

June 2026

This Magazine is a Publication of the Asian Institute of Technology

TECHNOLOGY

Asian Outlook on Engineering & Technology

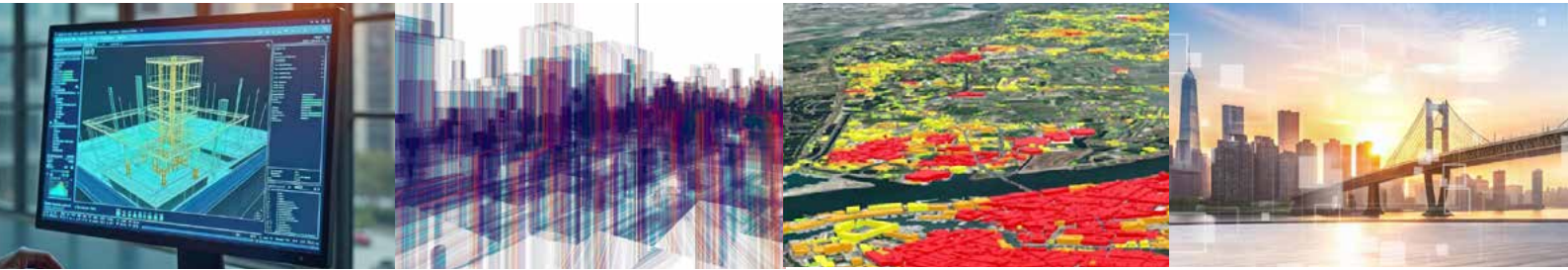


DIGITAL TRANSFORMATION OF INFRASTRUCTURE



June 2026

CONTENTS



04

The Role of Advanced Software in Modern Structural Design

Thaung Htut Aung

08

In Conversation Engr. Farhad Pazoki, Technical Director, egis-UAE, Dubai, United Arab Emirates. on Digital Transformation of Infrastructure in the Middle East

11

Infrastructure Inspection Technologies for Challenging Environments

Masayuki Shobuzako, Rupesh Machamasi & Haruna Ito

17

An Aspect of Digital Transformation in Infrastructure: A Geotechnical Perspective

Richard Moh & Hsiao-chou Chao

24

Digital Transformation of Infrastructure

AIT Solutions Editorial Team

27

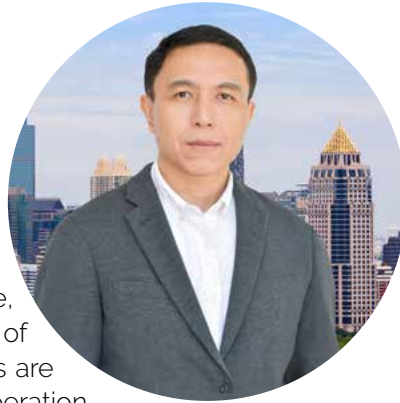
AIT Solutions News

ISSN 2286-9158

Technology Asian Outlook on Engineering & Technology, is published by AIT Solutions Asian Institute of Technology, 58, Moo 9, km. 42 Paholyothin Highway, Khlong Luang, Pathumthani 12120, Thailand

Copyright © 2026. AIT Solutions. All rights reserved.

Editor's Note



In the June 2026 issue of Technology Magazine, we focus on the theme of Digital Transformation of Infrastructure, exploring how digital technologies are reshaping the planning, design, construction, operation, and management of infrastructure assets across sectors including buildings, transportation, energy, water, and urban systems.

The articles featured in this issue highlight the application of advanced engineering software that enables professionals to model, analyze, and optimize complex structures with greater precision and efficiency. The contributors also examine emerging trends such as artificial intelligence, automation, digital twins, and cloud-based collaboration platforms that are influencing the future of structural and geotechnical engineering. While these technologies continue to advance rapidly, the importance of sound engineering judgment and ethical responsibility remains fundamental to ensuring safe, resilient, and sustainable infrastructure development.

Another important topic addressed in this issue is the growing challenge of aging infrastructure, workforce shortages, and increasing safety concerns in inspection and maintenance activities. These challenges are accelerating the adoption of innovative technologies, particularly advanced robotic solutions, for infrastructure inspection in complex and hazardous environments.

In our conversation with Engr. Farhad Pazoki, we discuss how digitalization is transforming the infrastructure ecosystem in the Middle East, the challenges associated with managing multinational project teams, and the evolving role of engineers in an increasingly connected construction environment.

I extend my sincere appreciation to all contributors for sharing their expertise, insights, and perspectives on emerging technologies and their practical applications in the infrastructure sector.

As a knowledge product of AIT Solutions, Technology Magazine serves as a professional communication platform for experts, practitioners, and researchers, providing insights into the latest technologies, industry developments, events, and innovations shaping the built environment.

We welcome your valuable feedback and look forward to continued engagement and meaningful discussions.

Thaug Htut Aung

Executive Director, AIT Solutions
Asian Institute of Technology
thaughtutaung@ait.ac.th

Editor in Chief

Thaug Htut Aung

Associate Editor

Justin Arnold Finch

Managing Editor

Jennifer Pangilinan

Layout and Design

Khattiyanee Khancharee

Contributors

AIT Solutions Editorial Team

Engr. Farhad Pazoki

Haruna Ito

Hsiao-chou Chao

Masayuki Shobuzako

Richard Moh

Rupesh Machamasi

Thaug Htut Aung



AIT Solutions
solutions@ait.ac.th
www.solutions.ait.ac.th



ACECOMS
acecoms@ait.ac.th
www.acecoms.ait.ac.th

58, Moo 9, km. 42 Paholyothin
Highway, Khlong Luang,
Pathumthani
12120, Thailand

Tel : +(662) 524 6388
: +(662) 524 5533
Fax : +(662) 524 6655

The Role of Advanced Software in Modern Structural Design



Advanced software has transformed modern structural design by enabling engineers to model, analyze, and optimize complex structures with greater precision and efficiency. Emerging trends such as artificial intelligence and cloud-based collaboration are further shaping the future of structural engineering by enhancing design accuracy, improving coordination, and supporting more sustainable engineering solutions.

Author:**Thaung Htut Aung**

Executive Director, AIT Solutions
Asian Institute of Technology

Introduction

Modern structural design process has evolved far beyond manual calculations and hand-drawn sketches. Today, advanced software tools are indispensable in engineering design workflow: Conceptual/Schematic Design, Design Development, and For Construction Drawings stages. These tools have transformed the way engineers approach complex structural challenges, enabling more precise modeling, analysis, and optimization than ever before.

Application of finite element method (FEM) in advanced structural analysis software allows the engineers to simulate the structural behavior of buildings and infrastructure under various loading conditions with precision and reliability. In addition, it enhances the visualization of structural geometry and responses for clear understanding and identification of weaknesses and errors in design. Software improves design optimization by allowing multiple design iterations, testing different structural systems, leading to cost effectiveness and sustainable material choices. Integration of BIM allows the architects, engineers of various disciplines to share the design information with minimum conflicts and improving coordination.

Examples

Modern structural design software encompasses a broad range of tools tailored to different aspects of engineering projects. These include general-purpose finite element analysis programs, specialized building and bridge design platforms, foundation and slab design tools, steel connection design, and integrated BIM solutions. Key features often include:

- Parametric modeling and design iteration support
- Linear and nonlinear material modeling capabilities
- Object-based modeling approach (beams, columns, and slabs) with automatic conversion into FEM model (with finite elements and meshes)
- P-delta analysis considering nonlinear geometric response
- Construction sequence analysis capabilities to check the response of the structure at various construction stages

- Linear and nonlinear static and dynamic analysis capabilities
- Linear and nonlinear link models for modeling of bearings, dampers and isolators
- Soil-structure interaction modeling
- Automated design load combinations and design optimization algorithms
- Reinforcement detailing, connection design and construction documentation generation

Technical Insights

Advanced structural software incorporates sophisticated numerical methods such as the finite element method (FEM) to discretize structures into elements for detailed structural analysis for deformation, stresses and force demands. Structures with complex geometry can be effectively modeled and rigorously analyzed to determine accurate and reliable structural responses appropriate for design.

