BIM Best Practices to Apply and Obstacles to Avoid

A Client-Led Approach, with Eoin Kiely

March 8, 2023

Today's discussion

Agenda	
1	Introductions
2	What Is BIM?
3	Digital Delivery
4	Lessons Learned
5	Q&A

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Objectives

1. To demonstrate the different types/challenges in BIM
2. To share the benefits of a Client-Led Approach
3. To understand the importance of a full project lifecycle and Data
4. To identify risks and issues for future projects

Turner & Townsend

112 offices

46 countries

8,481 people

12,406 projects

The Americas
1,126 people
30 offices

UK
2,992 people
16 offices

Europe
450 people
19 offices

Asia
712 people
18 offices

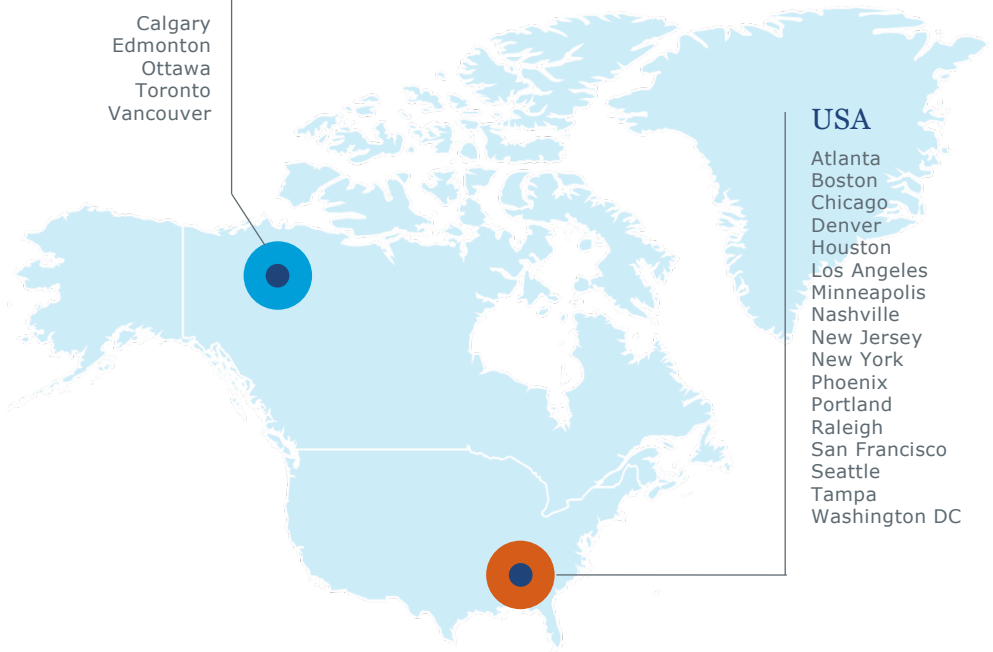
Africa
308 people
10 offices

Middle East
555 people
6 offices

Australia and New Zealand
646 people
13 offices

Canada
Calgary
Edmonton
Ottawa
Toronto
Vancouver

USA
Atlanta
Boston
Chicago
Denver
Houston
Los Angeles
Minneapolis
Nashville
New Jersey
New York
Phoenix
Portland
Raleigh
San Francisco
Seattle
Tampa
Washington DC



25 years in region

50+ Digital SME

850+ People

25% average savings per client

Turner & Townsend

Program strategy and set up

Setting up for success – building the right capabilities and execution plan to drive clear program outcomes.

Program management

Looking at the big picture, driving better overall outcomes, and having real confidence your program is under control.

Project management

On-site, in-person Owner's representation, holding stakeholders accountable for project success through effective planning, the right team and rigorous controls.

Cost and commercial management

Driving and safeguarding your commercial interests from start to finish.

Procurement

Developing and delivering procurement and supply chain strategies that get the best results from the market.

Controls and performance

Applying robust and pro-active controls from a clear baseline to deliver confidence in program and project performance.

Safety, health and quality

Embedding the strategies and culture that support effective operations and maintain a safe and healthy environment.

