Enhanced passenger experience through digitalization

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The Digital Challenge – Everything is Connected: The Passenger, the Operator, the Train and the Traffic
The Digital Challenge – Everything is Connected
The Passenger, the Operator, the Train and the Traffic

The passenger: Always connected on the journey
Passengers want to have online assistance, to work/consume, to be entertained and to communicate with the world – everywhere.

The (cost-) efficient and digitalized operator
The operator needs real-time supervision (e.g. fleet status, safety and security), real time data for optimization (e.g. utilization, energy) at any place.

The supplier – enabling with innovative Train IT
The supplier has to deliver flexible, connected and cost/energy optimized trains. An open and secure IT-infrastructure is the enabler.

The upcoming challenge: Autonomous driving
Autonomous driving changes the way of traveling and transportation – with completely new business models of operation.

Challenges and opportunities
- Digital Solutions
- SiMobility
- AlwaysConnected
- Passenger Info +
- iCCTV
- Train IT
Siemens offers answers to frequently asked questions of passengers

Which ticket should I buy?
Where do I need to get off the train?
Do I have WiFi connectivity on board and infotainment services?
Is it save to take public transport?
How much time do I have for my connection?
What other travel options do I have?
Siemens answers: Digital solutions for enhanced passenger experience.
Seamless passenger experience by intermodal and connected solutions from door-to-door

- **SiMobility**: Intermodal information and transaction solutions incl. handsfree ticketing “Be-in/Be-out”
- **Always Connected**: Connected solutions for passenger assistance and entertainment during the journey
- **PIS+**: Passenger Information and guidance System depending on passengers location and traffic situation
- **iCCTV**: Automated recognition solutions including detection of seat occupancy and wheelchair space availability
- **Train IT**: Fully integrated standard IT backbone for flexible and future-proof train application
SiMobility solutions improve passenger travel comprehensively

SiMobility Connect
B2B platform enabling information and transactions before, along and after the journey

SiMobility Flow
Proximity-based push information for passenger guidance and source of usage data for operators

SiMobility JustGo
Hands-free, on-the-go ticketing with BiBo (Be-in/Be-out) and CiBo (Check-in/Be-out) flavors
SiMobility makes travel easy, seamless and comfortable

Inform & Plan
Book & Pay
Travel
Manage

Travelers

Challenges and opportunities

Digital Solutions
SiMobility
AlwaysConnected
Passenger Info +
iCCTV
Train IT
SiMobility Connect: flexible base towards intermodal and mobile services

- **Mobility retailer**
- **B2B platform operator**
- **Service providers**

**Travelers**

- **Apps/Portals for travelers**
  - Customer portals, Traveler profiles
  - Billing, payment
  - Single authentication

**SiMobility Connect**

- Schedules, realtime info
- Routing, booking
- Ticket provision, transactions
- Billing, B2B clearing, ...

**Transport operators**

**Digital Solutions**

- Challenges and opportunities
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SiMobility provides guidance: contactless ticketing included
SiMobility for enriched mobility offerings

**Extend mobility offerings**
- Multimodal services

**Simplify travel**
- Best-price – hands-free

**Increase customer satisfaction**
- Confident passengers
- Single-mode offering
- Complex tariff systems
- Lost in mobility jungle

Challenges and opportunities  Digital Solutions  SiMobility  AlwaysConnected  Passenger Info +  iCCTV  Train IT
 Siemens as innovation partner for third largest rail operator in Switzerland

**Scope**

- Easy access to intermodal mobility services incl. routing
- Timetable (static, dynamic)
- Integration of BiBo functionality via mobile app
- “Best-price” module for optimization after public transport trip

Siemens has been selected as innovation partner for the development, implementation and operation of a sales platform – to go live at the end of 2016

- 13 mio passengers p.a.
- 125 km rail network in East/Central Switzerland
- 3rd largest rail operator in Switzerland

Challenges and opportunities

Digital Solutions  SiMobility  AlwaysConnected  Passenger Info +  iCCTV  Train IT
Velaro Turkey with digital **AlwaysConnected** solutions: Internet on board, passenger assistance and entertainment

