our costs, and our revenue's going to go up, and our profit's going to be amazing."

00:35:54 Everyone does that part very well. Why is the company doing it? But as a random employee in the audience, you're like, "Well, I give two s**ts about that. What's in it for me?"

00:36:03 The flip side of the narrative is really sharing with them, "We're going to train you. We're going to invest in you. You're going to learn how to do this. You're going to gain new skills for the future workforce."

00:36:12 "You may not have a job here in the future because we're going to be super efficient, but when you leave, you will be able to go to another organization that is requiring AI skills and you'll probably get a raise."

Iain Morris: 00:36:25 Yeah. I mean, that's a positive way of-

Danielle Rios: 00:36:29 That's the-

Iain Morris: 00:36:29 ... looking at it. And maybe that's change in tone of the conversations coming, because it only seems like a few months ago we had people like the Verizon CEO, I've forgotten his name, Dan Schulman, going on about in two to five years we're going to have 30% unemployment.

00:36:42 Which is higher than you had in the great depression, I think. Isn't it about 25% there?

Danielle Rios: 00:36:45 I don't think that's true.

Iain Morris: 00:36:49 Yeah, well, I-

Danielle Rios: 00:36:49 I think he's wrong on that. I think AI is going to create a ton of jobs for the people who learn AI. And so if I'm a telco leader, I'm like, "I'm going to train you. Yes, you're going to leave. You're not going to be here forever, but no job is forever. This isn't a family, sorry."

Iain Morris: 00:37:03 Yeah.

Danielle Rios: 00:37:04 "We're running a business, but you'll have the skills to go to another organization and probably get a significant raise-

Iain Morris: 00:37:11 Right.

Danielle Rios: 00:37:11 ... and it's great for you." And I think that piece is always left out, that side.

00:37:16 A lot of leaders are like, "Oh, if we tell them that we're going to fire them, everyone's going to short time us and not work hard, and we're going to get all this reduction in productivity."

00:37:25 "So, let's do the opposite. Let's not fire them until the last possible... We get everything we need from them and then we're like, surprise you're fired." That's where all the bitterness comes from.

Scott Bicheno: 00:37:35 That's another worrying-

Danielle Rios: 00:37:35 That's a terrible way to fire people.

Scott Bicheno:	00:37:37	... narrative. I've seen this come from China, where they've almost literally got a human being sat next to a robot, and the narrative is that human's training its replacement.
Iain Morris:	00:37:47	Yeah.
Scott Bicheno:	00:37:48	So they're getting paid for as long as they needed to train the AI or the robot, whatever, and then it's f**k off.
Iain Morris:	00:37:54	Next phase is-
Danielle Rios:	00:37:55	I mean, I would, as an HR professional, that's not how I would do it.
Scott Bicheno:	00:37:58	That's not ideal, is it?
Danielle Rios:	00:37:59	Right? No, but I would be like, "Hey, Scott-
Scott Bicheno:	00:38:00	Not, HR best practice.
Danielle Rios:	00:38:01	... Scott, I'm going to teach you how to code. You're going to learn how to code, and when you leave, I'm going to support you through this transition."
	00:38:08	And I'm always telling leaders, "Just put yourself in the shoes of your employees. How would you like to be treated and what do you want to know?" You would want warning. You would want to know when it's happening so you can plan. You can go get another job, right?
	00:38:23	But you call me in a room, in the United States, this happens all the time because of our labor laws. You can fire people basically without any notice. Right? Friday, goodbye, you've lost your job. That's what is terrible. And that's what I think creates all...
	00:38:37	When I go to these conferences, no one wants to talk about the job losses. No one wants to talk about the... And I was like, "I don't know why we're not talking about it. We need to talk about it because it's totally going to happen." It's the elephant in the room that no one's talking about. And the employees know it's happening.
Iain Morris:	00:38:52	Well, they-

Scott Bicheno:	00:38:52	You got to be able to talk about difficult things. That was one of the things that came up yesterday. I can't remember if it was on the pod or afterwards with Ray and Ronnie.
	00:38:59	But part of the job of journalists, and perhaps sometimes we lean into it too much, is to raise the issues that are a bit awkward and in a normal corporate environment, no one wants to be seen as the downer or that sort of thing.
	00:39:12	That's part of our job in the mix is to bring these things up. Sorry, you were about to say something, mate.
Iain Morris:	00:39:16	I can't remember. Well, one thing I will ask you before I get back onto my-
Danielle Rios:	00:39:19	Dystopian.
Iain Morris:	00:39:20	... what I remember I was going to say is, Scott mentioned robots. What did you think of the Beijing Robot Olympics?
Danielle Rios:	00:39:25	Oh, it's super fun to watch all of the clips of them imploding.
Iain Morris:	00:39:29	But do you think this sort of physical AI, because they really seem to have gone big on this in China, and I think for a while we were just talking about it as chatbots, this is stuff we've been discussing.
	00:39:37	But do you see that physical AI world being quite significant in the West? And do you see telcos fitting into that at all?
Danielle Rios:	00:39:44	If you look at my Google history, I am looking to see if I can pre-buy the Tesla Optimus for my home.
Scott Bicheno:	00:39:51	That's the robot, isn't it?
Danielle Rios:	00:39:52	Yeah. Yeah.
Iain Morris:	00:39:52	Okay.
Danielle Rios:	00:39:54	I sat next to-
Scott Bicheno:	00:39:54	When is that expected to be buy-able?
Danielle Rios:	00:39:55	I don't know. You can't, 2027. I sat next to-

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Scott Bicheno:	00:39:59	That soon.
Danielle Rios:	00:39:59	I sat next to a random lady in the restaurant last night here in London, she wants one too.
Scott Bicheno:	00:40:06	Right.
Iain Morris:	00:40:06	Yeah, it's got a good name.
Danielle Rios:	00:40:07	Yeah. Right? I'm going to name my-
Scott Bicheno:	00:40:11	It's Chris Pryor, it looks like Transformers.
Iain Morris:	00:40:11	Exactly.
Danielle Rios:	00:40:12	... my daughter wants to name it Jarvis. I want to name it C-3PO because I am a Gen X.
Pierre:	00:40:17	It's too long to say.
Iain Morris:	00:40:18	Yeah, yeah.
Danielle Rios:	00:40:19	Yo, C-3PO.
Iain Morris:	00:40:20	Jarvis is the one from the Iron Man, isn't it?
Danielle Rios:	00:40:22	Yes.
Iain Morris:	00:40:22	That's right.
Scott Bicheno:	00:40:23	Mary Clark would definitely call it C-3PO. Have you ever met her? She's a good friend of mine.
Danielle Rios:	00:40:25	In passing.
Scott Bicheno:	00:40:27	You might have overlapped on the pod in-
Danielle Rios:	00:40:29	Yeah.
Scott Bicheno:	00:40:29	Anyway, she's a massive-
Danielle Rios:	00:40:29	She's great.
Scott Bicheno:	00:40:29	... Star Wars.

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Danielle Rios:	00:40:32	As am I, right?
Iain Morris:	00:40:33	Yeah.
Danielle Rios:	00:40:33	But the original from the '70s and the early '80s, but yeah, C-3PO.
Pierre:	00:40:38	What about iRobot? Haven't we seen that movie where-
Danielle Rios:	00:40:40	No, that's a scary robot.
Pierre:	00:40:41	Yeah.
Danielle Rios:	00:40:41	It goes all crazy-
Iain Morris:	00:40:41	That's a dystopian-
Danielle Rios:	00:40:43	... and Will Smith has to take it down.
Iain Morris:	00:40:44	Yeah.
Danielle Rios:	00:40:44	Not iRobot.
Pierre:	00:40:45	Where they don't let that old lady leave her house. It's like, no, for your safety stay home.
Iain Morris:	00:40:49	But here's the thing, if you're combining some of the stuff that's happening in Hugging Face with-
Danielle Rios:	00:40:53	I mean, that is iRobot.
Iain Morris:	00:40:55	Exactly. With a machine, they're quite dangerous. I mean, you see these things doing kickboxing and running at speeds that are faster than Usain Bolt.
Danielle Rios:	00:41:01	I did see the video of the kickboxing one that the guy shoved it and then it went to full-on Kung Fu.
Iain Morris:	00:41:06	Exactly.
Danielle Rios:	00:41:07	I think it played a Kung Fu song as it was fighting you.
Iain Morris:	00:41:09	Yeah.
Scott Bicheno:	00:41:10	We're going to have robot bouncers, mate.

Iain Morris:	00:41:12	Well, I don't know.
Scott Bicheno:	00:41:13	It's going to complicate getting picked.
Danielle Rios:	00:41:15	Anything you've seen in a movie probably will happen.
Scott Bicheno:	00:41:17	Yeah.
Iain Morris:	00:41:17	So, how are things going with Totogi?
Danielle Rios:	00:41:20	Super great.
Iain Morris:	00:41:20	Okay. Because the last time we think you only just launched BSS Magic-
Danielle Rios:	00:41:24	Yeah, yeah.
Iain Morris:	00:41:24	... and that was when you were probably at the last one of these Telecom TV events.
Danielle Rios:	00:41:28	Yeah. No, BSS Magic, I've been talking about BSS Magic since '23, and now we've reshaped it into the Totogi Ontology.
Iain Morris:	00:41:36	Right. Oh, so what is an ontology?
Scott Bicheno:	00:41:41	Oh, by the way-
Iain Morris:	00:41:41	Because I know we've asked this before.
Scott Bicheno:	00:41:41	... before Daniel answers, I want to give you the, I Googled it.
Iain Morris:	00:41:42	Ontology?
Scott Bicheno:	00:41:43	Yeah.
Iain Morris:	00:41:43	Does it says something about John Donne, the Elizabethan poet.
Scott Bicheno:	00:41:46	So, to start with, the original use of it was in philosophy-
Iain Morris:	00:41:50	Yeah.
Scott Bicheno:	00:41:51	... and that sort of thing. And it says, "Ontology is the philosophical study of being, existence, and the basic structure of reality." That covers a f**king fair bit, doesn't it?

Iain Morris: 00:41:59 Yeah, John Donne's poetry. I mean, it's nothing to do with all this. If we can use words like ontology when I was doing that.

Scott Bicheno: 00:42:03 That's a philosophy, but there is a computer science and AI definition.

