Alti - **00:00**

You.

Jaco - **00:04**

Hello, and welcome to the Human and Machine podcast. My name is Yaku. I'm sitting with my co host, Lenny. Lenny, how are you? Good, and you, Yaku? Very well, thank you. It's another week has gone by. It feels like it's been two days. We are actually recording this podcast from our new office, the new element eight office. We're really excited to be in this space. Hopefully we can share a little bit more around this over the next few weeks. But we're sitting in our new office still very much in lockdown. And, yeah, another week has gone by. Exciting episode. We are continuing in our series. Well, it's become a series. It wasn't planned as a series.

Lenny - **00:44**

Definitely not.

Jaco - **00:45**

Certainly not planned as a series. But it has become a little bit of a series around industrial IoT. And you would have noticed over the past few episodes that we've been discussing the industrial IoT, or IIoT, which is, of course, a major element of industry 4.0. That, of course, promises to help companies as they proceed on their digital transformation journey. So why it's become a bit of a series? We spoke with arlen Nipple, the co inventor of MQTT. MQTT. Many people will say the darling of Enterprise IoT because of its efficiency, simplicity as a protocol.

Alti - **01:23**

Yeah.

Jaco - **01:24**

And arlen shared the more recent developments on the open source spark plug specification that they've developed under arlen's leadership. Then we spoke with Louis von Bake from Business connection, who's the managing executive there for IoT and OT on some of the IIoT drivers within industrial and manufacturing companies. And certainly a lot of three letter acronyms. Definitely. Hopefully it makes sense to most of our listeners and very exciting. Today we're speaking with altmada toy. I think we'll just refer to him as Alti, who's the co founder and director at Hive IoT. Really excited about the chat with Alti over the next few minutes as well.

Lenny - **02:09**

Yeah, I think it's going to go full circle. So we're going to take all the way from protocols to the challenges that we see. And today we're going to round it off a little bit about devices and the challenges in manufacturing of these devices. We touched a little bit on it last week with Louis about the challenges of devices, the different kind of device level networks like Laura Sigfox, that's available now. All of a sudden, your device needs to comply to all of these different type of applications.

Jaco - **02:37**

BlE is another three letter acronyms all over the place.

Lenny - **02:41**

And I think Altma has some very good stories and guidance around this devices. What does it take to actually make a device in this current environment? How does that landscape look in South Africa especially so, yeah, Alti, well done. Welcome.

Alti - **02:57**

Hi. Thanks. Thanks, guys.

Alti - **02:59**

Yeah, really exciting stuff to be here. Looking forward to it.

Jaco - **03:03**

Fantastic. And we also have some very good news around a very good practical example that you guys have been working on for a bit, which is really just adding immense value to organizations and helping keeping people safe and keeping folks.

Lenny - **03:20**

A little bit of a teaser. We had this discussion in the previous podcast about out of uncertainty, and especially are we sitting with COVID So in uncertainty and challenging times, it's mostly the times where great innovation happens.

Jaco - **03:36**

Absolutely.

Lenny - **03:36**

So definitely have a teaser for you guys.

Jaco - **03:39**

Good example of that in the podcast. But, Alti, you three years that you've been in the, what do we call it? I suppose we can call it the IoT game. You probably call it, you've called it much worse, many different. But it's been three years that you've been on this journey. How did it start for you?

Alti - **03:54**

Absolutely. So we can probably call it my IoT journey or our IoT journey. Well, it started, obviously, my background in the industrial space, and I think from there, when we saw the impact that IoT will have in that industrial space, I met a few other gentlemen and we started the team as hive IoT.

Alti - **04:19**

Right.

Alti - **04:20**

And we decided to at first look at different solutions out there, the networks. At that stage, Sickfox was just starting out in South Africa. We became a channel partner with them and we decided to start hive IoT.

Alti - **04:37**

Right.

Alti - **04:37**

And especially my co partners, michael and the guys, they still have a system integration company, and we saw the impact it'll make in the system integration game.

Alti - **04:48**

Right?

Alti - **04:49**

And that's when we started hive IoT. And I think what happened from the device side is when we started, there were so little devices available that we saw that as a nation, we decided to look at manufacturing devices.

Alti - **05:04**

Right?

Alti - **05:04**

So, yeah, that's how we started the.

Jaco - **05:06**

Company on the advent of Sigfox, cheap networks, the promise of cheap devices. On the advent of all of that, you saw the opportunity, and three years ago, you started this hive IoT journey. And I can imagine it's probably over the last three years, it has changed.

Alti - **05:26**

And grown immensely, or maybe not absolutely grown, changed immensely. I think when we started, we had a whiteboard of about 40 or so different devices and opportunities that were looking at on a daily basis.

Alti - **05:45**

Right.

Alti - **05:47**

And it was super exciting. When we started, we wanted to send drones all over the place and so forth. Right. It's still there.

Alti - **05:57**

Right.

Alti - **05:57**

Those opportunities are there, but I think from a startup point of view, we had to sit back and say, we have to survive as a company, so where do we go forward and what do we focus on? So we took two or three use cases and we focused on that to start with.

