



From BIM to CIM

25-November-2016 Amsterdam



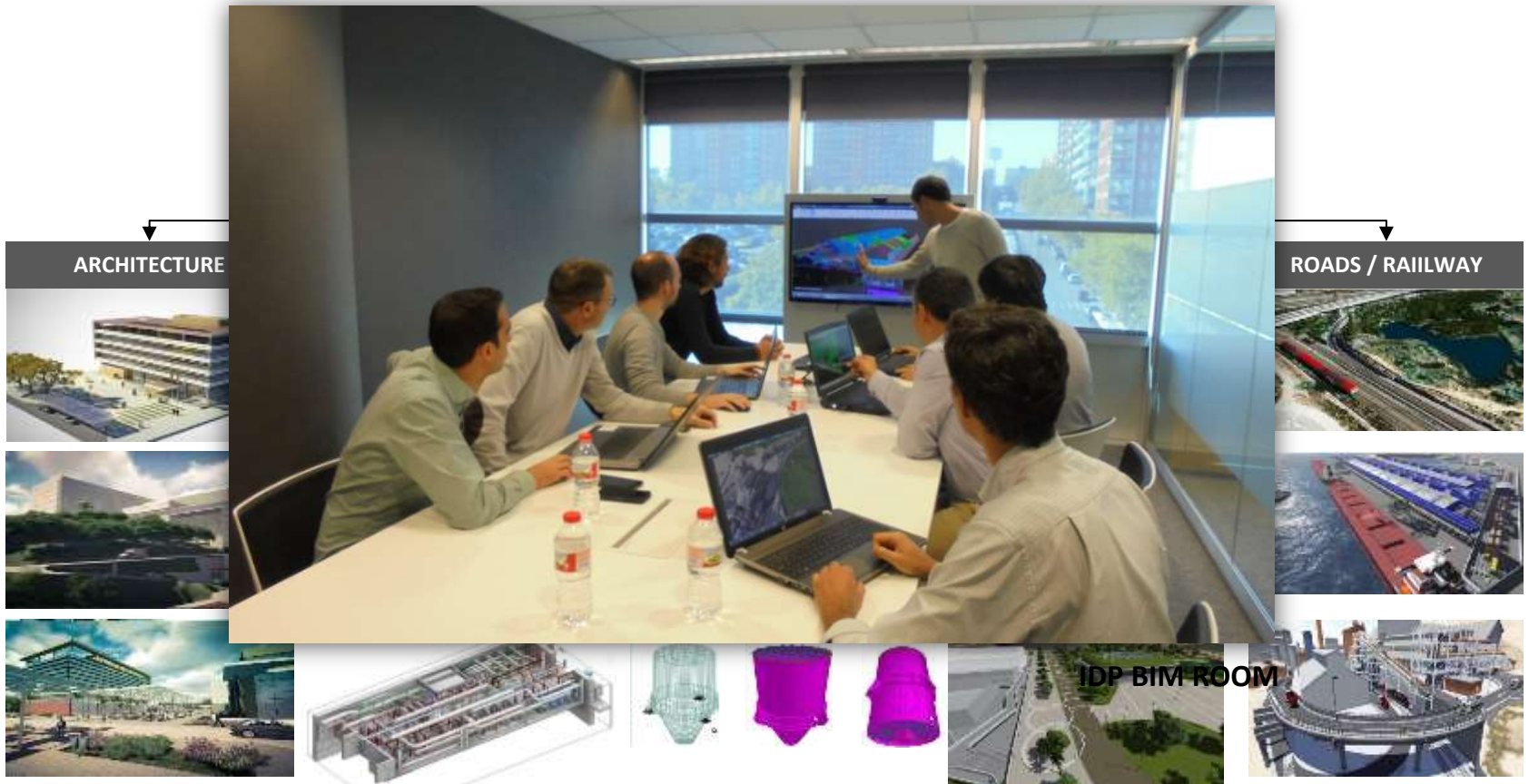
1. Short description of IDP Group

IDP (www.idp.es) is a global and multi-sector technical services company, founded in 1998 , working in the fields of **engineering** , **environment** , **architecture** and **ICT** with:

- more than **300** multidisciplinary technicians.
- **8 offices** in 5 countries (Perú, España, Brasil, Ecuador y Chile)
- Projects across **41 countries** in 4 continents (América, Europa, Asia y África)



- **Multidisciplinary team**
- Acting in all **Business Units**
- And all **disciplines**



