



● ● Don Claussen, CEO, ST Engineering iDirect

Satellite Evolution Global

Q&A

## Leading the way to standards-based networks ● ●

ST Engineering iDirect has been an industry leader for a long time and now the company is entering a new era where the goal is to revolutionize the ground and deliver a virtualized cloud-based network unfettered by the limitations of bespoke hardware and finite capacity. We spoke with Don Claussen, the company's CEO, to find out what's next.

*Crispin Littlehales, Executive Editor, Satellite Evolution Group*

**Question: You took over as CEO for ST Engineering iDirect at the start of 2023 with the directive to enhance the company's global leadership and technological vision. What would you say are your biggest accomplishments to date and what is the next big thing on your leadership agenda?**

**Don Claussen:** 2023 was focused on reorienting the business for the new market dynamics. We will be unveiling our next generation product at Satellite 2024 in March. What you'll see is a combination of the best of both the Newtec and iDirect legacy product lines—essentially the best of both worlds. This new product line addresses the core needs of the emerging market such as multi-orbit integration; easing satellite network deployment; and scalability. We've branded that product to make sense to the evolving market.

I have a holistic view of what we need to do as a company to successfully launch this new brand. As such we've been enhancing the leadership team and bringing on new people with different experience. Some have worked in the IoT and cellular markets, some have worked on the satellite operator side, and some have worked extensively in defense both in the United States and internationally.

We have been very successful doing things a certain way for 20 years.



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We've enabled global and regional operators to expand their customer base across a wide variety of markets. The next big step is telling our next innovation story to the community—not just in our marketing materials, but in technology proofs of concepts. We are going to demonstrate our capabilities as we mature them so the market can understand what they can do and how to deploy them.

**Question: Overall, what do you see as the main challenges the satellite industry faces and where do you think the biggest opportunities lie?**

**Don Claussen:** The main challenge is something that we've been talking about for several years now. It's the adoption of industry standards. We have all been siloed since the beginning of time. There are many different initiatives, whether it's DIFI or 5G or 3GPP. The challenge for us as an industry is to find a way for all of us to come together and accept standards, whatever they are. The point is that we must decide as a group that we're going to do that.

At the same time there are always going to be those entities that vertically integrate. We must figure out how we are going to bring them into those standards-based networks because it is very clear that all our customers are going to operate in a multi-orbit environment. They are going to use GEO, MEO, and LEO and we who make the ground systems are going to bring the terrestrial network to create a unified environment and experience. I think ST Engineering iDirect is ahead of the curve on figuring that out.

At present, we have a lot of bandwidth and capability on orbit which is driving the cost down and increasing the total addressable market because we can bring more

people into the satellite space. It's faster, cheaper, and more efficient. The opportunity is collapsing on common standards; getting away from bespoke hardware so that commodity hardware can be used and providing that in a network that is scalable and easier to deploy.

Think of satellite radio 25 years ago. Everybody thought that would never upset terrestrial radio. These days nearly every car in North America has satellite radio capability. Once we achieve the aforementioned goals we can bring cars, trains, trucks, and all of the IoT targets into the network. That's one of the big opportunities.

**Question: NGSO constellations are growing at an astonishing rate, and they promise to revolutionize our future by delivering more sophisticated communications capabilities including smart cities. What role is ST Engineering iDirect playing to convert hopes and dreams into reality?**

**Don Claussen:** Part of our next generation platform strategy is to make sure we can bring those NGSO constellations into the network. We've traditionally enabled geostationary orbit operators and now we want to bring them all together. It's not just so they interoperate, it's designing a system that will support the scale that's going to come with that.

Thus far with satellite communications, we haven't had to manage the scale that cellular companies have had to manage but that's where we are headed as we connect all these devices. In any given region we are going to have 10 to 100 times the number of users in a network. NGSO is going to enable that by bringing high-speed bandwidth and low latency which can drive a scale that will create more advantageous costs points. Those capabilities are



Photo courtesy ST Engineering iDirect ●●●

creating an environment where we as traditional enablers of GEO operators have had to rethink what we do.

**Question: I'm going to circle back to smart cities. The ST Engineering (your parent company) website has a whole area devoted to that segment. How is that unfolding?**

**Don Claussen:** That's part of ST Engineering's DNA. There is a whole business that handles smart cities whether it is public transportation or badging systems or tolling systems. Smart cities are part of the whole IoT business case. Today, you can connect things that need to be remotely managed in a way that can be handled within your SATCOM network. For example, last year we worked with a large Latam provider to deliver IoT capability to control power plant electrical switches in remote areas. Whereas previously someone would have to use a truck, car, airplane, or boat to manage such things, we're enabling that to be done over a satellite network.

As I drive from New Jersey to Washington D.C. for work, there is no cellular connection for about one third of the trip. If I had the ability to extend it through a satellite network, I would have a much better experience. The same is true for trains. Enabling connectivity for commuters is part of IoT and smart cities.

As we continue to scale our networks, costs will come down and when we adhere to standards-based platforms where we can roam between networks, we'll see our total addressable market grow. I think we're going to see a lot of new SATCOM users.

**Question: ST Engineering iDirect is a big proponent of industry standards. What do you see as the key advantages to having an industry united under a common set of standards and when, if ever, do you see that happening?**

**Don Claussen:** Although I don't think we've decided how we are going to do it as an industry, I believe we all want to embrace standards and build them into our products. What we need to do, though, is look at what mobile cellular operators have done because they have already figured this out. They know how to run between networks and how to make them all interoperable. We should take that framework and apply it because I don't think we can do smart cities or IoT or anything of that scale without having interoperability.

