Intel Corporation

5G & AI Based Video Analytics

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PRESENTATION

Lilian Veras

Welcome, everyone, to the Intel Network Builders webinar program. Thank you for taking the time to join us today for our presentation titled "5G and AI Based Video Analytics".

Before we get started, I want to point out some of the features of the BrightTALK tool that may improve your experience.

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Today we are pleased to welcome Nishant Veer and Rakesh Channaiah.

Nishant Veer has worked for business development in developing end-to-end products extensively using the deep learning and image processing method to detect the various high, medium complexity objects in live footage.

Rakesh has worked in various R&Ds throughout his career in companies such as Alcatel Lucent, Ericsson, British Telecom, Tech Mahindra, Accenture, etc, where Rakesh has provided vital inputs for development of advanced technologies, and technology consulting.

Welcome, Nishan and Rakesh, and thank you for taking the time to join us today. Rakesh, over to you to start off.

Rakesh Channaiah

Thank you, Lilian, thanks for that wonderful introduction, and welcome all, thanks all for joining this webinar.

So, as the title says, so we are looking at something, a great opportunity that is going to unlock because of 5G and AI based video analytics getting together. So, today we will discuss how this is helping telcos, and also at the same time, we will showcase the use case that's already been done integrating these two great technologies.

So, as Lilian mentioned, we both come from very strong domain expertise, working in various telcos, as well as providing technology in the upcoming techs like analytics, IoT, and AI.

So, the webinar will be focused mainly on 5G and, as I said, video analytics. We'll have overview on how telcos can unlock this opportunity, how can Deepsight play an important role in working together with telcos, then a use case that's already ongoing from last one year with one of the largest telecom player, and also with our other customers from telcos and different verticals, how our use cases can be deployed to telcosand our workloads

So, before going in detail, I want to highlight a few things that we have learned in last four years of our company, where we saw there are various demands that come up, especially when we do AI deployments. So, deployments in AI is still maturing. There is no fixed way of doing things. There is always agility required. There's always a need of innovation. So, AI deployments play a very important role in understanding how to deploy a particular solution with the use case for a XYZ vertical. Then comes the accuracy. The accuracy is the most discussed topic, but when it comes to deployed solutions, accuracy becomes more important as the environmental issues can deter the events in detecting accurately. So, there are required technologies and methodologies to be followed, which we'll talk about in coming slides. Then fine tuning. So, this is another challenge we have faced after deploying the AI solution, as we said, as I said a few seconds ago, that changing an environment also triggers how to fine tune based on those requirements. And lastly, the customers' demand for various kinds of deployments, like on the edge, on the cloud, or on the server, or on the 5G.

So, Deepsight AI is a computer vision company focused on various use cases like video surveillance, smart cities, banking, retail, etc, and recently started working very closely with telcos for various use cases. We are available on different platforms, from edge to 5G, and on the different devices, it can be retrofit solution, it can be CCTV, drone, or machine vision cameras.

So, as I said, the requirements have always been driven from the customers. So, edge based where the customer wants in our data privacy, or ultra-speed requirements for the single or couple of use cases, we have an edge based solution that can be deployed on the client premises, on the particular given location. The server based, on the other hand, is a centralized solution, where all their cameras or drones are feeding the videos into one location, where the entire computation takes place in the server. Third, the cloud based solution where we are cloud agnostic, we can deploy the solution AWS, GCP, Microsoft Azure, so on and so forth. Whenever the customer is need for any type of deployment, we have all three ways to approach a problem. And lastly, the latest, the 5G, which we have been working from last one year, and thanks to our continuous understanding towards telecom, we started this way back in 2019, and that gave us a very good clarity how a 5G can play a very big role with video analytics for the end users.

So, as I mentioned, the three challenges that come across when you start deploying AI is deployment challenges, accuracy, and fine tuning. Here in this slide, I want to relate to those problems and how we have solved it. One is a feature customization. We can customize the features as required for your needs, and we can scale it not just for one camera, but for thousands of cameras. There's a good scalability available in our platform. The quick deployment, this is a key requirement for analyzing how good are the use cases, how feasible is this computer vision based AI solution for a particular segment. So, we have done a very good job on identifying fastest way to deploy, be it on the features side, be it integrating with different technologies like IOT, or be it adding up more use cases. The hyper scaling becomes very important, as we see the growth and requirements, especially when we start doing 5G. The smart city projects, one of the most useful cases that 5G can be leveraged, is this one, where hyper scaling plays an important role. Now, lastly, the most important, on-field tuning. Everything works fine in the labs, everything works day one when we deploy, but then there is always a challenge due to the change in environment, as we mentioned. So, we have very smart on-field tuning, where we can tune the use cases on-demand and make the solution work in a very limited time, and continuously can we fine tune as and when we go along.

