

Title	Preconditions for establishing and maintaining test sites for cooperative mobility
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MEET IN ASIA PACIFIC FOR THE
WORLD'S LEADING TRANSPORT TECHNOLOGY EVENT

ACTIVATING GLOBAL MOBILITY SOLUTIONS

ITS—ENHANCING LIVEABLE CITIES AND COMMUNITIES



2016
MELBOURNE

23rd World Congress on Intelligent Transport Systems

Melbourne Convention and Exhibition Centre

10–14 October 2016



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Dr. Aki Aapaoja

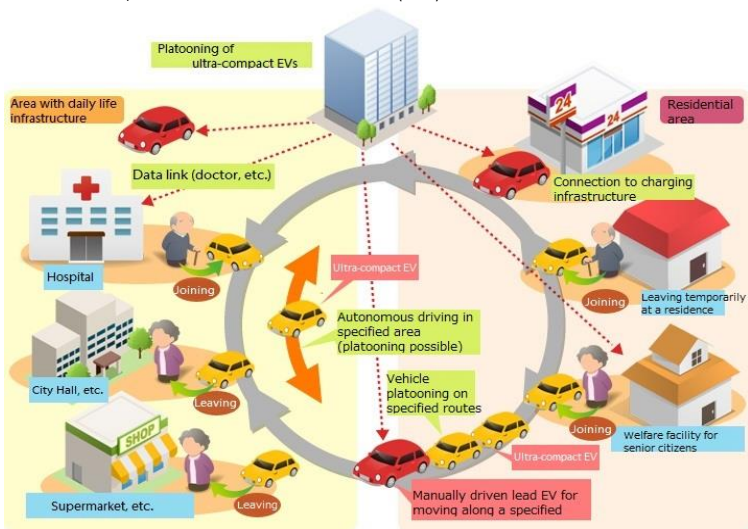
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Preconditions for establishing and maintaining ITS test sites



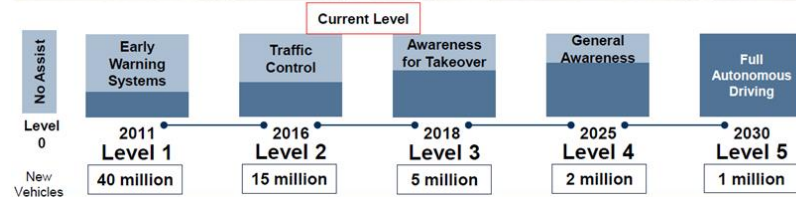
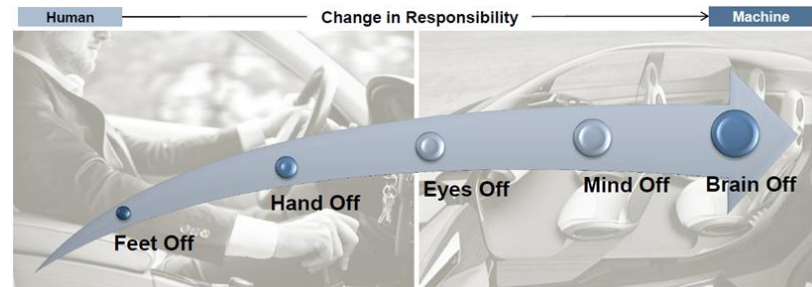
Background and motivation

Source: Japan Automobile Research Institute (JARI)



Source: Frost & Sullivan, 2016.

Safety
Sustainability
Shared economy
Efficiency
Digitalization
Accessibility
Lower costs



- +3500 people dies in car accidents daily, 50 million people are injured or disabled per year
 - Estimation: - 50% in fatalities
- 1 billion vehicles = ~23 % GHC
- Average 235 hours driving every year in UK

Test ecosystem – what's that all about...



Responsibilities



Software
Security



Roles of vehicle
and driver



Environmental
perception

OBJECTIVE

What are the most critical **success factors** in establishing and maintaining **test site ecosystems**?