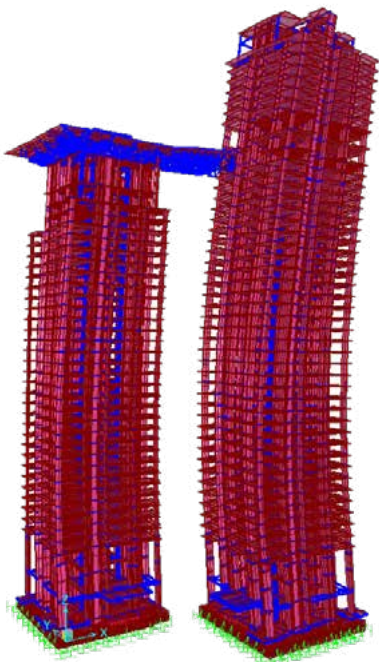
Beyond linear behavior, today's software offers nonlinear modeling and analysis features that simulate structural behavior under extreme loads, earthquake loading and progressive collapse. This includes capturing phenomena such as inelastic response of structural components, progressive collapse, and other critical failure mechanisms. Both geometric and material nonlinearities are incorporated: geometric effects evaluate stability and secondary forces, while material and component behaviors are modeled through fiber hinges, lumped plasticity elements, and specialized hysteresis models for cyclic loading. Nonlinear link elements further expand engineers' ability to study dampers, isolators, and other seismic protection

devices. Modeling input parameters defining nonlinear force–deformation relationships for materials, components, and systems are typically derived from laboratory test data.

Modern tools can evaluate structural response to time dependent forces—from earthquakes and wind to vibrations caused by people and machinery, using methods such as steady state analysis for frequency-dependent loads from the machines, linear and nonlinear response history analyses for loading over a specific time history such as earthquake ground shaking. These analyses can identify the resonance effects on the structure where the excitation frequency of the loading matches with the natural frequency of the structure.

A key evolution in recent years is the seamless integration of structural analysis software with Building Information Modeling (BIM) platforms. This connection enhances cross disciplinary collaboration, reduces design inconsistencies, and improves constructability. Coupled with

parametric modeling and optimization tools, engineers can quickly adjust the structural forms and optimize the structural geometries. By establishing relationships between components, changes in input parameters (e.g., spans, loads) instantly update the entire model, rapidly explore multiple design options, leading to more efficient, cost effective, and sustainable solutions.



Care to be Taken

While modern structural engineering software offers remarkable power and precision, its effectiveness ultimately depends on the quality of the information fed into it and the expertise of the engineer interpreting the results. Even the most advanced programs cannot replace sound engineering judgment.

To ensure reliable, and trustworthy outcomes, engineers must complement software generated results with essential manual checks. These include verifying global equilibrium through reaction checks, reviewing deflected shapes for logical behavior, confirming modal responses and mass sources, and validating boundary conditions and unit systems. Such spot checks serve as critical safeguards, ensuring that digital models reflect real world performance and that no subtle input errors compromise the integrity of the design.

When nonlinear modeling and analysis are performed, engineers must carefully verify the input parameters defining the nonlinear force–deformation relationships of structural components, as well as the adopted modeling approach, against available laboratory test data. For example, the hysteretic behavior of a structural component subjected to cyclic loading should be validated by developing a detailed FEM model that replicates the laboratory test conditions, including member geometry, boundary conditions, and loading protocol. The numerical responses obtained from the FEM analysis should then be compared with the experimental results reported in the relevant research literature to ensure consistency and reliability of the adopted nonlinear model.

Future Outlook

The next era of structural design software is being shaped by rapid advances in artificial intelligence and machine learning. These technologies are poised to automate complex design decisions, enhance risk assessment, and streamline engineering workflows. At the same time, cloud based platforms and real time collaboration tools are transforming how teams work together, making project coordination faster, more accessible, and more globally connected than ever before.

In the United States, the National Council of Structural Engineers Associations (NCSEA) initiated AI tool to answer questions based on a closed database that includes structural engineering-specific resources. For readers interested in exploring this evolving landscape, NCSEA provides a range of informative resources on the applications of AI in structural engineering:

- <https://www.ncsea.com/se-gpt/>
- <https://www.ncsea.com/foundation/innovation/artificial-intelligence-in-structural-engineering/#resources-and-initiatives>
- <https://ncsea.notion.site/Current-AI-Automation-Applications-1d680c019620801e98aaf917e753c1c8>

Conclusion

Advanced software has fundamentally transformed modern structural design by expanding the engineer's ability to model, analyze, and optimize increasingly complex structural systems with a high degree of accuracy and efficiency. Through the integration of sophisticated numerical methods, nonlinear analysis capabilities, and Building Information Modeling (BIM), these tools enable engineers to make informed design decisions that enhance safety, constructability, and sustainability. While the power of such software continues to grow driven by advances in automation and artificial intelligence, sound engineering judgment remains essential to ensure reliable and trustworthy outcomes. When used thoughtfully and responsibly, advanced software will continue to play a pivotal role in shaping resilient, efficient, and innovative structures, guiding the future of structural engineering toward smarter and more sustainable built environments.



• In Conversation •

Engr. Farhad Pazoki

Technical Director, egis-UAE,
Dubai, United Arab Emirates.



on Digital Transformation of Infrastructure in the Middle East

As infrastructure projects across the Middle East continue to scale in ambition, complexity, and speed, digital transformation is redefining how projects are planned, coordinated, and delivered. From Digital Twins and BIM-driven workflows to cloud-based collaboration and sustainability-focused engineering, technology is becoming deeply embedded across the infrastructure lifecycle.

In this edition of Technology Magazine, Engr. Farhad Pazoki shares his perspectives on how digitalization is reshaping the region's infrastructure ecosystem, the challenges of managing multinational project teams, and the evolving role of engineers in an increasingly connected construction environment.

Q From your perspective, how has digital transformation reshaped the planning, design, and delivery of infrastructure projects in the Middle East over the past decade?

A Digital transformation in the Middle East has transitioned from a visionary concept to an operational reality over the past decade. This shift is primarily driven by massive government-led "Giga Projects" like Saudi Arabia's 'NEOM' and the 'UAE's Vision 2030' initiatives, which treat digital infrastructure as a strategic enabler of economic growth. Digital transformation has fundamentally reshaped Middle Eastern infrastructure from a traditional "concrete and steel" model to a high-tech "digital ecosystem". This evolution is characterized by three key shifts:

- i. **From Physical to Virtual: Digital Twins & BIM:** Major projects like NEOM and the Red Sea Project now use "Digital Twins" to simulate entire urban ecosystems before construction begins. The adoption of Building Information Modeling (BIM) has moved from optional to mandatory in hubs like Dubai, resulting in a significant reduction in planning errors and significantly faster project delivery.
- ii. **Radical Gains in Efficiency & Cost:** Fully digitalized workflows have unlocked huge savings in construction costs and reduced project timelines. The UAE government's transition to 100% paperless operations saved millions in cost and man-hours in administrative work.
- iii. **Smarter Site Execution & Sustainability:** Drones are now almost standard for surveying, and Advanced energy modelings help projects achieve sustainability certifications (like LEED) faster by optimizing material use and reducing carbon emissions in building operations.

Q In mega and fast-track projects common in the Middle East, how do digital workflows help manage complexity, risk, and stakeholder coordination?

A In the Middle East's unique construction environment of mega and fast-track projects, digital workflows have transformed the construction industry into a highly coordinated landscape. By moving away from fragmented, analogue techniques, project teams leverage technology to mitigate risks inherent in projects. Utilizing Common Data Environments (CDE), data silos are eliminated and large projects are tracked in a single place. Digital construction methodologies allow

managers to convert project scopes into manageable components, simplifying the oversight of extensive, multi-layered supply chains. Digital tools also facilitate options such as modular execution, which separates interdependencies that typically cause massive delays in complex ecosystems. Cloud-connected workflows enable global teams to work on models simultaneously, reducing rework and increasing productivity.

Q With multinational design and review teams involved in Middle East projects, what are the key challenges in maintaining model consistency and engineering intent across different software platforms and design offices?

A When dealing with projects that involve design teams in London for example, engineers in New York, and contractors here in the Middle East, the biggest hurdle isn't just the distance, it's making sure everyone is looking at the same version of information. In my view it's less about the software itself and more about the management of the people and the processes using the software. Following issues are often encountered:

- Language barrier: We have to be incredibly disciplined about using universal file formats so that the 'intelligence' behind a design doesn't vanish during the handover.
- The 'Same Design Language' Problem: Every international firm has their own design conventions hence digital systems won't immediately recognize them as the same thing. enforcing international standards (like ISO 19650) to force a common 'digital vocabulary' on everyone from day one is fundamental.
- The 'Lag' Challenge: When massive amounts of data is being moved across the globe, there is always the risk of people working on outdated versions. Nowadays we rely heavily on cloud platforms to make sure that updates are incorporated for everyone in real-time.
- Preserving the Original Vision: As a project moves from an architectural concept to a technical engineering plan, and then to the construction site, the 'soul' of the project can get buried under technicalities. The challenge is ensuring the digital model protects the original design intent throughout the entire lifecycle.



Q **What new skill sets are becoming essential for engineers and project managers in a digitally transformed infrastructure environment?**

A In a digitally transformed environment, the role of an engineer or project manager has shifted from managing physical tasks to overseeing sophisticated digital processes. While technical literacy is fundamental, the most essential new skill sets are data-driven, ensuring technology is used with strategic purpose.

