UIC Symposium

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30 November – 1 December 2021

TRANSITION TO CLEAN MOBILITY Panel 1: Digital game changers in the next 5 years?

- Moderator: Mr. Anson Jack, Emeritus Professor, University of Birmingham
- Mr. Christian Kern, Former Austrian Chancellor
- Mr. Carlo Borghini, Executive Director, Shift2Rail
- Mr. Sylvain Haon, Senior Director Strategy, UITP
- Dr. Florian Brummer, Head of EMEA in Amazon Web service (AWS) for specialty practice, supply chain, transportation and logistics



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Mr. Christian Kern, Former Austrian Chancellor



Digitization – what's next?

COVID accelerates the adaptation of digital technologies - demand for remote service and contactless interaction services picked up – decentralizing organization internal and customer communication

2 Rail is becoming a data-driven business model, the importance of software will increase massively compared to traditional hardware

The green deal is a mandate to become more productive - digitization is the key to achieving this; Authorities' increasingly expect full service commitments

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Industry platforms spanning value creation stages will gain in importance – requiring more cooperation between infrastructure companies, operators, oem's

Digitization promotes a consolidation process on the part of technology providers – vast new challenges will lead to a shakeout process

Cybersecurity will become a key competence and appears besides strategy as the number one priority on the agenda of topmanagement

Digitization of maintenance as an efficiency lever

AVERAGE COSTS OF RAIL OPERATIONS IN GERMANY^[1] (LOCAL TRANSPORT)



Maintenance as a driver of life cycle costs in rail operations - and digitalization as a lever to improve availability and efficiency

■Maintenance ~ € 1.4 per train km ■ Train crew ■ Energy ■ Overhead

Snapshot: Rolling stock competitors

Alstom's acquisition of Bombardier creates the second largest market player and reinforces ongoing consolidation dynamics.

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Revenues and adj. EBITDA margin of large rail players¹, 2020, in € bn.





Rail Cyber-Attacks are Skyrocketing



On average, a cyber-attack against critical rail systems occurs every 30 days

Thank you for your attention



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Mr Carlo Borghini, Executive Director, Shift2rail



Towards a climate-neutral society: the transformation of the railways

30 Nov 2021

Carlo m Borghini Executive Director

Europe's Rail: Vision, Objectives & Expected Impacts



European Green Deal

EU policy priorities

An economy that works for people: New Industrial Strategy

A Europe fit for the digital age: Shaping Europe's Digital Future

Europe in the world

Sustainable and Smart Mobility Strategy

EU-Rail Draft general objectives	Integrated European transport networks Urban SERA		Delivering European rail industry competitiveness Bridge the innovation "valley of death" through coordinating live, large-scale demos		ropean rail petitiveness n "valley of death" g live, large-scale os
EU-Rail Draft specific objectives	Deliver a European Traffic Management Layer enabled by automation and digitalization, building upon the national and local systems, including urban	etitive green rail fully integrated logistic chain	Accessible and Safe Mobility on Demand	Deliver a sustainable, safe and resilient rail system	Bring into market new and emerging land guided transport solutions



Governance



Europe's Rail



A new Europe's Rail



European Rail Traffic Management Single European Railway Area (SERA)

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A different urban mobility experience





- less urban trips ?
- shorter trips ?
- more leisure trips ?
- greater differences between age groups ?
- less opened communities ?
 - different use of the urban infrastructure



More seamless mobility







MOBILITY AS A LIFESTYLE: LEVERAGING THE HYPERCONNECTIVITY AND THE EVOLUTION OF THE CITY TO TRANSFORM THE MOBILITY

EXPERIENCE WITH THE LIFESTYLE



Thank you for your attention

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AWS in Railway

Dr. Florian Brummer



fbrummer@amazon.com Head of EMEA – Supply Chain, Transportation, Logistics









CUSTOMER

Win (back) customers through services and interconnectivity

SUSTAINABILITY

Contribute to reduction of transport-driven carbon emissions

FRUGALITY

Operate in the most efficient way to recover from crisis





What is **Cloud computing?**

The term "cloud computing" refers to the on-demand delivery of IT resources via the Internet with pay-as-yougo pricing





Achieving business value with cloud computing









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Cost Savings (TCO)

Moving from Capex to Opex, paying only for what you use **Staff Productivity**

Operational Resilience

Increase staff productivity by focusing on added value tasks

Benefit of improving SLAs and reducing unplanned outages

Business Agility & Innovation

Deploying new features/ applications faster and reducing errors



Value



Addressing Railway Industry Challenges & Opportunities



Thank You





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TRANSITION TO CLEAN MOBILITY Panel 2: Modal shift strategy

- Moderator: Ms. Sandra Gehenot, UIC Freight Director
- Mr. Philippe Citroën, Director General, Unife
- Mr. Paul Hegge, Director Public Affairs & Corporate Social Responsibility, Lineas
- Mr. Robert Ampomah, CTO, Network Rail
- Mr. Jauri Kauppila, Head of the ITF Secretary-General's Office and Head of Quantitative Policy Analysis, International Transport Forum

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Mr. Philippe Citroën, Director General, Unife



Rail is the backbone of the European sustainable mobility transition

- The European **Green Deal** (2019): A milestone of the Von der Leyen Commission to make Europe the first **climate-neutral continent by 2050**
- Decisive action to support the modal shift towards sustainable modes like rail is essential to achieve the Green Deal's targets, as recalled in the EC Sustainable and Smart Mobility Strategy (2020)
- UNIFE actively working on **Fit-for-55 package** proposals that can be conducive to more sustainable rail solutions (e.g. AFIR, energy taxation)
- Rail is by far the greenest mode of mass transportation as it accounts for less than 0.5% of transport-related GhG emissions and improved its energy efficiency steadily
- This track record and current initiatives are a great opportunity to boost transport decarbonization in Europe, with rail leading the transition





EU funding for rail: A decisive role to incentivise modal shift

• National Recovery Plans: €55 bn to support Member States' rail infrastructure, rolling stock, digitalisation and urban rail transport

A few examples: Italy (€29 bn); Spain (€6.4 bn); France (€5 bn); Poland* (4.5 bn); Romania (€5 bn), Czechia (€900 million), etc.

