The Digital Silk Road: Exclusive interview with Citic Telecom CPC boss

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About a week ago, a Chinese company called Citic Telecom CPC formally announced that it had completed its acquisition of a European company called Linx Telecommunications.

While the story may be interesting in and of itself, it's just one piece of a much larger jigsaw puzzle China's Premier Xi Jinping wants to piece together.

A couple of years ago, Jinping sketched out a roadmap of what has come to be known as the "One Belt, One Road" project, often shortened to Obor.

Essentially, Obor is a vast Eurasian logistics network, which includes, land, sea and air routes, as well as telecommunications infrastructure – which is where Citic Telecom CPC comes in.

While Jinping may not be directly pulling the strings, as it were, a lot of Chinese businesses – and European enterprises for that matter – are developing stronger ties in all of the sectors Jinping had outlined:

- transportation;
- energy; and
- telecommunications.

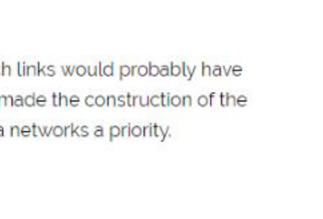
Had Jinping not said anything, such links would probably have continued to develop but Jinping made the construction of the Eurasian energy, logistics and data networks a priority.

'It's just a coincidence'

Knowing the background, then, it was natural to think that Citic Telecom CPC is doing its bit for the nation by expanding its network along what is now being called the Digital Silk Road.

It can't be just coincidence.

"It *is* actually – it's an absolute coincidence," says Stephen Ho, CEO Citic Telecom CPC, in an exclusive interview with *Robotics and Automation News*.



Stephen Ho, CEO, Citic Telecom CPC

"It's genuinely true, and I didn't make up this story as well.

"I've known this guy, this banker, for a long time. We never had any business before. He just phoned me one day and he said, 'Would you be interested in this company..?'

"I didn't know anything about Linx, honestly. Never come across it. It was a very small company – well, it has a presence in 14 countries, but it has just a tiny number of people working for it.

"We weren't in this part of the world to be able to recognise these opportunities, especially in eastern Europe and Russia, we're not very familiar.

"However, the other side of the story is that the country, China, has been trying to develop – and this is on a separate angle – this belt thing, saying, 'Oh, right, this Silk Road, we can revitalise, because there are economic benefits', and so on… that's a separate thing.

"But it's just that when they were talking about it, Linx decided that they want to recoup their investment."

Netherlands-based Linx had about 100 employees, whereas Citic, as a group, has about 150,000 employees, generates revenues of approximately $57 billion a year, and operates in about 50 different business sectors, including media.

It's 60 per cent state-owned, which is why it was worth pressing Ho on the issue of whether he was part of the "Chi-Com propaganda machine", as some might call it.

"I can really, honestly, 100 per cent assure you this is purely coincidental," he says.

"It so happened that I wanted to expand my network capability and network coverage, and something comes along and grabs my attention."

Slow boat to Europe

The Eurasian landmass stretches from the Chinese Pacific coast to the French Atlantic coast, and the idea with Obor is that all of it – and parts of Africa – should be navigable by land, sea and air for businesses that want to trade with each other.

Maritime routes have been established for a long time, and shipping accounts for the vast majority of transported goods in the world today.

But ships are slow. A train would be much faster, and trucks would be more direct.

It was only earlier this year, after centuries of trade, that direct freight train services between China and western Europe were established.

If that was difficult to achieve, a direct road between the two trading giants would probably be impossible, in large part because the countries in-between are not as stable as might be required, although there have been some transportation agreements made in those places as well.

Trade between the European Union and China is absolutely massive. Approximately €1 billion a day is exchanged for goods and services between Chinese companies and companies in the EU.

China is the EU's largest trading partner after the US. More than 10 per cent of all EU exports – valued at $170 billion a year – goes to China.

The main EU exports to China are:

- machinery and equipment;
- motor vehicles;
- aircraft; and
- chemicals.

The main imports – valued at a total of €345 billion a year – from China are:

- industrial and consumer goods;
- machinery and equipment; and
- footwear and clothing.

So, in the trading of physical goods, China sells more to the EU.

However, in the services sector, it's the other way round – the EU sells more services to China.

In 2016, the EU exported more than €37 billion of services, and imported just over €26 billion, leaving it with a positive balance of €11 billion.

Examples of service sectors are tourism, banking and financial, and of course telecommunications, where companies like Citic Telecom CPC fit in.

The language of business

The internet is essential to almost all business these days, even those located along what might have been the ancient Silk Road.

With so much money and information being transferred across borders, a secure and reliable telecommunications infrastructure is imperative for the Obor project, which, if truth be told, sounds more like an aspiration, an articulation of ideas, rather than a blueprint for a specific construction.

The acquisition of Linx by Citic Telecom CPC, which may or may not be acting on direct orders from Beijing, is a big step towards providing the necessary communications framework for the further expansion of trade between the EU and China.

Already a large telco in Hong Kong and China, in acquiring Linx, Citic Telecom CPC adds a number of assets to its business, including:

- a 470 kilometre submarine fibre network in the Baltic Sea, linking Finland, Sweden and Estonia;
- network operation centres in Moscow and Tallin, in Estonia;
- a data centre in Tallin, which happens to be Estonia's largest internet exchange; and
- extensive infrastructure and business operations centres in 14 countries with 14 points of presence across western Europe, eastern Europe and Central Asia.

For Ho, a former IBM employee, this marks the beginning of a new era, with the company's telecommunications network now covering more than 140 PoPs in 130 countries.

