謝尚賢 教授

CAE招生說明會 研究室介紹

09/21/2026



Research Center for Building & Infrastructure Information Modeling and Management

台灣BIM聯盟

Alliance for BIM-enabled Upgrading of Taiwan Construction Industry

主軸方向

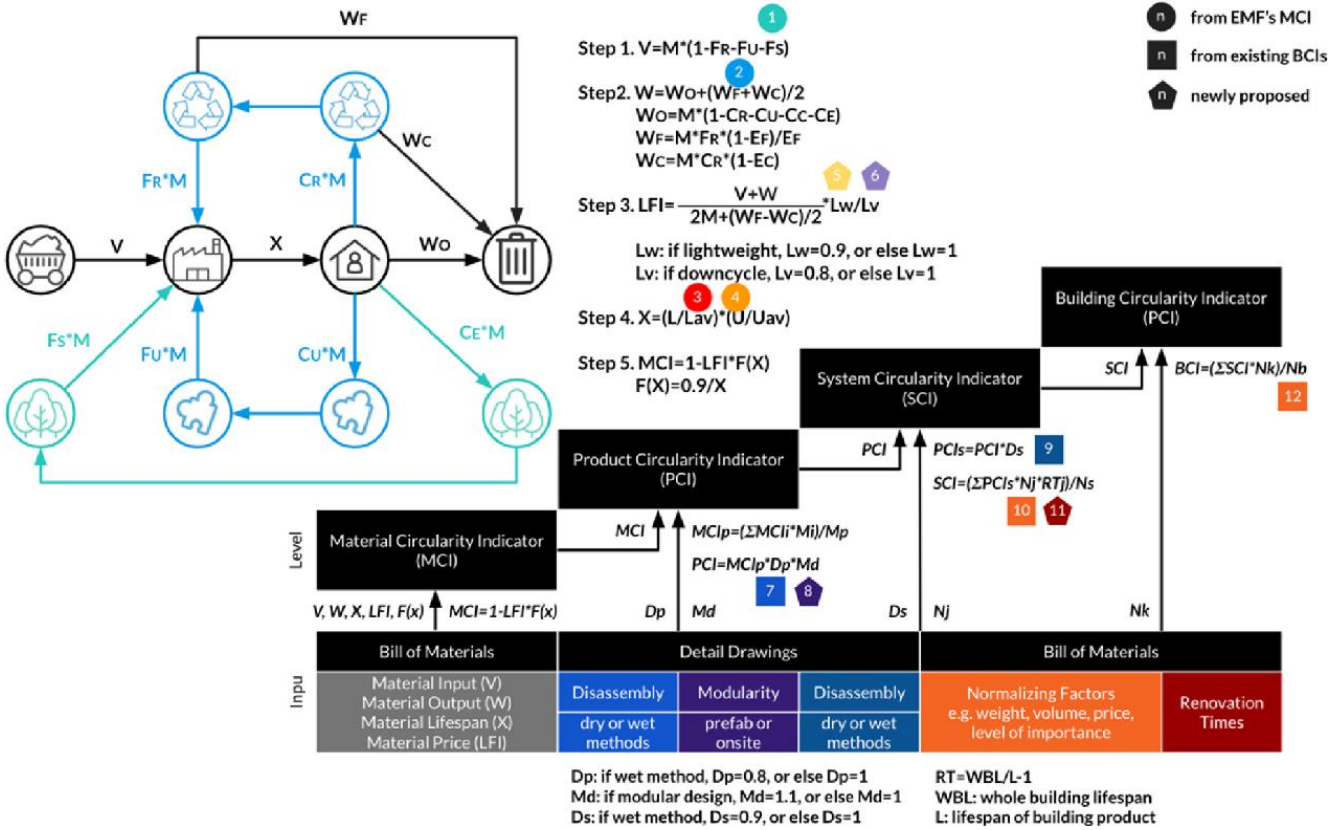
以數位轉型驅動
營建產業永續轉型

建築尺度


工業與基礎建設
公平正義與和平
減少不平等
永續城市
責任消費與生產
氣候變遷
全球夥伴
健康福祉
優質教育
性別平權
就業與經濟成長
Impact
Campus

