



Oifig um Sholáthar Rialtais
Office of Government Procurement

CIF DIGICON 2020 7th July - Virtual eProcurement - Building Information Modelling (BIM)

Presented by

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Office of Government Procurement

OGP.GOV.IE

Delivering Sustainable Procurement Solutions



Agenda

- Introduction
- Overview of Capital Works Management Framework (CWMF)
- Building Information Modelling (BIM)
- Why BIM Works - Standards
- BIM and CWMF
- Implementation Strategy

Roadmap



FIGURE 1. NBC ROADMAP TO 2021

Introduction

In Ireland, public infrastructure procurement is governed by the Capital Works Management Framework (CWMF) using Public Works Contracts (PWC)

In 2014 a Review of the Public Works Contracts was prepared for the Government Construction Contracts Committee

- Some Key Findings:
 - Poor definition of the works requirements
 - Insufficient identification of risk
 - Inappropriate risk allocation
- BIM was recognised by the GCCC as a powerful risk management tool.
 - Digitalisation of the Information Requirements for Public Works projects

Report on the Review of the Performance of the Public Works Contract

Interim recommendations for amendments to the Public Works Contracts and Medium Term Strategy for the development, procurement and administration of projects under the Exchequer Capital Programme

Government Contracts Committee for Construction

December 2014



Overview of CWMF

The Construction Policy Unit of the Office of Government Procurement have the responsibility of supporting the Irish Construction Sector when they engage with the CWMF.

Team of 9 people (and growing) manage the CWMF which has 4 Pillars:

Pillar 1: PWC's -11 Contract types, supported by,

20 Model Forms, 9 ITT's, 13 Form of Tenders and Schedules, Authorised Bonding Business, Arbitration Rules, Weather Events, Information note on GDPR.

Pillar 2: Conditions of Engagement

2 Standard Conditions of Engagement, 6 Model Forms, 4 ITT's (Services), 2 Form of Tenders and Schedules (Services), Arbitration Rules, Information note on GDPR.

Pillar 3: Cost Planning/ Control and Suitability Assessment

6 Standard forms for Cost Planning and Control, 6 Suitability Assessment Questionnaire's

Pillar 4: Guidance Notes and Glossary

28 Guidance Notes, 1 Glossary,

Totals: 103 Documents – 1000's of pages of Guidance Notes

Construction Procurement Reform

Home News Circulars Regulations Contact Us Useful Links

Have you obtained sanction for a derogation from the Government Contracts Committee for Construction (GCCC) under Section 6 (c) of Circular 01/2016?
If Yes? - Then click on the link to the Circular 1/16 - Derogation Documents.
If No? - please click on the following link to bring you to Home Page

Home
Welcome to the Construction Procurement Reform website

The Department of Public Expenditure and Reform is responsible for implementing national policy on public procurement, particularly in relation to construction procurement. The Department's website: constructionprocurement.gov.ie has been specifically developed to implement the key outputs of the Government Decision of May 2004 in relation to the reform of public sector construction procurement. The main objectives of this reform initiative are:

- Cost certainty at tender award stage
- Better value for money (VFM), and
- More efficient delivery of public works projects

The reform is one of a number of key value for money measures announced by the Minister on 20 October 2005 and has been put in place to help address concerns about the extent of cost overruns (i.e. the increase in project cost between the accepted tender price and the final outturn cost) on public works and consultancy contracts, and to eliminate such cost overruns through better planning and greater use of works contracts and conditions of engagement by means of optimal risk transfer to contractors and consultants who are best placed to manage and control such risks.

This site consists of a Capital Works Management Framework which contains an integrated set of contractual provisions, guidance material and technical procedures which covers all aspects of the delivery process of a public works project from inception to final project delivery and review. **Please check the News page for recent updates.** The structure of this strategic framework is closely aligned and compliments the Capital Appraisal Guidelines issued by the Department of Finance.

The Capital Works Management Framework is for the use by contracting authorities involved in the expenditure of public funds on construction projects and related consultancy services. The use of the framework should result in a more cost effective delivery of public works projects because of the more systematic and detailed approach to, among other things, planning (both preparatory and detailed), capital budgeting as well as design and construction cost control.

Contact Us: construction@per.gov.ie

Sholáthar Tógála, Ceannáras na hOifige um Sholáthar Rialtais: 9A, Sráid an Mhara Uachtarach, Baile Átha Cliath 1, D01 PF72
Déan Teagmháil Linn: construction@per.gov.ie. Léigh an Ráiteas Pribháideachais.
English Gaeilge

Overview of CWMF

- Procurement is a complex process engaging Clients, End Users, Administrators, Technical Professionals, Works Contractors, Suppliers, Construction Specialists, and Facility Managers
- Public Spending Code, CWMF Rules, Government Initiatives
 - Government, Construction 2020(2014), A Strategy for a Renewed Construction Sector.
 - GCCC Position Paper (2017), BIM-Adoption-Strategy-Statement-of-Intent, CPP 01/17
 - National Bim Council (2017), Roadmap to Digital Transition For Ireland's Construction Industry 2018-2021
- **Government policy objectives from CWMF:**
 - Cost certainty at tender award stage
 - Better value for money (VFM), and
 - More efficient delivery of public works projects

Future of CWMF

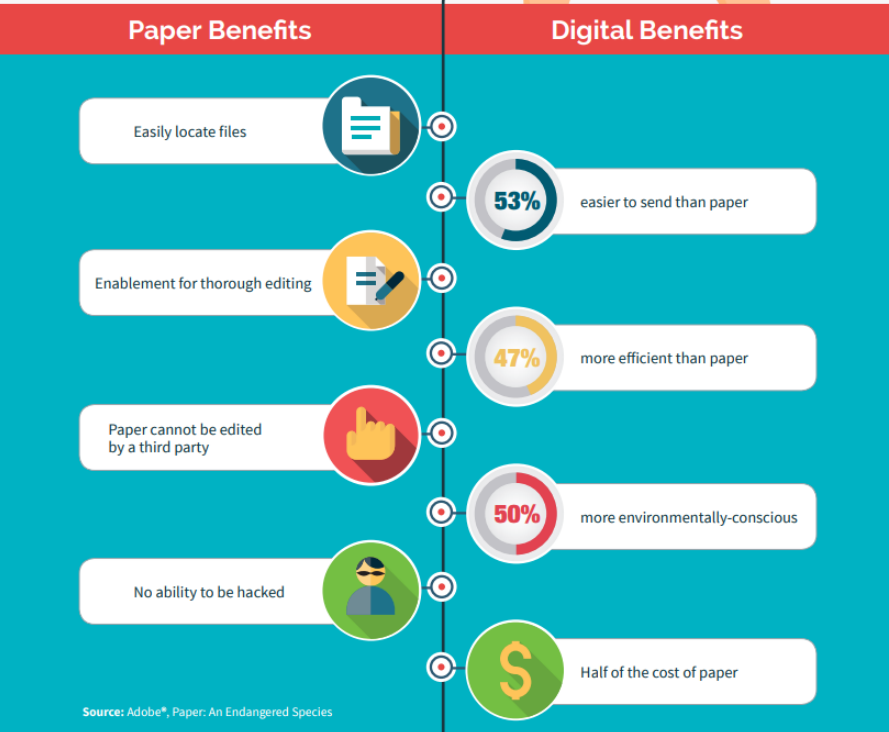


- The Construction Policy Unit of the OGP are undertaking a review of the CWMF
- Potential Digital Solutions that can streamline the procurement process
- Potential Solutions may include:
 - Construction Procurement Portal (Potential National CDE for Public Procurement)
 - Contracting Authority Registry
 - Construction and Construction Related Service Passport
 - Project Management
 - Streamlined procurement strategy
 - Contract selection
 - Supporting contract documentation
 - Compliance with the Public Spending Code and CWMF
 - Complete once approach
 - User profiles
 - Project tracking
 - Process flow management
 - Smarter Contracts
 - Less time to prepare Procurements
 - Less time to prepare Bids
 - Less time to prepare Tender Analysis
 - Digital Assets

