Digital LBS

Linking BIM and Scheduling

2022-07-12

Agenda

How do we work with Linked Data?

Digital LBS
(Location-based scheduling)

The Concept

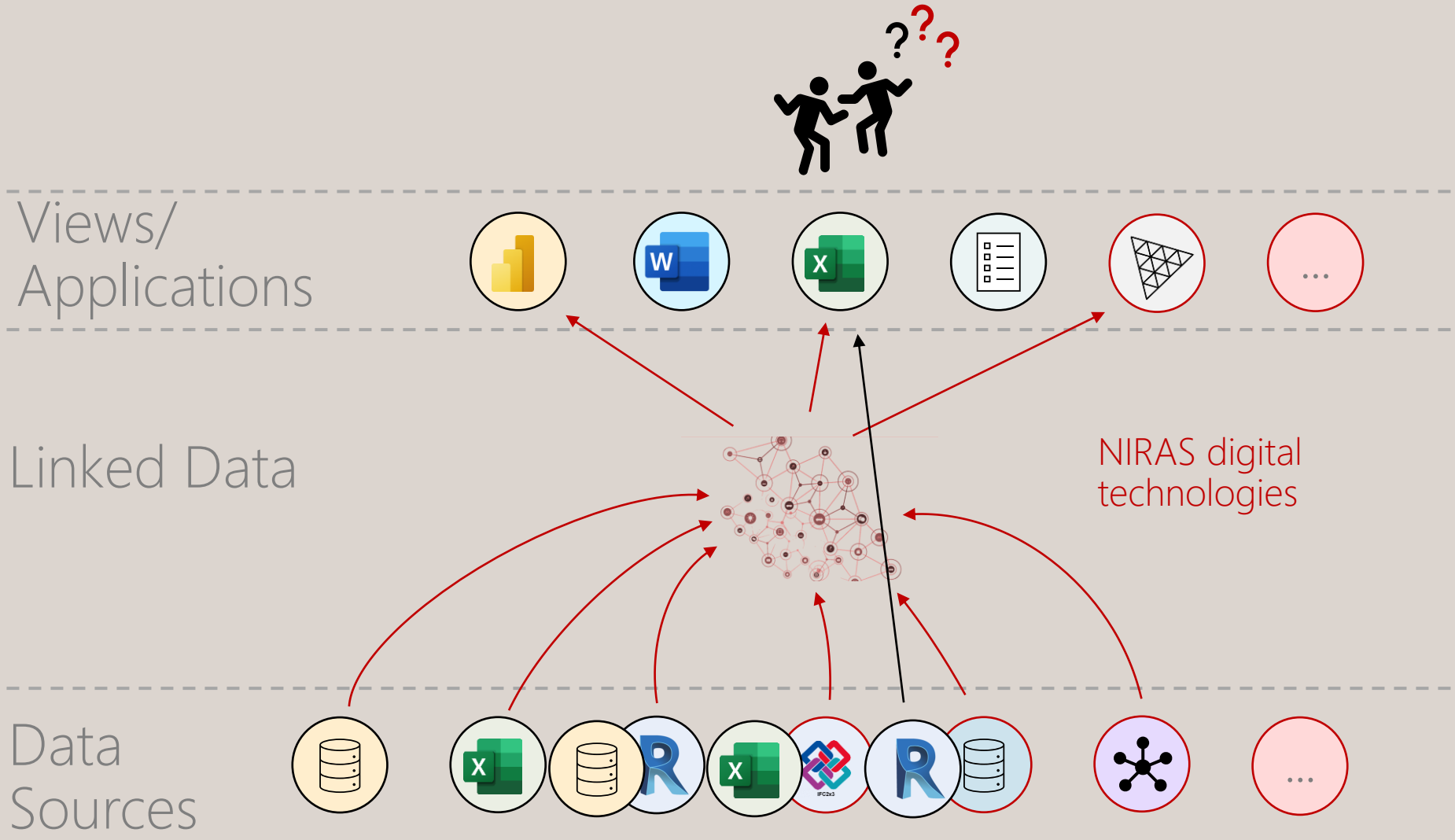
Digital LBS
(Location-based scheduling)

The Solution

How do we work with Linked Data?

How we work with data

Using graph databases and ontologies to get from data to knowledge



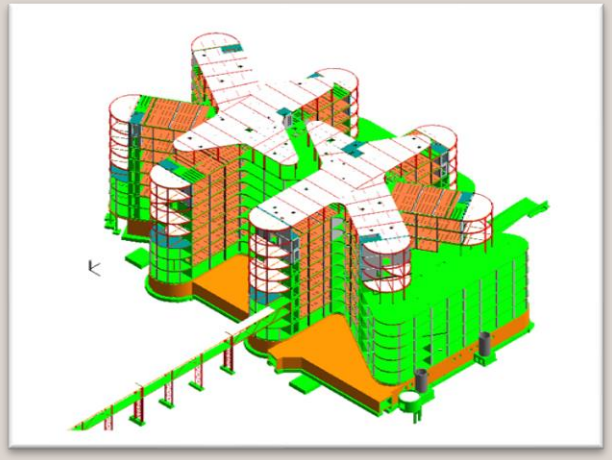
Digital LBS
(Location-based scheduling)

