Podcast Transcript – Interoperability and Testing Essential to eSIM Ecosystem's Success

[00:00:12] **Ankit:** Hello everyone and welcome back to The Counterpoint Podcast. I'm your host Ankit Malhotra, and today we are going to talk about the eSIM landscape. Today we have to pick a topic that is usually not talked about. And that part, although very important, the eSIM testing to talk more about that, we have a special guest, Marcus, director of Product Management and Business Development at Comprion. Hello Marcus. How are you today?

[00:00:37] **Marcus:** Yeah, hi, Ankit. I'm very good today. Thanks a lot for having me in the podcast and I hope you're fine too.

[00:00:44] **Ankit:** Super glad to have you on the show, Marcus. So before we dive into today's discussion, can you give us a quick intro about yourself and Comprion?

[00:00:52] **Marcus:** Sure, so Comprion is a Germany-based company. We are specialized in tools and test solutions for the mobile industry, for mobile devices. So on the one hand side, we care about the mobile communication interface which is about mobile device testing and the SIM card and the eSIM and everything related to SIM and eSIM, but in particular also to the combination of eSIM and how it interferes with the mobile communication.

On the other hand, we look after the NFC interface when it's used for payment transactions, for example, but also for the connected cars and the contactless keys. So that's what Comprion is doing. We are heavily engaged in many of the standardization bodies like GSMA, 3GPP, and all of them. I, myself, I am, yeah, covering product management, business development, but also our engagement in these standardization organizations.

I'm with Comprion for two and a half years now, and before I was working for the GSMA, so the Trade Association of the Motor Industry, and also to some extent engaging in eSIM.

[00:02:06] **Ankit:** So, you know, there are a lot of device categories like smartphones, smart watches, connected cars, and eSIM is a component that is present in almost every consumer category and IoT categories as well.

And if it is not present, it'll be present in those categories by the end of this decade. So when did Comprion start with eSIM testing.

[00:02:25] **Marcus:** Yeah, we have a quite long history in this. So the company is working for 20 years now, or for more than 20 years now. And yes, before eSIM came along, we were dealing with as the SIM technologies and providing test solutions, monitoring solutions. For SIM cards we provide a lot of test SIM cards for many companies who want to test the device and for this needs to pluck a test them into the device. So have a quite long track record in that area. And since the start of eSIM, we of course also address all the eSIM aspects as an evolution from the SIM card.

[00:03:05] **Ankit:** So let's say someone who is not from the eSIM industry and want to test an eSIM, what are the components and the elements that you test and how, if you could explain the technical process to our listeners, that would be great.

[00:03:18] **Marcus:** Yeah, so actually we address and we test that need to test all the components of an end-to-end eSIM Architecture means that is the eSIM or UICC, just a different name itself. So the chip, which is sold in the device. Then we have, at least for consumer devices, we have a small software component on the device, which, for example, interacts with the user of the device and facilitates the lifecycle management of the eSIM profiles means loading the profile, enabling, disabling, and all this.

So the eSIM profile is just the data. Which you load from a remote server onto the eSIM chip, which configures all your configuration service. And then there is this remote SIM provisioning service running in the cloud. The technical name is called SMDP Plus. If it's about consumer devices, for example, if it's about M2M devices there's a slightly different technical specification for this all done by the GSMA.

And then the backend component is called the SMDP and the SMS-R. There is a new component on the horizon or no new specification on the horizon with a new component, which is the GSMA eSIM and Remote SIM provisioning specification for so-called IoT devices. So that's, let's say the, the successor of the specification for end-to-end devices.

It fixes a number of problems from the end-to-end spec. It comes with one more component which is so-called the eSIM IoT remote Manager. It's also a backend component and which allows the enterprise user who

controls a number of IoT devices to manage the life cycle of the profiles on the devices.

Yeah, so these are the basic components. There's ones more software components then also on the IoT devices similar to the one on the consumer devices called the IPA, which also on the IoT devices, manage the lifecycle manage.