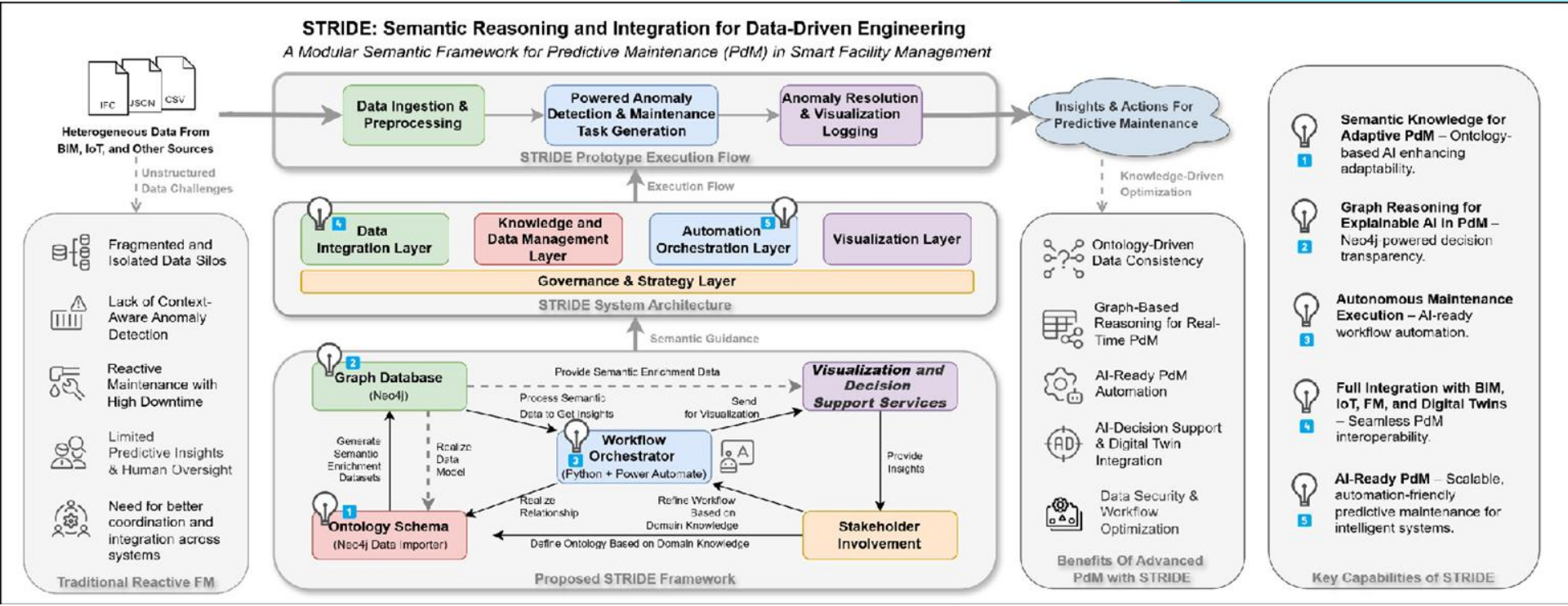

Net-Zero Buildings
Circular Buildings
Digital Twins for Sustainable Campus
WELL Buildings

新的建築循環度評估框架



Chang, Y. T., and S. H. Hsieh* (2025). “Development and Application of an Enhanced Building Circularity Indicator: A Pilot Study in Taiwan,” *Journal of Cleaner Production*, 145363, DOI: 10.1016/j.jclepro.2025.145363.

智慧設施管理中的預測性維護框架



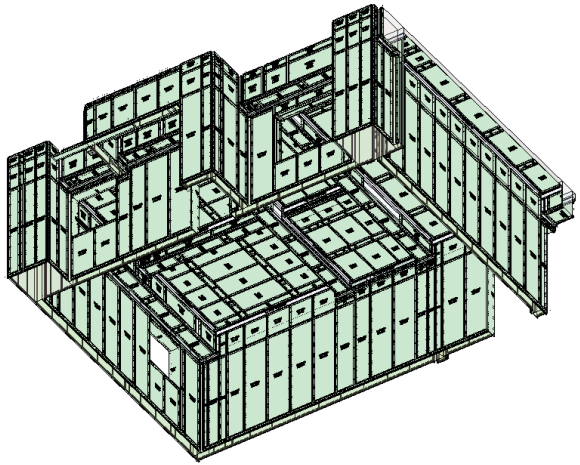
Huang, C. P., and S. H. Hsieh (2026). “Semantic Reasoning and Integration for Automating Predictive Maintenance in Smart Facility Management,” Advanced Engineering Informatics, 1, Part A, April 2026, 104240.