The Concept

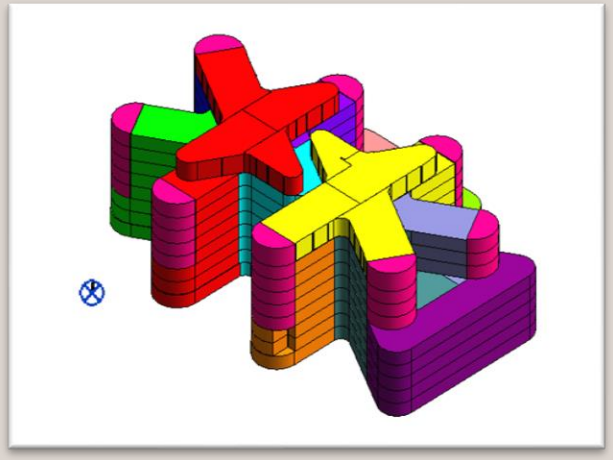
Model-based Planning

Linking model information to a project schedule (4D-Planning)

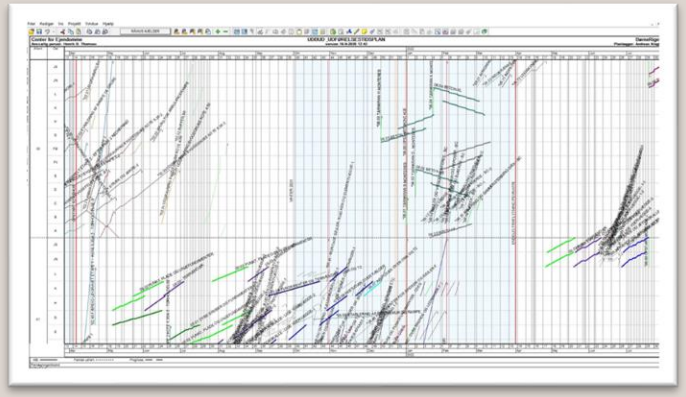
Construction Model



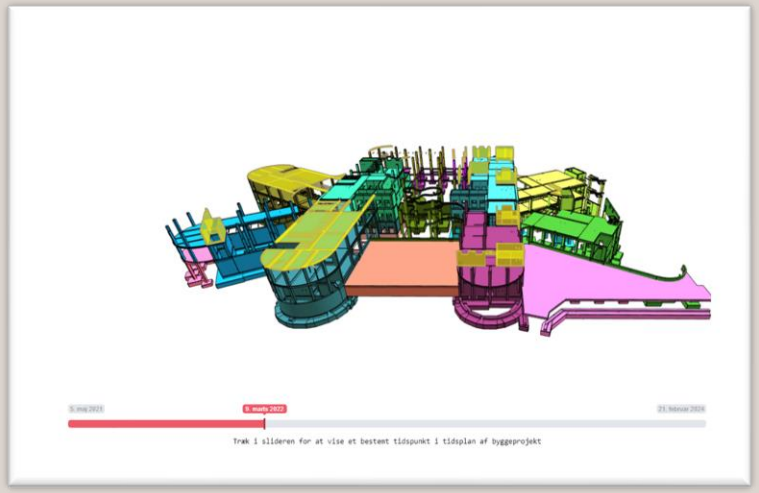
Location Model



Time Schedule (location-based)

