The Hong Kong Institute of Surveyors

The HKIS BIM Certification Scheme
Application Guide for Listing under "Surveyor BIM Pro"

1. Introduction

1.1 In 2017, the HKSAR Government decreed that BIM technology must be used in the design and construction of all major government capital works projects with a project cost estimate of more than HK$30 million that were scheduled to start during or after 2018, and that the use of this technology in private construction projects should also be promoted. This has generated a surge in demand for BIM personnel and training needs.

1.2 To ensure that construction professionals have appropriate skill levels and competency in using BIM technology, and that the scope and quality of BIM courses provided in the market meet the needs of the industry, it was important to establish a certification body for BIM personnel and an accreditation body for BIM courses in Hong Kong.

1.3 To facilitate the healthy development of BIM in Hong Kong, the Construction Industry Council (CIC) has introduced the BIM Certification and Accreditation Schemes to ascertain the competency of BIM personnel and the quality of local BIM training courses.

1.4 In order to meet the increasing demand of BIM personnel as project BIM team leaders and coordinators according to the BIM structure requirement specified in DevB's Technical Circular for the "Adoption of Building Information Modelling", it is essential to **build up capacity and capability of HKIS members** for adopting BIM in property and construction projects. In this regard, the HKIS sets up the BIM Certification Scheme and creates a listing system through which applicants may apply for admission to the List of "Surveyor BIM Pro".

1.5 The objectives of listing are to ensure that the applicants have acquired the recognised training and prescribed practical BIM experience and have attained a level of knowledge in professional practice acceptable to the HKIS for admission to the List of Surveyor BIM Pro.

1.6 A streamlined procedure is also agreed with CIC where if an applicant wishes to become a HKIS Surveyor BIM Pro and CIC-Certified BIM Manager (CCBM), the applicant is only required to submit **one** application. No separate application is required to be submitted to CIC for certification as a CCBM. The HKIS will send one copy of the application documents to CIC for their review. To avoid duplication in assessment, the approval/disapproval of Surveyor BIM Pro and CCBM will be bundled, i.e., applicants will be approved/disapproved by HKIS as Surveyor BIM Pro with the same outcome of approval/disapproval of CCBM by the CIC BIM Certification and Accreditation Board (BIMCAB).

2.   Eligibility Criteria for Listing of Surveyor BIM Pro

2.1   The listing of Surveyor BIM Pro is targeted at BIM practitioners who:
   (a) already have relevant practical experience in BIM projects[1], such as in development of BIM standards; planning, design, contract administration and execution of BIM projects in the areas of quantity surveying, construction management, project management, cost and programme management, design management and specification, and property management; BIM education; quality assurance, etc., meet the relevant academic and/or professional qualification requirements, and
   (b) have completed a CIC-Accredited BIM Manager course, or a CIC-Accredited BIM Manager Top-up course which is applicable for CIC-Certified BIM Coordinators (CCBCs) only.

2.2   The targeted BIM practitioners should be able to observe a high standard of associate professional conduct and ethical behaviour, as all Surveyor BIM Pro are expected to uphold the standing and reputation of the HKIS/CIC (where applicable) and the BIM profession.

2.3   **Core Competencies of a Surveyor BIM Pro**

   The Core Competencies of a Surveyor BIM Pro are as follows:

   (a)   **BIM Initiation**: Ability to describe BIM concept definitions and scope, BIM standards and guidelines in the Hong Kong and global contexts. [Level 2]

   (b)   **BIM Software and Technologies**: Ability to explain BIM software and the modelling process, and current and upcoming technologies. [Level 2]

   (c)   **BIM Uses and Processes**: Ability to understand BIM uses and BIM software applications, and to design and manage the overall process of a BIM project. [Level 4]

   (d)   **Digital Information Management, Collaboration and Integration**: Ability to plan and execute the setting-up of a common data environment and data quality control system for effective use and sharing of digital information in a BIM project. [Level 4]

   (e)   **Commercial and Contractual Aspects**: Ability to describe commercial and financial issues of BIM as well as BIM-related contractual issues. [Level 2]

   (f)   **Communication Skills**: Ability to apply effective interpersonal and communication skills in a variety of public and interpersonal settings, such as presentations, meetings, report / training material writing, etc. [Level 4]

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1 Practical experience in BIM should be gained from property and construction projects which necessitate the use of BIM and the associated deliverables are to meet certain objectives of the projects. These deliverables as products of BIM applications have to be reviewed by the responsible person(s) of the projects and adopted in the implementation of the projects to distinguish them from merely experiential experiences, i.e. without formal verification by the project team.

