Breakout Session III 1.
EVs and Personalization
NSF 2014 Transportation CPS Workshop

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Electric Vehicles (EVs)

- Vehicle-to-grid (V2G)

    – G2V while moving?

- Electrified shared mobility

    – Manage electrical charging stations.

- What can CPS do to increase acceptance and uptake?

    – Car renting and accommodate the rate

    – Control of driving electric vehicles

    – Use information available to improve energy efficiency

    – General car sharing strategy and energy efficient

Electric Vehicles (EVs)

- Driving range.
  - Internet of things – integration into solving congestion, and demands
- Energy efficiency:
  - Use information to optimize the energy use.
  - Balance the demands of electricity.
- Model and balance the use of electric vehicles in transportation services and operation.
- Long-term sustainability: more alternative energy sources needed, issues
  - May impact peak in the usage
  - Cost: is it really efficient?
  - Car can store the energy and feed back

Personalization

- Vehicle personalization

  - Presentation of data to operator

- How can a Smart Cities interact with an on the go society

  - Societal benefits

  - Vehicle benefits from social data input

  - User on demand approach

  - Social-aware transportation systems (physical versus social sensors)

- Others

Personalization

- Customize the feedback.

- Industrial standardizations differ. Guide lines and safety rules.

  - Understand to which degree the existing customization can cause issues to safety.

  - Customized add-on features shall not cause safety issues.

- Each user has different preference: additional constraints can be of personal choices.

  - Person who customizes should be in the charge.

- Full autonomy and completely customized driving experience.

- Adaptive control: monitoring and learning the behavior of the driver and adaptation.

  - Customize and optimization for individuals.

Personalization

- Customization should be extended to other devices.

    - Transfer profile by smartphone.

    - Personalized choices can be transferred between cars

    - Integrate gesture recognition cross platforms.

    - Standardization of control is also important. The users would prefer smooth transition between cars.

- Individual customization may impact high-level system performance.

- Public benefit.

- Concern for people with disabilities, e.g. customizable to secondary accelerator

- Research topic or manufacture concern?

Interdisciplinary Topics

- Use existing in vehicle sensors for other non-vehicle sensing purposes

    - Collect road inspection data -> improve road conditions network wide

    - Near-time sharing of sensor data for road conditions, etc.

    - Sensor platform for providing services, related privacy issues

- CPS meets Big Data

    - Processing near sensor, data reduction

- Others