Digital Transformation: The global telecoms industry is in a state of transition

Presentation for Kinetic Conference

Latin America | April 2018
About GlobalData Technology Practice

GlobalData’s Technology practice is a world-leading provider of commercial intelligence for technology businesses.
Agenda

Digital Transformation Market Context

Transformation to a Digital Service Provider: Condition to Compete

Case Studies

Key Findings
Concept of Digital Transformation

Digital transformation can be defined as the acceleration of business activities, processes, competencies and models to fully leverage the changes and opportunities of digital technologies and their impact in a strategic and prioritized way.

In fact, digital transformation is business transformation.

Source: GlobalData and CIO
The digital ecosystem is being shaped globally by disruptive advances in broadband and computing technologies, the rising influence of mobility and a new era of customer empowerment.

- Better customer experience
- New revenue drivers
- Faster time-to-market
- Predictive marketing
- Efficient innovation engines

**TECHNOLOGICAL DISRUPTION**
- Ultra-fast broadband connectivity
- Cloud computing and storage
- Powerful big data analytics
- Automation by means of machine learning

**INFLUENCE OF MOBILITY**
- Smartphone ubiquity
- Ascent of mobile video
- Climb in users with mobile Internet connectivity
- "Appification" of services, content and routine tasks

**CONSUMER EMPOWERMENT**
- Always-on expectations
- Co-creator paradigm (e.g. crowdsourcing)
- Mobile-first preference
- Defy constraints of physical world

Source: GlobalData

#Foro3C
Agenda

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Key Findings
Growth is disproportionally captured by GAFA & Technology Players

Creation of demand through innovation has supported the emergence of disruptive players in multiple industries: GAFA, OTTs, etc.

Source: GlobalData

EMERGENCE OF DISRUPTIVE PLAYERS IN MULTIPLE INDUSTRIES

Telco heartland

Disrupting telco’s digital diversification

Pioneering the digital wave
New business imperatives rationalize telco transformation

The digital ecosystem is being shaped globally by disruptive advances in broadband and computing technologies, the rising influence of mobility and a new era of customer empowerment. Experiences from Google, Amazon, Facebook and Apple (GAFA)

### CHALLENGES AND OPPORTUNITIES CREATED BY DIGITAL

**BUSINESS IMPERATIVE**

- **Speed up service delivery**
- **Enhance Customer Experience**
- **Develop new revenue streams**
- **Drive continuous Innovation**

**Enabling platforms**
- Developers: Android, Google Chrome, Google Chrome OS are all open source
- Advertisers: AdWords and AdSense
- Consumers: YouTube, Translate, Maps, other

**Customer Obsession:**
- Strengthen value proposition of revenue product lines (Prime, AWS)
- Leverage data analytics for product design
- Raise appeal of its streaming content by investing in original video productions

**Long Term Value**
- Invest to grow global Internet connections
- Make big bets—invest to drive ambitious technological breakthroughs

**Passion for invention**
- Invest heavily on design and development
- Deploy focused, nimble design teams
- Nourish robust developer community

Source: GlobalData
### Telco approaches to digital transformation: Same challenge, similar ways to get there

The opportunities and threats posed by the rise of digital companies are impacting telcos across the board. Telcos are responding with a similar array of strategies to transform and unleash the new growth engines.

#### TELCO DIGITAL STRATEGIES– CASE STUDY SAMPLE

<table>
<thead>
<tr>
<th>Strategic focus</th>
<th>Organization: Result: Efficiencies</th>
<th>Technology: Result: Innovation</th>
<th>Market: Result: Revenue growth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transform to digital culture</strong></td>
<td>Customer channels</td>
<td>Employee digital readiness</td>
<td>Talent sourcing</td>
</tr>
<tr>
<td><strong>Enable digital ecosystem</strong></td>
<td>Organic innovation engines</td>
<td>Developer platforms</td>
<td>Media platforms- acquire or build</td>
</tr>
<tr>
<td><strong>Unleash digital revenue drivers</strong></td>
<td>Digital apps (IoT, mobile)</td>
<td>Digital media and content</td>
<td>Data and advertising engines</td>
</tr>
</tbody>
</table>

Source: GlobalData
Agenda

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Key Findings
China Telecom: Digital strategy overview

China Telecom aims to become a leading digital services provider by focusing on five emerging businesses. The company expects Internet of Things to become a significant revenue driver in the next five years.

