CitA
BIM GATHERING

Building Capabilities in Complex Environments

CitA BIM Gathering 2017, Croke Park, November 23rd & 24th, 2017

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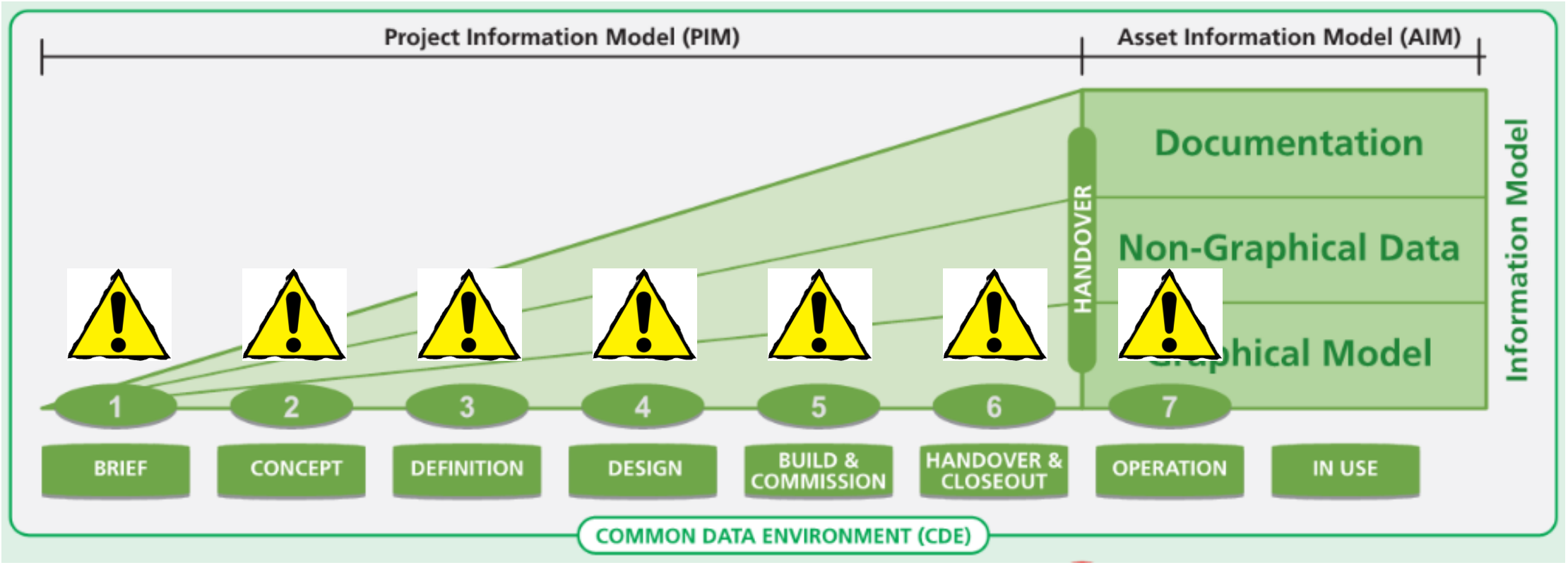
The Lifecycle Engineer

Agenda

- **Current Industry Issues**
- **The Lifecycle Engineer**
- **BIM Standards**
- **Paper Findings**
- **Future roadmap for FM**


Project Information Model (PIM)
Asset Information Model (AIM)
Documentation
Non-Graphical Data
Graphical Model
HANDOVER
Information Model
1
2
3
4
5
6
7
BRIEF
CONCEPT
DEFINITION
DESIGN
BUILD & COMMISSION
HANDOVER & CLOSEOUT
OPERATION
IN USE
COMMON DATA ENVIRONMENT (CDE)

- **Losing the “B” word!**
- **Change the mindset or wait for industry to change?**
- **Create a new position or evolve the current?**
- **Lack of Industry engagement**
- **Language gap**
- **Contractual issues**
- **Technical Knowledge**
- **Slow academic reaction**
- **Engagement party**

- **Project Delivery Manager**
- **Information manager**
- **Task Team Delivery Manager**
- **Task Information Manager**
- **Interface Manager**
- **Information Originators**

