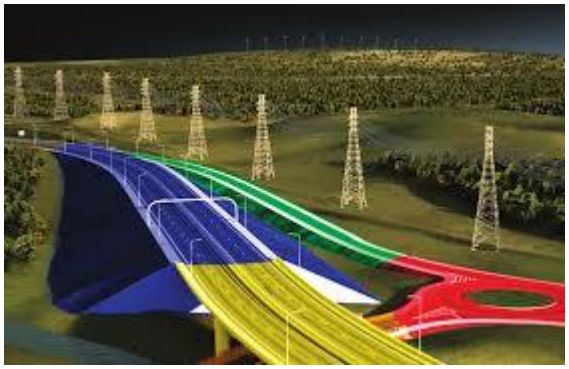
Instytut Badawczy Dróg i Mostów

Road and Bridge Research Institute



Experience Learnt from recent CEDR BIM Call (CREDIBLe)

Adam Zofka, Ewa Zofka

IBDiM

UN TEM BIM Conference

6, April 2016

Warsaw

CEDR Transnational Road Research Programme Call 2015

- Launched by Transport Infrastructure Ireland (TII) of Ireland on behalf of the Conference of European Directors of Roads (CEDR).
- CEDR provides a platform for cooperation and promotion of improvements to the road system and its infrastructure, as an integral part of a sustainable transport system in Europe.
- The participating NRAs in this Call are Germany, Netherlands, Belgium-Flanders, Finland, Norway and Denmark.

CEDR BIM Call 2015: AIM

The aim of this Research Programme is to:

- Improve interoperability within the European NRAs and its stakeholders.
- Embedding the use of Building Information Management (BIM) based on open standards in their **Asset Management** and **Construction** processes.

CEDR BIM Call 2015: Themes

This Call has the following 4 sub-themes:

A. Exploration of procuring asset information for better projects and Asset Management Systems

B. Exploration of BIM data structures

C. Design for common principles for a European object-type library

D. Design and test a basic European object-type library and open BIM standards

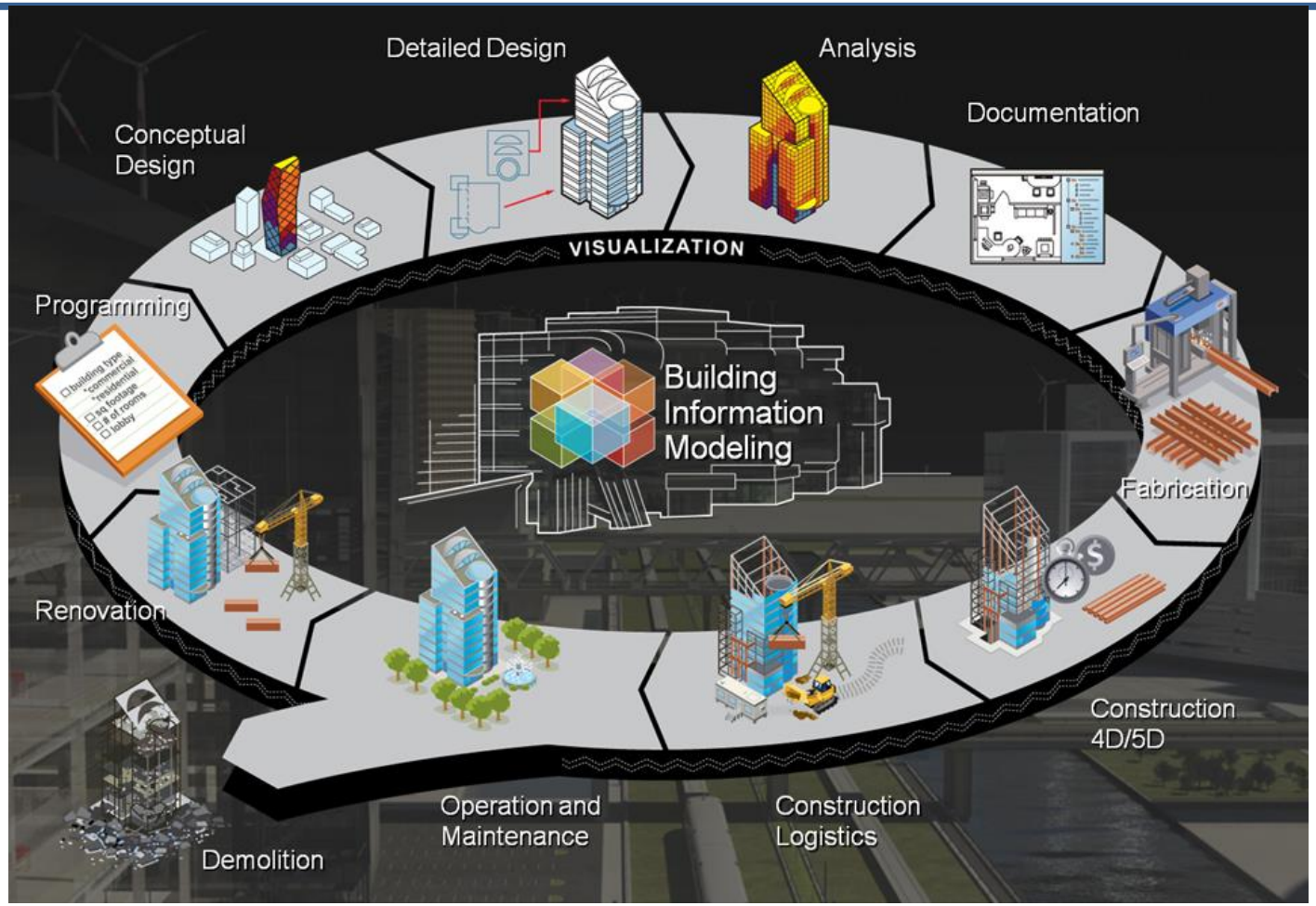
CEDR BIM Call 2015: Reasons for this Research

