The mobile industry is on an exciting journey: it is transforming towards digital business. Fast and fluid shifts in our digital ecosystem are constant factors in our industry, but the market megatrends we see today point to radical change of a different scale and magnitude. There are several trends that I see as having the greatest impact on this future digital world. These include the rise of the fourth industrial revolution, the shift to all-digital services, and the abundance and ubiquity of new technologies which serve both as enablers and disruptors. Each of these trends will underpin a rapid transformation of both markets and society over the next decade—and collectively, they will allow mobile service carriers to be key beneficiaries of that transformation.

All industries are undergoing a rapid conversion of their traditional operational processes to automated and digitized ones, a phenomenon often referred to as the Fourth Industrial Revolution, and one that is particularly acute in the telecommunications industry. New technologies, especially artificial intelligence, will continue to increase every enterprise’s capacity to automate. This will not only profoundly influence the nature of services and of industries, it will hasten their interconnectivity: firms from across industry sectors will soon see their processes intimately connected with one another, and supported by a seamless layer of automated capabilities that link them all.

One of the outputs of this process is the increasing digitization of all services, far beyond the app stores of today. Over the next decade, all daily consumer interactions, purchases and information requests are likely to be primary—if not exclusively—digital. This continuous digital business transformation will in turn further drive down the marginal costs of distributing digital products and services, and lead to an increasing abundance of digital products globally. It will also foster ubiquitous access to services, and the ‘digital divide’, between ‘haves’ in well-served markets and ‘have-nots’ in poor or remote ones, will vanish. Operators will play a key role in this future, particularly in providing universal connectivity to the billions of people that will come online in the coming years.

We need only look at the vast changes in the competitive landscape of communications services over the last decade to see the rapidity of these changes. Ten years ago, competition was based primarily on connectivity-centric product strategies within domestic markets with rigidly defined, high-margin interconnection regimes. The emergence of digital platforms and global internet players with large-scale user bases has fundamentally changed the economics of the industry. Thus, collaboration among communications service industry participants is becoming essential.

While successful players will never entirely abandon their competitive instincts, collaborative strategies are growing in importance, in such areas as identity and privacy—common good areas where individual service providers cannot sufficiently differentiate their own service offerings. In an increasingly connected world, consumers leave ever-larger digital footprints, and ever more enterprises leverage the growing pools of data those footprints create. Operators are well-positioned to become central trusted guardians of digital identity and personal data, to offer a ‘true choice’ to end-users, which will both enable innovative new services, while allowing consumers to decide if and how their personal data is shared.

Collaboration in this space is already taking place: the “Mobile Connect” carrier consortium is a global, federated solution for mobile phone-based authentication, authorisation, identity and attribution services, which provides digital identities to emerging market consumers who lack access to formal identification. Advances in network technology (and, in particular, 5G technology) provides carriers with the ability to truly provide universal coverage. These advances also allow them to re-arrange their business models to address new opportunities created by the broader changes in the wider digital ecosystem.

Beyond leveraging 5G to deliver enhanced mobile broadband experiences to customers, the changing nature of how network technology is deployed and utilized will have three profound implications for carrier business models. Firstly, network topology may need to be rethought, to cater for new spectrum bands, and to densify networks through small cells, which will allow many more specialised and localised services carriers can provide to consumers, advertisers, and other ecosystem participants. Secondly, increased ‘softwarification’, virtualisation and local caching at the network core will make it feasible for carriers to customise their networks faster, and more efficiency serve numerous, newly-formed digital customer segments. Thirdly, new enhanced mobile broadband technology will allow carriers to target enterprise requirements. While consumers have driven most of the mobile industry’s revenue growth to date, the Fourth Industrial Revolution mentioned above will drive enterprise demand for digital services faster in the future.

As increasingly powerful networks enhance their service delivery capabilities, carriers will also start to focus more on developing an enabling layer of platform services. This will ensure that interoperability is built in by design, that architectures and data models are designed to support global ecosystems; and that technical and commercial friction is reduced. Competition will therefore move up the stack to the digital service layer, and each operator will support a comprehensive ecosystem on their respective ‘Life Platform’ in a fully digitized, ubiquitously-connected world.

Digital ecosystems will be radically different over the next decade—and I believe that the role of carriers will become even more important as a result. All of us in the industry must continue to embrace both our cooperative and competitive instincts simultaneously. Evolution waits for nobody; we must be bold enough to seize new opportunities, and flexible enough to change frequently. This is at the heart of transforming towards digital business.
Today, over 50% of the traffic in the network pipeline is consumed by video, which has become a fundamental service for operators. For some live e-sports games, the number of online viewers has reached tens of millions. AT&T’s acquisition of Time Warner shows its strategic focus on transforming itself from a communications service provider (CSP) into a media content provider. How operators need to manage and enhance experience throughout the end-user lifecycle journey, to provide ROADS experience-driven business, such as an unclear business model and high cost of content acquisition, we will undertake the following initiatives to build an overall system integration solution for video service: build the content aggregation capability and cloud aggregation video platform, to help operators develop and operate video services efficiently; build video-based and-to-end network, to achieve the best video service experience; build video service design, deployment efficiency, and marketing capabilities.

The better experience with 4K video and virtual reality (VR) is both a challenge and an opportunity for operators’ networks. The new growth engines of enterprise cloud and IoT also have a profound impact on an operator’s business.

From the end users’ point of view, there is no difference between the services provided by operators or Internet companies. However, the experience itself can vary. We believe that operators need to manage and enhance experience throughout the end-user lifecycle journey, to provide ROADS experience: Real-time, On-demand, All-on-line, DIY, and Social. To realize the ROADS experience, operators must implement a digital transformation of their business.

To better help operators address the transformational challenges, Huawei, along with IDC, carried out a survey on digital transformation, interviewing more than 50 operators globally at various phases of transformation. Nearly 200 people completed the survey, and 39% of them were final decision-makers. We found that the biggest challenge for operators is uncertainty. The industry does not have de-facto standards or benchmarking practices. That's why they hesitate and continue to observe developments.

On the business level, most operators believe that data analytics, vertical industry platforms, and video are their top business opportunities. We recognise this trend from operators’ frequent acquisitions in the film and television entertainment industry.

On the organization and talent level, most of the operators think that challenges mainly lie in internal skills, and business processes that cross organization boundaries. This has already happened to some European operators as their employees have started early retirement plans.

LEVERAGE DIGITAL TECHNOLOGIES TO IMPROVE OPERATIONAL EFFICIENCY

Huawei’s digital transformation has undergone four phases: standardization, centralization, platform-based, and intelligence-based. Huawei is now between the phases of platform-based and intelligence (AI) based, and will continue to increase investment in platforms and big data analysis to reach the final stage. At present, Huawei has been re-architecting our IT, delivery and supply chain through cloud-based technology. The consolidation of Huawei’s datacenters and migration to Huawei’s internal cloud data center has increased resource utilization from 20% to 80%. EDP (Integrated Service Delivery Platform) has been applied to over 5,000 projects worldwide, and the total number of sites has reached 2 million; by adopting OWS (Operation Web Services), 40% of the work flows have been automated, and over 180 APIs have been developed by regional teams; order fulfillment cycle has improved by 50%.

After internal incubation and validation, these digital capabilities will be applied to our global businesses in order to help our customers improve operational efficiency. We have chosen the following areas to jointly innovate with global operators: For customer care, based on big data analysis, we will identify activities that can be migrated to digital channels, and gradually achieve customer self-service. For marketing, we will migrate marketing activities from offline to online APP channels. For network and IT outsourcing, we will use the Global Service Centers and OWS to provide multi-vendor pre-integration and verification, and build a ecosystem collaboration platform for open cooperation. For the organization, we have built an IT professional services team to better serve our customers. Our global development activities from offline to online APP channels. For network and IT outsourcing, we will use the Global Service Centers and OWS to provide multi-vendor pre-integration and verification, and build a ecosystem collaboration platform for open cooperation. For the organization, we have built an IT professional services team to better serve our customers. Our global development activities.

