



Digital Environments Enabled by 5G

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Tekes



Innovation

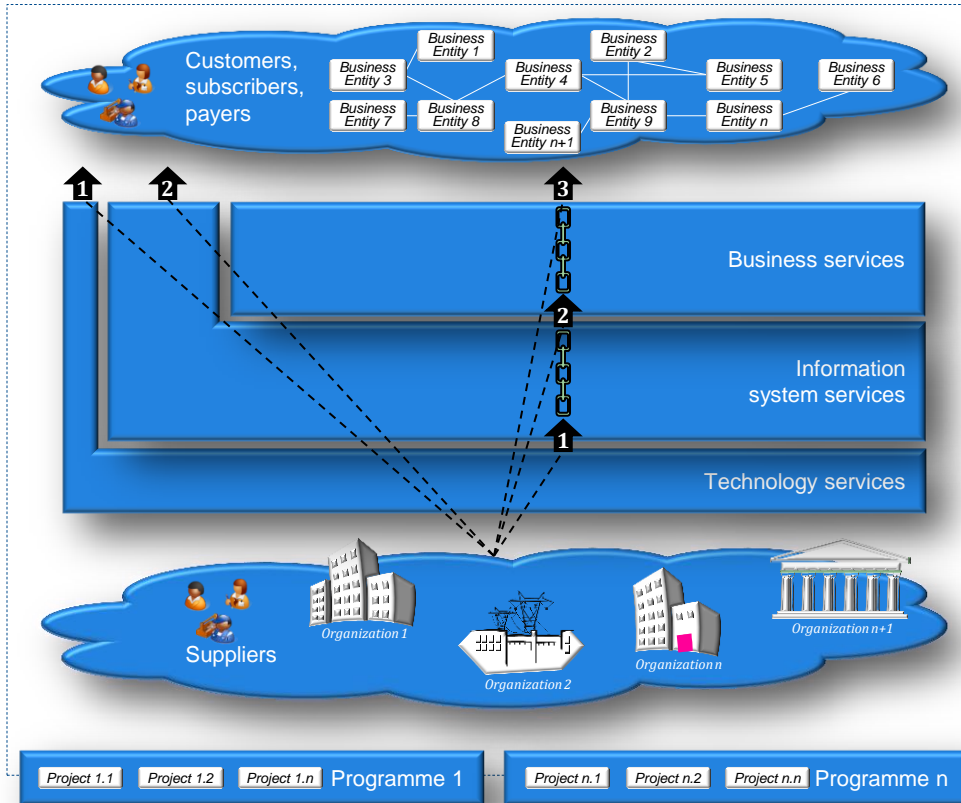
Ecosystems

OPEN

Source

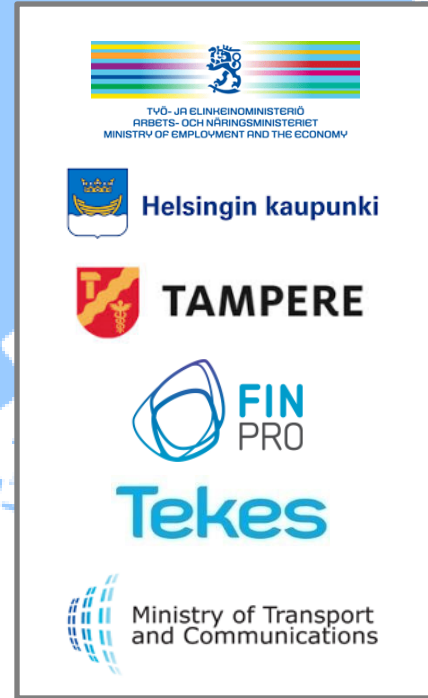
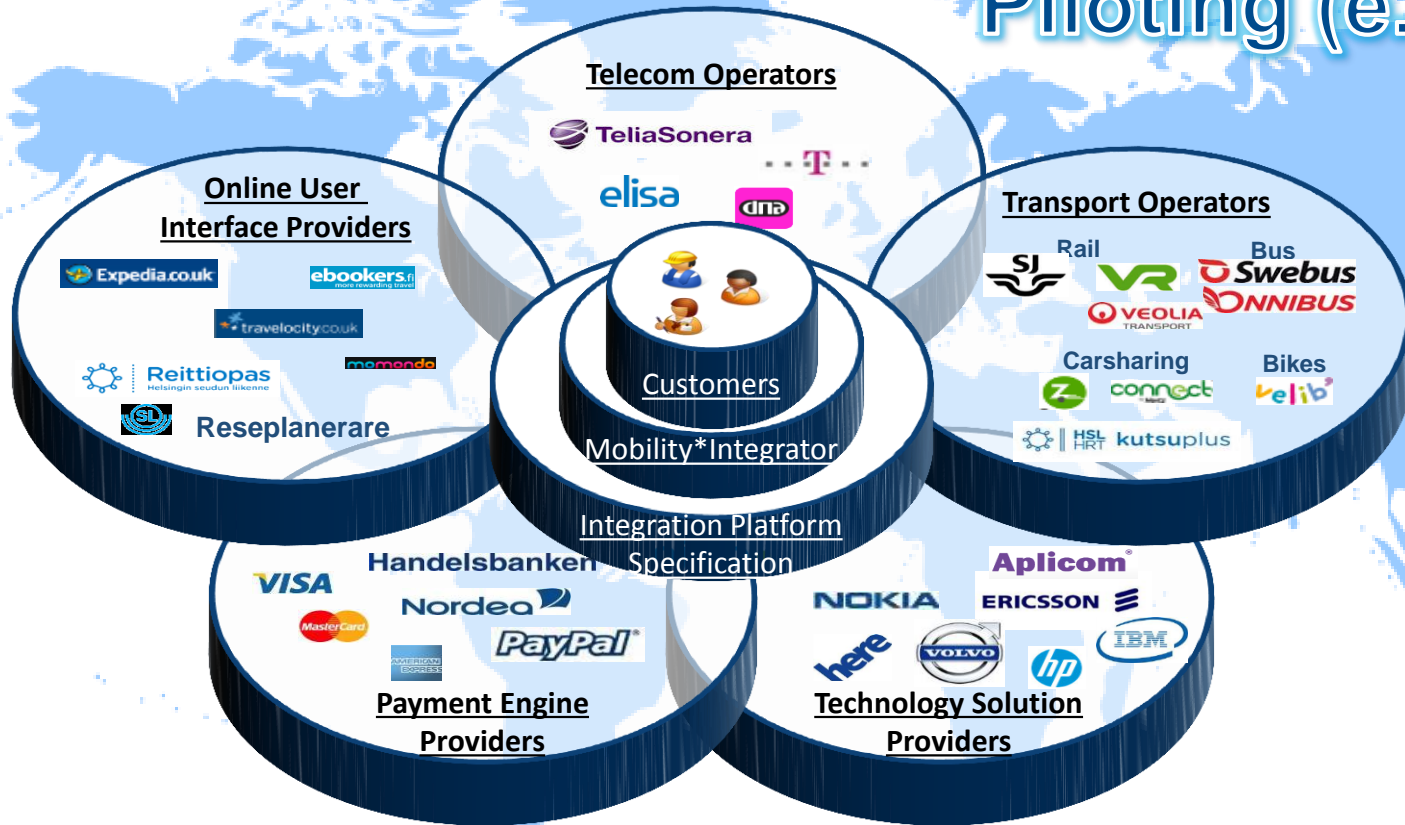
Platforms

Ecosystem Content – Platform-based innovation



- ✓ Customers and their expectations as a starting point.
- ✓ Common understanding about values and concepts (i.e. speaking the same language)
 - Capability to handle interoperable concepts together.
 - Forms "Innovation platform" for new business models and services.
- ✓ Business model formulated by various organizations.
 - Value and service networks formulated by various organizations.
 - Value and service network related governance models.
 - Service driven leadership and management practices.
- ✓ Organization related activities (processes, development activities) and resources (personnel, information technology, other technology) behind services.
- ✓ Target-oriented programmes and projects
 - Targets and objectives based on customer requirements and organizational strategies.
 - In single programme/project the development scope should be seen in the right extent.

