自2018年10月推出建造業創新及科技基金(基金)以來，發展局與建造業議會一直聽取業界意見，並推行優化措施，協助業界應用創新科技。在科技應用方面，基金自去年開始已將工業化機械人焊接納入資助範圍，並提供資助予業界租賃先進科技產品。至於建築信息模擬(BIM)，申請者現可自由分配港幣800,000元資助於購買BIM軟件及電腦或為員工提供BIM培訓。下圖簡介基金框架下的資助模式及上限。我們今次會集中向大家介紹有關BIM應用的事宜，並提供適合應用於機電工程項目的BIM軟件資訊。

Since the launch of the Construction Innovation and Technology Fund (CITF) in October 2018, the Development Bureau and the Construction Industry Council (CIC) have taken heed of the industry's feedback to implement enhancement measures to assist the industry in embracing innovations and technologies. In respect of Technology Adoption, the CITF has extended funding coverage to include industrialised robotic welding and also rental of advanced technologies since last year. As for Building Information Modelling (BIM), applicants can now freely allocate $800,000 to purchase BIM software and computer or provide BIM training for employees. The table below shows the current funding mode and ceiling under the CITF framework. In this issue, we will focus on matters related to BIM applications and provide information on BIM software suitable for electrical and mechanical engineering projects.

類別 Category/ 資助模式 Funding Mode	資助上限 Fund Ceiling (港幣 HKD)
建築信息模擬培訓 BIM Training/ 建築信息模擬應用 BIM Adoption A. 現金回贈 — 每位報讀課程人士每個課程最多可獲港幣3,000元資助 B. 資助 70% 的建築信息模擬軟件和電腦的費用 (每部電腦的上限為港幣 21,000元) A. Cash rebate $3,000/ person/ course at max.; B. 70% on software & computer cost (max. HK$21,000/ computer)	A. 每位申請者港幣80萬元 B. 每位申請者港幣300萬元 (建築信息模擬及創新建築科技合併資助) A. $0.8M/ applicant B. $3M/ applicant for BIM and ACT
創新建築科技 ACT A. 租賃 — 資助50%，租賃期最多為六個月，每項科技的租賃資助上限為港幣20萬元，每位申請者累積資助上限為港幣50萬元 B. 購買 — 資助70%的產品價格 A. Rental — 50% of fee, max. 6 months, $200,000/ technology, $500,000/ applicant B. Purchase — 70% of product price	A. 每項科技港幣80萬元 B. 每位申請者港幣300萬元 (建築信息模擬及創新建築科技合併資助) A. $0.8M/ technology B. $3M/ applicant for BIM and ACT
「組裝合成」建築法 MiC (顧問/ for consultant) 聘請專業的「組裝合成」建築法顧問 — 資助70%的費用 Specialist MiC Consultant — 70% of cost	每個項目港幣250萬元 $2.5M/ project
項目應用 — 15% 顧問服務費用或港幣400萬元 (以較低者為準) Project adoption — 15% consultancy fee or $4M (whichever is lower)	每個項目港幣400萬元 $4M/ project
納入屋宇署預先認可「組裝合成」建築法清單內 — 港幣40萬元至100萬元，視乎「組裝合成」建築法規模及複雜性而定 Entry to Building Department's Pre-accepted MiC List — $0.4M to $1M depending on the scale and complexity of MiC projects	每項申請港幣100萬元 $1M/ application
「組裝合成」建築法 MiC (承建商/ for contractor) 租用/ 購買「組裝合成」建築法指定建造設備 — 資助70%的費用 MiC Plant rental/ purchase — 70% of cost	每個項目港幣250萬元 $2.5M/ project
購買/場外生產「組裝合成」建築法元件 — 資助70%的費用 MiC module purchase/ offsite production — 70% of cost	每個項目港幣500萬元 $5M/ project
預製鋼筋 STB 現金回贈 — 每公噸港幣300元　Cash rebate — $300/ tonne	每個項目港幣500萬元 $5M/ project
工業化加工流程 — 機械人焊接 Industrialised Processing — Robotic Welding 15% 的加工處理費用　15% on processing fee	每位申請者港幣80萬元 $0.8M/ applicant

現時建築信息模擬基金資助例子

申請者：甲公司　　　建造工程合約：香港工程項目（科技應用）

申請類別	最低價報價單	基金資助額
建築信息模擬培訓（接受培訓僱員人數：60人）	港幣186,000元	港幣180,000元
建築信息模擬硬件（數量：10部）	港幣220,000元	港幣210,000元
建築信息模擬軟件乙（數量：2套）	港幣153,500元	港幣107,450元
建築信息模擬軟件丙（數量：3套）	港幣203,700元	港幣142,590元
建築信息模擬軟件丁（數量：5套）	港幣230,000元	港幣159,960元
建築信息模擬總開支：	港幣993,200元	港幣800,000元