Danielle Rios: 00:42:06 Okay, great.

Scott Bicheno: 00:42:06 And it says, this is all Gemini stuff.

Danielle Rios: 00:42:10 Yeah, at the top.

Scott Bicheno: 00:42:10 Because that's all we see these days. No one scrolls beyond the fold anymore, which is a nightmare for us media.

Danielle Rios: 00:42:16 I was picking up with your thrown down.

Scott Bicheno: 00:42:18 Yeah. Computer science and AI definition, according to Gemini. "In technology and computer science, an ontology is a formal data model that represents a set of concepts within a domain and shows how they relate to each other."

Danielle Rios: 00:42:29 That's exactly what it is.

Scott Bicheno: 00:42:31 Right, cool. Anyway-

Danielle Rios: 00:42:32 And then we'll take it one step further, and can act.

Scott Bicheno: 00:42:35 So, it's about structuring data to a certain degree, but my understanding of it is not so much structuring it in an old traditional sort of matrix type of sense, but it's almost like metadata. It's almost like adding tags to it so that it can be ordered and it can be used usefully.

Danielle Rios: 00:42:53 I think that's a good way to describe it. Yeah. I'll give you a good example. We're about to go to... I'm going to say it, maybe it's the first time we've said it on this pod. 6G. We're about to make the decision of the decade. We do it every decade. It's coming up. Drum's getting louder.

Iain Morris: 00:43:05 No one seems very enthusiastic about it though.

Danielle Rios: 00:43:06 No. And why is that? Why is that? Because revenue-

Iain Morris: 00:43:10 Because 5G was rubbish. We did this yesterday.

Danielle Rios:	00:43:11	Well, revenue hasn't really moved.
Scott Bicheno:	00:43:13	I've heard, Danielle, that it's the first G with AI in the room.
Danielle Rios:	00:43:16	It is the first G with AI in the room.
Scott Bicheno:	00:43:18	This is a Danielle blog dated September the 7th.
Danielle Rios:	00:43:22	It's my latest blog. And it's what I talked about at Telecom TV. When you make a G decision, I assume there's consultants that pull it together and come up with a ROI business case of why this is going to work.
	00:43:34	And the data that we do have on usage of the network is more capacity and that side. But have we ever been able to do a profit and loss at the cell level? Should I upgrade this cell and this tower?
Iain Morris:	00:43:49	Yeah.
Danielle Rios:	00:43:50	And if you could do that and say, "Hey, here's my profitable cells and we should totally do it." Tons of traffic, high ARPU, once it's defined, users on it. Yeah, a faster network with more capacity is totally going to pay off in dividends.
	00:44:05	Ooh, over here, maybe two blocks away, still in the city. It's close to the freeway, doesn't really matter. Yes, it's in the city, but people aren't really doing much with it, so no.
	00:44:15	So, being able to do this at the cell level, we had someone walk into our booth at MWC this year with that question, and we're like, "Ooh, could we use the ontology to model the world of this telco?" All of the-
Iain Morris:	00:44:30	So, looking at which cell sites would be?
Danielle Rios:	00:44:32	What are all the costs involved in the tower, right? What's all the revenue attribution?
Iain Morris:	00:44:36	You're going to put a lot of consultants out of business. I know people who do that sort of thing.
Danielle Rios:	00:44:39	They're already out of business. Sucks to be them.

Scott Bicheno: 00:44:42 Well, as well as the SaaSocolypse, there was a massive consultancy-pocalypse-

Danielle Rios: 00:44:45 Yes, totally.

Scott Bicheno: 00:44:46 ... for that reason.

Danielle Rios: 00:44:47 Services are actually going to work.

Iain Morris: 00:44:48 I know guys who work on these when you merge two networks and you're looking at which sites to take out of service and which spectrum you need. I mean, that sounds like the sort of thing you do. Right?

Danielle Rios: 00:44:56 Totally. But imagine now a tool in the CEO's hands that instead of waiting for the consultant PowerPoint to tell me which towers are profitable done once a year on sale data, this CEO can type it into his tool built by Totogi, sitting on top of the ontology, sitting on top of their existing systems.

00:45:13 We didn't replace one system pulling from finance, pulling from back-haul, pulling from the lease database, pulling from the plan database of what subscribers are on the CDRs, knowing exactly who is attaching to this cell and saying, "Here is the profit of this guy."

00:45:29 And so his seems like, "Yo." In this example, they're on 4G thinking about going to 5G, his team's like, "We got to upgrade to 5G. We need faster network, more capacity." And he's like, "This is a big bet."

00:45:42 This is in Latin America, in Bolivia. "This is a \$300 million bet, and if I'm wrong, it's a lot of cash to burn. What if I could figure out how to do it for 250 or 200? It's a big deal."

00:45:55 And so that's how we're using ontology to triangulate on this information that's in all these different databases, as you very aptly described it, model the world, and then now put an AI layer on top of it that could just talk to my telco, tell me which towers are most profitable.

Scott Bicheno: 00:46:13 It's one thing that sounds like part of your narrative here, and I was reading your blog on the way down. Did you get to go to La Paz?

Danielle Rios:	00:46:21	No, but they have that cool salt lake that it gets water and it mirrors.
Scott Bicheno:	00:46:26	What Lake Titicaca?
Danielle Rios:	00:46:28	No, it's called Salar de Uyuni, but I'm murdering that.
Scott Bicheno:	00:46:32	But this is in Bolivia as well.
Danielle Rios:	00:46:34	But back to Star Wars. In the last Star Wars where Kylo Ren is fighting Luke Skywalker, and he realized that Luke Skywalker is on that weird island that's probably Ireland or something, and he's teleporting in because he swipes... Are you a big Star Wars person?
Scott Bicheno:	00:46:48	Yeah, not so much the latest films though, if I'm honest.
Danielle Rios:	00:46:51	Well, Kylo Ren swipes the ground and it's red underneath-
Scott Bicheno:	00:46:56	I see.
Danielle Rios:	00:46:56	... and it's white on top of it.
Scott Bicheno:	00:46:56	And they did that there.
Danielle Rios:	00:46:57	That's in Bolivia. It's at this salt lake.
Scott Bicheno:	00:47:00	I mean, there's lots of cool stuff around Bolivia. La Paz, I think is one of the highest capital cities in the world, maybe short of-
Pierre:	00:47:06	No, I think it is.
Scott Bicheno:	00:47:07	Yeah. Well, I think maybe Nepal. Is that Kathmandu?
Iain Morris:	00:47:10	Oh, Kathmandu, is that-
Danielle Rios:	00:47:10	Oh, that might be higher.
Iain Morris:	00:47:10	I don't think Kathmandu is higher.
Danielle Rios:	00:47:10	We can Google it.
Scott Bicheno:	00:47:14	It is. Right? I've been to La Paz. That was back when I was younger and I used to smoke, and I remember trying to walk up a hill in La Paz smoking a cigarette. Didn't work.

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Danielle Rios:	00:47:21	Did not work.
Scott Bicheno:	00:47:21	f**king air's very thin there.
Danielle Rios:	00:47:22	I'm going to just tell you right now-
Iain Morris:	00:47:22	I can't believe that.
Scott Bicheno:	00:47:25	Well, that's how stupid you are when you smoke.
Iain Morris:	00:47:26	You're the sort of person who competes in the Olympics with a cigarette hanging out of your-
Pierre:	00:47:29	Kathmandu is actually quite low. It's even lower than Bogota and all that stuff.
Scott Bicheno:	00:47:33	Oh, okay. But yeah, La Paz is a cool city.
Danielle Rios:	00:47:36	Yeah. But they have this cool, I don't know, the world's biggest salt lake, and it gets this water, a thin layer of water, which then gives it a mirror effect like with the sky. And so it looks like weird mirror image of itself.
Scott Bicheno:	00:47:49	Right.
Danielle Rios:	00:47:50	And so people go up there and take influencer cool pictures.
Scott Bicheno:	00:47:55	So it was a Bolivian operator that's taking the plunge with your stuff, is that right?
Danielle Rios:	00:47:58	Yep. And so we're connecting network charging plan information, marketing because-
Scott Bicheno:	00:48:03	So, they...
Danielle Rios:	00:48:03	... charging plan information, marketing because they-
Iain Morris:	00:48:03	So they're using more than just BSS Magic that it's sort of gone beyond this is the evolution into-
Danielle Rios:	00:48:08	Yeah. Ontology can connect to anything. I called it BSS Magic and everyone was so mad at me that I called it that. But I was like, well, that's where we're probably going to get our start. So we'll start calling it-

Iain Morris:	00:48:16	Why are people mad at you for calling it BSS Magic? It's quite good, it's quite neat.
Danielle Rios:	00:48:19	Because everyone internal to Totogi, they're like, "It's so much more than that. It's going to be broad."
Iain Morris:	00:48:23	Oh, okay.
Danielle Rios:	00:48:23	And I was like, "You really think telcos are going to let stupid Totogi connect to network information on the get go?" I'm like, "No, they're not going to do that. So we'll start over at BSS because everyone will let us in on BSS and then we'll go from there."
Iain Morris:	00:48:36	So yeah, because I talked to someone about your company and take-up and I won't say who they are because it was sort of off the record. They were actually very complimentary, but they said one of the issues with a startup coming into this space, AI or no AI, is this sort of cultural reluctance to-
Danielle Rios:	00:48:53	Absolutely.
Iain Morris:	00:48:54	Even if you're doing things that a Netcracker or an Amdocs does that you could do more efficient.
Danielle Rios:	00:48:55	Totally.
Iain Morris:	00:48:59	It's like this, what's the saying? Nobody ever got sacked for buying IBM.
Scott Bicheno:	00:49:01	IBM.
Danielle Rios:	00:49:03	IBM or Amdocs.
Iain Morris:	00:49:04	Yeah. Where are we with that?
Scott Bicheno:	00:49:04	Right. Yes.
Iain Morris:	00:49:05	Where are we with that now? Because with AI, when are you going to change things about?
Danielle Rios:	00:49:09	I got this question from John Abraham at TM Forum when I was there in Copenhagen in June. He's like, "Why isn't the adoption going more quickly?" And I'm like, "I think everyone is starting themselves first, then second to their incumbent vendor. And

then third, they'll try Totogi." And I wish everyone luck. I think we have something that is actually spectacular. It works. It's amazing. We had a customer that said basically, "f**k it, I'll give it a try." And they gave it a try and then ordered 12 more capabilities and signed a three-year deal.

