



# AM4INFRA

## **DELIVERABLE REPORT**

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- 2 - HE – HIGHWAYS ENGLAND COMPANY LTD – UK
- 3 - ANAS – ANAS SPA – IT
- 4 - FEHRL – FORUM DES LABORATOIRES NATIONAUX EUROPEENS DE RECHERCHE ROUTIERE – FR
- 5 - TII – NATIONAL ROADS AUTHORITY – IE
- 6 - UNR – UNIRESEARCH BV – NL
- 7 - CETH – ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS- GR
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## Executive Summary

This deliverable presents how the AM4INFRA project has executed the activities on stakeholder engagement in order to foster replication of the project results i.e. a common framework approach for asset management on transport infrastructures.

The project has taken great care to engage with stakeholders through an open dialogue in order to foster a learning environment in which stakeholders would feel fully involved in the building, demonstration and verification of the common approach for asset management. Over its runtime, the project organised the following key stakeholder events:

- Open stakeholder setting (all stakeholder groups)
  - First stakeholder event in Utrecht (NL), October 2017. On the first series of deliverables in which the design of the common approach was described (D1.1, D1.2, D2.1, D2.2, D3.1, D3.2).
  - Final project event at TRA 2018 in Vienna (AT), April 2017. On the common approach for asset management, the maturity assessment and on the living labs.
  - Webinars from February 2018 until May 2018 following the living labs and final event. The webinars were initiated in order to maximise the outreach towards the community of infrastructure managers, industry and research.
- Invited stakeholder setting (asset managers)
  - **Living lab launching events:** January 2018 (Rome), February 2018 (Antwerp), and March 2018 (Windsor). These events were with stakeholders that were directly involved in the local geographical setting of the living labs in Rome, Eindhoven and London.
  - **Maturity assessment** of five national infrastructure agencies. These were concerned with four of the five national agencies involved in the project and one national manager involved with the project through a living lab from January 2018 until April 2018.
  - **CEDR Executive Board engagements** in June 2017, March 2018 and June 2018. Presenting and discussing the AM4INFRA results and proposed legacy (in CEDR context).

This deliverable gives an overview of all the events mentioned above apart from the maturity assessment. The maturity assessment of the five national infrastructure agencies is fully explained in deliverable D4.5 – Replication assessments of each stakeholder.

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# 1 Purpose of the document

The purpose of this document is to present the outcomes of the stakeholder engagement events that took place over the duration of the project.

## 1.1 DOCUMENT STRUCTURE

See table of contents.

## 1.2 DEVIATIONS FROM ORIGINAL DESCRIPTION IN THE GRANT AGREEMENT ANNEX 1 PART A

### 1.2.1 DESCRIPTION OF WORK RELATED TO DELIVERABLE IN GA ANNEX 1 – PART A

#### **Task 4.3 Knowledge transfer workshops from living labs to stakeholders**

The most effective means of knowledge transfer remains face-to-face, peer-to-peer exchange. A fundamental part of the replication activities in the AM4INFRA project will therefore involve a series of in-depth visits by stakeholders' delegations to the project partners as well as the living labs. Two forms of visit are envisaged:

- Stakeholder engagement visits – Large delegations from individual stakeholders to individual project partners and the living labs. These delegations of up to 12 people would include politicians, members of the CEDR Group, engineers, etc. – designed to gather a thorough understanding of activities being implemented in the project partners' organization as well as the living labs, and to foster deeper engagement with these stakeholders. Each stakeholder shall pay three such visits to either a project partner or the living labs over the course of the project.
- Technical transfer study visits – Smaller groups of 3-4 people per stakeholder, such as relevant technical staff – designed to allow staff from national road authorities to learn about implementation processes, and technical aspects in detail at the living lab. These trips will be organised jointly – i.e. all stakeholders will visit the living labs at the same time. At least 6 of these trips will be organised over the course of the project. Where possible, these will be combined with other meetings.

Living labs will be set up in Italy, the Netherlands and the UK. In other words, three road sections will be studied: a) the Dutch one (Eindhoven), the Italian one (Road Ring of Rome), the English one. Under WP3, Task 3.3 will deliver a set of tools aimed at defining a common system for a single road stretch (WP1 and WP2 will collaborate in supplying the elements to decide which is the road stretch most suitable). Three issues are important: a) the living lab is a way of developing the whole project (making material available and encouraging discussions with other players – specially from rail and similar - from the beginning); b) a clear application of the concept of living lab will be the Eindhoven case, already defined in terms of interests, stakeholders, facts, etc., and suitable for a simulation of AM analysis; c) the IT exercise will be built on one single, representative, road stretch, that could be the same Eindhoven case or the Ring Road of Rome.

**Sub-Task 4.3.1. Monitor the progress and outcome of the living labs, based on the common framework** to identify the best practices that could be used in a new PCS (M1-M24). The AM4INFRA project will set a new standard for asset management and create a common framework in which knowledge will be built and new ways of cooperation will be established. With the outputs of the living lab and the management experiences gained in the project, best practices will be identified.

**Subtask 4.3.2: Learning by doing /implementation workshops.** This is a follow-up activity to the knowledge transfer workshops. A series of implementation workshops will be held (at least 4) in order for stakeholders to get a learning-by-doing experience. These workshops will be based on the replication assessments, the monitoring/outcomes of the living labs, and the best practices.