- **Client Representative**
- **Soft Landing Champion**
- **Technical Advisors**
- **Delivery Manager**
- **Facility Manager**

CIC BIM PROTOCOL

- *"The protocol requires the employer to appoint a party to undertake the information management role. This is expected to form part of a wider set of duties under an existing appointment and is likely to be performed either by the design lead or the project lead, which could be a consultant or contractor at different stages of the project. In some circumstances the employer may appoint a standalone information manager. The information manager has no design related duties."*

BS 8536:2015 Briefing for design and construction. Code of practice for facilities management (Buildings infrastructure)

- *"The appointed person should be expected to have first-hand working Knowledge of the owner's organization and an understanding of the asset's/facility's future. Where an existing asset/facility is to be refurbished, the owner's representative should have an understanding of its history."*
- *"There is the chance that the owner's representative might be seen as a **project manager**. For clarity, a **project manager** is responsible for delivering the asset/facility to an agreed scope, schedule and cost/budget and, normally, has no involvement or interest once the project has been delivered and the asset/facility is operational."*
- *"Similarly, a **facility manager** would likely have little expertise and limited interest in the project's delivery, other than to ensure that the asset/facility, once delivered, performed as required. There is, therefore, the need for a person who possesses a broader, more integrated understanding of the combined project delivery and asset/facilities management process than either of the aforementioned."*

The **BS 8536 standard** provides further details which state that*: "The role should include regular reference to the schedules or equivalent documentation that identify the work activities of the design and construction team with their associated information requirements and deliverables.*

The author conducted interviews with 14 key members currently involved in BIM fields that are in relation to the position that is proposed throughout the US, UK and Ireland.

Members engaged had a total combined time conducted in the construction industry of over 200 years with academic levels ranged from Bachelor of Science (BSc) to Doctor of Science (DSc).

- BIM Managers
- BIM Directors
- BIM Coordinators
- BIM lecturer
- VDC Managers
- BIM software developer
- FM software company CEO
- FM Database manager

What is your current understanding of Building Information Modelling including positives/negatives?

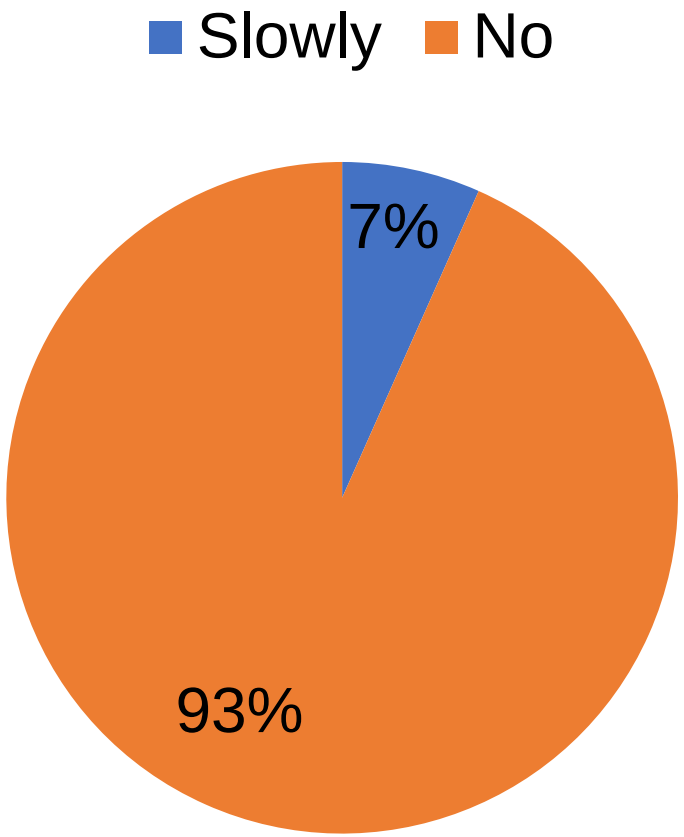
- They felt a lot of benefits are obtainable from BIM
- Reduce waste and rework
- Information captured once and digitalised within a CDE
- Negatives included lack of supply chain involvement
- Client passive BIM approach
- CAD managers transformed to BIM Managers

"BIM is all about process, it is not only benefit the design and construction, but also facilitate entire life cycle of building asset. I believe BIM is "Better Information Management"" (S.Farrell)

"BIM is great but is too expensive. BIM is primarily used to hedge issues affecting field labor productivity." (B.Young)

How do you feel the FM industry have engaged BIM?