Technology and data

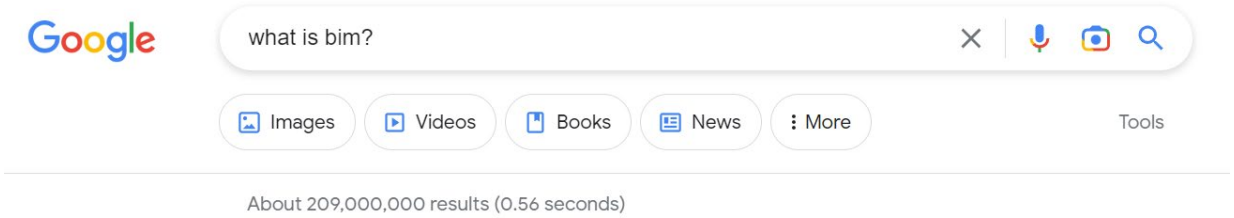
Unlocking the potential of technology, data and information modeling to drive performance, support great decision-making and create collaborative working environments.

Consultancy

Independent advice to help make your business and investments a success.

What IS BIM?

What IS BIM?

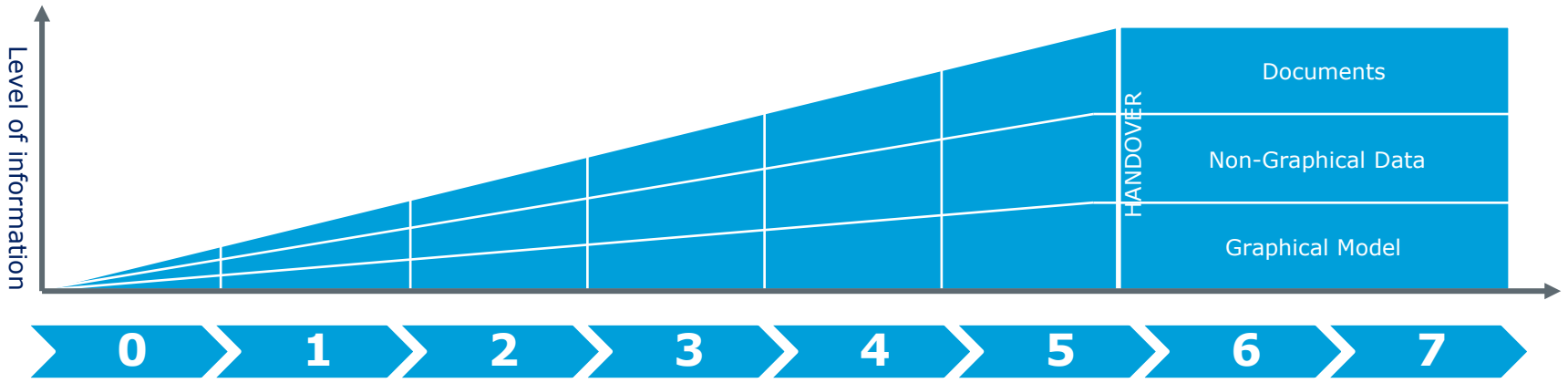


"**Building Information Modeling (BIM)** is the foundation of digital transformation in the architecture, engineering, and construction (AEC) industry. As the leader in BIM, Autodesk is the industry's partner to realize better ways of working and better outcomes for business and the built world." (Autodesk)

"BIM is a process supported by various tools, technologies and contracts involving the generation and management of digital representations of physical and functional characteristics of places. Building information models (BIMs) are computer files (often but not always in proprietary formats and containing proprietary data) which can be extracted, exchanged or networked to support decision-making regarding a built asset." (Wikipedia)

"BIM is a process for creating and managing information on a construction project throughout its whole life cycle. As part of this process, a coordinated digital description of every aspect of the built asset is developed, using a set of appropriate technology. It is likely that this digital description includes a combination of information-rich 3D models and associated structured data such as product, execution and handover information." (NBS)

Agree on priorities



Auditable trail of data and decisions	3D coordination and clash detection	4D modelling	5D Cost and quantity
6D Asset data management	Design completion, progress and certainty	Design Management	Field management tracking
Model verification	Possession and permit to work	Project controls information platform	Visualization, communication and reviews

What IS BIM?

