“Over-The-Top” Services: Enablers of Growth & Impacts on Economies

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Introduction

• The telecom industry has had to deal with a continuously changing business and technology environment more than most other industries over the past half century.

1. Evolution of Data communication is expected to continue at an accelerated pace over the next decade with already visible impact on National Economy and particularly Telecom Operators

2. Operators have dominated the communications industry for more than two decades. Now they are challenged by new players in a reshaped Eco-system.

3. The growing impact of OTT services on telco’s voice and messaging revenue a widely accepted phenomenon. Are there able to re-think their business models to adapt to a new digital era. Will they focus on their core connectivity business? On providing digital services? On finding new revenue streams?...Will they have the Resources to Invest in all these segments?

4. Regulators played an extremely positive role in the past decade making the development happen. They are questioned today about ensuring sustainability of the new ecosystem including in ensuring Affordable quality services to the largest Population. Are they ready for that?

5. OTT Players are taking full benefit of Telcos’ Infrastructure and Investments to grow their Business. Will they accept to “Contribute ” on balanced Value share and Cost/Revenues vs. Net Neutrality Assurance?
Plan

1- OTT Services: Enablers of Growth
2- OTT Services: Impact on Economies
3- OTT and Regulation Aspects
4- Recommendations
5- Conclusions
What’s OTT?

“OTT (Over-The-Top) refers to applications and services, which are accessible over the internet and ride on Operators’ networks offering internet access services e.g. social networks, search engines, amateur video aggregation sites, etc.”

Example of Classification:

<table>
<thead>
<tr>
<th>Communications</th>
<th>Voice Services</th>
<th>Messaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Social Networks</td>
<td>E-Commerce, E-Health,....</td>
</tr>
<tr>
<td>Video/Audio</td>
<td>OTT TV</td>
<td>OTT Video</td>
</tr>
<tr>
<td></td>
<td>Streaming</td>
<td></td>
</tr>
</tbody>
</table>

Those Players are Major Enablers and Drivers for Sector Growth
Continuous evolution of cellular technologies, providing better network capacities in terms of bitrates, latency, coverage, mobility, etc.

Enabling high-bandwidth and real time applications (streaming, online games, etc.)
Enablers & Drivers for Growth (2/6)

*Increased Growth of mobile connected devices and connections especially via Smartphones*

Global Mobile Devices and Connections Growth

- **9% CAGR 2014–2019**
- **Billions of Devices**
- **Other Portable Devices (0.2%, 0.2%)**
- **Tablets (1%, 3%)**
- **Laptops (3%, 2%)**
- **M2M (7%, 28%)**
- **Smartphones (29%, 40%)**
- **Non-Smartphones (61%, 27%)**

Figures in parentheses refer to 2014, 2019 device share.
Source: Cisco VNI Mobile, 2015

Boosting the global rates of Internet penetration
Enablers & Drivers for Growth (3/6)

New trends in Mobile Phones: Advanced Capabilities

- 4G technology’s support
- Integrated camera with high resolution
- More Powerful Microprocessors with less energy consumption
- Integrated sensors
- Higher battery autonomy
Enablers & Drivers for Growth (4/6)

Consumers’ trends

• **Personalization & Customization**
  Consumers’ demand for more personalized experience and more customizable access to services of their choice

• **Accelerated consumers’ demand for contents**

• **Social Propensity**
  – Need of modern consumer to share every emotion, thought and experience instantly
  – Sharing of huge quantities of pictures, videos and audios
  ➔ Explosion of user generated multimedia content which has led to increased sharing & communication among social groups

*Source: (1)* Impact of Over the Top (OTT) Services on Telecom Service Providers, February 2015
Enablers & Drivers for Growth (5/6)

Contents & features

• **Advances in audio/video codecs and streaming technologies** (H-264/H265, HLS, Microsoft Smooth Streaming, etc.)