Create **economically viable facilities for companies and authorities** to validate, market and assess impacts and performance of autonomous vehicle functions.

In practise: **autonomous driving test setups and the coordinated forum for exchanging and benchmarking ideas**

Benchmarked ecosystems

- Sweden

- Swedish Proving Ground Association
- Test Site Sweden, Gothenburg
- Drive Sweden, Gothenburg
- Astazero, Sandhult

- The Netherlands

- Helmond Test Site



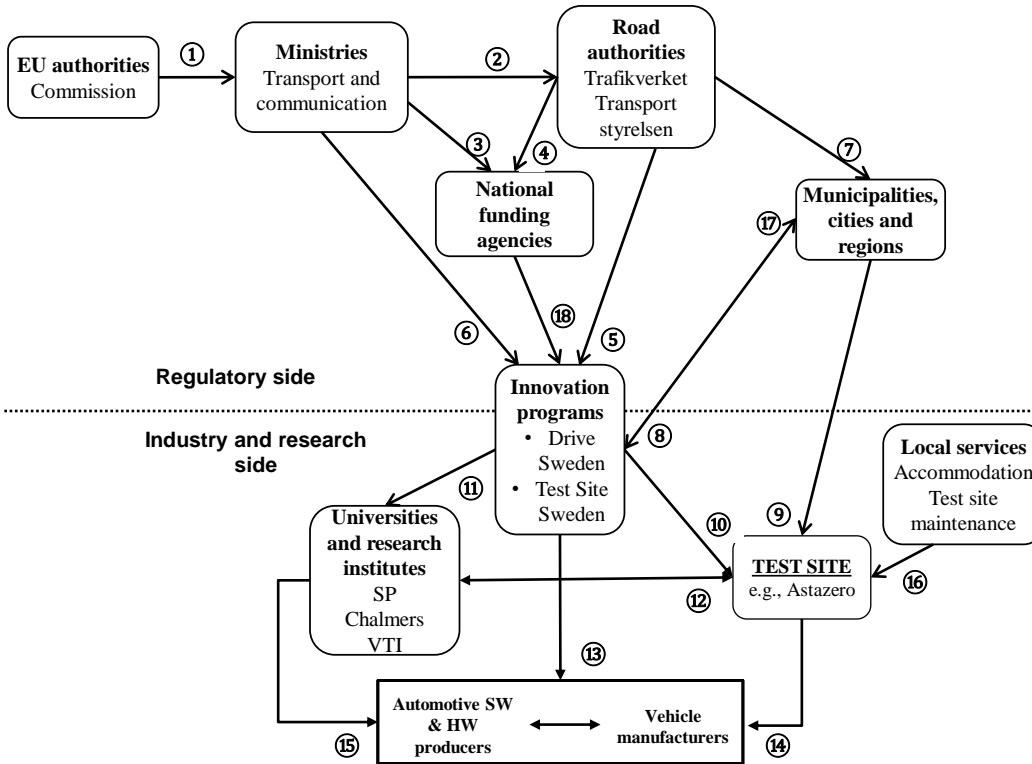
The Dutch ecosystem



Source: Joëlle van den Broek, 2015

Enhancing Cooperative Mobility Solutions through Triple Helix and joint-development

The Swedish ecosystem



1. Regulations and guidance	10. Coordination, support, contacting, networking
2. Government program, spearhead programs	11. Networking, test beds, project management, pilots
3. Development and focus areas	12. R&D support and services and facilities
4. Development and focus areas of mobility and road traffic	13. Networking, test beds, project management, pilots
5. Requirements of transport systems	14. Test services, facilities
6. National activities and focus areas	15. R&D & test co-operation, facilities, support
7. Regional implementation and development tasks	16. 3 rd party services
8. Regional steering, requirements and focus areas, infrastructure as a living lab	17. Testing in a real-life context (living labs)
9. Regulations, guidance and land-use planning; infrastructure	18. Strategic R&D funding