Design coordination and supply chain collaboration is failing clients. BIM is not achieving full value

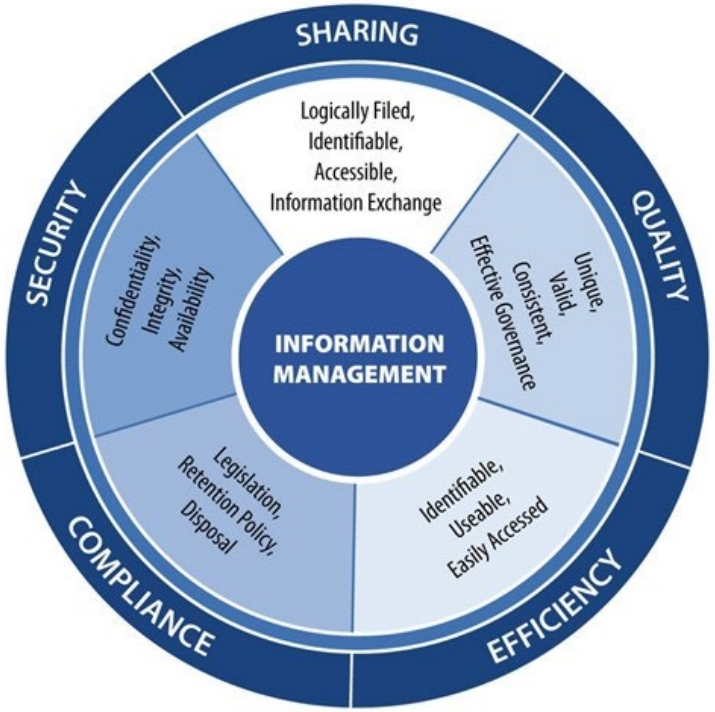
Major programs are not delivering an asset fit for operation

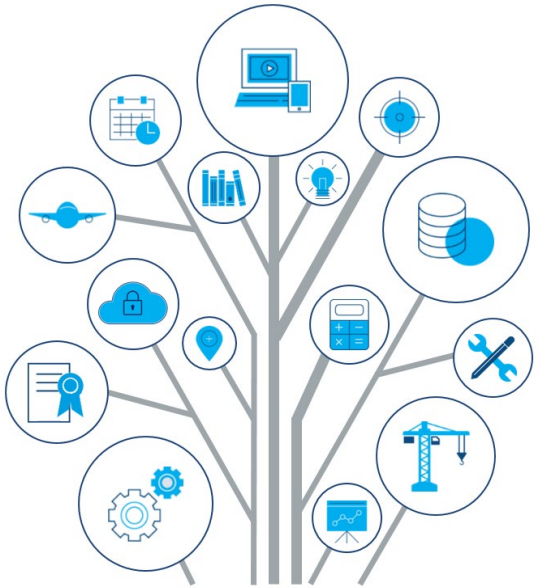
Client's do not have an asset information model to drive digital adoption and optimize decision making though the lifecycle

The **I** in **BIM**

Information Management

Proper information management provides clients confidence that all project team members are complying with the protocols for the process of collecting, storing, managing, sharing and maintaining information in all its forms throughout the whole lifecycle.