• **Content Availability & Development of Content Delivery Networks (CDN)**

• **Better offered Features & greater Convenience**

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<table>
<thead>
<tr>
<th></th>
<th>SMS</th>
<th>WhatsApp</th>
<th>Line</th>
<th>Viber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Characters</td>
<td>×</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Group Chat</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Emoticons</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Stickers</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Photos</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Videos</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Audio</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Location</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Contact</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Walkie-Talkie</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>Voice &amp; Video Call</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>Line Camera</td>
<td>Doodle</td>
<td></td>
</tr>
</tbody>
</table>
### Enablers & Drivers for Growth (6/6)

#### Attractive Business Models

- Various business models which depend heavily upon the market, customer segment and competition. **Examples:**

<table>
<thead>
<tr>
<th>Business Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subscription based</strong></td>
<td>Users pay a periodical fee to use the service</td>
</tr>
<tr>
<td><strong>Usage/Transaction</strong></td>
<td>Users pay for a specific transaction or the resources they use</td>
</tr>
<tr>
<td><strong>Advertisements</strong></td>
<td>Users pay attention. This attention is monetized as different types of ads</td>
</tr>
<tr>
<td><strong>Freemium</strong></td>
<td>Basic features are free, but premium or convenience features are not</td>
</tr>
<tr>
<td><strong>Donations</strong></td>
<td>Some platforms (such as Wikipedia) are funded by donations</td>
</tr>
<tr>
<td><strong>Monetization of Information</strong></td>
<td>Users disclose their own Information and content. Suppliers monetize it</td>
</tr>
</tbody>
</table>

*Source: DETECON Consulting & Deutsche Telecom Group, “The rise of OTT players – what is the appropriate regulatory response?”, 2014*
All these Factors, associated with appropriate Regulation that ensured fair competition and fostered innovation almost worldwide, have led to an outstanding Growth of the sector and its contribution to the national Economies:

**Contribution to GDP (p2016):**

- Developed Countries: 5.5%
- Developing: 4.9%

...and the Growth is expected to continue

Traffic: Mobile Data Boosted by Mobile Videos Services

Video services and fast growing demand will make Mobile Networks “Struggling” to cope with it!
...with Growing Revenues for OTT and Stagnation of Telcos!

**Development of global Telco and OTT services market (2010 – 2021)**

Unit: Billion US $

<table>
<thead>
<tr>
<th>Year</th>
<th>Telco Services Market</th>
<th>OTT Services Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>458</td>
<td>41</td>
</tr>
<tr>
<td>2011</td>
<td>476</td>
<td>58</td>
</tr>
<tr>
<td>2012</td>
<td>497</td>
<td>74</td>
</tr>
<tr>
<td>2013</td>
<td>519</td>
<td>94</td>
</tr>
<tr>
<td>2014</td>
<td>540</td>
<td>117</td>
</tr>
<tr>
<td>2015</td>
<td>560</td>
<td>137</td>
</tr>
<tr>
<td>2016</td>
<td>580</td>
<td>158</td>
</tr>
<tr>
<td>2017</td>
<td>600</td>
<td>180</td>
</tr>
<tr>
<td>2018</td>
<td>624</td>
<td>257</td>
</tr>
<tr>
<td>2019</td>
<td>649</td>
<td>368</td>
</tr>
<tr>
<td>2020</td>
<td>675</td>
<td>526</td>
</tr>
<tr>
<td>2021</td>
<td>702</td>
<td>753</td>
</tr>
</tbody>
</table>

+1.720%  
+53%

Source: IDATE - World Internet Services Markets 12/2013 and Delecon Forecast (e)
... considering past capex contribution

As % of revenues, the difference is huge

Source: Accenture- The new Digital Operator, 2014
Growing Share of OTT’s (1/4)

Voice & Messaging

Source: DETECON Consulting & Deutsche Telecom Group, “The rise of OTT players – what is the appropriate regulatory response?”, 2014
Growing Share of OTT’s (2/4)