I don't know how long it will take. We've been talking about this for a few years and ST Engineering iDirect is going to participate in driving those standards discussions forward. As we put our products out into the market, the plan is that both our customers and our competitors will embrace those standards so that we can all work together. If we don't work together, it's just not going to happen. Hopefully we can provide market leadership and through proofs of concept we will demonstrate that it is feasible to do it.

**Question: We hear a lot about the government and military shifting towards the use of commercial off-the-shelf products to build out large scale networks more rapidly and cost-effectively. How is ST Engineering iDirect facilitating the use of its products without compromising the high level of cyber security and resiliency that is crucial to defense and disaster communications?**

**Don Claussen:** We have a government business that focuses on the US Department of Defense (DoD) and a business that focuses on Ministries of Defence worldwide. We are tightly integrated from a go to market standpoint because what the US DoD does others want to emulate, and everyone needs that security. The military and defense industry is moving towards the adoption of commercial products because they can get them into the hands of users much faster than something that's developed specifically for military use.

Those bespoke products will always be there, but what we are doing is taking the lessons we've learned from our defense customers and applying some of those to our commercial product while making sure that the network complexity is taken out of it. For example, in the defense environment, iDirect's Evolution® Defense product is a market leader. A lot of large operators use iDirect's Velocity™ product and we've just released a software-defined mode on the newly announced 450mp, the first in 4-Series suite of SDR modems, that will enable people to switch from an Evolution® Defense network to a Velocity™ network' thereby providing the mechanism for our customers to move back and forth from their bespoke defense network to a commercial network without sacrificing the security they need.

**Question: In the last year ST Engineering iDirect has forged strategic partnerships with Microsoft and Airbus. Can you provide a bit of detail about both endeavours and tell us why such partnerships are mission critical to the advancement of the company's technology?**

**Don Claussen:** We started to collaborate with Microsoft

Azure Space to prove out the concept and develop the capability to virtualize the ground segment. This is very important because if we don't virtualize and run on commoditized platforms that have a much faster refresh rate, we are making it harder for our customers to upgrade or to scale when their networks grow. We did a proof of concept late in 2022 where we demonstrated the demodulation capability of an iDirect virtualized high-speed SPCP modem running as containerized software on a COTS server located on Azure. That was also the first time we showed how we could receive high-speed traffic via a digital interface instead of the traditional L-band interface, proving our commitment to the DIFI standard. In May of 2023, we showcased the virtualization of the modulator capability of the modem to run on Azure. So, we've now done both the transmit and receive in a virtualized environment. We are now in a PoC phase to virtualize the network processing functions of the hub running on Azure Cloud on COTS.

In June 2023, we entered into a strategic partnership with Airbus Defence and Space to enable a tighter integration between the ground segment and the space segment. This allows us to collaborate with those who build the spacecraft and the payload. If we work with a company like Airbus at the beginning to understand how they are going to handle the technology that's going into orbit and how it's going to work, we can enable the systems necessary to manage that.

We can optimize the interactions between ground and space as well as introducing capabilities over the course of time that allow that to happen automatically. For instance, as capacity moves around in a given beam or a region, our technology will enable the operator to take advantage of that without user intervention, based on what is going on with the network. You can't do that if you don't interact with the people making the payloads because once they are in orbit, they're already up there for whatever the lifespan is going to be and then the ground is behind the curve. What we want to do is to be able to introduce those capabilities before or as the satellites reach orbit.

Part of ST Engineering iDirect's realignment is enhancing the leadership team with people who have worked at operators and worked at other ground segment providers and therefore been users of the equipment. We are talking with our customers about not only what we can provide for their existing constellations, but what they want for their next generation satellites. That way, we can either build or provide the capability they seek or help them think through that capability in an alternative way. This means we will be able to deliver a more relevant product that is future proof because we are continually evolving our technology with our customers and our partners.

**Question: I've read that ST Engineering iDirect is on a transformative journey, not only in terms of its identity but also in terms of product development. Can you**

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**expand on how the journey is unfolding and what we can expect to see from the company in the next 1 to 5 years?**

**Don Claussen:** Starting with the introduction of our new next generation product brand at Satellite 2024, we are going to demonstrate our story. Over the next 1 to 5 years, we are going to deliver a virtualized, cloud-based network that will evolve towards a standards-based approach. This will provide end-to-end orchestration of a network that's composed of multi-orbit, multi-access capabilities.

Our goal is to do demonstrations so that our customers can see the evolution of the technology as we come to major releases. People can come and see this in our labs. They can start to use it in their labs so that they can get used to the technology and understand what it means to them. This is all about creating a platform that evolves.

In the past, when we've progressed the technology, we've had to replace a lot of hardware. With a standards-based, virtualized approach we can move to a more software-based deployment which will allow our

customers to upgrade at a more predictable rate and allow us to focus on delivering new capabilities and not worry about obsolete hardware. Think of the gateway which typically could only provide as much capacity as resided in that gateway. Once we digitize some of the capabilities that have thus far been analog, that flexibility starts to grow because a portion of the gateway resources reside in the cloud.

Because there is now so much on orbit capacity with multi-orbit solutions and very high throughput geostationary satellites, we want to make certain that we set up our customers to scale for continual growth. .

It's an exciting time for our industry. We have new entrants into the market. More and more people are consuming satellite communications. This company has been an industry leader for a very long time and now we are entering a new era—the next generation ST Engineering iDirect—and we are going to drive a lot of what the market is going to require. ●



Setting up customers to scale for continual growth. Photo courtesy sdecoret/Shutterstock ●●●