



New research from ICT Intuition, LLC

What I Learned in 2016 (and what to watch for in 2017)

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What I Learned in 2016 (and what to watch for in 2017)

At the risk of adding to the pile of year-end summaries and predictions you're receiving, I'd like to offer up my observations. I've been in this industry in various capacities for more than 30 years and know that change is slow but inevitable. And it makes sense. Any change a service provider undertakes ripples around the world and has an impact well beyond its borders so it is not only prudent to proceed with caution, but absolutely necessary. Information and Communication Technology (ICT) has a substantial monetary and social impact on business, government and individuals worldwide. The providers of those services and systems – from integrated circuits to networks, applications and professional services – are critical to the connected global economy.

We're in a phase now where change is more revolutionary than evolutionary. Service providers aren't just upgrading, but making substantive business changes. Some are pursuing a media path while others are positioning to become a turn-key digital service provider for business. Change is constant in telecom and some of today's changes just might prove transformative. As analysts, it is our job to figure out which of today's ICT marketing presentations will become tomorrow's operating strategies. Some of us might even go so far as to share our opinion of which ones should or shouldn't.

That is the purpose of this report. There were many announcements, trials and case studies shared by the industry this year. I've selected a few concepts that will be important in the coming years and we will be researching and expanding on each as 2017 progresses.

Specifically;

- DSPs aren't digital enterprises
- We need a new definition of network
- Customer experience has to start with the customer
- The new network runs on data
- We need a hybrid operations model, not just a hybrid network

This report includes examples from some of the work we've done this year. We hope it contributes to the conversation about networks, digital transformation, operations and ICT. We welcome your opinions and input as ICT Intuition explores these and other ICT operational challenges in 2017 and beyond.



DSPs Aren't Digital Enterprises

In a recent ICT Intuition survey, 67% of the more than 120 service providers questioned claim to be digital service providers (DSPs), yet most sold only network services and had no partner strategies. While some tasks have been automated, processes haven't changed. When calling in for support, a customer is still bounced from one area to another because relevant data is stored based on network or service rather than customer. There is no automation or intelligence that ties data about a service to an individual customer.

Implementing cloud-based systems that deliver digital solutions takes new thinking and new processes. Automation doesn't fix a bad process and, in most cases, can make it worse. Process changes are real changes and as much as we humans don't like change, it is inevitable. For those closest to the customer or the network, implementing a good, automated digital process will likely make their jobs easier, not eliminate them. For DSPs, in addition to the revamped OSS/BSS employed to serve digital customers; internal systems for employees such as payroll, work order management, expense management, etc. need to be implemented as digital processes using data from OSS/BSS solutions, intelligent automated processes and integrated APIs. But that hasn't happened yet.

Every service provider shares concerns about attracting talent and streamlining operations and that only emphasizes the need to make the processes and systems that serve employees digital, mobile and intuitive. Much is said about CSPs becoming DSPs and as an industry we acknowledge that that is going to take some time, but the transition to DSP will be easier for a digital enterprise. To become digital enterprises,

service providers have to embrace mobility and the cloud for their own business needs and implement a partner strategy that enables customers to access any combination of cloud functions, applications and services.

We Need a New Definition of Network

The public network has always consisted of a physical network that is configured to deliver a service and then each service is delivered to individual customers under an all-seeing central operations and management function. For service providers in 2017 the network gets bigger – much bigger. The new network includes more than 5G and virtual network elements. Networks now include applications, autonomous devices, partners and intelligence. Data will drive the execution of processes, dynamically modify operations and secure the customer experience. While network infrastructure will always be at the heart of digital services; the ability to include and exclude partners, applications, customers and data is the new definition of network.

For more than a century, operators have built, maintained and ensured the quality operation of networks. Physical, hardwired, networks. There are wireless networks and satellite networks, but each starts and ends with hardware elements and software components that connect and control each piece of the network. As we add network function virtualization (NFV) and software defined network (SDN) control, there are more connections and configurations possible; more data to capture and correlate; and greater opportunities for failure.

Add to that the increasing level of scrutiny that network operators are receiving from government regulators, and service providers are in need of alternatives. One alternative that was announced in 2016 is the NEC/NetCracker Network as a Service (NaaS) offering. NEC/Netcracker NaaS provides an end-to-end environment to rapidly create, deploy and monetize value-added services by bringing together virtualized network infrastructure and services, cloud applications, orchestration and commercialization tools through an open ecosystem of pre-integrated partners. Service

providers can rapidly onboard and launch new services, including enhanced network functions and partner offerings to expand the network and broaden their revenue mix.

Customer Experience Has to Start With the Customer

In a digital world, every user is connected and the resultant experience determines the value of a product or service and affects revenue, costs and reputation. Given the growing number of network elements, servers, applications and providers involved in every online transaction; management tools are being added that, while valuable, are not intended to measure the digital user experience and cannot be realistically expected to do so.

So much of what contributes to customer experience is now outside the control of the service provider. Attempts to align the views from individual monitoring systems to understand the end-to-end performance and quality of digital services create blind spots that become increasingly prominent and difficult to minimize as more digital services and devices come on-line. While core functionality may be solid, the ability to navigate the visibility gaps between management systems and create a seamless end-to-end view of what customers are experiencing is missing. Metrics that describe the performance of each component of the customer transaction are valuable for trouble shooting but without a reliable end-to-end measurement, the picture is fragmented and far from clear.

From the first customer inquiry to the final delivery of products and services, there are multiple devices, systems, providers and partners that make up the digital customer experience. As part of its analytics tool, Actual Work, Actual Experience has developed a lightweight Digital User that sits where the user sits, operates the way a user operates and collects performance data at every point along the way. That data is then sent to the cloud to be crunched by ground-breaking advanced analytics based on ten years of intense academic research in digital experience quality.