So, we repeat this is one of the great opportunities as we go onto the 5G and video analytics, which creates a power of two solution for telcos. So, let's see how this brings value to telcos' ecosystem. So, telcos have never benefited so much so what they can benefit from now on from the 5G, is that a video surveillance where there are already established end users who are used to a subscription-based model, and today, telcos can provide a solution like residential security or enterprise security, especially if I'm talking about physical security, or a use case where retail's providing productivity information, which can all be done today through this great convergence of 5G and AI.

Now, the biggest advantage, which other technology companies don't have, is the access to these end users. They already are inside their premises. The biggest communication providers of today, for them to just make this work, they have to enable their cameras to feed into the network, and once the video feed is fed into the network, the rest is taken care by the platform. So, we'll talk about that in more detail as we go along.

Just to give an example, this is a moment for telcos to reinvent. Now the industries are very well there and been there in using telcos, but how it can add different use cases. If you have retail customers, you can add customer analytics, giving them analysis on the crowd, and then if it is a business of safety and security, video surveillance is a use case where we can detect helmets; if it is a factory, if they are not wearing the hard hats, these kinds of different use cases can be given as a service, security as a service. Then employ workplace safety. The biggest industries like oil and gas, warehouses, logistics, construction sites, these places are looking for this kind of solution for a very long time, and this is a moment where 5G and AI has come together again. Now the business model is very straightforward. We suggest or recommend a subscription-based model, which is very clearly understood by the end users, and there's no need to change this model, unless as required by the customer.

So, yes, just to reiterate this, and especially the MEC, that's the game changer, which I leave to Nishant to add more information there, but these four great pieces of technology coming together can create a wonderful revenue stream for telcos.

So, with this, I will hand over to Nishant to explain in more detail about the use cases, the kind of challenges we have faced, our learnings in the last one year working with a telecom company, and we continue to innovate and evolve as we work more and more with the telcos. Nishant, over to you. Thank you.

Nishant Veer

Thank you, Rakesh. Before starting, I tried to tell you that the technology is moving very fast in this digital world, and what we have seen is, based on the technology, the application is not moving that much fast. We have moved from 2G to 5G and still 6G is in line. The technology is going fast and we need to see how we can leverage this technology. So, I will just focus on how Deepsight is leveraging the entire 5G potential in the next slides, so I just want to set expectations that, OK, I will very much stick to the 5G-related use cases and 5G-relatedthings, actually, on how Deepsight is leveraging.

Yes. So, on the 5G side, when you study... because 5G is still evolving, and you know that during the evolving period, there is a requirement of the pre-deployment of 5G, and in order to do the full testing of 5G network, the 5G operators are looking for the solution which is much scalable, which can work on the network edge. So, before starting on the 5G pre-deployment, 5G has a lot of advantages like high bandwidth, lower latency, secure transmissions, and also the private network can be created with the 5G, but at the same time, in order to supply the quality of services from application end-to-end to the 5G, MEC is playing a big role, actually, multi-access edge computing platform, and various companies, almost every company, are developing their own MEC platform, and somebody is taking from the-- companies like AWS has their own Wavelength platform and we have recently done integration with the Capgemini.

So, what I mean to say is that the 5G has full potential in order to leverage the higher bandwidth, low latency, providing support to the applications. At the same time, multi-access edge computing platform is helping to onboard any application to provide quality of services leveraging the 5G connections. So, this is how it is. So, the first use case is the pre-deployment in 5G where Deepsight has built a platform which can be easily integrated, that is Kubernetes ready, and Kubernetes-ready, Docker-based, container-based solution, based on the customer requirement. It can be deployed over the edge. Moreover, the main 5G-- I would like to tell you the 5G deployment on the edge, there are major challenges, there's two challenges. One is that there will be some customers or retail customers who are looking for limited two cameras to four cameras customers, some customers are high enterprise level customers having hundreds of thousands of cameras, hundreds of cameras, and the way an application should work, it should work in the diff-- because on the network, on the server side there are different varieties of hardwares are present. Obviously, Intel has a range of hardwares, from Xeon processors, second/first generation processor hardware, to 2nd Generation, 3rd Generation. Deepsight has converted its model in order to work into different processors and getting the higher FPS from the processors actually. So, that is our first thing is the deployment side, and the second thing