- Gain **better knowledge** and **guidance** on how to manage asset information during the lifecycle for internal development **by making use of modern IT technologies**
- Steer the development of asset management systems into a more demand-driven rather than a supply-driven process
- Benefit from national developments and experiences resulting in a **reduction of costs** and acceleration associated with BIM systems
- Create common understanding about **open standards** that are suitable or need to be developed.

Selected benefits of BIM

- **Minimized information loss** during the transition between project stages, processes and participants
- **Better life cycle management resulting from more readily available consolidated design and construction information as a single source of data.**
- **Higher quality** assurance of the projects
- **Better cooperation and communication** between all the participants both on the management, and on the technical level
- **Methodological collaboration** across disciplines
- A solid **information base for asset management and life cycle management**
- More transparency and better accountability on a political level
- Clear procurement rules and efficient working processes leading to better quality
- **Minimized costs of operation, maintenance and construction to realize maximum performance of the infrastructure network.**

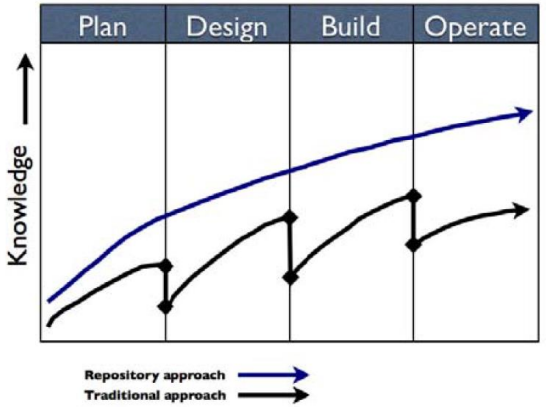
What BIM can do?



Issues with BIM

- Large number of asset support and maintenance contracts often require rework, resurveying because generated **digital model is not transferred to construction organizations** during the designing phase or because of **errors or inaccuracy of received data** or even because of **different data standards**.

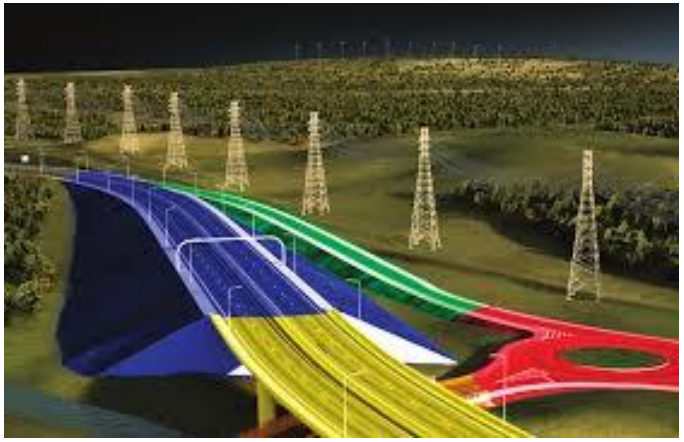
- Construction organizations **recreate digital infrastructure object models from the paper designs**. Recreation process may cause deviations from the design model and errors.



