



Liability in 5G and Beyond: Concepts and challenges

Chrystel Gaber

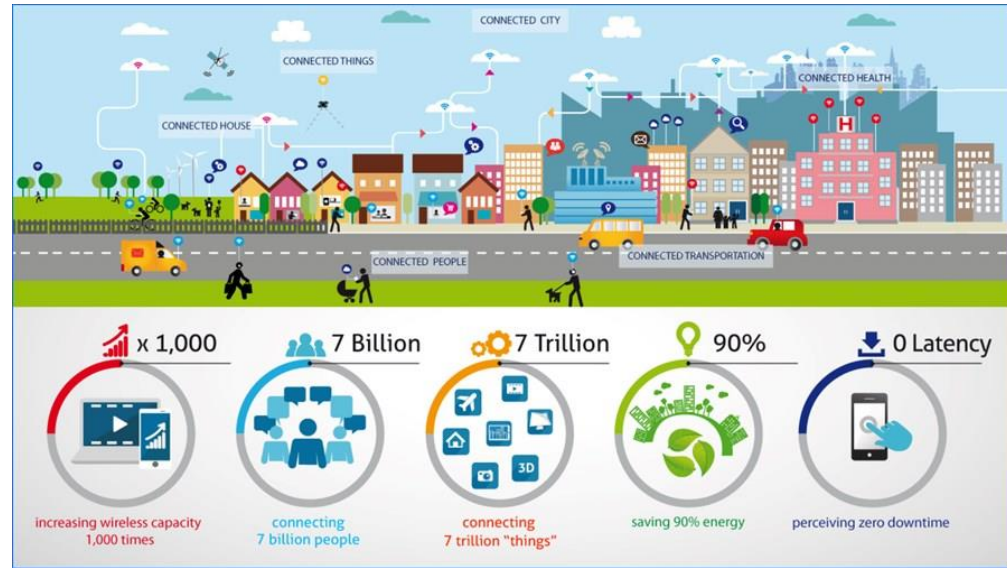
Orange

WAL5Gplus 16/06/2021

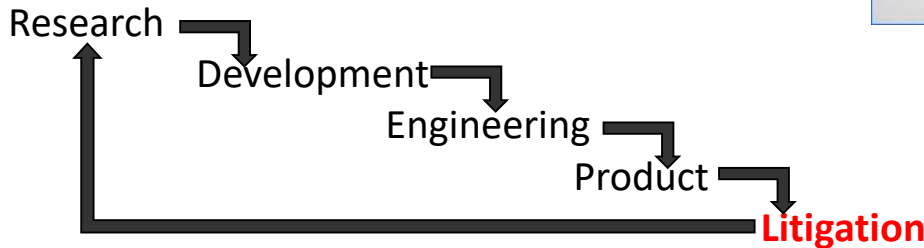




Liability & 5G



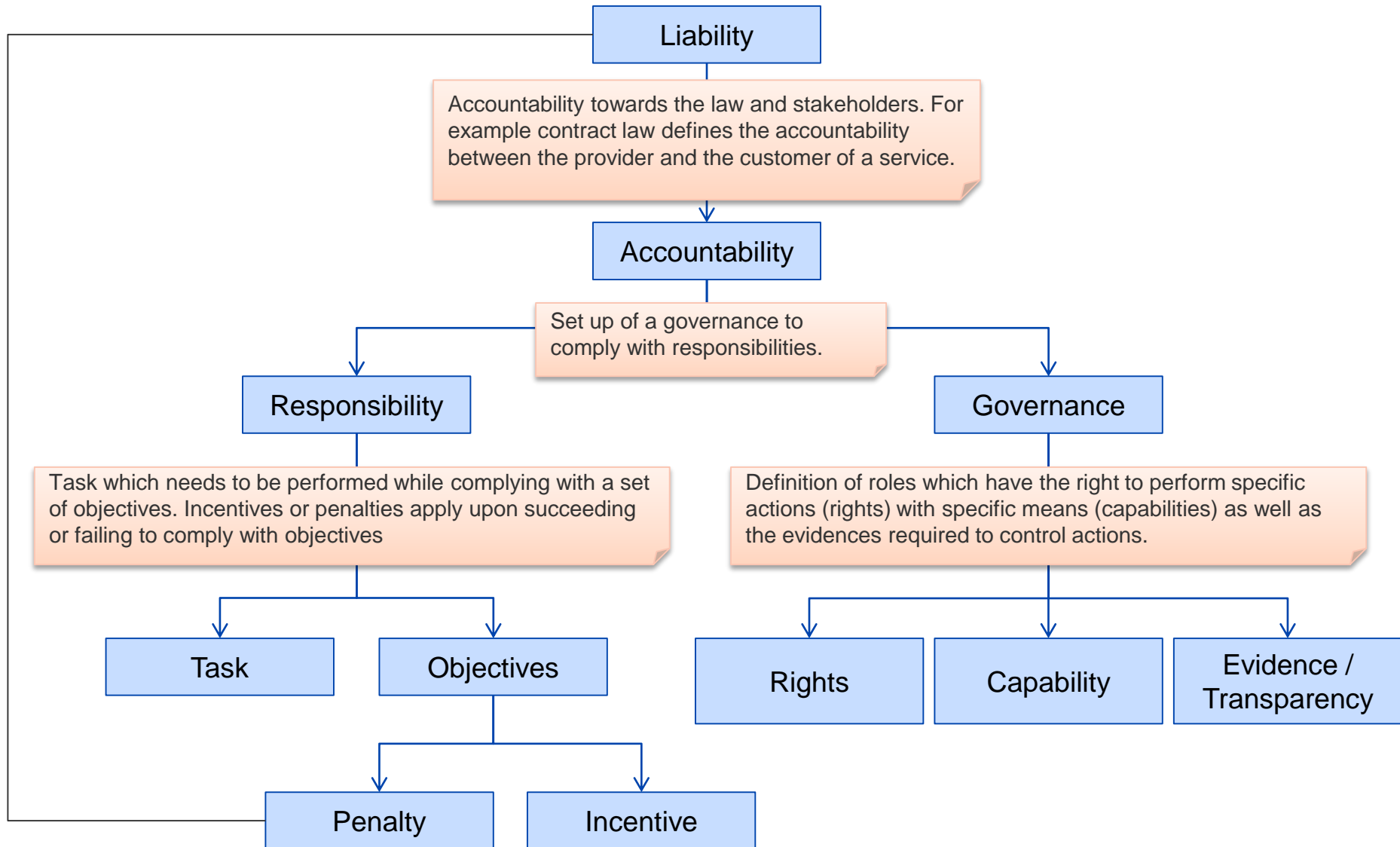
- ▶ Service delivery in 5G:
 - Multi-party
 - Multi-domain
 - Multi-layer
- ▶ Dedicated services for critical & sensitive use cases → verticals



