Building Capabilities in Complex Environments

CitA BIM Gathering 2017, Croke Park, November 23rd & 24th, 2017

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Level 1 before Level 2 - an Irish BIM mandate

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Agenda

- GCCC position paper
- BIM maturity levels
- Response to the GCCC position paper
- Impact of the findings
- Conclusion

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LATEST NEWS, PRESS RELEASES - NOVEMBER 21ST, 2017

Government Strategy to Increase use of Digital Technology in Key Public Works Projects Launched

Building Information Modelling (BIM) to be required in the design, construction and operation of public buildings and infrastructure over the next 4 years

The Minister for Public Expenditure and Reform, Paschal Donohoe, T.D. and the Minister of State with special responsibility for Public Procurement, Open Government and eGovernment, Patrick O'Donovan, T.D., today set out the Government's strategy for the increased use of digital technology in the delivery of key public works projects that are funded through the public capital programme.

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"At the BIM gathering 2015, when I presented, I did not think a mandate was required, but now I think the sooner the public sector gets a mandate the better"

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The Mandate is not for the AEC industry or for the operation of buildings by the Public sector, it's to prioritise the digital transformation of the Public sector

Digital transformation of the Public Sector

Operations

AEC industry

GCCC Position Paper   15 Mar 2017

Circulation: Open   Doc Ref:

A Public Sector BIM Adoption Strategy   CPP 01/17

Statement of Intent

"Properly implemented, a public sector Building Information Modelling (BIM) adoption strategy will support the implementation of Government policy objectives[1] in the procurement of public works projects, in their construction and in their maintenance upon completion."

"Government policy objectives are defined as cost certainty at tender award stage, better Value For Money (VFM), and more efficient delivery of public works projects."

Risks and challenges

- **Production of a model** that is of **little long-term** use at a **significant cost**
- **Significant disruption** in organisations during its **early adoption**
- **Piecemeal approach** to adoption across the public sector will result in **different approaches,** which could lead to **greater investment** required to **undo non-standard practices** that may be adopted

- Standards must be mandated to ensure that the public sector **sets clear and consistent requirements**
- Draft International Standard **ISO 19650** is currently out for comment by CENTC442, this will lead to a **new set of BIM standards** that will **affect the defining requirements**

- New **roles, procedures, and technology** will be required in client organisations/Government bodies which will require **cultural change**

High-level strategy.

- Ensure that <mark>public bodies invest the necessary resources</mark> and to impose standards for delivery across the public sector. standards to be adopted
- **Timeline for implementation**
- **Capital Works Management Framework (CWMF)** will be **augmented** to incorporate the necessary documentation
- **Early adopters** will be those projects where the **long-term benefits** are deemed to be the greatest, which are **complex construction projects** with **intensive operation and maintenance regime**

- **BIM Level 1 and 2 will be defined in the Strategy**
- The **Contracting authorities should adopt Level 1 before** the adoption strategy **requires Level 2** to be applied to their projects
- As **Level 1 imposes** many of the **information production standards** and **prioritises the internal organisational changes** without having to make the transition to a digital environment and so **'prepares the ground'** for the move to the digital requirements of Level 2

- The **timeline should not be accelerated except for pilot projects** to allow service providers and contractors time to adopt the technology and processes

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

Public Sector	Sub-Sector	Complex Project Complex FM	Complex Project Medium FM	Medium Complex Complex FM	Medium Complex Medium FM	Low Complex
		Band 5	Band 4	Band 3	Band 2	Band 1
D. Ag & Marine					+36 Level 2	+18 Level 1
D. Defence			+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
D. Education	Primary		+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
	Secondary		+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
	Third Level	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
D. Health	HSE	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
	Vol. Hospitals	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
D. Housing	Housing		+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
	Non-housing.	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
OPW	Heritage	+24 Level 2	+30 Level 2	+36 Level 2	+48 Level 2	+18 Level 1
	Flood Risk				+36 Level 2	+18 Level 1
	New Build	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+48 Level 2
TII	Rail	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+18 Level 1
	Road	+12 Level 2	+18 Level 2	+24 Level 2	+36 Level 2	+18 Level 1

