GSL PROMOTUS

FOCUS GROUP RESEARCH

To Help Drive Awareness and Use of BIM

Report of Key Findings

Prepared for the BIM Acceleration Committee

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INTRODUCTION

The BIM Acceleration Committee is looking for ways to increase awareness and use of BIM in New Zealand over the next few years.

As part of exploring ways to achieve this, it was important to undertake research and talk to key audience groups directly to obtain their thoughts and feedback.

This research will help the Acceleration Committee better understand the target market, in particular their motivators and barriers to using BIM.

We also used this research opportunity to explore the best channels to reach future audience groups and develop messages that would resonate with them.

The following research report presents the key findings from the qualitative research undertaken with the specialist trade and product audiences in September and October this year.

RESEARCH OBJECTIVES

Outlined below are the research objectives for the project:

- To understand how BIM is currently used in the participants' organisation.
- To explore the motivators and barriers to using BIM.
- To explore the awareness of current BIM communications.
- To gain an understanding of the preferred communication channels for all things BIM related.

APPROACH AND SAMPLE

GSL Promotus undertook two focus groups with specialist trade and product audiences, one in Auckland on 11th of September and one in Wellington on the 11th of October 2017. Each group lasted approximately 1.5 hours.

SAMPLE

The following table outlines the participants in more detail.

DETAIL		PARTICIPANTS
Gender	Male	11
	Female	2
Business / Industry Type	Cladding / partitions	1
	Building software solutions	1
	Metal supplier	1
	Concrete	2
	Heating, Ventilation and Air Conditioning	4
	Engineering consultant	2
	Plumbing	1
	Facilities and energy management	1
TOTAL		13

KEY FINDINGS

ROLES AND RESPONSIBILITIES

- Participants' roles/responsibilities in their organisations varied. Their responsibilities included the following; managing contracts, managing designs, design/drawing, overseeing operations, managing product and technical specifications, product engineering, engineering consultant, interfacing with architects, managing resources for contractors, plumbing, facilities and energy management, people management and business management and growth.

TOOLS/SOFTWARE PACKAGES/MODULES

- Participants used a number of tools/software packages/modules to collaborate and share information digitally as part of projects, including sending/receiving/manipulating digital information.
- The specific tools used primarily depended on what was provided by their organisation, and what was used by most people in their industry. To a lesser degree, it also depended on what was considered effective and easy to use.
    - *"For our business we most definitely use AutoCAD but in my world I live in Outlook".*
    - *"I find WeTransfer easier than Drop box".*
    - *"It depends on your role what you are going to use".*
- Some of the tools used by participants included: (in no particular order):
    - AutoCAD
    - Aconex
    - DDS-CAD
    - Revit
    - Navisworks
    - Procore
    - CATPlan
    - ArchiCAD
    - Inventor
    - TenderLink
    - OneDrive
    - Office365
    - Costx
    - Dropbox
    - WeTransfer
    - Outlook

- Hightail
- OMTrack
- SPM
- Envizi
- Revizto
- Bluebeam
- MMS access
- Kobi
- Skype
- DBS Cad
- Microsoft project
- BIM

INTRODUCTION TO BIM

- The common name/term used by all participants when referring to Building Information Modelling was BIM.
- Most heard about BIM for the first time about 3 or 4 years ago, with a few having heard about it 9 years ago. Everyone had heard about it through the organisation they were working for at the time, and from industry related communications, including; conversations with colleagues, face to face presentations on BIM, BIM 101 seminar, and articles in industry magazines/publications.
    - *"I heard about a seminar through our association and thought well I better know something about BIM because it seems like it is coming".*
    - *"We just talk amongst ourselves as a topic (about BIM)".*

KNOWLEDGE OF BIM

- All participants were aware that BIM is being used overseas and some commented that it is now compulsory in the UK.
- A few mentioned having read a New Zealand document titled 'The productivity partnership' which discusses ways of increasing productivity in the construction industry, with BIM being one way to do this.
- Most commented that the aim for NZ (and other countries using BIM), is for BIM to be compulsory across all projects at some point in the near future. Therefore, it was considered critical by most, to not only to understand BIM, but also to be using BIM across current projects where possible.