- 每位參加者每個課程最多可獲資助港幣3,000元
- 每部電腦上限港幣21,000元
- 資助70%的建築信息模擬軟件
- 建築信息模擬軟件及硬件超出資助上限港幣800,000元

扣除基金資助額，申請者只須承擔的開支：港幣193,200元

常見問題

問：我可為建築信息模擬(BIM)項目申請多少基金資助額？

答：每間合資格公司最多可獲批港幣800,000元資助。公司可按照個別需要，自由調配用於BIM培訓及/或BIM試用及項目應用的金額。

問：就同一位員工，申請者是否只可以獲得一次港幣3,000元的資助？

答：資助金額將視乎員工參加的課程數目計算。若該名員工報讀並完成不同的BIM培訓課程，每個課程最多可獲港幣3,000元資助。例子：員工甲完成一個BIM基本課程(費用為港幣2,200元)及一個BIM進階課程(費用為港幣4,000元)，員工甲所屬的公司最多可獲批港幣5,200元資助。

問：我可否將港幣3,000,000元資助全數用於BIM項目？

答：否，每間合資格公司不得把建築信息模擬及創新建築科技合併資助額港幣3,000,000元全數用於BIM應用及培訓。每間合資格公司最多只可就BIM項目獲批港幣800,000元資助。餘下的資助額必須用於創新建築科技項目。

問：公司可否把基金資助只用於購買電腦？

答：否，每部通過基金資助購買的電腦，必須安裝基金資助購買的BIM軟件。

問：BIM試用項目申請是甚麼？

答：為鼓勵業界廣泛應用BIM，即使合資格公司在申請時未能提供規劃或進行中的建築項目資料，但仍可向基金申請最多港幣200,000元購買BIM軟件及配套電腦，作試驗用途。

問：如何知悉課程或軟件是否適合我？

答：除諮詢業界伙伴或供應商外，公司亦可參考基金網站所載的預先批核名單。網站載有不同程度的BIM培訓及適合特定範疇的BIM軟件資料。

基金預先批核名單 >>

申請流程

立即申請

1. 於基金網站 www.citf.cic.hk 的基金電子申請平台開設帳號

2. 細閱使用需知和準備所需文件：
   ① 商業登記證(BR)
   ② 最新的周年申報表(NAR1)
   ③ 一份最近三個月發出的銀行月結單
   ④ 報價單及 ⑤其他

3. 於基金電子申請平台填妥和提交基金申請表

4. 議會審批申請

5. 通知申請結果：
   「預先批核名單」申請將於30個曆日內獲通知；而「非預先批核名單」申請則於60個曆日內獲通知

6. 按照基金要求提交進度報告和發放基金

與 CITF 對話 CHATS

BIM攻略 — 機電工程篇

政府近年一直積極推動科技應用及創新的建造方法，以提升建造業的生產力和成本效益，而採用建築信息模擬技術(BIM)就是其中一個重點項目。鑑於有業界反映部分機電工程承辦商對BIM技術認識不足，仍處於摸索階段，有見及此，我們特別訪問了高雅機電工程有限公司(高雅)，以他們應用BIM的經驗作借鑑。

1. 高雅主要承辦哪些機電工程項目？

在工程項目的整個發展周期，由整體設計、物料供應，以至測試及維修保養工作等，高雅全程提供專業知識和技術。我們這些特定行業的知識，涵蓋不同的機電工程項目，包括空調、電力裝置，消防及水管和排水設施。

2. 高雅何時向基金提交申請？
哪些BIM產品是使用基金購買的？

我們於2019年7月向基金申請資助，以購置兩套BIM軟件—Autodesk AEC Collection 和 AutoCAD Revit LT Suite (預先批核名單編號 PBS18-002、PBS18-003)及配套電腦，並於同年8月成功獲批款項港幣20餘萬元。

3. 這些BIM軟件有何主要功能？在應用上有何利弊？
高雅會否向同業推介這些軟件？

這兩套BIM軟件，把複雜的規劃、設計和建造概念，轉化為可見的立體圖像，利便不同工種的工程人員進行討論，構建出最為理想的設計及裝置圖則。BIM軟件亦可計算通風、水流等數據，能夠大大改善工作效率，減少工程失誤，絕對值得向業內人士推介。

4. 這些軟件如何幫助高雅？
在改善效率及生產力上有沒有例子可以分享？

BIM軟件幫助我們協調各方的設計建議，並能更清楚明確地進行溝通。軟件的模擬能力甚高，在早期設計階段已可準確預測建築物落成後的效果，從而促進業界生產力，提升建築效率，以及改善工地安全。我們其中一個湖水過濾系統機房工程便是好例子。工程師從BIM模型發現一條水管與外牆裝飾結構的一條角鐵會相撞，遂更改水管路徑。

