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A Proposed Toolkit for Designing and Assessing Asset Information Requirements

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Case Study



- Social Housing Organisation adopting BIM
- BIM guidelines and industry templates
- Information quality assessment methodologies
- Proposed toolkit for supporting non-BIM experts in developing asset information requirements

BIM Need

- Manage 26,700 properties
- Asset maintenance key area of business
- Priority to ensure detailed asset information captured early in development process for ordering stock to ensure effective maintenance and management of assets
- Asset data stored and used across 2 systems...
- £19.9 million spent on repairs and maintenance in 2015-2016



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Number % .00 .00 Conditional Formatting Table

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Sort & Find & Filter Select

	A	B	C	D	E	F	G	H
1	Title	COBie						
2	Version	2						
3	Release	4						
4	Status	IFC2x3						
5	Region	en-UK						
6	Purpose		From	Till	Count	Ratio	Key	This spreadsheet supports the exchange of building, system and product information through the life cycle
7	Outline		2012-01-19T12:27:24	2012-02-15T16:23:24	779	7.25	Additional information per Object	Individual worksheets are organized by project phase as shown below
8								
9	All Phases	Sheet	From	Till	Count	Ratio	Key	Contents
10		Contact	2012-01-19T12:27:24	2012-02-15T16:03:03	5	0.05	Contacts per Object	People and Companies
11								
12	Early Design Worksheets	Sheet	From	Till	Count	Ratio	Key	Contents
13		Facility	2012-01-19T12:27:24	2012-01-19T12:27:24	1			
14		Floor	2012-01-19T12:27:24	2012-01-19T12:27:24	1	1.00	Floors per Facility	Vertical levels and exterior areas
15		Space	2012-01-19T12:27:24	2012-01-20T10:01:14	3	3.00	Spaces per Floor	Spaces
16		Zone	2012-01-20T10:13:26	2012-01-20T10:13:26	1	3.00	Spaces per Zone	Sets of spaces sharing a specific attribute
17		Type	2012-01-19T12:27:24	2012-01-20T10:01:14	19	1.84	Components per Type	Types of equipment, products, and materials
18								
19	Detailed Design Worksheets	Sheet	From	Till	Count	Ratio	Key	Contents
20		Component	2012-01-19T12:27:24	2012-02-14T16:26:46	35	11.67	Components per Space	Individually named or schedule items
21		System	2012-01-19T12:27:24	2012-01-20T10:01:14	35	1.00	Components per System	Sets of components providing a service
22		Assembly	2012-01-19T12:27:24	2012-01-19T12:27:24	6	0.06	Assemblies per Object	Constituents for Types, Components and others
23		Connection	2012-02-15T16:23:24	2012-02-15T16:23:24	4	0.04	Connections per Object	Logical connections between components
24		Impact	2012-01-20T10:01:14	2012-01-20T10:01:14	28	0.29	Impacts per Object	Economic, Environmental and Social Impacts at various stages in the life cycle
25								
26	Construction Worksheets	Sheet	From	Till	Count	Ratio	Key	Contents
27								Note: submittals and approvals added on Documents
28								Note: manufacturer and model added on Type
29								Note: serial and tag added on Component
30								
31	Operations and Maintenance	Sheet	From	Till	Count	Ratio	Key	Contents
32		Spare	2012-01-19T12:27:24	2012-02-14T16:26:46	15	0.79	Spares per Type	Onsite and replacement parts
33		Resource	2012-02-14T16:26:46	2012-02-14T16:26:46	1	0.05	Resources per Type	Required materials, tools, and training

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AutoSum Fill Clear Sort & Filter




