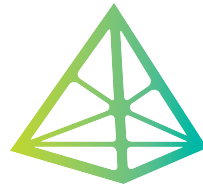




CITFDIGEST



CITF 建造業 創科基金

融匯科技 創建香港 WE INNOVATE, WE BUILD

<https://www.citf.cic.hk> CITF 建造業創新及科技基金 citf.cic.hk 二零二零年十二月 DEC 2020 / 第六期 ISSUE 6

共創興盛 — 數碼化如何改變建造業的面貌

建造業一直面對工程延誤、工人老化及成本壓力等種種挑戰。這都促使建造業盡快革新，加強生產力，改善效率，並提升安全及可持續發展，以轉型成為高端行業。數碼化被譽為一個主要動力，能推動建造工程取得卓越成績。數碼化不單只關乎技術，而且還涉及組織、流程及人力。為了在業內培養推動數碼化的文化，建造業創新及科技基金不但資助業界購買建築信息模擬(BIM)軟件及其他有助施工流程的數碼工具，還通過各種形式的活動及培訓支持行業升級轉型，包括邀請行業專家，就人工智能、物聯網解決方案及機械人技術等相關主題與業界交流。



建造業創新及科技應用中心(CITAC)自二零一七年起一直擔當關鍵角色，與業界分享尖端建造解決方案及創新技術。在二零二零年十一月十一日，CITAC以雙模式(即實地及網上平台)舉行題為「建造業數碼化」的「建造業創新及科技應用中心周年大會」。發展局常任秘書長(工務)林世雄先生應邀為大會擔任主禮嘉賓並致開幕辭。隨後，多位本地及海外有名的專家在分享環節中，與大家探討數碼工具如何重塑他們的業務，並介紹成功個案。

大會圍繞工程生命周期數碼化的主題，探討六個主要範疇的數碼轉型：數碼策略、數碼項目推展、數碼設計、數碼製造、數碼建築及數碼基礎設施。

大會的分享環節由英國公路局智能公路實施總監(Smart Motorways Delivery Director) Lorraine Butler 博士揭開序幕，與我們分享快速工程模型(REM)如何在英國基建項目中做到設計自動化。其後，萬達商業管理集團建築信息模擬首席總工程師李雄毅先生，向我們介紹建築項目整個生命周期的推展過程。除了從工程角度看數碼化外，Zaha Hadid 建築師事務所高級建築師 Shajay Bhooshan 先生亦說明數碼工具如何協助建築設計。Fraunhofer IPT 技術及創新管理主管 Toni Drescher 先生繼而帶領觀眾展開德國工業4.0旅程。至於數碼建築領域，本地創新先鋒一金門建築有限公司何安誠工程師告訴我們，金門成功背後的其中一個秘訣，就是積極善用數碼科技。最後，亞馬遜網路服務首席技術專家 Olivier Klein 先生，為與會者講解資訊科技基礎設施與數碼轉型之間的關係，為大會畫上圓滿句號。

這是CITAC首次在網上舉行周年大會，業界反應非常熱烈，超過1 000名不同界別的人士參與，當中包括承建商、顧問及政府代表等。i-Club會員現可獨家在CITAC網站觀賞大會重播。請即加入成為我們的i-Club會員，掃描以下二維碼，便可觀看整個會議重播。當中不乏真知灼見，可給你實用建議，也能帶領你度過前面重重難關。



目前經濟環境不明朗，發展局及建造業議會將繼續全力以赴，協助建造業積極升級轉型。



發展局
Development Bureau



CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Thrive together – How digitalisation changes the landscape of construction industry

The construction industry has been facing a number of challenges - project overruns, aging of labour, and cost pressure. All are pushing the construction sector to respond as fast as possible so as to transform the industry into a high-end one with enhanced productivity, efficiency, safety and sustainability. Digitalisation is accredited as one of the key drivers to bring about excellence in our construction works. Digitalisation is not only about technologies, it also touches upon organisation, processes and people. In an attempt to cultivate a pro-digitalisation culture in the industry, the Construction Innovation and Technology Fund (CITF) not only supports procurement of BIM software and other digital tools conducive to construction processes, but also supports the industry to build up their capacity through various kinds of events and trainings.