what Deepsight has done, integrated with the multiple MEC players like] naming the Wavelength platform, MEC platform, which has actually -- where they have WaveLength joining many operators like Vodafone UK. We have deployed the Vodafone UK, SKT Korea, and Verizon USA. So, during the pre-deployment side right now, because 5G is evolving, the integration between MEC and 5G is what every company is doing, and in order to test whether the integration works, they need a highly scalable AI platform because our AI platform is required to hava high bandwidth data because we are processing the video. So, imagine there's a problem, how we're testing that, the CCTV camera, thousands of camera feeds are coming over the 5G network to the network edge, and Deepsight has built a platform which has the power to process thousands of camera feeds in real-time and add a number of deep learning computer vision features, and raise alerts actually.

So, what happened in order-- during the testing time of 5G, Deepsight demands-- based on the number of camera and number of feeds, Deepsight demands quality of service requirement to MEC, and MEC talks to 5G control plane network to provide the quality of services to Deepsight applications and that is how the pre-deployment 5G testing is going on, and we have a major customer on this pre-deployment testing, is Telefónica, Ericsson, Capgemini Engineering. Capgemini Engineering has a MEC platformnamed ENSCONCE platform, and Intel has a server. So, these companies have collaborated with Deepsight in order to do the pre-deployment testing, and also recently we have collaborated with Reliance Jio in India. So, this is on the pre-deployment side.

The next thing, howthe 5G, we can leverage with the Deepsight application is... OK, so regarding the post-deployment, like Rakesh mentioned, the post-deployment once 5G and MEC, provided by the operator and core network company, if that is stabilized between the MEC player, with the help of the Deepsight application during the pre-deployment side, while this is stable, the Deepsight AI offering with the 5G MEC player and the core network company and 5G operators, they can join hands and they can go direct, they can do go-to-market to the end user, providing the various use cases to the banks, sports, hospitals. For example, you can provide the enterprise price in the 5G private network. The drone-based surveillance when the data feeds are coming from the drones, and Deepsight has the potential to process on the real-time on the network edge. So, there could be various use cases, which Rakesh has already explained, which you can do a sector specific and we can use full potential of 5G private network or public network in order to get the feed to the network edge at the Deepsight located-- at the network edge at Deepsight servers, and Deepsight has the power to process and send alerts and events, and help into automating the SOPs and providing their daily computer vision features. This is the post-deployment, the main post-deployment, once it stabilized, all the people like operators, Deepsight and MEC players can join hands to sell their end products like our use cases to the customers, actual customers in the post-deployment.

So, now, I will tell you how-- we go to more specific to what we have done, how we have achieved this thing.

So, the CCTV camera, you can see the Deepsight application, multi-access edge computing platform, is again at the edge of private and public network, and where the data from the various industries-- like every industry has a CCTV camera for operations purpose. They have fitted the CCTV camera, but the problem is certainly that everyone is monitoring manually, so it's very difficult to identify the events or security threats or operational things, 24/7 manually seeing the feeds, actually.

So, what we have done, we have-- the surveillance is happening, or operation is happening, based on the CCTV camera in these industries, or with the drones, and there is a lot of actual IoT Edge devices present. These feeds on the Deepsight application, we are taking the real-time feed from this industry and we can add computer vision feature, we can detect, we can add intelligence to the existing CCTV camera and drone video feeds, and based on the detection, we can raise alerts on the dashboard. So, imagine there is thousands of cameras. So, we are categorically sending the alerts -- whenever we detect something, like for example, if we are detecting the helmet or we are detecting somebody is spending more than five minutes, the facial recognition for attendance, so we keep sending on the common dashboard, if you see right-hand side, and on the dashboard level, you can see that, OK, in this particular area, how these drones behave, and there is a heat map. Everything, it's very innovative. Dashboard is being provided with Deepsight to see the alert and realize the full potential of Deepsight application, how it is leveraging the 5G connections, actually. And the 5G is-- because in this, 5G is playing a big role because there is a high bandwidth requirement from these smart cities. They want highly secured transmissions to be there and high bandwidth, the lower latency, and sometimes they are in the private network. They want to operate in the private network. They don't

