

## Innovation Focus Areas for Multimodal Infrastructure Innovation and Implementation

### Capability 1: Infrastructure optimally meeting end user needs

The ability to provide optimal transport infrastructure network capacity in order to accommodate increasing transport needs, and balancing cost, performance, safety and risk to provide infrastructure as a high quality service to end users.

#### Innovation Focus Areas:

- Network performance
- Integrated infrastructure network management
- Responsible and innovative procurement and finance

### Capability 2: Infrastructure meeting environmental and social sustainability needs

The ability to embed transport infrastructure networks in their immediate surroundings, optimally balancing interests from economy, society, and environment.

#### Innovation Focus Areas:

- Decarbonisation of infrastructure management
- Preserving the environment
- Integrating multi-layer networks and nodes

### Capability 3: Infrastructure achieving added value from digitalisation

The ability to harvest the benefits from digitalisation in internal processes of transport infrastructure management as well as in the relation between transport infrastructure management and its end user, to better serve the achievement of sustainability targets and needs of infrastructure end users.

#### Innovation Focus Areas:

- Smart data and information ecosystem for accommodating automated and connected transport
- Information provision for process optimisation in infrastructure management



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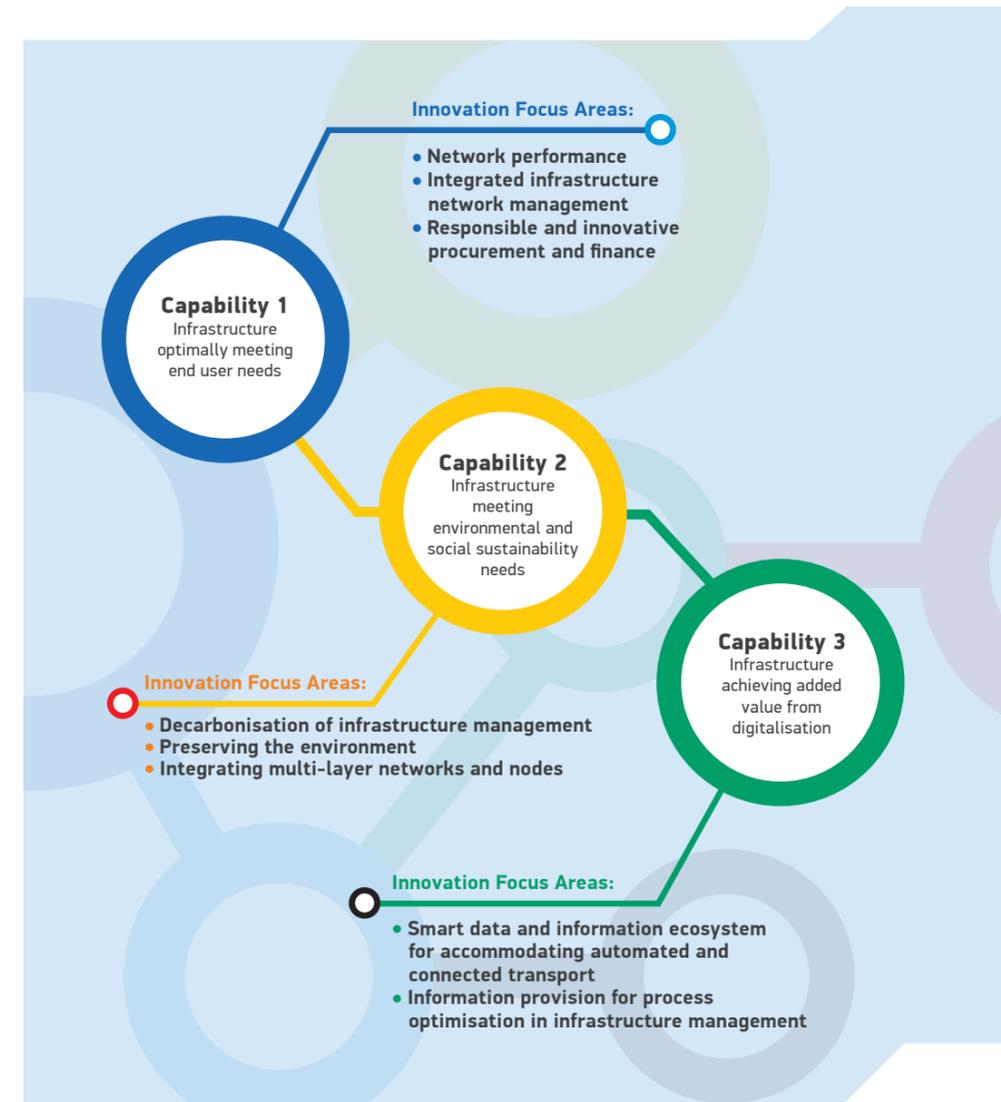
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2. Vaylä - FI
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5. Vejdirektoratet - DK
6. Trafikverket - SE
7. Statens Vegvesen - NO
8. BMVI (Bundesministerium für Verkehr und digitale Infrastruktur) - DE
9. BASt (Bundesanstalt für Straßenwesen) - DE
10. ANAS S.p.A. - IT
11. bmvit (Bundesministerium für Verkehr, Innovation und Technologie) - AT
12. Ministerio de Fomento - ES
13. Infraestruturas de Portugal - PT
14. Ministerstwo Infrastruktury - PL
15. Ministerstwo Gospodarki Morskiej i Żeglugi Śródlądowej - PL
16. CERTH / HIT (Centre for Research and Technology Hellas / Hellenic institute of Transport) - GR
17. Ministère de la Transition écologique et solidaire - FR
18. Netivei Israel - IL
19. Karayolları Genel Müdürlüğü - TR
20. TÜVRheinland Consulting - DE



