

Working with BIM: Are We Really Doing it, and Who is Counting?

The 6th BIM, LEAN & Social Science Workshop

The logo for Auckland University of Technology (AUT), consisting of the letters 'AUT' in a white, outlined, sans-serif font on a black rectangular background.The background of the slide is a photograph of a modern building with a facade of horizontal wooden slats. The building is partially obscured by large, semi-transparent white geometric shapes (triangles and polygons) that create a layered effect. In the foreground, a person with a backpack is walking past a concrete pillar. The scene is set outdoors with trees and a green lawn.

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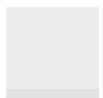
Working with BIM

BIM in New Zealand

The Development of BIM

- On most significant or complex building projects, design teams are now designing and documenting in 3D.
- An increasing number of projects are requiring the contractor to maintain the BIM throughout the construction phase and provide an As-Built or Record Model at handover.
- Main contractors are requiring their supply chain to provide construction phase BIM inputs
- The depth of the supply chain that can adequately support a BIM project in New Zealand is still limited.
- The major roadblock to increased use of BIM appears to be using it for asset and facilities management (the operate phase of a building).

The New Zealand BIM Handbook, November 2016



Working with BIM

How the Research Community is Doing it?



- The overall proportion of industry projects which are using some form of BIM is around 57%.
- The percentage of clients, who are aware of BIM and are using BIM-based systems is around 38%.

Explicit understanding of BIM application seems crucial

This presentation considers how the research community, including funding agencies, in Construction Management/ Engineering in New Zealand has been approaching domestic studies on the professional uptake of BIM

Main questions of this study

- Are assumptions about growing knowledge and use of BIM within the relevant sectors accurate at the individual level?
- If not what is the reason, and
- How should the research community respond?



Are We Really Doing it?

Research Method



Monitoring

The practical experience and knowledge of BIM amongst those entering the Master of Construction Management (MCM) programme at AUT were monitored between 2012 and 2017.

The MCM programme

- Was designed with steerage and direct support from industry and launched in 2008.
- Provides MBA-style mid-career development for construction professionals

The cohort is representative

The country is heavily dependent on attracting construction professionals from overseas as the activity is at a high point and demand for personnel, in Auckland especially, is outstripping supply.

- A 60% of the overall workforce in Auckland are born overseas
- Roughly half of each cohort were part-time domestic students who were also working, the balance being international students who were predominantly full time.

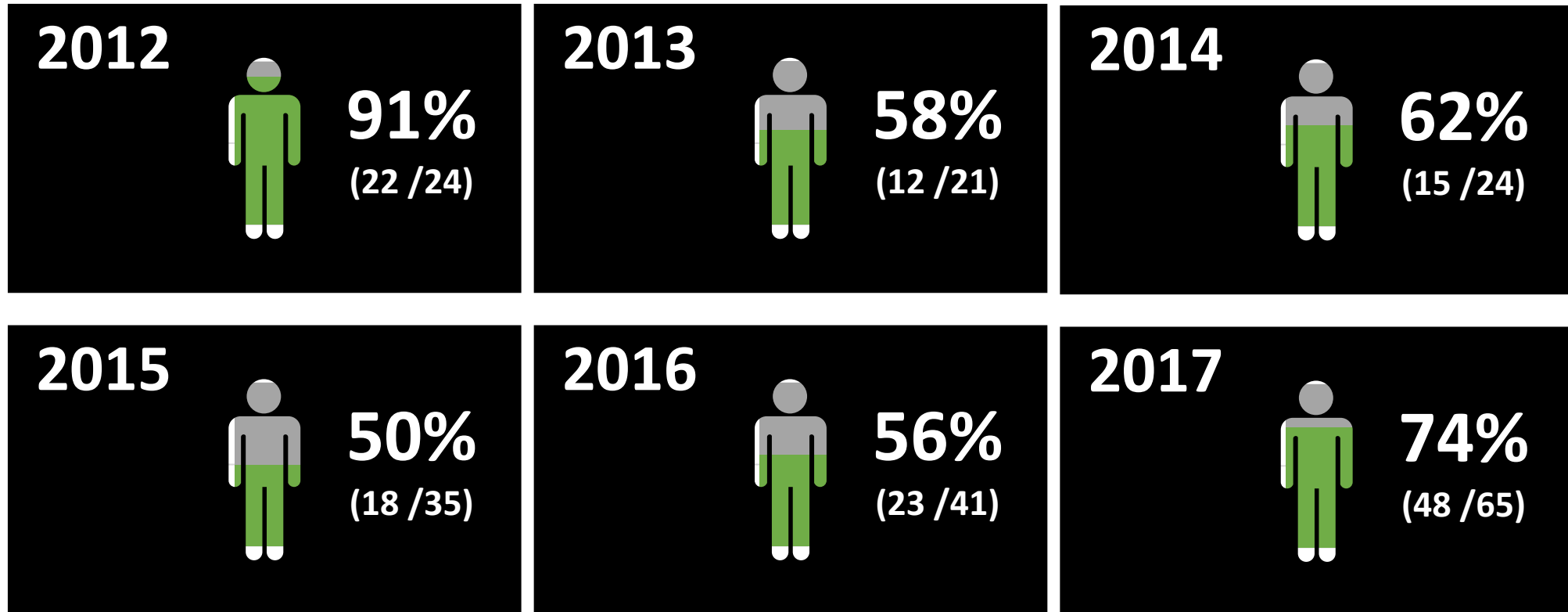
The MCM cohort, therefore, provides a representative image of early-mid career construction professionals.