BIM DEFINED

- Participants were asked to describe BIM in their own words. There were a number of consistencies across participant descriptions of BIM, primarily with the following concepts/words; 3D, modelling, building/construction, collaboration/shared, designs, information, avoiding clashes, data set, and enabling future planning/modelling.

- Outlined below are the specific responses from participants when asked to describe BIM (the bold words were consistent themes across their responses):
    - **Modelling** a **building** in **3 dimensions** looking for **agreement or clashing** of materials or trades – used as a co-ordinated set of **drawings** in one space for **construction** and **future planning.**
    - A **process** of **designing** that encourages **collaboration** between multiple parties to produce a **data rich** prototype **model** that includes geometry, time, cost and whole **life information**.
    - You **build information** into walls, and other elements. This info is then used for things like costing etc.
    - Way of **integrating** all of the various **suppliers/manufacturers/builders/trades** into a **building** project with the least amount of **clashes** – **information** is **shared** a lot better.
    - Fully **co-ordinated** set of **drawings** so a completed **building**, has **no clashes** or problems. Maintenance tool for servicing once a project is completed.
    - **3D modelling** for **construction**. In a specialised sense for MEP, it is modelling the mechanical services systems in 3D to increase **construction accuracy**, **reducing errors** and **waste**.
    - **Collaboration** protocol to **enhance workflow** between all **contractors, designs, and asset owners** by adding **intelligence** to **objects** and **models**. BIM is part **sculpture**, BIM is part **people** and BIM is part **process**. BIM is not 3D modelling. BIM is not the new CAD.
    - Combines multiple **services/subcontractors input** into a **building** project to create a **3D model**, which visually shows the interaction (physical) of all inputs.
    - BIM is incorporating **all information** about a **building** into a computer **model**.
    - An **information** database linking **everything** in a **building** (e.g. drawings, equipment, schedules, consumption etc.).
    - **Joins together** a new **building**, architecture, structural, services, for maintenance of the building. **Future proofing** it (the building).
    - A multi-dimensional graphical **data set** that **models** their relationships of a real life **physical structure**.
    - **Virtually complete building**.

ORGANISATIONAL USE OF BIM

- Almost all participants said that they were currently using BIM on at least one of their projects, however, one person had never used BIM.
- According to those participants using BIM, the main reason BIM was being used for their project/s was either because:
    - The contract for that project stipulated the use BIM.
    - The client has requested, and was willing to pay for BIM.
    - BIM came as part of using Revit for a project.

- Their company had selected to use BIM in order to 'win' the project and be selected as the provider (because the client preferred suppliers using BIM).

- Some participants commented that if they didn't state on a project tender that they were using BIM across that project, they were less likely to 'win' / be given that project. In their opinion this was because the movement is for all projects to use BIM in New Zealand eventually, and those not on board using BIM would be left behind and not chosen for projects.
- Some commented that if the client hadn't requested BIM, and paid for it as part of their project, it probably wouldn't have been used due to the additional expense; *"We were lucky the client wanted to pay for BIM, more clients need to commit to the cost".*
- One participant could select if he used BIM on projects, and he tended to use it if he thought the project wasn't too complex and he wanted to complete his work faster, as BIM eliminated the need for him to reply on others during his designing/drawing phase.
- A few mentioned that a large number of Government projects their organisation were working on weren't using BIM which surprised them given BIM is officially endorsed and encouraged by the Government; *"The government need to see the value in it and use it".*

BARRIERS TO USING BIM

- Everyone spoken to said it was important in their industry to understand, and know how to use BIM (since NZ will eventually make BIM compulsory). However, all identified a number of barriers that were preventing them from fully embracing and being advocates for BIM. The main barriers according to participants were the following:
    - **Lack of understanding and embracement from others -** most commented that not everyone who should be using BIM is on-board with the process and therefore not populating all the required information. Almost all participants were frustrated and reluctant to enter information when other key project parties did not commit to the same level of information input. Therefore, in their opinion, if only part of the information was entered, it rendered the process and data set valueless. Also associated with this challenge was the perception that there are very few experienced and qualified BIM people working with BIM according to some; *"BIM is really just data, how many people actually turn that information into something useful, this is a real challenge and a learning curve".*
    - **Late contractor involvement / lack of collaboration** – once a project is signed off, all stated that there is a sense of urgency from project teams to commence and complete projects as quickly as possible, and very little time is spent collaborating, especially early on to avoid issues and agree the process, which in turn makes the process fraught with issues in their opinion.
    - **High costs associated with BIM** – some did not consider BIM as a way to save money, even in the long run. It was perceived by some to be an expensive way to undertake projects and if the client wasn't willing to pay for BIM, it made them reluctant to use and endorse BIM.
    - **Value of BIM not realised** – all admitted that more education for all parties on the benefits of BIM was necessary to help encourage the use of BIM across industry stakeholders, and in particular, showcase the benefits of BIM when used properly. At the moment most felt the benefits to using BIM are not obvious and apparent, especially how to avoid making mistakes and errors with projects. From a client perspective, a few stated that the building owner, and those who buy

