

BIM and GIS standardisation and implementation in Sweden with a through life perspective

Lifecycle standard as an integrating framework

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Industry collaboration on BIM



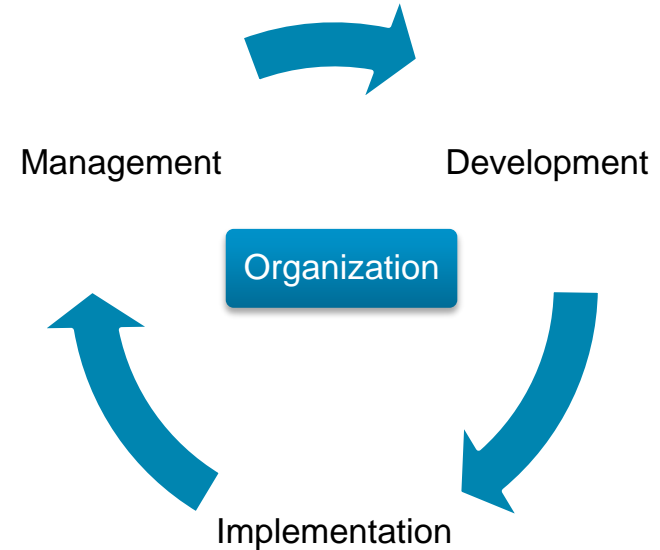
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- Non-profit organization with almost **180** members from:
 - property owners, developers, architects, consultants, contractors, installation companies, construction material companies and developers and suppliers of software.
 - Maximum possible industry collaboration for increased use of BIM
 - Vision:
 - "We create the seamless flow of information in the built environment processes"

Mission

- Facilitate **Implementation**
- **Managing** industry-wide standards and tools
- **Develop** processes, working methods, standards and tools



Member groups

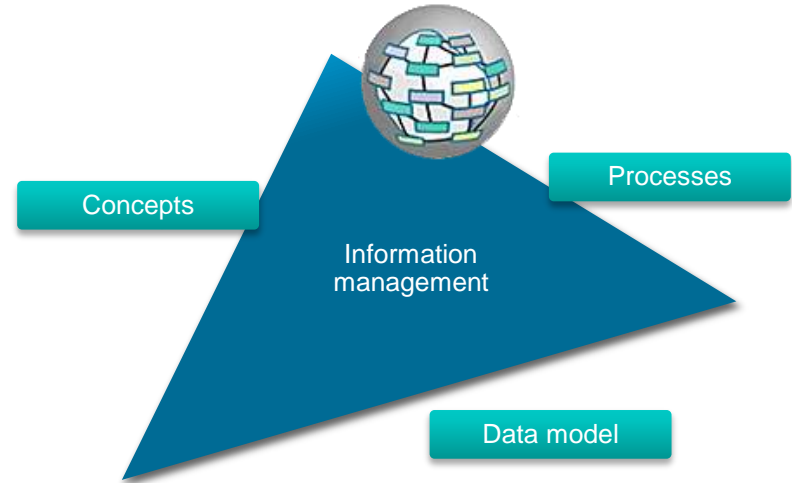
Six member groups with focus on networking and development of common needs.

Meetings four times a year, 15-30 participants per group

- Infrastructure
- Facilities management
- Installation (HVAC)
- Project management
- Environment and Energy
- Building materials

Development in projects, examples

- BIM classification
 - BSAB 2.0 = Coclass
- Information delivery (processes)
- buildingSMART international
IFC, bSDD, IDM
- BIM and legal aspects
- National guidelines for BIM

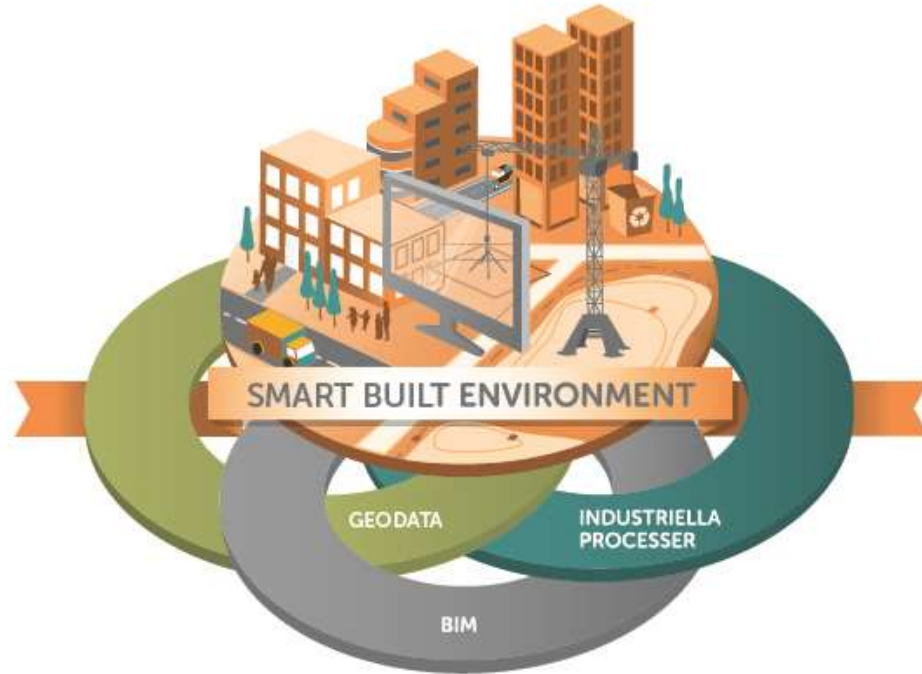


Smart Built Environment

- 12-year program
- 10 + 10 M€ for the first period 2016-2018
- The research funding agencies Formas, VINNOVA and Energimyndigheten
- Program office at IQ Samhällsbyggnad
- IQ Samhällsbyggnad, Sveriges Bygguniversitet (LTH LTU, KTH and Chalmers), Lantmäteriet, BIM Alliance have been running the project
- Almost 40 companies and organizations behind the program



