



# Nokia's Triple Play: Fibre, Fixed Wireless and the Power of Automation

AN INTERVIEW WITH STEFAAN VANHASTEL

BY MELISSA COGAVIN, BROADBAND JOURNAL



STEFAN VANHASTEL,  
VP MARKETING &  
INNOVATION, NOKIA

STEFAN VANHASTEL, VICE PRESIDENT OF MARKETING AND INNOVATION AT NOKIA, IS DRIVING THE FUTURE OF BROADBAND WITH CUTTING-EDGE SOLUTIONS AND STRATEGIC VISION. WITH A DEEP BACKGROUND IN FIBRE OPTICS AND FIXED NETWORKS, HE BRINGS OVER TWO DECADES OF INDUSTRY INSIGHT. IN THIS INTERVIEW, HE SHARES HOW NOKIA IS SHAPING THE BROADBAND LANDSCAPE THROUGH INNOVATION AND GLOBAL COLLABORATION.

### TELL ME ABOUT NOKIA'S WORK WITH RURAL BROADBAND IN FINLAND.

I would say it's broader than just rural broadband and broader than Finland. Out of 2 billion homes across the planet, roughly half are connected and passed with fibre. Not all will be able to get fibre simply because the business case doesn't work, or it's just too hard because they are in very remote areas.

### AND FURTHER AFIELD?

There are also countries with good DSL or cable infrastructure available, typically in Western Europe or the US. Some countries started later with fibre. I live in Belgium, which started deploying fibre during COVID when the streets were empty, and they could dig up everything. But they had good DSL infrastructure, same with the UK; pretty good coverage with DSL.

### THERE IS THEREFORE LESS INCENTIVE TO CONVERT TO FIBRE?

Not necessarily, there is probably more incentive now than ever before to convert to fibre. DSL was good but today's digital landscape is driving a need for more capacity and greater speeds all of which fibre can provide. Finland is a good example. They didn't have a lot of fixed access in Finland because Finland had an unusually high adoption of mobile phones. As a result, there was actually very little fixed broadband because people were doing everything on their phones.

However, mobile handsets are no longer fast enough to do it all, especially for things like cloud-based applications. There's a lot of ambitious fibre rollouts going on in Finland with alternative technologies like fixed wireless access helping to fill the gaps to get fast broadband connections to more people sooner. It takes about 10 years to cover an entire country with fibre to the home.

### IT'S A SLOWER PROCESS THAN YOU THINK.

Many countries try to cut all the red tape and make the permitting process easier. In Belgium, where I live, if you dig up a street you have to notify all the utility companies, because if they need to

do digging as well in the near future, it must be combined in one bigger project. However, it also means that sometimes you'll need to wait 12 months to get a permit to dig somewhere because you have to combine it with two or three other projects. Then you basically need crews who can dig up a street and put fibre in the ground. And in many countries, that lag creates a bottleneck. There are just not enough construction companies to dig up every city all at once.

### IF EVERYTHING MOVES SO SLOWLY, WHY THE PURSUIT OF HIGH-SPEED TECHNOLOGY? DO PEOPLE REALLY NEED A 100GBPS NETWORK TODAY?

The point is, you're future proofing the network with fibre in the ground which will be good for generations. Operators can simply upgrade the speed by changing the electronics on both sides allowing them to easily go from GPON to XGS, to 25Gbps today and eventually to 50, and even 100Gbps in the future. While the fibre build is about 90% of the cost; once you put that fibre in the ground it'll last, it'll last for decades, and you can just keep upgrading the speed when you need to.

### THE NEED FOR SPEED. DO YOU THINK THE APPETITE FOR IT WILL KEEP GOING UP AND UP AND UP OR IS IT GOING TO LEVEL OUT EVENTUALLY?

Typically, if you provide the bandwidth, someone will figure out a way to use it. Bill Gates once said 640K is enough for anyone but look at where we are today with demand for 10Gbps and even 25Gbps speeds becoming more prevalent. We're no longer just using these networks for residential. Your neighbourhood might have a small startup company, maybe they do video production. With fibre, the operator can address both using one single network, because that fibre to the home network can do both GPON and XGS or 25 or 50 at the same time. So you no longer have to build a separate network just to connect that one video production company in your neighbourhood. They can just put them on the same network. The residential users stay on GPON or XGSPON, and maybe this video company goes to 25Gbps.

A great example of this can be found in New Zealand where the operator noticed a very heavy user on one of the fibre links, a cherry farm. The farm figured out that if they if they run image analytics on the cherries, they can accurately check the quality of each individual cherry, and then they can sort them precisely, guaranteeing their quality; thus, they can get slightly better prices. They take 72 pictures of each cherry, send the 72 pictures to the cloud, where they analyse the images and sort them accordingly.

### PRESUMABLY SOME DATA CENTRE IS ABSOLUTELY GROANING WITH PICTURES OF CHERRIES.

It's the additional bandwidth that's allowed this to happen. Before now, it didn't make sense to build an entire room with servers just to do one harvest a year. Now, because they are connected to a 25Gbps network, they have enough bandwidth, and can do all the processing in the cloud. They just rent a bunch of servers for two weeks. Because of this, they can triple the amount of land that they are going use to plant trees. His business case is improving all the time.

