

Inside information

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Getting the right data is the first step in making better decisions about the delivery and operation of infrastructure assets, says Dave Monswhite

Around the world, major infrastructure projects continue to grow in size and complexity. In this environment, access to objective, relevant and accurate information is crucial to improve the agility of decision-making. This is aided by new technology and collaborative approaches, such as building information modelling (BIM), although they are often under-used.

Unfortunately, many clients are only exposed to visualisations of the 3D design aspects of the BIM process, focusing on design and engineering-related elements. What they often do not see is the impact of the information sitting behind those graphics.

Information is an often overlooked intangible asset that should be managed from the pre-investment/planning phase

Take light fixtures in a train station. You can see the object as a 3D image in a BIM, but it may have other parameters attached to it, for example, the type of street light it is mounted on, the spare parts it needs, maintenance cycles and power use.

Data extracted from such a model can be used to make powerful decisions ? the world of information management. Unfortunately, many clients are not in control of how information is produced or communicated to them.

Beyond traditional

Clients generally request and receive design information in traditional formats, namely drawings, plans and sections. Traditional approaches supply traditional results. A more effective tactic is to be specific from day one about the information you will need to make decisions throughout the life cycle of your asset.

A well-defined and communicated information strategy, from the outset, is key. Think about the questions you will ask later in your project. In an airport, for example, how will retail spaces work? Will queue flows be efficient? Or, in a school, will the corridors be wide enough for pupils to use safely?

The answers can fundamentally affect your asset's design, so it is essential to decide early on which information and data-capturing requirements your organisation will need for future

decision-making. This also means that the process of gathering information can be written into contracts.

A better solution

Many buildings are still designed using a traditional, architectural-led approach. Such designs make use of floor plans and elevations, but clients often struggle to understand the implications of the design choices at an early stage. Finding out late that a concept is flawed will impact on schedules and costs ? and probably mean a compromise solution.

Strong information management also improves understanding of the capital and operational expenditure implications of any decisions taken

However, using BIM from the start, showing simple floors and walls, primary cores, orientation and the relationship with other buildings, for instance, allows an objective appraisal on whether the concept is worth progressing. If so, the model can be populated with more detail about individual objects ? doors, heating systems and windows ? as long as these have been defined from the outset.

Studies demonstrate that this can shorten overall design times because the right solution is being developed earlier. An accurate mass-model allows cost managers to understand details like wall-to-floor ratios, and so develop a robust early cost estimate. Strong information management also improves understanding of the capital and operational expenditure implications of any decisions taken, and leads to improved quality through minimised rework.

Design commonality

There can also be a huge programme-wide impact, for example across multiple train station redevelopments. Consistently naming and structuring information objects across every model allows comparisons to be made and design commonality to be found, to take advantage of buying economies or even understand the implications of lead times across multiple sites. There will also be consistent information available for operating assets.

However, consistency is key. If an organic, bespoke approach is taken to structuring the data of individual projects, each one will look different in BIM, and actually create inefficiencies. Culture is the biggest barrier to true collaboration and the client is central to changing this.

Control your scope of service: get the information you need to make informed decisions. If you use the scope of service you have always used then you will receive the traditional outputs you have had in the past.

Consider your project holistically: identify and resolve any disconnect between those commissioning, designing or building an asset and those ultimately operating it. Involve your operational team early in the process so that it does not have to wait to discover information about a complex asset at handover.

Collect your FM information early: use a methodology such as [BS 1192-4](#) , which provides parameters for gathering information about every object even if you do not know how to use it yet. It will avoid the need to revisit old projects.

Involve your costs managers sooner: cost managers should work alongside designers to ensure that affordability is factored into the early design process. Make your project gateways more about affirmation of progress.

Control your data environment: do not rely on a third party. What happens if there is a disagreement and they block your access? Information is an often overlooked intangible asset that should be managed from the pre- investment/planning phase. What is your approach to maximising its value on your projects?

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Further information

- Related competencies include: [Project process and procedures](#) , [Teamworking](#)
- This article is taken from the RICS *Construction journal* (February/March 2015)