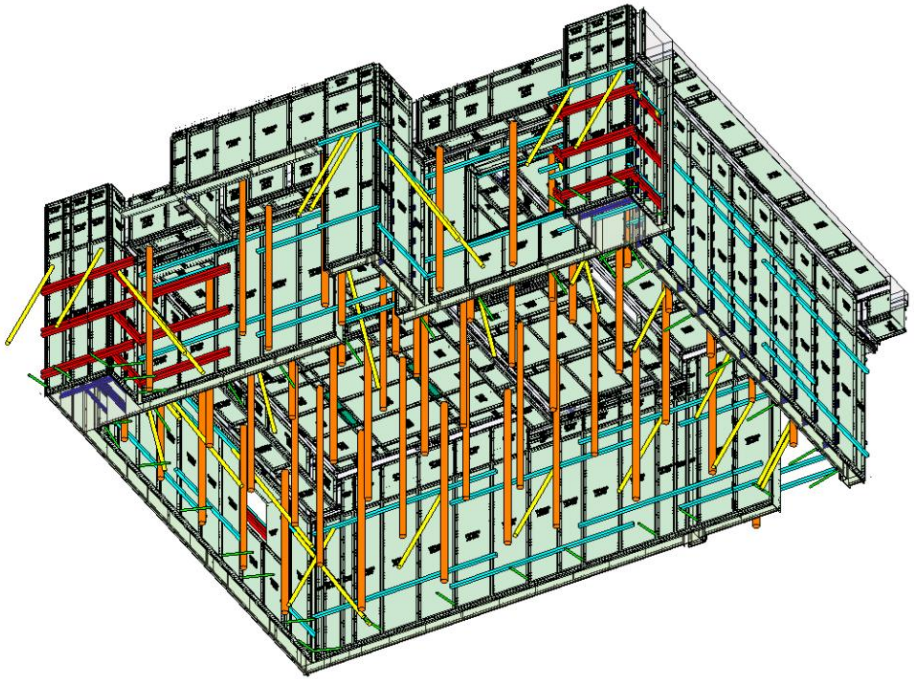
工地尺度



鋁模板系統智慧配模軟體研發

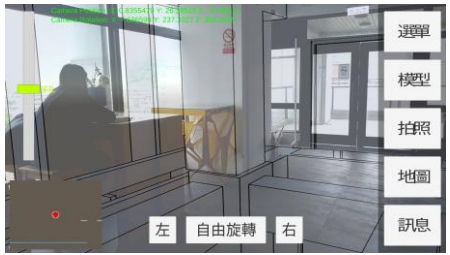


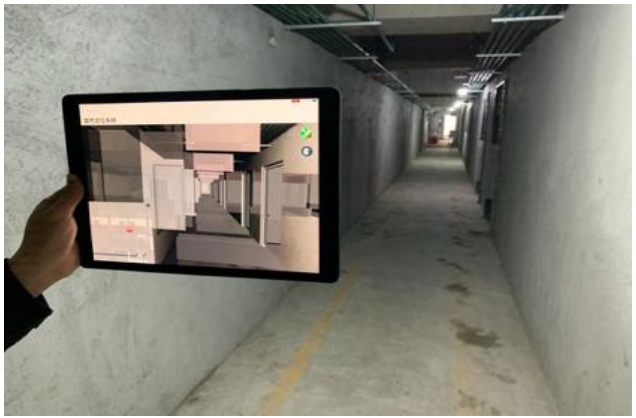




應用BIM+X於工程品質查驗

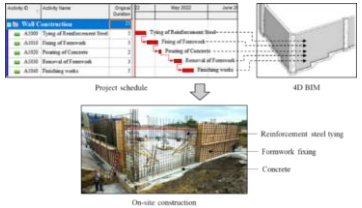




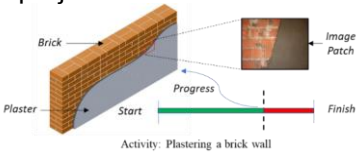


紀乃文、李雨澈、韓仁毓、謝尚賢*（2020），”基於攝影測量與建築資訊模型之半自動影像敷貼技術：以擴增實境方法輔助施工查驗”，*中國土木水利工程學刊*，第32卷，第5期，第397 - 405頁。
Kuo, W. L., B. K. Huang, and S. H. Hsieh (2025). “Integration of BIM and AR With VSLAM to Assist In Construction Site Inspection,” Journal of Civil Engineering and Management (to appear).