### 1.2.2 TIME DEVIATIONS FROM ORIGINAL PLANNING IN GA ANNEX 1- PART A

- The open stakeholder meeting of October 2017 was a time (and content) deviation.

- It was originally planned for summer 2017. Also, it was only intended for D1.2 (and underlying: D1.1), but the decision was made to postpone it in order to enable SH consultation on the deliverables of both other WPs as well.
- See also the various inception reports.

### 1.2.3 CONTENT DEVIATIONS FROM ORIGINAL PLANNING IN GA ANNEX 1 – PART A

The execution of task 4.3 “Knowledge transfer workshops from living labs to stakeholders” has been in deviation of the literal description in the DoA. The various task elements of this task were updated to match the definitive dissemination and communication (D&C) strategy as was delivered in the Dissemination and Communication Plan (D4.2) and in its final update (D4.8).

The D&C strategy has been centered on raising awareness and obtaining support of the national infrastructure agencies and authorities through CEDR (and through its MoU with EIM; the European platform of rail infrastructure managers). Particular focus in the strategy has been to establish a permanent structure on disseminating and implementing the results of AM4INFRA after end of runtime (the legacy). This updated strategy is considered an improvement to the original plan both in quantity and quality. At its core are the following events:

- The three Living Labs. For obvious reasons the living labs focused on the local and regional stakeholders involved in the specific geographical settings. Reflecting the local stakeholder setting, the living labs were held in the local language. In order to enable wider dissemination of the results, webinars in English have been organized immediately following the Living Lab meetings.
  - Living Lab A90 Rome: meeting held on 30<sup>th</sup> January 2018; webinar held on 8<sup>th</sup> February 2018.
  - Living Lab E34 Eindhoven: meeting held on 21<sup>st</sup> February; webinar held on 1<sup>st</sup> March 2018.
  - Living Lab M4 London: meeting held on 8<sup>th</sup> – 9<sup>th</sup> March 2018; webinar held on 20<sup>th</sup> March 2018.
- The CEDR Executive Board discussed the AM4INFRA project and the plan for its legacy at two meetings:
  - CEDR EB on 8<sup>th</sup> – 9<sup>th</sup> March 2018: workshop in conjunction with the kick-off of the Living Lab M4 London
  - CEDR EB on 14<sup>th</sup> June 2018: presentation of the AM4INFRA Technical report and workshop on the project’s legacy (proposal to launch a CEDR working group on Network Governance)
- The CEDR Governing Board. On 18<sup>th</sup> April 2018, during TRA, a CEDR GB Level working breakfast was held with several members of CEDR GB who support a common Asset Management approach. This session resulted in bolstering the proposal to launch a CEDR working group on Network Governance, centered around a standing, strategic advisory board to the GB. Other infrastructure managers (i.e. regional and other modes) will be involved.
- The final project conference was held during TRA 2018 – on 18<sup>th</sup> April 2018. This has been pulled forward from the original planning in M24 in order to maximize outreach to the European research community (over 3000 people attending TRA).

## 2 Introduction

The Coordination and Support Action AM4INFRA aims to deliver the first ever common European asset management framework approach that enables consistent and coherent cross-asset, cross-modal and cross-border decision making. It will build on ongoing actions, best practices and contemporary experiences of five NIAs (National Infrastructure Agencies) that are considered frontrunners in the development and application of asset management in their networks governance.

The delivery of the framework calls for awareness, understanding, trust and commitment of, in particular, the infrastructure managers., implying their close coordination and collaboration. The precondition for this is transparency to each other including any political and societal influences and policies. This requires them to share a common vision and objectives, in a common language and from a common information base. The governance challenge is to provide the key stakeholders in the infrastructure governance with appropriate data, methods and tools in order to enable their decision making on cost-performance to be transparent, coherent and consistent across the assets, across the modes, and across the borders.

AM4INFRA WP4 (Replication, Dissemination and Communication) focuses on sharing knowledge, experience and good practices. This means frequently informing and consulting relevant stakeholders in transport infrastructure, in particular the infrastructure managers as they are the prospected implementors of the common framework approach. In order to deploy the project's results further, a dissemination and communication plan was drafted to help ensure that different target audiences quickly understand the objectives of AM4INFRA project and the potential impact in the future.

The project has taken great care to engage with stakeholders through an open dialogue in order to foster a learning environment in which stakeholders would feel fully involved in the building, demonstration and verification of the common approach for asset management. Over its runtime, the project organised the following key stakeholder events:

- Open stakeholder setting (All stakeholder groups)
  - **First stakeholder event** in Utrecht (NL), October 2017. On the first series of deliverables in which the design of the common approach was described (D1.1, D2.1, D3.1).
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  - **Maturity assessment** of five national infrastructure agencies. These were concerned with four of the five national agencies involved in the project and one national manager involved with the project through a living lab from January 2018 until April 2018.
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This deliverable gives an overview of all the events mentioned above apart from the maturity assessment. The maturity assessment of the five national infrastructure agencies is fully explained in deliverable D4.5 – Replication assessments of each stakeholder.



### 3 Target groups for communication and dissemination activities

The asset management approach distinguishes between three key stakeholders on roles, responsibilities and tasks: **asset owner**, **asset manager** and **service provider**; and integrates demands of two other stakeholders: **asset user** and **societal interests** (please see Figure 1).