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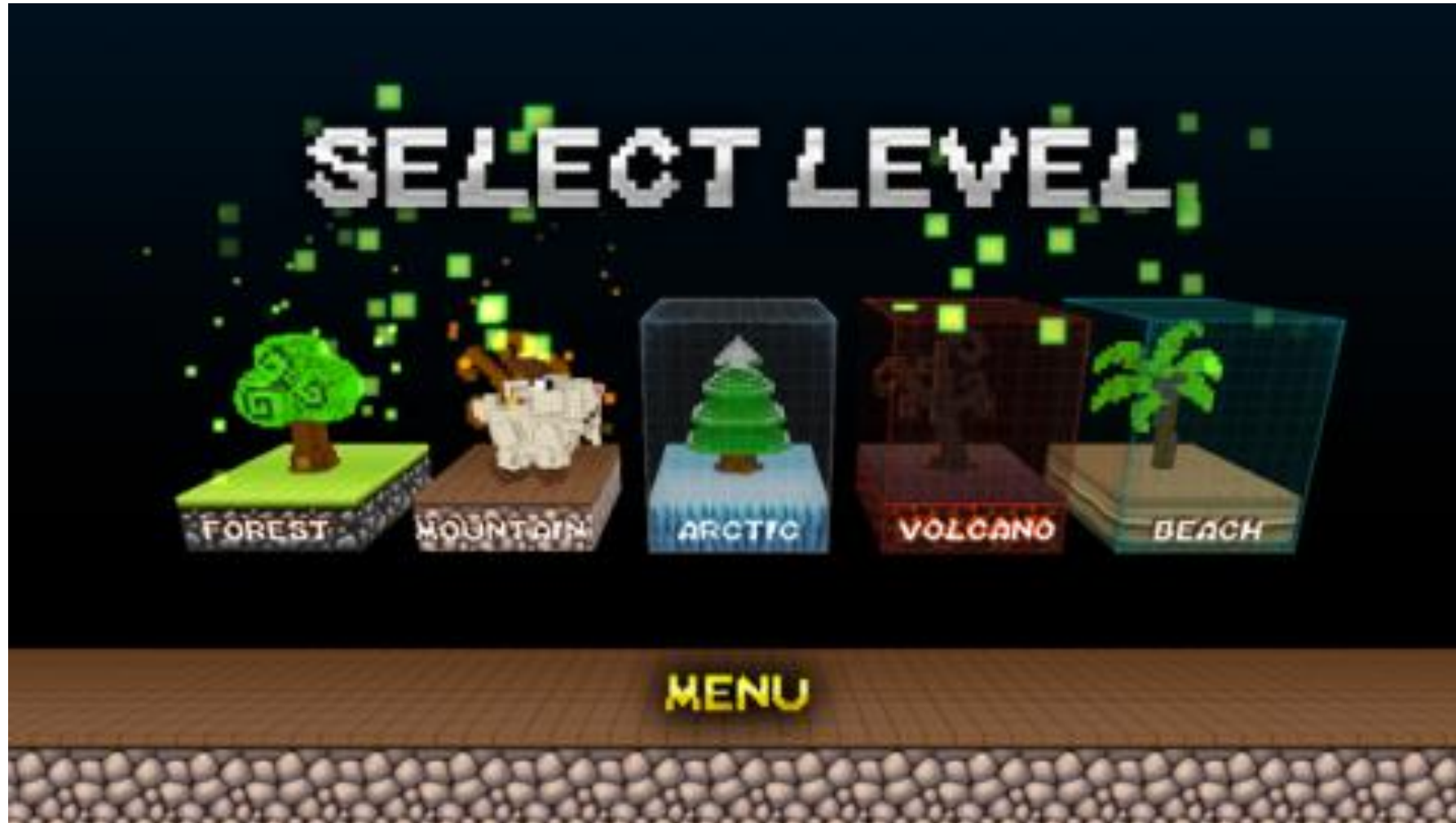
Level 0:   Unmanaged information

Level 1: Managed information within an organisation using industry standards

BS 1192:2007+A1:2015

BRITISH STANDARD

Collaborative production of architectural, engineering and construction information – Code of practice