由於這項工程在早期設計階段已採用BIM，各個工程團隊只需參考立體模型，無需細閱紙張圖則，便能協調安裝工程，偵測錯誤，並採取相應的補救措施。這樣可減少因平面圖則模糊不清而令工程出錯的機會，亦節省因此而產生的開支和減少浪費物料，並同時改善環保效益。

5. 市面上有很多BIM軟件可供選擇，高雅為何從中挑選了這兩套軟件？機電業承辦商應如何選擇合適的產品？

選擇合適的BIM軟件，需要考慮到成本效益和產品是否適用。我們選購該款BIM產品，主要是由於可與業主所使用的軟件互相操作。

6. 高雅除購置BIM軟件及電腦外，還有否申請基金資助BIM培訓？如有的話，有多少名員工接受過相關培訓？

我們獲基金批出港幣16萬元，資助67名員工參加BIM培訓。員工參加的課程包括入門工作坊、基本知識、基本技巧，以及專為機電及管道工程(MEP)而設的課程。

7. 對機電業承辦商來說，哪些類別的BIM培訓較為重要？現時獲資助的BIM課程能否滿足這些需要？

目前，大多數建築工地人員對BIM軟件已有初步認識，但由於一些BIM課程只着重一般技術，因此未必能滿足我們特定的需要。為提升機電業BIM專業人士的技術水平，我們建議增辦一些專為機電及管道工程(MEP)而設的BIM課程。
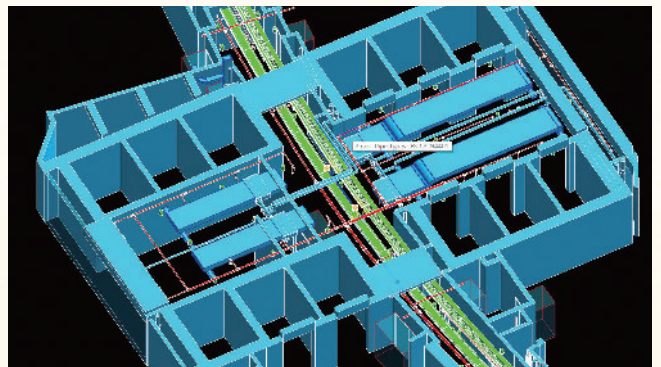
8. 高雅如何得知當局成立了這個基金？
基金可如何更有效地向機電商推廣BIM技術？

我們從報章、網站及其他渠道獲悉基金的成立，另參加了一些由基金舉辦的簡介會，並直接與產銷商及服務供應商聯繫。至於如何推廣BIM技術，建造業議會或可為業界從業員提供免費的雲端平台。

9. 高雅認為應如何完善BIM的資助因素？

鑑於續訂軟件的費用高昂，基金可與軟件產銷商商討，爭取更具競爭力的價格；又或考慮取消BIM資助金額的上限或擴大資助範圍，以涵蓋初期的開辦成本和後期的訂購費用。

高雅機電工程有限公司

「建造業創新及科技基金」申請數字節節上升
CITF application figure is rising

由2018年10月至今已收到逾二千二百份申請，當中一千六百多份申請已經成功獲批，總資助額逾港幣三億九千萬元。

Counting from October 2018, the application number has reached more than 2 200, of which over 1 600 applications have been approved. The funding grant amount is more than HK$390 million.

Current BIM Funding Example

Applicant : Company A　　**Construction Project : HK Construction Project (Adoption)**

Application Type	Lowest Bid	CITF Grant	
BIM Training (No. of employees receiving training: 60)	HK$ 186,000	HK$ 180,000	Each person entitled to HK$3,000 per course at maximum
BIM Hardware (No. of units: 10)	HK$ 220,000	HK$ 210,000	Each computer capped at maximum HK$21,000
BIM Software B (No. of units: 2)	HK$ 153,500	HK$ 107,450	Grant 70% of BIM Software and Hardware
BIM Software C (No. of units: 3)	HK$ 203,700	HK$ 142,590	
BIM Software D (No. of units: 5)	HK$ 230,000	HK$ 159,960	
Total Expenses:	**HK$ 993,200**	**HK$ 800,000**	BIM Software and Hardware grant exceed HK$800,000

Expenses borne by the applicant: HK$193,200

FAQs

How much funding can I get for BIM from CITF?

A : Each eligible company will be entitled to a maximum grant of $800,000. The company can freely allocate funding for BIM training and/or BIM experiential use and project application according to their individual needs.

Does the applicant only receive a BIM training subsidy of HK$3,000 once for the same employee?