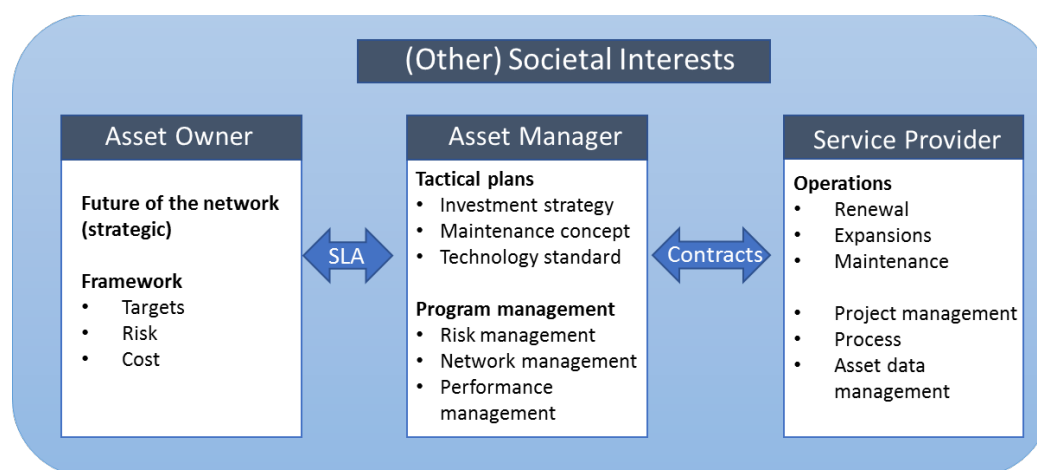


Figure 1. Roles, responsibilities and tasks of asset management stakeholders

**Asset owners** are responsible for the future of the network, *i.e.* defining the strategy and policy and defining the targets in terms of network performance, risk levels and budget.

**Asset managers** are the link between the asset owners and the service providers. They are responsible for the ‘line of sight’, to prepare tactical plans for investments, maintenance concepts, to take care of the planning, organisation and processes at network level, to ensure fact and risk based network management, to set technical standards and to translate of asset owners’ performance requirements into appropriate service level agreements (SLAs) and into specific contracts with the service providers such as DBFO (Design, Build, Finance, Operate) or DBFM (Design, Build, Finance, Maintain).

**Service providers** are responsible for the operations *i.e.* the execution of O&M contracts based on SLAs and performance indicators defined by the Asset Manager in order to guarantee a certain performance of the infrastructure.

**Asset user and societal interests** - end users who are interested in free of charge online data access.

The main target audience is the group of asset managers, including the industrial toll way operators, because they will adopt the common framework and implement it in their management systems.

Communication with the asset managers group is performed in the wider arena of stakeholders, which was divided into: public, industry and research as shown in Table 1.

Table 1. The external target audience of the project

Public	Industry	Research
<p><i>Representatives for infrastructure authorities.</i></p>  <p>European Rail Infrastructure Managers </p>  <p><b>PIANC</b> The World Association for Waterborne Transport Infrastructure</p>	<p><i>Representatives for industrial parties</i></p>  <p><b>ECTP</b> INNOVATIVE BUILT ENVIRONMENT</p>  <p><b>ERRAC</b> The European Rail Research Advisory Council</p>  	<p><i>Representatives for research providers</i></p>     <p><i>Relevant European projects</i></p>  <p>CEDR Call 2010<sup>1</sup></p> <p>CEDR Call 2014<sup>2</sup></p> <p>CEDR Call 2015<sup>3</sup></p>

A list of stakeholders relevant to the AM4INFRA project has been built throughout the running of the project. The list will be available in the private area of project website and will be used for legacy purposes. This group of persons have been distinguished according to their roles, responsibilities and tasks according to the AM4INFRA approach: asset owners, asset managers, service providers and other societal interests. Stakeholder allocation is shown in Figure 2.

<sup>1</sup> Research Call 2010 - Effective Asset Management Meeting Future Challenges

<sup>2</sup> Research Call 2014 - Asset Management and maintenance

<sup>3</sup> Research Call 2015 - Asset Information Using BIM

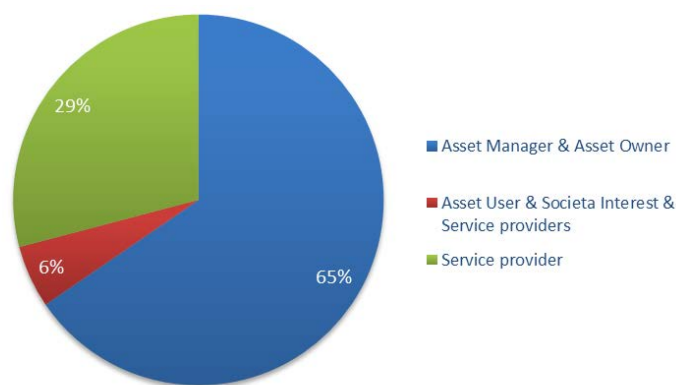


Figure 2. Stakeholder allocation [source: Stakeholders database]

In addition, clear, coherent effective messages for the stakeholders were defined in order to communicate the on-going approach, results and outcomes of the AM4INFRA project. They are interesting and relevant for the stakeholders group and other replicators. The messages were different depending on the target audience (Figure 3).