BSi
British Standards
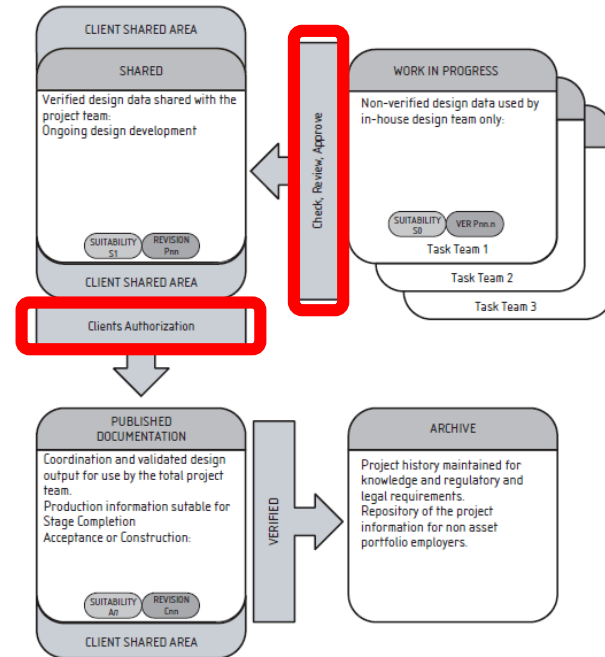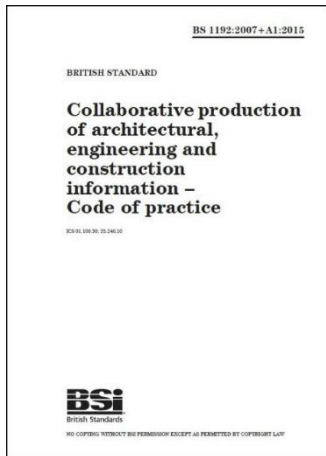
Common Data Environment And QA/QC Processes

4.1 Process considerations

4.1.1 Standard method and procedure

Projects should follow a common set of generic processes at the highest level, which are fine-tuned on a project-by-project basis. The procedures outlined apply to all approaches to project design production, A1 and co-ordination of the information model. A1

Standard Method and Procedure (SMP)

Fields	Directories (see 5.4.2)	Files (see 5.4.3)	Containers within files including layers (see 5.4.4)	Clause
Project	PR1	PR1		6
Originator		XYZ		7
Zones and assets		Z1		8.1.2
Levels and locations		01		8.1.3
Type		M3		9
Role		A	A	10
Classification		G31 (optional)	G322	11
Presentation			M	12
Number		0001		13
Description (optional)			Doors	14
Suitability (optional)	S1	S1		15.2.2
Revision (optional)	P2	P2		15.2.3
Name	PR1-S1-P2	PR1-XYZ-Z1-01-M3-A-0001	A-G322-M_Doors	

Metadata based file naming

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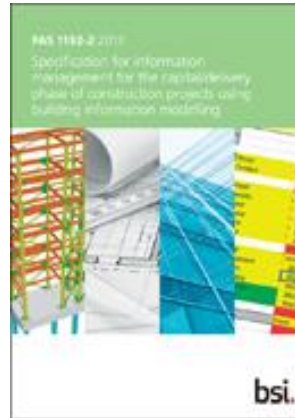
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Level 2: Managed construction project information across a number of organisations, using process standards for collaborative decision-making
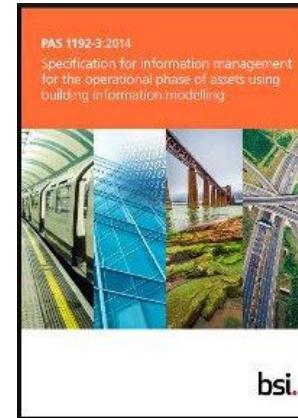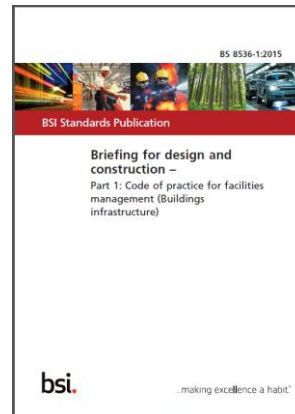
BS 1192:2007
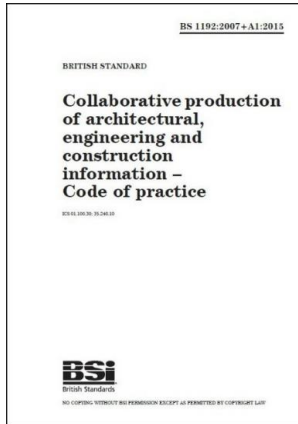
PAS 1192-2:2013
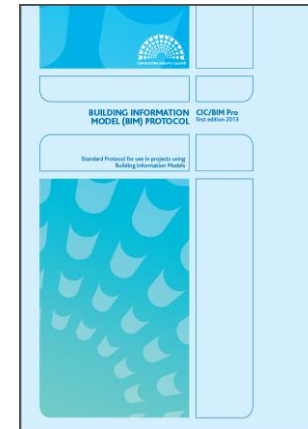
PAS 1192-3:2014