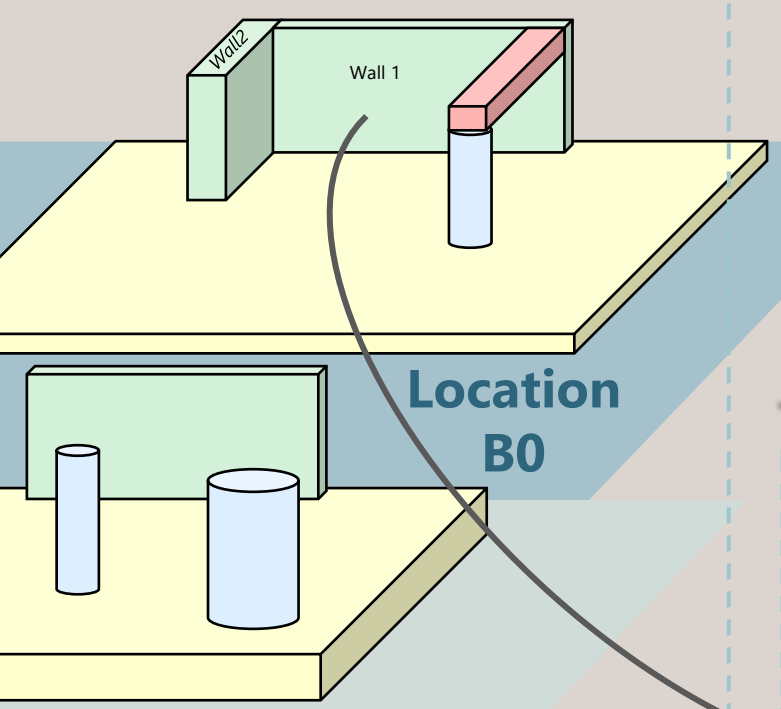


4D-Plan of the Construction Process

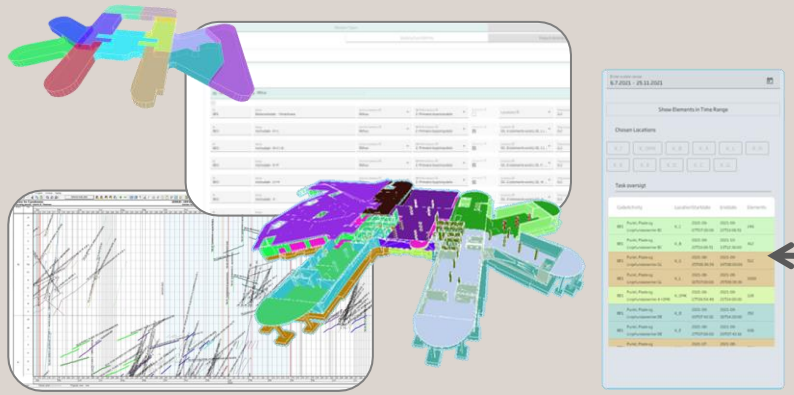


Data-based planning

Building elements



Time and Cost-Management



Subactivity: Concrete Pouring

- Name: Concrete Pouring Insitu Walls
- Code: BE403
- Category: Shell Construction
- Duration factor: m2
- Time: 0.1 h/m2
- Resources: …
- ElementTypes: Insitu Wall

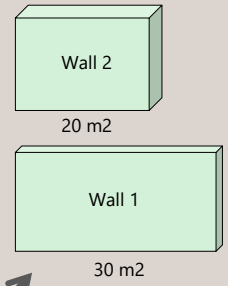
Building element types in location B0

Prefab Columns
1 pcs

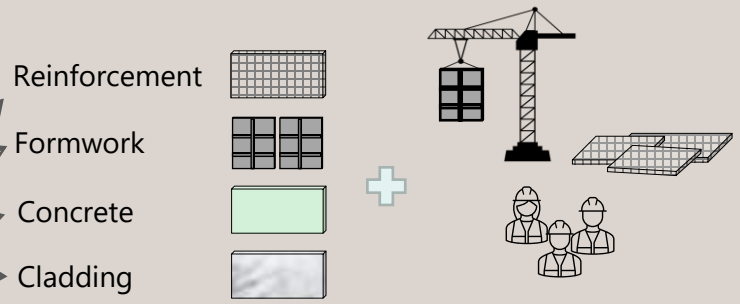
Insitu Slabs
2 pcs

Insitu Walls
2 pcs, 50m2

Prefab Beams
1 pcs



Activity: Construct an insitu wall



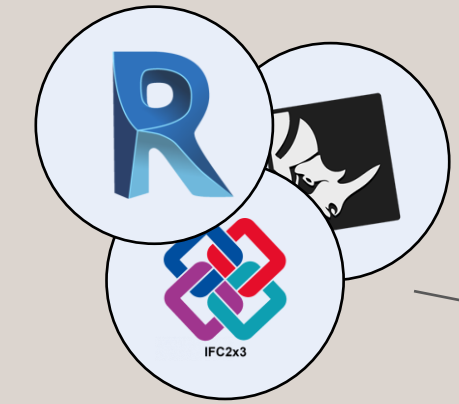
BIM and Linked Data

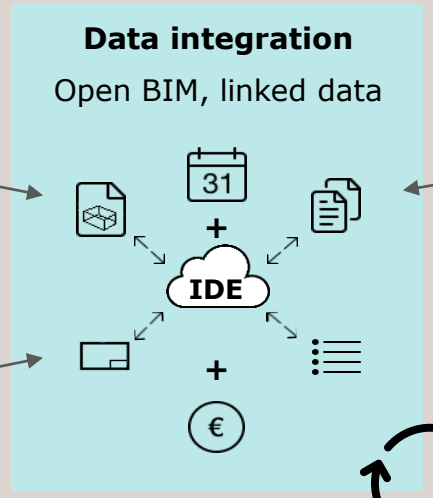
How does it work with Linked Data?

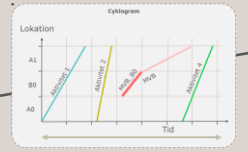
What is the number of building elements in location A1? What types of building elements are in A1?

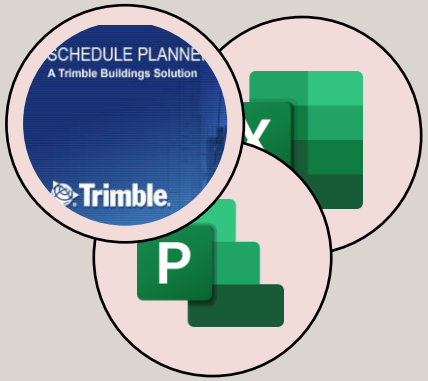
How many m3 of insitu walls will be built on the ground floor and what activities are needed to do so?