And we have been committed to building an open ecosystem. We initiated the Open ROADS Community, which is committed to exploring the transformational direction and research on user behavior. With Linux Foundation, we co-sponsored the OPEN-O community which is committed to helping operators improve business agility and deployment efficiency.

Second, and more important, a successful transformation highly depends on the resolve of the board of directors and the chief executive. Clear and consistent internal messages from the leadership can drive the transformation through a top-down approach. Together with the whole ecosystem, operators must achieve ROADS experience-driven transformation, towards a digital business.
MARKET REPORT: DIGITAL TRANSFORMATION: ENABLING NEW GROWTH

by Mobile World Live

Mobile operators across the world face the challenges of slowing growth and ongoing disruption of core services by new Internet players, even as the broader mobile ecosystem continues to see significant revenue growth.

According to a June 2016 report from GSMA Intelligence (GSMAi) and the China Academy of Information and Communications Technology (CAICT) “Mobile operators the digital transformation opportunity”, digitisation has already disrupted the mobile industry and is now beginning to transform a range of other industries, including healthcare, finance and retail. This in turn is creating opportunities for innovative new services, with consumer engagement and data traffic increasingly focused on mobile devices and mobile networks.

The first two trends reflect the shift in user growth from the developed world — where mobile markets are increasingly saturated — to developing and emerging markets; while in the developing markets it is often the case that a person’s first experience of the Internet is on a mobile device. The Internet of Things (IoT), meanwhile, is expected to drive the average number of connected devices per person to three by 2020 compared to 1.5 in 2015, “providing improved efficiency and controlled automation in daily life”, according to the GSMAi.

The platform economy, meanwhile, uses smartphones, software and open APIs to create and scale new digital marketplaces for a huge range of services and products, from over-the-top messaging apps through to a broad range of consumer-focused sectors reinventing how business is done through digital platforms, and major industrial sectors putting analytics and automation in the cloud.

According to GSMAi, mobile operators are increasingly opening up their APIs to third-party developers. Around 15,000 open APIs are available, with 40 new ones created every week.

There has long been a debate about the trade-off of scale versus value leakage by opening up a network or database to third parties. GSMAi argues that the web experience points firmly in favour of open. “Amazon, eBay, Netflix, Uber, Facebooks, Googles, Twillo and the Fintech cohort are all testament to this,” the research company said.

CLAIMING NEW DIGITAL TERRITORIES

By building digital ecosystems, operators can also play a central role in stimulating innovation and catalyzing a firm’s claim on new digital territories. The risk of being marginalized is much less likely if they are instrumental in bringing together the likes of application developers, device manufacturers, distributors and systems integrators.

AT&T has created six Foundry Innovation Centres, for example, in order to specialise in different digital areas. Ranging from the IoT and the connected car to software-defined networks, the centres allow AT&T’s innovators to work with outside experts in developing consumer and business solutions.

Telefonica’s global M2M partnership programme, focused on the B2B market, has over 500 partners. DNVGL, Deutsche Telekom’s smart home platform, has more than 40 partner companies working on various products and services. SK Telecom and AT&T also have smart-home digital hubs.

Certainly, telcos face a number of challenges and changes as they transform themselves from traditional communications service providers into digital service providers. Their business models are changing, as are the expectations of both their existing and new customers.

Phil Jordan, global CIO at the Telefónica Group, does not underestimate the digital transformation challenge. “It is a complete transformation of business model, processes, policy, product design, systems and ultimately culture, skills and mindset. This is a scale transformation that will define the future of telcos and the whole industry.”

CONNECTED LIVING

The GSMA Connected Living programme is an initiative to help operators add value and accelerate the delivery of new connected devices and services in the machine-to-machine (M2M) market. This is to be achieved by industry collaboration, appropriate regulation, optimising networks as well as developing key enablers to support the growth of M2M in the immediate future and the IoT in the longer term.

Many mobile operators are already following strategies to help them exploit the potential of connected living. NTT DoCoMo in Japan, for example, has focused on the “smart life” initiative to achieve sustainable growth in the face of severe competition from mobile network operators and MVNOs.

Kyoji Murakami, executive vice president and member of the board of directors at NTT DoCoMo, said the operator is providing consumer services including digital content services, health and education, and financial services.

“This is a scale transformation that will define the future of telcos and the whole industry.”

- Phil Jordan, telefónica

By combining and connecting assets such as DoCoMo’s service, technology and customer base, and group/partner companies, we generate innovation and collaboration and provide the ever-improving value,” Murakami added.

Orange is adopting a similar approach but with the added dimension of using this shift to take the fight to OTT players.

“Digital transformation means more to Orange than re-architecting its processes and IT infrastructure. We need to vigorously adopt this strategy in order to survive and become a best-in-class operator,” said the company’s VP of network operation and performance, Roberto Kung, at the Huawei event.

“Our main competitors are not other operators, but OTT players. We must start using their weapons in order to overcome the threat these firms pose. They are currently more agile and have fully adopted the use of big data, cloud-based services and open APIs,” said Kung.

Kung calls for operators to share solutions and processes, claiming that there are much bigger and more aggressive competitors than each other. “We should look to technology agnostic and use a lifecycle policy of design execute monitor and troubleshoot. We must start to adopt open APIs to become more agile so we can introduce and launch new integrated services.”
“There is a sense of urgency within Orange to undergo digital transformation, and we must take the opportunity to move to a true on-demand business model. We want to become an essential part of our customers’ lifestyle,” he commented.

Evidently that operators are gearing up for a digital transformation comes from an Ovum information and communications technology (ICT) survey. This revealed mobile operators were prioritising IT projects such as overhauling order-to-activation systems and customer self-service tools, and ensuring billing and charging systems will be able to support end-to-end (E2E) digital services.

The study by the UK-based research firm also highlighted that the key worries for operators centred on how they could automate and rapidly deploy the new digital services. To help with this transition Ovum maintains that many and guidance from vendors and mobile operators are seeking expert help than just specific technology assistance, according to Ovum, is more charging systems will be able to support activation systems and customer self-service projects such as overhauling order-to-mobile operators were prioritising IT technology (ICT) survey. This revealed Google, Amazon, Rackspace, Netflix, Facebook and so on — have long enjoyed and we must take the opportunity to move to a true on-demand business model. We want to become an essential company said.

In the fourth quarter of 2016, the global cellular market recorded annual growth in recurring service revenue of 2.9% to US$219 billion, while data revenue increased by 10.7% to US$65.7 billion, according to a report from GSMA Intelligence (GSMAI).

Capex, meanwhile, fell 12.5% to US$51 billion and EBITDA dropped 1.5% to US$68 billion. The figures indicate that while data traffic is growing, global mobile operators still face some challenges in building experience-oriented networks that also prove to be capable of optimising network value.

In its report, titled Global cellular market trends and insights — Q4 2016, GSMAI paints a picture of steady and relentless growth with the mobile industry, particularly in terms of mobile data usage.

Certainly, mobile operator transformations are being driven by the continued growth in data traffic, but more importantly by the fast-rising quality of service (QoS) expectations of subscribers.

According to a recent study by Juniper Research, global average smartphone cellular data usage will reach 5 GB per month by 2021, up from 2.6 GB in 2017, while video will account for 60% of global mobile data traffic in 2017, before approaching 80% by 2021.

ignoring any traffic generated by the Internet of Things (IoT) and machine-to-machine (M2M), the research company claimed that data from smartphones, tablets and feature phones would grow fourfold between 2017 and 2021 to reach over 700,000 petabytes.