Q **How important is collaboration between consultants, contractors, technology providers, and academia in accelerating digital transformation in infrastructure?**

A In my view, this isn't just "important", it is the only way forward. In the Middle East, we are building projects at a scale and speed that have never been attempted before and no single entity, no matter how large, has all the answers. I see this collaboration as a four-way partnership where each player provides a vital contribution, without it, we are just buying expensive software without a plan. Technology providers build tools for our specific climate, consultants and contractors share data transparently rather than working in silos, and academia prepare a workforce that is "digital-ready" from day one. True transformation happens in the "handshake" between these groups, turning individual innovations into a standardized, regional ecosystem that reduces risk and accelerates delivery for everyone.

Infrastructure Inspection Technologies for Challenging Environments



Aging infrastructure, workforce shortages, and growing safety concerns are driving the adoption of innovative technologies, particularly advanced robotic solutions, to transform infrastructure inspection in complex and hazardous environments.

Authors:



Masayuki Shobuzako
Team Lead,
FUNNOVATE LAB, Eight-Japan
Engineering Consultants Inc.



Rupesh Machamasi
Development Chief
FUNNOVATE LAB, Eight-Japan
Engineering Consultants Inc.



Haruna Ito
PR/Sales&Marketing
FUNNOVATE LAB, Eight-Japan
Engineering Consultants Inc.

Introduction

Japan's social infrastructure is aging rapidly, as most of it was constructed during the period of intensive development in the high economic growth era (1955–1973). To prevent serious accidents, preventive maintenance has become an urgent priority. Since 2014, the Ministry of Land, Infrastructure, Transport and Tourism, Japan (MLIT) has mandated periodic close visual inspections of bridges and other structures every five years, promoting a shift toward preventive maintenance.

However, severe budget constraints and personnel shortages make it difficult to inspect the vast number of facilities using conventional methods alone. Consequently, there is a growing demand for technologies that streamline

inspection tasks. Initiatives such as "i-Construction" are promoting ICT, while new regulatory frameworks permit the use of remote technologies—such as drones and underwater robots—provided they can acquire data equivalent to close visual inspections.

In this context, various inspection robots have been developed in Japan, with rising demand for automation in confined or hazardous environments where human access is restricted. However, site conditions vary widely, ranging from flooded culverts to shallow waters and debris-strewn areas, limiting the versatile use of any single robot. Consequently, selecting optimal mobility and deploying appropriate robot for site-specific requirements remains a major challenge.

To address these diverse field conditions, our innovative technology/product development team, named "FUNNOVATE LAB" of Eight-Japan Engineering Consultants Inc. as a civil engineering consulting firm, has been developed two specialized robotic platforms. This article introduces the technical features and field applications of **a modular boat-type drone** designed for mobility and stability in waters, and **a crawler robot** capable of operating in harsh terrain and shallow waters where boats cannot navigate.

Modular Boat-Type Drone "Flemolar"

1. Development Background and Objectives

Most conventional surface drones (USVs) used for infrastructure maintenance are specialized for specific site conditions or purposes. Consequently, surveying different environments requires transporting multiple units, resulting in significant labor for logistics and setup.

Furthermore, traditional hull designs face a trade-off between stability in wavy open waters (requiring larger hulls) and maneuverability in confined spaces (requiring smaller hulls). Additionally, inspection equipment is often fixed to specific units, limiting sensor sharing and operational flexibility.

"Flemolar" is developed to overcome these challenges by enabling a single platform to adapt to diverse field conditions while improving transport and deployment efficiency.

2. Key Features

a. Modular and Reconfigurable Design

The hull length can be adjusted from approximately 65 cm to 140 cm, depending on the site conditions (Fig. 1). This reconfigurable design, combined with interchangeable attachments, allows a single vessel to provide both maneuverability in narrow spaces and stability in wind and waves. Furthermore, the modular components enable the entire system to be disassembled for compact storage and transport (Fig. 2).



Figure 1: *Left:* Short configuration (Length: 65–90 cm)
Right: Long configuration (Length: 90–140 cm)



Figure 2: Compact storage via modular structure

b. High Versatility for Multipurpose Surveys

Despite its lightweight design (approx. 5 kg), the platform offers high extensibility tailored to inspection objectives. It can be equipped with waterproof gimbal or 360-degree cameras for structural imaging above the waterline, or 3D sonar for acquiring underwater topographic data. This versatility enables a single unit to collect comprehensive data both above and below the water surface.

c. Non-GPS Long-Range Communication

In GPS-denied spaces like confined culverts, a 0.2-mm ultra-fine optical fiber cable connects—the drone, onboard camera and controller (Fig. 3). This enables high-definition, real-time video transmission even in shielded areas, ensuring reliable situational awareness. This technology extends the inspection range to extensive culverts spanning several kilometers.



Figure 3: *Optical fiber camera system*

3. Case Studies

a. Port Facility Pier Inspections

Conventional surface drones are often susceptible to waves and wind, leading to risks of capsizing or distorted imaging.

In this survey, stability was ensured by extending the hull to its maximum length of 140 cm. Furthermore, by equipping the drone with a waterproof 30x optical zoom camera and a high-performance gimbal (Fig. 4), high-resolution images of the structures were successfully captured even in wind speeds of 10 m/s. This system demonstrated the ability to identify fine cracks as narrow as 0.1 mm (Fig. 5).



Figure 4: *Bridge inspection using a waterproof gimbal camera*



Figure 5: *Confirmation of 0.1-mm cracks (PCT girder)*

b. Pump Station and Culvert Inspections

The target pump station (Fig. 6) has a narrow entrance (2.6 m wide x 1.0 m high) and a complex internal waterway structure, making conventional drones difficult to maneuver. Additionally, signal blockage in confined culverts—often causes video loss, hindering drone tracking and internal assessment. In this survey, the minimum hull length was deployed to

enable precise on-the-spot turns and lateral movements (Fig. 7). Furthermore, Fiber-optic communication ensured long-distance real-time video transmission, proving the system's effectiveness in non-GPS and radio-shielded environments.



Figure 6: *Survey in a confined sewage pump station*



Figure 7: *Imaging interior of a pump station*



Figure 8: *Conducting Sonar survey*

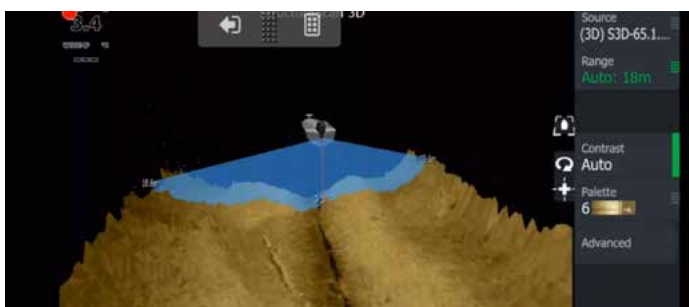


Figure 9: *Acquired 3D topographic data*

c. Underwater Topography and Scour Surveys

Conventionally, visual inspection of structures above the waterline and surveys of underwater scour or topographic changes required separate vessels. In this survey, we equipped the drone with 3D sonar (Fig. 8) to acquire three-dimensional topographic data (Fig. 9). This confirmed that a single vessel can perform both surface and underwater surveys, significantly streamlining the investigation process.

Crawler Robot

1. Development Background and Objectives

While boat-type drones are effective for water-based infrastructure, environments such as dry or shallow culverts and debris-strewn post-disaster sites remain inaccessible to surface vessels. In such conditions, conventional floating vessels cannot operate, often necessitate hazardous manual inspections by workers and causing delayed responses due to the time required to ensure personnel safety.

The crawler robot was developed to fill these "inspection gaps" By combining climbing capabilities with a waterproof design, the robot ensures safe and reliable inspections. Additionally, its modular sensor system provides the flexibility to adapt to diverse field conditions.

2. Key Features

a. High Terrain Adaptability and Durability

The robot features a powertrain capable of climbing 35–40 degree slopes, ensuring stable navigation over debris and uneven terrain (Fig. 10). Its dustproof and waterproof features allow the entire unit to be washed after use, maintaining functionality and long-term durability even after use in harsh environments.



Figure 10: *Navigation over debris and slopes*

b. Flexible Communication Options

Operators can choose between wireless and wired communication depending on site conditions. In confined spaces like concrete culverts where wireless signals are unstable, an optical fiber cable connects to the onboard gimbal camera. This ensures stable, high-definition real-time video for visual inspections, unaffected by signal shielding.

c. High Payload Capacity and Extensibility

With a significant payload capacity of up to 15 kg, the robot can be equipped with various instruments tailored to inspection objectives. Beyond gimbal and 360-degree cameras, the platform supports high-brightness LED lights for dark areas and gas sensors for detecting toxic fumes, allowing for an optimal configuration based on site risks and survey requirements.