China Telecom: Digital strategy overview

China Telecom aims to become an integrated digital services provider within five years. Its digital strategy, “Two plus Five”, calls for leveraging two core technologies, 4G and broadband fiber, to lead in five emerging digital ecosystems – IPTV, mobile payments, Internet of Things (IoT), cloud computing and big data, and artificial intelligence (AI).

SELECT DIGITAL STRATEGIES BY FOCUS AREA – CHINA TELECOM

**Internal digital transformation**
- Digital sales and service channels (WeChat, YiChat)
- Digital learning platforms and employee training
- Big data to drive process and product improvements

**Digital ecosystem innovation**
- Strategic partnerships (e.g., GE, Akamai)
- Network evolution (Transformation 3.0)
- Next generation network (CTNet2025)

**Digital revenue drivers**
- IoT (e.g., Smart Family)
- Cloud business solutions
- Big data / AI
- BestPay mobile payments
- eSurfing IPTV

Source: GlobalData
China Telecom has put in place a number of strategies leveraging digital technology to invigorate customer-facing operations and talent development programs. Big data insights are utilized to enhance business processes.

- China Telecom (CT) understands the need to transform the organization internally to compete in the digital economy. It leverages its YiChat messaging platform to conduct webinars and encourage collaboration.

- The company is leveraging digital technology to improve the customer relationship. It has been able to drive utilization of its consumer online channels for mobile data top-ups and data plan purchases. In 2015 the operator began the WeChat instant messaging service for business data plan sales under its ‘Sales Elite’ program.

- China Telecom also wants to also expand digital channels to improve the efficiency of its customer service operations. It provides customer support nationwide via popular instant messaging apps, online blogs and chat services. The company has built robust big data analytics resources, these tools are already being utilized to improve operational processes such as network and data operations, customer service and product development.
China Telecom leverages data for digital innovation

CT is combining its network and robust big data resources to drive revenue through IoT, cloud and data-driven advertising solutions for the enterprise and vertical industries.

- China Telecom is making progress toward its IoT ambitious revenue goal, with net additions of over 3m IoT devices in the first half of 2016. The company centralized its IoT network operations to expand its line of applications and build scale.

- China Telecom is targeting growth applications such as smart transit, smart logistics, connected vehicles and wearables. In addition, is directing R&D resources to build its next generation IoT platform.

- In cloud and big data, China Telecom is combining its network capacity and data resources to target enterprises and vertical industries. In September 2016, CT’s Best Tone subsidiary launched a data-centric online advertising platform. The platform connects to smart TVs, computers and smartphones and leverages CT’s big data technology and broadband network to identify potential users and deliver targeted messages, increasing the ROI of ad campaigns.

- China Telecom is targeting the vertical markets with dedicated cloud apps, such as the financial cloud, the industrial cloud and such. In the first half of 2016, its cloud services revenue grew by 41% while big data revenue tripled.

<table>
<thead>
<tr>
<th>SELECT SOLUTIONS PARTNERSHIPS – CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus area</td>
</tr>
<tr>
<td>Advertising</td>
</tr>
<tr>
<td>Internet Plus</td>
</tr>
<tr>
<td>Cloud, Media</td>
</tr>
<tr>
<td>Content (books)</td>
</tr>
</tbody>
</table>
## China Telecom: Financial Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenues (RBM)</td>
<td>324.329</td>
<td>331.202</td>
<td>352.285</td>
</tr>
<tr>
<td>Mobile Subscribers (Million)</td>
<td>185.62</td>
<td>197.90</td>
<td>215.00</td>
</tr>
<tr>
<td>Wireline Broadband Subscribers (Million)</td>
<td>106.95</td>
<td>113.06</td>
<td>123.12</td>
</tr>
<tr>
<td>of which: Fiber-to-the-Home (FTTH) subscribers (Million)</td>
<td>42.61</td>
<td>70.99</td>
<td>105.99</td>
</tr>
<tr>
<td>IoT Connected Devices (Million)</td>
<td>0.98</td>
<td>14.19</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: RBM Millions

Note 2: China Telecom completed the construction of its efficiently-centralised operating platform for Internet of Things and operation commenced in April 2016.
Verizon’s vision is to become the “innovator in the “digital-first mobile future” and grow profitable revenue by leveraging its network’s quality and new content assets to lead in IoT and digital advertising.