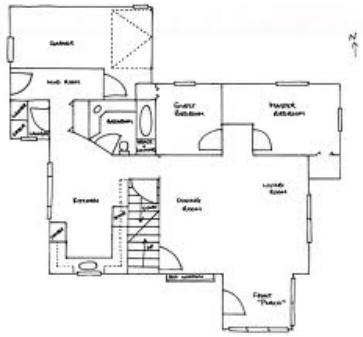


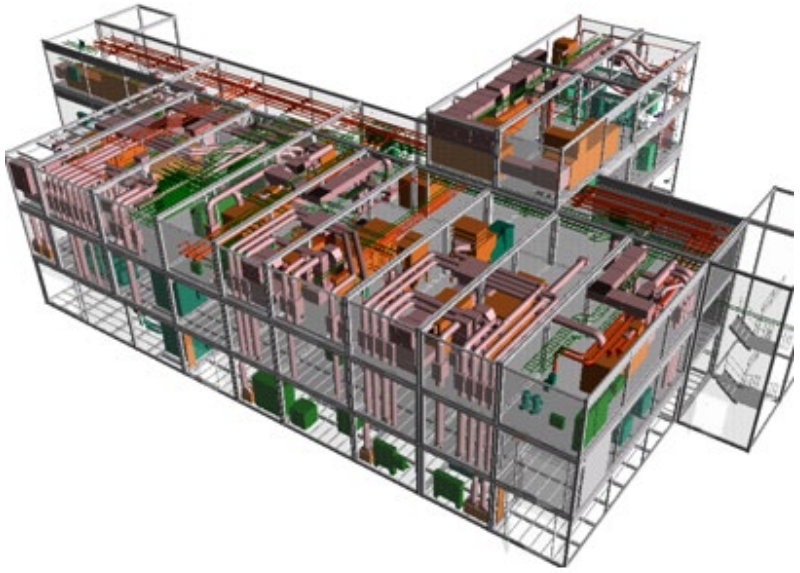


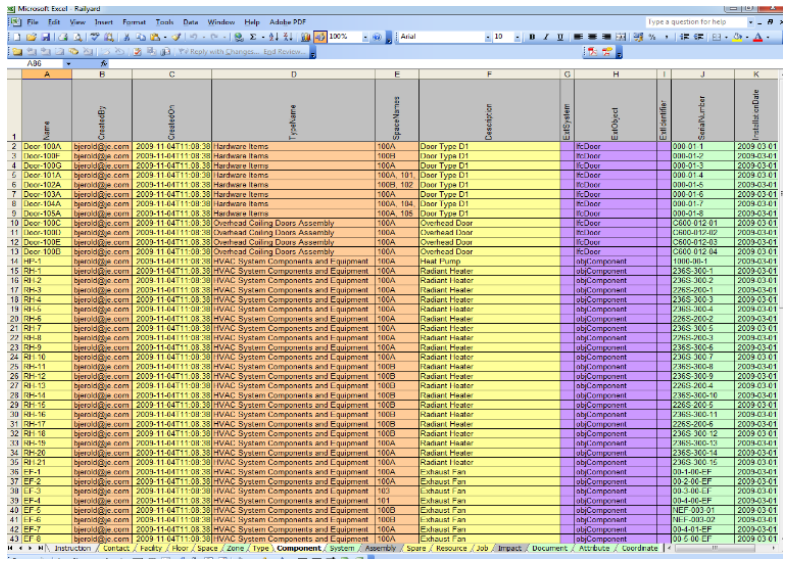
Building Information Modelling

BIM is a way of digitalizing the built environment from early design to operations. It incorporates physical, commercial, environmental, and operational data on every element of the design of an asset. It is a process that enhances client understanding of how the asset will work and feel, and how it fits together rather than simply what it looks like.