When are we finished with constructing the foundations?









Linked Data

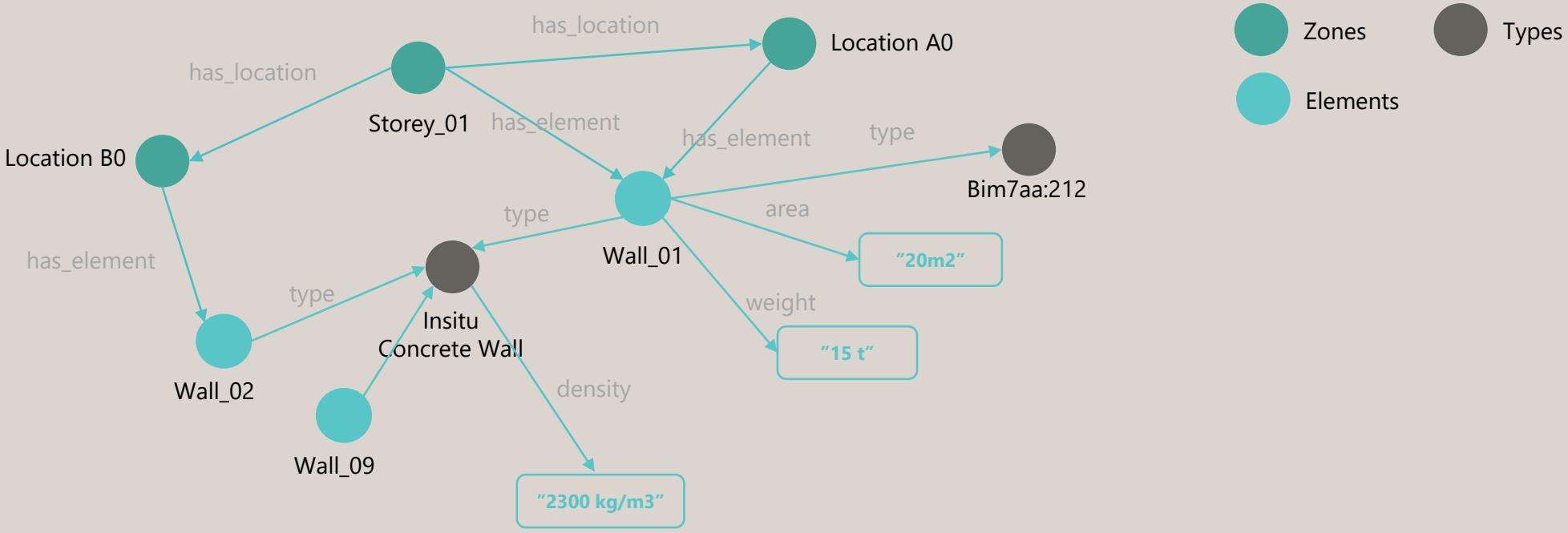
Saturation

Data Enrichment

Terminology

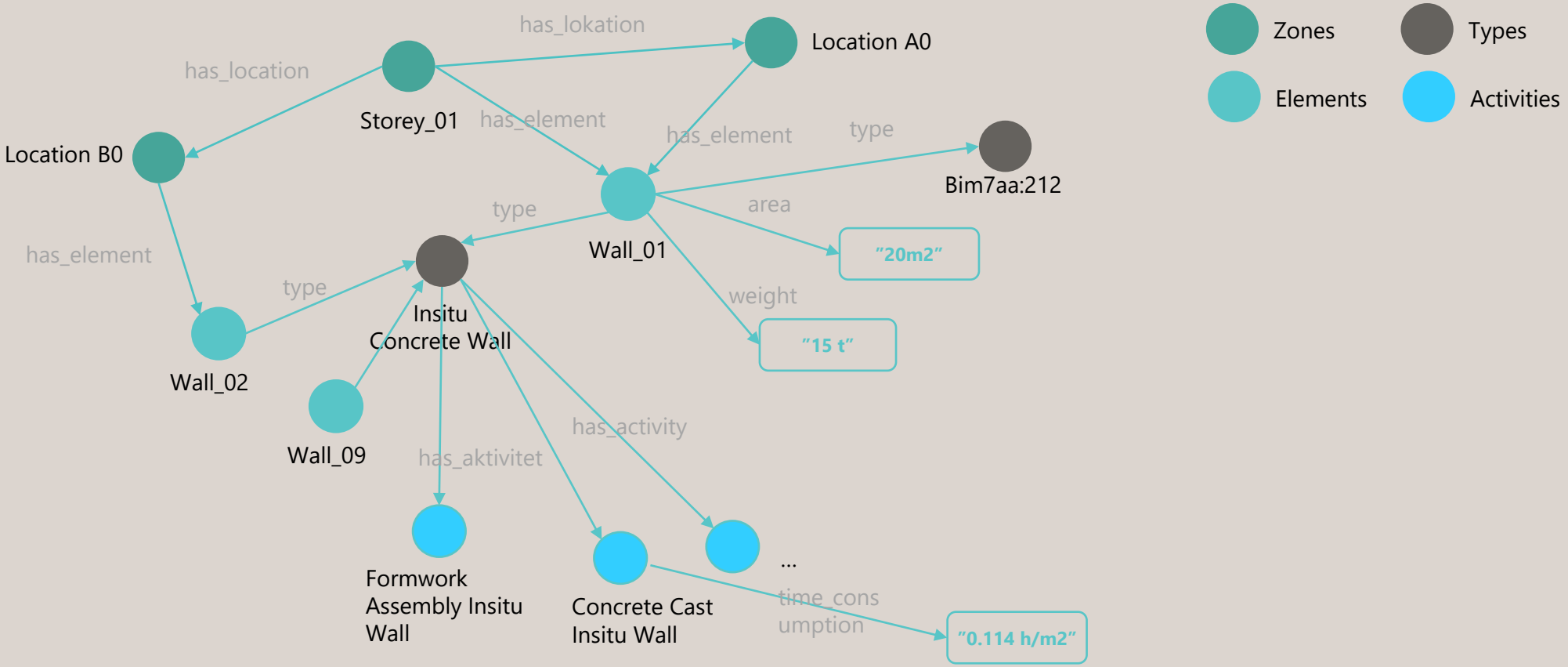
BIM and Linked Data

Building the data model



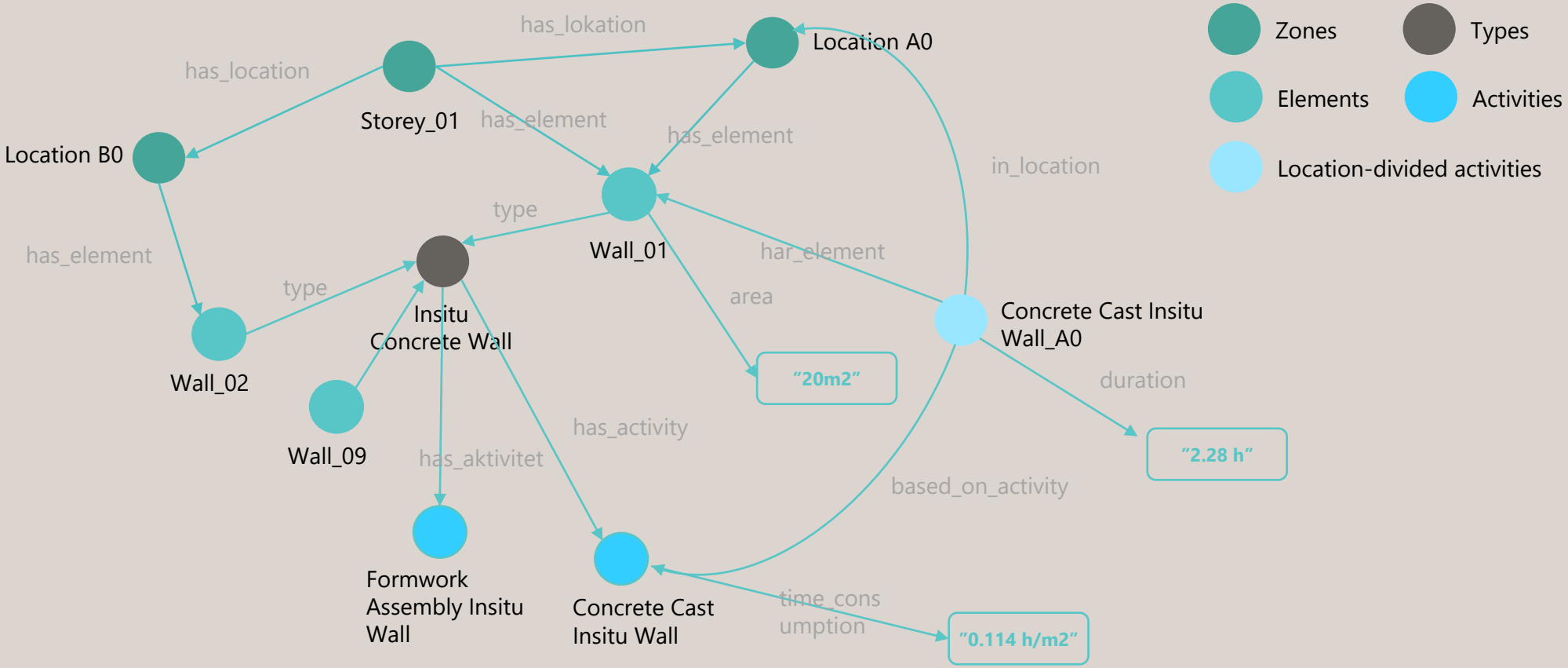
BIM and Linked Data