A : The subsidy amount shall be based on the number of courses attended. Only the fees for the different courses completed by the same employee shall be subsidised up to HK$3,000 for each course. Example: Employee A completing a BIM basic course at HK$2,200 and a BIM advanced course at HK$4,000, the employer shall be entitled to a subsidy of HK$5,200.

Can I spend all $3,000,000 for BIM?

A : No. Each eligible company is not allowed to spend the ACT and BIM Combined Grant of $3,000,000 solely for BIM use and training. Subject to per-technology cap of $800,000, each eligible company can only receive a maximum of $800,000 for BIM. The remaining balance must be used for ACT products.

Can I use the grant to buy computers only?

A : No. Each subsidised computer must be installed with a CITF funded BIM software.

What is BIM experiential use?

A : To encourage an extensive use of BIM in the industry, eligible companies without an on-going/new project at time of application can still apply to the CITF for a maximum of $200,000 to purchase BIM software and supporting computers for experiential use.

How can I find out the course or software is suitable for me?

A : In addition to consulting industry partners or vendors, companies can also refer to the Pre-approved List on the CITF's website. Reference levels of BIM training and disciplines of BIM software are available.

Pre-approved List >>

Application Procedures

1 Create an account at the CITF Application Portal via the CITF website www.citf.cic.hk

2 Read the User Guide and prepare all required documents:
① Business Registration (BR) Certificate
② Latest Annual Return (NAR1)
③ One Bank Statement issued in the last 3 months
④ Quotation(s) and ⑤ others.

3 Complete and Submit Online Application Form in the CITF Application Portal

4 Vet Application by the CIC

5 Notify application result (Pre-approved List items within 30 Calendar Days; non Pre-approved List items within 60 Calendar Days)

6 Report submission and fund disbursement according to the CITF requirements

Apply Now

BIM Tips - E&M projects

In recent years, the government has actively promoted the application of technology and innovative construction methods to enhance the productivity and cost-effectiveness of the construction industry, and the use of Building Information Modeling (BIM) is one of the key focuses. In view of the industry's feedback that some electrical and mechanical engineering contractors have limited understanding of BIM technology and are still in the exploratory stage, we interviewed Krueger Engineering (Asia) Ltd (Krueger) to tap into their experience in BIM application for sharing.

1. What electrical and mechanical (E&M) projects do Krueger undertake?

We offer expertise across the entire project life cycle, from the overall design, supply of material to testing and maintenance work. Our sector-specific knowledge covers a wide range of E&M projects including air conditioning, electrical installation, fire prevention as well as plumbing and drainage system.

2. When did Krueger apply to the CITF? What BIM products were procured using the CITF?

The funding application on the purchase of two sets of BIM software - Autodesk AEC Collection and AutoCAD Revit LT Suite (Pre-approved List code PBS18-002, PBS18-003) and matching computers was submitted to the CITF in July 2019. We were granted more than $200,000 in August of the same year.

3. What are the main features of these BIM software? Any advantages or disadvantages in application? Will Krueger recommend these software to the industry?

The two BIM software, converting complex plan, design and construction concepts into visible three-dimensional images, facilitates discussion among engineers of different works and compilation of the best possible design and installation plan. Data on ventilation, water flow rate and others could be calculated via the BIM software, which can greatly improve work efficiency and reduce errors. It is definitely worth recommending the software to the industry.

4. How can these software help Krueger? Are there any examples to share on efficiency and productivity improvement?

BIM software can help us coordinate inputs from design stakeholders and facilitate clearer communication. The high degree of simulation enables an accurate prediction of building performance from the early design stage, thereby enhancing productivity, uplifting construction efficiency and improving site safety. One of our projects on lake water treatment plant is a good example. Our engineers, observing from the BIM model the collusion between a water pipe and a corner iron of the external wall finishes, subsequently adjusted the path of the water pipe. As BIM was adopted in the early design stage, project teams could refer to the 3D model without going through the paper drawing to coordinate building

efforts, detect errors and take corresponding remedial attempts. Chances of failure arising from blurriness of 2D diagram can be reduced and so as the resulting costs and wasted material, improving environmental performance in the meantime.

5. There are many BIM software available in the market. Why did Krueger choose these two software from the rest? How should contractors in E&M trade choose the right products?

Choosing the right BIM software requires consideration of cost-effectiveness and applicability. We chose these BIM products mainly because of their interoperability with the software used by the owner.

6 In addition to procurement of BIM software and computers, has Krueger applied CITF for BIM Training? If yes, how many employees have attended such training?

We were granted $160,000 to fund 67 employees to attend BIM training. The courses they attended cover introduction workshop, elementary knowledge, basic skills and programmes designate for Mechanical, Electrical and Plumbing (MEP) projects.

7. Which types of BIM trainings are more important for contractors in E&M trade? Can the subsidised BIM courses satisfy such needs?

