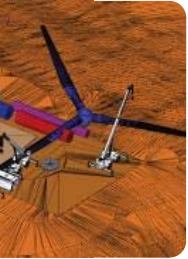


BIM im United Kingdom



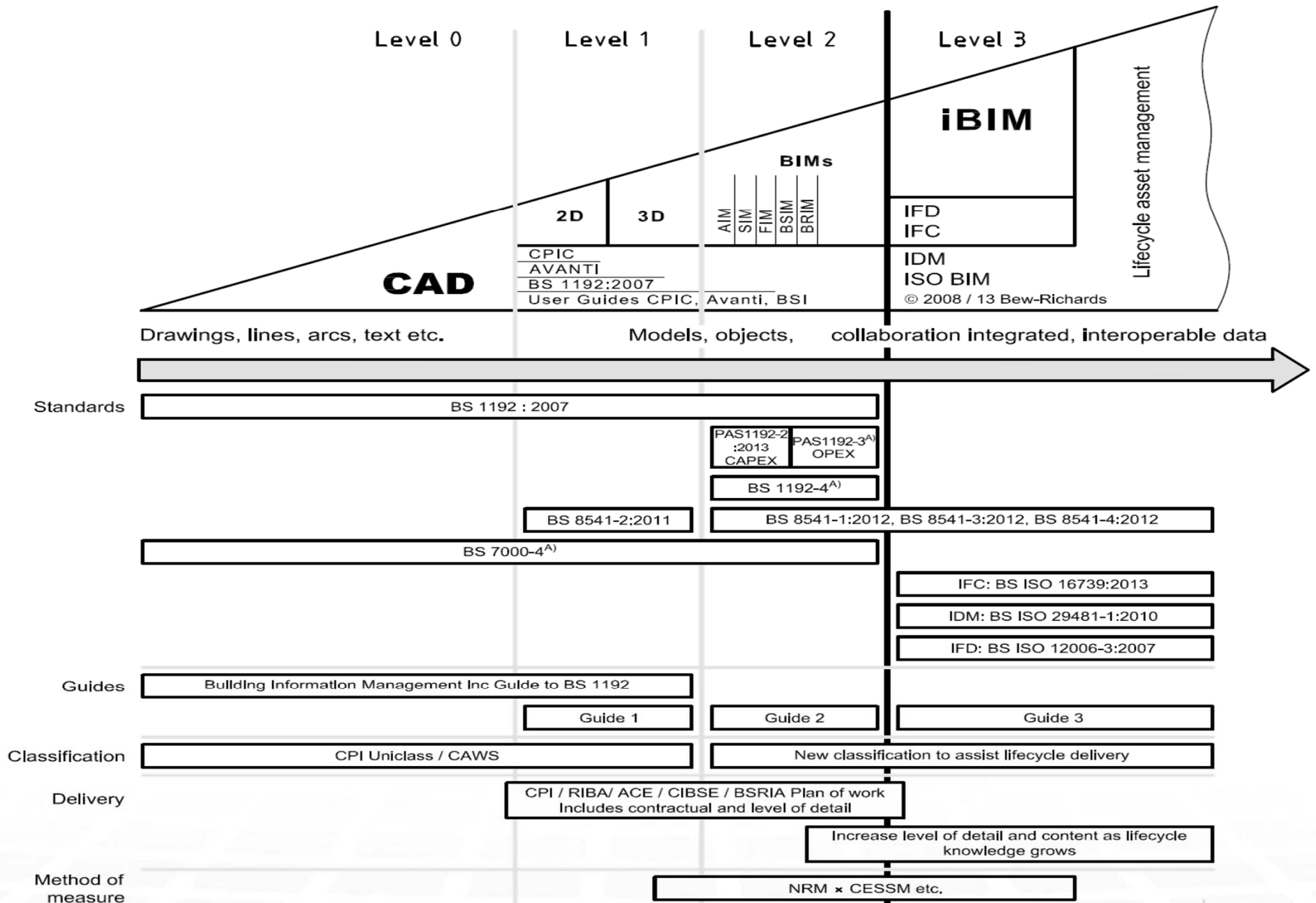


Der britische BIM Standard

BS 1192

British BIM Standard BS1192

Quelle: B555_Roadmap_JUNE_2013



British BIM Standard BS1192

- BS1192:2007
 - Beschreibt die Methode zur
 - Erstellung,
 - Verteilung
 - Qualitätssicherungvon Bauinformationen inkl. die durch CAD erstellte
 - durch einen strikten Prozess der Zusammenarbeit und spezifischen Namenskonventionen



British BIM Standard BS1192

- PAS1192-2:2013
 - Überspannendes Dokument
 - Aufbauend auf BS1192:2007
 - Ziel des Dokuments ist Ausschreiber und Bieter in Projekten die Notwendigkeit von Projektstandards zu vermitteln

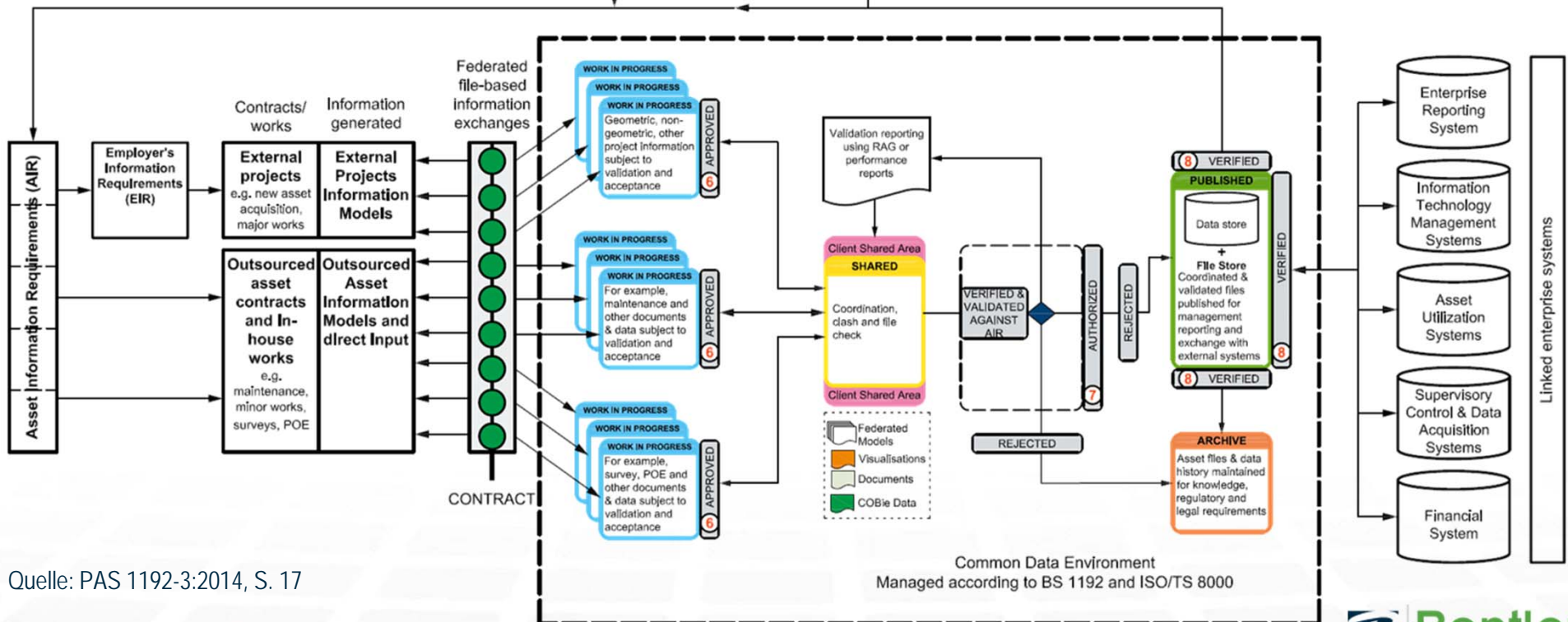
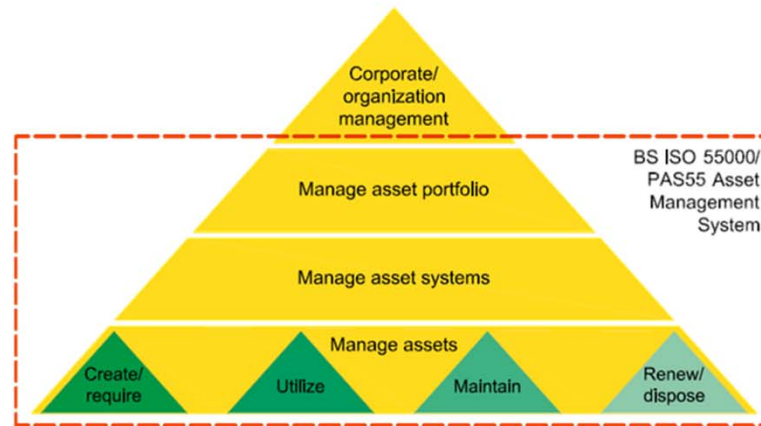


British BIM Standard BS1192

- PAS 1192-3:2014
 - Begleitendes Dokument zu PAS1192-2:2013
 - Fokus auf operative Phase sog. Assets
 - Es behandelt den Datenaustauschprozess:
 - Zum Erzeugen eines Asset Information Model (AIM)
 - Zwischen Asset und Project Information Model (PIM)
 - Zur Erfassung von Asset Informationen hinsichtlich Beseitigung, Außerbetrieb-nahme und Abriss
 - Nutzung und Pflege des AIM im Lebenszyklus



