



**26-29 NOVEMBER 2018**  
**Dubai World Trade Center**  
**11:00 - 19:00 Daily**

**AECOM**

# BIM as Information Management and Design Process



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# BIM Uses Building life cycle



Geometry

Space planning

MEP design

Structural analysis

Sustainability

Construction schedule

Cost

Asset Management

Information

Design

Build

Operate



# UK Standard's approach to Information Management

## BIM management vs information management

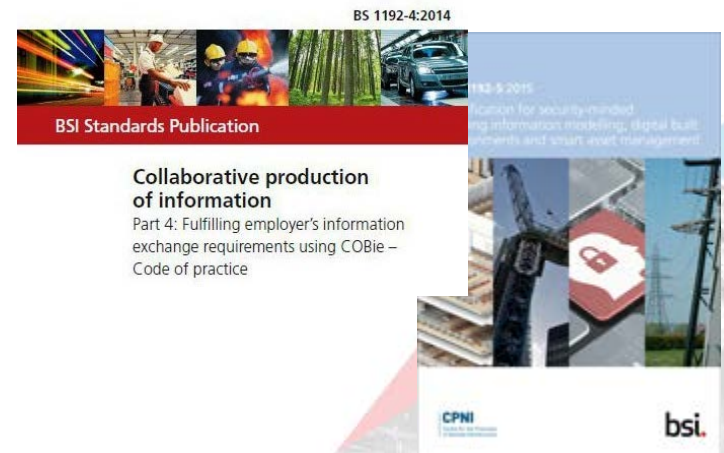
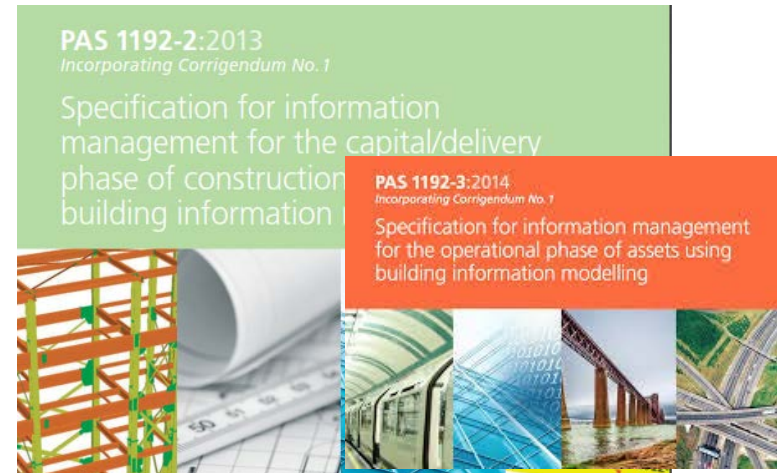
### Adoption and implementation – challenges and risks.



Standards:

BS 1192:

- PAS 1192-2:2013 - Specification for **information management** for the capital/**delivery phase** of construction projects using building information modelling
- PAS 1192-3 is the 'Specification for **information management** for the **operational phase** of construction projects using building information modeling'.
- BS 1192-4: 2014, Collaborative production of information. Fulfilling employer's information exchange requirements using **COBie**. Code of practice.
- PAS 1192-5: 2015, a specification for [security-minded building information modelling](#), digital built environments and smart asset management.



# Information Management and Information Manager role as defined in British standards

*PAS 1192-2: 'The information manager has a role in facilitating the management of the federated model and the production of project outputs. The information manager is also responsible for managing the operation, standards and culture of the Common Data Environment'*



# Information Standard

- Industry challenges with information exchange
- Information Exchange protocol – COBie
- Why COBie?

## A.18 Attribute

### A.18.1 Single Attribute

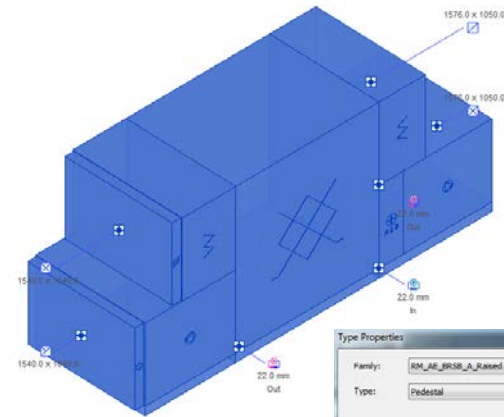
Table A.20 shows an example of COBie single Attribute information.