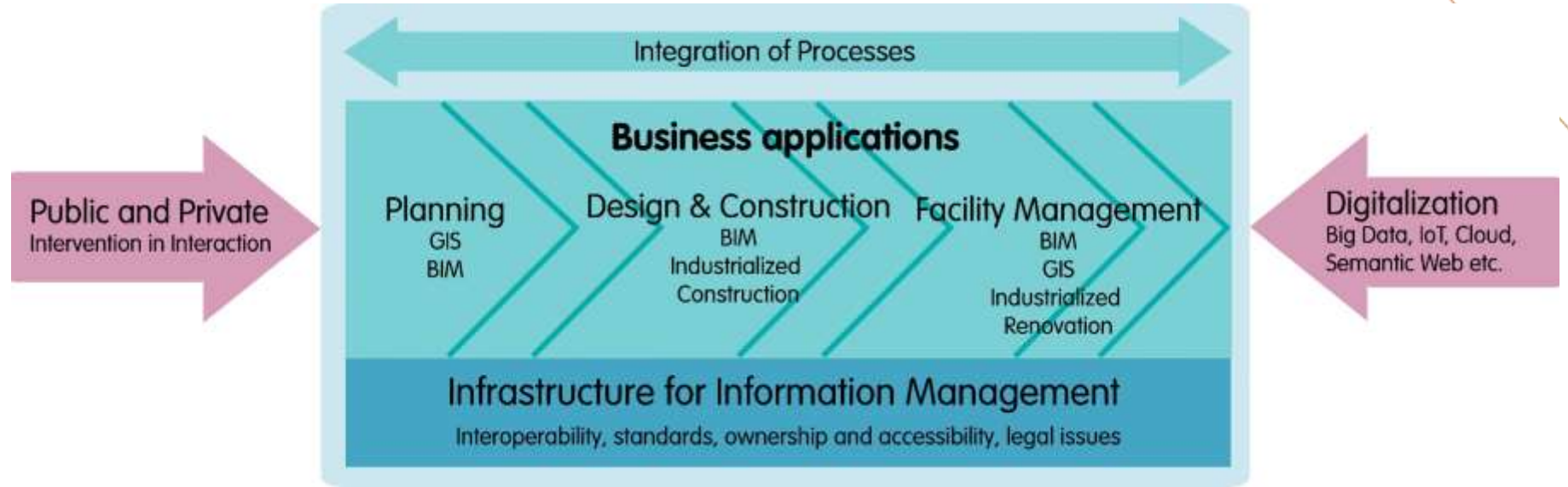
A common strategy for digitalisation for a Sustainable Built Environment



SMART BUILT
ENVIRONMENT

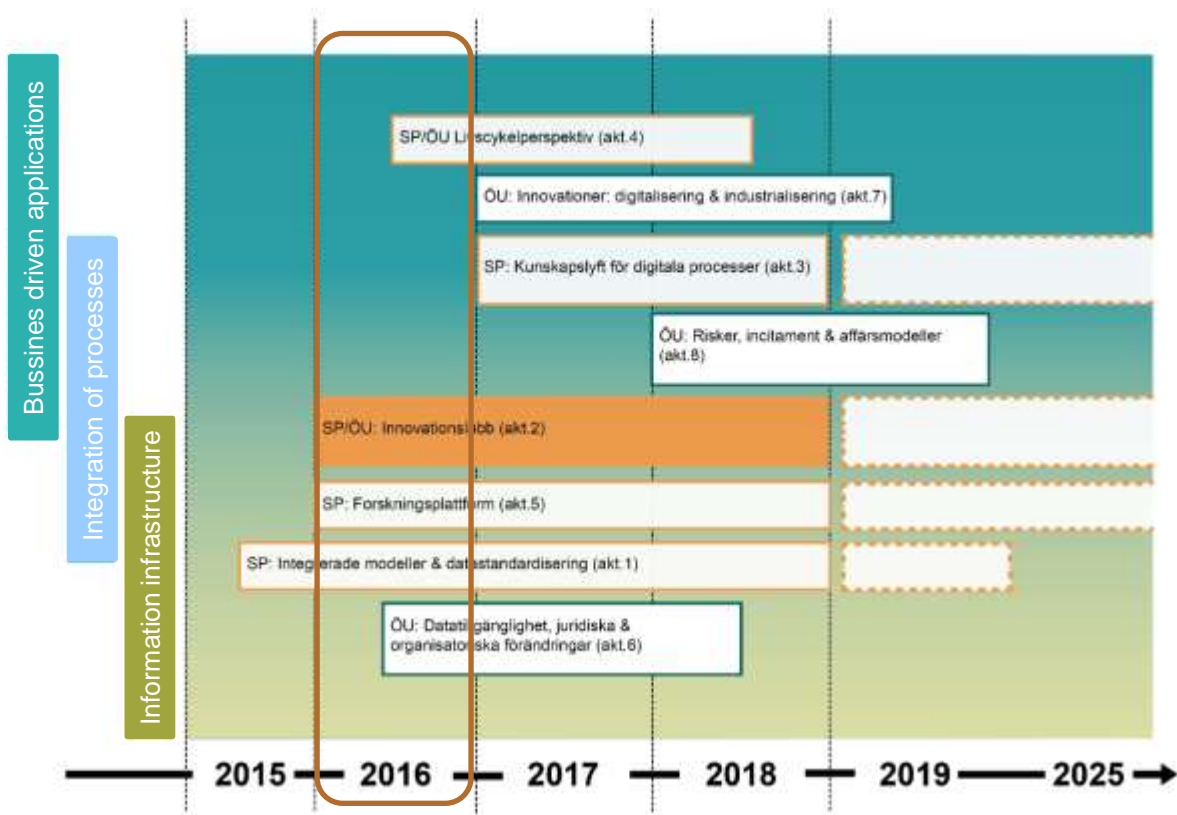
Digitalization as a driving force for the change of the sector

“Sustainable building, and maximum user benefit through effective information management and industrial processes”