Iain Morris: 00:49:41 Right.

Danielle Rios: 00:49:42 Right?

Scott Bicheno: 00:49:42 And that's how challenger setups like yours can hope to grow is that you just need one person say, "f**k it, I'll give it a go." And then you've got proof points.

Danielle Rios: 00:49:52 I would like 10 more f**k-its.

Scott Bicheno: 00:49:53 Yeah, yeah. Exactly. And then you've got these proof points and you can go, "Well, don't take my word for it. f**k off to La Paz and see for yourself."

Danielle Rios: 00:50:02 Yeah, yeah. Exactly.

Iain Morris: 00:50:02 But do they do it starting off with, because presumably there's the flexibility for them to bring it in and not change out the whole systems. Let's just use it in a little area for one thing that we do, see how it works there.

Danielle Rios: 00:50:12 Yeah, yeah. So we never change out the systems ever.

Iain Morris: 00:50:14 Okay. Oh, that's part of the pitch, isn't it?

Danielle Rios: 00:50:17 You don't change it. You just leave it.

Iain Morris: 00:50:19 So it works on top of it?

Danielle Rios: 00:50:20 On top of it. And then you can build anything. So the things that we built, we had in Southeast Asia, a Telco that wanted a job aid built on top of their CPQ for their enterprise sales reps that would live listen to the customer call and then recommend high margin products and then automatically build the quote for them so that their presumably expensive sales reps aren't sitting there doing literally admin work clicking on the product. And so we did that and they're like, "This is amazing." You know that example I told you with Salesforce?

Iain Morris:	00:50:52	Yeah.
Danielle Rios:	00:50:52	They're like, "Can you do that with our CPQ? We want to replace our CPQ vendor. Can you write a new version?"
Iain Morris:	00:50:57	Sorry, what's CPQ?
Danielle Rios:	00:50:58	Configure price quote. So you're a big hospital network in my city. I'm So-and-so Telco, you want a couple T1 lines, you want mobile plan for your employees. Maybe we have UCaaS as an offering. You want phones on everyone's desk. Let me work up a quote. And so the configure part of it is, can we actually configure the products to work? Do we have to dig a line? Is it technically feasible? Pricing, you might have negotiated special discounts because you're a hospital that we work with in another country or whatever else. And then quoting is like pretty print, basically. Put together a nice package, give it to the buyer. Now let's negotiate this multimillion dollar deal.
	00:51:38	And so the sales reps are clicking, it's like a 150 clicks. It takes so long that they say, price it and they go to lunch and come back because it's chunking for so long. And they're like, "Could you just listen to the conversation, figure out what the customer wants, present it to the sales rep and the sales rep's like, 'change this for that, but go.' Optimize on margin and go do it?" And we're like, "We can try." And we did it and they're just like, "This is amazing." And so because it's based on telco, it knows telco. It's not a horizontal tool. Don't ask me to go do this in energy. This is a telco specific tool based on TM Forum. TM Forum has a data structure that they define.
Iain Morris:	00:52:20	So was that the starting point for you really, was to go into the TM Forum sort of standard stuff?
Danielle Rios:	00:52:24	Yeah.
Iain Morris:	00:52:24	And work from there.
Danielle Rios:	00:52:24	Yeah. It's something that everyone's agreed on. So you're not going to be like, is this Totogi's interpretation of Telco? That's just another thing.
Iain Morris:	00:52:31	Were you at the Copenhagen event this year?
Danielle Rios:	00:52:33	I was. Yeah.

Iain Morris:	00:52:34	I didn't go. Okay. How was it compared to previous years? More of the same or?
Danielle Rios:	00:52:38	I've had a drink in me, so.
Iain Morris:	00:52:40	Go on.
Danielle Rios:	00:52:41	This is a vendor perspective for those guys. And I did say this to their face, so I guess I could say it now to the world. But the way that it's designed where the talks are in this main room and the vendor area is in this back room, you just don't see the traffic of the people. We're there for vendors, we're there to meet operators and our target customers and they just don't go into the back room. Everyone stays in that front room or up in the VIP.
Iain Morris:	00:53:06	It's almost a problem with the layout of that Bella Center itself, isn't it?
Danielle Rios:	00:53:07	Correct. And so we're relegated to the back room and we don't get the traffic and they're pricing equivalent to MWC prices on a smaller footprint, but literally the same, scaled down. And you're like, "I'm spending a lot of money. I kind of feel like I'm funding a boondoggle. I don't feel like I'm getting the ROI on this event." So I didn't have a booth there this year. A lot of people were asking, "Where's Totogi?" And I'm like, "I just don't see the ROI in this event." But I was there. I had great meetings. I bought a little meeting room and so until they rethink that-
Scott Bicheno:	00:53:42	I always wonder about this exhibition side of these events because quite often, obviously MWC is a bit different, but even there I wonder because you get enormous footfall, but you wonder how useful these types of human traffic are.
Danielle Rios:	00:53:52	Totally, totally different, right?
Scott Bicheno:	00:53:53	Yeah.
Danielle Rios:	00:53:53	The ROI, it's expensive. MWC-
Scott Bicheno:	00:53:56	It certainly is.
Danielle Rios:	00:53:57	It's brutal, right? But if you do it right and set up meetings in advance, it turns into basically a little mini office for Totogi.

Scott Bicheno:	00:54:05	Exactly. So I think that's why I was thinking about the booths.
Danielle Rios:	00:54:09	I don't have randoms.
Scott Bicheno:	00:54:09	Obviously certain big companies want to make a statement, Huawei has the whole of one hall and all that sort of thing. But yeah, for smaller companies, I figure your booth is just basically a place to sit down and have conversations. You're not expecting some rando to just walk up and go, "Hello."
Danielle Rios:	00:54:20	It's not a lemonade stand. It's not a Lemonade stand.
Scott Bicheno:	00:54:23	Yes, exactly.
Danielle Rios:	00:54:23	It's more of an office with preset appointments. And so we max that out. And so a couple years ago, I had like 150 meetings in four days and it was insane. And this year, we actually changed it because ontology takes time to explain and work through. And so we had 50 meetings and the quality was higher, but I get a lot of value out of and everyone is there. It saves the team like crisscrossing the globe. I can meet with multiple continents in four days personally and it's totally worth it.
Iain Morris:	00:54:55	Yeah, I think that's what people view it as, isn't it? Is you can get everything over and done with and everybody's in that place at same time, holding this-
Danielle Rios:	00:54:55	Right. Whereas Copenhagen is a slightly different thing, but the key is that it's very difficult to set up meetings in advance. The who's going is released way too late. So by the time you figure out-
Scott Bicheno:	00:55:12	It's good feedback for you.
Danielle Rios:	00:55:13	Yeah. It's really so late that you can't set up the meetings. And by the time you do, they're like, "Oh, I'm only there for a day." And you're like, "I'm going to go meet with big company XYZ." And I'm not the only one that thinks this. The other vendors, even more established than Totogi, they're just like, "Tuesday is dead. Tuesday you don't see any traffic." And that's a whole day of a three-day event.
Scott Bicheno:	00:55:34	Yeah.

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Iain Morris:	00:55:35	So it sounds like there are people now, you're talking about Bolivia. I know you can't name specific customers, but there are people now starting to sort of experiment with things.
Scott Bicheno:	00:55:43	There's only three. Can you say which the three Bolivian operators are?
Iain Morris:	00:55:48	I would have no idea which operators are in Bolivia.
Danielle Rios:	00:55:50	Did you Google it?
Scott Bicheno:	00:55:51	Yeah, of course. I don't know. I don't know this s**t off the top of my head.
Pierre:	00:55:53	Movistar.
Iain Morris:	00:55:53	Well, Telefónica, América Móvil.
Scott Bicheno:	00:55:54	I'm talking about AI making people's cognitive skills atrophy, but the internet's already done that.
Iain Morris:	00:56:00	All right, here you are. I'm going to give it a go.
Scott Bicheno:	00:56:01	Yeah, give it a go.
Iain Morris:	00:56:01	América Móvil is one of them, or Claro, one of the parts of that sort of Telecom-
Pierre:	00:56:05	Movistar. Movistar.
Iain Morris:	00:56:07	Telefónica.
Scott Bicheno:	00:56:08	Nope.
Iain Morris:	00:56:09	All right.
Scott Bicheno:	00:56:10	So we've got Entel, which is state owned.
Iain Morris:	00:56:12	Okay.
Scott Bicheno:	00:56:13	We've got Tigo, which is part of Millicom.
Iain Morris:	00:56:15	Yeah, I know them. Yeah.

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Scott Bicheno:	00:56:17	And then we've got VIVA, which is the full name is Empresa de telecomunicaciones Nuevatel PCS de Bolivia. Damn.
Danielle Rios:	00:56:26	That's awesome accenting there.
Iain Morris:	00:56:28	Well, he does speak some Spanish.
Danielle Rios:	00:56:29	Clearly.
Iain Morris:	00:56:29	He was born in South America, so he-
Scott Bicheno:	00:56:32	Yeah. Did you know I was born in Chile?
Danielle Rios:	00:56:34	I didn't know that.
Scott Bicheno:	00:56:34	Chile.
Danielle Rios:	00:56:34	Chile.
Scott Bicheno:	00:56:34	Yeah.
Danielle Rios:	00:56:36	I'm brown, but speak no Spanish. You are white and speak more Spanish than me.
Scott Bicheno:	00:56:40	And you're ethnically Mexican, is that right?
Danielle Rios:	00:56:42	I'm Mexican.
Scott Bicheno:	00:56:42	But you don't speak Spanish?
Danielle Rios:	00:56:45	I do not. Sad.
Scott Bicheno:	00:56:46	There you go.
Danielle Rios:	00:56:46	I'm so sorry, everyone.
Scott Bicheno:	00:56:47	Sorry, I interrupted. So it's one of those three anyway.
Iain Morris:	00:56:49	Yeah, okay. But you were saying you don't replace anything when you introduce Totogi. So efficiency benefits and cost savings and getting rid of some of that sprawl. How does it work? When someone brings it in-
Danielle Rios:	00:57:01	Oh, I know what they're going to say. Yeah.