Alti - **06:12**

Right.

Alti - **06:13**

But it took us about a year to get to that point. So, yeah, absolutely. It's been changing. I think we can go into some details on the device as we go forward, but it has changed a lot. I think the space as well has changed quite a bit. Right, since it started.

Jaco - **06:30**

Yeah, definitely. And we've spoken the past few episodes again, we've spoken about platforms, we've spoken about communication protocols, we've spoken about some of the drivers behind some of these projects and how to get them off the ground and where the budgets typically come from. We haven't really touched on the devices. And if you think about especially something like scaling in these projects, the devices is obviously a massive part of that. And it sounds like you've had not only a little bit of trial and error, but you've also had some steep learning curves with regards to what that actually means practically.

Alti - **07:07**

Absolutely. I think when we started, were looking at, in some cases, a one device fits all scenario quite a few times. Super device. A super device, right. It's got to be fast, it's got to be able to roll out quickly, it's got to be good, the quality, it's got to cheap, it's got to tick all the boxes, right? And I think in the three years, yes, there's scenarios where we have a device like that where you can add some inputs and measure temperature and so forth, but when you start looking at bespoke solutions, right, it's a tailor made device, normally for your end customer, depending on the solution, obviously. But I think a lot of these times we've seen that the one size fits all device, it's not always the most practical thing out there.

Alti - **08:00**

Right?

Lenny - **08:01**

Yeah. If we think about it, if you talk about one device fit all scenarios, potentially that means this device must be able to measure whatever you need to measure. Some of these devices also needs to have locations, so you need to put on some GPS device, you need to also enable the accelerometer for that, for vibrations, et cetera. So all of a sudden you're adding on additional cost, and we spoke about cost and scalability. Now you've got the super device with ten things that can measure, but you're only going to measure potentially one or two things at a particular client, and now all of a sudden, the cost and the scaling goes a little bit.

Alti - **08:39**

Out of the window and you forgot the battery, it needs to last ten years.

Alti - **08:43**

Right.

Lenny - **08:44**

That's another important point, is the battery, right?

Alti - **08:47**

Only ten years. Only ten years.

Lenny - **08:49**

So, yeah, adding all of these things, unnecessary things, GPS, I mean, a GPS little module will drain battery so quickly, it's scary. And a battery in a fridge, Alti, you can talk about that as well. Hey.

Alti - **09:03**

Yes. Obviously, when you start looking at different temperatures, it has effective batteries. So we learned the hard way that you need specific batteries for the cold temperatures, especially fridges. Not fridges, but more freezers.

Alti - **09:19**

Right.

Alti - **09:19**

When you start going to those sub zero temperatures.

Alti - **09:22**

Right.

Alti - **09:23**

So there's a lot of aspects, and I think what we've learned through the years is that, first and foremost, when you sit down with a customer and you ask them what do they want to do? And I think it's exciting for customers. So firstly, they want to measure everything, right. We want to put a device on literally anything I can so that we can get that data in, right? But at the end of day, the client, when the customer wants the solution and the data needs to make sense for them, right. You want to get the value from the data. What's the why? Why are you tackling the solution?

Alti - **09:57**

Right.

Alti - **09:58**

What would the data or the sense on each and every asset point that you're measuring, what would that bring you in the pocket? What's that return for the customer? I think at the end of day, we've now become so set on that when we sit in front of a customer, we start with requirements.

Alti - **10:13**

Right?

Alti - **10:14**

What do you want to do? Why are we measuring this? How long are we measuring this? Where is this going? Do we need gps? How long does the gps last?

Alti - **10:21**

Right.

Alti - **10:22**

Do you want to measure it in the stockyard? Is the temperatures involved?

Alti - **10:25**

Right.

Alti - **10:25**

It's just an endless list. And we try and find as many questions to ask the customer to make sure that at the end of the day, he gets his return value on that IoT solution.

Jaco - **10:36**

Yeah, 100%. Somebody mentioned this week, I can't remember who it was. In conversation, somebody mentioned data lake. Let's throw everything we can into the data lake. Every measure, every device, everything in our value chain or supply chain, let's throw it in the data lake. And this person mentioned that they actually, internally, they have a term for it that they call it a data swamp, because very quickly you throw everything in there but becomes muddled, it becomes stinky. After a while, because there's no context to the data, you're not too sure what to measure, where, what the impact of things are. And I think that data lake can very quickly become a data swamp.

Alti - **11:14**

Yeah, look, I mean, at the end of day, your solution is only as good as the data you get in.

Alti - **11:19**

Right?

Alti - **11:20**

And the device at the end of day is just an enabler for that.

Alti - **11:23**

Right?

Alti - **11:24**

It enables the same with your network.

Alti - **11:26**

Right.

Alti - **11:27**

And that's where we come in and we look at what is the best solution for your customer at the end of day. Is it a bespoke solution? Is it something we have to develop? Is there something off the shelf that we can do quickly? At the end of the day, the date that you get is only as good as the data you measure out.