3. Case Studies

a. Post-Disaster Underground Inspections

Following heavy rain, the target underground parking garage presented several challenges: total darkness due to damaged lighting, standing water several centimeters deep, and potential toxic gases from decaying organic matter. Furthermore, manual inspection posed significant risks, including secondary disasters, health hazards from contamination, and reduced visibility caused by personnel stirring up sediment (dust and mud). In this survey, a crawler robot equipped with a 360-degree camera and LED lighting was deployed for remote imaging (Fig. 11), effectively eliminating human risk through unmanned technology. Additionally, the crawler's steady movement minimized sediment disturbance, enabling the acquisition of clear video even in unstable environments (Fig. 12).



Figure 11: *Crawler robot with 360-degree camera and LED*



Figure 12: *Parking Site-imaging via crawler robot*

b. Inspections of Shallow and Confined Culverts

The target culvert was extremely shallow (depths of several to a dozen centimeters), making it impassable for conventional boat drones due to grounding risks. Conversely, the interior was too narrow for manual inspection, severely limiting available survey methods. In this survey, the crawler robot was equipped with a waterproof gimbal camera (Fig. 13), achieving stable navigation and omnidirectional imaging across shallow water and uneven surfaces, unaffected by water resistance or obstacles (Fig. 14).

Conclusion

This report presented the development and application of a "modular boat-type drone" and a "crawler robot." These technologies address the pressing challenges facing the construction sector, including aging infrastructure, labor shortages, and increasingly harsh inspection environments. By strategically deploying these two robotic platforms, we confirmed that safe and efficient inspections can be conducted in environments previously inaccessible to humans—such as confined waterways, hazardous post-disaster sites, and non-GPS environments. The high versatility of these systems—allowing for optimized hull shapes, onboard equipment, and communication methods—is particularly effective for diverse infrastructure types.

Moving forward, we will continue field trials to further enhance data precision and navigation performance. Furthermore, by integrating AI-driven damage detection, we aim to automate the entire workflow, from data acquisition to the identification and evaluation of structural anomalies.

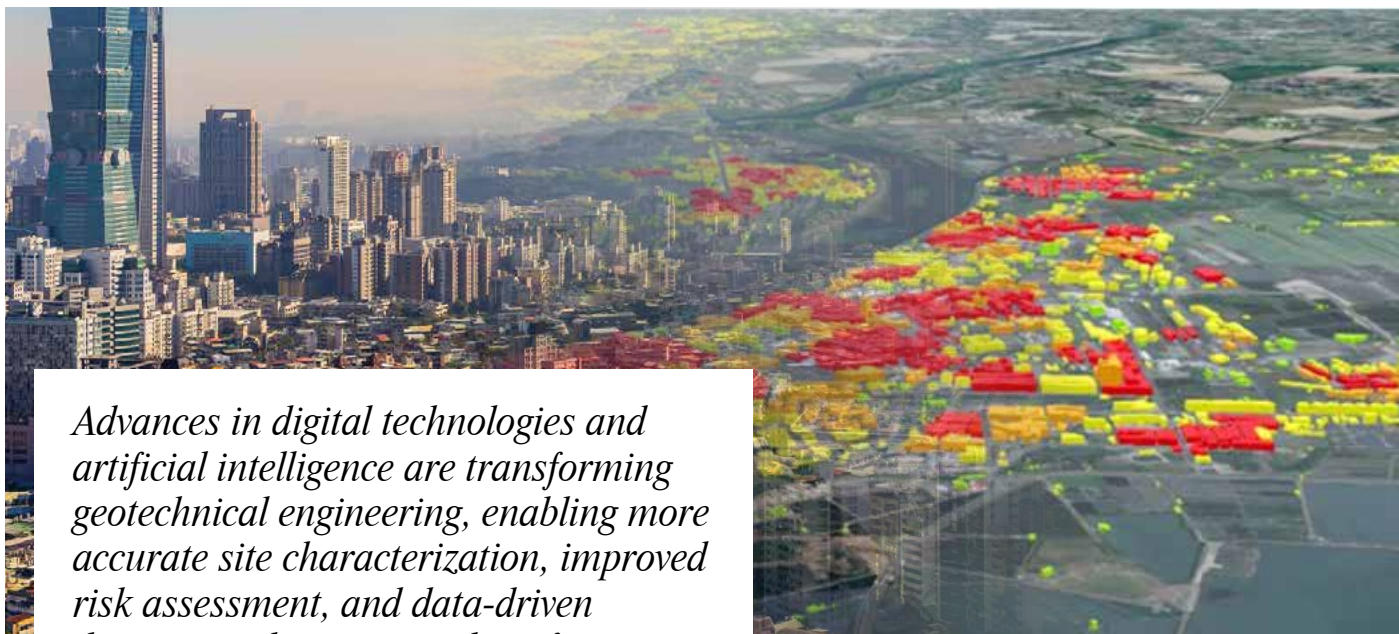


Figure 13: Crawler robot equipped with a gimbal camera



Figure 14: Imaging interior of a culvert using a gimbal camera

An Aspect of Digital Transformation in Infrastructure: A Geotechnical Perspective



Advances in digital technologies and artificial intelligence are transforming geotechnical engineering, enabling more accurate site characterization, improved risk assessment, and data-driven decision-making across the infrastructure lifecycle. Integrated tools such as GIS, drones, BIM, and machine learning are enhancing design efficiency and reducing uncertainty in complex ground conditions. As these innovations reshape practice, maintaining strong engineering judgment and ethical responsibility remains essential to ensure safe and resilient infrastructure development.

Authors:



Richard Moh
Chairman, MAA Group Consulting Engineers



Hsiao-chou Chao
Director of Advanced Engineering Unit, Moh and Associates, Inc.

Preface

As of early 2026, more than 6 billion people—representing over 74% of the world's population—are active internet users, reflecting an unprecedented level of global connectivity. In parallel, generative AI platforms such as ChatGPT, Gemini, DeepSeek, Perplexity AI, and GitHub Copilot collectively serve over 1.3 billion monthly users worldwide. At the same time, the number of IoT-connected devices has exceeded 21.9 billion globally as of 2025 and is projected to reach 30–40 billion by 2030, further expanding the scale of data generation (OpenAI, 2026). This is a readily observable phenomenon that the AI tools have span the full engineering workflow—from data acquisition and analysis to design, visualization, and decision-making—enabling a fully digitalized infrastructure lifecycle.

Throughout history, when the world undergoes transformation, those who fail to keep pace risk being replaced or rendered obsolete; geotechnical engineering is no exception to this pattern.

Retrospective of the advancement of geotechnical engineering

Geotechnical engineering, a branch of civil engineering, may also be defined as the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of humankind (American Society of Civil Engineers [ASCE], 1961).

The birth of modern geotechnical engineering can be traced to the early 20th century, with Karl Terzaghi widely

recognized as the founding father of the discipline. Following the rapid technological advances driven by wartime demands between the 1940s and 1960s, geotechnical engineering experienced significant growth. From the 1960s to the 2010s, numerous sub-disciplines emerged, such as rock engineering, numerical methods, reliability-based design, performance-based engineering, observational and monitoring-assisted design, and so on.

Entering the 2020s, the world has stepped into the era of artificial intelligence and digital transformation. As with other fields of civil engineering, sustainability and resilience have become central goals of geotechnical engineering, shaping both current practice and future development. Table 1 provides a brief summary of the advancements in geotechnical engineering over the past 100 years.

Table 1: A brief summary of the advancement in geotechnical engineering

Era	Advancement	Key Breakthrough
1920s~1940s	Birth of geotechnical engineering	Effective stress principle Consolidation theory Shear strength concepts
1940s~1960s	Engineering practice & war-time acceleration	Observational method Learning from failures & performance
1960s~1980s	Mechanics, Rock Engineering, & Numerical Methods	Critical State Soil Mechanics Stress-path dependent behavior
1980s~2000s	Computing, Reliability, & Ground Improvement	Finite Element Method (FEM) Finite Difference Method (FDM)
2000s~2010s	Performance-based & monitoring auxiliary observational design	Reliability and performance-based design Mega project
2010s~present	Digital, AI and Sustainable development	Carbon-reduction solution Life-cycle performance Resilient & adaptive design

Ongoing development and future trends

In the mid-2020s, digital technologies have matured into practical and robust tools for addressing complex challenges in geotechnical engineering. Liquefaction risk evaluation, for example, can now be effectively performed through the integrated application of GIS, drones, and BIM. Figure 1 illustrates the Urban Hazard

Preventing Management Geomatics 2.0 platform developed by MAA Group Consulting Engineers (Weng et al., 2025). Built upon an integrated framework, the platform enhances analytical accuracy, improves visualization, and facilitates more informed engineering decision-making.

