TELCO 2025: TOWARDS A NEW DNA
TRUST IN THE DATA WORLD: THE NEW FRONTIER

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FEBRUARY 14TH, 2019
We surveyed 8,000 consumers on their perception of Tech and Telcos’ role

Sample
- 8 markets
- Age groups: 15%, 24%, 16%, 21%, 24%
- Sample: 1,000

Focus
- How is digital changing daily lives?
- Which feeling about data security?
- How are Telcos perceived in this world?
Phones are life platforms, and are gaining weight in budget arbitrage

What best describes your smartphone usage?
% of all, total respondents

- It’s a necessity: 51%
- It’s a tool: 44%
- It’s my life: 14%

I’d rather spend money on phones & contracts than...
% of all, total respondents

- Gym Membership: France 31%, All countries 53%
- Eating out: France 27%, All countries 40%
- Shopping for new clothes: France 31%, All countries 40%
- Saving for later: France 28%, All countries 39%
- Travelling: France 28%, All countries 38%
- Buying presents for a family: France 28%, All countries 36%

Source: Oliver Wyman Telco 2025 survey, including 8,000 participants from 8 countries (2018)
Consumers are excited by new technologies, yet some fear personal data services

How do you feel about the following services and technologies being developed and soon being available?

Share of ‘excited’ consumers minus share of ‘scared’ consumers, % of total

<table>
<thead>
<tr>
<th>Service</th>
<th>France</th>
<th>3rd generation care</th>
<th>Virtual reality</th>
<th>Connected home security</th>
<th>Augmented reality</th>
<th>Fitness &amp; health</th>
<th>Connected devices at home</th>
<th>Smarter AI</th>
<th>Autonomous driving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>61</td>
<td>54</td>
<td>50</td>
<td>50</td>
<td>47</td>
<td>46</td>
<td>41</td>
<td>20</td>
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<td></td>
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<td>78</td>
<td>69</td>
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<td>69</td>
<td>70</td>
<td>62</td>
<td>62</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Oliver Wyman Telco 2025 survey, including 8,000 participants from 8 countries (2018)
Are OEMs credible alternatives to Telcos as connectivity services provider?

Should all the following companies provide mobile or internet services, which one would you prefer?
% of respondents who rated the respective player with “1”

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Your current mobile/telco operator</td>
<td>26</td>
<td>33</td>
<td>42</td>
<td>59</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>Other telco operator</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>11</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>OEM (Apple, Samsung)</td>
<td>49</td>
<td>38</td>
<td>33</td>
<td>20</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td>Amazon</td>
<td>-4</td>
<td>-5</td>
<td>-7</td>
<td>-3</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>Other tech companies (Google, Facebook)</td>
<td>-6</td>
<td>-8</td>
<td>-7</td>
<td>-3</td>
<td>-1</td>
<td>-5</td>
</tr>
<tr>
<td>Other non-tech companies (bank, groceries, etc)</td>
<td>-5</td>
<td>-6</td>
<td>-6</td>
<td>-4</td>
<td>-8</td>
<td>-6</td>
</tr>
</tbody>
</table>

Source: Oliver Wyman Telco 2025 survey, including 8,000 participants from 8 countries (2018)
Telcos and Media need more capital for the same $1 revenues with less margin vs. Tech giants…

Decreasing value of tangible assets
Breakdown of S&P 500 market value

Evolution of Return on Capital Employed
2013–2016

1. NOPAT = EBIT less income taxes; Capital employed = Total assets – current liabilities excluding short term debt – Cash, equivalents and short term investments – long term investments
2. Amount investors pay for every $1 of revenue | 3. % physical assets as vs total assets

Source: Taival, Symbol surfing, Annual reports and Factiva financials. Selected companies: TEF - Spain, Cellnex - Spain, Verizon - US, AT&T - US, Orange - France, SFR France, Turkcell – Turkey, Turk Telekom - Turkey, MegaFon - Russia, MTS - Russia, ChinaUnicorn - China, China Mobile - China, Vivo - Brazil, TIM – Brazil and Oi – Brazil, Oliver Wyman analysis
Yet Telcos continue to have massive Capex needs to invest in 4G, Fibre and 5G

Example for France

Mobile data traffic from '15 to '201

- Mobile traffic 2015-2020, in PB/mo
  - 2015: 54 PB/mo
  - 2020: 357 PB/mo

New 4G sites per operator to deploy in rural area

- Number of new mobile sites per operator
  - 2017: 500
  - 2018: 1,000
  - 19 - 22: 1,500