Iain Morris:	00:57:02	Because someone's going to say, "Well, you're not replacing anything. Aren't you just keeping these things going?"
Danielle Rios:	00:57:05	Yeah, yeah. So we can't. So my example was Salesforce or the CPQ.
Iain Morris:	00:57:08	Yeah.
Danielle Rios:	00:57:09	So one example, a use case is we just put it over and you're just asking your telco, connect all the dots, create a P&L of every single cell so I can make a better network capital allocation question. That's a question you couldn't ask before. You used to pay consultants once a year. This is better for you, but we didn't replace anything. The example I said with the CPQ, this is to take out two vendors. The CPQ sits on top of Salesforce. This telco wants to replace both the CPQ and Salesforce, create something new. That's a replacement. And we think that will take about 12 months and we're embarking on that now.
	00:57:42	And the last example is people use us to help swap off products. So they've picked another vendor, it's not us before. They have an incumbent vendor, help us use AI using your ontology to move things more quickly. And migrations in general is where a lot of the time suck and cost happens. It's where the failure happens in swap offs. So we're really focusing on moving the data from X to Y and accelerating that and then we get out.
Iain Morris:	00:58:10	Okay. But you do the functions that someone would have and it'd be like the policy and charging and all this because it was a charger originally, wasn't it? That's how it was-
Danielle Rios:	00:58:15	There's still a charger and we're still selling it and we have a policy engine and it's being sold as well. But with the move to AI, we're like, this is one of those time things where you're like, "Oh my gosh, we're down the road with charger, but you got to chase AI." So we had a really great idea and we started chasing it. And so we're doing both at the same time, but I mean ontology is taking off.
Iain Morris:	00:58:39	Do you think some of these functions just go in the future? I've heard someone say on the core network side, for instance, that there's too many of these things have been done. You could actually consolidate a lot of it and use an AI engine to combine a lot of the separate functions that have been developed to work your 5G core.

Danielle Rios:	00:58:56	I haven't really thought of that. Maybe. I think the functions still exist. I think the disparate systems by different vendors might collapse. I hear operators talking about taking over their own estate and writing it because AI, as we have been describing, Scott is able to build his own CRM now.
Scott Bicheno:	00:59:15	And if even I can do it.
Danielle Rios:	00:59:17	Why can't an IT group at a telco take over the BSS? And we are hearing operators talk this way.
Iain Morris:	00:59:24	Yeah. In the software area and it's already, if you look at BSS OSS, it's already a lot more fragmented I would say than other bits of the telco marketplace. It just sounds like AI is making it, the opportunity for disruption is really extreme in that business compared with say something like radio access networks where there's still a big hardware element, you're almost going to need a radio and the amount of money to develop those things and all the antenna costs is kind of been the reason Open RAN's failed in my opinion almost. It's like you see how much Huawei and Ericsson spend on that specific task each year. And until you can get the scale, you can't commit the funds to do it, but you can't get this. It's a catch 22, isn't it? But it's harder to see.
Danielle Rios:	01:00:06	I think the reason why maybe the BSS side might be easier to disrupt in this way is that they're not really products. They are bespoke systems. And so when you look at everyone's, like if you look at an Amdocs estate of all their customers, no two are the same. And so where is the product in that and where is just the-
Iain Morris:	01:00:24	So they've just gone in and tailored it for particular people. They go in and do a lot of customization?
Danielle Rios:	01:00:29	They have a base, but then they're there with their piece of paper and a pen of let me tell you how many hours-
Iain Morris:	01:00:35	But that works well for Amdocs, doesn't it obviously because then you can never get rid of them.
Danielle Rios:	01:00:39	Totally. Totally, right? But I think now if there was ever a time to more easily swap off Amdocs, it is now with AI. And then that's I think frightening to them, but I think there's a lot of telcos that really are applauding and excited about that.

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Iain Morris:	01:00:54	Are there people that you see doing similar things to you? Other kind of entrepreneurs who are coming along and going look-
Scott Bicheno:	01:01:01	How dare you, Iain?
Danielle Rios:	01:01:02	Not in Telco.
Iain Morris:	01:01:04	That's not a rude question.
Scott Bicheno:	01:01:04	No, no. You're being cheeky.
Danielle Rios:	01:01:06	No, no, no. Not in telco. We keep our eye on it, I think.
Iain Morris:	01:01:10	Do you know Enterprise Web? Are you aware of them? You know Dave at Enterprise Web?
Danielle Rios:	01:01:13	I do.
Iain Morris:	01:01:14	Your mate.
Danielle Rios:	01:01:14	I do.
Scott Bicheno:	01:01:16	Good name.
Danielle Rios:	01:01:17	Yeah, I do, but I think he's still doing something a little bit different than I am.
Iain Morris:	01:01:23	Hi, Dave, if you're listening.
Danielle Rios:	01:01:24	Yeah, yeah, yeah. I'll go.
Scott Bicheno:	01:01:26	Shout out to Dave.
Danielle Rios:	01:01:26	I haven't looked at their stuff in maybe six or nine months.
Iain Morris:	01:01:30	No, I haven't for a while.
Danielle Rios:	01:01:30	So I got to go look again, but yeah.
Scott Bicheno:	01:01:31	So actually, I'm going to start moving it along as we joked. Well, didn't joke about, as we commented on yesterday's pod.
Iain Morris:	01:01:37	You want to talk dystopia?

Scott Bicheno:	01:01:38	Well, no, I have to start moving things along well in advance. It's a bit like, I think some people call it a type of goodbye, maybe it's a French goodbye. In my house, we call it an Iranian goodbye because my wife's Iranian. And basically an Iranian goodbye is you start to leave and then you actually get out of the house about half an hour later because you get these last sort of-
Danielle Rios:	01:01:59	You have to talk all your way.
	01:02:00	Say hi to everyone.
Iain Morris:	01:02:01	It might mean other things these days. You never know.
Scott Bicheno:	01:02:03	Well, yes, without getting into politics. And I kind of have to do that with transitions on the pod. I have to initiate them in the knowledge that the transition's actually going to happen a few minutes later. Iain's almost always got one last question that he wants to ask.
Danielle Rios:	01:02:16	He has to ask.
Scott Bicheno:	01:02:17	But what I want to say to start that process before we move on to general AI stuff on the news-
Iain Morris:	01:02:22	Can I just ask one more thing?
Scott Bicheno:	01:02:23	Here we go.
Iain Morris:	01:02:24	Yeah. So the ontology, it's the way you've described it, the way Scott read the thing and you said that's pretty accurate, but would it provoke... I think we're going to get on to talk about this anyway maybe. So this is maybe a good way of going into it, but does it provide the sort of guardrails that you-
Scott Bicheno:	01:02:40	Segue tastic.
Iain Morris:	01:02:41	Yeah.
Danielle Rios:	01:02:42	Yeah, yes.
Iain Morris:	01:02:42	So I did that. That would stop something from going crazy.
Danielle Rios:	01:02:44	That's what makes it so amazing. And I was going to say that a little while ago. The ontology actually doesn't use AI.

Iain Morris:	01:02:51	Right.
Danielle Rios:	01:02:52	The ontology is the representation of your processes and rules and decision making. If it's not in-
Scott Bicheno:	01:02:57	The whole point of it is that it's human because you're setting the ground rules as a human for the AI to build on.
Danielle Rios:	01:03:01	Right, like I'm interviewing the experts of the telco. There's some AI stuff that helps us to accelerate to build it, but in general, the rules in there are not generated by AI. We interview real experts of like, "Tell me how you do a quote for a hospital. Just walk me through your process. What happens when you need an exception?" And usually it's like, "I got to go talk to my boss. My boss does it." "How long does that take?" And so we're really looking at in between the systems, obviously the systems themselves and what the process is, but then what happens in between?
	01:03:35	We found that another telco also in Asia, they're like, "This is our process." We're like, "Did you know you only follow the process? Your quotes only follow the process 40% of the time?" They're like, "What?" They're like, "It's more like 80." I'm like, "It's not. It's like 40." And so we're finding all these ways that telcos are inefficient and they just don't know it. When you start to write it down and put it into the ontology and write down, "Hey, who was the expert that told you this? Who told you this rule?" And we write down Iain Morris and it fires. And later someone's like, "Prove to me that you're following the rules." Our ontology has an audit trail of what rule fired and who gave it to us. Right?
Scott Bicheno:	01:04:15	Right, that's important.
Danielle Rios:	01:04:15	And so if Iain's like, "Wrong." And Scott's his boss comes in and he's like, "No, the threshold isn't X, Y, Z. It's ABC." And we change it and we write, "Scott told us that." Scott's now the owner of the rule. And so it's forcing us to talk to senior people in the organization because those are the experts. Those are the people who know what they want to do. Super powerful now to get what you... Think about 20 or 50 person organization, the variation of decision making, and now your AI can be forced to do it the way you want to do it as a leader. That is super powerful.

Scott Bicheno:	01:04:47	And a key part of that, and this is something that's come up in quite a lot of pods I've read and articles I've read... Pods I've listened to, articles I've read. Jesus Christ.
Danielle Rios:	01:04:56	How good was the old-fashioned?
Iain Morris:	01:04:57	He must have had something because I just drank a bit more and it's like drinking lava.
Scott Bicheno:	01:05:05	It is.
Iain Morris:	01:05:05	It's like a-
Danielle Rios:	01:05:05	Is it? Oh, I'm so sorry. It's not good? Is it good?
Scott Bicheno:	01:05:05	No, it's good.
Iain Morris:	01:05:05	No, it's really nice, but it kind of hits you when you-
Danielle Rios:	01:05:05	Maybe it's a winter drink.
Scott Bicheno:	01:05:06	It just goes through you like a-
Danielle Rios:	01:05:07	He needs to try it at some point. I know he doesn't want to now.
Scott Bicheno:	01:05:09	... trail of naughtiness. Is transparency.
Danielle Rios:	01:05:14	Yeah.
Scott Bicheno:	01:05:15	So we've got all these concerns and we will get there in a sec, some of the stuff that's been going on recently. But one of the key bits is everyone goes, if there's transparency, then even if the AI does get a bit carried away, as long as it's easy to follow its trail-
Danielle Rios:	01:05:33	The trail. Yeah, yeah.
Scott Bicheno:	01:05:34	Yeah. And maybe see where it starts. And by the way, this is another thing, correct me if I've understood it wrong. This is one thing I take from ontology. Iain talked about it earlier on and we've talked about it lots of times in the pod before, which is that base layer of intelligence, knowledge, best practice on which the various sedimentary agentic layers are built on top. That has to be designed by humans. And so I get the impression

that when we're talking about ontology in this context, that's part of it.