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(g) **Leadership, Management and Integrity Aspects**: Ability to represent the HKIS/CIC (where applicable) and uphold a high standard of professionalism, integrity and ethical behaviour.

The above core subjects are listed in Annex A of this Application Guide in detail.

3. Assessment Criteria

3.1 The following assessment criteria will be adopted for listing of Surveyor BIM Pro:

(a) the applicant has obtained the professional membership of The Hong Kong Institute of Surveyors (HKIS)[2];

(b) the applicant has, in the past 5 years, gained at least 2-year practical experience in BIM (including stationed in Hong Kong for at least 6 months) such as in the development of BIM standards; planning, design, contract administration and execution of BIM projects in the areas of quantity surveying, construction management, project management, cost and programme management, design management and specification, property management, BIM education, quality assurance, etc.;

(c) submit a competency statement (incorporated in the application form), of between 1,500 and 2,500 words, to demonstrate the applicant's practical experience in BIM and English writing skills;

(d) successful completion of a CIC-Accredited BIM Manager course, or a CIC-Accredited BIM Manager Top-up course which is applicable for CCBCs; and

(e) associate professional conduct and integrity demonstrated by the applicant's associate professional disciplinary history and conviction records (if any) and the applicant's interview performance. An applicant who has:
a. committed misconduct or neglect in any professional respect,
b. been disqualified and removed from the HKIS's List of Surveyor BIM Pro or CIC-Certified BIM Managers Register and HKIS's List of Surveyor BIM Co or CIC-Certified BIM Coordinators Register,
c. been disqualified from being listed or certified as a BIM personnel by other BIM listing/certification body for disciplinary reasons, or
d. been convicted of any criminal offence involving bribery, fraud, dishonesty or malfeasance, or any offence which may bring the HKIS/CIC (where applicable) and the BIM profession into disrepute,
will not be considered for listing/certification unless the HKIS/CIC (where applicable) has other considerations after taking into account of all circumstances.

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2 The Hong Kong Institute of Surveyors (https://www.hkis.org.hk).

4. Processing and Assessment of Applications for Surveyor BIM Pro

4.1 An applicant for listing as Surveyor BIM Pro must submit the following to the HKIS for assessment:

    (a)   completed application form;

    (b)   application fee (HK$1,000);

    (c)   a copy of the professional membership of the HKIS;

    (d)   (i) a portfolio of work examples that proves the applicant has, in the past 5 years, gained at least 2 years of practical experience in BIM (including stationed in Hong Kong for at least 6 months), such as in the development of BIM standards; planning, design, contract administration and execution of BIM projects in the areas of quantity surveying, construction management, project management, cost and programme management, design management and specification, property management, BIM education, quality assurance, etc.; and
(ii) a completed and signed Certification of Practical Experience in BIM;

    (e)   a competency statement, of between 1,500 and 2,500 words, to demonstrate the applicant's practical experience in BIM (see (d) above) and English writing skills (the first six core competencies required for a Surveyor BIM Pro are given in Section 2.3);

    (f)   evidence of completing a CIC-Accredited BIM Manager course, or CIC-Accredited BIM Manager Top-up course which is applicable for CCBCs (e.g. completion certificate); and

    (g)   a curriculum vitae.

Upon receipt of an application, the HKIS will assess the completeness of the documents submitted and will request the applicant to provide further details to substantiate the application, if needed. The application will be regarded as withdrawn if the applicant fails to provide the necessary details within 3 months from the date of request made by the HKIS.