- **Differences between drawings and 'as-built' reality.** Generated information is not stored anywhere, so it cannot be used for the operation or reconstruction of the objects. Deviations from the design model are not updated according to 'as-built' model.

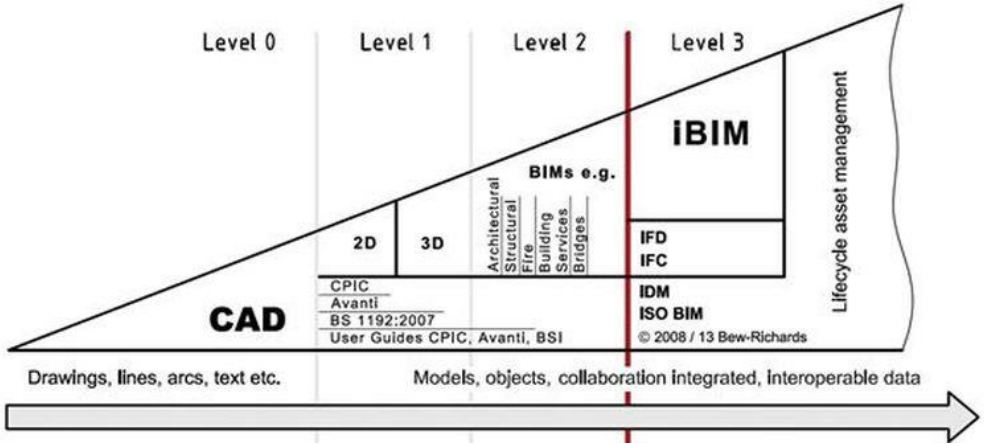
Response to CEDR BIM Call The CREDIBLe Project

Design and Implementation of **CR**oss **E**uropean **DI**gital **B**im **L**ibrary (CREDIBLe)



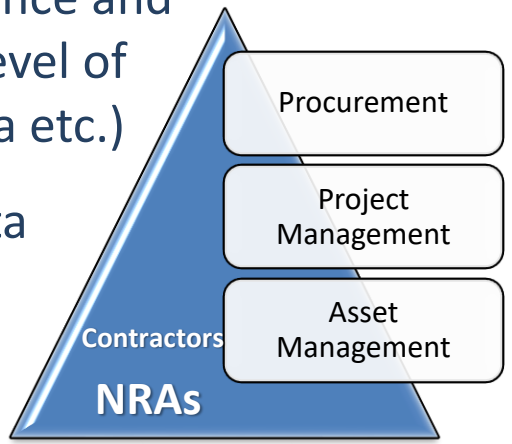
CREDIBLe Project Background

- The **need for the digitized and interoperable** cross-Europe **BIM data market** has been identified in the recent **CEDR** Call.
- **Significant fragmentation** contributes to major inequalities and losses of information during the life cycle of construction and infrastructure projects.
- Various **levels of BIM maturity** across European countries, ranging from Levels 0-3.



CREDIBLe Project Goals

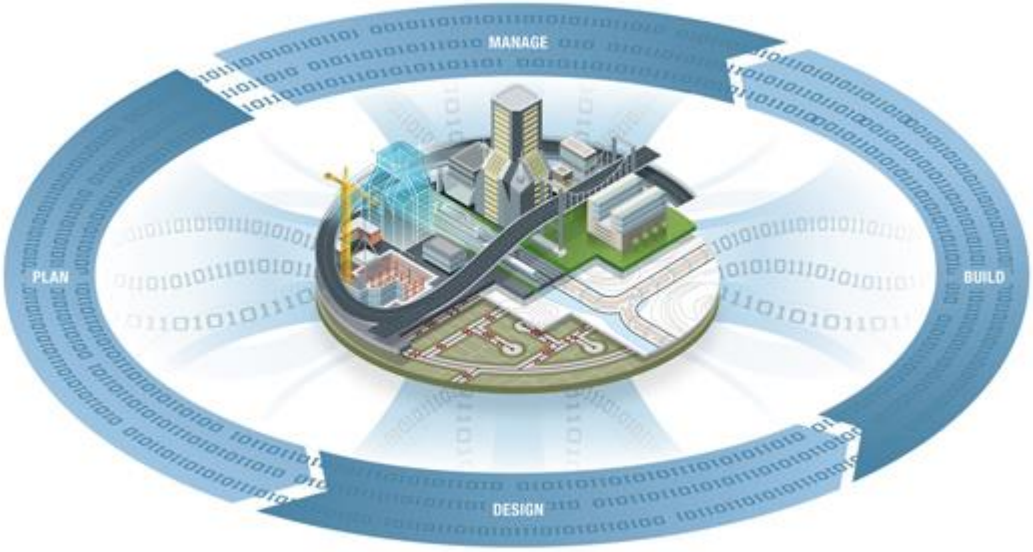
- Review current BIM projects and AMS in European road transport sector
- Survey experts from NRAs, design, construction, maintenance and other organizations to identify their needs and technical level of information exchange (standards, amount and type of data etc.)
- Explore BIM data structures at **3 levels** and create BIM data requirements for BIM object-type library with a catalogue of infrastructure objects and their respective parameters to be used in BIM



