The challenges of the digital world: Security, privacy and public finance

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Challenges of the digital world in LATAM

- Connectivity
- Cybersecurity
- Privacy

Investment and taxes

Asociación Interamericana de Empresas de Telecomunicaciones

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LATAM Connectivity

- Democratization in access to telephony
- More bandwidth: Average connection speed + 118% since 2010 (Akamai)
- Falling access prices 2010-2015 (ECLAC)

USD 330.000 Millions. Cumulative investment (1996-2014)

900.000 Jobs / year derived from digitization

LATAM connectivity is mostly mobile

Mobile broadband average
2014: 34.50
2015: 41.72
2016: 51.30

Fixed broadband average
2014: 7.80
2015: 8.43
2016: 8.94

Source: ITU
We have great challenges ahead...

We are closing gaps

Internet Adoption Evolution
LA Vs. OECD (2006-2015)

Mobile Broadband Evolution
LA Vs. OECD (2006-2015)

And new ones are arising
Connected devices per capita 2015 - 2020

Source: Own elaboration based on ECLAC and OECD data (2016)

There is still much to do

53% of people don’t use Internet
66% of households don’t have Internet

Latin America

Source: ITU (2016)

This widening gap may point to important differences in how societies benefit from the positive externalities of the Internet and the new generations of digital transition (M2M).

Source: Own elaboration based on Cisco VNI data (2016)

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The complexity of the challenge: Closing the digital divide

Strong income restriction of families:
Despite the reduction in prices, the Internet is still inaccessible for the poorer ones

Need of investments:
In networks to close the coverage gap and increase capacity and quality

**ASIET 2020 challenge**
Required investments to close the digital divide

+10% on trend growth
$ 400 billion in 8 years

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Fuente: Análisis de Convergencia Research

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The ICT services are more affordable but not universally affordable

- The average monthly income of the lowest quintile of family income is between 200 and 600 USD
- The ICT services could represent from 5% up to 45% of the household income
- The limited income represents a major issue to close the digital divide
- The competitive pricing for the connectivity is not enough

**Average revenue per mobile user in 2015, by region (ARPU per year in U.S. dollars)**

<table>
<thead>
<tr>
<th>Region</th>
<th>USD/mes</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>49.1</td>
</tr>
<tr>
<td>Japan</td>
<td>44.5</td>
</tr>
<tr>
<td>Western Europe</td>
<td>31.8</td>
</tr>
<tr>
<td>Africa</td>
<td>7.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>ARPU/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America</td>
<td>9.6</td>
</tr>
<tr>
<td>(2006)</td>
<td>14.9</td>
</tr>
<tr>
<td>North America</td>
<td>35.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>85 mil</td>
</tr>
</tbody>
</table>

**The ARPU is very low**

There is small room to have price reductions – More strategies to cost reduction and ease access are needed
Despite the increasing connectivity Latin America is lagging behind in local content production.

- The number of visitors to YouTube is 7 times bigger than the second place in preference.
- The sum of all the visitors to popular Latin American sites is less than the number of visitors to Google sites.

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Cybersecurity – Impacts in Latin America

- Economic losses caused by cyber attacks in Latin America USD 90.000 millions (2016)
- Most affected industry is Banking
- Brazil is the most impacted country in 2016

Economic losses caused by cyber attacks
Latin America - 2016 (in millions USD)
Brasil $40,045
Mexico $24,676
Colombia $5,700
Argentina $5,400
Chile $5,367

Source: Digware

recipients of phishing emails - Latin america 2016

Source: Kaspersky
Cybersecurity
How prepared is Latin America?

- Cyber crime has a borderless nature
- There are big disparities between countries
- The regulatory and legal efforts must be harmonized
- OAS and IDB are developing a program to observe and improve cybersecurity

Examples of maturity level (18 countries in Latin America):

- Cybersecurity Strategy: 83% Early stages
- Legislative framework for ICT Security: 55% Advanced stages
- Trust in use of online services: 83% Early Stages
- Cybersecurity Awareness: 89% Early stages

Categories of OAS and IDB Study
Startup: Nothing exists
Formative: Poorly defined
Established: In place and working but lack of resources
Strategic: Prioritization is made in terms of national needs
Dynamic: Clear mechanism to adapt strategy
## Data Protection Latin America landscape

<table>
<thead>
<tr>
<th>Country</th>
<th>Cross Border Registration limitations</th>
<th>DPO Required</th>
<th>Data Security Breach notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Chile</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Colombia</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dom. Rep.</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mexico</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Peru</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- All Latin American countries have a Privacy or data protection framework.
- Not all of them consider new services or technologies (Data portability, IoT)
- Brazil and Chile are discussing new proposals to include new services and obligations
- The harmonization is key to enable the flow of information in the region
- The data protection laws in Latin America follow the European Model
Digital Ecosystem has a significant contribution to GDP compare with other sectors.

