SCOTTISH FUTURES TRUST

Building Information Modelling (BIM) Training

Creating the Digital Estate

Feb/Mar 2018

Image courtesy: AECOM

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YOUR

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CIOB Trustee

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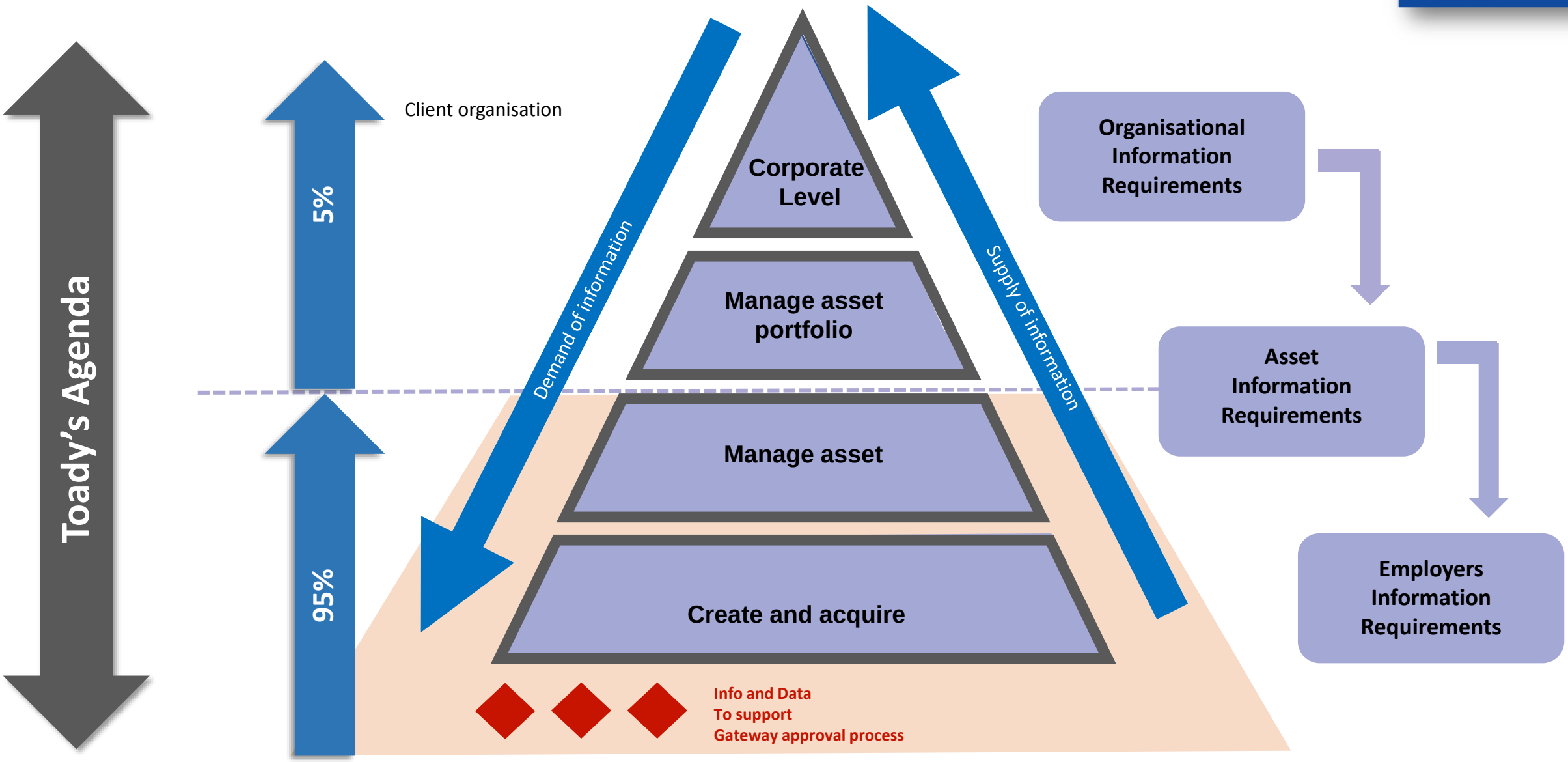
HOUSE KEEPING

Todays Agenda

SCOTTISH FUTURES TRUST

- Purpose of today
- 01 Background
- 02 What is BIM?
- 03 SFT BIM Programme and Tools
- 04 The Foundation: Better Data & Info Management
- 
- Coffee Break
- 05 Organized Data & Information Delivery
- 06 Creating an Information Delivery Plan
- How it All Comes Together
- Question and Answers

Purpose of Today



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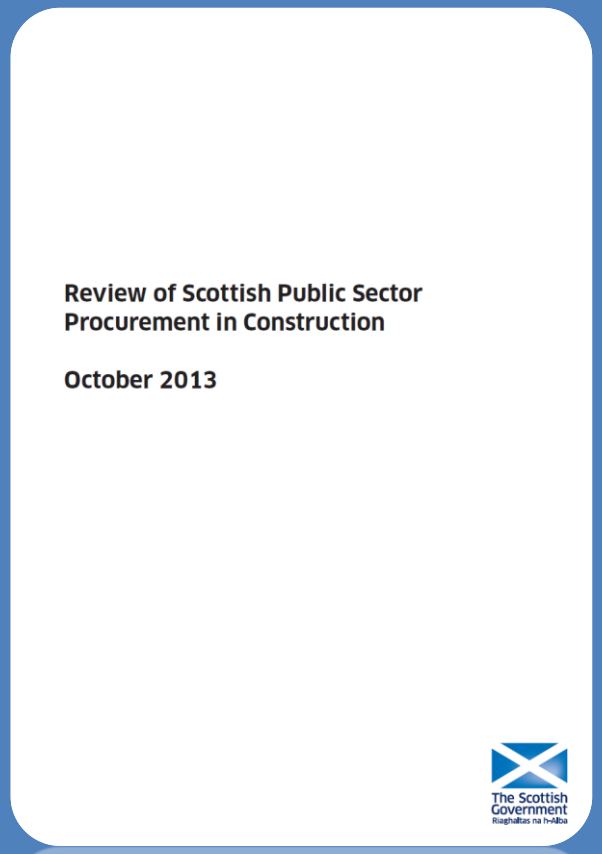
Background

Overview

Review of Procurement in Construction

01

Review of Procurement in Construction



"BIM should be introduced in central government with a view to encouraging adoption across the public sector. The objective should be that, where appropriate, projects across the public sector adopt BIM level 2 by April 2017."

Review of Scottish Public Sector Procurement In Construction

What is BIM?

A Def-in-ni-tion
BIM & Digital Working
Traditional VS BIM L2 Lifecycle
Technology
VR and AR Technology

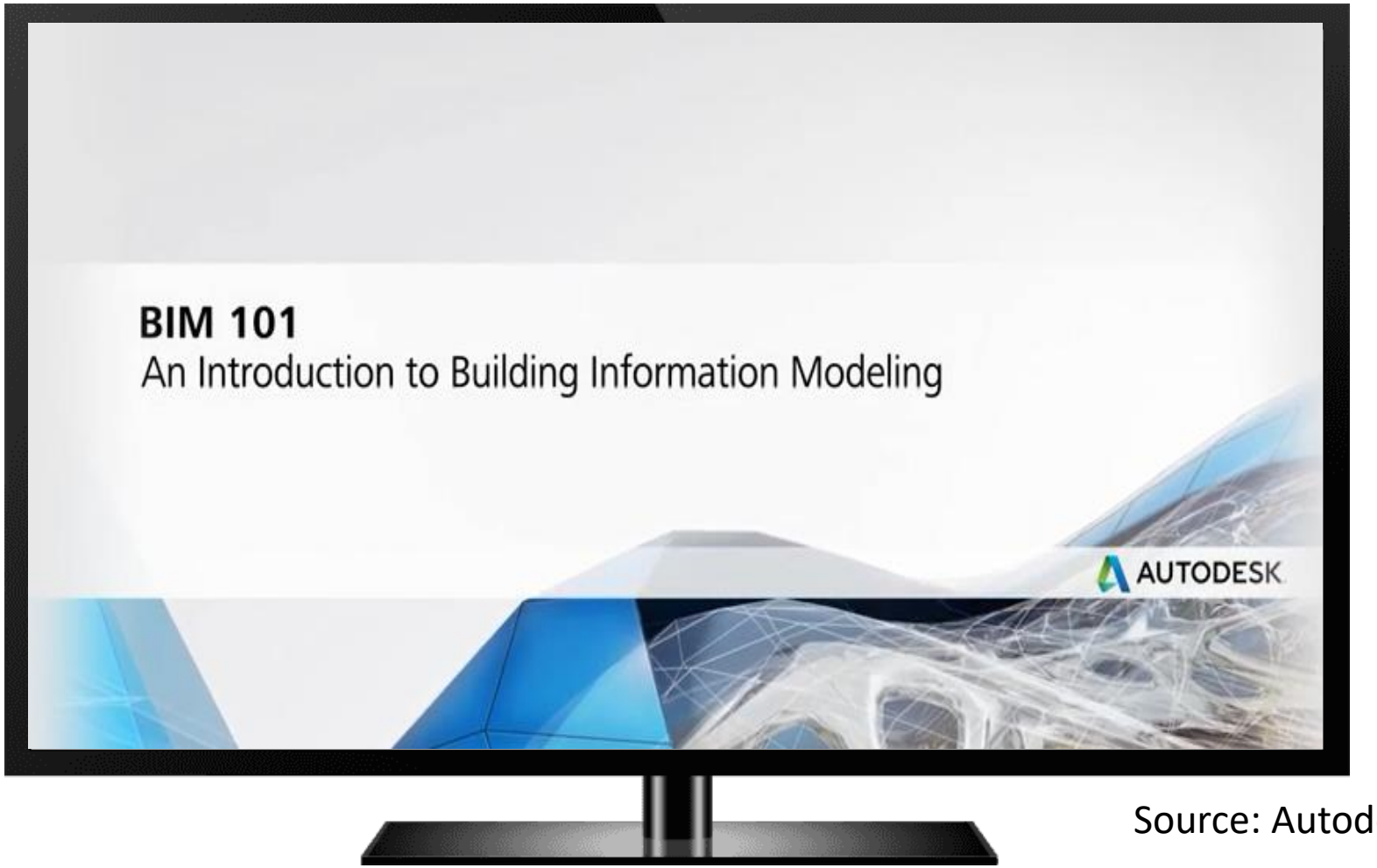
A def-i-ni-tion

What is BIM?

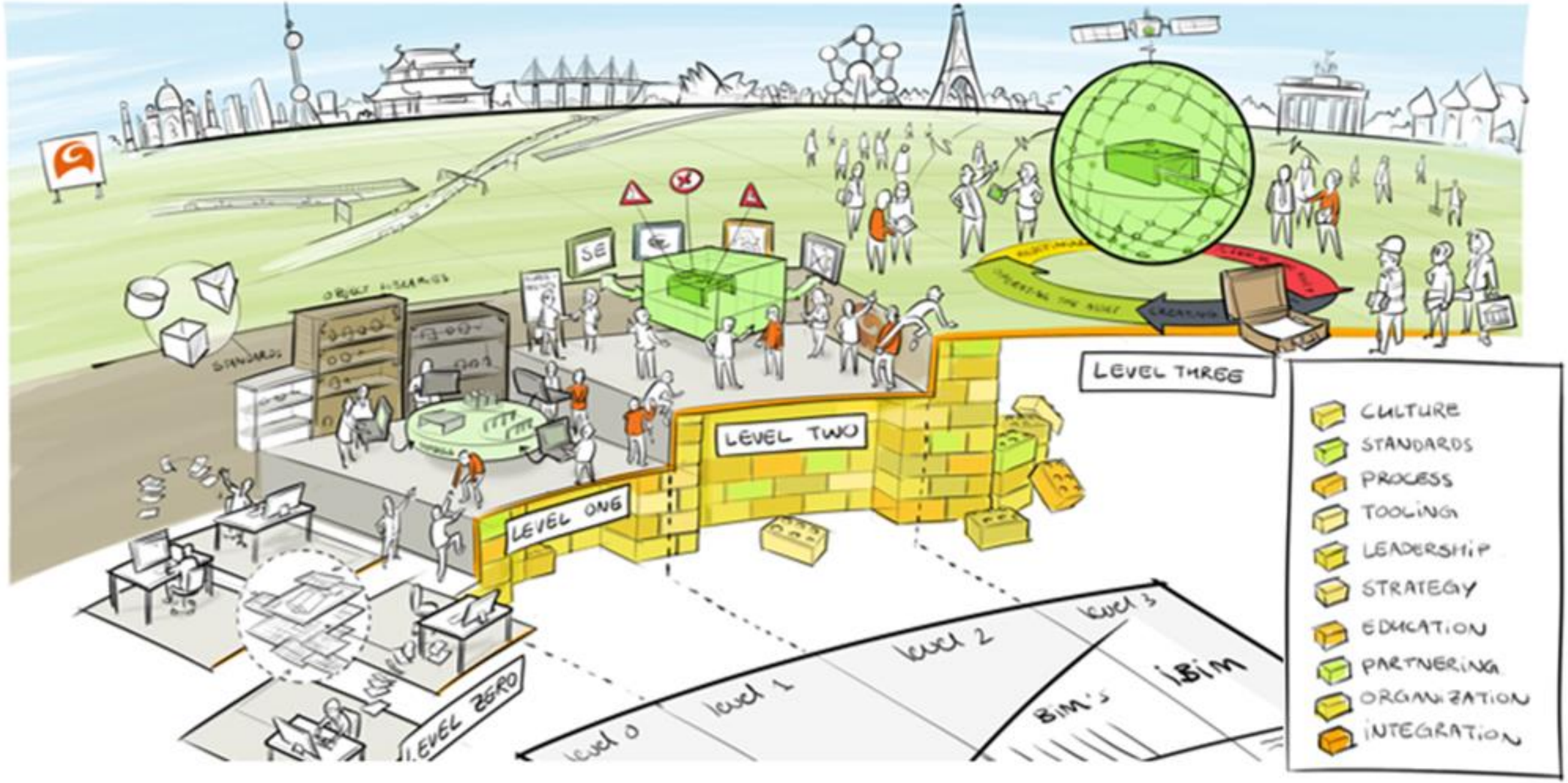
Discrete set of electronic object-oriented information used for design, construction and operation of a built asset. **PAS 1192-5**

Building Information Modelling is "the process of designing, constructing or operating a building or infrastructure asset using electronic object-oriented information. **PAS 1198-2:2013**

What is BIM

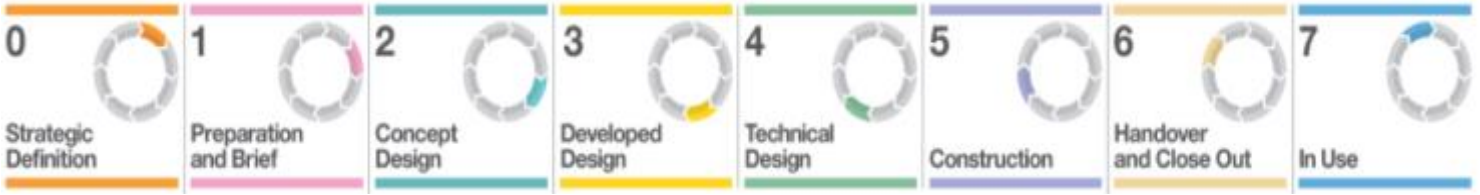


Source: Autodesk



Source: Arcadis

Traditional VS BIM L2 Lifecycle

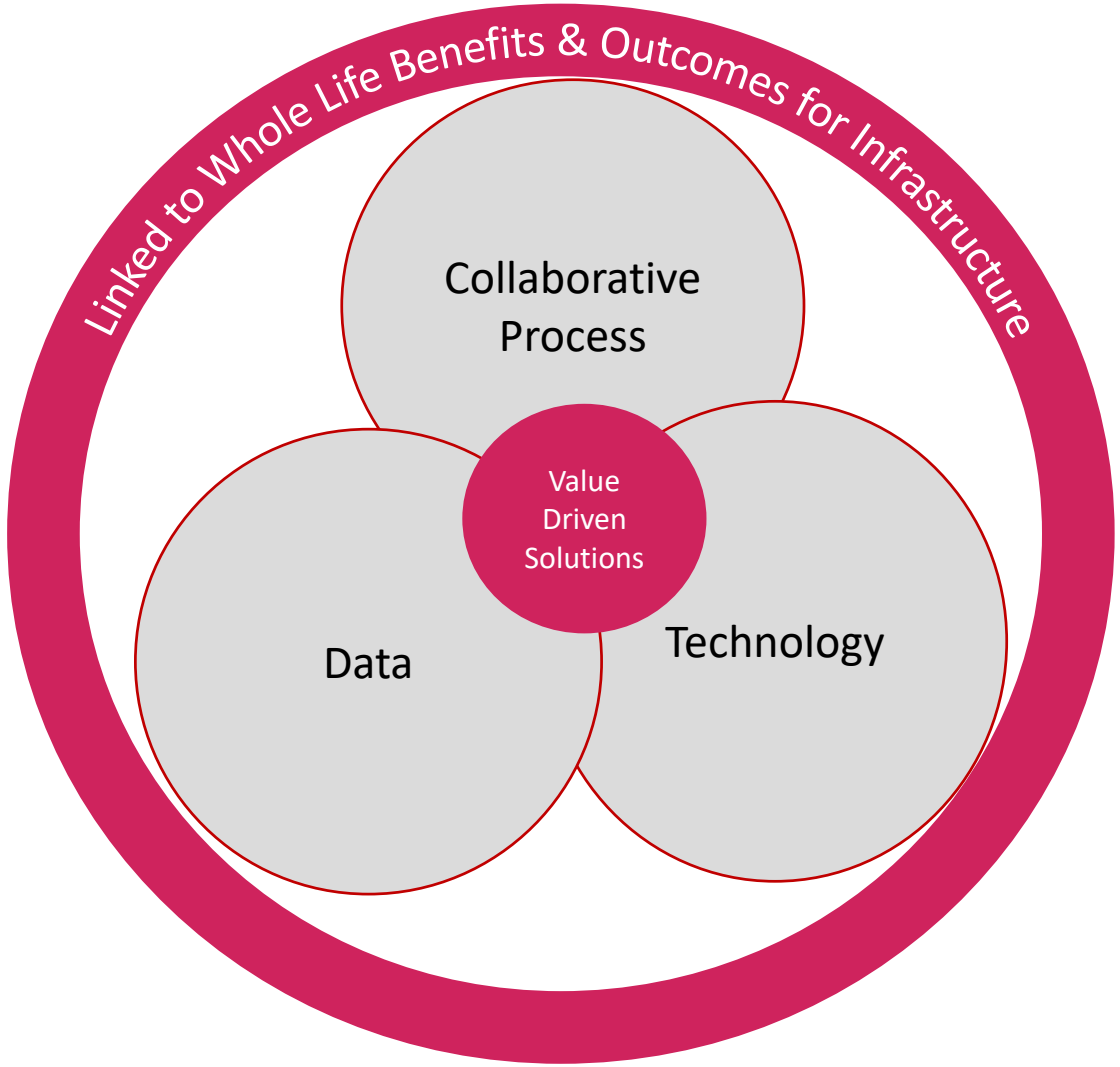


Helping clients buy data and Info only once

The Level 2 approach

And using it to make earlier and more well informed decisions

BIM & Digital Working



Technology

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Operation & Maintenance

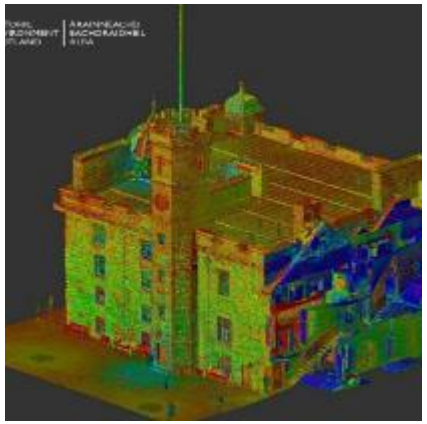
Augmented Reality

Offsite Manufacturing & Assembly

Engagement with Data

Immersive Environment

3D Printing & Laser Scanning



VR and AR Technology

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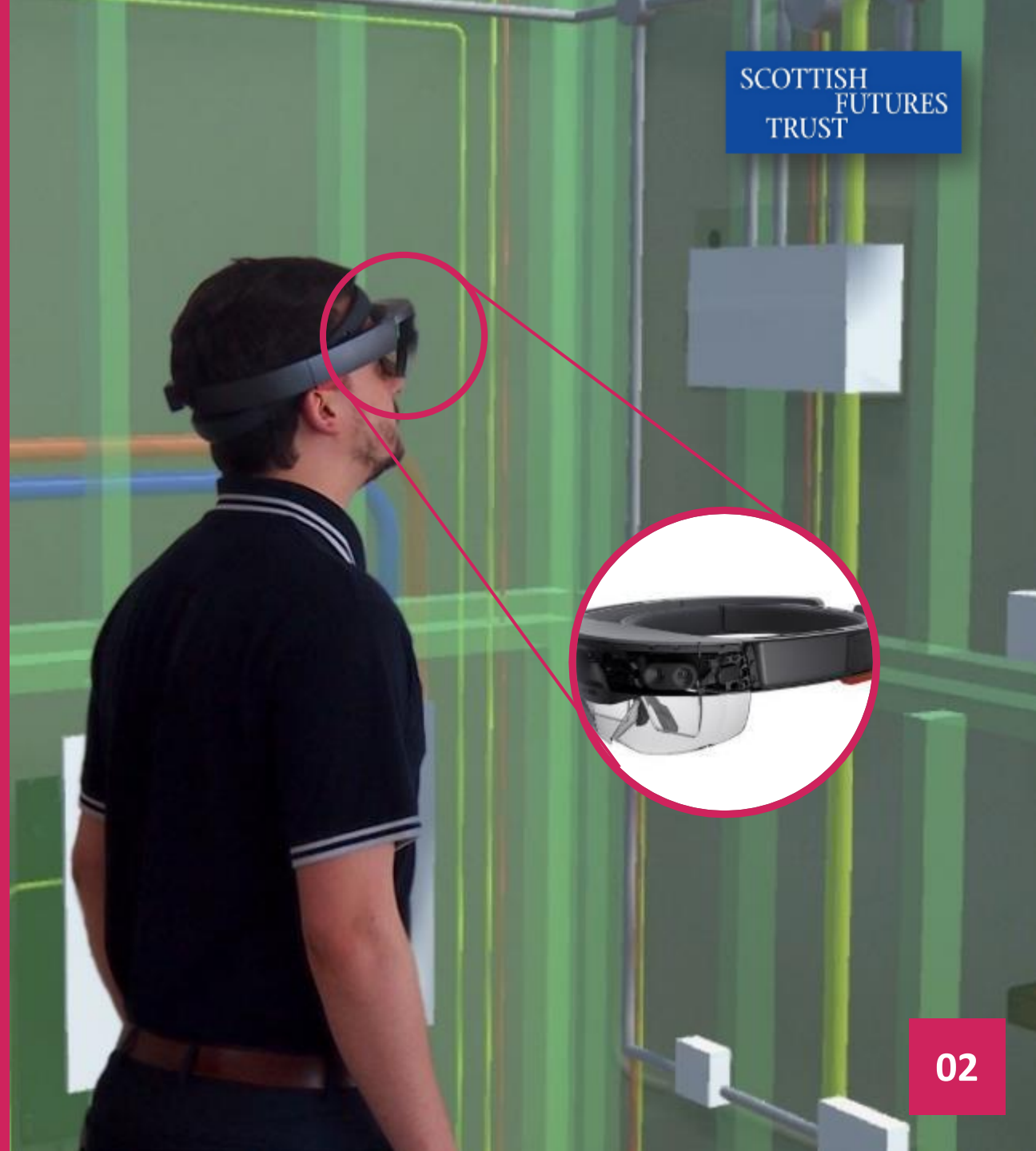
VR and AR Technology

Soluis Group
Carbon Dynamic
University of Strathclyde's
Boeing (AMRC)
AECOM
Laing O'Rourke



SFT BIM Programme Tools

BIM Implementation Plan
BIM Programme Scotland
Where are we now?
BIM Policy & Grading
BIM Portal
Scottish BIM Delivery Group Update

BIM Implementation Plan

Roadmap for supporting procuring authorities within Scotland to implement BIM Level 2 from April 2017.

