

Tomorrow's Elastic
Adaptive Mobility

TEAM Project Presentation

1st MyWay Collaboration Workshop

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Vision



Achieving always optimal mobility conditions.

Targeting

- **Users:** Encouraging collaborative behaviour of travellers and drivers.
- **Infrastructure:** Making infrastructures adapt pro-actively and in real-time based on user needs.
- **Communication technologies:** Combining automotive communication systems with cloud technologies.

Mission



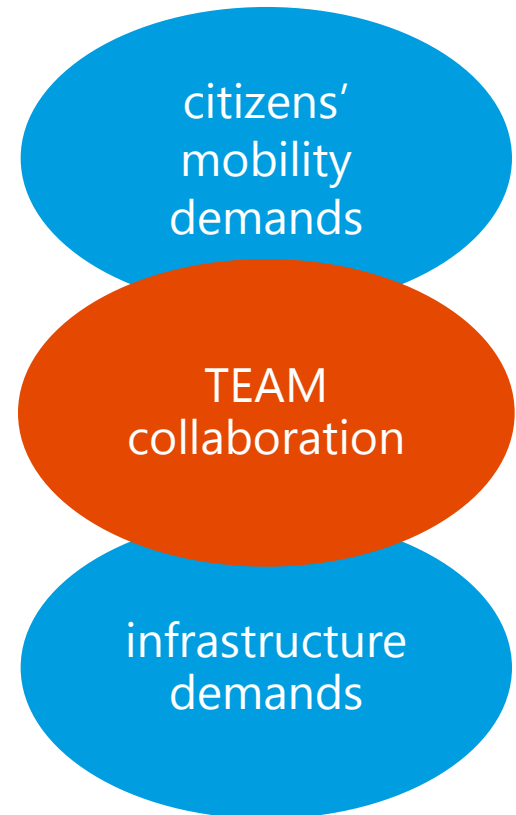
Turn static into elastic mobility by balancing needs.

Collaboration is the key concept.

It extends the cooperative concept of vehicle-2-x systems to include interaction and participation.

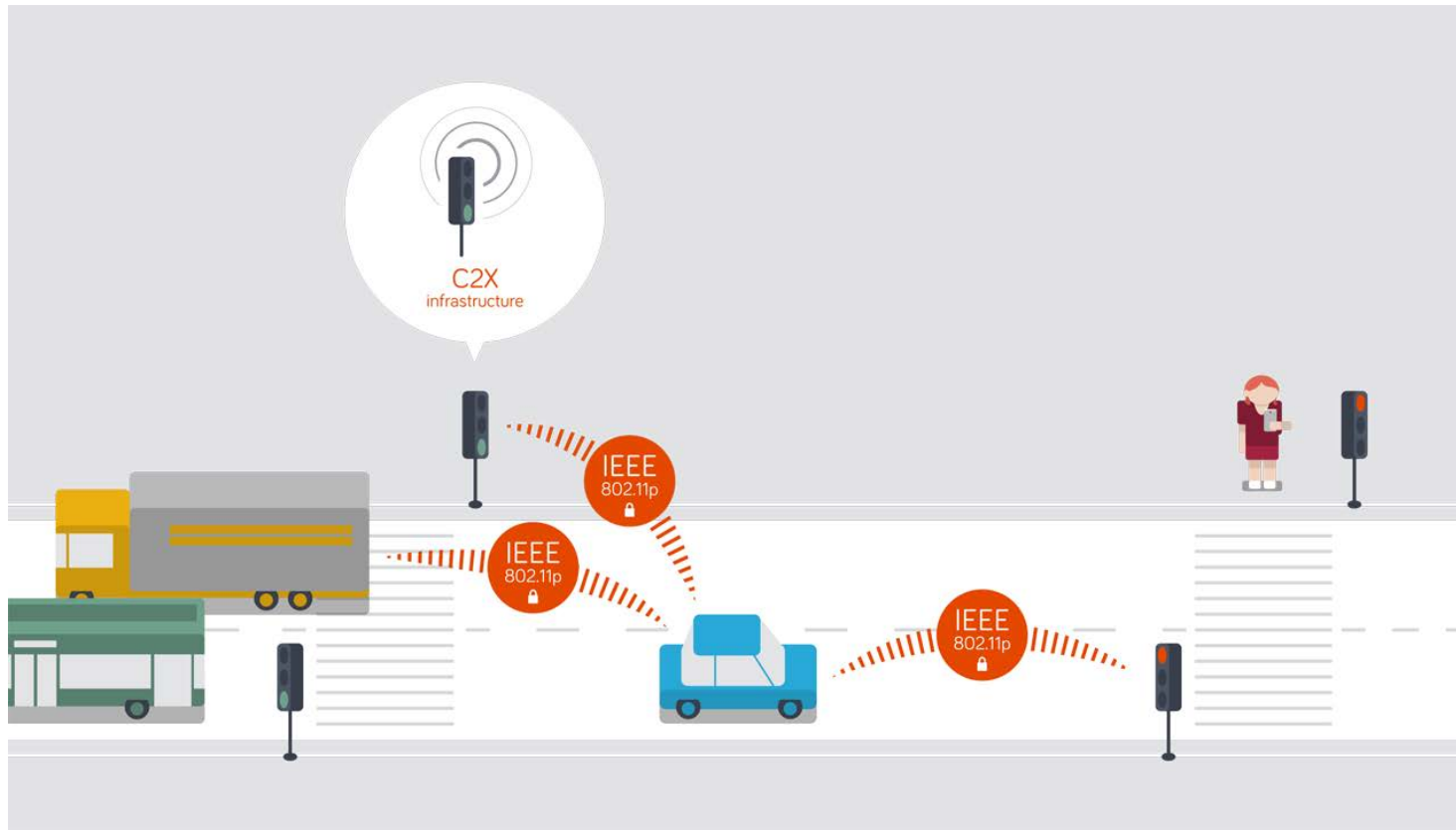
Make travellers and drivers, vehicles and infrastructure act as a **TEAM**