Important innovations in digital media, interactive video entertainment, Internet of Things (IoT) and broadband.

To position to benefit from the digital advertising revenue opportunity, Two major acquisitions, AOL and Yahoo.(Oath)

Verizon is investing in innovation platforms to engage other industry stakeholders in the development of a vast applications ecosystem for its solutions, through initiatives like the Incubator Innovation Centers and the ThingSpace developer platform.

Source: GlobalData

SELECT DIGITAL STRATEGIES BY FOCUS AREA – VERIZON
Verizon disrupts the connected world with IoT

Verizon aims to grow its IoT revenues exponentially in the next 5 years. Verizon’s IoT business generated revenues of US$780 in 2016 with 25% of growth. Target 2017 1 USD Billion, 28% of growth.

To accomplish this the company is executing a three-point strategy.

- Verizon is first enabling the development of a vast ecosystem of IoT applications through the ThingSpace platform.
- To scale the IoT business, Verizon is offering solutions that span the enterprise, industrial, government and consumer segments.
- Verizon is also aligning robust big data resources with its IoT solutions to enable organizations to pursue data-driven business models.

Verizon offers a wide array of IoT solutions, including telematics, mHealth, precision agriculture and smart cities.
Verizon prepares to pursue digital advertising

Verizon is making bold investments to strengthen its content and media platforms to tap on the growth opportunities posed by mobile video and advertising.

- The acquisitions of AOL and Yahoo (Oath) represent a combined investment of almost $10bn for Verizon. These bold moves signify Verizon’s commitment to explore the digital content and advertising business models to complement the media platform services provided by Verizon Digital Media Services.

- Yahoo brings strengths in native video and programmatic advertising. AOL’s mobile advertising platform helps Verizon to diversify its revenue base and strengthen its TV Everywhere offers.

- The Go90 mobile app taps into the growth wave of social entertainment. Its flexible format featuring à-la-carte live sports, live music and concerts is attracting major advertisers who are interested in reaching millennials and other viewers of online video services.

- Above all, the Yahoo and AOL acquisitions provide Verizon the user scale it needs to deliver on its 2020 strategy. Their challenge will be to efficiently integrate the programmatic advertising advantages.
Verizon enables digital innovation

• A key factor for Verizon is to be able to build a robust ecosystem of applications and solutions. Verizon is investing in two platforms to engage third-parties in ecosystem innovation.

• The **Innovation Centers** are incubator workspaces co-located with Verizon labs where outside technologists can ideate, develop and commercialize new products with the support of Verizon scientists and engineers. Verizon advisors provide assistance with business cases, and the labs provide a simulated wireless environment, equipment and tools to test, certify and launch the products.

• To accelerate the development of IoT apps, in 2015 Verizon launched the **ThingSpace** online platform. The workspace enables developers and customers to create applications for Verizon’s IoT solutions by providing programming interfaces (APIs), development kits and testing tools, and access to Verizon’s robust big data analytics engine. ThingSpace has become a growth engine for Verizon, having spawned many successful IoT applications, including Hum, Grid Wide and Intelligent Video.