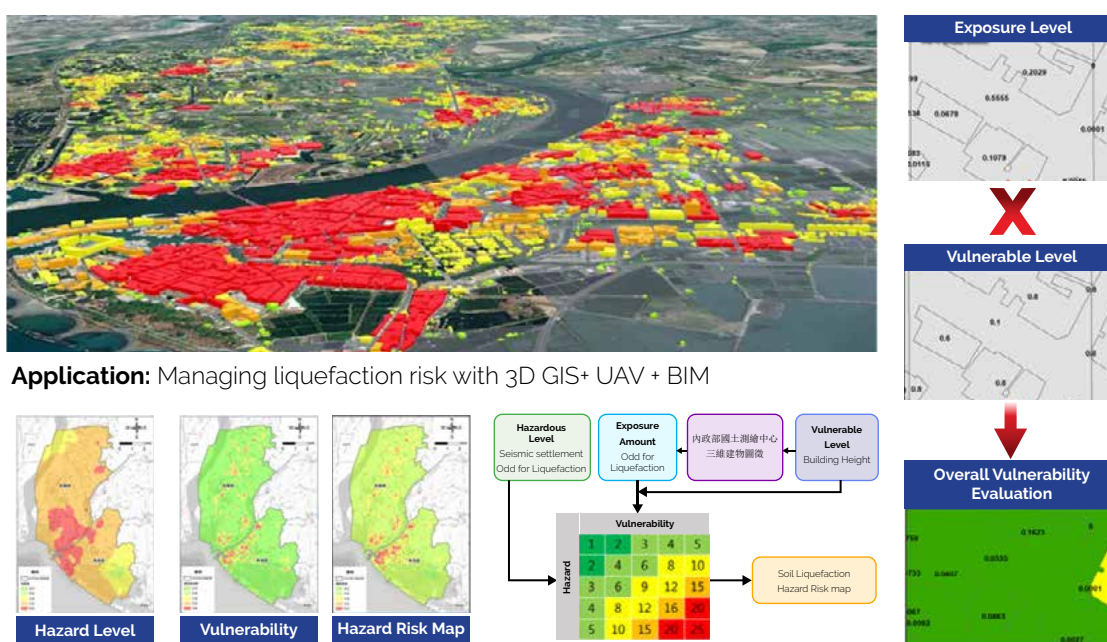


Figure 1: Liquefaction Risk Management with integrated 3D GIS, UAV, and BIM

Figure 2 illustrates another integrated application, trademarked as iSlope, developed by MAA Group Consulting Engineers for slope hazard prevention (Chen et al., 2026). Through the combined use of 3D geological modeling, LiDAR, drones, and InSAR, the system significantly enhances the ability to identify instability mechanisms, monitor ground movements, and implement proactive mitigation measures.

An AI-based application for soil characterization has been developed using machine learning algorithms, based on the MAA soil database, through a collaborative effort between the AIT GTE Division and MAA Group Consulting Engineers. As shown in Figure 3, the soil layers comprising the investigated ground can be continuously and spatially delineated using a limited number of boreholes and data from nearby boreholes. Unlike traditional approaches,

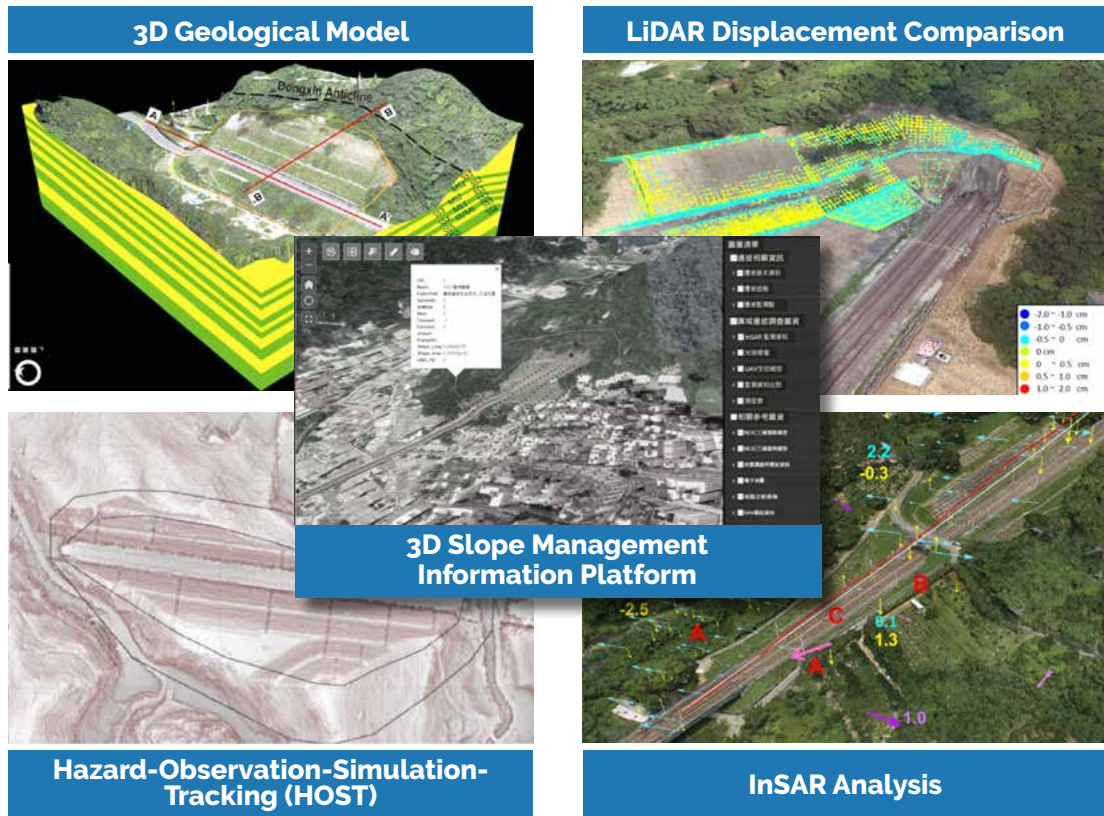


Figure 2: Slope - slope land hazard prevention system

this method can identify zones where soil layers thin out, thereby reducing the need to infer subsurface conditions between boreholes through interpolation. Most importantly, it significantly reduces uncertainty in soil characterization.

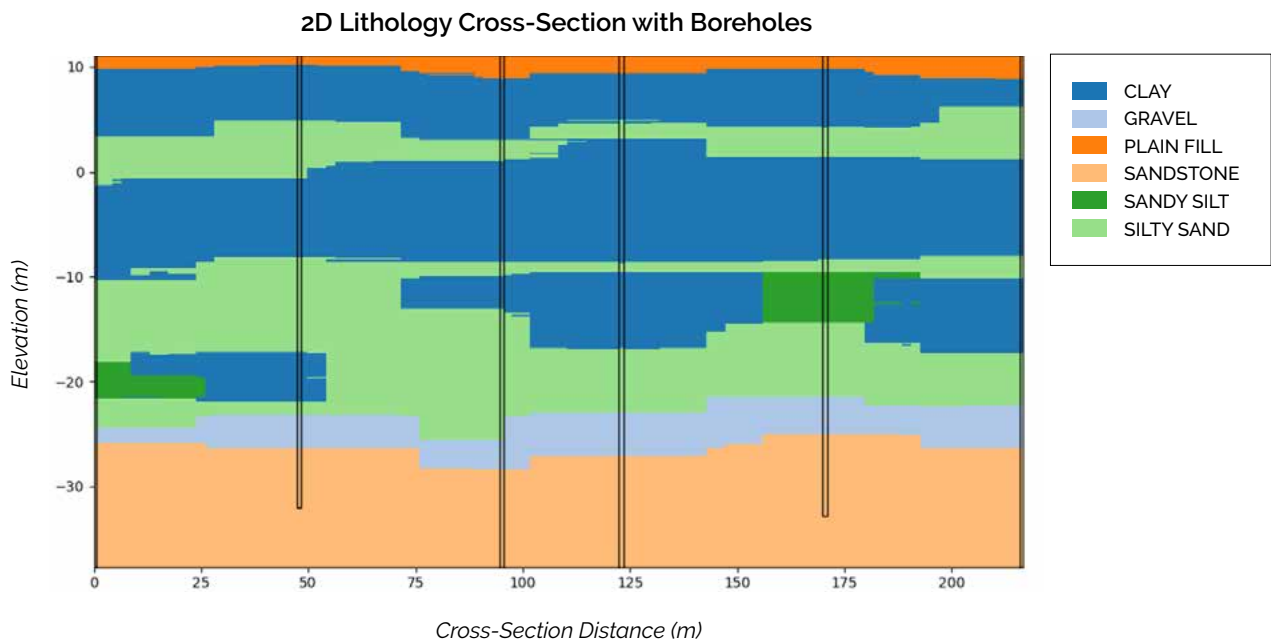


Figure 3: A Data-Driven AI Application for Ground Characterization (Ishara, 2026)

A comprehensive, data-driven AI application package for deep excavation analysis, as illustrated in Figure 4, was developed for practical implementation. The package comprises five modules: data calibration (Hwang and Moh, 2010, and Chao et al.,

2010), numerical simulation, numerical model calibration (Calvello and Finno, 2004), parameter learning, and AI-based prediction (Chen et al., 2024). Each module can be operated either independently or in an integrated manner.