- Adapting to each other
- Adapting to the situation



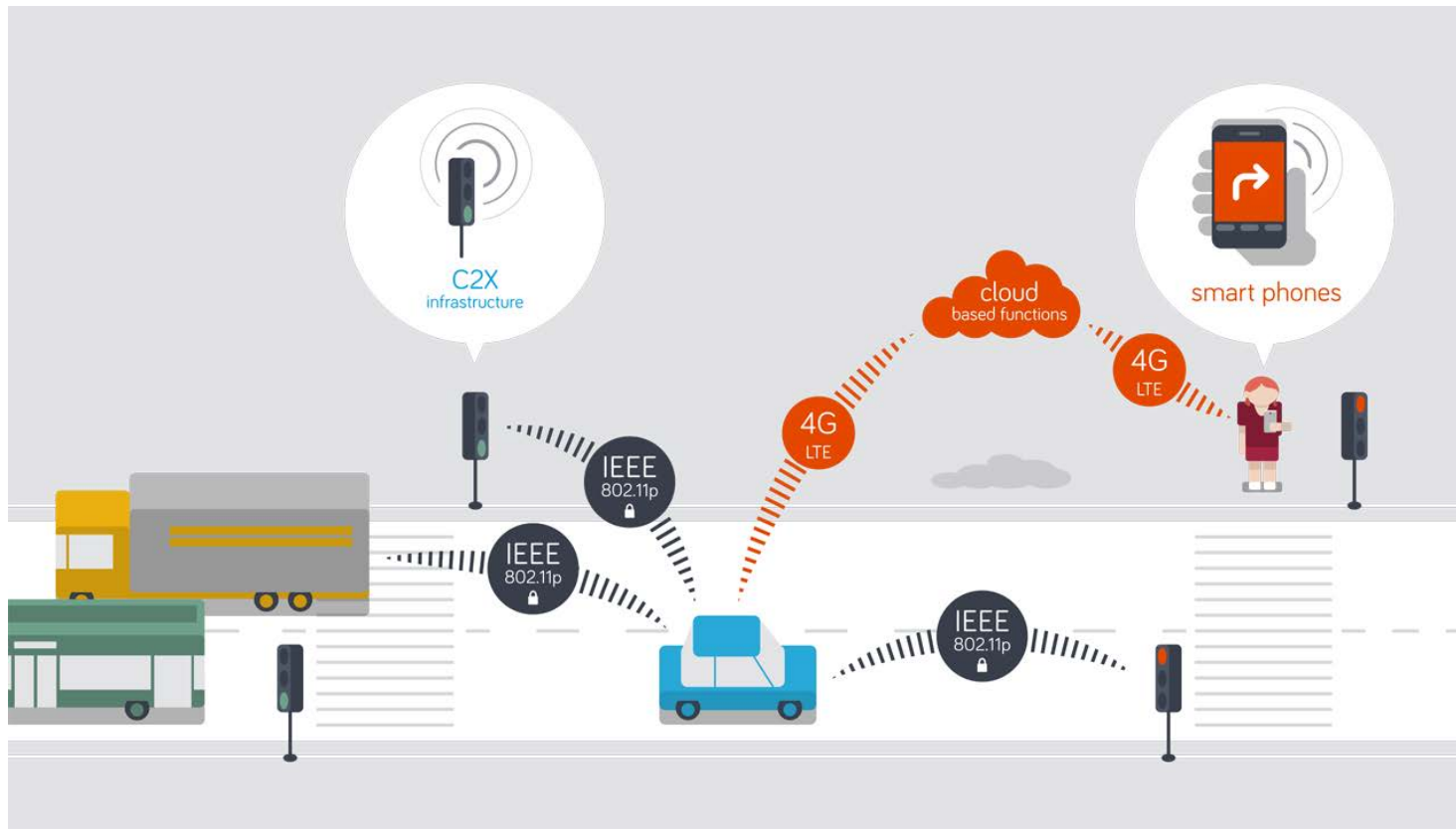
Motivation

Vehicles and infrastructure already communicate...