British BIM Standard BS1192



Quelle: PAS 1192-3:2014, S. 17

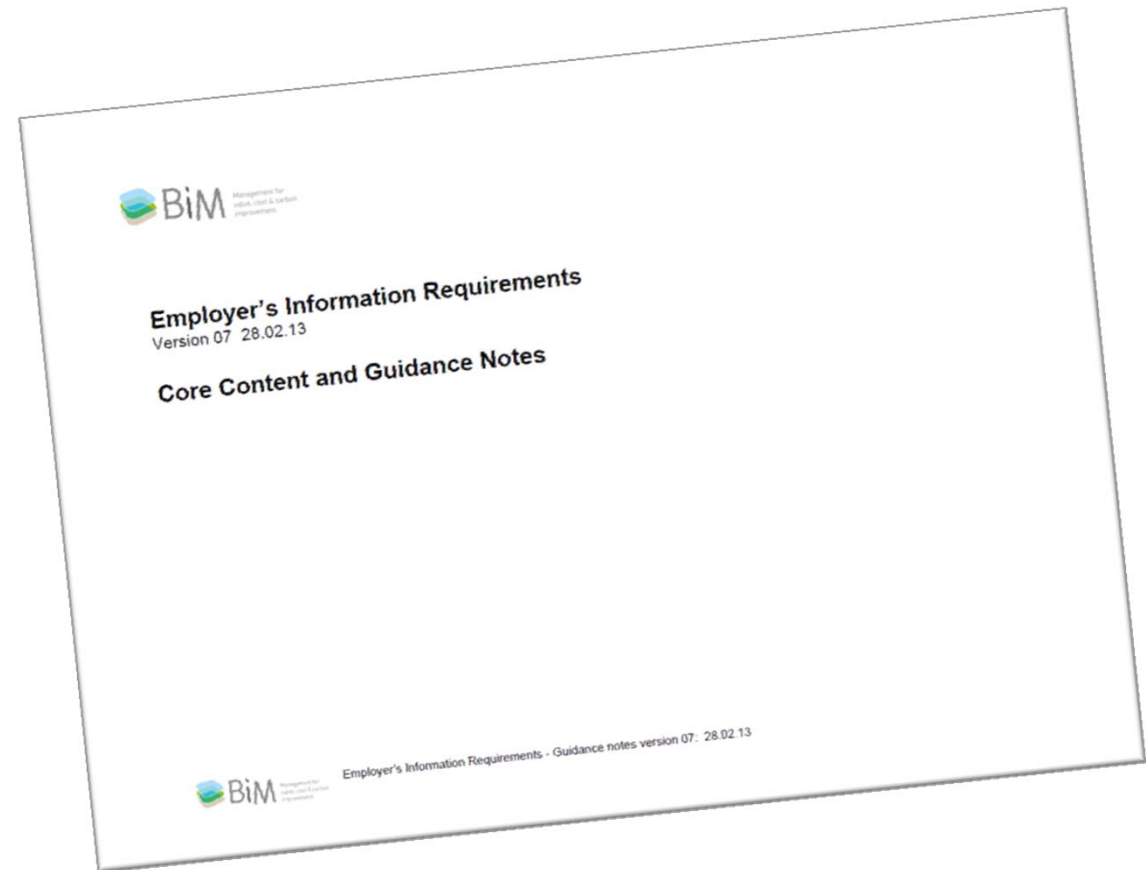
British BIM Standard BS1192

- BIM Protocol
 - Minimale Anforderungen für rechtliche und kommerzielle Aspekte in öffentlichen Projekten (15 Seiten)
- CIC Professional Indemnity for BIM
 - Beschreibt was versicherbar und was nicht versicherbar ist
 - Bezieht sich auf BS1192:2007 und erklärt welche Leistung versicherbar ist
- CIC The Role of Information Management
 - Kurze Beschreibung der Rolle des BIM Managers



British BIM Standard BS1192

- Employers Information Requirement
 - Erklärung des Kunden bezüglich seiner Erwartungen und der erwarteten Ergebnisse
 - Anforderungen hinsichtlich Informationsaustausch
 - Was für ein Format, in welcher Form und wann muss geliefert werden
 - Bieter sind aufgerufen diese zu beantworten



British BIM Standard BS1192

- CPIX BIM Strategy Templates
 - Pre-Contract Building Information Modelling (BIM) Execution Plan (BEP)
 - Post Contract-Award Building Information Modelling (BIM) Execution Plan (BEP)
 - CPIX - BIM ASSESSMENT FORM
 - CPIX - IT ASSESSMENT FORM



British BIM Standard BS1192

- Cobie UK 2012 information delivery templates
 - Datenschema zum erstellen und übertragen von information bei der Übergabe an den Bauherren und Betreiber für den Betrieb und das Facility Management
 - Untermenge der IFC
 - FM 10 Handover MVD



British BIM Standard BS1192

The screenshot shows the National BIM Library website. At the top, there is a navigation bar with links for 'construction knowledge', 'bim', 'jobs', 'books', 'product information', 'cpd', and 'magazines'. The main header features the 'nbs National BIM Library' logo and a search bar. Below the header is a navigation menu with 'Home', 'About', 'Object Types', 'Manufacturer Objects', and 'BIM for Manufacturers'. A 'Register now' and 'Log in' button is also present. The main content area includes a welcome message: 'Welcome to the National BIM Library, the construction industry's free-to-use resource of NBS standard BIM content, available in industry-neutral IFC format and formats compatible with Autodesk Revit, ArchiCAD, Vectorworks, Tekla and Bentley.' Below this is a 'BIM Content' section with a text box describing the library's 550+ proprietary objects and a 'Browse through the BIM Library by object type' button. To the right is an event announcement for '18th June 2013 An NBS event in association with: construction products association RIBA # Insight Register Now'. The 'Browse by...' section has tabs for 'Object types' and 'Manufacturers', with a grid of categories like Adhesives, Ceilings, and Concrete. The 'Expert articles...' section lists articles such as 'Managing information exchange in collaborative environments: PAS 1192-2' and 'Using NBS Create and NBS National BIM Library to maximise the benefits of BIM'. A 'Cookie Control' dialog is visible in the bottom left. The desktop taskbar at the bottom shows various application icons and the system clock at 17:44 on 17.06.2013.

British BIM Standard BS1192

The screenshot shows the National BIM Library website with the following content:

- Navigation:** Home, About, Object Types, Manufacturer Objects, BIM for Manufacturers. Buttons for Register now and Log in.
- Search:** A search bar with a magnifying glass icon.
- Browse by Object Type:**
 - Adhesives:**
 - Cementitious adhesives [2]
 - Admixtures, additives and additions:**
 - Set accelerating admixture for concrete [2]
 - Bedding and underlay compounds:**
 - Cementitious levelling screed mix [3]
 - Fibre reinforced levelling screed mix [4]
 - Self smoothing levelling screed mix [7]
 - Self smoothing wearing screed mix [5]
 - Self-smoothing calcium sulfate screeds (ready mixed) [8]
 - Ceilings:**
 - Concealed [12]
 - Concealed grid [17]
 - Direct fix [4]
 - Exposed [22]
 - Exposed grid [17]
 - Concrete:**
 - Ready-to-use fine concrete for bedding [2]
 - Concrete Waterproofing:**
 - Rubber hydrophilic waterstop [3]
 - Waterproofing admixture [2]
 - Curtain Walling systems:**
 - Curtain walling accessories [9]
 - Stick curtain walling system [14]
 - Unitized curtain walling system [4]
 - Damp proof courses:**
 - Plastics cavity closers [2]
 - Membranes:**
 - Cold applied bitumen solutions [3]
 - Floor coating resin [2]
 - Geocomposite studded sheet [5]
 - High density polyethylene studded sheets [3]
 - Polyethylene sheets [6]
 - Mortars and Grouts:**
 - Cementitious grout [2]
 - Crystallization active slurry mortar [2]
 - Epoxy resin-modified cementitious slurry [3]
 - Paving jointing mortar [3]
 - Paving unit priming slurry mortar [2]
 - Panel cubicles:**
 - Integrated Plumbing Systems [1]
 - Panel cubicles [1]
 - Privacy Screens [1]
 - Panel partitions:**
 - Media walls [1]
 - Plasterboard panel partition system [6]
 - Storage walls [1]
 - Plasters and renders:**
 - Acrylic render [2]
 - Cementitious render [6]
 - Gypsum plaster [4]
 - Lime render [4]
 - Polymer modified render [5]
 - Silicone render [2]
 - Roofs:**
 - Flat [63]
 - Pitched [30]
- Right Sidebar:**
 - 18th June 2013:** An NBS event in association with construction products association. RIBA # Insight. Register Now.
 - nationalBIMLibrary.com** logo.
 - Is the industry prepared for BIM?** Watch the BIM Roundtable Discussion.
- Footer:** Desktop, DE, 00:15, 18.06.2013.