buildings need to appreciate the value of BIM, in particular the value of the full data set/model/BIM provides them, and why the additional cost of BIM is attached when purchasing the building.

- **Project costs hard to predict upfront –** according to some participants, money is often lost on BIM projects because it is hard to quote for all the costs upfront, and before all the project details are known. Most said it is near impossible to accurately quote for the number of hours it would take to populate a buildings data set without knowing all the variables of the project. However, quotes are required early with an estimate of hours for the whole project. Some stated that often money is lost in underquoting and hours cannot be recouped for the 'actual' amount of time required to use BIM properly and to its full potential.
- **Lack of clarity on who drives the BIM process and who owns the model** – a few mentioned a lack of clarity on some projects as to who owns the model and who should be driving BIM amongst the relevant parties. This in turn meant that there was a lack of ownership and investment, to avoid the 'owner' being blamed if things did go wrong. Another issue with this was how to manage BIM over different cost centres; a few were reluctant for their cost centres to pay for BIM when they were not the main project owner/stakeholder or client.
- **Lack of flexibility with BIM when managing changing project requirements** – a few said that on projects things can change during the process and the designs may differ from the final product which is an issue for them when using BIM. A few also said they had used the BIM process on a project, the deliverable for that project had been only the 2D designs which was frustrating (please note the participant was unsure why this was the case); *"The BIM process often stops at a certain point and the designs are developed in 2D – the model is then redundant".*
- **No access to high-powered technology required to use BIM** – a few commented that a 'grunty' / high-powered computer is needed in order to use BIM easily and effectively. Otherwise it can be a slow, frustrating process with a less adequate computer.
- **New Zealand 'no. 8 wire' attitude** - a few participants mentioned that some Kiwi's on a project tended to do things quickly and on-the-go which they found challenging. Even though this 'no. 8 wire' approach was considered an innate Kiwi attitude when fixing things, and working out solutions, it works against the overall principles of BIM.

WAYS TO MITIGATE THE BARRIERS

- Despite identifying a number of barriers and challenges to using BIM, participants explored and identified ways to mitigate those barriers. The discussions on how to mitigate those barriers generated 'blue sky' ideas, with no constraints put on their suggestions. Their ideas included;
  - **Education**
    - In order to increase the understanding of BIM, it is important to showcase the benefits of BIM and engage audiences to use BIM to its full potential. There will need to be an education process with all audiences (from the project team to the client) to achieve this. This education process will help with the current lack of experienced users, as well as assisting those who do not understand or appreciate the value to using BIM, reinforcing

the importance to populating the dataset with all the required information – ultimately increasing the use and accuracy of BIM; *"Even bad/inadequate BIM models contain data that can be used effectively giving a 'win' to some degree".*