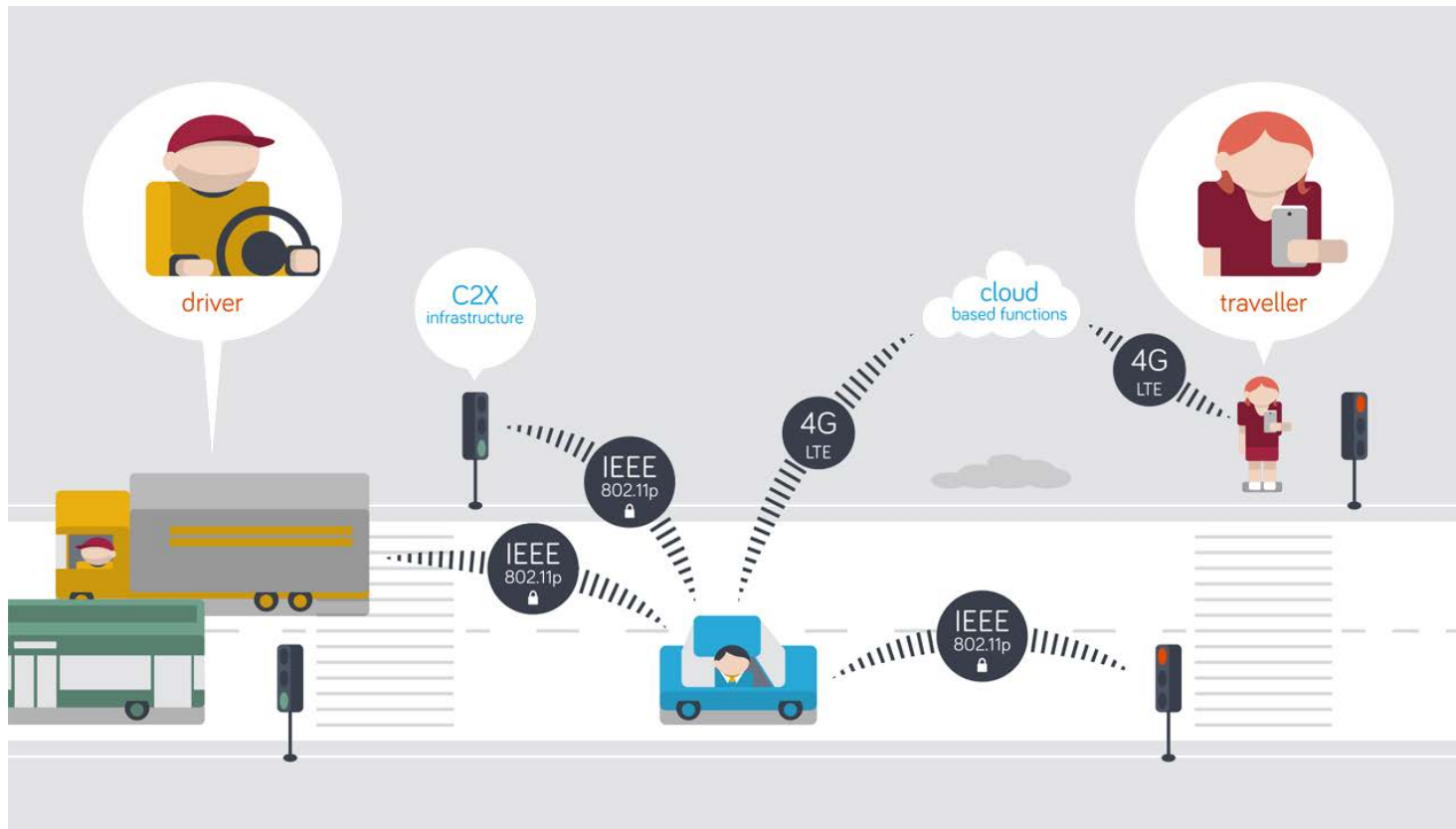
Motivation

Smart phones and cloud services will be connected, too.



Motivation

Next: Collaboration integrates and balances all stakeholder needs.



Four paradigms define the research concept.

(1) Elastic mobility

means a shift from a reactive traffic management to an permanent adaptive and collaborative traffic management.

(2) Window of interaction