Piloting (e.g. MaaS)



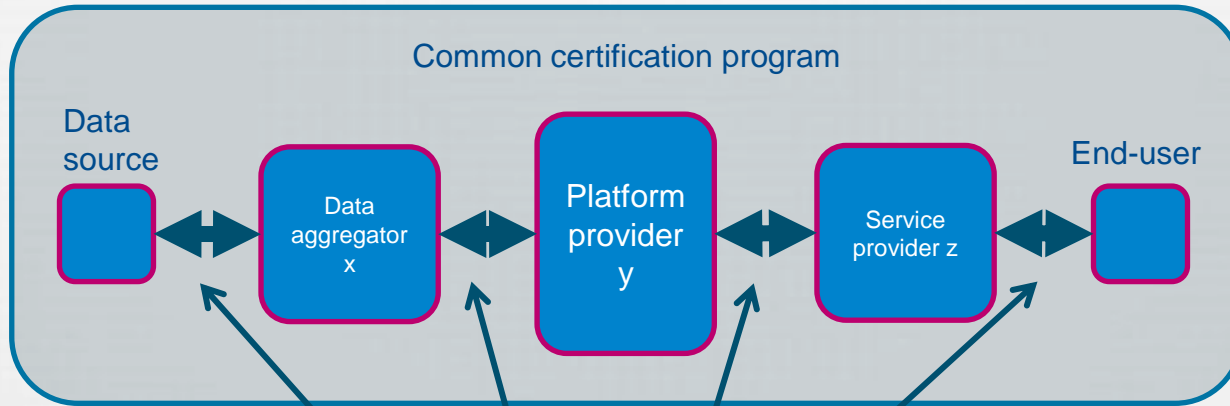
The company logos mentioned are only for descriptive purpose

**) Note: Illustrated from Mobility point of view, could be also Health, Retail etc.*

Source: Frost & Sullivan / Tekes / Knowhill

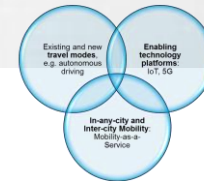
4. Scalability: MaaS-Alliance - Interoperability Certification with Ertico

The solutions need to be **scalable** to different user profiles and to the whole of Finland as well as to **international markets**



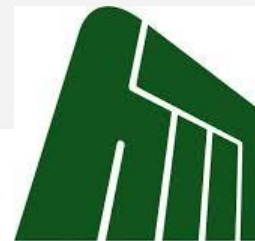
Creation of an interoperability testing program for MaaS solutions