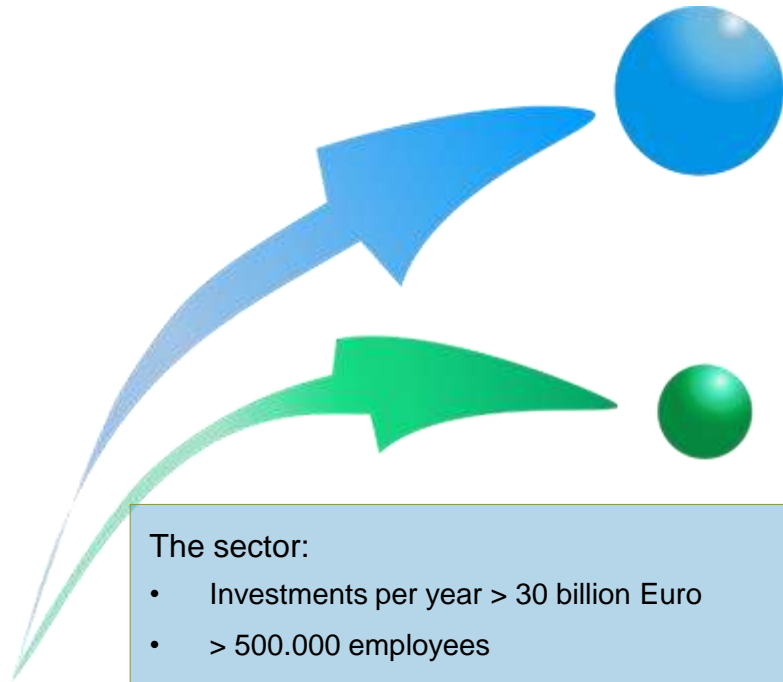


**SMART BUILT
ENVIRONMENT**

Open calls and Strategic projects



Goals of the program – 2030



The sector:

- Investments per year > 30 billion Euro
- > 500.000 employees
- > 20.000 companies, big part of SME, 290 municipalities
- Time from planning to completion > 8 years

- 40 %
reduce of environmental impact in new buildings and renovation
- 33 %
reduced time from design to finished project
- 33 %
reduced construction costs
- **Renewed business logic**
new value chains and business models

SMART BUILT
ENVIRONMENT





First calls accomplished

- Test beds and verification projects
- Digital business models
 - 14 accepted projects, ca 1.5 million € + industry funding
 - 6 projects regarding Test beds selected to for the second phase.
- Next call is planned to open in February 2017 - "Innovations for digitalisation and industrialisation"



4 started strategical focus areas

- **Standardisation**

- For common concepts, data formats and processes
- Three funded projects already:
 - Classification
 - Strategies for 3D Geodata (700 tkr)
 - Industrial processes (900 tkr)
- 2 + 2 Project proposals defined

- Process leader/coordinator:
Kurt Löwnertz, Sweco



1. **National guidelines,**
Rogier Jongeling

2. **Information support in
property development,
planning och building
permits,**
Elisabeth Argus

2 projects with focus on industrial
processes will start 2017

- **Research platform**

1. Validate and measure effectivity
 2. Courses
 3. New Knowledge
- Survey to academy to track resources and finding competence

- Process leader/coordinator:
Lars Stehn, SBU/LTU



- **Innovation lab**

- Develop environments/projects for testing, verification and evaluation of:
 - New technology, working methods,
- 2 projects accepted 15 Nov:
 - **Testbed portal**, Thomas Sundén SUST
 - **Prestudy "Test in construction project"**, 1-2 project more during 2017

- Process leader:
Henrik Szentes, Strability



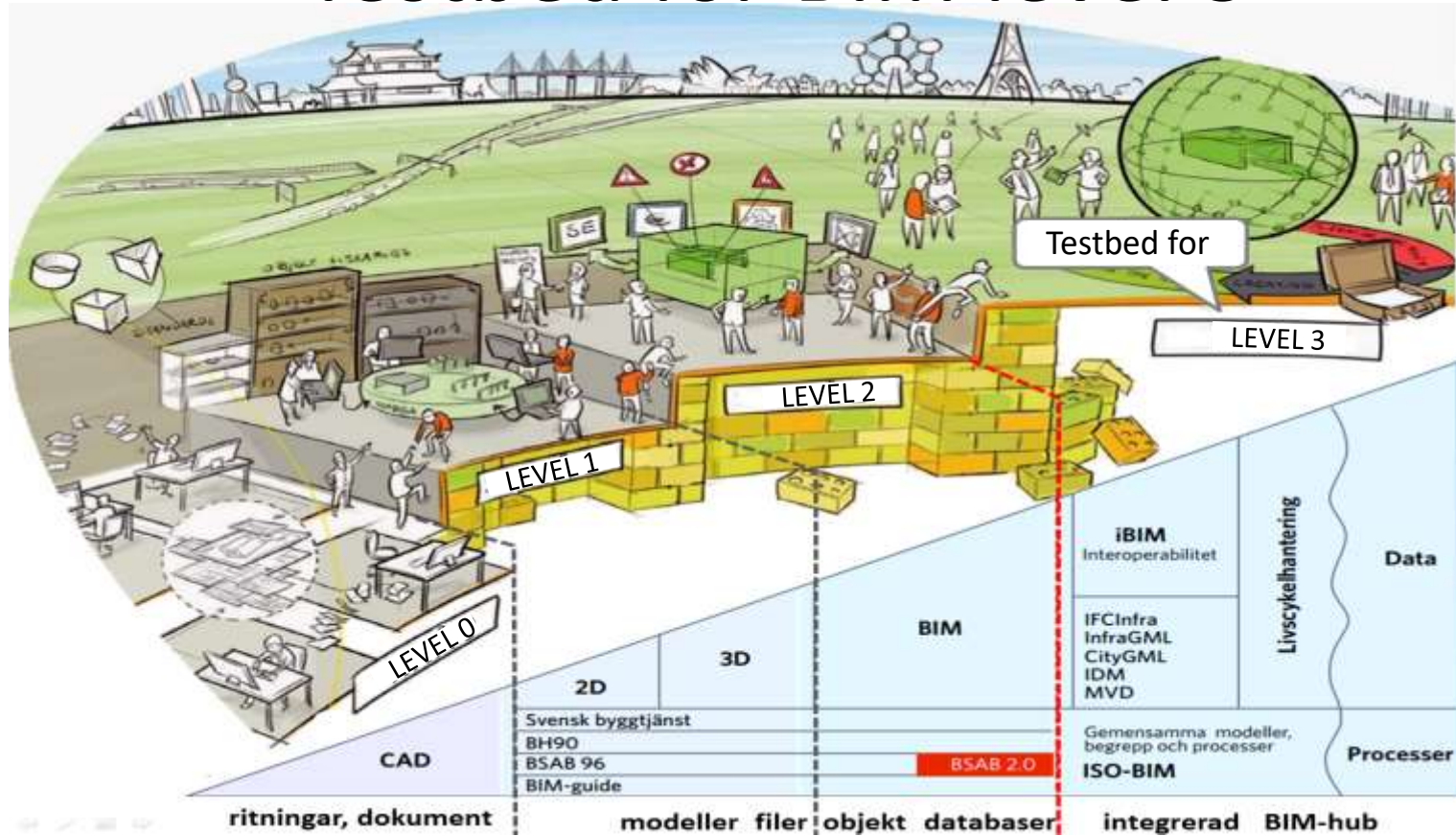
- **Lifecycle perspective**

- Lifecycle analysis and lifecycle costs based on digitalization
- 3 projects accepted 15 November:
 - **Obstacles to overcome**, Martin Erlandsson, IVL
 - **Test pilots**, Jeannette Sveder Lundin, Skanska
 - **Knowledge and communication**, Jeannette Sveder Lundin

