

The proliferation of 4G and steady progress on the government's Digital India initiatives and the Smart Cities Mission have opened up immense opportunities for global network equipment providers. Moreover, as the Indian market gears up to establish a robust 5G ecosystem, these opportunities will double in the future.

Nokia, a leading telecom equipment vendor operating in the country, is optimistic about leveraging these opportunities and aims to play a key role in the evolution of the country's telecom networks. In an interview with *tele.net*, **Harri Holma, Nokia fellow, radio systems, Nokia Bell Labs; Amit Marwah, head, customer marketing and communication, Nokia India** and **Michael Clever, head of E2E cloud solutions, mobile networks** share their views on the company's business strategies and key growth drivers as well as the roadmap for 5G in the Indian market. Excerpts...

**In your view, how does India compare with other global markets?**

**Harri Holma**

In 2017, India's data demand was higher than any other country in the world. It was higher than that of the US, which is very impressive. A part of this growth can be attributed to the launch of services by Reliance Jio Infocomm Limited. So, in terms of data, India is clearly the most aggressive market.

There are challenges though. The volume of data is high but spectrum is less than what is available globally. The site density too is not exactly as high as in some of the leading markets like Tokyo or South Korea, which tend to have denser networks or small cell deployments. This means that it is difficult to get the same quality of service in India.

**What is Nokia's business strategy for India?**

**Amit Marwah**

In the past few years, Nokia has made several investments in India. Our largest resource base of more t

From an overall business point of view, we want to play a part in the evolution of businesses and network

The other focus is to create a larger impact with our software business that focuses on web-scale players and enterprises. Third, we want to go beyond conventional telecom operators and explore vertical markets such as the enterprise market. Our biggest strength is the end-to-end portfolio.

## **Michael Clever**

India is one of our growth countries. It has very dense urban areas, exploding demand and data traffic, a

**Telecom operators are optimising their energy consumption. How is Nokia helping in this area?**

## **Michael Clever**

We have a new chipset called ReefShark which brings three times more capacity and requires 64 per cent less power. The chipset will be rolled out with the commercial launch of 5G. We realise that the telecom power consumption is huge and bringing it down is one of our major concerns. In fact, using cloud reduces power consumption significantly, as it has the latest and

the best IT processor. We believe that we can save 90 per cent power in comparison to old networks with the new chipsets, cloud and new processors.

**What are your views on the use of small cells to expand coverage?**

**Harri Holma**

Small cells have been deployed in a number of markets and they fall in the unlicensed category. One thing to note is that 4G long term evolution (LTE) technology can use unlicensed frequencies. There are operators like AT&T and T-Mobile in the US which use 4G LTE on their licensed as well as unlicensed spectrum. They deploy small cells in high-traffic areas. They can use more spectrum by aggregating licensed and unlicensed frequencies. This also shows that small cells provide benefits over 4G networks and even more on 5G networks with higher frequencies.

**How do you see the 5G roadmap panning out in India?**

**Harri Holma**

Typically, advanced technologies have arrived a little late in India, but in the case of 5G, things may be very different. Today, India has emerged as the number one country in terms of mobile data consumption. This also indicates that there is a clear need to provide more capacity and 5G will be one of the solutions in the toolbox providing more capacity to Indian operators.

A key use case of 5G is to support extreme connectivity in the form of internet of things. Optimisation here means a lower cost, lower power consumption and also better coverage.

5G is also important for critical communication. By enhancing network reliability and reducing latency, several advanced and critical applications can be run on top of the networks. It could be some cutting-edge machine control system or advanced traffic control application that is not

practical today.

### **Michael Clever**

India is producing Nokia's 5G platform for the world. Nokia has a huge R&D facility in Bengaluru, Karnataka. We have thousands of engineers working on 5G, helping build an ecosystem around it. Moreover, equipment for our new platform, 5G AirScale, is being produced in Chennai, Tamil Nadu.

### **What can the government do to enable the roll-out of 5G in India?**

### **Amit Marwah**

The regulator will have a role to play in giving the initial push to network evolution. The first step is to make spectrum available and affordable because it has to be utilised for future technologies like 5G. Also, there is a need for higher fiberisation. Issues with right of way and other regulatory challenges need to be eased. Once that happens, the business case for the sector will develop automatically as it has happened with 4G.

### **How is Nokia contributing to programmes like Make in India, Digital India and the Smart Cities Mission?**

### **Amit Marwah**

We have made in-roads into smart city projects with our end-to-end portfolio offerings. We are engaging and collaborating with stakeholders in the smart city ecosystem, including integrators as well as state governments.

## **What are the key challenges in the Indian telecom market?**

### **Harri Holma**

Some of the critical things need to be in place such as spectrum, network architecture and network modernisation. The spectrum for 5G, in an ideal situation, is about 400 MHz divided among three to four operators (around 100 MHz each) over the 3-5 GHz spectrum band. While 5G would work with lower spectrum, it would not work optimally.

Second is the network architecture. Soon operators will start the evolution to cloud and they should make sure that they have enough fibre backhaul available, especially to support the increase in traffic.

Another area is network modernisation. The network has to be prepared from the radio point of view and the end-to-end point of view for the introduction of 5G. If you look at the Nokia AirScale base station, it is already prepared for the 5G deployment. It means that operators who have that kind of product in the field are better placed to roll out 5G rapidly.

## **Do you feel slow fiberisation is an impediment for backhaul networks?**

### **Harri Holma**

Fibre definitely will be a good thing for 5G deployment but the microwave radio has shown that it is not as important for India. Of course, fiberisation in the long term will be beneficial. If we only look at mobile broadband, then we would just need bandwidth for user data; but when we move to the second phase, then we would need things like low latency and high reliability. We would also have to cater to content.

### **Amit Marwah**

In India, fiberisation in urban areas needs to move much faster but that does not mean connecting 100 per cent sites with fibre because we can still survive with good microwave to a large extent. When we say that Japan or Korea have 100 per cent fiberised sites, we have to understand that almost the entire country is urban.

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