Source: VTT implementation project to be funded by Tekes



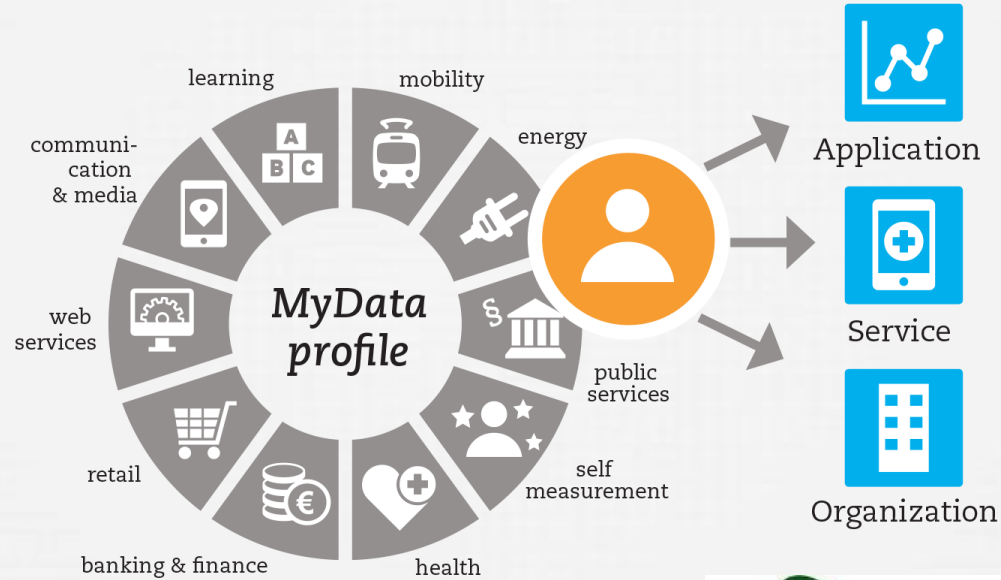
MyData Principles

- **Human Centric:** right to data, individual in control, privacy
- **Usability of Data and transparent relationship management:** machine readable, open formats, APIs, standards,
- **Open Business Environment:** interoperability, possibility to change services without “data locks”



HELSINKI
INSTITUTE FOR
INFORMATION
TECHNOLOGY

MyData Principles



Ecosystems

Testbeds

BUSINESS OULU

SLUSH

FIIF



HILLA

HACKS

fimecc

VTT



Ministry of Transport and Communications



Ministry of Education and Culture



MINISTRY OF SOCIAL AFFAIRS AND HEALTH Finland

Etc.