This sets out a combination of focused actions including:

- Pathfinder projects,
- Guidance,
- Training,
- Research

BIM Programme Scotland

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FINALIST BUILDING AWARDS 2017

Building Information Modelling

Scottish Futures Trust

https://bimportal.scottishfuturestrust.org.uk/

Resources

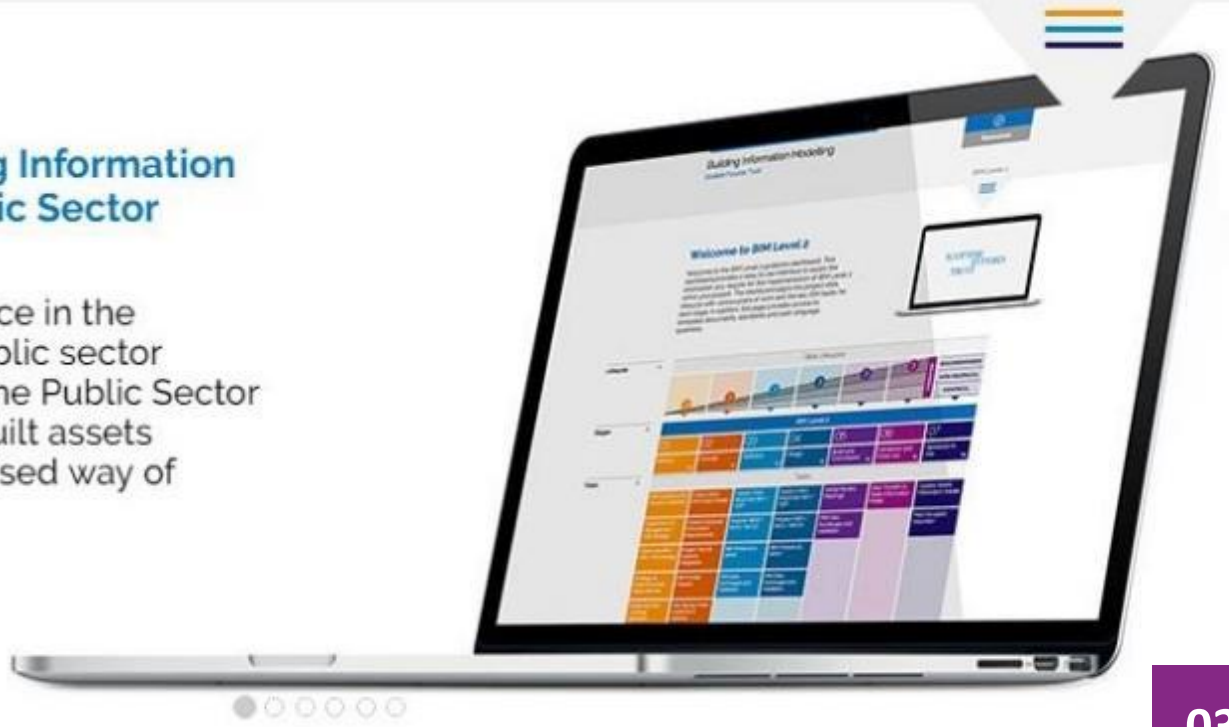
About Us

BIM Level 2

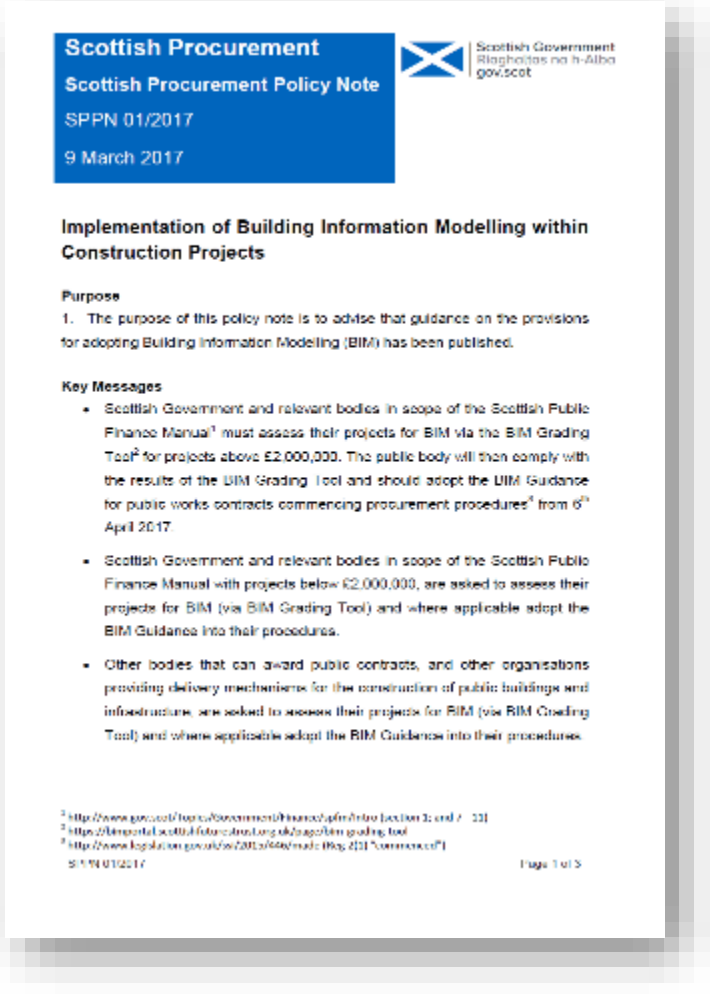
Welcome to the new Building Information Modelling portal for the Public Sector Procurer within Scotland.

This portal provides clear guidance in the implementation of BIM within public sector procurement. This is to support the Public Sector derive greater value from their built assets through a collaborative and digitised way of working.

Information Video



Where are we now?



Scottish Procurement

Scottish Procurement Policy Note

SPPN 01/2017

9 March 2017

Scottish Government
Riaghaltas na h-Alba
gov.scot

Implementation of Building Information Modelling within Construction Projects

Purpose

1. The purpose of this policy note is to advise that guidance on the provisions for adopting Building Information Modelling (BIM) has been published.

Key Messages

- Scottish Government and relevant bodies in scope of the Scottish Public Finance Manual[1] must assess their projects for BIM via the BIM Grading Tool[2] for projects above £2,000,000. The public body will then comply with the results of the BIM Grading Tool and should adopt the BIM Guidance for public works contracts commencing procurement procedures[3] from 6th April 2017.
- Scottish Government and relevant bodies in scope of the Scottish Public Finance Manual with projects below £2,000,000, are asked to assess their projects for BIM (via BIM Grading Tool) and where applicable adopt the BIM Guidance into their procedures.
- Other bodies that can award public contracts, and other organisations providing delivery mechanisms for the construction of public buildings and infrastructure, are asked to assess their projects for BIM (via BIM Grading Tool) and where applicable adopt the BIM Guidance into their procedures.

[1] http://www.gov.scot/Topics/Government/Finance/spfm/Intro [section 3; end / 23]
[2] https://bimportal.scottishfuturestrust.org.uk/page/bim-grading-tool
[3] http://www.legislation.gov.uk/uksi/2015/446/made [Reg 2(1) "commencement"]

SPPN 01/2017 Page 1 of 3

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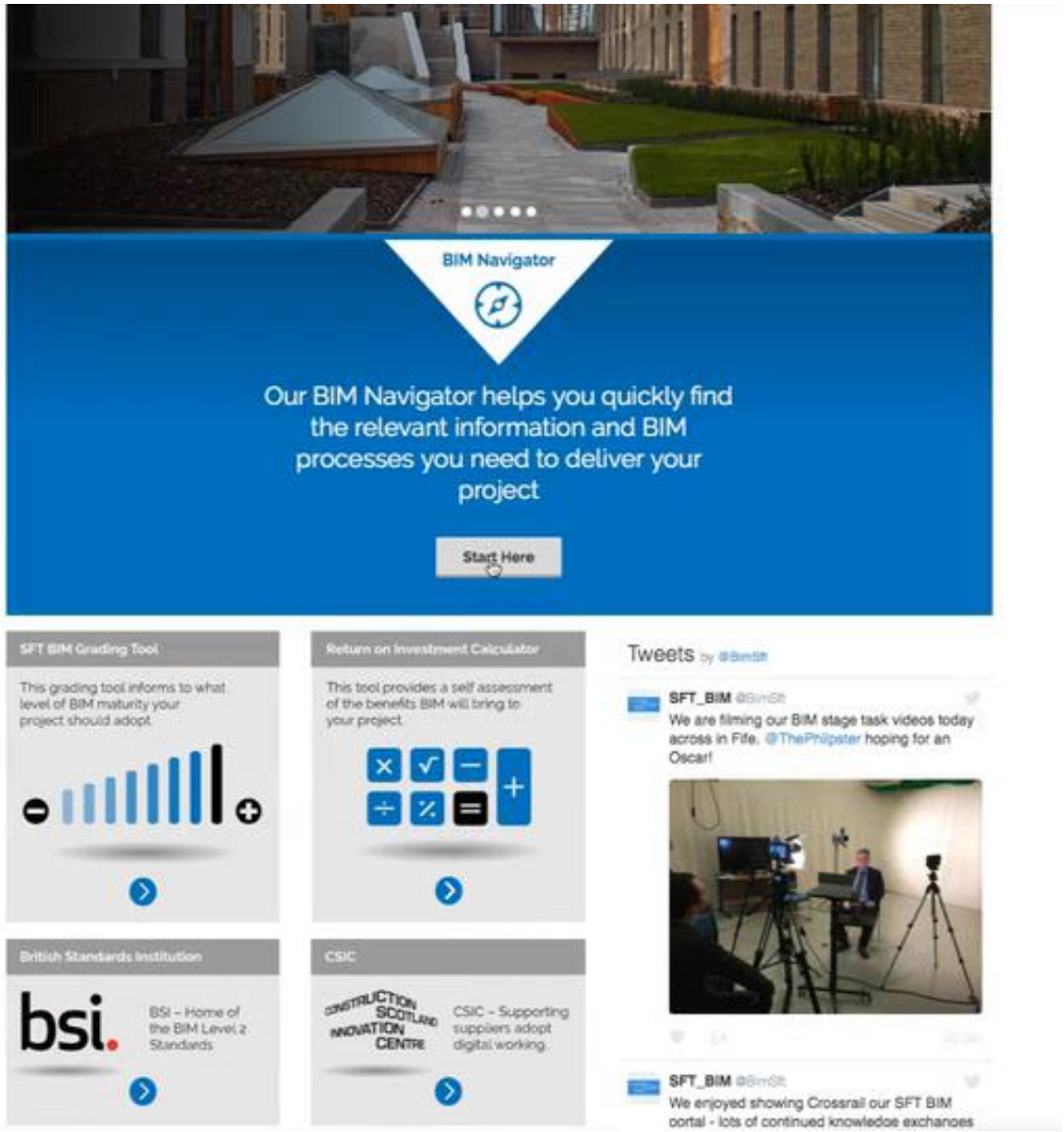
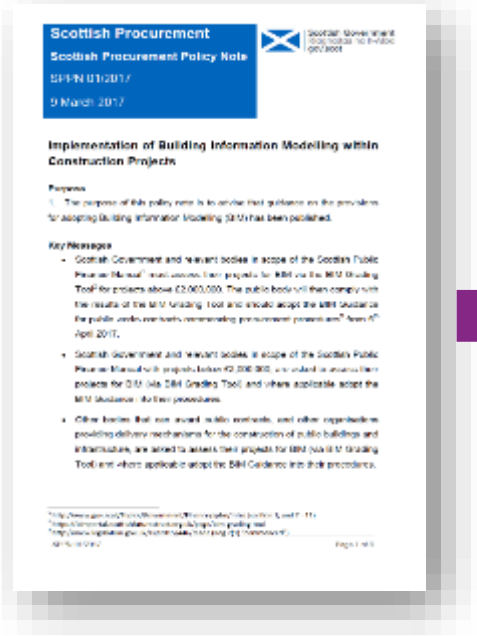
BIM Navigator - Guidance



BIM Policy & Grading

Scottish Government BIM policy	Relevant Projects	Assessment Tool Bim Level 1 or 2	Portal & Guidance


Scottish Procurement

Scottish Procurement Policy Note

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Purpose

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Key Messages

- Scottish Government and relevant bodies in scope of the Scottish Public Procurement Manual must assess their projects for BIM via the BIM Grading Tool for projects above £2,000,000. The public bodies will then comply with the results of the BIM Grading Tool and should adopt the BIM Guidance for public construction works commencing procurement projects on or from 4th April 2017.
- Scottish Government and relevant bodies in scope of the Scottish Public Procurement Manual with projects below £2,000,000, are invited to assess their projects for BIM (via BIM Grading Tool) and where applicable adopt the BIM Guidance during their procedures.
- Other bodies that run award public contracts, and other organisations providing delivery mechanisms for the construction of public buildings and infrastructure, are asked to assess their projects for BIM (via BIM Grading Tool) and where applicable adopt the BIM Guidance into their procedures.

Project above £2m
Procurer within Scope

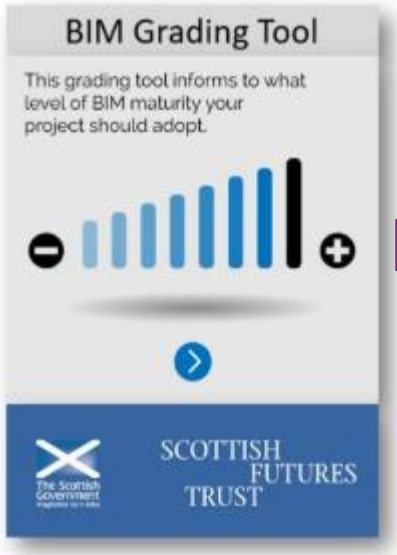
Project below £2m
Procurer within Scope

Procurer outwith Scope
(Councils/Universities)

Required

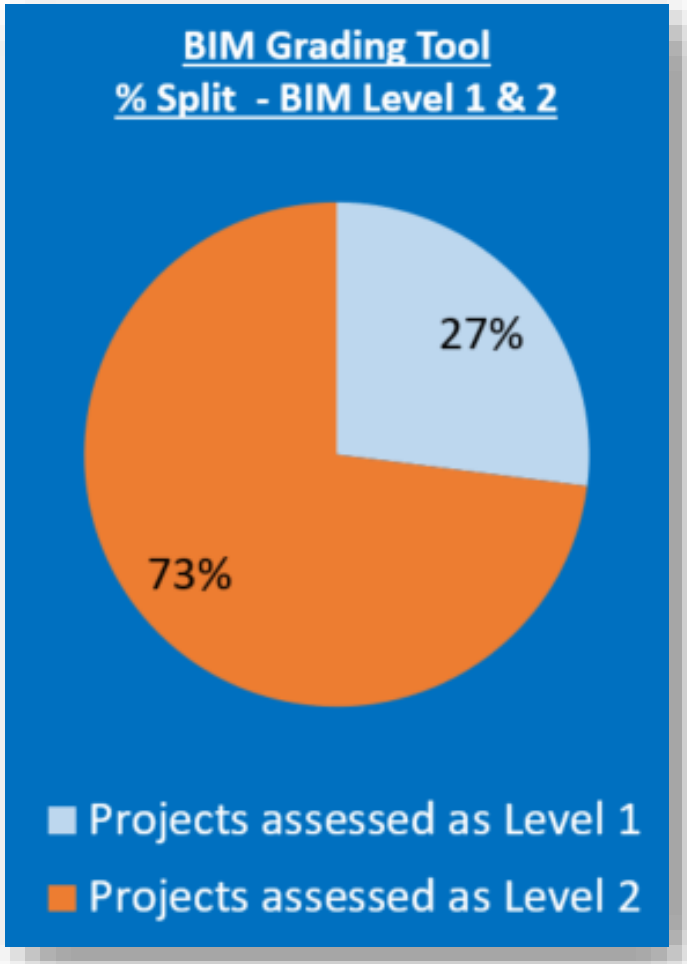
Encouraged

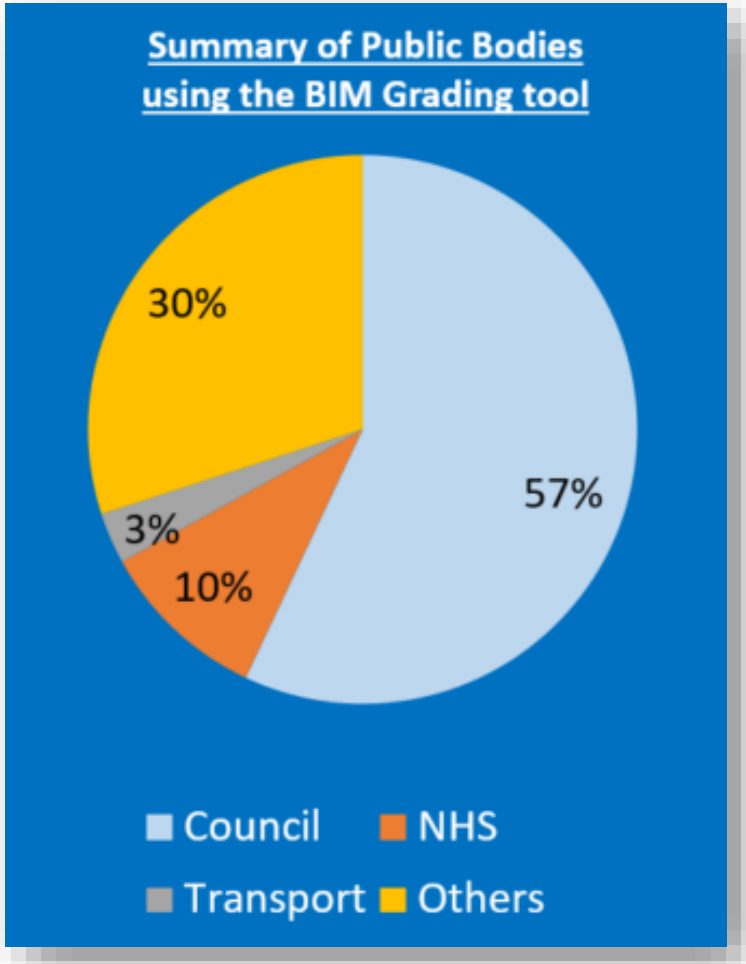
Encouraged

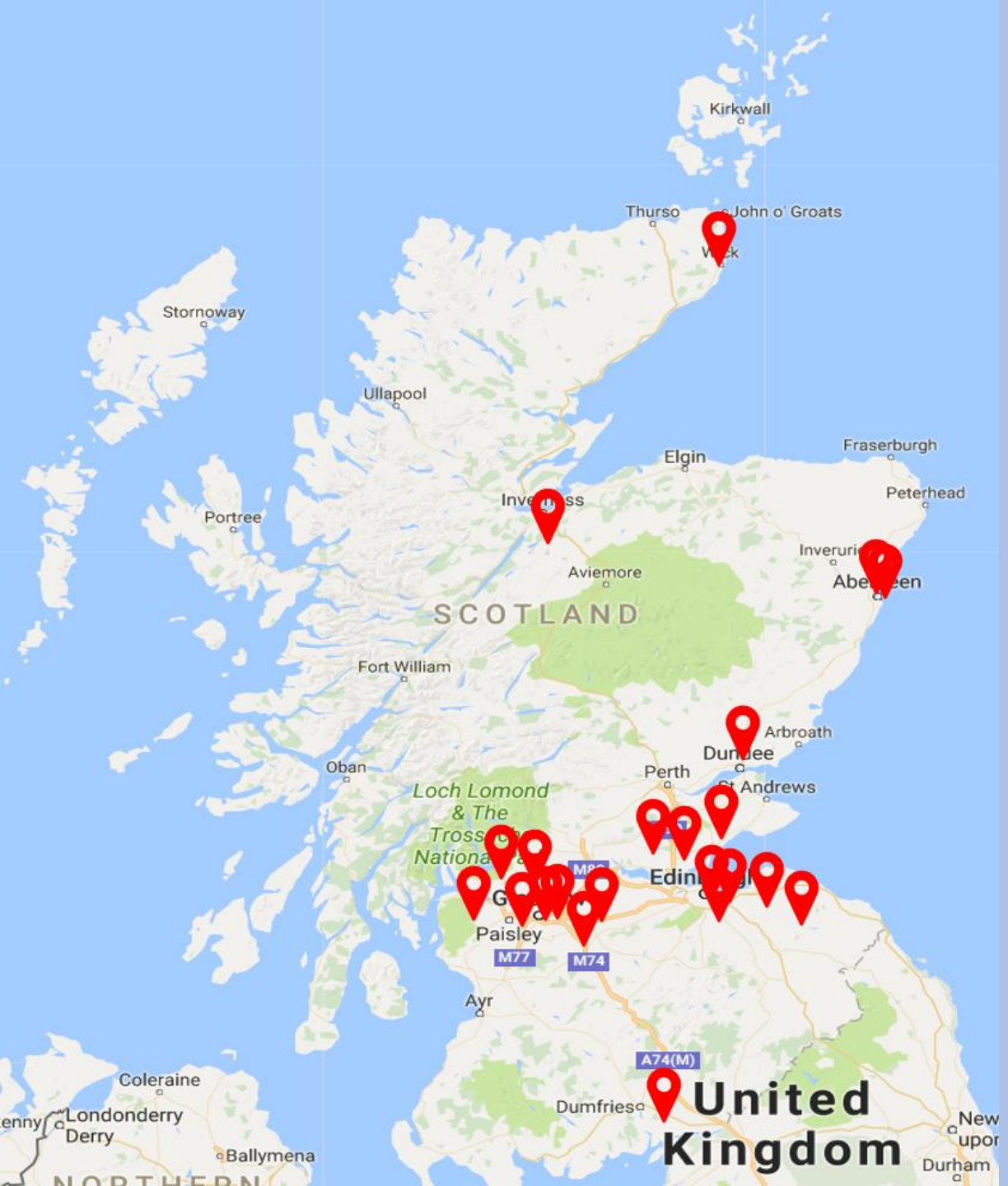


BIM Grading Tool

£540m of projects have been assessed through the BIM Grading Tool since April 2017.







Projects in development committing to implement BIM within Scotland as of Dec 17.

£620m of BIM Projects

£510m BIM Level 2

£110m BIM Level 1

Improved Stakeholder Communications

ferrovial agroman Lagan

amey

RPS

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Get The Basics Right?

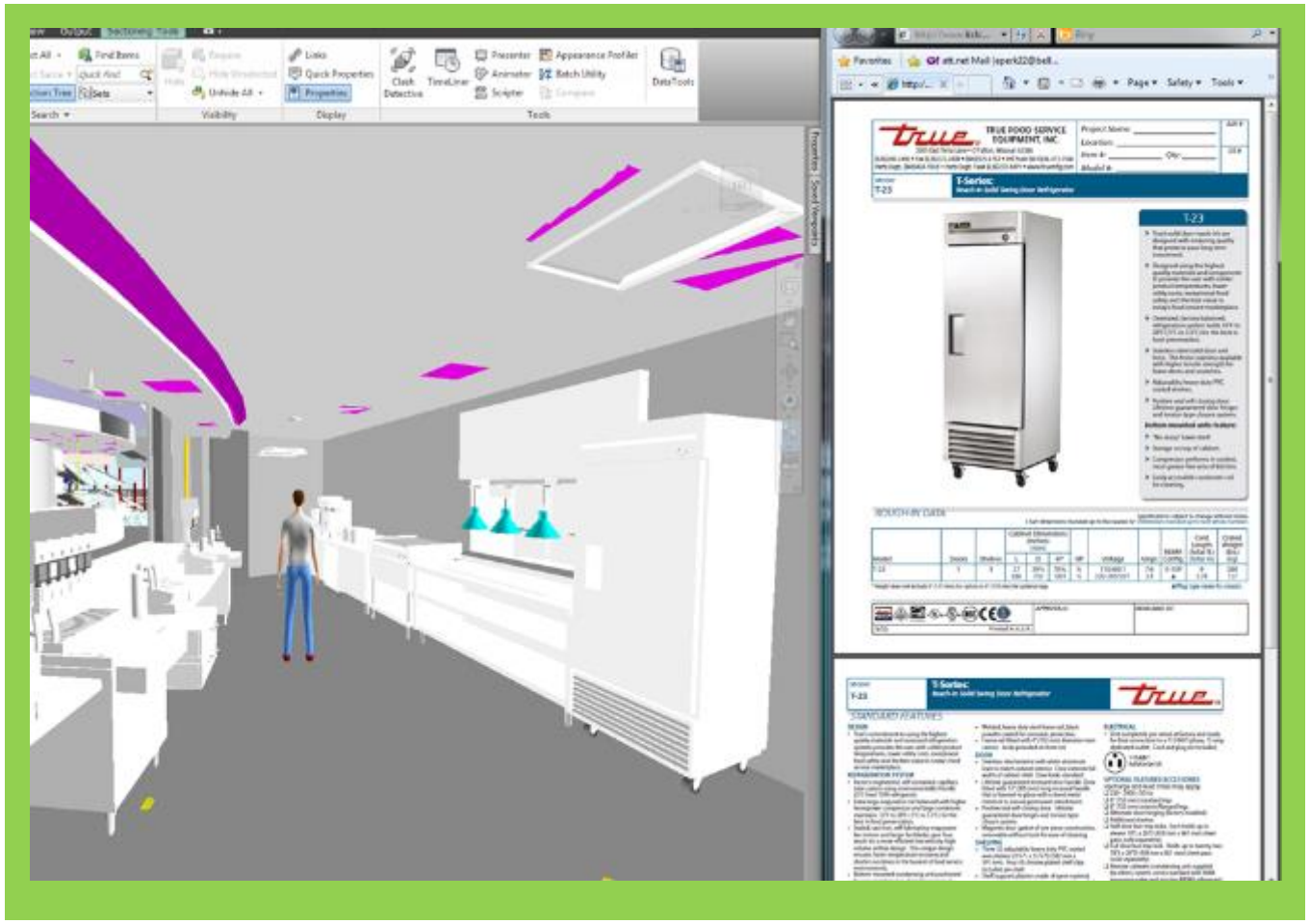
A good foundation in Information Management

The Foundation: Better Data and Information Management

Organized Data & Information Delivery
Data VS Information
A shift in thinking
The process
The Information Delivery Cycle
PAS 1192-2 in 5 Minutes (Video)
PAS 1192-3 in 4 Mins (Video)

Organized Data & Information Delivery

Handover usable, digital, indexed design and construction documentation



Images courtesy: AECOM

Data VS Information

What is the difference?