Inviting industry experts to share knowledge on related topics like artificial intelligence, IoT solution and robotics is one of the initiatives.

Since 2017, the Construction Innovation and Technology Application Centre (CITAC) has assumed a pivotal role in promoting cutting-edge construction solutions and innovations. 'CITAC Anniversary Conference on Construction Digitalisation' was held by CITAC in dual mode on 11 November 2020 – on site and at the online platform. Mr LAM Sai-hung, Permanent Secretary for Development (Works) of Development Bureau, was invited to be the Guest of Honour and deliver the opening remark. Following the welcoming note came the sharing sessions of distinguished experts from Hong Kong and abroad on how digital tools reshape their business and successful cases.

Centered on the theme on digitalisation across the construction life-cycle, the Conference covered digital transformation in six major areas: Digital Strategy, Digital Project Delivery, Digital Design, Digital Manufacturing, Digital Construction and Digital Infrastructure.

Dr. Lorraine Butler, the Smart Motorways Delivery Director of Highways England, kicked start the sharing session by showing us how the Rapid Engineering Model (REM) delivered design automation in UK infrastructure projects. Mr. Landson LI, BIM Principal Chief Engineer of Wanda Commercial Management Group, took over the stage and introduced the full life cycle project delivery process. Further to digitalisation from the engineering prospect, Mr. Shajay Bhooshan, the Senior Associate of Zaha Hadid Architects, illustrated how digital tools benefited architectural design. Mr. Toni Drescher, the Head of Technology and Innovation Management of the Fraunhofer IPT, took our audience to the journey of Germany's industries 4.0. In the area of digital construction, our local innovation pioneer, Ir Thomas HO of Gammon Construction Limited revealed one of the secrets behind Gammon's success – being proactive in embracing digital technologies. The presentation of Mr. Olivier Klein, the Lead Technologist of Amazon Web Services, on the relationship between IT infrastructure and digital transformation marked the perfect end note to the Conference.

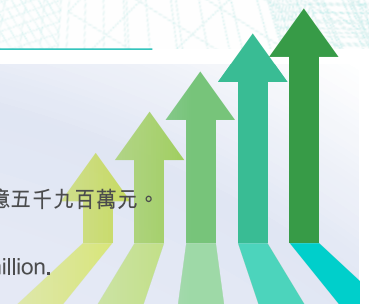
It was the first attempt to have the CITAC Anniversary made available online and the response from the industry was truly overwhelming – over 1000 attendees across different sectors including contractors, consultants and Government representatives participated. Replay of the Conference is now available exclusively for i-Club members on CITAC website. Join our i-Club and scan the below QR code to enjoy the full version of the Conference replay! These insights would provide you with some practical tips as well as a guide to help navigate the rough water ahead.



Amid the prevailing economic uncertainty, the Development Bureau and the Construction Industry Council would continue to help the industry upgrade and transform in earnest.

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

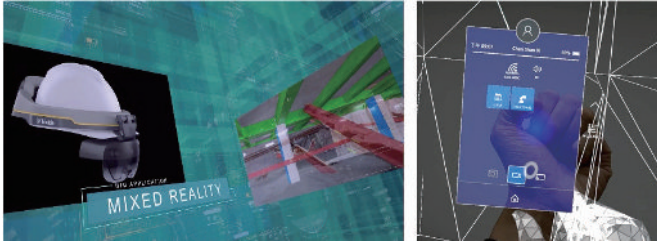
由2018年10月至今已收到逾二千份申請，當中一千五百多份申請已經成功獲批，總資助額逾港幣三億五千九百萬元。
Counting from October 2018, the application number has reached more than 2 000, of which over 1 500 applications have been approved. The funding grant amount is more than HK\$359 million.