"*There is a disconnect between those stipulating information requirements (i.e. Client), those collating the handover information (i.e. Main Contractor) and those responsible for using the handover information to manage the asset (i.e. Facility Manager).*" (T Gillian)



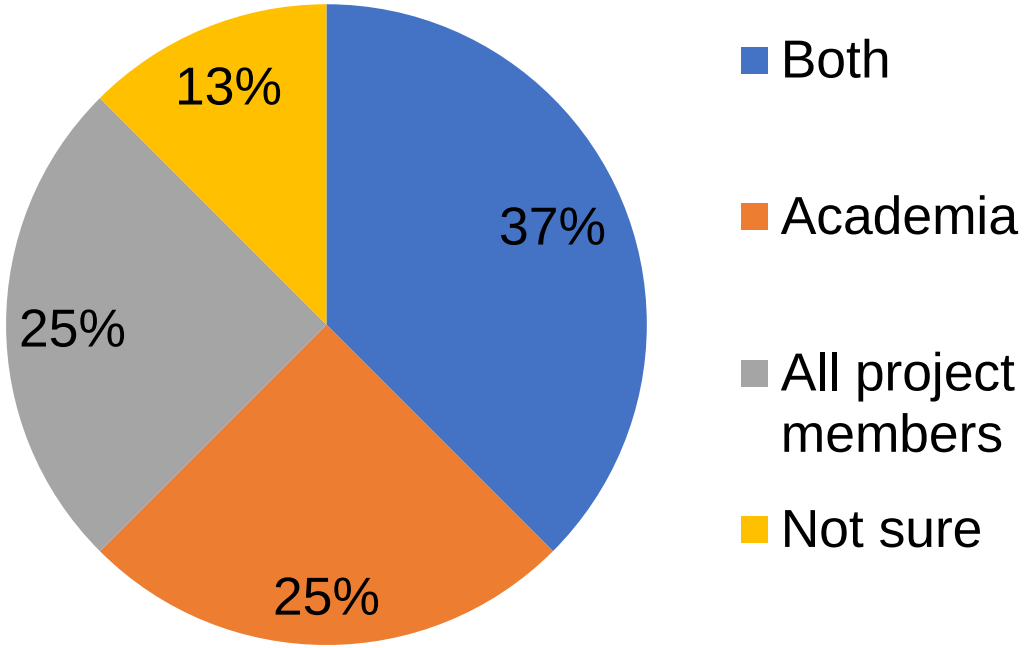
What in your opinion, do you believe needs to occur to engage BIM fully within the FM industry?

*"A **full education process** needs to happen so the benefits of BIM are **demonstrated to the industry**. This process needs to start at the education level, teaching every student within architecture, engineering, surveying etc. This way it is a defined benefit process that all students and then qualified personnel can see"* (A Kearney)

*"**Demonstrate** the benefits to the FM Industry and ask for their requirements - in most cases it will be completel different to what the Designer thinks that FM wants or needs"* (B.Gallagher)