- Process leader:
Kajsa Byfors,
Svensk Betong

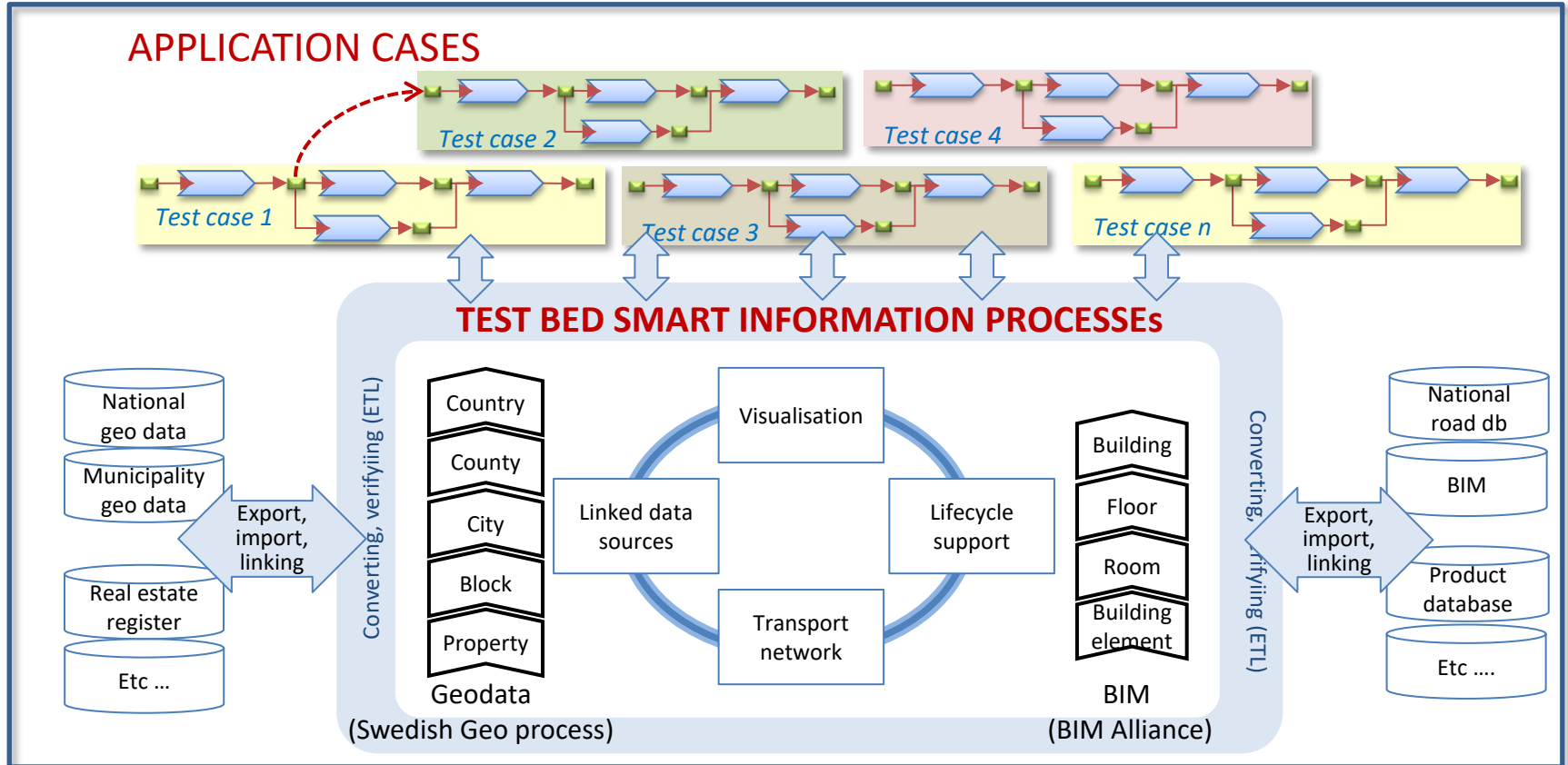


Testbed for BIM level 3

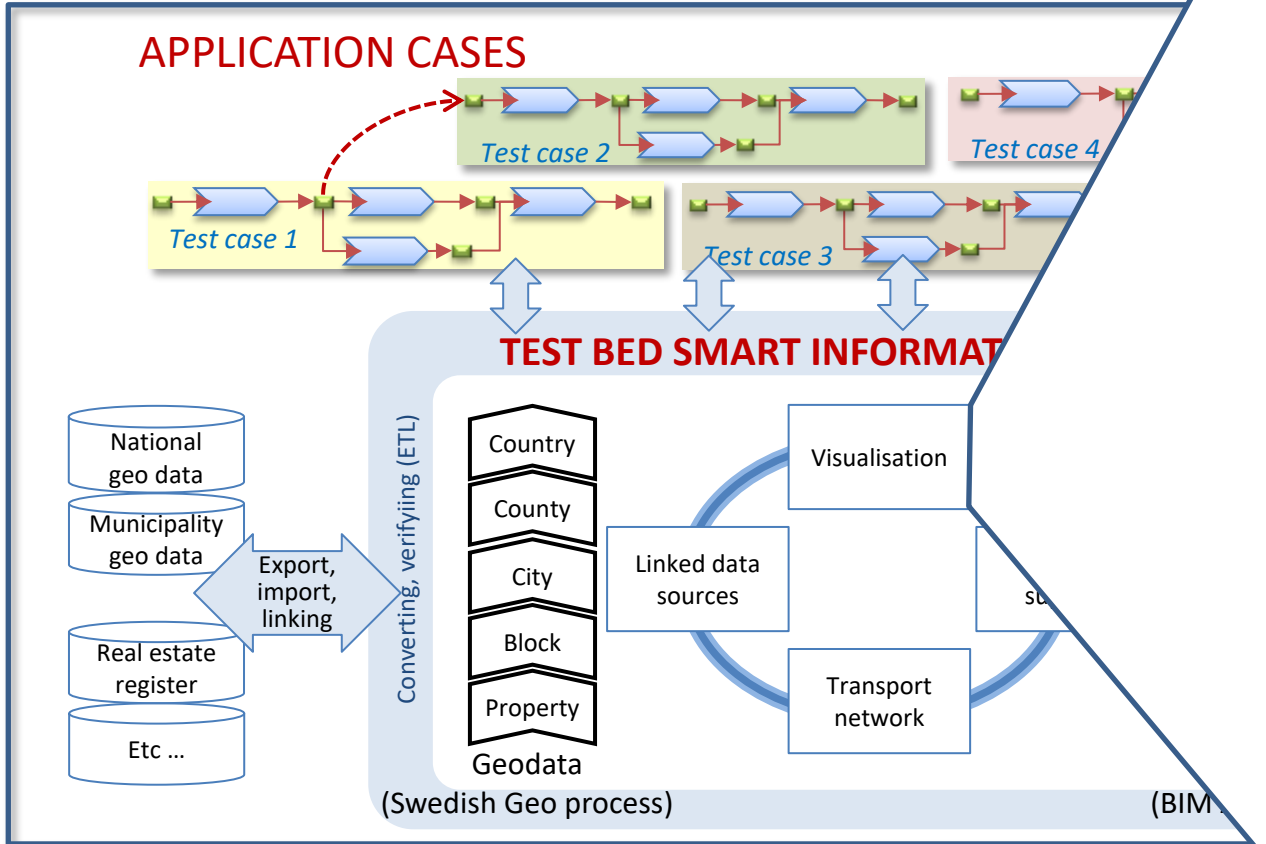


BIM levels after British