建造業創新及科技基金建築信息模擬項目為本培訓 - 培訓套餐及報價表參考樣本
Construction Innovation & Technology Fund BIM Project-based Caoching Reference Sample of Service package & Quotation

報價公司/Vendor Company：_____　　客戶公司/Client Company：_____

聯絡人/Contact Person：_____　　聯絡人/Contact Person：_____

聯絡電話/電郵: Telephone No./Email Address: _____　　聯絡電話/電郵: Telephone No./Email Address: _____

報價編號/Quotation Ref：_____　　報價公司蓋章/簽署：Stamping/Signiture of Quoting Company: _____

報價有效期/Validity：_____　　日期/Date：_____

建造業創新及科技基金 建築信息模擬項目管理為本培訓 培訓套餐及報價表 Construction Innovation & Technology Fund BIM Project-based Caoching Service package & Quotation		選擇行業 Choose the Work Trades				服務報價 Quotation		
		☐ 幕牆工程 Curtain Wall	☐ 機電工程 MEP	☐ 鐵器工程 Steelworks	☐ 鋼筋工程 Rebar Fixing			
	培訓項目 Coaching Item	建議時數 Suggested Hours	建議時數 Suggested Hours	建議時數 Suggested Hours	建議時數 Suggested Hours	所需時數 Required Hours	單價 Unit Price (HK$)	總價 Total Price (HK$)
規劃 Planning								
1	招標簡報和BIM要求 Tender Briefing & BIM Requirements	16	16					
設計 / 施工 Design / Construction								
2	項目設置 Project Setup	16	16					
3	BIM建模 (包括軟件操作技巧培訓) BIM Modelling (Incl. SW Skill coaching)	56	56					
4	參數化設計和生產 Parametric Design & Production	24	24					
5	圖則提交 Drawing Submission	40	40					
6	工程分析 Engineering Analysis	16	18					
7	成本估算（5D） Cost Estimation	24	24					
8	圖紙製作 Drawing Production	32	32					
9	模型審核和質量保證 Model Audit & QA	40	40					
10	模型協作 Model Collaboration	40	40					
11	共用綜合平台設置和管理 CDE Setup & Management	16	16					
12	openBIM和互操作性 openBIM & Interoperability	16	16					
13	數字工作監督系統集成 DWSS Integration	24	24					
竣工/ 物業管理 As-Built / Facility Management								
14	竣工建模和資產數據管理 As-Built Modeling & Asset Data Management	24	24					
							總價： Total:	

即將推出

	建築信息模擬項目管理為本培訓套餐- 培訓詳情 Building Information Modeling Project-based Coaching Package - Coaching Details	行業應用的例子 Trade-specific Examples
1	**招標簡報和BIM要求　Tender Briefing & BIM Requirement**	
	1. 了解EIR、AIR、PIR、SIR、OIR（即了解項目的 BIM 要求以確保符合規範） Understanding EIR, AIR, PIR, SIR, OIR (ie. Understand project BIM requirements to ensure compliance); 2. BIM 應用分析（了解 BIM 應用的範疇與交付成果，例如工程量計算（QTO）/ 工料清單（BQ）、排程規劃等） BIM Use Analysis (Understand the scope and deliverables of BIM uses e.g. Quantity Take-off (QTO)/ Bills of Quantities (BQ), Scheduling - for planning); 3. 持份者對應（了解參與人員）Stakeholder Mapping (Understand personnel involved); 4. BIM 執行計劃（BEP）所包含的資訊（了解與客戶行業相關的 BEP 部分內容（BEP 通常由總承建商提供）） Information included in BIM Execution Plan (BEP) (Understanding on parts of BEP relevant to the work trade of Client (BEP is usually provided by main contractors)); 5. 角色分配與模型責任矩陣（了解項目中相關人員的 BIM 角色與工作範疇） Role Assignment and Model Responsibility Matrix (Understand the BIM-related roles/ scope of works of the relevant personnels in the project); 6. 項目範疇 (了解並解讀與客戶行業相關的項目範疇，特別是合約中就「模擬」相關的要求或實際期望的BIM應用，以確保符合規範及達成 BIM 目標） Project scope (Understand and intepret trade-specific scope of the client esp. the solid project related requirements/ information e.g. 'simulation' required in the contract or actual desired BIM use to ensure compliance and / or BIM objectives are met); 7. 所採用的標準（了解所使用的 BIM 標準，例如政府 / 機電工程署 / 內部規則，以確保符合規範） Standards Used (Understand BIM standards used - e.g. government/ EMSD/ in-house rules to ensure compliance)	**(一般) (General)** 1. 了解總承建商的BIM 執行計劃及要求。 Understand the main contractor's BIM Execution plan and requirements. 2. 了解總承建商及分包商BIM方面的職責。 Understand the BIM responsibilities of the main contractor and subcontractors. **(幕牆) (Curtain Wall)** 1. 了解總承建商提供的BIM模型規格及界限（例如只限樓宇結構，其餘要由幕牆分包商負責）。 Understand the specifications and boundaries of the BIM model provided by the main contractor (e.g., limited to the building structure only, the curtain wall subcontractor will be responsible for the rest). **(機電) (MEP)** 1. 了解由總承建商提供項目的特定內容，機電的BIM執行計劃通常分為兩類：合約批出前的初步計劃(Pre-BEP)及合約批出後的詳細計劃(Actual BEP) Understand the specific project content provided by the main contractor. The BIM Execution plan for MEP is generally divided into two categories: the preliminary plan (pre-BEP) and the detailed plan (actual plan) after contract award. 2. 了解總承建商提供的BIM模型規格及界限（例如只限樓宇結構，其餘要由機電分包商負責）。 Understand the specifications and boundaries of the BIM model provided by the main contractor (e.g., limited to the building structure only, the MEP subcontractor will be responsible for the rest).