want to go in the public domain. So, this is like the ports, logistics. And amusement parks, they are offering the private network, so the data is very much close to their amusement parks and it's flowing within that network. So, with the help of 5G, MEC, and Deepsight AI, we can provide very good end user-- post-deployment use cases to the end user, actually.So, on the ongoing use cases, I will tell you what we have done with Telefónica. As I explained to you, we have a customer like Telefónica, is a network provider, and Capgemini is providing the MEC platform. I'm telling you the use cases, the case study, what we have done since 2020. This application is running on the 5TONIC Lab in Spain, where Ericsson is providing the core network. 5TONIC is a consortium which is where the 5G innovation is taking place by Telefónica, Ericsson, Capgemini Engineering, and Intel is providing a Smart Edge Platform or there, so meaning Intel processors are getting used in the lab. So, this is how the Telefónica, Ericsson, 5TONIC, Intel, and Capgemini has collaborated with Deepsight, because right now, the integration testing is going on. So, they are doing testing with the help of Deepsight platform,actually. So, I will tell you a detail about how we have done and what is the architecture level this thing actually there.

So, as you can see, this is the more technical side how the network, core network operates for this network, but moreover, I would say that this is-- what you can see, this is the one on the architecture side, the 5G router, the CCTV cameras on the customer edge, customer location is connected to the 5G router, whether it's via the 5G hotspot and via the 5G router, and the 5G router has a SIM card and this is connected-- with the router, we are getting the frames from the CCTV cameras over the 5G network to the 5TONIC lab, and there, Deepsight lab is processing. All the computation and processing is happening at the edge level,actually.

So, here you can see this is the one where the MEC platform is given by this Capgemini Engineering, and the edge video processing is-- actually that is the Deepsight lab has been onboarded with the Capgemini ENSCONCE platform, and where you are on the Deepsight platform, you can provision and add a number of cameras via user plane function, and the data is flowing via UPF to the Deepsight platform because we are going to provision the cameras. And how it works that, generally, whenever the Deepsight AI Labs application demands based on the number of cameras and number of features on the cameras provisioned in the Deepsight platform, Deepsight demands the quality of service, like there is a 10 Mbps and 20 Mbps connection is required, and that is sent to the MEC platform, and the MEC platform, you can see that it's talking to the 5G core network in order to realize the 20 Mbps connection to the Deepsight AI Labs platform to work in a better manner in. So, how they are testing it is Deepsight platform is always-- because Deepsight is expecting 20 Mbps, so what Deepsight is doing, Deepsight is always getting the feedback to the MEC company that, OK, this is what we're achieving, the data rate, and those data rates, if there is a lesser data rate than the expected, the Deepsight platform, the accuracy drops are going to come on the feature detection. So, those important data are continuously given by Deepsight AI Labs platform to the MEC so that they can improvise, they can get the data. So, imagine there is a 5G core network, sometimes the expectation is that the camera should be on the-- sitting on the car and car is continuously moving. So, if some cells -- they are doing the testing, where in case some of the cells is not giving that particular quality of service, that helps to understand that this particular-- on the network side, on the location area or cell, is not performing well as per Deepsight application. So, there is a good feedback mechanism happening from the Deepsight application to the MEC, and which is-- and that is helping to correct their integration at the 5G and MEC level. So, that is what-- the main thing is that integration testing is happening with the Deepsight AI Labs platform in order to do the pre-deployment of a 5G network, actually.

So, on the demand side, although the result, what we have seen in the case study is that, generally, we can process, Deepsight can process, the 400 Mbps high speed data, which is coming to the application, which we have seen, although we have much more potential, because we are a platform-- if the supply is there, Deepsight platform has a full potential to consume the data and produce in real-time. This is how much is scalable on the Deepsight platform that imagine there one terabyte of data is flowing from the CCTV camera to the edge location. So, accordingly, Deepsight horizontal scale up is happening with the Kubernetes, and it can consume those data, and it can process in the real-time, with a very low latency-- you can see 30 milliseconds-- and alerts are happening to the dashboard level. So, results are very much evident in the Telefónica deal, which I will show you at the last of the presentation. This particular collaboration happened on the public domain and we'll show you exactly how it worked.

So, on the customer side, you can see that the customer is-- we have globally customers like MTR Metro in Hong Kong. Wistron is an iPhone maker in India. And a lot of these surveillance companies, you can say the-- one of the innovative projects, which I want to tell you, in the solar panel company, where we have given the COVID detection feature, like social distancing detection over the cloud only,

the social distancing, no facemask, crowding and all, but they like the solution and they ask, OK, can you detect the defects in the solar panel if there is a cross-crack and microcrack in the solar panel, can you detect on the-- during the manufacturing funnel? So, what we have done, we have added a camera, whenever CCTV camera play ads in, whenever the solar panel is passing through the camera, we can detect the defect, cross-crack and microcrack, and we raise a siren so that they can-- it helps to have a greater ROI with a Deepsight application because they have controlled a lot of faulty pieces not to go into the production environment. So, we have customers available in Hong Kong, in South Africa, UK, and India. We have a major customer in the e-surveillance company, banks, warehouses, and manufacturing units, and universities.