2. Transition from Architectural BIM to Civil BIM

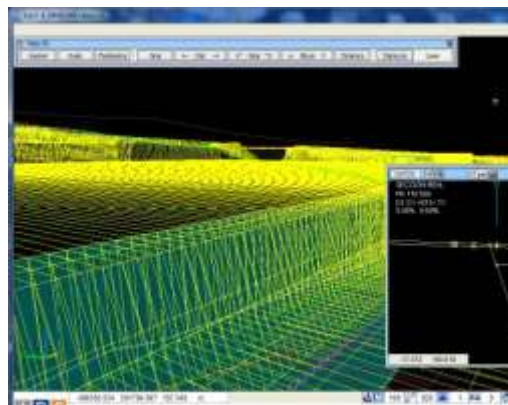
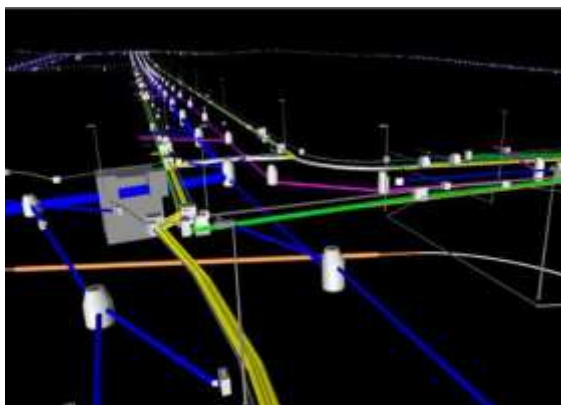
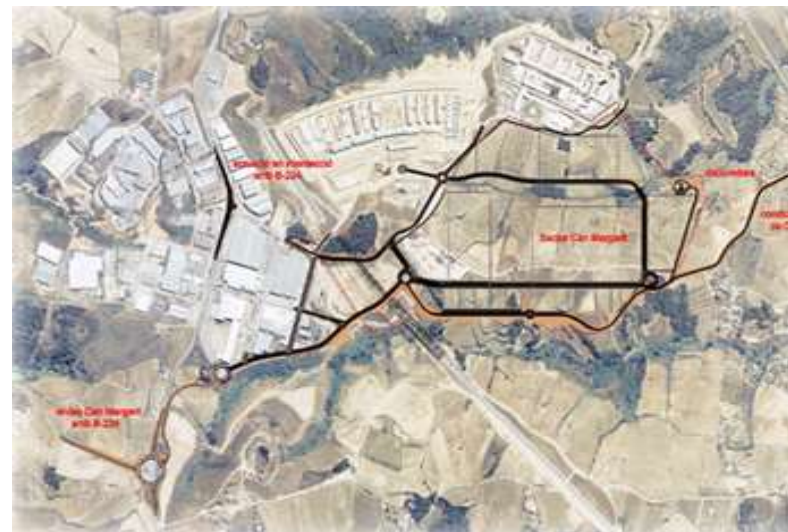
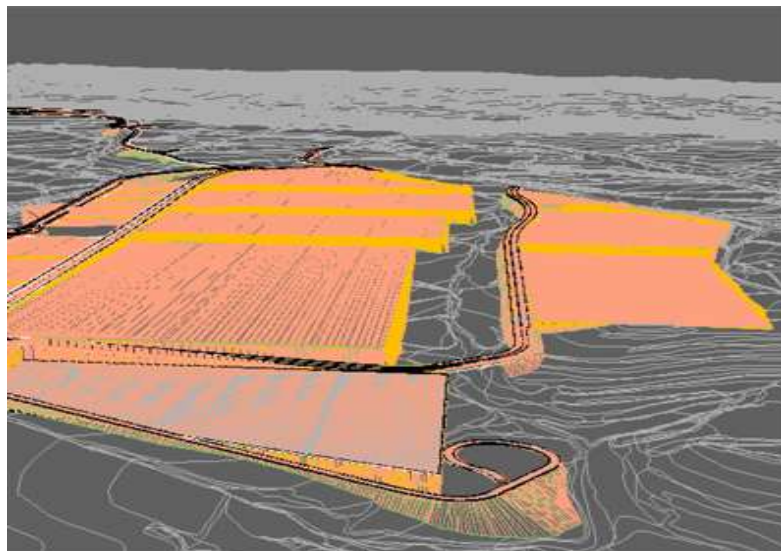
IKEA commercial center in Alfafar (Spain)

Total Constructed Area: 108.374 m² – Investment 42.887.469.-€



- Urban development of Can Margarit industrial and logistic sector in St Esteve (Spain)