Nowadays, most construction site personnel have a preliminary understanding of BIM software. However, BIM courses focusing on generic skills might not meet our specific needs. To uplift the skills level of BIM specialists in E&M trade, it is recommended to add some tailor-made BIM courses on MEP.

8. How did Krueger know about CITF? How CITF can better promote BIM technology to mechanical and electrical companies?

We heard about the CITF from newspapers, websites and other channels. We had also participated in some introductory workshops conducted by the CITF and directly interacted with vendors and service providers. As for the promotion of BIM, the CIC might provide a free point cloud platform for industry practitioners.

9. Any suggestions from Krueger on refining the BIM funding parameter?

Given that the renewal of software subscription is expensive, the CITF might negotiate with vendors for a more competitive pricing, consider cancelling the cap on BIM or extend the funding coverage from the initial start-up costs to subsequent subscriptions.

Krueger Engineering (Asia) Ltd

適用於機電工程的預先批核建築信息模擬軟件　Pre-approved BIM Software for E&M Trades

* 預先批核名單編號
* Pre-approved List Code

\# 與其他BIM軟件的互動
\# Interoperability with other BIM Software

資料僅供參考，詳情請聯絡個別軟件供應商
For reference only. Please contact respective vendors for details.

1. ACCA software SpA　🌐 www.isbim.com.hk　📞 3188 2992

* PBS20-013 Edificius

- 內置的"Smart MEP"建模器可以在機電族之間自動篩選的合適的配件
- 可以分析和可視化機電系統中建築設計和工程設計之間的碰撞
- 利用機電參數化族配對工具可以創建無限BIM族庫
- 導入和導出IFC格式的模型，可以與任何其他BIM軟件進行交互
- 支持無縫連接其他功能 (例如3D設計，成本估算等等)

- Built-in "Smart MEP" modeler that automatically suggests the correct fittings selection between MEP elements
- Identify and visulaize conflicts between architectural design and engineering design of MEP networks
- Create an infinite BIM objects library with the parametric MEP object configurator
- Import and export models in the IFC format to interact with any other BIM software
- Support seamless integration with other features such as 3D design, cost estimating, and others

\# 可以應用於所有其他與IFC格式兼容的BIM軟件和其他ACCA 軟件解決方案，如PriMus，EdiLus。也包括其他應用軟件集成如Sketchup, Blender, Rhino/Grasshopper

\# All other BIM software compatible with IFC format and other ACCA software solutions such as PriMus, EdiLus. Incuding additional integration with Sketchup, Blender, Rhino/Grasshopper

* PBS20-014 Edificius + RTBIM

除上述功能外，另增添支援實時渲染功能

Adds in Real Time Rendering function further to the above features

2. Autodesk Inc　🌐 www.autodesk.com.hk　📞 2824 2338 (只提供英文版 English version only)

* PBS18-002 Architecture Engineering & Construction Collection IC Commercial New ELD Subscription

1. **Revit** (Please refer to product features of "Revit" as below.)
2. **Navisworks Manage** (Please refer to product features of "Navisworks Manage" as below.)
3. **Fabrication CADmep**

- Multipoint routing for fabrication
- Sloped piping for fabrication
- Patterns for filter plenum boxes
- Support for PDF underlays
- Fabrication Review software
- Vertical design line annotation

\#
1. **Revit** (Please refer to product features of "Revit" as below.)
2. **Navisworks Manage** (Please refer to product features of "Navisworks Manage" as below.)
3. **Fabrication CADmep Navisworks integration**

* PBS18-014 Navisworks Manage Commercial New Single-user ELD Subscription

- Integrated model takeoff
- sheet takeoff
- Model file and data integration
- NWD and DWF publishing
- 5D project scheduling
- hotorealistic model rendering
- BIM coordination with AutoCAD
- BIM 360 integration
- Model aggregation
- Clash detection and interference checking
- Clash and interference management

\#
1. **BIM 360 Integrations with Navisworks**
2. **Autodesk Navisworks provides file exporters to create native Autodesk Navisworks files directly in CAD applications. Currently, you can export NWC files from AutoCAD, MicroStation, Revit, ArchiCAD, and Max applications**

* PBS18-018 Revit Commercial New Single-user ELD Subscription

1. **Top Features**
- Generative Design
- Parametric components
- Worksharing
- Schedules
- Dynamo for Revit

2. **Architectural design**
- Analysis with Insight
- Architectural modeling
- 3D design visualization
- Multistory stairs
- Cloud rendering

3. **Structural engineering and fabrication**
- Physical and analytical model
- Reinforcement detailing
- Structural steel modeling
- Dynamo for structural engineering
- Linking with steel fabrication