Key messages tailored for different target audiences:

Asset owner	Asset Manager	Service Provider	Other societal interests
<p><i>AM4INFRA makes asset management transparent in Europe thus facilitating the decision-making process</i></p> <p><i>AM4INFRA's insight into asset management practices provides NIAs support for development of asset management strategy and for adoption of structured decision-making processes</i></p> <p><i>AM4INFRA brings innovation and helps fill knowledge gaps</i></p>	<p><i>AM4INFRA reveals common principles and tools in European asset management practice</i></p> <p><i>AM4INFRA strengthens asset management approach across modes and borders to enhance current practices</i></p> <p><i>AM4INFRA's insight into asset management practices provides NIAs support for development of asset management strategy and for adoption of structured decision-making processes</i></p>	<p><i>AM4INFRA reveals common principles and tools in European asset management practice</i></p> <p><i>AM4INFRA brings comparable practices and best value for stakeholders</i></p>	<p><i>AM4INFRA ensures optimal upkeep of ageing infrastructure hand in hand with user safety and minimal delays</i></p> <p><i>AM4INFRA allows proper engagement with service providers concerning infrastructure condition and needs.</i></p>

Figure 3. Key messages [Source: AM4INFRA D4.2 ANNEX 1]

## 4 Stakeholder engagement events

A number of dedicated AM4INFRA events have been organized during the course of the project in order to disseminate the project progress and results to the primary stakeholders. An overview of the events organized by the project consortium are described below.

