Establishing Key Performance Indicators to Measure the Benefit of Introducing the Facilities Manager at an Early Stage in the Building Information Modeling Process

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ABSTRACT

The Facilities Manager occupies a unique position within the lifecycle of a building asset, as he/she is one of the only Architecture/Engineering/Construction (AEC) and Facilities Management (FM) professionals who is in a position to view the product of the entire design and build process and is responsible for the operational phase which incurs approximately five times the initial capital cost. Despite the potential benefits that the Facilities Manager offers, this profession still does not command the recognition it deserves within the AEC/FM sector. This is beginning to change through the introduction of Building Information Modelling (BIM). In order for the BIM process to be maximised it is imperative that the Facilities Manager plays a much more important role within the design and construction process. Despite this, at present the role of the Facilities Manager within this process is still uncertain with no set Key Performance Indicators (KPI) or role designation being specified to date. This paper outlines how the Facilities Manager can play a pivotal role in the BIM process and, in particular, will aim to establish the basis for a number of KPIs by Facility Managers which will in turn lead to a more robust Lean FM practice.

Keywords: Building Information Modelling, Facilities Management, Facility Manager, Key Performance Indicators, Pilot Project

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BACKGROUND

In ever changing financial landscapes it is imperative that the construction sector reacts and participates in a new digital age and utilities the available tools at its disposal. One of the most interesting technologies to have emerged within the construction sector in recent years has come through the Building Information Modelling (BIM) process.

Building Information Modelling

BIM is effectively a more productive method of managing the construction process with a long term view towards reducing life cycle costs of the associated assets within the project. The AEC / FM industry, as indicated by Azhar (2011), has long sought techniques to decrease project cost, increase productivity and quality, and reduce project delivery time. BIM offers the potential to achieve these objectives as it stimulates the construction project in a virtual environment. BIM is a tool as detailed by Alvarado and Lacouture (2010) that can foster project integration on different levels within the Architecture, Engineering, Construction, and Facility Management (AEC/FM) sector, because it can facilitate information exchange, access to real time information, and information gathering among project members. BIM is poised to revolutionise the construction industry because of its promise to radically improve collaboration among the wide-ranging expertise needed to design and construct a building and to increase efficiency (Kent & Gerber, 2010).

BIM for FM

As the AEC / FM Sector is undergoing a radical shift it’s hardly surprising that facility managers would be among the first professionals to recognise the value of having their buildings designed, built, and operated using the BIM method as outlined by Ruiz (2010). The author further adds that this is in part due to the slumping economy; facility managers are concerned about how to operate and maintain their buildings more efficiently in order to save money. Facilities management (FM) as stated by Su et al (2011) represents one of the fastest growing sectors in real estate and construction. FM encompasses and requires multidisciplinary activities, and thus has extensive information requirements. While some of these needs are addressed as highlighted by Gerber et al (2011) by several existing FM information systems, BIM, which is becoming widely adopted by the construction industry, holds undeveloped possibilities for providing and supporting FM practices with its functionalities of visualization, analysis, control, and so on. Arayici et al. (2012) provide further details through referencing a number of documented case studies with the perceived benefits to be realized through the use of BIM in FM:

- Accurate geometrical representation of the parts of the building.
- Faster and more effective information sharing.
- More predictable environmental performance and life cycle costing.
- Better production quality - documentation output is flexible and exploits automation.
- Ensuring that procurement decisions are made on the basis of whole-life costs, cultural fit and not solely short term financial criteria.
- Ensuring that purchasing will be coordinated between departments where possible.

A recent survey of more than 60 building owners and FM professionals by Mortenson Construction shows that BIM/ Virtual Design and Construction (VDC), is key among owner professionals. When asked to identify the most exciting trend in FM and project delivery, 42% cited BIM/VDC as their top trend. Some advantages of BIM for FM as detailed by Sabol (2013) include:

- Unified information base, providing a business owner’s manual.
- Effective support for analysis, particularly for energy and sustainability initiatives.
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