Siemens Digital Business

International Media Day

Deep dive curated portfolio Siemens Mobility

Railigent X and Mobility Software Suite X

Johannes Emmelheinz, Michael Frankenberg

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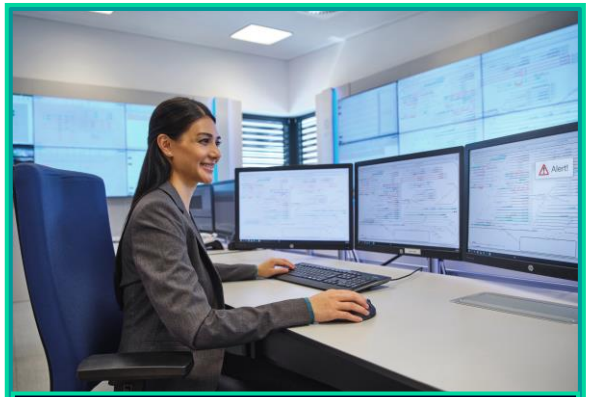
Challenges in the rail industry

 # Competitive passenger experience

 # Balancing supply & demand

 # Aging infrastructure & lifecycle cost



 # Network & vehicle availability

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Digitalization is the key lever to overcome rail industry challenges.

Challenges in the rail industry

- Growing demand for train & network capacity
- Aging infrastructure and assets
- Maintenance interval optimization
- Operations & lifecycle costs reduction
- Legacy IT systems
- Cyber security threats
- Increased passenger expectations
- Solving the first / last mile

Siemens Mobility's value promises

Optimized lifecycle costs ↘	100% system availability ↗	Maximized network capacity ↗	Optimized customer experience and processes ↗

Our approach for such an eco-system of digital solutions

Common architectures	Open & easy to integrate	Interoperable	As a service (aaS)

Railigent X
connects assets

Mobility Software X Suite
connects people

Siemens Xcelerator for mobility
the interoperable and connected ecosystem for everyone

Product & Services | Marketplace | Partner ecosystem | Community | Governance

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With an interoperable and connected ecosystem of digital solutions,
we can provide additional value to our customers

Mobility Software Suite X — Seamless intermodal travel for a sustainable future addressing passengers and intermodal operators

Railigent X — The solution to manage assets smarter addressing asset owner, operator and maintainer

Train Planning System

HACON

TPS.live
TPS.track-works
TPS.infra
Rail Timetable Planning
TPS.yard
Fleet & Crew Planning

Inventory, Reservation & Ticketing

sqills

Inventory Mgmt.
Yield Mgmt.
…
Mainline Ticketing

Mobility-as-a-Service

HACON
BYTEMARK
EOS.UPTRADE
PADAM MOBILITY

City ticketing
DRT
Journey Planning
Corp. Mobility Budget
MaaS Booking
Apps
Incident Mgmt.

Digital Train

Remote config-uration
Remote SW update
…
Remote diagnosis & monitoring

Digital infrastructure

Digital station solutions
…
Infra-structure in the cloud

Digital Services

Digital asset Mgmt.
Connec-tivity & data trans-mission
Cyber security services
Measure-ments & monitoring
Lifecycle intelligence
Operations intelligence
IT care services
Mainten-ance intelligence