Data

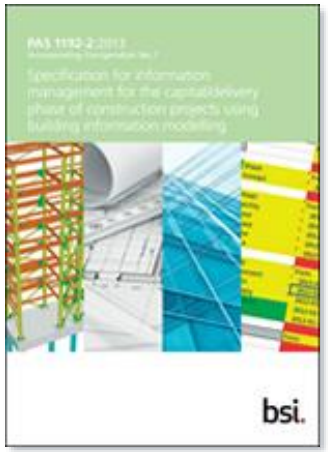
Raw Unorganised facts that need to be processed

Information

Data that has been processed, organised, structure in a given context to make it useful

Both data captured during the life-cycle of projects can be turned into valuable information, however only if the data is captured in a consistent and well defined manner.

The Process



Client

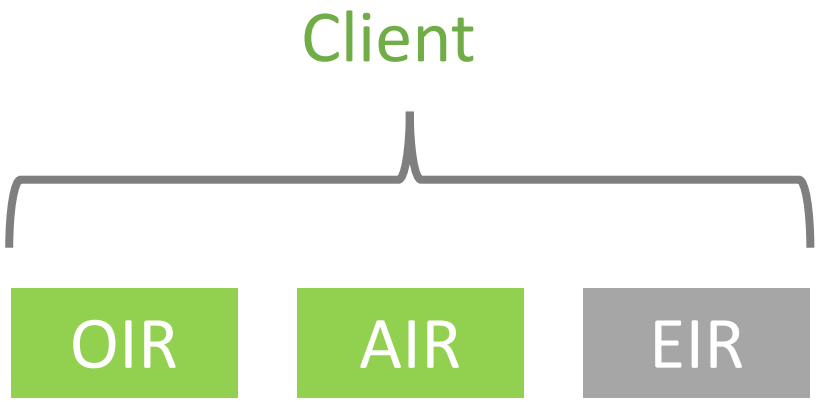
Client / Supplier

OIR | AIR | EIR | BEP | PIM | AIM

Supplier

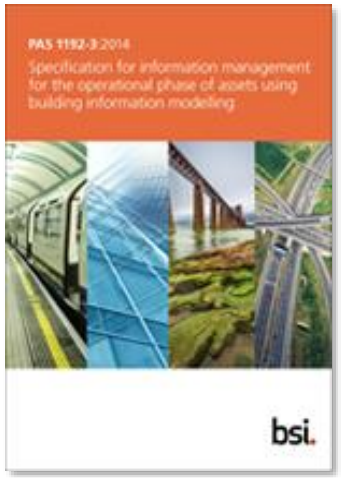
The Process

What?



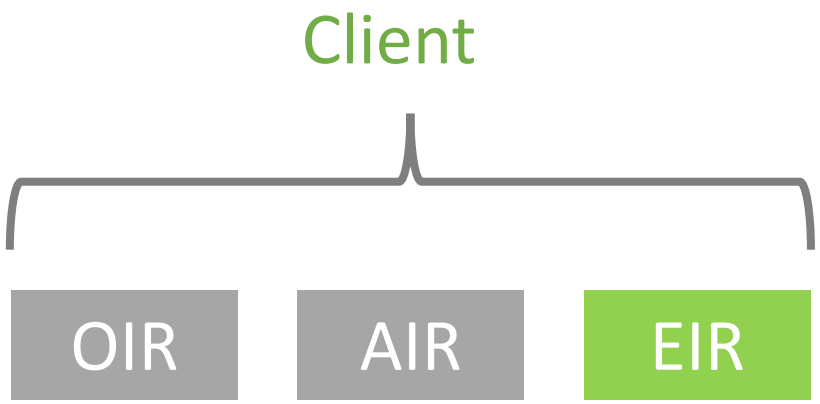
First consider your:

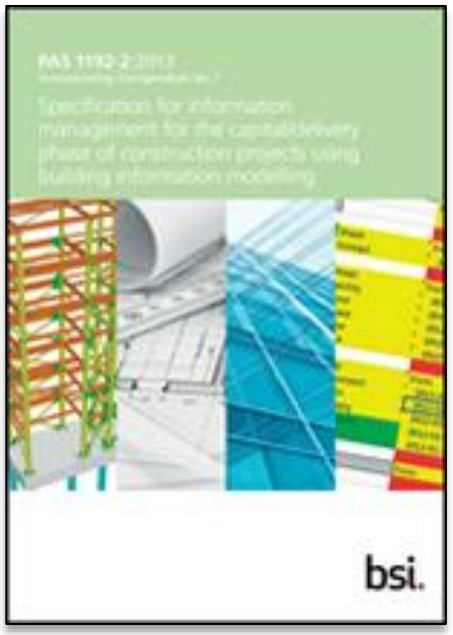
OIR – Organisation Information Requirements
AIR – Asset Information Requirements



The Process

What/How?





Then provide a comprehensive:

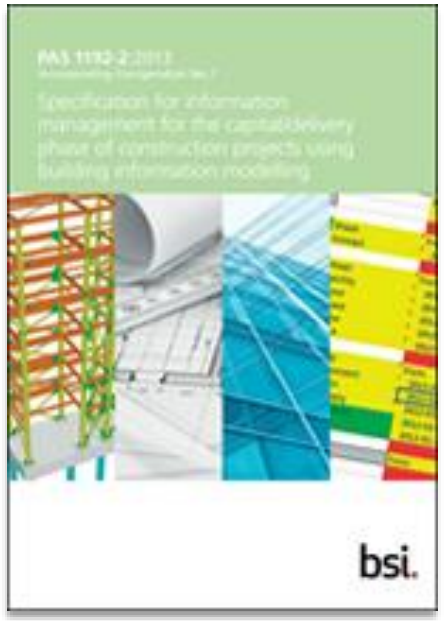
EIR – Employer Information Requirements

The Process

How?

BEP PIM

Supplier



Ensure the supply chain provides quality information, as described/contained in their :

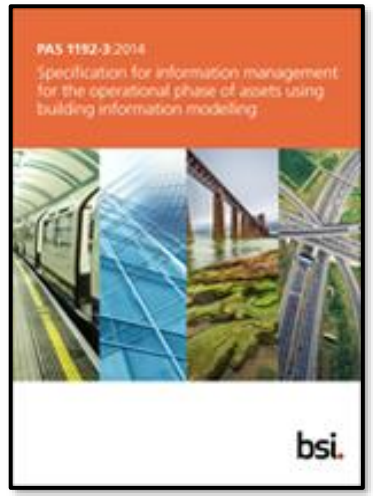
BEP – BIM Execution Plan
PIM – Project Information Model

The Process

How/why?

Client / Supplier

AIM

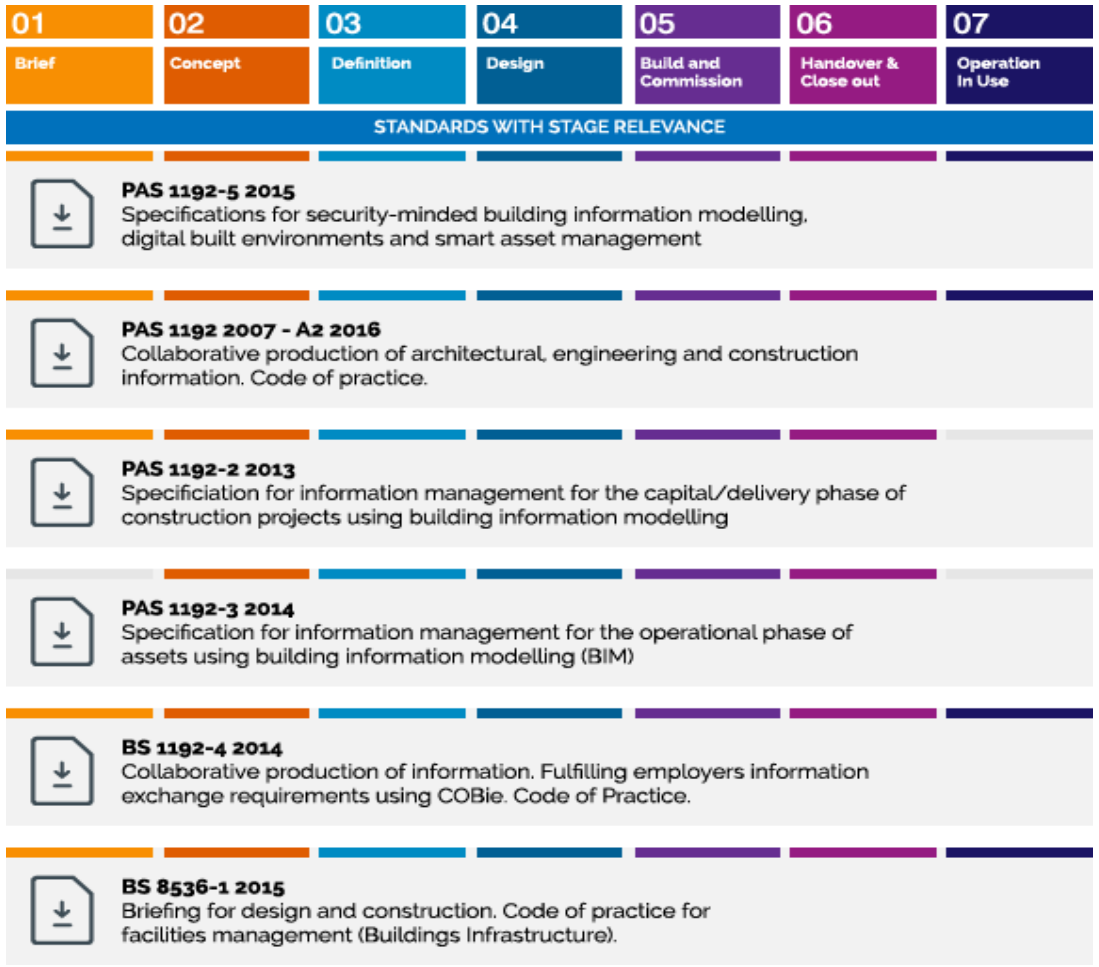


Store and access quality assured information via an:

AIM – Asset Information Model (Common Data Environment)

Update

Level 2 standards



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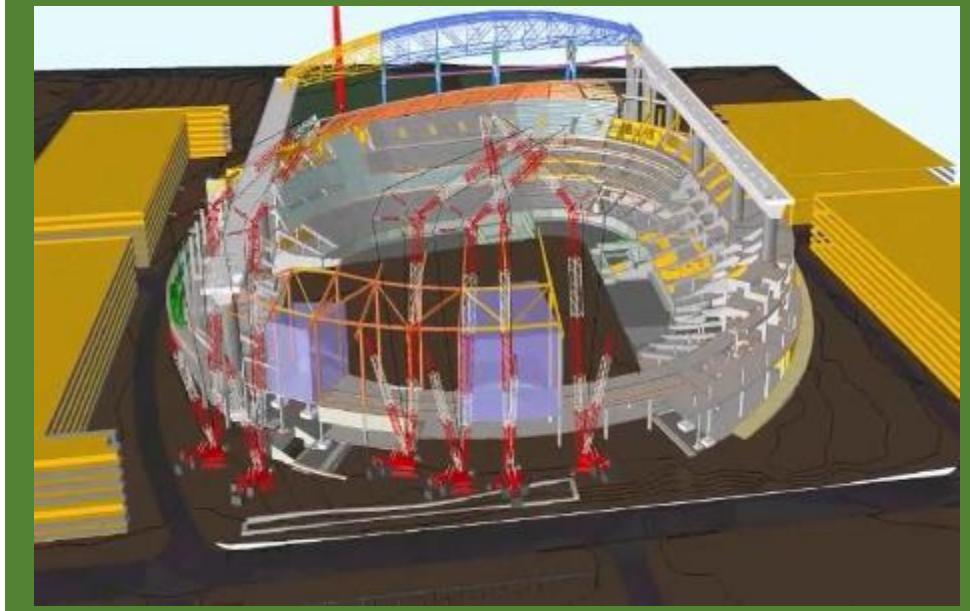
- The PAS Documents will be re-issued Easter 2018. Documents have been revised to fully align.
- Not all documents have been changed only the ones necessary to achieve alignment with the minimum of change.
- Roles and Achievements and Authorities have been added and defined.
- Further definition of the EIR, BEP TIDP and greater understanding of the MIDP and prime contract delivery plan.

Update

Level 2 standards: Additions

PAS 1192 Part 6:2017
Specification for collaborative sharing and use of structured Health and Safety information using BIM



PAS 1192-7
Specification for **defining** and **maintaining** **structured digital** **product** information used for design, construction and use of a product or built asset

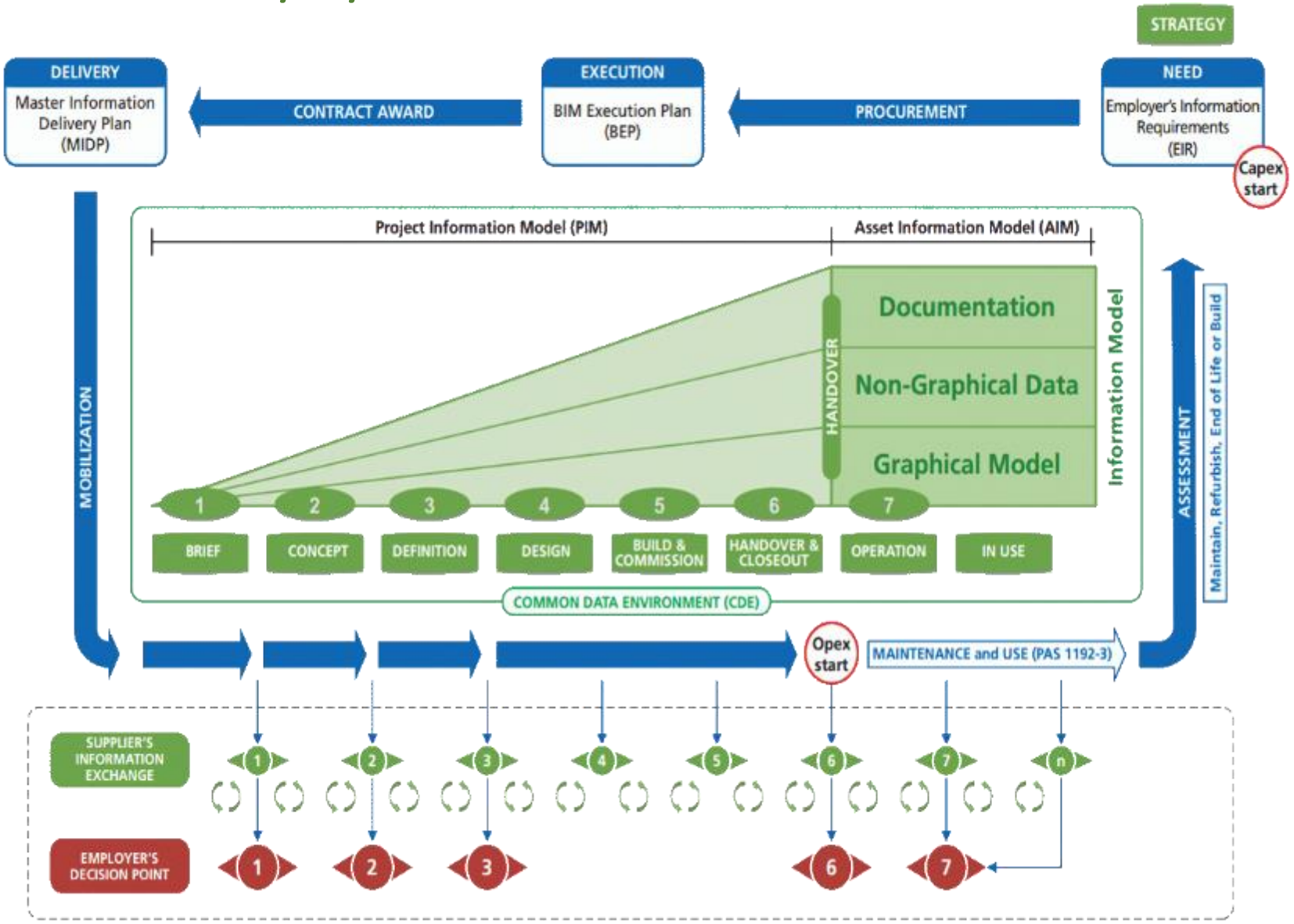
- Data templates
- Property groups
- Property
- Attributes

HOLD

- Steering Group review September 2017
- Public consultation December 2017 – Jan 2018
- Publication May 2018