refers to the real time needs of human decision making process between 5 seconds and 5 minutes.






(3) Participation

considers the needs and behaviours of road users in the technical systems of intelligent transport solutions.

(4) Collaboration

extends the cooperative concept of vehicle-2-x systems by integrating the user into a highly interactive and participatory network.

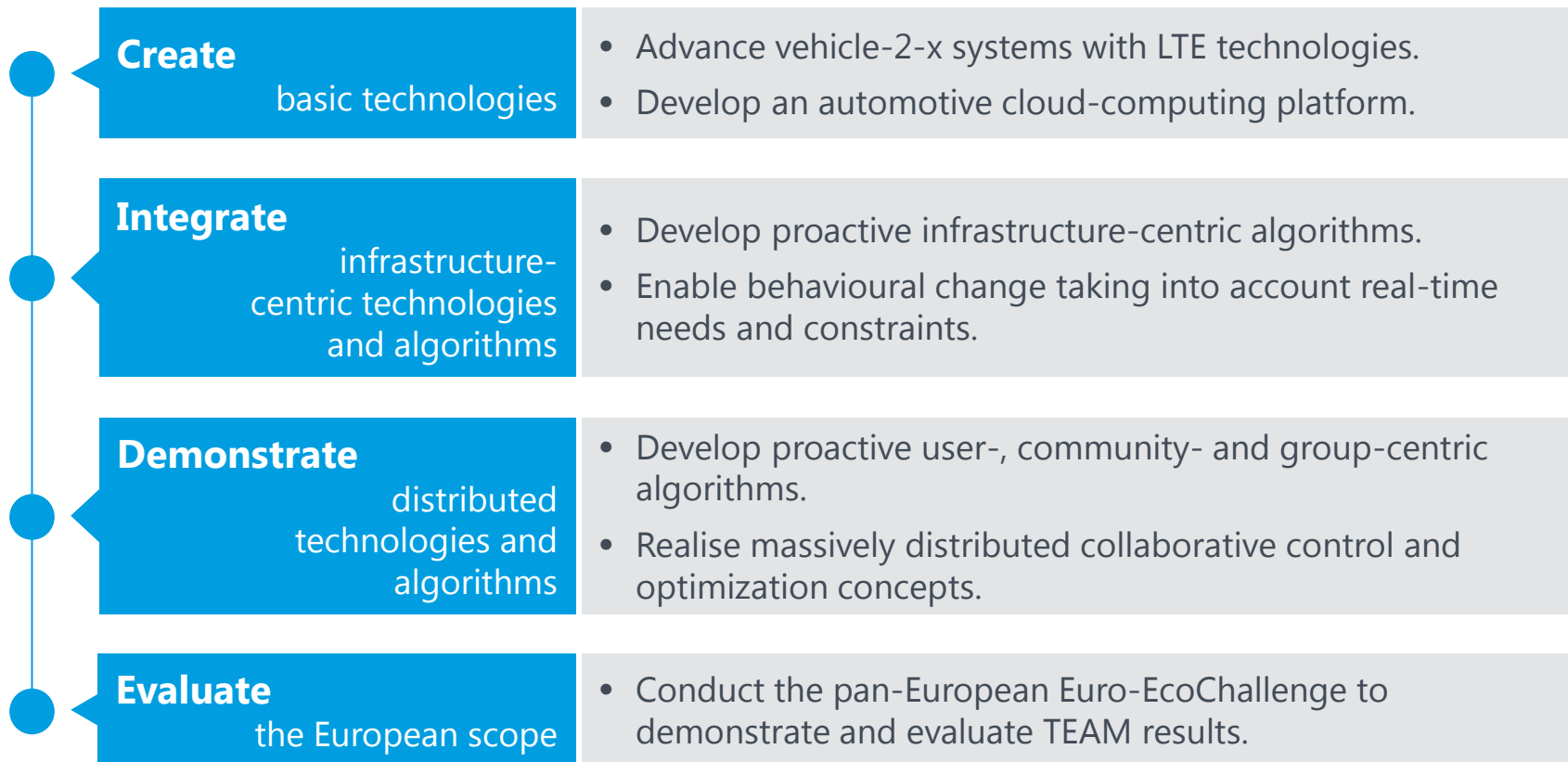
Building the elastic mobility management system.