Voice & Messaging

Messages sent via mobile handsets by service type, worldwide, 2010–2018 [Source: Analysys Mason, 2014]

Increase in International Phone and Skype Traffic

Source: TeleGeography © 2014 PriMetrica, Inc.
Growing Share of OTT’s (3/4)

Social Media

Source: GlobalWebIndex, 2015
Growing Share of OTT’s (4/5)

Media & TV

OTT media revenue forecast

Annual OTT TV Revenue - 2009 and 2014

Informa Telecoms and Media
Plan

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Economic Impacts of OTT Services (1/2)

At Countries’ Level – Opportunities

- ICT Sector Growth (*)
- Optimize Transportation, Save energy
- Productivity Gains, Cost Reductions
- Create new jobs
- ..and Macro-economic Benefits:
  - Opportunities in Digital economy for developing Countries
  - Main Benefits for countries where OTTs are based

(*) Driven, in most of Developing countries at more than 60% by telecom Operators
Economic Impacts of OTT Services (2/2)

At Countries’ Level - Threats

• Threat on “Vulnerable” Economies, due to imbalance between value creation and value creation: Difficulty for traditional and local companies to compete with global players (Global market, scale effect, power of negotiation, content deals, etc…) (*)

• Tax Losses
  ✓ OTT players, location-agnostic benefit from the world variable tax rates
  ✓ Reduced tax resources for “consumer” States since users purchase goods/services on global tax “free” market

(*) Source: Deloitte Research 2014
### Economic Impacts of OTT Services (2/2)

#### At Countries’ Level – Tax vs profit of Major’s

<table>
<thead>
<tr>
<th></th>
<th>Capitalisation boursière (février 2015)</th>
<th>CA (Monde)</th>
<th>Profit (Monde)</th>
<th>Impôt / CA (USA)</th>
<th>Impôt / CA (hors USA)</th>
<th>Impôt / profit (USA)</th>
<th>Impôt / profit (hors USA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google</td>
<td>370</td>
<td>59,8</td>
<td>14,5</td>
<td>5,7</td>
<td>2,2</td>
<td>26,4</td>
<td>8,6</td>
</tr>
<tr>
<td>Apple</td>
<td>748</td>
<td>170,9</td>
<td>50,2</td>
<td>19,1</td>
<td>1</td>
<td>61</td>
<td>3,7</td>
</tr>
<tr>
<td>Facebook</td>
<td>223</td>
<td>7,9</td>
<td>2,8</td>
<td>32,9</td>
<td>1,5</td>
<td>31,2</td>
<td>(pertes)</td>
</tr>
<tr>
<td>Amazon</td>
<td>175</td>
<td>74,5</td>
<td>0,5</td>
<td>0</td>
<td>0,5</td>
<td>1,6</td>
<td>(pertes)</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>183</td>
<td>46,9</td>
<td>11,5</td>
<td>5,8</td>
<td>6,3</td>
<td>47,2</td>
<td>18,8</td>
</tr>
<tr>
<td>Pfizer</td>
<td>216</td>
<td>51,6</td>
<td>15,7</td>
<td>10,5</td>
<td>7</td>
<td>(pertes)</td>
<td>12,5</td>
</tr>
<tr>
<td>GE Company</td>
<td>223</td>
<td>146,0</td>
<td>16,2</td>
<td>-2,8</td>
<td>3,4</td>
<td>-31,9</td>
<td>26,1</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>203</td>
<td>84,2</td>
<td>14,8</td>
<td>7,7</td>
<td>2</td>
<td>28,1</td>
<td>16,9</td>
</tr>
</tbody>
</table>

**Source**: Expert Report For European Commission on Digital Taxation. May 2014.
OTT Impacts on Telecom Operators (1/4)

Loss of Traditional Revenues to OTT

- Growth of VoIP CAGR of 25% between 2012 and 2017
- Loss to OTT Revenues in 2016 expected around 50 B$ both in voice (7%) and messaging (28%). Cartesian – Study, 2014
OTT Impacts on Telecom Operators (2/4)