Application Programming Interface

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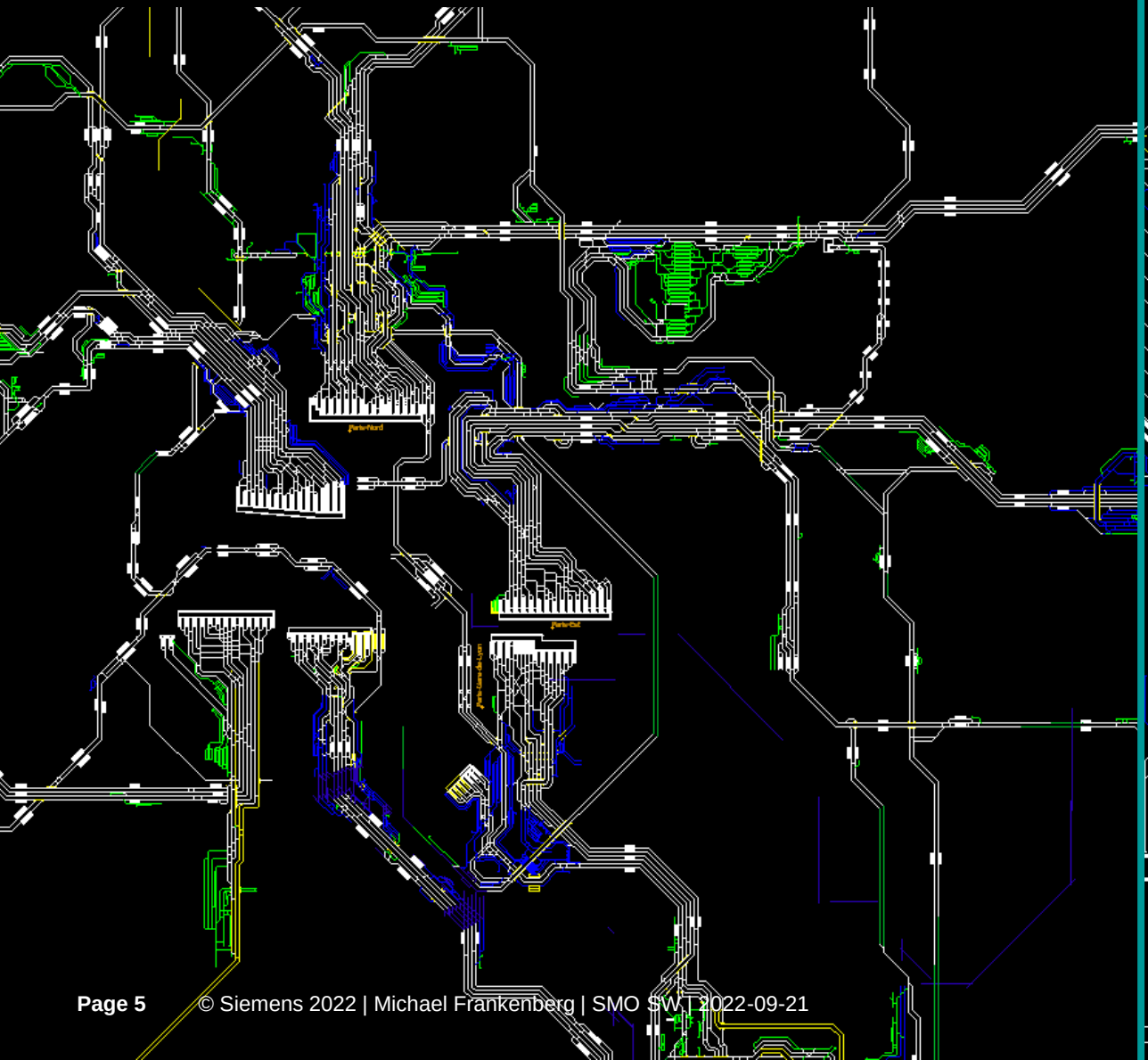
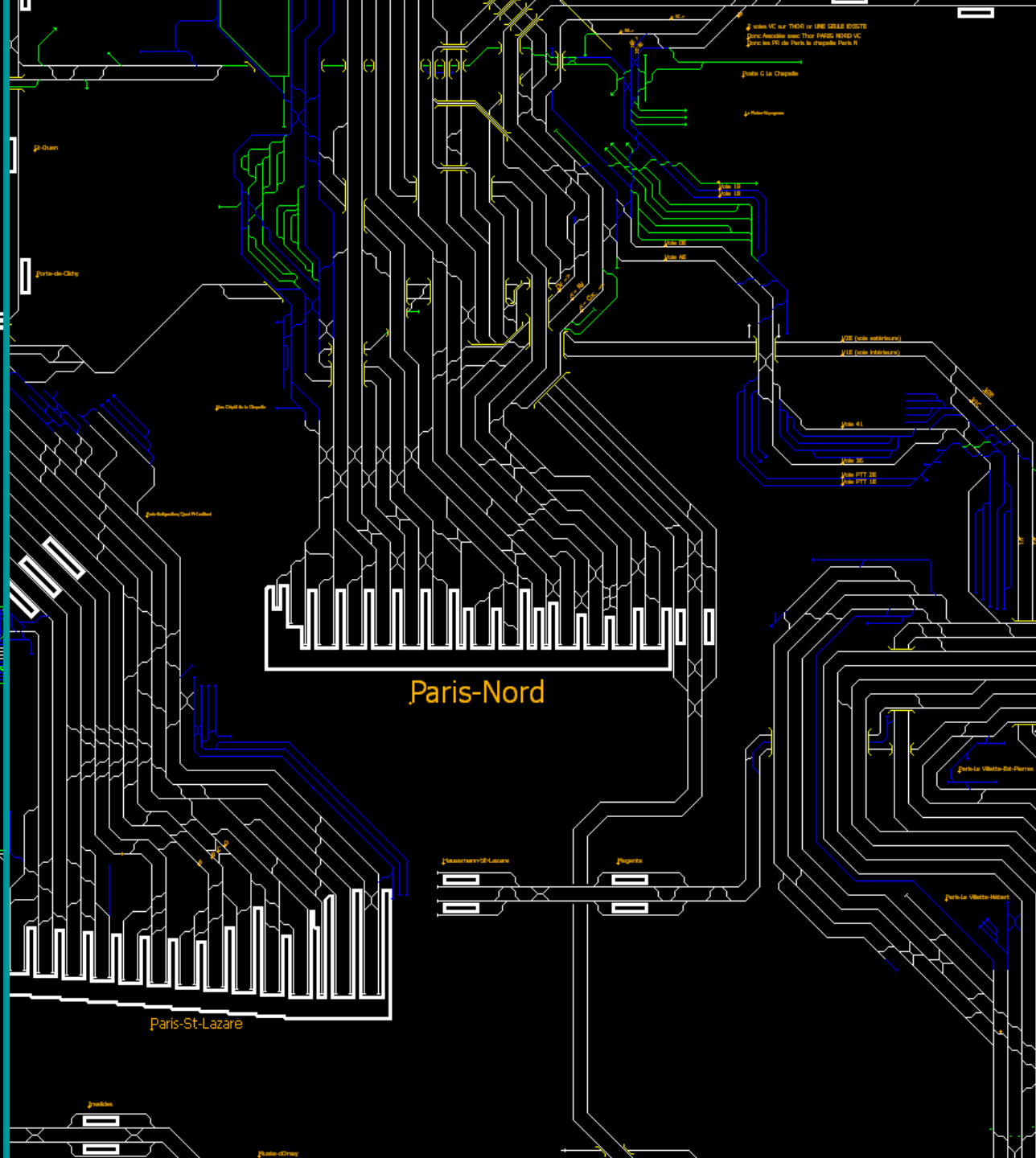
Let's get digital!