Technology Industries of Finland



Cyber Security
JYVÄSKYLÄ - FINLAND

DIGILE HACKS

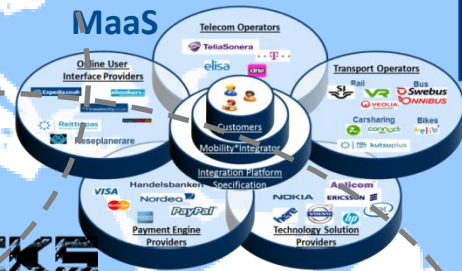


Ministry of Transport and Communications



TYÖ- JA ELINKEINMINISTERIÖ
ARBETS- OCH NÄRINGSMINISTERIET
MINISTRY OF EMPLOYMENT AND THE ECONOMY

Tekes



5G TNF

5G Test Network Finland

Startups

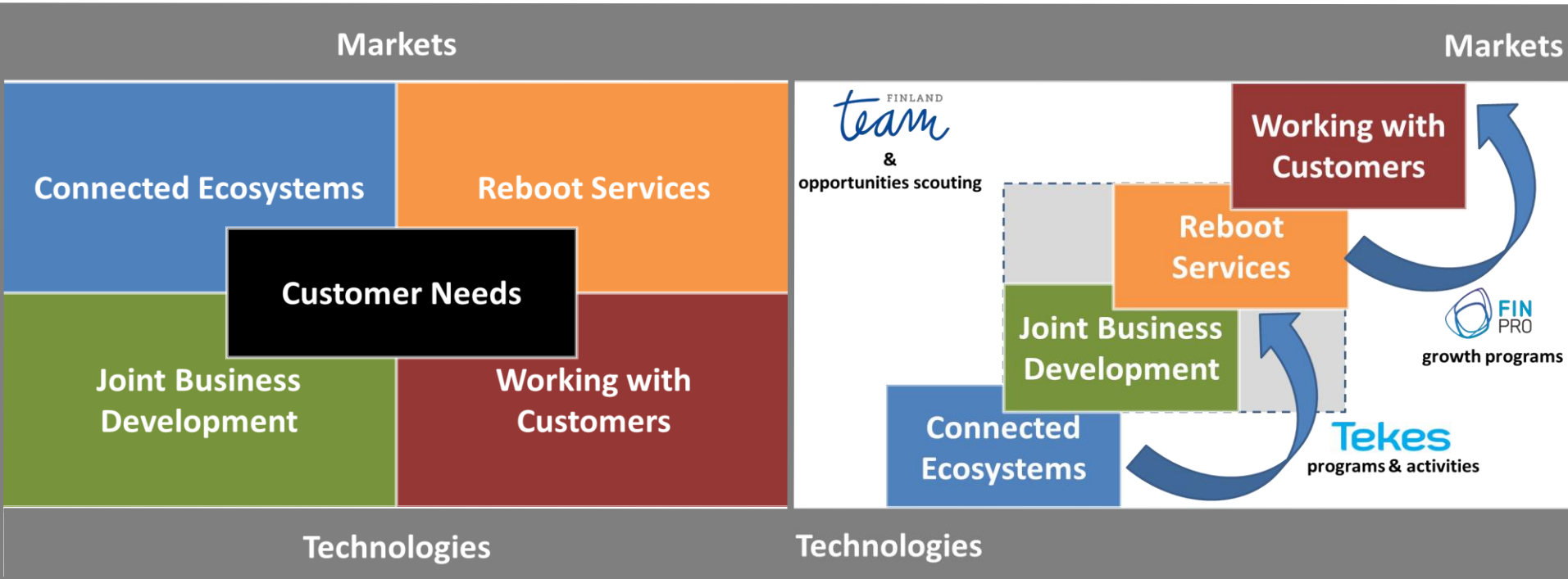
SLUSH



FINLAND
team

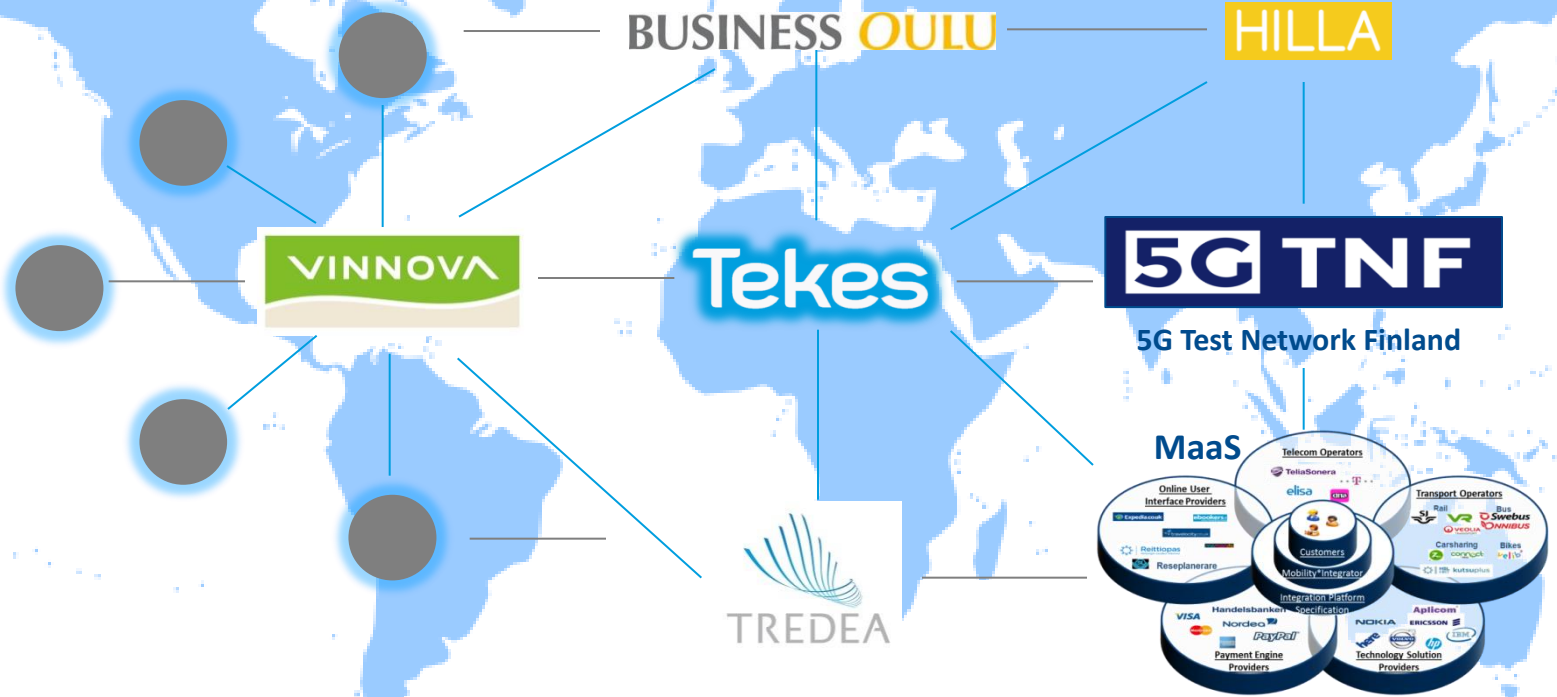
Tekes

Innovation Environment