Lower ARPU but Higher Traffic

ARPU decline continues, stagnation of revenues

Source: Juniper Research, Oct 2014
OTT Impacts on Telecom Operators (3b/4)

Imbalance Cost vs Revenues - Data

Source: Juniper Research, October 2014
OTT Impacts on Telecom Operators (3/4)

Threat to Investment

Global MNO Service Revenues vs Capex/Opex ($bn)

- Lower telecom Contribution to the national economy and state income
- Slower(!) BB -Qos- deployments in rural/low income areas

It is to note that OTT are highly contributing to the global Investment (Data Centers, Servers, F.O Links, Applications dev, etc....)

Source: Juniper Research, Oct 2014
OTT Impacts on Telecom Operators (4/4)

**Virtuous Circle**

( Mutual Interest)

While OTT benefit from broadband networks, Telcos also benefit from increased demand for bandwidth driven by applications. Auto Sustainable system!

**Vicious Circle**

OR

Disconnect between Source of Revenues and Costs for any Actor in the Chain

Profit Crunch ➔ less Investment and then less connectivity/usage/Revenue:
The Chain can be Broken

With inevitable impact on availability and Affordability for services to the largest population
Plan

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OTT’s world ....

1. No Regulation (own policy/rules)
2. No service license required, no interco Obligation
3. Disruptive models (free, freemium, Ad based etc)
4. The World as Market Place
5. Scalable investment (no obligation of availability)
6. Reduced direct employment
7. IP-based, Internet-based standards (IETF)
Compared ... to Telco’s

1. Subject to National Obligations: License, Tax regime
2. Close Regulation (SLAs, USO, Pricing, Control...)
3. High pre-investment required and Local Resources Cost (Frequencies, etc..)
4. Mostly Local Market space and Rules
5. Traditional business models
## Regulatory Imbalances (1/4)

<table>
<thead>
<tr>
<th>Licensing</th>
<th>Accessible Market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operators</strong></td>
<td><strong>OTT Players</strong></td>
</tr>
<tr>
<td>Must purchase license from gov. to operate</td>
<td>Often not subject to specific licensing</td>
</tr>
<tr>
<td><strong>Operators</strong></td>
<td><strong>OTT Players</strong></td>
</tr>
<tr>
<td>Only serve customers within the regulated jurisdiction</td>
<td>Serve any user, any where</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Taxes</th>
<th>QoS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operators</strong></td>
<td><strong>OTT Players</strong></td>
</tr>
<tr>
<td>Local and national taxes</td>
<td>Locating operators in low cost locations and tax havens</td>
</tr>
<tr>
<td><strong>Operators</strong></td>
<td><strong>OTT Players</strong></td>
</tr>
</tbody>
</table>
| Licenses include requirements for SLAs | ☐ No QoS guarantee
☑ QoS issues blamed on network provider |
## Regulatory Imbalances (2/4)

### Pricing Regulation

<table>
<thead>
<tr>
<th>Operators</th>
<th>OTT Players</th>
</tr>
</thead>
</table>
| Regulators’ approval is needed in advance | ❑ No need for authorization  
❑ Loose agreement is offered which is subject to change at any time |

### Interconnexion

<table>
<thead>
<tr>
<th>Operators</th>
<th>OTT Players</th>
</tr>
</thead>
</table>
| Required as part of regulatory regime  
➔ Additional costs | “Over-The-Top” of the network  
➔ no interconnection requirements |

### Net Neutrality

<table>
<thead>
<tr>
<th>Network Operators</th>
<th>OTT Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best effort data transport without discrimination, independent of source or nature of data</td>
<td>No obligations (control over content and freedom of choice concerning customers)</td>
</tr>
</tbody>
</table>
### Regulatory Imbalances (3/4)