The GSMAI also noted that total mobile connections excluding M2M reached almost 75 billion, while unique subscribers were just over 4.8 billion. And connections continue to grow, with GSMAI predicting an increase of 10% in 2017.

In Q4, smartphones accounted for 51% of connections, and this is expected to reach 52% in Q1 2017. Annual growth in 4G connections was 55%, while 4G coverage accounted for 59% of the total population in Q4 2016 compared to 48% in Q4 2015.

**LEADING OPERATORS SHOW THE WAY FORWARD**

Denmark’s TDC and the Spain-based Telefónica Group are examples of two operators that have focused on how to maximise the value of their current networks. TDC, for example, noted that the volume of data traffic in the mobile network is doubling almost every year.

“Danes are data-hungry and they will demand even higher speeds in the future. The TDC Group is therefore working hard to stay abreast of developments, and we are continuously introducing the latest technology for the benefit of our customers,” the company said.

If the on-demand business model is to be taken seriously by operators, they must move beyond viewing services as mere enablers of services, and instead see them as core business drivers. The transition to an on-demand business model is inevitable, and operators must seize the opportunity to transform their businesses to stay ahead of the curve.

**MARKET REPORT:** Digital Transformation: Enabling New Growth

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**MARKET REPORT:** Operators Seek to Optimise Network Value to Meet QoS Demand

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If the on-demand business model is to be taken seriously by operators, they must move beyond viewing services as mere enablers of services, and instead see them as core business drivers. The transition to an on-demand business model is inevitable, and operators must seize the opportunity to transform their businesses to stay ahead of the curve.
As part of its strategy for the 2016-2018 period, the operator aims to change its mindset from that of a traditional telco to a customer-centric approach, with the integration of businesses and technology and white-label solutions and partnerships at the top of its agenda.

Telefónica, is also aggressively tackling the issues of network efficiencies and QoS called for within its digital transformation strategy. The company admits that the upheaval associated with this move, which is underway in 15 subsidiaries, is not trivial.

“The magnitude of transforming the company’s end-to-end (E2E) business systems involves a radical overhaul to ensure a common set of business processes, the standardisation of its systems architecture and ensuring its operations and infrastructure are capable of delivering a scalable network,” said the company’s global CIO, Phil Jordan, at a recent Huawei event focusing on digital transformation.

“This is a three-pronged approach. We will transform how we interact with the customer, the way we work and how we operate internally. This will mean the replacement of systems, but it’s more than just changing IT,” added Jordan.

Noteworthy is Jordan’s admission that Telefónica subscribers had become very adept at spotting when a service was not digital end-to-end, and confirmed that part of its transformation strategy would see an ever increasing shift towards the bundling of services “own our own and others.”

“We’re now bundling many more of our products to include mobile, MBB, TV, etc. in an effort to simplify the ordering process for customers. As such, we’ve reduced by 50 per cent the number of products we have in our catalogue, and more so in our B2C sector. This has also significantly cut the number of associated support systems. In Spain, we’ve now almost one product per subscriber, which is hugely different from where we were,” said Jordan.

Telefónica has been in the process of transforming its operational structure for some years now, and has already begun to experience some of the benefits of this process. After dropping to fifth place in the last ranking of global operators based on reported mobile connections (including cellular M2M) and mobile revenues by GSMAI, Telefónica Group climbed back to third position in the ranking for the second quarter of 2016 following the reconsolidation of its UK operation after its sale to CK Hutchison Group was blocked.

Operators have been forced to take some far-reaching measures in order to improve operational efficiency, including outsourcing large swathes of their operations.

Surprise, for example, recently signed a managed services agreement with Huawei that has seen the operator outsource its ICT operations. The Switzerland-based operator said it has been able to optimise its opex structure by using synergies and through the simplification of its operations in different areas. On the capex side, the operator has benefited from the use of pre-developed services from its partner instead of self-development. It has also increased the

| OMNICHANNEL ADDRESSES DIGITAL TRANSFORMATION CHALLENGES |

The need for outside assistance will grow as operators migrate to an E2E digital infrastructure, according to Ovum. The skills required may not necessarily be telco-related but more centred on customer experience management (CEM), applying big data analytics and automating business processes.

Fixed and mobile operators have traditionally handled customer interaction through IT silos. In such an environment, customers discreetly engage with the operator at a number of separate front-end touchpoints. These could range from physical stores and call centres, to the web, social media, online shopping carts and e-mail notifications. Each touchpoint, typically, has its own back-end dedicated IT support system.

‘Omni-channel’ – a bedrock of any digital transformation – does away with vertical (and disjointed) IT architectures of this sort. Through the use of consistent, consolidated and current customer data, customers – offline or online – can get a consistent, continuous, seamless and personalised brand experience.

A well-tuned omni-channel, where appropriate workflows and processes are in place, will also allow mobile operators to become predictive. Based on data usage patterns and previous actions on operators’ websites or apps, they are more likely to recommend products and services that customers are actually interested in.

The attraction of omni-channel means it’s high up on the agenda of the Open ROAD5 (Real-time, On-demand, All-online, On-yourself, and Social) community. Initiated by Huawei, the community was launched at Mobile World Congress in February 2016 and addresses the digital transformation challenges that telcos face.

As with most aspects of a telco transformation, however, omni-channel requires both a cultural and technology shift. “Historically, telcos have been product-centric,” said Francesco Venturini, who heads up the communications and media division at Accenture. “They need to become data-centric and customer-centric.”

As this shift evolves the need for help with cloud delivery and virtualisation will also grow, together with the reengineering of operations, organisational and process changes.

This complex picture also involves a significant cultural change for operators. While basic connectivity will remain as a cornerstone to an operator’s business, the future will be much less about spectrum, 3G/LTE and coverage than about wholesale automation. Not everyone in the industry is ready for this divergence away from the traditional operator model or has the necessary skills sets. But like many other mature industries, mobile telecoms is embarking on a journey that will irrevocably change how it conducts its business, and there will be casualties in this brave new world.

| NETWORK 2020 |

At the same time, mobile networks are getting better and better. Across the world, mobile operators are harnessing Internet-style technologies to provide compelling and innovative services in an efficient and flexible way.

The GSMA’s Network 2020 programme is making it straightforward for operators to harness the full potential of IP to deliver everything from group chat and advanced voice services to the IoT and live HD video. These advanced communications services will raise the profile of operators and increase their profitability in an increasingly competitive and fragmented digital services market.

Voice-over-LTE (VoLTE), video-over-LTE (VOLTE) and voice-over-Wi-Fi (VoWi-Fi) now underpin an array of compelling multimedia communications services with reliability, security and reach that go far beyond Internet-based alternatives. "Historically, telcos have been product-centric. They need to become data-centric and customer-centric."
Q&A:
Smart life

Kyōji Murakami,
Executive Vice President and
Member of the Board of Directors
NTT DOCOMO

Q: Can you describe the background and the reasons for NTT DOCOMO pursuing the smart life business?

Kyōji Murakami (KM): The number of subscriptions in Japan is 150 million – penetration is more than its population (126 million), and further growth of voice service cannot be expected. In addition, with the growth of MNOS and the severe competition with MNOS, we are intensifying the endeavours of smart life business so as to lead to a sustainable growth.

The results are showing up steadily in numbers - cumulative profit for FY2016 from smart life domain up to Q3 (April - December) was 98.2 billion yen, a 42% increase year on year, showing a steady growth.

Q: What type of specific services are you providing?

