Technology with disruptive potential

Connected E-Mobility has the potential to revolutionize the ways people around the world live and commute. Many opportunities – such as a self-driving cars and automated subway trains – are currently being tackled by industry veterans, start-ups and researchers in pilot projects and model cities.

Revitalizing transportation infrastructure through technology

The New York subway system has been a transportation cornerstone for moving in and around the Big Apple for over 100 years, but accommodating increasing ridership on an aging system can be challenging. Relying on new Communications-Based Train Control (CBTC) technology from Siemens, the New York Metropolitan Transportation Agency (MTA) can now track where trains are located, enabling more trains running safely together and resulting in less time waiting at the platform.

Intelligence is spanning commuter lines in New York all the way to freight rail across the U.S. A new software platform called RailFusion can predict where a railroad might have an issue and fix it remotely before it even becomes a problem.

New infrastructures for connected and autonomous vehicles

next47 will foster technologies that shape the future of E-mobility – starting with the safe, fast charging of batteries and programs to manage charging infrastructures. Start-ups have been exploring charging technologies for several years now and the first pilot projects have already transitioned to commercial use. California start-up FreeWire partnered with next47 to create mobile charging stations that are increasingly driver-friendly. But there is more to come: imagine private charging communities, remote wireless charging and charging robots.

In the near term, commuters will also continue to see vehicles become more intelligent, but it won’t just be the cars themselves that will be smarter. Infrastructure like intersections and streetlights will have the ability to “communicate” with vehicles, buses, or even pedestrians to help drivers make decisions that can reduce congestion and increase safety. These types of sys-
tems are called "Connected Vehicles", a technology that the US DOT says could prevent 80 percent of unimpaired vehicle accidents.

Connected Vehicle technology is being deployed in the U.S. in New York, Tampa, and Wyoming, and these DOT-funded pilot projects will be the first real-world scenarios in which this technology will operate. In Tampa for example, Siemens is looking at technologies that will warn drivers when they’re taking a curve too quickly, how to coordinate signals and pedestrian crossings that respond immediately to traffic conditions in real-time, and bus operator alerts for when pedestrians may be in the crosswalk.

Autonomously driving the future
Autonomous driving has been a big focus for major mobility players, both new and old. Self-driving taxis and small buses can cover the “last mile” between a person’s home and the train station. But putting these autonomous solutions into place requires a revamped transportation infrastructure capable of directly transmitting all necessary information to every autonomous vehicle. Driverless subway trains with Wi-Fi control systems can transport more passengers in the same amount of time than conventional subways. This success relies on precise timing and the permanent calculation of braking distances and velocity to determine the shortest-possible distance to the next train. At the same time, each train’s control system uses its route profile to determine how much the train must accelerate in order to maintain the distance to the train ahead of it – all while using as little energy as possible.

E-Aviation? Closer than you think
Siemens and Airbus are currently working together in the field of hybrid electric propulsion – with the goal of demonstrating the technical feasibility of various hybrid/electric propulsion systems for aviation by 2020. Both companies will be making significant contributions into the project and have sourced a team of around 200 employees to advance leadership in innovation and the development of electrically powered aircraft.

For more information:  www.usa.siemens.com/innovationUS