[00:05:15] **Ankit:** So how different it is from testing a physical SIM?

[00:05:19] **Marcus:** There are many, two, two differences. First of all, the, the SIM card you had physical access to test the SIM card if it's in the device. Now, of course, you need to ensure that if you want to test the SIM, that you have a de-solder SIM and that you're then able to test it. Remote sim provisioning is something which is a new concept which wasn't existing for sim cards. The sim card was always, When it comes out of the factory, the combination of the chip and the operating system of the SIM card and then the configuration data for the operator profile. So for eSIM, we have these backend components, which is doing the remote SIM provisioning, and also they need to be tested and that is, that is different. This is not testing a card, but this is testing backend components.

[00:06:04] **Ankit:** Yeah. So we know testing is a very important part, but why doesn't this get talked about much often at industry events and elsewhere? Because I think every eSIM device that is going there after testing, every profile that is going to the market also goes after testing. It's not like, it's not like these devices are getting there without testing, but very, very rarely, very few people talk about this. So why do you think that's the case?

[00:06:29] **Marcus:** Yeah. On the one hand side, testing is always something which many people, many companies do not really like. It's about cost. Yeah. And it's a must do, yes. You must do this. To some extent the the companies in the ecosystem are even forced to do certain testings in before being able to launch a device or an eSIM chip on a mobile operator network. Nobody wants to be forced to do something, which they may would like to do in a different way if they would have full control over itself.

So people would of course, reduce the cost over time as there's a lot of commercial pressure on the industry in total. And SIM and eSIM is quite

a niche technology. So everybody talks about smartphones and you mentioned the camera into operating systems and all this. Yeah. So the eSIM or the sim is a small piece in the, in the end-to-end architecture, which quite often people forget about this if talking about devices.

[00:07:27] **Ankit:** The eSIM is very important, as we have already said, and as you were mentioning, the RSP part, which is not there in the physical SIM now, although it's there in the eSIM. There have been some questions about interoperability as well. So, like earlier physical SIMs used to come with the operator profile already loaded into the sim, but now how do you ensure that interoperability works like it's supposed to be on different networks and on different devices?

[00:07:54] **Marcus:** Yeah, so that is really an area which is significantly changing from SIM cards to eSIM. So in the, in the SIM world, it was different because you needed to test the interoperability of the SIM card against the device. The SIM card was purchased by an operator. The operator profile on the SIM card was defined by the operator. There was exactly then this one profile with one sim card association. And then of course the operator needed to test against the different devices and they controlled the SIM card because they purchased the SIM card means they had also the. The commercial power of what goes into production on eSIM side, it's different. So the eSIM chip and operating system is not controlled by the operator anymore. It's purchased by the device manufacturer and sold that into the device. The separation here is between the chip and the eSIM profile.

So the configuration data of the operator service, that is something which is still defined by the operator and its its suppliers. And it's then loaded only when the customer signs up to tariff to the device. And now we have a different, a new interoperability challenge, which is between the eSIM profile and the eSIM chip and the device. So that is a new one, which wasn't there in the past. And this is actually something where we see real-world issues.

So we know that again and again, certain operator profiles work good on one device and do not really work on a different device. And that's where interoperability is important, is really critical, and where the industry needs to care about.

[00:09:36] **Ankit:** Right. I also remember an issue where some 5G smartphones had a 4G eSIM and they were not able to use the 5G

network on the 5G supported devices So how do you think we can ensure that does not happen again, and the consumers who have already have those kind of devices, what can they do? I know there are some fixes, but if you can give some more light on it.

[00:09:55] **Marcus:** Yeah, so there is not the, the one size fits all eSIM profile for all devices. As you mentioned, an eSIM profile may specify the communication services for a 4G network or for a 5G network. So depending on the capabilities of the device tariff, which the user has purchased, for example, the operator needs to ensure that the customer gets the right eSIM profile onto the device. Means the operator needs to provide a set of profiles and then select in real time what profile really to provision on the device. Once a customer says, here I am, I have a phone, I want to download the profile.