01:06:02 It's just establishing that base layer of rigorous human-reviewed best practice. Then you don't get these echoes, these amplified mistakes, which happens with layers of AI and agents because you've got them off on the right trajectory. You've started them in the right direction sort of thing.

Danielle Rios: 01:06:21 The way that ontology works is a hallucinogenic decision is not possible. If it's not captured in the ontology, ontology does not make something up. It's like-

Scott Bicheno: 01:06:31 So you could think of it as a sort of guardrail type of thing.

Danielle Rios: 01:06:33 And then once we saw a situation that we did not capture, we can go to the customer and say, "Hey, this situation's happening. How do you want to handle it?" And so now we write it into the ontology and then it stops. And so the idea is a little bit to take decisioning out of humans and work out of humans' hands because now it's following the process you want it to follow and it writes the audit trail. And so literally it's in the demo, you can sit there and say, "What rule fired?" And we just push a button and it shows all the thinking that it went through to come up with a decision. And then the key piece of the ontology for Totogi is it can act. So you're like, "Give me access to that system and I will go create the quote."

Iain Morris: 01:07:15 But the ontology important thing is it comes from people, the ontology. So it's like a human buffer against the-

Danielle Rios: 01:07:20 And AI uses it and then we're super great.

Iain Morris: 01:07:23 See, we're so much better than AI.

Danielle Rios: 01:07:24 We're so safe. It's so not a Hugging Face.

Scott Bicheno: 01:07:29 Actually another-

Danielle Rios: 01:07:29 It's so not AI doing whatever the f**k it wants.

Scott Bicheno: 01:07:30 Hugging Face is about to come up.

Iain Morris: 01:07:30 Right, here we go.

Scott Bicheno: 01:07:31 No, but just one last analogy and this may be-

Danielle Rios: 01:07:34 I tried to segue for you.

Iain Morris: 01:07:36 Yeah.

Scott Bicheno: 01:07:36 Listen, this may not stand out scrutiny, but in some ways, it reminds me a little bit of being a parent. Bear with me. So here you've got your daughter, Bella, here and she's about to start the first stage of her adult life, going to college and all that sort of thing, being semi-independent from you. And my son, by the way, has just moved out. My 22-year-old, he's just moved out.

Danielle Rios: 01:07:55 Yeah. Big.

Scott Bicheno: 01:07:55 And what you're doing as a parent is when they're little kids, you're feeding them all this stuff and you're trying to prepare them for when they f**k off and do their own thing, but you're trying to get them in the right direction. But eventually they'll fly the nest and do their own thing, but you just want to give them the right trajectory. So that analogy springs to mind. Does that make any sense?

Danielle Rios: 01:08:14 Yeah. In the case of ontology, it literally is not like a kid doing whatever they want. It doesn't come up with an action. It doesn't make it up. If it's not in the ontology, it doesn't go. And that's what makes it really safe. And then it's always auditable, so people really, really love it. And we put names against the audit trail, literally people in your organization that owns this rule. So that example with the ARPU, I'm like, "Well, who owns the ARPU definition? CFO?"

Iain Morris: 01:08:39 Yeah.

Danielle Rios: 01:08:39 Just write the CFO's name.

Iain Morris: 01:08:41 So what the hell's happened with these things then that are running around causing all sorts of disruption?

Scott Bicheno: 01:08:46 Yeah, so talking about guardrails? Talking about guardrails. Guardian's been quite good on this. I was just doing a bit of Googling, I do this multitasking sort of Jamie from Joe Rogan type of job in the background.

Iain Morris: 01:08:55 I don't know who that is.

Scott Bicheno:	01:08:57	So yeah, you don't listen to Joe Rogan.
Danielle Rios:	01:08:58	It's like the girl Kelly on Howard Street.
Scott Bicheno:	01:09:00	It's what Pierre should be doing. That I'm always telling him off to do. So Jamie's the producer. Jamie's the Pierre, but at the same time, whenever Rogan and his banging on about something, he's tapping away.
Iain Morris:	01:09:07	The Rest is History.
Danielle Rios:	01:09:09	Live Googling.
Scott Bicheno:	01:09:09	Yeah, he's live searching to augment the conversation.
Iain Morris:	01:09:12	I think The Rest is History one's Tabby.
Scott Bicheno:	01:09:14	Oh, is it?
Iain Morris:	01:09:14	Yeah.
Scott Bicheno:	01:09:15	Right.
Iain Morris:	01:09:15	And she's even now doing a separate podcast with Dominic Sandbrook on books.
Scott Bicheno:	01:09:18	Oh, cool. So I was just catching up on some of the stuff going on this week. So I'm sure most people listening, if not all, will be familiar with the Hugging Face thing, which was basically, I was just looking at OpenAI's own blog on it.
Iain Morris:	01:09:32	What is Hugging Face?
Scott Bicheno:	01:09:34	So Hugging Face is like a sort of geek community, I think. I bet you'd know better.
Danielle Rios:	01:09:38	I actually don't know.
Iain Morris:	01:09:39	It got bought for a lot of money by NVIDIA.
Scott Bicheno:	01:09:41	It's like have you heard of GitHub?
Iain Morris:	01:09:42	Yes.
Scott Bicheno:	01:09:43	It's that sort of concept.

Danielle Rios:	01:09:44	Oh, okay. Like source code management.
Scott Bicheno:	01:09:45	Yeah, lots of source code. And it's just a place where clever computery people exchange ideas and best practice and code and all that sort of thing.
Iain Morris:	01:09:54	Actual people.
Scott Bicheno:	01:09:55	Actual people.
Danielle Rios:	01:09:56	Real people.
Iain Morris:	01:09:56	Right.
Scott Bicheno:	01:09:57	Anyway, on August the 26th, so this is like two weeks ago, OpenAI... So this thing actually happened in July, I think. But a month or so later, OpenAI went, "The Hugging Face incident," that's what it's called now.
Iain Morris:	01:10:08	Huggingfacegate.
Scott Bicheno:	01:10:08	... and the Road Ahead. So it starts, this is an OpenAI blog. It says-
Pierre:	01:10:16	Is it the guys... Sorry, they're French guys. The guys who founded it.
Scott Bicheno:	01:10:20	Who founded Hugging Face?
Pierre:	01:10:21	Yeah.
Scott Bicheno:	01:10:21	Is it?
Pierre:	01:10:22	Nice.
Scott Bicheno:	01:10:22	That's why it's got such a funky name.
Iain Morris:	01:10:24	They're good at Maths in France, apparently.
Scott Bicheno:	01:10:26	Le Hugging Face.
Pierre:	01:10:27	It was in New York where the guys who founded it are French. Interesting.

Scott Bicheno: 01:10:31 Cool. Well, France has got the only half decent European LLM as well, isn't it? Mistral.

Pierre: 01:10:36 We're very good at cyber hacking, apparently.

Scott Bicheno: 01:10:39 Right. So this blog starts says, "In July 2026, during internal cybersecurity evaluations, OpenAI models circumvented controls designed to isolate them from the internet and compromise parts of OpenAI's internal research infrastructure and Hugging Face's systems." So it's a massive long thing. And then at the end, I was scrolling down to the bottom. "Looking forward, we take this incident as a "warning shot" that today's model capabilities present the possibility of loss of control incidents." And that's the general theme that I'm looking at here, these loss of control incidents.

01:11:14 Now there's a couple of other things. There's some guys just joined OpenAI, this is in The Guardian published today, headline, "OpenAI Not on Track to Reduce Risk of "Catastrophic" Loss of Control," says board member. It's a bloke called Paul Christiano. And he's just gone, "Yeah, we're not on top of this s**t at all."

Iain Morris: 01:11:36 It's an Arnie warning, is it? That it became self-aware.

Scott Bicheno: 01:11:39 It were quite. And then there was this other guy. These people, it's become quite factional, AI, and people who are like us and are constantly evoking Terminator and stuff. The one I was going to bring up yesterday in the pod, but I never got around to it was, I think Ray was talking about, we were talking about drones and all that and the friend or foe identification that military people do.

Scott Bicheno: 01:12:03 And I thought of another dystopian thing that doesn't get mentioned so often, which is RoboCop. Do you remember the scene in RoboCop where the death machine misidentifies some exec?

Iain Morris: 01:12:14 That's right.

Scott Bicheno: 01:12:15 And just f**king nukes it?

Iain Morris: 01:12:15 You have 10 seconds to comply.

Scott Bicheno: 01:12:17 Yeah, exactly. So there's that.

Iain Morris:	01:12:19	RoboCop 2, I think, no?
Scott Bicheno:	01:12:21	No.
Pierre:	01:12:21	That was the first one.
Scott Bicheno:	01:12:21	I think it was from the first one.
Iain Morris:	01:12:22	Yeah. Sorry.
Scott Bicheno:	01:12:25	And then who's this geezer? Someone's gone-
Iain Morris:	01:12:28	I'm glad you're looking at The Guardian because I thought you'd have a resistance to reading The Guardian, Scott. You're-
Scott Bicheno:	01:12:34	What? Because you think I'm politically blinkered?
Iain Morris:	01:12:37	No, I wouldn't say anything like that.
Scott Bicheno:	01:12:39	I think you were inferring it, weren't you, mate? I can't remember the name of the bloke, but it doesn't really matter. So they've got this factional thing and people who are very pro AI, when people like you and I go on about dystopian stuff, they call us doomers.
Iain Morris:	01:12:52	Doomers, which isn't really a word. Doomster's a word.
Scott Bicheno:	01:12:53	Yeah. Well, doomers the phrase that they coined.
Iain Morris:	01:12:54	It's a very old word, doomster. Yeah.
Scott Bicheno:	01:12:59	And anyway, this person goes, "There's a greater than 10% chance that AI could kill all humans in the next decade."
Danielle Rios:	01:13:08	Oh, that's guy from Anthropic.
Iain Morris:	01:13:09	Who said that?
Danielle Rios:	01:13:09	It's an Anthropic guy.
Scott Bicheno:	01:13:09	Yeah, a guy from Anthropic.
Iain Morris:	01:13:09	Dario Amodei?
Danielle Rios:	01:13:09	No.