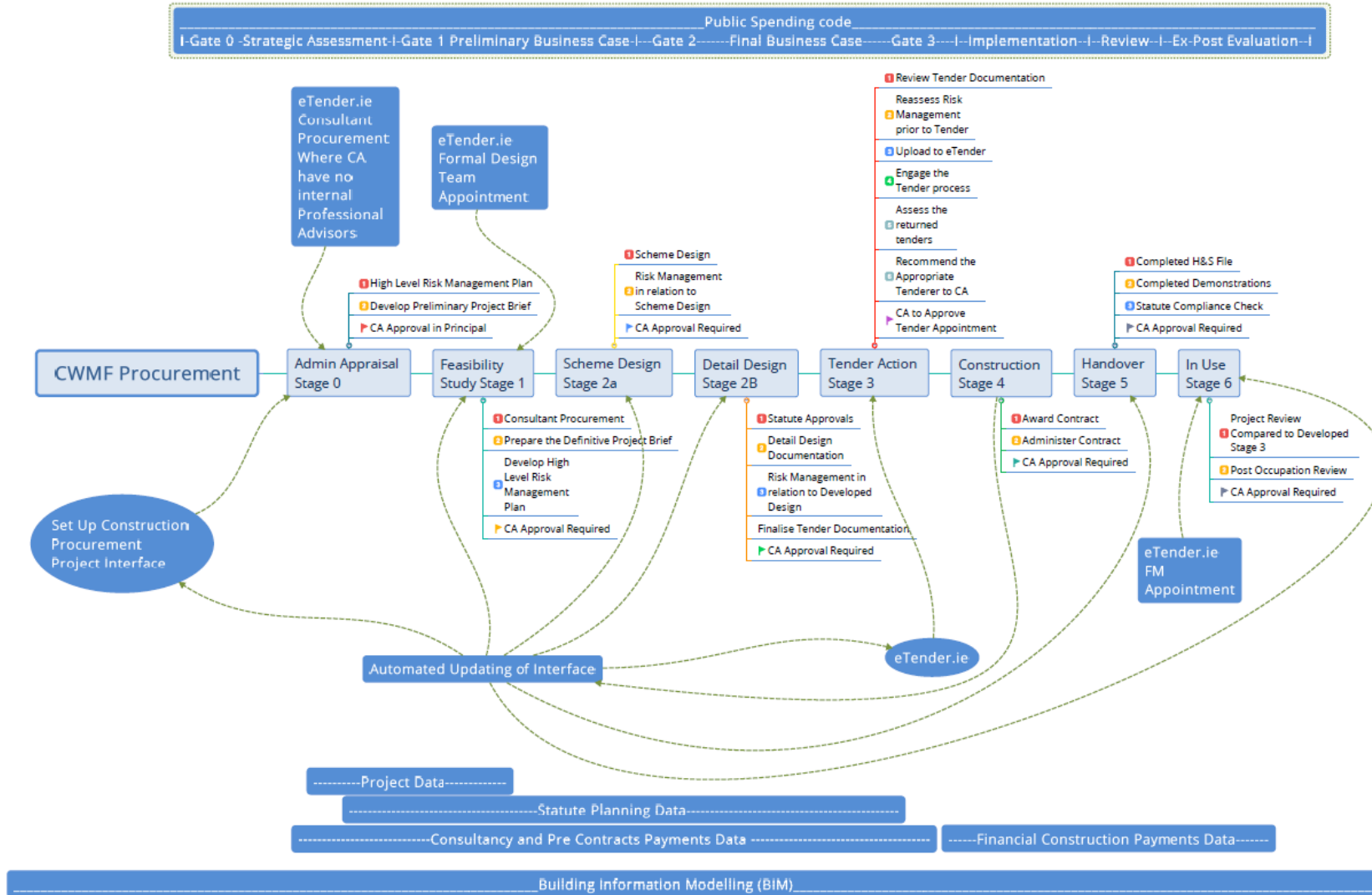


PAPER VS. DIGITAL

It seems as though one cannot escape a BYOD workplace or the abundance of enterprise adopted applications. Every aspect of business has been impacted by this transition, but the question still remains: has print been replaced by a digital medium?



Building Information Modelling (BIM)



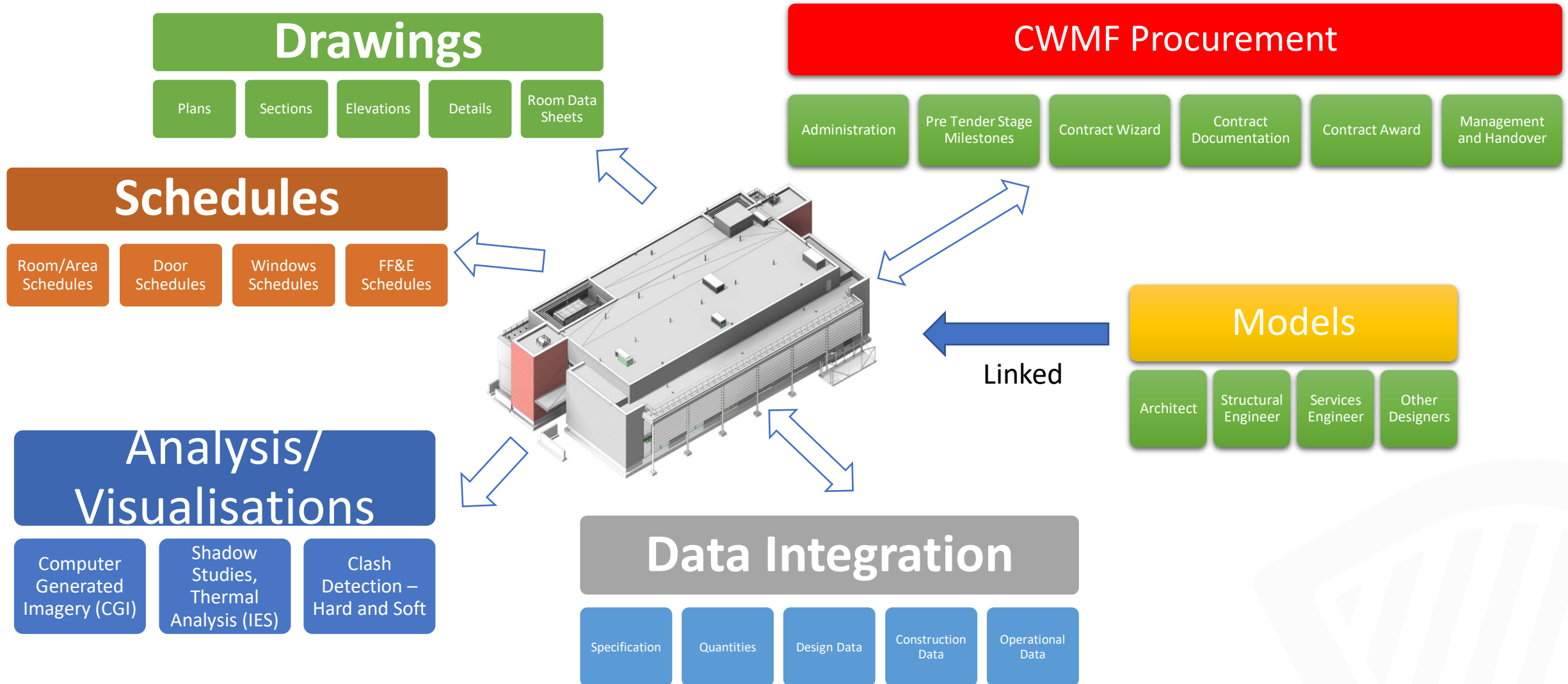
BIM and the Public Procurement Process



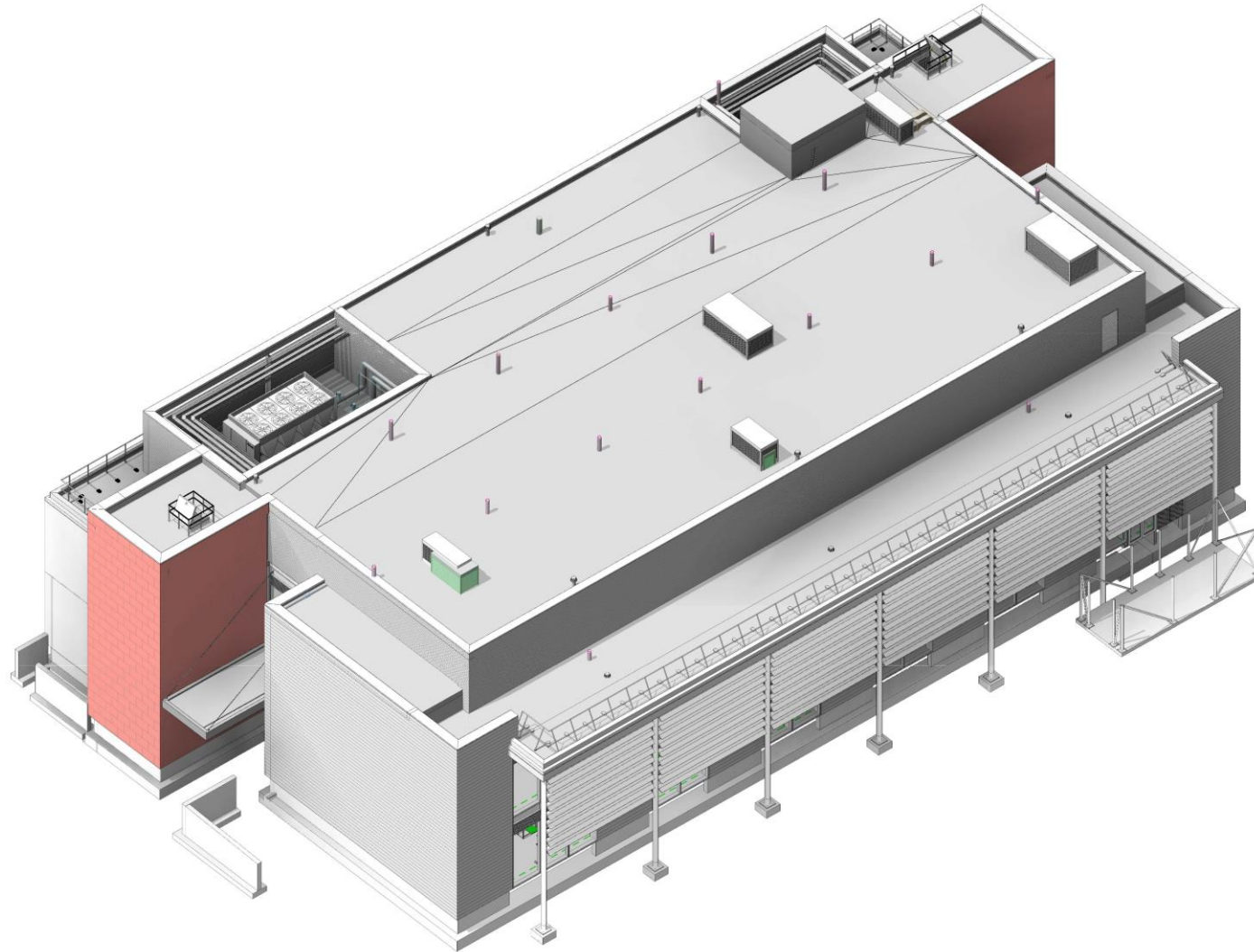
Collaboration



Building Information Modelling (BIM)

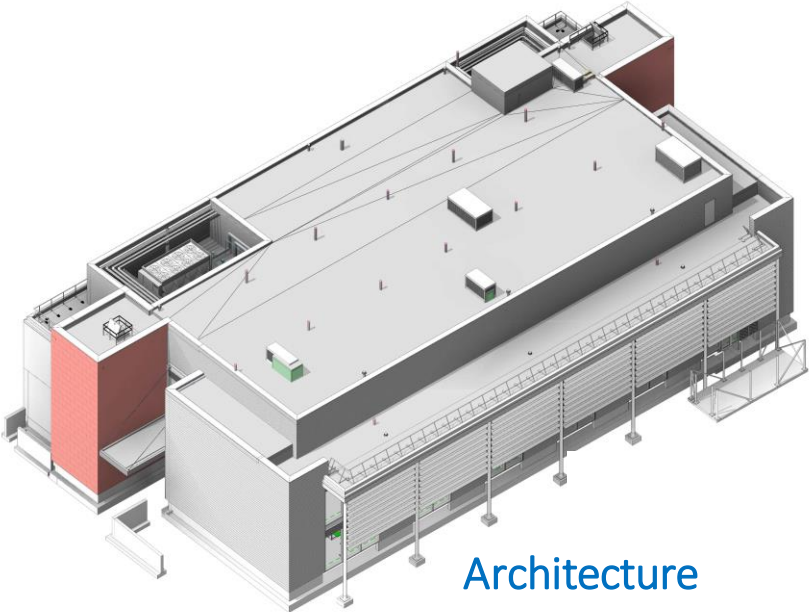


Building Information Modelling (BIM)