Latin America: Production per industrial sector (2014)  
(USD Millions and % GDP)

- Natural Gas: 14,874, 0.20%
- Water: 33,643, 0.44%
- Logistics: 64,635, 0.85%
- Telecommunications: 118,407, 1.91%
- Broadcasting and Telecommunications: 145,890, 1.97%
- Electric Energy: 150,468, 2.94%
- Oil and Gas Extraction: 225,993, 2.96%
- Terrestrial transportation: 289,993, 3.80%
- Total Digital Ecosystem (*): 391,126, 5.13%

(*) Includes: Computer manufacturing, telecommunication equipment manufacturing, Postal, broadcasting, telecommunications, and IT services
Source: Katz, R para cet.la y CAF : Retornos y beneficios de las telecomunicaciones; Cuentas Nacionales; análisis TAS
The tax burden for Telecommunications in Latin America is the largest among other sectors with 12.12%. Other sectors with similar structures have a tax burden 10% lower than telecommunications. Colombia will apply in 2018 VAT to other services of the ecosystem (e.g., OTT video services). Brazil has a initiative for a more comprehensive tax reform to include (income and VAT) to other digital services. Costa Rica has a law initiative to apply VAT to digital services.

### Latin America and Caribbean: Net transfers per industrial sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Argentina</th>
<th>Brasil</th>
<th>Colombia</th>
<th>México</th>
<th>Rest of Latin America and Caribbean</th>
<th>Latin America and Caribbean</th>
<th>Rest of the World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and carbon products</td>
<td>10.38%</td>
<td>17.32%</td>
<td>12.77%</td>
<td>8.51%</td>
<td>6.64%</td>
<td>10.91%</td>
<td>17.36%</td>
</tr>
<tr>
<td>Heavy industries and construction</td>
<td>7.31%</td>
<td>8.51%</td>
<td>4.15%</td>
<td>2.69%</td>
<td>3.67%</td>
<td>5.62%</td>
<td>5.41%</td>
</tr>
<tr>
<td>Public Services</td>
<td>22.38%</td>
<td>11.57%</td>
<td>13.80%</td>
<td>10.37%</td>
<td>7.47%</td>
<td>10.80%</td>
<td>11.28%</td>
</tr>
<tr>
<td>Communications</td>
<td>19.22%</td>
<td>13.84%</td>
<td>8.17%</td>
<td>7.93%</td>
<td>8.74%</td>
<td>12.12%</td>
<td>8.97%</td>
</tr>
<tr>
<td>Transportation</td>
<td>17.42%</td>
<td>11.06%</td>
<td>6.05%</td>
<td>1.87%</td>
<td>4.11%</td>
<td>7.42%</td>
<td>8.42%</td>
</tr>
<tr>
<td>Total</td>
<td>12.79%</td>
<td>10.45%</td>
<td>4.32%</td>
<td>5.52%</td>
<td>5.10%</td>
<td>8.01%</td>
<td>8.09%</td>
</tr>
</tbody>
</table>

Where will Latin America’s growth come from?
Industrial Internet: Towards a more productive Latin America

In a context of the end of the commodity supercycle

Evolution of commodity prices
- Commodity price index
- Commodity non-fuel price index
- Commodity fuel (energy) index

Responsive state
Supercycle up
Commodity price bust
The “new normal”?

Slow productivity growth is the main challenge

Per capita GDP and productivity growth in Latin America vs. developing countries, 2000–15
Constant $ Index: 100 = 2000

- Developing countries per capita GDP: 4.2%
- Developing countries productivity: 3.9%
- Latin America 1.6 per capita GDP: 0.6%
- Latin America productivity: 0.6%

LA most productive sectors made a negative contribution to productivity over past 15 years

Latin American productivity (GDP per employee) by sector, 2015
3 thousand

- Sector productivity compound annual growth rate, 2000–15 (%)
- Latin America average = 18

- Mining: -4.0%
- Electricity, gas, and water: -1.3%
- Professional services: 0.7%
- Transportation and communications: -1.6%
- Manufacturing: -2.4%
- Construction: -0.8%
- Other services: -0.6%
- Trade and tourism: 1.3%
- Agriculture: 2.5%

- Despite the economic growth of the last decade, labor productivity in Latin America is modest if compared to other countries or regions. (20% since 2000).
- It is necessary for Latin America to modify its productive structure towards schemes with greater added value.
- Increasing levels of connectivity is critical, but not sufficient. The challenge lies in the uses of such access.

Risk: Without improved productivity growth, the rate of GDP growth could decline by 40% to 50% over the next 15 years in most economies.
In a nutshell

- Closing the digital divide in Latin America is a work in progress
- The local production of content and a productive usage of the internet requires appropriate public policies
- A new reasonable uniform taxation model is required to include other actors of the ecosystem
- Strengthening of cyber security requires: Raise countries awareness, leverage cyber skills in law enforcement, establish a multi stakeholder approach to define the strategies, reinforce the international cooperation, among other measures.
- The data privacy laws must be reviewed in terms of new technologies and applications and a harmonized approach
In a nutshell

- Strengthening international (EU-Latam) cooperation is key to:
  - Create a Digital Single Market
  - Define the taxation model for digital economy
  - Harmonize the data privacy frameworks and cybersecurity strategies
  - Transition to Internet 4.0

- The Trade agreements until now only focus on the Telecom regulation could be a good tool to improve the whole ecosystem.
Muchas gracias!
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