

Tomorrow's trains moving  
towards **smarter rail networks**

## How important is connectivity for players in the railway sector?

By 2021, train-based broadband services in Europe could generate total profits of around €2.351m. This figure includes income from Wi-Fi access charges and passenger upgrades, revenues generated by an increasing number of travellers shifting to rail transport, as well as operating-cost savings.

### Increasing demand for connectivity all around the world

- The UK and the US have the highest quantities of rolling stock deployed with Wi-Fi services in their respective markets (Europe and North America).
- In 2011, North America and Europe generated infotainment revenues of about \$159m. This is expected to increase to \$707m by 2021 with a CAGR of 20.9% in Europe and 22% in North America.
- On average about 1,800 trains a year will be equipped with Wi-Fi internet services between 2011 and 2020, worldwide.

### Generating Smart Information across the railway value chain

- **Maintenance:** Collecting, transmitting and treating real time data, 24 hours a day, 7 days a week and 52 weeks a year is a key issue for players in the rail sector.



- **Supervision & control:** Developing and improving a control-system solution for next-generation trains by optimising data collection.
- **Energy Management:** The key long-term drivers in the smart railway segment are linked to the impact of the rising awareness of environmental and sustainability issues on cost optimisation.
- **Passenger services:** Transport players are beginning to consider how "Big Data" retrieved from passengers' smart devices could be used to improve business models of

urban rail networks and timetables, as well as enable rail operators to predict ridership rates and thus enhance their offering.

### Passenger demand for a more intelligent travel experience

- 1/ On-board Internet & Entertainment Services
- 2/ Smart Ticketing
- 3/ Automated Fare Collection
- 4/ Door-to-door Services

• While travelling, passengers need to remain constantly connected so that they can benefit from an elaborated Infotainment System. In the rail segment, information technology is deployed through On-board Internet and Entertainment, Smart Ticketing, Automated Fare Collection and Door-to-door Services.

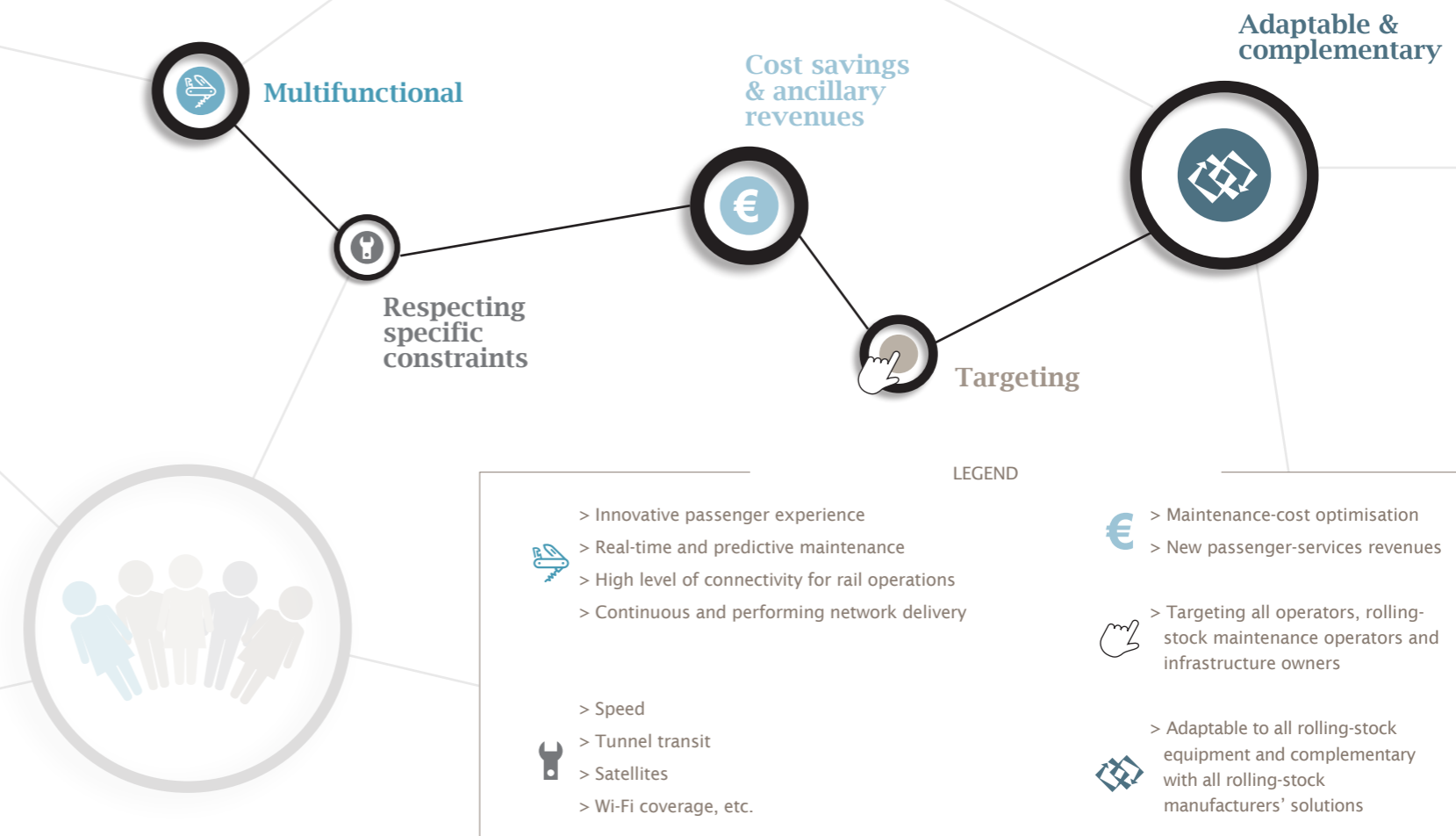
• These technologies harbour the next wave of business opportunities in the rail sector, worldwide.