Total Area: 645.680 m² – Investment 38.740.800.-€



■ Road Tunnel beneath Plaza de las Glorias in Barcelona

Total length: 957 m., 3 lanes each – Investment: 49.750.000.-€



■ Vehicles Testing circuit "Double Star PG" at Shandong (China)

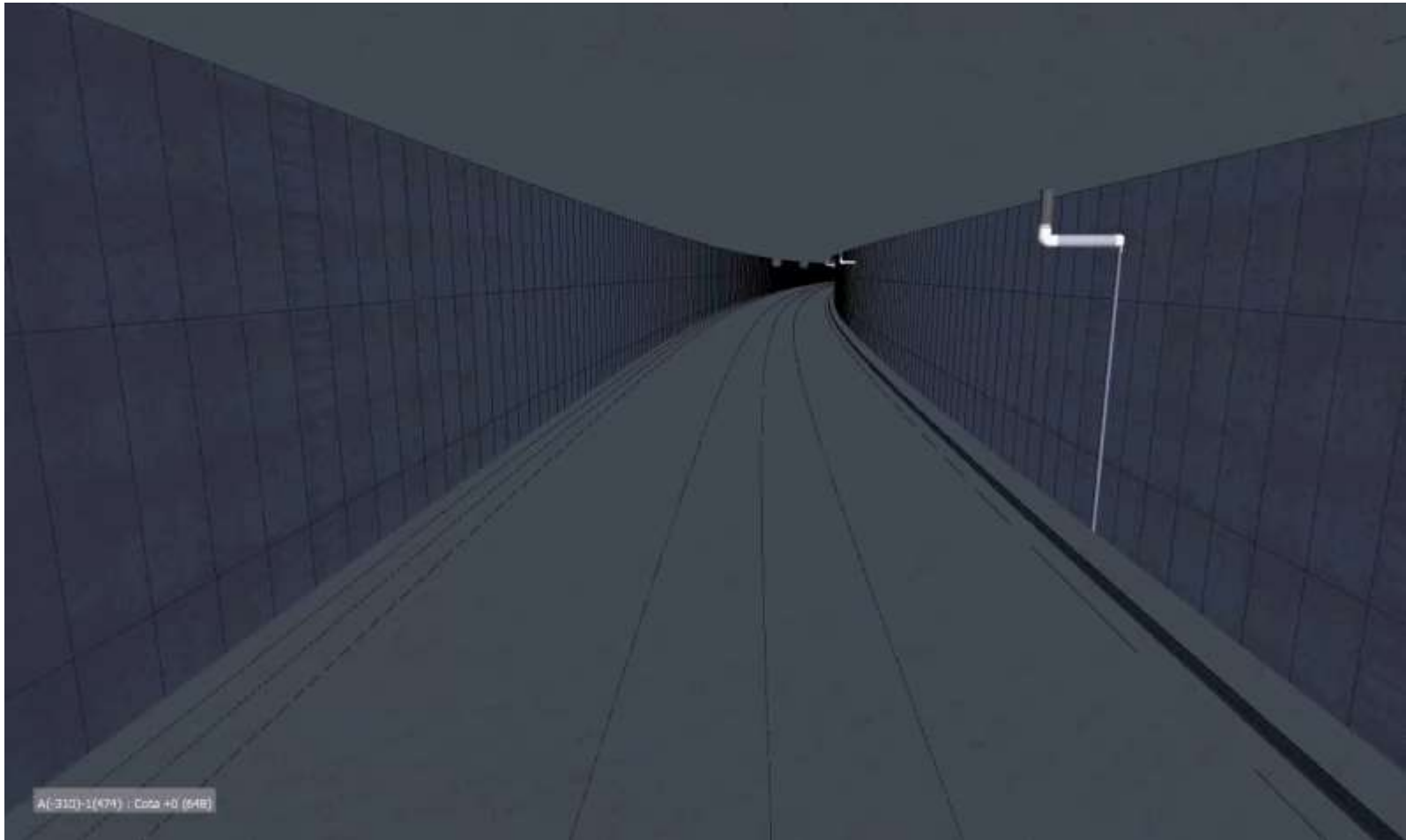
Total Area: 130 Ha – 11 testing ways – Investment 78.350.000.-€



