

Podcast Transcript - Digital Cockpit to Drive Future Connected Car Experiences

[00:00:08] **Maurice:** Hello everyone. And welcome back to the counterpoint podcast. I'm your host, Maurice, and today we have a very interesting topic lined up for discussion. We'll be talking about some key automotive industry trends that we're seeing, including connected cars, electric vehicles, autonomous vehicles, and ADAS.

With this in mind, we also want to be looking at what are the major opportunities that will present themselves in 2022, talk about what the players are doing in the ecosystem and much more. And so to talk about this today, I have two analysts with me, Soumen Mandal and Mohit Sharma. Both of them are based in India. Hey, Mohit, how are you doing?

[00:00:45] **Mohit:** I'm good morning. How are you?

[00:00:48] **Maurice:** Oh, I'm great. And thanks for coming on with me. What about you, Soumen? How are things with you?

[00:00:51] **Soumen:** Yeah, I am doing fantastic. Looking forward to today's discussion.

[00:00:55] **Maurice:** Perfect. Well, let's get right into it then. So I'm really interested in these 2022 trends that are happening, but I think for us, for the listeners, we need to rewind a little bit and kind of give a recap about what's already happened in the industry right, so we have a baseline. So, Soumen why don't you do that? And tell us a little bit about what happened in 2021. What kind of trends you're seeing and start from there.

[00:01:20] **Soumen:** Thanks, Maurice. This is a great question to start with today's discussion. Yeah. This was not a great year for the automotive industry. However, auto sales increased by 4% YoY in 2021 to reach 80 million units. But it could not reach the pre-pandemic level, which is around 85 to 90 million units per year. After easing of lockdown, people's started owning their own vehicles instead of availing public transportation. This help this industry to witness a v-shape recovery. But again, COVID-19 happened and it caused automotive industry to witness massive shortages of automotive and semiconductor components. So that's why the growth was not up to the mark. So if we talk about that new features, you can see that now automakers are providing lots of connected and autonomous features. These new features are trickling down to lower price point in this year.

[00:02:15] **Maurice:** Ah, that's great. Soumen thanks for setting the stage with things. So soon after the pandemic started in 2020 we saw the automotive industry hit very hard by semiconductor shortages and, with Counterpoint, we really track a lot of the markets in terms of smartphones, TWS you name it and we've seen shortages hit a lot of different industries.

What can you tell us specifically? Now that's helping with the automotive industry because, you know with smartphones or other things, we were seeing some easement, but what's happening here. And Mohit, why don't you take that one.

[00:02:48] **Mohit:** Yeah. Thanks Maurice. So I think this is the question has been asked for last one and a half years, right? So if you look back in 2021, the chip shortages were started easing off in the first quarter. But the second quarter onward, you have seen production plants in shutting down or in Q3 have seen the automakers started releasing the cars without high-end features, right? So you don't have those infotainment features or adaptive cruise control features a little bit on that.

And in the Q4, you have seen some recovery and coming back to the 2022 you will see that things will be easing off, but you will not see problems will be completely solved in 2022.

[00:03:29] **Maurice:** Yeah. And talking about 2022 specifically, we saw some pretty neat announcements happening at CES and the beginning of the year, you know, CES the big trade show that happens in the U S. Had a lot of different announcements in terms of healthcare in terms of AI, but really, I think one of the big standouts was for automotive centric announcements. Soumen why don't you tell us a little bit more about what you saw when you covered CES this year?

[00:03:55] **Soumen:** We know CES is famous for consumer-related product announcements. Some large including BMW, Mercedes Benz and General Motors skip this in-person event, citing COVID-19 outbreak. But if you look at the automotive announcement in this years, the all announcement around electric vehicles, connected mobility, autonomous mobility, digital cockpit, robotics, shared mobility. So this page is in line with that industry transformers and towards CASE that is connected, autonomous shared and electrification.

So some of the important announcements are like Sony to form a new entity to focus on this. So if you look two years back in CES 2020 Sony announced its first EV prototype. Now it's formed a new entity to focus only on EV business.