4.2 The assessment panel will review the contents of the submitted documents, and if the submissions are considered to be satisfactory, will invite the applicant to attend an interview. The purpose of the interview is to assess whether the applicant possesses the core competencies and practical experience required for a Surveyor BIM Pro.

Upon completion of the assessment, the assessment panel will make a recommendation to the HKIS BIM Committee for approval or disapproval.

4.3 It is expected that the application process will take around 4 to 6 months in normal circumstances. The application process consists of 3 stages:

    (a)   documents verified by the HKIS.
    (b)   assessment interview performed by the assessment panel after reviewing the submitted documents.

(c)   approval/disapproval by the HKIS BIM Committee/ CIC BIM Certification and Accreditation Board (where applicable).

5. Notification of Assessment Result

5.1 Applicants will be recommended as a Surveyor BIM Pro in the HKIS if the assessment is favourable. Applicants will be informed of the result by mail.

6. Payment

6.1 **Fee payable**

A non-refundable application fee of HK$1,000 is required for the application.

6.2 **Payment Method**

Applicants should pay the required application fee by cheque which should be made payable to "The Hong Kong Institute of Surveyors". All payments received are non-refundable, non-endorsable and non-transferable.

7. Validity of Listing

7.1 The Surveyor BIM Pro should attend and keep records of the BIM-related CPD of at least 12 hours per year. They may be requested to provide evidence of the BIM-related CPD, without which the Surveyor BIM Pro status will be removed from the List of Surveyor BIM Pro.

7.2 If a Surveyor BIM Pro is also a CCBM, but cannot maintain his/her CCBM status for whatsoever reason, the HKIS will remove him/her from the List of Surveyor BIM Pro.

8. Application for Reinstatement

8.1 A person whose Surveyor BIM Pro status is removed may, within 2 years of the date of removal from the List, apply for reinstatement. The applicant is required to submit the relevant documents, such as evidence of BIM-related CPD hours and others if requested.

8.2 A person whose Surveyor BIM Pro status removed for more than 2 years, will need to submit a fresh application as a Surveyor BIM Pro and the procedure given in Section 4 applies.

9. Appeal Cases

9.1 An applicant for listing as a Surveyor BIM Pro, including reinstatement of listing, who is dissatisfied with a decision of the HKIS BIM Committee may appeal to the HKIS, no later than 21 calendar days after receiving notification of the decision:

(a)	a completed application form for appeal; and	
(b)	an application fee (HK$1,500).	

9.2 Upon receipt of an appeal case with all necessary documents, the HKIS will form an Appeal Panel to review the case. The decision of the Appeal Panel is final. The Appeal Panel will inform the HKIS BIM Committee of its decision. The application fee will be refunded to the applicant if the appeal is found to be valid.

9.3 Applicants will be informed of the result by mail.

10. Application

10.1 The completed Application Form, together with all necessary supporting documents, should be submitted to the HKIS by hand or recorded delivery.

11. Enquiry

The Hong Kong Institute of Surveyors
Address: Room 1205, 12/F, Wing On Centre,
111 Connaught Road Central,
Sheung Wan, Hong Kong.
Tel No: (852) 2526 3679
Fax No: (852) 2868 4612
E-mail: info@hkis.org.hk

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Core Subjects for Assessment as a Surveyor BIM Pro under the HKIS

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	BIM definitions and terminology		✓		
	1.1.2	The difference between 2D CAD, 3D CAD and BIM	✓			
	1.1.3	Concept of BIM in the whole life cycle of a built asset	✓			
	1.1.4	Value and benefits of adopting BIM	✓			
	1.1.5	Value of BIM for AM & FM	✓			
	1.1.6	Collaborative working in BIM		✓		
	1.1.7	Limitation of BIM	✓			
	1.1.8	Challenges within existing working practices & how BIM addresses these		✓		
	1.1.9	How BIM affect the current practice in AECO 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 and collaborative formats		✓		

