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The 3D Standards evolution Piloting for Smart Cities and the Build Environment (GEOBIM)

Bart De Lathouwer

Open Geospatial Consortium

20 October 2016

Setting the stage

"Is this thing on?"

The 3D Standards evolution
Piloting for Smart Cities and the Build Environment (GEOBIM)

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Setting the stage

- Geo and BIM, how do they relate?

- Identify the issues

- How we pilot the solutions

- Use of standards in Smart Cities

- Observations & Conclusions

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Photo: Tomorrowland

Photo: Tomorrowland
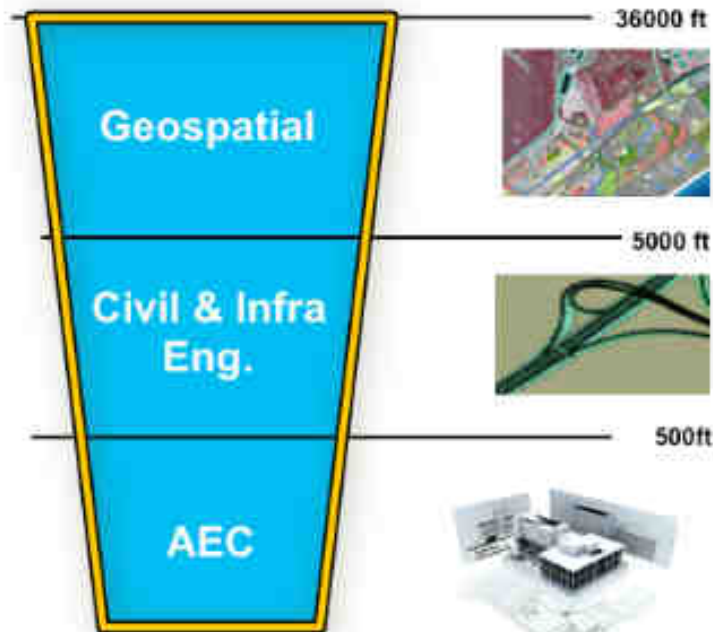
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History & Context

- Geospatial, Civil Engineering & BIM come perfectly together in the Urban environment and are destined to work together
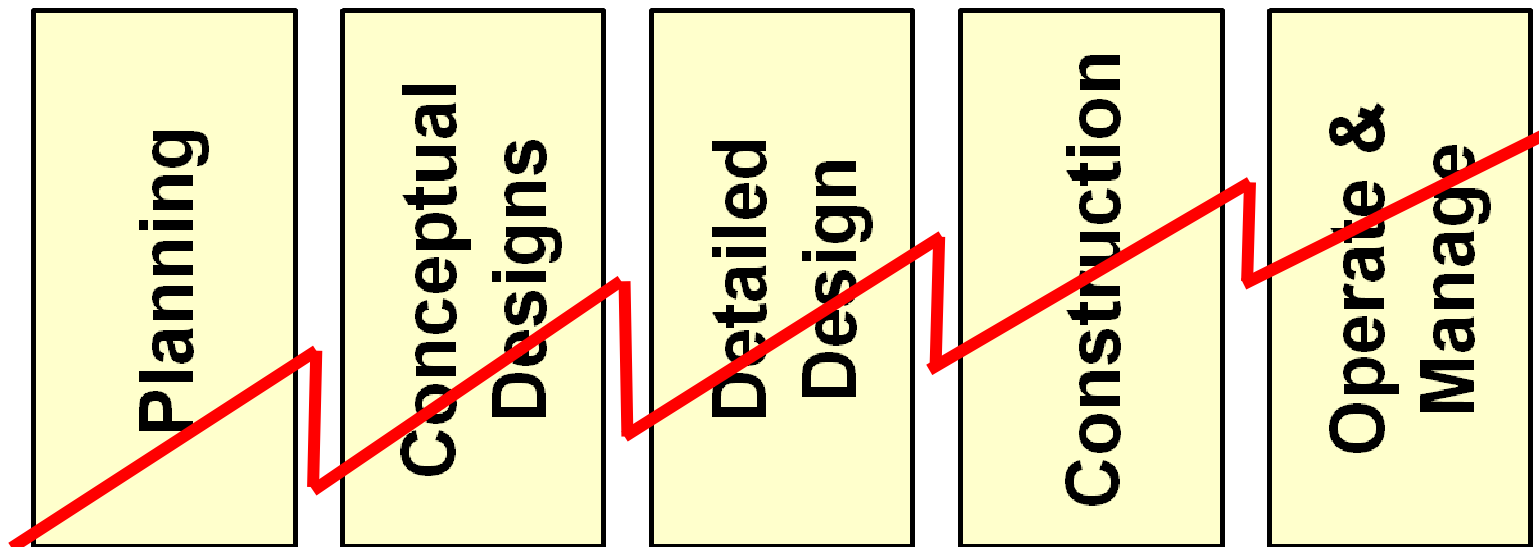