### SELECT VERIZON INNOVATION INVESTMENTS

<table>
<thead>
<tr>
<th>Focus area</th>
<th>Last 2 years investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media and advertising</td>
<td>US$4.4bn (AOL); US$4.8 (Yahoo)</td>
</tr>
<tr>
<td>Telematics (IoT)</td>
<td>$612m (Hughes Telematics)</td>
</tr>
<tr>
<td>Training and development</td>
<td>US$308 million</td>
</tr>
<tr>
<td>Thing space and Innovation Incubator Centers</td>
<td>undisclosed amount</td>
</tr>
</tbody>
</table>
# Verizon: Financial Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividends declared per share</td>
<td>USD 2.16</td>
<td>USD 2.23</td>
<td>USD 2.28</td>
</tr>
<tr>
<td>Wireless Revenues</td>
<td>USD 87.646</td>
<td>USD 89.186</td>
<td>USD 91.680</td>
</tr>
<tr>
<td>Wireline Retail</td>
<td>USD 12.168</td>
<td>USD 12.696</td>
<td>USD 12.751</td>
</tr>
<tr>
<td>IoT Revenues</td>
<td>USD 585</td>
<td>USD 690</td>
<td>USD 780</td>
</tr>
<tr>
<td>Thing Space Developers</td>
<td>4.000</td>
<td>13.000</td>
<td></td>
</tr>
<tr>
<td>Wireless Connections</td>
<td>108.2 Million</td>
<td>112.1 Million</td>
<td>114.2 Million</td>
</tr>
<tr>
<td>Post Paid Churn</td>
<td>1.04%</td>
<td>0.96%</td>
<td>1.01%</td>
</tr>
<tr>
<td>ARPA (Average Revenue per Account)</td>
<td>USD 162.17</td>
<td>USD 163.63</td>
<td>USD 167.70</td>
</tr>
</tbody>
</table>

Note 1: Dollars in Millions

Note 2: Not included Revenues Acquisition of Fleetmatics Group PLC (Fleetmatics), a global provider of fleet and mobile workforce management solutions in July 2016. Revenues of Fleetmatics around USD 250 Million.

Source: Verizon
**AT&T: Digital strategy overview**

AT&T aims to become the world’s leader in digital services by leveraging its strong brand and technological prowess. The company is also making bold investments to expand its digital assets.

Foundry Program: High-tech working space where third-party inventors and developers have access to AT&T network resources and test beds. AT&T has six foundries in the US focusing on specific vertical technologies, such as IoT (connected car, home and health), cyber security and business process optimization.

**SELECT DIGITAL STRATEGIES BY FOCUS AREA – AT&T**

<table>
<thead>
<tr>
<th>Internal digital transformation</th>
<th>Digital ecosystem innovation</th>
<th>Digital revenue drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raise workforce digital IQ (Workplace 2020)</td>
<td>Accelerate ecosystem collaboration (ATT Foundry, Digital Drive)</td>
<td>Leverage digital acquisitions (DirectTV, Time Warner, other)</td>
</tr>
<tr>
<td>Employees as innovators (The Innovation Pipeline)</td>
<td>Leverage AT&amp;T developer program</td>
<td>Scale IoT solutions (consumer, enterprise, government)</td>
</tr>
<tr>
<td>Customer service via social media (Social Care)</td>
<td>Develop vertical ecosystem partnerships (GM, other)</td>
<td>Leverage network prowess to lead in Cloud</td>
</tr>
<tr>
<td>Online listening platform (PRNOC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AT&T transforms its workforce

AT&T recognizes that digital transformation starts with the company culture and it is investing to move its large workforce toward a digital paradigm and increase their IQ in digital technology.

• One way for AT&T to change its culture is to attract new talent from technical fields.

• In 2013 AT&T launched the Workforce 2020 program. The program has several building blocks:
  • **Workspace redesign**: Transform workspaces to make them conducive to innovation and collaboration. Leverage AT&T technology (e.g., video labs, ‘telepresence on wheels’, etc.) to enable employees and teams to work from anywhere.
  • **Workforce retooling**: Provide training and education options to help employees acquire new skills. In addition to internal courses on the basics of digital technologies, AT&T grants certifications in high-tech specialties such as data science, coding and cloud-computing. AT&T is partnering with University of Notre Dame, Georgia Tech and Udacity to offer accredited online ‘Nano’ degrees and master programs.

• AT&T is investing over US$250m on internal training programs and US$30m on tuition reimbursement per year.
AT&T drives third-party collaboration

AT&T ECOSYSTEM DEVELOPMENT – FOUNDRY PROGRAM

Objectives:
• Drive ecosystem of AT&T digital solutions by closely collaborating with the technical community.
• Reduce time to market of new products and service.

Highlights:
• The foundries: High-tech working space where third-party inventors and developers have access to AT&T network resources.
• Target industries: AT&T has six foundries in the US focusing on specific vertical technologies, such as IoT (connected car, home and health), cyber security, business process optimization.
• Investment: US$140m for six centers.
• Impact: Inventions such as the ‘Connected Car’ and the Public Relations News Operations Center (PRNOC), the social media monitoring center located in Dallas.