### YOUR FARMER'S EXPOSURE TO RISK IS REDUCED BECAUSE HE KNOWS EXACTLY WHAT HE'S DEALING WITH.

Exactly! When people ask why you need 10Gbps, that's why. Because a farmer wants to take 72 pictures of each cherry. Which isn't immediately obvious. It goes back to that investment; you're building something that is going to meet future needs. You'll never have to upgrade that cabling again before your retirement.

### WHAT'S COMING UP FOR NOKIA THIS YEAR?

There are basically three big areas that we invest in. One is fibre solutions. The other one is fixed wireless access. The third one is automation. Almost everything we do fits in one of those three buckets for broadband access.

### SO, WHAT IS NOKIA'S FOCUS RIGHT NOW?

To build next generation fibre technologies; offering our operators 10Gbps, knowing that 25Gbps, 50Gbps, 100Gbps are all available if required.



## FROM THE INDUSTRY

Depending on their needs and their business case, they can select the right combination of technologies: maybe it's GPON, XGS for residential plus 50Gbps for businesses, or maybe it's GPON plus 25Gbps.

For fixed wireless access, this will be a critical technology to get to 100% coverage. Satellite will play a part, but only for extremely remote areas - a single farm, a station in the outback in Australia will use a satellite, but not for a small village in Wales with maybe 50 homes. You can't cover that with satellite because hundreds of people want to be online at the same time. Satellites will struggle with that level of capacity; fixed wireless access could be a nice solution. We've been investing in sub-6, which is the low end of the spectrum, perfect for long distances. This is the spectrum that until now was used for mobile communication.

### **BUILD ONE TOWER AND YOU CAN COVER AN ENTIRE VILLAGE OR AN ENTIRE RURAL AREA PRESUMABLY. WHAT ABOUT SPEED?**

The capacity is somewhat limited; it's good coverage, but you're not going to get very high speeds. So, we started investing in millimetre wave, which are much higher frequencies. The distances are a bit shorter, maybe half a kilometre but the speeds are up to a gigabit per second, for example. So, the combination of the two can be good where you use the lower end of the spectrum, the sub 6GHz spectrum to cover an entire area and in the spots where you have bigger clusters of users, you would build an extra

millimetre wave antenna just to provide additional capacity for that cluster of users, for example.

Fixed wireless access is also a very cheap way for mobile operators to take market share in fixed markets; those who have built a very expensive 5G network, but the profit hasn't necessarily followed.

### **WHAT VERSATILE TECHNOLOGY. WHAT'S THE CATCH?**

The only challenge can be capacity; with the average fixed user consuming about 20 times as much bandwidth as a mobile user because you're watching Netflix or you're downloading games, for example.

But the solution is very simple. Install millimetre antennas in strategic areas where you're running out of bandwidth, and you suddenly get more bandwidth in that area. It works especially well if you go after underserved areas.

### **THIS IS CLEARLY GOING TO GO DOWN WELL. WHICH TERRITORIES ARE YOUR FOCUS?**

Europe, the US and Asia are the most advanced areas and we are in the Middle East as well. In the Middle East, most of those countries are starting from mobile connectivity because they never built out cable or DSL networks, or even telephone networks. Their first introduction to telecommunication was a mobile phone. We estimate that a couple of hundred million will get fixed wireless access probably over the next 10 years.

### **AND CLOSER TO HOME? WHAT ELSE ARE YOU WORKING ON?**

The third area for us right now is automation, the management of these access networks, whether they are fibre or fixed wireless access. Automation inside the home is important; once you bring fibre and fixed wireless access to the home, even with gigabit speeds, your next problem becomes your in-home Wi-Fi network. Even if you have state-of-the-art Wi-Fi, older devices like an old robot vacuum cleaner can clog up your entire network.

