



## LoRa gets a boost from the developing world

Much has been written and said about the progress of LoRa in the world's developed economies, but the technology is also gaining rapid acceptance in the developing countries as well, with large scale deployments in places such as India, Africa and South America, writes Peter Dykes

Perhaps one of the most ambitious deployments is on the Indian subcontinent. VS Shridhar, senior vice president and head of Industrial IoT (IIoT) at **Tata Communications** says, "India is seen as a high-growth potential market for IoT and it has recently taken the lead in global smart cities development. Tata Communications is building the foundation for IoT in India - building the world's largest LoRa network, spanning nearly 2,000 communities and touching over 400 million people in total. In 2017, the company had already deployed LoRa network in 38 cities in India, with many more cities planned in 2018. The initiative will bring together devices, applications and other IoT solutions to create an India-wide IoT ecosystem."

He adds that a tangible example of an IoT network which has been rolled out in India by

Tata Communications is the LoRa network. Recently, Tata Communications partnered with **MOTWANE** to deploy 300 smart street lights for **Jamshedpur Utilities and Services Co. (JUSCO)**, India's only comprehensive urban infrastructure service provider, using LoRaWAN technology. The system enables smart features such as switching the lights on and off or dimming them remotely from a central command centre. The lights can be adjusted in clusters depending on need in each location, which helps reduce manpower costs and energy consumption further.

Indeed, Tata recently announced a tie-up with digital infrastructure provider **Mahanagar Gas Limited (MGL)**, one of India's leading natural gas distribution companies, to deploy 5,000 smart gas meters in Mumbai. The company says the



**VS Shridhar,**  
Tata Communications



**Arnab Das,**  
Aricent



**Iain Stevenson,**  
Comsol

new smart meters will give households and businesses unprecedented visibility and control over their gas usage and enable MGL to enhance operational efficiencies. Tata predicts that the global smart gas meter market is set to grow from around US\$1.59 billion in 2016 to US\$2.27 billion by 2021 and it expects that there will be around 130 million smart meters across India in the next three years.

But there is more. Arnab Das, the vice president and global business leader for Service Line-IoT Offerings at **Aricent**, says, "The [Indian] market is on the cusp of significant growth in low power wide area network (LPWAN) deployments with several operators and technology firms are forming various alliances to address the service infrastructure availability. There are indications that a net is being created of LoRa WAN coverage that includes up to 50 cities across India. A significant number of use cases that can drive IoT application uptake are in trial phase using LoRa technology. The software and deployment and support service providers have also scaled up their readiness to provide trained personnel and innovative software driven intelligent services."

Elsewhere, LoRa technologies are also gaining traction. In 2017, South African wireless connectivity provider **Comsol** launched an open architecture LoRa LPWA network nationally in 2017. Backed by **Cisco** and **IBM**, the company claims it is the largest IoT network in Africa and was deployed on the back of Comsol's R1.5 billion (US\$122m) Open Access Layer 2 National network investment. It services all the major metropolitan networks in South Africa.

"IoT offers solutions for smart cities, smart businesses, and even many of the challenges we face as a society, for example managing scarce resources like water. By enabling smart tracking, smart perimeter control, smart agriculture, smart buildings, as well as smart city applications like metering and manhole cover monitoring, IoT is already fundamentally changing how we live. We are proud to introduce the network that is going to empower African utilities, businesses, and individuals to gain the benefits the IoT offers," says Iain Stevenson, the chief executive of Comsol.

In South America, LoRa is also gaining rapid

traction. In 2017, Argentina-based telecoms and technology player **Inversiones Condor (ICondor)**, also launched its IoT network using LoRaWAN based on Semtech Corporation's LoRa devices and wireless RF technology. ICondor, which created what is now the Movistar network and also the Claro (America Móvil) network. The company is now working to create an Argentine and South American nationwide IoT LoRaWAN network which it began in Buenos Aires and Rosario. The company is aiming to cover the whole country by July 2018. ICondor says it will serve many of the typical markets for IoT including asset tracking, metering, smart city and smart home applications and smart agriculture.

The other hot market in South America is Brazil. Following the release of new technical requirements for radio frequency (RF) communication devices enabling the operation of LoRa devices and technology throughout Brazil by Anatel, Brazil's National Telecommunications Agency, **Semtech** says it is ready to roll out a LoRaWAN nationally. According to Frost and Sullivan, by 2021, the IoT market for applications and hardware is set to generate US\$3.29bn in Brazil.