Standards Institute (from ARCADIS adapted to Sweden)

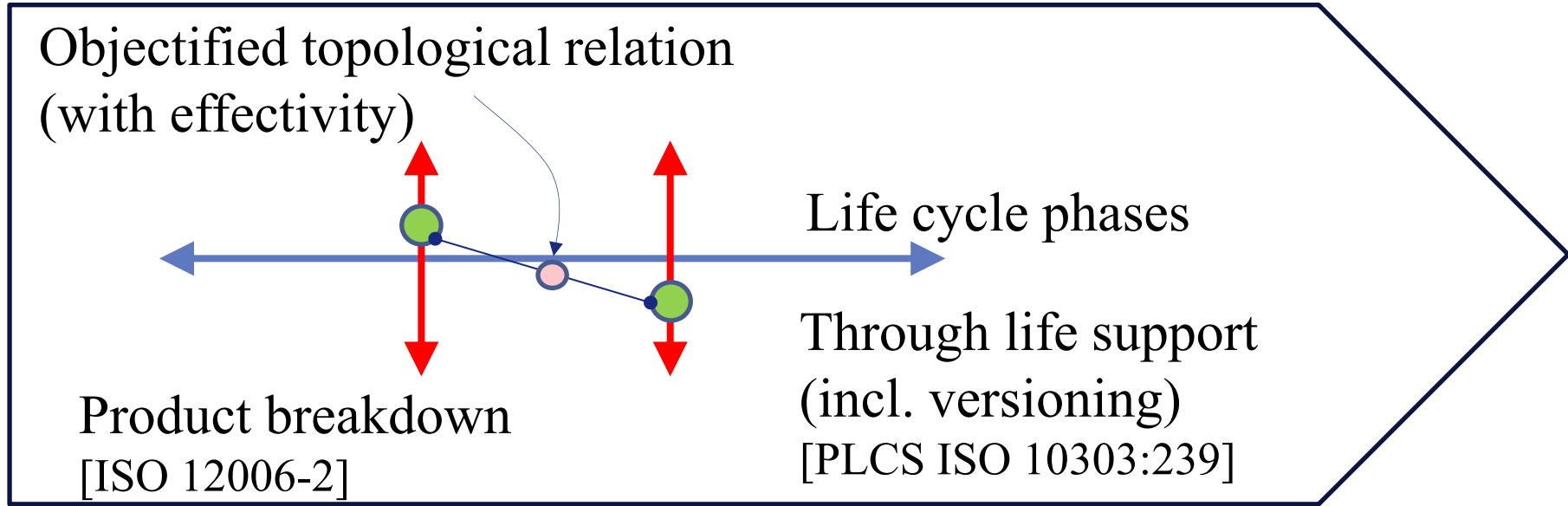
Smart planning, design, construction, operation and use processes over the whole life cycle