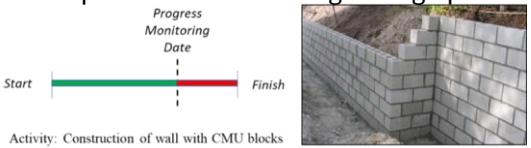
自動化工項百分比進度判讀

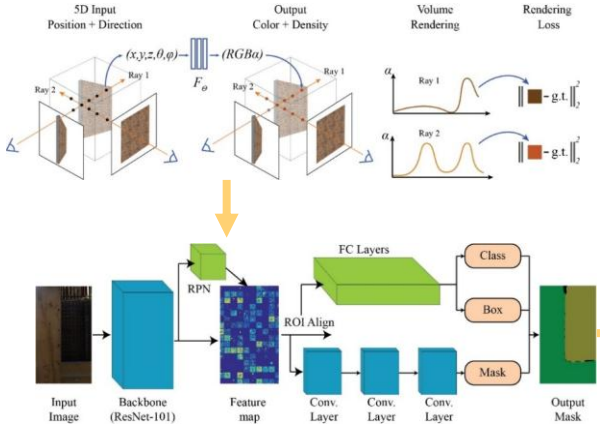


Many to one relationship between project schedule and BIM



Multiple materials on a single image patch







Class	mAP (IoU ≥ 0.5)	mAP (IoU ≥ 0.75)
Concrete	0.943	0.636
Formwork	0.944	0.915
Reinforcement steel	0.920	0.900
Steel structure	0.812	0.723
Floor tiles	0.916	0.721
Wall tile	0.866	0.750
Overall	**0.900**	**0.774**

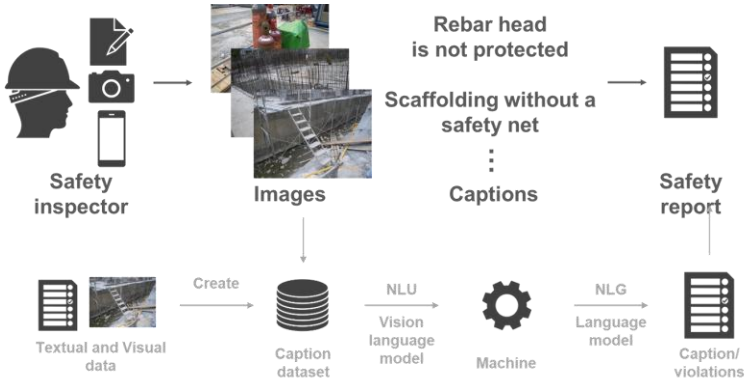
Partial completion of construction on the progress reporting date

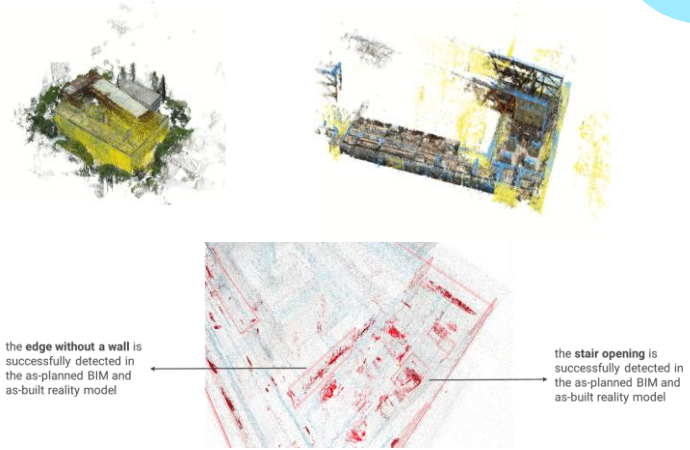
Pal, A., Lin, J. J., Hsieh, S. H., & Golparvar-Fard, M. (2024). Activity-level construction progress monitoring through semantic segmentation of 3D-informed orthographic images. *Automation in Construction*, *157*, 105157.