- **Increased communication**
    - It is important to constantly keep key audiences engaged and kept up to date about all things BIM related. This can be one way to ensure the education process is always relevant and tailored to showcasing the benefits and addressing the barriers. A few mentioned that any communications would need to highlight that *"BIM is a journey that can be joined at anytime, not only at concept and design"*. It was felt this message would help engage the whole industry and not just the small number of high end building owners so that BIM is seen as applicable to all building stock, new and existing.
- **Compulsory early contractor involvement and constant collaboration**
    - It is thought to be a case of limited time as well as a general resistance (potentially fear) from some of the project team which often prevents early contractor involvement and collaboration. Allowing, and paying for, more time for early involvement and addressing the reasons for resistance for collaboration, should hopefully ensure all parties are across all aspects of the project. One thing that was suggested to help facilitate collaboration was to encourage and create working environments that are fully transparent across the different sectors and trades, as this may help reduce fear and resistance to sharing knowledge and information which is vital for BIM; *"We need to take the design model through from design to construction with the client, and all people en route so that there is understanding and information in the model".*
- **All expenses and time associated with BIM are realised and paid for**
    - There is a perception that BIM is expensive, posing a question over the value of BIM, and who will pay for the time required to populate and produce the full data set for a project. Education will help play a role in increasing awareness of the value of BIM, however, during the quoting process it is important that the realistic hours involved are put into the timeline and paid for accordingly. Most indicated the current tender process for many projects is fraught with issues for accurately quoting, and it is a challenge to estimate the number of hours, and even harder to get those hours paid for on projects using BIM; *"Government need to see the value in non price attributed tenders"*. Clients also need to know and appreciate the real cost and value of using BIM, becoming advocates, drivers, and purchasers of BIM; *"BIM needs to be viewed as an investment (more than a cost)", "Even though BIM requires large amounts of investment and early engagement which increases capex costs, this is at an overall reduction of operational".*
- **Clarity on the owner/s of the process and model**
    - Early on in the project it is important to communicate the key roles of the main project stakeholders, in particular who owns and will drive the process, and at the end of the project, who owns the data/model. This is

especially important if BIM is managed and paid for over a few different cost centres and owners.

- **Keep BIM up-to-date and relevant as project requirements change**
  - As a project evolves it is critical for the stakeholders and project owner/s to ensure BIM is evolving with the requirements, and regardless of the deliverables, at the end the data/model is completed. Where possible the deliverables should be the data and model created, which can continue to be adapted/future proofed as things change throughout the life of the building/construct. A few also suggested creating standards for building elements would be beneficial. Another idea from a few participants was to exclude 'useless' information from data fields, in order to keep it clear and concise so users are more likely to complete it.
- **Enable project teams with the required technology**
  - It is crucial all parties working with BIM have the necessary technology and tools to undertake the everyday tasks and collaboration required on the project. It would also help if there were some industry standards across the tools that are used to communicate within project teams and the relevant industries. Examples of required technology sometimes not available included high-powered computers; *"You need a grunty computer to be able to use BIM easily. It can slow down computer speed if not".*
- **Mind shift away from the New Zealand 'no. 8 wire' approach**
  - To a certain extent a mind shift is needed amongst Kiwis so that a 'quick fix' or *"I will just do it myself"* attitude doesn't occur across projects using BIM. The audience view needs to be a longer term one, incorporating forward planning, and with the appreciation for the long term benefits and gains of BIM if used properly.

STRENGTHS OF BIM

- Participants found it harder to identify the strengths of BIM compared to the barriers of BIM. This was primarily because they felt the strengths were only true strengths if BIM was used to its full potential and populated completely by all collaborators (which generally participants didn't feel was the case). The key strengths of BIM identified by participants focused on the following areas/benefits of BIM:
  - **Accurate up-to-date building model** and **maintenance** for the **life of the building** – BIM provides a complete up-to-date building model that can hold more information and detail than other module/tool/process options; *"Being able to see 3D projects before they're built is great"*. The model doesn't have to be all completed at the same time (being able to be done incrementally), and can be passed onto key stakeholders for the whole life of the building. Using BIM makes services and maintenance easier. It also avoids relying on knowledge inside key stakeholders heads when everything is documented and can be openly shared.
  - **Increased Productivity / time saving** – BIM means project teams don't need to refer to multiple sets of drawings, being able to do more work in a shorter timeframe, by seeing how everything fits together in a 3D model. Co-ordination in the office, in the model is fast, it is easy to see if everything fits together quickly.

- **Collaboration** - BIM encourages collaboration to ensure all parties are involved with the design at an early stage, and contribute to an efficient, optimal product where the issues are ironed out before work commences on-site.
- **Reduced waste** – BIM can help reduce the amount of materials that end up being unused or wasted on projects. With BIM all partners can see each others' elements so that everything fits together without clashes during the construction phase (clash detection means no rework at a later date saving on time, money and materials).
- **Cost savings** – through accurate measurements of materials when planning and ordering cost savings are made. Cost efficiencies are also realised for the whole life of the building due to the accurate model and maintenance information.
- **Personal control** – BIM allows for the personal control of drawings and documentation, enabling the design and drawing to be done at the same time, producing all the information in one step, reducing CAD dependency.