C10 19/01/2012 12:27:24

	A	B	C	D	E	F	G	H	I	J	K	L
	Name	CreatedBy	CreatedOn	TypeName	Space	Description	ExtSystem	ExtObject	ExtIdentifier	SerialNumber	InstallationDate	WarrantyStartDate
2	TFT Monitor:TFT Monitor:TFT Monitor:211812	nn@aec3.com	2012-02-14T16:26:46	TFT Monitor	LO-01A	TFT Monitor:TFT Monitor:TFT Monitor:211812	Autodesk Revit Architecture 201	IfcElectricalElement	3cBcy7GE	n/a	n/a	n/a
3	Mirror:Mirror:Mirror:211825	nn@aec3.com	2012-02-14T16:26:46	Mirror	LO-01A	Mirror:Mirror:Mirror:211825	Autodesk Revit Architecture 201	IfcElectricalElement	3cBcy7GE	n/a	n/a	n/a
4	TFT Monitor:TFT Monitor:TFT Monitor:211790	nn@aec3.com	2012-02-14T16:26:46	TFT Monitor	LO-02B	TFT Monitor:TFT Monitor:TFT Monitor:211790	Autodesk Revit Architecture 201	IfcElectricalElement	3cBcy7GE	n/a	n/a	n/a
5	Mirror:Mirror:Mirror:211826	nn@aec3.com	2012-02-14T16:26:46	Mirror	LO-02B	Mirror:Mirror:Mirror:211826	Autodesk Revit Architecture 201	IfcElectricalElement	3cBcy7GE	n/a	n/a	n/a
6	Generic Int DD:1810 x 2110mm:1810 x 2110mm:211798	jjohnston@brydenwood.c	2012-01-19T12:27:24	1810 x 2110mm	LO-C01	Generic Int DD:1810 x 2110mm:1810 x 2110mm:211798	Autodesk Revit Architecture 201	IfcDoor	3cBcy7GE	n/a	n/a	n/a
7	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:2118	jjohnston@brydenwood.c	2012-01-19T12:27:24	790 x 2110mm 3	LO-02B	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:2118	Autodesk Revit Architecture 201	IfcDoor	3cBcy7GE	n/a	n/a	n/a
8	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:2118	jjohnston@brydenwood.c	2012-01-19T12:27:24	790 x 2110mm 3	LO-01A	Generic Int D Cell Door:790 x 2110mm 3:790 x 2110mm 3:2118	Autodesk Revit Architecture 201	IfcDoor	3cBcy7GE	n/a	n/a	n/a
9	Plumbing SVP 1:Plumbing SVP 1:Plumbing SVP 1:211824	jjohnston@brydenwood.c	2012-01-19T12:27:24	Plumbing SVP 1	LO-C01	Plumbing SVP 1:Plumbing SVP 1:Plumbing SVP 1:211824	Autodesk Revit Architecture 201	IfcFlowTerminal	3cBcy7GE	n/a	n/a	n/a
10	WC Pan:510 x 510mm:510 x 510mm:211788	jjohnston@brydenwood.c	2012-01-19T12:27:24	WC Pan 510 x 510mm	LO-01A	WC Pan:510 x 510mm:510 x 510mm:211788	Autodesk Revit Architecture 201	IfcFlowTerminal	3cBcy7GE	n/a	n/a	n/a
11	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211813	jjohnston@brydenwood.c	2012-01-19T12:27:24	Wallgate ALS180 Basin 470w x 3	LO-01A	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211813	Autodesk Revit Architecture 201	IfcFlowTerminal	3cBcy7GE	n/a	n/a	n/a
12	WC Pan:510 x 510mm 2:510 x 510mm 2:211807	jjohnston@brydenwood.c	2012-01-19T12:27:24	WC Pan 510 x 510mm	LO-02B	WC Pan:510 x 510mm 2:510 x 510mm 2:211807	Autodesk Revit Architecture 201	IfcFlowTerminal	3cBcy7GE	n/a	n/a	n/a
13	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211808	jjohnston@brydenwood.c	2012-01-19T12:27:24	Wallgate ALS180 Basin 470w x 3	LO-02B	Wallgate ALS180 Basin:470w x 300d:470w x 300d:211808	Autodesk Revit Architecture 201	IfcFlowTerminal	3cBcy7GE	n/a	n/a	n/a
14	Cell Bed family:Cell Bed family:Cell Bed family:211786	jjohnston@brydenwood.c	2012-01-19T12:27:24	Cell Bed family	LO-01A	Cell Bed family:Cell Bed family:Cell Bed family:211786	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
15	Cell Desk:Desk Whitewood:Desk Whitewood:211787	jjohnston@brydenwood.c	2012-01-19T12:27:24	Desk Whitewood	LO-01A	Cell Desk:Desk Whitewood:Desk Whitewood:211787	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
16	Cell Locker:Cell Locker:Cell Locker:211789	jjohnston@brydenwood.c	2012-01-19T12:27:24	Cell Locker	LO-01A	Cell Locker:Cell Locker:Cell Locker:211789	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
17	Safer Seat:Safer Seat:Safer Seat:211791	jjohnston@brydenwood.c	2012-01-19T12:27:24	Safer Seat	LO-01A	Safer Seat:Safer Seat:Safer Seat:211791	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