Pal, A., J. J. Lin, S. H. Hsieh, and M. Golparvar-Fard (2023). "Automated Vision-based Construction Progress Monitoring in Built Environment Through Digital Twin," *Developments in the Built Environment*, 16 (2023), 100247.

智慧化工程安全管理

- 開發自動化影像註解模型，協助工地環安衛巡檢效率提升及資料系統化。
- 自動辨識工地墜落相關潛在區域，並將工程現地之現實元件與BIM模型連結。





Tsai, W. L., P. L. Le, W. F. Ho, N. W. Chi, J. J. Lin*, S. Tang, and S. H. Hsieh (2025). “Construction Safety Inspection with Contrastive Language-Image Pre-training (CLIP) Image Captioning and Attention,” *Automation in Construction*, Vol. 169, January 2025, 105863.

智慧化營建排程自動規劃

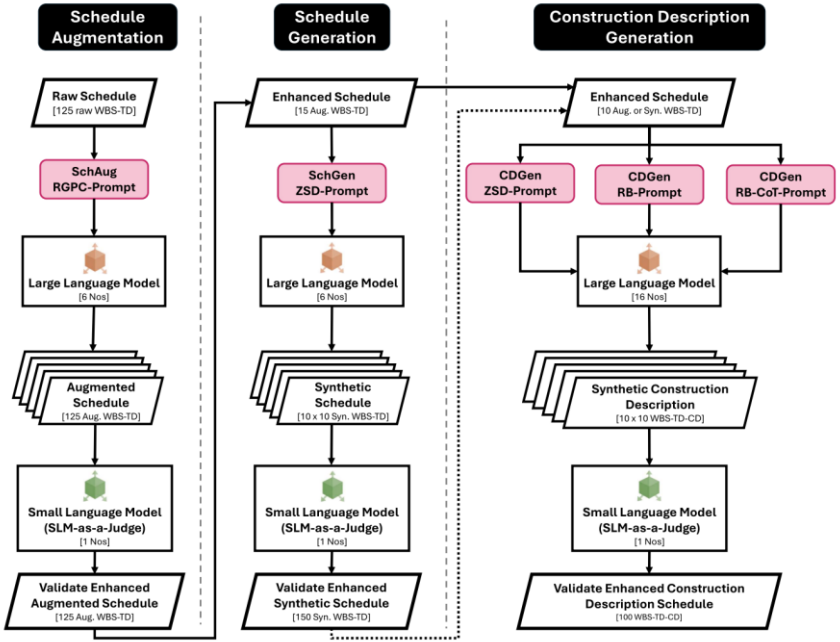


Fig. 10. Dataset Preparation Pipeline Across Schedule Augmentation, Generation, and Construction Task Description Generation.