3. Civil BIM in transport infrastructures

1st BIM linear project

Americo Vespuccio Highway – Santiago de Chile - > 8 km length



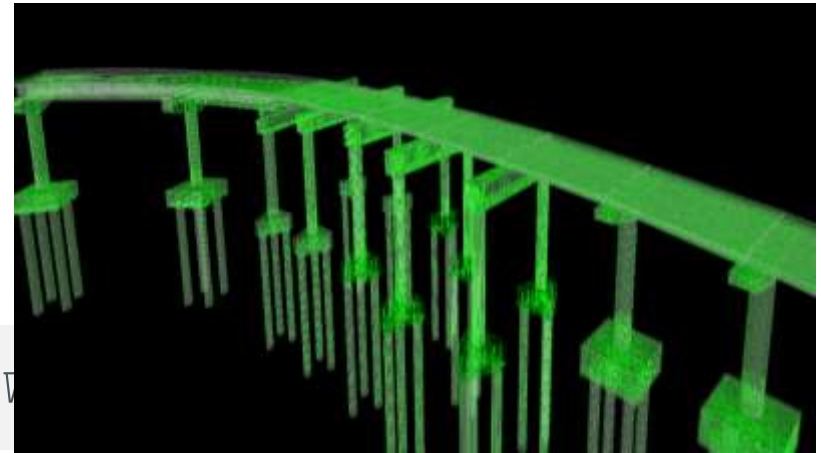
Urban road services in the new city of Olmos (Peru)

Construction total area of 734 hectares, accounting for 112,000 residential areas, green areas, public facilities and commercial and industrial areas



Santa Catarina state Road network (Brasil)

9 national roads (A101F, SC-108, SC-390, SC-435, SC-437, SC-443, SC-445, SC-446, SC-447)



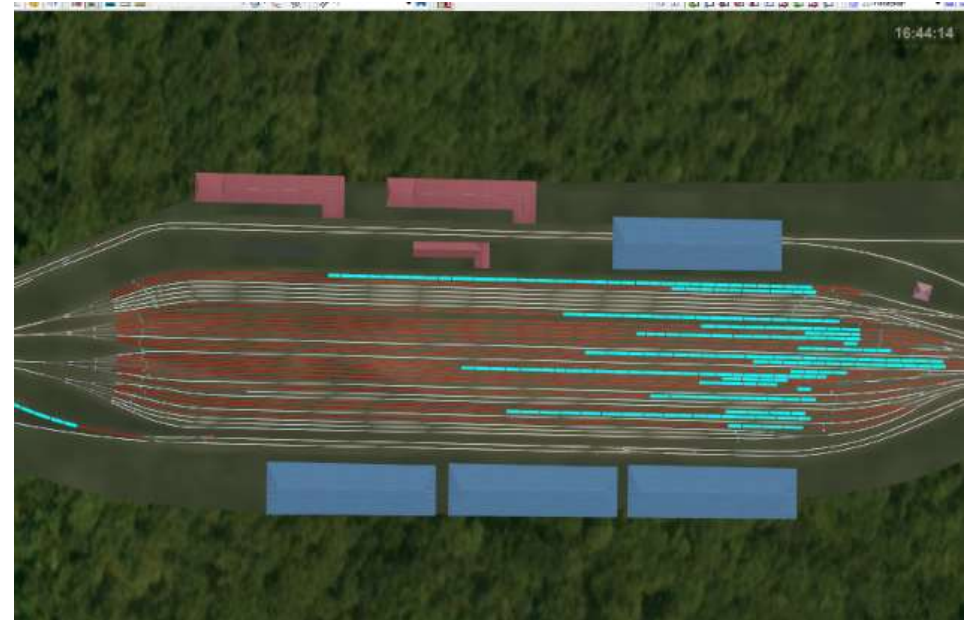
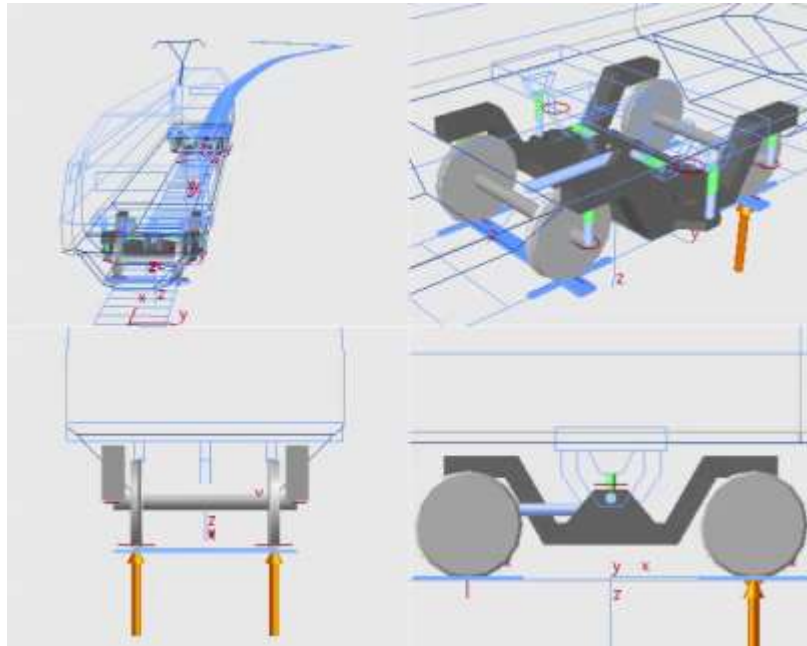
3. Simulation in transport infrastructures