Features of the Dutch and the Swedish ecosystems

Sweden

- Test sites highly market-oriented
 - Quite a limited co-operation between test sites and public authorities (especially in No)
 - Authorities as providers of infrastructure and/or growth fund
- Automated driving and new mobility systems get the authorities' and ministries' attention (hot topic!)
 - Triple Helix approach
- Concrete focus and expertise areas
 - Active safety system and automated driving (Southern Sweden)
 - Cold climate testing (Northern Sweden)
- Future trends
 - Active safety systems
 - Real-time information sharing (V2X)
 - Living labs for testing (V2V2I) (automated driving)
 - Indoor test facilities
 - Automated driving and new mobility systems (e.g., MaaS)

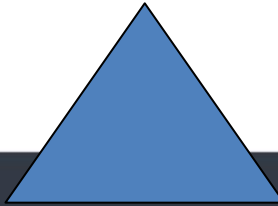
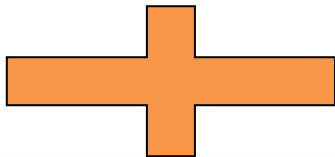
The Netherlands

- Strong public support (i.e. national agenda)
 - Relies on project and public funding
 - Commercial testing and activities will be more important
 - Triple helix approach as a cornerstone
 - Funding, steering, collaboration...
 - Vital role of an umbrella organization
 - Focus areas:
 - C-ITS and cooperative mobility
 - Mobility solutions
 - ITS corridors
 - Future trends
 - Traffic management as a service (V2X)
 - Large-scale deployment of C-ITS systems
 - Automated driving
 - International collaboration
- 

Benefits vs. cost/investments/challenges

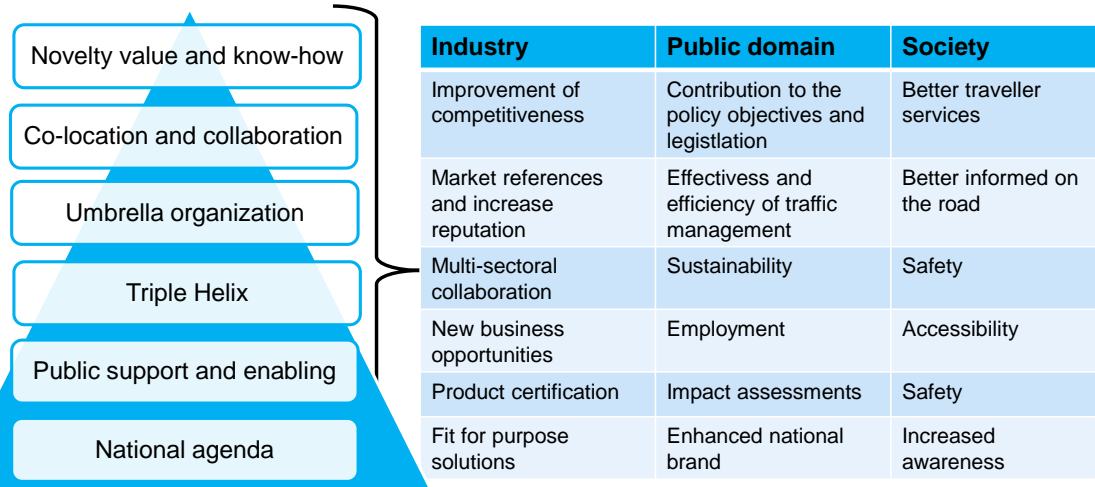
- *Enhancing wide spread multisectoral/-national collaboration*
- *Revenue for companies*
- *Employment*
- *New business and exportation opportunities*
- *Cooperation and information exchange between companies*
- *Investments in infrastructure*
- *Development of mobility and traffic management (incl. procedures)*