2	**項目設置　Project Setup**	
	`1. CDE 資料夾結構 (了解 CDE（通常由客戶 / 總承建商提供）的資料夾結構及 ISO19650 等標準，以避免資料錯放及相關人員之間的混淆。) CDE Folder structure (Understanding on folder structure and standard ISO19650 etc. of CDE (usually provided by client/ main contractor) to avoid mislocation and confusion among parties involved) 2. CDE 資料夾的使用與權限(了解 CDE 資料夾的用途及存取權限，以避免混淆並確保可追溯性。) Usage and permission of the folders in CDE (Understand the use and access right of the CDE folders to avoid confusion and ensure traceability) 3. 檔案命名規則了解所需的命名格式，以確保合規性與一致性，避免混淆及重做。) File naming conventions (Understand the required naming format to ensure compliance and consistency to avoid confusion and rework) 4. 模型責任 / 範圍 (了解各參與方的項目 / 工種特定範圍，例如按樓層 / 立面劃分模型的範圍 / 邊界，以確保彼此理解，避免不必要的重疊或無人負責的模型部分，從而妨礙順利採用及項目交付。 Model responsibility/ scope (Understand project-/ trade-specific scopefor each parties involved e.g. the extent/ boundary of models by levels/ elevations to ensure mutual understanding without undesirable overlapping or model portion without responsible parties that may deter smooth adoption and project delivery) 5. 共用座標的使用(了解各軟件特定的共用座標設定，供所有參與方使用，以防止混淆及錯位 / 錯放。) Uses of Share coordinates (Understand software-specific shared cooridnates for use by all parties involved to prevent confusion and misalignment/ mislocation) 6. 共用座標的設定 (了解共用座標的設定方式，通常由客戶 / 總承建商提供。) Share coordinate Setup (Understand the set-up of the shared coordintes which are usually provided by client/ main contractors) 7. 項目範本中應包含的資訊（工地邊界 / 水平）(了解項目範本（通常由總承建商提供）及其中包含 / 需輸入的資訊。了解如何驗證當中的資訊或根據工種需要進行修改，例如為特定行業加入坐標格線。) Information should be included in Project templates (Site Boundary/ Levels) (Understand the project template (usually provided by main contractor) and information therein/ to be input. Understand how to verify the information or modify for trade-specific purpose e.g. adding grid lines for specified trades) 8. 現有工地數碼掃瞄的需求 / 要求 (了解及評估是否需要進行現有工地的數碼掃瞄，例如用於設計及工地驗證，特別是加改工程。) Needs/Requirements for doing existing site digital capture (Understand and assess the need for existing site digital capture e.g. for design and site validation esp. for A&A works) 9. 模型協作設定 (了解如何設定共享模型，以便協作更新 / 數據共享及擷取。) Collaboration Model setup (Understand how shared models are set-up for collaborative updating/ data sharing and retrieval) 10. 工作集設定 (了解 Revit 特定的工作集設定與操作，即是將模型劃分為邏輯子集，供不同項目團隊成員及工種同時協作使用。) Workset setup (Understand the setup and operation of Revit-specific workset i.e. dividing the model into logical subsets for the different project team members and trades involved for collaboration simultaneously)	**(幕牆) (Curtain Wall)** 1. 幕牆分判商需理解及核實模型範本包含的資訊，並按需要或總承建商要求提出修改，如為幕牆加上相關坐標格線等。 Curtain wall subcontractors must understand and verify the information contained in the model template and propose modifications as needed or as requested by the main contractor, such as adding relevant coordinate grids for the curtain wall. **(機電) (MEP)** 1. 部分項目的總承建商會指定香港坐標，分判商需依照該共用座標範本及標準方式命名檔案及製作機電模型。 The main contractor for some projects will specify Hong Kong coordinates. Subcontractors must follow this shared coordinate template and standard file naming method when creating MEP models. 2. 機電分判商在協作模型設定時，須與總承建商協調，於CDE的環境裏按規定及訂明要求、 格式將獨立的圖則整合至機電綜合圖(CSD)。 When collaborating on the model, MEP subcontractors must coordinate with the main contractor to integrate the individual drawings into the MEP combined services drawing (CSD) within the CDE environment according to the specified requirements and format.