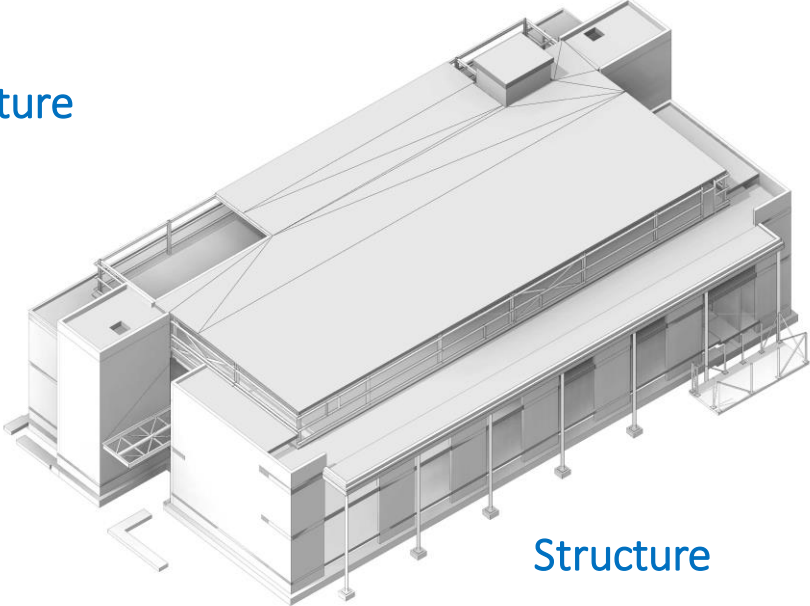


Federated Model

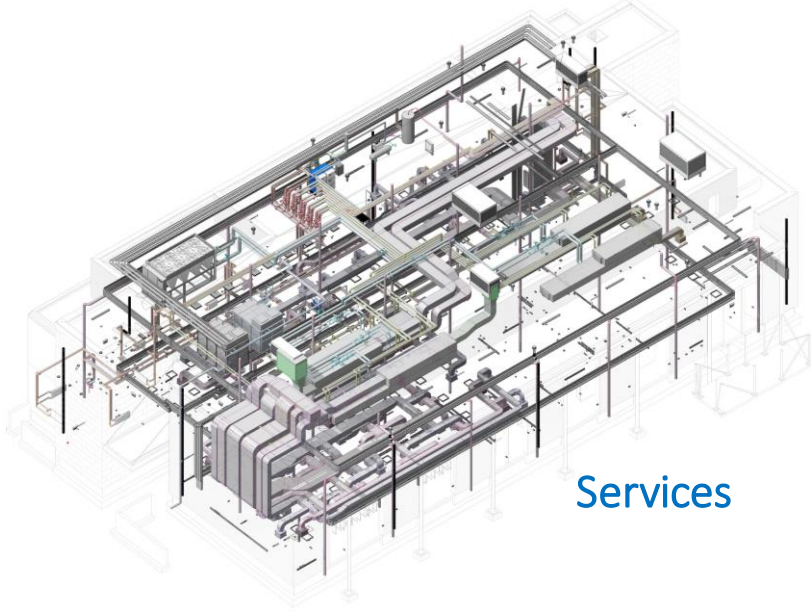
Building Information Modelling (BIM)



Architecture



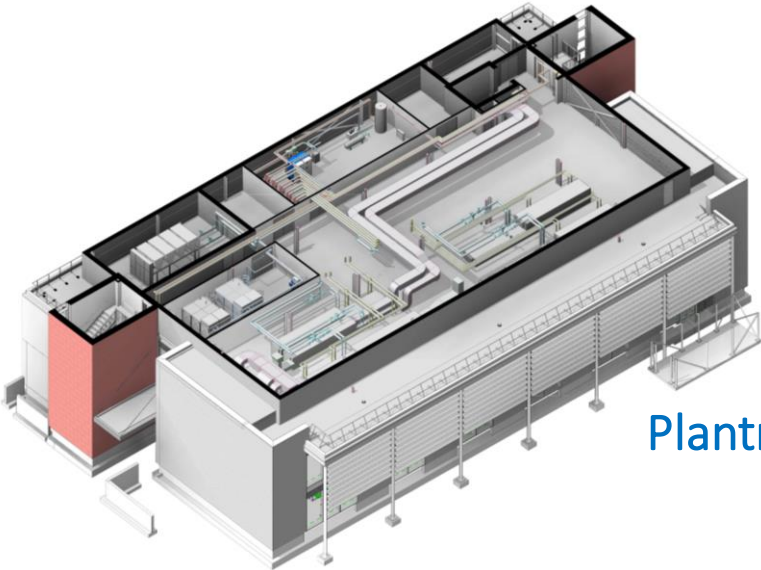
Structure



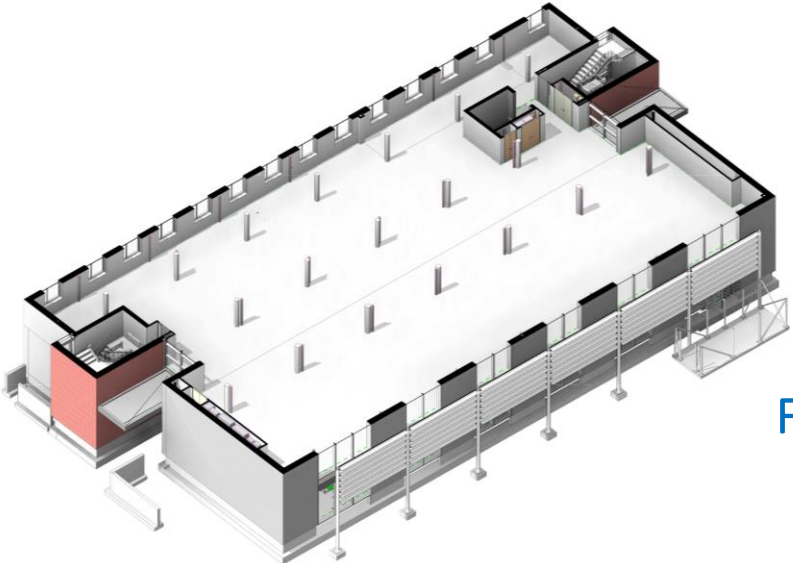
Services

Federated Model

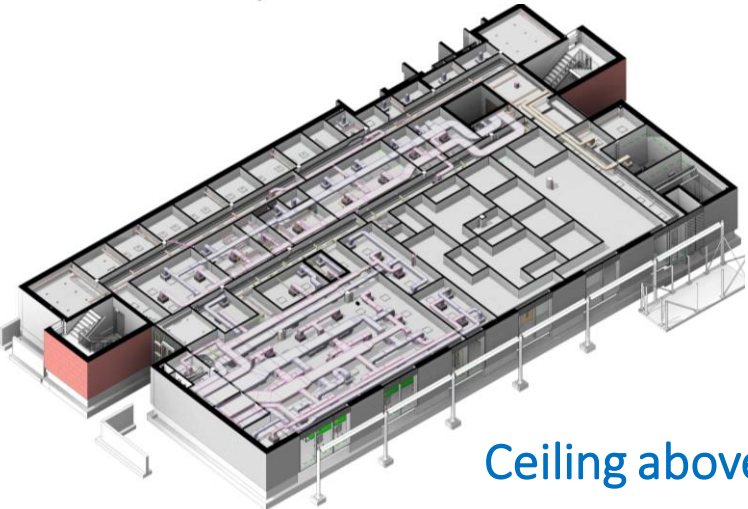
Building Information Modelling (BIM)