Simulation of railway operations



Advantages

- Simulation of the operational running of the infrastructure



Virtual Driving



Advantages

- Experiencing the hyper-realistic conduction of the train with real monitored physics
- Real time telemetry
- Simulation platform based on videogame technology

■ INTERMODEL EU Project

Grant Agreement number: 690658

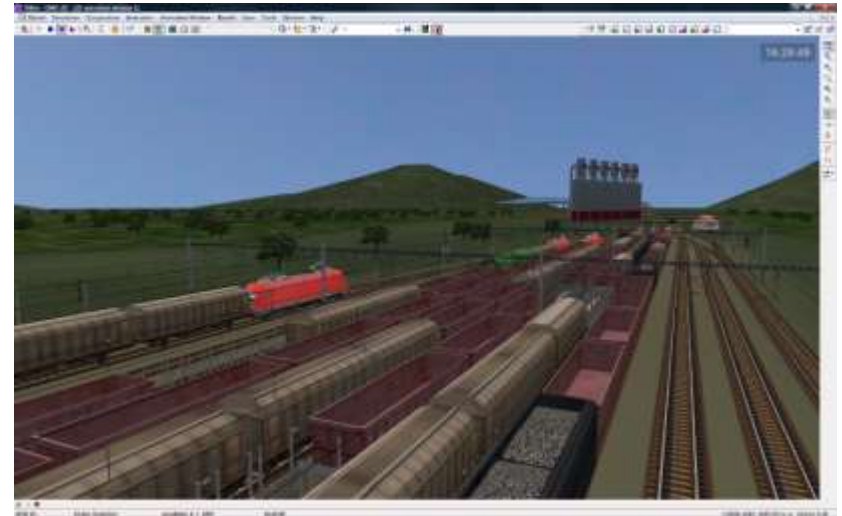


IDP coordinates the European research & development project INTERMODEL, within the *Mobility for Growth* call from the *Horizon 2020* programme (MG-8.4a-2015), which aims to develop a methodology and set of ICT tools in order to allow an advanced simulation of railway intermodal logistics platform models to support tasks related with design and operational phases.



- **INTERMODEL EU Project**
Grant Agreement number: 690658



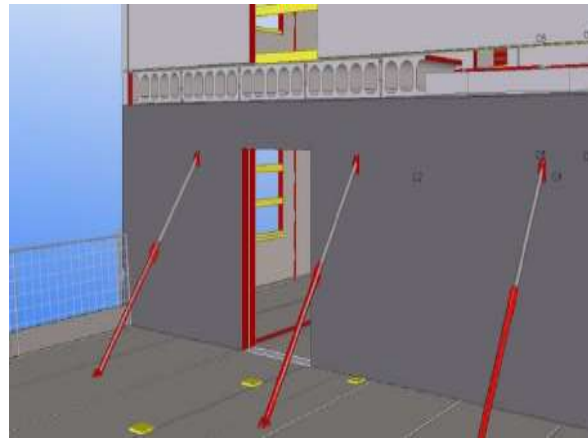
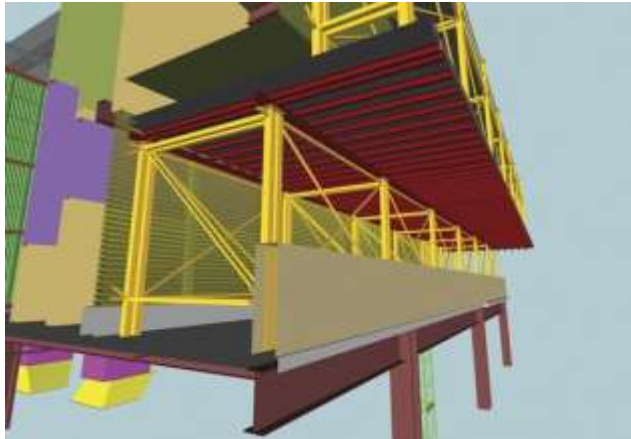


BIM methodology has to adapt to fit new challenges due the long lifespan: Climatic Change, New materials and handling machinery, OPEX estimations...
BIM must be linked with existing freight logistics simulations to assess the overall performance of the terminal.