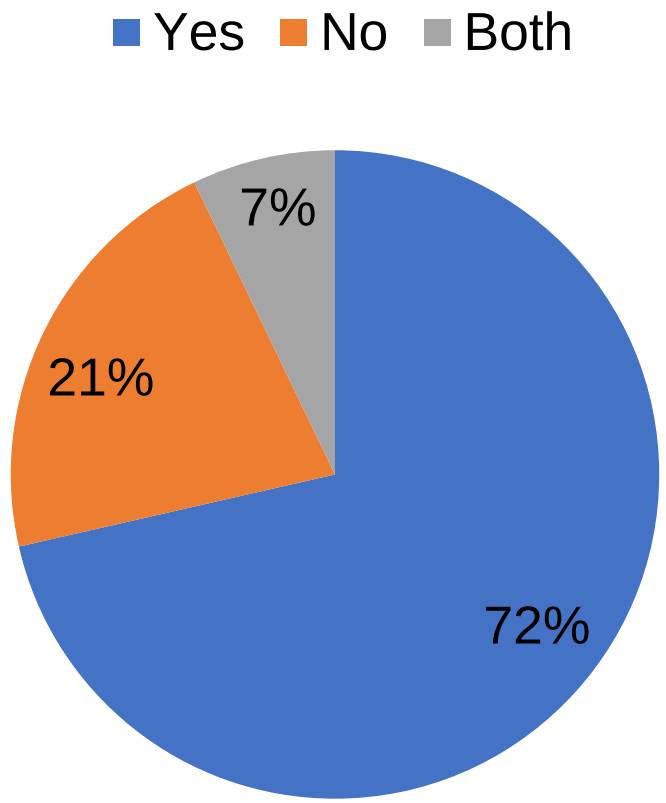
- Education
- Full early engagement
- Client driven
- Government mandated
- Demonstrate benefits to FM industry
- Creation of a new role

Do you think a responsibility lies with the FM industry or academia to progress the utilisation of BIM technologies?



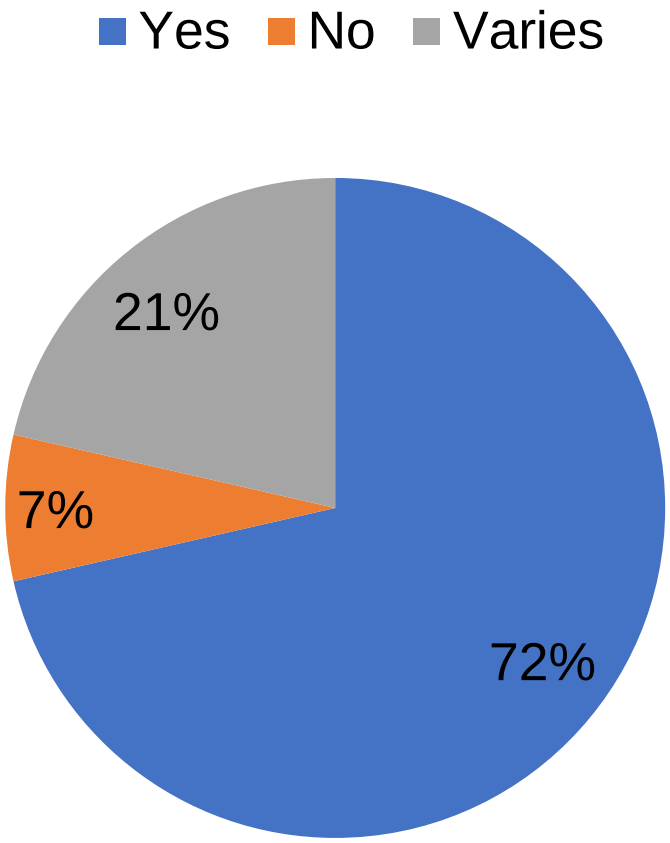
"I think it lies on both sides. The academia needs to ensure that graduates have the necessary skills and knowledge to meet the demands of industry today but also in the future. The FM industry has a responsibility to be sustainable and cost effective going forward, BIM can help this" (J.Boylan)

Do you think some FM companies will be left behind if they do not continually develop and engage BIM technologies?