Establishing a digital user and executing a process the way a customer or employee would requires end-to-end measurement of what happened, when, what elements and

providers were involved and the impact on the overall experience. By doing this for multiple processes, Actual Work enables rapid response to problems and, over time, analyzing digital customer experience quality reveals performance bottlenecks that show where persistent problems exist, partner performance and where technology investment would add the most business value.

The New Network Runs on Data

Before we can address how best to deliver digital services, we have to get a handle on all the data coming from the resources, services and customers that make up the new network. All of the elements required to provision users and give them access to the network and any combination of applications, features and functions they choose will benefit from and ultimately require data-driven operations. Even the most capable individuals cannot respond to the demands of dynamic service enablement and delivery using manual processes and wildly disparate inventories.

Data quality or lack thereof, is a major concern for service providers as they transition to a data-driven architecture. Rationalizing product and service catalogs; while difficult, time consuming and often painful; is possible and creates the foundation for dynamic data-driven order management, fulfillment and assurance workflows. But when the order hits resource inventory, the going gets tough.

Service providers are using inventory systems that have been in place for years, even decades, and each of these core systems have been multiplied and modified so extensively that turning them off would likely put the entire business at risk. And it is those same multiplications and modifications that are the primary reason data in those systems is unreliable and in some cases, nearly unusable, requiring manual intervention and subverting efforts at automation. Traditional OSS is incapable of orchestrating the efficient and effective operation of multiple physical and virtual resource inventories and vendors are beginning to offer alternatives.

Rather than either a) configuring a service across multiple resource inventory systems using manual “swivel chair” operations or b) relocating resource data to a central

location that must be continually synchronized with existing sources, Ericsson Adaptive Inventory queries any relevant existing system for the resources required by product and service components. With the Ericsson solution it is possible to pull current data from multiple sources and dynamically construct an end-to-end network topology that can be assigned to a specific product or a particular customer instance of a product.

Large sums of money have been invested in operational transformation and OSS/BSS solution upgrades and replacement. A dynamic or adaptive approach to resource inventory enables those solutions to remain in place and be used by engineers, and eventually OSS/BSS solutions, to dynamically modify individual topologies and rapidly adjust infrastructure resources in the event of a failure, service modification, or changes in performance.

To enable dynamic orchestration, Amdocs is implementing a solution that supports service delivery and assurance from the customer to the core of the network. Physical and virtual inventory data is necessary to support each layer of orchestration, but rather than federate the data to an additional data store, Amdocs pulls data from a variety of sources and each orchestration action uses and augments the data. Depending on the action, more or less detail is required and the data resulting from each action must then be aligned with existing sources. Managing and optimizing the availability and utilization of data is the key to rapid delivery and on-going management of new services.

We Need a Hybrid Operations Model, Not Just a Hybrid Network

Before we can fully address how to best deliver digital services, build a digital service provider, delight customers and wrangle all that data; there is a need to step back and think hard about an operational model. Technology comes and goes, but operations are forever. The FCAPS¹ functionality that has been with us forever remains constant. All the functions described all those years ago have to be performed. What has changed

¹ For those of you too young to remember, FCAPS (pronounced F-Caps) stands for Fault, Configuration, Accounting, Performance and Security. A full set of telecom operations functional requirements originally defined as part of the ISO Telecommunications Management Network (TMN).

and what must change once again is the organizational and process structure that delivers that functionality.

Foundationally, service providers have to build infrastructure, create services, deliver those services securely to customers, ensure that those services continue to perform as required and get paid. That hasn't changed and it won't. It is the operational architecture that enables all the relevant functions and processes that is changing. The monolithic, centralized command and control structure that has served the industry so well in the past is not what will serve us in the future.

And we're starting to see it in NFV trials and SDN proof-of-concept. Scale, the single biggest challenge this industry has always faced, is forcing the issue. There is too much data and too many sources to continuously federate it all together in one monolithic location under single control. The new network is actually many loosely connected network instances distributed by customer, region or function and locally managed to ensure agility and responsiveness. We're seeing the need for layers of orchestration to support local fulfillment and assurance microservices and each is part of a loosely coupled centralized choreography that interacts with the customer, manages those layers and addresses global or architectural issues.

This type of distributed operating strategy then creates the ability to instantiate a unique network for every customer that provides access to the service applications and data each needs. Rather than multiple services running across a single network, there will be multiple services running across multiple networks that are unique to each customer or locale. Localized event monitoring ensures that detailed data is available to quickly provision new or modified services and identify and solve problems close to the customer. Higher level data (e.g. usage, performance) is then aggregated to a centralized point for customer support and billing.

All the innovative solutions that are being delivered now and coming soon will not deliver service providers a transformational impact using a traditional telco OSS/BSS model. We need a hybrid operations model, not just a hybrid network. All the learnings

discussed in this report contribute to that new model and bringing it all together should be part of a sound operational strategy, not random chance.

The digital services industry will continue along a variety of technology paths and network upgrades and NFV/SDN trials will continue. At ICT Intuition we will continue to focus on how to tie it all together and understanding what a digital operations strategy looks like. We'll start with the tenant model that instantiates a new network for each customer and continue with a detailed explanation of our radial operations model that aligns necessary functionality with an operational concept that works at scale.

The functions won't change but the business will.

ICT Intuition, LLC delivers an innovative approach to market analysis from ICT analysts with decades of experience defining, managing, and delivering the business, operational, and marketing strategies critical to communication service providers, utilities, government, and the vendors that serve them.