But Sony is not the first smartphone ecosystem to enter into this race. We have already seen VIN group. Foxconn, Xiaomi all are entering this race and we expect this space is going to be more competitive in the coming years. The next interesting announcement I heard in CES that is, Google exploring new capabilities with Android Auto. And now mobile is providing more power to enter Android Auto then you can have new apps in Android auto, like micro mobility, navigation, access to points, charging for parking, etc.

So moreover Google is also supporting UWB technology to BMW cars through Google phones and Samsung Galaxy phones. So more phones will be connected in the coming times. That means Google is exploring more business opportunity to automotive services areas. And you know, that metaverse is a buzz in today's world and automotive industry is not lagging from this opportunity.

So that's why Hyundai brought "meta mobility" in this year CES. So it has joined forces with Boston Dynamics to build a robotic society, where we'll be able to freely move between the real and virtual worlds. So if you ask me the most interesting trends in this year, CES was a Snapdragon Digital Chassis and Digital cockpit announcement. Hey Mohit, as you are attacking this industry. Can you share your views on it?

[00:06:09] **Maurice:** Those are some interesting trends, Soumen and you know before Mohit starts on that, I think this digital cockpit is something that was really interesting for me because, I think it really helps try to reconfigure how we can experience our vehicles from the inside. So not only just the looks and stuff on the outside, which is what usually is what carmakers really showcase, but really how do we have a digital experience integrated into the cockpit. And that's kind of what this is all about. Isn't that right Mohit?

[00:06:41] **Mohit:** Yes. Maurice. You have rightly pointed out that if you look inside the car, the user experience has become one of the important features for drivers and not and also the, for the passengers. Right? So like user experience include how the driver or the passenger interacts with the car, which has nothing, but human-machine interference, right?

This includes larger displays, intelligent voice assistance or augmented head-up displays. And these technologies we have seen in CES 2022, for example, Panasonic has shown this AR HUD and this Tron has also launched their cockpit screen and Crains has launched their co-pilot of AI assistant, which been awarded the technological innovation award in CES 2022. So basically digital cockpit aims to make your driving more safer and comfortable with the

combination of all these features, which help us to just sit back and have more safety and comfortable driving

[00:07:37] **Maurice:** Yeah, I can't imagine really how that looks like yet, but I'm really interested to see what develops in the future there. Well, great. So we covered CES, but, you know, one thing that we really track your Counterpoint is the different kinds of processors connectivity that goes into cars. And for, one thing the number of connected cars with TCUs or telematics controlling units that are being sold have, have actually risen globally and how are we looking at this, like what are brands doing? And how are they focusing on things like infotainment systems as a differentiator or you know, these things really started off with being in a high-end cars, but are they trickling down to lower price points? And is this why the number of connected cars are being sold or, you know, what's your take on that. And, and Soumen why don't you answer that for me.

[00:08:27] **Soumen:** If we're talking about connectivity, we have to look at the whole connected ecosystem. So starting from chipset, NAD modules, telematics, system integrators to connectivity providers. Yes, I absolutely agree with you that connected car shipment is rising and it has already crossed 36 million shipments in 2021 and we are expecting it will cross 70 million units by 2025 and one in four car will be connected with 5G. But we have not seen so much 5G adoption in the automotive space because of higher ASP of TCUs and supply shortages. So, if you look at the TCU market, from the global perspective, you can see that LG, Continental, Harman are the top players.

But when you look at China, you can see that market is pretty much fragmented with local players, like BD Star, Soling, Gosuncn and Flairmicro. So we can expect that these players will look for global diversification for getting more markets share in the coming years. So, yeah. And now I'm coming to your next question that yes infotainment will work as a differentiator even not for the mass market but surely for the premium market. In the age of autonomous vehicles, there will be huge demand for large OLED screens, seamless connectivity and backseat screen also. That's why we are also seeing that automakers are now using two modules, one part seamless connectivity for infotainment. Another one is for eCall. So these will be the new features coming in times, but not in the short term.

[00:10:06] **Maurice:** I see. So, you know, it, it's kind of like a more long run play here with a lot of these new technologies that are coming out. So Mohit now let me ask you this. I'm also curious about autonomous vehicles and like ADAS location ecosystems and things like that, because there's a lot of

momentum also happening there and what's happening, where we would like the different levels of autonomous driving. What are you seeing?