KM: For consumers we are providing three categories of services. The first includes digital content services, such as the video delivery of movies and dramas, unlimited music service, and all-you-can-read magazine viewing service.

The second covers the field of health, gourmet, and education. You can manage your health conditions, get information on restaurants, and use other services that can make the daily life more convenient and comfortable.

The third area covers financial services, such as credit card and consultation on insurance.

For enterprise customers, we are providing services that provide marketing support and solve the issue specific to that field in a variety of categories such as retail, health and medicine, education, agriculture, and fishery.

Q: What is the major strategy behind this endeavour (smart life business)?

KM: By combining and connecting assets such as DOCOMO’s service, technology and customer base, and group/partner companies, we generate innovation and collaboration, and provide the ever-improving value – we position that as one of the major strategies.

Particularly, endeavours to create services in “co-creation” with partner companies – we call this “+d” (“plus dee”), and these endeavours enable us to provide new services very quickly in a variety of fields.

Q: What are the key projects you have achieved so far?

KM: One of the key projects was launching of d Point as a tool to connect services and partner companies.

Customers can accumulate d Point according to the amount spent, or use it as payment when they use DOCOMO or partner companies’ services. Through the expanded flow of commerce with the merchants where you can use d Point (physical/Internet space), we want to increase the subscription of our own services such as digital content, as well as amount of transaction in financial and payment service focused on credit card business.

We want to increase the number of merchants where d Point can be used to among the top in Japan.

It has been one year since its launch, and merchants are increasing steadily. We definitely feel a good response.

Q: What IT infrastructure element is important for support of this strategy?

KM: We are providing a variety of services relevant to daily lives of customers. In order to propose more appropriate commercial products, promote cross-selling, and enable reciprocal flow of customers to/from partner companies effectively, we will need to understand behaviours and characteristics of customers better than now.

For this, we believe it is critical how we can create a system by which we understand the individual “customers” better and make them more visible from the big data such as their attributes, state of subscription and actual usage. It is also critical to set up a mechanism which enables us to present ideas in appropriate timing and location.

Q: What is the impact does the smart life business have on DOCOMO’s revenue and market share?

KM: The customers using smart life business services have higher customer retention rate of subscription of mobile service, and as a result they are contributing towards the revenue of DOCOMO as a whole, and towards a improved share of the mobile business market. For example, holders of credit cards issued by DOCOMO have a significantly lower churn rate for mobile services than those who do not.

In addition, we have recently carried out a process of revising our services so those who do not have DOCOMO mobile phone subscription can also utilise smart life business services, whereby we are approaching a new customer segment, and as a result we believe this can contribute towards an increase in total revenue of DOCOMO.

Q: What kind of company will DOCOMO be with the progress of this strategy?

KM: Through the evolution of the service and pursuit of +d, we want to provide services customers feel are more fun, convenient, comfortable, and affordable. We also want to try to resolve social issues in Japan, be that change in work style, decreasing number of children, aging society or strengthening our international competitiveness.

By pursuing these endeavours, we believe we will be a company that customers perceive to be intimate, reliable, and advanced.

“The customers using smart life business services have higher customer retention rate of subscription of mobile service”
You have previously described digital transformation as the ‘hardest thing a telco will ever do’. Can you explain some of the broader challenges that you expect to face during this process?

Phil Jordan (PJ): To transform into a digital telco effectively, it must be a holistic and end-to-end process across the business. Digital at the ‘front’ of the business in all customer interactions and digital in the ‘back’ in all business operations. Being digital means lots of things to lots of people, but at the very least it means all experiences and interaction of operations becoming real-time and automated. It is a complete transformation of business model, processes, policy, product design, systems and ultimately culture, skills and mindset. This is a scale transformation that will define the future of telcos and the whole industry.

Q: Which is the greater challenge for a telco and why: the technical transformation, or the cultural changes that are required?

PJ: Rethinking how our business operates; the changes in ways of working, processes, skills, data focus and digital mindset are much more demanding than the technology transformation. However, the individual challenges aside, it is imperative we don’t address transforming technology and transforming culture or ways of working in a business in separate terms. The future will only accommodate businesses that are digital end-to-end, operating in real-time, in an automated way using data to enrich customer experiences where increasingly cognitive decision-making is supported with machine learning. Any business that isn’t addressing the transformation of business and technology in parallel will fail.

Q: You have already mentioned the complexity of your business model and operations were not ready for transformation. So we embarked on a group-wide simplification of product portfolios, offers, processes, systems and our technology infrastructure. This has been followed by a multi-year business-led transformation that is re-implementing our business operations with new end-to-end customer journeys and enabled with new technology that allows us to move the business to become end-to-end digital. We track the enablement of digitalisation through a key KPI that we have created that uses the drivers of real-time and automation in all our customer-facing processes and has enabled us to measure digitalisation in our business, track progress and target our transformation investment.

Q: What are some of the important lessons that have been learned so far, and how have these shaped your strategy for the future?

PJ: As this is a transformation that hasn’t been addressed too often in our industry, there are many lessons we are learning with our partners as we transform. For example, some of our core beliefs were confirmed, such as that business engagement and willingness to adopt change represent the ‘X-Factor’ in transformation success. Then there were some surprises. For example, as you run multiple transformations in a co-ordinated way, some of the best value of reuse has been in the buying, contracting, governance and change management and not in the development and build of a common solutions architecture. Key to lessons learned is obviously not in the identification of a lesson but the learning part! One of the advantages of being a group is that we get the opportunity to learn quickly and optimise our approach constantly, and this is key to success.

Q: As a global telco, Telefonica also faces the challenge of transforming companies with very different cultures and histories. What can you tell us about your progress within the different regions?

PJ: We are driving the same transformation across many different countries, cultures and with some shared history but all with local customers, regulators, competitors, strong individual needs and identities. To cope with trying to drive standardisation and transform a group and optimise our approach by learning lessons quickly we have used a very simple model to guide us: why, when, what, and how.

“Why” and “when” a country needs or wants to transform is a local assessment, and the “what” and “how” we transform is where we take a standardised approach. This ensures the country CEO can always control benefit realisation, priorities, timing and pace, while globally we can make sure that the models, blueprints, frameworks, processes and systems have the standardisation we need for the global digital market we are facing.

We are now live with the new capabilities in seven markets in Brazil and HispAms, and have migrated more than 60 million customers. In 2017, we will have 10 markets live including Europe and many more tens of millions of customers migrated.

Q: An important part of a telco’s digital transformation isn’t to improve the customer experience. Are you starting to see improvements in this area? What more needs to be done?

PJ: Every customer you migrate to new customer journeys supported with new technology that is designed to be digital is an improvement in experience. Migrated customers can manage their relationship with us in real-time, have the ability to engage us through any channel and stop and start where they want. They can increasingly do everything they need to from an app on their smartphone, and much more. In terms of what more we need to do we need to migrate all our customers and then exploit the capabilities that we have enabled alongside a new approach to insight and data that we will reset expectations of customer experience from a telco – exciting times.

Q: How long do you expect this process to take - at least in terms of the fundamental changes in technical and the cultural shifts that are required?

PJ: The programme of changing processes and technology is advanced but continues. The migration of all our customers will continue for a few years as we always need to balance the pace of transformation alongside delivering the high quality, robust and secure services our customers expect and also the returns our shareholders expect from Telefonica.

The culture change is happening now but may never stop in the same way that our customer demands and expectations never stop growing. After digital, it’s data, then it will be decisioning … the pace of change is only going to get faster.

Q: What kind of company would you like Telefonica to be by the time we reach the next decade?