<table>
<thead>
<tr>
<th>Number portability</th>
<th>Operators</th>
<th>OTT Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligation to offer number portability between providers</td>
<td>OTT service independent from mobile number</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USO &amp; similar Fees</th>
<th>Operators</th>
<th>OTT Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to USO and specific local fees</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure/Network</th>
<th>Operators</th>
<th>OTT Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>❐ Unbundling, open access to Infrastructure obligations,</td>
<td>❐ Proprietary Infra with no obligations</td>
<td></td>
</tr>
</tbody>
</table>
## Regulatory Imbalances (4/4)

<table>
<thead>
<tr>
<th>Public Safety services</th>
<th>Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operators</strong></td>
<td><strong>Operators</strong></td>
</tr>
<tr>
<td>Mandatory</td>
<td>Strict data protection and privacy requirements by Law</td>
</tr>
<tr>
<td><strong>OTT Players</strong></td>
<td><strong>OTT Players</strong></td>
</tr>
<tr>
<td>No such obligations</td>
<td>Practiced on a limited and generally voluntary basis</td>
</tr>
</tbody>
</table>
Examples of National Regulation/Legislation (1/6)

**European Region**

<table>
<thead>
<tr>
<th>EU</th>
<th>Two rules were approved in April 2014:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. to ensure equal access of firms and individuals to online services</td>
</tr>
<tr>
<td></td>
<td>2. to harmonize rules across national borders to create a unified European market</td>
</tr>
<tr>
<td></td>
<td>Individually, (e.g. in France, Spain), OTT providers have been blocked when offering voice services that connect to the PSTN</td>
</tr>
<tr>
<td></td>
<td><strong>Justification:</strong> OTT’s are acting in this regard as Telcos and should fulfill the same Telco’s obligations (offer emergency services, LI, etc.)</td>
</tr>
</tbody>
</table>

EU is actually working on Digital Agenda 2020 that should address OTT subject.)
Examples of National Regulation/Legislation (2/6)

*European Region*

<table>
<thead>
<tr>
<th>Country</th>
<th>Regulation/ Legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>- <strong>Second country globally</strong> to include net neutrality principles into a law (2011)</td>
</tr>
<tr>
<td></td>
<td>- <strong>Telecom operators are prevented from blocking or charging consumers over and above the regular data charges</strong>, for using VoIP based apps and other internet-based communication services</td>
</tr>
<tr>
<td>UK</td>
<td>- OFCOM permits experimentation with new business models that rely on certain forms of <strong>traffic management</strong> (the “best effort” Internet is then protected)</td>
</tr>
</tbody>
</table>
### Examples of National Regulation/Legislation (3/6)

**American Region**

<table>
<thead>
<tr>
<th>Country</th>
<th>Action/Regulation</th>
</tr>
</thead>
</table>
| **USA**  | New FCC draft internet rules were released on March 12, 2015 (will take few years to be finalized)  
  ➢ **Objective:** ensure reasonable network management (no blocking, no throttling, no paid prioritization) |
| **Chile** | In July 2010, net neutrality principles have been introduced in the National Telecommunications Act  
  ➢ “zero-rating” was recently banned in May 2014 |
| **Canada** | The CRTC has banned zero-rated mobile video streaming of carriers own services |
### Examples of National Regulation/Legislation (4/6)

**Asian Region**

<table>
<thead>
<tr>
<th>Country</th>
<th>Regulations and Practices</th>
</tr>
</thead>
</table>
| Singapore     | - Specific licenses for VoIP connecting to PSTN  
                - Peer-to-peer not licensed, subject to competition law |
| South Korea   | - The KCC announced “Net Neutrality (NN) and Internet Traffic management Guidelines” in 2011  
                (Transparency, No blocking; No unreasonable discrimination, Reasonable traffic management)  
                - It is legal for telecom operators to charge their customers extra fees to use VoIP apps or block their use entirely |
Examples of National Regulation/Legislation (5/6)