- Develop Roadmap recommendations for the European object-type library (open data standards; asset information exchange protocols; requirement for the BIM object-type library)
- Design, test and validate European BIM object-type Library.

CREDIBLe Project Goals

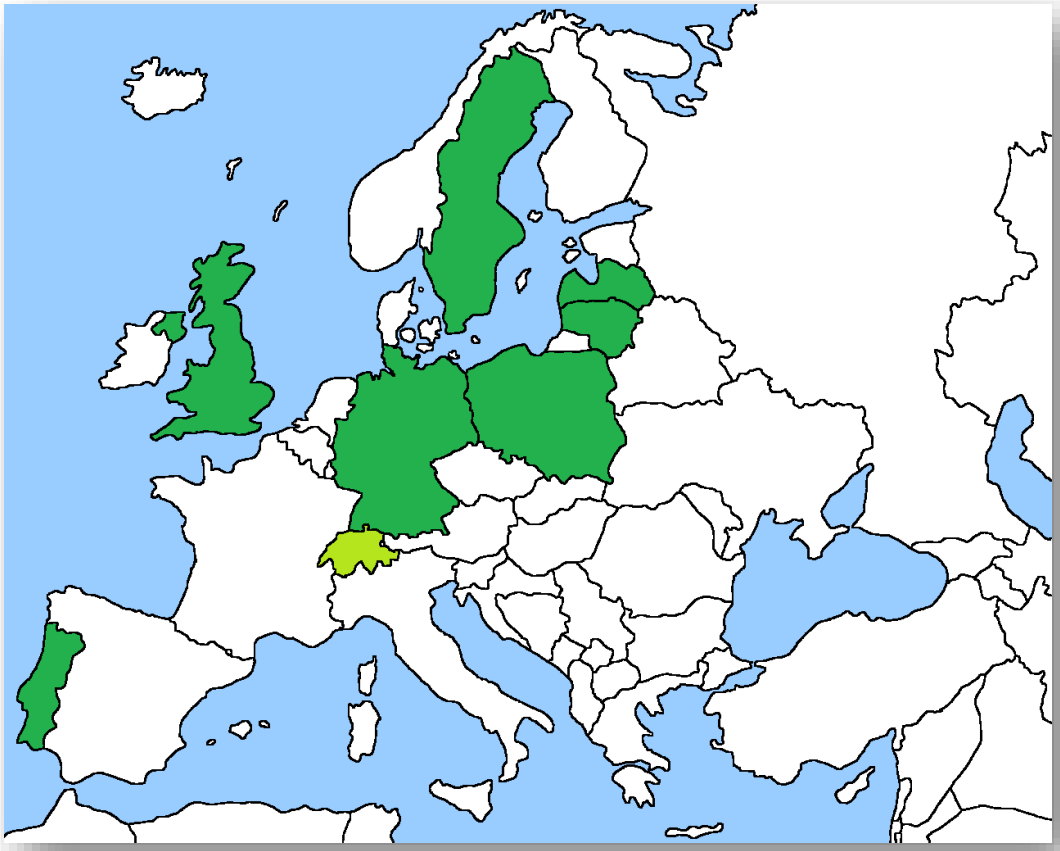
In summary, we will conduct a **desk research** to identify state of the art BIM and procurement practices which will help us in developing an open standard for the library and create the **library tool**.



