

The future of transportation

Autonomous transportation systems

- Digitalization is set to revolutionize the way we get around. Getting quickly and efficiently from A to B is a given nowadays. But passengers expect more – and local governments, transport operators and industry have to respond accordingly.
- Today, innovation in the rail industry means, more than anything else, digital innovation. That is because digitalization makes it possible to fulfill the most urgent needs as regards mobility, namely maximum availability and throughput as well as greater comfort and convenience.
- Autonomous systems are a key aspect of digitalization in the transportation technology segment. They can help rail operators to make rail traffic more flexible and to convey more passengers. Now, digitalization raises the option of making autonomous driving systems available across the board.
- When it comes to autonomous transportation systems, different levels of automation are possible, including driver-controlled (no assistance systems), semi-automated, highly automated and fully automated (no intervention on the driver's part). Mass-produced fully automated systems are already available for the rail industry, e.g. the driverless metro in Nuremberg or the Paris Metro. In road traffic, by contrast, drivers have much more individual freedom and there are more factors influencing their actions; that makes the development of autonomous vehicles more difficult.
- Siemens is the world market leader for highly and fully automated metro systems, posting over €3 billion in new orders in the last five years. In the future, the automation trend is expected to extend to regional, long-distance and freight rail. Within the next four years, Siemens expects as much as 40 percent of rail traffic for the industrial, mining and freight segments to be operating in semi-automated mode; by 2020, around 30 percent of mainline transportation should also be semi-automated. Overall, the market for highly and fully automated systems is expected to grow much faster than other transportation markets. For example, while the mass transit market will grow by a total of about three percent between 2014 and 2020, the share of highly and fully automated systems within that market will rise from its current level of just over 30 percent to around 70 percent.
- That is why Siemens intends to exploit the competitive edge it enjoys for all levels of automation and extend its leadership position in the market for fully automated systems. With road traffic, the focus will be on what is known as intelligent infrastructure, which includes smart sensor networks and solutions that enable vehicles and infrastructure to communicate with each other. Here, Siemens can provide the hardware and software for vehicle-infrastructure communication.
- We are convinced that our solutions will enable us to grow faster than the market. For one thing, Siemens has over 160 years of experience in the transportation technology market; for another, with around 17,500 software developers on its payroll, the company has a strong software competence. Well before our IP-based communication architecture made reliable, high-availability communication possible between safe signaling components, we were already the leader for ISDN-based signal controllers. We were also the first in our industry to use data analytics to enable predictive maintenance. The high-speed rail line between Madrid and Barcelona, which is operated by Renfe,

The top of the page features a light blue background with a white Siemens logo in the upper left. The background is decorated with faint, scattered binary code (0s and 1s) and a stylized, semi-circular technical diagram on the right side, resembling a cross-section of a train or a complex mechanical part with various lines and arrows.

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Spain's national rail company, is a case in point. In order to ensure high levels of reliability, Renfe and Siemens founded a joint venture that deploys advanced data analytics in the trains operating on this line. To date, appreciable delays due to technical problems have occurred only once every 2,300 journeys.

- Siemens and major customers such as Deutsche Bahn, Germany's national rail company, agree on the need to promote autonomous driving systems. Deutsche Bahn, for instance, intends to beat automotive industry to the punch and launch an autonomous driving system before they do.

Further information

Press feature | Innovation at Siemens:

www.siemens.com/press/innovation-at-siemens

Picture of the Future | Future of transportation:

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