ICT FOR BETTER ROAD TRANSPORT IN EUROPE:
DG RTD PERSPECTIVE

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ICT FOR CONNECTIVITY AND AUTOMATION: THE NEXT REVOLUTION

- Major trends that are expected to shape the future of road transport and mobility, with huge market impact
- Rapid development of automated driving technologies
- Will address major transport policy objectives, such as: safety, intermodality, energy efficiency, air quality, traffic congestion, etc.
- Automated vehicles can fundamentally change automotive industry (enable new "mobility-on-demand" services and innovative digital services)
- Bring (back) into the market categories that cannot or do not want to drive
- Perfect match with electrification, particularly in urban environments
- Cyber security is fundamental to ensure safety and acceptance
- A total of 300M€ EU funding in the 2014-2020 period for technology and demos
Engine control systems at the core of emissions and other issues
- Cycle recognition
- Bench recognition
- Undeclared Alternative Emissions Strategies
- Ineffective OBD
- Ineffective TPMS

Another series of scandals is emerging: this time it's customers and workshops that voluntarily reduce the effectiveness of control and aftertreatment devices, again effectively killing people
- Blocking EGR ducts mechanically or disabling by software (if not already done by OEMs)
- Modifying injection parameters
- Disabling the lambda sensor in TWCs
- Piercing or eliminating the DPF
- Disabling the injection of AdBlue
- Replacing the ECU or installing an additional "dongle" to increase performance and save on taxes

Tampering is a growing concern for national and local authorities, but there are reasons, some are not the customer’s fault:
- Pollution control devices can cause loss of performance, fuel or AdBlue consumption and therefore higher operating costs, maintenance problems (clogged/broken EGRs and DPFs, MOT failures)
- At the end of component life, replacement parts are too costly (1000-2000€ for a 100-200€ DPF)

Cyber security, or lack of it, is the crux of these new threats to air quality, ICT can solve it: full HW and SW protection to block tampering, while leaving full access by authorities: a specific topic is included in the 2018 call (but a lot more topics on issues related to CAD, many synergies possible)
Components need specific chips for functioning (E-motors, power electronics, battery)

SW essential to optimise electrified vehicles and make them a success with end users

- Powertrain control (including of course also brake blending and recuperation, normally not considered in powertrain)
- Vehicle control (climate, active suspensions)
- Battery Management Systems
- Sensors

Mobility as a Service needs advanced ICT solution, in combination to those from CAD, to make it the mobility means of choice in conjunction to other ICT tools to realise real multimodality

Smart navigation, combining all energy consumption related parameters (in particular altitude information), to maximise range and reduce travel time considering recharging stops

Charging control, guaranteeing sufficient range for the next day while allowing flexibility for grid management

ICT support of all these aspects widely funded in EU research projects
Electrific infrastructure needs several levels of ICT support

- Smart charging at home and in the office, to coordinate large numbers of slow charging points avoiding peaks
- Advanced fast charging, with convenience functions like reservation and interleaving
- Simplified payment and billing (no more multiple, incompatible cards and apps)
- Smart navigation simplifying long trips with multiple charges

Strong support for infrastructure research in the past (as we saw in previous presentations and sessions), continuing in the 2019-2020 calls

- LC-GV-03-2019 - User centric charging infrastructure
  - Pervasive cheap slow charging for cities and occasional ultrafast charging for long range travel
  - Optionally, on road charging if sufficiently mature for application
  - Including demonstration of the final solutions and their interoperability in multiple cities and TEN-T

- LC-GV-05-2019 InCo Flagship on Urban mobility and sustainable electrification in large urban areas in developing and emerging economies
  - Tool box for advanced management strategies towards private and public electric mobility
  - Includes both vehicles and infrastructure
  - Comparative demonstration activities and pilots in the field of electro mobility in cities
  - Multilateral International Cooperation encouraged, in particular Asia (e.g. China, India,…), CELAC (e.g. Brazil) and Africa
  - Scale up concepts for the demos (sustainable planning, financing plans, replication in other cities).

ICT is the key to an attractive and streamlined EV user experience
RESEARCH IS NOT ENOUGH: EU FUNDING OPPORTUNITIES FOR DEPLOYMENT
Alternative Fuels Infrastructure Directive: the masterplan

Interaction of various aspects covered in the National plans and resulting impacts

CEF financing mostly for fast charging projects between MSs, on-road charging not yet implemented, might be in the future if sufficiently justified
2017 analysis of National plans - Electricity

- Estimated 2020 EV shares from 0.1% to 9.2% in the different MS.
- Current attainment level (ratio of current and 2020 estimated EV stock) 0.2-83%.
- Only seven NPFs define a target that would ensure at least one publicly accessible recharging point per 10 EVs for 2020.
Analysis of NPFs - Electricity

- The current attainment level for the 2020 targets of publicly accessible recharging points ranges from 1% to 100%.

- Much better results for the TEN-T core network.
Connecting Europe Facility Support: some examples

This EU funding mechanism is supporting many Fast Charging networks

- In Austria and Italy
Connecting Europe Facility Support: some examples

This EU funding mechanism is supporting many Fast Charging networks

- In Scandinavian countries
Connecting Europe Facility Support: some examples

This EU funding mechanism is supporting many Fast Charging networks

- In Austria, Germany, Slovenia, Slovakia and Croatia
Connecting Europe Facility Support: some examples

This EU funding mechanism is supporting many Fast Charging networks

- France
Connecting Europe Facility Support: some examples

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- Germany and Nordics
Connecting Europe Facility Support: some examples

This EU funding mechanism is supporting many Fast Charging networks

- The British Islands
Possible updates of the AFI Directive

- Conventional/fast charger deployment close to minimum EU coverage (thanks also to bigger batteries)
- ICT and political will needed to streamline payment (including cash/credit card) and to lead to a common and pleasant user experience, particularly when EV penetration will increase
- Even for EVs, many NPFs show low ambition, very few define sufficient corresponding AFI targets
- Support measures and their implementation too low to ensure that national targets and objectives contained in the NPFs are reached
- Interoperability of ultra-fast charging is fundamental, but 400/800 V split and no/few compatible cars
- Fast AC/DC split added costs and finally AC has low penetration, a real waste: a case for euthanasy?
- CEF a possible funding mechanism for initial field testing of on road charging, possibly for closed business cases (A to B lines with captive fleet)
- Good justification needed given maturity and current low EV penetration in most countries (EV leaders go ahead?), and huge chicken-egg problem, particularly for HD vehicles
- Outside closed business cases, ICT is key to billing
- Market fragmentation at EU level and even within MS is a risk for several technologies (see above)
- This risk is even higher for on road charging, as competing technologies emerge, interoperability is key
- A basic choice between conductive and inductive, and top and bottom contact line is needed early on
Thank you for your attention!
And see you at the H2020 infoday
on October 23rd in Brussels