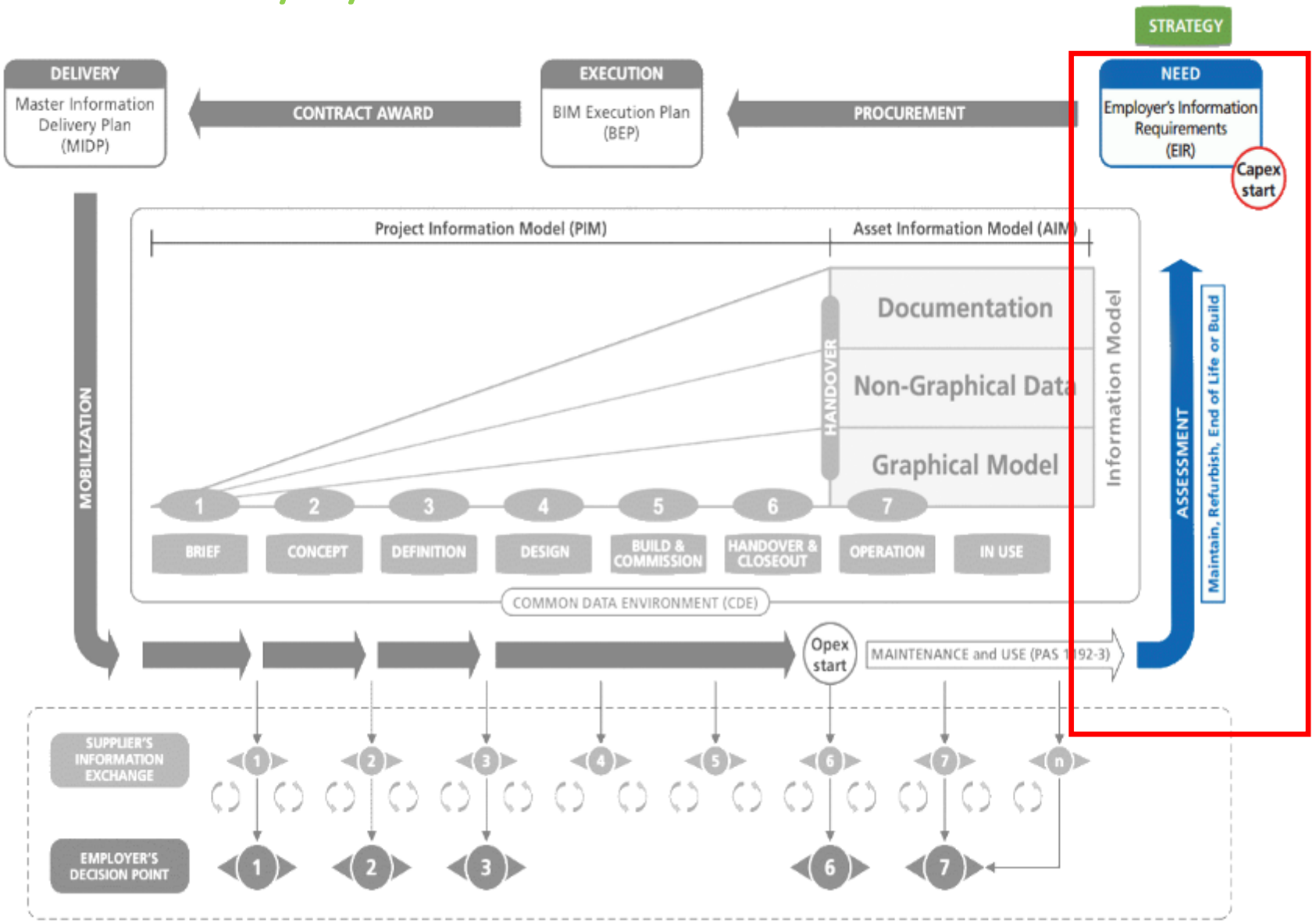
The Information Delivery Cycle

Overview



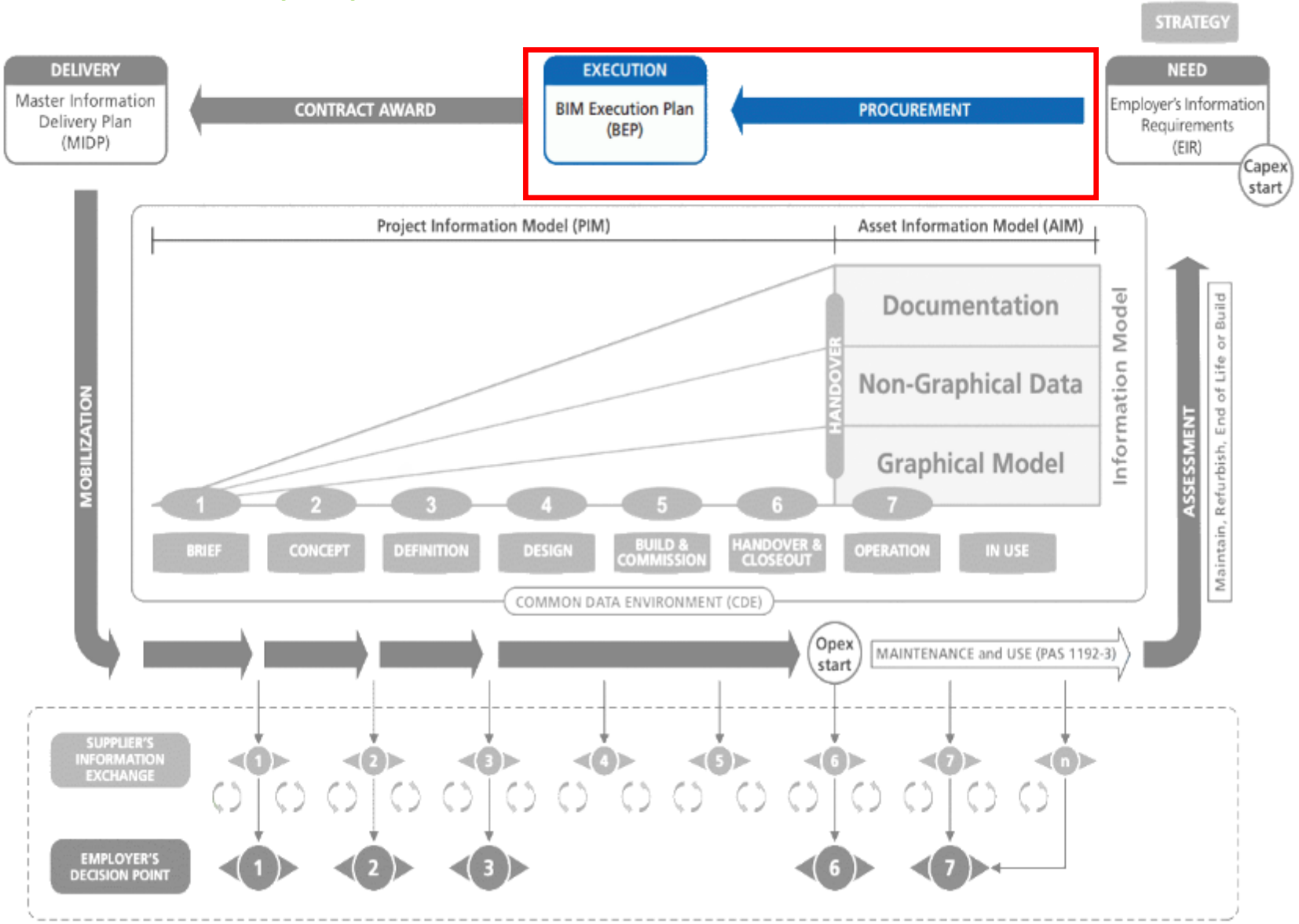
The Information Delivery Cycle

Need



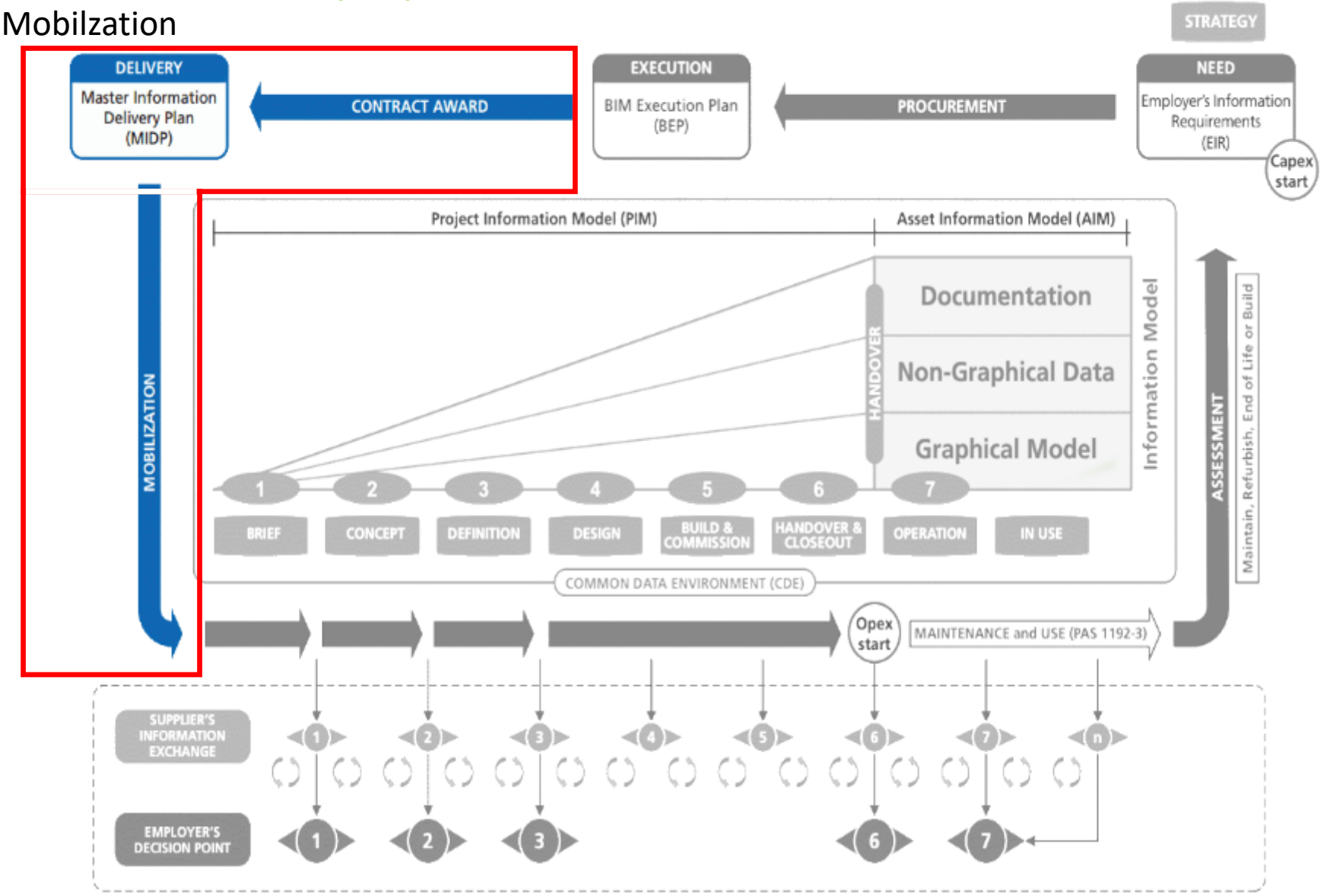
The Information Delivery Cycle

Execution



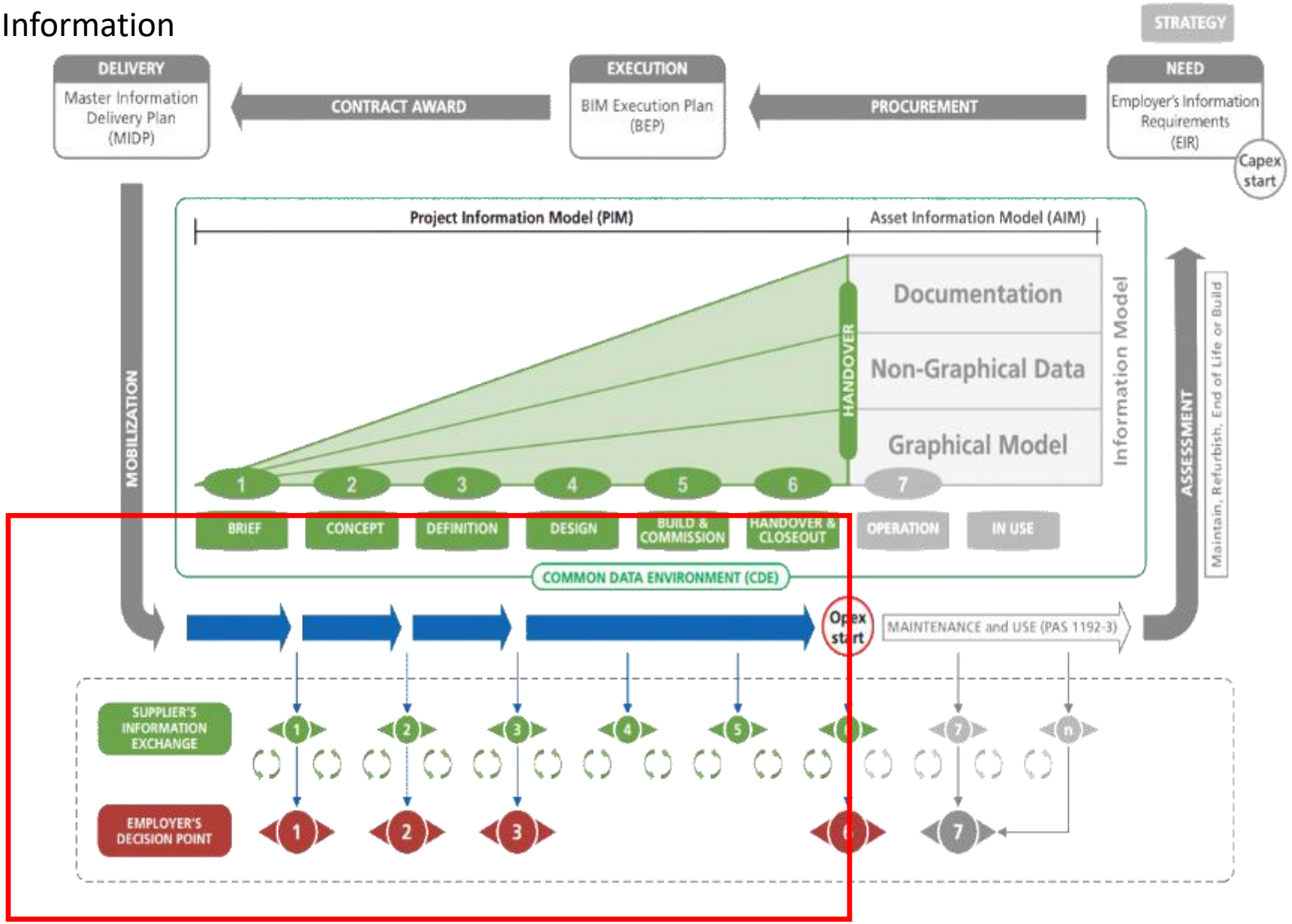
The Information Delivery Cycle

Delivery and Mobilzation



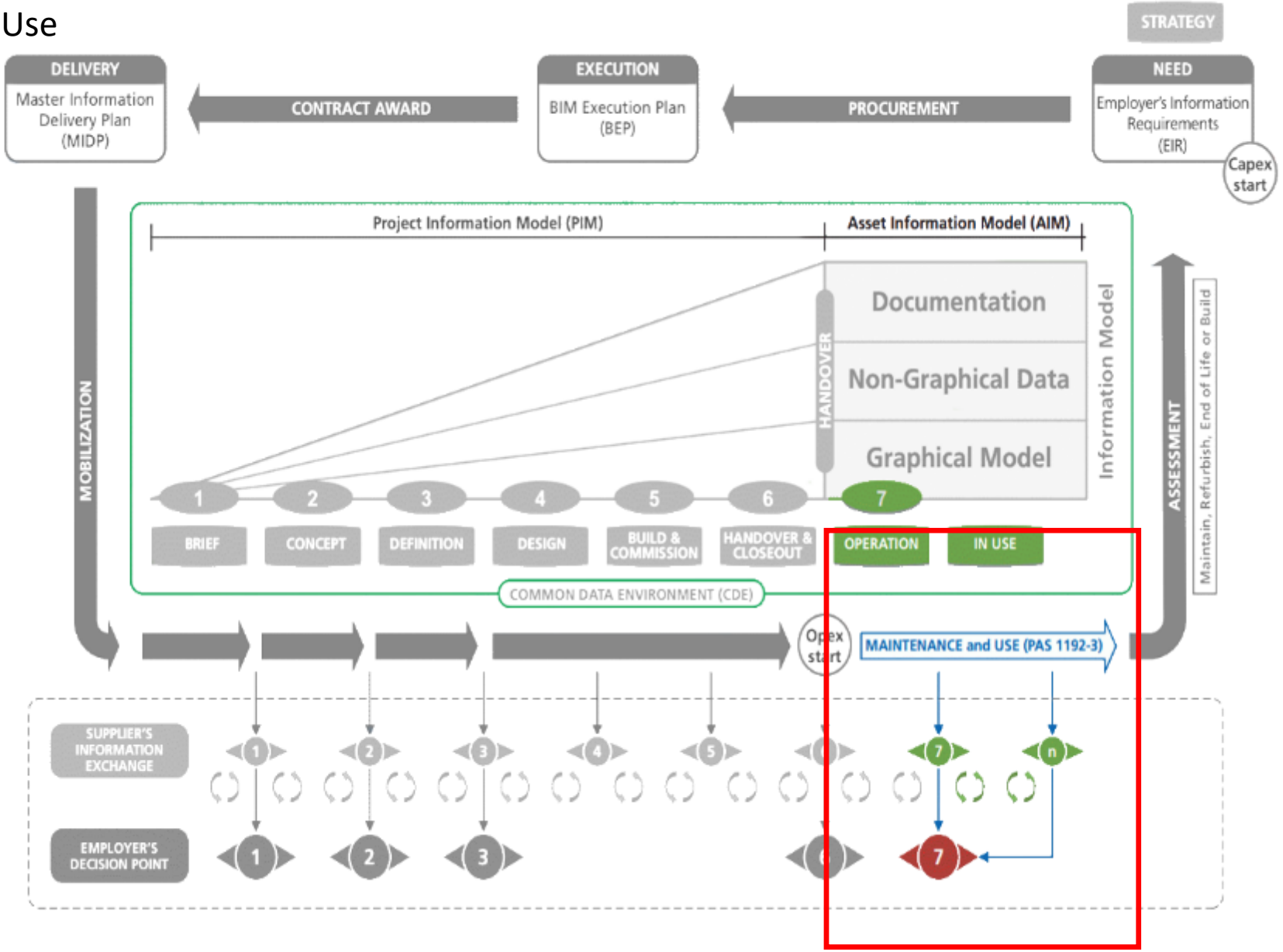
The Process

Production of Information



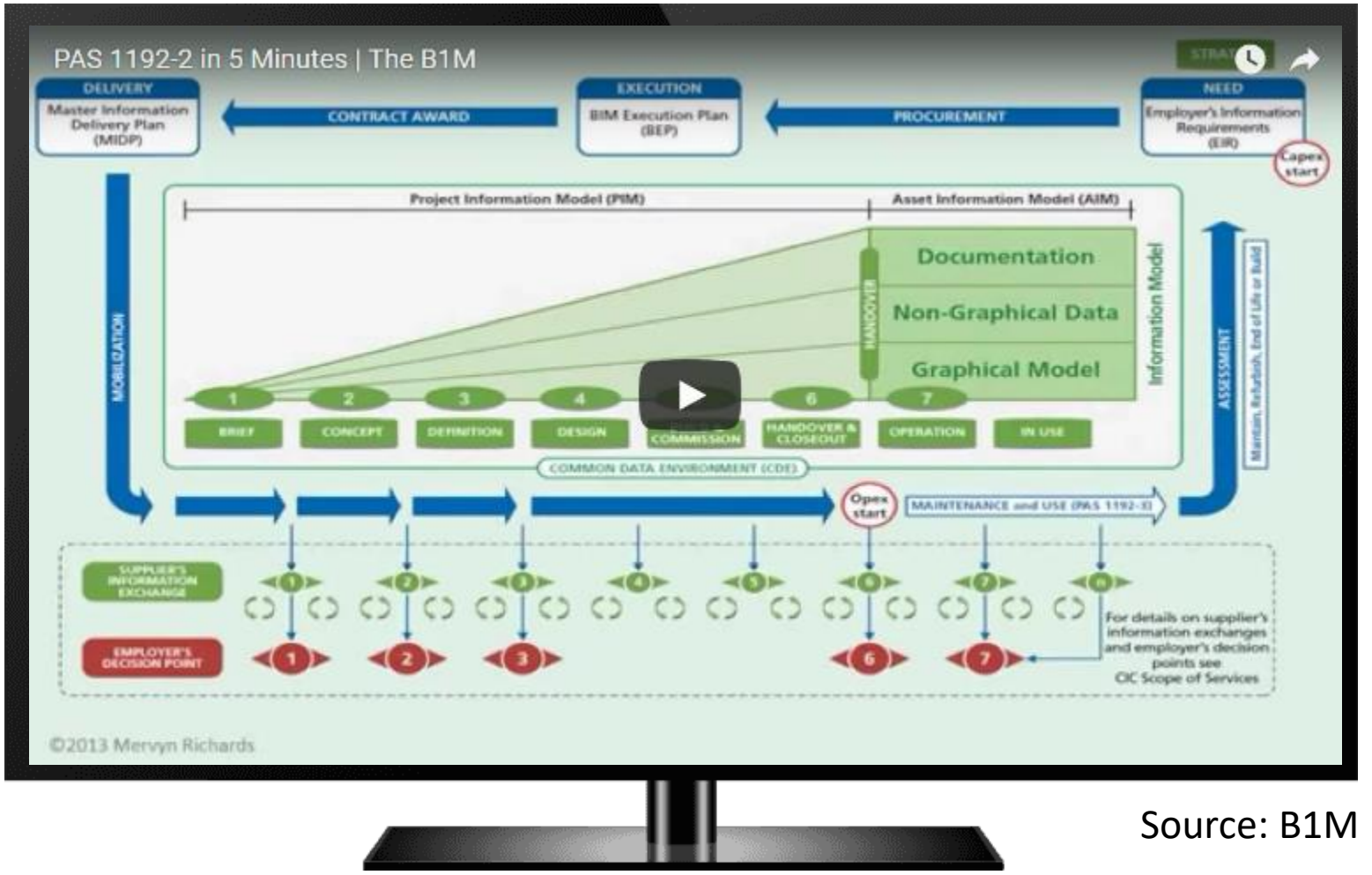
The Process

Operation and In Use



PAS 1192-2

In 5 minutes



Source: B1M

PAS 1192-3

In 4 minutes

Source: B1M

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EXCERCISE ONE

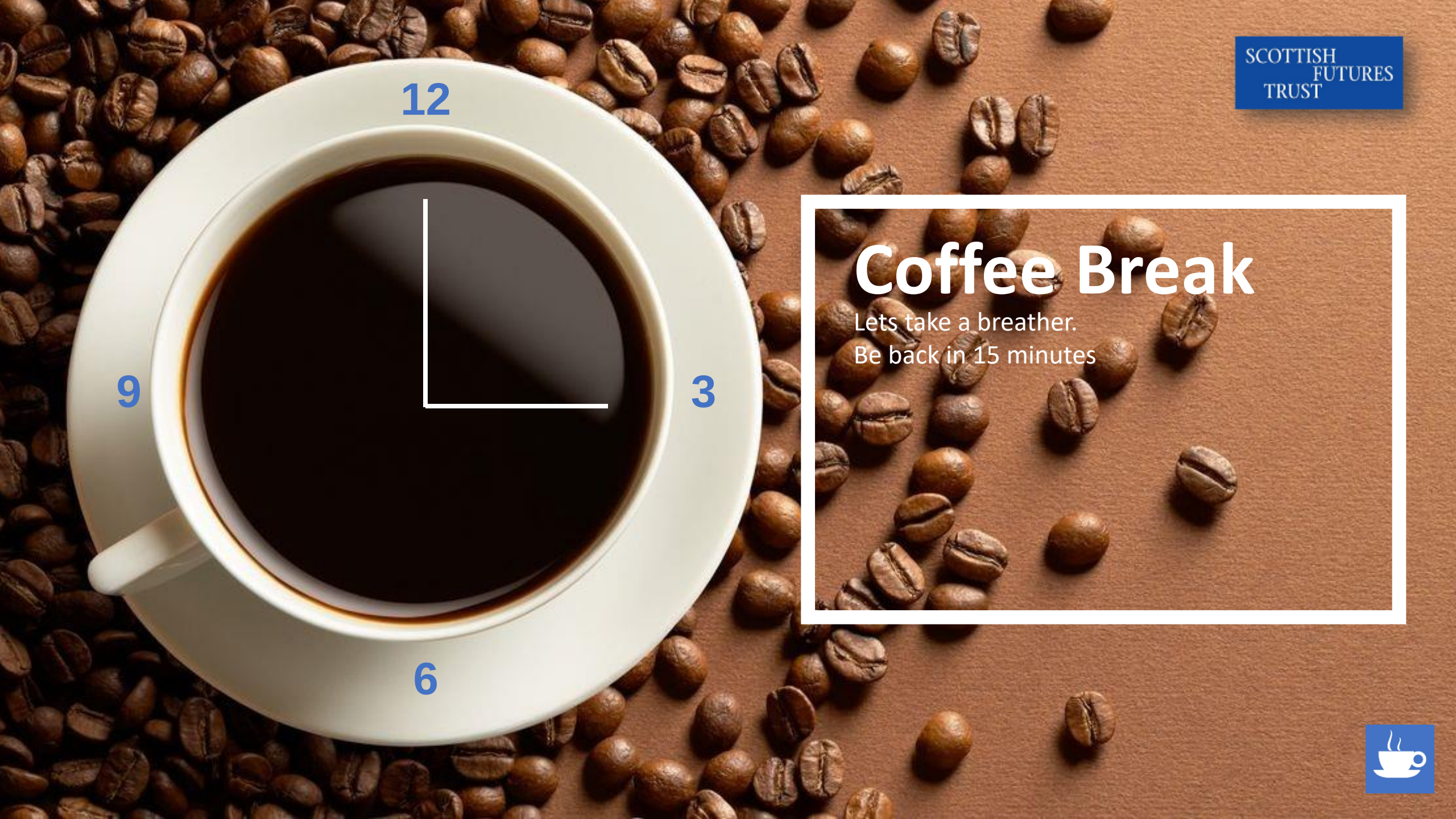
Organized Data & Info Delivery

Discussion points

You have had a **major failure** on one of your assets.

1. How would you currently determine if the same product / detail or sub-contractor had been used on any other buildings in your portfolio?

2. How could this process be improved?



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Coffee Break

Lets take a breather.
Be back in 15 minutes

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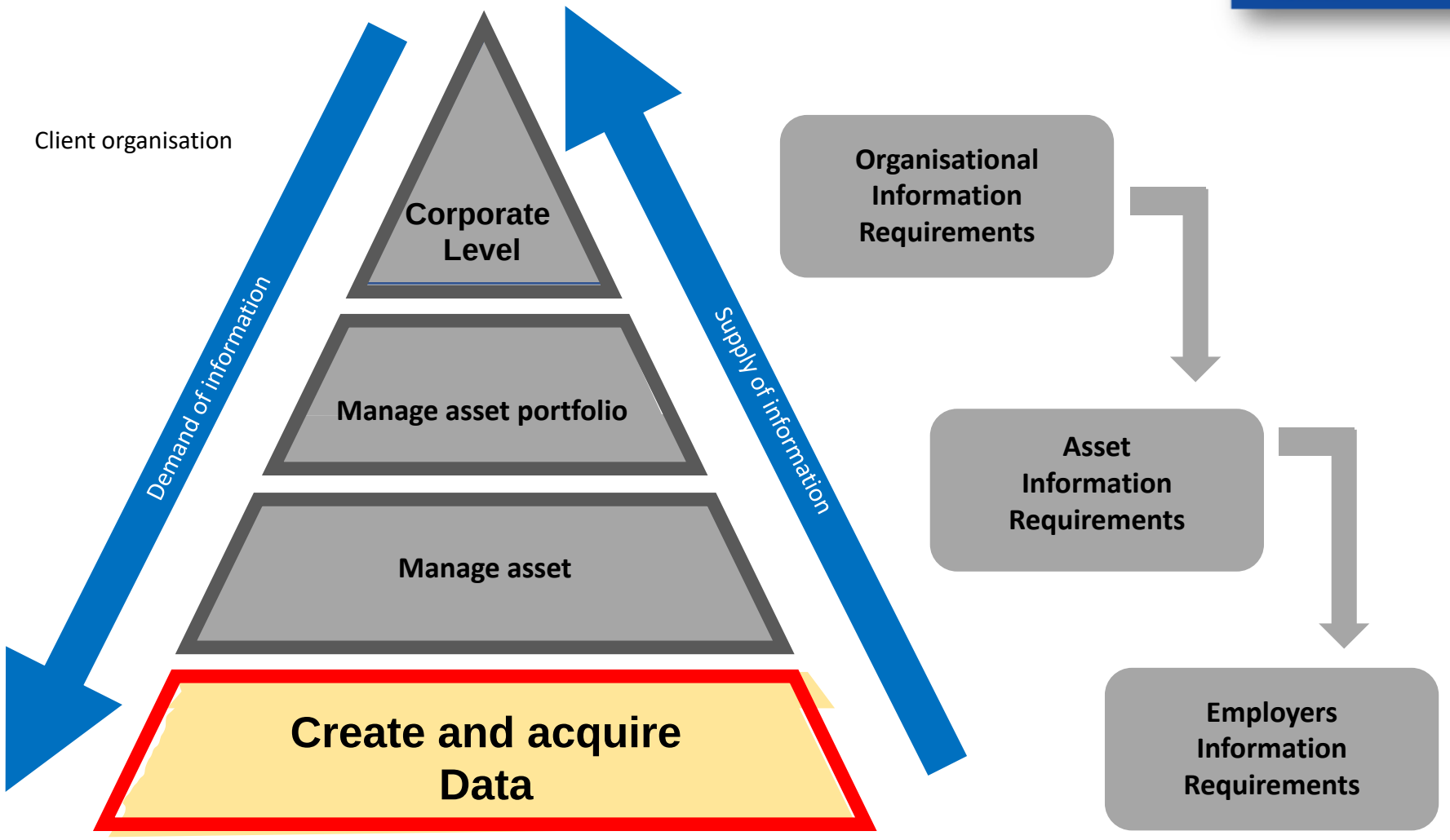
Organized Data & Information Delivery

Exercise 1
Exercise 2
Importance of classification systems
Uniclass
BS 1192:2007 Naming conventions

Classification & Naming Conventions



Classification & Naming Conventions

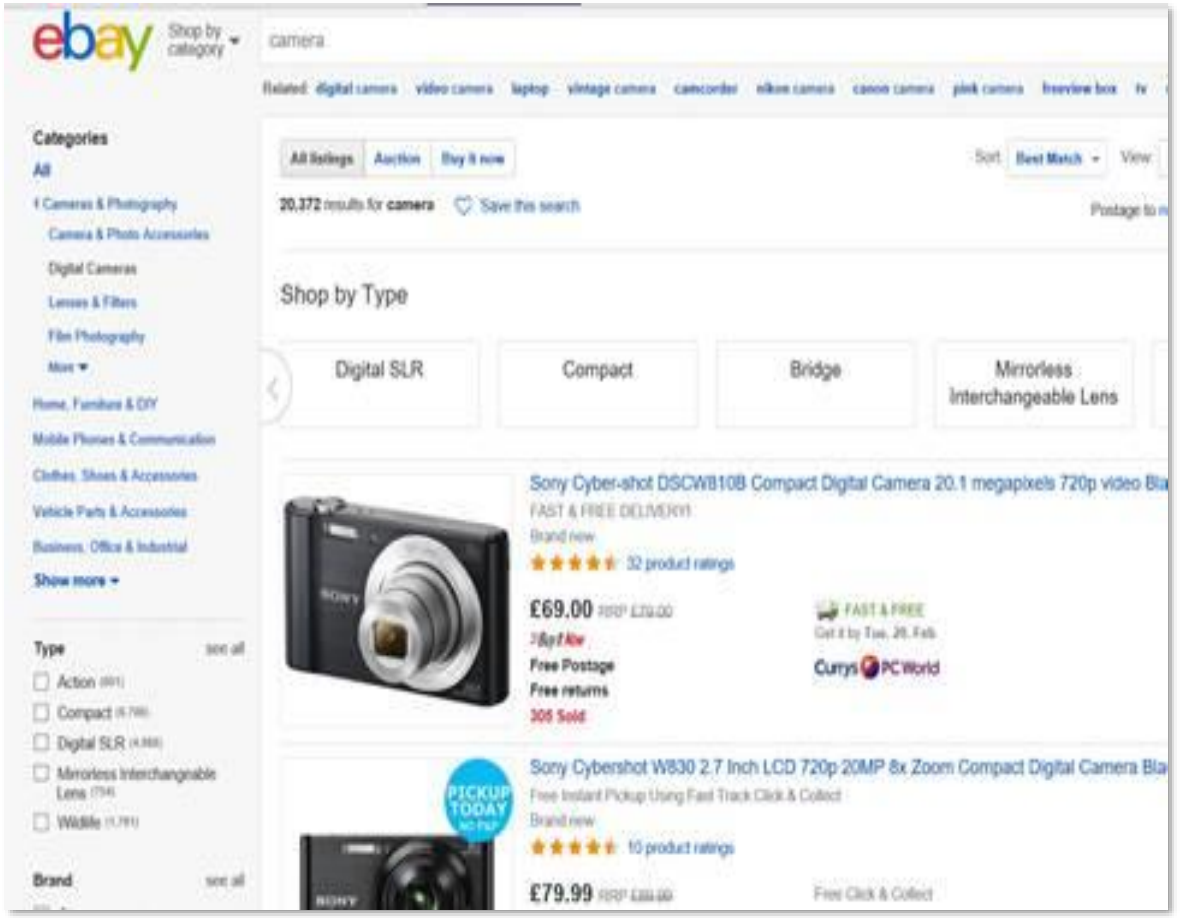
Classification

Importance of classification systems

Classification Systems are essentially a ‘reference dictionary’ that is used to accurately describe things. BS 1192 recommends that classification codes are selected from a system complaint with BS ISO 12006 and the UniClass publication

Think of Ebay. Sellers list 1000’s of products.