4. More Dimensions?

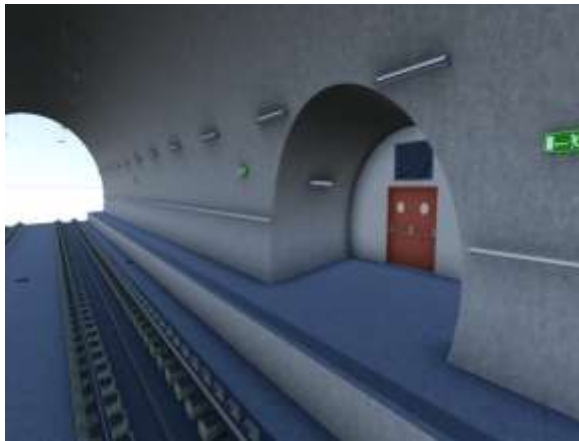
Safety on site



Advantages

- Integration of the safety measures and elements into the BIM model
- Detection of black spots
- Proving of the expected security & safety plans' effectiveness through the BIM model
- Assessment of the designed preventive actions.
- Monitoring of dangerous actions and working staff to prevent harmful situations.

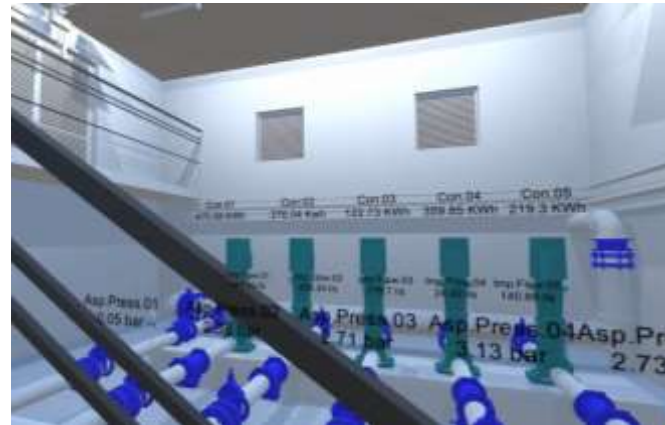
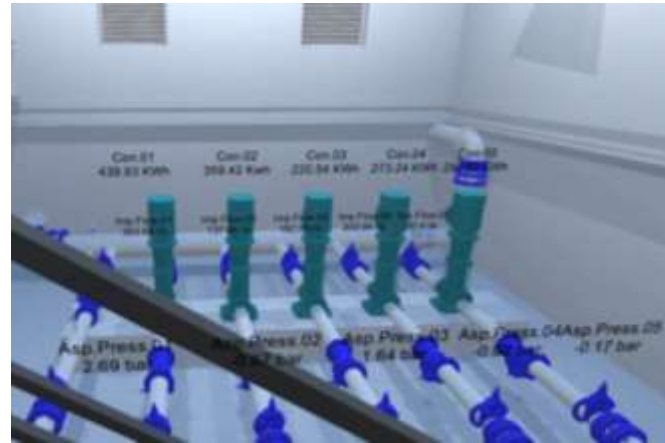
Simulation of the evacuation plans



Advantages

- Designing of the evacuation plans
- Calculation of evacuation movements
- Planning of the evacuation sequence
- Use of BIM model as design's approval platform
- Use of BIM model as future management platform for firemen and emergency brigades

■ Sensing and monitoring of installations



Advantages

- Sensing of the installation and collection of data
- Real time remote control of installations, valves, etc.
- Detection of deficiencies and/or malfunctioning

5. CIM Technology

1. Introduction to CIM Technology

CIM is a work methodology, supported by specialized software, aiming at the production and management of projects, which allows:

- **Designing**
- **Planning**
- **Organizing**
- **Managing construction execution**
- **Exploiting during operational phase**



This digital model allows the integration of up to **7 dimensions**:

- **3D** The 3 physical (integration of the surroundings, automation of document production, interoperability of calculation software, geometrical comprehension - clash detection, visualization improvement).
- **4D** The planning (Construction planning, simulation of constructive sequences).
- **5D** The cost (Construction measurements, quotations).
- **6D** Energy and sustainability analysis (Energy simulation and sustainable design, quality, audit and certification).
- **7D** Integration with Facility Management systems.