3	**BIM建模　BIM Modeling**	
	1. 建模（使用選定的軟件)使用指定軟件進行建模。Modelling (with software of choice) 2. 系統 / 坐標格線，建構相關的坐標格線與系統。System/ Grid. 3. 主體元素之間的協調 了解模型中建築元素的協調設定與操作。 Host element coordination (Understand the cooridnation setting and operation of building elements in a model) 4. 工地現況建模(了解如何建立現有工地實況的三維數碼模型，包括地形、周邊建築等，以作為整個項目設計與施工的基準。) Site Condition Modelling (Understand how to create a 3D digital representation of the existing site conditions, including the terrain, surrounding structures, etc. to serve as a baseline for design and construction throughout the project lifecycle) 5. 模型元素分類 (了解如何對模型元素進行分類，以便有效地組織、分析與管理數據，確保一致性、減少模糊性，並促進數據共享與相互操作性，例如成本估算與工程排程。) Model element classification (Understand how to classify model elements to organize, analyze,and manage data efficiently and properly to ensure consistency, reduce ambiguity, and facilitate data sharing and interoperability e.g. cost estimation and scheduling of works) 6. 視圖設定（視圖範圍 / 篩選器 / 階段 / 工作集）設定視圖參數以便於模型檢視與管理。) View Setting (View Range/Filter/Phase/Workset) Set view parameters to facilitate model viewing and management. 7. 視圖建立（平面圖 / 剖面圖 / 立面圖 / 局部圖 / 三維視圖）建立各類視圖以支援設計與溝通。 Views creation (Floor Plan/Section/Elevation/Callout/3D View) Create various types of views to support design and communication. 8. 模型連結 (了解如何將工種專屬模型與其他模型（如建築 / 結構模型）進行連結或參照，以便協作更新、分析與協調（例如碰撞檢查）。) Link model (Understand how a trade-specific model is linked or referenced with others e.g. architectural/ structural models etc. for collaborative updating/ analysis/ coordination e.g. clash) 9. 匯入 / 連結 CAD 圖紙作為模型參考（如有需要）根據需要將 CAD 圖紙匯入或連結至模型中作為參考。 Import/Link CAD Drawing for model reference (as required) Import or link CAD drawings into the model as reference when needed. 10. 干擾檢查的設定與使用(了解如何識別與解決模型中不同元素的碰撞與衝突，進行配置檢查，例如是否符合預設規則 / 標準 / 項目要求（如偏差容限）。) Setup and Use Interference Check (Understand how to identify and resolve clash, conflicts of different elements in the model, configuration checking like checking aherence to predefined rules/ standards/ project requirements e.g. tolerence) 11. 模型格式轉換（如總承建商 / 顧問使用不同軟件時），根據需要進行模型格式轉換，以配合不同軟件平台的使用。 Conversion of model format if main contractor/consultant uses a different software (as required) Convert model formats as needed to accommodate different software platforms.	**(幕牆) (Curtain Wall)** 1. 了解幕牆的模型建立、幕牆系統、幕牆網格等。亦可以了解如何在幕牆系統中建立門窗的模型。 Understand curtain wall modeling, curtain wall systems, curtain wall grids, etc. Also understand how to create the model of doors and windows within the curtain wall system. 2. 若總承建商或顧問使用不同的軟件，分判商亦需了解如何轉換模型的格式。 The main contractor or consultant may uses different software, subcontractors must also understand how to convert the model formats. 3. 在處理干涉和踫撞檢查時，亦需了解項目的要求，例如：偏差容限等。 For handling interference and clash checks, the subcontractors must understand project requirements, such as tolerances. **(機電) (MEP)** 1. 了解風管/喉管/電線槽/風槽的模型建立和配件的設定。 Understand how to model ducts/pipes/cable trays/conduit and setting of accessories. 2. 了解風喉/喉管的段落分佈和尺寸設定，以實現風喉/喉管系統的建立。 Understand the section layout and size setting of ducts/pipes to implement the duct/pipe system. 3. 了解如何在工地現場核實由總承建商提供的建築或結構模型。 Understand how to verify the architectural or structural model provided by the main contractor on site. 4. 不同行頭的機電分判商可了解到使用一致的標準製作模型及進行標注。 MEP subcontractors from different disciplines can learn to use consistent standards for modeling and annotation.