Are We Really Doing it?

Self-reported knowledge of BIM

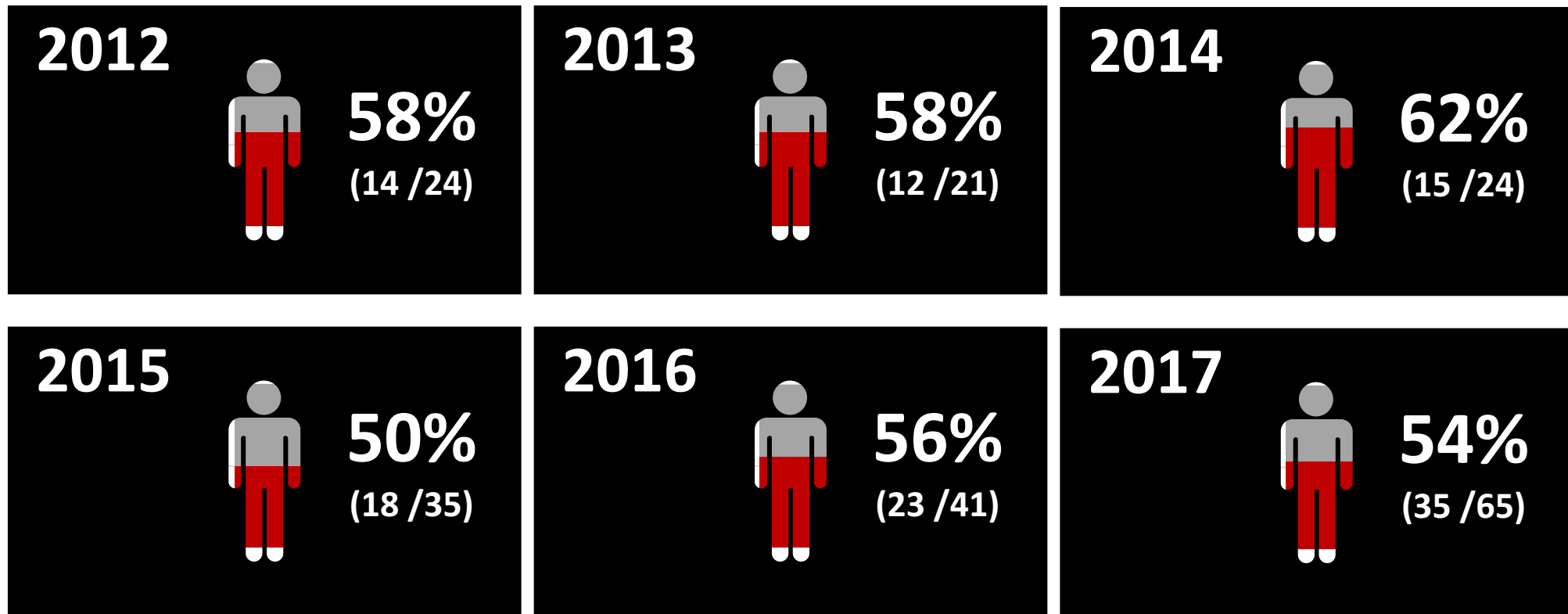
Knowledge about what BIM stands for



Are We Really Doing it?