Source: Liability & computer security : nine principles, R.J. Anderson

- ▶ Intelligent & automated support for liability management is needed

Liability management - concepts



Liability management challenges - 5G & verticals -



- ▶ Critical Verticals
 - are subject to NIS Directive & others specialized directives per segment (SEVESO, Transport, NIS2...)
 - have to manage / comply to safety and availability constraints

- ▶ Challenges & questions
 - How will infrastructure impact the commitments of critical verticals & how will **vertical constraints be translated into agreements & contracts** ?
 - How **liability will be transferred** from critical verticals to network infrastructure operators and subcontractors ?
 - How can a 5G slice management tool assist operationals & jurists ?
 - How can we **certify & insure** 5G components & management systems ?

*We acknowledge that delivering **on-demand or security contextualization of services** is a **key driver for 5G slicing adoption by critical verticals**. Offers will have to embed **liability (on-demand)** between parties*



Thank you for your attention!

Find us at www.inspire-5gplus.eu

Twitter: @

Acknowledgment:



The research conducted by INSPIRE-5Gplus receives funding from the European Commission H2020 programme under Grant Agreement N° 871808. The European Commission has no responsibility for the content of this presentation.

Liability management & 5G Principles & Challenges



How will infrastructure impact the security commitments of critical verticals ?

P2- Use the right threat model - expect the real problems to come from blunders in the application design and in the way the system is operated

P8- Security goals & assumptions should be based **on industry practice** in the **application area**, not on general computer concepts

▶ **Critical verticals** are subject to **NIS directive** & others **specialized Directives per segment** (e.g. SEVESO, Transport, NIS2...)

▶ Slice offers (**on demand network capacities**) **need** to address the different security requirements of verticals

Liability management & 5G Principles & Challenges



How & what liability will be transferred from critical verticals to infrastructure operators and subcontractors ?

P1- Security systems (...) must be designed & certified on the assumption that they **will be examined in detail by a hostile expert**

P3- Security goals - Before setting out to build a computer security system, make sure you understand what its real purpose is

P4- Shifting the blame - Understand how liability is transferred by any system you build or rely on

- ▶ How can we avoid conflicting commitments & terms of use for service delivered to verticals ?
- ▶ How can we visualize the state of liability & responsibilities for each stakeholder of the system ?

Liability management & 5G Principles & Challenges



How can a 5G slice management tool assist operationals & jurists ?

P5- The limitations of the legal process & new kinds of technical evidences

- ▶ Legal issues will not be solved only by a tool or standards. **Is it possible to anticipate potential issues ?**

P6- Computer security legislation is highly likely to suffer from the law of unexpected consequences

- ▶ What are the needs of auditors, experts, jurists to check evidences collected by a security, trust, liability system ?

P7- Don't rely on existing standards to solve legal problems

- ▶ What are the evidences related to autonomous & complex systems and how do their specificities impact the work of law makers & jurists ?

How can we certify & insure 5G components & management systems ?

- P9-** A trusted component or system is one which you can insure
- ▶ How can 5G providers convince their customers that if a component or system breaks and/or comprises the 5G system function or security, Service Providers will **not lose an unpredictable amount of money or expose itself to lawsuits** ?
 - ▶ Can we compose several components which are certified and/or insured to build a trusted service ? (& how) ?

Inspire5G+ paves the way for a liability management system



INSPIRE-5Gplus

- ▶ Identified functions & enablers for a liability-management system

F1 - Define accountability & relationships

- Manifest
- Liability-Aware Security Manager
- Liability graph
- Behavioral profiles

F2 – Monitor & collect evidence events / incidents

- Root Cause Analysis
- Path Proof Protocol

F3 – Analyse, resolve & identify liabilities

- Liability-Aware Security Manager
- Liability graph
- Root Cause Analysis
- Risk Analysis Graph