British BIM Standard BS1192

The screenshot displays the National BIM Library website interface. The browser address bar shows the URL: www.nationalbimlibrary.com/BIMObjects?n=bbe1286d-537b-42c7-8a60-4ee6856e48c5. The page features a search bar with 'Type' and 'Manufacturer' filters. Below the search bar, several wall system options are listed, each with a cross-section diagram and a detailed description of its components. The options include:

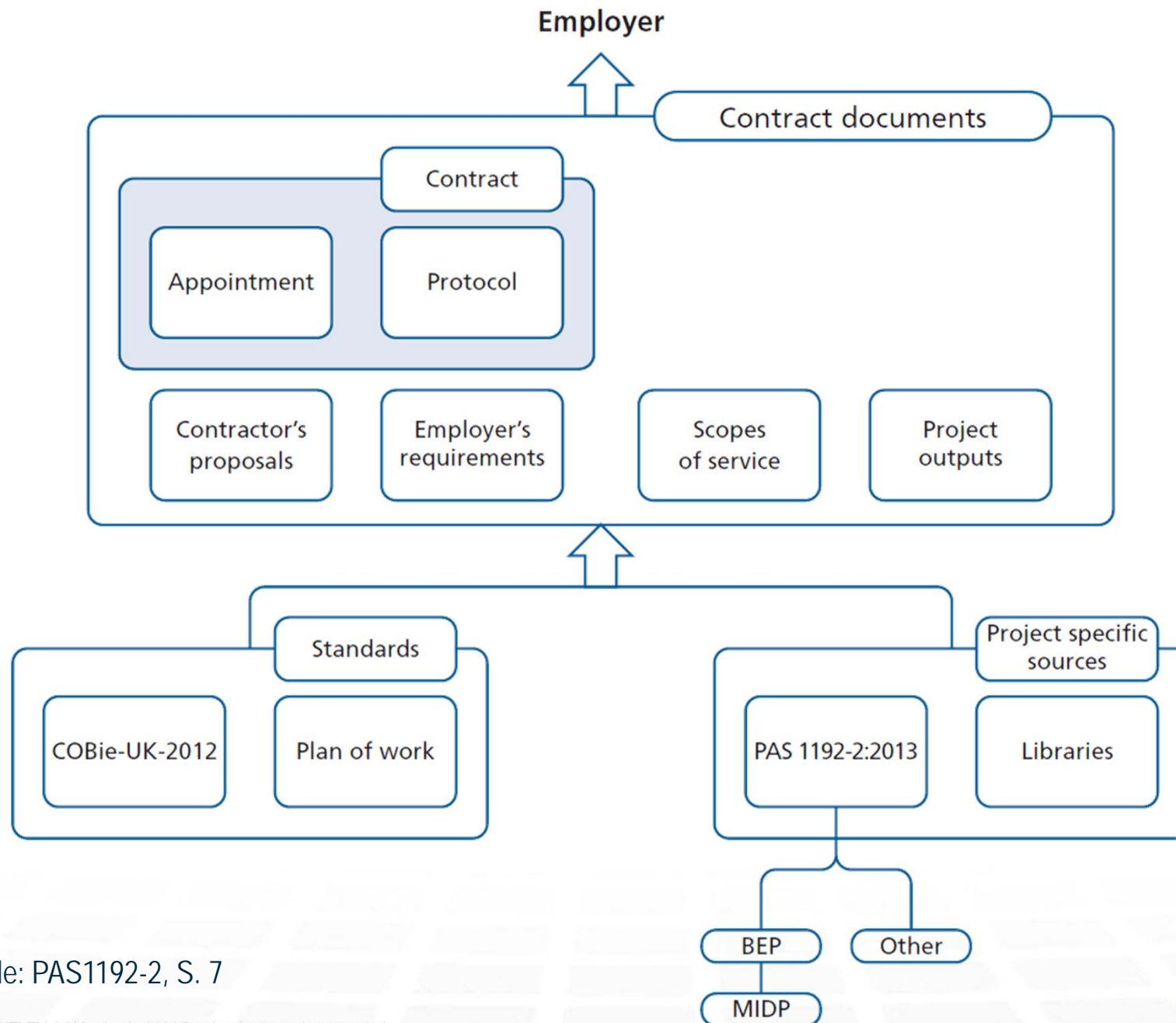
- Brick cavity wall with partial fill insulation and plaster.**
Unit wall system comprising: 102.5 mm clay brick, 50 mm cavity, 50 mm ridged board insulation, 100 mm concrete block and 13 mm plaster.
- Brick cavity wall with steel frame, full fill insulation, particleboard and plasterboard lining.**
Unit wall system comprising: 102.5 mm clay brick, 100 mm mineral wool insulation batts, 22 mm cement bonded particleboard, 150 mm steel frame and 12.5 mm gypsum plasterboard lining.
- Brick cavity wall with wood frame, particleboard, insulation and plasterboard lining on metal furrings.**
Framed wall system comprising: 102.5 mm clay brick, 50 mm cavity, 22 mm cement bonded particleboard, 225 mm insulated wood frame, 25 mm metal furrings and 12.5 mm gypsum plasterboard lining.
- Cement rendered concrete block cavity wall with steel frame and partial fill insulation.**
Framed wall system comprising: 20 mm cement render, 100 mm concrete block, 100 mm mineral wool insulation batts, 22 mm cement bonded particleboard, 150 mm steel frame and 12.5 mm gypsum plasterboard lining.
- Cement rendered concrete block cavity wall with steel frame, particleboard, insulation and plasterboard lining.**
Framed wall system comprising: 20 mm cement render, 100 mm concrete block, 50 mm cavity, 50 mm particleboard insulation, 22 mm cement bonded

On the right side of the page, there is a promotional banner for an event on 18th June 2013, associated with the Construction Products Association and RIBA #Insight. Below this is a 'Download' button with a list of software applications: ArchiCAD, Bentley, IFC, Revit, Tekla, and Vectorworks. Another banner asks 'Should architects take the lead with BIM?' and promotes a BIM Roundtable Discussion.

A 'Cookie Control' dialog box is visible in the bottom left corner, stating: 'This site uses cookies to store information on your computer. By using our site you accept the terms of our Cookie Policy.' with a 'I am happy with this' button and a 'read more' link.

The Windows taskbar at the bottom shows the system tray with the date 00:17 on 18.06.2013 and the desktop name 'DE'.

British BIM Standard BS1192



Quelle: PAS1192-2, S. 7



MOVING LONDON FORWARD





County of
Duckinghamshire

County of
Hertfordshire

County of

28

Bahnhofserweiterungen

8

U-Bahnhöfe

90

km überirdischer Streckenausbau

20

km doppelröhrige Tunnel



An aerial perspective of a large-scale urban infrastructure project, likely a railway station or transit hub. The scene is overlaid with a complex network of colorful lines (red, green, purple, blue) representing Building Information Modelling (BIM) data. The background shows modern buildings, including a prominent curved structure with a grid facade. Small human figures are scattered throughout the scene to provide scale. The BIM lines trace paths through the buildings and across the ground, indicating the integration of digital data into the physical construction process.

Building Information Modelling (BIM)

For Crossrail, Building Information Modelling (BIM) is the process of generating, building and managing data through the life of the project by using model-based technologies linked to a database of project information. BIM incorporates data – physical, environmental, commercial – on every element designed for Crossrail.

A BIM environment has not been created on this scale for a European transportation infrastructure project before and Crossrail is focusing its efforts in exploiting the opportunities BIM can bring not only in delivery of the railway, but perhaps more importantly in driving forwards design innovation within the construction industry.

Crossrail aims to be the first major infrastructure project to fully realise the BIM lifestyle concept. A key focus for us is the long-term cost savings that can be realised through our BIM model, by providing accurate information that can be handed over to the operators of the railway for managing Crossrail's assets post-completion.



Daten



Altdaten – Einführung eines Common Data Environment (ProjectWise),
Juli 2009

- CAD Dokumente 92,000
- Nutzer 25
- Verträge 3



Vergangenes Jahr – Januar 2013

- CAD Dokumente 970,000+
- Nutzer 1650+
- Verträge 64



Dieses Jahr - August 2014 (geschätzt)

- CAD Dokumente 2,000,000+
- Nutzer 2500+
- Verträge 84+

Spezifikationen & Standards

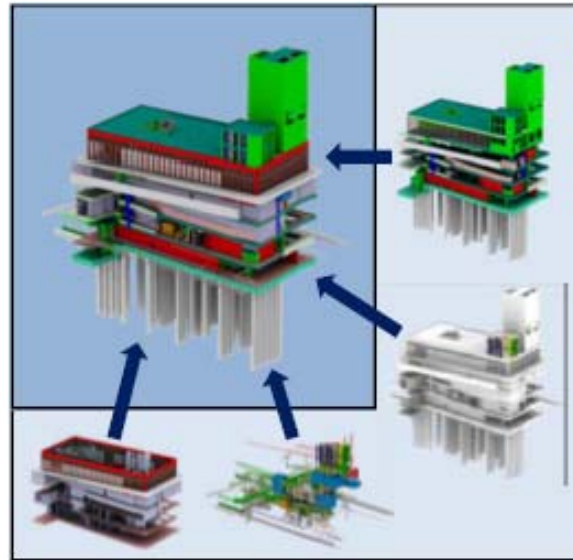
Gewerkeabhängige Vorgaben für 3D Modelle abhängig vom Projektstand unter Verwendung von **BS 1192**

- Definition der Zusammenarbeit
- Definition der Detailtiefe
- Sicherstellung der Durchgängigkeit