Self-reported knowledge of BIM

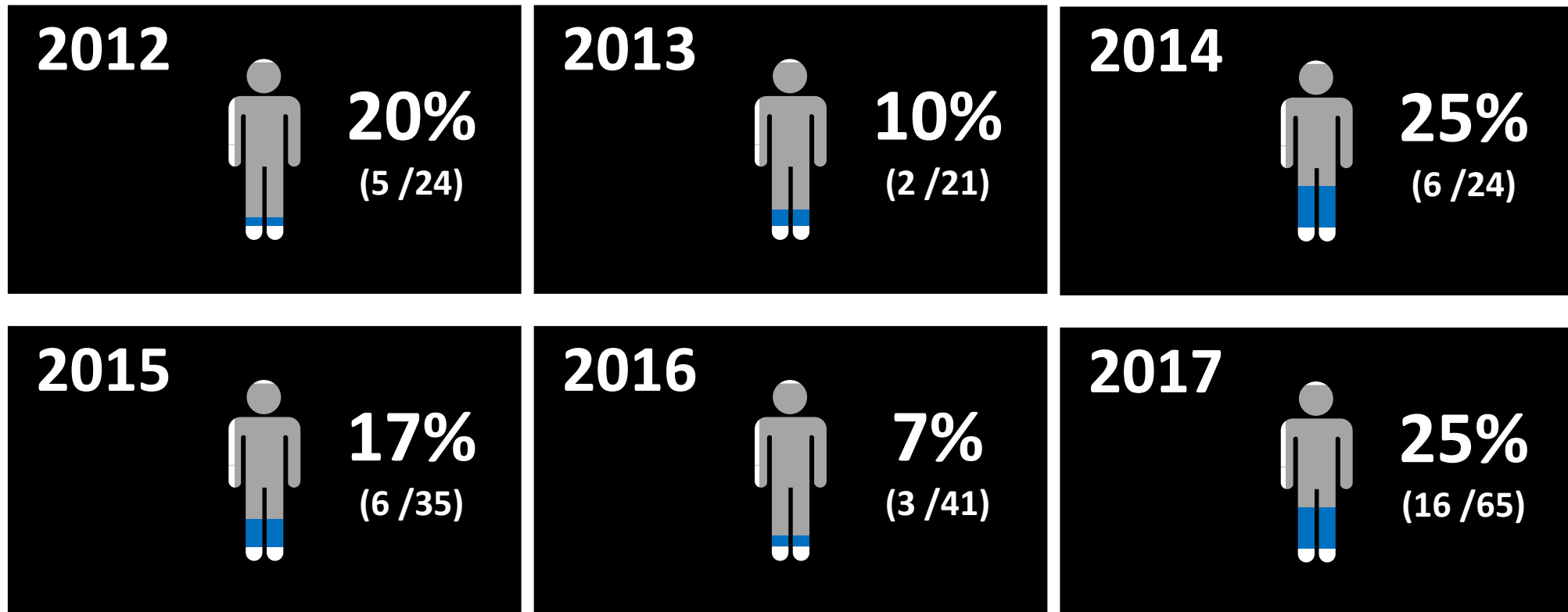
Ability to demonstrate usable knowledge of the applications and the future of BIM



Are We Really Doing it?