PJ: I would like Telefonica to be a leaner, simpler, faster, digital and data services business with outstanding connectivity still at the core of its value proposition. It will be renowned for:

• an insight-driven digital customer experience;
• protecting customer privacy whilst helping them live a rich and full digital life;
• being a trusted ICT partner for business and organisations that are transforming and growing their business in the digital world.

Q & A: Digital end-to-end

Phil Jordan, CIO, Telefonica Group

“We the future will only accommodate businesses that are digital end-to-end, operating in real-time, in an automated way.”

“One of the advantages of being a group is that we get the opportunity to learn quickly and optimise our approach constantly, and this is key to success”
Marc Frankenhauser, Senior Manager, Commercial Management, Sunrise

Q: Sunrise recently signed a managed services agreement with Huawei that will see the operator outsource its ICT operations. What were the primary drivers behind this move?

Marc Frankenhauser (MF): The reasons were to improve quality and flexibility whilst improving the operational cost base at the same time. Therefore the intention was to use market standards for commodity services, like client and server operations. Standard services should also allow the much faster rollout of new technology internally, as no dedicated development would be needed. In parallel, using the same infrastructure for IT and communications technologies should gain further operational benefits and synergies.

Q: What is the timeline of this managed services agreement and what do you hope to have achieved once it has been concluded?

MF: The IT managed service agreement is signed for five years. Our intention is to front load the development, i.e. achieve a major part of the ICT convergence and realize the operational benefits already during the first two years of the partnership.

Q: How will this impact the types of services that Sunrise will be able to offer to its customers and what improvements should customers expect to see in future?

MF: Using already developed solutions and economy of scale of the provider should drive much faster rollout of these IT services. Can you provide details of the capex and opex benefits that improvements in operational efficiency will bring and how this will impact the company’s overall network operation?

MF: It was possible to optimise the opex structure by using synergies and through simplification in different areas. One example is the onsite service for IT and CT: before the new managed service agreement, Sunrise had two different providers. Now, Huawei’s field service is also supporting the 100 Sunrise shops within Switzerland. Another example is using the Huawei 24/7 network back office also for IT services.

On the capex side, optimisations are seen mainly in two areas. The first is the already mentioned use of pre-developed services from the partner instead of self-development. The second topic is increasing the usage of shared platforms within Sunrise, e.g. a new virtualization environment for IT and CT together to optimize capex investments.

Q: What role will this outsourcing agreement play in helping Sunrise to achieve its overall goal of becoming a digital service provider?

MF: The agreement does play a major role, as you also have to become digital internally to be a digital service provider. The user workspace is a key element here, and Huawei can and will support that area with their services to drive digitalisation. One of the first topics will be the integration of mobile devices into our IT infrastructure to increase mobility and productivity for our internal users.

Q: What is the scope of the services in the managed services agreement and what do you hope to have achieved once it has been concluded?

MF: Using standard services internally at Sunrise will enable us to show the benefits also to Sunrise’s end customers and offers further opportunities to also resell such IT services. In parallel, there could also be new ICT services offered for business customers that combine IT and CT topics.

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Q: Can you reveal what progress has been made to date in the operator’s transformation process, and provide some details on some of the key challenges that still lie ahead?

MF: We only took this live two to three months ago, but we have already been able to ramp up a new ICT virtualisation platform, based on Huawei technology (Huawei Hardware and FusionSphere) to start the process of network virtualization. We initiated first client improvements and rolled out a new service management toolset for ICT.

There are also different transformation projects running in parallel. In mid-December, all employees had the opportunity to participate in a survey about their workplace IT equipment. The score achieved was an encouraging average of 7.34 points out of 10. This confirms the high quality of our office IT equipment since one of the main challenges of digitalisation relates to the use of technology by our employees. Digitalisation requires changes in processes, and people need to be supported throughout this change process.

“You also have to become digital internally to be a digital service provider. The user workspace is a key element here.”
Q&A: Simpler and better

Kim Søgård Kristensen,
Executive Vice President & CTO, TDC

Launching a highly ambitious GigaSpeed program transforming TDC’s coax network into a state-of-the-art DOCSIS 3.1 based network that offers Giga speed to more than one million households within the strategy period.

Developing and launching a brand new TV platform and set-top box solution targeted towards TDC’s Cable-TV customers.

“TDC’s strategic goal is to remain number one in the Danish mobile market.”

KSK: Some of the key milestones that have been achieved so far in the strategy implementation are:

- Better connectivity – by continuing to deliver best speed, quality and coverage through unifying our unique assets.
- Better offerings and entertainment – by delivering relevant products both today and tomorrow.
- Better customer experience – driven by best customer insights and digitization.

Q: Can you provide an overview of your strategic plan for 2016–2018 that is centered around two metrics: customer satisfaction and cash flow generation?

KSK: TDC Group launched the corporate strategy “Simpler and Better” in January 2016 and one year down the road we set out the following strategy plan. The strategy is based on three customer promises:

- Better connectivity – by continuing to deliver best speed, coverage and quality in order to stay ahead of our capable competitors in Denmark. The customer community in Denmark has acknowledged this premium position both on the residential and business market.
- Better offerings and entertainment – by delivering relevant and custom entertainment services that individuals, households and corporations demand with the ever-increasing speed, quality and customer experience that is necessary to comply with in order to compete.
- Better customer experience – driven by best customer insights and digitization.

Q: What progress has been made with this strategy to date? Can you reveal any key milestones that have already been achieved?

KSK: We built the best mobile network in Denmark in a strong and close partnership with Huawei and together we have been able to keep up with the increasing demand for higher speed, coverage and quality in order to stay ahead of our capable competitors in Denmark. The customer community in Denmark has acknowledged this premium position both on the residential and business market.

Q: What do you expect your mobile network to look like in 2018, and what impact will maximize the value of your network have on the services that you will be able to provide in future?

KSK: In 2018 we have started the strategic virtualization journey to all our networks including the mobile network in order to improve agility, customer specific configuration, remote control and cost levels. Forecasts for the Danish IoT market suggests a gradual build-up in 2018, which will be supported by TDC’s growing NB-IoT coverage.

Q: What kind of market player do you expect and hope TDC will become in future?

KSK: From a network perspective, TDC will be the number one provider of connectivity in Denmark across mobile, coax, fibre and copper technologies and we will offer a coherent and easy customer experience across services used in the daily life.

Commercially, we will deliver the communication and entertainment services that individuals, households and corporations demand with the ever-increasing speed, quality and customer experience that is necessary to comply with in order to compete.

Q: Can you provide some insights into how you are building the “best and fastest mobile network”?

KSK: The customers will benefit from an always-on experience whether at home or away when using their mobile devices. With the increase in speed they will use the devices for all communication from voice through TV to gaming and always with a high quality level. This requires a superior mobile network, which is what TDC provides and will provide long term in Denmark.

Q: What will be the benefits to your customers? How will you ensure that you will be able to provide an improved customer experience?

KSK: The mobile market in Denmark is highly competitive with challenging expectations on increasing speed, full coverage and low pricing. The use of smartphones is exploding and in the horizon we see an increasing demand for IoT connectivity. To this end we are planning the rollout of NB-IoT in line with the evolution of IoT solutions in Denmark. Furthermore, we have launched VoLTE and have demonstrated speeds of 1 Gbps in the mobile network preparing for a future.

Q: What do you expect the mobile market today that force the pace of this transformation progress? What challenges have you overcome, and what are the challenges that still lie ahead?

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Q: Can you outline the expected benefits this process will bring to the TDC group, and why?

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Q: Increasing sales and reducing churn levels within both the residential and business market

A: Significant increase in the overall customer experience, the perception of TDC as having the best mobile network is now the dominating factor in customer’s evaluation of TDC.

