

CitA BIM Gathering 2019

Féidearthachtaí as Cuimse
Infinite Possibilities

The Evolution of Collaborative BIM and Digital Construction Programmes at TU Dublin



Roadmap to Digital Transition

For Ireland's Construction Industry
2018-2021

NSAI Briefing Note on BIM (Building Information Modelling) Standards

The NSAI welcomes the recognition in these strategy documents, of the key role that "Standards" and "Certification" will play, to drive consistency, efficiency and productivity in the Irish construction industry.

An Roinn Caiteachais
Phoiblí agus Ardchóiríche
Department of Public
Expenditure and Reform

AA Useful Links

ABOUT > OUR LATEST NEWS > NSAI BRIEFING NOTE ON BIM (BUILDING INFORMATION MODELLING) STANDARDS

National Development Plan 2018-2027

Home About Expenditure Reform

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.

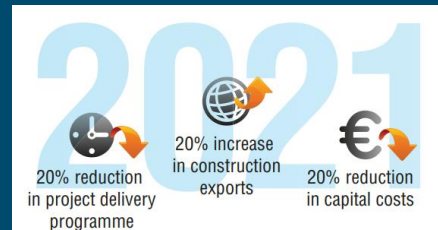
The strategy will see public bodies establishing requirements for the use of Building Information Modelling (BIM) in the design, construction and operation of public buildings and infrastructure on a phased basis over the next 4 years, commencing with the larger, more complex projects, where those operating at that scale are already working through BIM. A BIM model comprises a digital dataset of all the information associated with a project's development from the early design stage through to its operation.

Minister O'Donovan said 'BIM is fast becoming an essential requirement for informed consumers of construction services internationally, and many countries have established BIM requirements at a national level. It has already been successfully used on a number of complex building projects completed in Ireland in recent years, primarily in the technology and pharmaceutical sectors. It is also being used on the National Children's Hospital at the St James's Hospital campus, on the Dublin Institute of Technology's Grangegorman Campus and across the Public Private Partnership programme.'

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2012/2014

**Upskilling
unemployed
professionals**

Level 8 CPD
Diploma in BIM
Technologies



Level 8 CPD
Diploma in
collaborative
BIM
Technologies



2014/2019

**Upskilling unemployed
& working professionals**

Level 9

MSc in applied Building
Information Modelling
& Management + PgDip
in Collaborative BIM +
PgCert in BIM
Technologies



2019 ->

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**Reskilling &
upskilling
professionals**

Level 9
MSc in BIM (Research)



Level 8
BSc (Hons) in BIM
(Digital Construction)