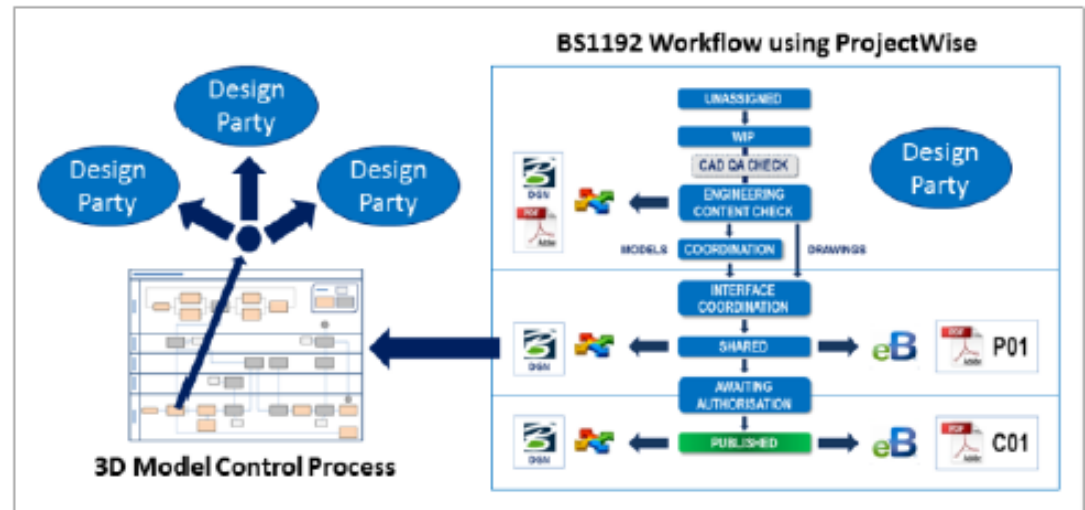
Kritische Reviews

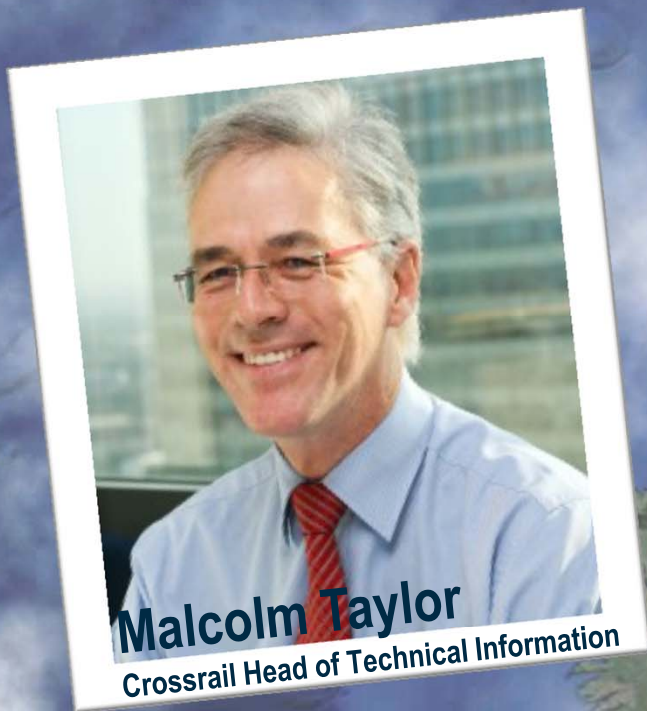
3D Reviews mit allen im Prozess beteiligten Gewerken



Prüfprozess

Einführung eines Prüfprozesses für 3D Modelle basierend auf ProjectWise





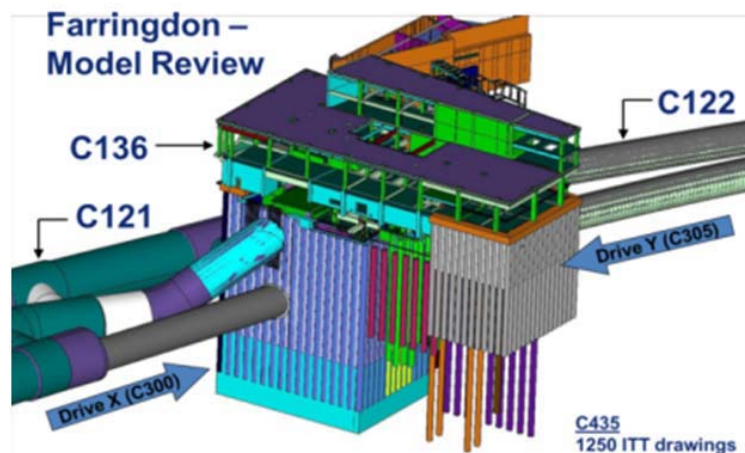
„Wir bauen 2 Corssrails.
Eine Reale und eine Virtuelle und
beide sind gleichermaßen wichtig.“

Direkter Nutzen

- **Kollisionsfreiheit** (Reduzierte Fehlplanung)
- Gesteigerte **Effizienz** durch schnellen integrierten Freigabeprozess
- Hohe **Datenaktualität** (Vermeidung von Informationsverlusten)
- Erhöhte **Sicherheit** (Visuelles Erkennen von Gefahren)
- **Planungssicherheit** (4D Planung)
- Erhöhte **Performance** (Modelle im GIS Kontext)
- Direkter **Übergang** der Daten vom Design zum Bau
- Innovatives **Asset Management** (Asset Database)

Kosteneinsparung

- Schnelles Finden von Informationen in einer Quelle
- Erstellung von Nicht-CAD Informationen
- Automatisiertes Erstellen von Modellen und Zeichnungen



Farringdon Station:

3D Verknüpfung von Modell und Projektplan

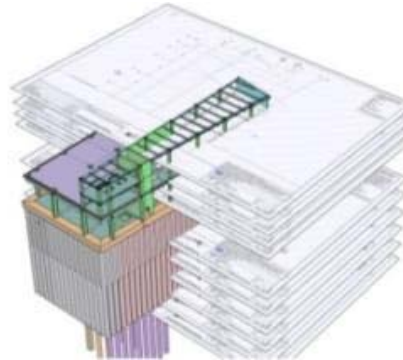
Kosten: 120k GBP

Gewinn: Sicherung von 8 Mio GBP Risiko

Nicht finanzieller Nutzen

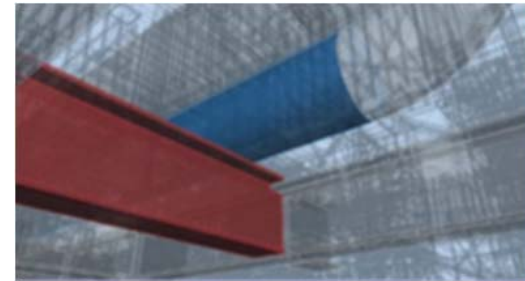
Sicherheit

Besseres Verständnis durch Kombination von 2D und 3D Visualisierung



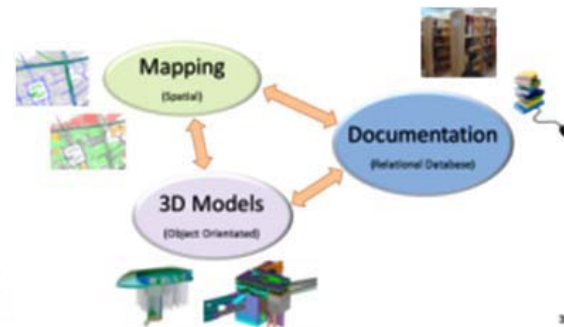
Effizienz

Vermeidung von Fehlern durch Kollisionsprüfung im Modell



Effektivität

Gewährleistung der ausschließlichen Nutzung aktueller Daten und Pläne





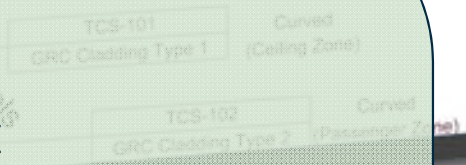
Zeiteinsparungen Corssrail:

- Synchronisieren von Informationen 10 Manntage/Monat
- Workflow 26 Manntage/Vertrag/Monat
=780 Manntage/Monat für 30 Verträge
- CAD Prüfung (Q&A) 50 Manntage/Monat
- Suchen nach Daten *Nicht Mess-/Quantifizierbar*
- Alle nutzen aktuelle Daten *Nicht Mess-/Quantifizierbar*