Graphics: OGC
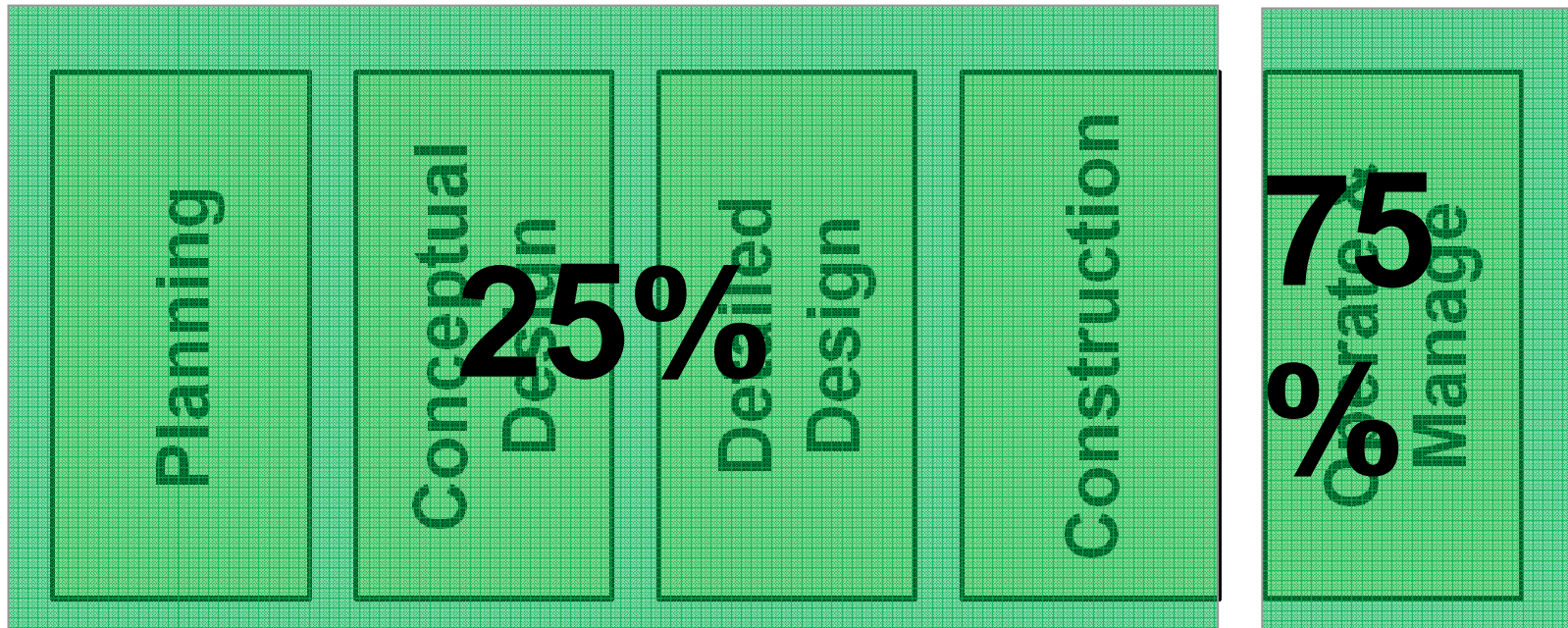
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History & Context

- Identified loss of information in the build workflow
  - Opportunity to <u>bring together</u> CityGML and IFC and pilot the interoperability arrangements

Budgets

- Total budget spend over the life cycle of a building

Planning	Conceptual Design	Detailed Design	Construction	Operate & Manage
	25%			**75%**

Budgets

- We know how to model the outdoors
  - Mostly

- Move to the inside, Indoor!
  - BIM and Indoor to Operate and Manage

Planning	Conceptual Designs	Detailed Design	Construction	Operate & Manage

Future City Pilot, Phase 1

Early experiments in transportation

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FCP1

- OGC in collaboration with bSI

- 6 month project

- Pilot interoperability arrangements in Geo and BIM

- Quid IFC and CityGML?