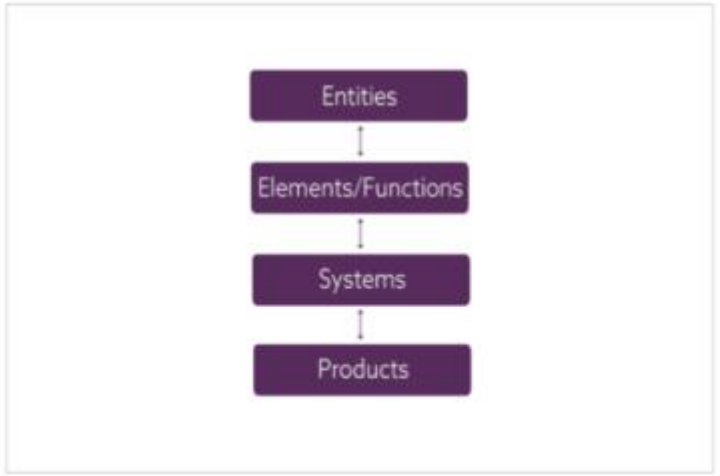
In order for the buyer to find a product Ebay has a categorised items by similar type. For example cameras are listed under ‘Cameras & Photography’ I can then search by ‘Digital Cameras’ and then again drill down to the type of digitagl cameras, such as Digital SLR, Compact etc



Uniclass

Tables

Uniclass 2015 - Complexes, Entities, Spaces/Locations and Activities tables



Uniclass 2015 - Entities, Elements/Functions, Systems and Products tables

The suite of tables are broadly hierarchical, and allow information about a project to be defined from the broadest view of it to the most detailed. The Complexes table describes projects in overall terms and can be thought of in terms of the provision of an Activity. Complexes can be broken down as groupings of Entities, Activities and Spaces depending on the particular use.

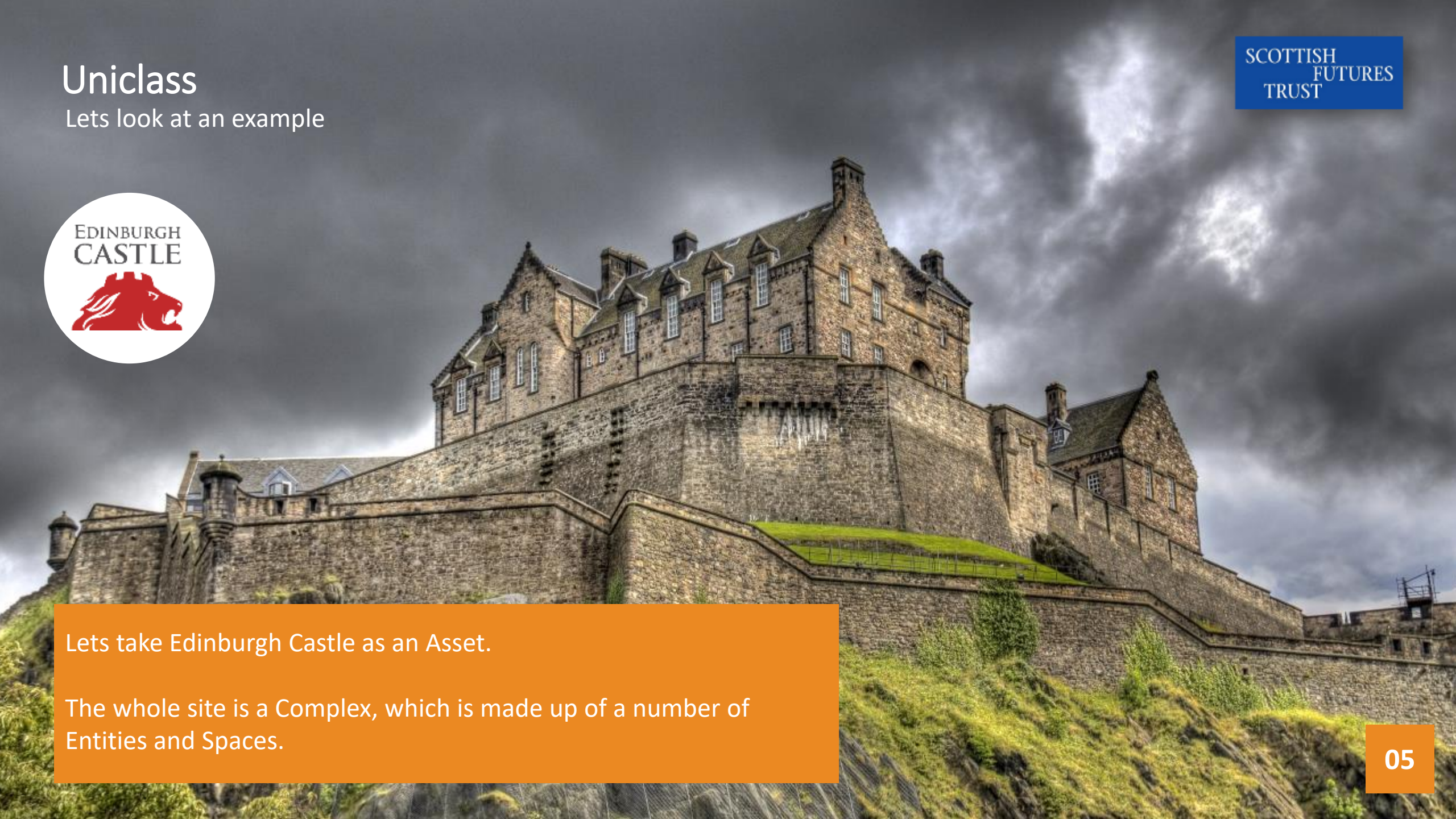
Entities can also be described using the Spaces and Activities tables if required.

For detailed design and construction, the main starting point are Entities.

The main architectural components of an entity are elements, for other requirements in an entity such as drainage, heating or ventilation, the activities table sets out these functions. These Elements and Activities are fully described in the Systems which in turn contain products.

Uniclass

Lets look at an example



Lets take Edinburgh Castle as an Asset.

The whole site is a Complex, which is made up of a number of Entities and Spaces.

Uniclass

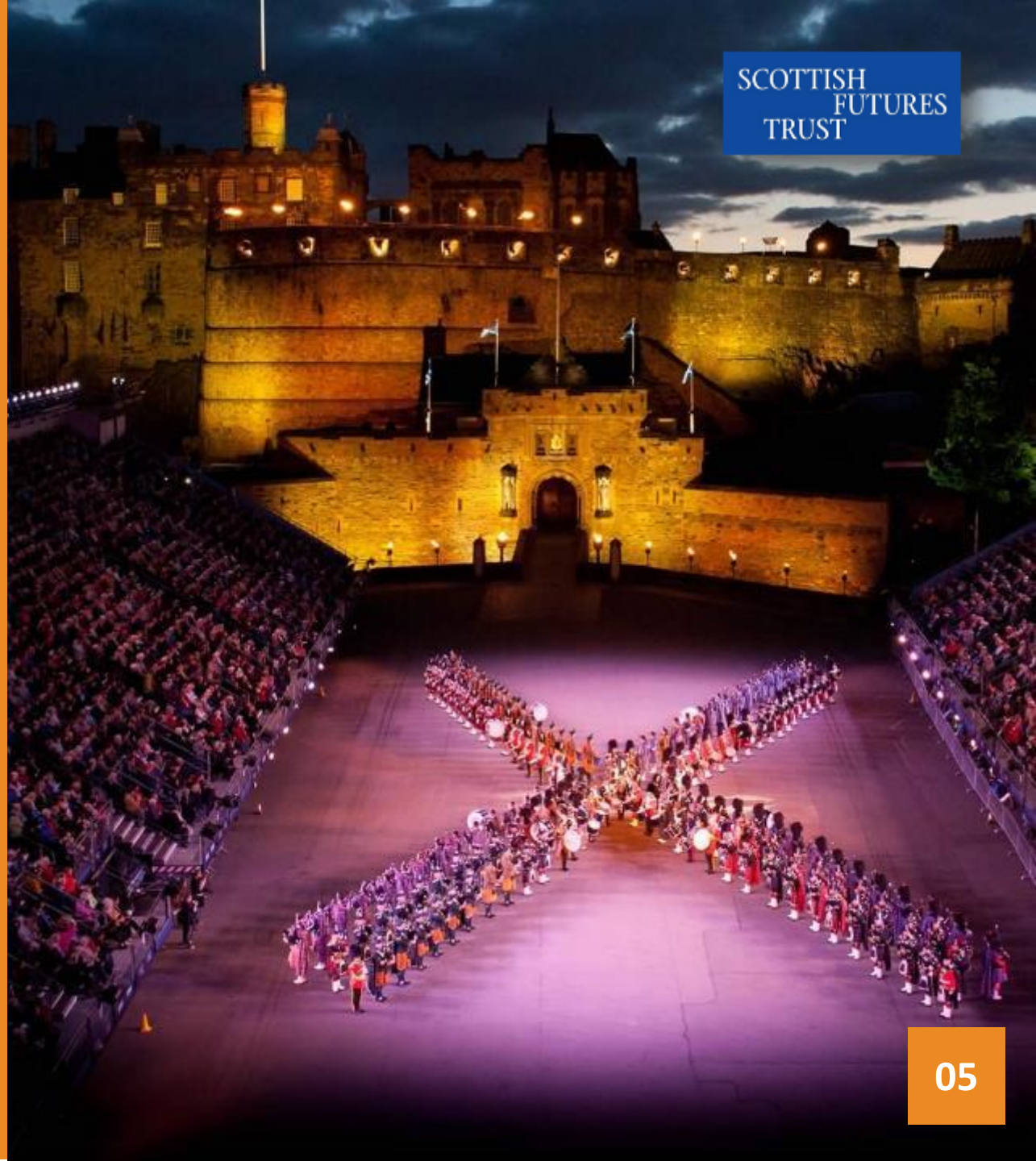
Lets look at an example

Edinburgh Castle as made up of a number of spaces.

An example is the space to the entrance of the castle which is used as a Performing space.

Within Uniclass 2015 this is classified as

SL_40_60 Performing Arts Space



Uniclass

Lets look at an example

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An example of an entity with the castle complex are the administrative offices.

Within Uniclass 2015 this is classified as

En_20_15 Administrative office entities

Uniclass

Classification at Asset Level

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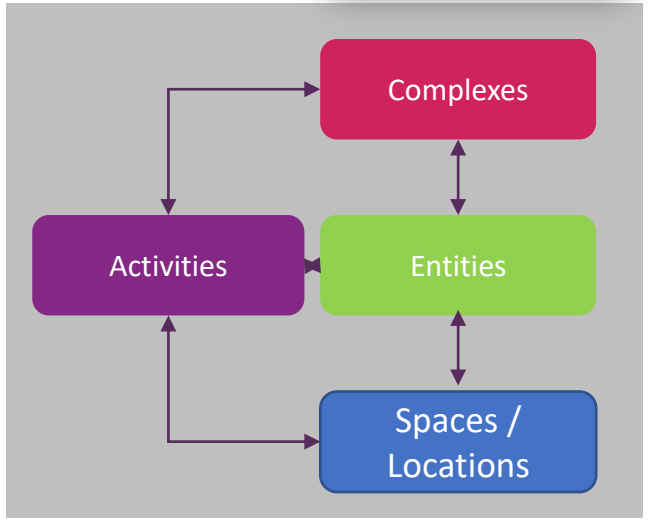
ASSET LEVEL



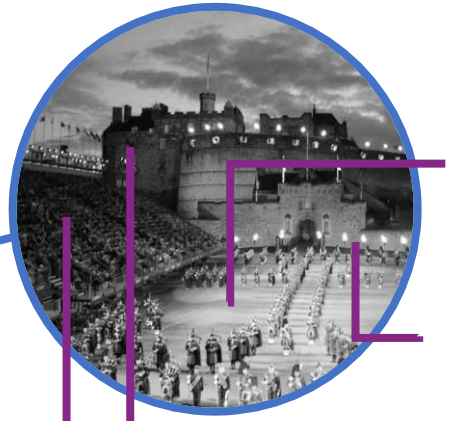
En_20_15
Administrative office entities

En_40_20_23
Dining buildings

En_55_15_50 Water treatment buildings

Complex (Co)
Co_40_35_38
Historic sites

SL_40_60
Performing arts space



Ac_40_60_58
Outdoor music performing

Ac_40_65_03
Artiste changing & make-up activities

Ac_40_65_88
Theatrical lighting controllin

Ac_40_65_02
Amphitheatre seating

Uniclass

An example

Another example of an entity with the castle complex is the Red Coat Café.

Within Uniclass 2015 this is classified as **En_40_20_23 Dining buildings**

The ‘Red Coat Café’ Entity its self is made up of a number of Elements and Functions and Systems.

Uniclass

An example

En_40_20_23 Dining buildings
'The Red Coat Café

Uniclass

Classification at Assembly Level

Entities

En_40_20_23
Dining buildings

Uniclass

Classification at Assembly Level

ASSEMBLY LEVEL

Entities

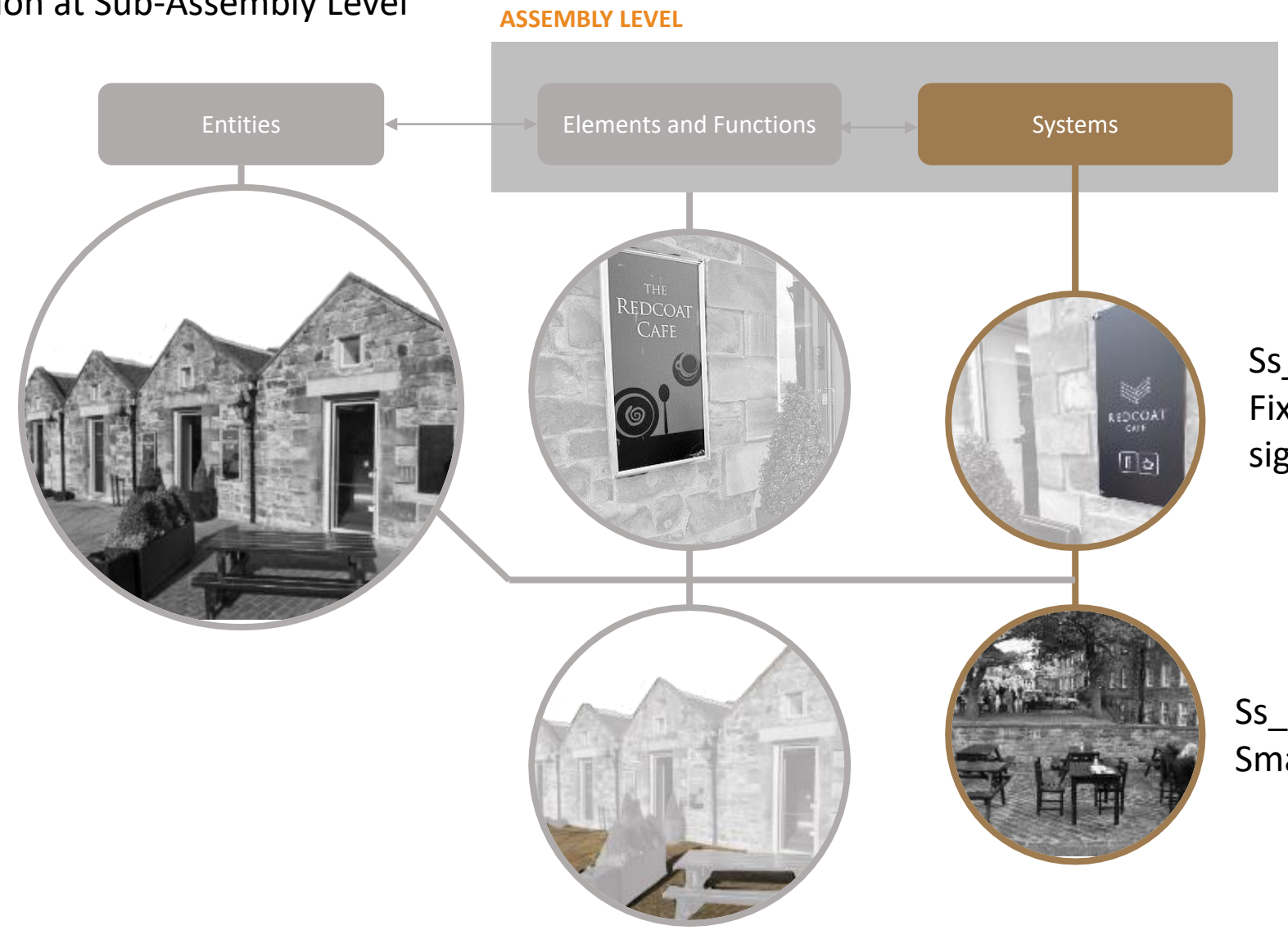
Elements and Functions

EF_40_10
Signage

EF_30_60
Pavements

Uniclass

Classification at Sub-Assembly Level



Ss_40_10_25_30
Fixed external signage systems

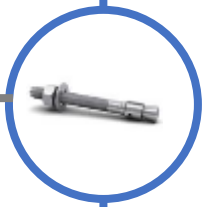
Ss_30_14_90_75
Small unit bound paving systems

Uniclass

Classification at Component Level

COMPONENT LEVEL

Entities | Elements and Functions | Systems | Products



Pr_20_29_03_28
Expansion anchors

Pr_40_10_77_04
Alpha numeric characters

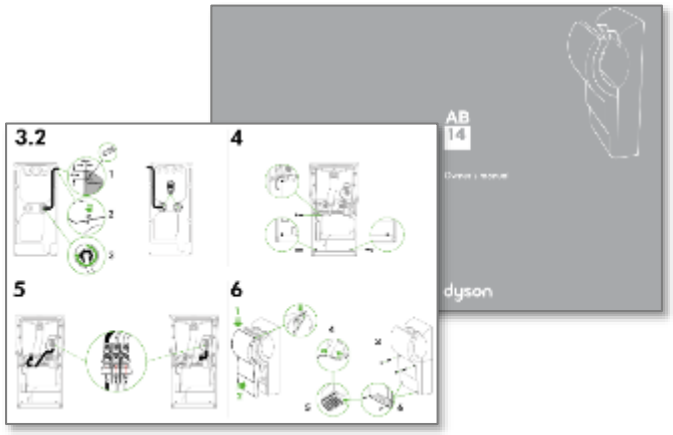
Pr_20_31_04_46
Laying course fine aggregates

Pr_25_93_60_09
Clay pavers

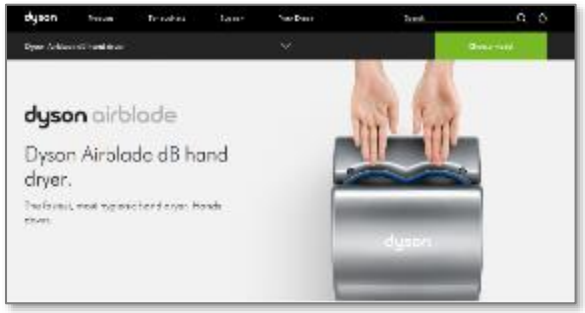
Uniclass

Classification at Component Level

Documents



Product data sheets, technical information, installation manuals, owners manuals



Links to external websites

Non- graphical

Identification information

What is the object called? = Name/Classification
Who created the object? = Author
How makes the object? = Manufacturer
What is the object? Description
Where is the object? Position/location

Performance information

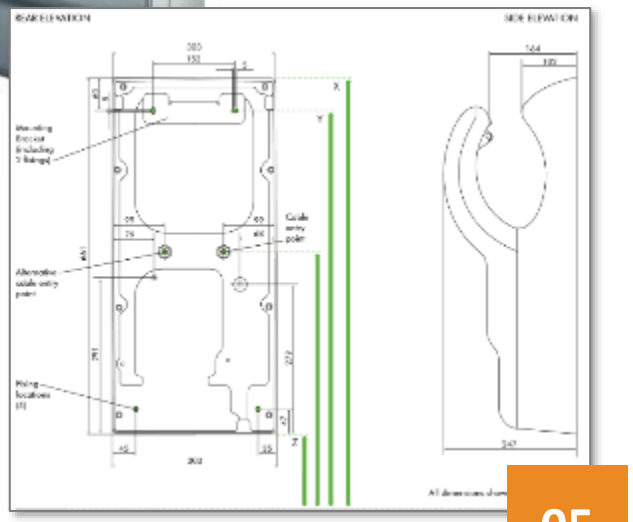
How well does the object perform?
Standards/regulations/specification data

Maintenace information

How does the object work? = Instructions
How is the object cleaned? Data sheet
When was the object tested? Statuary testing/commissioning certificates

Graphical

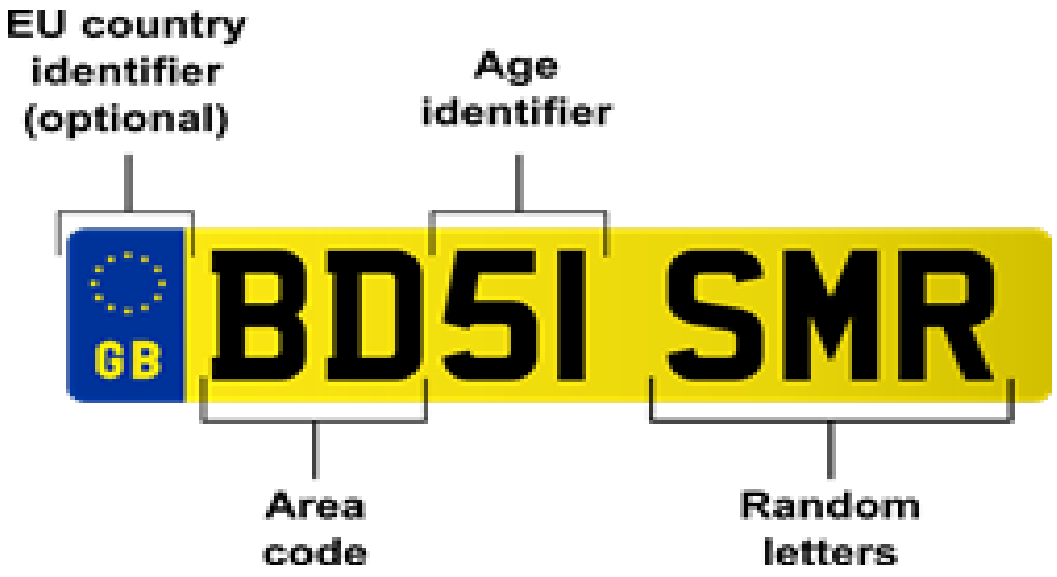
Dimensions and product geometry



Naming Convention

Naming conventions

BS 1192:2007



Example: Think of a number plate. The registration of a car is made up of different codes and letters, each conveying a piece of information. This information is set out in a standard way, so for example every knows that the first two digits represent the area from which the car came from etc.

Standard codes for types of information

The standard codes for file containers holding models and drawings the code should be exactly two characters as follows:

File types for drawings and models

Code	*File Type*
AF	Animation file (of a model)
CM	Combined model (combined multidiscipline model)
CR	Specific for the clash process
DR	2D drawing
M2	2D model file
M3	3D model file
MR	Model rendition file for other renditions, e.g thermal analysis etc.
VS	Visualization file (of a model)

File types for documents

Code	*File Type*
BQ	Bill of quantities
CA	Calculations
CO	Correspondence
CP	Cost plan
DB	Database
FN	File note
HS	Health and safety
IE	Information exchange file
MI	Minutes / action notes
MS	Method statement
PP	Presentation
PR	Programme
RD	Room data sheet
RI	Request for information
RP	Report
SA	Schedule of accommodation
SH	Schedule
SN	Snagging list
SP	Specification
SU	Survey

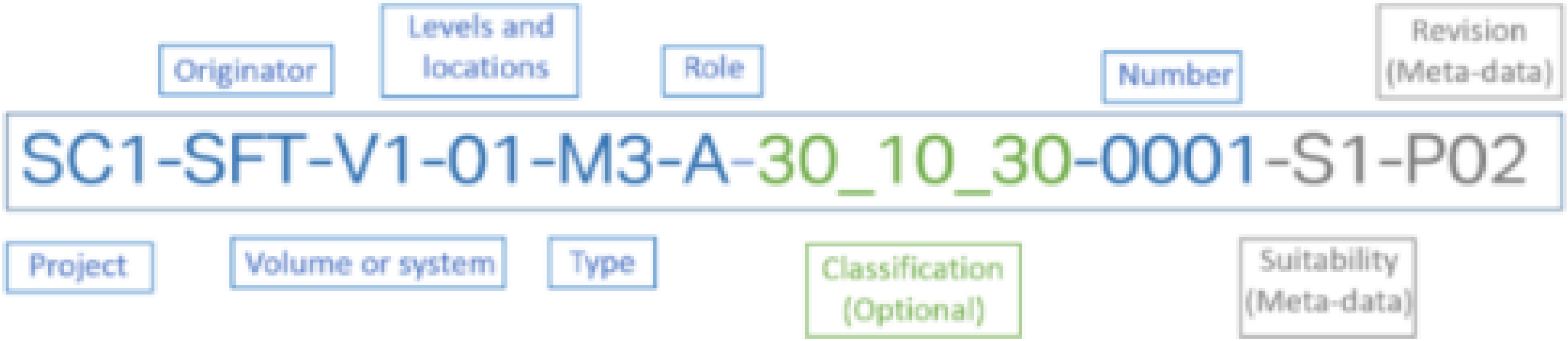
Naming conventions

BS 1192:2007

As more and more information is shared digitally, the use of structured, consistent and understandable naming conventions for information becomes vital.