Smart planning, design, construction, or use processes over the whole life

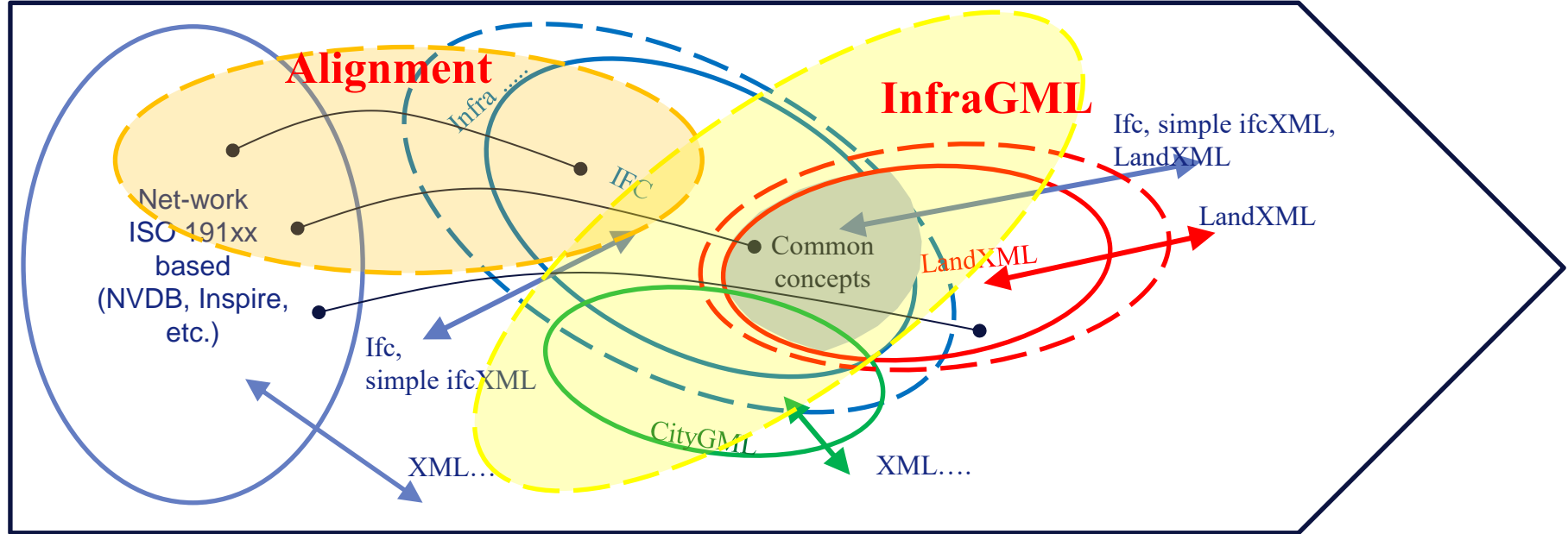


Lifecycle + breakdown with topology

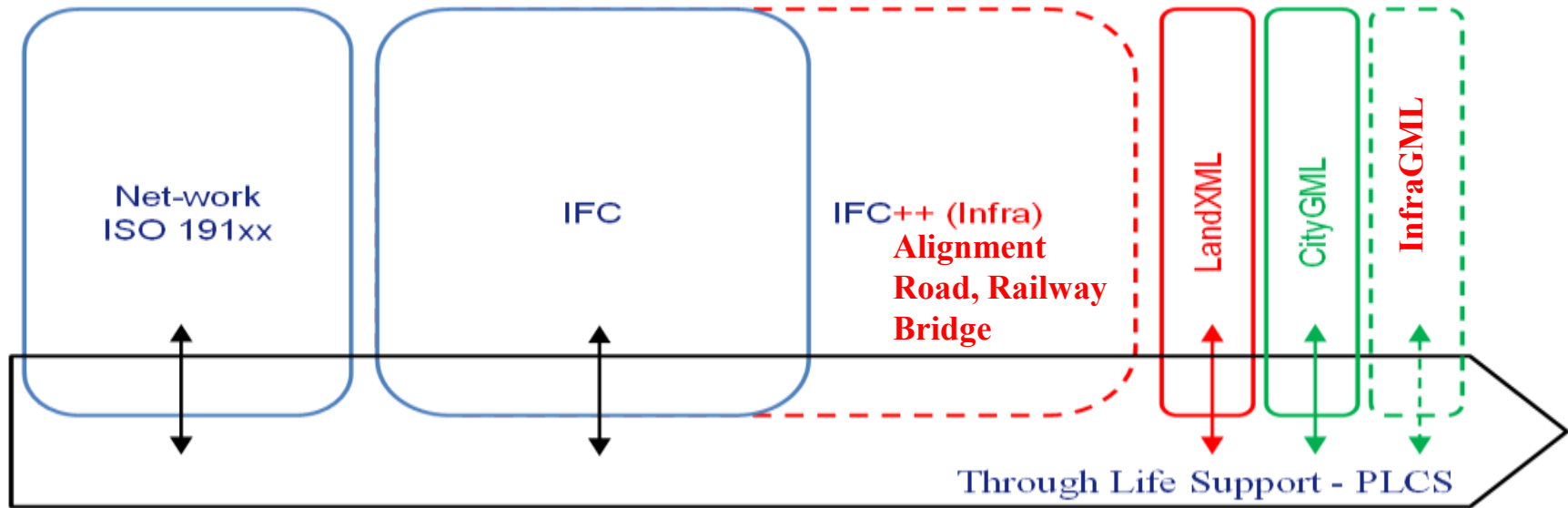


Integration of standards for buildings and infrastructure

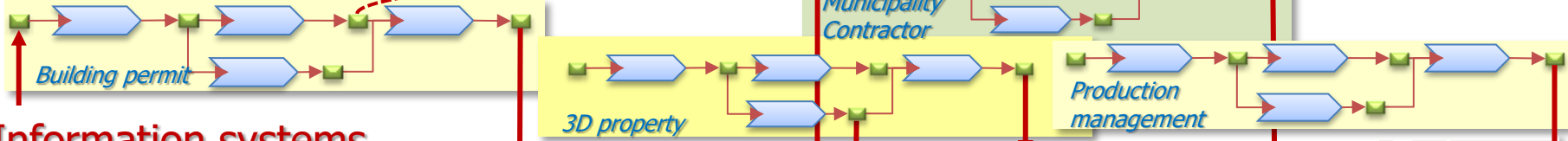
Through Life Support - PLCS



Heterogeneous data models mapped to PLCS



Business processes

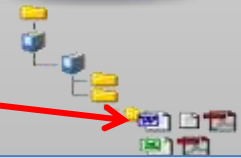
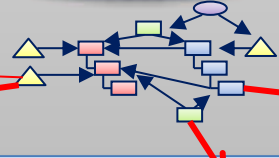
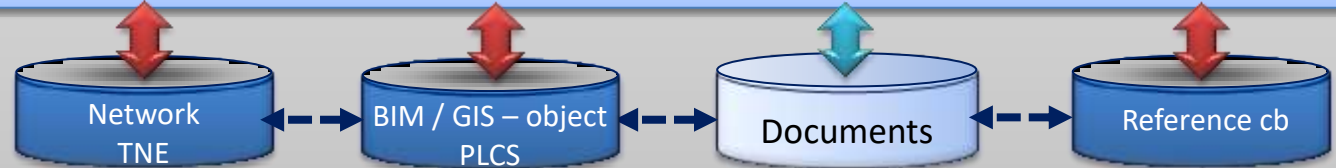


Information systems



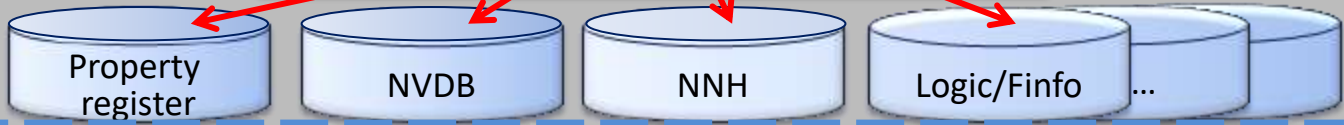
Standardised interfaces (ETL tools)

Information



- City
- Block
- Building
- Room
- Road
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Linked data sets