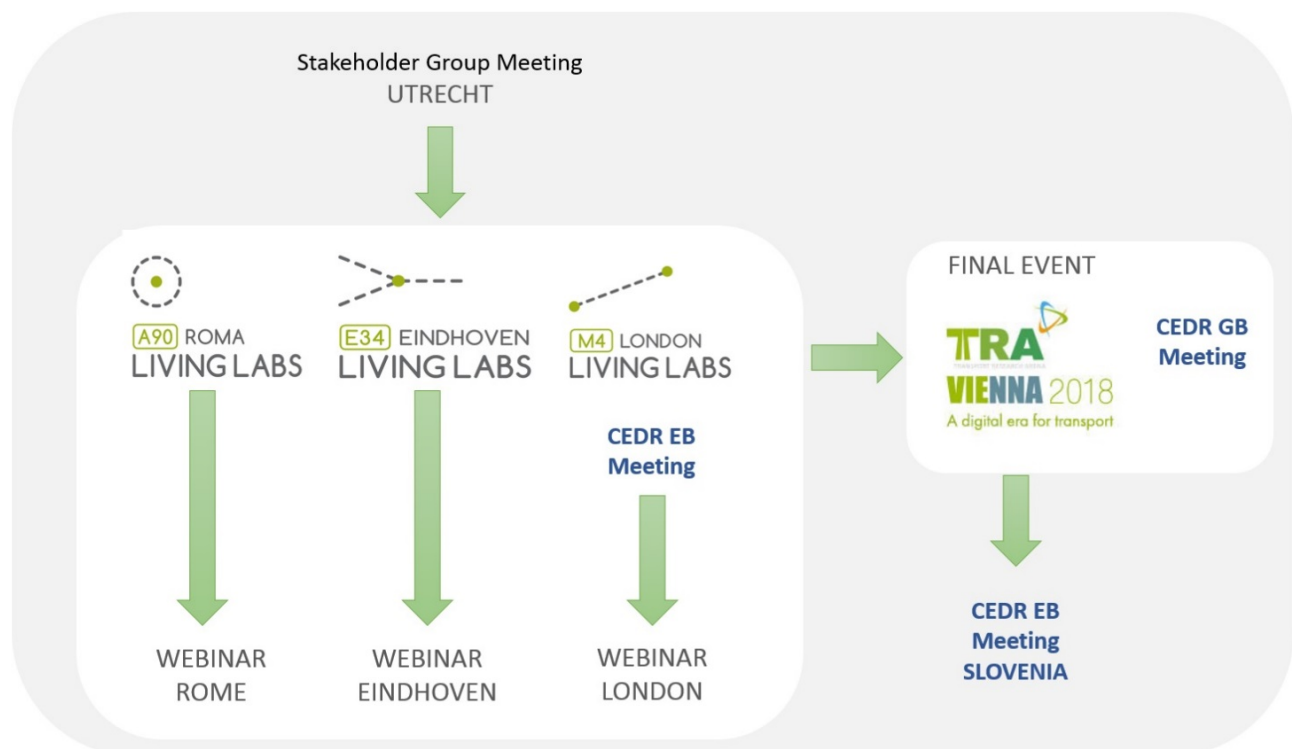


Figure 4. Overview of key stakeholder engagement events

Table 2. Overview of stakeholder engagement workshops

Event	Date/place	Purpose	Lead partners
<b>Stakeholder Group Meeting</b>	3-4 October 2017	The main aim of the workshop was to consult external stakeholders from infrastructure management and operations and the immediate surroundings on three draft documents supporting the application of the common framework approach.	<ul style="list-style-type: none"> <li>• RWS (overall coordination and management)</li> <li>• ANAS</li> <li>• HE</li> <li>• TII</li> <li>• SIA/ZAG</li> </ul>
<b>Learning by doing/implementation workshops</b>	January - March 2018	Three implementation workshops with experts were organised in order for stakeholders to get a learning-by-doing experience. The workshops were organized in the context of the three Living Labs: <ul style="list-style-type: none"> <li>○ Eindhoven (focus on WP1)</li> <li>○ London (focus on WP2)/ CEDR EB workshop</li> <li>○ Rome (focus on WP3)</li> </ul>	<ul style="list-style-type: none"> <li>• FEHRL (overall coordination and management)</li> <li>• RWS (Eindhoven)</li> <li>• HE (London)</li> <li>• ANAS (Rome)</li> </ul>
<b>CEDR Governing Board meeting</b>	18 <sup>th</sup> April 2018 at TRA2018, Vienna	The aim was to capture opinions and input from selected CEDR GB members about the legacy of the AM4INFRA project i.e. proposal to launch a CEDR Working Group on Network Governance	<ul style="list-style-type: none"> <li>• RWS (overall coordination and management)</li> </ul>
<b>AM4INFRA Final Conference</b>	18 <sup>th</sup> April 2018	In conjunction with/context of TRA 2018 The aim to raise awareness and capture input from experts and decision makers from agencies and policy makers attending TRA 2018. <ul style="list-style-type: none"> <li>○ Results and outcomes of the three living labs were presented</li> <li>○ Next steps for implementation and evolution of the common framework were presented.</li> </ul>	<ul style="list-style-type: none"> <li>• FEHRL (overall coordination and management)</li> <li>• RWS</li> <li>• HE</li> <li>• ANAS</li> </ul>
<b>CEDR Executive Board meeting</b>	14 <sup>th</sup> June 2018 in Slovenia	The aim was CEDR agreement on: <ul style="list-style-type: none"> <li>○ the draft AM4INFRA Technical Report the legacy of the project. This dealt with the proposal to launch a CEDR Working Group on Network Governance in which the outcomes of the project will be followed up.</li> </ul>	<ul style="list-style-type: none"> <li>• SIA/ZAG (overall coordination and management)</li> <li>• RWS</li> <li>• HE</li> </ul>

## 4.1 STAKEHOLDER GROUP MEETING IN UTRECHT

### 4.1.1 DESCRIPTION OF THE WORKSHOP

The first AM4INFRA stakeholder group meeting was held on 3-4<sup>th</sup> October 2017 at the LEF Future Centre in Utrecht, the Netherlands.

Over 30 participants from different countries and multi-modal organisations provided valuable input to draft project documents, as well as to the planned Living Labs in which the documents will be demonstrated and verified. The documents constituted a common framework for a European life-cycle based asset management approach for transport infrastructure.

### 4.1.2 AIM OF WORKSHOP

The main aim of the meeting was to consult external stakeholders as infrastructure managers and operators and their immediate stakeholders on three draft documents supporting the application of the common framework approach:

- An application guideline for Infrastructure Asset Managers on how to use the framework approach in order to optimise decisions across their line of sight from policy indicators to condition and performance of the individual assets,
- A repository of case examples for whole life cycle and risk-based management for reference,
- A data business model explaining how data and data architectures is implemented in order to support optimal and transparent decision making across the modes and institutions.

### 4.1.3 CONTENT OF WORKSHOP

The stakeholders were welcomed by the technical coordinator of the project, Mr. Ruud Smit in the futuristic setting of the LEF centre. He introduced the AM4INFRA project and the Work Package leaders: Gerrald Goselink (RWS; WP1), Ramesh Sinhal (HE; WP2) and Elisabetta Marcovaldi (ANAS; WP3).

In a series of break-out sessions the stakeholders were consulted on the concepts and deliverables from each of the three content work packages:

- WP 1 – Stakeholders' focused objectives
- WP 2 – Whole life Cost and Risk Based Approach for Road Network Management
- WP 3 – Information and Data Management

The concept and objective of the three Living Labs were explained. The Living Lab concept was chosen by the project partners because it provides the opportunity to embed and verify elements of the framework approach into real life scenarios and practices and to learn from this reality over time.



Figure 5. The AM4INFRA Strategic Team at the stakeholder group meeting

#### 4.1.4 MAIN RESULTS OF WORKSHOP

Valuable insights and recommendations were captured by the project team on the project scope, the alignment with technology development and the replicability in the context of asset management maturity. Issues were addressed, such as:

- How to anticipate on technology development such as smart mobility?
- Will the common framework also be applicable beyond the TEN-T network e.g. in regional and municipal networks?
- How is replication considered, in view of varying agencies' financial status or asset management maturity?
- Are environmental, social and economic aspects included in the common framework approach?

Furthermore, in relation to the dissemination and replication activities, large number of recommendations and ideas resulted from the discussion of a beneficial stakeholders' approach aimed at aligning with the strategic, tactical and operations elements of any agency or entity. Discussion also ensued regarding the legacy of the project.

A video describing the activities held in the AM4INFRA stakeholders group meeting was produced and can be found here: <http://www.am4infra.eu/am4infra-stakeholder-meeting-video/>.

## 4.2 LIVING LAB A90 ROME

### 4.2.1 DESCRIPTION OF LIVING LAB

The first AM4INFRA Living Lab was held on 31<sup>st</sup> January 2018 at the Sala Situazioni Nazionale, ANAS Headquarter in Rome, Italy. Over 15 participants, from various organisations (ANAS, Autostrada dei Parchi, ASTRAL, AISCAT, RAI) attended the Living Lab, worked together and contributed towards the enrichment of the project deliverables, provided input and feedback to the Living Lab concept and supported the project results.