Taxation – Regulation – Funding – Smart Procurement – PPP – Piloting – Testing

Nordic Collaboration



2. Integration of multiple transportation services over open interfaces – the role of cities is essential in open data

In the procurement of integrated transport service **cities** need to open data on public transportation services covering

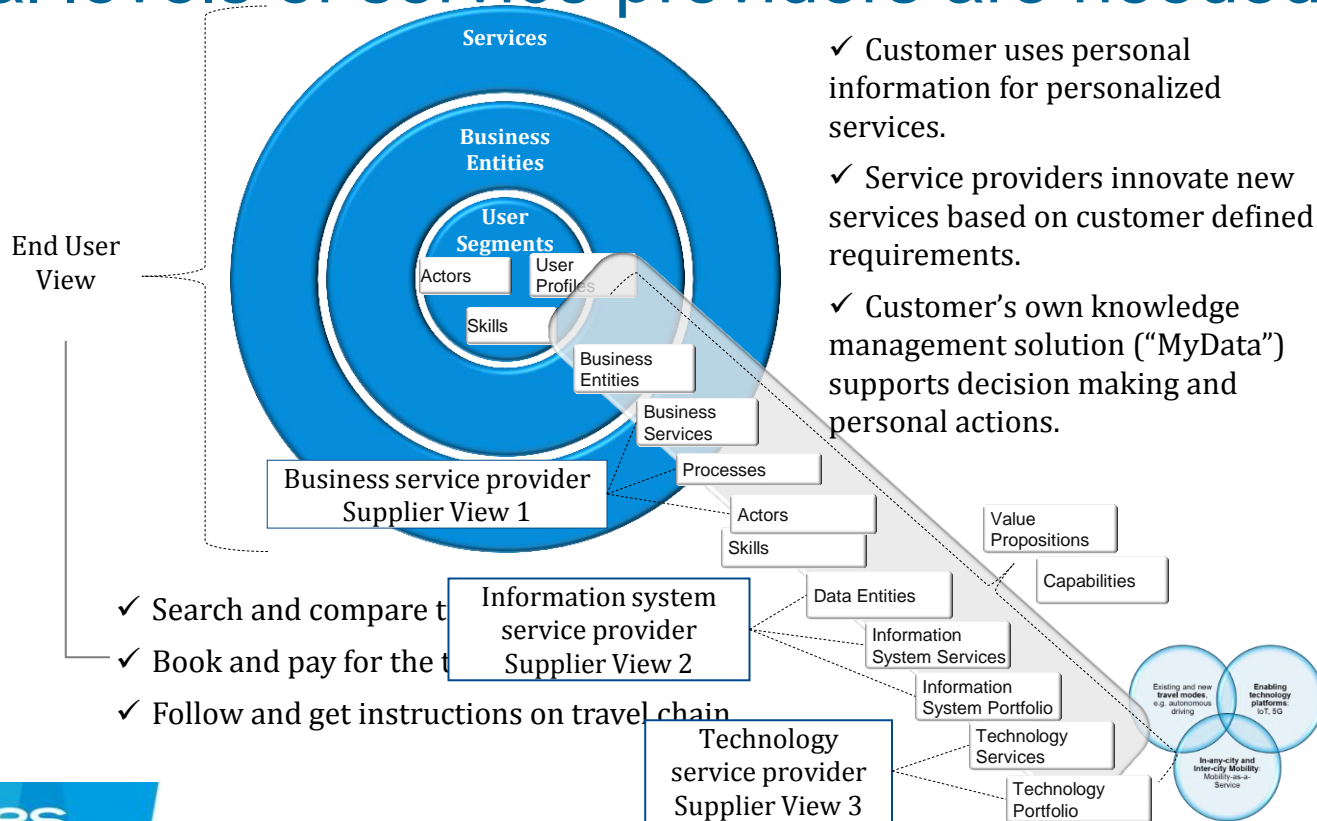
- ✓ different budgeting silos: e.g. elderly care, school rides, food logistics
- ✓ anonymized delayed point-to-point data.