Lenny - **11:43**

Yeah, Aussie, we spoke a little bit about device level networks. We spoke a little bit about Sigfox. We also mentioned Laura as a network. It feels for me that there's no real standard on this. So now you're talking about all fit one shop device. Now all of a sudden, we're not talking about measuring stuff like temperatures and GPS and that now all of a sudden, you also need to think about the device level communication. Do you fit this thing out with the Laura chip? Do you fit it out with the Sigfox module? What do you see? Is there a drive to be standard, or is there a multitude of these networks now available? And again, you now need to cater for each and every one of those networks. Obviously, that influenced device manufacturing, et cetera. So what's your experience?

Lenny - **12:34**

How do you guys overcome this? Because I do feel that it doesn't feel that there's a very good defined standard for device communications as yet in this space.

Alti - **12:45**

I think you're right. We obviously look at it from an experience point of view, where it really, once again, depends on the solution the client wants.

Alti - **12:54**

Right.

Alti - **12:54**

So you have your low, long range, wide area networks.

Alti - **13:00**

Right?

Alti - **13:00**

Which at the end of the day, if you look at Loran sick Fox, your cost on these devices, the communication cost on that is low. And also they're obviously lower in battery than you'd use with GSM. So it really depends on that solution. So I don't think at the end of the day, there's a standard connectivity layer for us. And I think you'd also find that for different IoT companies, they standardize on different network protocols.

Alti - **13:27**

Right?

Alti - **13:27**

Some people don't even use any of those. They have their own proprietary stuff they use.

Alti - **13:31**

Right.

Alti - **13:31**

They might set up their own network based on whatever protocol they have, which is also exciting.

Alti - **13:38**

Right.

Alti - **13:38**

Because this paves the way for new communication layers and quicker, faster and all of that.

Alti - **13:44**

Right.

Alti - **13:45**

But it could make it a messy situation at the end of the day.

Alti - **13:50**

Right.

Alti - **13:54**

And once again, it depends. And that's why we so adamant when we start talking to a customer to.

Lenny - **14:00**

Look at that use case.

Alti - **14:01**

Right.

Alti - **14:01**

And what's requirements? Because if it's a device that needs to update once a day, but you need the battery to last years, then something like Sickfox or Lora is ideal for that.

Alti - **14:12**

Right.

Alti - **14:13**

If it's something that needs more throughput on the data, then we start looking at GSM networks and thingstream and networks like that.

Alti - **14:21**

Right.

Alti - **14:22**

So yes, I don't see that there's a specific standard. If you want to call it. We use it fit for purpose at the moment.

Alti - **14:29**

Right.

Lenny - **14:30**

Cool. And what does that mean for device manufacturing? I mean, you guys manufacture, you design, you do all it from the ground up.

Jaco - **14:38**

Maybe there's a question that I have. Why do you manufacture? So I'll give you an example. So we've been using, for some reason we keep on talking about fridges, industrial fridges. It's always the cold chain example that we use. A couple of things that come to mind is, right. When will we see these devices manufactured with whatever the capability around comms and integration with networks? When we will see these devices manufactured already stock out of the factory with that capability in. And does the multitude of what is available make that a little bit difficult? Number one. Number two, retrofitting, I would imagine, is something that is what we're currently looking at doing. Is that practical? Is it easy? Is it affordable? And if that's not an option, we have to manufacture. Why do we have to manufacture?

Jaco - **15:28**

What does that entire sort of landscape look like around devices and fitting? And maybe it's a bit of a big question. Alti.

Alti - **15:37**

Sure. When you say manufacture, you mean local. Why do we manufacture local?

Alti - **15:42**

In that sense?

Jaco - **15:43**

I think the fact that you're manufacturing locally is fantastic, but you're obviously manufacturing because of a need that you have around a specific requirement.

Alti - **15:51**

Absolutely. Right.

Alti - **15:52**

So I think that comes back to the scalability question.

Alti - **15:55**

Right.

Alti - **15:56**

So there's a lot of people that can take Arduino and a Tupperware box and you can go do a proof of concept, right?

Jaco - **16:06**

Have you seen any of those tupperware boxes? That's an Iot box.

Alti - **16:10**

Might have, might have homegrown solution. Yeah, that MVP.

Alti - **16:17**

Right?

Alti - **16:20**

And I think the trick in there, and that's obviously something we learned when we started. And I think when you start looking at this as a startup, right, it's not an easy thing to scale. You need money to do that, obviously. Right? There's different ways to do this. You can do this with a manufacturing line, you can do this. And we've gone through a few of these and we've partnered up with some guys, local guys of Africa that we do manufacturing with and so forth. Right? And we've tried all the different routes we've imported and so forth. And it all goes back to the scalability of the device that you're doing.

Alti - **17:02**

Right?

Alti - **17:02**

Is it a one soft thing? Will you have ten or will you have 100 of these devices? Is it something that you're rolling out for the mass market? Right, you're talking about a fridge. How many fridges are we looking at? Like 1000. Then you have to be able to scale this.

Alti - **17:16**

Right?