看得見的未來建築藍圖

Visible Future of Construction Blueprint

駿輝建築有限公司(駿輝)為新輝(建築管理)有限公司旗下的全資附屬公司，是新鴻基地產集團建築部一員。駿輝秉承母公司的企業價值觀，自強不息，不遺餘力地採用創新科技和理念，提高整體工作效率和服務質素。駿輝得到建造業創新及科技基金的資助，購買兩台 Trimble XR10 with HoloLens 2，分別用於沙田住宅和觀塘商用物業兩個建築項目。



Trimble Connect with HoloLens XR10

Trimble XR10 with HoloLens 2 推出後，我們便能把全息影像數據輸送至建築工地。該設備把 HoloLens 2 與安全帽相結合，讓前線建築工人可在安全的環境下查閱數據。安全帽使用混合實景技術，為工地的建築團隊提供精確的空間投射信息，並支援他們把建築信息模擬(BIM)模型數據疊加至項目用地的實際環境中。大至鋼筋支架，小至水泥飾面及水渠喉管，均可通過 HoloLens 2 在逼真的全息圖像中詳細呈現，讓項目經理可盡早更正設計缺陷，並擬定人力計劃，從而解決難題。即使工地網絡訊號較弱，我們也可預先把 BIM 模型下載至 HoloLens 2 中，以便日後在工地應用。

回顧往日，當工地仍處於以紙和筆主導的年代，項目團隊和前線工友在處理繁複的工序時，溝通和信息分享往往出現困難。Trimble XR10 with HoloLens 2 連接雲端服務，不但可提供最新、最準確的信息，而且還能協助各方同步共享信息。現在，無論是工地上的前線人員，還是身處辦公室的项目經理，只要使用 Trimble XR10，便能跨越地域界限，進行實時溝通。工地團隊擷取的 3D(三維)圖像，可即時傳送至經理的桌面屏幕上，以便分配待辦工作、解決問題和糾正錯誤，盡量減少可能出現的延誤。此外，Trimble XR10 亦與各種 CAD 格式(例如 SKP、IFC(2x3)、DWG、DGN 及 STEP)兼容，在使用上更為便利。

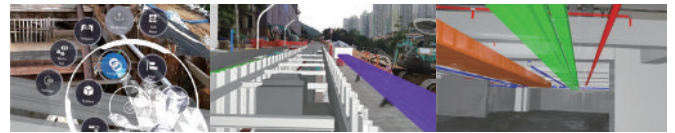
在建築周期的不同階段，由檢視設計模型、查看複雜的指示，以至與位於各處的项目團隊合作，這款安全帽都發揮重要作用，有助我們提高生產效率，改善工程質素，縮短工作流程和促進多方溝通。全賴 Trimble XR10 with HoloLens 2 提供協助，我們現可省卻冗長的會議討論和反覆的圖紙修改。整個決策過程都得以簡化，為駿輝、客戶，建築團隊甚至社會創造最大的價值。



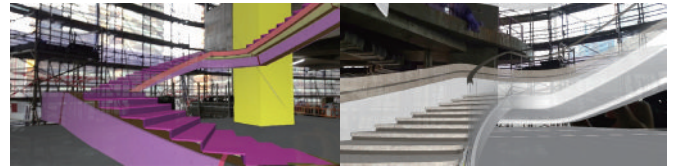
我們在應用 Trimble XR10 with HoloLens 2 方面取得成功，但不會因此自滿。駿輝秉承新鴻基地產集團「以心建家」的企業文化，將繼續鼓足幹勁，探求先進的新科技，用心興建優質居所，為顧客提供卓越服務。

Chun Fai Construction (Chun Fai), a wholly-owned subsidiary of Sanfield (Management) Co. Ltd, is part of the construction chain of the Sun Hung Kai Properties Group. Sharing the same corporate values on continued improvement as our parent group, Chun Fai spares no efforts to embrace innovative technologies and ideas to enhance overall working efficiency and service quality. With the funding support of CITF, Chun Fai purchased two Trimble XR10 with HoloLens 2 for use in our construction projects – a residential one in Sha Tin and the other commercial one in Kwun Tong.

