Capgemini

TECHNO VISION Change Making 2021
BE LIKE WATER

Simply the **Edge**

5G and The Fog expand the edges of IT infrastructure further into the real world, making the digital twins of 'things' more realistic and smarter than ever

5G and fog computing are pushing storage, processing and connectivity power deeper into the physical world and further away from corporate data centers. With potentially every 'thing' at the edge of infrastructure in connected real-time to the network, the vision of digital twins evolves. They become even more precise, trustworthy models of their physical equivalents. Add (artificial) intelligence, and they turn out to be much 'smarter' than their real-life twins. This brings radically different perspectives on how to orchestrate and manage so many more physical assets – and the data it generates – as part of the IT infrastructure. But once the edge is unleashed, it's better than all the rest.

Bernd Wachter
Expert in Residence

WHAT

- The internet of things (IoT) brings a rich infrastructure that connects physical assets to IT systems, often in real time
- Computing is now fluid, with usecases requiring data to flow seamlessly from cloud to fog to edge and ultimately to mist computing in order to meet business needs.
- AI is leveraged to predict their future state and drive their interactions with other assets.
- 'Digital twins' pop up in all major industries, but more notably in manufacturing and utilities, where operational technology (OT) and information technology (IT) merge.
- 5G is opening up the speed envelope, enabling data transaction at the edge interconnecting users, machinery, sensors and other "things" alike seamlessly.

USE

- Daimler launched the world's first local 5G network within its automobile production 'Factory 56' in Sindelfingen, Germany, connecting all production systems and machines throughout the entire Mercedes-Benz assembly process.
- The Swiss center of excellence for agricultural research, Agroscope dedicated 17 strategic research fields (SRFs) to focus on the challenges of the agriculture and food sector, by leveraging the latest 5G, edge and fog technologies for Precision Farming.
- Auckland, New Zealand has increased its 'Smart City' IQ by using sensors in streetlights to monitor traffic flow, easing congestion by analyzing data collected.
- To tackle the problem of lost sales due to out of stock products, US-based grocery chain, Giant Eagle deployed smart shelves in its stores to reduce stock replenishment time by two-thirds and cut the number of out of stocks on any given day by 50%.
- UK leading auto parts distributor, Andrew Page used telematics to reduce speeding by 97%, with a 47% reduction in crashes, and a circa 7% improvement in fuel economy and reduced maintenance costs. (Capgemini Research Institute)

IMPACT

- Benefiting from a real-time connection to physical assets, for route optimization, increased resilience or for improved customer experience.
- Adding value to physical products, e.g. through the provision of usage analytics to customers.
- Creating new business models through the monetization of the IoT and develop a fully immersive experience through a blend of augmented and virtual reality.

TECH

- IoT, 5G and digital twin platforms: GE Predix for the Industrial Internet, IBM Watson IoT, Microsoft Azure IoT Suite, C3 IoT Platform, AWS IoT Core, SAP Cloud Platform for the IoT, ThingWorx IIoT, AWS IoT Greengrass, Cisco Jasper, GE Predix, ptc ThingWorx, Capgemini 5G Research paper, OpenFog
- Connecting the orbit: AWS Groundstation, Azure Orbital
- Open standards: Open Connectivity Foundation, The Open Group IoT Work Group
- IoT marketplaces and communities: IoT Consortium, IoT Talent Consortium, Industrial Internet Consortium, Platform Industry 4.0

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