The Evolution of Drawings

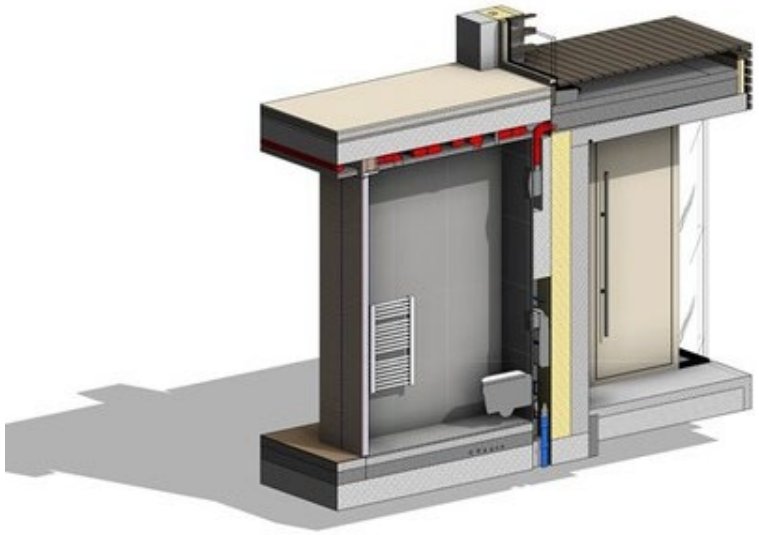




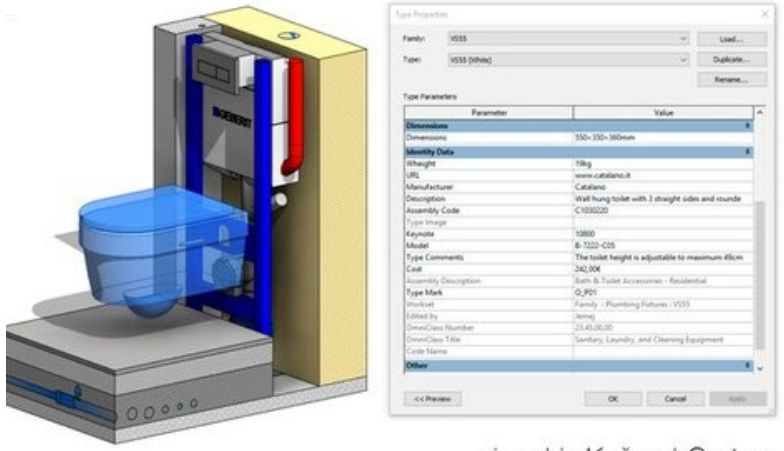


BIM Model Definition

Geometry



Non-geometry/data



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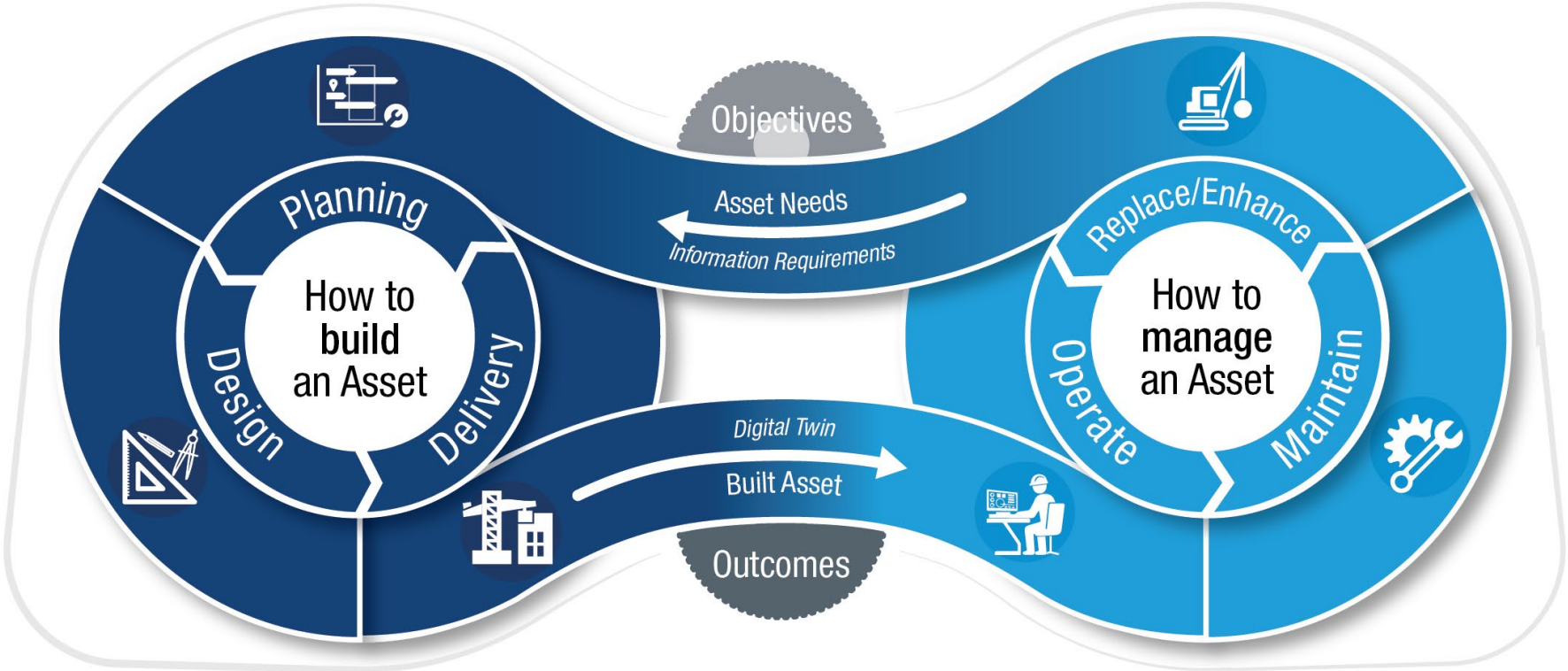
Delivery Binoculars



Delivering digitally

A Client-Led Approach

"We want BIM!"