Q: Agile and cost effective network development, operation and maintenance.

A: The mobile network in Denmark is highly competitive with challenging expectations on increasing speed, full coverage and low pricing. The use of smartphones is exploding and in the horizon we see an increasing demand for IoT connectivity. To this end we are planning the rollout of NB-IoT in line with the evolution of IoT solutions in Denmark. Furthermore, we have launched VoLTE and have demonstrated speeds of 1 Gbps in the mobile network preparing for a future.
Q: What progress have you made to date with this transformation strategy? Can you reveal any key milestones that have been achieved, as well as the investments that will be required?

PL: HKT has partnered with Huawei to pioneer a digital operation transformation project since 2016. We analysed the current ‘pain-points’ and discovered the demands of enterprise customers. Through a series of workshops, we defined the scope and project objective. We have gone through a ‘planning and design’ phase, which involves an assessment based on a digital maturity model for digital operation benchmarking purpose. We formulate an overall architecture design and road map of deliverables. We also have gone through a series of design thinking workshops to understand customer’s demands from an outside-in perspective and conducted some pilot tests.

Investment areas involve consultancy services, redesigning the process to be customer-centric, developing people digital competence, enhancement of back-end capabilities, inventory system, operation support systems development and network infrastructure build.

Q: Can you provide details of some of the technologies you plan to deploy to achieve your eventual targets? How has this changed the relationship you have with the vendor community?

PL: Key new technologies we plan to deploy include: Cloud computing; Big data analytics solution; SDN; NFV; 

Employing a DevOps model to re-engineer enabling technology platforms.

Adopting open standards, open source, and an API-based interface is the technology trend, especially in the upcoming digital era. Operators tend to follow open standards in purchasing vendor solutions.

Q: What challenges have you faced so far as you transform from being a CSP to a DSP, and what are the challenges that still lie ahead?

PL: One big challenge is about the engagement of different business units within the company. As digital transformation involves the entire customer journey, support from different business units is critical.

For the technical side, the detailed design of data structure and the digital operations platform is no doubt a challenging task.

Data is an important element in today’s digital world; it plays an important role in the customer journey management. This includes known details of personal interest or customer experience at different customer touch points. Today, we have a big data engine to manipulate a high volume of data, but the legacy system does not fit today’s needs. We need to adopt a greenfield approach towards data structure and system design to “unify” the data, and there is no standard or best practice for us to use as a reference point.

Q: Can you provide an overview of the benefits that a digital transformation will have both for HKT and for its customers?

PL: The key benefit to customer is all about a good customer service experience. We would deliver in real-time, online and on-demand; allow self-management via the web portal; and provide OTT-enabled services to our customers.

For HKT, everything should be based on best practice and open standards. Service provisioning automation is realized through digital transformation. Service provisioning automation would also mean lower operating costs with higher productivity. We also expect a better network resource utilization by employing cloud and SDN technology, which in turn will lower capital investment for new service development in the long run. The development cycle for new services should also be significantly reduced.

Q: Can you provide an example of the kinds of services you hope to provide in future following the completion of this process? What are the added benefits that HKT will be able to provide?

PL: After completing the pilot phase of the transformation project, HKT would like to firstly launch three business solutions for the enterprise market, namely:

One Communication, which is a comprehensive unified communication service based on IP Centrex technology and broadband access; 
Commercial mobile, which includes features like private network access, usage differentiation among company policies, and more; 
Cloud-based services including IaaS and SaaS; this can include big data analytic solutions.

Q: What kind of market player does HKT hope and expect to be in the future?

PL: HKT is currently striving to strengthen itself in every aspect as an omnichannel player, and we would like to move forward to built the better digital ecosystem and become a true digital service provider.

On top of our quadruple-play services (telephone, mobile, TV, broadband), we are also a cloud service provider. HKT has a very rich service portfolio. We also expanded our transaction service to cover mobile payment (Tap n Go Service) and charging facility for electric vehicles (Smart Charge).

The application of IoT, Big data, virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and connected vehicles will become popular in the near future. We believe our digital operation transformation will enable us to better capture those new business opportunities as a true ecosystem player.

Q: Can you explain what being a ‘customer-centric’ operator means for the future of HKT and why it is so important that the operator has embarked on this process?

PL: Being ‘customer-centric’ means delivering the service with a focus on what the customer wants, as opposed to focusing on system capability or the enabling technology”.

Peter Lam, 
Managing Director Engineering, HKT Limited

Q: HKT said it is embarking on a digital transformation of its operations in order to become a “customer-centric” rather than a “network-centric” operator. Can you provide an overview of this strategy as well as a timeline for targets? How long will this process take, according to the current plan? 

Peter Lam (PL): Telecommunication service providers nowadays are facing increasing challenges and competition from OTT players in terms of service innovation, time-to-market and customer service experience. In order to sustain continuous business growth and stay competitive in the market, telecommunication service providers have to embark on and commence their digital transformation processes to different extents. Digital transformation is about creating a future-proof, customer-centric organization that provides an engaging culture and an encouraging environment for innovation. It involves complete transformation from business strategy and operations, front-end and back-end supporting system, to the underlying network and infrastructure, together with people development.

Our objective is to deliver customer-centric service through digital operations. This includes superior customer experience and more agile and compelling digital services.

As a starting point, HKT first embarks on its digital transformation in business solutions for the enterprise market. We analyse the current ‘pain-points’, discovering service requirements of enterprise customers by walking through the customer journey from an outside-in perspective through a “design thinking” process. We then implement the required operation transformation in different areas to build business operation and ICT infrastructure with agility to keep meeting and exceeding customer expectation. With the lessons learnt in enterprise market digital transformation, we plan to gradually extend our digital transformation to other areas such as the consumer market.

The company-wide digital transformation project will take three years to realize. The planning and design phase focusing on the enterprise market segment started in 2016. Implementation is expected throughout 2017 to streamline operations through enhancement of business support systems, ICT infrastructure cloudification and virtualization. This provides HKT with the business agility to offer customer-centric solutions and services for our enterprise customers. A similar digital transformation process for the consumer market will be kick-started in the second half of 2017.

“Being ‘customer-centric’ means delivering the service with a focus on what the customer wants, as opposed to focusing on system capability or the enabling technology.”
Roberto Kung, Senior Vice President Quality and Operations from Orange

Q: You presented Orange’s vision on operation transformation as part of Orange’s Essentials2020 ambition, to ensure that it is able to meet the changing demands of customers while remaining a leading digital service provider. Can you provide examples of the group’s progress to date?

RK: Telecom operators have to work both on physical infrastructure network (FTTH and 5G infrastructure with lower agility potential, but very important with the ‘last mile’ control) and network functions (higher agility potential). Telecom operators must first be able to set up agile operation (use easy to modify cloud-native applications and set up nimble life cycle management for example).

This is not sufficient as the whole organisation must be adapted and transformed to take advantage of agile operation (from business development approach, to marketing, to development, to operations to customers). DevOps is one step. Processes need to be changed, and supporting BSS/ OSS also need to be changed. So it is not easy to be as agile as it can be.

For instance, DevOps is extensively used for our own developments. But we also need to work with suppliers with a similar DevOps approach to shorten lifecycle to less than one month. We also need to open our networks with APIs and work in partnership with nimble third parties.

We are taking the opportunity of virtualisation to introduce agility everywhere and be able to compete with OTTs on an equal footing and to take advantage of our last mile advantage.

Q: What are the primary driving forces behind such operation transformation?

RK: In one word: ‘agility’. We can no longer accept slow life-cycle management, waiting through six months or even one year. A telecoms operator must be able to be agile as OTT players. Whenever possible, we must also automate repetitive operation actions. It is important to be able to react rapidly and set up agile operation, with much shorter life-cycle management.