BS 1192-4:2014

DPoW

PAS 1192-5

BS 8536-1:2015 x2

BIM Protocol

Uniclass 2015

Level 3:   The UK government define this as Digital Built Britain, a combination of the Construction Industry, Smart City and Information Economy Strategies that have yet to be fully defined. The industry bodies are fixed on a definition that requires a single construction model that is modified by all, and that can be used in operation.

Combination of the Construction Industry, Smart City and Information Economy Strategies
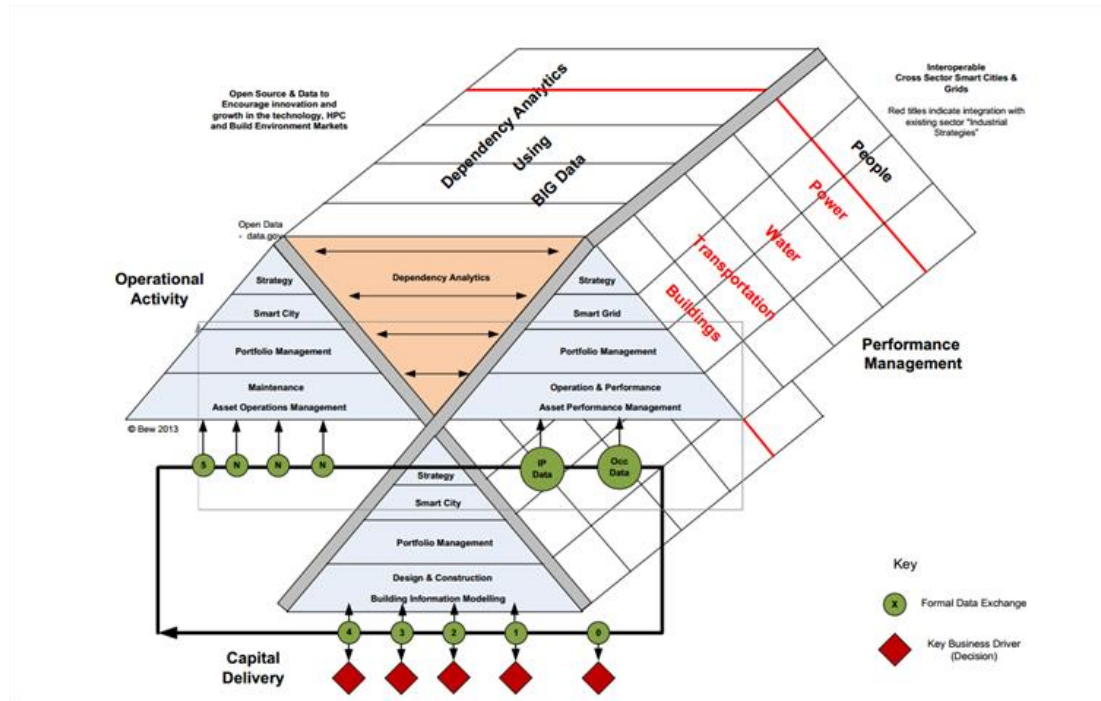
"or"
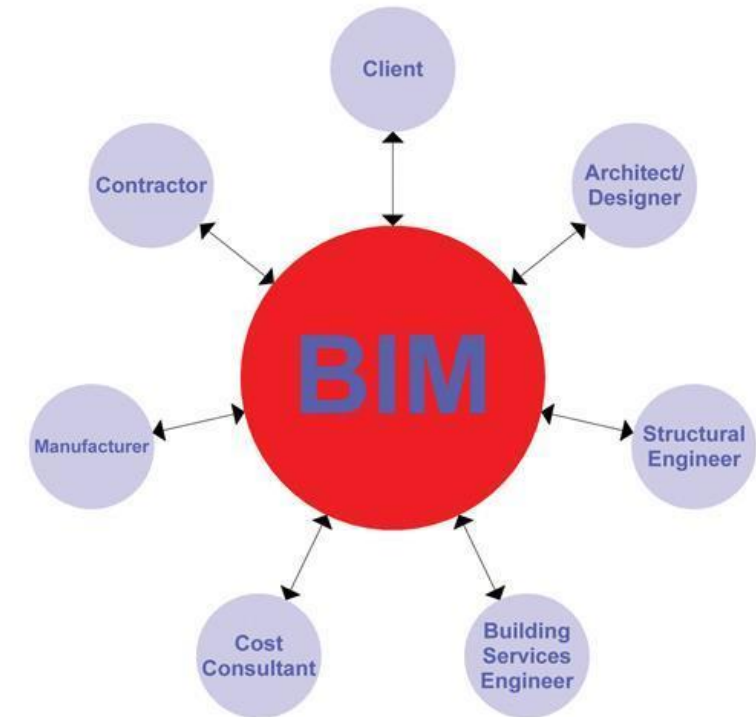
Single construction model