Alti - **17:16**

And there's a lot of factors in that, as you said, lenny. Now let's say are we doing a fridge for just a long range, wide area, low power type of network, or are we doing a fridge device for high throughput? Right, so now you need to start looking at the different modules, you need to start looking at the electronics, you need to start looking at the enclosure, then you need to start looking at the certifications on all of these devices. Right, which at the end of the day, it adds up to the device cost as well.

Lenny - **17:46**

Right, sorry, that's something I think that people forget is it's not something like you slap on and all of a sudden you've got this device. I mean, to be allowed to be certified on the sick Fox network, your device must be certified. It's a massive cost to get that little badge on your device to say, hey, I am now a sick Fox certified device. It's a massive cost. So yes, it all goes back into that scalability factor. How many of you are you making? You have to work that cost in, and I think that's probably one of the drivers why a device doesn't cost you just a couple of hundred grand anymore. It's not just practical at this point.

Alti - **18:25**

Yeah. It boils down to what components do you have in the device? Right. Some components are more expensive than others, obviously.

Alti - **18:34**

Right.

Alti - **18:35**

And it's a volume scam at the end of the day.

Alti - **18:37**

Right.

Alti - **18:37**

Obviously when you start looking at 10,000 units, the price comes down a lot. It really depends on that solution at the end of day. Right? Is it a volume based solution where we're looking at a specific price level where we want to push in 20 or 30 or 50,000 units. So it does. There's a huge impact between what you have to certify it and the certifications on that.

Alti - **19:05**

Right.

Jaco - **19:06**

Yeah, I didn't realize about the certifications. Obviously, every single device has to be certified, and that catalog is obviously growing at the moment. That catalog of available sort of devices, pre built devices, approved devices. I would imagine over the last few years that catalog has grown, and there's certainly a lot more available today than what there was three years ago.

Alti - **19:26**

Absolutely. I mean, leaps and bounds.

Alti - **19:29**

Right.

Alti - **19:29**

Especially in the sick Fox environment. There's a lot of certified devices in South Africa as well. There's quite a few companies that's manufacturing locally. So, yes, that catalog is growing in all the different network components as well, which is also exciting.

Alti - **19:46**

Right.

Alti - **19:46**

So you might sometimes have a customer that wants a specific device and to get to the market quickly or to ease the customers pain quickly, it can be an off the shelf device.

Alti - **19:56**

Right.

Alti - **19:57**

And I think from a starter point of view, it's also something we learned, and something I can put out there is that you don't have to manufacture each and every device. And we learned that the hard way.

Alti - **20:07**

Right.

Alti - **20:08**

I mean, if it's off the shelf and you can buy and you can integrate it, assist your customer and help them ease their pains as quickly as possible. When we started, we wanted to change the world with different devices, and we definitely wanted to manufacture as many devices as possible, and it's not always practical.

Jaco - **20:27**

Yeah. And do you find, when you do these, do you find that it's, what is it called? Is it called a proof of concept? Proof of technology?

Alti - **20:36**

Yeah, proof of concept. A PoC most of the times.

Alti - **20:39**

Right.

Alti - **20:39**

So I think that comes down to box of wires, unless we have an off the shelf product, where nowadays we have one or two products we can just modify slightly to get the PoC running, unless it's a total major new environment that we've never dealt with.

Alti - **20:56**

Right.

Alti - **20:56**

And we have to build a device from scratch.

Lenny - **21:02**

Alti, it seems to me that three years ago, you were a little bit ahead of the curve. Do you feel that only after maybe the first year or the second year that South Africa has caught up into that wave, it feels that you saw this need very early in South Africa's journey. I know South Africa was earmarked while Africa in general was earmarked as one of the biggest opportunities for IoT. Do you feel we're ready? Do you feel that it's now a time that the device explosion is going to happen, that we've been waiting for.

Alti - **21:38**

The IoT adoption. You can look at it. I think in certain instances it's been slow. In other instances it's been booming. We've definitely seen an up curve in Iot solutions.

Alti - **21:51**

Right.

Alti - **21:52**

I think that first year or two was a lot of education that was happening from us. And I think sometimes even internally. Right. We were learning a lot as we go, and were almost pioneering in certain instances.

Alti - **22:04**

Right.

Alti - **22:05**

And I think the market is ready. I think there's still a lot of education going along. And I think there's also sometimes a lot of misconceptions on IoT. A lot of mean, there's a lot of, as you said, three letter acronyms out there.

Alti - **22:19**

Right.

Alti - **22:19**

And there's a lot of. IoT is actually such a broad thing.

Alti - **22:26**

Right.

Alti - **22:26**

If you start looking at IoT, your apple Watch you might wear as an to, I think from where hive is at the moment, as the companies to make it customer centric in that sense.

Alti - **22:41**

Right.

Alti - **22:42**

But I think the markets are ready. I think a lot of your executives, high level executives, now know what IoT is and how they can actually value from it.

Alti - **22:52**

Right.

