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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 lead and execute the subject without supervision and advise others.

-	Core Subject	L1	L2	L3	L4
1. BIM Initiation	*1.1. BIM Concept*				
	1.1.1 BIM definitions and terminology		✔		
	1.1.2 Difference between CAD (2D/3D) and BIM		✔		
	1.1.3 BIM in the context of whole life cycle of a built asset and smart city		✔		
	1.1.4 Value and benefits of adopting BIM in the whole life cycle of a built asset		✔		
	1.1.5 Collaborative working in BIM		✔		
	1.1.6 Limitation of BIM		✔		
	1.1.7 How BIM can affect the AECO practice and address the current challenges		✔		
	1.1.8 Promote architectural excellence through adoption of BIM*				✔
	1.1.9 Uphold Architect's leading role in AEC industry*				✔
	1.2. Local, Mainland & Global BIM development and standards				
	1.2.1 Local BIM standards, publications and available resources		✔		
	1.2.1.1 CIC BIM standards and other related publications and resources		✔		
	1.2.1.2 Government BIM & BIM-AM related technical circulars, standards, guidelines and publications		✔		
	1.2.2 BIM development in Mainland and global context	✔			
	1.2.3 Mainland and international BIM standards, publications and initiatives		✔		
	1.2.3.1 Mainland BIM standards GB/T series	✔			
	1.2.3.1 ISO 19650 series		✔		
	1.2.3.2 openBIM and other collaborative formats		✔		

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-	Core Subject		L1	L2	L3	L4
2. BIM Software and Technologies	*2.1. BIM Software and Platforms*					
	2.1.1	Common BIM software and platforms for various trades		✔		
	2.1.2	Key characteristics, file format & version, strength and limitation of common BIM software and platforms		✔		
	2.1.3	Interoperability across common BIM software and platforms		✔		
	2.1.4	Awareness and knowledge ti infrastructure, plug-ins and add-ons available for facilitating statutory submission using BIM tools*		✔		
	2.2. Technologies and Construction Related Applications					
	2.2.1	Internet & cloud	✔			
	2.2.2	Laser scanning & photogrammetry		✔		
	2.2.3	Unmanned Aircraft System (UAS) / Drone		✔		
	2.2.4	Geographic Information System (GIS)		✔		
	2.2.5	Common Spatial Data Infrastructure (CSDI), 3D Digital Map and 3D Photo-realistic Model by the HKSAR	✔			
	2.2.6	Internet of Things (IoT), Radio Frequency Identification (RFID), mobile or smart devices		✔		
	2.2.7	Virtual reality (VR), Augmented Reality (AR) and Mixed Reality (MR)		✔		
	2.2.8	Digital Twin		✔		
	2.2.9	Robotics	✔			
	2.2.10	Programming, automation and API	✔			
	2.2.11	MiC, MiMEP and DfMA		✔		
	2.2.12	Indoor positioning	✔			
	2.2.13	Artificial Intelligence (AI), Machine Learning and Large Language Model (LLM)	✔			
	2.2.14	Smart Site Safety System (4S) and Digital Works Supervision System (DWSS)	✔			

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-	Core Subject	L1	L2	L3	L4
3. BIM Uses and Processes	*3.1. – BIM Organisational Strategy and Requirements*				
	3.1.1 Overview of BIM strategy, uses and organisation		✔		
	3.1.2 Key personnel in relation to BIM and their roles and responsibilities		✔		
	3.1.3 Establish and lead the development of the BIM Requirements at the organisational level				✔
	3.1.3.1 Organisational Information Requirements (OIR)				✔
	3.1.3.2 Asset Information Requirements (AIR)				✔
	3.1.3.3 Security Information Requirements (SIR)				✔
	3.1.4 Develop and lead the implementation of the CDE strategy at the organisational level				✔
	3.1.5 Establish and manage the strategies for integrating BIM with broader construction digitalisation technologies at the organisational level (e.g. GIS, Digital Twin, 4S, etc)				✔
	3.1.6 Case study		✔		
	3.2. – Project Planning Stage				
	3.2.1 Define and establish the Appointing Party BIM Requirements and the Project Information Requirements (PIR) at the project level				✔
	3.2.2 Develop and manage the Exchange Information Requirements (EIR)				✔
	3.2.3 Determine and lead the integration of technologies and system requirements at the project level (e.g. BIM software, platforms, CDE, etc.)				✔
	3.2.4 Develop and oversee project delivery requirements and appropriate BIM Uses at the project level				✔
	3.2.5 Develop and manage the Level of Information Need (LOIN) to be adopted at the project level				✔
	3.2.6 Establish and manage the BIM & information standards, methods and procedures at the project level				✔
	3.2.7 Coordinate and manage the shared resources with the Lead Consultant / Lead Contractor at the project level				✔
	3.2.8 Assess and validate the capability and capacity of the delivery team				✔
	3.2.9 Case study		✔		
	3.2.10 Determine strategy and level of integration of digital information into asset and facility management*				✔
	3.3. – Definition & Design Stage				
	3.3.1 Develop and lead the Pre-appointment and Post-appointment BIM Implementation Plan (BIM IP)				✔
	3.3.2 Develop and lead the Pre-appointment and Post-appointment BIM Execution Plan (BEP)				✔
	3.3.3 Define and manage the Information Management Assignment Matrix				✔
	3.3.4 Establish and manage the detailed modelling methodology and requirements				✔
	3.3.5 Manage the production and delivery of the BIM Uses in the planning and design stages				✔
	3.3.6 Lead and report in BIM-related meetings and documentations				✔