18	Safer Seat:Safer Seat:Safer Seat:211803	jjohnston@brydenwood.c	2012-01-19T12:27:24	Safer Seat	LO-02B	Safer Seat:Safer Seat:Safer Seat:211803	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
19	Cell Bed family:Cell Bed family:Cell Bed family:211804	jjohnston@brydenwood.c	2012-01-19T12:27:24	Cell Bed family	LO-02B	Cell Bed family:Cell Bed family:Cell Bed family:211804	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
20	Cell Desk:Desk Whitewood:Desk Whitewood:211805	jjohnston@brydenwood.c	2012-01-19T12:27:24	Desk Whitewood	LO-02B	Cell Desk:Desk Whitewood:Desk Whitewood:211805	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
21	Cell Locker:Cell Locker:Cell Locker:211806	jjohnston@brydenwood.c	2012-01-19T12:27:24	Cell Locker	LO-02B	Cell Locker:Cell Locker:Cell Locker:211806	Autodesk Revit Architecture 201	IfcFurnishingElement	3cBcy7GE	n/a	n/a	n/a
22	Basic Wall:Generic Ext - 150mm:211792	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A , LO-02B	Basic Wall:Generic Ext - 150mm:211792	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
23	Basic Wall:Generic Ext - 150mm:211793	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A , LO-02B	Basic Wall:Generic Ext - 150mm:211793	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
24	Basic Wall:Generic Ext - 150mm:211794	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A	Basic Wall:Generic Ext - 150mm:211794	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
25	Basic Wall:Generic Ext - 150mm:211795	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A , LO-01A	Basic Wall:Generic Ext - 150mm:211795	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
26	Basic Wall:Generic Ext - 150mm:211796	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-02B , LO-02B	Basic Wall:Generic Ext - 150mm:211796	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
27	Basic Wall:Generic Ext - 150mm:211797	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-02B	Basic Wall:Generic Ext - 150mm:211797	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
28	Basic Wall:Generic Ext - 80mm:211799	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-01A	Basic Wall:Generic Ext - 80mm:211799	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
29	Basic Wall:Generic Ext - 80mm:211800	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-01A	Basic Wall:Generic Ext - 80mm:211800	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
30	Basic Wall:Generic Ext - 80mm:211801	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-02B	Basic Wall:Generic Ext - 80mm:211801	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
31	Basic Wall:Generic Ext - 80mm:211802	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 80mm	LO-02B	Basic Wall:Generic Ext - 80mm:211802	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
32	Basic Wall:Generic Ext - 340mm 2:211809	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 340mm	LO-01A , LO-02B	Basic Wall:Generic Ext - 340mm 2:211809	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
33	Basic Wall:Generic Ext - 150mm:211829	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-01A	Basic Wall:Generic Ext - 150mm:211829	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
34	Basic Wall:Generic Ext - 150mm:211830	jjohnston@brydenwood.c	2012-01-19T12:27:24	Basic Wall:Generic Ext - 150mm	LO-02B	Basic Wall:Generic Ext - 150mm:211830	Autodesk Revit Architecture 201	IfcWallStandardCase	3cBcy7GE	n/a	n/a	n/a
35	Safer Cell 7 Bay FF:1275x1200h:1275x1200h:211810	jjohnston@brydenwood.c	2012-01-19T12:27:24	1275x1200h	LO-01A	Safer Cell 7 Bay FF:1275x1200h:1275x1200h:211810	Autodesk Revit Architecture 201	IfcWindow	3cBcy7GE	n/a	n/a	n/a
36	Safer Cell 7 Bay FF:1275x1200h:1275x1200h:211811	jjohnston@brydenwood.c	2012-01-19T12:27:24	1275x1200h	LO-02B	Safer Cell 7 Bay FF:1275x1200h:1275x1200h:211811	Autodesk Revit Architecture 201	IfcWindow	3cBcy7GE	n/a	n/a	n/a