Alti - **22:53**

Add value to the company by using IoT. And I think a lot of companies are ready to actually go into those POC phases. Right. And the other thing is that doing a proper POC is also not always the easiest thing.

Alti - **23:08**

Right.

Alti - **23:08**

You have to have on both sides, your customer side and your integrator side. You've got to have your champions that look after the POC and make sure from the get go to put on those facts on the table, what do we want to achieve with that POC? What is it? We want to get value out of the whole IoT solution at the end of the day.

Jaco - **23:31**

Yeah, for sure. So talking about solutions, what are some of the practical? Maybe now is the time to do that. I'd love to chat about Safetrace. Safetrace is something that you have developed with, I think you partnered with guru business solutions. We've heard a lot of it's been in the news. And obviously, again, as Lenny mentioned in the beginning, obviously faced with the Covid-19 crisis, not only in South Africa but globally, leaders are looking to understand how they can have basically one business imperative at the moment, which is maintaining operations and doing it safely. So on the back of that safetrace, super exciting for you guys. Super exciting for South Africa. Tell us a little bit more about that.

Alti - **24:23**

Yeah, sure. So I think when we started lockdown, so one of my Iot babies is a sick fox button that we designed and developed from ground up, which is a customer, what's his name button. Right, where you can basically smiley faces.

Alti - **24:47**

That you can press.

Jaco - **24:49**

What are some of the applications of that? What would you use that, for example?

Alti - **24:53**

So it was based on why we use sick fox, low battery power. You can stick the button on a restaurant table and you can get immediate, real time feedback from a customer. So there's customer feedback.

Alti - **25:04**

Right.

Alti - **25:04**

Awesome. And we've been asked to do this button quite a few times. So the market wanted a button like that. Obviously, when we started hive IoT, and especially with our industrial background button with three smiley faces was probably not the first thing we had in mind, right.

Jaco - **25:20**

Was probably the most practical.

Alti - **25:23**

So it was definitely market driven. And we had quite a few companies that ask us for this button. So went ahead and made this button. And then Covid-19 hit us. And I woke up probably the second or third day in lockdown, drained in sweat. And I came to the realization that our button is now pretty much dead because no one would want touch that button anymore. It is now gone.

Alti - **25:50**

Right.

Alti - **25:50**

So in that sense, we looked at how can we survive and how can we help other companies in this Covid-19 epidemic side.

Alti - **26:02**

Right.

Alti - **26:02**

And Guru came to us, John came to us with the concept of safe trace. And at that stage it had a different name and it was more for a broader aspect where we would try and get it to as many people as possible. It needed to be a solution to be able to assist with contact tracing, but not be able to track as with a cell phone.

Alti - **26:27**

Right.

Alti - **26:28**

Because I think everyone went for the cell phone application route. And being in South Africa, not everyone is kitted with the latest and greatest cell phone. And obviously there's the know, we don't want to be gps tracked and so forth. And then you have your user adoption. How many people actually install an app, right? And why do they need to install the app? What would they benefit from an app like that? So looking at that, we started the journey and looked at how can we make a solution where people have a device on them which is low in power, could last a long time. We don't want to charge the devices because if people forget to charge the device, we'd lose the contact. And we started looking at to develop the solution in lockdown.

Alti - **27:16**

Right.

Alti - **27:16**

So we did everything remotely between the team and yuan and his concept.

Jaco - **27:24**

Everything remotely. What does that typically look know from our experience? The ability to sit together as a team and brainstorm and work on know, that's obviously quite an adaption doing that remotely.

Alti - **27:38**

It was.

Alti - **27:39**

Right.

Alti - **27:39**

I mean, were used to brainstorming on whiteboards and looking at to put a solution together. We were used to being a team in an office, and when we did these brainstorming sessions would take an hour, two or three of our time, and it was a lot, I would say probably a lot easier to do it in office. And I think, although in that sense, from a tech startup side, were used to working remotely in a certain sense. But brainstorming, we normally like to be in a room with each other and bounce ideas off each other.

Alti - **28:19**

Right?

Jaco - **28:20**

Yeah.

Alti - **28:20**

So that started becoming a daily zoom, Skype teams, whatever your flavor, whatever the.

Jaco - **28:27**

Flavor of tool for the day is.

Alti - **28:29**

And WhatsApp and so forth.

Alti - **28:31**

Right.

Alti - **28:31**

So it was difficult, I think maybe at first, but I think it actually also changed the way we worked, in a sense. It actually allowed for us to be more agile because now we didn't have to actually drive to the office and do everything there.

Alti - **28:46**

Right.

Alti - **28:46**

We could just bounce ideas off each other through a Zoom session. Although I think in certain days we do like that human interaction between us.

Alti - **28:56**

Right.

Alti - **28:58**

We do need that.

Jaco - **28:59**

Yeah, for sure. And I think everybody is feeling the Zoom fatigue at the moment.

Alti - **29:04**

Zoom out, definitely.

Jaco - **29:07**

All right, so obviously you're under pressure because time was obviously of the essence in this scenario. Coming up with a solution that will obviously not only help operational efficiency, but also save lives. Obviously, all of this on the backdrop of this time pressure in putting a solution together. That must have been some tight working hours and a little bit of pressure to get that done and get that going and into the market and into a PoC so quickly.