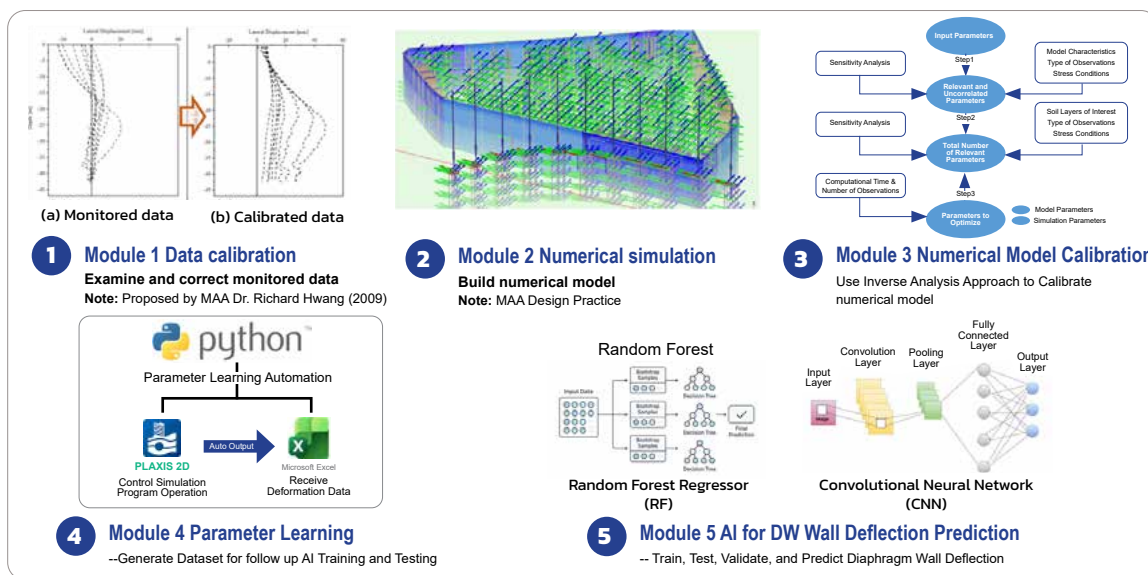


Figure 4: A Data-Driven AI application package for deep excavation analysis

With input parameters representing the geometrical layout, soil conditions, and structural properties, Module 5 of the AI package can be implemented independently for rapid prediction of diaphragm wall deflection (Chen et al., 2024). The prediction results can serve as a reference for construction planning and establish a baseline for the protection of adjacent buildings. The functions of Module 5, along with the required input parameters and expected outputs, are illustrated in Figure 5.

- Functions**
- Quick evaluation of diaphragm wall (DW) deflection
 - Reference for construction scheme
 - Baseline for adjacent building protection

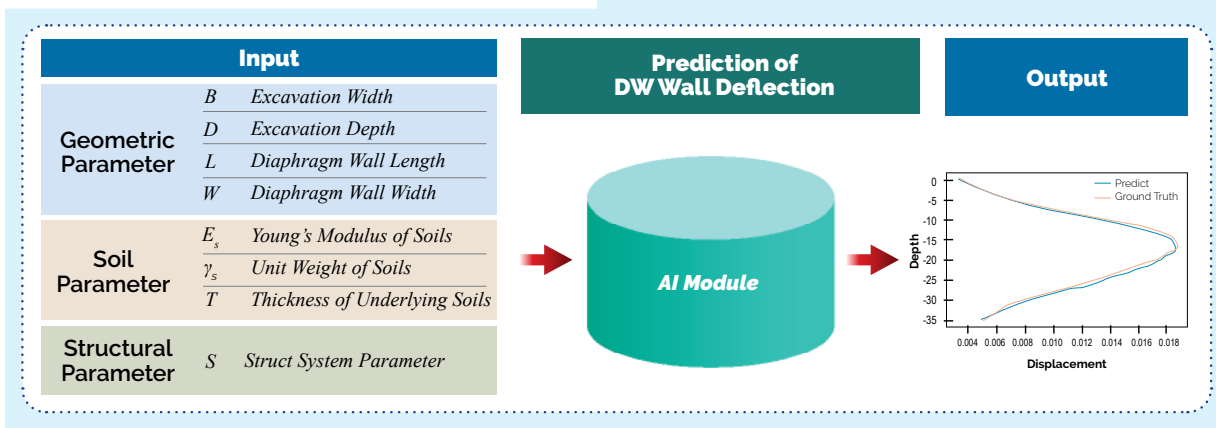
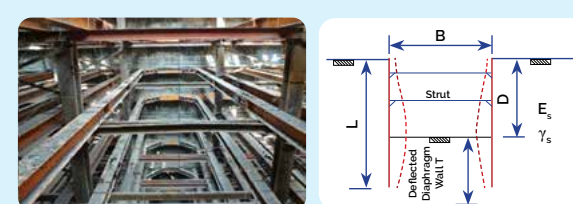


Figure 5: Module 5 – AI for prediction of diaphragm wall deflection

Against the backdrop of the global digital landscape and rapid AI adoption, the application of AI in geotechnical engineering shows significant promise. It is anticipated that future advancements will be driven by six key domains:

- Site characterization and ground modeling – which involves AI-assisted interpretation of subsurface data, integration of multi-source geotechnical information, and probabilistic ground modeling.”
- Design optimization – including AI-driven parameter selection, optimization of foundation and excavation designs, and enhancement of performance-based design.
- Smart construction – which focuses on real-time monitoring, automated quality control, and adaptive construction management through the use of sensor data and machine learning.
- Design support – encompassing AI-assisted decision-making, preliminary design automation, and expert system-based engineering support tools.
- Predictive analytics – for maintenance, covering condition assessment, performance forecasting, and early warning systems for infrastructure deterioration.
- Geotechnical risk management – involving AI-enabled risk identification, uncertainty quantification, scenario analysis, and decision support for risk-informed engineering.

Challenges and opportunities

The advancement of AI in geotechnical engineering presents unprecedented opportunities to accelerate progress toward previously unattainable frontiers. At the same time, it introduces new challenges that

must be carefully understood, addressed, and responsibly managed. Some of these challenges are outlined below.

- Changing role of engineering judgment, as human expertise must be redefined in collaboration with AI.
- Risk of deskilling, particularly in fundamental engineering reasoning and experiential learning.
- Reshaping the ethical framework of engineering practice, including accountability, transparency, and responsible use of AI in safety-critical decisions

Although the challenges and their potential solutions remain under exploration and development, several fundamental observations can be regarded as immutable.

AI is effective in pattern recognition but does not substitute for engineering judgment; it identifies correlations rather than causation, and human reasoning, professional responsibility, and ethical decision-making remain essential. AI does not eliminate uncertainty but enhances its quantification and management, recognizing that uncertainty is inherent in geotechnical engineering. Its principal value lies in enabling connectivity across data, models, monitoring systems, and engineering experience throughout the project lifecycle.

Expectation of Future Engineers

Inspired by Leonardo da Vinci’s Vitruvian Man, the expectations for engineers in the digital renaissance era can be illustrated in Figure 6. This framework emphasizes the harmonious integration of art, science, and mathematics, enabled by advanced digital technologies and AI-driven tools. At its center is EPIC—the philosophy articulated by Za-Chieh Moh in his address at the 85th Commencement Ceremony of the Asian

Institute of Technology in 1999 (Moh, 1999), and further developed by Richard Moh in the theme lecture of the Dr. Za-Chieh Moh Memorial Symposium (Moh, 2025). The framework highlights alignment with nature, empowerment through technology, and guidance by continuous self-development. It represents a gateway to the era of digitalization and artificial intelligence, where technological advancement must remain anchored in human values and professional responsibility.

Acknowledgement

The authors would like to express their sincere appreciation to their colleagues at MAA Group Consulting Engineers for their valuable input and feedback during the preparation of this manuscript.