	Communication	Converged communication channels.
	Infrastructure	Distributed sensing and “best effort” balancing of needs according to local policies.
	Data	Consolidated sensor input available in real-time.
	Applications	Novel collaborative applications interconnected through automotive cloud.
	Traveller/driver	Active participation and collaboration.

Objectives and work plan



Technologies and users interlinked.



Stakeholders are essential for the key concept of collaboration.

TEAM stakeholders

- can detail use case identification, requirements and state-of-the-art analysis,
- establish a continuous dialogue to validate and improve designs and development,
- support the final evaluation,
- support deployment and exploitation.

The stakeholders are

- researchers/ related projects
- car manufacturers
- suppliers
- telecommunication providers
- road infrastructure operators



Expected results



Improving transportation safety and efficiency, Implementing environmental aspects

- Novel distributed sensing and “best-effort” balancing algorithms.
- Cloud-based local dynamic map services and associated communication technologies.
- Off-board telematics services and in-vehicle smart phone integration.
- Coaching mechanisms for safe and green driving and travelling.

Applications

Infrastructure.

(1) Collaborative urban monitoring and ad-hoc control

can monitor urban roads and recognize incidents or special events while driving

(2) Collaborative co-modal route planning

provides end-users with alternative routes and transportation modes based on their preferences

(3) Co-modal coaching with support from virtual/avatar users

creates a “virtual” coach (avatar) for end users- comparing true costs, travel times, CO2 emissions and more



Applications

Infrastructure.

(4) Collaborative smart intersection for intelligent priorities

optimizes traffic flow at intersections, includes priority to certain vehicles (i.e. buses), synchronization of traffic lights, speed recommendations

(5) Collaborative public transport optimization

works towards adaptive bus scheduling, based on input from travellers (transmitted via Smartphone)

(6) Collaborative dynamic corridors

establishes corridors i.e. for heavy vehicles (certain lanes could be reserved for trucks to deliver goods more efficiently)



Applications

Travellers & drivers.

(4) Serious game and community building

creates a gamified environment where drivers and passengers can share their information, learn proper driving styles, receive incentives to support collaborative behaviour

(5) Collaborative eco-friendly navigation

merges all information (from road users, traffic data, infrastructure) to create collaborative eco-friendly routing and navigation



Infrastructure stakeholders' involvement



Including major municipalities from the beginning.

Germany – Berlin

Co-modality test in the large scale public transport system and urban traffic management applications.

Italy – Turin and Trento province

Verification of the TEAM service continuity for the travellers and drivers community.

