Implementing of Building Information Modelling in Public Works Projects in Ireland - Presentation

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Implementing Building Information Modelling in Public Works Projects In Ireland

By
Barry McAuley, Dr. Alan Hore & Dr. Roger West

Presented by
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Ireland and the need for change

- Ireland - huge financial losses in the public works
- Reduce greenhouse gas emissions by up to 20%
- Capital Works Management Framework (CWMF) introduced in 2007
- A number of recent Large investment from the Irish Government
- Public works projects in the UK will be required to use BIM techniques from 2016.
- Irish Government move towards the mandatory use of Building Information Modeling (BIM) on public works projects
Methodology - RIAI / CITA BIM Workshop

• Raise awareness and promote a higher level of understanding of BIM

• Demonstrate a more effective way for teams to collaborate

• Assess / demonstrate some of the BIM software tools available

• Validate designs through digital analysis

• Test BIM technologies in responding to low carbon construction demands
CITA BIM Workshops

What major BIM activities ......

- Collaborative networking effort
- Gaining international interest
- Discussion on Key Topics/Obstacles
- Expert Opinion and Table Discussions
- Record & distributed outcomes back to Industry
- Promote/Communicate Industry Consensus & Joined-up Thinking

Construction IT Alliance
BIM WORKSHOP SERIES 2012

A series of workshop events designed to facilitate a high level discussion of the key stakeholders on the immediate obstacles to the implementation of building information modelling in Ireland. Specifically the workshops are designed to assist in:

- Facilitating the general adoption of BIM in Ireland.
- Disseminating best practice and application of BIM in a variety of direct and indirect construction related work processes.
- Facilitating a consistent and co-ordinated message back to industry in how to best implement building information modelling in Ireland.

Monday 25th June 2012
## Capital Works Management Framework Objectives

1. Greater cost certainty
2. Award contracts on the basis of a lump-sum fixed-price
3. Rebalance the risk
4. Value for Money
5. Efficient delivery of the projects

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<th>Capital Works Management Framework</th>
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<td>Public Works Contracts</td>
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<td>Contracts, Model Forms, Arbitration Rules, Invitations to Tender &amp; Schedules (works)</td>
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Lit Review

- **Irish Public Sector and the Governments roles in implementing BIM**
  - Majority of construction contracts used in Ireland provide for conciliation and arbitration as an alternative means of dispute resolution
  - The Irish Government must play a major driver and review current BIM initiatives and barriers within internationally public sector procurement

- **Global BIM**
  - USA, Finland, Norway, Denmark, UK, Germany, Singapore who are all currently in the process of developing BIM guidelines
  - The implementation of BIM on all public works projects in the UK to a level 2 standard

- **Barriers to BIM**
  - Process, Interoperability, Use of the Model, Status of the model, Project responsibilities and risks, Ownership and protection of Data
  - The US Consensus DOCs 301 and AIA E202
RIAI / CITA BIM Workshop

- 2011 RIAI showcase of integrated and collaborative Working

3D BIM Model on Screen
Laptops On Meeting Table (No Paper)
Instant Access to Sophisticated Information and Analysis
Digitally Recording Decisions in Real-Time

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Pilot Team and Process

- Leading design professionals from selected firms within the AEC/FM sector
- Consulting engineers, services engineers, architects, and consultants
- Additional support from contractors, QS's, technical support, FM support for handover documentation and BIM energy specialists

- Digital brief with the overall goal to design a BIM model of a standard generic DOES school
- Exploded down to its components
- Synchronised with a central server
Pilot Analysis

Generic School broken down to its core elements

Build the Base BIM Model ➤ “Explode” to Standard Components ➤ Prepare a New Design
Low Carbon Options

Figure 6: Mass Model 1

Figure 7: Mass Model 2

Figure 8: Mass Model 3

Figure 8: Mass Model 4
Pilot Feedback

• The BIM process helped identify eventualities that may occur on site and subsequently aided in avoiding these eventualities.