### 4.2.2 AIM OF LIVING LAB

The main goals of the Living Lab were:

- To identify a specific road stretch of a TEN-T itinerary in order to perform an on-field application for the designed asset management information system model,
- To perform on the selected itinerary a case study regarding the application of asset information management system,
- To collect results and lesson learnt from case study outcomes,
- To identify possible additional user and functional requirements to update the asset information management system BBP,
- To collect any possible input from the stakeholders on the living lab.

### 4.2.3 CONTENT OF LIVING LAB

The Rome Living Lab was concentrated on a 70 km stretch of the Rome Ringway A90. The ring road of Rome is the real-life context for the Rome Living Lab. This ring road is 68 km long and serves over 100.000 vehicles a day. The figure below shows the map of the ring road. This road plays a key role for the accessibility of the inner city with over 30 junctions providing access to it.





Figure 6. Motorway A90 in Rome

The core of activities of the Living Lab were captured from two round-table sessions:

#### Round Table with the stakeholders – Part 1

Proof of concept of the deliverables of WP3:

- a) Asset Information Management Core System Ontology map
- b) System functionality and architecture

#### Round Table with the stakeholders – Part 2

Simulation of a data collection and integration shared environment, related to the mobility on the GRA including different road stretches:

- a) Assessment of the GRA context for different asset managers
- b) Asset data analysis
- c) Proposed multi-operator PFIs: discussion and proposals
- d) Introduction to scenarios based on the sharing of key information and KPIs

### 4.2.4 MAIN RESULTS OF LIVING LAB

The results of the Rome Living lab have been defined as follows:

- Participants' agreement on AM4INFRA data and information framework.
- Suggestions for new datasets for the Asset Data Dictionary and new links between them for system information model.
- An asset-oriented and road user-oriented risk concept linked to maintenance works and level of service
- An opportunity to discuss the road corridor and criteria of the case study, based on a common asset management-life cycle costs approach.
- A first identification of constraints/threats with respect to the common approach.

Full details of the Living Lab can be found in deliverable report [D1.3 Living lab for three real life situations \(cross-asset, cross-network, cross-border\)](#).

### 4.3 LIVING LAB E34 EINDHOVEN

#### 4.3.1 DESCRIPTION OF LIVING LAB

The second Living Lab/implementation workshop took place on 21<sup>st</sup> February in Antwerp, Belgium. The focal point of the Eindhoven Living Lab was cross-border optimisation on the E34 motorway. The E34 is part of the United Nations International E-road network. It connects Zeebrugge, the major seaport of Bruges, with Bad Oeynhausen, a German spa town located beside the River Weser at the eastern edge of North Rhine-Westphalia. At Bad Oeynhausen, the E34 links to the E30, a major pan-European east-west artery. It also passes, relatively briefly, through the Netherlands, following the southern by-pass of



Eindhoven. Within Germany the route follows from south-west to north-east the full length of North Rhine-Westphalia. The section of interest for this living lab is the section linking the Antwerp region through the Netherlands up to Venlo (NL).

#### 4.3.2 AIM OF LIVING LAB

The main purpose of the Eindhoven Living Lab was to demonstrate and verify the 'line of sight' framework in a cross-border setting. The Living Lab focused on the fact that cross border optimization of networks involves at least two institutions, one at each side of the border. In order to make such optimization possible these institutions should find a smart way to cooperate.

#### 4.3.3 CONTENT OF LIVING LAB

The two responsible road agencies for the stretch of cross-border road of interest to the project were AWW of Flanders and RWS of the Netherlands. Although a much wider variety of other stakeholders were involved along this route, the primary focus in the living lab was on the dialogue between these two major network operators.

The activities for the living lab centred around 6 topics and one overarching theme. The overarching theme was a comparison of asset management maturity. The topics covered were:

- Parking lots for trucks
- New infrastructure
- Cross-modal city-initiatives (Antwerp, Eindhoven)
- Maintenance and operation
- Data and security
- Sustainability



Figure 7. Motorway E34 along Eindhoven

#### 4.3.4 MAIN RESULTS OF LIVING LAB

The results of the Eindhoven living lab have been defined as follows:

- Opportunities were found in cross-border alignment for planning of renovation works, future functionality, and lorry parking facilities
- Mapping of joint opportunities and issues
- Get cross-border acquainted is a hot topic
- Helped to prepare shortlist of priorities and required participants for follow-up Living Labs

## General Conclusions

- Cross-border issues are not isolated elements (not in time, not in type of work, not in institutional players)
- Cross-border issues easily propagate deep into national networks (alternative routes/cross modal solutions/parking facilities)
- Be aware of Institutional asymmetry (mandate, responsibility, work culture etc)
- Language is important (by meaning and terminology)
- Cross border dialogue has been stimulated

Full details of the Living Lab can be found in deliverable report [\*D1.3 Living lab for three real life situations \(cross-asset, cross-network, cross-border\)\*](#).

## 4.4 LIVING LAB M4 LONDON

### 4.4.1 DESCRIPTION OF LIVING LAB

The third Living Lab took place in Old Windsor, close to London's Heathrow airport on 8<sup>th</sup> - 9<sup>th</sup> March 2018. It was hosted by Highways England. The living lab was organized as a two-day session back-to-back to the CEDR Executive Board meeting. This living lab was concentrated on the M4 (London - Wales) motorway - the main strategic route between London, the west of England and Wales.