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Reponses to the GCCC Position Paper

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Name:	Sector Title:	Views Expressed:	Organisation Size:	Sector:	Originator:
Association of Consulting Engineers of Ireland (ACEI) Submission	CS+ ME Engineer	Organisation	96 member firms	Both Private and Public	ACEI-Consulting Engineers
Bernard Pierce Submission	HSE Estates Department	Personal	Personal	Public Sector	Bernard Pierce
Construction Industry Federation Submission	Construction Industry	Organisation	85% of the industry's overall turnover.	Both Private and Public	CIF-Construction Federation
Construction IT Alliance (CitA) Submission	Not-for-Profit Digitisation in Construction Industry.	Organisation	27 member organisations of the Alliance	Both Private and Public	CitA
DCS Engineering Consultancy Submission	CS Engineer	Business	3 employees	Public Sector	DCS-Eng.
Dublin Institute of Technology (DIT) Submission	Educator	Organisation	400 staff and approximately 8000 student	Both Private and Public	DIT
Dr. Shawn O'Keeffe Submission	Engineering Technologist	Personal	Personal	Both Private and Public	Dr Shawn O'Keeffe
Engineers Ireland (EI) Submission	Engineers professional body	Organisation	23,000 members	Other	Engineers Ireland
Grangegorman Development Agency (GDA) Submission	Other	Business	20 staff and 10 contractors	Public Sector	GDA
Iain Miskimmin Submission	Digital Built Asset advisor and educator	Personal	Personal	Both Private and Public	Iain Miskimmin
Jones Engineering Submission	M&E, GC, Specalist Contractor	Business	40 person BIM Department	Both Private and Public	Jones Engineering
Paul Lawrence Submission	Architectural Technologist	Personal	Personal	Both Private and Public	Paul Lawrence
Royal Institute of Architects of Ireland (RIAI) Submission	Architects & Architectural Technologists	Organisation	membership of over 3,300	Both Private and Public	RIAI
Society of Chartered Surveyors Ireland (SCSI) Submission	Quantity Surveyor	Organisation	5500 chartered surveyors	Both Private and Public	SCSI
Hussey Fraser Submission	Solicitor	Business	Law Firm - 8 Solicitors	Private Sector	Hussey Fraser
Turner & Townsend Submission	Global Construction Professional Services company	Business	opinion of the Dublin office and the BIM Team	Both Private and Public	Turner Townsend