4	**參數化設計和生產　Parametric Design & Production**	
	1. 基本族群開發(了解如何建立和管理可重複使用的參數化物件。) Basic family development (Understand how to create and mange reusable parametric objects.) 2. 嵌套族（若使用 Revit）：了解族群中嵌套族的概念。 Nested families (if Revit) (Understand families in other families e.g. lock/ vision panel for doors/ ironmongeries of curtain wall glass panels (component's component)) 3. 參數命名策略(了解相關客戶的標準 / 要求，例如機電工程署（EMSD）對 BIM 模型與物件中參數命名的規範，以確保一致性並避免歧義。) Parameter naming strategy (Understand the relevant client's standards/ requirements e.g. EMSD on the naming of parameters used in BIM models and objects to ensure consistency and avoid ambiguity) 4. 參數類型（共享參數 / 項目參數）(了解常見的參數類型，用於定義與管理建築元素相關的資訊，例如元素的屬性、尺寸、材料及其他特性。正確理解可確保一致性並避免混淆。) Parameter type (Shared Parameter/Project Project Parameter) (Understand the common types of parameters, for defining and managing information associated with building elements which describe an element's properties, dimensions, materials, and other characteristics. Correct understanding can ensure consistency and avoid confusion.) 5.類型 / 實例參數控制(了解類型參數的性質與操作方式（即適用於所有實例（元件）的參數。) Type/Instance Parameter control (Understand the nature and operation of Type Parameter (i.e. a parameter applicable to all instances (components) .) 6. 使用共享參數建立明細表(了解使用者定義的共享參數如何儲存在外部文字檔（.txt）中，以便在多個項目與族群之間共享，確保一致性，並可用於不同模型間的明細表、標註與篩選。) Using Shared parameter to create schedules (Understand the use of shared parameters defined by users stored in an external text file (.txt) for sharing across multiple projects and families to ensure consistency and enable their use in schedules, tags and filtering across different models) 7. 族群視圖控制(了解如何在不同視圖中管理族群幾何圖形的顯示，例如平面圖、立面圖與三維視圖。) Family visibility control (Understand how to manage the display of family geometery in different views such as plan, elevation and 3D views)	**(幕牆) (Curtain Wall)** 1. 了解如何建立行業相關的嵌套族群，例如門/門板/鎖等等。 Understand how to create trade-specific Nested families, such as doors/door panels/locks. 2. 了解政府部門或客戶要求的標準參數命名系統。 Understand the standard parameter naming systems required by government departments or clients. 3. 了解如何採用Rhino3D+Grasshopper或Dynamo進行幕牆的參數化建模過程。Learn how to use Rhino3D + Grasshopper or Dynamo for the parametric modeling process of curtain walls. **(機電) (MEP)** 1. 分判商可以學習基本族群的開發，例如：消防喉轆，空調機組，泵等。 Subcontractors can learn how to develop basic family, such as fire hose reels, air conditioning units, pumps, etc. 2. 分判商可以了解參數類型，例如由總承建商提供的型號/規格/維修紀錄等，分判商須依照執行。 Subcontractors can understand and follow the parameter types, such as model numbers/specifications/maintenance records provided by the main contractor. 3. 不同行頭的機電分判商就某些共同機電元件例如電綫、電燈喉、綫槽等，使用一致的標準建立及使用族群及進行一致的標注。 MEP subcontractors from different trades should use consistent standards to create and use the families and annotation for common MEP components, such as wiring, lighting fixtures, and cable ducts.

