

CitA
BIM GATHERING



Building Capabilities in Complex Environments

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



breaking into the
[black box]

- demystifying

BIM data

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We are talking Data not Documents

Data, that may be ...

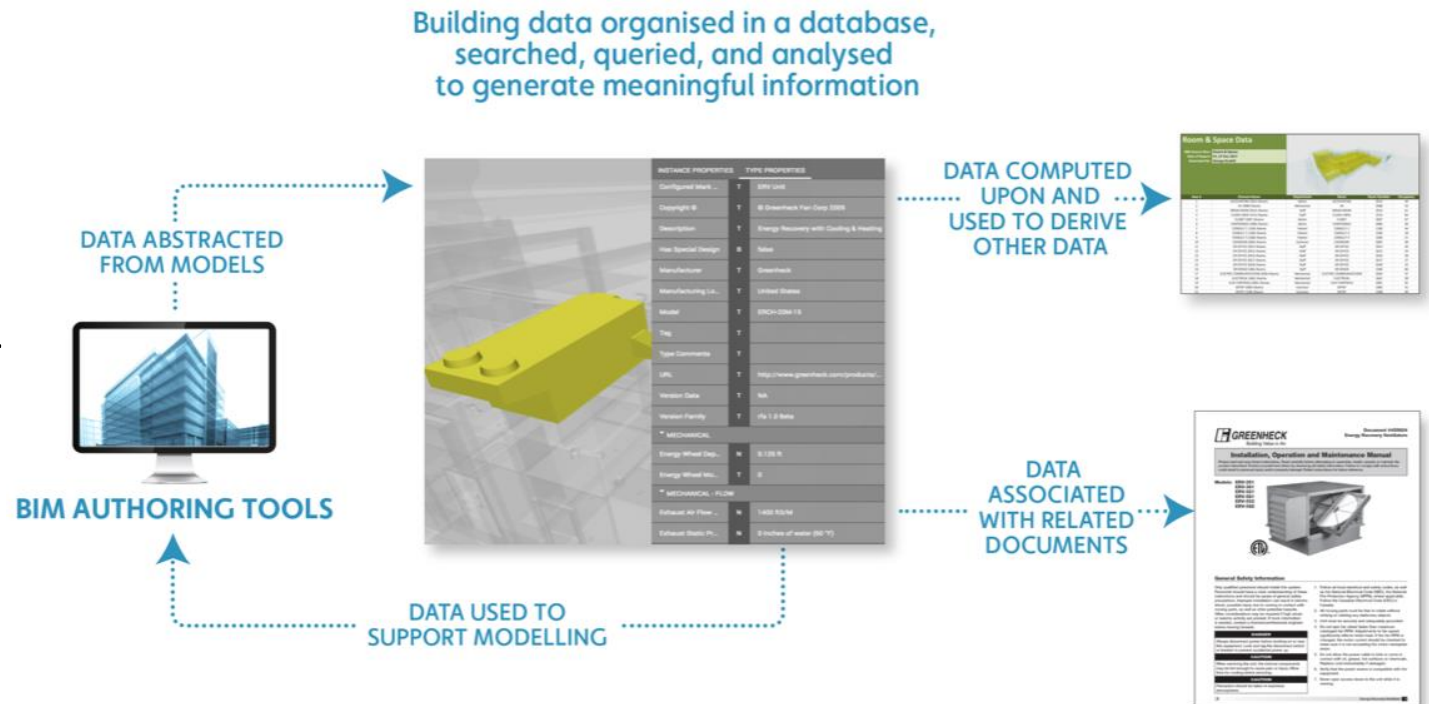
Used to create models

Abstracted from models

Organised in a database, searched, queried & analysed to generate meaningful information