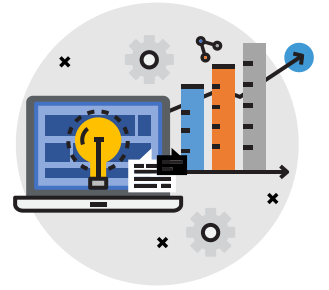
Self-reported knowledge of BIM

Experience of using BIM in real situations



Reports vs Observations

Are We Really Doing it?



A consistent story of growth is presented, but it is not seen at the individual level

- Is the same pool of practitioners just being spread more thinly?
- Is the assumed embrace of BIM by the technologically-inclined young not eventuating?
- Even if they are not getting hands-on experience at work, would they not be teaching themselves in their own time if they were excited by it as some have predicted?



Industry group



Used BIM in the last 12 months



of all projects use BIM



intend to use BIM in the next 12 months

Reports vs Observations

Who is Counting?



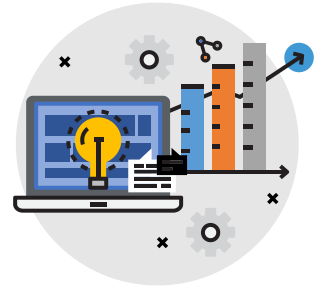
Growth report patterns and the research community

- Those conducting the majority of research exercises regarding BIM in NZ have had a vested interest in reporting growth; be they promotional bodies such as BAC, BIM Software suppliers/trainers or BIM Library suppliers.
- This pattern has been further encouraged in the last two decades by a political agenda that makes it difficult to access Public Good research funds without industry support, which generally means finding companies that can profit from the findings.



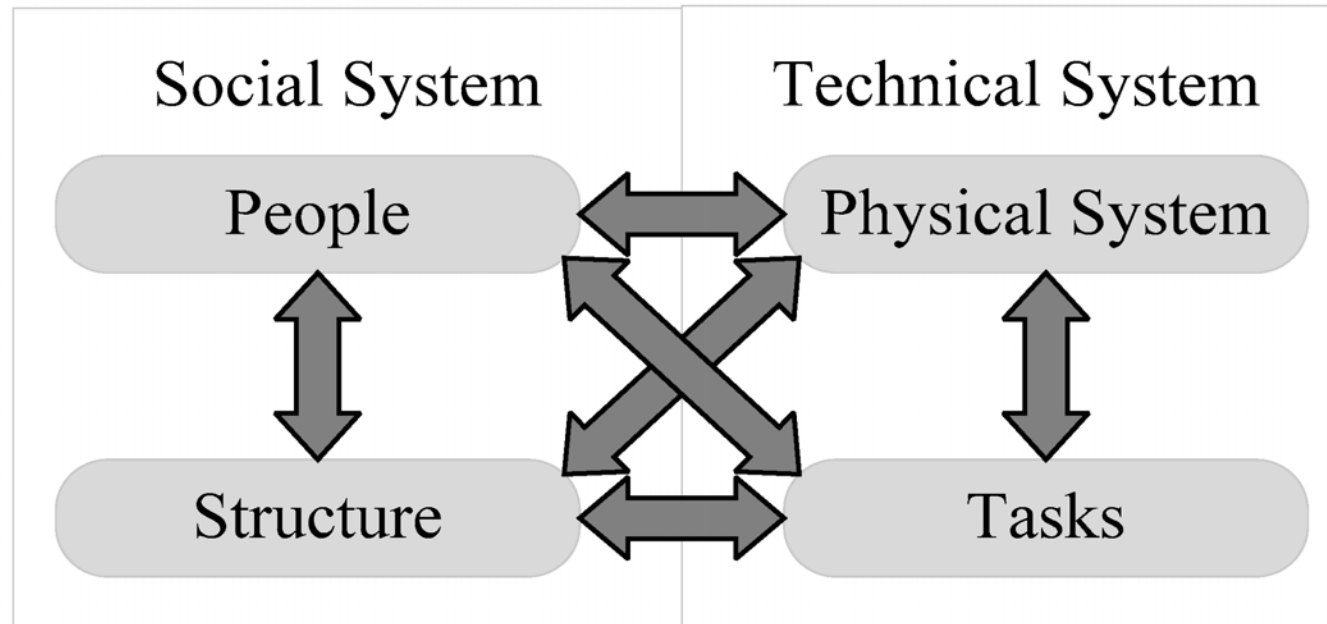
Reports vs Observations

Are We Really Doing it?