4. **Construction**
- Construction modeling
- Construction coordination
- Navisworks interoperability
- Import/Export 2D sheets
- Constructability details
- Fabrication for structural engineering

5. **MEP engineering and fabrication**
- HVAC design and documentation
- Electrical design and documentation
- Plumbing design and documentation
- MEP fabrication detailing
- Insight integration
- Fabrication service conversion
- Fabrication documentation

\#
1. **IFC interoperability**
2. **BIM 360 interoperability**
3. **Navisworks interoperability**
4. **Point cloud tools**

3. Bricsys NV　🌐 www.bricsys.com　📞 3950 3353

* PBS18-038 BricsCAD BIM MEP Suite (AX3000)

在完整的建築信息模型(包括建築和結構部件)中對暖通空調和管道系統進行設計、建模和文檔編制

電氣模塊內置工具，可清楚制定計劃併計算載流量、邏輯電路的電壓降和短路電流。程序亦可生成電纜清單和電路安裝零件清單

- 路線規劃和風管規劃
- 集成繪圖元素
- 自動訪問商品數據庫
- 輕鬆放置安裝零件
- 自動根據圖紙調整電氣符號：旋轉至牆壁、距離功能
- 添加額外信息的智能電氣符號
- 簡單分配元件予電路；拖放功能

Design, model, and documentation of HVAC & Piping Systems in context of a full BIM model, including architectural and structural components

Electrical module contains tools to create plans clearly and to calculate ampacity, voltage drop and short-circuit currents for logical circuits. Generates lists for cables and mounting parts of a circuit

- Route planning and ductwork planning
- Integrated drawing elements
- Automatic access to the article database
- Effortless placement of installation parts
- Automatically adapts electrical symbols to the drawing: rotation to the wall, distance function
- Smart electrical symbols to which further information can be added
- Simple assignment of components to circuits; drag & drop functionality

\#
IFC Building Smart Certified
100% Industry standard
DWG and DXF Compatible
DGN Compatible

3. Bricsys NV   🌐 www.bricsys.com   📞 3950 3353

✳ PBS18-038 BricsCAD BIM MEP Suite (AX3000)

Easyline基於線的系統建模和尺寸標註
(例如：將線轉換為風管，管道)

- 熱負荷計算和管道網計算
- 壓力損失 Excel報告
- 風管系統零件清單

Easyline line-based systems modelling & dimensioning
(eg: convert Line to a Duct, Pipe)

- HeatLoad Calculations & Pipenet Calculations
- Pressure loss reports and export in Excel
- Ducting & Piping system parts list

 # Excel & PDF Compatible

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4. Forida Ltd   🌐 www.forida.com.hk   📞 2412 4590

✳ PBS18-039 Ideate Software

- 導出BIM數據到Excel內進行處理，然後快捷及準確地倒回Revit model
- 將數據從工程電子表格自動轉到Autodesk Revit model
- 方便E＆M工程師在Revit模型和設備清單之間調整項目的可交付資料及數據處理

- Export BIM data into Excel, manipulate the data, and then push back to Revit model at high speed and accuracy
- Facilitate automatic transfer of data from engineering spreadsheet into the Autodesk Revit model
- Enable E&M engineers to align the project's deliverables and avoid double handling of data between Revit models and equipment list

 # Revit

✳ PBS18-040 Solibri Model Checker

- 標籤，標記和構建模型對E＆M組件進行分類
- 工程估算
- 以機械組件、HVAC等不同E&M分類處理及管理issue

- Tag, label and structure models to classify E&M components
- Quantity takeoff
- Connect and create issues by different disciplines such as Mechanical, HVAC, etc

 # Revit, Navisworks, AutoCAD, Civil3D, ArchiCAD, Tekla

✳ PBS18-042 AGACAD

- 為MEP工程提供一系列完整的解決方案
- MEP Hanager可以直接在Revit model內為喉道，管道，電纜橋架和導管插入大量的吊架和支架
- 製作準確的物料清單(BOM)和生成CBWD，以進行準確的現場組裝

- Offer complete solutions for MEP engineering
- Use MEP hanges to insert large-scale of hangers and supports through a Revit model for ducts, pipes, cable trays and conduits
- Get accurate Bill of Materials and Builder Work Drawings for accurate on-site assembly

 # Revit

✳ PBS20-001 Enscape

- 加速工作流程，只需單擊一下即可render Revit model
- 在高質量及實時的VR環境中檢視Revit model
- Live Sync功能可實時呈現在Revit的更新, 有助解釋復雜的MEP系統設計, 加快溝通和協作
- 適用於客戶演示和設計流程
- 不用培訓便可使用

- Accelerates workflows as it can render a Revit model just by one click
- Explore Revit project in a high-quality, real-time environment
- Live Sync features faciliate communication and collaboration on complex MEP system design
- Useful for client presentations and design processes
- Easy to use and requires no extra training