"We have BIM in the contract"

"The GC is defining BIM"

"We are using the Architects BEP"

"We are using a Digital Twin"

A Client-Led Approach

The average building lifecycle:

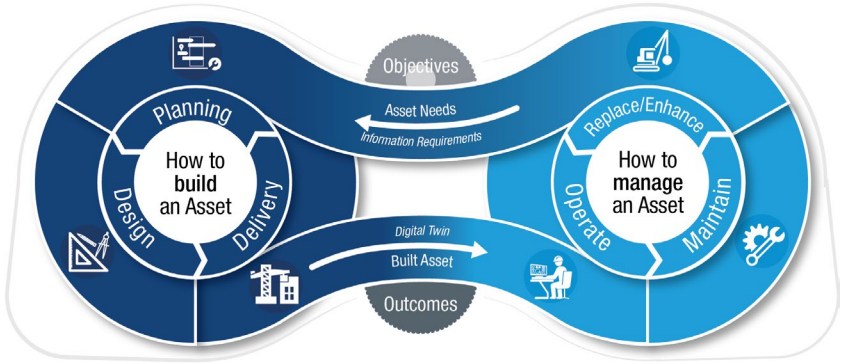
1 year to Design

2-5 years to Construct

10-50 years in Operation

A Client-Led Approach

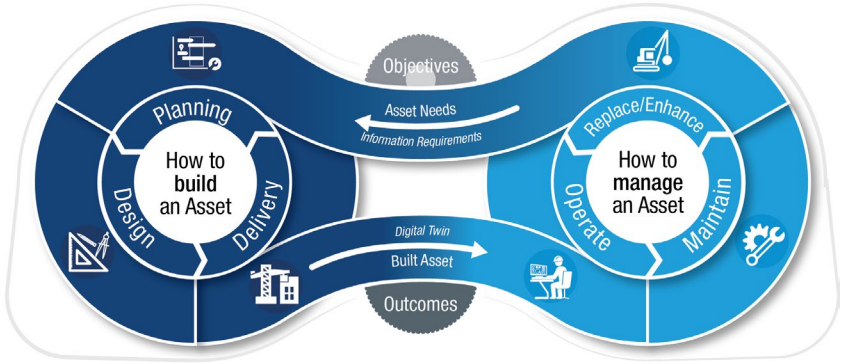
Start with the end in mind!