[00:10:32] **Mohit:** Autonomous driving is one of the hottest topic of not just automotive industry, but for the tech industry, because of the ecosystem hardware & software. So it's just not about the automotive industry, but for the tech industry. And coming back to the question like for me, 2021 year was one of the remarkable year for the automotive industry, in terms of the autonomous technology. And I will explain you why, because it has been a lot of, you know traditional automakers have been formed new partnerships on acquired smaller startups in the same technological space or, you know, invested in some joint ventures so I have seen a lot of improvement or I would say more happening in the industry. And in the last month of 2021, we have seen Mercedes got the level three autonomous driving certification from the German government. So they begin the official OEM to produce cars with level three, autonomous driving. And last week only the Cruise is opening for robotaxis for the normal public.

So. It's still a long way to go to reach the full autonomous driving level five, because you know, it's the transition from level two to level four is quite big. And there have been talks that, you know, some people just want to skip level three, for example, BMW. They just don't want to, because the transition between the level three to level four or level two to level three is not so big. But the transition from level two to level four is quite huge because in level four, you just have to give the control and everything. And from the level two is this, you have to. The hands or the hands for a few minutes and then have to hold back the steering again. So it's long way to go because of the regulation and policies, but one of the areas where I'm seeing the autonomous learning, isn't actually making progress as for the trucks and robot deliveries.

And why is the need of the hour for the truck industry? Because there has been shortages of the track divers in the US and Europe. Europe is actually facing 400,000 shortage of truck drivers. Can you imagine that? And for us, it has been 80,000 truck drivers. So, you know, you need someone to drive those trucks, right?

And this is why the autonomous driving is become very important for the truck business. So all these companies like TuSimple and Android or Arora or Kodiak, which are the startups or recently got into the the big IPOs, so they have been targeting for autonomous driving by 2023 or 2024. So I'm hoping you will get to see the autonomous driving for trucks in next coming two years, because the autonomous driving space for trucks it's not so complicated as

compared to the cost where you have so many aged cases and on, on the highway, users have group drivers don't have so much complexity. So just to add all these points Maurice one interesting thing I would like to talk about is location ecosystem platform.

So location data has been one of the important data because, you know, you have so much data, but if you don't, if you add the location element to it, it exactly pinpoints to you what location. So this is why location that has become so much an important industry. Right? And we did a study of location platform ecosystem where we find out that HERE is leading the rankings for the last five years, leaving behind.

Google and TomTom, right? And the trends which we saw in these, in this study that most of the location platforms are building, you know, analytical and visualization capabilities to offer more tools which can perform analytical or visualizations stuff, because on the platform, you can give them to make custom maps or, but what about doing the analysis?

That gives you to do the analytical part. This is happening there and why it's happening there. Things like that and show it in a very beautiful manner on the different visualization things. And another thing is like with all the data location platform, they are introducing more security features. For example, consent manager or doing the anonymization of the data. So this is one of the trends also we saw in our study and lastly is the marketplace business model where this location platform get into the partnership with the other players and then they take their data and put there on the marketplace and where someone who's interested come to these marketplaces and buy those data, and then they can share some percentage of the revenue with those players. So these are the trends which we saw in our location platform, a study, which we did last year. Yeah. So, that's it.

[00:15:01] **Maurice:** And you're perfectly right there. And I think that brings up a really good point on autonomous driving. We generally see it as a, as a consumer thing, but really if there's a huge business use case here for B2B do you have any comments on what potential revenue opportunities you're seeing between, let's say B2C versus B2B

[00:15:21] **Mohit:** Yes, so definitely talking about this truck business, right? Autonomous trucking. So you will see a lot of fleet operators are last mile delivery they are already having a contracts with these TuSimple because they need someone to drive the trucks and you already seen some shortages. So you have a lot of B2B opportunities in the truck businesses. Whereas for cars, the

robotaxis will be one of which is will B2C, I would suggest. So you have, you have a different B2C in the car market, but for tracking, it's more of a B2B.

