China Unicom: The biggest 5G impact will be on manufacturing



In the past, digital transformation of manufacturing meant factory automation or replacing manual labor with machines.

Now it means the integration of 5G with other powerful technologies such as AI, big data and cloud computing, said Dr. Yang Lei, vice president of the China Unicom Zhejiang Intelligent Manufacturing Research Institute.

"Once 5G is combined with sensing and control technologies, edge computing, AI and big data analytics, it will drive the transformation and upgrade of China's manufacturing industry and lead us to a fully cloud-based, connected and intelligent new era," he said.

Dr Yang said China Unicom research indicated that the biggest impact of 5G would be on the manufacturing sector. It is forecast to account for 28% of the economic value of manufacturing in 2035.

China Unicom has a team of around 100 staff working with corporate partners on developing 5G scenarios.

They are focused on eight industries: the aviation, auto, equipment and home appliance manufacturing sectors, and mining, iron and steel, petrochemicals and power generation.

Dr Yang said the company had created a 10 billion yuan (\$1.55 billion) fund to incubate use cases and to accelerate industry adoption.

One impact from 5G is the shift in traffic to the cloud, easing the loads on terminal devices.

"With large bandwidth, low latency, and massive connections, more and more data is uploaded to the cloud platform. The computing and processing capabilities of the cloud platform are much higher than those of the devices.

"Therefore the requirements for device processing capabilities will gradually decrease, which will result in a rapid reduction of the device costs," Dr Yang said.

He said the strength of 5G was its ability to "easily connect man, machine, material, method, environment, and measurement, so that we can develop dedicated applications for more scenarios."

One use-case developed by China Unicom was the application of 5G and AR to provide precision control of a robotic arm to carry out maintenance and other tasks in a factory.

"With the application of big data, we can see the probability of faults in real time, helping onsite personnel better manage equipment and production."

In another application, a robot can scan for faults in the production process at an auto plant. Its real-time calculations are uploaded to the cloud and integrated with AI and big data to provide an analysis of fault tolerance that can substantially cut costs.



Yang stressed that it was important for operators to gain a deep understanding of industries to find the commonalities and achieve commercial scale. "Custom solutions won't deliver scale. We make a conscious effort to identify commonalities. When that is achieved, we can replicate across different industries.

"To find the common requirements, you need specialized talent. In China Unicom, we have hired many people from the vertical industries."

He said China Unicom had had successful collaborations with leading industrial firms such as Commercial Aircraft Corporation of China, Sany Heavy Industry, Geely FAW, Gree and Midea.

He noted that the role of operators was changing, with the collaborations often requiring them to set up companies or joint teams to promote the experience to the whole industry.

Unicom had also found that partner companies were also enthusiastic about spreading the word.

"After we have done some cases and accumulated capabilities, they show great interest in working with us to apply those cases and capabilities to the whole industry."

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