Alti - **29:37**

Absolutely. I mean, hats off to one of our other directors, Matthew Keebe. I mean, he's been working day and night on, especially software and so forth.

Alti - **29:48**

Right.

Alti - **29:49**

So what we decided on was to not manufacture locally because we needed to scale and scale quickly. So we needed something off the shelf at that stage, which we decided to import the devices from overseas. We looked around for partners, phoned around, shattered email.

Lenny - **30:07**

So these devices were already available.

Alti - **30:10**

Ready, available.

Alti - **30:11**

Right.

Alti - **30:11**

But they were doing a different, obviously.

Lenny - **30:14**

Not specifically for Covid. It was just the technology that was available that you guys saw the gap for to utilize as a covert tracking device.

Alti - **30:23**

Exactly. So we took a ble tag. So normally this ble Bluetooth, low energy tag would be fitted onto an asset.

Alti - **30:34**

Right.

Alti - **30:35**

And then somewhere along the line, you'd have either a mobile device via a cell phone or a gateway that would pick up this Bluetooth low energy device.

Alti - **30:44**

Right.

Alti - **30:44**

So normally you might fit that on any asset. Let's say, for instance, a pallet, if you want to track the pallet.

Alti - **30:52**

Right.

Lenny - **30:52**

I know they do for shipping containers as well.

Alti - **30:55**

When they.

Lenny - **30:55**

Exactly put it on the ship over the seas, they can actually track and see where that container is at any point in time.

Alti - **31:01**

Yeah.

Alti - **31:03**

The reason we chose Bluetooth low energy was it's a technology that's known. People know Bluetooth. It's tried and tested. It has its limitations in certain areas. But we decided that from a battery life, because that was probably one of the most important things. We needed a battery life that would last us months and if possible, a year at least.

Alti - **31:26**

Right.

Alti - **31:26**

Per device. And we found a partner overseas and they had these devices. But obviously the purpose for these devices were to do asset tracking. So these devices would send out advertisements, and we had to then go and look at how these devices work in the field at the moment. And we had to change the firmware on these devices so it fits our purpose.

Jaco - **31:51**

Yeah. So a couple of requirements in this case. So obviously, the system, if you can call it that, or the platform or whatever, you had to be simple and effective without any of the complexity that, to your point, that you typically have with apps and working with apps, let alone the fact that most people wouldn't necessarily have a smartphone.

Lenny - **32:11**

Well, just forget my phone at home.

Jaco - **32:13**

Forget my phone at home.

Alti - **32:14**

Absolutely.

Jaco - **32:14**

So the technology had to be familiar to the average kind of person, had to be easy for them to understand and not even worry about how it works. And then the interesting one that you mentioned is obviously the requirements around Papia, the poppy act, or Popia, as it's known, that's very often tracking people's movement and whereabouts. That's obviously a consideration just in terms of the Protection of Personal Information Act. I think that's something probably folks don't even think about as well. So it's quite a few requirements to try and encapsulate into one solution.

Alti - **32:46**

Yeah, absolutely. Probably the two biggest things were make sure the device will last four months.

Alti - **32:53**

Right.

Alti - **32:54**

Shouldn't be rechargeable. It just needs to work. And the other thing was user information. Right. We didn't want to track people when they went home after work, so we decided to make this for large enterprises. And from there, Safetrace was basically born. And we started chiseling away at the different requirements as we moved along.

Alti - **33:14**

Right.

Jaco - **33:15**

Fantastic. And safetrace today, POC was done. Sorry, at Cock Ingram, and that is now moved beyond a POC. They're actually rolling out, it's implemented and running.

Alti - **33:30**

Absolutely. So we did a proof of concept, and were very lucky that Adcock were willing to do the POC with us. And they were understandable. I mean, this is a new technology. Right. It's something that was born in an agile environment. Right. It was rough around the ages when we started, and then we obviously started to just refine it as we moved along.

Alti - **33:54**

Right.

Alti - **33:55**

And they were willing to work with us for first two, three weeks just to get some gateways in there, make sure that cards upload and so forth.

Alti - **34:03**

Right.

Alti - **34:03**

And after that, they were happy with the PoC, and we've now moved beyond that where we're doing a full rollout for the company.

Lenny - **34:11**

All right, so just a little bit practically. So you talked about gateways. We talked about this little Bluetooth wearable device. So safetrace, pretty much. You slap a little device on your wrist, like a watch or a smartphone or Apple Watch, like we mentioned. So you slap this little Bluetooth device on your wrist and you just rock up at home or at work? Pretty much. And it will now track, depending on the gateways in your facility, it will know where you were and as well as what other users have you been in contact with in that same facility. And that's pretty much how that spider web of interaction then gets traced. So if someone did have the unfortunate event of contracting Covid, you can trace pretty much everybody that's been in contact with that person throughout the entire vicinity.