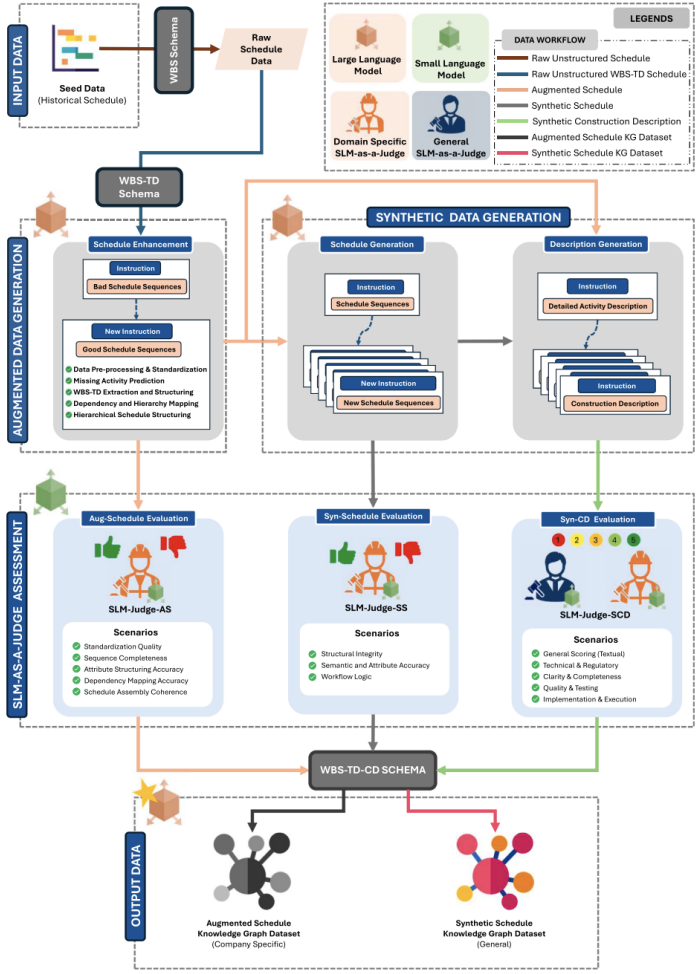


Fig. 1. Overview of methodology.

Singh, A. K., and S. H. Hsieh (2026). “Multi-LLM-Based Augmentation and Synthetic Data Generation of Construction Schedules and Task Descriptions with SLM-as-a-Judge Assessment,” Advanced Engineering Informatics, 69, Part A, January 2026, 103825.