5	**圖則提交 Drawing Submission**	
	1. 修訂記錄與追蹤(了解如何記錄和追蹤圖則或模型的修訂歷程。) Revision record and tracking (Understand how to record and track the revision history of drawings or models.) 2. 本地標準：了解相關的本地標準，例如註釋方式 / 顏色編碼，依照屋宇署（BD）的提交要求。 Local standards (Understand relevant standards e.g. annotation/ colour codes per existing BD requirements) 3. 圖則提交工作流程(了解相關標準，例如 ISO 19650，該標準提供圖則共享與審批流程的要求。) Workflow for drawing submission (Understand the relevant standards like ISO 19650 which provides requirements on sharing of drawings and approval flow)	**(幕牆) (Curtain Wall)** 1. 了解如何滿足本地的審批標準要求，如屋宇署入則要求的註解或顏色編號。亦了解ISO 標準的圖則共享和審批流程。 Understand how to meet local approval standards, such as the annotations and color coding required by the Buildings Department's requirements. Also understand the ISO standard drawings sharing and drawing approval process. **(機電) (MEP)** 1. 了解本地的標準要求，如消防圖則要求的註解或顏色編號。亦了解ISO 標準的圖則共享和審批流程。 Understand local standard requirements, such as the annotations and color coding required by fire safety plans. Also understand the ISO standard drawing sharing and drawing approval process.
6	**工程分析 Engineering Analysis**	
	工程分析是一個利用信息模型來協助、分析和優化不同設計選項的過程，以確定滿足設計規範和委託方/客戶要求的最有效的工程解決方案。 (a) 結構分析 (b) 通風分析 (c) 照明分析 (d) 能源分析 / 熱分析 (e) 消防工程 (f) 土木工程 (g) 其他工程分析 Engineering Analysis is a process that uses the Information Model to assist, analyse and optimise different design options to determine the most effective engineering solution to meet design codes and Appointing Party's / Client's requirements. (a) Structural Analysis (b) Ventilation Analysis (c) Lighting Analysis (d) Energy Analysis / Thermal Analysis (e) Fire Engineering (f) Civil Engineering (g) Other Engineering Analysis	**(幕牆) (Curtain Wall)** 1. 通過導出玻璃幕牆的BIM模型到專業的結構分析軟件，進行結構分析並評估玻璃是否滿足規範要求。 By exporting the BIM model of the glass curtain wall to specialized structural analysis software, conduct structural analysis and assess whether the glass meets the regulatory requirements. **(機電) (MEP)** 1. 可以使用其他軟件進行暖通空調裝置的風管流量和耗電量的分析。 Analyze air flow and power consumption for HVAC units using other software. 2. 如則樓或客戶或.其他項目持份者使用不同軟件， 了解如何將BIM模型轉換為 IFC 通用格式， 然後匯出。確保訊息能順利交換。The consultant firms, client, or other project stakeholders may use different software, understand how to convert the BIM model to the IFC format and export it, and it ensures smooth information exchange.
7	**成本估算(5維度) Cost Estimation (5D)**	
	1. 建立工程量清單（BQ/QTO）(了解如何從 BIM 模型中擷取數量，建立工程量清單。) Create Schedule of Quantities (BQ/QTO) (Understand how to extract quantities from the BIM model to create a bill of quantities.) 2. 建立 BIM 模型與成本的關聯(了解如何將成本資料與 BIM 模型建立關聯，以便進行成本估算與分析。) Create cost relationship with BIM Model (Understand how to associate cost data with the BIM model to facilitate cost estimation and analysis.) 3. BIM 模型與成本模擬的同步更新(了解如何將成本估算與 BIM 模型 / 時間表 / 施工進度等更新同步。了解目前的 BIM 計量方法可能不完全依循《建築工程標準計量方法》（SMM），而是採用供建模人員參考的建模手冊《標準建模方法》（SAM）。) Synchronized updating of BIM Model and cost simulation (Understand how to sycnchronise the updating of cost estimate with the updates of BIM model/ timeline/ programming etc..Understand the current BIM measurement method which may not strictly follow SMM but the Standard Approach to Modelling (SAM), a manual for modeller to create models)	**(幕牆) (Curtain Wall)** 1. 了解如何令模型同步更新，包括施工進度/ 時間表等。 Understand how to synchronize models with construction progress and schedules. **(機電) (MEP)** 2. 了解如何建立BIM 模型和成本的關聯性，例如使用其他軟件：Cubicost 等。 Understand how to link BIM models with costs, such as using other software like Cubicost.