• The BIM process added a greater cost certainty and reduced a significant amount of the design risk.

• BIM enabled the designer to have the option to choose a carbon friendly design for the primary school.

• Design team could identify areas of possible clash detection and could instantly confront them before they went to site.
BIM Workshop

- Setting an aligned policy for use of BIM in regards to a top down strategy for Government, Institutions, companies and projects

- Roundtable Discussion
  - Should the Irish Government follow the UK Government’s decision in mandating the use of BIM on public sector projects?
  - How best can the Irish Construction industry, lobby / influence the decision of the Irish Government in regard to BIM?

- A resounding agreement that Ireland should follow the UK

- There must be single voice in the form of a Chief Construction Advisor such as in the UK
Triangulation of Results

**Greater cost certainty** - Mass model studies allow design teams to design to a cost, rather than cost to design.

**Award contracts on the basis of a lump-sum fixed-price** - Exercises in design, programming, value management and concept energy analysis allows a more accurate financial assessment for a contract with a fixed price.

**Rebalance the risk** - Better risk prediction through enhanced clash detection.

**Value for Money** - BIM enables a whole life cycle approach and addresses the clients needs over the structures life.

**Efficient delivery of the projects** – BIM enables testing of design solutions to provide a more responsive building design.
Conclusion

- The workshop proved a success and provided the platform for the Irish Government to see first-hand, how a collaborative BIM model could provide cost certainty.

- The BIM workshop addressed a number of problem areas in which the Irish AEC / FM sector was found trailing in all areas.

- Still require “an act of faith” for the Irish Government to fully embrace it.

- Legal mandating of BIM may further be viewed as discriminating on SME’s.

- The CWMF is already achieving low tender prices.
Ireland’s challenges

- Getting people up to speed and training is key
- Getting people to change mindset
- Irish Government to step up to the challenge
- Investment is needed by AEC businesses
- Need to utilise BIM champions with your organisation
- Interoperability of BIM products to be addressed
What major BIM activities ......

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A series of workshop events designed to facilitate a high level discussion of the key stakeholders on the immediate obstacles to the implementation of building information modelling in Ireland. Specifically the workshops are designed to assist in:

- Facilitating a consistent and co-ordinated message back to industry on how to best implement building information modelling in Ireland.
- Facilitating best practices and application of BIM in a variety of direct and indirect construction related work processes.
- Providing the general adoption of BIM in Ireland.

Monday 25th June 2012
Major BIM Activities in Ireland

What major BIM activities ......

CITA | Construction IT Alliance
BIM | Building Information Modelling | Ireland’s Opportunity
Presentation To
GCCC | Government Construction Contracts Committee
Wednesday 2nd May 2012

Presentation by:          Accompanied by:
Dr. Alan V Hore          John McGowan
Executive Director, Construction IT Alliance

Ralph Montague
Director, Arcdox
Co-Ordinator CITA LinkedIn Group

Barry McAuley
Phd Student
Dit Bolton Street

Monday 25th June 2012
CITA BIM Survey 2012

Should Ireland follow the UK in mandating BIM

- Yes: 10.8%
- Neither: 27.0%
- Yes or No: 62.2%
- No: 10.8%

Can BIM help Ireland reach its Carbon Targets

- BIM is the answer: 4.1%
- BIM can play a significant role: 45.9%
- I am undecided to its use: 29.7%
- BIM can play a minor role: 8.1%
- BIM has no role: 12.2%

BIM as FM Tool in Managing the Government Estate

- BIM can be a crucial FM tool: 5%
- BIM can be a significant FM tool: 22%
- I am undecided: 36%
- BIM can be a minor FM tool: 37%
- BIM has no role to play: 36%

BIM Importance in 5 years Time

- No importance: 4%
- Low importance: 12.2%
- Moderate importance: 24%
- High importance: 5%
- Very High importance: 31%
Thank You!