A test case – the city of Eskilstuna

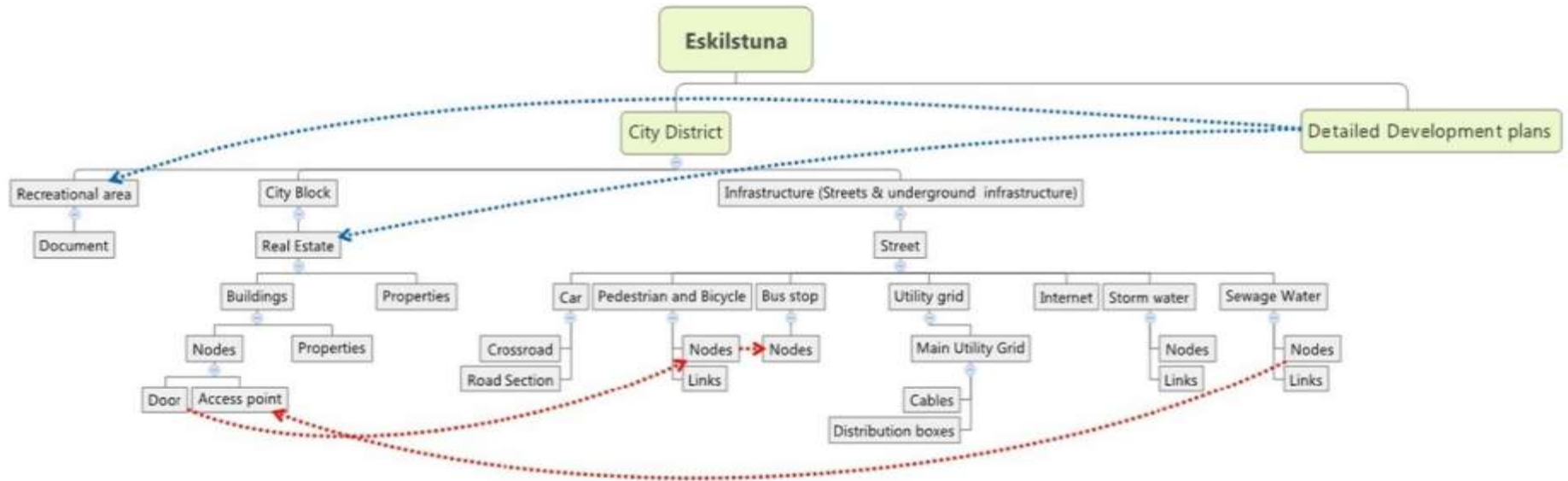


Figure 10. The mapping structure for the complete CIM-demo in Share-A-space. The demo is build up with help of hierarchies but also have relations between different hierarchies, which is in the figure represented as dotted arrows.



Nordwallsgatan

Stalbrännaregatan

Öbbergsgatan

Knut-Hellbergsgatan

Munkellsagan

Västra Stora Stora

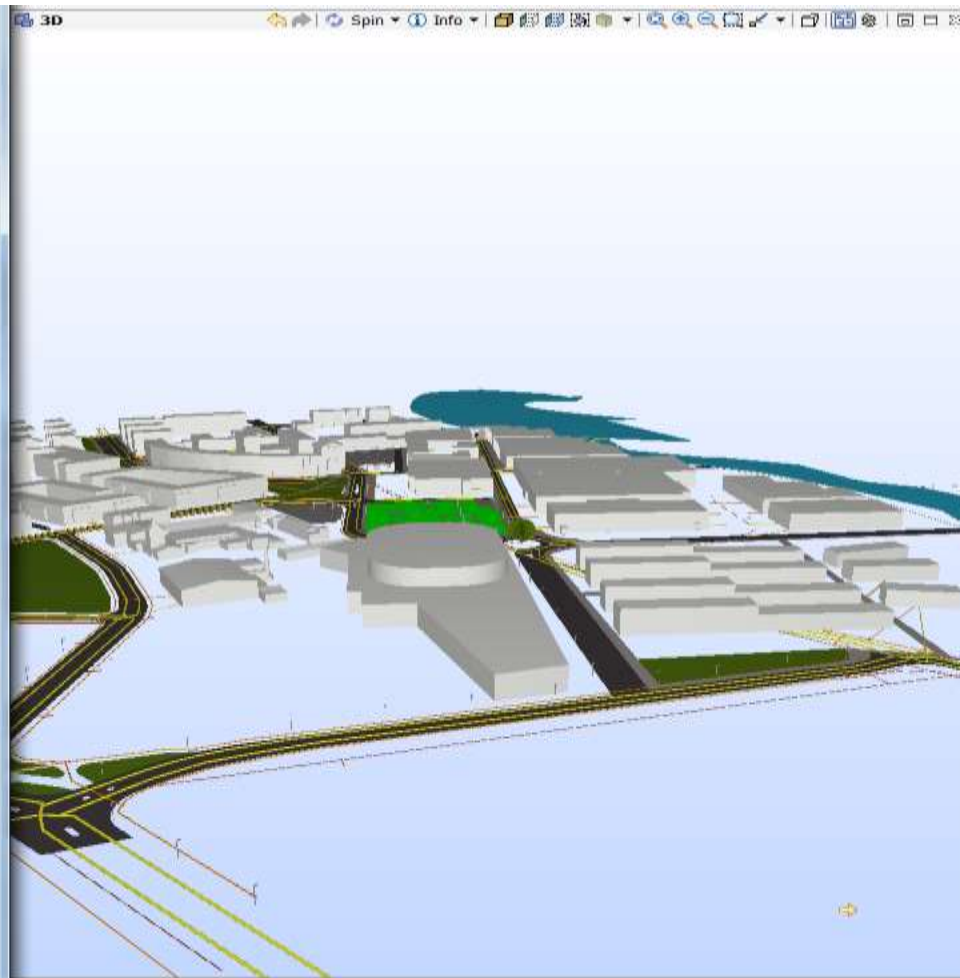
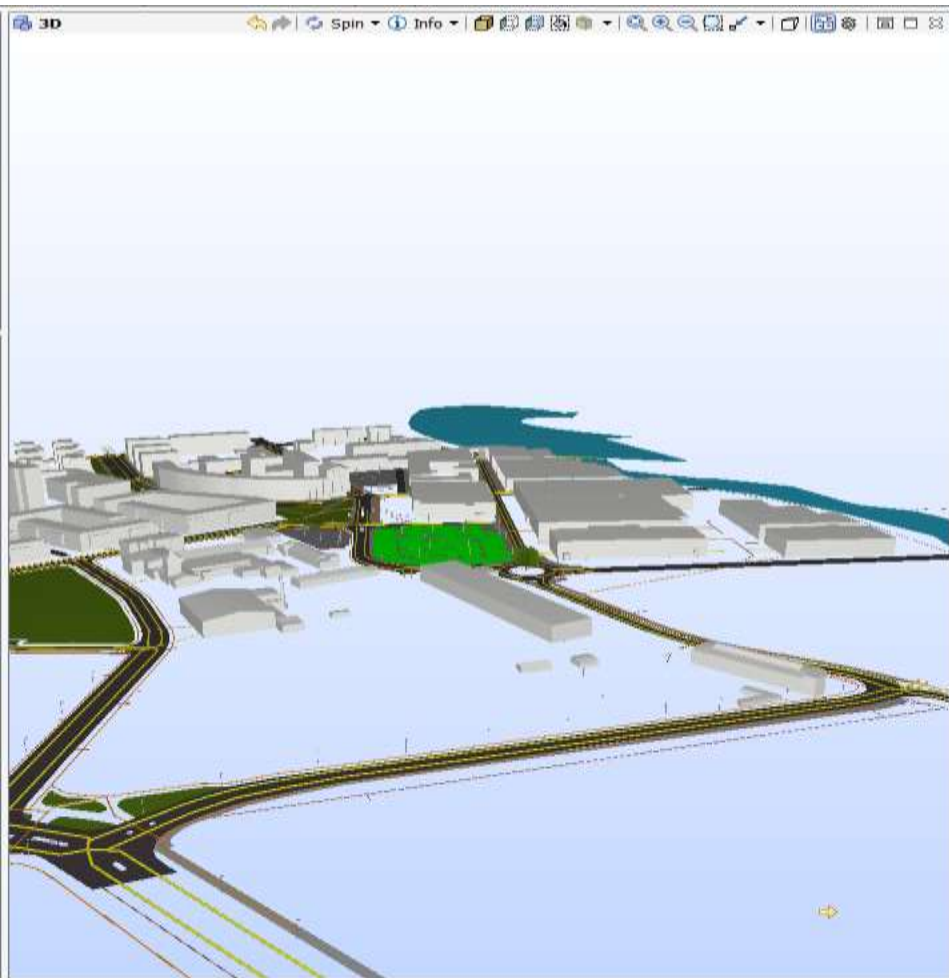
Perigatan