Associated with other related data or documents

Computed upon and used to derive other data



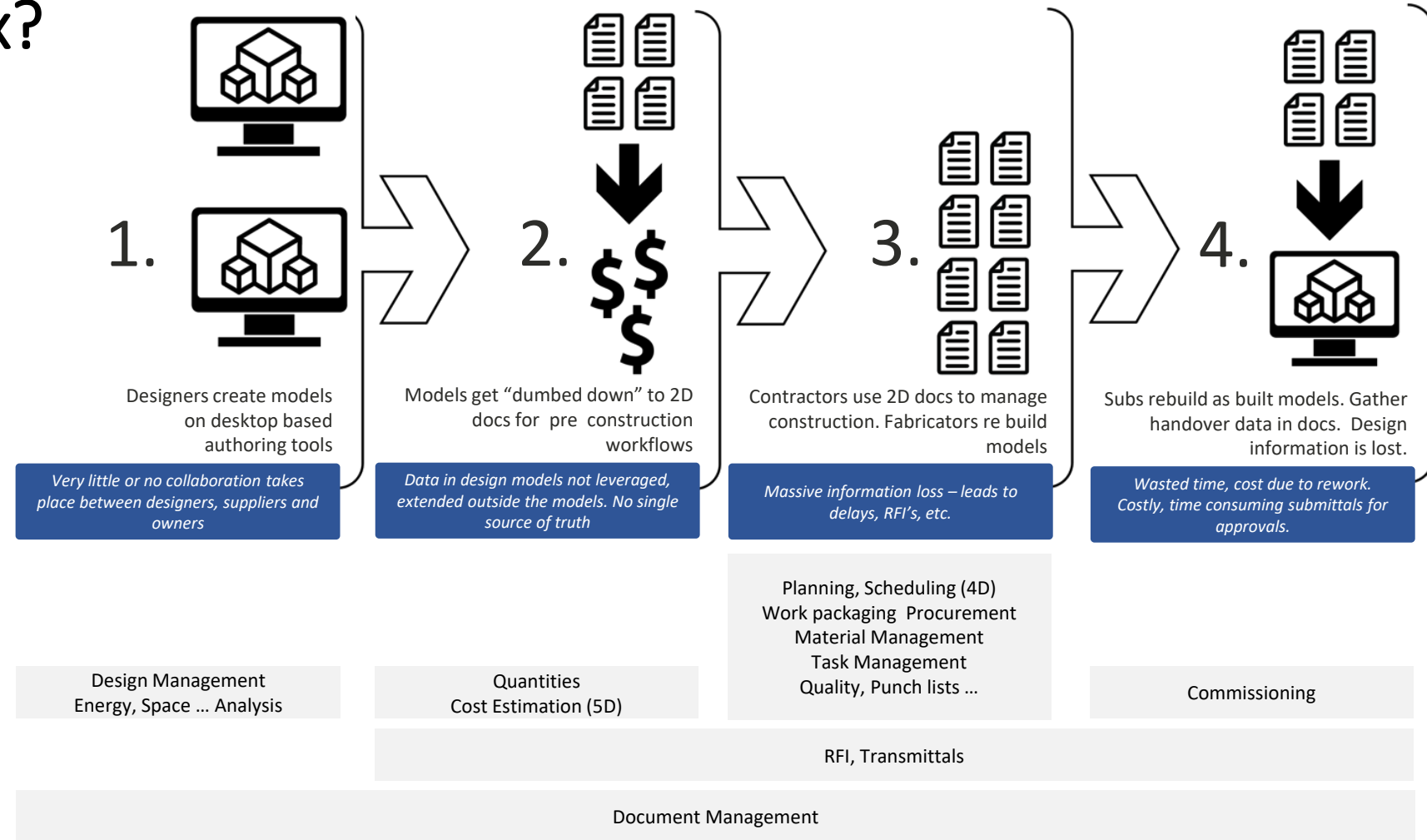


Why is it a black box?

BIM lives in silos. Data is in many files and not in a database that can be queried.