The situation calls for deeper integration of social science

- Working with BIM represents a multidisciplinary field, which encompasses several research areas. The work takes a close understanding of the interactions between the built environment projects and their natural, social and economic contexts.
- Construction projects are complex and so they are necessary to be viewed as sociotechnical systems
 - All the trades within the project are required to get involved



Martin Ibl, Jan Capek (2017)

Are We Really Doing it?

Self-reported knowledge of BIM

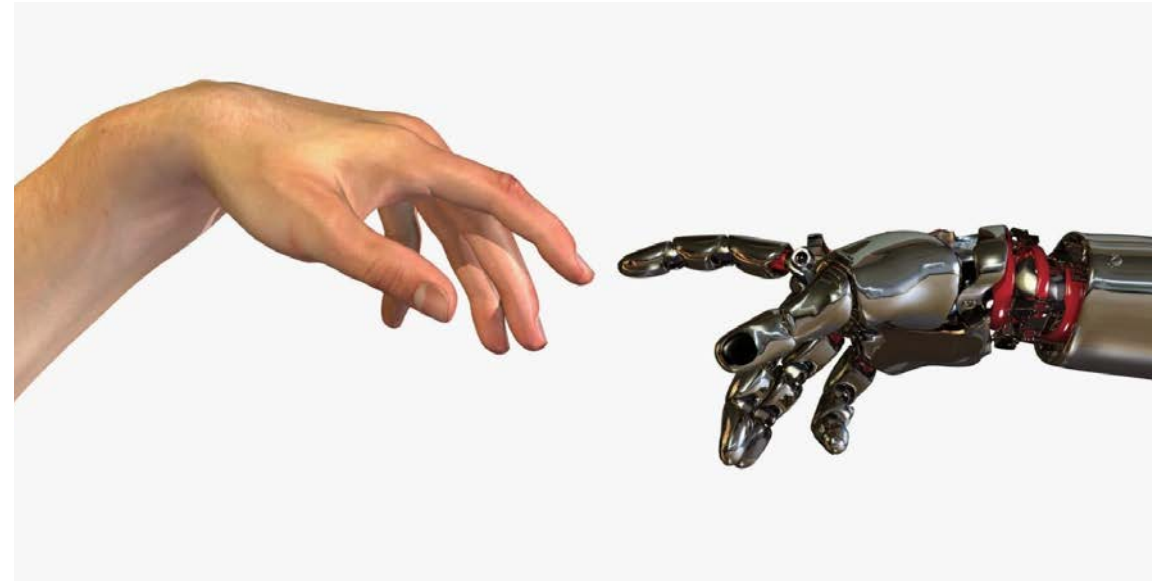
The Challenges of our work

- The potential biases and skews in understanding and predictions based on the self-reporting method
- Hardcopy survey forms filled out in class – but with discussion discouraged that quite possibly contributed to the obvious spikes and dips.
- Reluctance of the participants to have their independent voice
- Reluctance of the funders to pay for research with no promotional outcomes



Points to consider for future developments

- A socio-technical perspective must be taken into consideration when monitoring the development of BIM application
- Achieving full objectivity in monitoring BIM application requires a special care in selecting the monitoring bodies.



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What is the next?

The plan to provide more robust evidence

The potential complementary sources to survey:

- The usage of BIM software libraries
- Submission of BIM materials to territorial authorities compared to other types of materials.
- Lesson learnt from the best holistic practices





AUT

Thank You

Any Question?

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