**Reskilling &
upskilling graduates
from levels 6 & 7**

BSc (Hons) in BIM (Digital Construction)									
5	Digital Construction Principles & Standards								
10	BIM Architectural Modelling & Review	BIM Civil and Structural Engineering Modelling & Review	BIM MEP Modelling & Review	BIM Construction Model Exploitation & Review	5+5				
10	BIM Federation & Validation								
15	Work-Based Learning - in work for part-time students	Work-Based Learning - Internship for whole-time students	BIM Electives BIM Objects (5) VR/ AR for Digital Construction (5) BIMCert: Introduction to Low Energy Buildings Construction (5) Visual Programming for Digital Construction (5) BIM and Off-Site Digital Construction (5)			Students who, for an acceptable reason, cannot undertake work placement/work-based learning will have options of modules that are available on other programmes (subject to available places, meeting pre-requisites, and the student taking all classes and assessments as delivered on the host programme). Alternatively, a 15-credit collaborative module may be an option.			
5	Research Methods								
15	Dissertation with Agile Project Management								
60									
					Stage 1	MSc in applied Building Information Modelling & Management			MSc in BIMM (Research)
					15	Lean & Digital Construction Collaboration (15)			Stage 1
					15	BIM in Architecture	BIM Quantity Surveying & Construction Management BIM Mechanical & Electrical Engineering		15
	Postgraduate Certificate in BIM Technologies	30	MM	BMCA	KF	Includes former cross-domain and theory & practice content with Federated BIM Collaboration including as-constructed surveying (i.e. point clouds) Simplified to 3 streams. Prerequisite capabilities can identify learning outcomes included within the level 8 modelling & review modules, thus creating a progression path. For Discussion: Based on feedback from students and external examiners, the proposal is to change from 3 * 5 credit modules to a single 15-credit module per discipline, thus allowing more time for students to develop deep, level 9 learning specific to their discipline.			
					Stage 2 Option A				Stage 2 + 3 Option B
					10	Collaborative BIM Process			
						5 Credit Elective - shared		Shared with MSc in Digital Construction Analytics / Engineering Analytics	
						Availability to be confirmed annually		Shared with BSc (Hons) in Digital Construction	
					5	Visual Programming for Engineering & Built Environment BIM for Clients & Asset Managers IoT Analytics for Smart Cities & Cognitive Buildings - Blended	BIM and Off-Site Digital Construction (5) Intro to Data Analytics - Blended (5) Cloud Computing for Engineering & Built Env - Blended (5)	VR / AR for Engineering & Built Env - Blended (5) Intro to Python Programming - Blended (5) Statistics for Engineering	
					15	Multidisciplinary Collaboration Project			
	Postgraduate Diploma in Collaborative BIM	60							
					Stage 3				
					5	Research Methods		Research Methods	5
					25	Capstone Experience (Minor)		Capstone Experience (Major)	55
	MSc in applied Building Information Modelling & Management	90						MSc in Building Information Modelling & Management (Research)	90

BSc (Hons) in BIM (Digital Construction)

5	Digital Construction Principles & Standards			
10	BIM Architectural Modelling & Review	BIM Civil and Structural Engineering Modelling & Review	BIM MEP Modelling & Review	BIM Construction Model Exploitation & Review
10	BIM Federation & Validation			
15	Work-Based Learning - in work for part-time students	Work-Based Learning - Internship for whole-time students	BIM Electives	
			BIM Objects (5)	
			VR& AR for Digital Construction (5)	
			BIMCert: Introduction to Low Energy Buildings Construction (5)	
			Visual Programming for Digital Construction (5)	
			BIM and Off-Site Digital Construction (5)	
			15 credit Collaborative Project e.g. 3rd year module	
5	Research Methods			
15	Dissertation with Agile Project Management			
60				

MSc in aBIMM Suite including MSc in BIMM (Research) stream

[illegible]

DT 9876 MCP 2019: Client Project Team

Module & Project Lead / Client	Discipline
Kevin Furlong	BIM Process / MEP / Energy Analysis
Emma Hayes	BIM Process / Arch Tech
Client Professional Advisors	
Noel Brady	Architectural
Barry McAuley	Construction Management / QS
Ruairi Hayden	Construction Management
Avril Behan	Geomatics Surveying
Una Beagon	Structural Engineering
Dermot Kehily	QS

Important Note: The client team listed above are engaged to ensure that all applicable building regulations and standards are adhered to during the BIM design process. They are also available to each team for guidance, information and advice. If required a request for information (RFI) or meeting with advisors should be sought through the module leaders. Client advisors should not be contacted directly.



DT 9876 MSc in Applied BIM

Stage 2: Multidisciplinary Collaboration Project



Project Specific Employers Information Requirements



Project Description

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Each design team will make best possible use of the existing site constraints to maximise the gross useable space. The client (Panel) will review all proposals and designs.

All teams must include the following mandatory client space requirements within their design.

- Both new and existing buildings are to include 'Renewable' technologies where possible.
- Both new and existing buildings are to include 'Green' technologies where possible.
- Both new and existing buildings are to include 'Well' technologies where possible.
- A 100 seat 'Fan' arranged tiered lecture auditorium is to be included.
- A Virtual and Augmented reality, design and interactive space/cave is to be included.
- Shower & changing facilities are to be included.