Trimble XR 10 with HoloLens 2 literally makes holographic data available in the field. The device, which integrates a HoloLens 2 into a safety helmet, enables frontline construction workers to access data in a safe environment. Utilising mixed reality technologies, the hardhat provides our field team with precise spatial mapping and supports them to overlay BIM Model data onto the physical context of the project site. Detailed representation in a real-world setting covering steel frame and finishes as well as pipe and ducts allow project managers to trouble shoot design flaws and draw up manpower plan as early as practicable. Even in sites with poor network, the BIM model can be downloaded to the HoloLens in advance for subsequent application in situ.



在施工前準確對齊管道等設備的走線
Accurately align the routing of pipes and other equipment before construction



在現場預覽建築設計
Architectural design review at the construction site

Back to the days where paper and pen dominated worksites, it was often difficult to have an effective communication and information sharing between project team and frontline workers amid complicated work processes. With Trimble XR 10 with HoloLens 2, the connection to Cloud services not only features up-to-date and precise information but also facilitates simultaneous data sharing among multiple parties. Real-time communication between frontline site personnel, and project managers at office are now feasible via Trimble XR 10 with HoloLens 2. The 3D visualization captured by the field team can be instantly transferred to the desktop screen of the managers for to-do-tasks assignment, problem shooting and error rectifications, minimizing the possible delays. The compatibility with various CAD formats such as SKP, IFC (2x3), DWG, DGN, STEP further add to users' benefits and convenience.

Productivity, work quality, workflow efficiency and multi-party communication can all be enhanced as the headgear contributed substantially in different stages of the production cycle – from reviewing design models to viewing complex instructions to collaborating with project teams located differently. Lengthy discussion at meetings and back-and-forth drawing amendments can now be spared with the assistance of Trimble XR 10 with HoloLens 2. The entire decision making process is streamlined to maximize the values – not only to us, but also to our clients, our building team and our society.

The successful application of Trimble XR 10 with HoloLens 2 leaves us no room for complacency. Inheriting Sun Hung Kai Properties Group's corporate culture of Building Homes with Heart, Chun Fai will continue with our passion to seek new and advanced technologies to help develop residences of the finest quality and offer superb service to our customers.

InnoShare 數碼工程監督系統 — 全方位數碼監督 InnoShare DWSS – A Full Range Digital Works Supervision



(建造業創新及科技基金預先批核名單編號 PA20-088)
(CITF Pre-approved List Code: PA20-088)

香港特別行政區政府積極推動「建造業2.0」，以「創新」、「專業化」及「年青化」為方針，領導業界向前發展，提升表現，而其中一項主要目標是加強工程項目的管理。發展局有見及此，於2020年發出工務技術通告第3/2020號，要求承建商在項目預算超過三億的工務工程項目中使用數碼工程監督系統，以改善工地監察、生產效率、工地安全及工程質素。

什麼是數碼工程監督系統？

數碼工程監督系統為一數碼平台，用以整合數據和進行信息互換。工程團隊即使身處千里之外，仍能通過系統實時監察項目進度和管理員工。

InnoShare DWSS 數碼工程監督系統如何帶來裨益？

有別於以往監督人員需要不停往返工地與前線工友溝通，InnoShare DWSS 數碼工程監督系統集中收集和處理工程數據，以進行數碼化監督，從而減省時間成本。系統容許客戶、承建商及工程顧問等多個用戶，在高度安全的環境下進行實時監察。此外，系統具備電子檢測清單、數據記錄庫、危險等級評估、巡查和測試計劃等功能，有助維持工程質素及工地安全。

項目監督工作十分繁複。因此，InnoShare DWSS 數碼工程監督系統特別匯合了「檢查及測量申請表格」、「地盤工程日誌/地盤記錄簿連人員往返記錄」、「施工安全及環境檢討記錄」等多個模式，以配合建造業的實際需要。工程記錄可予追溯，既有助保存完整數據，亦可釐清項目團隊的權責，從而優化業界的良好作業方式。InnoShare DWSS 數碼工程監督系統亦與建築信息模擬(BIM)兼容，所製作的報表能通過相應ID直接套用於BIM模型，發揮協同效應。