Alti - **34:58**

Yeah. So it's not a risk. Well, they are wearables in that sense. We've opted for a card factor. People are used to their cards. Okay, access cards. It looks almost identical. A little bit thicker, because we need to have a big battery in there.

Alti - **35:16**

Right.

Alti - **35:17**

But the device can hook onto a lanyard or fit into your pocket, very compact in size. Same as your exact same size as your access card. Just a bit thicker. And it's high duty, like it's ip 67, so it's waterproof and all of that.

Alti - **35:34**

Right.

Alti - **35:34**

So for your more industrial environments, that's ideal.

Alti - **35:38**

Right.

Alti - **35:38**

Which is why we chose the card.

Lenny - **35:40**

And I think that's very important. Point is, when we talk about industrial, we're talking with communication protocols. In an industrial application, you might have scenarios where this thing must be intrinsically safe. So you guys had to go testing for that to make sure that there's no issues around that?

Alti - **36:01**

We didn't. We decided not to. From a time perspective, and so forth. It was just so busy, I think, to get this out to as many people as possible.

Alti - **36:11**

Right.

Alti - **36:13**

Time was the essence.

Alti - **36:14**

Right.

Alti - **36:15**

So it is something that we have opened up to our customers if they need it. There was unfortunately one or two sites that they need to kind of hand in the cars before they go underground and things like that.

Alti - **36:26**

Right.

Alti - **36:26**

So there is areas which they cannot use at the moment because of the intrinsic safe requirement. But I think we had to draw the line somewhere from a development point of view and said, listen, how far can we get this out and help as many people as possible?

Alti - **36:45**

Right.

Alti - **36:46**

And if it is limited because of whatever the reason, then that so be it.

Alti - **36:50**

Right?

Jaco - **36:51**

Absolutely. I mean, the key objective here is to obviously track movements and track infections and save lives. That's ultimately why this was born.

Alti - **37:03**

Absolutely.

Jaco - **37:04**

Yeah. I love about this story, Alti. Sorry, Tindra. What I love about the story is we often speak about ecosystem and the value of partnerships and innovation and co creating things that add value to business and society and just make life better. What I love about this story is the ecosystem that was involved here. You've obviously mentioned Johan. You guys were involved. I think the AM group were involved in terms of trying to figure something out from spare parts before selecting a device and all of those things. It's just the number of people involved in making this happen and making it happen quickly and community coming together to create something that is digitally innovative in South Africa and saving lives. That's what I love most about this story.

Alti - **37:52**

Absolutely.

Alti - **37:53**

Right. And I think you'll see that. And it's something that we've also learned through the years in this fast paced Iot space that we in. Right. There's so many aspects to a solution. At the end of the day, it's a lot of these times we collaborate with different companies, right. And a company might have a platform and they want a device.

Alti - **38:16**

Right?

Alti - **38:16**

And they'll come to us and say, we want to do this on the device, and it's a collaboration between ourselves and that platform company to get to the customer and give him the best solution.

Alti - **38:25**

Right.

Alti - **38:25**

And we're seeing that all more and more happening. Right. A solution is not, sometimes not even a device fits all, but not even a company fits all. Right? It might be a collaboration between the customer, two and three other companies that one looks after the network, one, it looks after devices, one looks after the platform.

Jaco - **38:43**

And all of these, I love that a device is not a solution, it's an enabler.

Alti - **38:47**

It's just an enabler. At the end of the day, right? You've got the three pillars enabler.

Lenny - **38:53**

So based on that Alti on Safetrace, we spoke about the access card. You log, you get who's been in contact. Did you guys also provide the platform for this where all the data is now getting analyzed? And to do that kind of genealogy tracing of the guys movement, did you guys also build this platform for this?

Alti - **39:12**

We have, yes, we have. So as I said, late nights. So we developed the firmware for the devices, right? We developed the firmware for the gateways. And the crucial thing there was to make sure that we have the requirement of what is contact.

Alti - **39:31**

Right?

Alti - **39:31**

So what is contact? And it differs between companies as well. And it has also changed from the World Health Organization. But you're basically looking at one and a half meter between two people and you're looking at anything between a five and a 15 minutes cycle that two people are close to each other in a confined space, right? And then we log that as, let's say we log that as contact. So for instance, two people in a room and they're there for longer than 15 minutes. Out of that 15 minutes for a consecutive five, every five minutes we look at a ping and we log that as a contact, right. And from there we then log that into a Gateway.

Alti - **40:14**

So a user needs to walk past the gateway stop for 5 seconds, his card will flash, data will be uploaded to the gateway and that then goes into our cloud platform, which is another thing that we developed and our first mvp for that was literally just to get the data in, make sure that we can cross reference users. Click a trace button and you get a list of users that person has been in contact with.

Alti - **40:37**

Right.

Jaco - **40:38**

Fantastic, amazing, lovely.

Lenny - **40:42**

Lockdown happened in, what was it, March?

Alti - **40:44**

Sure.

Lenny - **40:44**

It's been so long, I can't remember the date. It's end of March.

Jaco - **40:47**

What are we.