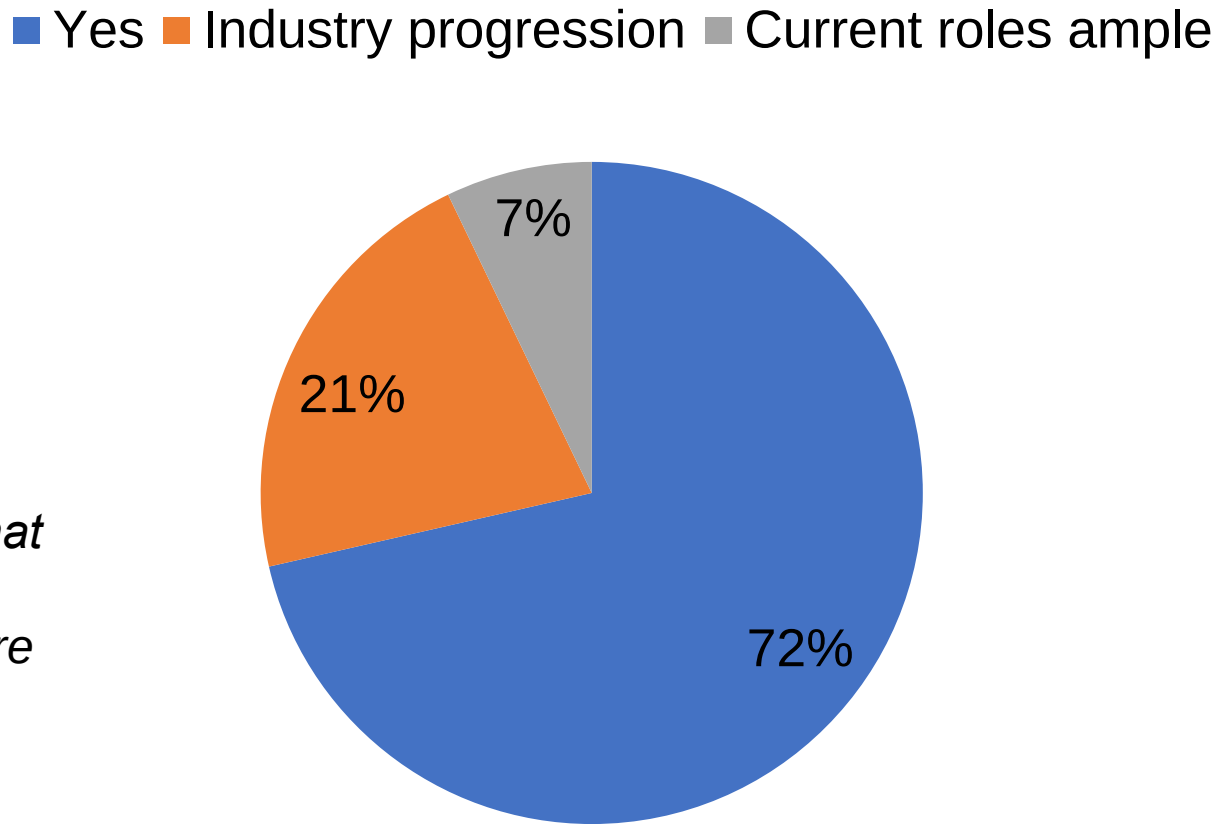
*"The CIBSE, BIFM and other organisations also need to embrace BIM and **edify the benefits to all sections of the industry**, as well as the clients that will occupy the building. Beyond this the M&E contractors that fully understand and see the benefits of BIM can go direct to the building owners of new builds and sell them on the "lifetime" benefits and savings around BIM. Once this commercial process begins it will drive the industry forward, as unfortunately people won't make decisions on the full benefits of BIM until they can quantify and cost evaluate the process"*
(A Kearney)

Have you seen a greater demand for the use of the BIM model from the client over recent years?