- *Test site infrastructure setup (equipment, cars, etc.)*
- *Implementation and installation*
- *Cooperation with other test sites in Europe*
- *Commercialization*
- *Public funding (in the beginning)*
- *Harmonization of standardization*
- *Multisectoral and cross-sectional collaboration (i.e., horizontal and vertical)*
- *Coordination of activities*



Conclusions

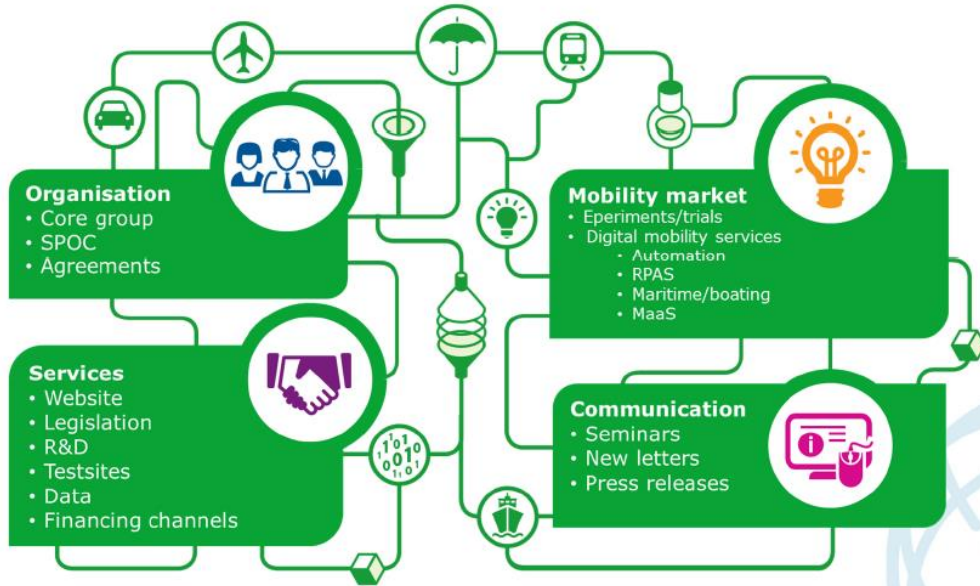
- **Public funding to support** the initiation and attract private investments (later commercialization)
- Ensure the **fit for purpose** by developing **solutions for real problems and for society** → Public sector as an enabler
- **The coordinating company** for the test ecosystem => enthusiastic, international connections, promoter, no own business interest...
- **Business possibility analysis** → novelty, competencies, niche...
- **Triple Helix approach** → Open innovation actions and shared research facilities/environments
- **A wide variety of test facilities** → From closed indoor areas to living labs



A Finnish example: TrafficLab

#liikennelabra

#trafficlab



Finland is a traffic lab

- The goal of Finland is to be one of the best places in the world to develop and test digital transport services.

Emphasis on experiments

- The Traffic Lab's priorities include new service concepts for mobility, traffic automatization, the Internet of Things, as well as pilots

Aiming for the global market

- a channel for internationally launching services, and to promote export in cooperation

- **International Finland-window**

- The Traffic Lab opens a door to the world and also to Finland

Living Lab Bus – Open innovation and test platform

Innovative electric buses serve as a test platform in real use environment.


Service and technology developers and providers are welcome to develop and test their solutions.

Real context and references – co-development and business ecosystem



aurora

www.snowbox.fi



Region Fell Lapland will be in the international forefront in the automatization of transport systems by offering a **unique arctic test site – the “[Snowbox](#)”**.

1. Arctic test sites for intelligent transport automatisation

Technology test site in real winter conditions with broad selection of services

4. Mobility as a Service

Flexible and affordable mobility services for tourists and locals without car dependency

2. Digitalised transport infrastructure and connected cars

Accurate mapping of road infrastructure and signage enabling connected driving and analytics for traffic management

3. Intelligent infrastructure asset management

Data collection and refined traffic management and maintenance processes in the era of automatisation



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ANY
QUESTIONS
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