Gesamt 866 Manntage/Monat

Gesamt für 1 Jahr 10.392 Manntage/Jahr*

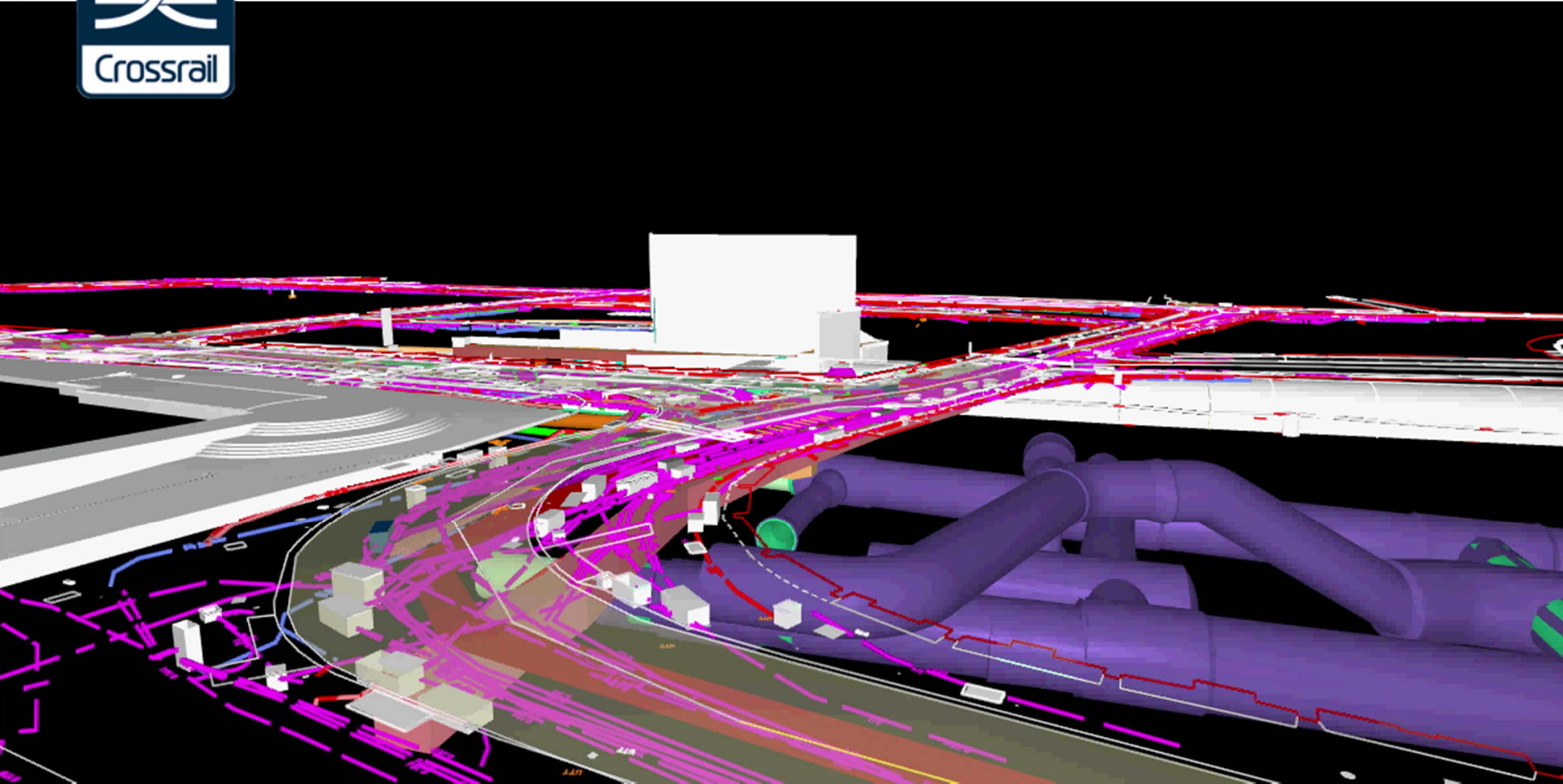
Mannjahre 57,7 Mannjahre



Floor structure. Refer individual stations for specific requirements

Tunnel structure

Ein Crossrail Information Model



Common Data Environment

The screenshot displays the ProjectWise Explorer V8i interface. The left pane shows a tree view of project folders. The right pane shows a list of files with columns for Name, File Name, Updated, and Updated By. The bottom pane shows Project Properties for a specific contract.

Verträge (Contracts): A red callout box highlights the top-level 'Contracts' folder and its sub-folders, including 'C1 - Framework Design', 'C000 - Test Area', 'C100 - Architectural Component Design', 'C121 - Sprayed Concrete Lining', 'C131 - Paddington Integrated Project (PIP)', 'C132 - Bond Street Station Design', 'C134 - Tottenham Court Road Station Design', 'C136 - Farringdon Station Design', and 'C138 - Liverpool Street Station Design'.

Einheitliche Ordnerstruktur (Uniform Folder Structure): A purple callout box highlights the detailed folder structure under 'C138 - Liverpool Street Station Design', showing a consistent hierarchy of folders like '1 - Reference Data', '2 - Application Data', 'Cells', 'Document Sets', 'Hevacomp', 'InRoads', 'Output Files', 'Plotting', 'Rebar DB Files', 'Architect', 'Drawing', 'Elevation', 'General Arrangement', 'Presentation', 'Reference', 'Schematic', 'Section', 'Sketch', 'Model', '2D-3D', 'Coordination', 'Extractions', 'Other', 'Raster Image', 'STAAD Pro Project File', 'Civil Engineer', and 'Geotechnical Engineering'.

Projekt/Vertrags Eigenschaften (Project/Contract Properties): A pink callout box highlights the 'Project Properties' pane, showing details for Contract C138, including Contract Topic (Liverpool Street Station Design), Main Contractor (Mott MacDonald Limited), Project Manager (TBA), and Home Folder Properties (Folder Name: C138 - Liverpool Street Station Design, Environment Name: Default Folder Environment, Storage: System Data Storage, Owner: CRLAD\Peter Willmen).

Name	File Name	Updated	Updated By
1 - Reference Data		08/09/2009 08:23:23	Peter Willmen
2 - Application Data		08/09/2009 08:26:25	Peter Willmen
A - Architect		08/09/2009 08:25:20	Peter Willmen
C - Civil Engineer		08/09/2009 08:22:45	Peter Willmen
C2 - Geotechnical Engineering		08/09/2009 08:26:45	Peter Willmen
C3 - Hydraulic Engineer		08/09/2009 08:25:57	Peter Willmen
C4 - Tunnelling		08/09/2009 08:26:07	Peter Willmen
D - Drainage, Highways Engineer		08/09/2009 08:23:53	Peter Willmen
E - Electrical Engineer		08/09/2009 08:24:31	Peter Willmen
F - Facilities Manager		08/09/2009 08:22:55	Peter Willmen
G - Geographical and Land Surveyor		08/09/2009 08:26:16	Peter Willmen
H - Heating and Ventilation Designer		08/09/2009 08:26:54	Peter Willmen
I - Interior Designer		08/09/2009 08:27:13	Peter Willmen
J - Railway Consents		08/09/2009 08:24:51	Peter Willmen
L - Landscape Architect		08/09/2009 08:26:36	Peter Willmen
M - Mechanical Engineer		08/09/2009 08:25:00	Peter Willmen
P - Public Health Engineer		08/09/2009 08:23:05	Peter Willmen
R - Rail Engineer		08/09/2009 08:25:10	Peter Willmen

Eindeutiger Dokumentencode



CRL1-XRL-S-DDA-N105_WS092_3-00001

Workspace Components Spatial
General Security Attributes More Attributes File Properties Audit Trail

Crossrail - Drawing and Model Attributes

Programme	CRL1	Crossrail Line 1 Programme
Originator	XRL	Crossrail Ltd
Role	S	Structural Engineering
Type	DDA	Drawing - Plan
Asset Location	N105	Tottenham Court Road Stn
Sub-Location	WS092	Tottenham Court Road Stn Astoria Worksite
Level	3	2 Levels below Ground

Drawing Number: **CRL1-XRL-S-DDA-N105_WS092_3-00001**

Title: Tottenham Court Road Station

Revision	Revision Note	Revision Date
P01.1	First Issue	

CAD File Type: N/A | Phasing: Proposed | Zone: [Dropdown]