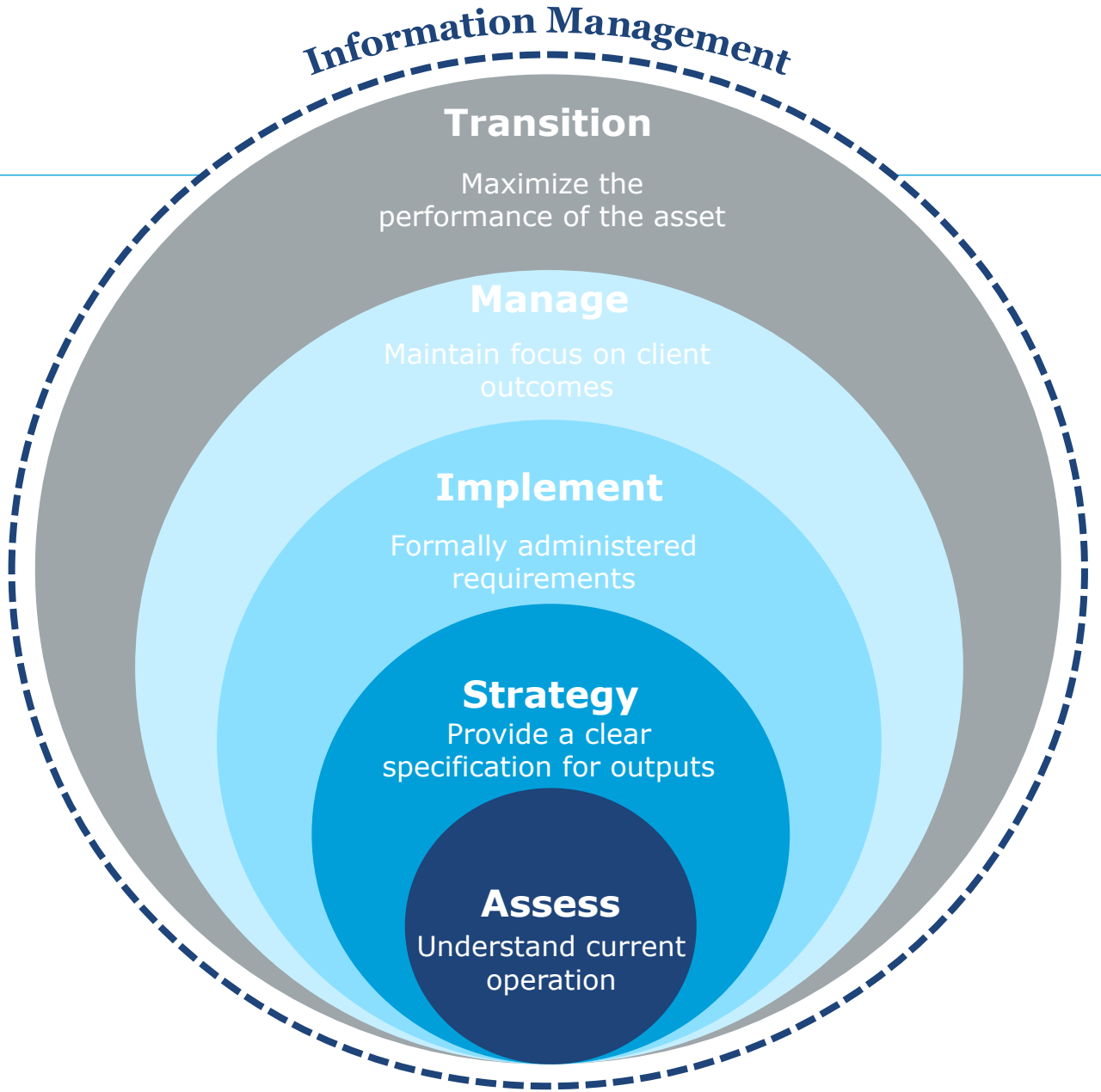


1	Understanding Owners needs	Estate Strategy
2	Articulating the requirements	Strategic Documentation
3	Achieving your outcomes	BIM/Digital Twin

A Client-Led Approach

Start with the end in mind!

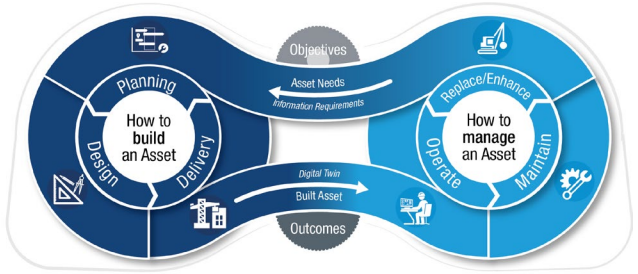




Lessons learned

Cultural change for the **Client/Owner**

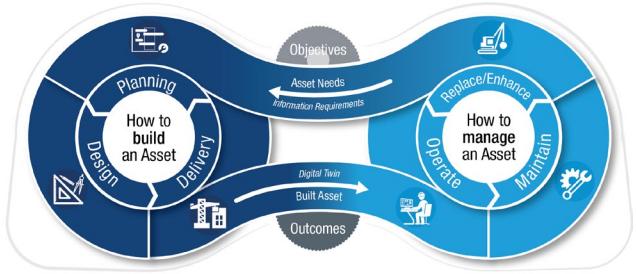
- Commit to the BIM process
- Consider information/asset management at concept
- Provide a Common Data environment
- Own your Data
- Understand obligations
- Appoint a team with the appropriate capability
- Consider consistency of data
- Consider changes in procurement methods



- Appoint a team without considering BIM protocols or contractual agreements
- Assume existing teams have the ability to undertake all required BIM uses
- Change information requirements during key project phases
- Leave decisions on asset management until later project stages

Cultural change for the **Project team**

- Establish a BIM Execution Plan, shared contract
- Earlier engagement and decision making
- Actively share work in progress information
- Validate model geometry and data
- Deliver information according to set standards
- Think of other inputs not just their own outputs



- Working in silos
- Create information which conflicts with the model
- Create ad hoc models that don't comply with an agreed data structure
- Revert to traditional processes in times of stress
- Retain or not share information
- Create models to communicate at milestones rather than to inform throughout

Lessons Learned

- Early engagement in a BIM process is critical
- We just 'want BIM' – its not that simple; everyone needs understand the requirements
- The operational team needs to be included for the data they want to capture or how they are going to us it
- Clear roles and responsibilities for all deliverables and client requirements
- Design team has been appointed on a standard scope – then Client wishes to introduce BIM
- **The I in BIM is important**, Data requirements need to be in place (EIR, BIM execution planning, protocols, and more)
- Design team attempt to revert back to 2D processes mid-stream
- Plan for the use in operations

But what is a Digital Twin?

Q&A

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