InnoShare DWSS 數碼工程監督系統支援多類型數據，包括文字、圖片及其他格式的附件。與依靠紙張的傳統運作模式相比，數碼化監督能減低儲存及用紙需求。系統亦支援電腦，平板電腦及其他指定類型的電子設備，進一步便利用戶。

InnoShare DWSS 數碼工程監督系統自推出以來，深受用戶青睞，除應用於私營建築項目外，亦在土木工程拓展署、路政署、環境保護署及渠務署的工務工程項目中採用。

工地監督數碼化及自動化乃未來大勢所趨，創域科技環球有限公司致力與業界攜手向前，締造更美好的前景。

如欲進一步了解 InnoShare DWSS 數碼工程監督系統，歡迎致電 (+852) 2466 9566 或瀏覽網頁 <https://www.ia-technology.com>。



創域科技環球有限公司

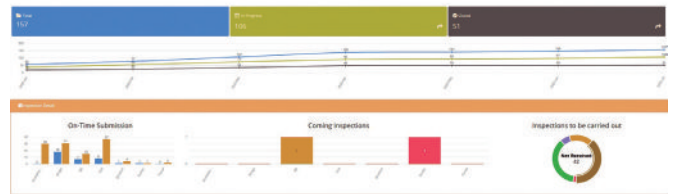
HKSAR Government is proactively promoting "Construction 2.0" by advocating "Innovation", "Professionalisation" and "Revitalisation" to lead the industry to make progresses and enhance its performance. Enhancing the management of works projects is one of the key objectives. Against the background, the Development Bureau issued the Technical Circular (Works) No.3/2020 requiring contractors of public works projects with pre-tender estimates over \$300 million to adopt Digital Works Supervision System (DWSS) to improve site monitoring, productivity, site safety and work quality.

What is Digital Works Supervision System (DWSS)?

DWSS is a digital platform which integrates data and facilitates information exchange. Even when the project team is thousand miles apart, they can still monitor the project progress and manage workforce in real time through the system.

How does InnoShare DWSS bring benefits?

Different from where supervisors are required to constantly travel back and forth for on-site communication, InnoShare DWSS reduces time cost by utilising its central data gathering and processing function to realise digital supervision. InnoShare DWSS allows multiple parties including clients, contractors and consultants to involve in a real-time monitoring process under a highly secured setting. It also helps maintain the work quality and site safety given its various functions like electronic checklists, data log, hazard rating and Inspection Test Plan etc.



Project supervision cannot be more complicated. InnoShare DWSS, tailored to the needs of the construction sector, features multiple models including Request for Inspection/Survey Check Form (E-RISC), Site Diary/Site Record Book plus Labour Return Record (E-Diary) and Site Safety & Cleansing Inspection Records (E-Safety). Traceability of records not only helps preserve the integrity of data but also clarify the powers and responsibilities of the project team, thereby strengthening the good practices of the industry. Given the compatibility between InnoShare DWSS and Building Information Modelling (BIM), reports generated can be directly applied to the BIM model through corresponding ID and generate synergy.

InnoShare DWSS supports a wide range of data – texts, photos and other forms of attachments. Compared with the traditional paper-oriented operation, digital supervision can reduce the demand for storage and the use of paper. Its applicability to computers, tablets and other designated types of electronic devices further adds to the convenience of users.

Since its introduction, InnoShare DWSS has been well received by users. In addition to private construction projects, our system was also deployed in various public works projects led by Civil Engineering and Development Department, Highways Department, Environmental Protection Department and Drainage Services Department.

Digitalisation as well as automation are the wave of future in site supervision. Innovative Associate Technology Limited is committed to working hand in hand with the industry to create a more promising prospect!

Keen to know more? Call us at (+852) 2466 9566 or visit our website <https://www.ia-technology.com>.

Innovative Associate Technology Limited