Project Innovation

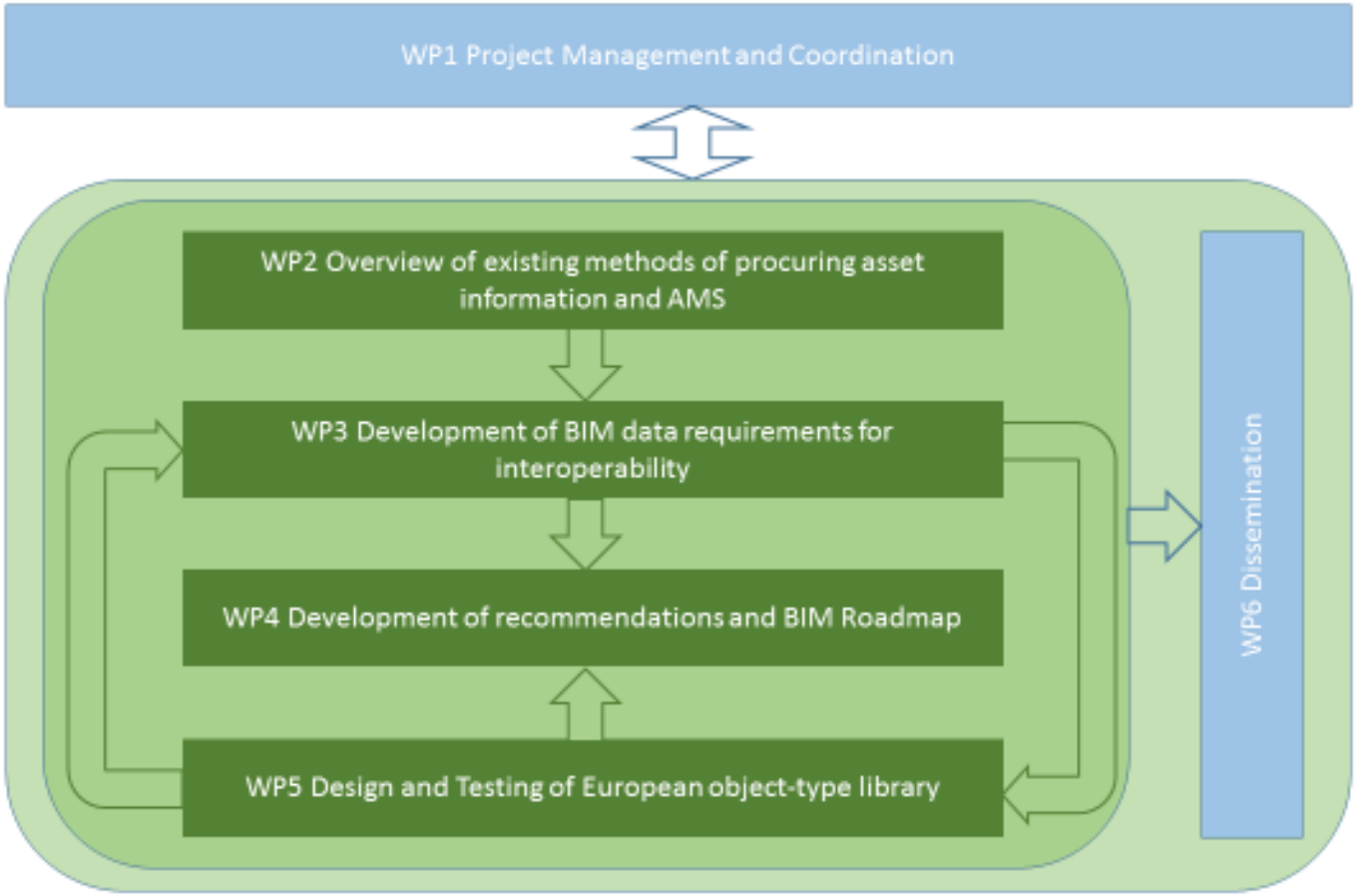
- The key component of our innovative approach is the fact that the **object type library** will be trialed **using live data and real work experience** offered by the one of our partners representing UK Contractors
- The UK partner acts as the service provider for a third of the Highways England network and maintains the IT and electrical assets on all Welsh motorways and trunk roads on behalf of Transport Wales.