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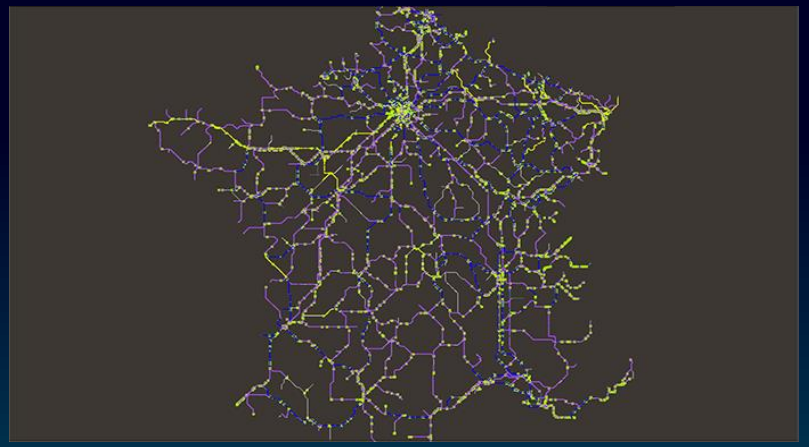
Digital workflow of train operations & timetables

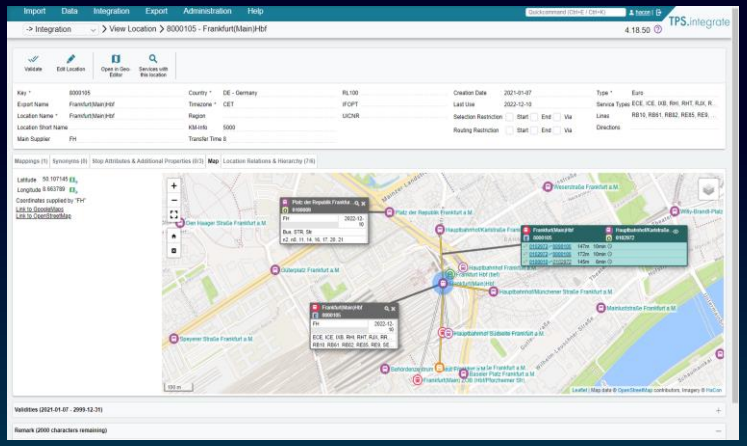
Infrastructure Manager

Network-wide path planning and capacity management



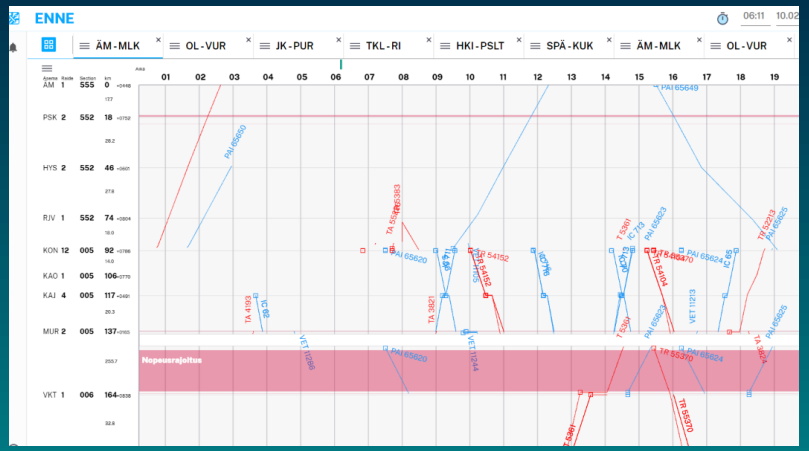
Timetable Management

Data management and harmonization for travel information systems



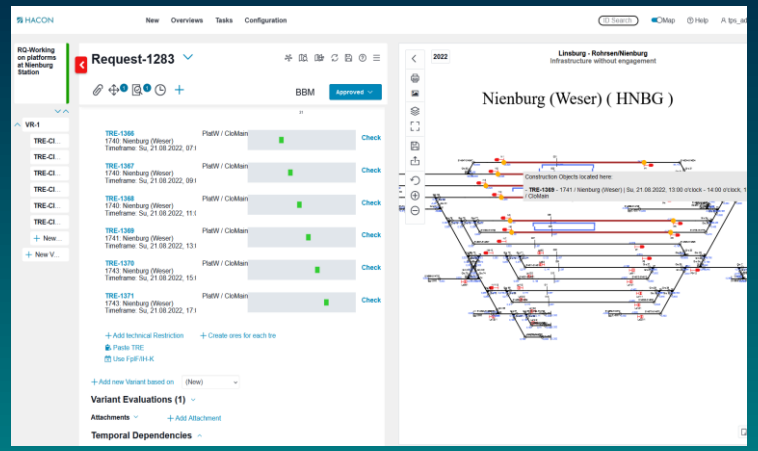
Train Operator

Effective traffic management in real-time



Trackworks

Coordinate construction sites across the network



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Let's enhance passenger experience!