Connectable HH from 2018 to 2022

- Target HH connectable in France, in million
  - 2018: 19
  - 2022: 30

Yearly investments on FTTH deployment

- Estimated yearly investment in France, in €Bn
  - 2018: 6.7 €Bn
  - 2020: 8.1 €Bn

Ambitious deployment plan in France

- Spectrum attribution
- Pilot city covered
- All transport axes covered

Maximum speed versus distance, in Mbps & km

- 5G (3.5 GHz)
- 4G (1800)
- 3G (800)
- 2G

Source: Cisco; Oliver Wyman analysis
5G will pave the way for new use cases; a clear killer case is yet to emerge short term

5G vs. 4G
Main differentiators

- 20 - 50x download speed
- 1/5th to 1/10th latency
- 5x # connected devices

Overview of potential use cases:

- 5G Fixed Wireless Broadband/Small Cells
- 5G Mobile Broadband
- Enterprise Fiber Network Deployment
- 4G Mobile Capacity/Small Cells
- Smart Cities Use Cases
- AR/VR/Cloud Gaming
- Autonomous Vehicles
- Other IOT
- New Innovation / Edge Computing

Uncertainty of Value
Timing
Telcos need to evolve their DNA to succeed in this new world

1. Become a Data Telco
2. Become an ecosystem player
3. Build emotional ties

It is all about Trust
Permission to data intimacy yet to be won; 13% fully trusts Telcos in France to protect personal data

How do you feel about companies storing your data to personalize services?

I fully trust technology providers to protect my personal data and to be transparent with its use, %

Reluctant and scared: Don’t trust how companies will use my data. Reluctant and afraid of “Big Brother”. Indifferent: Personalized services do not make a difference, offers and deals are annoying. Open & excited: Very excited about these offers, open to it as long as I get savings and deals.

Source: Oliver Wyman Telco 2025 survey, including 8,000 participants from 8 countries (2018)
GDPR can be a way to win data permission by going beyond the compliance play

Rights for customers – GDPR

- Right to access and inspect
- Right to edit
- Right to access and inspect
- Right to transfer data
- Right to erase

Customers “OWN” their personal data

Implications for Data players

1. Comply to the regulation
2. Leverage GDPR as a business opportunity

Example companies at risk

- Security bug for ~ 50M account, $1.6 Bn fine risk
- Data breach for ~ 500 M customers

Source: GDPR EU.org, The Guardian, Oliver Wyman Analysis

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AI muscles build up is a high stakes game: 77% of total A.I. investments in 2016 were made by a few digital giants.

Digital giants made 77% of total A.I. investments in 2016.

### A.I. funding, number of patents per country
(From Q1 2012 to Q2 2016)

<table>
<thead>
<tr>
<th>Country</th>
<th>Funding ($US BN)</th>
<th># of patents ('000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>17.0</td>
<td>27.0</td>
</tr>
<tr>
<td>China</td>
<td>2.6</td>
<td>15.7</td>
</tr>
<tr>
<td>UK</td>
<td>0.5</td>
<td>14.9</td>
</tr>
<tr>
<td>Canada</td>
<td>0.5</td>
<td>4.9</td>
</tr>
<tr>
<td>Germany</td>
<td>0.5</td>
<td>4.8</td>
</tr>
<tr>
<td>France</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Spain</td>
<td>0.2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Source: Goldman Sachs, New York Times
Coalition might be a way to outplay limited access to data and investment capacity.

Source: Oliver Wyman Analysis
Coalitions can be fully local: case in point Verimi; is there a potential for a wider European coalition such as Amadeus on Digital Identity?

Case of Verimi, a coalition of German multinationals on a common digital identity project

- Allianz
- Deutsche Bank
- axel springer
- Lufthansa

- Increase in transaction conversion
- Enhanced customer experience
- Reduction of barriers to entry
- Easy and modular integration

For Users
- Universal login
- User friendly interface
- Flexable data management

- Stored and secured data

Source: Verimi.de, lit search
In summary, for Telcos to strive as consumer behaviour changes, they need to evolve their DNA

Key learnings

• ~50%\(^1\) of youngsters see Apple or Samsung as potential providers of telco services

• 75%\(^2\) of consumers are open/indifferent to share personal data for more personalized services

• 13%\(^1\) of consumers trust Telcos to protect personal data

Notes: 1) France survey results 2) Across all the surveyed countries
Source: Oliver Wyman Telco 2025 survey, including 8,000 participants from 8 countries (2018)