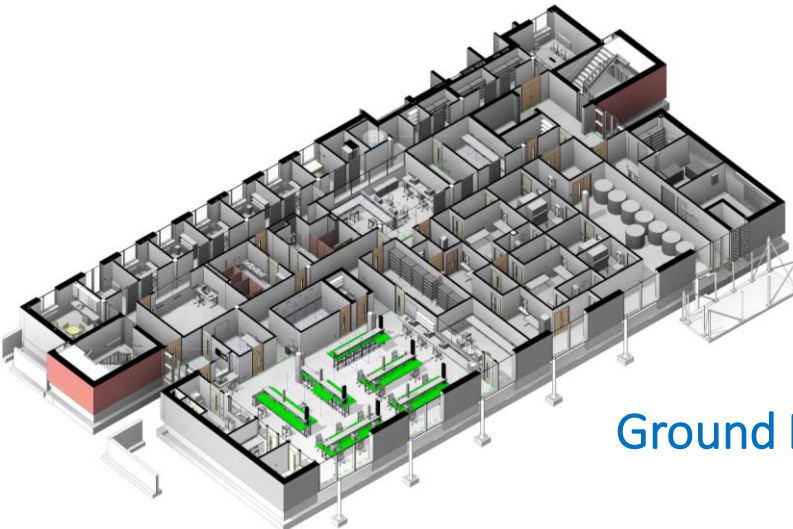
Plantroom Level



First Floor Level

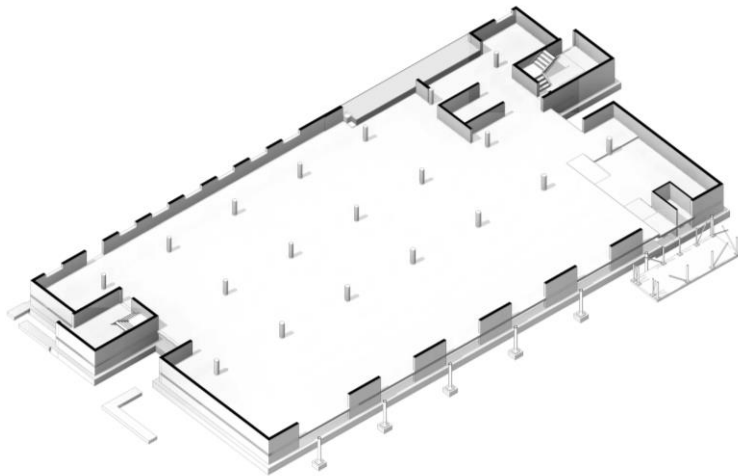


Ceiling above Ground Floor Level

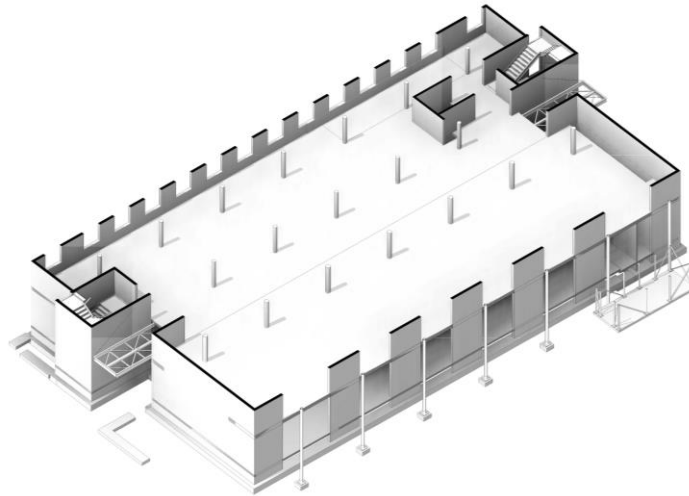


Ground Floor Level

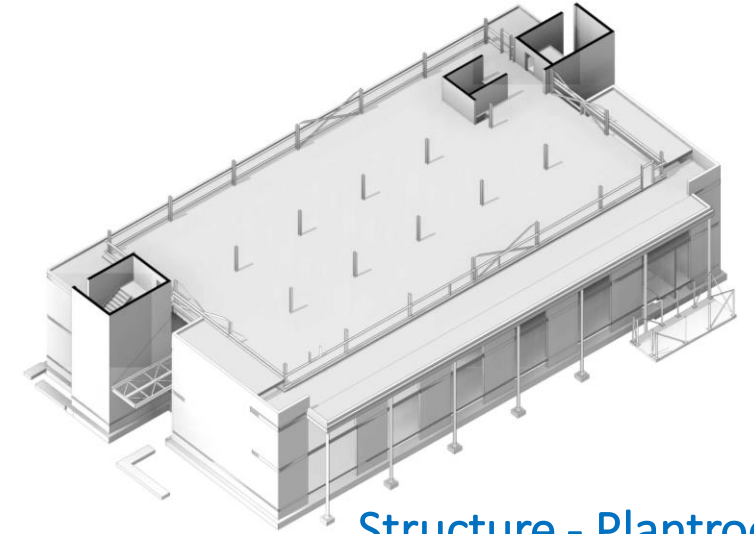
Building Information Modelling (BIM)



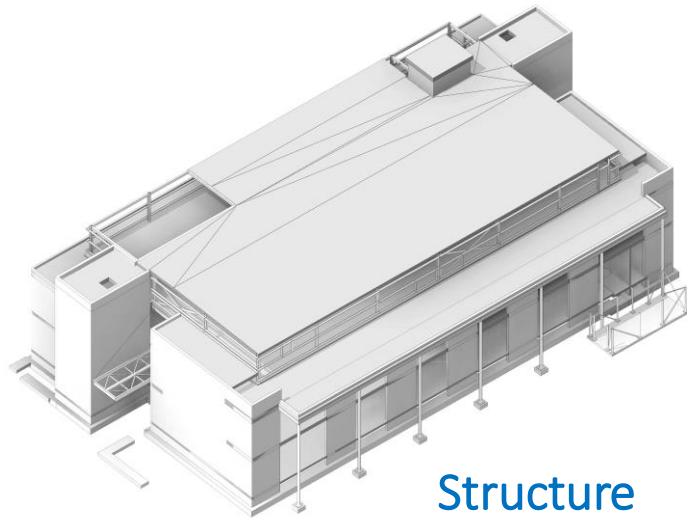
Structure - Ground Floor Level



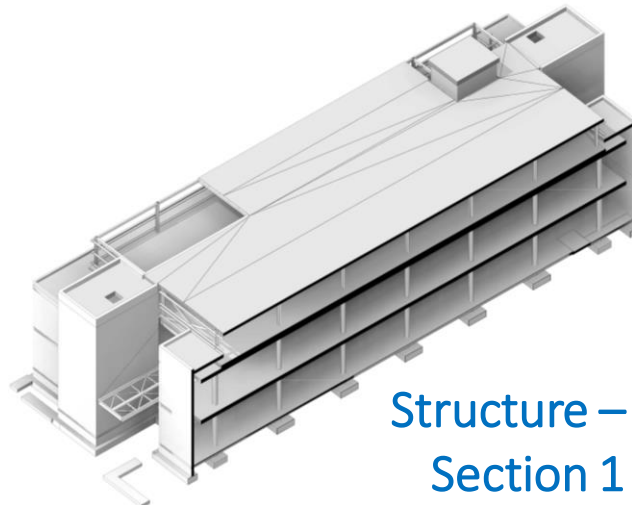
Structure - First Floor Level



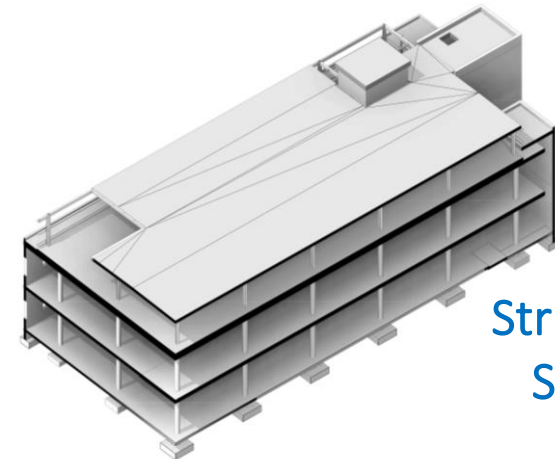
Structure - Plantroom



Structure

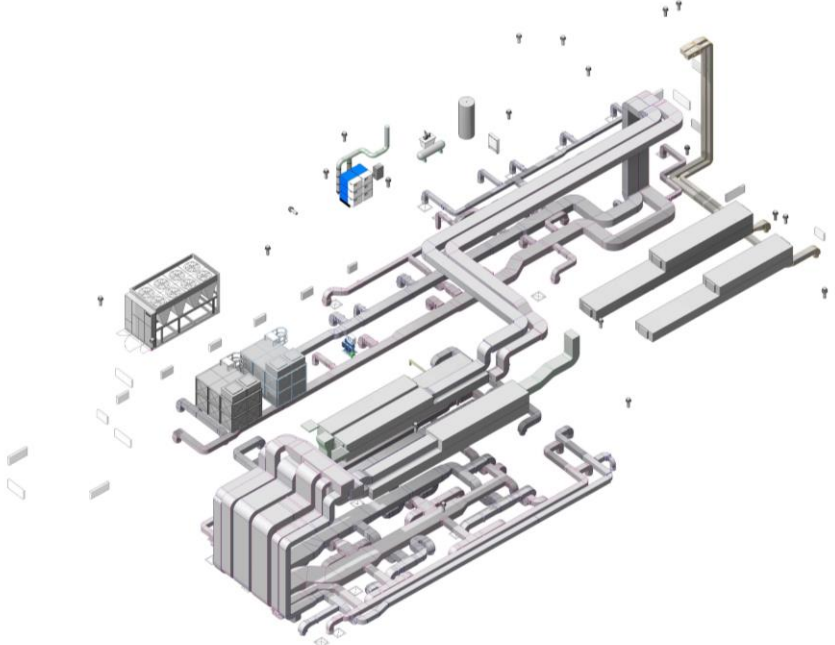


Structure –
Section 1

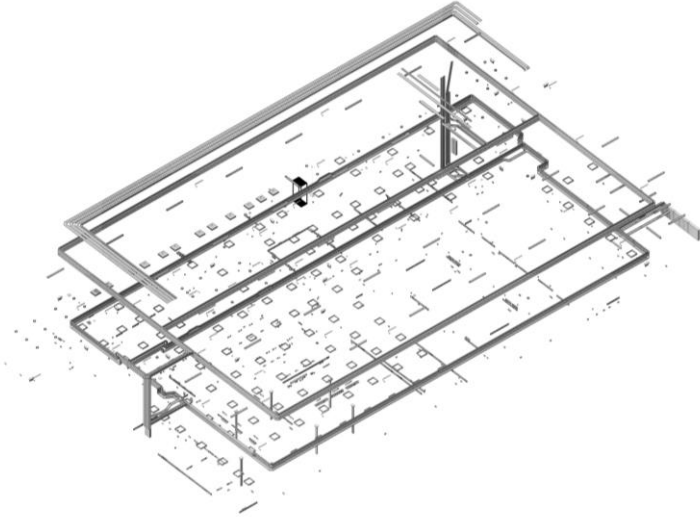


Structure –
Section 2

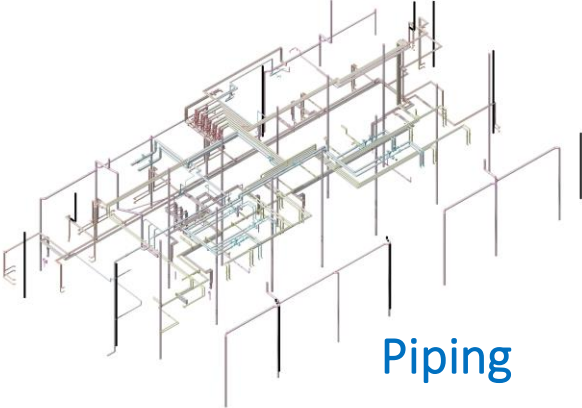
Building Information Modelling (BIM)