The key issues in place were:

- Heavy congestion (traffic) on the Strategic Road Network resulting in poor journey reliability
- Regular maintenance works planned along the route
- Construction of a Smart Motorway scheme (hard shoulder becomes a running lane and bridge/lane widening where required). Endeavouring to meet transport network user's needs.

### 4.4.2 AIM OF LIVING LAB

The main scope of the Living Lab was to verify and demonstrate the six-building block approach to risk and life cycle management within the common asset management framework.

### 4.4.3 CONTENT OF LIVING LAB

On the first day of the Living Lab presentations were held about the Living Lab Rome Ring Road (A90 Motorway), Living Lab Eindhoven (E34 Motorway), AM4INFRA Work Package WP2 "Whole Life costs and risk-based approach" – with the focus on D.2.1 and D.2.2 as well as the Living Lab M4 London: location and challenges. On the first day participants were provided with information delivered through the presentations by stakeholders.

On the second day participants used information provided on the first day for a fruitful discussion in smaller groups by means of Dialogue Sheets. These Dialogue Sheets with relevant questions turned out to be an excellent method to initiate interesting round table discussions, around the theme of life cycle management and risk looking at:

- Perception and understanding of Asset Management
- Applicability risk-based approach
- The use of systems and technology
- Future: application of the Living Lab

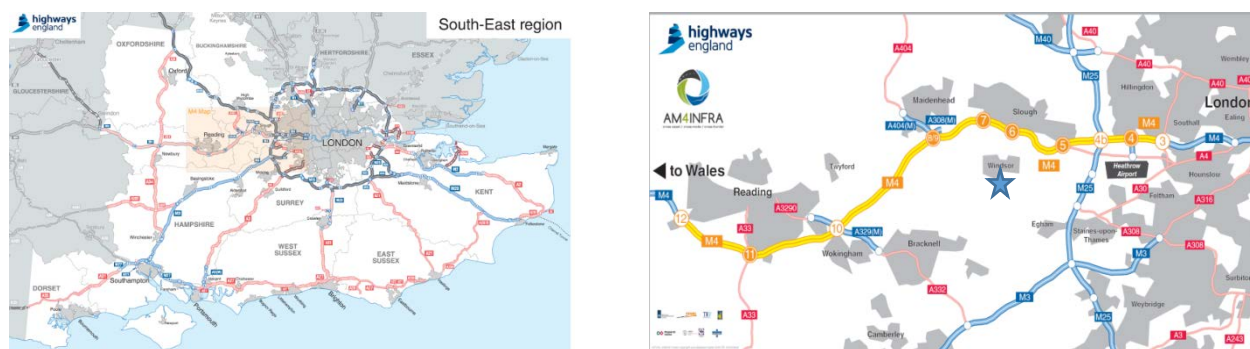


Figure 8. Motorway M4 in London

#### 4.4.4 MAIN OUTCOMES OF LIVING LAB

The results of the London Living Lab are as follows:

- Thorough understanding of the practical links between the six building blocks (data, systems/tools, organisations and Whole Life Costs and managing risk) was made possible.
- Management level/strategic systems are an important influence on the effectiveness of asset management, not just operational and tactical levels.



Figure 9. Life cycle management and risk-based approach framework – Six Building Blocks

Full details of the Living Lab can be found in deliverable report [D1.3 Living lab for three real life situations \(cross-asset, cross-network, cross-border\)](#).

#### 4.5 WEBINARS

The three Living Labs described above focused mainly on the local and regional stakeholders in the specific geographical settings. In order to involve other interested stakeholders, the project consortium organised three webinars; one for each Living Lab. The webinars focused on the scope of the Living Labs, the results and follow up activities. The webinars that were organised are as follows:

- 1<sup>st</sup> Webinar on Living Lab A90 Rome – 8<sup>th</sup> February 2018  
<http://www.am4infra.eu/living-lab-a90-rome/>
- 2<sup>nd</sup> Webinar on Living Lab E34 Eindhoven – 1<sup>st</sup> March 2018  
<http://www.am4infra.eu/living-lab-e34-eindhoven/>
- 3<sup>rd</sup> Webinar on Living Lab M4 London – 20<sup>th</sup> March 2018  
<http://www.am4infra.eu/living-lab-m4-london/>

## 4.6 AM4INFRA FINAL CONFERENCE

After almost two years of intense work and exchanges, the AM4INFRA partners presented the draft results of the project at the final event held on 18<sup>th</sup> April 2018 (in conjunction with the Transport Research Arena 2018 - TRA2018).

The AM4INFRA Final Conference was divided into two consecutive sessions with identical agendas in order to optimally facilitate the attendance. The first session was opened by Fabio Pasquali (ANAS Italy) and the introduction the AM4INFRA project concept and relevance was presented by Ramesh Sinhal (Highways England). The Project Coordinator, Jenne van der Velde (Rijkswaterstaat Netherlands) and other project partners, Ramesh Sinhal (Highways England), Elisabetta Marcovaldi (ANAS Italy), Neng Mbah (Highways England) presented the results of the project and the planned next steps. During the second session, the welcome speech was given by Maria Cristina Marolda (EC DG MOVE) with the rest of the programme following the same format as the first session.