8	**圖紙製作 Drawing Production**	
	1. 視圖命名慣例(了解如何根據項目標準命名各種視圖，以提升管理效率。) View Naming conventions (Understand how to name various views according to project standards to enhance management efficiency.) 2. 視圖設定（平面圖 / 剖面圖 / 立面圖 / 局部放大圖 / 詳圖）(了解如何建立和管理不同類型的視圖，以便清晰展示模型內容。) View Setup (Floor Plan/ Section/ Elevation/ Callout/ Detail) (Understand how to create and manage different types of views to clearly present model content.) 3. 元素標註技巧(了解如何為三維模型中的各個元素添加描述性資訊或標籤，例如類型、材料、尺寸或其他相關屬性，以確保一致性並減少錯誤。) Element tagging skill (Understand how to add descriptive information or labels to individual elements within a 3D model, such as the types, materials, sizes, or other relevant properties to ensure consistenncy and reduce errors) 4. 標註資訊輸入(了解如何準確地輸入用於標註的資料，以提升模型的資訊完整性。) Information input for tagging (Understand how to accurately input data for tagging to enhance the information integrity of the model.) 5. 建立 / 套用視圖範本(了解如何定義控制視圖外觀與行為的設定，並將相同設定套用至多個視圖，以確保項目一致性並節省時間與精力。) Create/Apply view template (Understand how to define setting that control the appearance and behavior of views to ensure consistency across a project through applying the same settings to multiple views to save time and effort) 6. 標題欄族群設定(了解如何設定標準化的標題欄，以確保一致性並提升工作效率。) Title block family setup (Understand how to setup standardized title blocks to ensure consistency and improve efficiency)	**(幕牆) (Curtain Wall)** 1. 了解如何由模型輸出所需施工圖、大樣圖等， 包括建立 / 套用視圖範本，確保一致性並節省時間。 Learn how to output required construction drawings, detail drawings, etc. from the model, including creating and applying view templates to ensure consistency and save the processing time. **(機電) (MEP)** 1. 了解如何標註所需資訊等不同參數。 Learn how to mark different parameters and required information. 2. 了解如何由模型輸出所需施工圖、大樣圖等，包括建立 / 套用視圖範本，確保一致性並節省時間。 Learn how to output required construction drawings, detail drawings, etc. from the model, including creating and applying view templates to ensure consistency and save the processing time.

9	**模型審核和質量保證　Model Audit & QA**	
	1. IFC 模型匯出(了解檢查 IFC 模型的標準符合性原則與方法，特別是針對使用不同軟件的項目團隊之間的協作所需的重要設定與格式。) IFC Model exportation (Understand the principles and methods of checking of standard compliance of essential setting and format of IFC model esp. for collboration among different project teams involved using different software) 2. Navisworks（NWC）模型匯出(與上述第 1 項類似，了解匯出 Navisworks 模型的設定與標準要求。) NAvisworks (NWC) Model exportation (Similar to item 1 above)(Understand the settings and standard requirements for exporting Navisworks models.) 3. 聯合模型設定（Federated Model Setup）(了解如何整合多個專業模型（如幕牆、建築、結構、機電）成為一個統一的模型表示方式，使各專業能保留其獨立模型，同時提供整體項目視圖以提升協調與碰撞檢查效率。) Federated Model Setup (Understand how to set up a combined model created by integrating multiple discipline-specific models (e.g., curtain wall, architectural, structural, MEP) into a single, cohesive representation which allows each discipline to maintain their individual models while enabling a holistic view of the project for better coordination and clash detection) 4. 碰撞檢查設定（Navisworks Manage / Solibri / 干擾檢查）(了解模型碰撞檢查的原則、方法與技巧。) Clash checking setup (Navisworks Manage/ Solibri/ Interferece Check) (Understand the principles, methods and skills of checking for clash in models) 5. 一般審核要求(了解由合資格人員（如認證 BIM 協調員或 BIM 經理）定期（例如每月）進行審核的要求與範疇，以及分判商對其行業專屬模型進行自我審核的要求。) General audit requirement (Understand the requirement and scope of regular audits (e.g. monthly) by qualified personnel e.g. certified BIM Coordinator or BIM Manager; as well as self audit for the trade-specific model by the sub-contractor)	**(幕牆) (Curtain Wall)** 1. 可以和不同的項目團隊/或使用不同軟件的團隊協作。分判商可以針對幕牆的模型進行自我檢查， 以確保資料齊備、 合規、 沒有跟其他行頭發生衝突才交付則樓、總承建商或客戶。 Collaboration with different project teams/teams using different software. Subcontractors can conduct self-checks on their curtain wall models to ensure that the information is complete, compliant, and free of conflicts with other disciplines before submitting the model to the consultant firm, main contractor, or client. **(機電) (MEP)** 1. 分判商可以針對所屬機電的模型進行自我檢查，以確保資料齊備、 合規、 沒有跟其他行頭發生衝突才交付則樓、總承建商或客戶。 Subcontractors can conduct self-checks on their MEP models to ensure that the information is complete, compliant, and free of conflicts with other disciplines before submitting the model to the consultant firm, main contractor, or client.