Building the data model



BIM and Linked Data

Building the data model

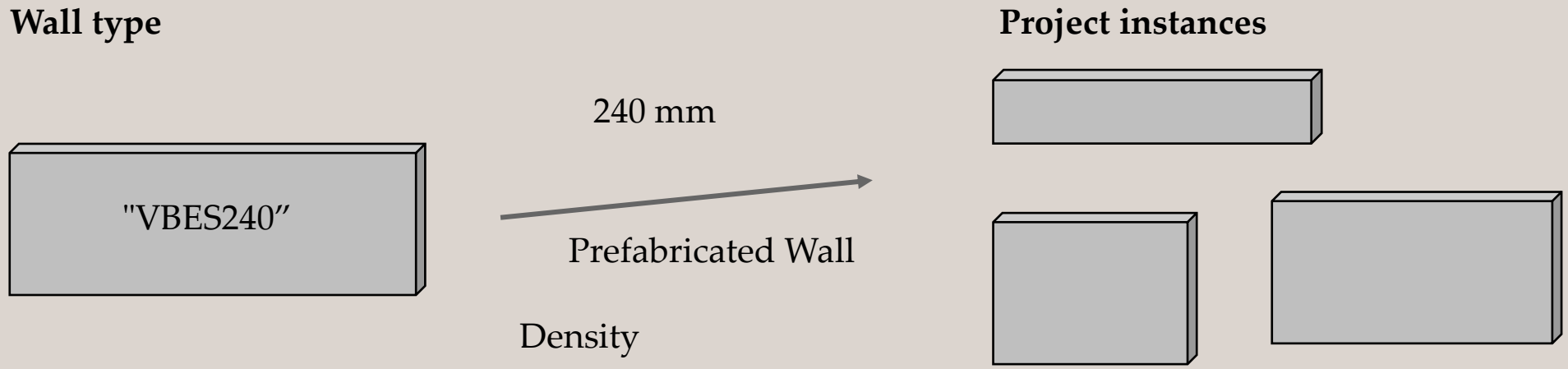


RDFox

High performance knowledge graph and semantic reasoning engine

Development of rules and automatic computing of knowledge

1 Apply type properties to instances