### Operators' needs for accurate data access and exploitation

- 1/Need to meet market challenges and fulfil passenger demands in order to attract and retain passengers (so as to counter competition from the air and personal-car transport segments), as well as to create brand loyalty.
- 2/Need to cut costs through energy, maintenance-cost and spare-parts savings.
- 3/Need to enhance operational efficiency through supply-chain optimisation, signalling, PLM, etc.
- 4/Need to boost revenues through ancillary income.

## Providing multiple benefits by using smarter Big Data

Rail travel has to become a safer, cheaper and more efficient means of transport, as well as a source of revenue generation. This is why Big Data solutions have been designed to enhance business and the travel experience, surpass the existing silos of systems and processes, drive innovation and build performance.



Imagine a time when you will be able to rely upon smarter transportation systems and make more intelligent use of all railway-data assets through the renewal and upgrading of existing data systems.

## VueForge™, the Altran Machine-Driven Big Data offer

DATA	TRANSPORT	INFORMATION	SERVICES	BUSINESS
Connecting Machines	Transport Network	Industrial Cloud, Analytics & Intelligence	Product & Service Innovation	Business Model Innovation
Integrate and implement the technologies to connect machines and devices, sense and harvest the data including local processing and regulation management.	Provide the adapted network technologies needed to take advantage of the device/machine mesh and send data to an infrastructure, possibly Cloud-based.	Turnkey analytics and Business Intelligence solutions, including self-service analytics and ubiquitous access, built on public, private or hybrid infrastructures.	Create and enhance services with connected machines and address technology and usage thanks to ideation and rapid-prototyping technologies.	Create innovative business models for the new/enhanced services and ecosystem setup (including players from other industries).
SECURITY				
In-depth industry knowledge	Network excellence expertise	Key cloud partnership	Innovation makers	Cross-fertilization & ecosystem

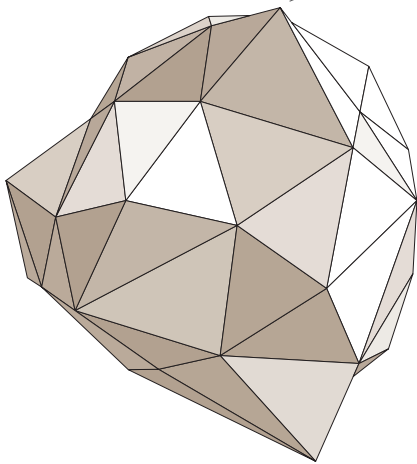
Connectivity is disrupting all industries, including the railway sector: new technologies such as Cloud and Big Data have created more integration challenges, giving rise to a host of new services, applications and business models. With billions of devices and machines soon to be connected, the key question raised by all of our clients is "what do I do with them?". In answer to this question, Altran has created VueForge™.

Altran is a unique player in this new pioneering field: as a global integrator, it has the means in terms of size and expertise to connect the embedded and the IT worlds by employing the right skills, some key in-house accelerators and appropriate partnership ecosystems. It is also able to guide its clients in drawing up new key value propositions and innovative business models that will enable them to reap the benefits of this connectivity boom.

With VueForge™, the Altran Machine-Driven Big Data solution, data is harvested from machines in a safe and secure manner, and transported to an infrastructure – possibly Cloud-based. The data is then transformed into information by employing relevant analytics and Big Data processing. VueForge™ also deals with developing new services based on the information thus processed, as well as business model generation and ecosystem implementation. In addition, because Altran is a global integrator, VueForge™ is supported by the Group's extensive network of partnerships, with members operating in areas ranging from Embedded-related activities, to the Cloud and Analytics segments.

Find out more at [intelligent-systems.altran.com](http://intelligent-systems.altran.com)

# INNOVATION MAKERS



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