

SIMPLICITY

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Meanings of Simplicity eMobility

- Means to hide the complexity from a **user** in accessing, using and generating services.
 - Solutions for managing complexity seamlessly from **service operator** point of view.
 - Flexibility and co-operativity of different products and standards to allow gradual network evolution and simplicity in **access network management**.
 - Technical solutions to keep costs and innovation cycles of **terminals and network infrastructure** at manageable level.
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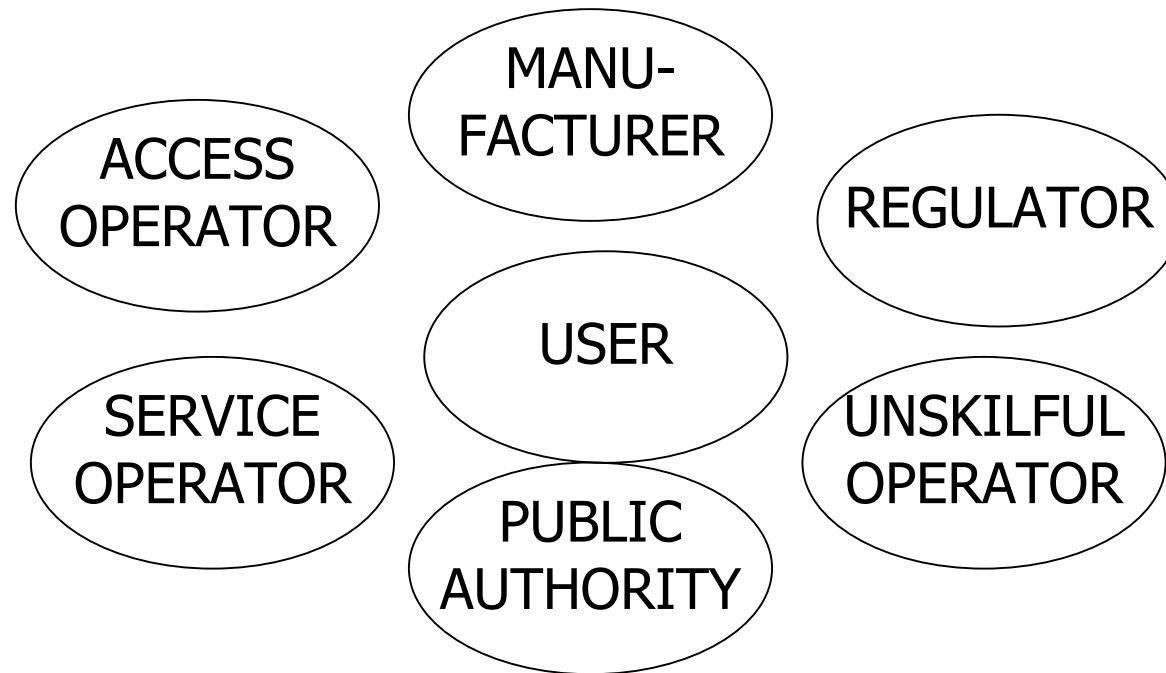
Research Challenges eMobility

- ❑ **Ubiquitous connectivity through auto-connectivity between legacy and new types of networks: WSN, PAN, LAN, Home Network, Moving Networks, Wide Area Networks and techniques which facilitate auto-configuration, self-organisation and management of heterogeneous and dynamic networks and services.**
- ❑ **A network agnostic service execution platform that interacts with network and terminals and also facilitates the deployment, adaptation and management of services on the various (including mobile) devices.**
- ❑ **Innovative services based on a user's ambient intelligent and streamlined context classifications methodology.**
- ❑ **Enabling techniques for user-created content facilitating peer-to-peer communication.**
- ❑ **Smart user interfaces and interactions with learning capabilities**
- ❑ **New mobile device form factors, included embedded wireless chip connectivity.**
- ❑ **Radically simplified mechanisms and technologies for context capturing, processing, distribution and integration into intelligent services.**
- ❑ **New and efficient search engines with automatic zero-configuration and complexity management (including the management of privacy and trust).**
- ❑ **Intelligent customer care and provision of smart support in real-time in case of technical difficulties.**

Stake Holders



Simplicity has different meanings and research potential for different stakeholders:



- Typical daily activity environments: office, transportation, home, hobbies, shopping mall, etc.
 - The available access networks are different in terms of technologies, available services, billing policies etc.
 - Usage of different terminals and access networks; preassumption to use them **without any configuration**.
 - User is only interested in **getting the service delivered** without the need to know what access networks are available.
- ⇒ Research challenges:
- interoperability of networks, products and services.
 - content filtering, synchronisation and delivery based on the time and place.

- Major driver is to keep costs and innovation cycles low.
 - ⇒ From multiradios to more flexible and generic platforms.
 - ⇒ Interoperability requirement of different access networks and products supports this.
- More autoconfiguration needed to make network management easier.

=> Research challenges:

- Interoperability of networks, products and services.
- From multiradio towards SDR.
- Autonomic communication systems.

Access Operator



- For access operators it is the most important to keep network infrastructure investments as low as possible.
 - ⇒ Evolutionary path to improve service quality, network capacity etc.
- Network management in multistandard environment will be a challenge.

=> Research challenges:

- Interoperability of networks.
- Autonomic communication systems.

Service Operator



- Due to hugely increased data storage capability, expected expansion of sensor networks, PANs, HANs, etc. the challenges for information filtering, synchronisation and delivery becomes huge.
- User created content/services
 - ⇒ Simplicity at the very extreme
- Customer support more automated without user interaction.



Unskillful Operator eMobility

- WLAN is an example of unskillful operator model; this trend will grow.
- Major driver is to make sure that an operator with a low level of understanding can offer his infra to wider (commercial) use.
 - ⇒ Zero- or autoconfiguration capabilities
 - ⇒ Smarter usage of spectrum, co-operation with other similar network elements etc.

=> Research challenges:

- Autonomic communication systems.
 - Cognitive radio systems / spectrum agility.
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- Public healthcare will use much more wireless technologies in the future.
- Crises management systems will rely on commercial products and standards in the future.

=>Research challenges:

- Very "simple" systems and products for disabled people monitoring, caring and medical measurements.
- Highly flexible communication systems allowing for flexible usage of spectrum and evolutionary waveform design.

Regulator



- Technical standards evolution processes are heavy and slow.
 - Spectrum regulation policies are changing very slowly.
- => Research challenges:
- De-standardisation via interoperability, flexibility and reconfigurability of infrastructure.
 - Spectrum agile communication systems and equipment.