Table A.20 COBie single Attribute example

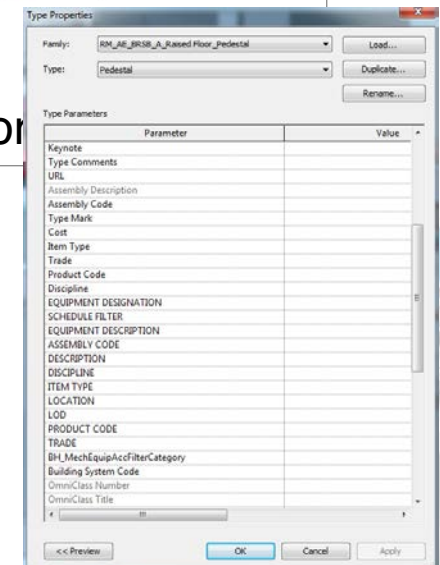
Attribute	Example	Notes
Name	<i>Weight</i>	expected
CreatedBy	<i>company@email.com</i>	reference
CreatedOn	<i>2013-04-15T00:00:00</i>	expected
Category	<i>Submitted</i>	pick
SheetName	<i>Type</i>	pick
RowName	<i>White Board</i>	reference
Value	<i>40.000</i>	expected
Unit	<i>kg</i>	pick
ExtSystem	<i>Authoring Application</i>	application
ExtObject	<i>IfcPropertySingleValue</i>	application
ExtIdentifier	<i>n/a</i>	application
Description	<i>Installed weight (excluding packaging)</i>	requirable
AllowedValues	<i>n/a</i>	requirable

# Design Information vs Construction vs Operations Information

- What Designer needs?
- What Contractor needs?
- What Operator needs?

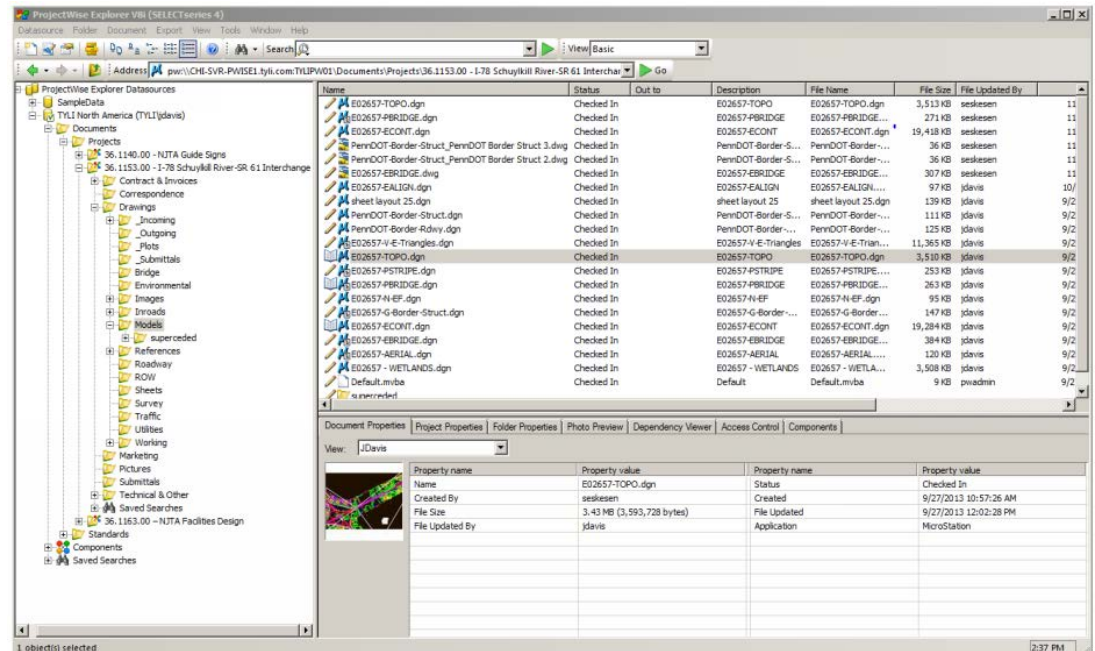


inform



# Information Manager role – Common Data Environment

- Who is Information Manager?
- BIM Manager? vs Document Controller?