The BS promotes the following naming of containers. Containers refer to a named persistent set of data within a file system or application data storage hierarchy including: documents, drawing, models and data files

For example:



Naming conventions

Overview

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Definitions

What is a field?

Part of a container named reserved for meta-data.

What is a Directory?

Location for storing files within a file system or application data storage hierarchy,.

What is a file?

Files include models, sub-models, sheets, documents, tables and schedules.

Containers within files?

Named data set within a file system or application data storage hierarchy. Containers within files include layers, sections and symbols

Top Tip

The standard controls the usage of fields for naming containers and codes used in those fields

Directories should have names composed by joining **one mandatory** field and **two optional** fields.

Files should be transmitted and stored in repositories with names composed by joining **seven mandatory** and **three optional** fields.

Containers within files should have names composed by joining **three mandatory** fields and **one optional field.**

Key
Required
Optional
Not Applicable

Field	Directories	Files	Containers within files
Project	PR1	PR1	
Originator		SFT	
Volume or system		Z1	
Levels and locations		01	
Type		M3	
Role		A	A
Classification		G31	G322
Presentation			M
Number		0001	
Description			Doors
Suitability	S1	S1	
Revision	P2	P1	
Name	PR1-S1-P2	PR-XYZ-Z1-M3-A-0001	A-G322-M_Doors

Naming conventions

Project

A individual code for to identify the project. It should be defined and confirmed at the early stages of the project, and confirmed within the EIR. The code should be independent and recognizably distinct from any individual organization's internal job number. Where possible it should match any existing contract code. Where a project involves several elements or one element with several phases, each should be assigned an identifier.

Field
Project
Originator
Zones and assets
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

Guidance:

On large projects, there may be a requirement to for sub-projects. In this instance the project code may be set up for the overall project with sub projects identified with an additional reference

Example:

Project	PR1

Naming conventions

Originator

So that the originator of every file and container holding models and drawings can be identified, a unique character code should be used. This should be between three and six characters.

Top Tip: On large projects, there may be a requirement to for sub-projects. In this instance the project code may be set up for the overall project with sub projects identified with an additional.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

ABC Architecture LLP (Architect)

Clear Costs Ltd (Quantity surveyor)

Big Beam Ltd (Structural Engineers)

Scottish Future Trust (Client)

Safety Ensured Ltd

Plugged in partnership

Example:

Originator	ABC

Naming conventions

Volume or System

The project should be divided into manageable sub-divisions using either:

- Volume or system; or
- Level and location.

Top Tip: Where possible “volumes” should be defined so as to identify a logical portion of work that is to be delieverd by a single team.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Larger and more complex projects may require the project to be divided into several different volumes. It is important that the volume strategy is agreed at the beginning of the project.

Wherever possible, repetion of the same codes, per role, should be avoided.

Example:

Volume	V1

Naming conventions

Levels and Locations

Where a container documents a single building level (floor) or location, the code for that level should be used. Where a container documents multiple levels, a distinct code should be used.

Top Tip: Civil projects such as airports and oil refinery's covering large areas would use a 'location' based code such as a grid reference or postcode. Location codes for linear assets are likely to require specific codes.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Multiple levels | No Level | Mezzanine two | Level one

Mezzanine one | Ground Floor | Basement 1

Top Tip: The term "location" might be more appropriate for infrastructure projects rather than 'levels' as most civil structures are horizontal.

Example:

Levels	01

Naming conventions

Type

To aid recognition, every container holding models and drawings should two characters to indicate the type of information it contains.

Top Tip: BS 1192 Section 9.2 gives a full list of file types for documents.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Drawings and models

CM	CR	DR	M2	M3
Combined model	Specific for clash process	2D Drawing	2 dimensional model	3 dimensional model

Documents

BQ	CA	CO	CP	DB
Bills of quantities	Calculations	Correspondence	Cost plan	Database

Example:

Type	CO (Correspondence)

Naming conventions

Role

Each organisation should be allocated to one or more roles with the project.

Where a role is not listed within the table, for example, non-standard project specific codes you should use the codes J, N, R, U or longer codes.

Top Tip: Further subdivison of roles can be implied using the classification field.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Architect | Building surveyor | Civil engineer | Drainage, Highways engineer

Electrical Engineer | Facilities manager | Acoustic consultant

Example:

Role	A

Naming conventions

Classification

Every container should be classified by a code, taken from the chosen dictionary, to accurately describe the construction assets represented.

Classification codes should be selected from a system compliant to BS ISO 12006 and the Uniclass Publication.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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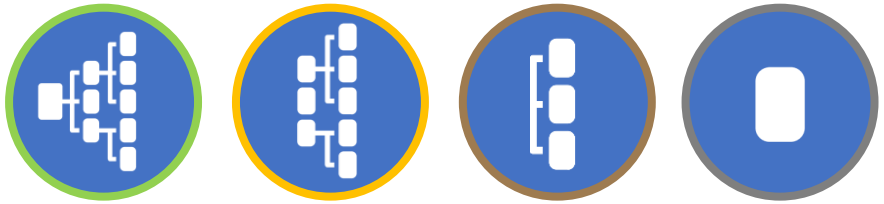
Guidance:



Entities | Elements and functions | Systems | Products

Top Tip: The NBS BIM Toolkit contains the up-to-date Uniclass 2015 classification tables. These can be downloaded and viewed at https://toolkit.thenbs.com/articles/classification#classificationtables

Example:

Classification	**Pr_40_70_62_37**

Naming conventions

Presentation

Every container should be consistent in its presentational conventions. For both drawings and documents, graphical and textual content should be distinguished by using containers within files such as layering or sections.

The presentation code ensures that the information can still be re-used for a variety of presentational purposes without conflicting with re-use of information.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Dimensioning | Hatching and shading | Model related elements | Plot/paper related elements | Text

Top Tip: There is currently no provision with BS 1192 to extend the list with project specific codes.

Example:

Presentation	**M**

Naming conventions

Number

The numbering for standing coding should be four integer numeric digits. These are used sequentially, and leading zeros should be used.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

Guidance:

001 002 003 004 005 •••

Example:

Number	001

Naming conventions

Description (Optional)

Descriptive text should be used to imply further distinctions of meaning. However, descriptive text derived from the other fields and used consistently can be used to aid recognition.

Top Tip: There is currently no provision with BS 1192 to extend the list with project specific codes.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

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Guidance:

Hand driers

Doorset system

CCTV Systems

Fixed external signage systems

Railtrack

Example:

Description	**Hand driers**

Naming conventions

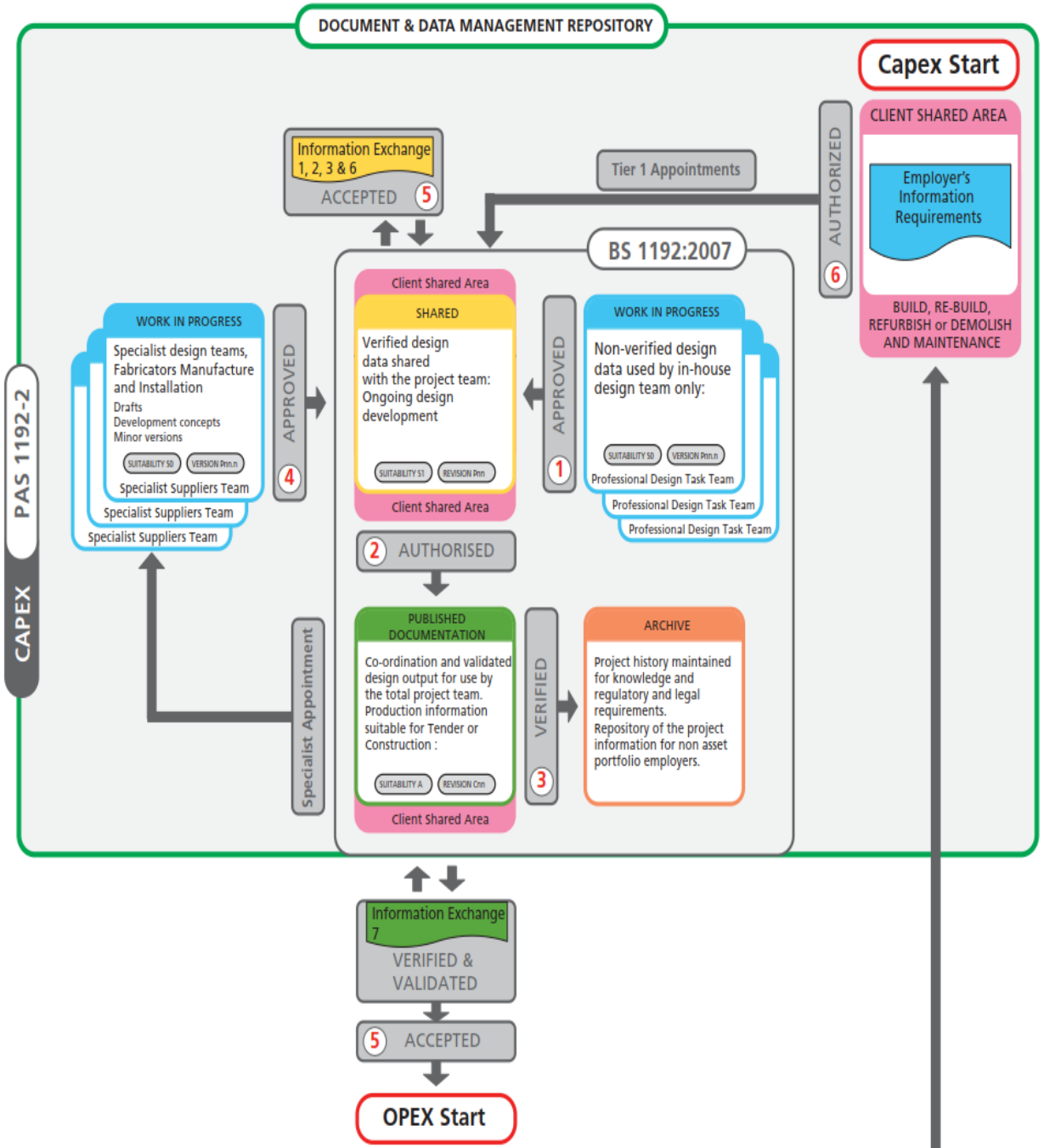
Status (Suitability)

Every container should have a field indicating the approved “suitability” for use of the contained information. This should be one or two characters.

Top Tip: Use of a particular management process might make some codes inapplicable to some types of document. BS 1192 Table 5 details the standard codes for suitability models and documents.

Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

Figure 15 – Extending the common data environment (CDE)



Naming conventions

Revision (Suitability)

Every container should carry a ‘revision’ field. This indicates the issue sequence of the contained information.

Top Tip: Versions created within WIP area should be numbered using decimals e.g. P1.1,P1,2, P1.3 etc. This should then become P2.1 etc.

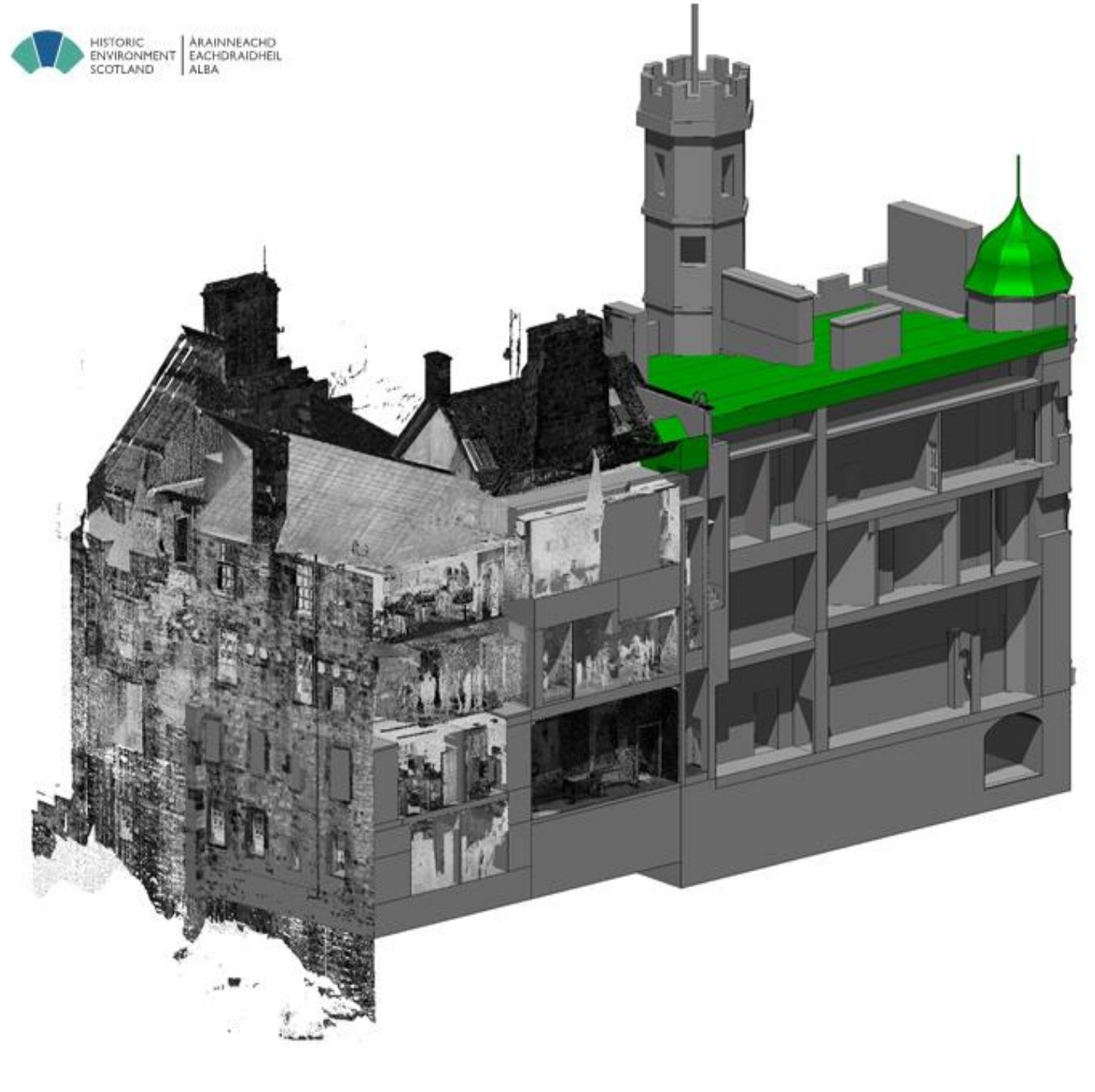
Field
Project
Originator
Volume or system
Levels and locations
Type
Role
Classification
Presentation
Number
Description
Suitability
Revision

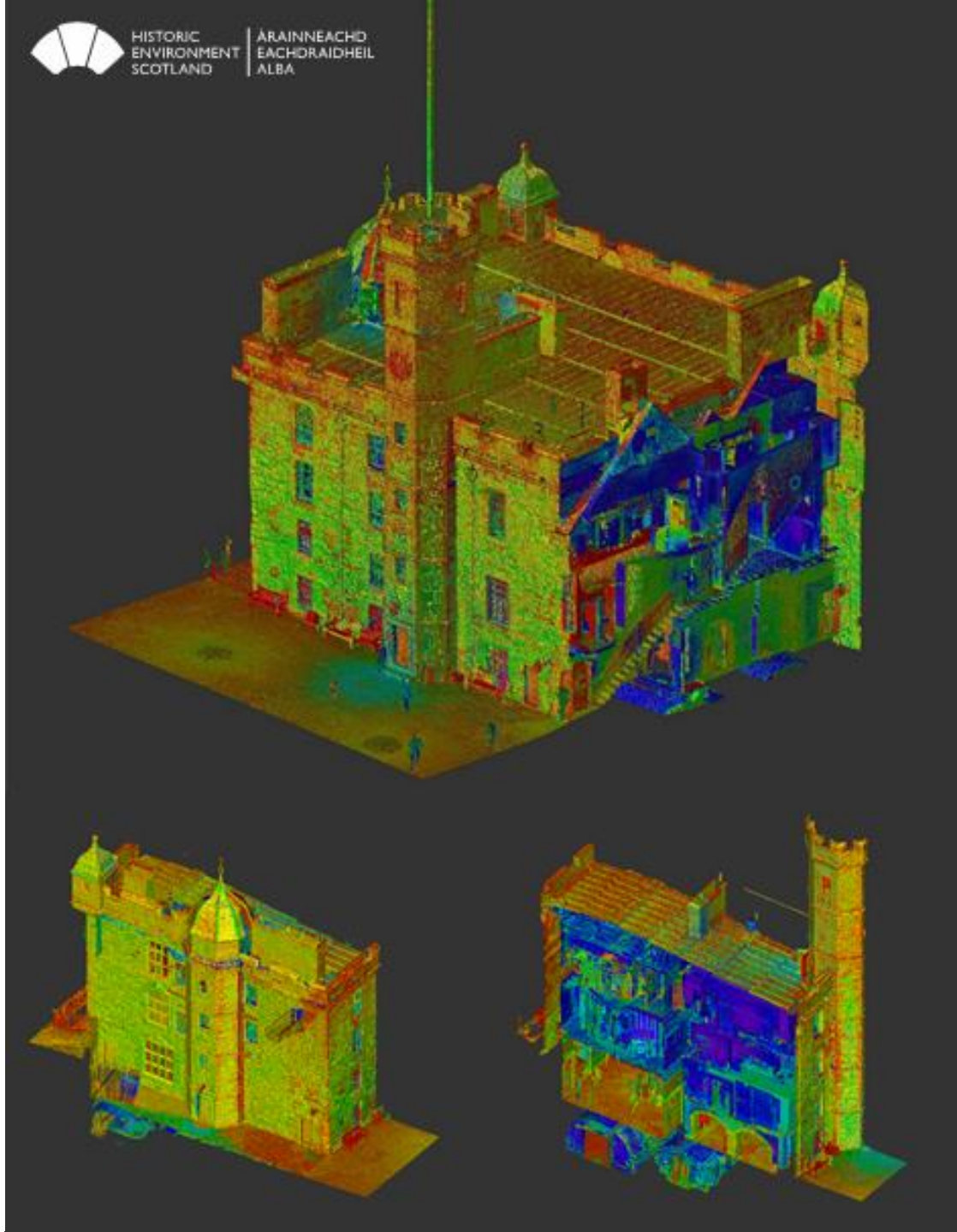
Guidance:

P01.1 etc to P0*n*.0*n* etc	P01 to P0*n*	P01.1 etc to P0*n*.0*n* etc	C01 to C0*n*	C01 to C0*n*
WIP	Shared	WIP to published	Published Documentation	Published for AIM acceptance

Example:

Revision	001


HISTORIC
ENVIRONMENT
SCOTLAND
ÀRAINNEACHD
EACHDRAIDHEIL
ALBA


HISTORIC
ENVIRONMENT
SCOTLAND
ÀRAINNEACHD
EACHDRAIDHEIL
ALBA

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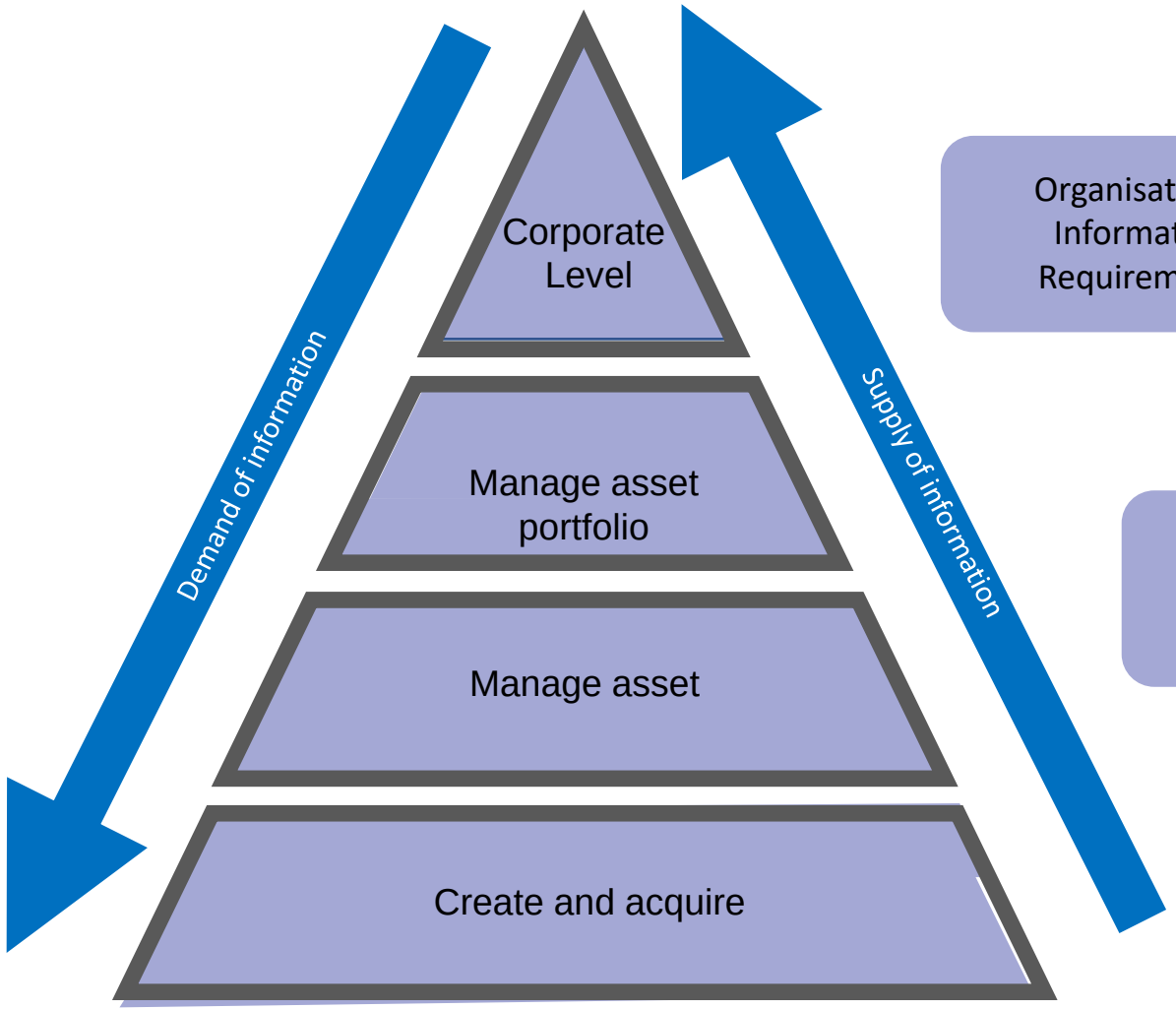
Creating an Information Delivery Plan

Plain Language Questions (PLQs)
Group Exercise
Organisational Information Requirements (OISs)
Built Asset Security Information Requirements (BASIRs)
Asset Information Requirements (AIRs)
Information Delivery Plan: What it should include
Employer's Information Requirements (EIRs)

Information Delivery Plan



Organisational Information Requirements

Asset Information Requirements

Employers Information Requirements

Info and Data
To support
Gateway approval process

1

Plain Language Questions (PLQs)

Plain Language Questions (PLQs)

Discussion points

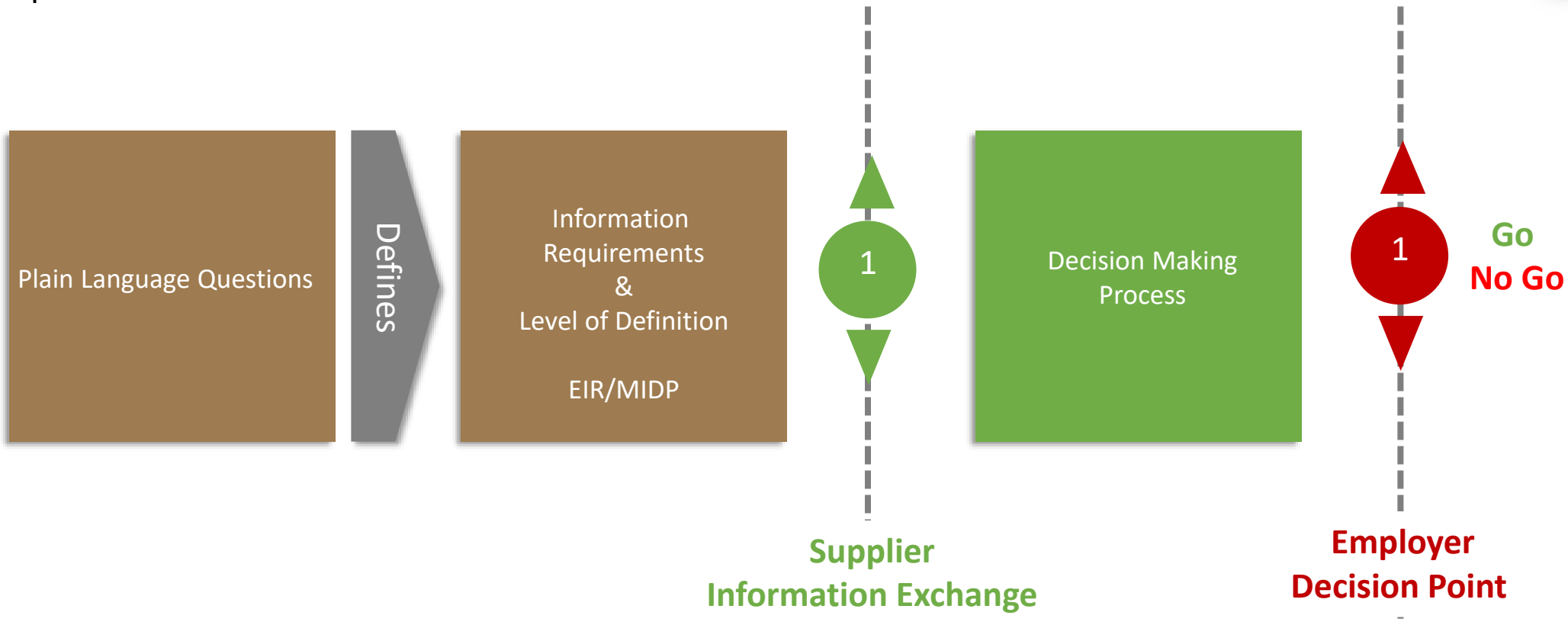
Plain Language Questions: questions asked of the supply chain by the employer to inform decision-making at key stages of an asset life cycle or project [from PAS 1992-3]

request for information that is expressed in simple, easy to understand terms [from BS 8536-1]

Setting PLQs are a key part of the information requirements process ensuring data is only produced when needed and ensures that digital data has clear purpose and aligned with organisational needs such as decision making.