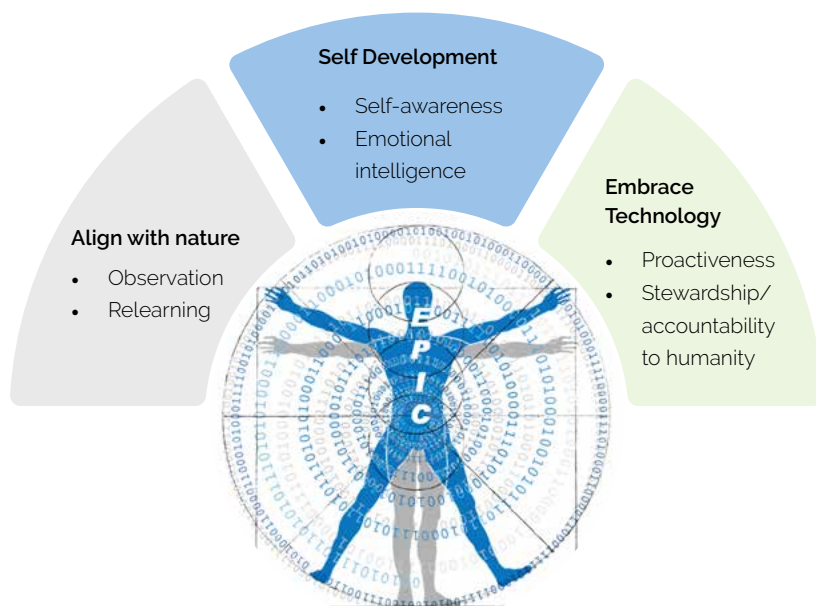


Figure 6: *The Vitruvian Man in the era of digital renaissance*

References

- OpenAI ChatGPT 5.3, May 2026, <https://chat.openai.com/>
- Chen, J.Y., Hsu, C.F., Chou, C.R. (2026), "A Case Study on Slope Risk Management Using iSlope", *The Magazine of the Chinese Institute of Civil and Hydraulic Engineering*, Vol 53, No.1 Feb 2026.
- Weng, S.C., Cheng, W.S., Liu, Y.Y., Hsu, C.F., Yu, C.J., Chou, C.R. (2025), *2025 Cross-Strait Geotechnical Engineering and Technology Exchange Symposium, Taichung, Taiwan, November 2025.*
- Ishara, P.K. Hashan, Chao, K.C., Chao, H.C., Puttiwongrak, A., Ge, L. (2026), "Comparative Stratigraphic Classification Using Conventional Hand Sketching, 3D Geological, and AI-Based Techniques", Available at SSRN: <https://ssrn.com/abstract=6177394> or <http://dx.doi.org/10.2139/ssrn.6177394>, Feb 2026.
- Calvello, M., & Finno, R. J. (2004), "Selecting parameters to optimize in model calibration by inverse analysis", *Computers and Geotechnics*, 31(5), 410–424.
- Hwang, R.N., Moh, Z.C. (2010), "Performance of Deep Excavations in the Taipei Basin", *ER 2010 Earth Retention Conference 3, August 1-4, 2010, Bellevue, Washington, USA.*
- Chao, H.C., Hwang, R.N., Chin, C.T. (2010), "Influence of Tip Movements on inclinometer Readings and Performance of Diaphragm Walls in Deep Excavations", *ER-2010 Earth Retention Conference 3, August 1-4, 2010, Bellevue, Washington, USA..*
- Chen, C.S., Chen, Y.C., Chao, H.C., Chang, Y.H., Liu, C.H., Yu, C.H., Hung, C. (2024), "A verification tool for deep excavation design assessment based on AI", *Proceedings of Geotech 2024, 26-28 August 2024, Tainan, Taiwan.*
- Moh, Za-Chieh (1999), "The Engineers of Society", 85th Graduation Address at the Asian Institute of Technology, Bangkok.
- Moh, Richard (2025), "Digital Renaissance Engineer", Theme Presentation, Dr. Za-Chieh Moh Memorial Symposium, 22 May 2025, Taipei.

Digital Transformation of Infrastructure



By AIT Solutions Editorial Team

Digital Transformation of Infrastructure: A Brief Timeline

Infrastructure has always been the backbone of economic and social development. From highways and bridges to power plants and ports, infrastructure represents the physical assets that are massive, visible and mechanical systems that enable connectivity and growth. Digital technology, though present some decades back, existed separately in offices and limited to standalone computers. Over the decades, this separation has disappeared with computer applications evolving into fully integrated digital ecosystems that are now shaping how the infrastructure is designed, delivered, and managed.

1970s-90s: The First Steps in Digital Adoption

In the 1970s-90s, infrastructure projects were primarily driven by manual drawings, site instructions, hand calculations, and physical supervision, while digital technology served mainly as a support function rather than an integrated part of

the infrastructure delivery. In this phase early structural software and analytical programs began assisting engineers. Though these tools were far less advanced than today's platforms, they demonstrated that computer-based calculations could improve precision in complex engineering systems.



Notable Project of this Period: Willis Tower (Sears Tower), Chicago

Early structural algorithms, the direct ancestors of today's ETABS, were used by engineers at SOM to validate the revolutionary "bundled tube" system. This proved that computer modeling could handle complex lateral wind loads that were previously impossible to calculate with manual precision.

2000s: The Digitizing of Design and Planning

In the early 2000s, infrastructure projects began moving from manual workflows to computer-based systems. This was the period when software tools such as AutoCAD and ETABS became standard across the engineering and construction industry. AutoCAD transformed the design process by replacing manual drafting boards with digital drawings.

Project scheduling also became more structured through tools like Primavera P6 and Microsoft Project. These systems improved individual project functions such as drafting, analysis, and scheduling, but they were still largely operated independently, with limited integration between design, planning, costing, and execution teams.



Notable Project of this Period: Taipei 101

The development of Taipei 101 demonstrated the growing importance of digital design tools in infrastructure through the application of advanced structural analysis software and digital drafting tools.

2005 – 2015: Integration Across Project Functions

As infrastructure projects became larger and more complex from airports, metro systems, industrial plants, to high-rise developments, the need for integrated digital systems became critical. During this period, project delivery moved beyond standalone software applications toward connected project management systems. Primavera P6 played a key role by integrating project schedules with resource planning and progress tracking, allowing project managers to better control cost, schedule, and manpower allocation.

Digital workflows became more connected with procurement systems, cost management tools, and enterprise planning software. This integration supported the improvement in communication across project teams and allowed stakeholders to make faster, data-driven decisions.



Notable Project of this Period: Burj Khalifa

ETABS and finite element analysis tools were used extensively to analyze wind and seismic loads for Burj Khalifa, world's tallest building.

2015 – 2020: BIM and Real-time Visibility

By 2015, digital transformation moved beyond efficiency into visualization and real-time collaboration. Building Information Modeling (BIM) platforms such as Autodesk Revit enabled teams to create intelligent 3D models before construction began. Clash detection reduced costly on-site conflicts by identifying structural, architectural, and MEP issues digitally. This significantly improved coordination and reduced rework. Primavera also evolved into a more strategic project management tool, integrating with BIM workflows to support 4D scheduling, where project timelines could be linked directly to the construction model.



Notable Project of this Period: Hong Kong-Zhuhai-Macao Bridge

The Hong Kong-Zhuhai-Macao bridge showcased the power of digital modeling and coordinated data systems to manage one of the most technically challenging sea crossing infrastructure projects.

2020 – Present: Smart Infrastructure and Lifecycle Intelligence

Since 2020, digital transformation has extended beyond construction into asset lifecycle management and smart infrastructure operations. Infrastructure assets such as bridges, airports, and buildings now incorporate IoT sensors that continuously monitor performance, usage, and condition. One of the most

significant developments has been the rise of digital twins, virtual replicas of physical infrastructure assets that simulate performance and predict maintenance needs.

Engineering platforms now assess energy performance, carbon footprint, and environmental compliance. This allows project teams to optimize sustainability outcomes during design rather than after construction.



Notable Project of this Period: Singapore Changi Airport Terminal 5

The Singapore Changi Airport Terminal 5 is integrating digital twin concepts and smart infrastructure planning to enhance operational efficiency, sustainability, and long-term maintenance.

Conclusion

The digital transformation of infrastructure over the past decades has been a journey from manual execution to intelligent integration. What began with drafting software and digital calculations has evolved into: integrated project delivery platforms, real-time asset monitoring, predictive maintenance systems, and smart, sustainable infrastructure ecosystems.

The most significant shift is not simply the use of software but the integration of information across the entire lifecycle of infrastructure. Concrete and steel remain the backbone of infrastructure, but digital intelligence has become the force that drives its efficiency, resilience, and sustainability.