Own Car

Mobility as a Service

All modes of transportation

Convenient access

Mobility orchestration

Integrated Demand Responsive Transport

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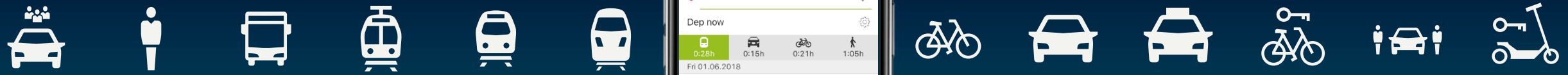
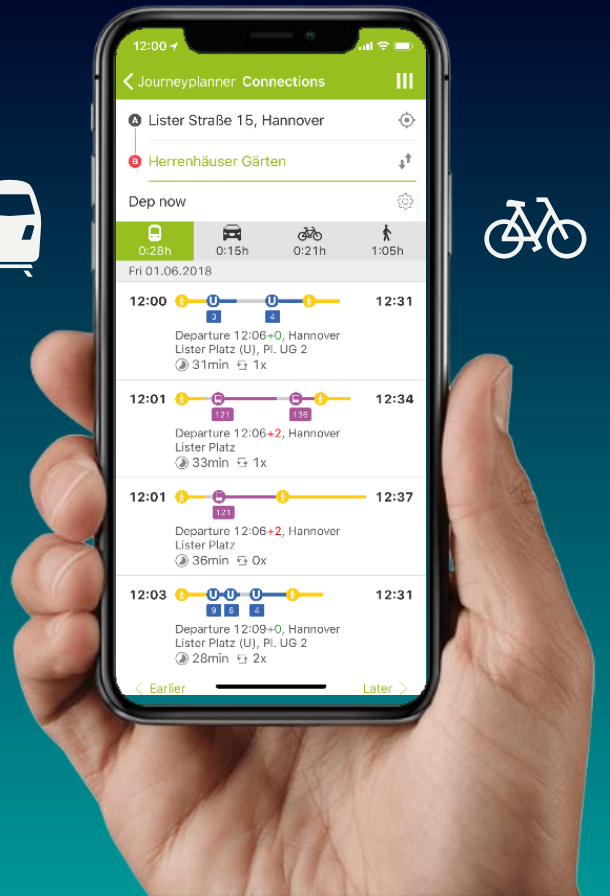
One App. One Account.

Plan. Book. Pay.





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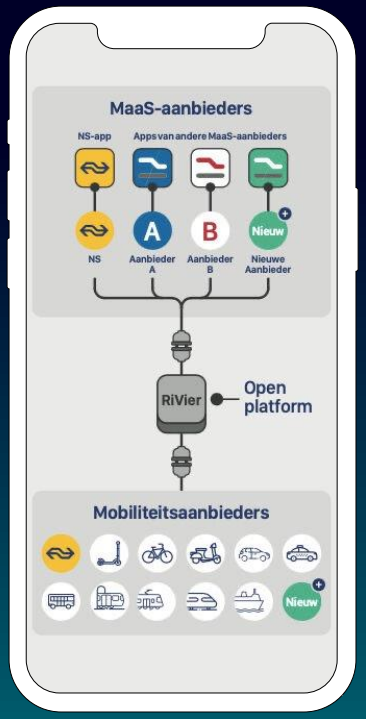
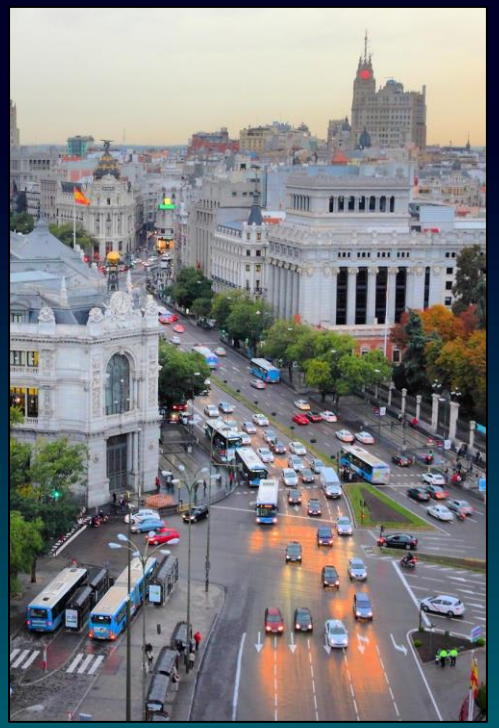
Countrywide MaaS solutions

RiVier
Netherlands



- **Countrywide Mobility as a Sevice (MaaS) platform for the Netherlands**
- **Plan, book & pay for public transport & mobility providers**
- **Open Ecosystem**