This is the same thing, which we have done. So, here I would like to tell you why SK Telecom, Vodafone, and Verizon has come into the picture in our customer base, because this is via our Amazon Wavelength MEC platform, which I told you that the Amazon has a very great MEC platform called Wavelength and they have already collaborated with multiple operators like SK Telecom, Vodafone, and Verizon, and they have given-- and they have connected to these operators, to Deepsight and Deepsight has deployed their applications on their drones, and they have shown their presence on how quickly they can integrate with any MEC environment, and the operator could be, so it is very much an independent solution where Deepsight application can be deployed with the various MEC environments, and ultimately, operator can leverage the Deepsight AI application, and it means for the post-deployment, they can sell to the end user, and the pre-deployment, they can do their MEC and core network and operator network testing, also, on the pre-deployment side, which we have explained.

So, there are a lot of, I think, recognitions—

Rakesh Channaiah

Nishant, we have one point before going into this. I think can you first highlight this Intel Smart Edge Open? I think that it is a very critical part of this deployment.

Nishant Veer

Yes, yes, yes. So, see, in the Intel Smart Edge Open I think there is OpenNESS platform during it. So, I just want to tell you in the Telefónica-- and during this Telefónica, particular… this collaboration, actually the Ericsson is… in this particular… Capgemini Engineering MEC platform has a lot of microservices getting used by OpenNESS platform from Intel.

So, there are two things we majorly used in Intel that we have converted entire our model to work with the core processor like OpenVINO format, ONNX format, and also we have converted our model to VNNI so that we are getting a higher performance on the same models. On the Intel-- actually, even, we are deploying on the Intel 2nd Generation or 3rd Generation Xeon processor because it has a specific instruction set, AVX512, which is accelerating the AI performance. So, what Deepsight has done, and this is specific to Intel, first we have converted our entire model to work in the VNNI instruction format so that we can leverage the full potential of Xeon processor. Secondly, what we have done, we have integrated with Capgemini Engineering, and entire Capgemini Engineering MEC platform is using OpenNESS, mainly which is OpenNESS-based. A lot microservices are based on Intel OpenNESS. So, that is how we have integrated with-- and have used the OpenNESS and OpenVINO toolkit set from Intel and VNNI instruction to have this Intel Smart Edge Open-- leverage, actually, this particular thing.

OK, Rakesh, so…

Rakesh Channaiah

Yes, I think that's a really important flow that we wanted to highlight given the 5G use case, and the various customers, and a close collaboration with Intel it is Intel Smart Edge Open. It's been a great… I would say it's a great collaboration, where we were able to understand how video analytics will work on 5G and vice versa, how 5G should be ready for supporting such high-bandwidth requirements, and that's the whole idea behind this project. And we would also like to just highlight a couple of things. We did smart city

projects using, again, Intel-based boxes on the site, on the edge, which proved to be very successful because of very good support given by Intel on the platform side, on the hardware side. So, we won very good recognition from the government projects, large projects, especially police force, and the forest areas in Indian region.

Then across, we're also involved in different projects. We were able to show a very good difference in how we can bring, you know, using video analytics. So, this area we believe is still unexplored, very potential for larger growth, and again, I want to repeat, this is, for telcos, a great time, and I think we should all unlock this opportunity.

This is all from our side.

Nishant Veer

Rakesh, one more thing actually. The main part on the Intel side, I would appreciate that the Intel processors are coming with the various core processors. Like you can create one core to a number of core instances, and that helped a lot in order to serve the retail customer to the enterprise customer. Imagine there is a two-camera customer, we can create an instance with two-core processor, and imagine you have a 100-camera customer, we can create instant for 50-core processor. That leverage is giving a full potential to access an entire range of customers, which is actually not possible with some GPUs, because there you need to have that particular set of hardware that is only for enterprises having 50 cameras or 100 cameras, but with the Intel Xeon processor, it helps us to provide access to various ranges of customer. And we have done a lot of-- and we have also significantly sold the cloud business, creating a number of instances based on the customer requirement and number of cameras and number of features. This is how we have done it with the help of Intel, yes.

Rakesh Channaiah

Yep.