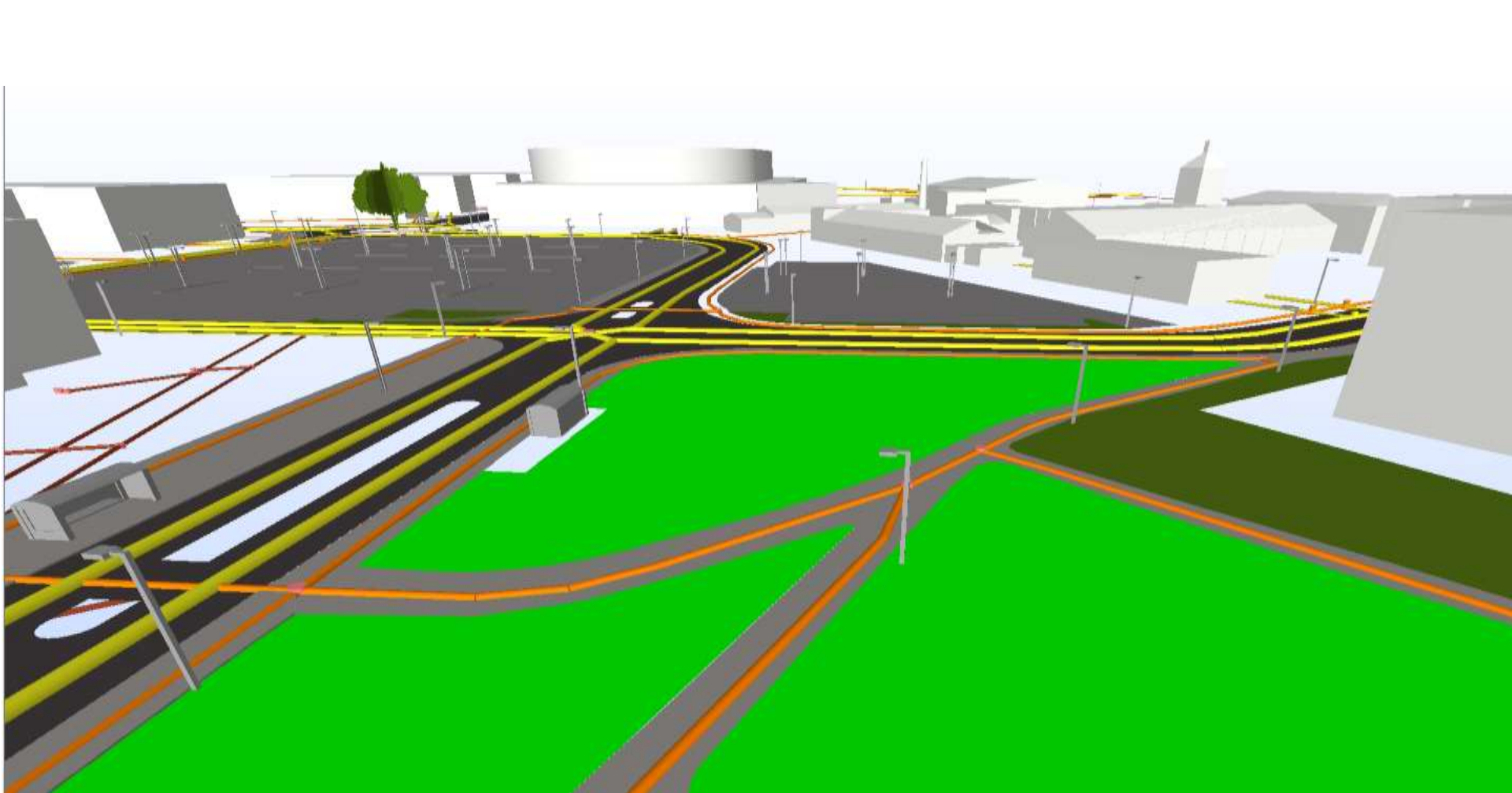
Bryggaregatan

Eleonoragatan

Vasbergsgatan

Strandgatan





A short animation



[Click on figure for video](#)