Lenny - **40:50**

I don't know, I can't remember. It's been so long. But just the fact that with all your experience in agile development, with all your research in the past three years about devices, what will work for what kind of solution, all of that experience accumulating now to seeing an opportunity in less than 100 days have a full blown solution. And I think that's kudos and credibility to you guys'knowledge in this space.

Jaco - **41:16**

Born from an opportunity.

Lenny - **41:18**

Born from an opportunity and realize the need and the quickness of agile development to actually get something to the customer to still be available for the guys to use in the current lockdown situation.

Jaco - **41:30**

And Ulti, like with most startups, you've probably over the few years, you've questioned some of the sort of why and not knowing that it was all sort of aligned around helping and saving lives in 2020, who would have known?

Alti - **41:45**

Absolutely. It just came together. Everything just came together. Once again, couldn't have done it without the team. Right. And also the team has grown throughout the last three years. And I think it was that when normally we would probably try to manufacture it ourselves and there wasn't time for that.

Alti - **42:05**

Right.

Alti - **42:05**

We needed to get devices here and thousands.

Alti - **42:07**

Right.

Alti - **42:09**

And I think sitting back and saying, let's do this, how can we tackle the quickest way? Absolutely. The team was, I mean, they've just shown all of us who have shown what we can do if we put our minds to it in that short time and space.

Alti - **42:25**

Right.

Alti - **42:26**

We started with a solution basically at the end of April.

Alti - **42:29**

Right.

Alti - **42:29**

So you're right, it was like in literally a few months. I think normally this would have taken us probably half a year, maybe longer. So, yeah, it's been a wild ride.

Jaco - **42:39**

Yeah. And I suppose something else that you mentioned that is really important is that we often look at going to market with something, typically under normal conditions, what that looks like. When is it perfect? Should we be first? Doesn't matter if we first, we must just be the best. And I think the circumstances around this one was totally different and born out of need around what was happening in the world around us.

Alti - **43:02**

Yeah, absolutely. I think perfection, especially everyone being engineers, we battled with that for the first year. Right. We couldn't take a thing to a customer in a Tupperware box.

Alti - **43:17**

Right.

Alti - **43:17**

It would always need to be the bells and whistles. And we've learned through the years that the hardware is enabler and it doesn't always have to look xy perfect C in that sense.

Alti - **43:28**

Right.

Alti - **43:29**

We got to have to just take that device, make it work, get the data in and show the value to the customer at the end of day. Right. You can fine tune that and make it into that final Rollsroyce solution as you go along.

Alti - **43:42**

Right?

Alti - **43:43**

Yeah. So perfectionist in the first year, probably been a lot of our downfall and some of our solutions.

Alti - **43:48**

Right?

Lenny - **43:49**

Yeah, no, for sure. Alti, we spoke about Safetrace. Any other.

Jaco - **43:55**

What's next?

Lenny - **43:55**

What's next?

Jaco - **43:56**

You've proven some things at very large scale now, effectively. Is there anything that you can share that's on the horizon? I'm sure this has opened a few technology and solution doors for you.

Alti - **44:08**

Yeah, we are. Unfortunately, I can't say much at the moment.

Jaco - **44:18**

We may read something in the news in a few weeks time.

Alti - **44:21**

Yeah, we are busy in the retail space with something exciting at the moment, which we're chiseling away on as well to get that I think we passed MVP. We're going into the next stage of that.

Alti - **44:33**

Right?

Alti - **44:34**

So yes, there's some exciting stuff that we're busy with, which is we always try to get that disruption word, try and disrupt and get to solutions and things quicker and faster.

Alti - **44:46**

Right.

Alti - **44:46**

So these are quite a few things that's interesting, that's on the horizon. But as I said, unfortunately, there's certain aspects I can't mention at the moment.

Jaco - **44:56**

Well, I'm sure it's with good reason that you can't mention it, which means that it's really in good progress in that final stages of delivering value. So, yeah, all the best with that, man. Hope it goes well. And I'm sure it's just not the last that we're going to hear of new, innovative stuff that you guys are doing.

Alti - **45:13**

Awesome, thanks.

Jaco - **45:14**

And that was another South Africanism, by the way. Exe perfecti.

Lenny - **45:18**

We have a few of those.

Alti - **45:22**

After I said, I was like, oh, yes, there we go.

Jaco - **45:24**

We have a few international listeners and probably three. We have a few international listeners and every now and then we have to just highlight wherever South Africanism, I think Xi perfection is a South Africanism.

Lenny - **45:38**

Just to translate that, it means it must be 100% correct and perfect.

Alti - **45:43**

Must be perfection.

Jaco - **45:46**

Yeah. Alti, I love the story, I love the application. I think for you and the team, it definitely sounds like you've had some of your best learning. You definitely have done some of your best work, and it sounds like it's been some of your best teamwork as well. So well done to you and the team and everybody involved with the solution. And thank you for demystifying and explaining a little bit more about what it looks like on a device level. Sure. Probably one of the most critical parts of the bigger overall picture, but often not the most understood. So that was really valuable for.