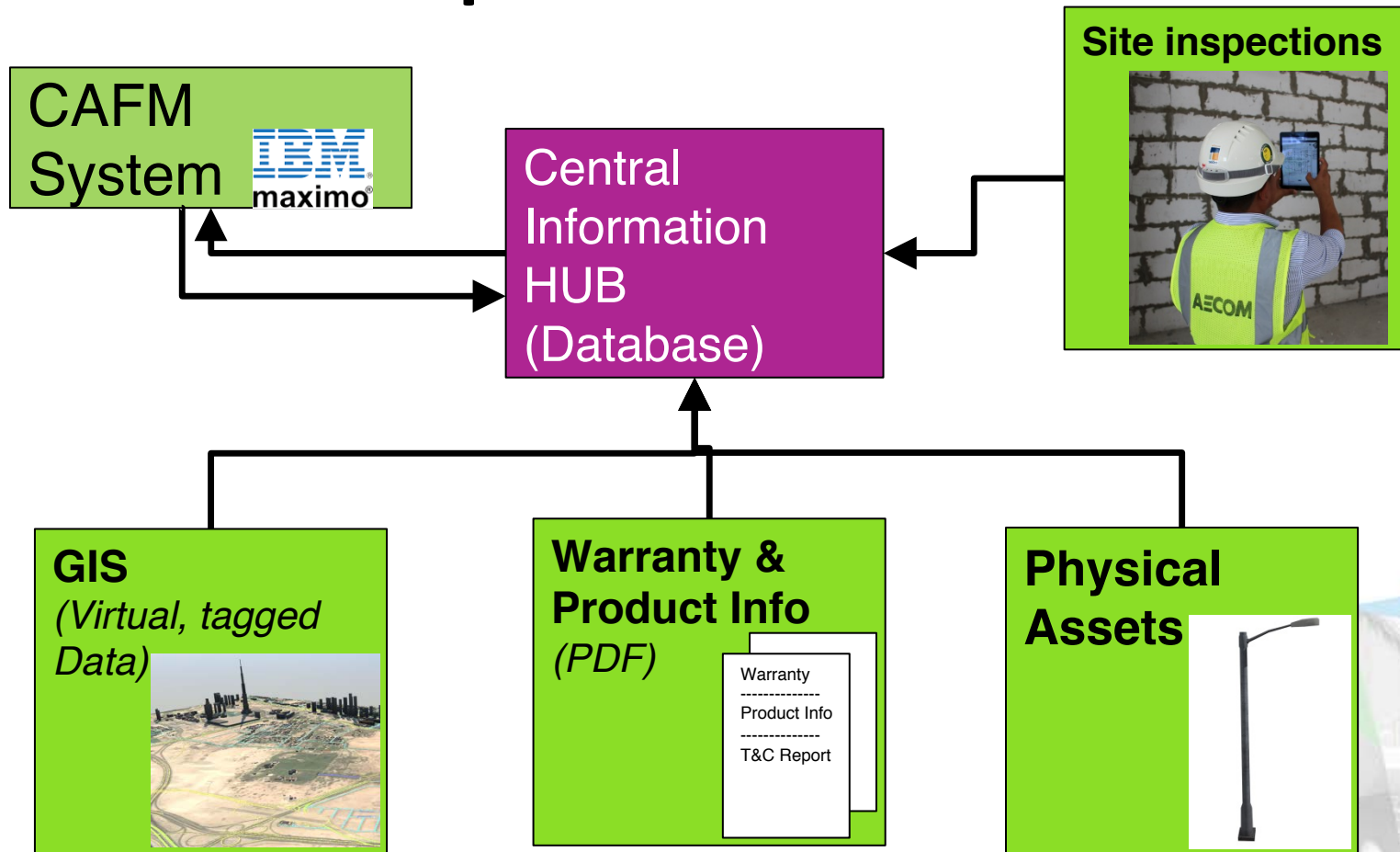
The screenshot displays the ProjectWise Explorer V8i (SELECTseries 4) interface. The main pane shows a list of files with columns for Name, Status, Out to, Description, File Name, File Size, and File Updated By. The files listed include various drawing files (e.g., E02657-TOPO.dgn, E02657-PBRIDGE.dgn) and their associated metadata.