BIM Forum Level of Development Specification

B2010 – Exterior Walls

Solid wall construction that is composite in nature; in other words, multiple layers of materials to form an overall assembly.

100	See B20	
200	<p>Generic wall objects separated by type of material (e.g. brick wall vs. terracotta).</p> <p>Approximate overall wall thickness represented by a single assembly.</p> <p>Layouts and locations still flexible.</p>	 <p>49 B2010-LOD-200 Exterior Walls</p>
300	<p>Composite model assembly with specific overall thickness that accounts for veneer, structure, insulation, air space, and interior skin specified for the wall system. (Refer to LOD350 and LOD400 for individually modeled elements)</p> <p>Penetrations are modeled to nominal dimensions for major wall openings such as windows, doors, and large mechanical elements.</p> <p>Required non-graphic information associated with model elements includes:</p> <ul style="list-style-type: none"> • Wall type • Materials 	 <p>50 B2010-LOD-300 Exterior Walls</p>
350	<p>A composite wall assembly may be considered for LOD350 only if hosted objects such as windows and doors are provided at a minimum of LOD350.</p> <p>Main structural members such as headers and jambs at openings are modeled within the composite assembly.</p>	

Level of Development Specification
Version: 2015

www.bimforum.org/lod

B2020 – Exterior Windows

100	See B20	
200	<p>Windows approximate in terms of location, size, count and type. Units are modeled as a simple, monolithic component; or represented with simple frame and glazing.</p> <p>Nominal unit size is provided.</p>	

B2020.10 – Exterior Operating Windows

100	See B20	
200	See B2020	
300	<p>Units are modeled based on specified location and nominal size. Outer geometry of window frame elements and glazing modeled. Operation is indicated.</p> <p>Required non-graphic information associated with model elements includes:</p> <ul style="list-style-type: none"> • Aesthetic characteristics (finishes, glass types) • Performance characteristics (i.e. U-value, wind loading, blast resistance, structural, air, thermal, water, sound) • Functionality of the window (fixed, casement, double/single hung, awning/project out, pivot, sliding) 	
350	<p>Rough opening dimensions</p> <p>Attachment method of window to structure</p> <p>Embed geometry</p>	
400	<p>Frame profiles</p> <p>Glazing sub-components (gaskets)</p> <p>Attachment components</p>	

B2020.20 – Exterior Fixed Windows

[See [B2020.10](#)]

- Stage 1. Brief
 - Stage 0. Strategy
 - Stage 2. Concept
 - Stage 3. Definition
 - Stage 4. Design
 - Stage 5. Build and commission
 - Stage 6. Handover and closeout
 - Stage 7. Operation and end of life
- [Edit stage details](#)

PROJECT TEAM

Client	BIM Academy
Lead Designer	An Architects
Project lead	Projex
Construction lead	DTA

[Edit roles](#)

DELIVERABLES

Number of deliverables will be displayed here.

Information about the stage in terms of the deliverables will be displayed here.

[Add deliverables](#)

49

Tasks

have been identified for this stage.

Learn about stage 1

The preparation of the Initial Project Brief is the most important task undertaken during Stage 1. Other significant and parallel activities needed during this stage include developing any related Feasibility Studies, assembling the project team and defining each party's roles and responsibilities and the Information Exchanges. These activities will help ensure that Stage 2 Concept and Design is as productive as possible.

Help to make decisions at this stage:

- [The Level 2 BIM standards and tools](#)
- [Employer's Information Requirements](#)
- [Uniclass 2015](#)

Related NBS services

Achieve successful digital information flow and exchange with a range of NBS services:

NBS BIM Object Standard

Ideal for this project stage when you're



140 RESULTS FOR 'WINDOWS'

124 of these results have definition guides.

Definitions



- With definitions (124)
- Without definitions (16)

Table



- Product (105)
- System (33)
- Activity (1)

Results 1 to 50 of 140

Sort by

Prev

1

2

3

Next

Object

Table

Classification

[Composite window units](#)

Product

Pr_30_59_98_15

[External window systems](#)

System

Ss_25_30_95_26

[Unplasticized polyvinyl chloride \(PVC-U\) window units](#)

Product

Pr_30_59_98_92

[Window hardware systems](#)

System

Ss_25_38_20_95

Uniclass2015 - Pr_30_59_98_15 Composite window units

Show classification mappings

Level of detail

Level of information



Manufacturer Product Data template

Complete this electronic spreadsheet to ensure that your Composite window units product information meets the requirements of Level 2 BIM. This is important as it will enable your customers to select, specify and use your products within the BIM environment. Once you have completed this template you can host it on your own website or distribute it to your customers. Please note that we do not host completed product data templates within the BIM Toolkit.

