

GETTING AUGMENTED

The world's economies are turning digital and the age of Augmented Innovation is coming. We're not there yet, but ICT and AI are turning the key and the door is opening.

Connectivity

The heartbeat of a Better Connected World



By Cao Zihui

It has taken us from the industrial age to a digital age where networks and data are becoming a new factor of production alongside land, capital, and labor. In the fully connected age of Augmented Innovation, networks combine physical and virtual digital connections, ramping up the value both create.

The heartbeat of humanity will soon be as much digital as it is physical. Our cyber heartbeat – a unique multidimensional identifier of our online presence – will be with us for life, like its physical equivalent.

Mobile Internet is emerging as a game changer for billions of people, both at work and at home. People are flexing their personal financial muscles with e-commerce, while phone apps mean that things like clothing, food, accommodation, and transport are just a few taps away.

Connectivity has become a basic human right.

Better connected enterprises

In this connected world, enterprises will



By 2020, the world will have >>



focus on their strengths, which they'll deliver as services, and outsource their weaknesses.

Future enterprises will be borderless, digital, and global from the get-go. Cloud services under hybrid solutions designed for each vertical will boost innovation, collaboration, and efficiency.

Banking, the leading ICT adopter of all verticals, will evolve to Bank 3.0, where customers and

not providers will decide what services are offered. ICT systems won't be just a support tool for bank operations, because they will take place in the cloud.

Telcos will establish digital ecosystems and develop new business models that support everything as a service (XaaS) on virtual infrastructure, platforms, and cloud data centers that enable E2E service and resource management.

Better connected nations

The world isn't lacking ICT strategies, with ITU reporting that 148 were in place around the world as of 2015. These include China's Internet+, Germany's Industry 4.0, Industrial Internet in the US, Digital Malaysia, Indonesia's broadband plan, Smart City in the Netherlands, and Smart Nation 2025 in Singapore.

Broadband standards are being redefined globally, and today more than 50 carriers across the globe offer gigabit broadband services. By 2020, all European families will have access to broadband at speeds of at least 50 Mbps.

Better connected economies

A better connected economy will have six key features:

- Real-time, precision matching of demand and supply
- Efficient resource utilization
- Real-time data collection and remote data processing
- Better quantification of data's value, which will end the dominance of money as the sole medium of exchange
- Old economic silos will break down as innovation crosses industry boundaries

- User needs will be defined at the individual level, making mass production obsolete

Better connected tech

The ICT industry will transform in five main ways:

Better devices that are personal and connected

Wearables that work seamlessly across platforms for things like health and fitness, micro-payments, and ambient awareness will cut the user-device distance to zero. Smart homes with open ecosystems will make isolated devices a thing of the past and create value like never before, especially with software development kits available to anyone with a creative brain. Digital natives, the middle-class, and women will be setting the bar high for vendors, and personalized demand will be the order of the day.

Better networks that are tailored to scenarios

Applications for different verticals will need different levels of network connectivity. Smart meters and smart buildings, for example, need power-lite, low-cost solutions for deep indoor coverage, while the Internet of Vehicles and smart transport will need wide coverage, low latency, and high mobility. Industrial control systems will demand super high-density connections with ultra-low latency.

5G will support 100 billion connections, 1-ms latency, and 10 Gbit/s speeds. SDN/NFV will help carriers establish agile, open, and flexible network architecture. Management systems will give a global view where resources can be deployed on demand



and consumers can purchase exactly the services they need.

The user experience will be ROADS: real-time, on-demand, all-online, DIY, and social.

Better platforms in elastic clouds

With extended functions that support entire business processes, from planning and design to development, cloud will drive ICT investment and underpin tech from driverless cars to AI. Enterprise investment in cloud will be the norm, because cloud can centrally provide services and share massive data, storage, and computing resources.

Telcos will provide enterprise customers with the hybrid cloud services they need to stay competitive over the long term. Demand for cloud data centers will grow fast with the widespread adoption of massive data storage, online analytics, and cloud services. By 2020, investment in cloud-based, IT infrastructure is expected to exceed non-cloud IT investment, meaning that cloud will soon be the primary facet of IT infrastructure.

Better ecosystems that are open and shared

Enterprises can no longer succeed alone. In the stage of Augmented Innovation, collaboration across an open ecosystem will create better products, and ecosystems

will evolve from semi-open or alliance-based entities into fully open, fully shared platforms.

API platforms will allow ICT companies to share and monetize their capabilities and services with third parties and partners. Software vendors can offer software as a service (SaaS) to better serve individual users and SMEs. More telcos will build platform-based open ecosystems to become service enablers or service creators. Open-source hardware will open up hardware development platforms for vendors and tech enthusiasts fond of thinking up new things to innovate.

Better user experience that is scenario-driven

Synergy between clouds, networks, and devices coupled with big data and AI will identify user scenarios and provide them with the most desirable services from the entire ecosystem's resource pool.

Services include digital assistants that will coordinate life and work and free people up to spend their time more creatively. Video – 4K and 8K HD – will be massive at work and play. It will form a key part of telcos' revenues, the groundwork for which is being laid in current investment trends. Cloud computing will change how multimedia content is processed and transmitted, with video

We asked the experts >>

In a better connected world, what tech are you most excited about



Rob McHenry,
VP of Public Sector
Operations, PARC:

"For Augmented Innovation, I'm most excited by the potential for contextual deep learning and hybrid AI to revolutionize the way that we explore scientific literature."



Glen Hiemstra, Founder
& CEO, Futurist.com,
Seattle, Washington USA:

"Three stand out – augmented reality, Internet of Things, and smarter AI... AI and technological enhancement continue to augment human capability."

clouds sitting at the core of global video delivery networks.

We live in an information age, brimming with new ICT technologies: 5G, virtual reality, augmented reality, heterogeneous multi-core processors, non-volatile storage media, graphene, chip-level optical interconnections, and cloud-based security systems.

These are the engines for exponential growth in the number of connections. These are the engines of a better life for all and a Better Connected World. [www](#)