Rail Baltica

Transport as Edge Use Case

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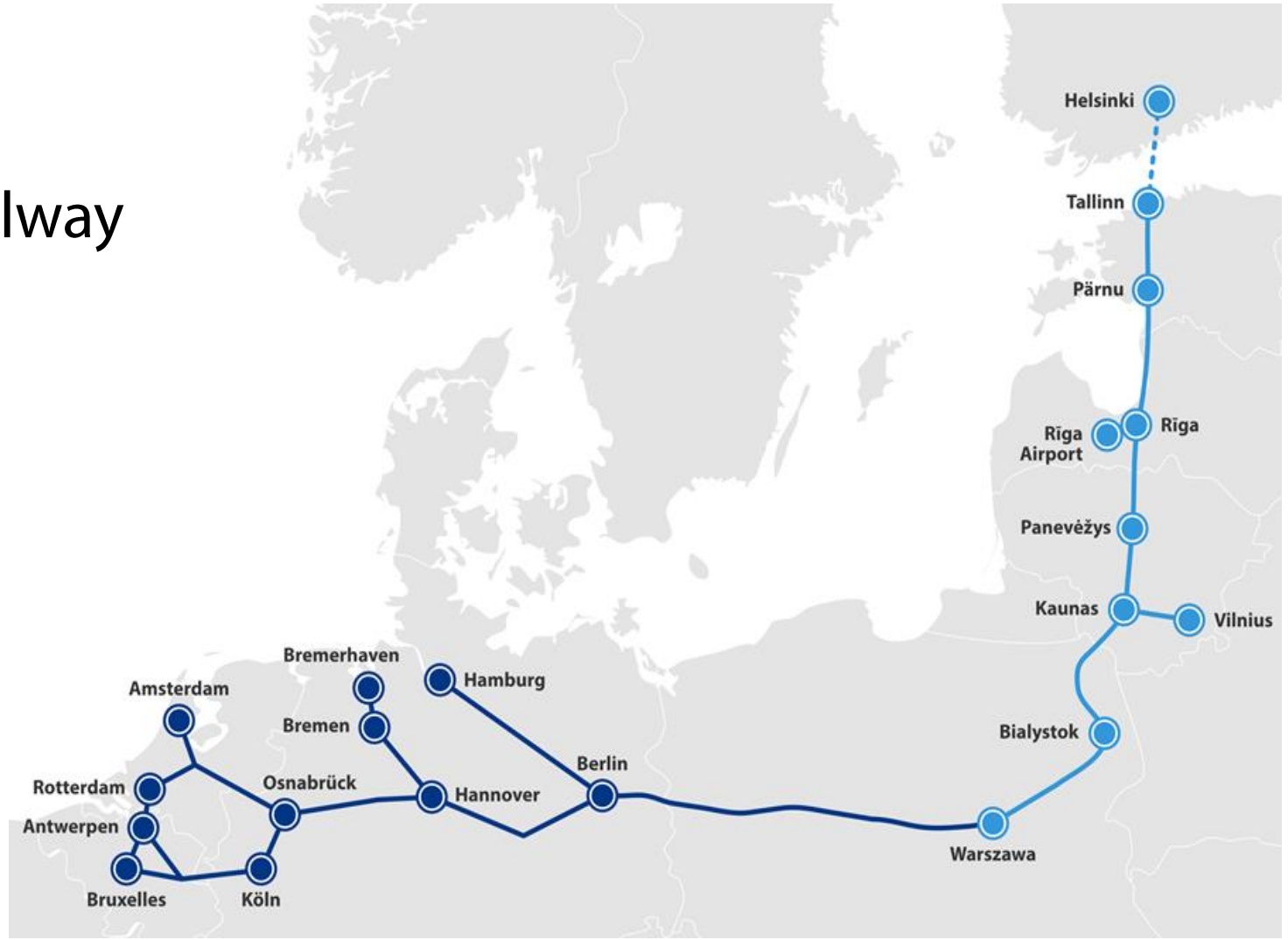
Rail Baltica: Overview

- ✓ Economic Corridor & New Railway
- ✓ Rail Infrastructure
  - ✓ 1435mm dual track
  - ✓ SE-C loading gauge
  - ✓ 25kV Electrification
  - ✓ 25 tonne axle load
  - ✓ 1050m freight train length
  - ✓ ERTMS
- ✓ 870km +
- ✓ Greenfield!



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Digitalisation: Typical vs Greenfield

Traditional Approaches

- Built in stages over time, no unified architecture/approach
- Silo of systems - one sensor = one system; one requirement = one system
- Designed to meet specific targets, not to evolve
- Inflexible, limited interoperability
- Limited number of suppliers

Greenfield Creates Options

- Interconnected systems
- One sensor – multiple systems
- Flexible, design for interoperability
- Open interfaces/standards “building blocks” allow evolution, wider range of suppliers

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Impact & Phasing

Design / delivery options

- Wayside sensors should be incorporated in design/delivery
- Small cell (4/5G) – terminal / depot design
- Data networks – services at construction sites?
- Infrastructure synergies – evaluation of higher-performing options
- Fibre / edge locations to support 5G
- Metro / "last mile" access network synergies/support

Long-term Infrastructure

- Sensors & "IoT" - lifecycle asset management for key components from start
- Increase range of suppliers for future procurements
- Increase efficiency of order-delivery-acceptance cycles
- Data space for intermodal (rail, air / maritime / road integration)