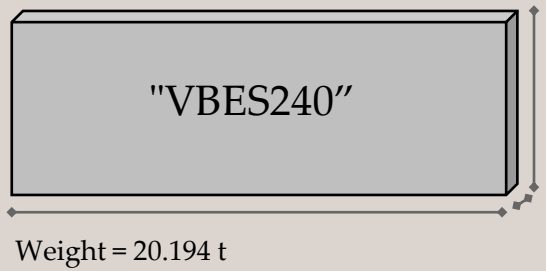
RDFox

High performance knowledge graph and semantic reasoning engine

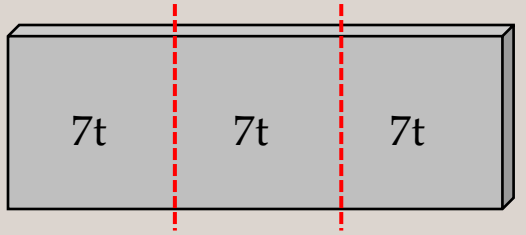
Development of rules and automatic computing of knowledge

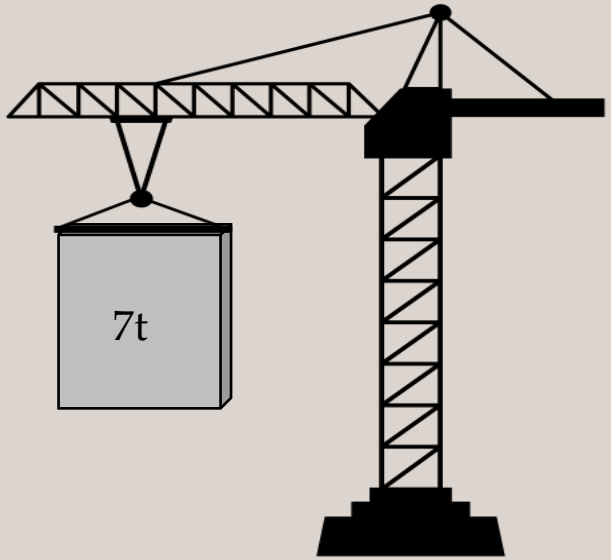
2 Weight calculation and wall splitting for crane operations