So there are mechanisms which all the remote SIM provisioning server providers built into their products. There are used, for example, to differentiate between the four 4G profile and the 5G profile. In the meantime, they're also used to mitigate from interoperability issues, because even an, an Eason chip is deployed in the market. If it's on the device, it has certain features. You cannot change it. You need to simply cope with the fact that maybe one profile works on this chip in a pretty good way, and not on the other trip. But you need a different profile for this other chip.

And then again, in real-time, you need to identify to what device do I load a profile and then select the right one for the device. This is not nice. It's, let's call it the kind of workaround, but this is what the industry is doing at the moment.

[00:11:24] **Ankit:** And we were, as you're talking about, interoperability in March Comprion and TCA started an interoperability service. So what is that about? And if you can tell us more about that.

[00:11:36] **Marcus:** Yes. So let's take one step back. What we need to, to differentiate is compliance testing and interoperability testing. So, compliance testing is you take one component of this architecture like the, the UICC, the chip, or let's say the backend server, and you test it, whether it's compliant to the specification, but you only address this one single component in isolation.

So this is good. It's necessary, and it's happening and it's, it's really important. But still, you will have problems if you put things together. For example, an eSIM profile on the chip, and then only in the combination of a specific chip with a specific eSIM profile. You may recognize that there is an issue, and this is what is about interoperability testing.

So taking a real eSIM profile and testing it against a number of devices, or let's say the, the UICC in the number of devices. And that's necessary. And we have teamed up with the TCA, the Trusted Connectivity Alliance, who is the standardization organization for the eSIM profile, who has also recognized that this is a real-world problem to address.

This means we have agreed on a testing scope and a testing procedure. We have agreed that we make sure that we provide a huge range of real-world devices in our labs, and that customers like operator, who want to launch a new eSIM profile can come to us and test there is a profile against a broad number of devices.

The good thing is if it fails first of all, you have prevented from an issue before it goes into the market. But with Campion, you have real deep experts in the field to also then identify the problem and to fix the problem. And doing this together with TCA, we have the direct links to the experts from the vendors of the UICC and the SDP Plus providers. So whenever it's necessary to involve them in root cause analysis we can do so.

[00:13:38] **Ankit:** So for our listeners, if you can specify how much time on average the process of eSIM would take. For example, an operator wants to launch an eSIM service, how much time would it take for them to pass all the tests and complete the testing process?

[00:13:52] **Marcus:** So it depends a little bit on the wish of the operator. How broad do they want to test? So we provide a quite significant number of devices in our lab, and it's up to the operator to say, look, I only want to test against the top 5 or top 10 devices in my market, which are relevant for my customer. To mitigate the risk of an interoperability issue or is they say, look, I want to be really sure because I have a high level of, of quality ambition and I want to test against 20 or 30 or 40 devices.

So a testing session may start with half a day. To test a against a small number of devices might be one or two days if it's a really huge number of devices. It also depends on what testing scope the operator wants. One element of a profile which is difficult to test and which is also requires more time to test if the profile contains applets, so the small applications. So that is something where specific behaviors which are caused by the app that on the phone needs to be observed and tested. Which takes a little bit more time. So it means there is no real answer. It's probably something between half a day and maybe one or two days order of magnitude.

[00:15:02] **Ankit:** Great. So I think we have already established that the testing of eSIM is very important. It's happening in most of the device categories. It is coming to an other device category. Comprion has a partnership with TCA, which gives you access to all the biggest industry players. So going forward, what are the big trends that you see are developing in terms of eSIM?

And also in terms of testing and what should the industry be looking at and how the industry should be looking at this essential part of the value chain.