Renfe-as-a-Service
Spain



- **Countrywide Mobility as a Sevice (MaaS) platform for Spain**
- **Integration of shared and public transport**
- **Renfe predicts: 650,000 new customers to train travel & increasing train ticket sales by 3% to 4%**

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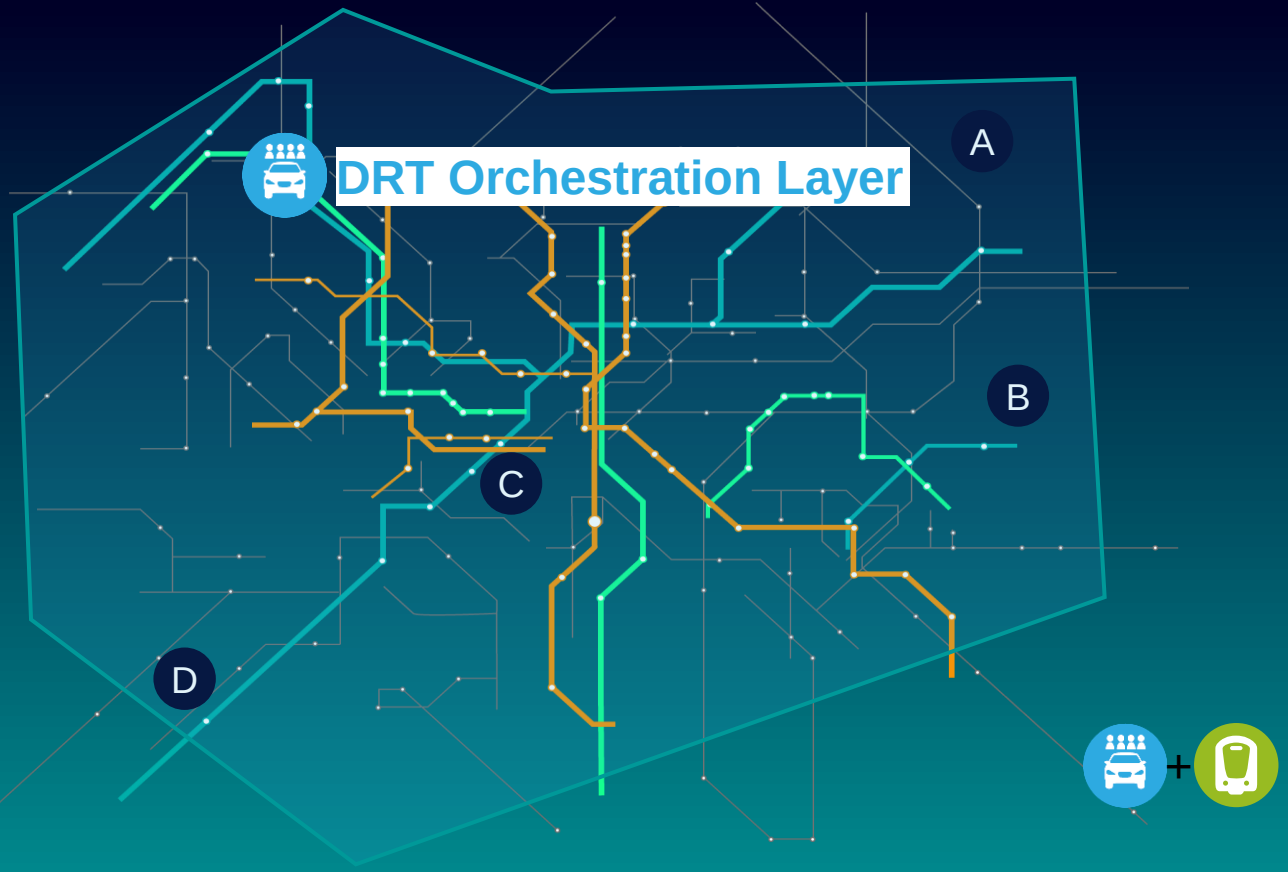
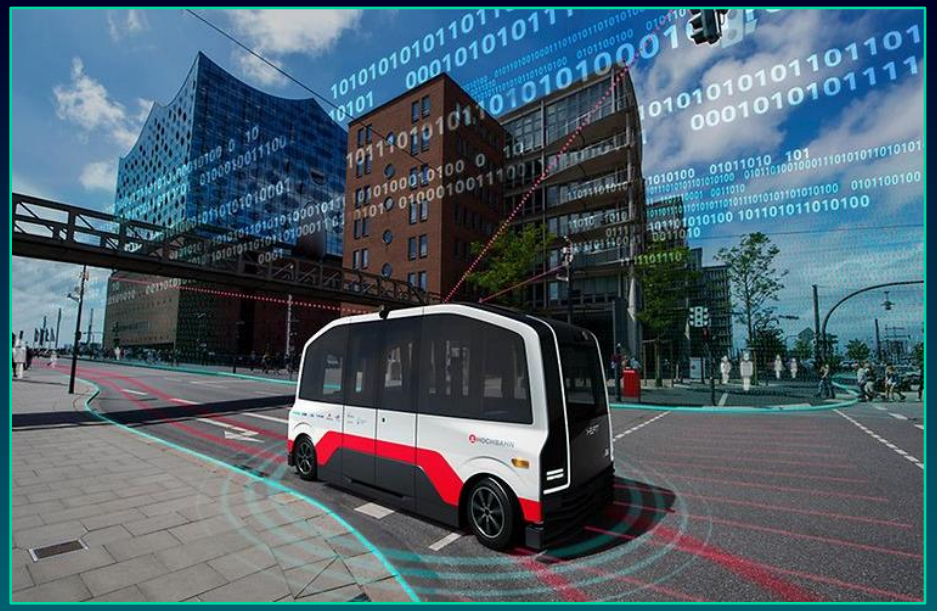
Demand Responsive Transport Orchestration