Design Status: S0 | Suitability: New Document

Drawn By: K.WHITE | Drawn Date: 21/7

Security Status: **RESTRICTED**

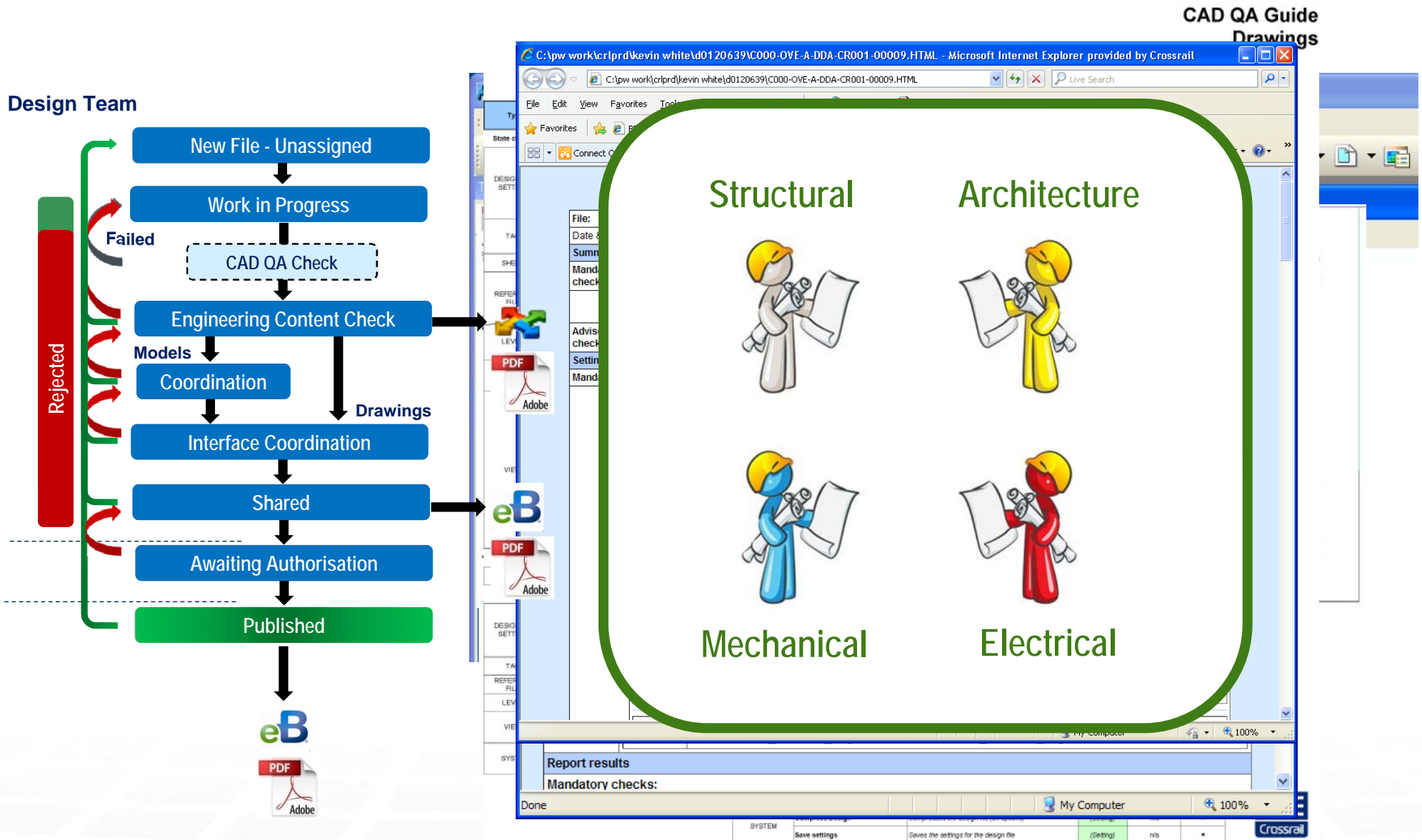
Sheet Size: A1

Bold Label indicates mandatory

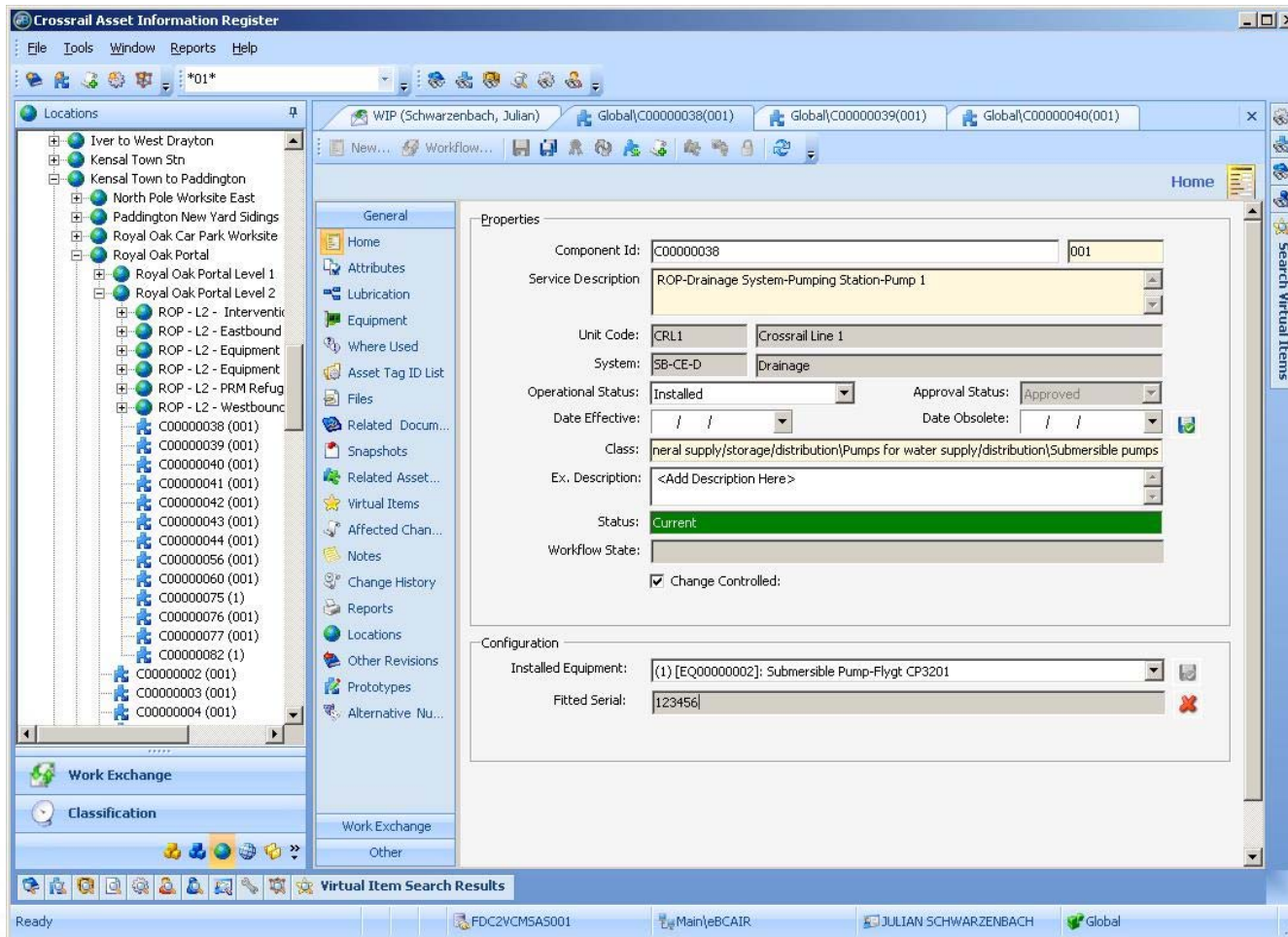
Save Undo Close | 1/1



Freigabeprozess



Asset Information Management System



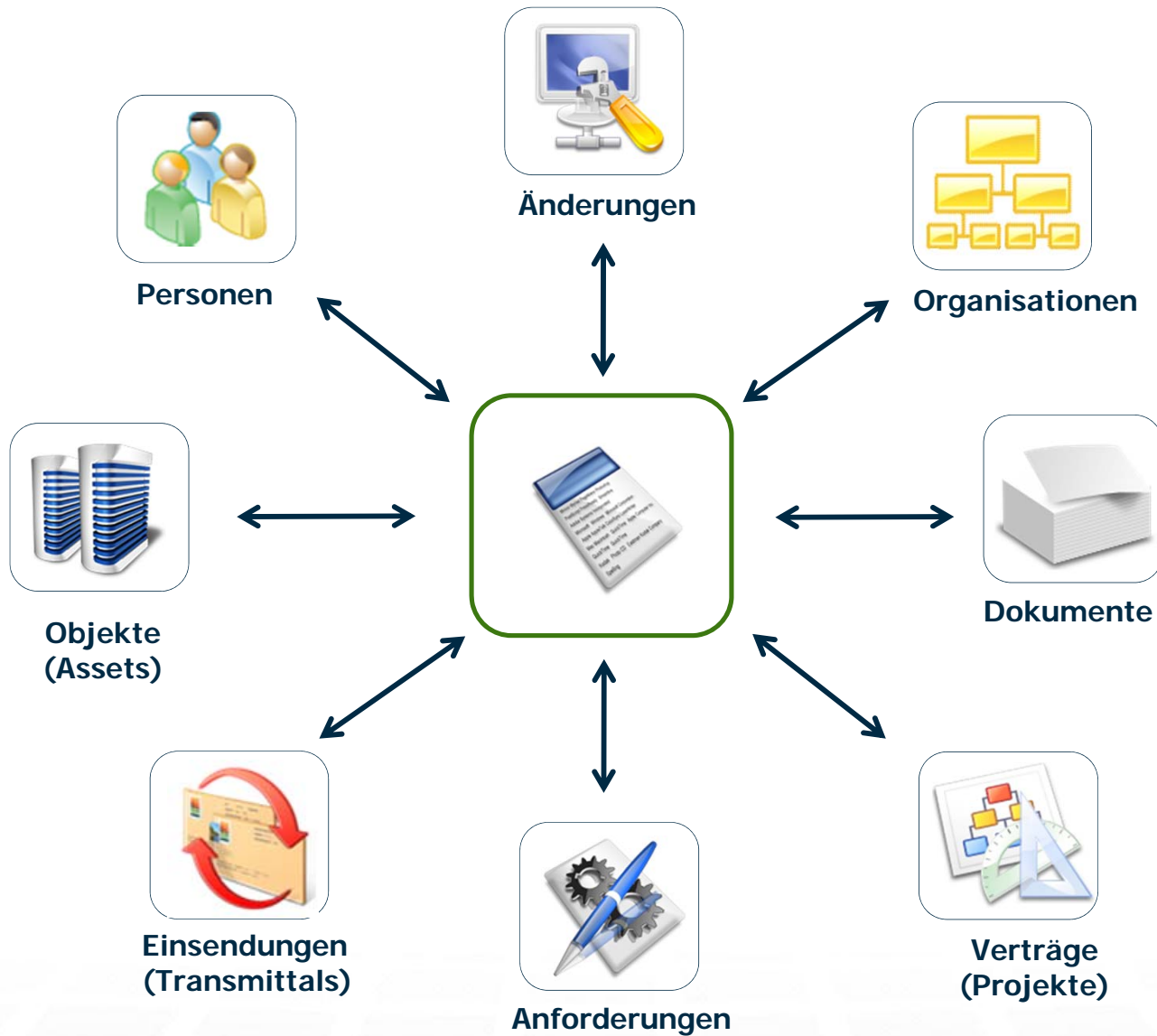
- Erstellung einer Datenbank mit allen Objektdaten
- Verknüpfung alle Informationen über den gesamten Lebenszyklus