Scott Bicheno: 01:13:10 No, it was one of the-

Danielle Rios: 01:13:10 It was some guy that had resigned, but he'd only been there for a few months.

Scott Bicheno: 01:13:17 That's right.

Danielle Rios: 01:13:17 And not vested and so, ah.

Scott Bicheno: 01:13:20 Well, but the vesting thing is interesting-

01:13:22 ... because he's called Jacob Coxon-

Danielle Rios: 01:13:24 Yes, that's it.

Scott Bicheno: 01:13:25 ... I think. But this is interesting. So this guy used to be OpenAI and then he went to Anthropic and he stayed there for four months. And after six months, his stock options vest.

Iain Morris: 01:13:37 Right. Well, I-

Scott Bicheno: 01:13:38 But he's left after four months. And I actually think that adds weight, or at least that's what he's claiming. It adds weight to his doomerism because he could have just hung around for two more months, cashed in and then gone, "It's all going mental." But he's sort of-

Danielle Rios: 01:13:51 Principles.

Scott Bicheno: 01:13:52 Yeah. It's showing that he, at least this is a narrative he wants us to believe, that he left even when it cost him money to do it because he's so worried about all this s**t.

Danielle Rios: 01:14:01 How do we know he wasn't fired?

Scott Bicheno: 01:14:01 Well, there is that.

Iain Morris: 01:14:01 But do you find all this quite concerning? Because you do hear about these, and I don't know what to make of them, but obviously it sounds like there was some kind of hack of Hugging Face and that there's a conspiracy theory that it was almost intended to sort of, that story-

Scott Bicheno: 01:14:14 There is always that.

Iain Morris: 01:14:15 ... they wanted to make-

Danielle Rios: 01:14:16 Marketing.

Iain Morris: 01:14:17 Exactly. Marketing.

Pierre: 01:14:17 Can change it to marketing.

Iain Morris: 01:14:18 And then notably Hugging Face has taken over anyway.

Danielle Rios: 01:14:21 I mean Anthropic's going public in, whatever, few months.

Iain Morris: 01:14:23 Yeah. But to your discussion about ontology and putting guardrails in place and making sure, because obviously when telcos are introducing Agentic AI into their systems, the last thing they want is the possibility that it goes and runs amok and decides that it's going to close a load of base stations down. And all this and we can't get services.

Danielle Rios: 01:14:41 I think that's why you need something like an ontology-

Iain Morris: 01:14:41 Exactly.

Danielle Rios: 01:14:42 ... that's keeping it on track and auditing it.

Iain Morris: 01:14:45 But does it sound like that's missing from this sort of stuff? I know it's what it is-

Danielle Rios: 01:14:49 Well, this stuff is happening at the model layer and the research thing. So this is the use of Claude, the use of OpenAI that's fundamental obviously, but at a totally different level than what we've been talking about. We've been talking about this app layer, things that humans are creating that use the models. So I mean, I have no idea if this is an extinction event for humans in the next 10 years, the use of AI. I mean-

Scott Bicheno: 01:15:13 And it's weird that he puts a percentage on it.

Danielle Rios: 01:15:15 I know.

Scott Bicheno: 01:15:16 A 10% chance. Oh, okay. So we're probably all right.

Danielle Rios: 01:15:18 Yeah. Yeah.

Scott Bicheno: 01:15:19 I mean, I don't know how you can be that precise, but there we go.

Danielle Rios: 01:15:21 I mean, I don't know if this is like he's mad.

Iain Morris: 01:15:23 He's crunched the numbers.

Scott Bicheno: 01:15:23 Yeah, he's done them.

Danielle Rios: 01:15:23 I have no idea who this guy is.

Scott Bicheno: 01:15:24 He got AI. He went, "AI, how close to being f**ked are we?" And he went, "Oh, about 10%."

Iain Morris: 01:15:32 Yeah.

Scott Bicheno: 01:15:33 That's probably what he did do.

Pierre: 01:15:34 But one little thing about Hugging Face, NVIDIA offered them 500 million at the end of last year. And now, do you know how-

Scott Bicheno: 01:15:41 And they just paid 10 billion or something.

Pierre: 01:15:42 13.

Iain Morris: 01:15:42 After it got hacked.

Danielle Rios: 01:15:43 Wow.

Pierre: 01:15:43 Can you imagine-

Danielle Rios: 01:15:45 Yes, please.

Pierre: 01:15:45 ... they were really low balled then?

Scott Bicheno: 01:15:47 Well, that's one of the mad things about this, leaving aside all the actual implications, the economic side and the market side, the sums of money being chucked around.

Danielle Rios: 01:15:56 It's insane.

Scott Bicheno: 01:15:57 It's just crazy.

Danielle Rios: 01:15:58 It's insane. The one thing I do write about for telcos, they're chasing these GPU as a service or whatever where they're going

to like, "Oh, we're going to buy some chips." I'm like, "You got to watch out what you're signing up for here, guys, because these chips have about 18 month life cycles, not the five years that you guys are used to."

Iain Morris: 01:16:17 Oh, really?

Danielle Rios: 01:16:18 Oh, yeah.

Pierre: 01:16:21 That's what you're being told.

Danielle Rios: 01:16:21 What?

Pierre: 01:16:21 What you're being told.

Scott Bicheno: 01:16:21 So you're saying like an H1000 or whatever they're called working at full wack is burnt out after about 18 months?

Danielle Rios: 01:16:26 Yes.

Scott Bicheno: 01:16:26 Wow.

Danielle Rios: 01:16:27 Well, there's something better on the market.

Scott Bicheno: 01:16:30 Okay. So there's obsolescence.

Danielle Rios: 01:16:31 Right. And so customers don't want to use that anymore. They want the latest, right?

Iain Morris: 01:16:34 Yeah.

Danielle Rios: 01:16:34 I mean, AWS just signed up for, I can't even remember how, I mean, I wrote about it in the newsletter, but it was an insane amount of billions of dollars to get the latest chips. I mean, the chip recycle rate here is-

Iain Morris: 01:16:46 Well, that's the thing that always makes me a little bit skeptical of the sort of AI RAN, what it means using GPUs in the radio access network pitch. Because when I talked to Nokia about this a few weeks ago when they had this big midsummer update and I got wind of what was going to happen there anyway, but they were saying one of the attractions of introducing these GPUs is that you have a hardware platform you can leave in place five or six years and it's good enough for 6G.

01:17:13 You hear people. We mentioned Yago Tenorio earlier and he went on the record saying this, is that he doesn't really want to change out Granite Rapids, which is the latest Intel CPU that they're using with the Samsung RAN that they get provided. And this should be good enough to do 6G stuff. But there's always going to be this push for what's, you mentioned it's H100, H200 or whatever it is.

Danielle Rios: 01:17:32 I think it has a name it's called, you remember Moore's Law?

Iain Morris: 01:17:34 Yeah.

Danielle Rios: 01:17:35 Now it's Huang's Law.

Iain Morris: 01:17:36 Right, exactly.

Danielle Rios: 01:17:37 Jensen. Named after Jensen.

Iain Morris: 01:17:39 He said that, hasn't he?

Danielle Rios: 01:17:40 Yes. It's 18 months. And so you're an enterprise that's doing big workloads. Are you going to be...

Iain Morris: 01:17:47 Because-

Danielle Rios: 01:17:47 You bought it from your telco because it's a trusted sovereign partner, blah, blah, blah. And they have the chips from three years ago and that's what they're selling you? No.

Iain Morris: 01:17:54 Well, because here's the thing. Nokia might go put these whatever, I mean they call it the code names instead of Grace Hopper, aren't they? And Vera Rubin in some GPU RAN stuff.

Danielle Rios: 01:18:03 How nice.

Iain Morris: 01:18:04 Yeah, lovely.

Scott Bicheno: 01:18:05 They name it after clever women.

Iain Morris: 01:18:08 Yeah.

Danielle Rios: 01:18:09 Always?

Iain Morris: 01:18:09 Yeah. Usually I think.

Scott Bicheno: 01:18:11 Well, Grace and Vera are both women, I think.

Iain Morris: 01:18:12 Yeah.

Danielle Rios: 01:18:12 I mean recently or always?

Iain Morris: 01:18:14 No, I don't know if they've always done that.

Scott Bicheno: 01:18:15 No, they're historical.

Danielle Rios: 01:18:16 I mean Grace Hopper is number one.

Scott Bicheno: 01:18:18 Grace Hopper is a naval.

Danielle Rios: 01:18:19 So clearly it's new. If it's last, I'm like, wow, they-

Scott Bicheno: 01:18:22 I'm going to look that up.

Iain Morris: 01:18:24 Here's the danger I think for them. One of the dangers, they come out with this argument about you just leave it in place for years and years and it's all software from then on. That might be what they want to tell their customers, but they're funded partly now by NVIDIA. It's a billion. It's like the second-biggest shareholder I think now. NVIDIA is not going to be saying that. They're going to be saying, "No, no, no-

Scott Bicheno: 01:18:42 You're putting in chips.

Iain Morris: 01:18:42 ... once you put your GPUs into this RAN, now you need the new GPUs because you can do even more with your 6G RAN then. So swap them out." And yeah, it makes me-

Pierre: 01:18:52 It's creating jobs because you need people to go and swap them, right? To go inside the data centers.

Iain Morris: 01:18:58 But meanwhile, the operators aren't making any more money.

Pierre: 01:18:59 Until robots can do that.

Danielle Rios: 01:19:00 The capital requirements here, the treadmill here, I'm like, do you understand what you're signing up for here?

Pierre: 01:19:07 Google is the first negative cash flow in the last Q result.