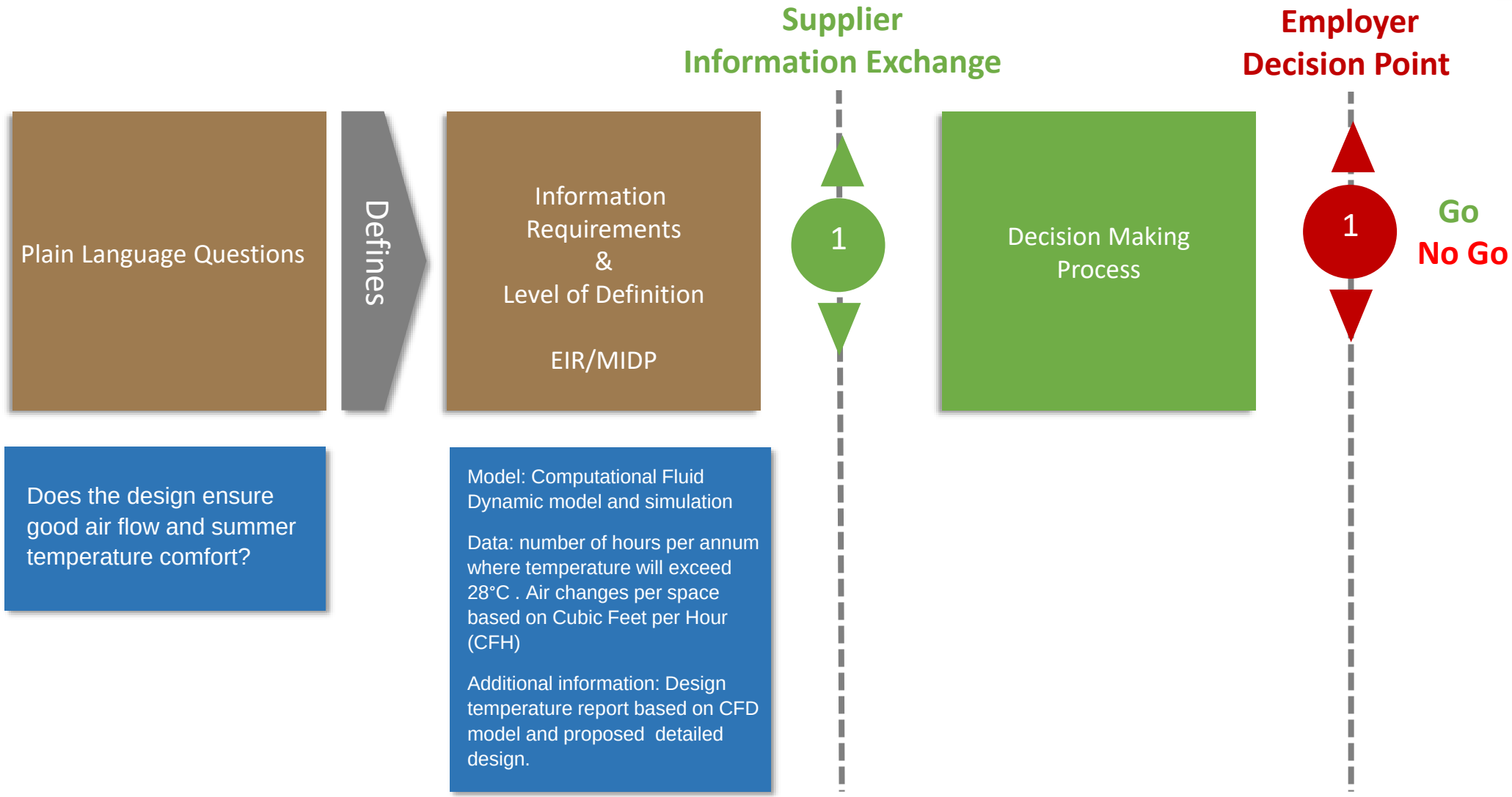
Plain Language Questions (PLQs)

The process



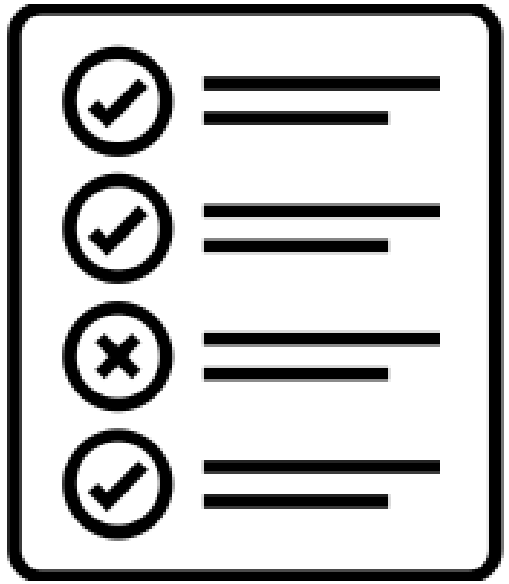
Plain Language Questions (PLQs)

The process



Plain Language Questions (PLQs)

Practical steps



Develop a matrix with your plan of work stages across the X-axis and identify for each stage the:

- Key decisions
- The plain language questions to help support the decision making process
- Information required
- Information type, e.g. model, document
- File Format, e.g. PDF, COBie
- Appropriate Level of Definition
- Whether there are any security requirements around the information
- Responsibility, e.g. role responsible for creating and managing this information
- How the information received with be reviewed as part of the decision making process

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GROUP EXCERCISE

Plain Language Questions (PLQs)

Group Exercise

You are about to undertake a gateway review for the detailed design stage of a school laboratory.

You are concerned about the:

Project Level:

- Affordability
- Programme Duration

Room Level:

- Maximum occupancy

What PLQs could help inform your decision?

Plain Language Questions (PLQs)

Group Exercise

- Affordability
  - Is the project in budget?
  - What is the whole life costs?
  - How does this budget compare to other similar projects?
- Programme Duration
  - Can the laboratory be built in required timeframe?
  - When do I need to order lab equipment?

Room Level:

- Maximum occupancy
  - Is there sufficient space for required occupancy?
  - Is the air conditioning suitable for maximum occupancy?

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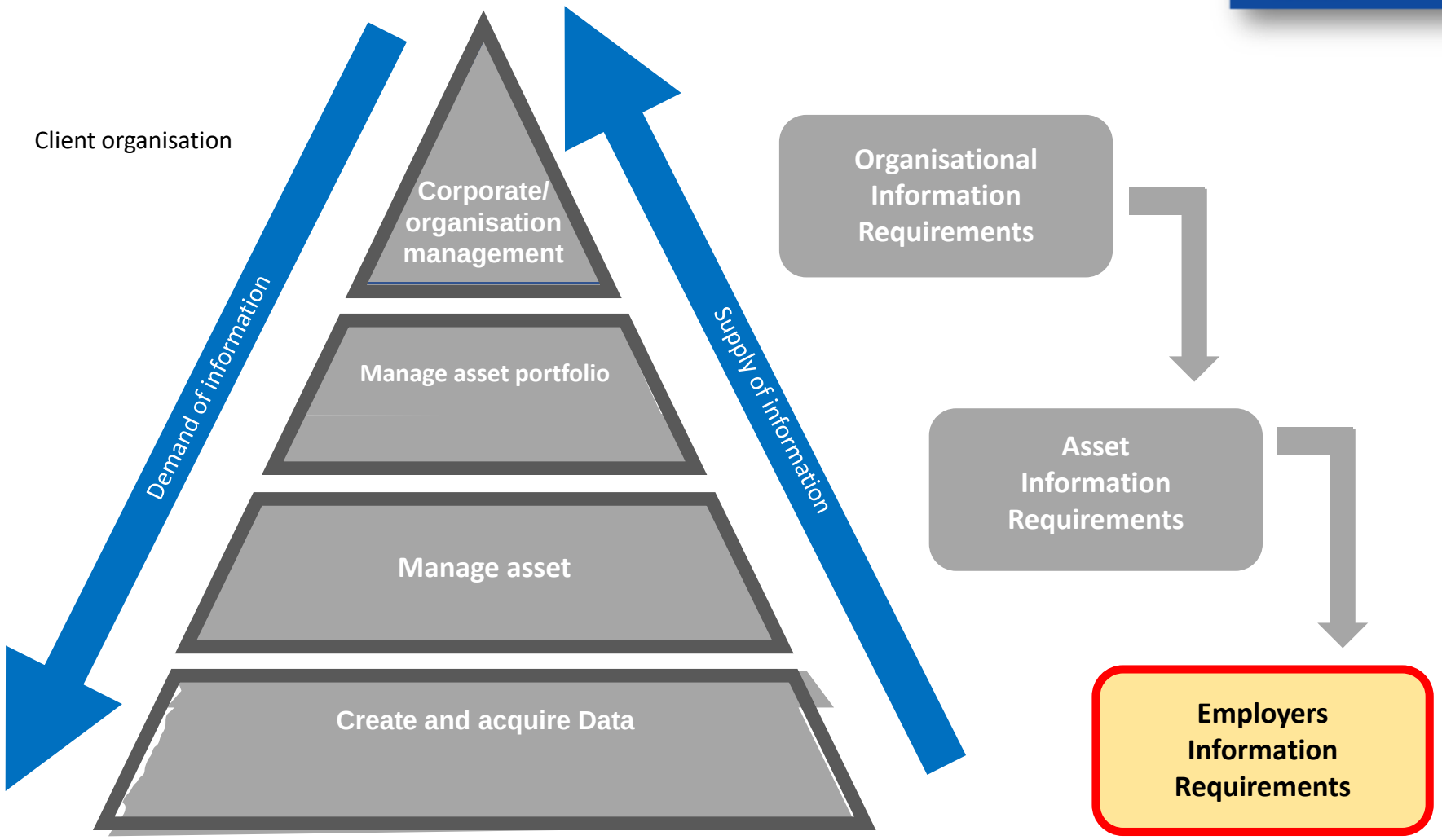
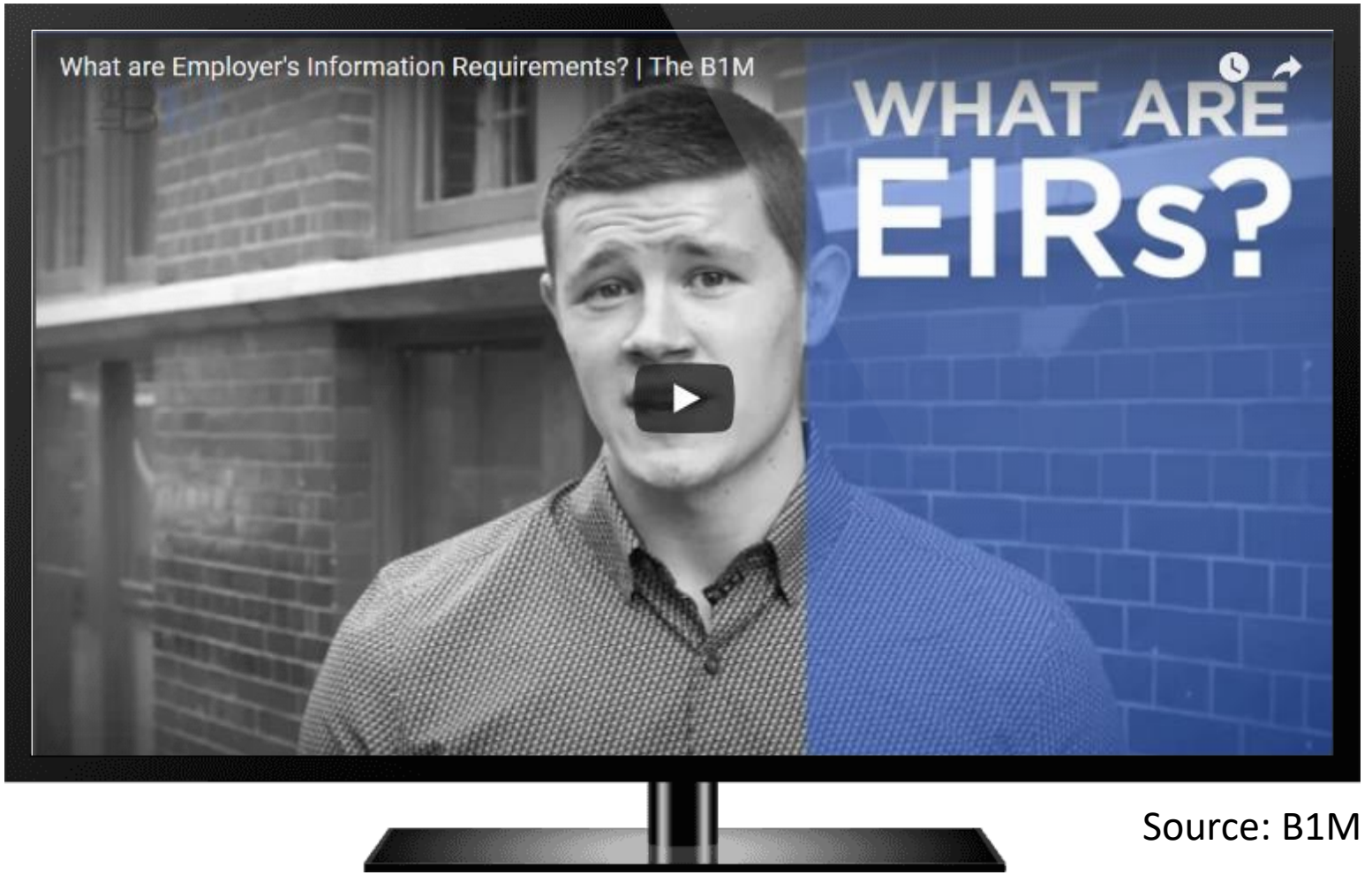
2

Employer's Information Requirements (EIRs)

Employers Information Requirements



What are EIRs?



Source: B1M

Typical EIR Contents

Technical – details of software platforms, definitions of levels of detail etc.

Management – details of management processes to be adopted in connection with BIM on a project.

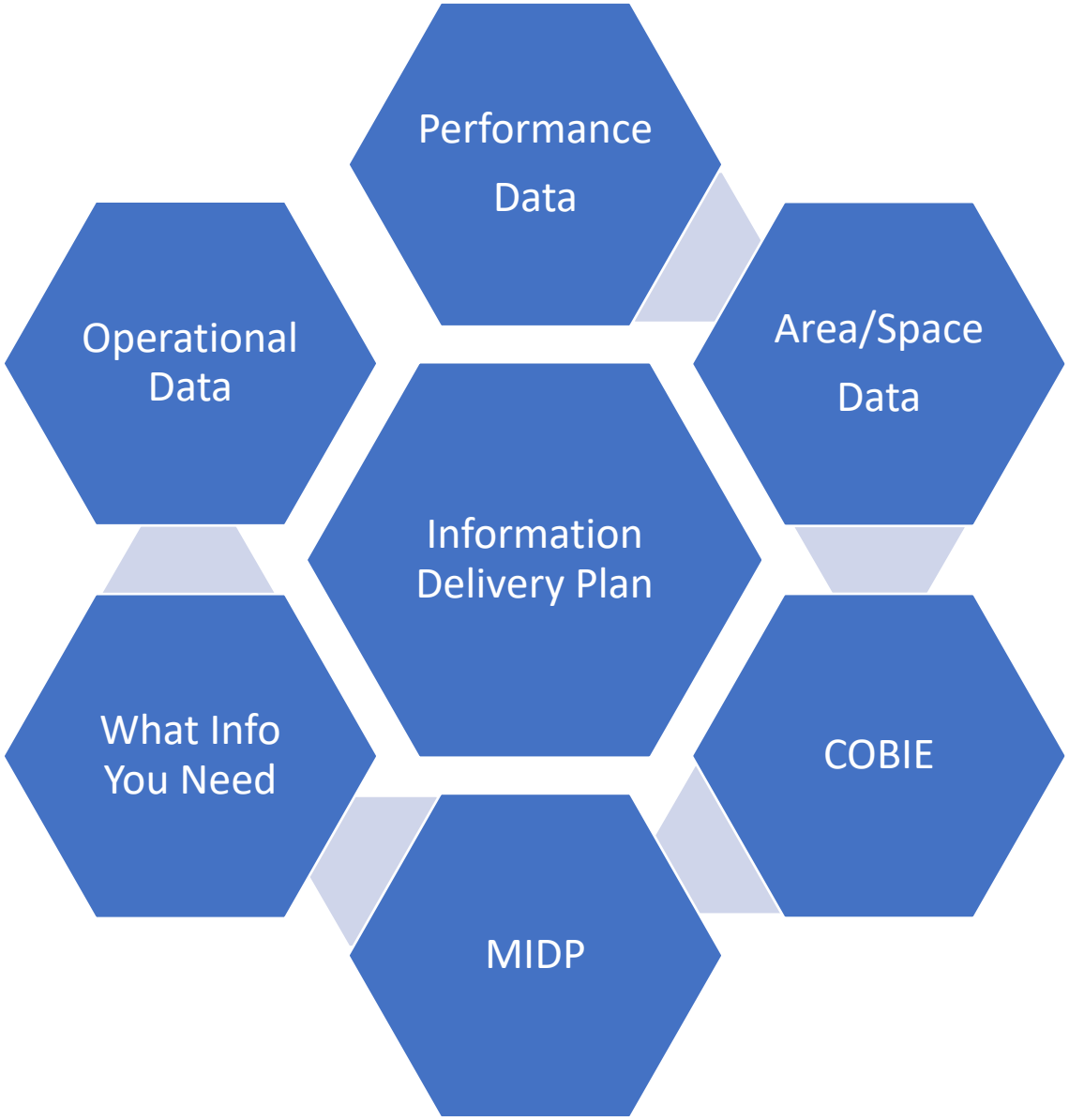
Commercial – details of BIM deliverables, timing of information exchanges and definitions of information purposes

Technical	Management	Commercial
• Software platforms • Data exchange format • Co-ordinates • Level of detail (general) • Level of detail (components) • Training	• Standards • Stakeholder roles and responsibilities • Planning the work and data segregation • Security • Coordination and clash detection process • Collaboration process • Model review meetings • Health and safety and construction design management • System performance constraints • Compliance plan • Delivery strategy for asset information	• Timing of data drops • Clients strategic purpose • Defined BIM/project deliverables • BIM-specific competence assesment