Most importantly, says Ho, the network includes "critical locations along the Digital Silk Road".

Ho says the growth of the logistics network envisioned in the Obor project will necessitate faster and more reliable data connections.

This means internet exchanges and PoPs as close to the user as possible, wherever possible.

But do these things really matter – does it matter where the internet's point of presence is, as long as the data gets through somehow?

Fast response

Ho says that it does, in fact, matter where a PoP is located. "Yes, it does. You're talking about two types of network connections.

"One is, of course, the internet, and we're all very familiar with that. The internet is what we call a 'best-effort network', so everybody can connect with everybody.

"And there are two issues that are important to consider.

"First, there's network latency, which is the delay in sending a packet of information from one end to the other.

"Sometimes, that delay can be quite long. So long that it may not be usable for certain enterprise applications.

"If you want to deliver mail, it doesn't matter if it takes a minute. But if you were to send an instruction to, for example, put a switch from off-to-on position or on-to-off position – albeit that's a simple operation – you need a certain response time.

"This goes for a lot of software applications in, for example, the logistics industry or manufacturing industry. They may have stringent requirements. Once something is sent to the other side, the response time needs to be quick, otherwise you'll hang the software."

Most logistics providers these days provide their customers with the opportunity of realtime or near-realtime tracking of parcels containing whatever goods they are expecting to be delivered.

With huge logistics companies now developing massive networks across the entire Eurasian landmass, such realtime data flows may not be possible in some areas that are too far away from a PoP.

But for some consignments, perhaps expensive machinery such as a container full of multimillion-dollar semiconductor manufacturing equipment, one would imagine realtime tracking would be a pre-requisite.

So far, air and sea have been used for most logistics operations, but road and rail may become an important part of the jigsaw puzzle in the next few years. And connectivity between vehicles and between the vehicle back to a central control room would be required, and time-lags, or "latency" as it's called, needs to be minimised.

"There might be some companies or IT departments that say, 'I want to use this network, but this network has got to have latency specifications or packet-drop specifications'.

"Say, for example, along the way, a packet is dropped, and you can have protocols and agreements about that – there may be a limit to how many packets that can be dropped from the service."

This is a big differentiator between the service levels of a network, says Ho.

Hyper-networks, or system of systems

Given that in some developing countries – such as the ones in central Asia that Obor will traverse – internet service in some areas is unlikely to be good, or even exist, building more telecommunications infrastructure would be required to provide higher levels of service – or just service.

That's the first issue.

"The other thing is hyper-networks," says Ho. "Hyper-networks are more stringent – they're not best-effort networks. They are designed to meet certain specifications from the outset.

"And that necessitates what we call 'nodes', because if you're in a certain country or a city and you want access – through the network – to somewhere else, and you want to be able to predict that particular information that you sent out is arriving at a certain end, a certain distance, a certain time or certain reliability, then you need private networks with very stringent design requirements, implementations and operations.

"That's the big difference between the public internet and private networks."

Another thing about networks is that, although any data from any individual or enterprise can be transmitted through them, there are ways to tailor networks for different things.

At the moment, countries in western Europe, particularly Germany, are developing internet of things networks for industry and for transportation.

Newly manufactured cars tend to have high levels of vehicle-to-vehicle communications as well as vehicle-to-infrastructure communications.

And in factories, more machines are being installed with sensors.

Each network, and network within a network, needs its own system, and needs to be able to communicate with other systems, in a sort of system of systems.

And while open standards enable interoperability, they're not always the solutions that larger companies choose because they often prefer proprietary networks because they tend to be seen as more secure, or more commercially desirable.

"We can customise networks to do certain things, give them certain functionalities to cope with certain things, according to specific requirements of industry," says Ho.

"But for internet of things, that's a different ball game. There are different levels of IoT that we're talking about.

"IoTs in industry need a lot of sensors, and it only makes sense if you're talking to a very good industry.

"You can't say IoT and use it to mean IoT in general. I mean, you can just put a sensor into a refrigerator or a put a sensor into lighting, and so on, but that's not meaningful.

"On the other hand, if you say we have a sensor that responds in nanoseconds or milliseconds because it's on a self-driving machine – car to car communications, for example – you can't relay those signals back to a central location and have the signal come back and react to it because the reaction time might be 0.1 milliseconds, and that's not going to be fast enough.

"You need to have onboard computing functions to say, 'My car is going to bump into your and the response time to press on the brake is less than one millisecond'.

"So that would be another type of IoT. So you can't just spread false IoT to different areas – it has to be specific as to what kind of sensitivity and responsiveness we are talking about.

"Those IoTs, the ones within vehicles or similar systems, will not go back to a network before they react to a certain emergency – it will have to have onboard computing.

"But that data will eventually go back to a network when it has already done something and report back and another set of procedures would take place.

"For that part – reporting an incident afterwards – you don't need a network with that kind of responsiveness.

"So for the general network that we do – which is a Layer 2 or Layer 3 network, which is on-packet – they have certain limitations on distance, timing and so on.

"It very much depends on what kind of industry it is and what kind of servers the IT department needs.

"They may be running stacks of computers somewhere to run a manufacturing operation, along the lines of an Industry 4.0 model, and they might want to, for example, control the robotics and automation systems from a remote location, and need to run the software centrally from somewhere.

"And those networks that interconnect and transmit the information have got to be very reliable, the availability has got to be very high, and they need to design the distances as well.

"Otherwise, if it exceeds the timing of what is intended, then it will collapse."