BIM COMMUNICATIONS

- As mentioned earlier, participants recalled hearing about BIM from industry related communications, and everyone recalled the BIM 101 Seminar - with some having attended the seminar. Those that attended the seminar felt it was more client focused and visionary than tailored to them. Most had read articles in industry related publications, received industry newsletters about BIM, and a few had been involved with Webinars about BIM.
- Participants recalled the BIM communications they had seen had come primarily from their industry, and in particular BRANZ was recalled as being a strong communicator about BIM.
- All participants wanted to hear more from MBIE/the Government, and the Acceleration Committee about BIM. In particular participants wanted to know/hear more about the following:
    - What BIM is.
    - How BIM is going to work moving forward.
    - Benefits and value of BIM.
    - How the Government is going to embrace BIM, and lead the way for its use in New Zealand.
    - How BIM is being used overseas.
    - Power and energy savings with BIM (as this seems to be a hot topic, and an easy 'sell' to clients according to the industry).
- All participants strongly recommended the development of **case studies** about BIM, showcasing how it has worked across a variety of projects, including who was involved with the project, what were the challenges, how those challenges were overcome, and the overall benefits involved from using BIM. These case studies could be international stories, as it was thought New Zealand might not have an extensive range of projects yet that have used BIM; *"I would like to see some success stories"; "It would be good to know about some BIM projects in detail, how they worked, what happened, what were the problems, how those problems were solved, and the overall benefits for everyone involved".*

- For future communications about BIM, most participants preferred to hear via email or a printed material (including industry magazines) as they often printed and took communications pieces away from their work environment to read when they had time and space to absorb the information.

RECOMMENDATIONS

Using all the input and feedback from the target audiences that has been gathered this year is key to developing a successful strategy to help drive awareness and increase the use of BIM in New Zealand.

To achieve a comprehensive strategy we recommend focusing on the following three areas:

1. Mitigating the barriers
2. Developing communications to educate and promote BIM
3. Continue to gain audience feedback and input

These three areas are outlined in more detail below.

1. MITIGATE THE BARRIERS

To increase the use of BIM, it is critical to understand the barriers, and look to mitigate them as much as possible. These barriers are the main reasons why participants are struggling to use BIM effectively and what is stopping them from becoming advocates for BIM with others. The key ways to mitigate the barriers focused on the following;

- **Communication**
    - Education to improve understanding of BIM and to highlight the benefits of it.
    - Early contractor involvement and constant collaboration.
    - Clarity on the owner/s of the process and model.
    - Emphasising the importance of BIM even as the project evolves and changes.
- **Cost Issues**
    - All expenses and time need to be realised and paid for.
    - Suggest less emphasis is placed on the short-term cost of using BIM - and more education on the long-term cost savings it can achieve over the life of a building.
    - Position BIM as "an investment".
- **Technology**
    - Ensuring project teams are equipped with required technology.
- **Attitude**
    - Mind shift from the New Zealand 'no. 8 wire' approach.

2. DEVELOP COMMUNICATIONS

Audiences would like to hear more about BIM and are open to future communications on BIM, particularly from the Government and the BIM Acceleration Committee.

We recommend a specific **communication strategy** for all audiences to:

- **Address** some of the identified **barriers** (including education for use, highlighting the benefits, cost savings over the lifetime of a building, contractor involvement, collaboration, clarity during the process and importance of BIM even during changing projects).

- **Raise general awareness** of BIM.
- **Engage** with BIM audiences.
- **Promote** BIM.

We strongly recommend the development of **case studies** as a major component of the communication strategy. Case studies are a great way to showcase how BIM works, how potential challenges were addressed, promote the overall benefits, and celebrate the successes of BIM.

3. CONTINUE TO GAIN AUDIENCE FEEDBACK AND INPUT

The BIM Acceleration Committee now has a foundation of feedback on BIM from both the qualitative and quantitative research that has been undertaken this year. It is important to continue to gain input and guidance from the target audiences, especially when marketing and communications strategies are implemented to improve the embracement and uptake of BIM.

This future input would help provide a gauge on how any changes have been received and are working, along with guiding any necessary tweaks or further areas for improvement.

It is also a great way to reinforce to the target audiences how much their input is valued and appreciated during the process of making any changes or improvements.