USE CASES:

- First & last mile
- Paratransit
- Off-peak hours
- Corporate
- Peri-urban & rural
- Other use cases





A Demand Responsive Transport System is needed which is deeply **connected into Public Transport** Networks.

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Let's balance supply & demand!

Multi Channel

Seat Reservations

Configurable Business Logic

Train & Bus Industry

Modern technology

Generic Functionality

sqills S3 Passenger

Software as a Service platform for **inventory management, seat reservation, and ticket distribution** for mainline rail and bus operators.

- Developed by Sqills because the industry lacked a configurable standardised **product**
- Market and operator agnostic
- Focus on carriers, but strong package of “direct distribution” functions
- Single codebase for all clients, but securely isolated instances for each customer
- Cutting edge technology, API driven design

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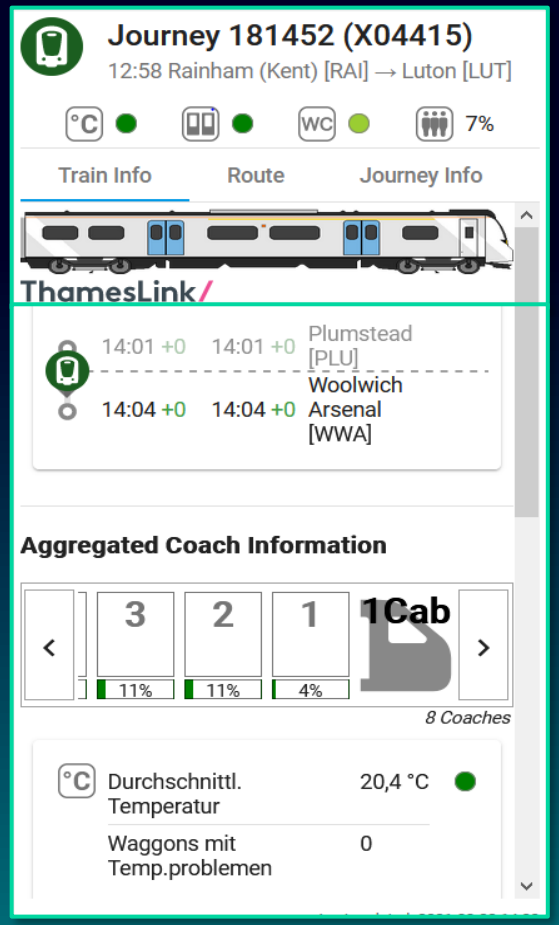
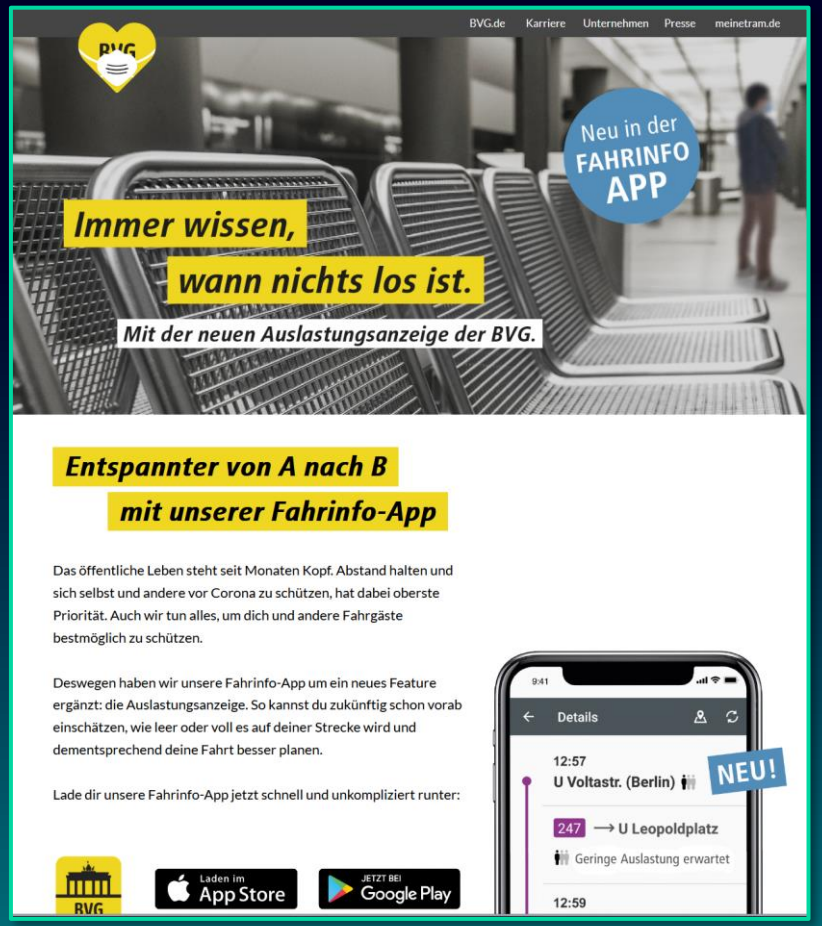
Let's connect!



