From BIM to CIM

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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** multidisciplinar technicians.
- **8 offices** in 5 countries (Perú, España, Brasil, Ecuador y Chile)
- Projects across **41 countries** in 4 continents (América, Europa, Asia y África)
BIM in IDP - Mainstream

- Multidisciplinary team
- Acting in all Business Units
- And all disciplines
2. Transition from Architectural BIM to Civil BIM
Main IDP references in Architecture & Building Services

- IKEA commercial center in Alfasar (Spain)

  Total Constructed Area: 108,374 m² – Investment 42,887,469.-€
Main IDP references in Civil Engineering using BIM

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

  Total Area: 645,680 m² – Investment 38,740,800.-€
Main IDP references in Civil Engineering using BIM

- Road Tunnel beneath Plaza de las Glorias in Barcelona

  Total length: 957 m., 3 lanes each – Investment: 49.750.000.-€
Main IDP references in Civil Engineering using BIM

- 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
Main IDP references in Civil Engineering using BIM

1st BIM linear project

Americo Vespuccio Highway – Santiago de Chile - > 8 km length
Main IDP references in Civil Engineering using BIM

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
Main IDP references in Civil Engineering using BIM

Santa Catarina state Road network (Brasil)

3. Simulation in transport infrastructures
8D - VIRTUAL SIMULATION - Railway

- Simulation of railway operations

Advantages

- Simulation of the operational running of the infrastructure
Virtual Driving

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

- 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

Simulation of the evacuation plans

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.
Sensoring 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
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

<table>
<thead>
<tr>
<th>PLANNING</th>
<th>TENDERING</th>
<th>CONSTRUCTION MANAGEMENT</th>
<th>MAINTENANCE</th>
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| • 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 | • **Economical, aesthetic and conceptual** evaluation of the different **contractors’ proposals**  
• Selection of **optimal contractor** | • **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** | • **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

1. CIM MANAGER
2. XARXES DE SERVEI
3. URBANITZACIÓ
4. MEDI AMBIENT
5. ENLUMINAT
6. CLAVÈGUERAM
7. VIA PÚBLICA
8. MOBilitat I TELECOM.
9. TELEFONIA
10. AIGUA POTABLE
11. GAS
12. RECOLLIDA I NETEJA VÀRIA
13. PARCS I JARDINS

EQUIP DE SUPORT ADDICIONAL

SOPORT BACK OFFICE
SOPORT INFORMÀTIQUE
Phase 2 – Implementation of the management system

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
Phase 2 – Implementation of the management system

II.b. OGC FCP1 - GeoBim City Model
Thanks for your attention

www.idp.es

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