[00:15:29] **Marcus:** So in terms of technology, the specifications are of course always evolving to always the next release, the GSMA and the working groups in the GSMA constantly working on this, but this is just business as usual. Let's say the new GSMA eSIM and remote SIM provisioning specification for IoT devices. That is really a bigger step. It's more or less available and devices and components I think are expected quite soon. So that is something to look into as a to some extent new technology, it's a very relevant technology. The companies are really desperately looking for this technology.

How things are changing is, is the following. We see a little bit more and more hesitation to engage in testing. So we see when it comes to the discussions about who is contributing to test specifications, the motivation is a little bit diluting. And also the companies try to limit, let's say the testing scope for the mandatory testing, which is done during by the conformance testing organizations like GCF and PTCB, for example. The companies try to to minimize the scope of testing eventually to save cost, of course. That is from a cost perspective, I do understand this. On the other hand, from the perspective that we as an industry want to deliver the best quality to the customer. I can only encourage. All the, the players

in the industry to yeah, Come together really, and, and continue the, the higher high level of testing, which we have always done in the last 10 or 20 years that makes a lot of sense from my perspective.

[00:17:09] **Ankit:** And what would be the impact of networks becoming more complex, like we have been seeing that the number of profiles where the operators are very limited, but now the number of profiles has increased. We also have more use cases. For example, in markets like Europe, US people used to have one SIM on their device, but now with eSIM they can use two profiles, and with the traveling abroad, they can even use more. You also have more use cases like private networks, companion devices, like smart watches. Even the eSIM is coming to connected cars and operators are launching plans for cars as well. So for a consumer it looks like it is getting a little more complex, but from a testing perspective, how do you make sure of that aspect?

[00:17:51] **Marcus:** Yeah, so in particular I would encourage the operator to really look into their eSIM profiles and to ensure the interoperability. So it starts with really validating the profiles against the technical specifications, which is often not done at all. And then I said, doing the, the real world testing with real world devices, they can use this testing service, which TCA and Complement provides in corporation. Of course, they can do it themselves if they want and if they have the capabilities to do so. But I think this is the area which is critical and not yet really good addressed. So I would really encourage, in particular, set the operators to take care about this.

[00:18:32] **Ankit:** Great. And before wrap up this discussion, one last question. Is there a role of regulatory bodies as well in this part?

[00:18:38] **Marcus:** Not really regulatory authorities. The industry has defined certain conformance testing framework, which at a different level mandate certain testing scope. For example, if you wanna launch a new UICC product as a vendor of an UICC. Then in order to to sell it and to bring it to the market, you need a certain certificate for the for the UICC. A technical one without it will not work and the certificate will only be granted if you have successfully passed the officially and the standardized. Test cases. Yeah, so these are defined by GSMA and the performance framework is delivered by global platform.

So that is not a governmental regulatory authority, but that's a performance testing framework where the industry has defined very strict

rules and there's no way around. Yeah. So that is the case for the, for the UICC, for other components, the roots are less strict. As said, you have the ability to maneuver around this a little bit and to, to limit the testing scope. If you, if you want.

[00:19:49] **Ankit:** Awesome. Thank you, Marcus. That was great, and I received some very good information. I think our listeners also got very good information about the eSIM testing landscape, so I would like you to thank you for joining the podcast and sharing your thoughts. This was absolutely wonderful.

[00:20:03] **Marcus:** You're welcome. Was a really pleasure.

[00:20:07] **Ankit:** And for our listeners, thank you for tuning in. We have been doing a lot of research on the eSIM market from enablement to provisioning to orchestration, and we really wanted to talk about eSIM testing part as well and you can read. On our website, and if you have any questions, you can connect with us by emailing on press@counterpointresearch.com. You can also listen to a previous podcast on major podcasting platforms such as Apple Podcasts, Spotify, Google Podcast, and more. And with that, I your host Ankit Malhotra. We'll be signing off. Thank you and see you in the next one.