Nov 2017
Mandate

May 2019 +18

May 2020 +30

Nov 2021 +48

Nov 2018 +12

Nov 2019 +24

Nov 2020 +36
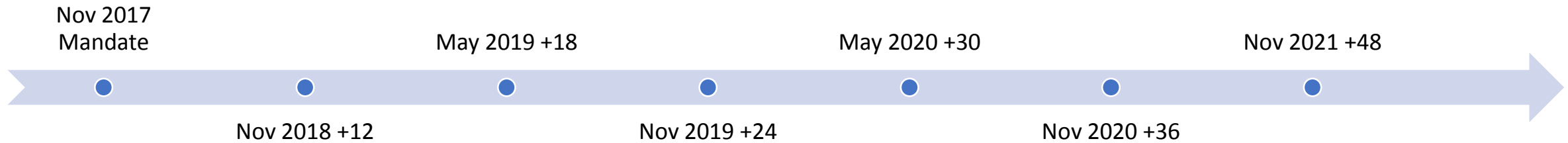
Timeline

- **Durations** outlined in Table 1 seem **realistic**, but warn of timeline slipping, **maintaining** these **dates** must be **prioritised**
- **Dates** are not **aggressive enough**, consideration should be given to **accelerating this timeline**, suggesting that with 48 months, **Europe will have advanced to level 3**

- **Encourage procuring authorities requesting BIM earlier than the timelines.**
- Others **agree with not applying BIM across the industry** at once and concurs with the approach of **starting with major authorities and developing the capability**.

- Categories which **currently require only Level 1**, should also have a **requirement for Level 2**

BIM maturity level

- **Different interpretation** of what is meant by **BIM Levels 1, 2 and 3**
- Respondents look for a clear comprehensive detailed definition of what the BIM levels mean in an Irish context

- Question the wording **"full" BIM**, the **implication that Common Data Environment (CDE) is required for Level 3 only** and **early contractor involvement** is necessary for Level 3

- **BIM Level 3 is not** going to be a **concern** in the **near future**

- **Strategy document needs** to **defined** what is **required**
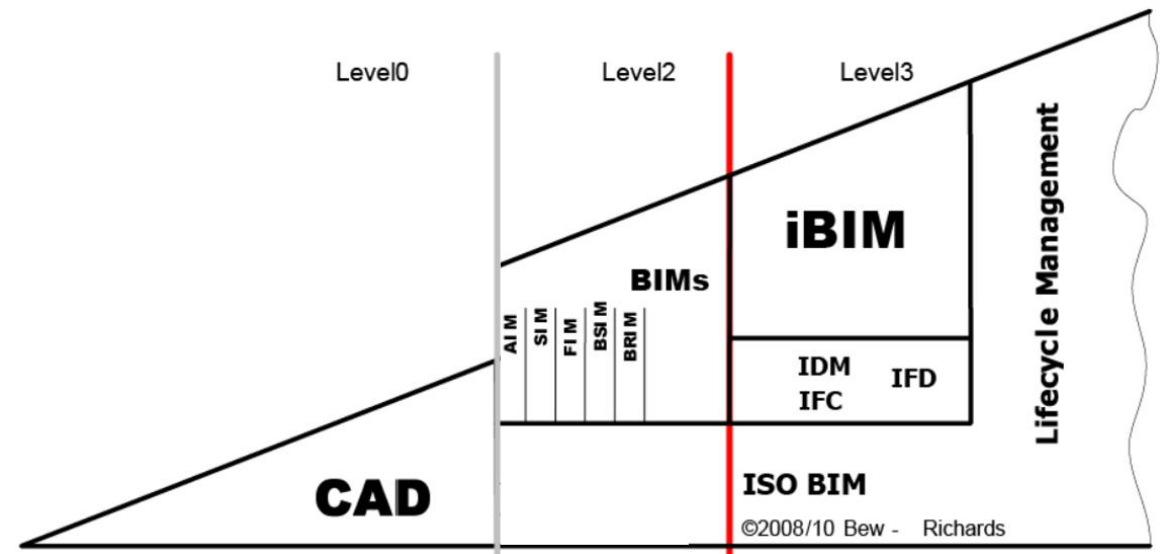
Level 1 first