3

Information Delivery Plan: What it should include

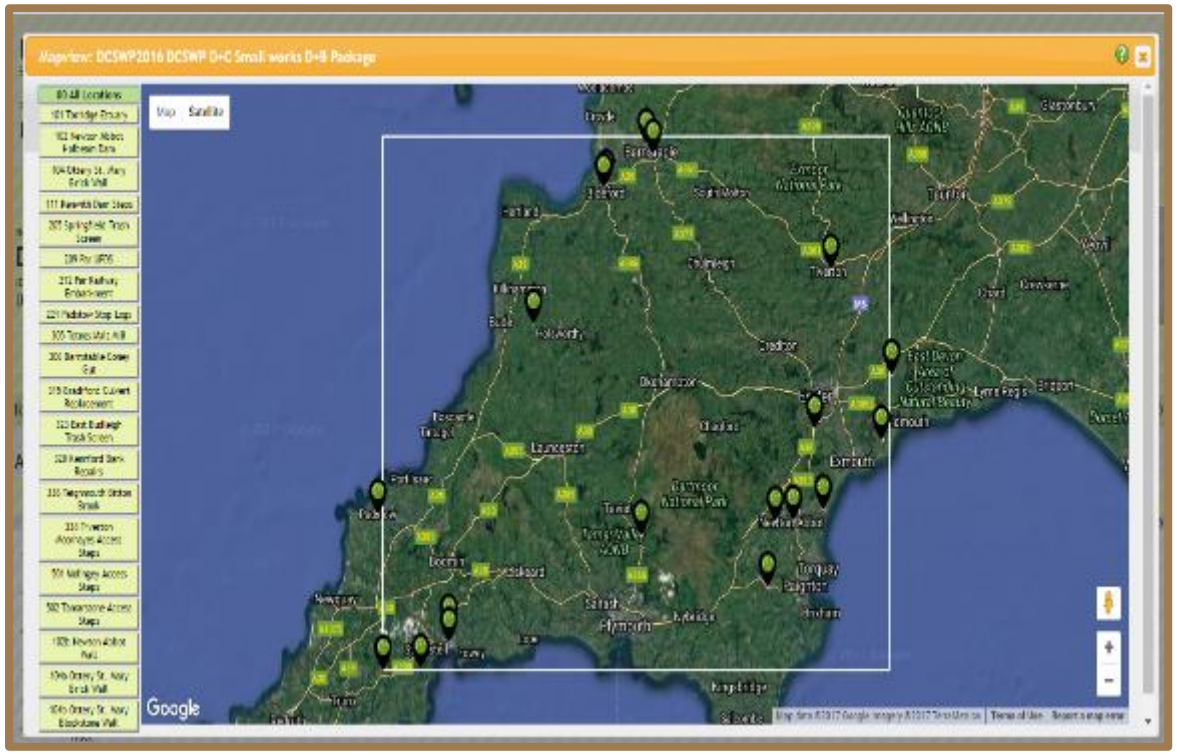
Information Delivery Plan

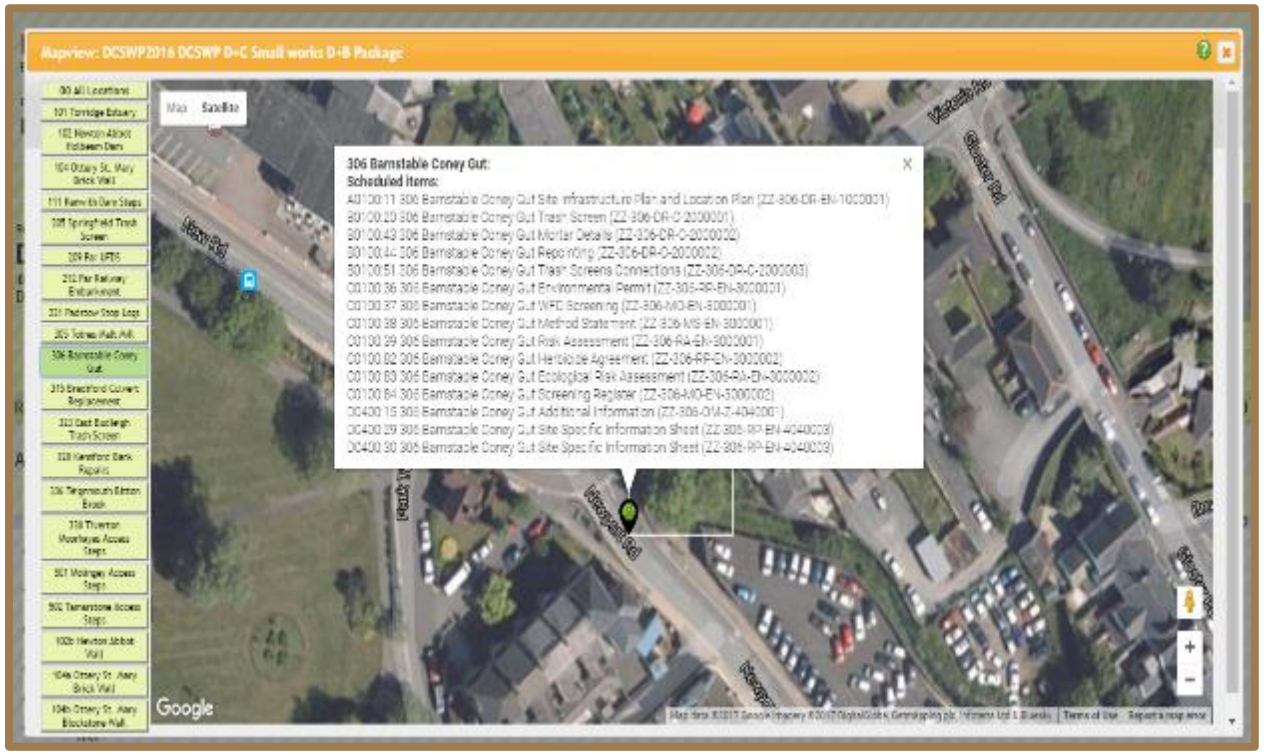


Buying Structured Information Delivery Plan

A quick win

Spatial Document Locator



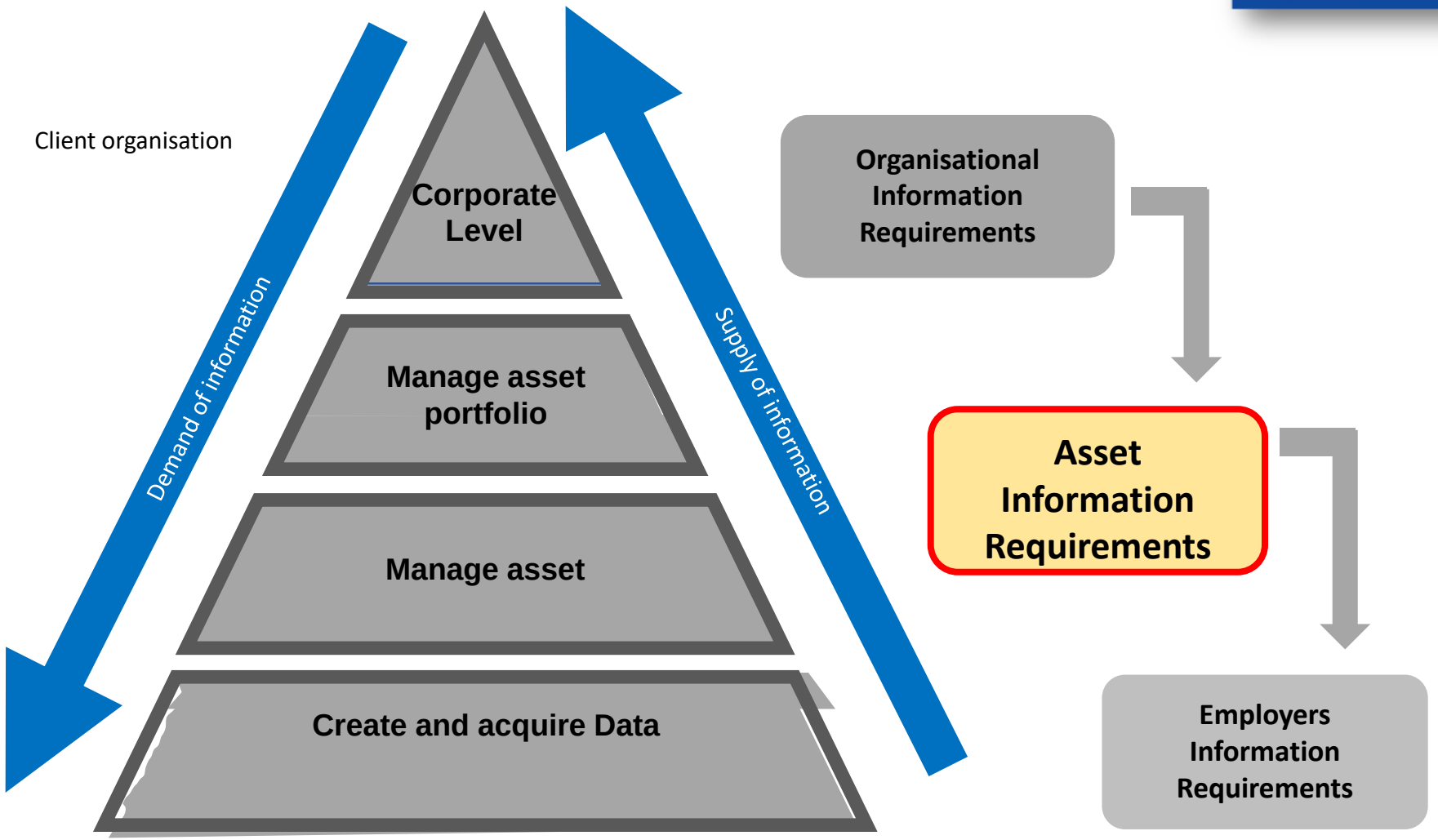


Facilitates sourcing structured documents and data using different methods such as GIS Tools / Google Maps

4

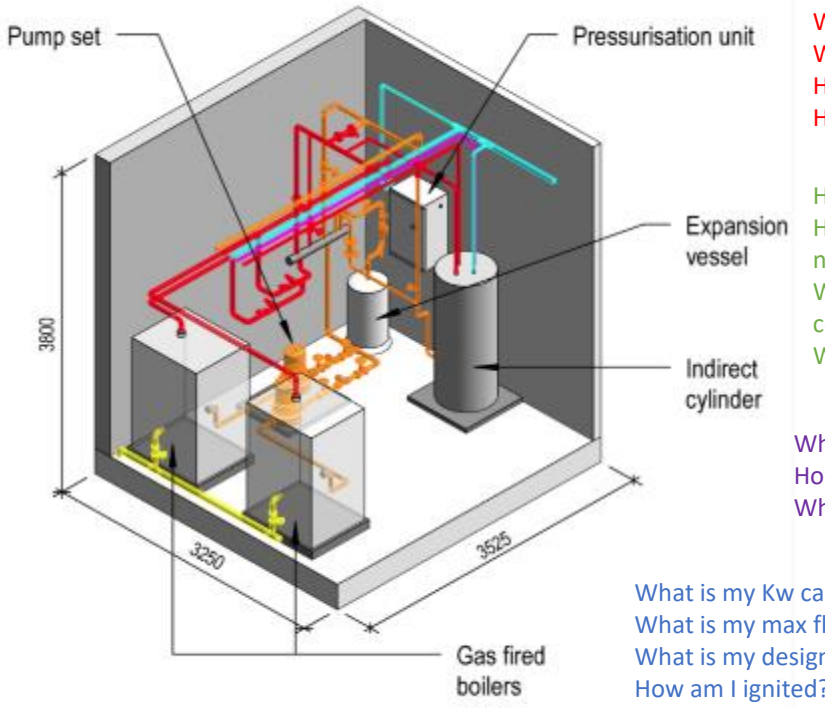
Asset Information Requirements (AIRs)

Employers Information Requirements



Built Asset Security Information Requirements (BASIRs)

Asset Information Requirements (AIRs) are the detailed pieces of information about the asset that when placed in context can answer the questions raised in the Organisation Information Requirements (OIRs). Asset Data is only produced when needed — eliminating waste



Who supplied me?
What's my serial number?
When should I be tested?
How long does my warranty run for?
How much do I cost to replace?

How should I be maintained?
How do you diagnose fault if I'm not working properly?
What is my planned power consumption?
What's my embodied carbon?

Where am I located?
How much do I weigh?
What is my storage volume?

What is my Kw capacity?
What is my max flow temperature?
What is my design safety overpressure?
How am I ignited?

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4.5 Asset Information Requirements (AIRs)

4.5.1 General

Based on the OIR, Specific AIR shall be specified as part pf a contract or as an instruction to in-house teams and may use data and information from the AIM relating to the asset management activities being carried out. The AIR shall also specify data and information to be captured and fed into the AIM. Where the activities relate to major works covered by PAS 1192:2, then the AIR will inform the EIR.

4.5.2 Classification

The AIR shall require the organization to classify the data the information being put into the AIM according to an agreed classification system or through the structures of the data store and/or-file store.

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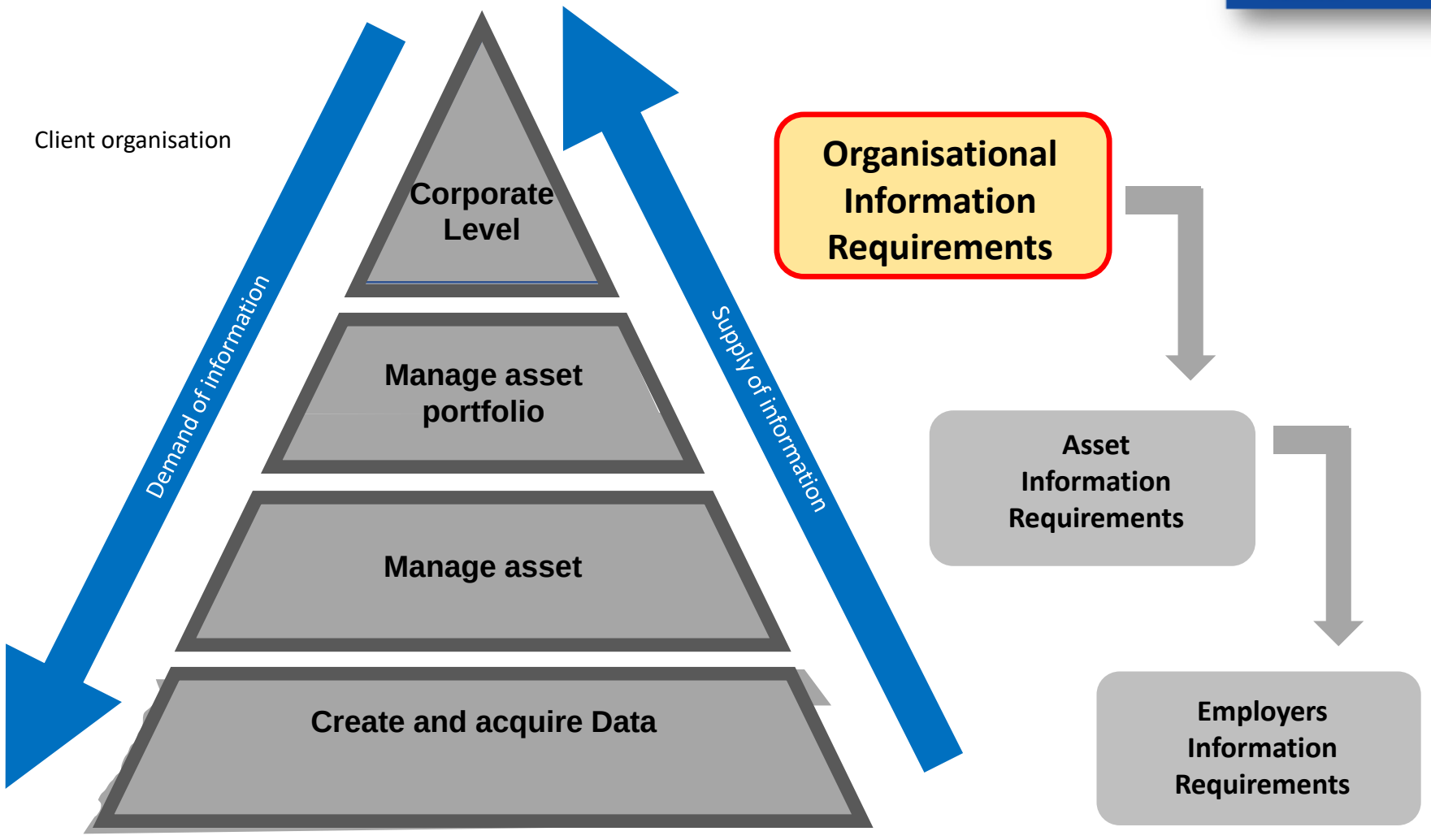
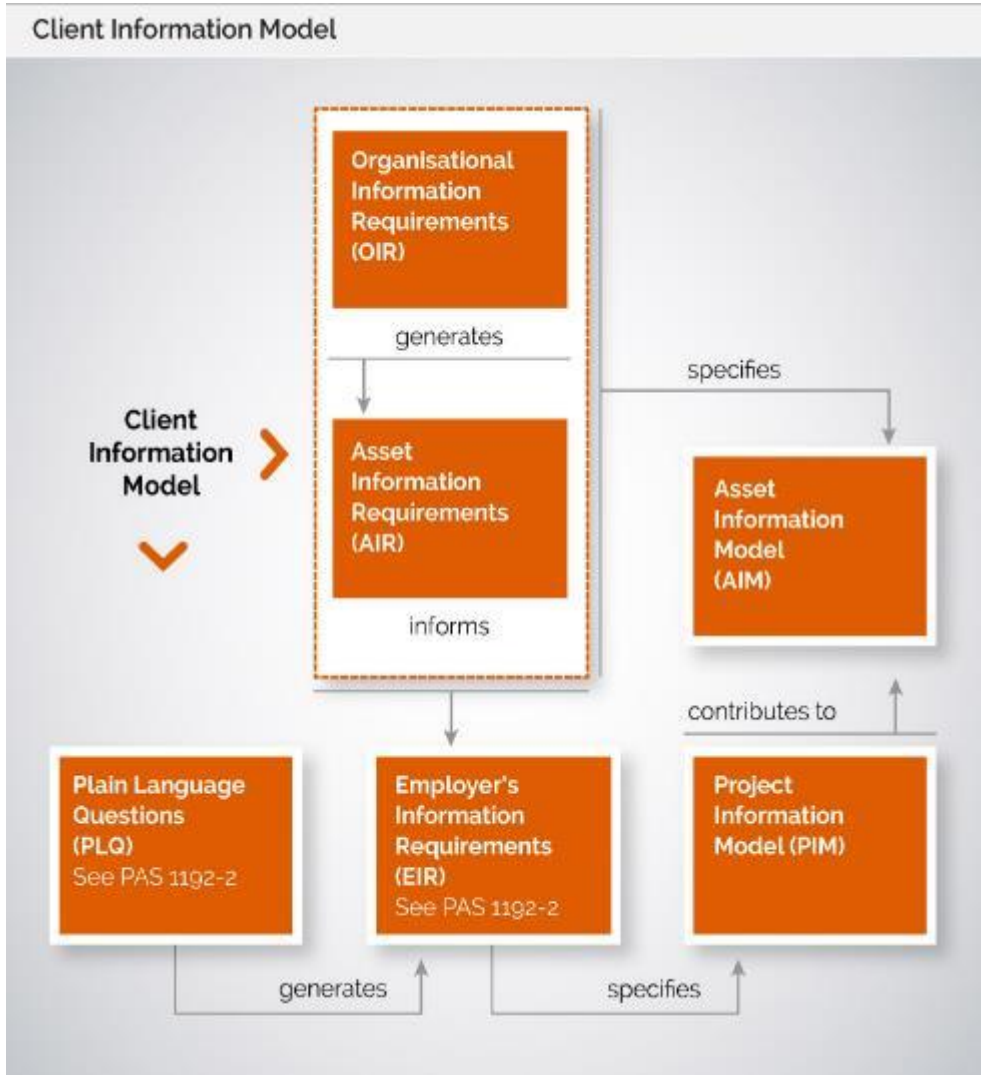
Organisational Information Requirements (OIRs)

Employers Information Requirements



Organisational Information Requirements (OIRs)



"Data and information to achieve the organisations objectives"

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This is not a project level BIM exercise

OIRs help define project level information and data needs

As asset portfolios become larger and more complex and as the world becomes more digitally biased, organisations are allocating more and more time and investment to considering the need for a re-structuring of how they manage asset information to information better decisions.

Whatever method is used by the executive team to analyse the performance of their current model and to inform the need for re-structuring the organisation, it will almost certainly need to identify benefits that it seeks to obtain from using and owning a digital asset information model.

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Built Asset Security Information Requirements (BASIRs)

Built Assets Security Information Requirements

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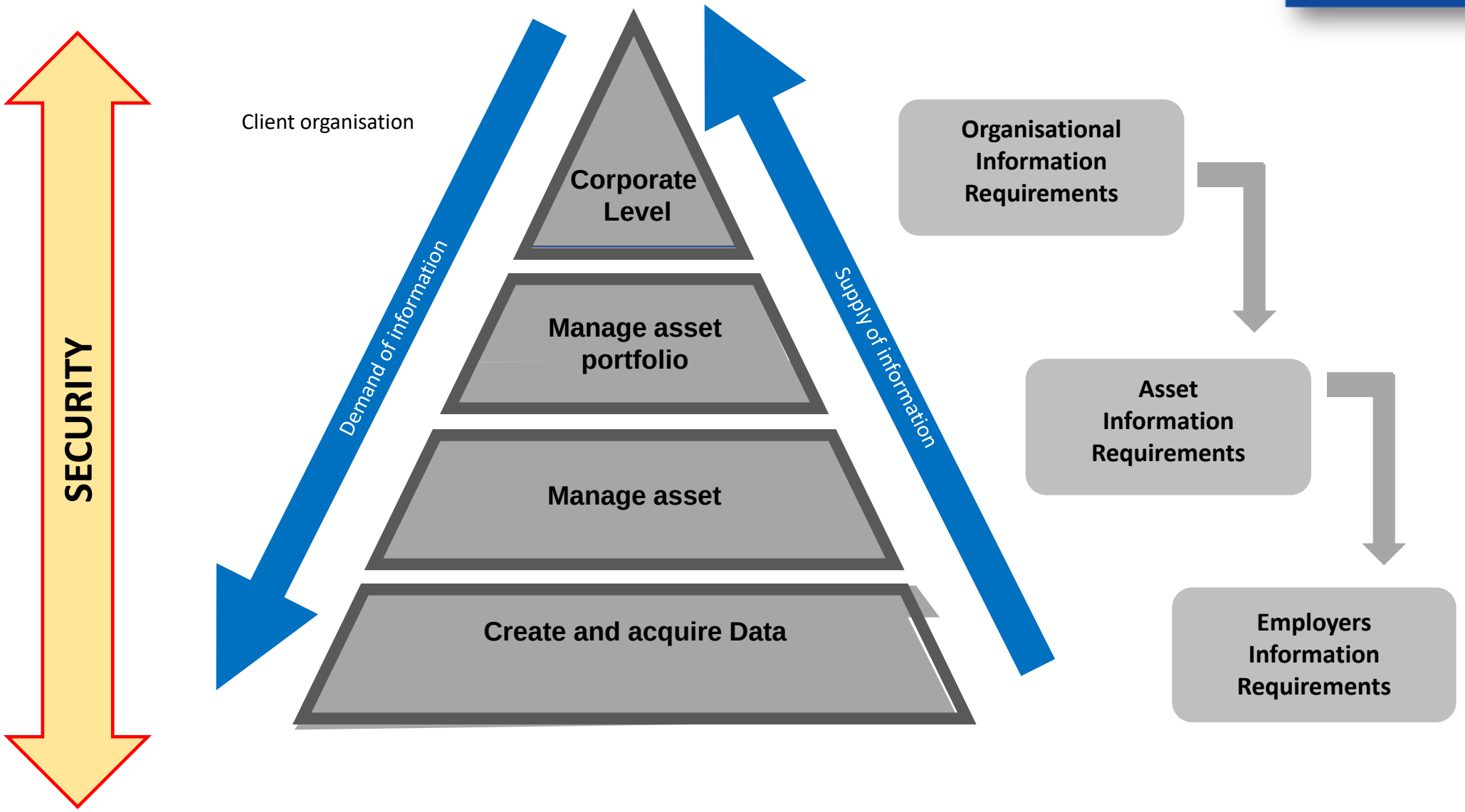

Built Asset Security Information Requirements (BASIRs)

Consider: Identifying and implementing appropriate and proportionate measures to reduce the risk of loss or disclosure of information which could impact on the safety and security of:

- personnel and other occupants or users of the built asset and its services
- the built asset itself
- asset information; and/or
- the benefits the built asset exists to deliver, whether social, environmental and/or commercial.

PAS 1192-5 specifies requirements for security-minded management of BIM and digital built environments. It outlines the cyber-security vulnerabilities to hostile attack when using BIM and provides an assessment process to determine the levels of cyber-security for BIM collaboration which should be applied during all phases of the site and building lifecycle.

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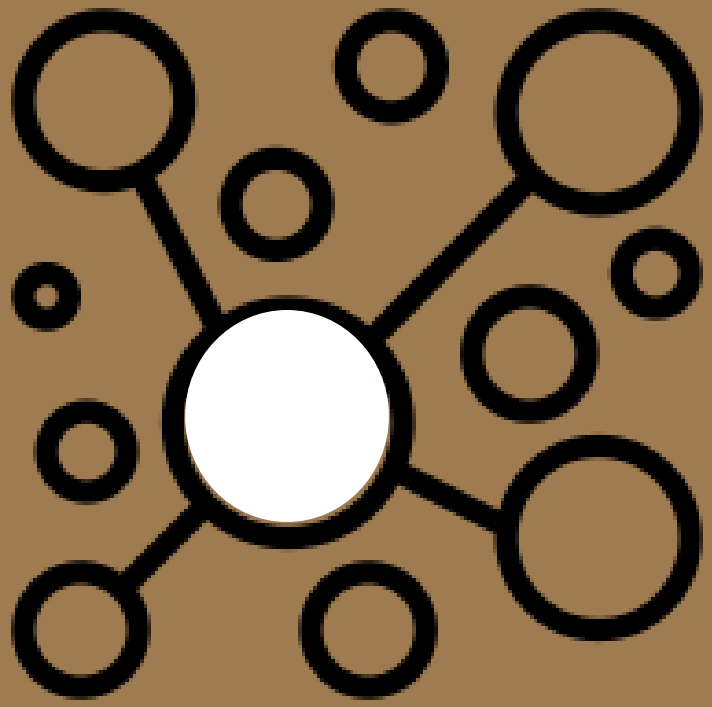

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Bringing It Altogether

WORKFLOW

Plain Language Questions

PLQ

OIR

Organisational Information Requirements

generates

generates

AIR

Asset Information Requirements

specifies

Asset Information 'Model' or 'Management'

AIM

Ministry of Justice

AMS

Asset Management Systems (UK-Wide)

informs

IDP

EIR

Employers Information Requirements

specifies

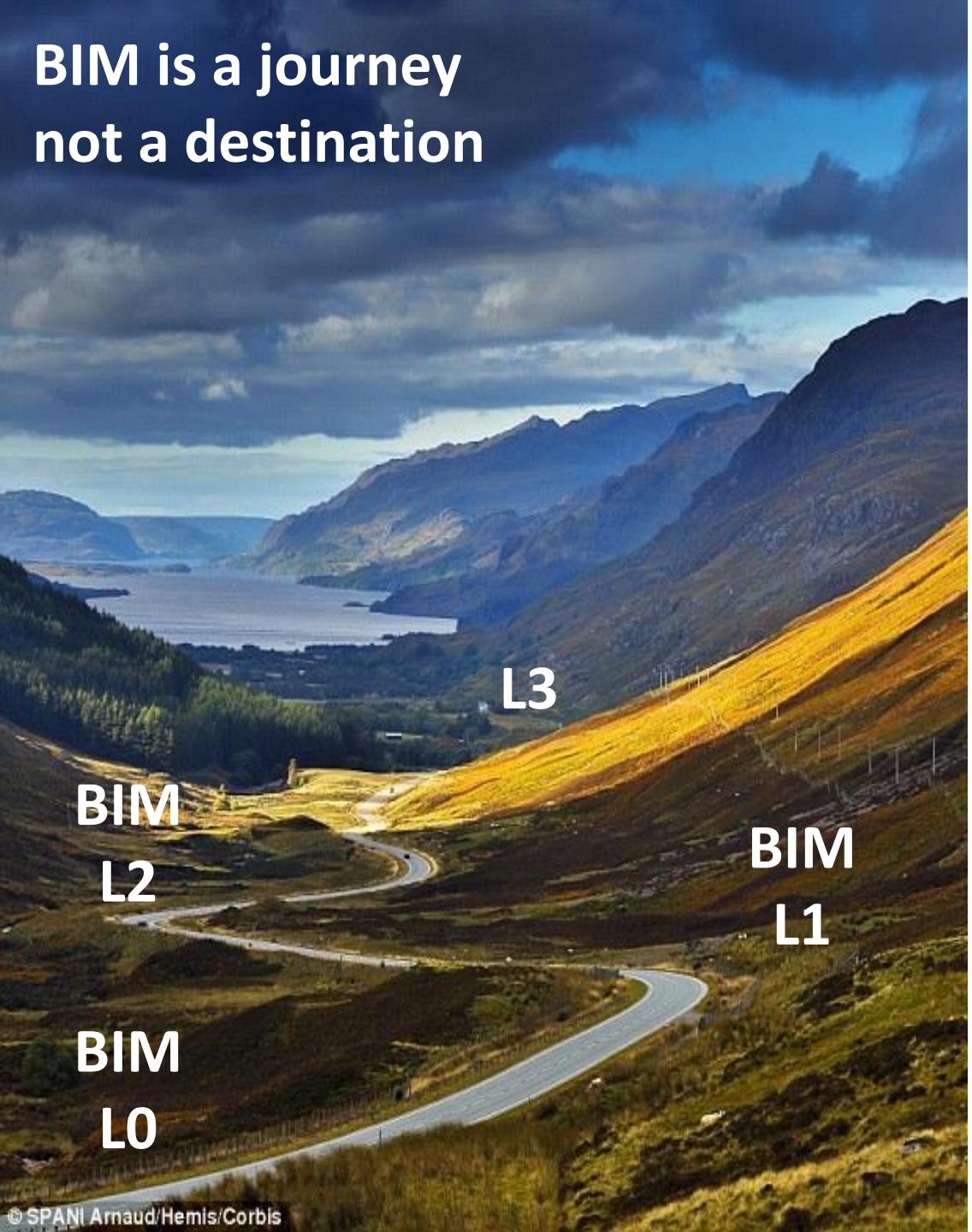
PIM

Information Delivery Plan

Project Information Model File & Data-Sets

Creating the Digital Estate

Source: Sainsbury



Next Steps

1. Familiarise yourself with the BIM Standards.

2. Think about your data ie. Creation, naming and management.

3. Engage and review resources available.

For Industry refer to:-
www.cs-ic.org/BIM

For Clients & Public Sector refer to:-
https://bimportal.scottishfuturestrust.org.uk/

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QUESTIONS &
ANSWERS

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