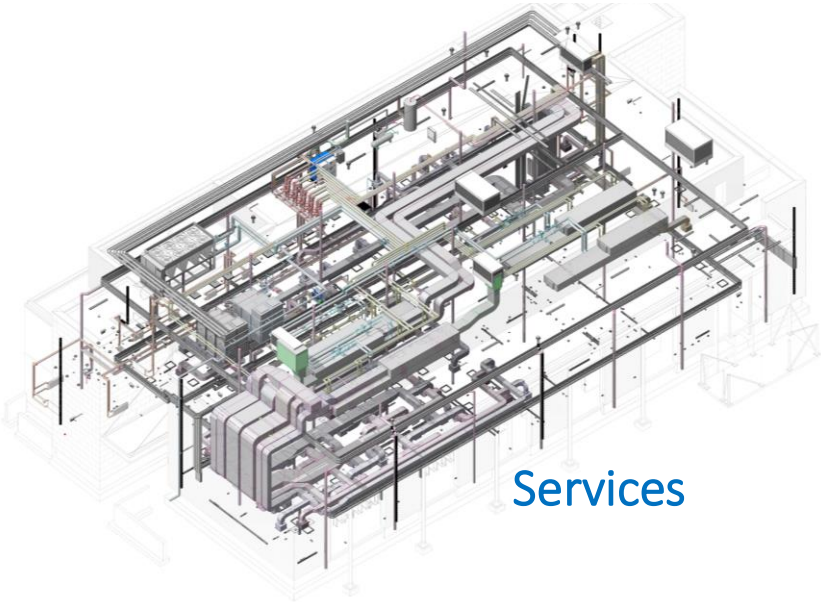
Mechanical Equipment and Ducts



Electrical Equipment

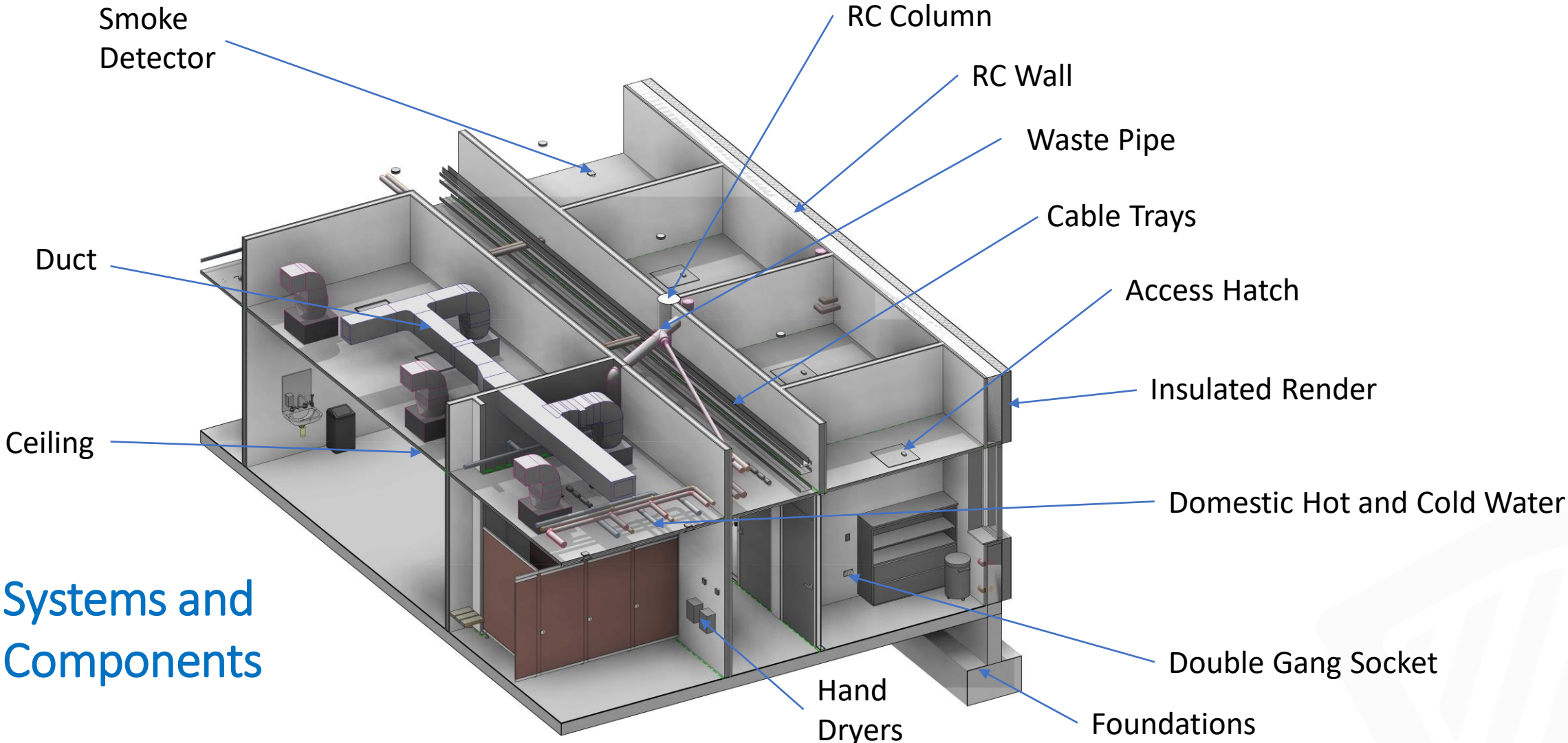


Piping



Services

Building Information Modelling (BIM)

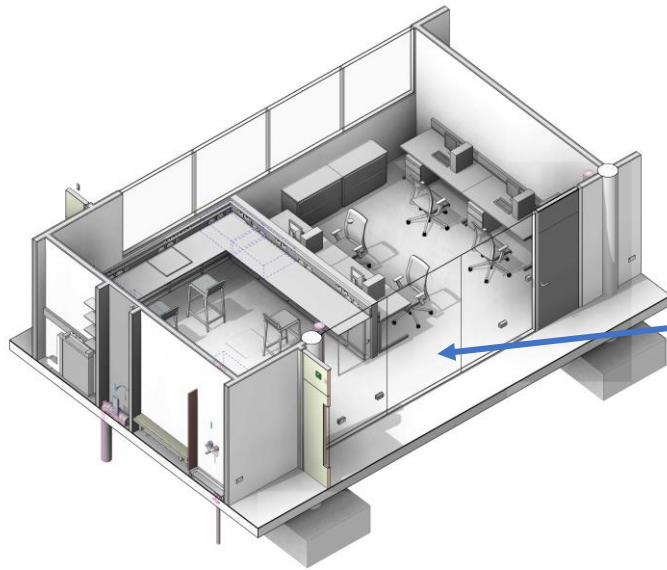


Building Information Modelling (BIM)

2.2 FRAMELESS GLAZED PARTITION SYSTEMS

A. TYPE IWS.701 VISUALLY-FRAMELESS GLAZED PARTITION SYSTEM

1. Proprietary visually-frameless full height/ ceiling height double glazed internal partition system configured as indicated on the Design Drawings, comprising:
2. Extruded aluminium head and base glass retaining channels.
 - a. Channels shall be secured to supporting structure/ substrates with concealed fixings in accordance with manufacturer's recommendations.
 - b. Exposed surfaces shall be powder coat finished to RAL colour to the acceptance of the Employer's Representative by sampling and selected from the manufacturer's standard range.
 - c. Glass retaining trims: Shall be selected by the Employer's Representative from the manufacturer's standard range.
3. Deflection allowance: The system shall be capable of accommodating a deflection of +/- 15mm as standard to suit installation conditions and subject to the performance criteria specified.
4. Clear double glazed flush clear silicone jointed safety glass panels of dimensions indicated on the Design Drawings.
 - a. Include manifestations in accordance with Technical Guidance Document Part (TGD) Part M of the Building Regulations and as indicated on the Design Drawings or as confirmed by the Employer's Representative.
 - b. Exposed glass edges shall be polished and bevelled as accepted through sampling.



Keynotes - [J:\15\15079\Spec's\001 T-Sheets\03 Keynotes\15079-BTE-Keynotes.txt]

Key Value	Keynote Text
Ⓜ-- EHL	EXTERNAL HARD LANDSCAPE
Ⓜ-- ESF	STREET FURNITURE AND EQUIPMENT
Ⓜ-- EWC	EXTERNAL WALLING . CLADDING SYSTEMS
Ⓜ-- EWG	EXTERNAL WALLING . GLAZED SYSTEMS
Ⓜ-- EWR	EXTERNAL WALLING . RAINSCREEN SYSTEMS
Ⓜ-- FLH	FLOOR FINISHES . HARD
Ⓜ-- FLS	FLOOR FINISHES . SOFT
Ⓜ-- FPS	FIRE PROTECTION SYSTEMS
Ⓜ-- FWG	FIRE PROTECTION SYSTEMS
Ⓜ-- FXB	FIXTURES, FITTINGS AND EQUIPMENT (FFE) . BESPOKE
Ⓜ-- FXP	FIXTURES, FITTINGS AND EQUIPMENT (FFE) . PROPRI...
Ⓜ-- FXS	FIXTURES, FITTINGS AND EQUIPMENT (FFE) . SPECIAL...
Ⓜ-- GLA	GLASS . APPLIED FINISHES
Ⓜ-- GLP	GLAZING/ SOLID INFILL PANELS
Ⓜ-- INS	SUNDRY INSULATION
Ⓜ-- IWS	INTERNAL WALLING - GLAZED SYSTEMS
Ⓜ-- IWS.701	FRAMELESS FULL HEIGHT GLAZED PARTITION SYSTEM
Ⓜ-- IWS.776	INTERNAL VIEWING PANEL WITH SLIDING PANELS
Ⓜ-- IWS.777	INTERNALWINDOW/ VIEWING PANEL
Ⓜ-- IWS.778	INTERNALWINDOW/ VIEWING PANEL - INTERSTITIAL ...
Ⓜ-- LFT	LIFTS
Ⓜ-- I IN	DECORATIVE WALL FINISHES

Keynote Text:
FRAMELESS FULL HEIGHT GLAZED PARTITION SYSTEM

OK Cancel Help

Type Properties

Family: System Family: Curtain Wall Load...

Type: Double Glazed Frameless Internal Scree Duplicate... Rename...