Weight = Density x volume



Crane Lifting = max 7t per crane





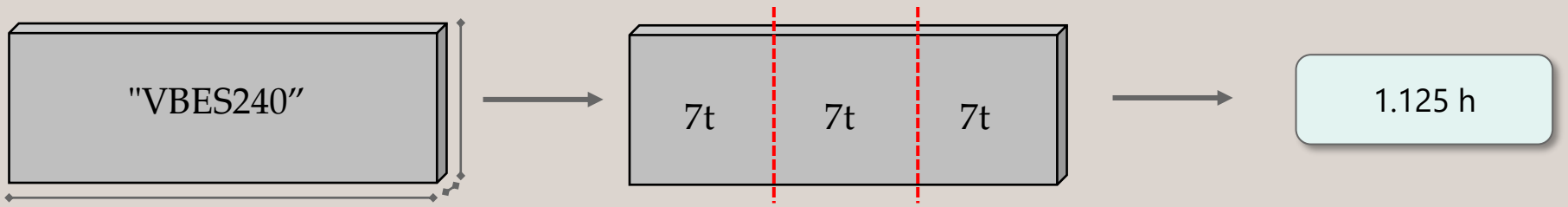
RDFox

High performance knowledge graph and semantic reasoning engine

Development of rules and automatic computing of knowledge

3 Installation Time

Experience:
- Lifting/assembly of 20 vertical elements (concrete walls, concrete or steel columns) per crane per day
- Lifting/assembly of 50 horizontal elements (concrete slab and concrete or steel beams) per crane per day



Time consumption: 0.375 h/unit
(=7.5h/20St)

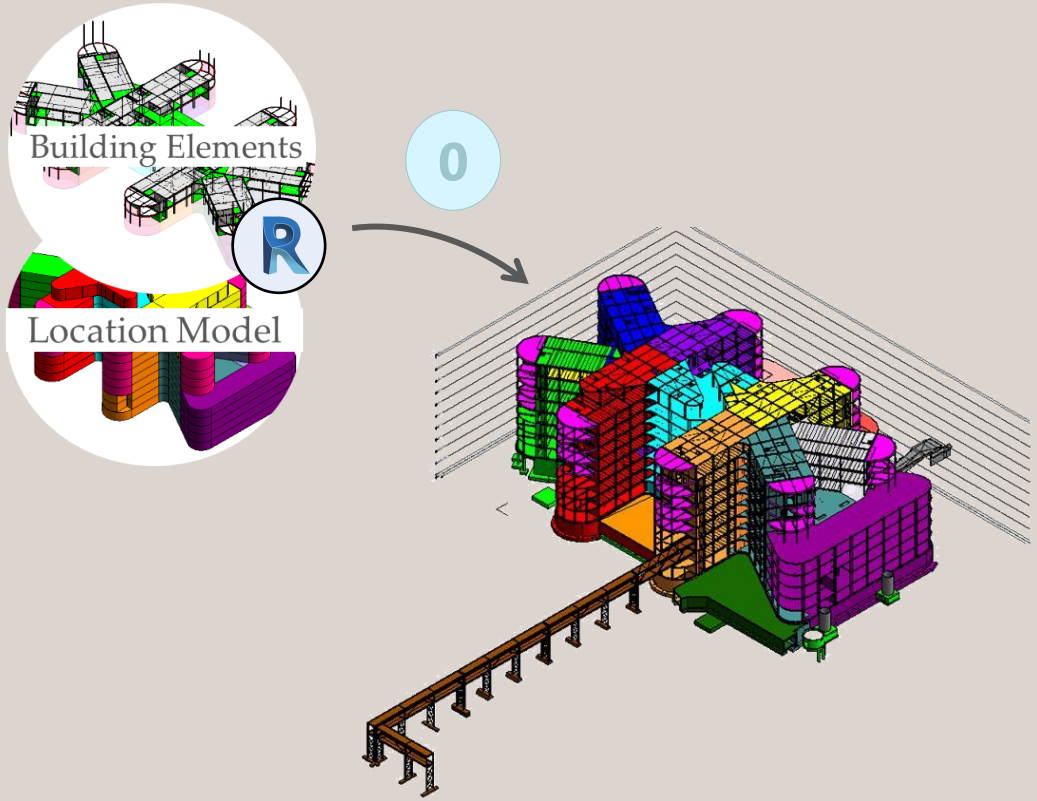
Digital LBS
(Location-based scheduling)

