OGC Interoperability Program Future City Pilot-1
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1. CIM Technology
1. Introduction to CIM Technology

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

- 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 contractors’ proposals**
- **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**
3. Comparison of traditional 2D work mode vs CIM Technology

1. Work methodology following a **2D individual planning** model
2. Implementation of changes at an **individual level**
3. **Design and planning**
4. **Graphical information**
5. **Isolation** of each specialist’s job through phases on the model on the model
6. Control of the **intermittent evolution**

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1. Work methodology with a **parameterized model integrating all the information** within a 3D model
2. **Major tracking of changes** within the whole set
3. **Design, planning, organization and management**
4. **Graphical, economical and time information**
5. **Simultaneous coordination** within the same model; **time and cost reduction**
6. **Real time** control of the evolution by the client; **decision-making**
2. Organizational project
Organizational project

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
3. Route Map
Route Map

PHASE 1
4 MONTHS

1.a
Initial study of the areas with the town/city council

1.b
Dialogue with third parties

1.c
Study of alternatives and software selection

1.d
Implementation action plan

PHASE 2
8 MONTHS

2.a
Creation of the information in the new model

2.b
Installation and launching of management platform

2.c
Revision of the model’s integration

2D
CIM Execution Plan (CEP)

2.e
Production of specifications sheet model

Train.
Training: Introduction to CIM systems

Train.
Training: Management of CIM systems

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4. Phase 1
Phase 1 – Assessment and study for the implementation

I.a. Initial study of the areas with the town/city council

- Beginning information type and formats
- Extension and distribution of the service across the city/town
- Area particularities
- Implemented technology and software typology
- Assessment of actual state and expected future actions
- Municipal management model
- Assessment process
- Specification of to-be-implemented information
- Evaluation of the available information’s aptitude
- Complementary information needs
Phase 1 – Assessment and study for the implementation

I.b. Dialogue with third parties

- Beginning information type and formats
- Implemented technology and software typology
- Specific management model
- Specifications document of functions and requirements
Phase 1 – Assessment and study for the implementation

I.c. Study of alternatives and software selection

- Identification of variables to be evaluated under homogenised and quantifiable criteria
- Comparison of alternatives
- Software selection
Phase 1 – Assessment and study for the implementation

I.d. Implementation action plan

- Study of the information gathered during previous stages
- Production of detailed report and handing over to city/town council
5. Phase 2
Phase 2 – Setting up of the management system

II.a. Creation of the information in the new model

- Creation of lighting area model
- Creation of sewer system area model
- Creation of public roads area model
- Creation of telecommunication and mobility area model
- Creation of telephone system area model
- Creation of drinking water area model
- Creation of gas area model
- Creation of road collection and cleaning area
- Creation of parks & gardens area model
- Parametering of model until desired LOD
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.c. Revision of the model’s integration

- Detection and resolution of unclear aspects, objects, spots...
- Detection and resolution of clashes
- Detection and resolution of hidden elements
II.d. Production of the CEP areas – system operation manual

- Description of the necessary requirements for a good working order
- Model contents
- Habilitated uses
- Roles and responsibilities
- Calendar
- Interactive working interface
- Procedures for electronic communications
- Management flows
- Management of the CIM model versions
- Revisions for the quality check
- Management and administration
Phase 2 – Implementation of the management system

II.e. Production of specifications sheet model

- Revision of actual specifications
- Confection of base document for new CIM sheets
Phase 2 – Training Proposal

Introduction to the new CIM systems

- Introduction
- Parameterized information
- CIM systems’ applications and dimensions

Management and use of CIM systems

- Introduction
- Generation and modification of contents
- Management of a model