This is made possible with cloud-native applications and a standard infrastructure design, allowing us to instantiate and operate new versions of applications as necessary, for instance on customer demands, for capacity reasons or for fine-tuning/configuring features. It also necessitates more automation with the ability to develop operation policies. Such an approach will also bring better quality and efficiency.

The push to ‘softwareisation’ with the technical convergence between IT and network is ongoing. Our ambition is to listen to our customers’ needs and to be able to respond in an agile way.

Q: Orange cites OTT players as the biggest challengers to operators today. Do you think that telcos will ever be able to compete on a similar playing field to more nimble OTT players, and if so, how?

RK: Obviously the changes are major in the domain of operations. Partners with developers and also have to operate continuous integration and development (CI/CD). Also innovation and engineering (Think and Build) have to work with the virtualisation framework, using VNFs. This has a major impact on the relationship with suppliers (procurement, how to integrate faster and fast, continuous releases…). Dramatically increasing the speed of delivery is the consequence of Orange transforming into a DSP. Our customers will be able to provision their services on demand.

But this change is well beyond Think, Build and Run. It assumes a major change of culture throughout the company. This is why Orange will soon launch its “Software Academy”. In a nutshell, this training programme aims at sharing a common culture of agility and software, at integrating better software logistics & tools for people working in network, IT, marketing, design or HR, with the objective of increasing the number of software engineers within the group.

Q: Can you explain some of the measures that Orange is taking to ensure that its network is able to meet the changing demands of users in future?

RK: The main measure has been the launch of the ODN (On Call Network) programme about 18 months ago following the all-IP programme created in 2014. The ODN programme federates all Orange initiatives with virtualisation (business opportunities - B2B, B2C, wholesale in network managements; architecture and technical solutions; industrialisation and disaggregation processes; virtual service aggregation…). It covers benefits such as digital online access, on-demand deployment of services, high network customisation, try-and-buy experience with pay per use, and resilient services. It starts with opportunistic and pragmatic services. But it intends to be holistic.

For instance, Orange already aims being ready for the introduction of 5G, notably with a virtualised approach.

However, today the industrial ecosystem is not yet stabilised. ETSI MANO standards have many options and have not yet delivered stage three. There are many OpenSource initiatives, such as OpenNFV, where Orange is one of the main contributors (with suppliers, OpenDaylight and OpenStack).

Unfortunately, we have not yet seen third-party orchestrators able to orchestrate major VNFs from other suppliers. The orchestration domain has seen many OpenSource initiatives (Arango-OSM, ONAP, 3GSPP, …). Orange would like such an ecosystem to stabilise and to narrow down to fewer options, so that the industry can handle interoperability and sustainability. That is why Orange has decided to support the OpenSource ECOMP initiative and is currently trialling ECOMP in Poland. ECOMP is today the most advanced in the orchestration domain because it is operational in AT&T and because it is the only one that comes with all the components necessary to handle all life cycle aspects: design, onboarding, monitoring and policy for automation. We would like to reunite all OpenSource initiatives of the domain. This is really an opportunity to drive the industry and stabilise technical options. One key deliverable is to standardise VNF guidelines (how to describe them and how to on-board them, for example) so that VNF providers may focus on one way to deliver them. Another hot issue is the integration with cloud for instance by focusing on Openstack and the relevant Infrastructure (IAAS, IAAS…).

Q: In terms of provision of services, what changes are we seeing and what should we see from Orange as it transforms from a CSP into a DSP?

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Q: What are some of the most important lessons you have learned as you move further towards digitisation, virtualisation and automation of telecoms and IT?

RK: The industry is still at the start. So only some first lessons can be shared. Working internally in DevOps mode is not easy and must be supported with adequate tools (automation of tests, configurations) and operation dimensioning (impact on operation back office). We need to strengthen the links between DevOps teams, with their culture of autonomy, and existing teams, with their culture of technical rules (for example, introduce a new monitoring mechanism versus rely on existing OSS tool that is not easy to modify). We need to introduce flexibility in our OSS (APIs for legacy, microservices for new OSS).

Q: With such foresaid transformation for network operation and culture, what kind of company will Orange be after 2020?

RK: Orange wants to fulfill its Essentials2020 strategic ambition to be always in touch to connect what’s essential in our customers’ life, being a digital, efficient and responsible company and meeting its ambition to provide an unmatched customer experience.

We must also learn to work in DevOps’ mode with suppliers. This is a big step for us, it will be difficult. That’s why we have sponsored JAD – Joint Agile Delivery – catalysts at the TM Forum. As a whole the industry needs to improve life cycle management.

Another key learning is how to handle Open Stack releases. This Open Stack version will certainly help.

More importantly, virtualisation has an impact on our organisations that may be difficult to change for instance when IT and network are handled by different units with different processes and tools. IT and network teams do not use the same trouble ticket systems, it makes difficult for them to work together. We decided to use the network system and process. This has a major impact when pre-existing processes and SLAs are not the same.

Another interesting example was to decide who is responsible for an orchestrator. On the one hand, developments are done by the IT entity. On the other hand, only operations have to say what to do. We had to create a mixed responsibility on this orchestrator.

Overall, we still have to learn in all domains: IT infrastructure, operations, DevOps improvement and tools and processes.

Q: Telcos are not only undergoing a massive change at a technological level, but also at a cultural level. As a former state-owned company that has already witnessed significant upheavals in the past, do you think that Orange is now ready to embrace a digital future and all that entails?

RK: Orange is both a former incumbent (France, Poland, Jordan, Ivory Coast etc…) and a new entrant (Spain, Belgium, Romania, Slovakia, Egypt, Tunisia, Morocco, Mali…). We have learnt from both aspects and learnt to transform ourselves to stay competitive. For instance, in the operation field, we have created shared NOCs (network operations centres) in Europe and MEA. All our countries have implemented service management centres focusing on customer experience and service operations.

Orange is doing everything to transform into a digital, efficient and responsible company. Both from a technical point of view and through its employees, for example through the aforementioned “software academy” programme. Orange is certainly getting prepared for the digital future.

Q: Obviously, all operators are undergoing similar transformation. We favour non-competitive exchanges with other operators. For instance, in the joint initiative JAD Orange leads a stream on culture and skill with the aim of defining how network job lines are going to be changed, and defining a maturity model to help the transformation.

With such foresaid transformation for network operation and culture, what kind of company will Orange be after 2020?

RK: Orange wants to fulfill its Essentials2020 strategic ambition to be always in touch to connect what’s essential in our customers’ life, being a digital, efficient and responsible company and meeting its ambition to provide an unmatched customer experience.
INTRODUCING THE OPEN ROADS COMMUNITY

The communications services industry is in the midst of an unprecedented time of change. This is normal in our industry; regulatory frameworks shift, new or different competitors enter, and of course new generations of technology regularly force market players to rewire their network operations and investment models. But the speed with which all these trends are converging on the industry today is impacting growth for mobile service providers in ways that can only be described, to use the industry’s most abused phrase, as disruptive.

In this rapidly evolving digital world, ICT industry participants need to redefine themselves, and it is with this belief that the Open ROADS Community, initiated by Huawei Technologies, was launched in February 2016 at last year’s Mobile World Congress. We have brought together dozens of global telecom industry stakeholders to achieve our mission: to be the incubator for digital transformation. Our Community’s acronym stands for five tenets which define the deep levels of personalization and quick service delivery that are emerging on the industry today. It is impacting growth for mobile service providers in ways that can only be described, to use the industry’s most abused phrase, as disruptive.