Project Partners

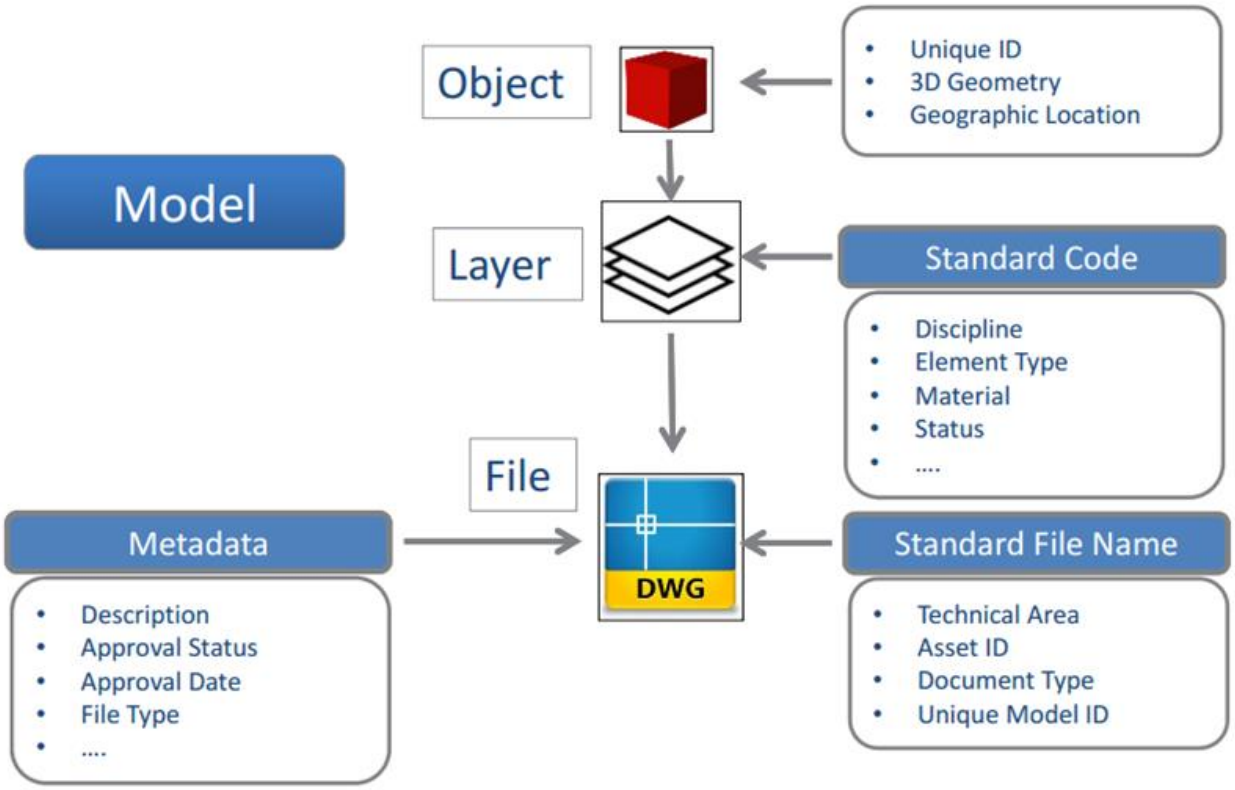


Supporting NRAs
Swedish Transport Administration (SE),
General Directorate for National Roads and Motorways (PL),
Portugal Infrastructurres, I.P. (PT),
Lithuanian Road Administration (LT),
Latvian State Roads (LV),