 # Revit, SketchUp, Rhino, ArchiCAD, Vectorworks

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5. GRAPHISOFT SE   🌐 www.graphisoft.com.hk   📞 3975 3260

✳ PBS18-027

ARCHICAD International Commercial Single / Net License with CodeMeter Keyplug for ARCHICAD

- 跨專業BIM創建工具
- 集成的MEP建模工具集
- 工程師能以非常直觀的方式開發MEP系統
- 工程師可以建模完整的E＆M系統和定制的物件
- 在用戶介面中已自動加載了E＆M圖庫
- 可以將所需的所有數據嵌入其項目的幾何部分，從而生成所需的所有資訊和文檔

- Multidisciplinary BIM authoring tool
- Integrated MEP Modelling Set of Tools
- Allowing engineers to develop Mechanical, Electrical and Plumbing Systems in a very intuitive way
- Engineers can model the full systems and customised objects for the E&M systems
- Incorporates a set of E&M Libraries loaded automatically in the user interface
- Users can embed all data needed on the geometrical parts of their project producing all Information and documentation needed

 # 使用openBIM方法，E&M BIM項目可以與市場上的每個BIM平台進行交換。Archicad可以直接導出到一組工具，其中包括：openBIM格式：IFC檔，IFC XML，IFC壓縮檔（2x3和4）其他格式：DWG，PDF，Rhinoceros3D，SketchUp，MicroStation，Google Earth檔，Revit項目檔，結構分析格式，Collada檔，Twinmotion 2020，Wavefront，3DStudio，StereoLithography，Piranesi，Electricimage，VRML，U3D和Artlantis

 # Using openBIM approach E&M BIM projects can be exchanged with every BIM platform in the market. Archicad can export directly to a set of Tools that include: openBIM Formats: IFC File, IFC XML, IFC Compressed File (2x3 and 4) Other Formats: DWG, PDF, Rhinoceros3D, SketchUp, MicroStation, Google Earth File, Revit Project File, Structure Analytical Format, Collada File, Twinmotion 2020, Wavefront, 3DStudio, StereoLithography, Piranesi, Electricimage, VRML, U3D and Artlantis

✳ PBS18-028 BIMcloud User License - Commercial International Net

- 項目團隊成員之間實現安全、實時協作，不論項目大小和複雜與否，無需考慮辦公地點和網絡速度
- 不論是公有或私有雲配置，只需標準硬體
- IT經理在設置過程中不需要專業技能或使用特別的硬體

- Secure, real-time collaboration between project team members regardless of the size or complexity of the project, the location of the offices, or the speed of the Internet connection
- Available in both private and public cloud in standard hardware
- IT managers need no special skills or extraordinary hardware for set up

 # ARCHICAD

✳ PBS18-047 BIMx Pro Mobile App

- 為項目所有相關方架起連接設計工作室和施工現場的橋梁
- 即時模型剖切、測量功能和項目批註等功能，使得BIMx是您最理想的現場BIM專案管理工具
- 可在任何移動設備上運行
- 隨時隨地做出設計決策並更新建築模型

- Bridge the gap between the design studio and the construction site
- Real-time model cut-throughs, in-context measuring and project markups in the model context make BIMx your best on-site BIM companion
- Readily functionable on any mobile device without special hardware or software
- Make design decisions and update your building model on the go

 # ARCHICAD

6. INTRATECH Corp.   🌐 www.tetra4d.com / www.3dpdf.com.hk   📞 9300 6269

✱ PBS20-005 Intelligent 3D PDF Exporter for Revit Plugin

- 縮小並將大型複雜BIM模型轉換為原檔1/10大小的 3D PDF E&M模型
- 2D工程圖紙和3D模型之間的智慧連結
- 輸出整個模型或者帶有旁邊相鄰對象的選定模型
- 輸出3D模型截面
- 輸出模型的結構和屬性
- 使用免費Adobe Reader軟件在3D PDF E&M BIM 模型上添加意見和注釋

- Strink down and convert large complex BIM model to very small 3D PDF E&M model with 1/10 file size
- Intelligent interlink between 2D drawings & 3D modelling
- Export the whole model or selected model with neighboring objects
- Export the 3D model sectioning
- Export the model structure and properties
- Add comment and annotation with free Adobe Reader on the 3D PDF E&M BIM model

Any third party PDF reader can view the 3d pdf model if it supports PRC and U3D format.