18 people attended the 1<sup>st</sup> session, while 36 people were present at the 2<sup>nd</sup> session. These include representatives of transport agencies as well as members of CEDR and EC projects (Interlink, SAFE-10T, and RAGTIME).

The project partners presented the AM4INFRA framework that enables transport infrastructure managers to determine what synergetic benefits their mutual cooperation would bring in reference to their respective policy outcomes as well as how they could achieve such cooperation without abandoning their specific organisational contexts. The framework consists of:

- a common language framework that spans the line of sight from policy outcomes on the network level to the condition and functionality of the individual assets.
- a tool box of methods and models for whole life cycle and risk management that enables transparent and fact-based decision making across the line of sight.
- a set of data and information structures and tools, including an Asset Data Dictionary providing common definitions, a common core model for an asset information management system facilitating the exchange and interoperability of data enabling the sharing and comparison of multiple datasets from different sources, and a Business Case providing a concrete example.

Another important feature of the final conference was the presentation of the results of the three AM4INFRA Living Labs. Learning by doing has been a key principle of the AM4INFRA project. For this reason, the project not only delivered a framework approach, tools and guidelines for asset management, but also demonstrated and verified these in practice through three living laboratories. These Living Labs provide a learning environment against the backdrop of practical situations on the TEN-T network.

The three Living Labs are:

- Living Lab A90 Rome
- Living Lab E34 Eindhoven
- Living Lab M4 London

Generally, the application of living labs proved to be an avenue for strengthening the cooperation between infrastructure agencies and building a converging growing path provided inspiration, stimulated mutual learning and paved the way to a common language. In total around 100 participants joined these living labs, representing over 20 infrastructure agencies or affiliate organizations.

The three living labs produced a number of conclusions from both a technical and soft skills perspective. These can be found in the project report titled "Living lab for three real life situations (cross-asset, cross-network, cross-border)".

One of the major objectives of the project is to maximise the replication potential across the European TEN-T network of the delivered common framework approach on asset management. The project partners presented a proposal on how to achieve this: through the establishment of a CEDR WG on Network Governance.

For those who were interested but could not attend the event, the project consortium conducted live streaming of both sessions. In addition, a follow-up webinar was organised on 3<sup>rd</sup> May 2018 where representatives of the project consortium presented the draft results to those that could not attend the final conference.



Figure 10. AM4INFRA Final Conference

#### 4.7 CEDR GOVERNING BOARD MEETING

On 18th April 2018, during TRA2018 in Vienna, a CEDR Governing Board (GB) Level working breakfast was held with several members of CEDR GB who support a common Asset Management approach. This session resulted in bolstering the proposal to launch a CEDR working group on Network Governance, centred around a standing, strategic advisory board to the GB. Other infrastructure managers (i.e. regional and other modes) will also be involved.

#### 4.8 CEDR EXECUTIVE BOARD MEETING

On the 14th of June, at the CEDR Executive Board (EB) meeting in Portorož, Slovenia, three members of the AM4INFRA project team contributed to a substantive dialogue of the CEDR Executive Board on the results of the AM4INFRA project (which is an activity in CEDR's current rolling Action Plan2018-2020), and on the follow-up on the project.

The CEDR EB agreed on the Technical Report on the AM4INFRA results. The Technical Report on AM4INFRA was presented by Ramesh Sinhal of Highways England. He showed the video of the animated Windsor meeting of the CEDR EB on the AM4INFRA project, last March (<http://www.am4infra.eu/am4infra-london-living-lab-video/>).

The agreement with the AM4INFRA Technical Report reflects CEDR's endorsement of the common approach on asset management of infrastructures. The report provides its members a clear reference to proven concepts, methods, models and data/information structures in support of their actions to implement asset management systems on their networks. The technical report is in the process of final editing and will be released before the end of August 2018.

The CEDR EB also discussed and agreed on the proposed follow-up on the AM4INFRA project, to be included in the upcoming rolling CEDR Action Plan 2019-2021. The agreement concerned the proposal by nine CEDR Members to launch a CEDR working group on the subject of Network Governance.

This working group has two objectives: to provide a standing, strategic advisory board to the CEDR Governing Board, and to provide a knowledge portal to CEDR's members. Its function as a strategic, advisory board is to address the key trends and developments in network management with a horizon of 5 to 10 years in support of common positions of the CEDR Governing Board. Its function as a knowledge platform is to support CEDR's members with expertise and relevant documentation on asset management, such as guidelines, case examples, learning environments. This will build from the AM4INFRA Technical Report.

In the discussions the EB members helped to shape objectives and position of the working group, and cementing the alignment with CEDR's mission, vision and strategic objectives. Based on the outcomes of this discussion the proposal will be further elaborated over the coming months, in preparation of the kick-off event in February 2019.

This working group will address the performance of transport infrastructure at a network level in the context of its contribution to the national and European economy, society and environment. Starting with a focus on asset management (systems), over time this working group will also include synergies with the immediate surroundings of the infrastructure networks (i.e. collaborative planning) as well as the subject of 'future proofing' the networks' performance in view of the various societal challenges the managers are facing.

With the CEDR EB agreement on the results from AM4INFRA and on the follow-up activities, a major objective of the AM4INFRA coordinating support action has been achieved: maximising the replication potential across the European TEN-T network of the delivered common framework approach on asset management on transport infrastructures.