Regulatory Impact on Technology Adoption in Telecommunications/ICT sector

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Setting the Context

• The world has witnessed tremendous growth in telecommunications and ICT sector in terms of adoption of technology, services and applications.
• But this adoption of is uneven across the world.
• The regulatory framework has significant impact on technology adoption in the ever burgeoning telecommunications and ICT sector.
• Proactive regulators ensure that all globally available technologies, services and applications are allowed in their respective jurisdiction to bridge the technology divide in this sector.
Global ICT scenario 2015
## Nepal’s Telecom Statistics - Voice as of Mid October 2015

**1.1 Subscription of Voice Telephony Service:**

<table>
<thead>
<tr>
<th>Services Operators</th>
<th>Fixed</th>
<th>Mobile</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PSTN</td>
<td>WLL</td>
<td>GSM</td>
<td>CDMA</td>
</tr>
<tr>
<td>NDCL</td>
<td>6,67,169</td>
<td>123,194</td>
<td>1,12,65,376</td>
<td>12,98,179</td>
</tr>
<tr>
<td>UTL</td>
<td>-</td>
<td>49,921</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NCell</td>
<td>-</td>
<td>-</td>
<td>13,162,446</td>
<td>-</td>
</tr>
<tr>
<td>STM*</td>
<td><strong>2,832</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NSTPL*</td>
<td>2,984</td>
<td>-</td>
<td>-</td>
<td>3,63,479</td>
</tr>
<tr>
<td>STPL</td>
<td><strong>598</strong></td>
<td>-</td>
<td>13,46,489</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>670,599</td>
<td>176,099</td>
<td>25,774,311</td>
<td>1298,179</td>
</tr>
</tbody>
</table>

### Subscriber Subscription (%)

<table>
<thead>
<tr>
<th>Services</th>
<th>Subscription (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td><strong>3.20</strong></td>
</tr>
<tr>
<td>Mobile</td>
<td><strong>102.18</strong></td>
</tr>
<tr>
<td>Others (LMS, GMPCS)</td>
<td><strong>3.17</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>108.55</strong></td>
</tr>
</tbody>
</table>

Population of Nepal 26,494,504 (Source: cbs.gov.np)
### Nepal’s Telecom Statistics - Data as of Mid October 2015

#### 1.2 Data/Internet Services

<table>
<thead>
<tr>
<th>Services</th>
<th>NDCL</th>
<th>UTL</th>
<th>Ncell</th>
<th>STPL</th>
<th>STM</th>
<th>ISPs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialup (PSTN + ISDN)</td>
<td>4,278</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5709</td>
<td>9987</td>
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<tr>
<td>Wireless Modem</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>45002</td>
<td>45002</td>
</tr>
<tr>
<td>Optical Fibre Ethernet</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable Modem</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>79409</td>
<td>79409</td>
</tr>
<tr>
<td>ADSL</td>
<td>1.63,665</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td>163665</td>
</tr>
<tr>
<td>GPRS, EDGE, WCDMA</td>
<td>64,78,096</td>
<td>4,807,586</td>
<td>96,083</td>
<td></td>
<td>-</td>
<td></td>
<td>11381765</td>
</tr>
<tr>
<td>CDMA IX, EVDO</td>
<td>136,573</td>
<td>62,859</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>199432</td>
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<tr>
<td>WiMAX</td>
<td>13,731</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td>13731</td>
</tr>
<tr>
<td>VSAT based Internet</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>13</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>6796343</td>
<td>62,859</td>
<td>4,807,586</td>
<td>96,083</td>
<td>13</td>
<td>130120</td>
<td>11893004</td>
</tr>
</tbody>
</table>

| Internet Penetration (%)           | 44.89 |
Proliferation of Connected Devices

Global forecasts

• IoT devices will encompass more than 6.4 billion connected objects in use by 2016, a 30% rise from 2015.

• In turn, that number is expected to further explode by 2020, where the IoT market will include **20.8 billion** things

  – the Gartner report
Proliferation of Connected Devices

Global forecasts

- the number of IoT (Internet of Things) connected devices will number 38.5 billion in 2020, up from 13.4 billion in 2015: a rise of over 285%.
  
  – Juniper Research
Proliferation of Connected Devices

Global forecasts

• 33 Billion Internet Devices By 2020:

• Four Connected Devices for Every Person in the World
  – Strategy Analytics
M2M and IoT

• Machine-to-machine (M2M) describes the use of applications
  – enabled by the communication between two or more machines
  – connects machines, devices and appliances wirelessly via a variety of communications channels, including
    • IP and
    • SMS,
    • to deliver services with limited direct human intervention
• The Internet of Things (IoT) describes the coordination of
  – multiple machines,
  – devices and
  – appliances
  – connected to the Internet through multiple networks
• These include everyday objects such as
  • smartphones,
  • tablets and
    • other consumer electronics, and
    • machines such as
      • vehicles,
      • monitors and
      • sensors
• equipped with M2M connectivity that allow them to send and receive data
What does it mean?

- Technologies are disruptive
- But laws and regulations are outdated and do not encompass these emerging technologies in a timely manner
What is the implication then?

• Businesses have two options:
  – Ask the government and regulator for permission
  – Start adopting without explicit green signals from the government and regulator
What does the Government and regulator do?

• Either react negatively
• OR Respond the development through formulation of appropriate policies laws and regulations facilitating the adoption of new technologies
Why laws and regulation?

• Regulation is fundamental to governing complex, open and diverse societies and economies.
• Regulatory processes allow policy-makers to balance competing interests
• have been critical to the development of democracy and the modern state.
Current state of affairs?

• We have not responded the realities of network, device and service convergence
• OTTs are always there but no regulatory certainty and clarity
• We have not prepared enough for proliferation of wireless devices – short range and low power
• We have not even allowed the adoption of 4G mobile technologies
• No thought for 5G
Current state of affairs?..

- Technology Neutrality? Agreed by the policy but regulatory barrier still exists
- Scope of the services of the different licenses such as voice/data –ISP vs NSP etc. are blurred
- IP has not been properly understood..
Sources of Regulatory Barrier

• Unavailability of spectrum in a timely manner
• Technology based spectrum assignment
• Services limited by licensing restrictions
• Lack of legal and regulatory framework for newer services and applications
• Third party services and applications are not entertained directly by regulators
• Persistent confusion on the emerging services and applications is discouraging for innovators
Conclusion

• The pace of technological innovation is beyond the reach of many government and regulators in the developing world

• But all countries have the privilege of access not only to information but also to technologies

• Proactive governments and regulators move with technologies and shape their legal and regulatory mechanism in line with market demands

• Government and regulators carry out regulatory impact analysis