校園尺度

永續校園智慧決策資訊整合平台

SDGs Campus Platform

Data Integration

Digital Campus

Data Visualization

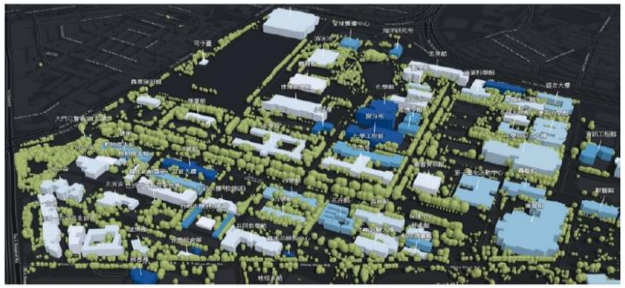
Decision Support

Data Governance

Open Campus

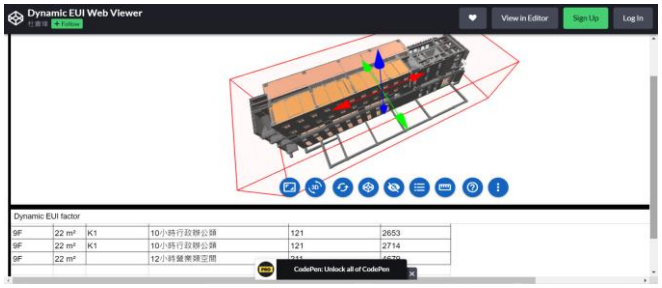
NTU SDGs





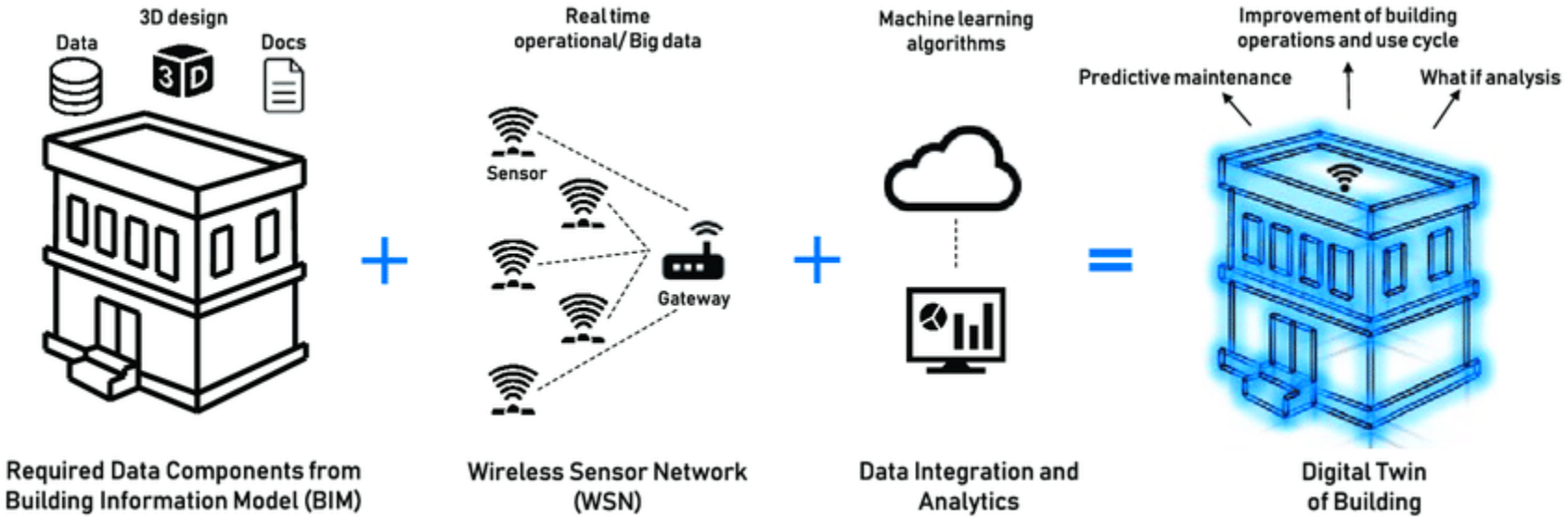






以大學校園建築GIS及BIM 3D模型為基礎，搭配物聯網(IoT)感測數據資訊整合技術，透過數位孿生(Digital Twins)視覺化呈現即時與模擬資訊，據以發展永續校園的智慧決策資訊整合平台。

淨零循環健康校園之數位雙生應用平台



都市/區域尺度

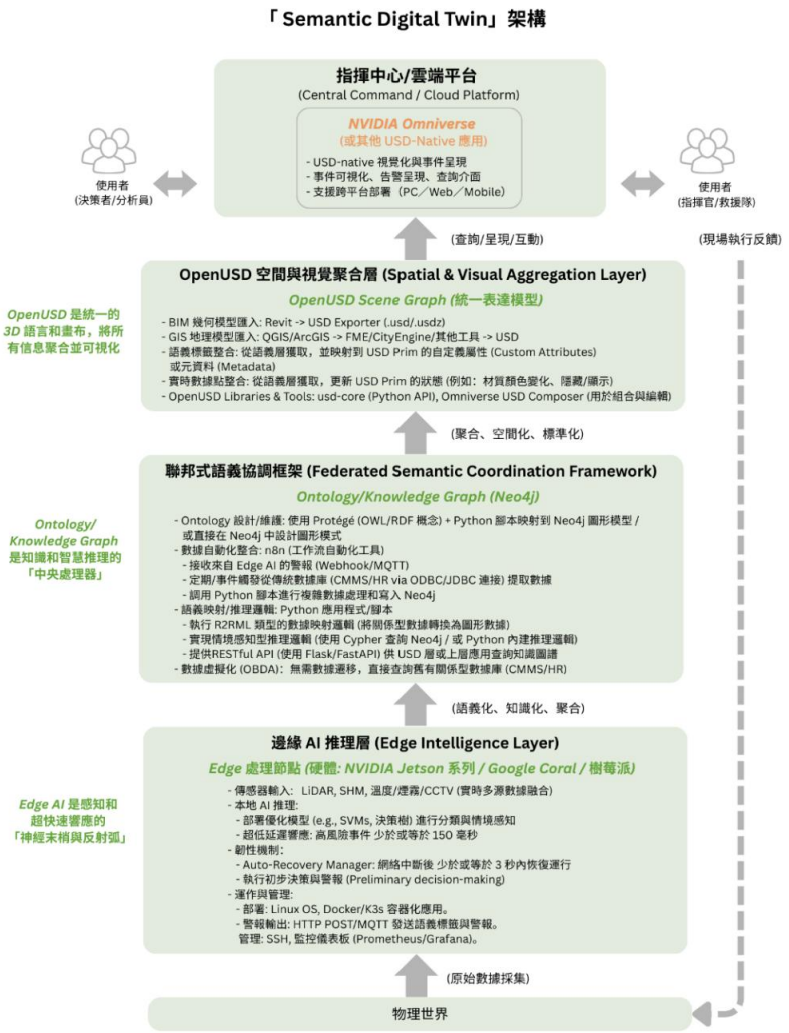


臺灣空間永續規劃之前瞻科技研究計畫共同示範場域計畫
(國科會計畫～2029)



都市地區共同場域情境與指標內容

大型複雜場域智慧人居數位孿生框架：語意事件驅動之邊緣自主與可稽核治理場景描述標準研究 (國科會計畫 ~ 2029)



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Thanks!

Do you have any questions?

shhsieh@ntu.edu.tw