		Core Subject	L1	L2	L3	L4
2. BIM Software and Technologies		*2.1. - BIM Software*				
	2.1.1	Overview of common BIM software		✓		
	2.1.2	Characteristic, file format & version, strength and limitation of common BIM software and platform		✓		
	2.1.3	Interoperability across common BIM authoring software	✓			
		2.2. - Technologies				
	2.2.1	Internet & cloud	✓			
	2.2.2	Laser scanning & photogrammetry		✓		
	2.2.3	Unmanned Aircraft System (UAS) / Drone		✓		
	2.2.4	GIS		✓		
	2.2.5	Internet of Things (IoT), mobile or smart devices		✓		
	2.2.6	VR/AR/MR		✓		
	2.2.7	RFID		✓		
	2.2.8	VDC	✓			
	2.2.9	Robotics	✓			
	2.2.10	Programming, automation and API	✓			
	2.2.11	MiC, DfMA and MiMEP		✓		
	2.2.12	Indoor positioning	✓			
	2.2.13	Upcoming trend of technology	✓			

	Core Subject	L1	L2	L3	L4
3.1. – Client BIM Strategic Stage					
3.1.1	BIM strategy, BIM uses, BIM processes		✓		
3.1.2	Key personnels in relation to BIM and their roles and responsibilities	✓			
3.1.3	Determine the information 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 under LOIN				✓
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 Appointing Party requirements				✓
	3.2.1.1 Organisational Information Requirements (OIRs)				✓
	3.2.1.2 Asset Information Requirements (AIRs)				✓
	3.2.1.3 Project Information Requirements (PIRs)				✓
	3.2.1.4 Security Information Requirements (SIRs)				✓
3.2.2	Exchange Information Requirements (EIRs)				✓
3.2.3	Determine project technology & systems requirement & integration				✓
3.2.4	Determine project delivery requirements and identify appropriate BIM Uses				✓
3.2.5	Contract & consultancy requirement		✓		
3.2.6	Assessment on supply chain capability & capacity				✓
3.2.7	Case study		✓		
3.3. – Definition & Design Stage					
3.3.1	BIM Execution Plan developed by supply chain				✓
	3.3.1.1 Pre-appointment BIM Project Execution Plan				✓
	3.3.1.2 Post-appointment BIM Project Execution Plan				✓
3.3.2	Supervision in fulfilling BIM uses in planning & design stages listed in CIC BIM Standards				✓
3.3.3	Project Information Model (PIM) data exchanges and validation				✓
3.3.4	BIM PIM file setup				✓
	3.3.4.1 BIM origin point & orientation setup				✓
	3.3.4.2 Model division				✓
	3.3.4.3 Modelling methodology				✓
	3.3.4.4 Project-based industry and BIM standards				✓

Row label (vertical): **3. BIM Uses and Processes**

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Core Subject		L1	L2	L3	L4
3.3.5	Direct BIM related meetings				✓
	3.3.5.1 Meeting with Appointing Party and Appointed Parties				✓
	3.3.5.2 Meeting for multidiscipline design collaboration				✓
	3.3.5.3 Internal steering and coordination meeting				✓
	3.3.5.4 Meeting with or giving presentation to external stakeholders				✓
3.3.6	Case Study		✓		
3.4. – Construction Stage					
3.4.1	BIM Execution Plan developed by supply chain				✓
	3.4.1.1 Pre-appointment BIM Project Execution Plan				✓
	3.4.1.2 Post-appointment BIM Project Execution Plan				✓
3.4.2	Supervision in fulfilling BIM uses in construction 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		✓		
3.5. – 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 under LOIN				✓
	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 in different formats (BCF, IFC, IDM, bsDD, COBie, MVD, etc.)				✓
	4.2. - Common Data Environment (CDE)					
	4.2.1	CDE solution and workflow		✓		
	4.2.2	Overview of CDE solutions in the market		✓		
	4.2.3	Setup of CDE			✓	
	4.2.4	Assessment and selection 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 (including software and hardware)				✓
	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 appointing party		✓		
	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		✓		
	5.2.2	Intellectual property right		✓		
	5.2.3	Legal implication and potential liability		✓		
	5.2.4	Professional indemnity	✓			
	5.2.5	Introducing NEC4 and Option X10 for BIM	✓			
	5.2.6	Commercial implications for contracts & insurances in relation to BIM		✓		