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Appendix B - Detailed List of Core Competencies of BIM Pro (HKIA) / BIM Pro

Minimum Level of Competency:

Level 1 (L1): General appreciation of the subject and an understanding of how the subject may affect, or integrate with other subjects.

Level 2 (L2): Knowledge and understanding of the subject and its application. Level 3 (L3): Ability to perform the subject independently or under supervision. Level 4 (L4): Ability to perform the subject without supervision and advise others.

-	Core Subject	L1	L2	L3	L4
1. BIM Initiation	*1.1. BIM Concept*				
	1.1.1 Promote architectural excellence through adoption of BIM				✔
	1.1.2 BIM definitions and terminology	✔			
	1.1.3 The difference between 2D CAD, 3D CAD and BIM	✔			
	1.1.4 Concept of BIM as whole project & whole estate perspective	✔			
	1.1.5 Value and benefits of adopting BIM	✔			
	1.1.6 Value of BIM for AM & FM	✔			
	1.1.7 Collaborative working in BIM	✔			
	1.1.8 Limitation of BIM	✔			
	1.1.9 Challenges within existing working practices & how BIM addresses these		✔		
	1.1.10 How BIM affect the current practice in AECO industry		✔		
	1.1.11 Uphold Architects' leading role in AEC industry				✔
	1.2. Local & Global Contexts, BIM standards and guidelines				
	1.2.1 Local BIM standards & resources		✔		
	1.2.1.1 CIC BIM Standards		✔		
	1.2.1.2 Government BIM standards & resources		✔		
	1.2.2 Global context in BIM development	✔			
	1.2.3 Global BIM standards & resources		✔		
	1.2.3.1 ISO 19650		✔		
	1.2.3.2 BIM FORUM LOD Specification		✔		
	1.2.3.3 OpenBIM		✔		
	1.2.3.4 ISO 16739-1:2018: Industry Foundation Class IFC		✔		

-	Core Subject		L1	L2	L3	L4
2. BIM Software and Technologies	*2.1. BIM Software*					
	2.1.1	Overview of industry leading BIM software/applications		✔		
	2.1.2	Characteristic, strength and limitation of industry leading BIM software		✔		
	2.1.3	Versions and file formats		✔		
	2.1.4	Interoperability across industry leading BIM software * to carry out open BIM workflow where necessary and to encourage open BIM inter-operability workflow where appropriate				✔
	2.2. Technologies					
	2.2.1	Cloud platform		✔		
	2.2.2	Laser scanning		✔		
	2.2.3	Photogrammetry		✔		
	2.2.4	GIS		✔		
	2.2.5	Application of smart devices		✔		
	2.2.6	VR/AR/MR		✔		
	2.2.7	VDC	✔			
	2.2.8	RFID		✔		
	2.2.9	Gaming technology in BIM	✔			
	2.2.10	Robotics	✔			
	2.2.11	Automation	✔			
	2.2.12	API	✔			
	2.2.13	MiC		✔		
	2.2.14	Indoor positioning	✔			
	2.2.15	Upcoming Trend	✔			

-	Core Subject		L1	L2	L3	L4
3. BIM Uses and Processes	*3.1. – Client BIM Strategic Stage*					
	3.1.1	BIM strategy, BIM uses, BIM processes	✔			
	3.1.2	Key personnel in relation to BIM				✔
	3.1.3	Determine the info management & CDE strategy				✔
	3.1.4	Determine the BIM/AIM/GIS strategy				✔
	3.1.5	Determine level of development in the context of graphics and information				✔
	3.1.6	Determine level of integration of digital information into asset & facility management				✔
	3.1.7	Case study		✔		
	3.2. – Client Pre-tender Project Stage					
	3.2.1	Determine & oversee the development of Client Information Model (CIM)				✔
		3.2.1.1 Organisational Information Requirements (OIRs)				✔
		3.2.1.2 Asset Information Requirements (AIRs)				✔
	3.2.2	Employers Information Requirements (EIR) * coordinate with consultant team and future asset / facility management team and advise client on Employer Information Requirement (EIRs)				✔
	3.2.3	Determine project technology & systems requirement & integration				✔
	3.2.4	Determine project delivery requirements				✔
	3.2.5	Determine the soft landings approach				✔
	3.2.6	Contract & consultancy requirement * be able to lead, draft, comment BIM specifications for all sub-consultancy agreements and understand the contractual impact on respective traditional professional practices, e.g., Level of Development and Clash Analysis * be able to define BIM scope and information deliverables for Architectural Discipline				✔
	3.2.7	Assessment on supply chain capability & capacity (Tender Assessment)				✔
	3.2.8	Case study		✔		
	3.3. – Definition & Design Stage					
	3.3.1	BIM Execution Plan developed by supply chain				✔
		3.3.1.1 Pre-contract BIM Project Execution Plan				✔
		3.3.1.2 Post-contract BIM Project Execution Plan				✔
	3.3.2	Supervision in fulfilling BIM uses in planning & design stages listed in CIC BIM Standards				✔