Sweden – Gothenburg

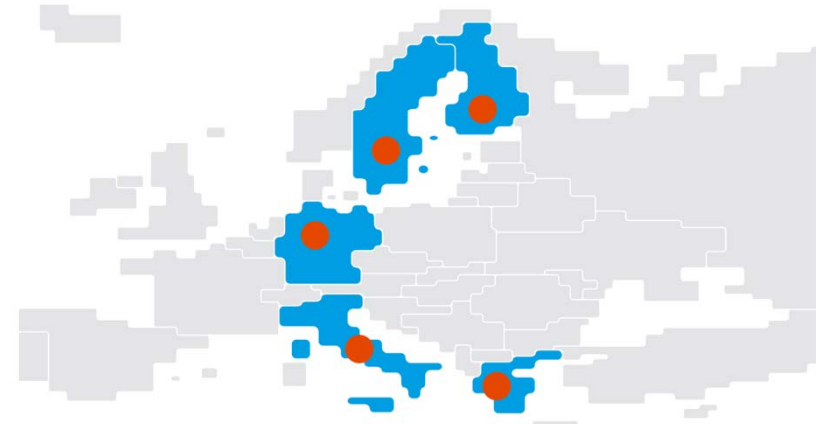
Trials of interurban applications and vehicle to vehicle communication.

Greece – Athens and Trikala

Test and demonstration of all FLEX applications.

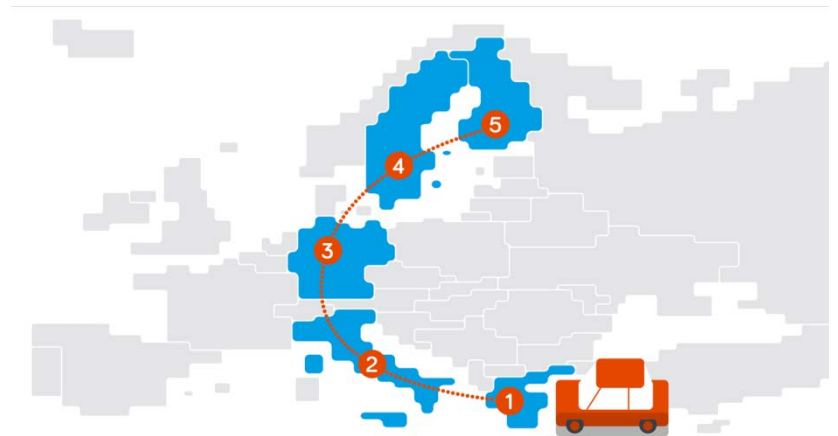
Finland – Tampere and Helsinki

Integration of DIALOGUE applications into real world infrastructure data.



The test set-up for components.

- Technology and performance test of all components and applications.
- Instructed users will test the TEAM developments.
- Challenges for TEAM application users (mainly drivers and travellers) to demonstrate the behavioral changes.
- Demonstration of results