2. Scope of each development phase

PLANNING

- Working **Parameterized model** in 3D
- Integration of all the **information** within one **single model**
- Complete evaluation of **alternatives**
- **Time & economical** information
- **Real time** control
- **Precise and exact** gauging
- Detection of **clashes** between planning **phases**
- Detection of **hidden elements**
- **Virtual** model

TENDERING

- **Economical, aesthetic and conceptual** evaluation of the different proposals of **contractors'**
- Selection of **optimal contractor**

CONSTRUCTION MANAGEMENT

- Easy **follow-up** of the **evolution** of works
- Evaluation of **changes** and/or **modifications** before implementation
- **Time and economical** control
- Reliable **decision-making**
- **"as-built"** project

MAINTENANCE

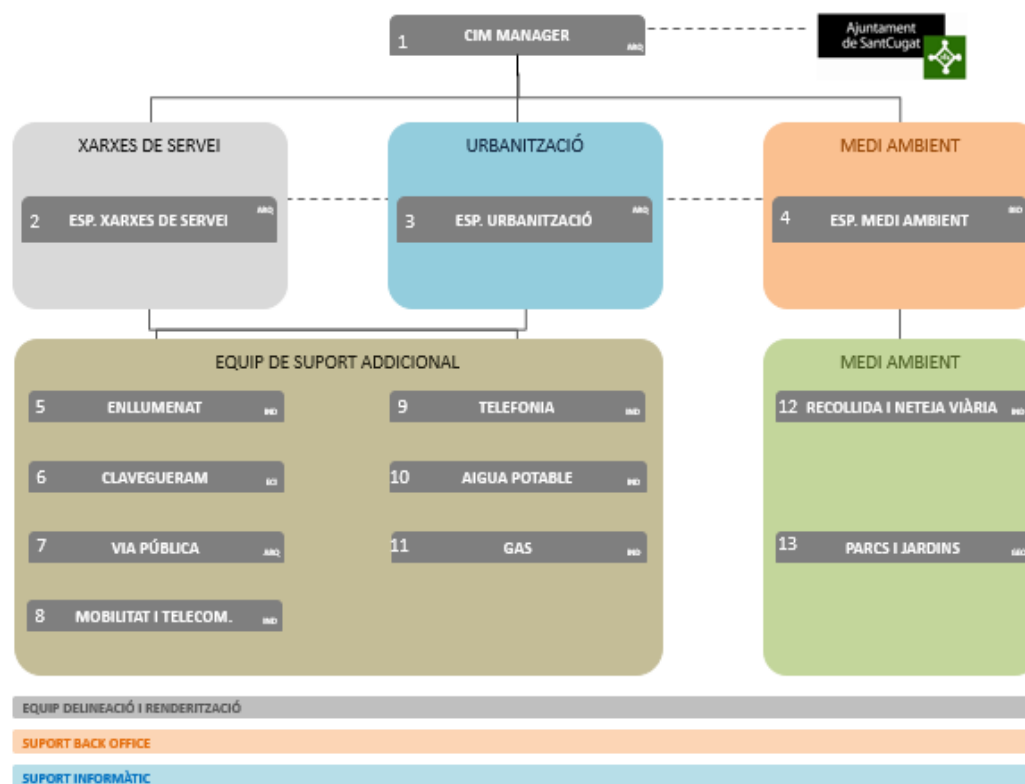
- **Exploitation & Facility management:**
 - Element description,
 - Supplier,
 - Service life,
 - Recommendations,
 - etc.
- Reduction of **expenses**



CIM AREAS

- Street collection and cleaning
- Lighting
- Sewer system
- Public roads
- Parks and gardens
- Mobility and telecommunication networks
- Telephone system
- Drinking water
- Gas

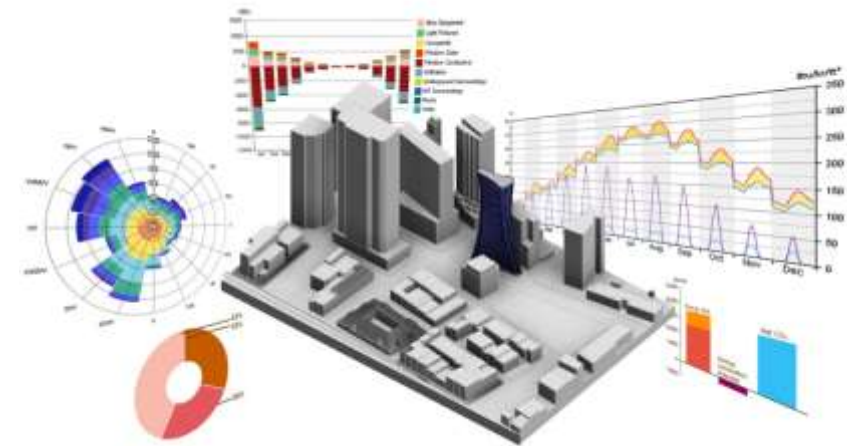
TECHNICAL TEAM ORGANIZATIONAL CHART





II.b. Installation and launching of management platform

- Preparation and implementation of informatics infrastructure
- Personalization and launching of the application
- Connection of the CIM model to the management system