"The recent actions taken by the telecommunications regulatory agency for the largest country in Latin America have facilitated the immediate rollout of a LoRaWAN network in Brazil and, likely, the continent," said Marc Pegulu, vice president and general manager of Semtech's Wireless and Sensing Products Group. "Citizens of the eighth largest economy in the world will soon benefit from low power wide area networks (LPWANs) powered by Semtech's LoRa Technology in a variety of exciting applications, including cities, building, supply chain and logistics, agriculture and metering."

It is becoming quite clear that the major drivers behind the rollout of LoRa in developing regions of the world include smart cities, utilities and agriculture, the latter being particularly important in those countries with agro-based economies. While IoT alone cannot feed the world, it could potentially make agriculture a far more efficient undertaking. Similarly, by creating efficiencies in areas such as energy management, it could be an important part of developing nations' strategies for growth without the attendant pollution experienced by the industrialised countries. ■

*"IoT offers solutions for smart cities, smart businesses, and even many of the challenges we face as a society"*



## Cost, power consumption and ease of design and configuration see LoRa selected for Indian IoT connectivity

Tata Communications has recently started to roll-out LoRa technology for its low power wide area network (LPWA) across India. Here, Anthony Bartolo, the digital infrastructure provider's chief product officer, details the needs of developing markets and the Internet of Things (IoT) applications that are driving adoption. He also explains why Tata Communications has chosen LoRa in preference to narrowband-IoT (NB-IoT) technology

**IoT Now: Most industry forecasts place the developing economies very much in the forefront of IoT adoption and usage - why do you think this is?**

**Anthony Bartolo:** There are a number of factors at play. The developed economies by definition already have quite well-developed infrastructures, which is something that many developing economies do not have. IoT can be perceived as a way to overcome infrastructure challenges and drive innovation to address challenges around areas such as water management, agriculture, population growth and others.

government support along with local enthusiasm for technology adoption plays an important role in IoT growth rates in developing countries. GSMA Intelligence recently published an interesting set of statistics in its 'IoT: the next wave of connectivity and services' report. This indicates that while the Asia-Pacific region will continue to be the largest regional market for IoT connectivity, this is fuelled by industrial IoT rather than consumer IoT adoption. Therefore the charge is led by enterprise adoption of IoT for a range of use cases including smart manufacturing and Industry 4.0 adoption, logistics, transportation, agriculture, smart city

significant growth up to 2025.

**IoT Now: What sort of common challenges do organisations face, when they are embarking on a new IoT project?**

**AB:** IoT-related projects usually demonstrate positive results in the proof-of-concept (PoC) phase. However, in some cases an organisation may not be ready to immediately scale up the project. One of the reasons for this can be that an IoT project often touches multiple organisational processes and boundaries and there is no single owner to help take advantage of the benefits without encroaching on someone else's turf. Hence, IoT projects can get caught up in internal struggle of ownership and this issue can have significant impact on the actual implementation of the project, when going beyond the PoC phase.



**Anthony Bartolo,**

*We assessed a number of low power wireless technologies, including LoRa, NB-IoT and others*

organisation that has already enabled IoT solutions many times can help enterprises navigate these issues. Ultimately, taking advantage of significant benefits associated with IoT outweighs the occasional organisational tangle.

**IoT Now: With all the technology options available, why focus on LoRa for LPWAN? What about NB-IoT?**

**AB:** We assessed a number of low power wireless technologies, including LoRa, NB-IoT and others. We identified LoRa technology as fulfilling our requirements across a range of criteria, including cost, power consumption, ease of design and ease of configuration. We selected LoRa not only for its range and low power consumption advantages, but also for the success of the LoRa Alliance in developing and promoting the LoRa ecosystem with several hundred technology companies and service providers adopting the technology around the world.

LoRa can be used for both fixed and mobile devices. Its bi-directional communications capabilities support multiple classes of device, thus unlocking use cases requiring faster application reaction time for network initiated transactions. LoRa is robust to local signal interference and it is relatively easy to densify network coverage if required.