Project Stages & Data Drops

Stage	Stage Description	Data Drop	Purpose	PLQ's
0	Strategic Definition	0	Development of Websites & Collaboration	1 - 2
1	Preparation & Brief	1	Pre Contract BEP	
1	Preparation & Brief	2	Post Contract BEP, PIP, CDE Set-up	
1	Preparation & Brief	3	MIDP, TIDP, CIC Protocol & Procurement	3 - 13
2	Concept Design	4	Outline Model Proposals & Energy Analysis.	14 - 21
3	Developed Design	5	Developed Model Design with Cobie Outputs	22 - 26
4	Technical Design	6	Mech, Elec, Energy Analysis, Renewables	27 - 28
5	Pre-Construction	7	Final Model Design and PIM / AIM	29 - 33
6	Final Tender Design	8	Final Tender Package & Federated Model	34 - 35
	Final Team Presentations	9	Final Team Project Presentations	
		10	Individual Reflective Writing Paper	

Plain Language Questions

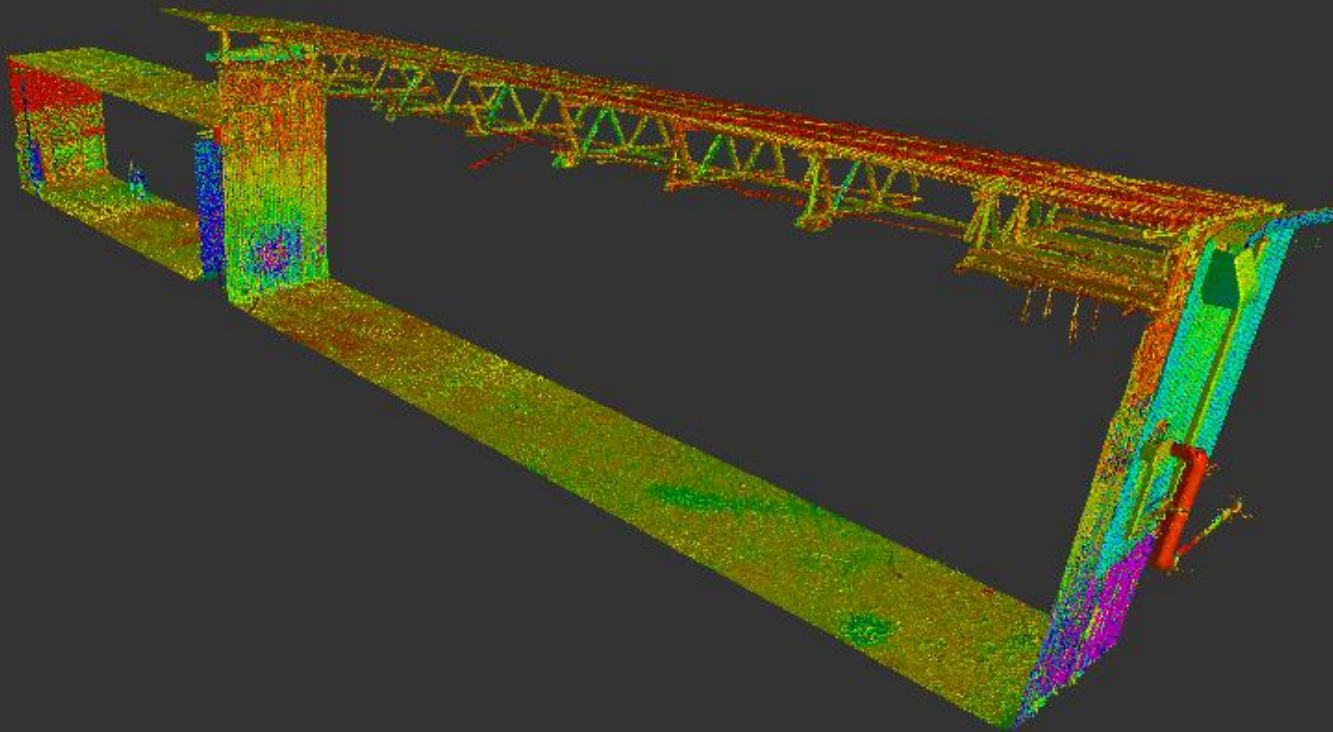
Client Plain Language Questions					PLQ
Stage	Stage Description	Data Drop	Data Drop Purpose		
0	Strategic Definition		Draft EIR	1	What is the inform management Str project
0	Strategic Definition		Pre Contract Survey	2	What are the di the site for the development
1	Preparation & Brief	1	Pre Contract BEP	3	Have the purp model will be
1	Preparation & Brief	1	Pre Contract BEP	4	How will BIL exploited in
1	Preparation & Brief	1	Pre Contract BEP	5	What is th
1	Preparation & Brief	1	Pre Contract BEP	6	What ph there on
1	Preparation & Brief	1	Pre Contract BEP	7	What or drain
1	Preparation & Brief	1	Pre Contract BEP	8	What asset
1	Preparation & Brief	1	Pre Contract BEP	9	reco WHI phi
1	Preparation & Brief	1	Pre Contract BEP	10	W r
1	Preparation & Brief	2	Post Contract BEP, PIM	11	V
1	Preparation & Brief	3	MIDP, TIDP, CIC Protocol & Procurement	12	
1	Preparation & Brief	3	MIDP, TIDP, CIC Protocol & Procurement		
1	Preparation & Brief	3	MIDP, TIDP, CIC Protocol & Procurement		
1	Preparation & Brief	3	MIDP, TIDP, CIC Protocol & Procurement		
1	Preparation & Brief	3	Outline Model Proposals & Energy Analysis		
2	Concept Design	4	Outline Model Proposals & Energy Analysis		
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2	Concept Design	4	Outline Model Proposals & Energy Analysis		
2	Concept Design	4	Outline Model Proposals & Energy Analysis		