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-	Core Subject		L1	L2	L3	L4
3. BIM Uses and Processes	3.3.7	Case Study		✔		
	3.3.8	Set up conceptual modelling and further up-grading to Project Information Model (PIM) on BIM platform for spatial programming and be able to direct the coordination with others to perform data exchange and validation*				✔
	3.3.9	Determine modelling methodology for architectural schedules and direct drawing production*				✔
	3.3.10	BIM PIM file setups including project origin point, orientation, model subdivision, modelling methodology, and project-based requirement and BIM standard implementation*				✔
	3.3.11	Basic understanding of parametric design tools*		✔		
	3.3.12	Basic understanding of environmental plug-ins and performance analysis tools*		✔		
	3.3.13	Supervise open BIM workflow and in advise on open BIM inter-operability issues*				✔
	3.3.14	Determine modelling methodology for GBP production and statutory compliance checking*				✔
	3.3.15	Determine modeling methodology for production of tender drawings, BIM model for QTO and related documentation*				✔
	3.3.16	Understand the limitations of clash detection and adequately utilize the same to assist consultant team on design coordination*				✔
	3.4. – Project Construction & Handover Stage					
	3.4.1	Develop and lead the Pre-appointment and Post-appointment BIM Implementation Plan (BIM IP)				✔
	3.4.2	Develop and lead the Pre-appointment and Post-appointment BIM Execution Plan (BEP)				✔
	3.4.3	Define and manage the Information Management Assignment Matrix				✔
	3.4.4	Establish and manage the detailed modelling methodology and requirements				✔
	3.4.5	Manage the production and delivery of the BIM Uses in the construction and handover stages				✔
	3.4.6	Lead and report in BIM-related meetings and documentations				✔
	3.4.7	Case Study		✔		
	3.4.8	Adequately direct contractor to produce 4D simulation with essential information embedded for programme review & planning, progress verification and cash flow reporting*		✔		
	3.4.9	Verify contractor's submitted drawings generated from BIM models*				✔
	3.5. – Building/Asset Operation & Maintenance Stage					
	3.5.1	Technologies for BIM asset management and integration with the building / asset management system		✔		
	3.5.2	Manage the production and delivery of the Asset Information Model (AIM) and associated data for operation and maintenance (O&M) stage				✔
	3.5.3	Manage the information exchange from the AIM to the building /asset management system				✔
	3.5.4	Maintain and update the Asset Information Model (AIM) throughout the O&M stage				✔
	3.5.5	Lead and coordinate BIM-based asset management with asset management, facility management, and operation teams				✔
	3.5.6	Case Study		✔		

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-	Core Subject		L1	L2	L3	L4
4. Digital Information Management, Collaboration and Integration	*4.1. Digital Information Management*					
	4.1.1	Plan and manage the information management workflow for various work stages				✔
	4.1.2	Plan and manage the BIM information and model exchange for multi-disciplinary collaboration				✔
	4.1.3	Define and manage the details of the Level of Information Need (LOIN) in terms of graphical, non-graphical, and documentation requirements for various work stages				✔
	4.1.4	Plan and manage the integration, archiving, and handover of BIM model and associated data across the work stages				✔
	4.1.5	Establish and maintain various BIM related coding systems and classifications for various work stages				✔
	4.1.6	Plan and manage the process of information exchange across various open / proprietary file formats (e.g. BCF, IFC, IDM, bsDD, COBie, MVD, IDS, etc.)				✔
	4.2. Common Data Environment (CDE)					
	4.2.1	CDE and the workflow as per ISO 19650		✔		
	4.2.2	Common CDE solutions in the market		✔		
	4.2.3	Establish and manage a CDE				✔
	4.2.4	Assess and select an appropriate CDE based on project requirements				✔
	4.2.5	Lead and manage the information exchange process of CDE				✔
	4.2.6	Limitation of CDE		✔		
	4.3 – Data Quality Assurance & Audit across various work stages					
	4.3.1	Plan and develop the BIM quality assurance and audit processes, methodologies and checking systems for various work stages				✔
	4.3.2	Manage the production of BIM quality assurance, auditand model checking for various work stages				✔
	4.3.3	Define and oversee the production of BIM quality assurance and audit reporting for various work stages				✔

-	Core Subject	L1	L2	L3	L4
5. Commercial and Contract	*5.1 - Commercial Issue*				
	5.1.1 Foster BIM literacy across organisation and stakeholders				✔
	5.1.2 Define and manage the requirements of hardware, software and IT infrastructure for BIM				✔
	5.1.3 Lead the human resource management, competency and training for BIM				✔
	5.1.4 Lead the procurement and supply chain management for BIM				✔
	5.1.5 Establish and oversee risk management strategies for BIM implementation.				✔
	5.2 – Contractual and Liabilities Issues				
	5.2.1 Understand the potential risks associated with model sharing, data accuracy and reliance on digital deliverables		✔		
	5.2.2 Describe the contractual provisions related to BIM, such as roles and responsibilities, ownership of models, intellectual property rights, and protocols for data exchange etc.		✔		
	5.2.3 Understand how BEPs, information requirements and standards integrate with contractual frameworks to define deliverables and the rights and liabilities of the parties involved		✔		
	5.2.4 Awareness of implications to industry practice of contractual BIM implementation*		✔		

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