## Capabilities and Innovation Focus Areas towards a sustainable Multimodal Coordination Mechanism



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## Capabilities Guiding Objectives for 2040

### C1: INFRASTRUCTURE OPTIMALLY MEETING END USER NEEDS

- Full accommodation of the anticipated development in transport demand across the network, achieving effective alignment between the surface infrastructure networks through interoperability and synchro-modality.
- Effective management of resources and assets, and high availability throughout the whole infrastructure lifecycle, from planning and design to end of life.
- Effective, adaptive integration and rapid implementation of innovations across the delivery process chain.
- Significant reduction of Total Cost of Ownership (TCO), e.g. reduction by 30% for infrastructure managers.
- Zero fatalities and severe injuries of infrastructure workers and end users through Vision Zero.
- Resilience to natural and man-made hazards, including adaptation to climate change.
- An affordable high capacity infrastructure that supports end users' service combinations of mobility and logistics.
- Comprehensive and consistent framework of performance indicators for the management of the integrated, multi-modal network, available by 2030.

### C2: INFRASTRUCTURE MEETING ENVIRONMENTAL AND SOCIAL SUSTAINABILITY NEEDS

- Compliance with COP21 and Agenda 2030/UN targets for sustainable development in the context of European objectives and targets.
- Minimise carbon footprint of the whole service-life of infrastructure, including the infrastructure delivery process chain. This includes achieving energy neutrality of the infrastructure management operations (e.g. lighting, signalling, data collection, information provision, lifting and ventilation) up to larger network scales.
- Facilitate the transition in the energy pool of the transport modes and supporting measures to improve energy-efficiency of mobility services (passengers, freight).
- Collaborate on the minimisation of the impact on the environment, in particular concerning the impact of noise, vibration and pollutant emissions. This concerns the share of the impact that is contributable to infrastructure management.
- Collaborate on the optimal net benefit from embedding infrastructure in the spatial setting. This concerns the 'how' in infrastructure governance, balancing benefits for the economy, society and environment in the planning and approval stage.

### C3: INFRASTRUCTURE ACHIEVING ADDED VALUE FROM DIGITALISATION

- Facilitate the transition towards smart mobility concepts (freight and passenger) for emerging concepts for automated mobility, e.g. Connected Cooperative and Automated Mobility (CCAM) for road and Automatic Train Operation (ATO) for rail.
- Proactive position of the infrastructure manager within the infrastructure related data-driven ecosystem, including clearly defined data flows between multimodal, national and sectoral stakeholders and a clear business model and case for investment in and maintenance of digital and virtual infrastructure.
- Ability to process internal and external raw data into smart data that can optimize infrastructure management processes, including maintenance and construction of infrastructure. Provide seamless data and information use and provision across the transport infrastructure network and logistics chain to the end user.
- Facilitation of the alignment of TEN-T core network with data and energy networks to benefit from multi-purpose digitalised networks that can cater for future digital needs, e.g. Internet of Things (IoT) and smart grid based electric mobility.
- Increase the use of automated, semi-automated and remote-piloted solutions for infrastructure maintenance and construction to improve safety for workers and reduce costs.

## Basic principles for a Multimodal Cooperation Mechanism for each Innovation Focus Area (IFA)