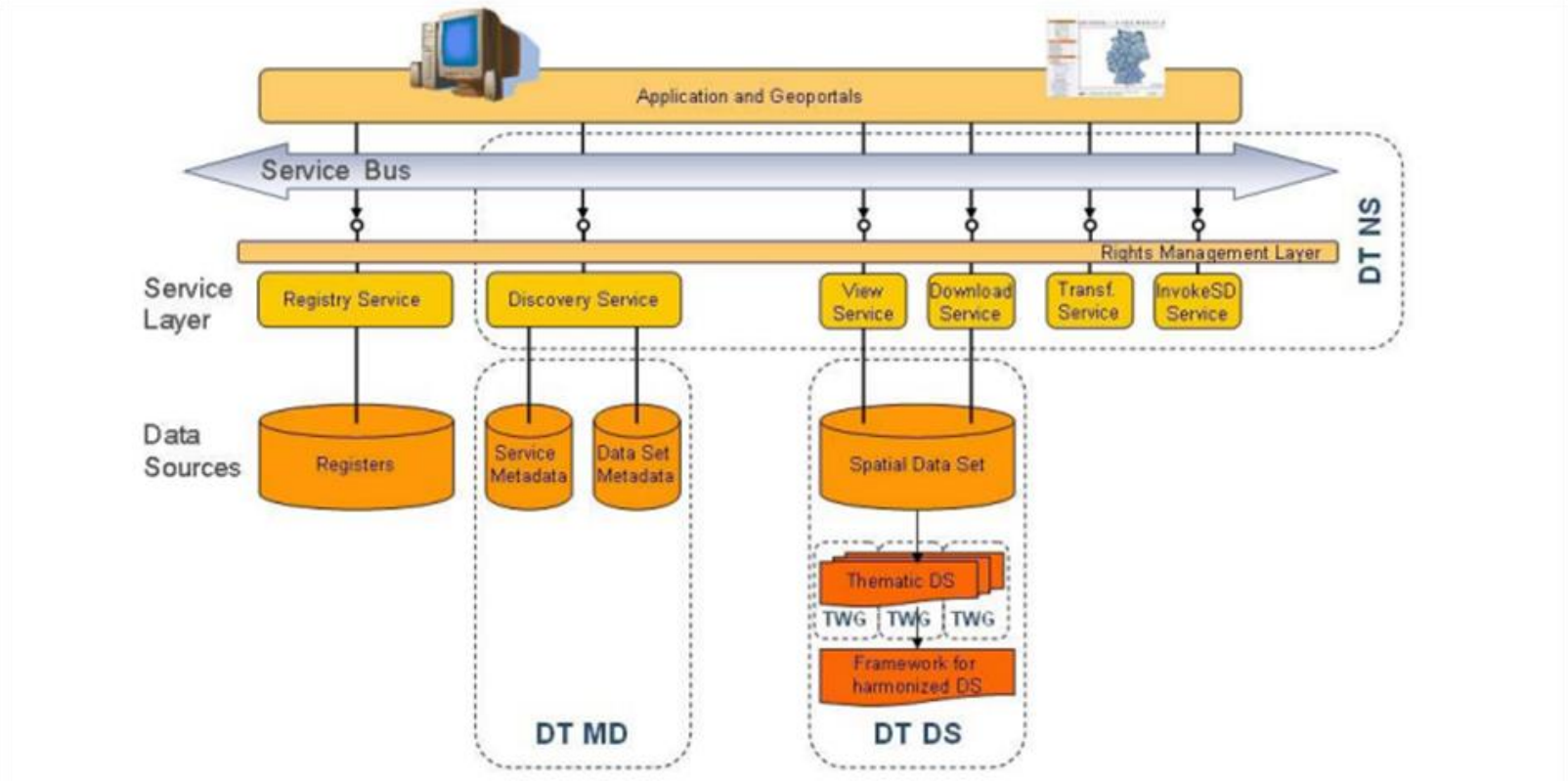
Work Packages



Object Type Library-example



INSPIRE technical architecture overview



Pilot Test of the Library

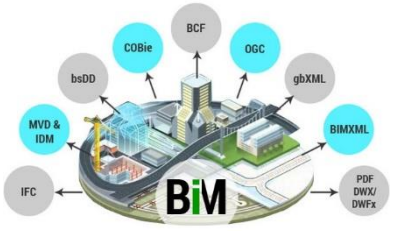
- A detailed test setup plan will be provided before Pilots execution.
- Test data sets, based on data delivered from supporting NRAs will be prepared also to cover special test cases.
- Test cases will be then designed and tests conducted at 4 pre-selected locations: Portugal, Sweden, Lithuania and Poland.
- Pre-selection of the testing countries was done based on the level of maturity of BIM ranging from 1-3 in our case.

ROAD AND BRIDGE RESEARCH INSTITUTE (IBDIM)

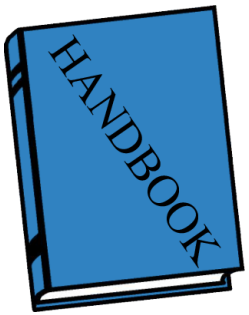
Expected Achievements

- **Needs** will be **identified** among Europe's NRAs and its major stakeholders regarding **exchange of information/data** during the lifecycle of assets as well as the level of interoperability.

- Relevant infrastructure asset information (**respective parameters**) for **BIM** will be identified to be used in future cross-Europe implementation.
- Developed **open standard BIM object-type library recommendation** can be easily used across Europe.