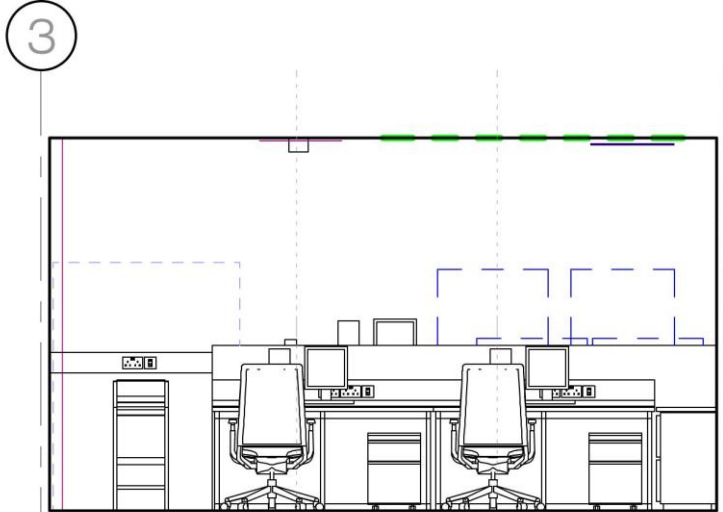
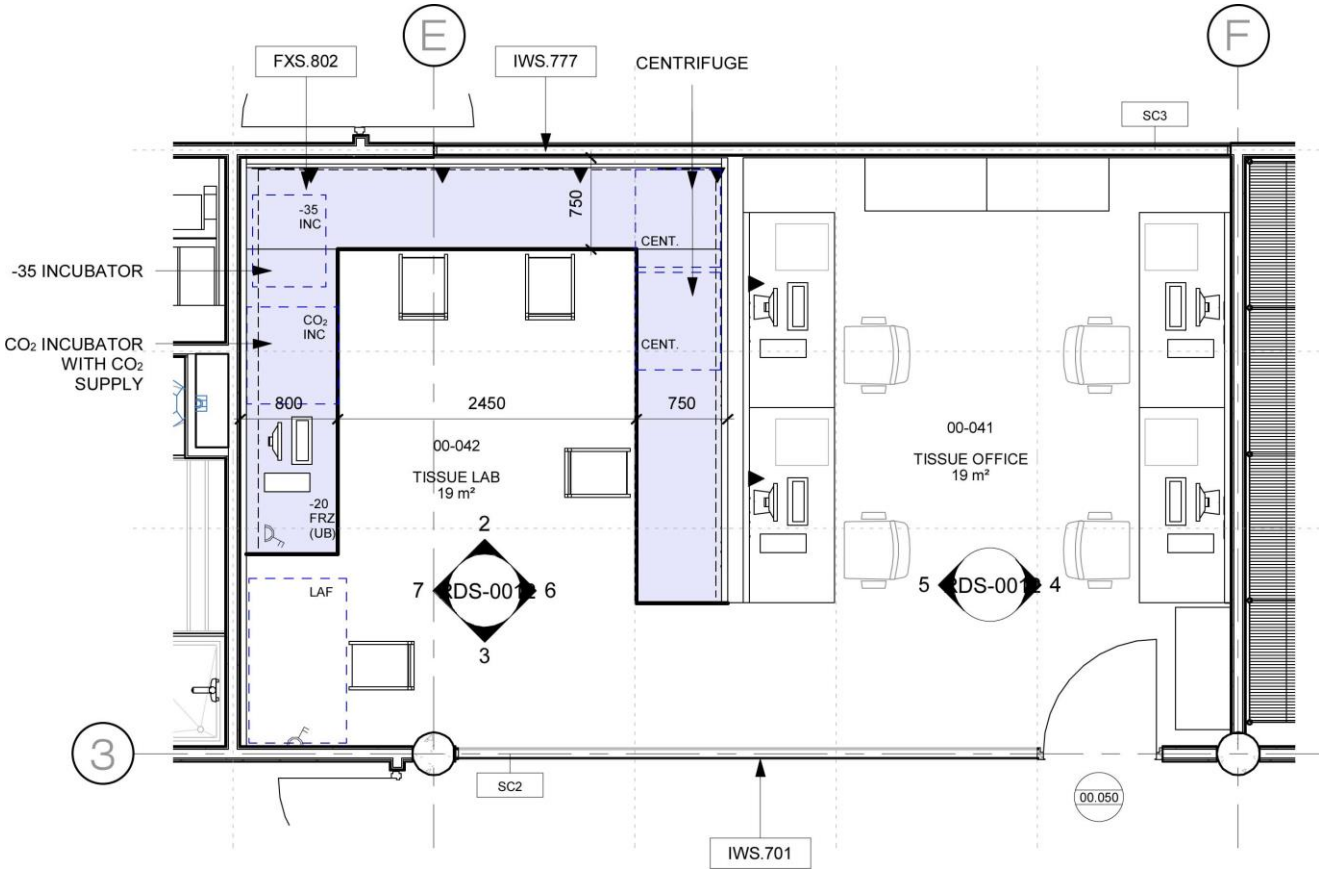
Type Parameters

Parameter	Value
Materials and Finishes	
Structural Material	
Vertical Grid	
Layout	None
Spacing	1650.0
Adjust for Mullion Size	<input type="checkbox"/>
Horizontal Grid	
Layout	None
Spacing	2286.0
Adjust for Mullion Size	<input type="checkbox"/>
Vertical Mullions	
Horizontal Mullions	
Dimensions	
Insulation Thickness	
Identity Data	
Type Image	
Keynote	IWS.701
Model	

<< Preview OK Cancel Apply

Building Information Modelling (BIM)

Traditional Deliverables - but better coordinated



5 RDS. 00-041 Elev 02
1:50

Why BIM Works - Standards

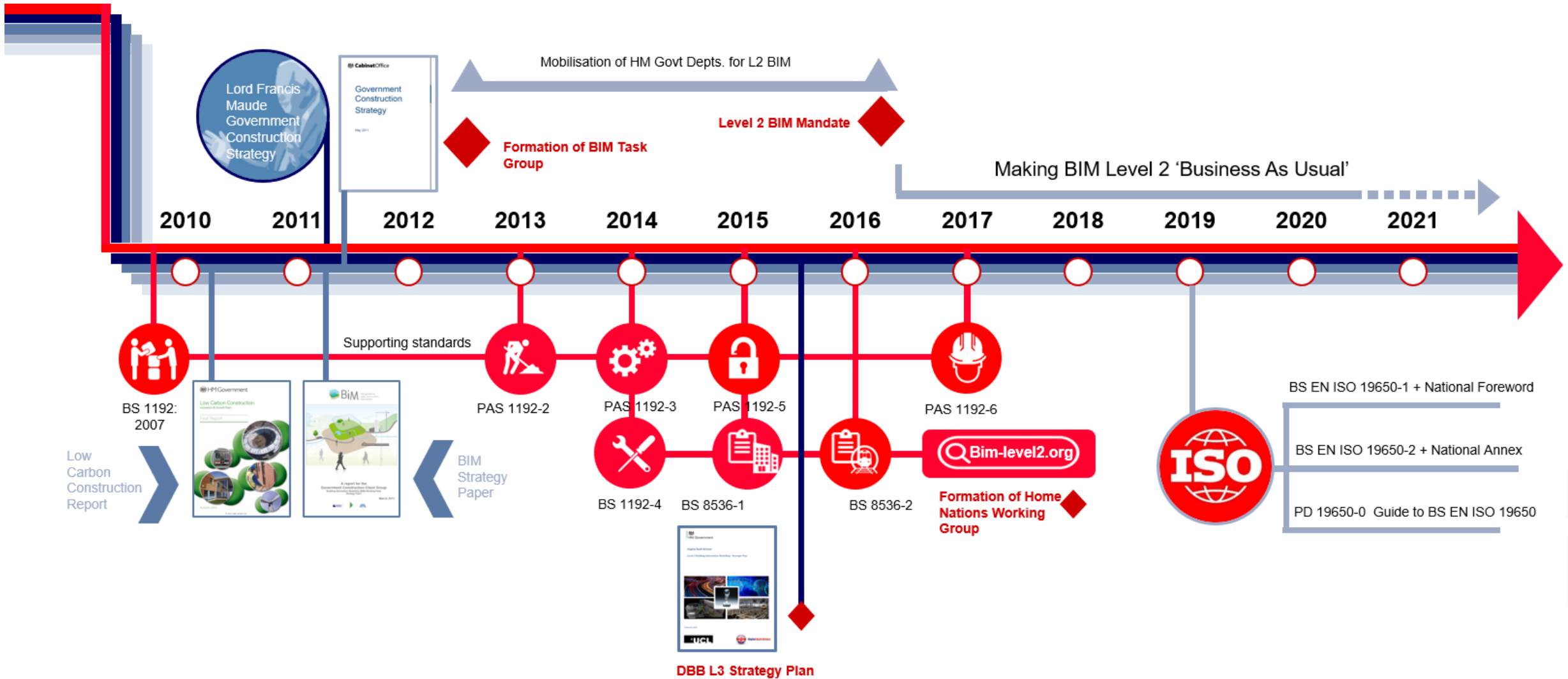
Traditional Approach

- *Drawings constructed by Lines by CAD or hand.*
- *Plans, Elevations, Sections and Details are completely independent and rely upon individuals from all designers to ensure geometry and information is coordinated.*
- *Specification is manually referenced in drawings.*
- *Schedules created in a spreadsheet.*
- *CGIs created using a model based on drawings.*

BIM Approach

- *The building is modelled in 3D by all designers using components and systems.*
- *2D Plans, Elevations, Sections and details are generated from the federated models.*
- *Data is either integrated into the model elements or referenced through links.*
- *Computer Generated Imagery (CGI's) are created from the BIM model.*

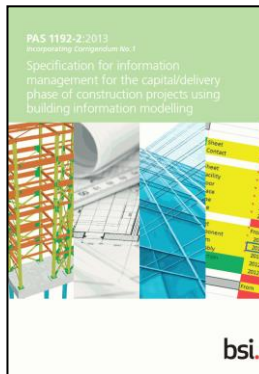
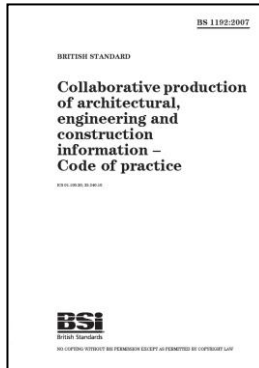
Why BIM Works - Standards



Why BIM Works - Standards

UK standards

BS 1192

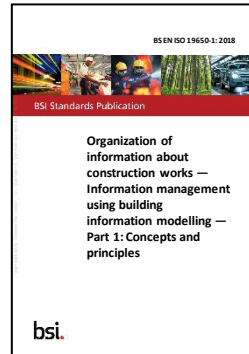


PAS 1192-2

Q1 2019

International standards

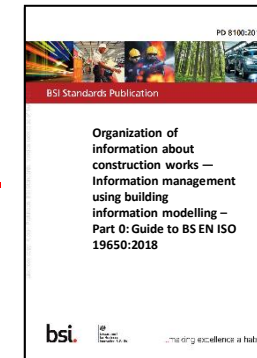
BS EN ISO 19650-1 + National Foreword



BS EN ISO 19650-2 + National Annex



PD 19650-0 Guide to BS EN ISO 19650



IS EN ISO 19650-1:2018 and IS EN ISO 19650-2 are available at <https://shop.standards.ie/>

BIM and CWMF

BIM Risks

1. Standards are great but SMEs don't have time to apply the standards correctly.
2. There are **mixed interpretations** of standards across professions and organisations which has been a limiting factor in the success of BIM adoption.
3. Clients don't have sufficient knowledge to procure in BIM.
4. Important for industry professionals to determine how we adopt standards and technology – otherwise someone else will do it.