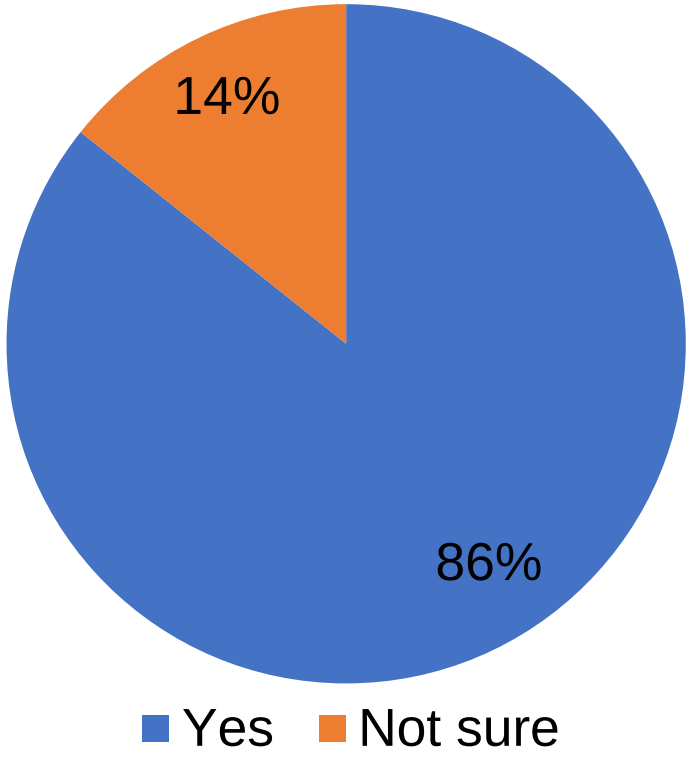
"As part of my studies I am required to understand if there has been an increased requirement for BIM. There is a significant demand from BIM and Clients are becoming aware of its benefits. The fear is that they are requesting BIM because they think it should be done. BIM is a alternative to traditional construction processes and the client needs to understand what this involves." (B McAuley)

Do you believe that new roles need to be created to fill the gap?



"I believe that existing roles will change; this will mean that the existing people will train up or be replaced by those who have the skills to work in the new environment. There are people in the industry there already to help turn over facilities from construction to client; they just do not use the best technology at this time." (L Swaine)

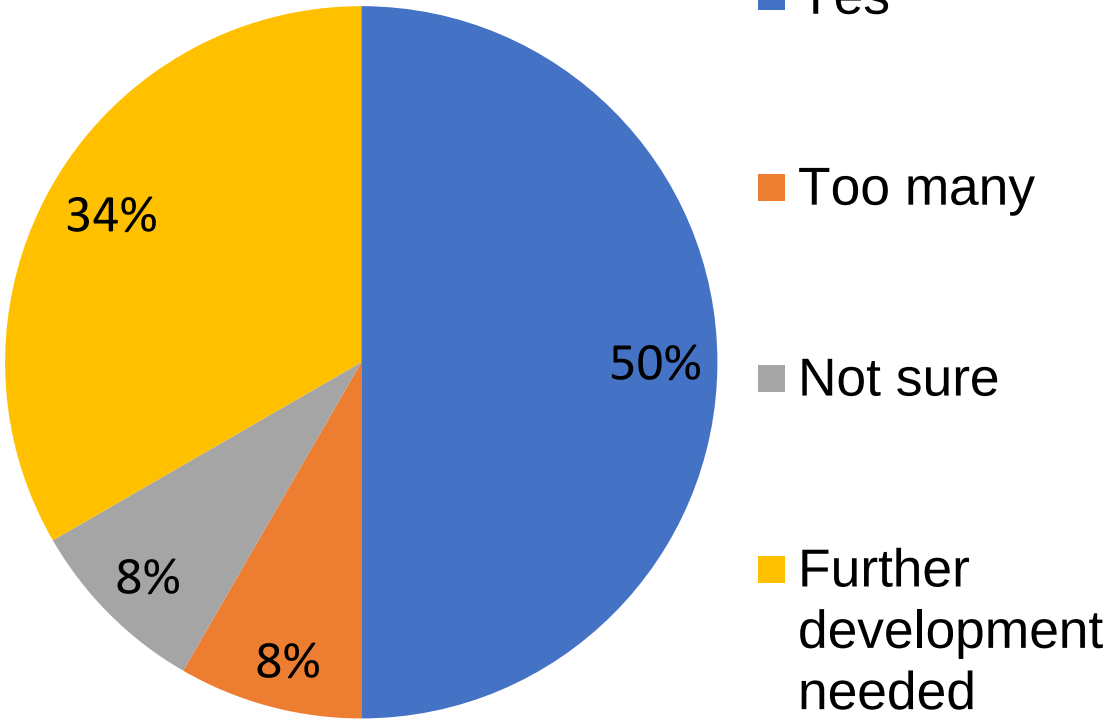
From the description provided of a Life cycle engineer could they help to ease the transition from construction to the facility management stage of a building life cycle?