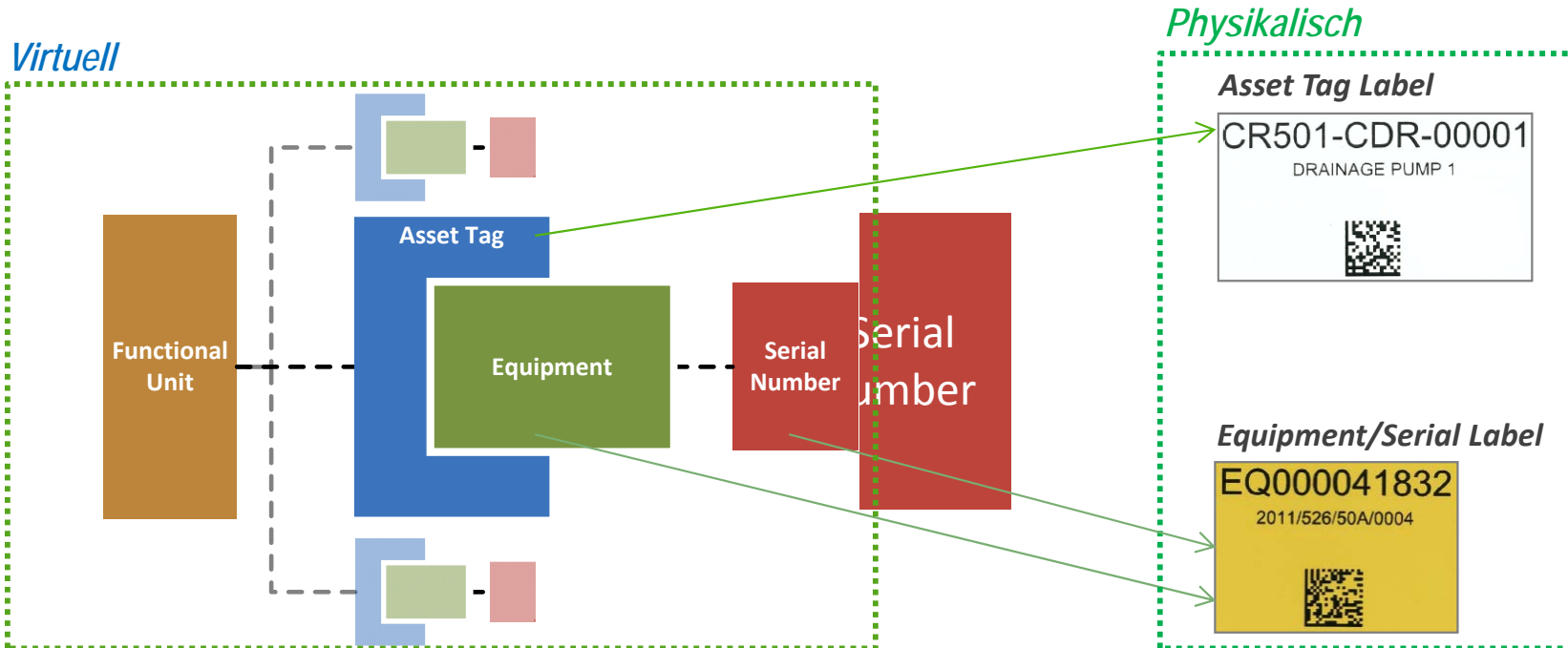
Crossrail nutzt eB Web als Elektronisches Dokumenten Management System (EDMS). eB hilft Corssrail alle Informationen über den gesamten **Lebenszyklus** zu verwalten und bietet ein integriertes **Änderungsmanagemant**.



eB – Informationen verknüpfen



Was sind Assets (virtuell, physikalisch)



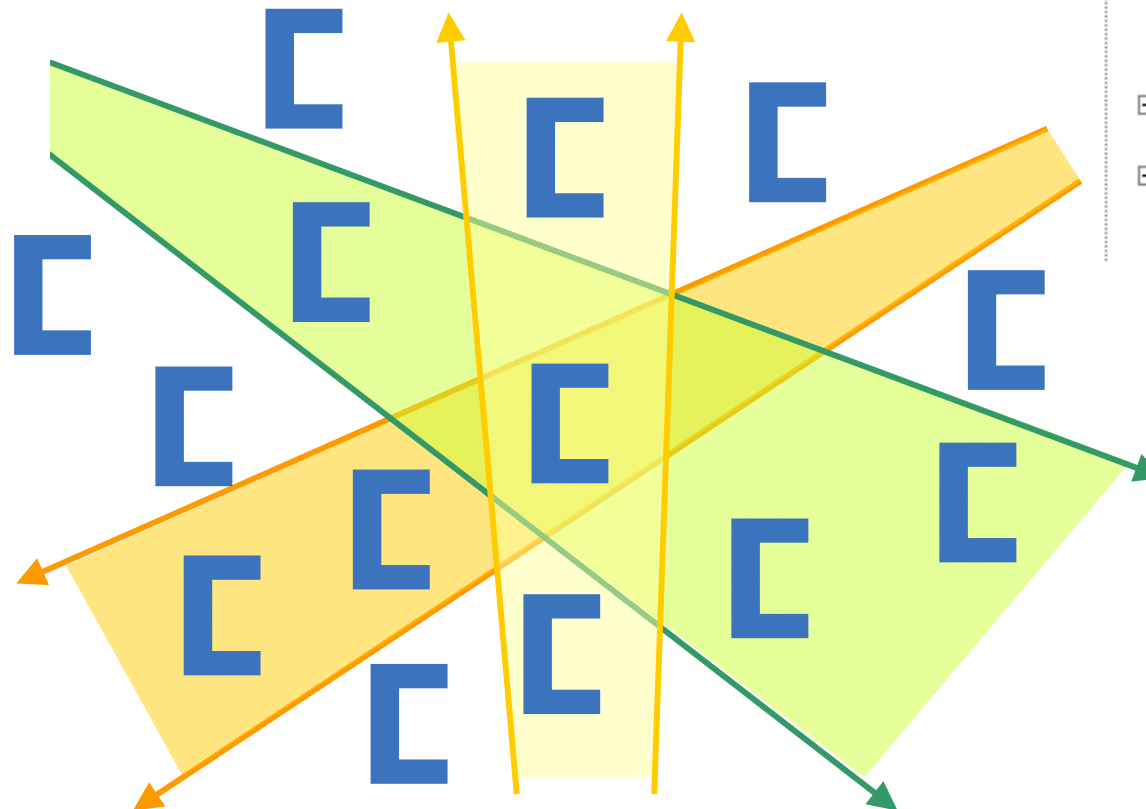
- **Tag** – die spezifische Aufgabe eines Objekts / Assets
 - z.B. Abwasserpumpe
- **Equipment** – das physikalische objekt, welches die Aufgabe ausführt
 - z.B. *Acme Model B Pumpe*
- **Serial** – eine eindeutige Instanz des Equipments
 - z.B. *12345*
- **Functional Unit** – Eine Zusammenfassung von Objekten die gemeinsam eine Funktion ausführen
 - z.B. *Abwasserpumpstation*

Unterschiedliche Sichten auf die Objekte

- Royal Oak Portal
 - Royal Oak Portal Level 1
 - ROP - L1 - Access Corridor
 - ROP - L1 - Communications Equipment Room
 - ROP - L1 - Emergency Switch Room
 - ROP - L1 - Escape Landing
 - ROP - L1 - Fan Room
 - ROP - L1 - Fire Equipment Room
 - ROP - L1 - Fire Suppression Room 1
 - ROP - L1 - Fire Suppression Room 2
 - ROP - L1 - HV Switch Room 1
 - ROP - L1 - HV Switch Room 2
 - ROP - L1 - Intervention Corridor
 - ROP - L1 - Intervention Stairs
 - ROP - L1 - LV Switch Room 1
 - ROP - L1 - LV Switch Room 2
 - ROP - L1 - Motor Control Centre

- Crossrail Functional Breakdown
 - FB-BS - Building Systems
 - SB-BS-C - Cable Routing
 - SB-BS-DR - Drainage rain water
 - SB-BS-DW - Drainage waste water
 - SB-BS-E - Electrical
 - SB-BS-EL - Emergency Lighting
 - SB-BS-ES - Escalator
 - SB-BS-FD - Fire Detection
 - SB-BS-FS - Fire Suppression
 - SB-BS-H - HVAC
 - SB-BS-L - Lift
 - SB-BS-LG - Lighting

Unterschiedliche Tags



Räumlich

Wo sind die Objekte

Funktional

Was tun diese Objekte

Klassifizierung

Welche Typen von Objekten sind das?

- L - Construction Products
 - L1 - Ground treatment and retention products
 - L11 - Ground anchorages
 - L12 - Ground improvement
 - L13 - Land/field drainage
 - L14 - Sheeting, revetments

Bereit für die Übergabe an den Betrieb

2.1 Example Images




3 Attributes

Generic Attributes plus the following:

Attribute	Units	Description
Length	Metre	The total horizontal length of the sheet piling asset
Height	Metre	The total vertical height of the sheet pile asset (where height varies use average height)
Depth	Metre	The depth below ground level (where Depth varies use average depth)
Weight per metre	Kg	The weight per metre of a single pile
Area	Metre ²	The total area of the sheet piling
Grade of steel	BS 970	Grade of steel used for the pile

Page 4 of 5
Document uncontrolled once printed. All controlled documents are saved on the CRL Document System
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Document Title
Document Number and Rev.