2

Provide an outline description of the deliverable.

Name

Definition

Description

A description of the type of object to detail any design intent.

Related literature 16 of 50

Filter by All Manufacturers

Refresh

Technical literature from #ribaproductselector



003 - Synerjy Window & Door Suite Specification Guide
Synseal Group



Dualframe 75mm Casement Windows
Sapa Building Systems Ltd



Made-to-order timber windows & doors
Lomax + Wood Limited



WarmCore window brochure
WarmCore Windows and Doors

3

Provide an outline description of the deliverable.

Name	Definition
Description	A description of the type of object to detail any design intent.

Related products 15 of 15

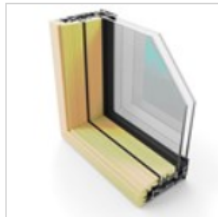
Filter by All Manufacturers

Refresh

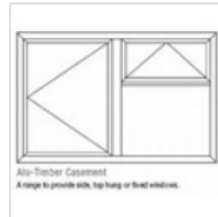
Product specifications from **nbsPlus** ?



HF 310 Timber/ Aluminium Window
Internorm Windows UK Ltd



Hybrid Series 2 Windows
Senior Architectural Systems Ltd



Composite Windows Alu-Timber



Hybrid Series 1 Windows
Soundcraft



4

Provide enough information to allow the selection of the manufacturer product to meet requirements. This information may also be used to replace the installed product during the operation stage of the building's lifecycle. Information covering the execution of the deliverable should also be provided in the associated specification.

Name	Definition
------	------------

4

Provide enough information to allow the selection of the manufacturer product to meet requirements. This information may also be used to replace the installed product during the operation stage of the building's lifecycle. Information covering the execution of the deliverable should also be provided in the associated specification.

Name	Definition
Manufacturer	The Manufacturer of the Composite window units.
Third party accreditation	The Third party accreditation of the Composite window units.
Standard	An example value being Non fire and/ or smoke rated windows to BS EN 14351-1.
Configuration	An example value being Side hung casement.
Dimensions - Standard	An example value being To BS EN 12519.
Dimensions - Width and height	The Dimensions - Width and height of the Composite window units.
Air permeability	An example value being To BS 6375-1, Class 2.
Watertightness	An example value being To BS 6375-1, Class 3A.
Resistance to wind load	An example value being To BS 6375-1, Class A2.
Operation and strength characteristics - Standard	An example value being BS 6375-2 .
Operation and strength characteristics - Requirements	The Operation and strength characteristics - Requirements of the Composite window units.
Load bearing capacity of safety devices	The Load bearing capacity of safety devices of the Composite window units.
User design standards	An example value being In accordance with BS 8213-1.

You have an EIR with recommended industry guidelines and templates...





Understanding Asset Owner Information Needs

What

information do we need to install, operate, replace and repair an asset?

When

is the information required?

How

can we measure when information is complete?

Information Systems Methodologies

- Assess Information Quality (IQ) - Procuring data that is fit for purpose at the time required
- Number of methodologies developed for over 20 years for assessing IQ: Asset Information Methodology Quality (AIMQ), Complete Data Quality Methodology (CDQM-a), Data Quality Assessment (DQA) etc.
- Zadeh et al. reviewed IQ assessment methodologies and developed a set of criteria specifically for assessing BIM IQ in FM:
 - Completeness – all the information is present
 - Value accuracy – the information is correct
 - Consistency – information is represented consistently across data sets
 - Well-formedness – presented in the compliant information format
 - Understandability – information is easy to understand and interpret

(Zadeh, P. A., Wang, G., Cavka, H. B., Staub-French, S., & Pottinger, R. (2017). Information quality assessment for facility management. *Advanced Engineering Informatics*, 33, 181-205)

Information Requirements Capture Framework

Information Item	Value	IQ Assessment Criteria
Object	Name of asset	Completeness, Value Accuracy, Consistency, Understandability
Data required	e.g. size, manufacturer, product ref etc	Completeness, Value Accuracy, Consistency, Understandability,
Preferred format	PDF, CSV, ENUM, etc. Practical utility	Well-formedness
Current data	PDF etc	Consistency, Well-formedness
Where captured	APEX, WMS, Health and Safety Manual etc.	Consistency, Well-formedness
Process and format	e.g. manually taken from contractor PDF	Value Accuracy, Consistency, Well-formedness
Additional Data	Any additional data required	Completeness, Value Accuracy
Data importance	Essential, Desirable	Completeness
Classification	e.g. Uniclass, Omniclass etc.	Well-formedness
Etc....