The Solution

Digital LBS

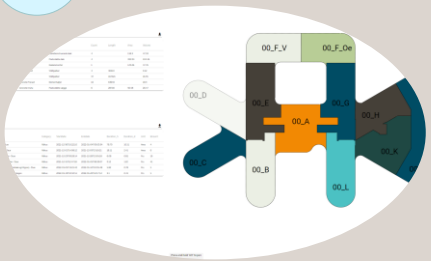
Solution Overview

Lokation splitting and quantity takeoff

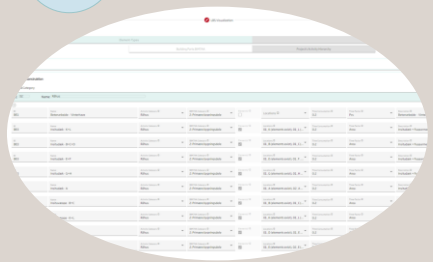


LBS - Application

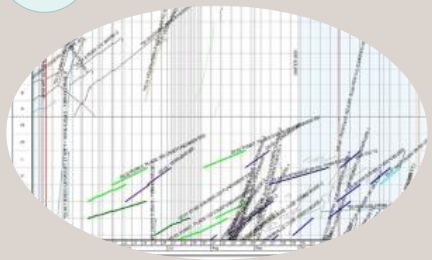
1 LBS Quantities



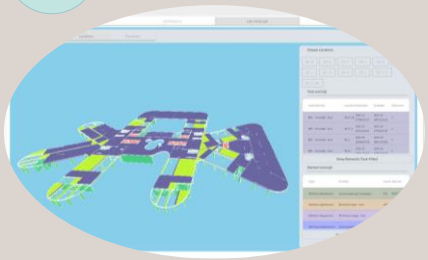
2 LBS Activities



3 LBS Planning

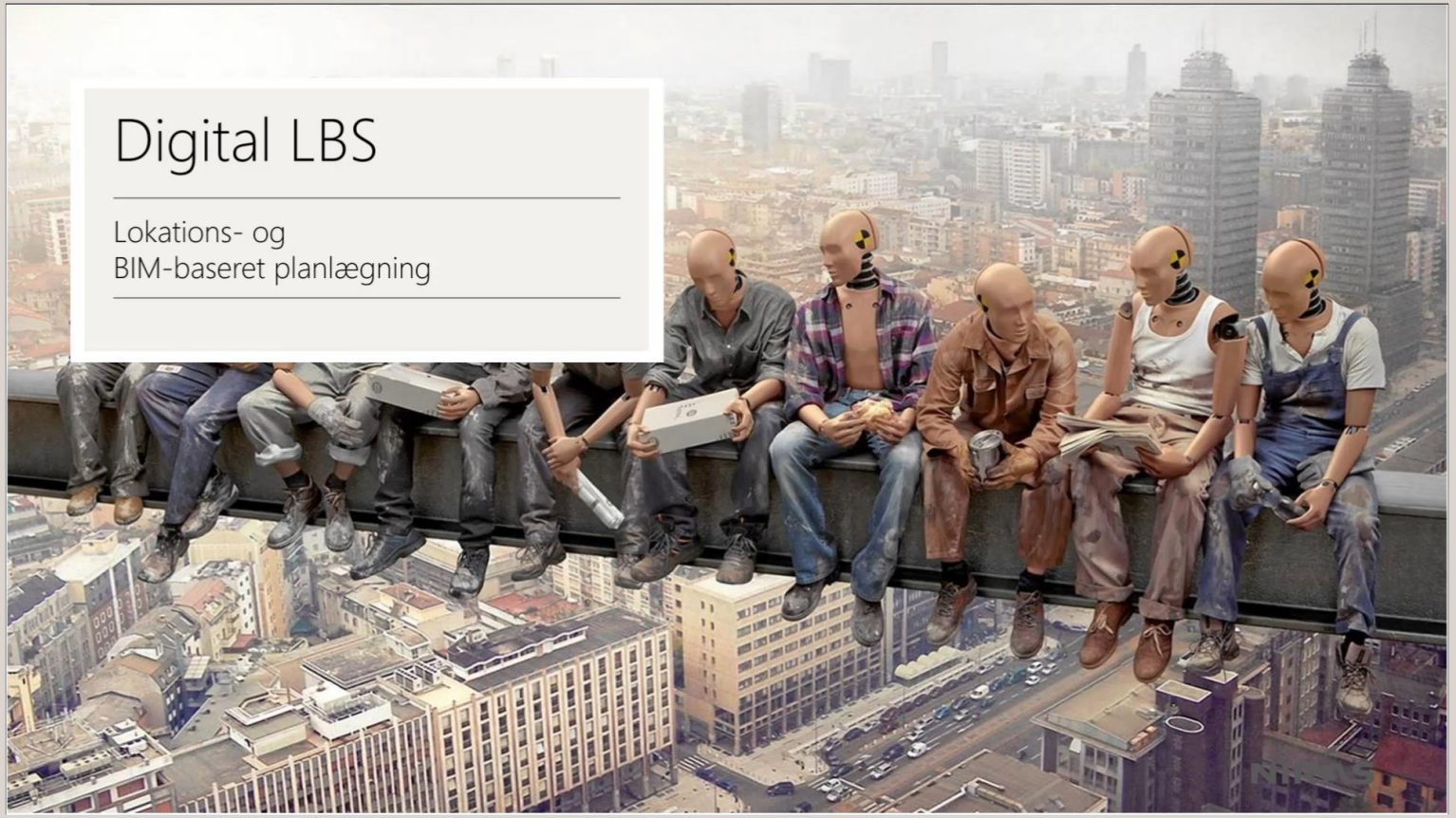


4 LBS Management



Digital LBS

Teaser Video



Digital LBS

Lokations- og
BIM-baseret planlægning

LBS Application

Current and future competencies

Current competencies

- Location-based quantities and activities
- Data integration with VICO Schedule planner
- Quantity-based time calculation
- 3D-Quality assurance
- 4D Viewer

Potential/future competencies

- 5D (link to cost database)
- Reporting of construction progress and visualization
- Resource planning and management
- Parametrical planning