**MENA Region**

<table>
<thead>
<tr>
<th>Country</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAE</td>
<td>- OTTs blocked because of legal intercept problems</td>
</tr>
<tr>
<td></td>
<td>- Viber App was banned in June 2013</td>
</tr>
<tr>
<td>Egypt</td>
<td>- Legislation expected soon (NTRA), but none at present</td>
</tr>
<tr>
<td></td>
<td>- VoIP using mobile network is forbidden <em>(because international calls have to go via the international gateway)</em></td>
</tr>
</tbody>
</table>
Examples of International Legislations (6/6)

**MENA Region**

<table>
<thead>
<tr>
<th>Country</th>
<th>Regulations</th>
</tr>
</thead>
</table>
| KSA              | - OTT only allowed if they work with licensed telecoms companies (*according to TRA*)  
                  | - VoIP defined as a regulated activity                                      |
| Kingdom of Bahrain | - Voice services connected to PSTN only allowed for license holders      |
|                  | - Foreign providers not actively marketing their services in the country will not be pursued |
Plan

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“We have to:
• Protect our citizens’ interests,
• provide incentives to the industry,
• attend to national-level needs and issues,
• create and sustain investor confidence, and..
• remain mindful of future needs of the consumers and the industry.”

Dr. Syed Ismail Shah,
Chairman of Pakistan Telecommunication Authority, April 2015
Challenges for Policy Makers

Affordable Access Africa

Affordable Access is not just a matter of connecting people at the ‘Bottom of the Pyramid’ with the cheapest devices and lowest price/quality connectivity. African connectivity is expensive in relation to income and in relation to global ‘like for like’ price comparisons. Businesses and business people in Africa do not want basic services, they want effective services at affordable rates and many of the answers lie within the Continent. A coordinated and concerted effort by Policy Makers, Service Providers, Investors, Solution Providers and Major end Users will move Africa towards the goal of making Access Affordable, bringing all of the associated Socio Economic benefits

Moto of IAD Summit 2015 Victoria Falls, Zimbabwe
Some Recommendations - General

1. At National Level:
   Assessment of the on-going Transformation of Digital Economy and its Impact on National Economy and Population

2. At TRA Level:
   - Perform consistent Study on the on-going sector transformation and the impact on the sustainability and affordability of access to service/quality to largest population
   - Organize Public debate for appropriate framework (public consultation, etc.)

3. At Service Providers Level:
   - Collect, measure and share consistent data on the impact of sector evolution on their business and their future.
Plan

1- OTT Services : Enablers of Global Growth
2- OTT Services : Impact on Economies
3- OTT and Regulation Aspects
4- Recommendations

5- Conclusions
Conclusions

- The Important evolution of Data communication as well as other technological, economical and appropriate regulatory role has led to the development of OTT Services worldwide and the very positive global Eco-system growth.

- This development have raised new Challenges for the national economies regarding the sustainability of digital eco-system. The most visible today is the impact on Telecom Operators business model.

- National regulators are in front line to establish an adequate regulatory framework which protects the interests of all stakeholders, guarantee fair competition and ensure sustainability of the evolving ecosystem.

- Due to the global aspect of these challenges, NRA and States need to work in close cooperation with Operators and other stakeholders.
Questions

- Is there an Issue today?
- If so, have we sufficient visibility and data to act?
- Shall such issue be considered as pure business matter (i.e., to be solved between business actors) or shall the impact on the citizens and the national economy require implication of National Authorities (NRA,..)?
- To what extent a national authority can deal alone with such issue (at national level) considering that the actors and markets are being more and more Global?
- What role can Regional and international Organizations play in this regard?
It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change!

Charles Darwin, 1809
Thank you for your Attention

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Main References and useful documentation

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8. AT Kearny : OTT Video in the Middle East- How to win the Market. 2014
9. AT Kearny : A viable future business model for the Internet. 2010