Collaborative TEAM

Session: Multimodal optimization modelling

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TEAM objectives

Tomorrow's Elastic Adaptive Mobility

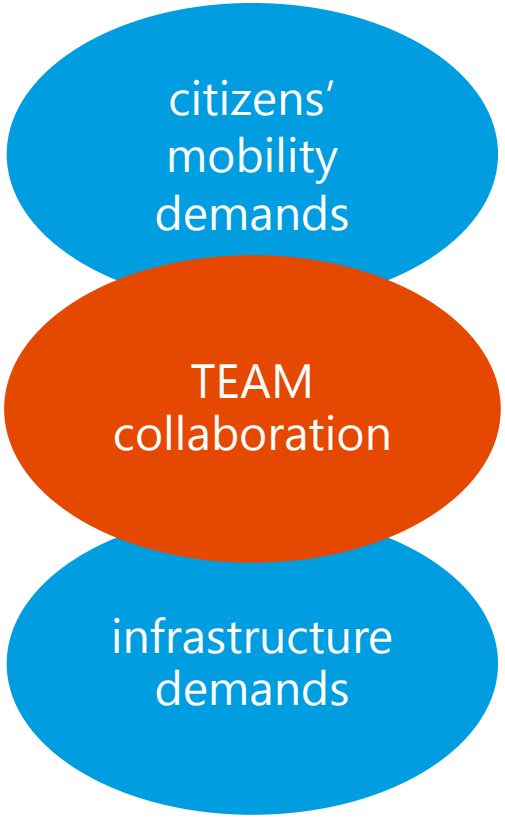
Turn static into elastic mobility by balancing needs.

Fostering **collaboration** is the key concept of the TEAM applications.

Extend the concept of cooperative 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



Co-modality in TEAM

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Example TEAM applications

(1) Collaborative co-modal route planning

- integration real time conditions (e.g. pollution sensor data, traffic density), historical traffic info and user centric demands and constraints
- provide end-users with alternative route choices and transportation modes based on balancing all user needs for ad-hoc control

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

- Co-modal real-time route recommendations that consider environmental footprint costs
- Offering travellers information about most optimal travel mode.
- Virtual avatar provides coaching feedback by comparing actual user behaviour with the suggested optimal behaviour

(3) Green, safe and collaborative driving serious game and community building

- promote proper driver behaviour by providing a contest and incentives
- Integrated with all other TEAM applications

TEAM approaches

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Approaches

- Co-modal routing: Traffic network throughput optimization and generation of travel recommendations using latency functions (relationship between load and throughput per link)
  - Utilize volatility in traveller/driver needs, i.e. avoid travel time optimization
- Feedback control loops for real-time traffic optimization incl. **traveller/driver coaching**
- For the coaching and assessment of the individuals: **serious gaming**
  - Assign a cost in the sense of marginal cost incurred by someone behaviour, i.e., how much does the social cost (the sum of all drivers' travel times) increase due to someone route or mode choice. This we could compare to the marginal cost incurred by the proposed route.

Status

- Required empowering components are being developed (e.g. TEAM LDM++)
- Cooperation with local public transport operators from TEAM pilot sites (Turin, Athens, Trikala Tampere, Gothenburg, Berlin) regarding deployment, demonstration, and assessment
- Large scale modelling and assessment is done using simulation environment VSimRTI

TEAM consortium

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Automotive

BMW GROUP Research and Technology

CRF CENTRO RICERCHE FIAT

VOLVO

ICT

COSMOTE our world is you

DELPHI

intel

here

intel Intel Mobile Communications

TELECOM ITALIA

RE:Lab

NXP

NEC

Infra-structure

TORINO Tecnologie Telematiche Trasporti Traffico

infotrip

RAMBØLL

swarco SWARCO MIZAR S.p.A.

e-trikala

swarco SWARCO TRAFFIC SYSTEMS GMBH

Research

Fraunhofer FOKUS

CREATE-NET

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

berlin

ICCS

[disi: aiti:] Daimler Center for Automotive Information Technology Innovations

Fraunhofer IAO

ellos

VTT

NATIONAL UNIVERSITY OF IRELAND MAYNOOTH

Other

eict

TEAM collaborations

Tomorrow's Elastic Adaptive Mobility

Selected liaison and interaction partners and projects

EUCAR
EUROPEAN COUNCIL FOR AUTOMOTIVE R&D

compass4D

AMSTERDAM GROUP
Get it in On The Road, Get it in the Vehicle.

DRIVE2

POLIS
EUROPEAN CITIES AND REGIONS NETWORKING FOR INNOVATIVE TRANSPORT SOLUTIONS

vmz
Verkehr Mobilität Zukunft

CONVERGE

BVG

THE CITY OF TAMPERE

MOBINET
Internet of mobility

Liikennevirasto
Finnish Transport Agency

simpli·city
The Road User Information System Of The Future

Applications

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Infrastructure.

(1) Collaborative pro-active urban/inter-urban monitoring and ad-hoc control

(2) Collaborative co-modal route planning

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

(4) Collaborative smart intersection for intelligent priorities

(5) Collaborative public transport optimization

(6) Collaborative dynamic corridors

Applications

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Travellers & drivers.

(1) Collaborative adaptive cruise control

(2) Collaborative eco-friendly parking

(3) Collaborative driving and merging

(4) Green, safe and collaborative driving serious game and community building

(5) Collaborative eco-friendly navigation