"A Life Cycle Engineer is needed for multiple reasons, but the reality is that this position has existed in non formal structures. Currently in many buildings a person has been appointed by the client (building owner / occupier) from the build team. This person is usually taken on in a managerial role to over view maintenance or FM, especially as they have superior knowledge of the layout and mechanical operation of the building" (A Kearney)

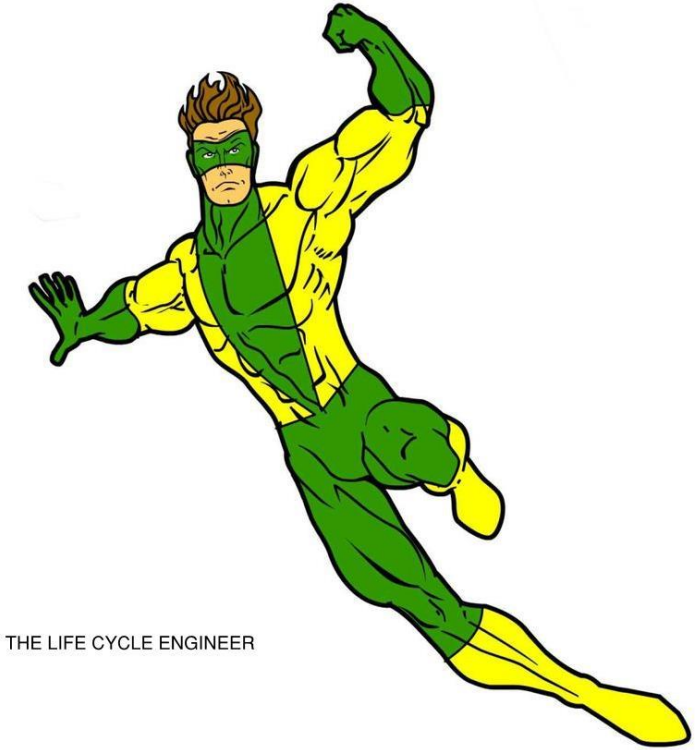
Do you believe that the role/responsibilities of the LCE are ample?

"There is a vast amount information and knowledge required to carry out the role of a Life Cycle Engineer. In a perfect world it would be great to have a dedicated person for the entire Life Cycle but unfortunately people come and people go. It would be much better to focus on smooth and complete information collation, transfer and storage that can subsequently be accessed efficiently and effectively at a later date." (T Gillian)