- **Level 1 will 'prepare the ground'**

- **BIM Level 1** is a good '**stepping stone**' to achieving **BIM Level 2** and beyond

- Implementation of BIM Level 1 will impose standards for information management, ensure a consistent naming convention, and enable sharing of electronic information in an organized way within a CDE as described in BS1192:2007

- Belief that **information is currently managed** and shared at **BIM Level 0**

- The **GCCC hope that level 1** will **prioritise** the internal **organisational changes** required for level 2

EU standards

- The GCCC recognise that the **draft International Standard ISO 19650** will affect the defining requirements

- **ISO standards** within the strategy is essential for **successful implementation**
- **Co-ordinated approach** between **Ireland's standards development** and the **EU BIM Task Group** and the **2014 Procurement Directive**

- **Develop a National Annex to ISO19650** by **building on the UK** and **other early adopting** nations' good practices,
- **Others believes** that the **high emphasis on UK** practice should be **removed** as this could **hinder Ireland in the EU**

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Proposed Mandate Timeframe

Public Sector	Sub-Sector	Complex Project Complex FM — Band 5		Complex Project Medium FM — Band 4		Medium Complex Complex FM — Band 3		Medium Complex Medium FM — Band 2		Low Complex — Band 1	
D. Ag & Marine								+12 Level 1	+36 Level 2	+12 Level 1	+12 Level 1
D. Defence				+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Defence 2	+12 Level 1	+48 Level 2
D. Education	Primary			+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Education 2	+12 Level 1	+48 Level 2
	Secondary			+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Secondary 1	+48 Level 2
	Third Level		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Third 1	+48 Level 2
D. Health	HSE		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Health 2	+12 HSE 1	+48 Level 2
	Vol. Hospitals		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Vol. 1	+48 Level 2
D. Housing	Housing			+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Hovel 2	+12 Housing 1	+48 Level 2
	Non-housing.		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Level 1	+48 Level 2
OPW	Heritage	+12 Level 1	+24 Level 2	+12 Level 1	+30 Level 2	+12 Level 1	+36 Level 2	+12 Level 1	+48 Level 2	+12 Level 1	+12 Level 1
	Flood Risk							+12 Level 1	+36 Level 2	+12 Flood 1	+12 Level 1
	New Build		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Level 1	+48 Level 2
TII	Rail		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Rail 1	+12 Level 1
	Road		+12 Level 2	+12 Level 1	+18 Level 2	+12 Level 1	+24 Level 2	+12 Level 1	+36 Level 2	+12 Road 1	+12 Level 1

Impact of the findings

- **BIM level 1 mandate** in the short term would **give the public sector** organisations the **directive** to start **updating their workflow and information management processes**

- Use of **BIM levels is open to interpretation**, the mandate should **move away from specifying workflows** and instead **define information outputs**
- **File-based deliverables to equate to BIM level 1** for the first step and **then information container-based deliverables to equate to BIM level 2** for the desired future state
- Having a **consistent output across the public sector** would be of value when **looking at the information as a whole** for smart city functionality

- **ISO standards** allows the public sector to **leverage the international knowledge** across the industry and use best practise standards without the need to recreate Irish versions, this will also **better equip the Irish AEC industry** to compete in **international markets**

- Adopting a **minimum of level 1** across all projects will **prevent managing information at BIM Level 2 and BIM level 0**

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Conclusion

- **Approach** by the GCCC is **broadly welcomed**

- **Concerns on the timeline**, as it is felt that it could be shortened

- **Confusion** on what the **different BIM levels mean**
- **Widely believed** that the **first step** should be to **implement level 1**
- **Prepare industry** and **more importantly the public sector** for the **level 2 mandate**
- **Simpler mandate** of **managed information** based around the principals of **BIM level 1** could be **implemented first** across **all categories concurrently**

- **Mandate needs** to look toward the **new EU BIM standards** to ensure **longevity**

- **Imposing BIM level 1** principals for information delivery **across the public sector** would start to **achieve the goal of the strategy in a shorter timeframe**
- **Public bodies** need to **start investing** the necessary resources in their **digital transformation**

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Thank you