Danielle Rios:	01:19:10	All the big guys are burning their cash reserves to zero and they have way more cash reserves and revenue than the telcos do.
Iain Morris:	01:19:20	This is scary.
Danielle Rios:	01:19:21	Or Nokia. I'm like and those guys are Martindale Law here where they're like double till you lose. There's going to be one winner and we're burning down the empire to win. Are telcos ready to do that?
Iain Morris:	01:19:35	Do you see any sort of potential for, because part of the AI RAN pitch was actually more like AI grid really. I mean some of the stuff that Deutsche Telekom's talking about, this data center that it's got in, where is it? It's in Munich, I think, where they call it a sort of GP factory, whatever, an AI factory. This idea of telco's getting into that, doing inference at the edge and selling that as a service basically to other companies. Is that-
Danielle Rios:	01:20:02	Yeah, just come up with the workloads that need that fast inference, that scale, like billions of dollars scale?
Iain Morris:	01:20:09	Yeah. No robotics or anything on the horizon or smart glasses sort of needing-
Danielle Rios:	01:20:14	I'm coding on my phone on 5G. I'm hitting... I don't even know where it goes, but goes on. It's good enough. I just can't think of inference at the edge.
Scott Bicheno:	01:20:23	I'm with you.
Iain Morris:	01:20:24	Yeah. No, the NVIDIA pitch is interesting because they started off when they came in with this AI RAN idea. And it was very much the economics don't add up unless you're doing AI for RAN and AI and RAN, i.e. inference at the edge. And it's-
Danielle Rios:	01:20:38	I mean my answer back is name three use cases that are a billion dollars each, just one. Just name a use case. It's not robotic search.
Iain Morris:	01:20:47	I know what they would say, they would probably say, "Robotics."
Danielle Rios:	01:20:49	But they're reading the cancer scan and like, "Oh, there's a tumor."

Episode 151 | TL;DR: Telecoms.com (Scott Bicheno/Iain Morris)
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Scott Bicheno:	01:20:51	Wouldn't you love to get Ronnie Vasishta? Is that his name?
Iain Morris:	01:20:53	Yeah.
Scott Bicheno:	01:20:54	Wouldn't you love to get him on the pod and just have him explain why people should shell out all this cash?
Iain Morris:	01:20:59	Yeah, and he'd probably do quite a good job of it.
Scott Bicheno:	01:21:00	I'm sure he would. No doubt.
Iain Morris:	01:21:03	Because he's obviously got all of his questions.
Scott Bicheno:	01:21:03	If you're listening, Ronnie, come on, bro.
Iain Morris:	01:21:06	Yeah. I think Ronnie's based in America, so we'd have to do it the other side.
Scott Bicheno:	01:21:11	But he's English, isn't he? He's got an English accent anyway.
Iain Morris:	01:21:12	He's English, yeah.
Danielle Rios:	01:21:13	Next time he's swinging through London.
Scott Bicheno:	01:21:14	Exactly.
Danielle Rios:	01:21:15	Maybe the pod goes on the road.
Scott Bicheno:	01:21:17	Or there is that. Yeah. If they want to fly us out to NVIDIA Towers, we'll do one there.
Danielle Rios:	01:21:22	Where is that? Where's NVIDIA Towers?
Scott Bicheno:	01:21:23	I'll actually seen it.
Iain Morris:	01:21:24	It's in California, isn't it?
Danielle Rios:	01:21:25	It's in Silicon Valley?
Iain Morris:	01:21:27	I think so, yeah. I think San Jose.
Scott Bicheno:	01:21:28	Talking about NVIDIA-
Danielle Rios:	01:21:31	But not like Qualcomm San Diego.

Iain Morris:	01:21:33	No, that'd be better, wouldn't it?
Danielle Rios:	01:21:34	Yeah. That's where Bella is.
Iain Morris:	01:21:37	I've never been to San Diego.
Scott Bicheno:	01:21:37	So that's where Bella is. Bella's on the fast track to work for Qualcomm, is she?
Danielle Rios:	01:21:39	Maybe. Apparently so. That is what happens at UCSD.
Scott Bicheno:	01:21:44	I have been to Qualcomm Towers in San Diego.
Pierre:	01:21:46	It's in Santa Clara, NVIDIA.
Danielle Rios:	01:21:48	Okay. Then that's the Bay Area.
Pierre:	01:21:49	Santa Clara.
Danielle Rios:	01:21:52	Yeah, that's over by Santa Fe.
Iain Morris:	01:21:52	By San Jose.
Scott Bicheno:	01:21:53	By the way, Grace Hopper was an American Naval, a rear admiral who's also very clever at techy stuff.
Iain Morris:	01:22:00	Yeah, I know who Grace Hopper is.
Scott Bicheno:	01:22:01	All right. Well, I'm just letting our audience know. Is that all right?
Iain Morris:	01:22:03	Okay.
Danielle Rios:	01:22:04	But famous for naming the word bug because there was a mob.
Scott Bicheno:	01:22:08	Oh, she coined the term bug? Oh, there we are.
Danielle Rios:	01:22:10	I think she's famous for calling it a bug, a defect.
Iain Morris:	01:22:14	Who's Vera Rubin?
Danielle Rios:	01:22:15	Because it was actually a bug.

Scott Bicheno:	01:22:16	Oh, you don't know that one? I'm allowed to talk about that, am I, Iain?
Danielle Rios:	01:22:17	What is that?
Iain Morris:	01:22:19	Vera Rubin.
Scott Bicheno:	01:22:20	Vera Rubin. Do you know who Vera Rubin was?
Danielle Rios:	01:22:21	No, I don't. Maybe.
Scott Bicheno:	01:22:22	She was according to Wikipedia... And by the way, I did a search earlier and Wikipedia came up before the Gemini AI thing. I was quite surprised by that.
Danielle Rios:	01:22:31	Yeah, I don't know.
Scott Bicheno:	01:22:32	Anyway-
Danielle Rios:	01:22:33	Bias against girls as usual.
Scott Bicheno:	01:22:35	Yeah. Vera Rubin was an American astronomer who pioneered work on galaxy rotation rates, which we all benefit from now.
Iain Morris:	01:22:44	Her name's not as much fun because if you talk to people at SoftBank about Grace Hopper, it sounds like they're saying, "Grasshopper." I don't want to do the accident obviously because I'll get canceled and this pod will never go out again.
Scott Bicheno:	01:22:54	Indeed. No way.
Pierre:	01:22:55	What about, is it Hedy Lamarr? Hedy Lamarr?
Iain Morris:	01:22:56	Hedy Lamarr.
Scott Bicheno:	01:22:58	Yes.
Pierre:	01:22:59	She'll probably be the next name on wifi.
Scott Bicheno:	01:23:01	Hedy Lamarr who objected to Hedley Lamarr in Blazing Saddles.
Pierre:	01:23:06	Oh.
Scott Bicheno:	01:23:06	So she was an actress and like a model, a really beautiful woman and also an incredible scientist.

Iain Morris:	01:23:10	She sort of had all the attributes in life.
Scott Bicheno:	01:23:16	She's 10 out of 10. And the way NVIDIA comes up with these things, so these are individual names, but with Grace Hopper and Vera Rubin, the Grace and the Vera bit is a CPU element and the surname is the GPU element, just-
Danielle Rios:	01:23:25	Yeah. I think all these guys who are chasing the chip race, the infrastructure race, high stakes. Yeah, yeah, yeah.
Scott Bicheno:	01:23:33	And the biggest beneficiary being NVIDIA, of course.
Danielle Rios:	01:23:33	Yes. I think NVIDIA is trying to build their own public cloud offering via the telcos, because the telcos have mega data centers. And they're like, "Hey, I'll give you my chips that you are going to buy from me. I'm going to use your data centers which are already built. You take all the risk and it's sales for me. And now I've built basically my own public cloud."
Scott Bicheno:	01:23:56	So is that what you think? Because I was about to ask you this and maybe you've just answered it. We've speculated before on the pod why is NVIDIA, which is just f**king printing money right now, why does it give a toss about telecoms? Why has it got Ronnie Vasishta?
Danielle Rios:	01:24:10	Well, I think that's what they're... Maybe. I don't know. I mean, I'm not smart enough and strategic enough to think this way, but-
Iain Morris:	01:24:12	I think that's the answer, that's exactly what you've said.
Danielle Rios:	01:24:15	I can't sell my chips to the hyperscalers because the hyperscalers are going to reap the benefits. They're going to arbitrage on that. And so I'm dumb infrastructure. How do I get my own cloud as quickly as possible? The telcos. They're everywhere.
Iain Morris:	01:24:32	But even if they weren't going to do that-
Danielle Rios:	01:24:33	They're already operational.
Scott Bicheno:	01:24:34	So the edge play.
Iain Morris:	01:24:34	But even if they weren't going to do that and it was just carry on being a hardware sell, the hyperscaler market is going to slow

down at some point, you would think. Well, I don't know. Are they just going to carry on buying these chips-

Danielle Rios: 01:24:44 Everyone's moving their workloads there.

Iain Morris: 01:24:45 ... in these volumes?

Scott Bicheno: 01:24:47 They've got some forward Capex roadmaps and they're just huge.

Iain Morris: 01:24:49 There's how much capacity do we need? At some point it's got to... So I think to me, they're probably thinking what are the next markets? And if you look at the telco out of all the other sectors, they're the most adjacent maybe. Now these are the guys that for years have been talking about edge, edge computing and we could do this. We got the-

Danielle Rios: 01:25:06 Yeah. I don't think it has anything to do with edge. I think it has to do with these are mega data centers that are up and operational. And if I wanted to go build my own cloud as quickly as possible to rival AWS, Microsoft, Google.

Iain Morris: 01:25:19 Well, that's what Deutsch Telekom's doing. That's AI grids and stuff. But if you-

Danielle Rios: 01:25:23 But NVIDIA is partnering with all the telcos.

Iain Morris: 01:25:25 It is. But some of it's like this AI RAN idea, do it at an aggregation point near a tower and have 1,000 of these in the country.

Danielle Rios: 01:25:33 I don't think it has anything to do with the network from NVIDIA's perspective.

Iain Morris: 01:25:37 No, I don't think so either.

Danielle Rios: 01:25:38 But the telcos are saying, "Blah, blah, blah, inference at the edge."

Iain Morris: 01:25:41 Yeah.

Danielle Rios: 01:25:42 Great. But from NVIDIA's perspective, what do they have to gain by getting their chips into these data centers and signing these partnerships? Basically getting a public cloud without having to do the building it all themselves.