**INTERNET ACCESS**
- AAA = Authentication, authorization and accounting

**ACCESSABILITY**
- In-seat displays
- On board monitors
- Mobile devices
- Satellite connection

**COMMERCE**
- Advertisement

**MOBILITY INFO**
- Coach related info
- Routes, platforms, connections

**WAYFINDING**
- Directions
- Moving map
- Station maps

**INFORMATION**
- Current news, weather info, announcements, driver view camera

**NEWS**
- Newspapers, RSS feeds

**VIDEO ON DEMAND**
- Plugin-free, payment, video games

**AUDIO ON DEMAND**
- Playlists, albums

**LIVE TV/Radio**
- IP-TV streams
- IP-radio streams

**e-READING**
- Books, magazines
Passenger Information System Plus – Imagine you are standing at the door and want to catch the next train

The all-in-one passenger system provides

- Realtime interference management of delays, malfunctions, incidents, etc.
- Guidance system for passengers before entering platform
- Simplified display of complex content e.g. network map, infrastructure
Intelligent Closed Circuit Television – iCCTV
Understand complex situations to increase passenger comfort

Intelligent CCTV means …

- Detection of occupation level – available seats, standing room and dedicated areas
- Analysis of passenger flows
- Automated alarming in case of safety threats
Intelligent Closed Circuit Television – iCCTV
Data analytics and algorithms for enhanced passenger comfort

**Occupation level**
- Detection of available seats and dedicated areas for wheelchairs, bicycles, baby pushchairs
- Dynamic prognosis of occupation level
- Display of available places on the train, on passenger assistance and conductor app and at the station

**Passenger flow**
- Passenger counting and movement analysis
- Active guidance of passengers using digital channels

**Safety threats**
- Detection of potential aggression or suspect objects
- Detection of vandalism on the train
- Automated alarming of driver, operators staff and control center

**Benefits for passengers**
- Easy and relaxed seat finding
- Higher safety and comfort feeling
- Faster boarding/leaving of trains

**Benefits for train operators**
- Higher passenger satisfaction can lead to higher utilization/revenue
- Utilization data help to better plan and optimize capacity and resources
- Shorter response time and more capable of acting in case of threats
Train IT: Separation in homologation and non-homologation relevant systems enables faster innovations

Subject of high safety requirements
- Traction Control
- Exterior Door
- Exterior Lighting
- Fire Alarm
- Operational State
- Power Supply
- Messages
- HMI
- Drive
- Break
- Door
- Supply

Subject of fast innovation
- Computing Capacity
- Infotainment
- Passenger Handheld
- WLan
- Content
- Train-Ground-Com.
- CCTV
- Passenger Information
- Passenger Counting
- Interior Lighting
- Reservation
- Computing Capacity

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Train IT brings innovative applications and saves costs over the lifecycle

Benefits of Train IT for operators

- A modular and standardized Train IT architecture for the operator and passenger IT network generates **significant cost savings over the whole lifecycle of a train**
- The new Train IT is the backbone to “plug-in” innovative rail applications (iCCTV, passenger information, WiFi, entertainment, diagnosis systems, etc.)
- Standard IT (HW and SW) components for the non-homologation relevant parts bring flexibility to upgrade and replace IT easily and quickly → lifecycle of IT/SW vs. lifecycle of a train
- Obsolescence and interoperability issues are “things of the past”
- Easy and future-proof to integrate 3rd party applications
- SW-updates can automatically be dispatched to and installed on the train (no manual updates via USB stick or CD Rom anymore)

Rhein-Ruhr-Express will be equipped with Train IT
Digitalization driving customer benefit
RRX exemplifies new digitalization offerings

Rhein-Ruhr-Express (RRX)

Digitally enhanced electrification and automation components
- Tailor made train setup based on optimized Lifecycle Costs (train, service and energy)

Digital services
- Smart data analytics for vehicle service
- Preventive up to predictive maintenance
- Bogie remote diagnosis

Vertical software/IT solutions
- Internet on board (WiFi)
- Passenger Information System
- Security for passengers (CCTV)

RRX will be equipped with innovative, digital solutions for passengers and operators

Best asset utilization
Guaranteed availability
Enhanced passenger experience
Thinking mobility further …

Thank you.