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“Open” Approach

Commodity / Commercial Off the Shelf systems:

Swiss-led SmartRail 4.0 project evaluated - potentially significant savings

Similar programmes address SIL and security considerations

For non-safety environments, reliability needs to be greater than typical COTS

Leverage data centre / hyperscaler efforts on more sustainable ICT

COTS - wider pool of potential staff than vendor-specific/railway-only systems

Open Standards / Systems as Opportunity:

Reduces barriers to entry for suppliers

Reduce risk of proprietary lock-in

Increases opportunities for regional / local businesses, including SME & startups

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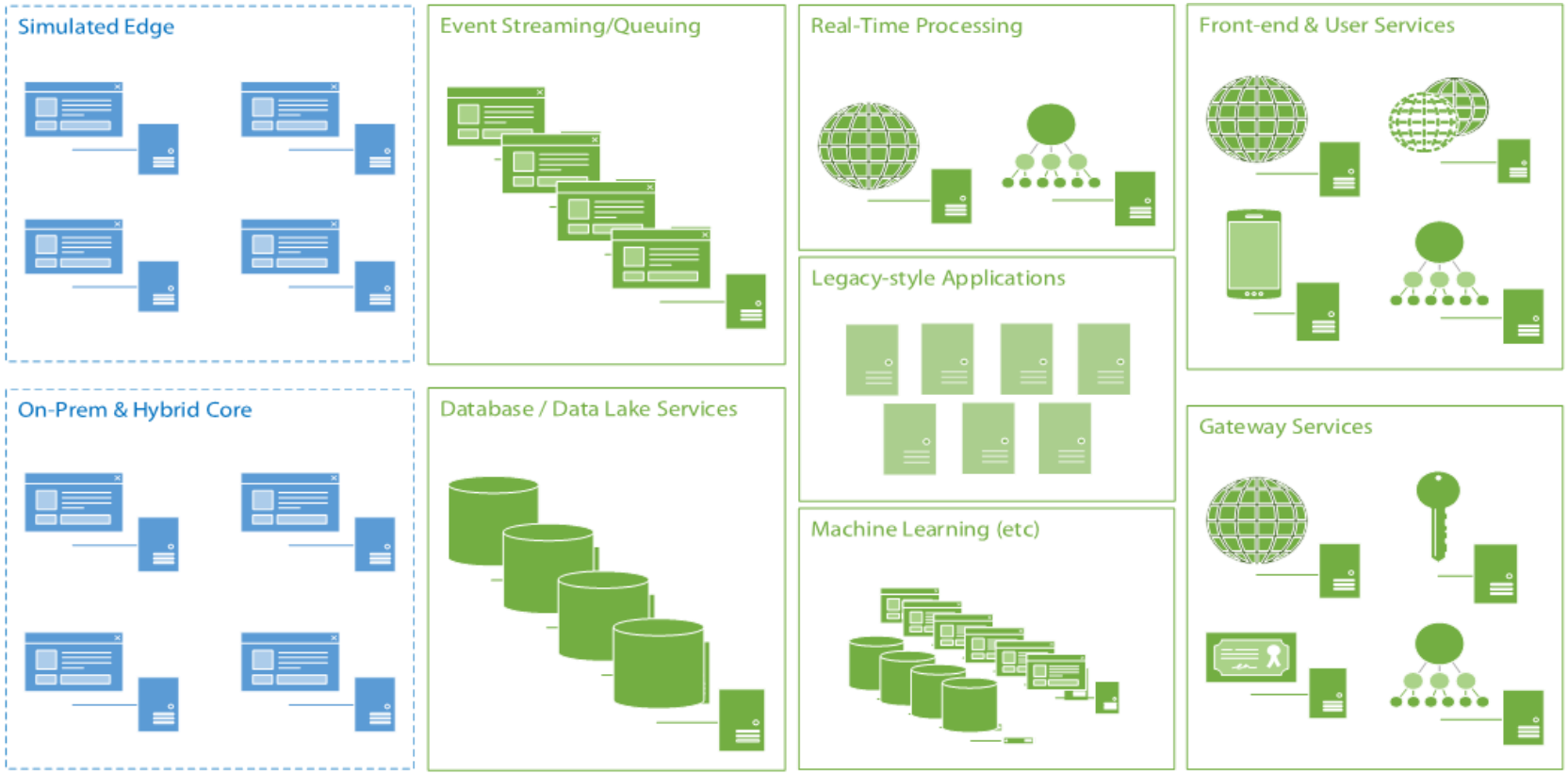
Demonstration / Validation

- Event-driven systems
- Messaging interfaces
- Simulated “edge” & DC (on-prem)
- “Cloud-native” (container/VM etc)
- Sustainable ICT
- Circular Economy principles for lab
- Open systems & interfaces
- Opportunities for non-rail suppliers
- Multitenant architecture
- Hybrid edge/core/cloud



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Timeline

2021-2022:

"Edge" & core ICT

Private cloud & hybrid connectivity

Locations for field testing – connectivity, sensors, edge ICT

Static testing (mostly) – e.g. weather variation

2023+:

Dynamic testing (sensors, wayside with trains running)

Data integration

Analytics / "big data" systems planning

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Sustainable

Capable

Deliverable

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Aitäh!
Paldies!
Ačiū!
Thank you!