Name	Status	Out to	Description	File Name	File Size	File Updated By
E02657-TOPO.dgn	Checked In		E02657-TOPO	E02657-TOPO.dgn	3,513 KB	seskesen
E02657-PBRIDGE.dgn	Checked In		E02657-PBRIDGE	E02657-PBRIDGE...	271 KB	seskesen
E02657-ECONT.dgn	Checked In		E02657-ECONT	E02657-ECONT.dgn	19,418 KB	seskesen
PennDOT-Border-Struct_PennDOT Border Struct 3.dwg	Checked In		PennDOT-Border-S...	PennDOT-Border-...	36 KB	seskesen
PennDOT-Border-Struct_PennDOT Border Struct 2.dwg	Checked In		PennDOT-Border-S...	PennDOT-Border-...	36 KB	seskesen
E02657-EBRIDGE.dwg	Checked In		E02657-EBRIDGE	E02657-EBRIDGE...	307 KB	seskesen
E02657-EALIGN.dgn	Checked In		E02657-EALIGN	E02657-EALIGN...	97 KB	jdavis
sheet layout 25.dgn	Checked In		sheet layout 25	sheet layout 25.dgn	139 KB	jdavis
PennDOT-Border-Struct.dgn	Checked In		PennDOT-Border-S...	PennDOT-Border-...	111 KB	jdavis
PennDOT-Border-Rdwy.dgn	Checked In		PennDOT-Border-...	PennDOT-Border-...	123 KB	jdavis
E02657-V-E-Triangles.dgn	Checked In		E02657-V-E-Triangles	E02657-V-E-Trian...	11,265 KB	jdavis
E02657-TOPO.dgn	Checked In		E02657-TOPO	E02657-TOPO.dgn	3,510 KB	jdavis
E02657-PSTRIPPE.dgn	Checked In		E02657-PSTRIPPE	E02657-PSTRIPPE...	253 KB	jdavis
E02657-PBRIDGE.dgn	Checked In		E02657-PBRIDGE	E02657-PBRIDGE...	263 KB	jdavis
E02657-N-EF.dgn	Checked In		E02657-N-EF	E02657-N-EF.dgn	95 KB	jdavis
E02657-G-Border-Struct.dgn	Checked In		E02657-G-Border-...	E02657-G-Border-...	147 KB	jdavis
E02657-ECONT.dgn	Checked In		E02657-ECONT	E02657-ECONT.dgn	19,294 KB	jdavis
E02657-EBRIDGE.dgn	Checked In		E02657-EBRIDGE	E02657-EBRIDGE...	384 KB	jdavis
E02657-AERIAL.dgn	Checked In		E02657-AERIAL	E02657-AERIAL...	120 KB	jdavis
E02657-WIETLANDS.dgn	Checked In		E02657-WIETLANDS	E02657-WIETLA...	3,508 KB	jdavis
Default.mvba	Checked In		Default	Default.mvba	9 KB	pwadmin

The bottom pane shows the Document Properties for the selected file, E02657-TOPO.dgn:

Property name	Property value	Property name	Property value
Name	E02657-TOPO.dgn	Status	Checked In
Created By	seskesen	Created	9/27/2013 10:57:26 AM
File Size	3,43 MB (3,593,728 bytes)	File Updated	9/27/2013 12:02:28 PM
File Updated By	jdavis	Application	MicroStation