- House rules:
  - Pre-market conditions
  - Non competitive
  - Non operational environment
 - Research

Scenario's

- Static 3D city models are *'easy'* to make
  - Maintaining a city model is harder
  - Need for **validation of new components** of the model
    - Model validation
  - Parts of a city planning tools

$$d_{limit} = 0 \text{ m} \qquad h_{eave} < d_{limit}$$

OR
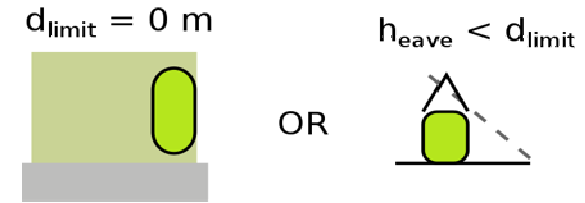
Graphics: IGN France

- Dynamic models
  - Associate sensor information to model components
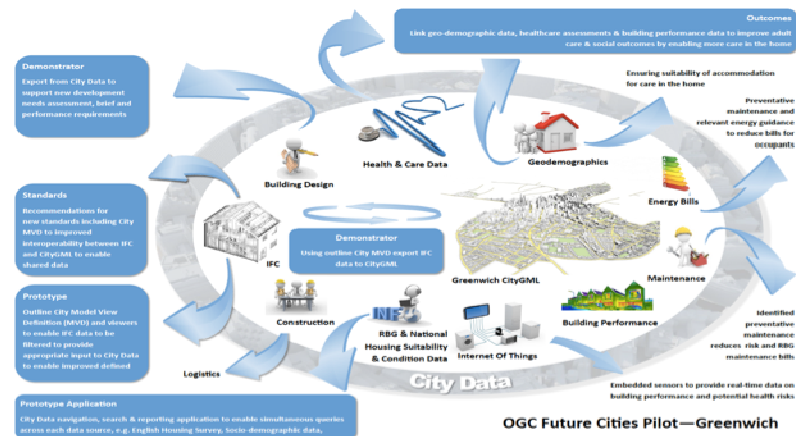 - SWE, SOS, SensorThings

Graphics: Steve Liang, University of Calgary

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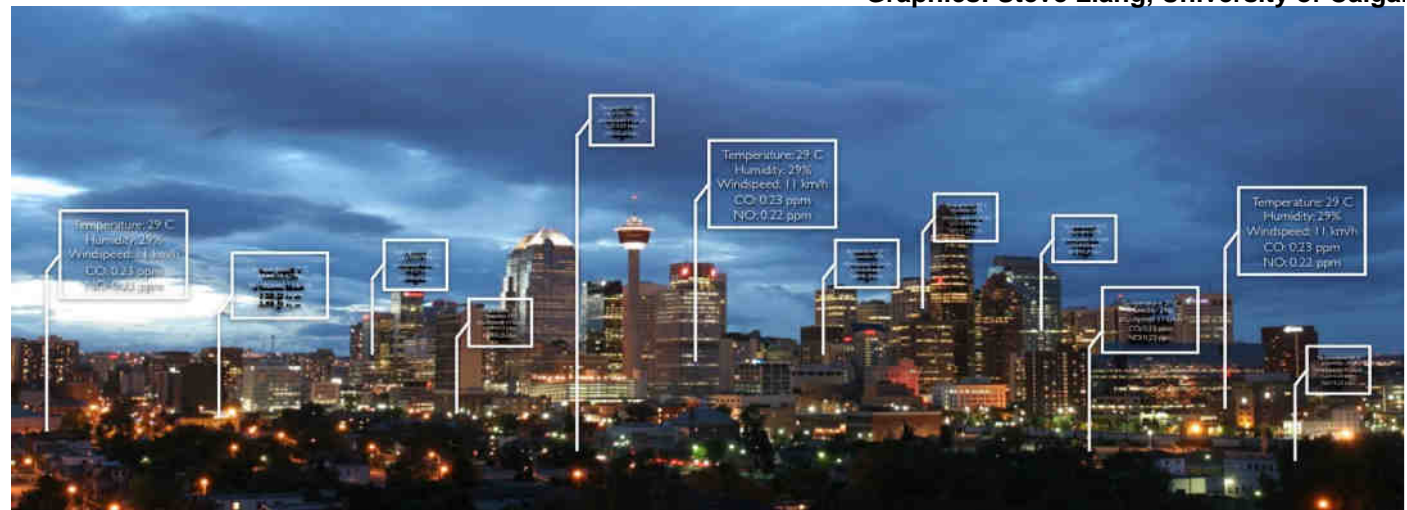
Scenario's

- Integration of city information with Dynamic model
  - Goal: reduce winter death (urban services)
  - Building humidity is related to illness
  - Integrate sensor readings with city model
    - Using CityGML and Sensor Web Enablement : "Dynamizer"

Graphics: Greenwich and OSGB

Scenario's

- Climate Change will flood more cities
  - Disasters Management / prevention
  - Model how cities flood using the 3D city model

UK, Doncaster, source: wikipedia

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The Visionary Sponsors

- Ordnance Survey Great Britain,
- Sant Cugat del Vallès (Barcelona), Spain,
- Institut National de l'Information Géographique et Forestière (IGN) France
- virtualcitySYSTEMS GmbH Berlin