Nishant Veer

So, I think last link I would like to see. Lilian, should I share this screen and show, and you are going to show that link?

Lilian Veras

Hi, Nishant. If you want to share your screen, you can go ahead and do it.

Nishant Veer

Yes, I'd like to share.

Just let me put it in the full-screen mode.

Lilian Veras

Nishant, while you find the link to share with our live audience, we do have a few questions that have come in while you were presenting. Shall I ask one of them?

Rakesh Channaiah

Go ahead, Lilian.

Lilian Veras

Well, first, thank you so much for this great presentation. I'll start off with one question then. The first question we have here from the live audience is, what is the main role of 5G?

Rakesh Channaiah

Nishant, you can... Nishant, are you able to hear us?

Lilian Veras

Can you answer that one, Rakesh?

Rakesh Channaiah

Yes, so I think I'll take it. Yes, I think, like we showed in different slides, when 4G came, there was great improvement in IoT. When IoT started, when it was already 2G, 3G, it was waking up for the bigger potential, but as soon as the 4G came in, IoT grew multi fold . Today, IoT is the norm for many greater automation and robotics, etc, right, and that given, 5G for us in, especially in the video analytics, is a great push to make video analytics work from remote places, because video is heavy bandwidth, it needs a lot of speed, and that given, 5G has got all those characteristics, which can make this video analytics thrive and grow much faster.

Lilian Veras

That's great. Thank you, Rakesh. And we do have one more question here.

Rakesh Channaiah

Yeah.

Lilian Veras

How can 5G change your business and provide support to applications?

Rakesh Channaiah

Yes, that's a very interesting question. See, I'll give an example here. So, in 5G, we have this private 5G network enterprise 5G. So, we discussed with various use cases. As we mentioned, we're working with the telecom players. I'll take an example of maybe a large entertainment park like Disneyland or Legoland, any XYZ amusement park on a large site, or in a large stadium. So, when these kinds of enterprises need support, they can today create their own network. Obviously, supported by the telcos. But not only just networks. Also, add these kinds of applications. Like take a stadium, right? They want to analyze the crowd. They want to analyze if there is anything going wrong, or even more, to count what is the number of crowd that is there inside the stadium, or for the theme park-- sorry, for the amusement parks, where they can support in not only just crowd analysis, security of the park, ensuring the safety is taken care, so everything today, they can do with videos, as there are cameras everywhere for them, and that's something 5G plays a fantastic role, and these applications are many you can take up. Like oil and gas, the safety of the employees, the fire reduction in the site, everything today can be done with 5G applications.

Lilian Veras

That's awesome. Thank you, Rakesh, and Nishant is sharing his screen now. Nishant, over to you.

Nishant Veer

Sorry, actually, my Chrome crashed when I was going to... I was about to share the screen. So, this is what-- this particular opportunity which we are talking about, where you can see the Telefónica, Ericsson, Intel. Telefónica is an operator, Ericsson is a core network company, Intel as a server or a Smart Edge platform, and also Capgemini Engineering as a MEC player has collaborated with Deepsight AI Labs in order to provide the-- during the pre-deployment testing, their collaboration with Deepsight AI Labs platform to do the integration, flawless integration, between the 5G network, MEC player, and the operators.

So, this is one of the examples which I wanted to show you. Other than that, I want to... So, yeah, other than that, just one more thing I just want to show. If you see here... so... so regarding the Deepsight platform, the Deepsight website, if you see, we have various sectors actually. So, every sector has its own use cases, but Deepsight platform has been built in order to customize any feature very fast within three to four weeks of timeframe. So, although we are going with some of the sectors, making the use case particular to a sector, but as a platform, we have built a platform where the model can be converted and a specific customization can be done within the time period. So, this is a website where we have already explained all the use cases related to various sectors. So, this is all about what we have done on the telecom space, and this particular on this site, and other than that, in the next week, we are having a collaboration with Reliance Jio, which is also the same thing what we have done with Telefónica. Yes, I think...

Lilian Veras

Thank you. Thank you so much, Nishant and Rakesh, for the great presentation. Thanks to our live audience for joining us today. Please do not forget to give our team a rating for the live recording so that we may continuously improve the quality of our webinars. Thank you again, Rakesh and Nishant, for joining us today, and this concludes our webcast.

Rakesh Channaiah

Thank you so much, Lilian, and thanks for the audience joining this. Thank you so much.

Nishant Veer

Thank you, Rakesh. Thank you, Lilian. Thank you everyone. Thanks.