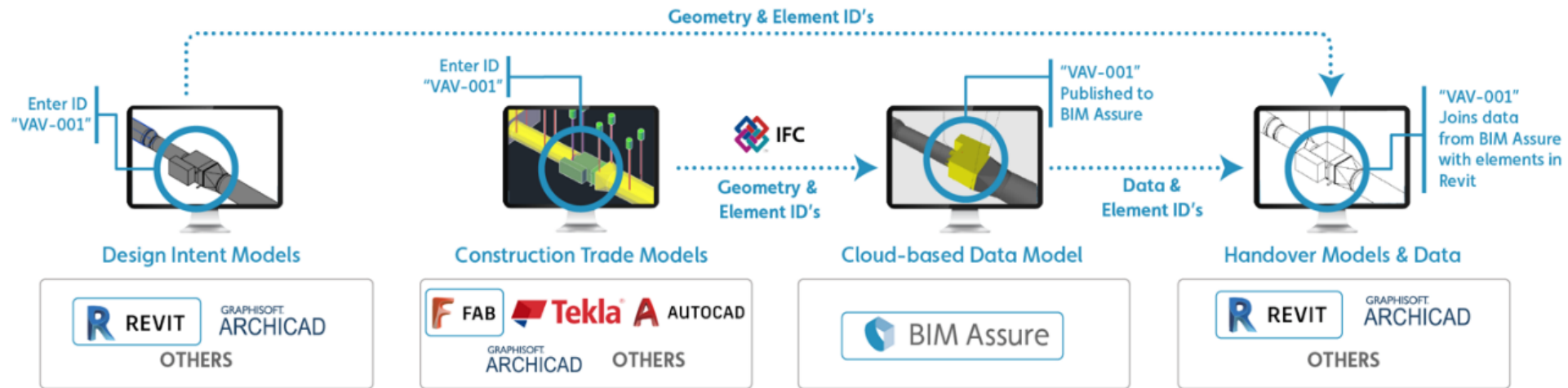
Information in models is not complete, not trusted and not leveraged downstream.

In vast majority of cases, BIM has become just a better way to generate drawings and schedules





Model handover = Data gymnastics!



	Origin Here	Dup Here	No Data	Import Data
Element ID	X			
Name	X			
Assembly Code			X	
Manufacturer			X	
Model Number			X	
Location			X	
Serial Number			X	
Installation Date			X	
Warranty End Date			X	

	Origin Here	Dup Here	No Data	Import Data
Element ID		X		
Name		X		
Assembly Code			X	
Manufacturer	X			
Model Number	X			
Location	X			
Serial Number			X	
Installation Date			X	
Warranty End Date			X	

	Origin Here	Dup Here	No Data	Import Data
Element ID				X
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Location				X
Serial Number				X
Installation Date				X
Warranty End Date				

Current Workflows for Managing Project Data is very complex



Data Management Challenges in AEC

- Design and construction data is highly inconsistent
 - Heterogeneous authoring tools for BIM and CAD
 - Inconsistent modelling practices across firms
 - Wide and varied taxonomies
 - Lack of adherence to standardised classification of building elements
- Authoring tools are not designed for data management.
- Off the shelf solutions to manage data, are limited if any. Bespoke solutions are expensive to build, maintain and tends to age quickly.
- Many firms lack a clear strategy for leveraging data in their workflows. A proactive approach is needed.