Participants

- **Remote Sensing Solution**
  - San Diego, USA
- **University of Melbourne**
  - Melbourne, Australia
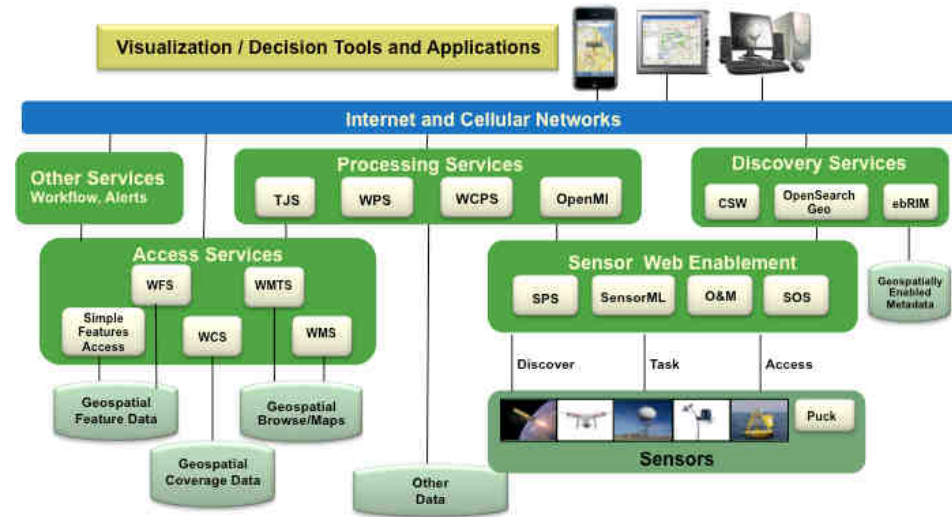- **University of Munich**
  - Munich, Germany

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Scenario's

- ## Scenario's
  - Urban Planning
  - Social Services
  - Disaster Management

- ## Use Cases
  - Link sensor information
  - Urban planning rules control
  - Dynamizer
  - City Services in 3D models
  - Use a 3D City model to simulate city flooding

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Timing

Schedule Event / Milestone	Date
RFQ/CFP Issued	5 February 2016
Prospective Bidder's Q&A Webinar	18 February 2016
Deadline to submit questions on RFQ/CFP to OGC	26 February 2016
Proposals due to OGC	4 March 2016
Project Kick-off Workshop in London	12 April 2016 (Entire day)
Project Plan refined following Kick-off Workshop	18 April 2016
Draft reports complete	September 2016
Integration and Interim Demonstrations complete	Begin October 2016
Conduct final demonstration	25 November 2016 at GeoBIM Amsterdam
Final reports complete	Nov-Dec 2016
Project end date	December 2016

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FCP1 Results

- Demonstrating interoperability arrangements (Nov 25)
  - [Geo-BIM Europe](#) in Amsterdam, 25 November 2016
  - Demo
  - Video

- Engineering Reports (Dec)
  - Feedback to all relevant OGC * Working Groups
  - Accelerate the Standards Program

- Final Video (Jan 2017)

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FCP2

- Run in 2017
- Also in the Geospatial, Civil Engineering & BIM arena
- Researching and looking for requirements (sponsors)
- Worldwide scope
- Indoor

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Smart Cities

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IEEE

Smart Cities

The way we live, work, use energy, transportation and other city resource and services will change significantly, because of a range of innovative "Smart City" solutions.

Image: https://eu-smartcities.eu/about/european_co

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Smart Cities

Innovative "Smart City" solutions will be based on sophisticated information and communication services!

Image: https://eu-smartcities.eu/about/european_co

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Smart Cities

Sophisticated information and communication services require a systematic approach to interoperate, using standards.

Image: https://eu-smartcities.eu/about/european_co

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ESPRESSO

ESPRESSO will develop a
"Conceptual Smart City Information Framework"

The framework will be developed, based on a detailed requirements-engineering campaign with Cities, standardisation organisations, administrative bodies, private industry and projects.

Results picked up by SDOs
ISO IEC JTC1 WG11

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Observations

- Geo and BIM coming together

- Indoor is 'hip'

- NMCA's are changing

- Smart cities:
  - 3D Models, BIM, Geo do not come up in the story!
  - Very little use of standards, all stovepipes

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Conclusion

- OGC has standards for 3D and Smart Cities

- Geo and BIM are destined to work together

- FCP1
  - IFC – CityGML interoperability to maintain city models and validate new elements
  - Dynamizer: sensors and 3D City Models
  - Understand how cities flood

- Smart Cities
  - Create awareness of standards & 3D
  - Use existing standards & frameworks

Image: http://www.psimagazine.co.uk

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Thank you

Bart De Lathouwer

- @BartDeLathouwer
- bdelathouwer@opengeospatial.org

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