[00:15:50] **Maurice:** Very interesting. And now Soumen I wanted to actually go back and ask you a little bit more about electric vehicles and you mentioned some announcements that happen at the CES, such as from Sony electric vehicle penetration is also rising.

So how has that deployment process going. And what are you seeing in terms of how the infrastructure for this is actually being built. You know, I look out of my window and I can see some charging stations being built now in a lot more places. So, so they're definitely some developments. What, what can you tell us overall about what's happening?

[00:16:24] **Soumen:** Yes. Maurice electric vehicle penetration is rising. So electric vehicle sales already crossed 6.7 million units in 2021, which got almost double from the 2020 year level. And China is leading this market as well followed by Europe and USA.

But if will look this market is diving by support from the government, but China is going to reduce or cut down subsidies on the new electric vehicles from 2023. Then it would be swing down there. So even he will look at the European market, then you can see now carbon emission, non-policies in Germany, UK and France are list item.

So that also may slow down electric vehicle adoption there after two-three years. And we know that for electric vehicle adoption, there'll be a requirement for huge infrastructure development. But if you look, there are only 2 million public charging stations available, out of those only 30% are only fast. So it may appear as a barrier for EV adoption in the initial years.

So there was Chicken-Egg Dilemma in the initial years. But I think that is going in the right way. So now I am talking about next problem, and that is charging standard. So if you look at the charging standard, you can see, there are lots of charging standards available in the market. So the new countries, or the developing countries are getting confused with charging standards to follow.

And now coming to the next problem, and that is battery recycling. You'll not that besides developing electric vehicles you have to also look on that battery recycling. Either it will create lots of environmental pollution. So what we have already seen in the initial years of EV adoption in China, that's when policymakers have to work on this problem as well.

The next problem for EV adoption, that is pricing. So you know that the price of EVs are higher compared to IC vehicles so that's why government needs to support more to consumers or else they will not be interested to invest more on EV. And now I'm coming to the last point and that is driving range. So if you are going outside and if you cannot find its charging station, and even that is not fast charging station, that may cost down your time.

That's how you have to build lots of fast charging station and also like driving range to support more than 500kms. So, if we can solve these issues, then I think this will be good for electric vehicles.

[00:19:02] **Maurice:** Now, Soumen one interesting point here that I know has increasingly come up with a lot of the consumers is this range, anxiety, right?

Like a lot of the journalists always in news articles, I feel like that's, what's one really big thing that you know, is being discussed is the range for how long you can drive. Mohit, you know, a little bit more about this, right? So can you tell us what EV makers are doing to really help with this range anxiety to increase driving range with batteries. Can you walk us through that a little bit?

[00:19:33] **Mohit:** Yeah, sure. I mean, you know, things like anxiety has been one of the big issues of the EV adoption, right. And if you see it in the earlier days most of the makers were focusing on the design part of the car, because you have this drag coefficient, the less drag coefficient, the higher the driving range. Right. But over the last two years you have seen transitions here not just from the design side, but now the EV makers are actually focusing to us the better design or battery technology, I would say. So I will talk about the battery first. You have this lithium-ion battery which has the liquid electrolyte, which is quite flammable and the density is also very high.

And now they're a technology which has been seeing in their trend to increase the driving range as a solid-state battery. You know, how does it different from the lithium-ion battery is that the it has the solid electrolyte, just the names of this right. Solid state battery. So the differences you have this. solid electrolyte between the anode and the cathode, which is the advantages are it's it's, you know, it improves safety, smaller size, lesser size, and you know, it's also improves the fast charging times and gives you the more travel range. And most of the companies are backing this technology right Volkswagen, for example, it has been in the contract or in the partnership with the content of scope who is a very renowned at solid distributed battery. Ford is also investing in solid power company. And Hyundai is investing in solid energy. So all these are focusing in

the solid state battery technology, whereas Tesla they have been always the outliers in the industrial, right?