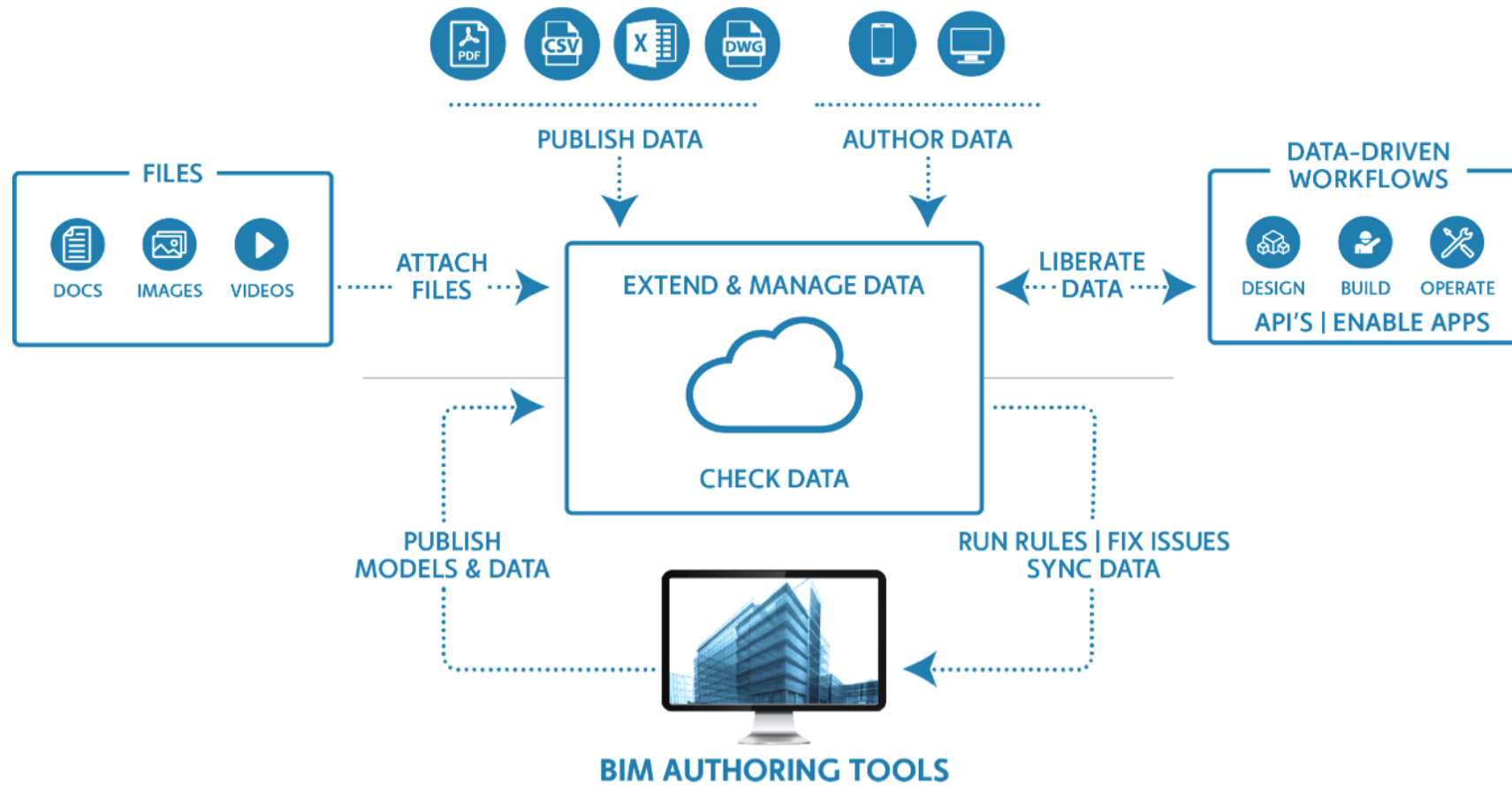


Common Data Environment

- Many systems with disconnected databases needed to achieve wide and varied expectations of different personas from a Common Data Environment (CDE).
- Most CDE solutions have largely meant collaborative document management
- What does CDE look like, from a “data” perspective
 - Support the ability to abstract, collect, organize, aggregate, data from varied sources.
 - Enable data that can be searched, queried, associated, transformed and managed.
 - Be a hub for data that serves as a trusted system of record to drive digitisation through data-driven workflows.
 - Have verification and validation of data at the very core.
 - Democratize data access and entry – accessible for non-BIM experts