Scenarios

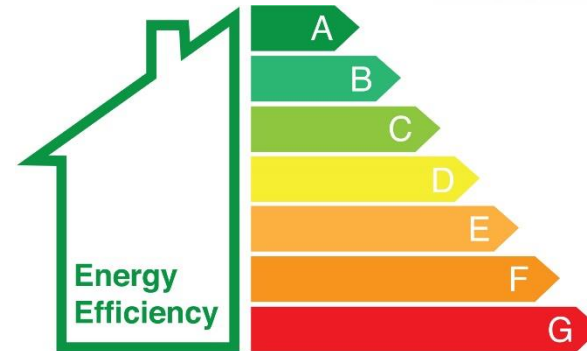
1. Window restrictor
(single component)



2. Sprinkler system
(system comprising multiple components)



3. Energy Performance Certificate
(whole building)



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Clipboard: Cut, Copy, Paste, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

Alignment: Wrap Text, Merge & Center, Text Alignment, Orientation

Number: General, Percentage, Decimals, Thousands Separator

Styles: Normal, Bad, Good, Neutral, Calculation, Check Cell

Cells: Insert, Delete, Format

Editing: AutoSum, Fill, Clear, Sort & Filter, Find & Select

A9 Restrictors fitted

	A	B	C	D	E	F	G	H	I	J
1		Required Data Values	Preferred Format	COBie	BIM Forum	NBS Toolkit	LOI			
2						Window Restrictor Stays				
3	Window ID				Required non-graphic information associated with model elements includes: aesthetic characteristics (finishes, glass types) Performance characteristics (i.e U-value, wind loading, etc) functionality of the window (fixed, casement, double/single hung, etc					
4	Manufacturer Information		PDF	COBie "Document"		Manufacturer	4			
5	Operating Manual		PDF	COBie "Document"						
6	Warranty Information		PDF	COBie "Document"		Warranty guarantor (parts), Warranty duration (parts), Warranty guarantor (labour), Warranty duration (labour), Warranty duration unit, Warranty description, Warranty start date	6			
7						Description	2,3			
8	restrictors required	true/false	XML							
9	Restrictors fitted	true/false	XML							
10	reason not fitted if required	tenant refused; unable to gain access; technical problem; etc.	XML							
11	Manufacturer (name, address etc)		XML	COBie "Contact"		Manufacturer	4,5			
12	Product reference		XML	COBie "ModelReference"		ModelReference	6			
13	Supplier? (name, address etc.)		XML	COBie "Contact"						
14	Fitted by? (company name, address etc.)		XML	COBie "Contact"						
	Operation	stay;				Restrictor type	4,5			

Findings

- Industry standard templates:
 - Valuable data-source to test developing information requirements
 - Help to identify information gaps and for developing custom templates from standards
 - Tend to be accepted without adapting them to particular information requirements of asset manager. This may be due to inexperience on the part of the asset manager.
- A standardised questioning process can be adopted to assist in identification of information requirements across concepts (products/components, systems and whole building). The proposed toolkit offers an approach to formalising this process enabling non-BIM experts to begin identifying and defining their information requirements.

Recommendations

- Standard templates are likely to provide the majority of information required elsewhere and are a significant improvement over current practice for many organisations.
- Identify the most critical/valuable asset information required and undertake the toolkit exercise only for the most significant.
- Organisations that procure construction projects on a regular basis have the opportunity to develop and manage their asset information requirements over time. To capture the relative importance of the information and understand the implications of any changes to systems that use the information, a managed AIR should also capture:
 - why information is required
 - which processes it is required to support
 - which stakeholders or systems it is shared with
 - For what purpose

Next Steps

- Current case study to be extended through to completion of the construction and into maintenance cycles to test IQ criteria
- Test with wider concepts such as different spaces or building types e.g. university, factory, hospital etc.
- Metrics should be tested and evaluated against other approaches

And Finally...

- Thanks for listening
- Any questions/recommendations?
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