10	**模型協作　Model Collaboration**	
	1. 碰撞矩陣設定(了解如何系統性地組織與優先排序不同建築系統之間的碰撞檢查，並建立碰撞矩陣（表格），以識別哪些元素發生衝突、哪些元素具有優先權，以及由誰負責進行調整。) Clash matrix Setup (Understand the systematic method for organizing and prioritizing clash detection testing between different building systems, how to create the matrix (a table) to identify which elements are conflicting, which elements take precedence over the others and who is responsible for making the adjustments) 2. 問題記錄(了解在模型開發與協調過程中識別與記錄問題的要求與方法。) Issue Logging (Understand the requirements and methods of identifying and documenting problems that arise during model development and coordination) 3. 問題管理工作流程(了解整個工作流程的要求與方法，包括問題的識別、記錄、指派與解決，確保模型開發與協調過程順利進行。) Issue management workflow (Understand the requirements and methods of the whole worklow including identifying, documenting, assigning, and resolving problems that arise during model development and coordination)	**(幕牆) (Curtain Wall)** 1. 了解如何設定踫撞矩陣， 以預示幕牆元件和結構、 建築元件的踫撞衝突，可預早讓總承建商處理。 Learn how to set up a clash matrix to predict clashes between curtain wall components and structural and architectural elements, allowing the main contractor to address the clashing issue proactively. 2. 了解如何記錄及應對幕牆相關的問題/衝突， 以順利透過既定程序、 工作流程解決。 Learn how to record and address curtain wall-related issues/clashes so they can be smoothly resolved through established procedures and workflows. **(機電) (MEP)** 1. 踫撞矩陣可以預示機電路徑和樑或柱的踫撞衝突，可預早讓總承建商處理不同機電系統之間的衝突。 The clash matrix can predict clashes between MEP paths and beams or columns, allowing the main contractor to proactively address conflicts between different MEP systems. 2. 了解如何記錄及應對機電相關的問題/衝突， 以順利透過既定程序、 工作流程解決。 Learn how to record and address MEP-related issues/clashes so they can be smoothly resolved through established procedures and workflows.
11	**共通數據環境設置和管理　CDE Setup & Management**	
	1. 提交工作流程(了解相關標準，例如 ISO 19650，該標準提供圖則共享與審批流程的要求。) Submission Workflow (Understand the relevant standards like ISO 19650 which provides requirements on sharing of drawings and approval flow) 2. 資料夾權限與存取權限(了解共通數據環境（CDE）資料夾的使用方式與存取權限，以避免混淆並確保可追溯性。) Folder permissions and access right (Understand the use and access right of the CDE folders to avoid confusion and ensure traceability)	**(一般) (General)** 1. 了解總承建商的CDE 執行計劃、要求及工作流程。 Understand the main contractor's CDE implementation plan, requirements, and workflow. 2. 了解總承建商及分包商CDE方面的職責。分包商如何就所屬行頭於CDE環境內存取BIM模型資訊。 Understand the CDE responsibilities of the main contractor and subcontractors. Also, understand how subcontractors access BIM model information within the CDE environment for their respective lines of work.