- Connecting Europe Facility: €25.8 bn for transport (70% for rail) in 2021-2027 to complete the TEN-T network
- Cohesion Policy: Over €300* bn of funding in 2021-2027 to make Europe greener, smarter and more connected



R&I is key to speed-up modal shift

- Innovation is in the DNA of the European rail supply industry, which currently invests 3.6% of its annual turnover in R&I
- Based on the success of Shift2Rail Joint Undertaking, Europe's Rail Joint Undertaking will be a "game changer" for the transformation of rail transport
- Europe's Rail Joint Undertaking in a nutshell: Budget: 1,2bn€, 25 members (Suppliers, RUs, IMs and Research Centres), Innovation Pillar (R&I) and System Pillar (System view)
- Key areas for R&I: Digital and Automated Train Operation (ATO including FRMCS and 5G), Digital Automatic Coupling (DAC), Traffic Management System (TMS), Digital Twin, Energy Management System, New materials, Traction Systems (e.g. Hydrogen & Battery)
- **R&I is of paramount importance to**: 1) Increase rail market share 2) Reinforce the competitiveness of the EU rail supply industry at worldwide level 3) Attract new talents and skills!



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Solutions to aid the Modal shift to rail Network Rail



Modal shift – Network Rail

- More punctual and connected passenger services
- Increase capacity
- Prompt response by freight to COVID saw 7% growth in rail freight (opportunities to open new freight corridors delivered)
- Rail freight needs decarbonisation at unprecedented scale by 2040
- Electrification expansion across the rail network is key
- Govt financial incentives needed



Modal shift to freight

Delivering Shift to rail:

- Deployment of modern signalling systems (ERTMS)
- Electrification expansion
- Alternative power solutions (is hydrogen an option?)
- Better data and decision support systems to move freight from road to rail
- Automated wagon and loco coupling
- Infrastructure strengthening and better-connected freight hubs
- Further work to assess gauge, diversionary capability and capacity to grow Channel tunnel freight traffic
- Future opportunities connection to vertiports for Autonomous Aerial Vehicles?

reight belongs on rail.

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Mr. Jauri Kauppila, Head of the ITF Secretary-General's Office and Head of Quantitative Policy Analysis, International Transport Forum

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ITF vision: Global transport activity



Global freight demand, trillion tkm



International Transport Forum

Rail share (Baseline 2015 \rightarrow Recovery 2050 \rightarrow Reshape+ 2050)

Passenger demand	14%	\rightarrow	18%	\rightarrow	21%
Passenger GHG emissions	4%	\rightarrow	2%	\rightarrow	1%
Freight demand	4%	\rightarrow	5%	\rightarrow	6%
Freight GHG emissions	8%	\rightarrow	6%	\rightarrow	6%

ITF vision: Policy measures and actions



Policy direction 1: improve and enhance infrastructure

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Policy direction 2: promote and incorporate technology



Policy direction 3: reform economic regulation

- Enhancement of rail network density and size
- Improved physical intermodal / multimodal infrastructure
- Introduction of new ultra-high speed rail routes
- Transit-Oriented Development (TOD)
- Improvements in rail service frequency and capacity
- Development of Intelligent Transport Systems
- Integration of public transport ticketing systems
- Application of Mobility as a Service (Maas)
- Carbon / road pricing
- Distance-based charges for road freight
- Air ticket taxes
- Parking pricing and restrictions



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Source: ITF Transport Outlook '21

Promoting modal shift: Policy directions for rail

Policy direction 1: improve and enhance infrastructure



Passenger rail

- Develop and expand urban railway system to increase capacity, safety and level of service
- Focus on high-speed rail networks to induce shift from short-distance flights and private car trips

Freight rail

- Invest in new rail links on high-throughput corridors to provide an attractive and sustainable shipping alternative
- Establish multimodal terminals and connections to facilitate seamless mode integration and accommodate growing containerization



Promoting modal shift: Policy directions for rail



Policy direction 2: promote and incorporate technology



Passenger rail

- Introduce integrated ticketing system to facilitate public transport transfers and increase flexibility
- Intensify the electrification process to improve operational cost-efficiency and viability of rail as a mode

Freight rail

- Develop Intelligent Transport Systems to boost performance and system capacity
- Adopt modernization of rolling stock to increase utilization factors, reliability and competitiveness of rail



Promoting modal shift: Policy directions for rail



Policy direction 3: reform economic regulation

Passenger + Freight Rail

- Revise pricing (congestion charging, parking fees) and taxation (vehicle registration, fuel) to impose higher costs on the adverse effects generated by other modes and to eventually promote and finance rail
- Activate new financing instruments (land value capture, green bonds and public-private partnerships) to support infrastructure investments, energy transition and technology adoption
- Induce market liberalization to encourage competition and innovation and to increase network utilization





Thank you for your attention

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