As a result, digital communications service providers are collectively struggling to find new ways to sustain compelling value propositions for their customers. Yet, service providers also have an opportunity to evolve and become key influencers in digital ecosystems, instead of simple value connectors. Communications service providers can build new digital ecosystems which will generate new industry value and revenue opportunities for all participants. Firms in other industries that collaborate with communications service providers in this ecosystem will reap similar benefits.

The Open ROADS Community’s goal is to help service providers become value connectors in digital business ecosystems, and to help all other businesses enhance their digital business through collaboration with these value connectors. We believe communications service providers will be the focal point where customer experience data and insight is curated and delivered to multiple brand owners and service providers, all with a universal view of each customer. The ability of communications service providers to manage and curate these ultimate ecosystems of brands and relationships, which uniquely surround each customer, is the key to the future success of all participants.

The Open ROADS Community creates and shares precise, actionable insights and tools for the benefit of all community members. One of the first such tools we have developed is the Open Digital Maturity Model (ODMM): a rigorous assessment tool that benchmarks the digital transformation progress of the business and identifies the steps required to achieve the digital business aspirations. The ODMM includes 6 dimensions which are Strategic Dynamism, Digital Culture & Skills, Optimal Customer Experience, Data Centricity, Service Innovation & Operational Excellence and Digital Technology Leadership. Enterprises need to approach their digital transformation initiatives by understanding where they can improve their capabilities and processes—and what they need to do in order to make those changes successful. The ODMM provides carriers and other enterprises with a precise gauge of where their digital capabilities are, and how to close the gap between their present state and their aspirational one.

The Open ROADS Community is not an industry forum. It is not a standards body. It does, however, rely heavily on the insights, architectures and methodologies from these bodies; most of our Community members are also active, award-winning participants in several of them. Our collaborations with industry groups become inputs into a holistic framework, which underpins the strategic thinking of the Community’s digital transformation process.

We call this framework the Digital Master Mind: a comprehensive view of the ways our community addresses its business transformation challenges. See below: our approach emphasizes the need for businesses to commit to transformation as a continuous process, constantly re-assessing their capabilities and goals against an ever-evolving industry landscape. Service providers must define their business aspirations clearly, using assessment tools and design thinking, and determine the gaps between these aspirations and the operating capabilities they have now, and expect to build.

This framework, combined with the tools and shared experiences of the Community, will help digital communications service providers to compete more effectively with new entrants to the ecosystem, such as OTT players and cloud service providers. We are creating collaborative platforms to build new digital services and business models with all digital service industry participants, and all other companies that depend on digital channels to grow their businesses.

One such platform for doing so is the Omni-channel Management Industry Alliance, a newly formed business domain within the Open ROADS Community. This team of cross-industry peers are working to build a mature ecosystem for omni-channel management, which uniquely surrounds each customer, is the key to the future success of all participants.

I invite you to join us, and help build the digital business future in which we will all thrive.
In this volatile ICT era, how can operators seize new service opportunities that will continue expanding their businesses? An effective way to do so is to deliver the ROADS experience, which means re-designing operations and infrastructure through digital technologies.

However, these digital technologies have brought about a series of challenges. One, for example, is that different vendors use different interfaces under hierarchical decoupling. Another is that operators have to deal with the uncertainty of the effects brought by the transformation. And a third example is that operators are unable to verify the best solution for a quick launch while ensuring the service quality after transformation.

**HUAWEI CLOUD OPEN LABS FACILITATE DIGITAL TRANSFORMATION**

Since establishing the Cloud Open Labs, Huawei has gathered strength from various fields, continuously developing multi-vendor solution integration and verification, accelerating the operations transformation and infrastructure reconstruction to support operators during their digital transformation.

In the SDN field, Huawei works with industry partners such as Check Point, Fortinet, Marantis, Infoblox, Citrix, and F5, to provide value-added services via the enterprise Cloud/VN solution.

In the NFV field, Huawei works with industry partners such as VMware, the OpenStack community, Red Hat, Wind River, and Ubuntu, to address challenges brought on by network decoupling. This facilitates large-scale NFV deployments and shortens the time-to-market for new services.

In the Cloud Data Center field, Huawei cooperates with industry partners such as VMware, BMC, Accenture, Ovell, and Microsoft, to provide an end-to-end (E2E) cloud hosting solution.

It is also worth noting that the Open Platform for NFV (OPNFV) described Huawei's NFV Open Lab as one of the world's standardized open-source labs. In addition, Huawei's Data Center Open Lab provides a lab environment for the OPEN-O community to collaborate on the development and testing of open-source projects.

Huawei technical certificate criteria includes Compatible (product compatibility certification), Validated (compatibility certification with Huawei products and solutions), and Enabled (certification based on Huawei's technical platform). By mid-January 2017, Huawei issued certificates for more than 30 partners covering fields such as security, load-balancing, WAN acceleration, cloud platform, IoT etc.

**HUAWEI VERIFIES ENTIRE OPERATOR NETWORKS TO PUT TESTED SOLUTIONS TO COMMERCIAL USE**

Most operators are building regional and nationwide networks. To ensure that these networks can deliver the ROADS experience, operators require a lab environment with a distributed structure, multiple vendors, multiple layers, and a cross-domain network to simulate operations for pre-verification purposes.

Huawei has worked with over 40 partners in the Cloud Open Labs, through which over 250 hardware products and 400 versions of software have been introduced. This covers services at the infrastructure, platform, and application layers and a number of leading-edge ICT technologies such as SDN, NFV, cloud data centers and Infrastructure Enabling Systems (IES). In 2015, Huawei introduced the new generation of the Cloud Open Labs, providing a lab environment with multiple vendors, distributed structure, and cross-domain network.

HUAWEI JOINS MULTIPLE VENDORS TO ESTABLISH AN OPEN ECOSYSTEM

The open cloud network architecture has brought about a series of changes in standards, interfaces, vendors, business models, and purchasing practices. Vendors need to unite to build an open ecosystem on an open and standard platform. In the face of all these challenges, Huawei proposed the partner plan and Huawei technical certification standards. The Cloud Open Labs cooperate with upstream and downstream partners, issue certificates for its partners, and attract more partnerships to build joint solutions and industry ecosystems, helping to accelerate the move towards industry maturity.

“Huawei Cloud Open Labs provide alpha and beta environments to meet the innovative needs of operators and partners.”

**INNOVATION HELPING OPERATORS DESIGN NEW SERVICES TO CREATE NEW PROFIT POINTS**

During the period of ICT convergence, customer requirements change rapidly and new business opportunities emerge. Operators need to be committed to creating innovative technology, operating models, and services that will meet customer requirements.

Huawei Cloud Open Labs provide alpha and beta environments to meet the innovative needs of operators and partners. The Cloud Open Labs environment helps operators rapidly innovate new services through agile iterative development and verification. To be specific, during alpha testing, Huawei provides micro services on its Platform-as-a-Service (PaaS) platform, builds service-based APIs, establishes development and test environments, and designs prototype solutions, allowing for fast service rollout. After the pre-integration tests, these prototype solutions are rapidly deployed to the beta test environments, ensuring 1 to N replication.

Huawei proactively works with operators, industry organizations, partners, OTT businesses, and developers on joint innovation initiatives and has designed a series of solutions such as CloudVPN, Cloud VoTE, Smart Home, smart meters, enterprise mobile data management, and government & enterprise cloud computing. Huawei will always strive to bring profits to operators and users and steer industry development.

Operator H in Hong Kong is hindered by slow service provisioning and limited service control. Huawei partnered with operator H, utilizing Cloud Open Labs, to improve their competitive edge by accelerating service provisioning by 90% and developing innovative and intelligent services such as automatic data quota control, shared policies, black and white website list management, and automatic bill classification.
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