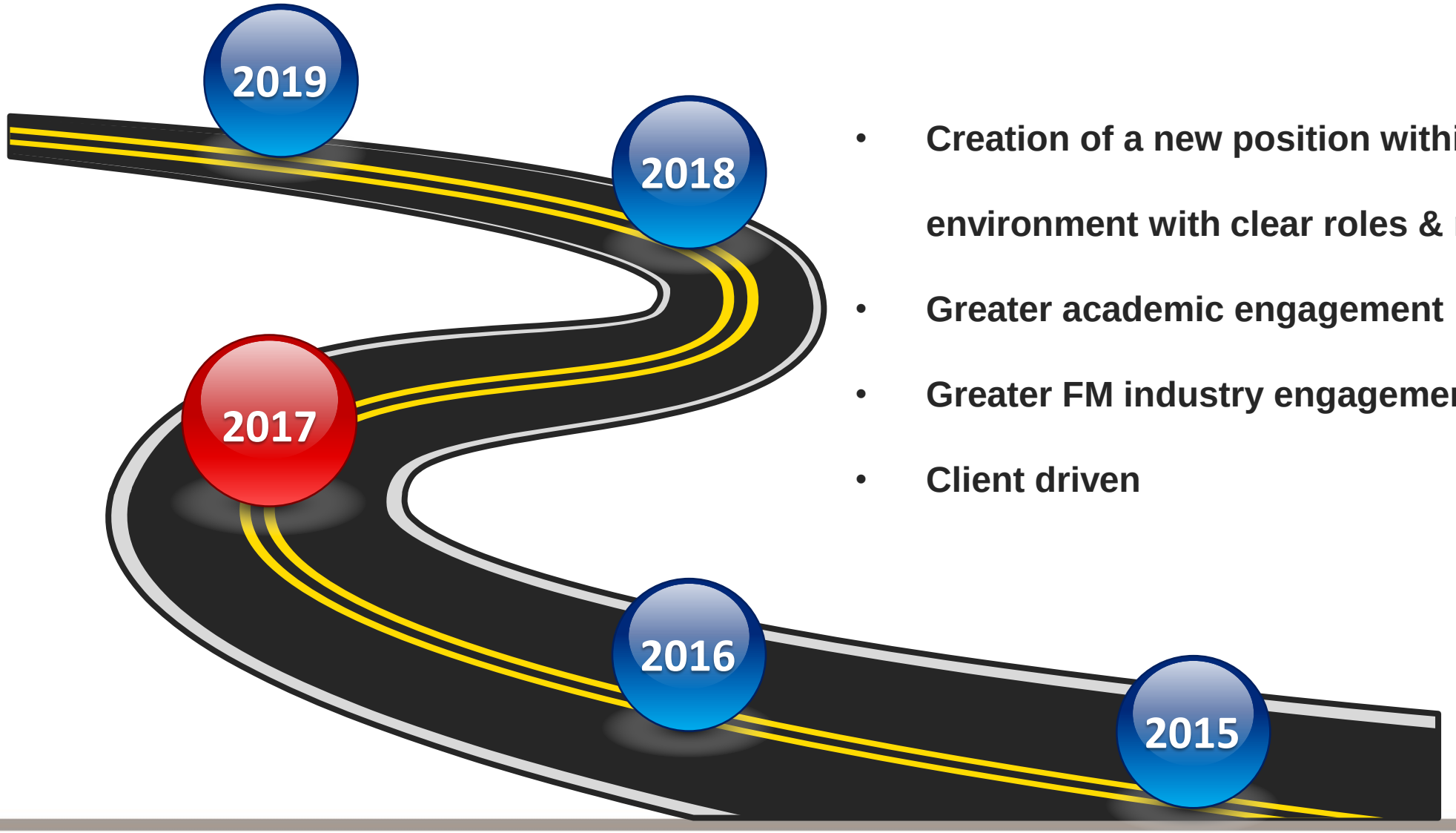
What do you see as the biggest change that will occur over the next year within the FM industry?

- Construction Industry to develop into digital industry
- Greater engagement from the FM industry
- Increased Interoperability
- Up skilling
- Greater client demand
- Strain on FM industry due to EU regulations regarding NZEB



"There are two types of capabilities and knowledge facility personnel should have to efficiently apply BIM and COBie for FM: (1) ***Knowledge of the concepts of BIM and relevant standards and formats****; and (2)* ***Knowledge of inventory information****, which is required to perform preventive maintenance, emergency work orders, renovations, etc. All three projects did not have personnel with specific experience or knowledge in handling this effort, which resulted in hiring a consultant having the appropriate expertise. Our recommendation would, therefore, be that FM departments should not only have personnel with this knowledge but also make them a part of the planning process in database formulation."*
Lavy s., J. S. (2014, December 21). ***A Case Study of Using BIM and COBie for Facility Management***

- Aiding the Client with information to input into the necessary contracts – **Early engagement**
- At pre-design stage of the process, the specification of information at briefing is well prepared
- Engaging with parties following the tender stage to ensure nominated parties understand their BIM deliverables. – **Ensure capability**
- Ensure COBie data is correct throughout the BIM process at each given stage, engaging with design, construction, commissioning and FM teams – **Continually monitoring**
- Ensure that assets are built/refurbished to optimise operation processes, maintenance and operational cost.– **Cost benefit analysis**
- Integrating the model to ensure essential MEP items are installed in the most maintenance friendly manner, future expansion, managing space requirements – **Ensure the clients needs are met**
- LCE would from the beginning of the project be actively engaging with the FM team to ensure the information is interoperable at the handover stage. Ensuring the correct information is gathered and in the correct format for CAFM system – **Early fault finding**



- **Creation of a new position within the current BIM environment with clear roles & responsibilities**
- **Greater academic engagement**
- **Greater FM industry engagement**
- **Client driven**

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Thank you

Joseph Mady