Model: State-of-the-art technology labs developed in partnership with infrastructure suppliers

Examples of ‘AT&T Foundry’ Inventions

Connected Car
• Advanced diagnostics
• Stolen vehicle tracking
• Automatic crash notifications

Digital health
• After-hospital home monitoring
• Connected clinical environment
• Nurse station: connect caregivers with patients

Internet of Things (IoT)
• Smart luggage
• Connected trash cans
AT&T leverages IoT to sustain revenue growth

AT&T’s collaborative development approach is paying off: connected cars are driving IoT sales. Now AT&T is consolidating its IoT solutions across segments and build scale.

AT&T SMART HOME AND CONNECTED CAR SOLUTIONS

**Smart Home**
- End-to-end digital home security and automation system.
- Offered in 84 markets.
- Platform integrates components from many suppliers, and works with third-party home security systems.
- Leveraging DirecTV purchase to integrate solution with TV receiver to allow users to monitor the home premises while watching TV.

**Connected Car**
- Over 8m vehicles connected to its network; over 50% of new smart passenger vehicles in the U.S.
- Multi-year agreement with Onstar (General Motors) to equip cars with mobile Internet and infotainment services.
- Partnered with BMW to integrate Wi-Fi hot spot in cars.
- Developing a cloud-based, voice-enabled mobile virtual assistant solution using its WatsonSM speech engine.
- Established AT&T Drive Studio, a test lab to collaborate with technology partners to develop car connectivity and smart car solutions.
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenues (Millions)</td>
<td>USD 132.447</td>
<td>USD 146.801</td>
<td>USD 163.786</td>
</tr>
<tr>
<td>Total Wireless Customers (000)</td>
<td>120.554</td>
<td>137.324</td>
<td>146.832</td>
</tr>
<tr>
<td>Business Connected Devices (000)</td>
<td>19.943</td>
<td>25.284</td>
<td>30.649</td>
</tr>
<tr>
<td>Consumer Connected Devices (000)</td>
<td>821</td>
<td>929</td>
<td>942</td>
</tr>
<tr>
<td>Connected Cars</td>
<td>NA</td>
<td>3.9 Million</td>
<td>4.9 Million</td>
</tr>
<tr>
<td>Churn</td>
<td>2.06%</td>
<td>1.94%</td>
<td>2.15%</td>
</tr>
</tbody>
</table>

Source: AT&T
The Future

- Blockchain
- Artificial Intelligence
- Augmented and Virtual reality (AR and VR)
The Future – Blockchain in Telcos

Blockchain Concept

Using cryptography to keep exchanges secure, Blockchain provides a decentralized database, or “digital ledger”, of transactions that everyone on the network can see. Blockchain allows consumers and suppliers to connect directly, removing the need for a third party.

Main Applications Of Blockchain In Telecom Industry

• Fraud Prevention (Roaming Fraud)
• Identity-as-a-service and Data Management
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Key Findings
Key Findings (Opportunities)

More and More IoT Applications
- Connected Trash Cans
- Mhealth
- Precision Agriculture
- Industrial Automation
- Connected Cars

Big Data Internal and External
Key Predictive Analytics Models To Be Adopted By Telcos In Short And Medium Term:
- Customer Segmentation
- Campaign Analytics
- Social Media Analytics
- Network Optimization

Niche Markets
Micro segmentation (Communities)
- Tech startup accelerators
- Software Developers
- E-Gamers
- Pacific Alliance (Top Industries with exports potential Automotive, Electronics and Aerospace, Manufacturing and Tourism)
- Education

Strategic Infrastructure Mega Projects

Innovation Centers
Center of Innovation and Technology
Focus in new innovative products IoT, Bid Data, IA, VR.
Ecosystem of Co-creation
Get in Touch

Marcelo Ruiz
Director of Consulting, Latin America

marcelo.ruiz@globaldata.com

www.globaldata.com/technology/

571 3470749 – 57 3153481901

www.linkedin.com/company/globaldata

Technology_GD