BIM and Asset Management

BIM is mandated by UK Government for central government funded projects from 2016, under the Government Construction Strategy. The majority of developments since this strategy was launched have focused on BIM for design and construction.
However, a core objective of the strategy is to maximise whole life value and minimise whole life costs and risks. To support this objective ICE and IAM are jointly developing an Application Guide on *Enhancing Asset Management through BIM*.
This short factsheet introduces the planned Application Guide; its purpose, scope and content; and seeks feedback and contributions from the target readers to ensure that the Guide meets the needs of the users.

Purpose

The purpose of the Application Guide is to explain how the BIM practices and technology can be applied to significantly enhance the efficiency and effectiveness of asset management and thereby the resulting benefits.

The scope of this guide covers all types of built or constructed assets/facilities found in economic infrastructure systems (i.e. roads, railways, ports, airports, water and sanitation, environmental protection, energy production & distribution, industrial and communication facilities, etc.) and social infrastructure systems (i.e. buildings for housing, offices, schools, hospitals, prisons, etc.
This is intended to be an introductory guide. It presents how and where BIM can be applied to unlock the benefits of asset management.

This Application Guide is intended for use by the following types of organisations and roles:

- Asset Owner / Asset Manager – responsible for asset management policy, strategy, planning and decision-making for optimising the cost, risk and performance of assets over their lifecycles
- Designer / Constructor – consultants and contractors responsible undertaking projects, such as for the design and/or construction of the asset/facility; or its renewal/ replacement/enhancement during service
- Asset Operator – responsible for operating/utilising the asset/facility in delivering services/outcomes for the users/customers at defined service levels
- Maintainer / Facilities Manager – responsible for asset maintenance/facilities management to ensure the asset/facility delivers the required level of service performance optimally (i.e. reliability, availability, safety, serviceability, sustainability, security, etc.).

BIM

BIM is the management of information through the whole life cycle of a built asset. It delivers value by underpinning the creation, collation and exchange of shared models and corresponding intelligent structured data. Using BIM brings about improvements in three important ways:

- It provides a "single source of truth" for asset data and information for all parties to share during design, construction, and throughout the operational phase of assets.
- It brings people, processes, information and technology closer together.
- It clarifies how we create and share data and information, by stating the requirements for who provides data, when and how they provide it, and what checks need to be undertaken to ensure it is accurate.

BIM and Asset Management

ICE Thought Leadership

Asset management

Asset management is a strategic approach to managing assets to enable the achievement of business objectives. It enables realisation of value from assets by translating business objectives into asset-related decisions, plans and actions. The BS ISO 55000 standard series defines asset, asset management and asset management system, and specifies what processes and capabilities should be in place for effective asset management.

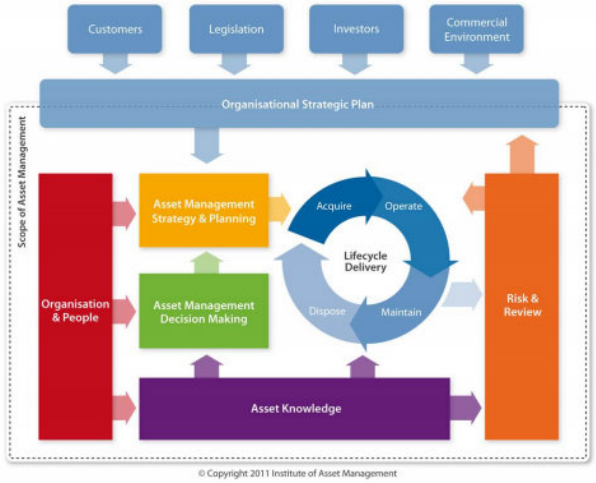
Asset management seeks to optimise cost, risk and performance over the whole asset lifecycle, at portfolio, system, and individual asset levels.

The built asset lifecycle covers everything from the initial identification of need to its end of life, including activities such as planning, design, construction, O&M, renewal, enhancement, decommissioning and disposal.

Asset management provides a strategic framework, a set of processes, techniques and tools to enable organisations to address the challenges they face such as increasing demand, increasing stakeholder expectations, deteriorating asset base, or constrained funding.

Elements of Effective Asset

The **Institute of Asset Management** (IAM), has defined the core elements or "Landscape" of Asset Management as in the diagram below, which shows clearly that Asset Knowledge and Information under-pins effective Asset Management.



IAM Concept Model diagram

ICE's Role

In accordance with ICE's roles, a BIM and Asset Management working group is currently developing further guidance on how BIM will help with Asset Management. This seeks to develop the knowledge and key principles of the longer-term benefits of BIM, as a critical enabler of both the desired asset performance, and of the in-service cost-effectiveness sought by UK Government through its BIM strategy.

The Role of BIM in Asset Management

BIM and Asset Management must support each other in three scenarios:

- **Bringing existing assets into BIM**
- **Developing new assets in BIM**
- **Operating and managing**

existing and/or new assets in BIM. Whatever the scenario, the Asset Manager needs access to the right information, to make decisions, which lead to activities, including updating the information.

The information collected and managed through BIM can include:

- **Asset register or inventory;**
- **Topographic data on the assets, and quantities derived;**
- **Asset condition data;**
- **Asset capability information**
- **Asset performance service levels, failure rates, etc.;**
- **Life expectancy data of equipment and materials;**
- **Descriptions of potential interventions for maintenance or renewal, and their costs;**
- **Contextual data, such as climate and surroundings;**
- **Asset history such as maintenance, alternations, renewals and replacements; and events such as accidents or other incidents.**

Using the terminology of BS PAS1192, the Organisational Information Requirements (OIRs) define the overall set of data and information needed by the organisation in undertaking its business. Information needed for effective asset management over the lifecycle is defined in terms of Asset Information Requirements (AIRs). The OIRs and AIRs inform the Employer's Information Requirements (EIRs) which specify what data and information is to be collected and provided by the designer and contractor to the Employer as part of a construction project.

How you can help

The working group developing the ICE-IAM Application Guide is looking for feedback and suggestions from ICE and IAM Members and others interested. This can include:

- **What are the needs of asset owners and managers in applying BIM to whole life Asset Management?**
- **What issues and difficulties have you faced?**
- **Which specific aspects do you most need the guidance on? Are there any specific questions that the Guide should seek to answer?**
- **Would you provide short case studies showing the application of BIM for Asset Management, identifying the issues faced, lessons learned and benefits achieved?**

Please send your inputs and suggestions to management@ice.org.uk