- Developed **handbook** will enable even an NRA at level 1 of digital asset data to start implementing it, and for those with advanced development comprehensive and common standard.



open source

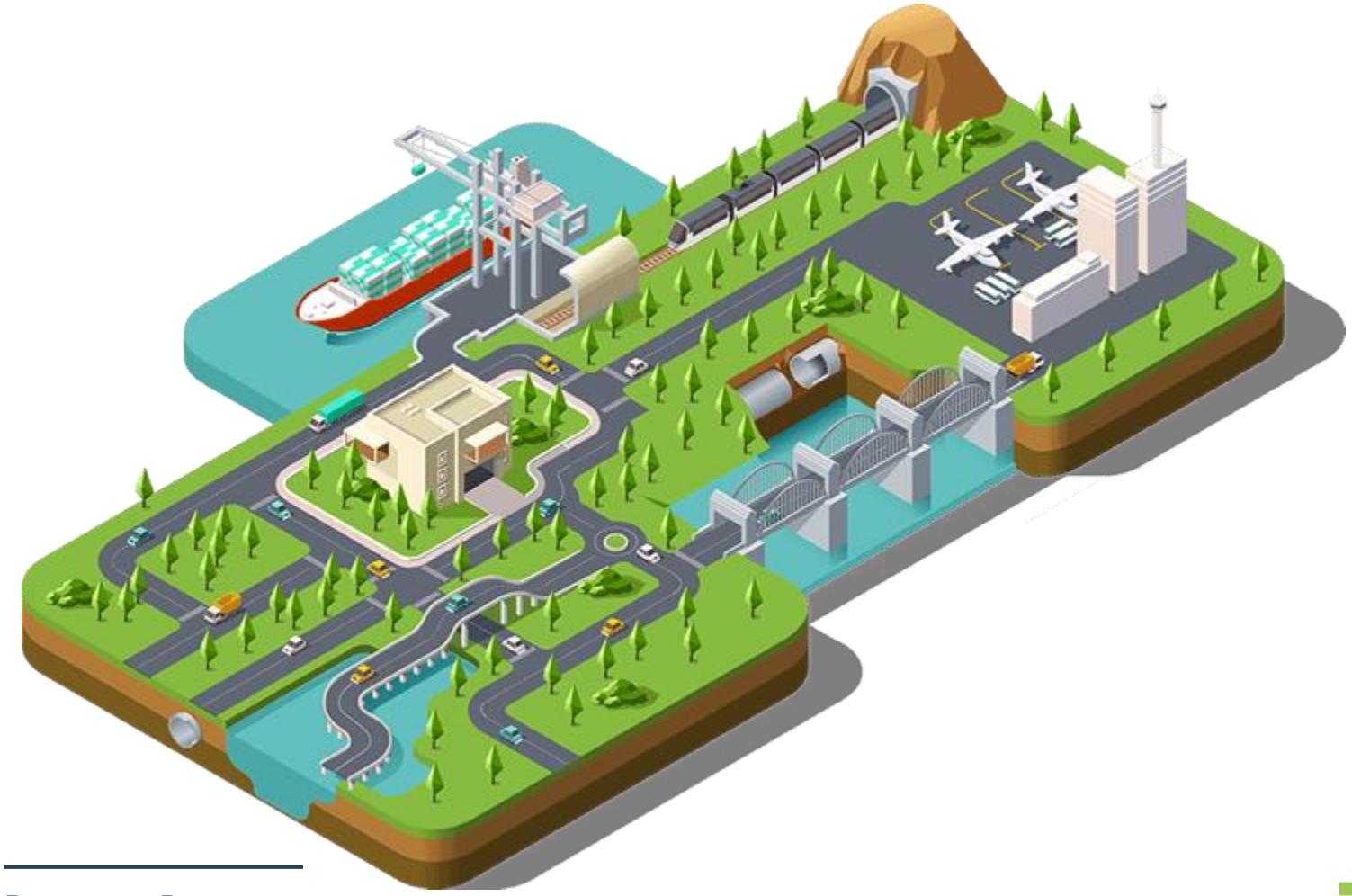
Expected Achievements

- **Designed and developed library** will be implementable easily and quickly as it is planned to perform a trial using live data (using existing infrastructure projects) considering entirely real world conditions.

- **A basic asset library will be developed that all road authorities can use.** The findings regarding individual member states specific AM info, or geographical specifics will be added in a common and interoperable way.

- Planned dissemination activities and regular consultations with the NRAs will raise awareness of the need to develop BIM and AM in organizations in an integrated way through proposed roadmap.

BIM Civil Infrastructure



Thank you! Questions?

Instytut Badawczy
Dróg i Mostów

Road and Bridge
Research Institute

Ewa Zofka
ezofka@ibdim.edu.pl
Adam Zofka
azofka@ibdim.edu.pl