Work structure

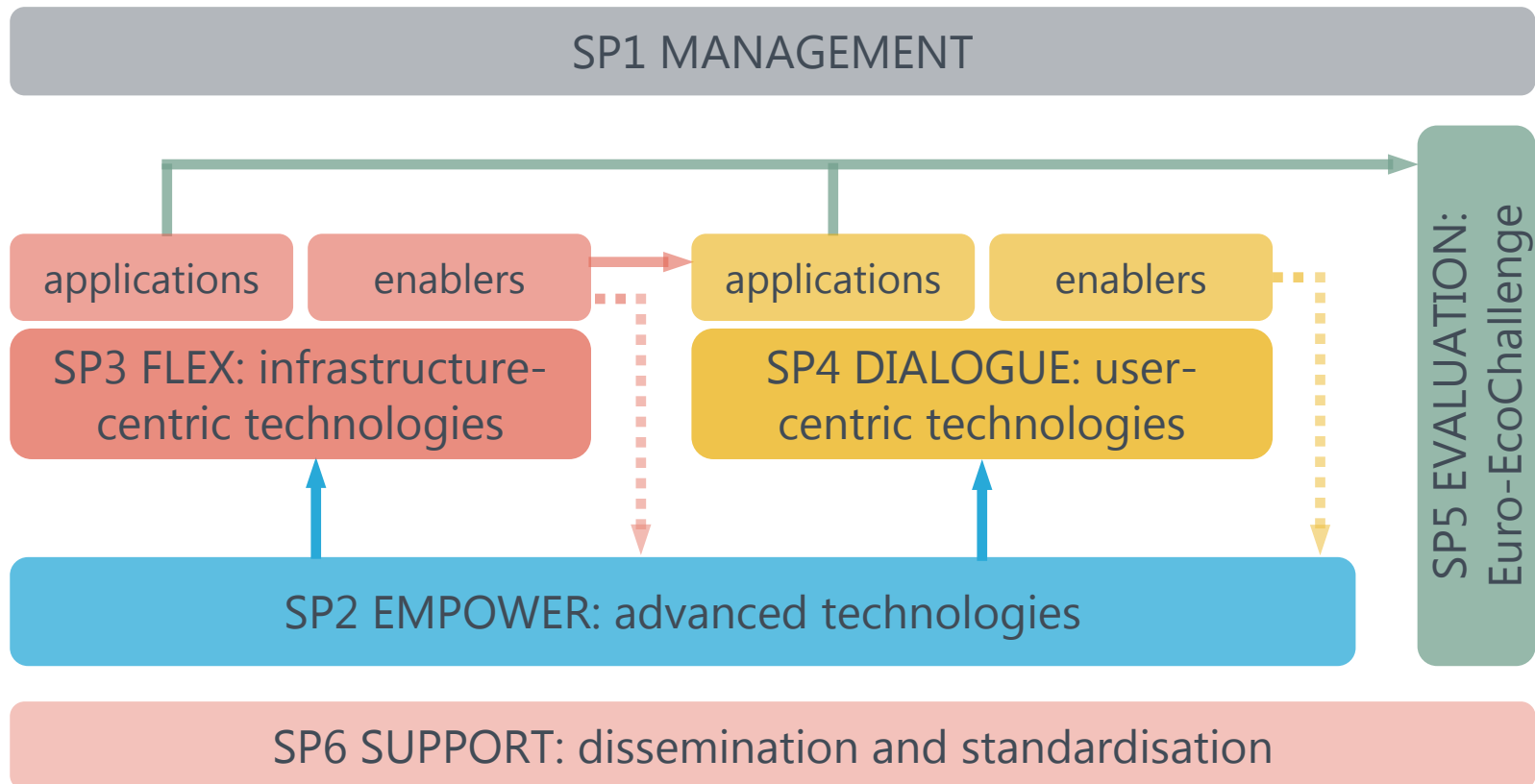
TEAM



Work structure

TEAM





Milestones and timeline



Team facts



Duration: 48 months
November 2012 – October 2016

Total budget: 17.1 m€

EU funding: 11.1 m€

Coordinator: Fraunhofer FOKUS, Dr. Ilja Radusch

Consortium: 28 partners
7 support partners

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by the European Union



Consortium



Automotive



ICT



Intel Mobile Communications



Infra-structure



SWARCO MIZAR S.p.A.



SWARCO TRAFFIC SYSTEMS GMBH

Research



Other



TEAM collaborations



Selected liaison and interaction partners and projects

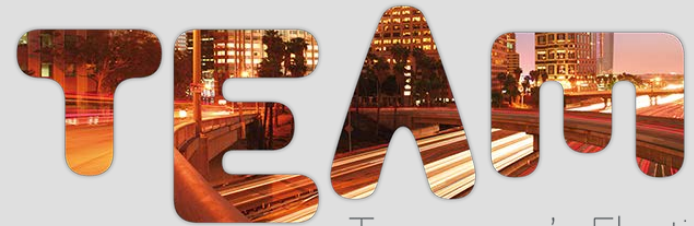


Thank you!

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Backup



Project structure



Subproject	Tasks
SP1 MANAGEMENT	Project coordination
SP2 EMPOWER	Basic technologies (e.g. advancements in communication technologies and cloud-based services) to realise collaborative mobility
SP3 FLEX	Infrastructure-centric technologies and algorithms for elastic mobility
SP4 DIALOGUE	Distributed technologies and algorithms to realise elastic mobility
SP5 EVALUATION	Conducting pan-European Euro-EcoChallenge
SP6 SUPPORT	Dissemination, exploitation, business modelling, stakeholder forums