Railigent train status for passenger information

Live @ Thameslink UK



AI based occupancy forecast

Live @ BVG Berlin

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Railigent X
The solution to manage rail assets smarter

Up to 40%

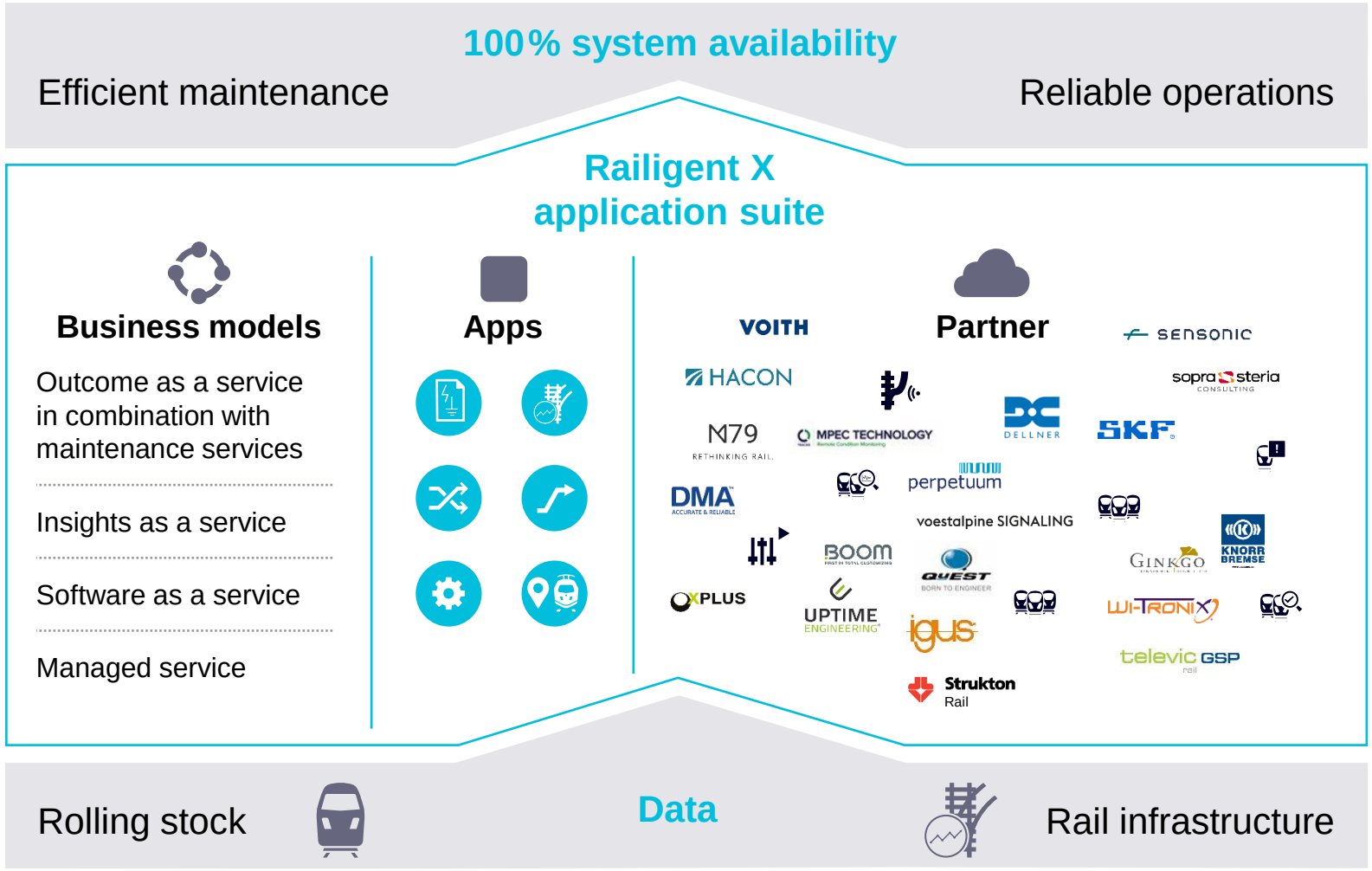
lower costs due to less service delays

Up to 30%

reduction of unscheduled depot stops

Up to 15%

reduction of maintenance costs



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Railigent X evolution

Railigent → **Railigent X**

Focus on analytics

+

Applications for prediction

100% availability

+

Open ecosystem

Alliance for Availability

+

Connected asset IoT platform with open APIs

Xcelerator – Connected asset platform

Cybersecurity

Connectivity

Domain knowhow

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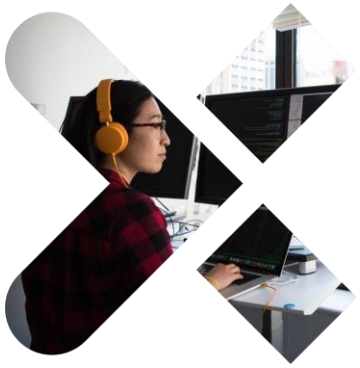
Siemens Xcelerator at Mobility Customer Services