So they follow cameras instead of radars right? The whole industry is going for the radar and camera fusion, but Tesla has been the out in autonomous because again, and the same, this is going to the, for the electric vehicle range. So they are actually going for the 4608 battery. This is cell to pack technology there how do you pack the battery modules? And for a GM is doing for the battery chemistry. So they have launch this new ultimum, there are using Nickel Cobalt Manganese Aluminum and their ultimate platform. So these are the trends we are seeing in increasing the battery range.

[00:21:47] **Maurice:** Very interesting on those trends Mohit. And thanks for bringing a little bit more color into that. We talked about a lot of different topics here during our time here from electric vehicles, connected cars the TCUs, etc. But now I really want to talk a little bit more about the future and the trends you're seeing.

So can you both, Soumen and Mohit talk a little bit more about some short term or long-term trends you're seeing. And what opportunities there are in the automotive industry. You know, I just Googled it really quickly and, you know, some things are popping up or like what the most vegan-friendly or environmental friendly car is and how consumers are looking for those things. So what are you seeing and Soumen why don't you lead us off on that?

[00:22:33] **Soumen:** Yes, the auto industry has seen it's course already. So 2022 looks very promising for this industry. Chip shortages have eased a bit, but has not ended yet. So standing in February 2022 still many automakers are forced to shut down their plants due to COVID-19 outbreak and supplies shortages..

So that's why we are expecting it will not reach the pre-pandemic level in this year. So it will take another one, two years to reach pre pandemic year level auto-sales. So now, if we look at the supply point of view, you can see that automakers are complaining that they have very less control on the supply chain.

That's why they are trying to develop or build their own supply chain ecosystem. So that's why they will be co-developing and co-designing chips with other players. They might not be producing it. So we have already had that Volkswagen, Ford, GM, Mercedes Benz all are interested in this space. So not only the automakers, even all the regions are trying to build their locally supply chain eco-system because this COVID-19 outbreak has disrupted the supply

chain. That's why every region don't want to depend much on the other region. And also like more focus is being put on R&D in this time, rather than manufacturing. That's why presently there are more long-term opportunities for this auto industry than short term.

[00:24:07] **Mohit:** Yeah. So just to add, you know, from Soumen's point, Soumen talk about short term and I can talk about trends in the longer term more to us like 2025 or 2030. So since I'm following ADAS and autonomous, so I would just looking at the future from the autonomous vehicle perspective. So when you have this level five autonomous driving cars, I would predict that you have more front row seats, can revolve and you can just have this kind of a backseat, and you can just watch movies or something like this. And I believe that the windshield can be used for watching as kind of a screen that you can just watch movies or something like this. And with Metaverse I'm hoping that you can just travel anywhere using those cars and those sorts of technologies. So, yeah, I mean, this is very far ahead, but you know, technologies can take anywhere, you never know.

[00:24:57] **Maurice:** You know I still drive a stick shift car, so all these trends and all these new innovations that are happening in cars, it's kind of be a shock for me. And maybe even a lot of people you know, once they are going to purchase a new car and have all these innovations. And so it's going to be really interesting to see, I think. You know, how consumers adopt to these things and respond to them. So really great to see what what's going to happen in this.

[00:25:22] **Mohit:** Yeah. Yeah. I mean, the transition has been, it'll be very difficult, especially people who just loves driving or, you know, want to feel, feel the sheer passion of driving. There are some people who just love driving the car so it definitely, but for me, the younger generations who are more into technology for them, it's, it's quite interesting things.

And they just want to play games while don't want to drive in this and the such traffic roads or highways or something like. They want to have experiences metaverse. So all these things will be more interesting for the younger generation and for the old generation, they are not so technical, so they just want to be stick to their old school things. So that's very cool. I can understand how you feel that the moment right now, all these technology.

[00:26:08] **Maurice:** Excellent points made. And thank you both for providing that insight into some of the trends for 2022 and onwards. But I'd like to end it there. Thank you both for joining us on this. It was great.

And I know we covered a lot of topics, so hopefully we can do this again in the future. Thanks both. Thank you. All right. And great. As always you can follow us on Apple Podcasts, Spotify TuneIn Google podcasts, and we'll have this up on our website. Counterpointresearch.com. Feel free to have a look and till next time, take care, everyone.