2	Concept Design	4	Outline Model Proposals & Energy Analysis	20	Have any client specific space requirements been met	Design Team
2	Concept Design	4	Outline Model Proposals & Energy Analysis	21	Are there any deviations from the brief or proposals to improve it	Design Team
3	Developed Design	5	Developed Model Design with Cable Outputs	22	Is the design developed to demonstrate detailed proposals for coordinated design intentions	Design Team
3	Developed Design	5	Developed Model Design with Cable Outputs	23	Is the design developed to demonstrate detailed proposals for site layout	Design Team
3	Developed Design	5	Developed Model Design with Cable Outputs	24	Is the design developed to demonstrate detailed proposals for buildability	Design Team
3	Developed Design	5	Developed Model Design with Cable Outputs	25	Is the design coordinated at a component and building element level of detail	Design Team
3	Developed Design	5	Developed Model Design with Cable Outputs	26	Does the current design meet the functional requirements of the project	Design Team
4	Technical Design	6	Medh, Elec, Energy Analysis, Renewables	27	Is the design developed to demonstrate detailed proposals for environmental systems	Design Team
4	Technical Design	6	Medh, Elec, Energy Analysis, Renewables	28	Is the design developed to demonstrate detailed proposals for services systems	Design Team
5	Pre-Construction	7	Final Model Design and PIM	29	Has the entire project / module brief been met	Design Team
5	Pre-Construction	7	Final Model Design and PIM	30	Are full energy analysis reports available	Design Team
5	Pre-Construction					
5	Pre-Construction					
5	Pre-Construction					
6	Final Tender Design		Federated Model			Team
6	Final Tender Design	8	Final Tender Package & Federated Model	35	Have all data security requirements been met	Design Team
7	For Construction					

Have all data security requirements been met

Design Team

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Broombridge

Broombridge

DIT Broombridge

Broadstone

Bominick

O'Connell Upper

GPO



Broombridge Design + Construct

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The building will be a lean, sustainable living lab
where apprentices, undergraduate students &
lifelong learners experience collaborative,
multidisciplinary & digital design, construction,
operation & maintenance

Aim of Impacting the Industry

7/38 (18%) papers here today

90% of graduates have received promotions

98% of unemployed entrants through Springboard gained employment while still on the programme



Irish Construction Excellence Awards 2019

ICEAwards.ie



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