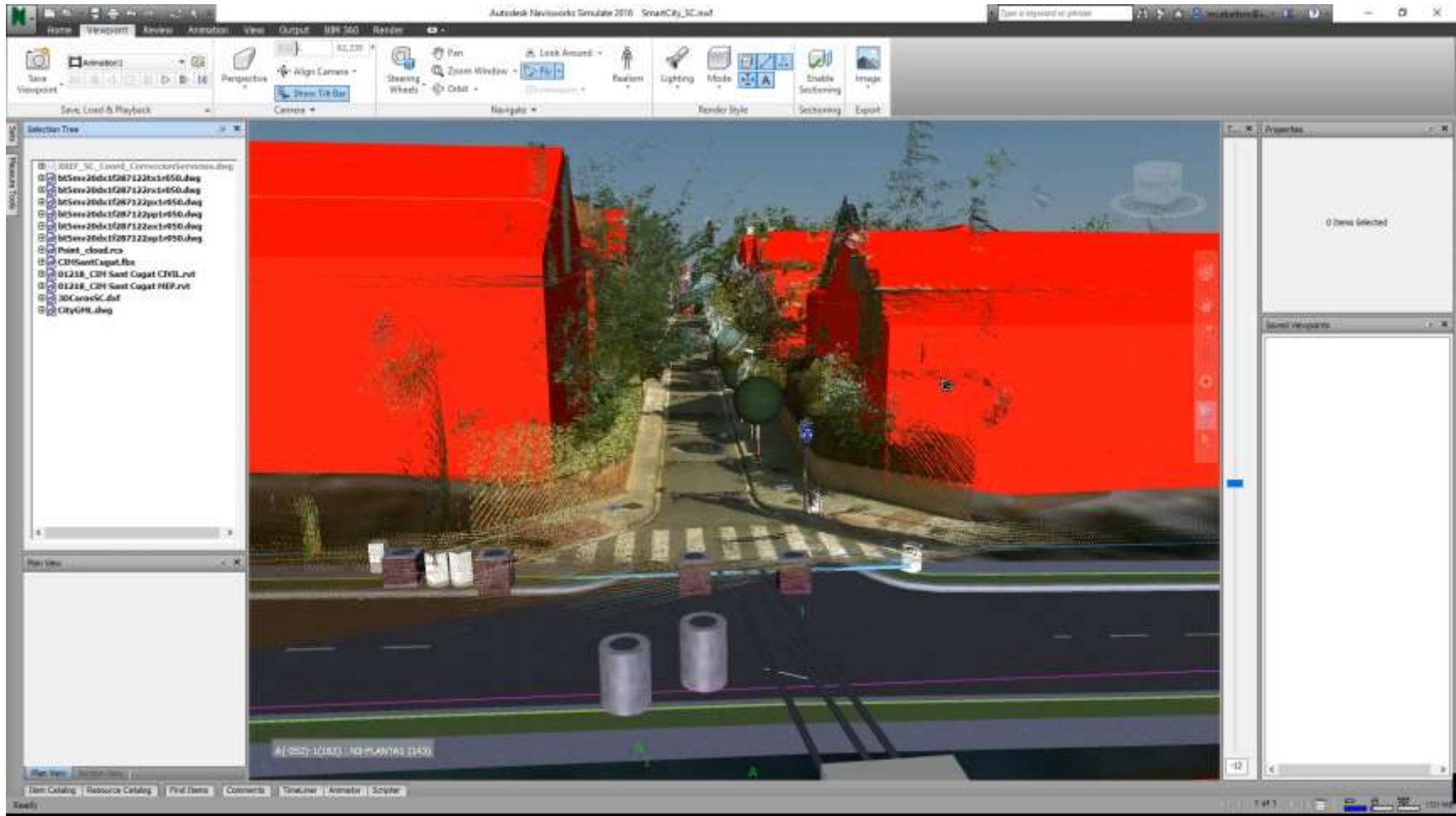




II.b. OGC FCP1 - GeoBim City Model



virtualcitySYSTEMS





Thanks for your attention

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