-	Core Subject		L1	L2	L3	L4
3. BIM Uses and Processes	3.3.3	Set up conceptual modeling in BIM Platform and spatial programming and be able to direct the coordination with others to carry out the task				✔
	3.3.4	Determine modelling methodology for architectural schedules and drawing production				✔
	3.3.5	Project Information Model (PIM) data exchanges and validation				✔
	3.3.6	BIM PIM file setup				✔
		3.3.6.1 BIM origin point & orientation setup				✔
		3.3.6.2 Model division				✔
		3.3.6.3 Modelling methodology				✔
		3.3.6.4 Project-based industry and BIM standards				✔
	3.3.7	Direct BIM related meetings				✔
		3.3.7.1 Meeting with high level				✔
		3.3.7.2 Meeting with supply chain level				✔
		3.3.7.3 Internal meeting				✔
		3.3.7.4 Multidiscipline collaboration meeting				✔
	3.3.8	Case Study		✔		
	3.3.9	Basic understanding of parametric design tools		✔		
	3.3.10	Supervise open BIM workflow and open BIM inter-operability				✔
	3.3.11	Determine Modelling Methodology for GBP production and statutory compliance checking				✔
	3.3.12	Determine Modelling Methodology for production of tender drawings and documentation				✔
	3.3.13	Basic understanding of environmental plug-in and performance analysis software		✔		
	3.3.14	Understand the limitation of clash detection and adequately utilize the same to assist consultant team on design coordination				✔
	3.4. – Construction Stage					
	3.4.1	BIM Execution Plan developed by supply chain				✔
		3.4.1.1 Pre-contract BIM Project Execution Plan				✔
		3.4.1.2 Post-contract BIM Project Execution Plan				✔
	3.4.2	Supervision in fulfilling BIM uses in construction & handover stage listed in CIC BIM Standards				✔
	3.4.3	Project Information Model (PIM) data exchanges and validation				✔
	3.4.4	Direct BIM related meetings				✔
	3.4.5	Case study		✔		
	3.4.6	Adequately request and utilize contractor's 4D simulation from BIM model for programme planning, progress verification and record		✔		
	3.4.7	Verify contractor's submitted drawings generated from BIM models				✔

-	Core Subject		L1	L2	L3	L4
3. BIM Uses and Processes	*3.5. – Handover Stage*					
	3.5.1	As-built information verification				✔
	3.5.2	Oversee data transfer from PIM to Asset Information Model (AIM)				✔
	3.5.3	Supervision in fulfilling BIM uses in handover stage listed in CIC BIM Standards				✔
	3.5.4	Case study		✔		
	3.6. – Operation & Maintenance Stage					
	3.6.1	Update Assets Information Model (AIM)		✔		
	3.6.2	Roles, responsibilities and authorities for maintaining the AIM		✔		
	3.6.3	Post occupancy evaluation		✔		
	3.6.4	Case Study		✔		

-	Core Subject	L1	L2	L3	L4
4. Digital Information Management, Collaboration and Integration	*4.1. Digital Information Management*				
	4.1.1 Value of data & how it should be managed		✔		
	4.1.2 Interoperate data/information to facilitate cross- disciplinary and cross-BIM platform collaboration		✔		
	4.1.3 Limitation of BIM software in relation to information management		✔		
	4.1.4 Determine level of development in the context of graphics and information in different stages				✔
	4.1.5 Determine level of integration of digital information into asset & facility management				✔
	4.1.6 Oversee the process and quality of information exchange				✔
	4.1.6.1 IFC/BCF/XML…etc.		✔		
	4.1.6.2 COBie		✔		
	4.2. Common Data Environment (CDE)				
	4.2.1 Overview of CDE		✔		
	4.2.2 Overview of various CDE platform		✔		
	4.2.3 Setup of CDE			✔	
	4.2.4 Assessment of CDE			✔	
	4.2.5 Management of CDE				✔
	4.2.6 Limitation of CDE		✔		
	4.3 Data Quality Control & Assurance across various stages				
	4.3.1 System checking				✔
	4.3.2 Model audit				✔
	4.3.3 Model checking				✔
	4.3.4 Audit reporting				✔

-	Core Subject	L1	L2	L3	L4
5. Commercial and Contract	*5.1 Commercial Issue*				
	5.1.1 Establishing BIM ready Environment to support the corporate			✔	
	5.1.1.1 BIM strategy in organisation level		✔		
	5.1.1.2 Challenges in BIM implementation		✔		
	5.1.1.3 Phases in BIM implementation				✔
	5.1.1.4 Hardware requirement for BIM		✔		
	5.1.1.5 Software requirement for BIM		✔		
	5.1.1.6 Manpower management for BIM				✔
	5.1.1.6.1 Staff plan				✔
	5.1.1.6.2 Staff recruitment				✔
	5.1.1.6.3 Staff training				✔
	5.1.2 Promotion of adopting BIM in office/to clients		✔		
	5.1.2.1 Value and benefit of adopting BIM	✔			
	5.1.2.2 Value and benefit of data and information from BIM	✔			
	5.1.2.3 Evaluating Return on Investments (ROI) of adopting BIM		✔		
	5.2. Contract Issue				
	5.2.1 Ownership of data * e.g. demarcate modelling and information responsibilities among disciplines and control federated models		✔		
	5.2.2 Intellectual property right		✔		
	5.2.3 Legal implication and potential liability		✔		
	5.2.4 Professional indemnity				✔
	5.2.5 Introducing NEC	✔			
	5.2.6 Commercial implications for contracts & insurances in relation to BIM		✔		