Norms and Standards for Trusted Connectivity
Digital governance as an enabler of trusted connectivity

5G - a connected open innovation platform

- Holistic and joined up policy approach is necessary.
- Data layer and trust in data flows is just one aspect.
- Disconnections in national data policy frameworks introduce challenges.
- Any disconnection at infrastructure and standards level are challenge-amplifiers
### Benefits of Standardization

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safeguard and promote values</td>
<td>Public goods</td>
</tr>
<tr>
<td>Common good protection</td>
<td>Governments</td>
</tr>
<tr>
<td>Consumers: product comparison, protection</td>
<td>Markets</td>
</tr>
<tr>
<td>Producers: economies of scale, reduce costs, certainty, quality</td>
<td>Consumers, Industry</td>
</tr>
<tr>
<td>Interoperability, interconnections, interworking, ecosystem</td>
<td>Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Public administrations, Businesses</td>
</tr>
</tbody>
</table>
Mobile industry has been shaped through shared innovation

- 700 Companies collaborate today
- >100 Open interfaces
- One global standard leveraged by large ecosystem enabling standard based innovation in mobile communication devices and network equipment.
Global Trusted evolution beyond 5G

Global 5G and 6G leadership with core values protected is ensured by...

Avoiding government-imposed standards to allow marked led initiatives to flourish is necessary but not sufficient.

Openness in the process and participation coupled with consensus-based decision making in international standards development is key.

Only through effective standard setting based on core values being protected can infrastructure enable convergence on data governance standards.
WTO encourages the use of international standards as a means to facilitate trade

• To ensure that neither the standard-setting procedures, nor the use of standards, cause discriminatory treatment and unnecessary obstacles to trade, the legal framework includes several procedural requirements.

• The procedures and standards should be transparent, open during all stages, impartial to different interests, consensus-striving, effective, relevant, coherent and ensure an effective participation of all WTO members and the relevant parties within their territory.

• Furthermore, WTO members must take reasonable measures to ensure that private standardizing bodies within their territory strive to comply with these procedural principles.

Technical standards
• Avoid fragmentation of standards.
• Refrain from using national standards in situations where global standards exist.
• Avoid state-imposed standards.
• States ensuring that private standardization bodies comply with WTO procedural principles.
3GPP – Key end-user benefits

**Affordability**

**Fast time to market**

**Mobile broadband**

**Unparalleled global diffusion**

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**3GPP technologies diffusion vs. essential commodities**
Percent of population covered by... (2020)

<table>
<thead>
<tr>
<th>Service</th>
<th>2020 Coverage</th>
<th>2020 Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic sanitation services</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>at least LTE</td>
<td>85%</td>
<td></td>
</tr>
<tr>
<td>Basic drinking water services</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>at least 3G</td>
<td>94%</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Mobil-cellular network</td>
<td>97%</td>
<td></td>
</tr>
</tbody>
</table>

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**Did you know?**

- 0.22 mil Children births everyday
- 6.7 mil Mobile phones sold everyday
- 3.6 bn Toothbrushes sold*
- 5.3 bn Unique mobile phone users

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Source: [https://www.statista.com/study/74670/a-mobile-connected-world](https://www.statista.com/study/74670/a-mobile-connected-world)

*Estimated by Statista
Source(s): [Grandviewresearch, GSMA, ITU, Statista Analysis, WHO, Worldbank, Worldometer](https://www.statista.com/study/74670/a-mobile-connected-world)
3GPP – Key end-user benefits

- Affordability
- Fast time to market
- Mobile broadband
- Unparalleled global diffusion

Source: [https://www.statista.com/study/74670/a-mobile-connected-world](https://www.statista.com/study/74670/a-mobile-connected-world)

Note(s): *3GPP includes 3G, 4G & 5G ** The years have been counted from the entrance of the mentioned technology to the market onwards. Calculated by Statista as of April 2020. Source(s): EMR, Ericsson mobility report, Facebook, GSA, Instagram, ITU, Jefferies & companies, our world in data, PayPal, Statista analysis, Strategy Analytics
Example 5G security of deployed networks

Operations process
• Secure operational procedures, e.g., segregation of duties, use of least privilege and logging
• Monitoring the security performance, vulnerability management and detection of attacks
• Response and recovery after breach

Deployment process
• Solid network design with security and resilience in mind
• Configuration of security parameters, hardening

Vendor product development process
• Secure hardware and software components
• Secure development processes
• Version control and secure software update

Telecommunications standardization process
• Secure protocols, algorithms, storage

- End users’ experience of network security is determined by deployed networks.
- Security status of deployed networks depends of four inter dependent levels.
- Holistic approach to security includes all four levels.
- Operators are in control of operations, deployment and integrator and vendor selection.
- Vendors are in control of their product development and sourcing decisions (component suppliers).
- Standards are set in a multi stakeholder fashion.
Enhancing trust in global mobile networks

NESAS development and product lifecycle assessments are conducted against security requirements that cover the following areas

<table>
<thead>
<tr>
<th>Security by design</th>
<th>Security testing</th>
<th>Automated build process</th>
<th>Security fix communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version control systems</td>
<td>Staff education</td>
<td>Build environment control</td>
<td>Documentation accuracy</td>
</tr>
<tr>
<td>Change tracking</td>
<td>Vulnerability remedy processes</td>
<td>Vulnerability information management</td>
<td>Security point of contact</td>
</tr>
<tr>
<td>Source code review</td>
<td>Vulnerability remedy independence</td>
<td>Software integrity protection</td>
<td>Source code governance</td>
</tr>
<tr>
<td>Security testing</td>
<td>Information security management</td>
<td>Unique software release identifier</td>
<td>Continual improvement &amp; Security documentation</td>
</tr>
</tbody>
</table>

The GSMA Network Equipment Security Assurance Scheme (NESAS), jointly defined by 3GPP and GSMA, provides an industry-wide security assurance framework to facilitate improvements in security levels across the mobile industry.

NESAS defines security requirements and an assessment framework for secure product development and product lifecycle processes, as well as using 3GPP defined security test cases for the security evaluation of network equipment.