



Liability in 5G and Beyond: Concepts and challenges

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Orange

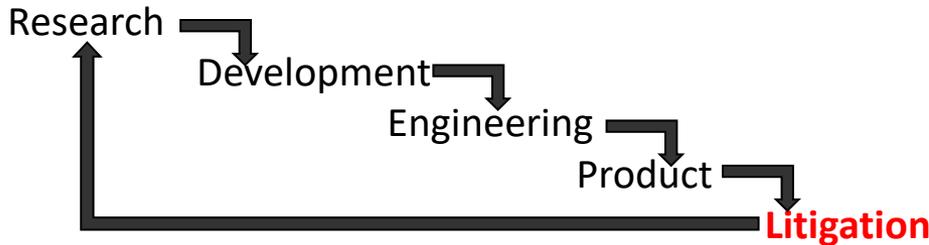
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Liability & 5G

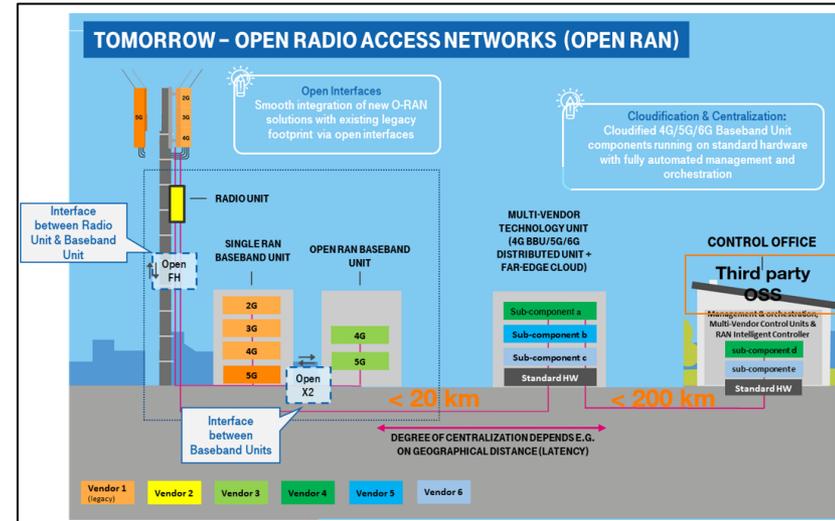
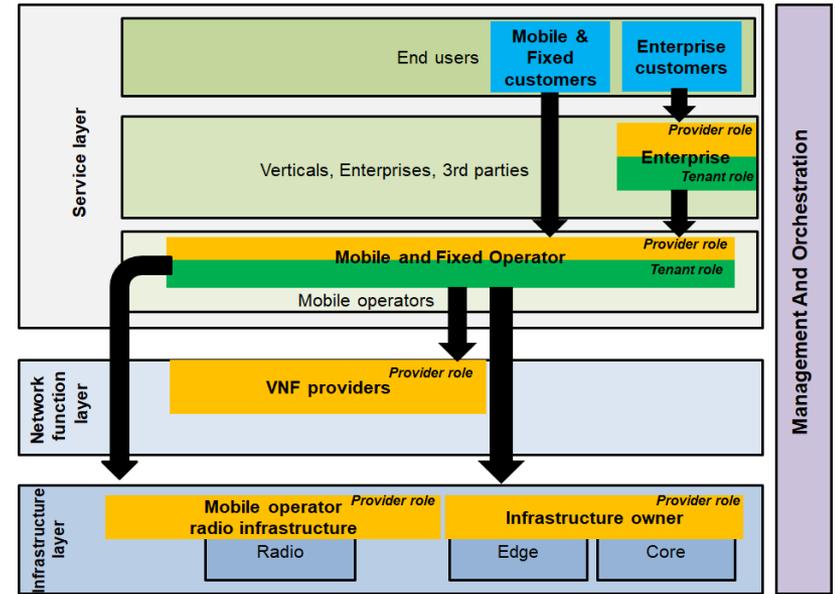
- ▶ Service delivery in 5G:
 - Multi-party
 - Multi-domain
 - Multi-layer
- ▶ Different needs for critical & sensitive use cases