ASSET DATA DICTIONARY DEFINITION DOCUMENT (AD4)
L151 – SHEET PILES


Document Number: XXXX-XXXX-XX-XXXX-XXXX

Document History:

Revision:	Date:	Prepared by:	Checked by:	Authorized by:	Reason for Issue:
0-0	16-02-12	Nick Mitsay-White	XXXXXX	XXXXXX	e.g. For Review, Correction B, etc.

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Page 1 of 5
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WORKS INFORMATION
Volume 2B – General Requirements

Document Number: CRL/LAB/IG-000/CB001-0003
Version 1.1



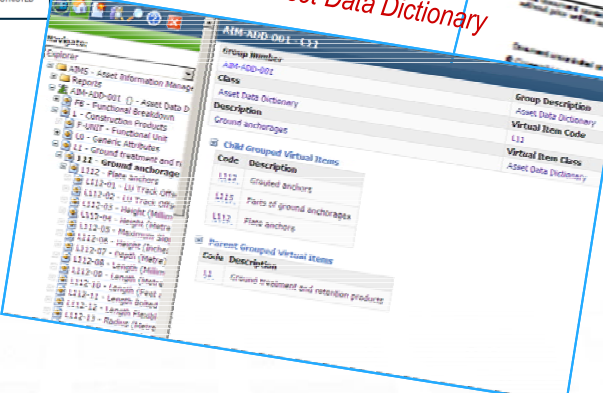
Engineering Directorate
Asset Information Management Plan

Document Number: CRL/L-IG-23-01P/CB001-0003

Revision	Date	Prepared by	Checked by	Authorized by	Reason for Issue
1.0	07/01/12	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	Initial Issue
1.1	07/01/12	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	Minor corrections
1.2	07/01/12	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	Minor corrections
1.3	14/07/12	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	Major corrections

Page 1 of 10
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Asset Data Dictionary



Asset Data Dictionary

Group Description: Asset Data Dictionary
Virtual Item Code: L12
Virtual Item Class: Asset Data Dictionary

Code: L122
Description: Ground anchorage

Code: L122-01
Description: Grouted anchors

Code: L122-02
Description: Parts of ground anchorages

Code: L122-03
Description: Plate anchors

Code: L122-04
Description: Maximum size

Code: L122-05
Description: Height (metre)

Code: L122-06
Description: Height (metre)

Code: L122-07
Description: Height (metre)

Code: L122-08
Description: Length (metre)

Code: L122-09
Description: Length (metre)

Code: L122-10
Description: Length (metre)

Code: L122-11
Description: Length (metre)

Code: L122-12
Description: Length (metre)

Code: L122-13
Description: Length (metre)

Zeitachse

2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

Bill

Land & Property

Heute eingesetzte Technik & Standards existierten zu Projektbeginn gar nicht



„Die Technik bekommen wir in den Griff.
Die Menschen machen mir mehr sorgen“

Phil Jackson, Bentley Senior Consultant (2006)



Kontinuierliches Lernen

Crossrail – Bentley BIM Academy



Andrew Wolstenholme, CEO Crossrail



Greg Bentley, CEO Bentley Systems

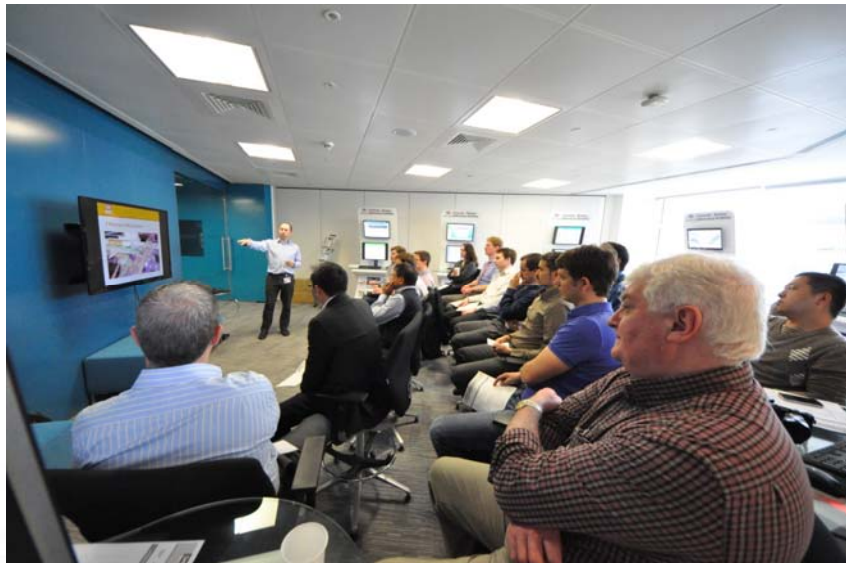
Eine gemeinsame Vision

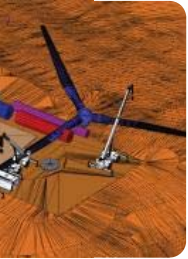
- On-boarding Veranstaltungen
 - Projektweise nach Bedarf
 - Inklusive der BIM Experten
 - Die Crossrail BIM Vision/Anforderung
 - Dokumenten Management
 - CAD/ Modelling Management
 - Asset Management
 - Abgabeformate für BIM
 - Begleitende Online Seminare



BIM Academy

- Schulungen
- Einweisungen
- Tests und Innovationen
- Simulation





Und wie geht's weiter?

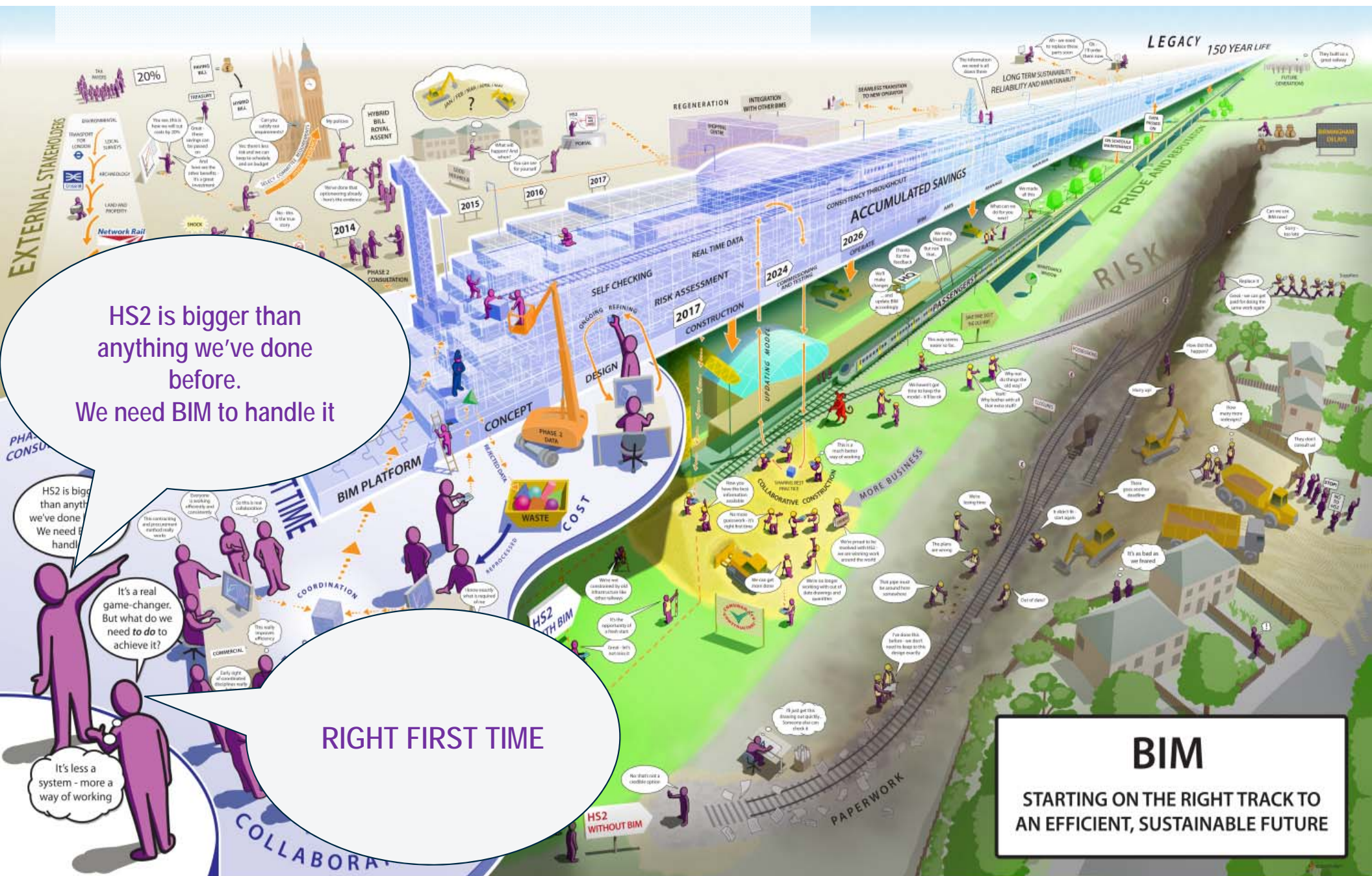
Beyond Crossrail ...

hs2 High Speed 2



■ High speed network (Phases I & II)
 ■ Existing lines for direct services
 ■ Heathrow Express

HS2 at the forefront of BIM



HS2 is bigger than anything we've done before. We need BIM to handle it

RIGHT FIRST TIME

BIM
STARTING ON THE RIGHT TRACK TO AN EFFICIENT, SUSTAINABLE FUTURE