✱ PBS20-006 Intelligent 3D PDF Exporter for Navisworks Plugin

- 縮小並將大型複雜BIM模型轉換為原檔1/10大小的 3D PDF E&M模型
- 輸出3D PDF 碰撞檢測報告
- 2D圖紙標籤和3D模型智慧連結
- 在2D圖紙上剪切並疊加3D模型
- 輸出整個模型或者帶有旁邊相鄰物件的選定模型
- 輸出模型的結構和屬性
- 使用免費Adobe Reader軟件在3D PDF E&M BIM 模型上添加意見和注釋

- Strink down and convert large complex BIM model to very small 3D PDF E&M model with 1/10 file size
- Export clash detection report with detailed report in 3D PDF
- 2D Tag and 3D object intelligent link
- Cut and overlay 3D on 2D drawing
- Export the whole model or selected model with neighboring objects
- Export the model structure and properties
- Add comment and annotation with free Adobe Reader on the 3D PDF E&M BIM model

7. Kalloc Studios Asia Ltd   🌐 www.kalloctech.com   📞 2520 1050

✱ PBS18-032 Fuzor BIM Solution
- 實時預覽漫遊機電工程三維模型
- 碰撞分析
- 機電工程設計審查

- Real-time walkthrough and visualization of E&M works
- Clash Analysis Reports
- Design Review of E&M works

Revit, ArchiCAD, Rhino, Sketchup, FBX, Naviswork, Point cloud data, IFC

✱ PBS18-033 Fuzor Ultimate
- 實時預覽漫遊機電工程三維模型
- 碰撞分析
- 機電工程規劃設計、協調、設計審查
- 機電工程工序動畫

- Real-time walkthrough and visualization of E&M works
- Clash Analysis Reports
- Design Review and coordination of E&M works
- Sequence animation of E&M works

✱ PBS18-034 Fuzor Construction Pro
- 實時預覽漫遊機電工程三維模型
- 碰撞分析
- 機電工程規劃設計、協調、設計審查
- 機電工程工序動畫
- 機電工程施工動畫

- Real-time walkthrough and visualization of E&M works
- Clash Analysis Reports
- Design Review and coordination of E&M works
- Sequence animation of E&M works
- Construction Sequence Simulation of E&M Work

✱ PBS18-035 Fuzor Virtual Design Construction
- 實時預覽漫遊機電工程三維模型
- 碰撞分析
- 機電工程規劃設計、協調、設計審查
- 機電工程工序動畫
- 機電工程施工動畫
- 移動端檢視機電工程安裝動畫
- 虛擬機電工程安裝安全訓練

- Real-time walkthrough and visualization of E&M works
- Clash Analysis Reports
- Design Review and coordination of E&M works
- Sequence animation of E&M works
- Construction Sequence Simulation of E&M Work
- E&M installation animation using mobile
- E&M installation safety training and simulation using VR and AR

8. Prostep AG   🌐 www.3dpdf.com.hk   📞 9300 6269

✱ PBS20-012 3D PDF PRO (3D PDF Animate / 3D PDF Publish / 3D PDF Compare

- 創建分階段模擬動畫，以增加可視化演示，例如電機 工程維修保養手冊，組裝説明和工作流程
- 追蹤變更和修訂，及時了解個案變更和變更請求
- 顯示組件屬性和BIM物料表信息以及組件選擇
- 使用免費Adobe Reader軟件在3D PDF E&M BIM 模型上添加意見和注釋

- Create step-by-step animations allowing increased visual demonstrations such as E&M maintenance manuals, assembly instructions, and workflows
- Track changes and revisions, staying up-to-date on project changes and change requests
- Display part attributes and BIM material table information with part selection
- Use free Adobe Reader to add comment and annotation on the 3D PDF E&M BIM model

Any third party PDF reader can view the 3d pdf model if it supports PRC and U3D format

9. Tech Soft 3D   🌐 www.tetra4d.com / www.3dpdf.com.hk   📞 9300 6269

✱ PBS20-003 Tetra 4D Converter / ✱ PBS20-004 Enrich

- 支援 3D PDF 檔案，並可大幅壓縮BIM模型至 原檔5%大小
- 自動識別 BIM 模型裡使用的工程材料, 物件並 輸出到 Excel 表
- 比較兩個 3D PDF 機電模型版本以審核工程項目的變更
- 支援3D場景與非幾何數據之間的資料檢視和互動
- 與免費Adobe Reader軟件相容
- 可以密碼或數位簽名加密檔

- 3D PDF BIM model can be compressed to 5%
- Automatically recognize part list or items of the BIM model and export them into excel table
- Compare two 3D PDF E&M models side-by-side
- Supprort veiwing and interactions between the 3D scene and the non-geometric data
- Inerroperable no version problem occur to interact the model with free Adobe Reader
- Encrypt the 3D PDF BIM model with password or digital signature

Any free PDF Reader can view 3D PDF model if it supports PRC or U3D format

詳情可參閱基金預先批核名單　Details please refer to CITF Pre-approved List :