12	**openBIM和互操作性　openBIM & Interoperability**	
	1. IFC 模型匯出/匯入 (了解檢查 IFC 模型的標準符合性原則與方法，特別是針對使用不同軟件的項目團隊之間的協作所需的重要設定與格式。) IFC export/import configuration (Understand the principles and methods for checking the standard compliance of IFC models, especially the essential settings and formats required for collaboration among project teams using different software platforms.) 2. BIM 協作格式（BCF）工作流程 (了解此開放文件格式的檔案交換方式，例如基於檔案的交換或基於伺服器的交換，以促進不同 BIM 軟件及項目團隊之間的高效溝通與問題解決) BIM Collaboration Format (BCF) workflows (Understand the types of exchange of files of this open file format such as file-based exchange or server-based exchange to facilitate efficient communication and issue resolution across different BIM software and project teams) 3.多平台間的數據交接(了解在設計、施工及營運階段，於不同軟件與系統間轉移項目數據的原則與方法，以防止數據遺失、版本控制問題的發生，並確保適當的存取權限，使相關人員能安全地存取最新資訊) Data handoffs duing multi-platform (Understand the prinicples and methods of transferring project data between different software and systems throughout the design, construction, and operation phases to prevent data loss, occurence of version control issues and ensure proper access control to enable parties involved will have safe access to the most up-to-date information)	**(一般) (General)** 1. 了解如何將BIM模型轉換為 IFC 或其他通用格式， 然後匯出。確保即使不同項目持份者使用不同軟件亦能順利交換BIM訊息，防止數據遺失、版本控制問題的發生。 Understand how to convert BIM models to IFC or other common formats and export them. This ensures smooth exchange of BIM information even among project stakeholders using different software, preventing data loss and version control issues.

13	**數碼工程監督系統集成　DWSS Integration (Digital Works Supervision System)**	
	1. 照片記錄(了解在系統中記錄工地照片的要求與方法，並將照片連結至模型元素，以便於記錄保存與後續跟進。) Photo Logging (Understand the requirements and methods of documenting site photos in the system and linking to model elments to faciltiate record keeping and follow-up) 2. 巡查排程(了解將巡查申請（RFI）及缺陷連結至模型元素的要求與方法，以促進記錄保存與後續跟進。) Inspection Scheduling (Understand the requirements and methods of linking Request for Inspections (RFI) and defects to model elments to faciltiate record keeping and follow-up) 3. 缺陷記錄 / 修復 (了解缺陷記錄與修復流程的要求與方法，包括與中央工地管理平台或數碼工地監督系統（DWSS）的同步。) Defect logging/ rectification (Understand the requirements and methods of the workflow of defect documentation and rectification including synchronisation with central site management platform or Digital Work Supervision System (DWSS)) 4. 竣工記錄準備(了解如何將設計 BIM 模型與 DWSS 系統中的巡查記錄及 CDE 系統中的更新連接起來，以便整合並準備最終竣工圖則。) As-built Record Preparation (Understand the methods of connecting design BIM models with inspection records in DWSS system and updates in CDE system for incorporation for final as built drawings preparation)	**(一般) (General)** 1. 了解如何將BIM模型連接至DWSS系統， 並進行相關監工流程，包括在巡查是於模型、 系統上進行問題標注、 上載相片、輸入其他資訊等。 Understand how to connect the BIM model to the DWSS system and perform the related supervision process, including marking issues on the model and in the system during inspections, uploading photos, and entering other information. 2. 了解如何可以通過上傳模型至共通數據環境及透過DWSS系統的監工流程， 存取最新的模型、 工地、巡查等資訊，來完成竣工模型。 Understand how to complete the as-built model by uploading the model to the common data environment and accessing the latest model, site, and inspection information through the DWSS system's supervision process.
14	**竣工建模和資產數據管理　As-Built Modeling & Asset Data Management**	
	1.建築運作建築信息交換（COBie）數據輸入(了解資產數據的要求，例如客戶要求的元件規格，以及如何在特定數據欄位中正確輸入資料，以提供結構化的組件數據，從而實現高效的交付和未來的設施管理。) Construction Operations Building information exchange (COBie) Data Input (Understand the requirements on asset data e.g. element specification required by client and the appropriate input for specific data fields to provide structured data of all the related components for efficient handover and future facility management	**(幕牆) (Curtain Wall)** 1. 分判商可正確輸入客戶要求的資料或政府標準要求例如：幕墻配件規格及數量等。 Subcontractors must accurately input the information required by the client or complied with thegovernment standards, such as curtain wall component specifications and quantities. **(機電) (MEP)** 1. 分判商可正確輸入客戶要求的資料或政府標準要求例如：風管及風量要求， 各機電設備、 配件的規格及數量等。 Subcontractors must accurately input the information required by the client or complied with the government standards, such as air duct and air volume requirements, and the specifications and quantities of various MEP equipment and the accessories.