LoRa provides excellent indoor and underground coverage, so coverage can be augmented with femtocells, to cover specific areas – for example indoor car parks or underground metro transport systems. The final

but important reason is to do with IoT security. In this area, LoRa presents a secure option. The LoRa protocol uses a combination of device, network and application level encryption, making it a highly secure technology.

**IoT Now: Why is an ecosystem approach important in order to enable specific services? Could strategic partnerships be an alternative to engaging with a wider, open ecosystem?**

**AB:** While our aim is to become a core enabler for connected devices in India, we understand that we will need to work with a number of partners in a broader ecosystem to achieve this. Our customers have indicated a range of challenges – from technology fragmentation to needing help with how to derive value from IoT data. Hence, it will be easy for these customers if they could avail a range of services by engaging with a single ecosystem.

This will enable seamless proliferation and adoption of IoT across sectors. Being able to work with a single source for connectivity, hardware sourcing, applications, data analytics, consulting, maintenance and managed services will enable enterprises to focus on their core business and not worry about engaging with different service providers for all-round connectivity solutions.

**IoT Now: How is Tata Communications engaging with the market in support of IoT?**

**AB:** We started deploying our IoT network in Mumbai, Delhi and

Bengaluru – which have all had live networks since June 2016. Since then we have been constantly developing and expanding our network coverage. We now provide coverage across 38 cities and industrial areas, each having a population of more than one million people.

Our network coverage extends along seven major industrial and logistics corridors in India, including Mumbai-Ahmedabad-Delhi-Kolkata-Chennai-Bengaluru. By mid-2019, we aim to expand our network to include more than 16,000 macro gateways and 50,000 femtocells, covering a population base of around 400 million people, making it the largest LPWAN in the world.

We recognise that the true value of IoT lies in developing solutions for real world challenges, not just in providing a network and connectivity. Hence, we are working to provide a scalable, pan-India solution platform and a complementary deployment platform, facilitating device plug-and-play and supporting multiple applications managed on a single platform for developers to work with. Our unified IoT platform encompasses device and service management, analytics, business and operating support system (BSS/OSS) infrastructure, a data service cloud layer and network inter-working.

The platform supports multiple applications and use cases. In addition to our network roll-out and platform development, we are building up a local ecosystem of designers, application developers, hardware and technology partners. There are a number of ways to engage customers, such as through provision of connectivity application programme interfaces (APIs) in the cloud, with which our customers can develop their own applications. We are also engaging with some of the top technology colleges in India to get their engineering students interested in the potential of IoT. In February 2018, we published our inaugural 'India IoT Report' which can be viewed here:

[www.tatacommunications.com/wp-content/uploads/2018/02/IoT-Report.pdf](http://www.tatacommunications.com/wp-content/uploads/2018/02/IoT-Report.pdf). The report is a

consumer survey that revealed how Indians believe that IoT-enabled automation at work and in households can help them.

**IoT Now: How do you see IoT developing in the coming 24 months? Do you see developing markets continuing to lead adoption and usage of IoT?**

**AB:** We expect growth to continue to be driven by the developing economies. In the case of Africa, for example, growth is predicted to exceed all other regions, albeit from a small initial base of connectivity. The Middle East region is also expected to witness double-digit growth in connectivity.

The Asia-Pacific and South Asia markets represent an already significant and established developing economic and industrial region for IoT. Growth and scale in these regions will be a significant factor driving overall, global adoption of IoT technology and usage. In the coming years, we expect increasing proliferation of use cases, more proof of concept trials and a continuous movement towards higher volume based, commercial deployments.

While the private sector plays a significant role in IoT adoption rates, government initiatives will nevertheless have an impact. We are already seeing this in India with the Indian government's smart city initiative, as well as AIS-140 intelligent transportation, IoT enablement for public service vehicles.

Innovative technologies including cloud, artificial intelligence, analytics and robotics are required to blend with IoT in order to truly transform businesses. Increasing interest in and adoption of Industry 4.0 initiatives along with making the manufacturing industry in particular and associated segments in general more efficient will also provide impetus for IoT adoption. With reports predicting industrial IoT as a driver for growth in developing markets, it is apparent that IoT growth will become a part of a broader trend for new technology adoption over the next two years and beyond. ■

[www.tatacommunications.com](http://www.tatacommunications.com)

*We expect growth to continue to be driven by the developing economies. In the case of Africa, for example, growth is predicted to exceed all other regions, albeit from a small initial base of connectivity*