A System for Integrated BIM

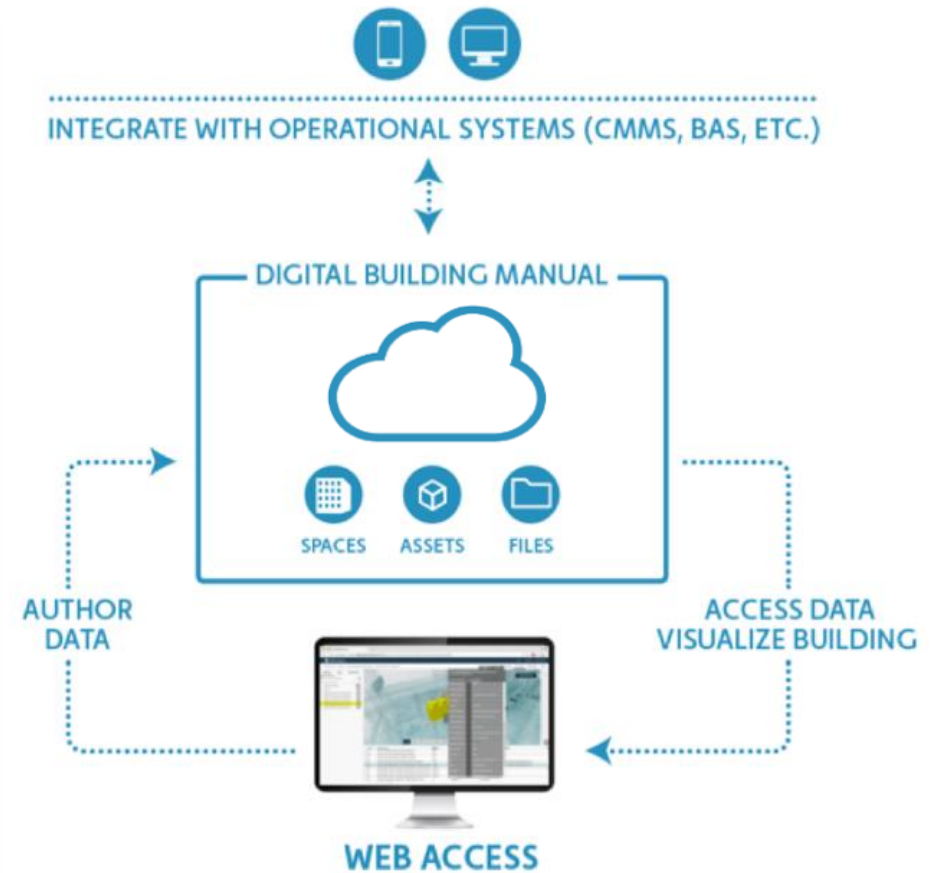




... Extend integrated BIM to a Digital Twin for operations

The screenshot shows the BIM Assure web application interface. The top navigation bar includes 'Home', 'Demo', 'General Medical', and 'General Medical - MEP'. The main content area displays a 3D wireframe model of a building's mechanical systems, with a large yellow rectangular component highlighted. A table at the bottom of the interface lists the following data:

Row #	Element Name	Mark	System Name	Cost	Manufacturer	Model	Type Mark
1	Main_BC_Controller_CM8...	BC-2			Mitsubishi Electric	CMB-P108NU-GA	
2	Main_BC_Controller_CM8...	BC-3	GAS 2.LQD 22.LQD 23.LQD 2		Mitsubishi Electric	CMB-P108NU-GA	





Conclusions

- Data flow between design, fabrication, construction and operations is disjointed, resulting in data silos. Delivering models with information aggregated across design, construction and commissioning, is challenging.
- BIM Level 2 has brought greater focus to data in models, driving a need for ...
 - Clear definition of Asset Information Requirements
 - Assignment of responsibilities to clarify who delivers what data, when and how
 - An automated system to verify and validate deliverables at each project milestone
 - A system to enable the supply chain to easily aggregate and associate data to model elements
- To fully leverage the “I” of BIM, it is essential to deploy a system for data management that will liberate data from the design environment and represent it in an extendable, associative and expressive database with verification and validation capabilities.
- Eliminating data silos and allowing unconstrained flow of data across the entire lifecycle of a project by integrating data from multiple sources will enable digitisation of work processes, improve productivity, reduce waste and enhance efficiencies.



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