# BIM data for Operations





# Why bother?

- How is BIM data used **now**
  - Drawings annotations
  - Schedules
  - Engineering analysis
  - Scheduling
  - Cost management
- How will BIM data be used in **future**
  - Machine learning
  - Generative design
  - Artificial intelligence



# Future of Design

## Machine Learning and Artificial Intelligence

- Historical Data – lessons learned - learning applied to future projects



# Title Text

BIM Data

created by author

uploaded on cloud

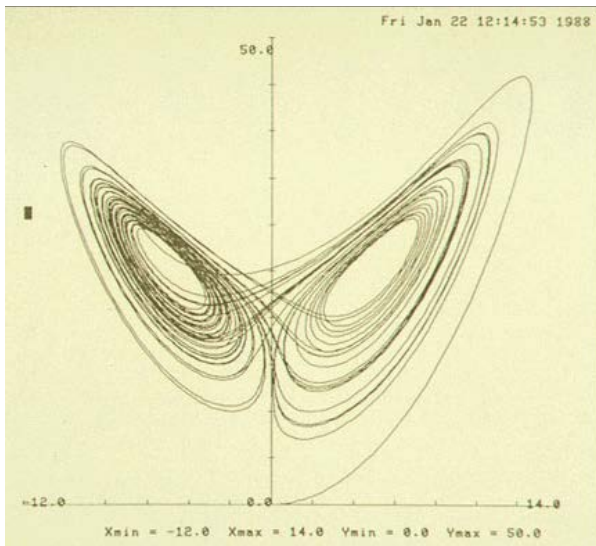
processed and analyzed

used to generate design /  
construct / operate

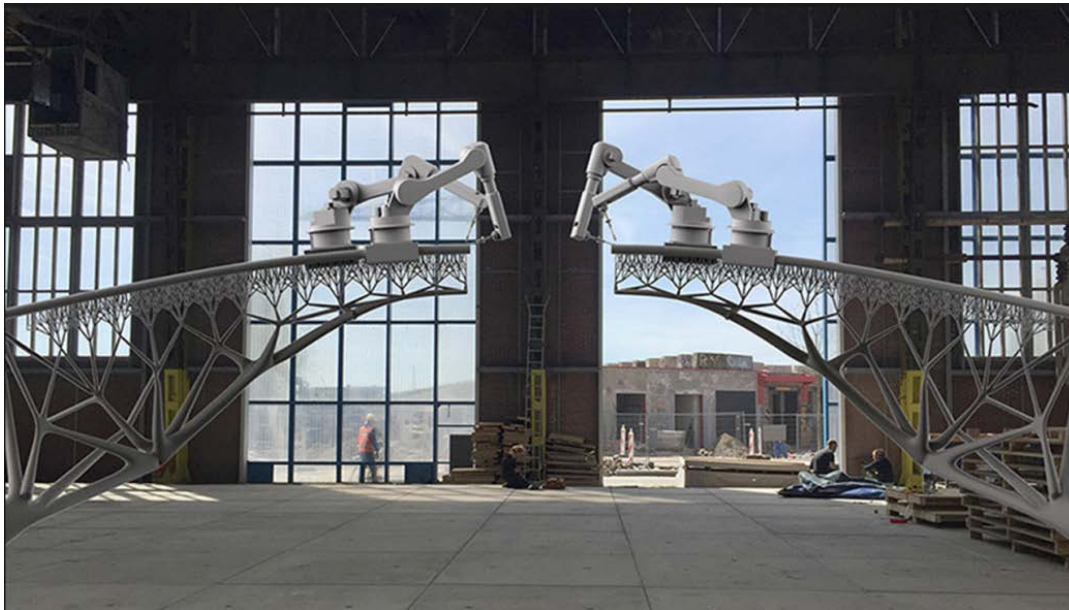


# Generative Design

- Insert  
Generative  
design picture



# 3-D printing



## Title Text

- Body Level One
  - Body Level Two
    - Body Level Three
      - Body Level Four
        - » Body Level Five



## Title Text

- Body Level One
  - Body Level Two
    - Body Level Three
      - Body Level Four
        - » Body Level Five





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