

TECHNOLOGIES OF INTEREST (TOIs)

Electrified Roadways (E-Roads) or Electric Road Systems (ERS) have a long history



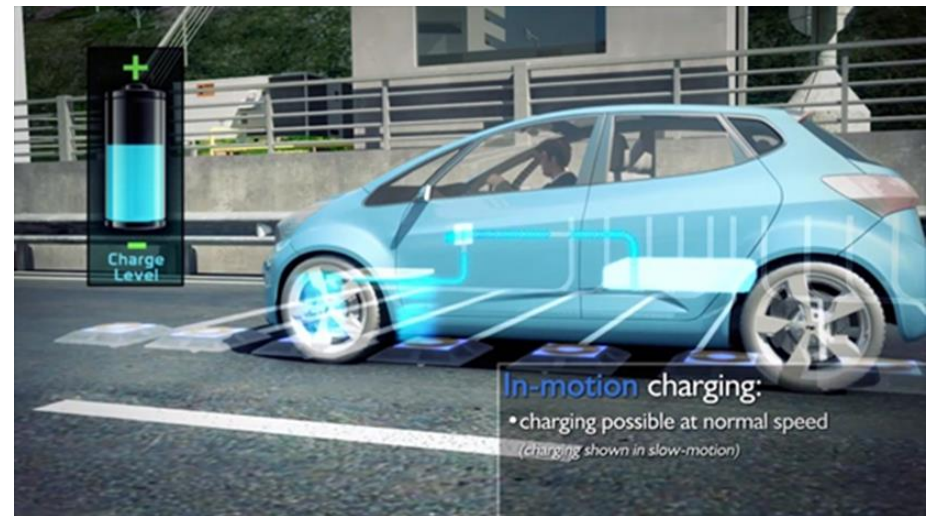
Siemens circa 1882 <https://en.wikipedia.org/wiki/Electromote>

- All technologies have an important role – we need a systems viewpoint
- Look for commonalities – subsystems, technologies & requirements
- Also looking for barriers and R&D Gaps (Specific to TOIs or common)

TOI: DYNAMIC WIRELESS

Dynamic Wireless Power Transfer (DWPT) a focus technology of Task 26 providing some of the motivation to this follow-up task

- Impact of emerging tech (both power/grid and controls) facilitates deployment to multiple vehicle categories
- Strong adoption potential due to multiple market service
- Technology level - High
 - Standards per vehicle category and safety
 - Interoperable technologies
 - Infrastructure cost and placement (identifying high use routes)



TOI: NON-ROAD CONDUCTIVE (OVERHEAD)

Most familiar and largest deployment history with new tech to expand legacy deployments and create new ones

- Advances in hybrid heavy vehicle technologies
- Accepted in some regions – Not in others
- Technology level – Medium
 - Standards and interoperable technologies
 - Infrastructure cost and placement (identifying high use routes)
 - Variable voltage architectures (vehicle requirements and multivehicle on grid)



<https://www.trolley-motion.eu/trolley2-0/>



<https://press.siemens.com/global/en/feature/ehighway-solutions-electrified-road-freight-transport>

TOI: NON-ROAD CONDUCTIVE (SIDE)

New applications (and technologies) to enhance applications and provide for wide array of vehicles

- High power available at speed – 450kW @ 200 kph (124 mph)
- System integration into safety system
- Technology level – Medium
 - Standards and interoperable technologies
 - Infrastructure cost and placement (identifying high use routes)
 - Vehicle integration and control



T Tajima, H. Tanaka SAE Technical Paper 2018-01-1343, 2018

TOI: IN-ROAD CONDUCTIVE

Can new technology enable a new market/application?

- Addressing specific customer/system needs
- Technology level – Low
 - Grid interaction
 - Vehicle connection tech/lateral control & integration
 - Standards and interoperable technologies
 - Infrastructure cost and placement (identifying high use routes)
 - Pavement interactions / weather



https://www.autoevolution.com/news/how-swedens-electric-road-network-will-work-125145.html#agal_0