Mobility operator integrates several transport modes by utilizing open interfaces to transport service industry's and public transport authorities' (PTAs')

- ✓ schedules,
- ✓ location data, and
- ✓ payment systems.



User need based design of the solutions – several levels of service providers are needed



- ✓ Customer uses personal information for personalized services.
- ✓ Service providers innovate new services based on customer defined requirements.
- ✓ Customer's own knowledge management solution ("MyData") supports decision making and personal actions.

- ✓ Search and compare the travel chain
- ✓ Book and pay for the travel chain
- ✓ Follow and get instructions on travel chain

Open Testbeds (e.g. 5G)

A grid of logos for various companies and institutions participating in 5G testbeds. The logos are arranged in five rows and five columns:

- Row 1: Anite, Bittium, Coriant, DIGITA, ELTEL
- Row 2: ERICSSON, EXFO, HUAWEI, intel, MEDIATEK
- Row 3: NOKIA, Pulse Electronics, SONY
- Row 4: ECE, EFORE, Fairspectrum, Haltian, indalgo
- Row 5: MAGISTER, PehuTec, GTF, RUGGED, SAROKAL TEST SYSTEMS
- Row 6: A? Aalto University, Centria, OAMK, TAMPERE UNIVERSITY OF TECHNOLOGY, TURKU AMK
- Row 7: HELSINKI YLIOPISTO UNIVERSITY OF HELSINKI, UNIVERSITY of OULU, Turun yliopisto University of Turku, VTT, Abo Akademi University
- Row 8: elisa, TeliaSonera, OULU BusinessOulu, Viestintävirasto Finnish Communications Regulatory Authority, yle

Towards

HORIZON 2020

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

and beyond:

5G TNF

5G TN

5G Test Network is a scalable environment enabling future business model piloting and service development in realistic real-life use cases. It also provides an opportunity for testing and development of key technology components forming the future 5G systems.

CORE++

CORE++ studies the influence of new spectrum sharing concepts on mobile communications from business, regulation, and technology perspectives in close collaboration between industry, research and public domains.

FUHF

The Future of UHF Frequency Band studies the changing media environment, long-term media consumption formats and their impact on business models for different actors in mobile communications and broadcasting ecosystems.

TAKE-5

The 5th Evolution Take of Wireless Communication Networks creates a multidisciplinary and open research platform for investigation and experimental evaluation of innovative ideas in networking, services and new business models for 5G.



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www.5gtnf.fi

Hackathons

Agile Innovation with Startups

Example
case

industryhack presents

#maketechhuman

An industrial hackathon hosted by Fortum and Nokia.
November 5th – 7th, 2015.

Fortum **NOKIA**

Enabling partners

elisa FIN PRO Tekes  VTT TRELAB



SLUSH

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<http://www.industryhack.com/>



Tekes

The Finnish Funding Agency for Innovation

Tekes

www.tekes.fi/en/