Railigent X – maximizing rail asset's value to 100% system availability



API-centric analytics extension

- Providing an open framework for creating scalable analytics/AI solutions
- via the Analytics Enabler Suite e.g. for **our partnering university RWTH Aachen**

Enables easy creation of analytical models

Operator/maintainer and asset owner

- Connecting vehicles and depots for locomotives
- via the Rail service hub, already in place for the 16 Vectrons **of our customer boxXpress**

Maintenance works can be easily and flexibly scheduled into running operations

Operator/maintainer and asset owner

- Loading software while trains are rolling, control train IT systems from the wayside
- via remote SW update as being installed for one of **our UK customers**

Reduced effort and costs for operations

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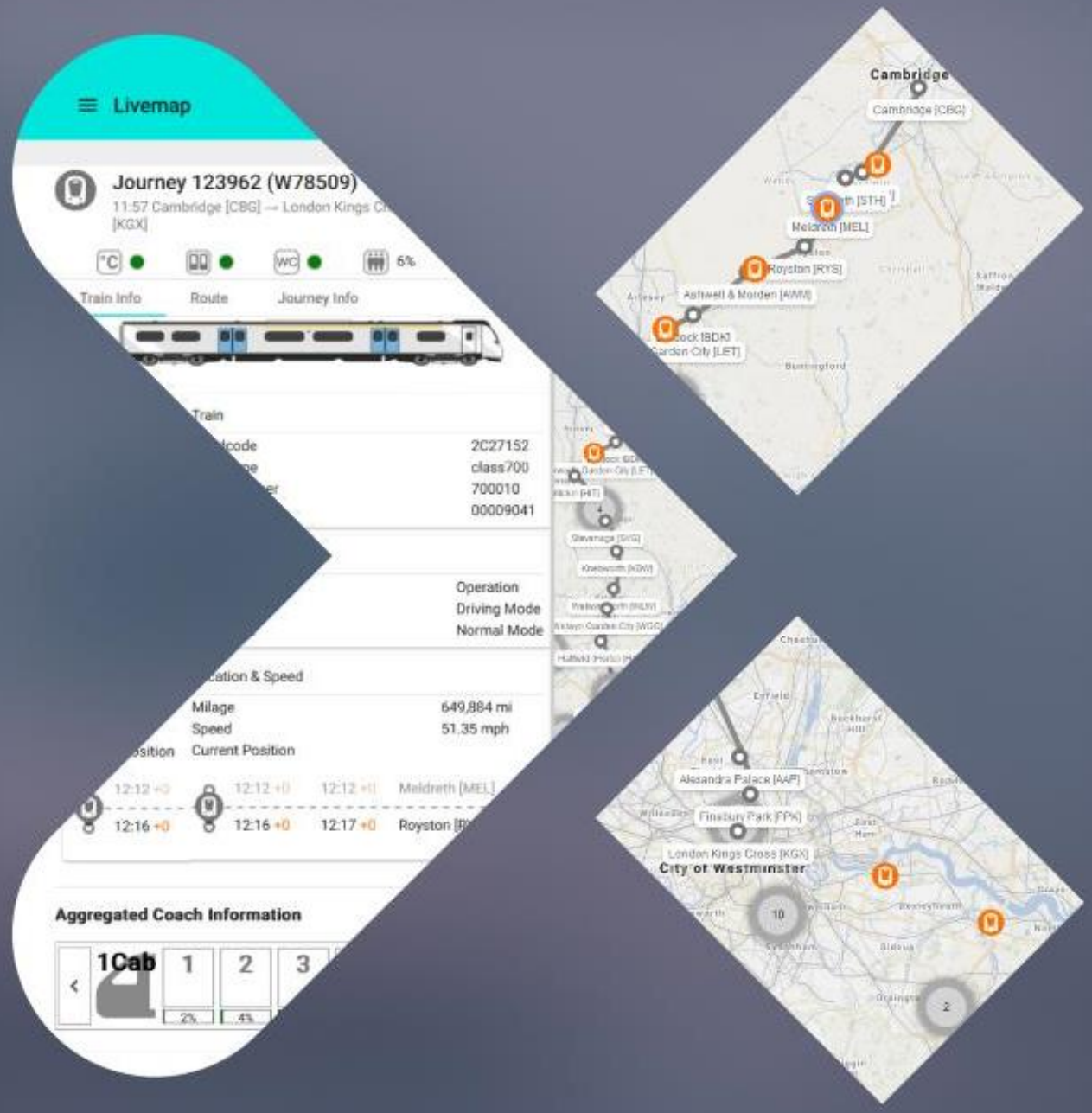

Siemens Xcelerator for mobility –
the interoperable and connected ecosystem for everyone:

Easy | **Flexible** | **Open**

Mobility Software Suite X
connects people for 100% occupancy

Railigent X
connects assets for 100% system availability

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Thank you!

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