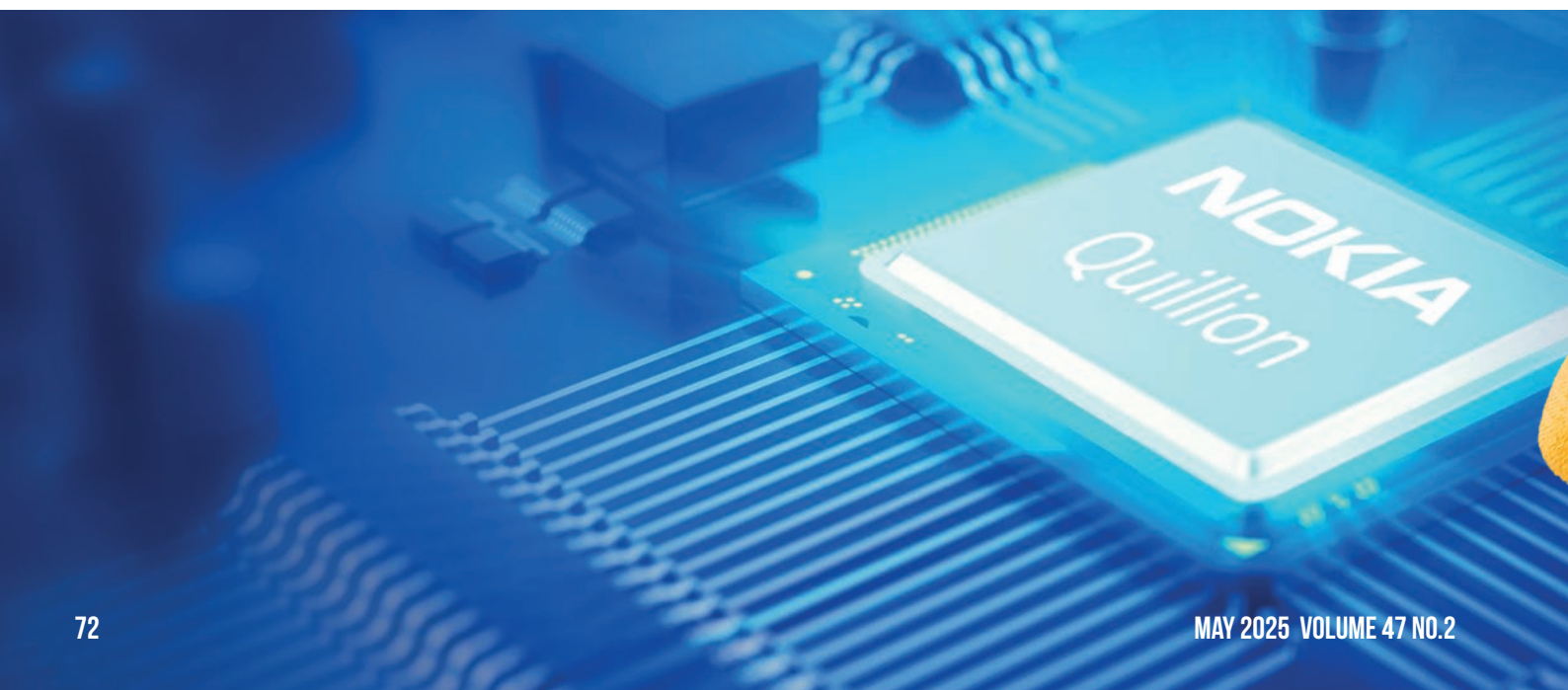
People typically call the operator when they have a Wi-Fi problem like this, and most cases it's not the fault of the operators, but they get called to solve it - because who else are you going to call?

### **HOW IS NOKIA HANDLING THIS ISSUE?**

We started building Wi-Fi solutions for in the home that can be managed by the operator. So, if you call the operator, they can actually see that your very old robot vacuum cleaner is consuming a lot of airtime in this frequency band and look to trouble shoot the issue.

### **IT'S GOOD THAT YOU'RE PROVIDING THAT VISIBILITY FOR YOUR OPERATORS AND THE END-USER.**

Operators can offer this type of managed service for a monthly fee and see a decent increase in ARPU from it. Other





operators will link that with a premium fibre offer, for example. If you take the gigabit fibre service, you also get premium Wi-Fi. There are different commercial approaches an operator can take; typically, it also reduces the calls to the helpdesk. Most customers tell us that 60% of the calls they get on the helpdesk are Wi-Fi related.

### YOU HAVE PINPOINTED A WEAKNESS IN THE CUSTOMER EXPERIENCE WHICH IS OFTEN THE MOST FRUSTRATING ONE TO SOLVE.

This sort of automation reduces that frustration. Automation means we can isolate problems; making sure that all the smartphones and the laptops are on the 5GHz band rather than on the 2.4GHz band.

### WHAT ARE YOU FINDING ARE THE CONSEQUENCES OF THIS LEVEL OF AUTOMATION?

Automation can help reduce calls to the help desk and reduce truck rolls, eliminating the need to send a technician out, which can cost €100-200.

### HOW ARE YOU EMPLOYING AI?

Interesting; when you build out fibre networks, operators work with subcontractors - the crews who dig up the street and put in the

fibre. They usually request photographs to document what was done, but also to allow the operators to verify that they put the fibre in the right connector. Usually, an operator can only spot check about 5% of these installs. The other 95% is a case of crossing your fingers; it's one of the biggest challenges that operators have. So we have trained machine learning in this area to improve efficiency and data accuracy so that our operators know exactly which fibre is connected to which port.

**BETWEEN FIXED WIRELESS ACCESS, FIBRE ROLL OUT, AUTOMATION AND AI, NOKIA ARE DOING MUCH TO IMPROVE QOE, BANDWIDTH, SPEED AND EFFICIENCY FOR THEIR CUSTOMERS FROM FINLAND TO NEW ZEALAND. WE WILL WATCH THEIR PROGRESS WITH INTEREST AND COME BACK TO STEFAN IN DUE COURSE.**

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