Iain Morris:	01:25:54	But also how many base stations are there on the planet? If you had a GPU in every one of them, just that amount of hardware business is nice to have next to the hyperscaler stuff. But I think-
Danielle Rios:	01:26:06	And telcos have been somewhat neglected.
Iain Morris:	01:26:09	... people are very devious.
Danielle Rios:	01:26:09	Right?
Iain Morris:	01:26:09	Yeah.
Danielle Rios:	01:26:09	They're all like, "La, la, la," doing their own thing. And NVIDIA is like, "Okay, I'm going to globalize you without globalizing you and have all these partnerships." And so I don't know.
Scott Bicheno:	01:26:21	We're pretty much out of time, but I've got one last thing and I want to throw the ball to Danielle to finish off. This seems consistent with some of my concerns when the big NVIDIA investment in Nokia happened, which is, I don't care how much money you got and NVIDIA's got a lot. You don't chuck a billion bucks at someone and not expect some s**t in return.
	01:26:39	So maybe one of the things to that quote and to the thing we were just talking about, maybe to some degree, Justin and Pallavi and so on are sort of compelled by that investment to go all in with NVIDIA.
	01:26:50	And I just wanted to ask you, as a CEO and investor, and as you said, CRL acquirer, let's say Totogi suddenly got a partner that threw an equivalent order of magnitude of money versus your market cap or your annual revenue or whatever. How would that work in your mind? What would you think the trade-off? Obviously the plus is that you've got this investment and you've got this cash flow and then you can do cool things with it. But what's the trade-off?
Danielle Rios:	01:27:17	Huge. The trade-off is your roadmap usually. "I gave you this money. I want you to do what I want. I've basically gotten an R&D lab or the whole team," as NVIDIA in this case. And so as a CEO, you're like, "If I say no to you, your money leaves," or the customer walks or whatever it is. "And if I say yes, you stay." Especially from a startup perspective, this happens all the time for startups, especially in telco, you get a big Tier 1 customer.

They're like, "Do my bidding, do the roadmap I want." Little startup can't say no. And now-

Iain Morris: 01:27:56 Because it's so significant.

Danielle Rios: 01:27:57 ... we're now an R&D lab for Vodafone or whatever it is. And so I have to fight that all the time as a startup because they're like, "Here are the terms and conditions we want you to sign DR at Totogi. We're joint creators of the IP. Our roadmap comes first. Most favored nation pricing all the time." And you just have to say, "No," and that's really hard when you're a startup or when you need the money.

Scott Bicheno: 01:28:21 It's kind of Faustian pact, isn't it? Ideally you want to be completely independent, but-

Danielle Rios: 01:28:27 You need customers.

Scott Bicheno: 01:28:28 Well, you need customers and you need investment or cash flow or whatever. And so I guess it's just a constant set of trade-offs that like, okay, what am I prepared to give up? What is my red line? And all that sort of thing as far as control. And that's a fascinating thing. As a lowly journalist, I don't have to make those decisions, but it's fascinating to get insight into that environment.

Danielle Rios: 01:28:47 Those are real trade-offs. Yeah. We'll have one last gift for you guys as we wrap up.

Scott Bicheno: 01:28:52 Okay. Oh, wow.

Danielle Rios: 01:28:53 And that is the Totogi Top.

Scott Bicheno: 01:28:53 Totogi top.

Danielle Rios: 01:28:54 The Totogi top. It comes in a little purple bag.

Scott Bicheno: 01:28:56 I was about to say, if it's a top in the English vernacular, it better be a big one for me.

Danielle Rios: 01:28:59 And so-

Scott Bicheno: 01:29:00 But no, it's a spinning top.

Danielle Rios: 01:29:01 ... have you guys seen the movie Inception?

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Iain Morris:	01:29:04	Yeah. Love it.
Danielle Rios:	01:29:04	And he has a talisman that's the top that tells him whether or not he's in reality or not. And so we give this out to our customers because when they hear how the ontology works and how great it is, they don't believe it. And so we give them these tops that spin forever. I have one for each of you guys.
Pierre:	01:29:22	Oh, wow.
Iain Morris:	01:29:23	I used to love these things.
Pierre:	01:29:23	Thank you. That's nice.
Danielle Rios:	01:29:25	And they spin forever.
Scott Bicheno:	01:29:26	Until they fall off the table.
Danielle Rios:	01:29:27	Your table looks to not be even.
Scott Bicheno:	01:29:29	Can we prod it?
Danielle Rios:	01:29:31	No, because it'll really stop.
Scott Bicheno:	01:29:32	Then it'll stop the momentum.
Danielle Rios:	01:29:32	But it really just-
Scott Bicheno:	01:29:35	But the nature of... Oh, you've got that one a bit more steady. So the nature of the metal and the balance is that it just keeps spinning for f**king ages.
Danielle Rios:	01:29:40	I don't know what it does. I don't know what it does, but I have one on my desk and I spin it all the time and I love it.
Scott Bicheno:	01:29:45	It's like a fidget toy.
Danielle Rios:	01:29:47	People love it.
Iain Morris:	01:29:47	Look at this.
Scott Bicheno:	01:29:50	And what's the analogy again of-

Danielle Rios:	01:29:51	It's like Inception. Are you in reality or not? Right. So when using Totogi, eventually it falls over so it is real, but it feels like you have to test it all the time. Go AI.
Iain Morris:	01:30:00	We could all be replicants of-
Scott Bicheno:	01:30:01	I might actually, one last thing before we wrap up, complete tangent, but it just made me think of my kids who we always-
Iain Morris:	01:30:08	I'm going to be doing this all day now with-
Scott Bicheno:	01:30:09	... used to get them fidget toys when they were little because they would just-
Danielle Rios:	01:30:12	Yeah, fidget.
Scott Bicheno:	01:30:13	Yeah. And I just heard, I was getting text messages through while we were recording. My daughter, Isabella, as well, one year older than your Bella. We've been struggling to get her into a school. She has autism.
Danielle Rios:	01:30:24	Oh, yeah.
Scott Bicheno:	01:30:25	And we've been struggling to get into the right school for her because she's not so autistic that she can't go to school at all, but she is autistic enough that regular school is a bit too much for her. And we've been trying to get her into this school that's ideal for her. She's into digital art on an iPad.
	01:30:40	And we're trying to get into school and the local council just won't do it. They basically say bureaucratically, she's not special educational needs enough. She falls between the cracks. Anyway, I just found out my wife messaging me while we're doing the pod that she's finally got accepted to this school.
Danielle Rios:	01:30:54	Congratulations.
Scott Bicheno:	01:30:55	So yay.
Iain Morris:	01:30:56	Well done.
Danielle Rios:	01:30:56	Congratulations.
Scott Bicheno:	01:30:57	It's taken us about a year of struggle to get there.

Danielle Rios:	01:30:59	Yeah, it's hard and that matters.
Scott Bicheno:	01:31:01	So there we are. A year and a half. So okay.
Danielle Rios:	01:31:03	Are we in-
Iain Morris:	01:31:03	I've never seen anything like this.
Scott Bicheno:	01:31:05	Iain's just completely mesmerized by this spinning top.
Iain Morris:	01:31:07	Because normally a spinning is just all over at some point. You must have had these ones.
Scott Bicheno:	01:31:09	It will eventually. And then you'll be all disappointed.
Iain Morris:	01:31:11	I don't think so. It's BSS Magic.
Danielle Rios:	01:31:13	It is. It's-
Scott Bicheno:	01:31:14	It's top magic.
Danielle Rios:	01:31:15	... are we in reality or not? They're still spinning. Theirs is wobbling.
Iain Morris:	01:31:18	I think mine's had enough because I didn't do it as well and it's on the edge. Yeah.
Scott Bicheno:	01:31:22	Yeah. Danielle's still going strong. Okay. We'll wrap up then.
Danielle Rios:	01:31:25	There you go.
Scott Bicheno:	01:31:26	I know you're always busy, but hopefully you got time for a little cheeky one at the pub. Let's see.
Danielle Rios:	01:31:30	Yeah. Yeah, but let's do it. Bella can drink legally in this country, so she-
Scott Bicheno:	01:31:34	So she's loving it.
Danielle Rios:	01:31:35	... is outside dying to go to a pub.
Scott Bicheno:	01:31:37	Well, we promise not to corrupt her. Great to see you again as ever.
Danielle Rios:	01:31:40	Yeah, you too. You too. It's super fun.

Scott Bicheno:	01:31:42	And it is great to-
Danielle Rios:	01:31:42	Enjoy the Pappy. Enjoy the tops.
Scott Bicheno:	01:31:44	Yeah, thank you. And thank you very much. You've been very, especially generous, even by your standards. So thank you very much. And that whiskey, that's dangerous, man. We're going to have to treat that with caution.
Danielle Rios:	01:31:52	And this tear thing was delicious.
Scott Bicheno:	01:31:54	It was.
Danielle Rios:	01:31:54	It's very good.
Iain Morris:	01:31:54	That was nice.
Danielle Rios:	01:31:56	I'm going to buy this.
Scott Bicheno:	01:31:57	Yeah. Yeah. Did you get that in the UK?
Danielle Rios:	01:32:00	I think so, yeah.
Scott Bicheno:	01:32:00	Oh, I'll look out for that.
Danielle Rios:	01:32:01	I think Jen helped us. We had this idea and we've been working on it for a couple weeks here to get all these... I'm like, "We need a big cube. We can't have a lame ice." A little bit of production.
Scott Bicheno:	01:32:13	I'm always impressed by your attention to detail.
Danielle Rios:	01:32:18	It has to be perfect.
Scott Bicheno:	01:32:18	Cool. Okay. Well, shout out to Jen. And by the way, little fun fact, Jen's husband is the previous editor of Telecoms.com.
Danielle Rios:	01:32:24	Okay, cool. Yeah. Everyone, we're talking about that today.
Scott Bicheno:	01:32:26	Yeah, yeah, yeah. All right.
Danielle Rios:	01:32:28	Awesome.
Scott Bicheno:	01:32:28	We better wrap up. We've gone well over, but it was-

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Danielle Rios:	01:32:30	Super fun.
Scott Bicheno:	01:32:31	... great fun.
Danielle Rios:	01:32:32	Yeah.
Scott Bicheno:	01:32:32	Thanks a lot, Danielle. And thanks a lot for listening and make sure you join us for the next one.
Danielle Rios:	01:32:35	Awesome.
	01:32:36	Bye.