Wie steuern und organisieren wir automatisierte Mobilität? Europäische & Internationale Perspektiven!

Martin Russ; AustriaTech
Mobility Highlights & Traffic Management

- Central Systems as a „new real evil“ – limiting „individual autonomy of citizens“ (Ethic Discussions)
- OEMs and Telco‘s will manage future traffic… (EATA)
- It‘s for the sake of the user, society and business…really!? New Actors – new markets – new mobility (NEW = MORE!)
- SAE Levels as a new technical norm – what is above?
- A digitalisation paradoxon: when everything get‘s transparent – nobody is willing to plan and tell what he/she wants
From expectations towards experiences!
… Mobility Transformation Landscape
Service Thinking & Verkehrsmanagement

- Service
  - Transport Operations
  - Products/Vehicles
  - Infrastructure

Future Design Thinking

+ Access/Ownership

Products/Vehicles
Transport Operations
Infrastructure

TM

+ Financing
# C-ITS Platform – WP Traffic Management

| Mission | Enhance Road Traffic Management capabilities  
Look into opportunities to improve transport network performance while making use of connectivity and automation |
|------------------|---------------------------------------------------------------------------------------------------------------|
| Vision | **Cooperative Traffic Management**  
A Connected traffic system in which all elements act collaboratively towards safety, flow efficiency and emission reduction. |
| Strategies | 'end to end' Communication | 'end to end' Collaboration | 'end to end' Performance |

<table>
<thead>
<tr>
<th>Customer User</th>
<th>How to meet the Customer/User needs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process improvement</td>
<td>How can we improve our processes?</td>
</tr>
<tr>
<td>Learning and Growing</td>
<td>How can we learn and keep growing?</td>
</tr>
<tr>
<td>Financial</td>
<td>How to increase revenues and reduce costs?</td>
</tr>
</tbody>
</table>
Basic Concept

TM 2.0
Interactive Traffic Management

DATA COLLECTION
- V2I
- Traditional detectors
- Cloud
- Navigation systems

DATA PROCESSING
- Modeling
- Control strategies
- Routing
- UTC
- Fleet management
- Traditional signs
- Cloud
- I2V
- Navigation systems

IMPLEMENTATION

> 30 Partner

Public Authorities
- [Logos]

Research
- [Logos]

Users
- [Logos]

Traffic & Transport
- [Logos]

Service Providers
- [Logos]

Vehicle Manufacturer
- [Logos]

Supplier
- [Logos]

Associations
- [Logos]

http://www.tm20.org
KOOPERATION & TRANSPARENZ
1. Exchange of traffic management plans (TMPs)
2. Role of Automation
3. TM and links to other modes
4. The implementation of TM 2.0 in real traffic
5. Contractual agreement and schemes
TM Cooperation Levels

Level 0:
• TMP and FCD exchange, both optimise their own processes

Level 1:
• : display or discard the public strategic route after evaluation by SP, user decides

Level 2:
• compulsory display as option of public strategic route, user decides

Level 3:
• mandatory takeover of public strategic route. RA decides

Level 4:
• Load balanced routing, traffic will be distributed according to individual destinations and free capacity slots on different routes.
Creating the win-win!

• Invest in **instruments that support a TM policy** (next to or instead of ITS technology):
• **Rules/procedures framework** allowing SP’s and road users to **optimise** their own **network behavior**
• provide incentives to **stimulate desirable network behavior** (earning credits, gamification)
• **mandatory takeover** of public strategic route in exceptional cases (safety related)
C-ROADS - Day 1 Services

HAZARDOUS LOCATION NOTIFICATION
- Weather Conditions
- Road works warning
- Slow or stationary vehicle(s)
- Emergency brake light
- Emergency vehicle approaching
- Other hazardous location notifications

SIGNAGE APPLICATION
- Traffic jam ahead warning
- Signal violation / intersection Safety
- Green Light Optimal Speed Advisory (GLOSA)
- Probe vehicle data
- In-vehicle speed limits
- Shockwave Damping
- In-vehicle signage
INFRAMIX - Road Infrastructure ready for mixed vehicle traffic flows

Smart Local TMCs
Dynamic Maps

Localisation:
- road and lane
- reference points & landmarks
- Up-to-date HD maps
- Connectivity
DTI = Managing Transition …

**Graph:**
- Y-axis: Share of automated vehicles (0% to 100%)
- X-axis: Testphase, Implementation/Mixed Traffic, Full Scale Deployment
- Data points:
  - Testphase: today
  - Implementation/Mixed Traffic: 2020
  - Full Scale Deployment: 20xx

**Circle Diagram:**
- Connect-ivity
- Information Services
  - Traffic management
  - Maps
  - Positioning
  - Sensors & detection

Positive Impacts on Traffic
Road Classification – Operating Environment

Automation capabilities of the infrastructure
Automated data collection
Automated data processing
Automated decision making
Cooperation strategy based ond LOS
Automated update of digital infrastructure
Connectivity
Suitability to host specific automated vehicle types
Availability of highly accurate maps
Good lane markings condition
Dense location referencing points
Presence of segregated or dedicated lanes
Presence of physical and digital signs and messages
Interaction with VRUs

Refering to SAE levels
Refering to specific ADAS functionalities

ROE Level!!
The European TM Future

- CCAD will be the new normal
- We need a new strategy & tactics
- From traffic management to managing capacity & and incorporating "several mobility transitions"
- further work on organizational aspects & governance
- user centric TM

Important elements

- DTI, mikro-makro, modes & nodes, towards ODD
- & MaaS - link to user oriented service eco-system - without MaaS no real target group orientation, for MaaS without TM no SLAs
ITS Austria Arbeitsgruppe

Bis Herbst 2017 – Erstellung einer Roadmap

Im Fokus

- Dateninfrastrukturen (inkl. Qualität)
- Konkrete Anwendungsszenarien und Use Cases
- Verbindlichkeit und Zertifizierung (Fahrzeug, Infra, Service)
- Business Modelle
TM - a new story

- if vehicles become social entities - will their freedom serve human needs
- and if everything will be available everywhere for everyone - will there still be a market for mobility
- managing traffic → guarantee mobility (access) → balancing societal benefits
- ITS Austria Conference 2017 - 16.11.2017:
  - From living machines and functioning users - how to organize mobility in the future...
VIENNA 2018
A digital era for transport
solutions for society, economy and environment

16. - 19. April 2018
Transport Research Arena
Reed Exhibitions Messe Wien

http://www.traconference.eu