By digitising the CWMF Procedures utilising the BIM process, standards will be applied to the information structure from Concept to Asset Management. This will develop better outcomes for asset delivery with a greater emphasis on quality, risk management, programme and cost certainty. NSAI are developing BIM implementation templates for the Private and Public Construction sectors in Ireland.

STANDARDISING THE PROCUREMENT PROCESS THROUGH DIGITALISATION

HAVING THE RIGHT INFORMATION AT THE RIGHT TIME AND RIGHT STAGE OF THE PROCUREMENT PROCESS

BIM and CWMF

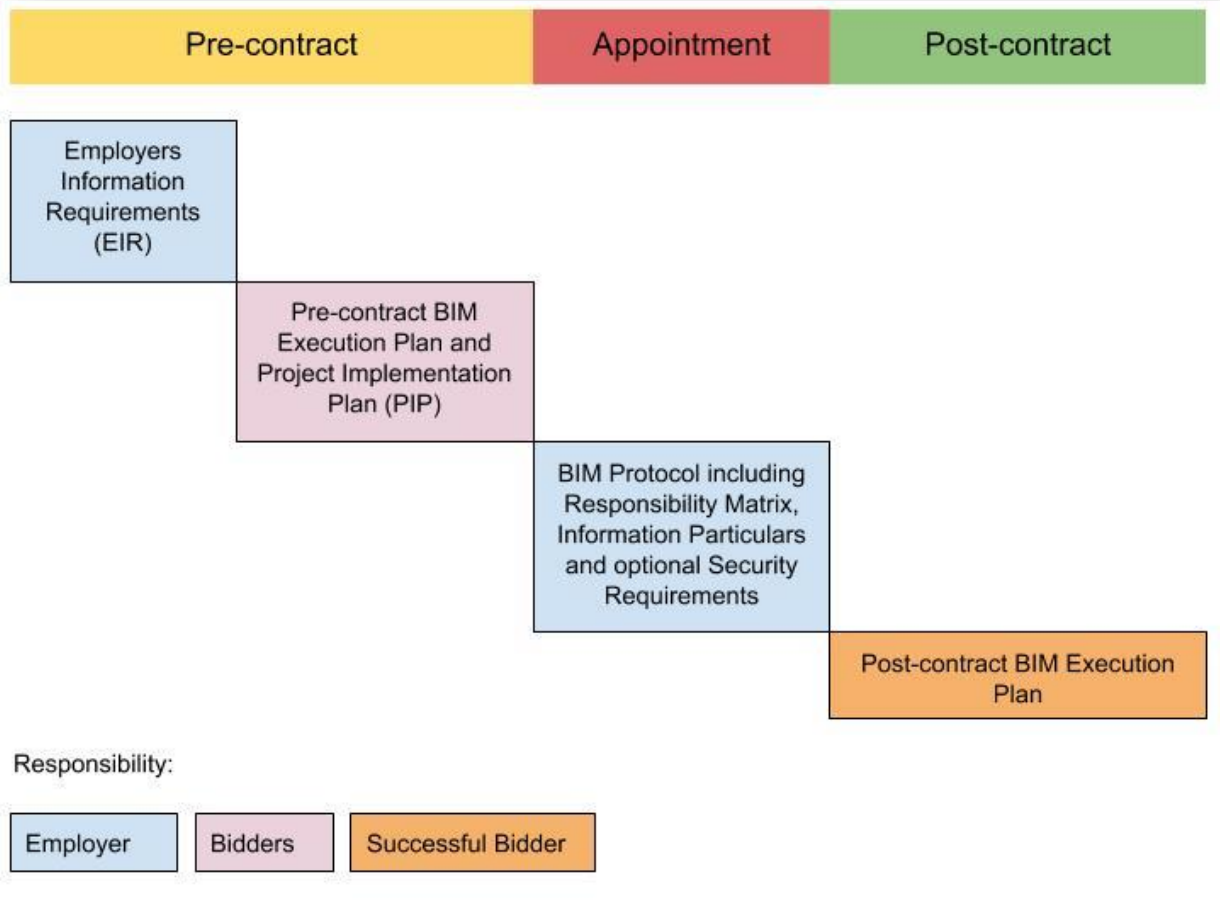
Business Case

Organisation Information Requirements (OIR)

Asset Information Requirements (AIR)

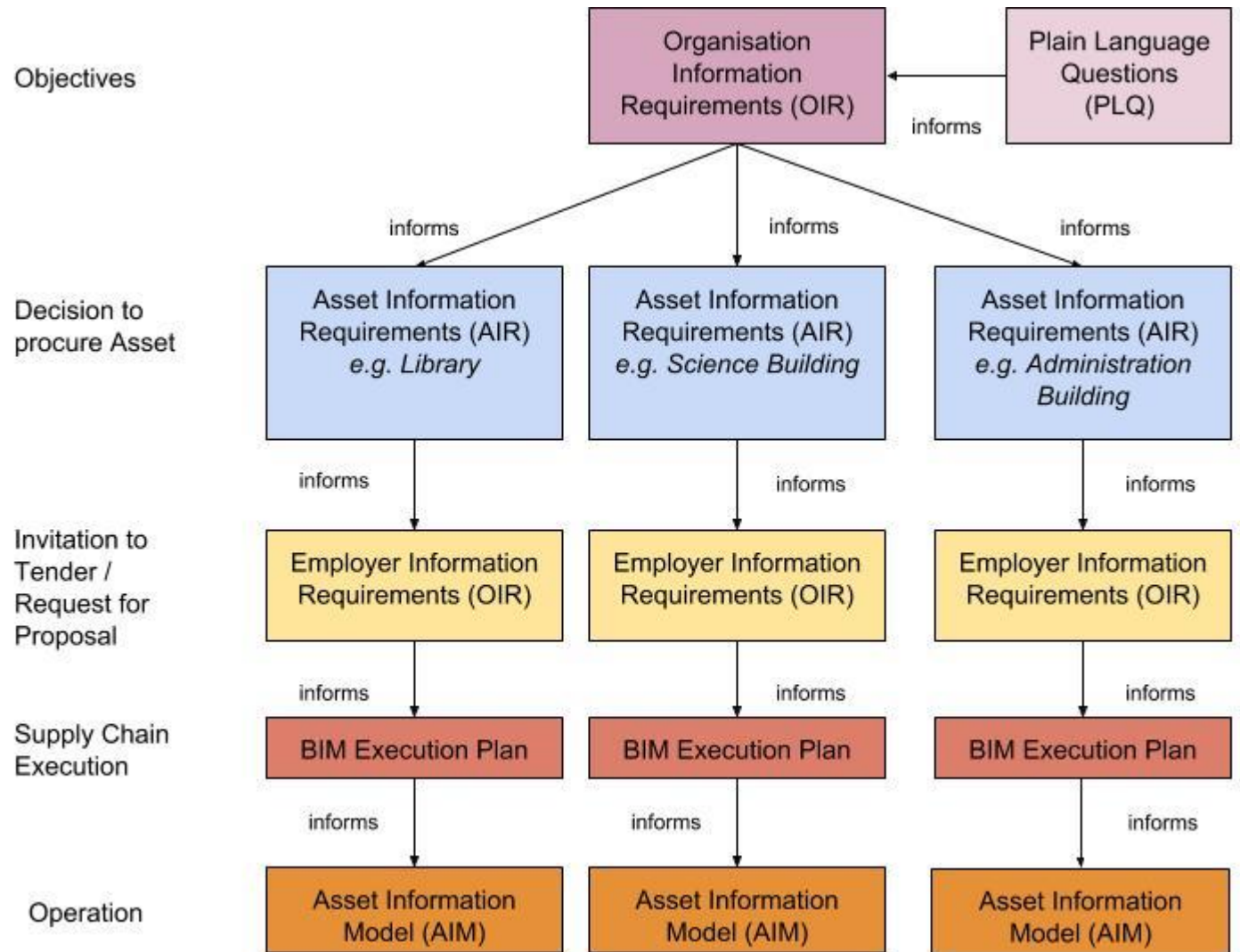


Project Execution



BIM and CWMF

- Standards
- Minimum requirements for BIM Information Exchange
- Outline of BIM process
- Organisation Information Requirements
- Plain Language Questions
- Asset Information Requirements
- Roles and Responsibilities
- Employers Information Requirements
- BIM Protocol
- BIM Execution Plan
- Common Data Environment
- Project Information Model
- Information Exchanges
- Asset Information Model



Implementation Strategy

- Public Sector BIM adoption strategy
 - Government mandate
 - The Government is planning to Mandate BIM on a phased basis
 - 1) to ensure that public bodies invest the necessary resources to adopt BIM in line with the strategy and
 - 2) to impose standards for delivery across the public sector.
 - 3) to develop BIM skills over a 4 year period for all Public Works Contracts
 - Firstly for Clients and Consultancy
 - Secondly for Contractors and Supply Chain
 - Initially on high value contracts where most of the BIM Skillset resides
 - Gradually introduced on lower value contracts
- New European Standards are in development and publication
 - e.g. EN ISO 19650-1 and 2 – Series in Publication 3 and in development 4,5,6
- Certification of BIM Capability through NSAI – (Can be applicable as part of a quality assessment for tender evaluation)