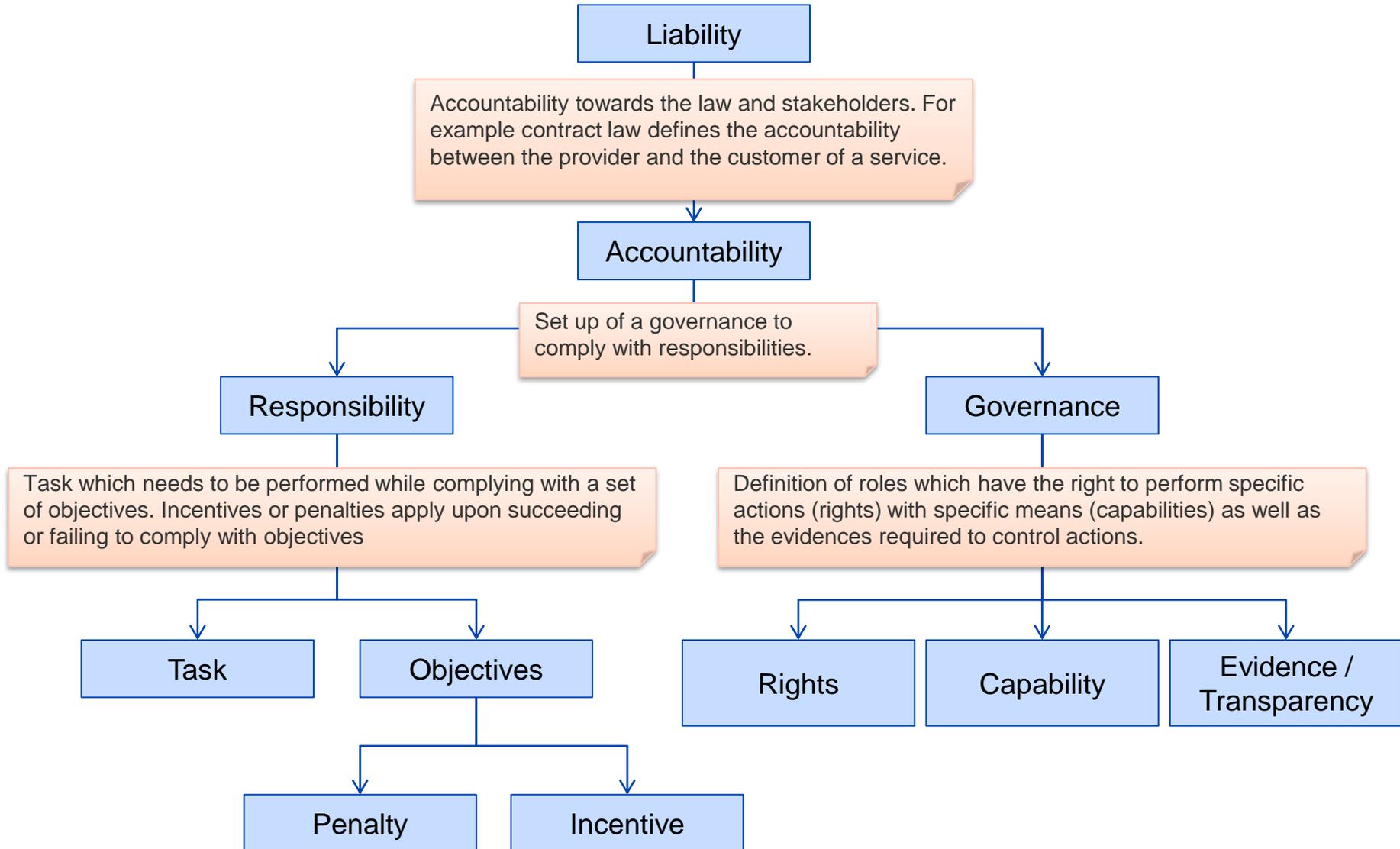
Source: Liability & computer security : nine principles, R.J. Anderson

- ▶ Intelligent & automated support for liability management is needed

What are the requirements / challenges ?



Liability management - concepts



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

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

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

Challenges for 5G & security managers

- ▶ Slice offers need to address the different security requirements of verticals
- ➔ Slice providers commit to provide means and/or results

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

- 1- Security systems (...) must be designed & certified on the assumption that they will be examined in detail by a hostile expert
- 3- Security goals - Before setting out to build a computer security system, make sure you understand what its real purpose is
- 4- Shifting the blame - Understand how liability is transferred by any system you build or rely on

Challenges for 5G & security managers

- ▶ In case of litigation related to a slice and its operation, the orchestrator, management system & service offer will be scrutinized
- ▶ A liability-aware security manager needs to collect evidence related to management operations
- ▶ Any stakeholder of the slice (in particular the slice provider) needs to understand what is the status of the liability he bears

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

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

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

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

Challenges for 5G & security managers

- ▶ Legal issues will not be solved only by a tool or standards. Is it possible to anticipate potential issues ?
- ▶ What are the needs of auditors, experts, jurists to check evidences collected by a security, trust, liability system ?
- ▶ What are the evidences related to autonomous & complex systems and how do their specificities impact the work of law makers & jurists ?

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

9- A trusted component or system is one
which you can insure

Challenges for 5G & security managers

- ▶ 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 ?
- ▶ 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

- ▶ 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



Thank you for your attention!

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