Implementation Strategy

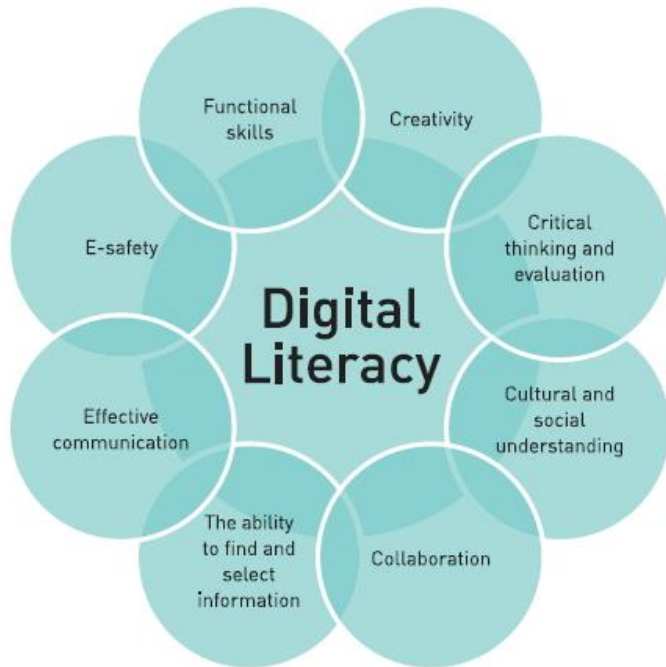


Table 1 – Indicative BIM implementation timeline – Period (months) from Government mandate to the introduction of BIM requirements in contract notices

Department/ Public Body	Sub-sector	Band 5	Band 4	Band 3	Band 2	Band 1
D. Ag & Marine		-	-	-	+ 36	+ 18
D. Defence		-	+ 18	+ 24	+ 36	+ 48
D. Education	Primary	-	+ 18	+ 24	+ 36	+ 48
	Secondary	-	+ 18	+ 24	+ 36	+ 48
	Third Level	+ 12	+ 18	+ 24	+ 36	+ 48
D. Health	HSE	+ 12	+ 18	+ 24	+ 36	+ 48
	Vol. Hospitals	+ 12	+ 18	+ 24	+ 36	+ 48
D. Housing	Housing	-	+ 18	+ 24	+ 36	+ 48
	Non-housing	+ 12	+ 18	+ 24	+ 36	+ 48
Office of Public Works	Heritage	+ 24	+ 30	+ 36	+ 48	-
	Flood Risk Management	-	-	-	+ 36	+ 18
	New Build	+ 12	+ 18	+ 24	+ 36	+ 48
Transport Infrastructure Ireland	Rail	+ 12	+ 18	+ 24	+ 36	+ 18
	Road	+ 12	+ 18	+ 24	+ 36	+ 18

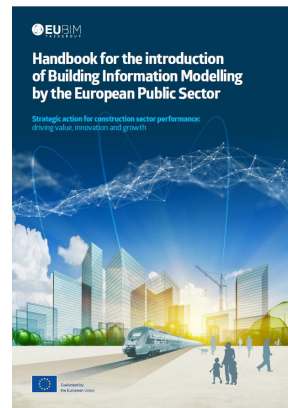
Indicative phasing concept from GCCC Position paper. BIM implementation is to be phased to accommodate the training and knowledge base in the Irish Construction Sector.

Implementation Strategy

As a Member of the European Union there are International Standards such as EN ISO 19650 series, (currently been published), that will have an impact on a Digital Transition of the Construction Sector in Ireland

The EU BIM Taskgroup have produced the “Handbook for the Introduction of Building Information Modelling by the European Public Sector - Strategic action for construction sector performance: driving value, innovation and growth ”

The Handbook is aimed at



Public Policy User



National Or Local Public Client/ Procurer User



Operator User

- Public policy user Involved in the development of policy for infrastructure or construction sectors
- National or local public client/procurer user Primarily concerned with procurement of services
- Operator user Responsible for the on-going management and operation of the built asset or environment

Implementation Strategy

Definition the Digital Life Cycle of a Project from concept through to end of life(Current CWMF).

- **Stage 1 - Define the need, Concept,– A system to manage the decision making process – Brief Outline**
- **Stage 2 – Procurement – Definitive Brief, Design – Definition i.e. Pre Contract BIM Execution Plan (Pre-contract BEP)**
- **Stage 3 – Contract Award – Post Contract BIM Execution Plan (Post Contract BEP)**
- **Stage 4 – Construction – Build and Commission**
- **Stage 5 – Handover – Handover and Close Out**
- **Additional Stage**
- **Stage 6 – Operations – Maintenance and Operation**

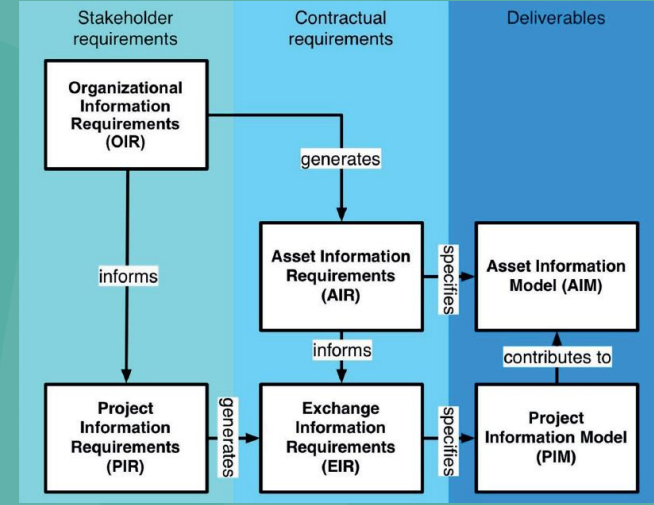
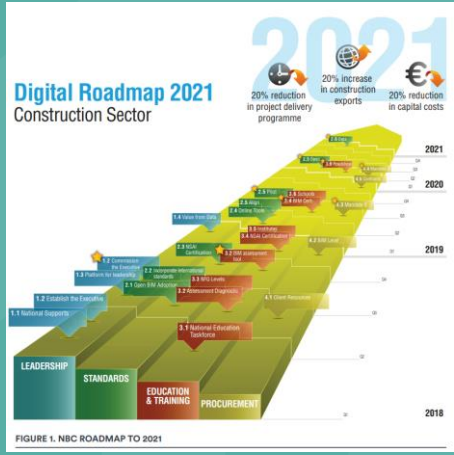
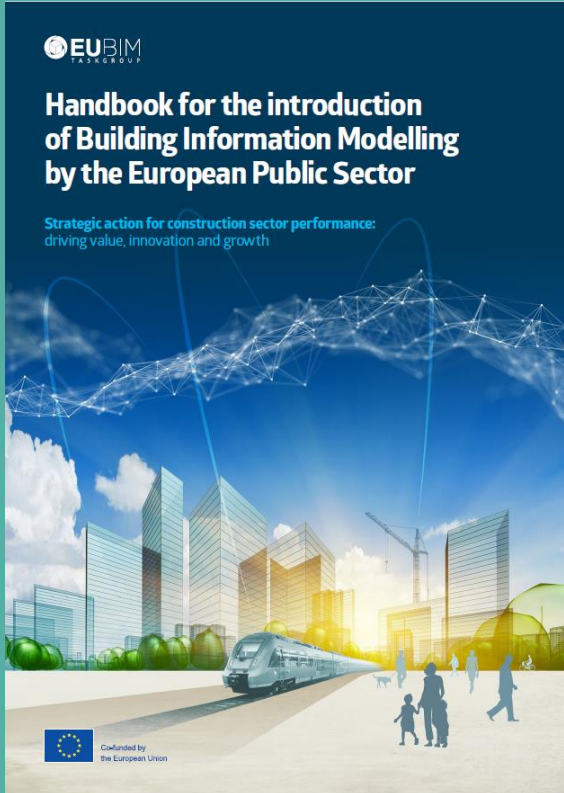
Implementation Strategy

What the Irish Construction Sector needs to do!

- Appropriately define the BIM requirements (Asset Registers to comply with ISO 55000).
- Manage Risk (Follow CWMF procurement rules)
- Define a Digital Plan of Works – Produce the right information in the right format at the right time throughout the entire project.
- Define a Classification System
- Systemise efficiencies
- Develop new professional skills – Training and Resources
- Provide an IT infrastructure for Clients to engage in a collaborative Procurement Process (Cloud Based)
- Centralise open resources

Engage with Professionals, Client's and Government Agencies to develop user friendly BIM toolkits which will benchmark BIM in the Irish Construction Sector and provide opportunities for all stakeholders

Thank You For Your Time



Questions or RFI's!!!!



Roadmap to Digital Transition

For Ireland's Construction Industry 2018-2021

References

- Hore, A., McAuley, B. and West, R. (2017) BIM in Ireland 2017, BIM Innovation Capability Programme, CITA Ltd.
- Government, Construction 2020(2014), A Strategy for a Renewed Construction Sector.
- National Bim Council (2017), Roadmap to Digital Transition For Ireland's Construction Industry 2018-2021
- GCCC Position Paper (2017), BIM-Adoption-Strategy-Statement-of-Intent, CPP 01/17
- EU BIM Taskgroup (2017), Handbook for the Introduction of Building Information Modelling by the European Public Sector, Strategic action for construction sector performance: driving value, innovation and growth
<http://www.eubim.eu>
- DRAFT INTERNATIONAL STANDARD ISO/DIS 19650-1:2017(E). Organization of information about construction works — Information management using building information modelling —Part 1:Concepts and principles
- DPER (2014) *CWMMF –Construction Procurement Reform* [Online]. Available:
<http://constructionprocurement.gov.ie/capital-works-management-framework/> [Accessed 10/06/2019]
- NSAI Briefing Note on BIM, Available: <https://www.n sai.ie/about/news/nsai-briefing-note-on-bim-building-information-modelling-standards/> [Accessed 10/06/2019]
- Mr. Michael Earley DipArch(Tech) BSc(Comp Sci) MICS MRIAI(Tech) Presentation for the launch of RIAI BIM Pack 2019



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