27 March 2026

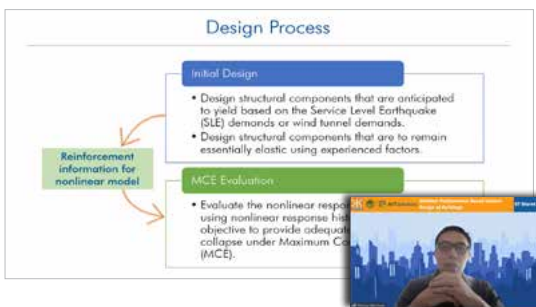


Structural Health Monitoring: One Year After the Myanmar Earthquake

AIT Solutions conducted an in-person seminar that provided a platform to reflect on the lessons learned from the March 2025 Myanmar earthquake, and demonstrate Structural Health Monitoring (SHM) technologies.

The seminar featured insightful discussions. The experts engaged actively with engineers and industry practitioners, sharing practical insights and real-world applications of SHM technologies.

7 March 2026



Webinar HAKI 2026 - Performance-based Seismic Design of Buildings

The Indonesian Society of Civil and Structural Engineers (HAKI), in collaboration with AIT Solutions, Asian Institute of Technology, successfully conducted a webinar on Performance-Based Seismic Design (PBSD) of Buildings on 7 March 2026.

The session provided valuable insights into the current state and practical implementation of PBSD in Indonesia, highlighting advancements in modeling techniques, regulatory frameworks, and real-world applications in tall building design.

5 March 2026



A Seminar on Performance-based Seismic Design, Davao, Philippines

AIT Solutions in collaboration with CSI Bangkok and ASEP, conducted a Performance-Based Seismic Design Seminar in Davao City, Philippines.

The seminar brought together structural engineering professionals for a full-day technical session focused on advancing seismic design practices and practical applications in structural engineering. Participants gained insights into Performance-Based Seismic Design (PBD) methodologies, approaches to improving structural resilience beyond conventional code-based design, and the application of CSI software tools in seismic analysis and design workflows.

3 March 2026

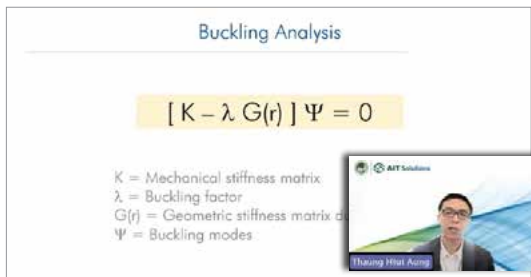


Structural Engineering Seminar by AIT Solutions - Manila, Philippines

AIT Solutions in collaboration with CSI Bangkok and Sy²+Associates, Inc. conducted a Structural Engineering Seminar in Manila, Philippines.

Mr. Taung Htut Aung, Executive Director AIT Solutions, and Mr. Keerati Tunthasawatana, Director, ACECOMS provided insights on: Performance-Based Seismic Design (PBD): Methodologies to enhance structural resilience beyond standard code requirements. CSI Software Applications: Advanced features and special considerations for optimizing workflows in CSI tools. Wind Tunnel Testing: Introduction to integrate experimental wind data into structural analysis.

25 February 2026



AIT Solutions - ACECOMS: CSI Software Online Forum

AIT Solutions and ACECOMS successfully conducted the CSI Software Online Forum. The forum served as a platform for practicing structural engineers and students to explore modeling strategies, analysis techniques, practical design considerations, and effective application of CSI software in real-world engineering projects along with practical challenges encountered in using CSI Software – ETABS, SAP2000, SAFE, and PERFORM 3D.

11 February 2026



AIT Solutions Technical Exchange on PBSD & Wind Engineering with Industry Professionals

AIT Solutions welcomed professionals from BDMS Silver Co., Ltd., d103 group, and landscape for an engaging technical session focused on Performance-Based Seismic Design (PBSD) and Wind Engineering solutions.

The session was complemented by a guided visit to the AIT-TU Wind Tunnel Facility,

28 January 2026



AIT Officials Receive Certificate of Honor from Thailand's Department of Public Works and Town & Country Planning

The officials from the Asian Institute of Technology (AIT) were awarded a Certificate of Honor from Thailand's Department of Public Works and Town & Country Planning (DPT), recognizing AIT's contribution to the fact-finding investigation into the collapse of the new Office of the State Audit Office (SAO) building.

23 January 2026



AIT Solutions - ACECOMS: CSI Software Online Forum

AIT Solutions and ACECOMS conducted the CSI Software Online Forum. The forum was an interactive and informative session that brought together practicing structural engineers as well as students from the region to discuss queries related to ETABS, SAP2000, SAFE, and PERFORM3D.

21 January 2026



AIT Solutions Conducts Webinar on Performance-based Seismic Design for Myanmar Young Engineers

AIT Solutions conducted a webinar on "Performance-Based Seismic Design of Tall Buildings" for Myanmar Young Engineers, as part of its ongoing commitment to professional development in the region.

The webinar featured an insightful presentation by Mr. Thaug Htut Aung, Executive Director, AIT Solutions on Performance-Based Seismic Design (PBD), an advanced approach to evaluate performance of tall structures in high seismic regions.

SAP2000[®]

STRUCTURAL ANALYSIS AND DESIGN

CsiBridge

BRIDGE ANALYSIS,
DESIGN AND RATING

ETABS

BUILDING ANALYSIS AND DESIGN

SAFE[®]

ANALYSIS AND DESIGN
OF FLOOR SYSTEMS

Perform[®] 3D

PERFORMANCE-BASED DESIGN OF 3D
STRUCTURES

CsiPlant[™]

PIPE STRESS ANALYSIS AND DESIGN

CsiCol[™]

DESIGN OF REINFORCED
CONCRETE COLUMNS



Asian Center for Engineering
Computations &
Software (ACECOMS)



COMPUTERS & STRUCTURES, INC.
STRUCTURAL AND EARTHQUAKE ENGINEERING SOFTWARE

To purchase CSI Software please contact ACECOMS
(CSI Channel Partner)

+ (662) 524 5539

✉ acecoms@ait.ac.th

CSI Channel Partner for
Thailand, Philippines, Myanmar and Sri Lanka

🌐 www.csiamerica.com

🌐 www.acecoms.ait.ac.th

OUR SERVICES

*Together we can build a resilient future
using advanced engineering technology*



Performance-based Seismic Design

- Conduct highly detailed modeling & structural analysis.
- Evaluate the structural performance explicitly to meet code intended objectives or enhanced performance levels.
- Improve cost-effectiveness in design.
- Provide structural design recommendations for structural design enhancements.



Wind Tunnel Testing

- Conduct wind tunnel laboratory testing.
- Provide wind loads for structural design.
- Provide cladding pressure for cladding design.
- Check public comfort and safety in public areas.
- Check the aerodynamic stability of bridges.



Structural Evaluation of Existing Buildings

- Conduct detailed assessment of structural system based on as-built conditions.
- Provide retrofit and strengthening solutions if required.



Structural Design Review

- Check compliance with applicable codes & standards to ensure public safety.
- Review the serviceability & strength requirements of structural system & components.
- Review the detailing of primary structural components.
- Report on the comments & findings.



Structural Health Monitoring of Buildings

- Evaluate the response of the buildings using acceleration sensors under earthquakes.
- Check the safety of structural system and re-occupancy of residents in post-earthquake scenarios.



Shaping the Future: The Impact of Professional Master in Structural Design of Tall Buildings on Civil Engineering

In the ever-evolving field of civil engineering, the construction landscape is reaching new heights - quite literally. With the increasing demand for skyscrapers and tall structures, the role of structural engineers has become more crucial than ever. To meet this demand and equip civil engineers with specialized skills, Professional Master in Structural Design of Tall Buildings (PMTB) is shaping the future of civil engineering.



Professional Master in Structural Design of Tall Buildings

PMTB is a response to this growing demand for specialized expertise. These programs go beyond the foundational principles taught in traditional civil engineering education, delving into the complexities of tall building design, including structural systems, seismic considerations, and wind dynamics. The curriculum is designed to provide students with a holistic understanding of the challenges and innovations inherent in tall building design and construction.



Interdisciplinary Approach

The design and construction of tall buildings require a multidisciplinary approach. PMTB encourages collaboration between engineers, architects, and other professionals. This interdisciplinary approach mirrors the real-world challenges faced by civil engineers working on complex projects, fostering teamwork and effective communication skills.



The Rise of Tall Buildings

In recent decades, the global skyline has been transformed by towering structures that defy traditional engineering norms. Tall buildings are not merely symbols of architectural prowess; they represent the intersection of art, science, and functionality. As cities expand vertically, there is a pressing need for engineers who possess a deep understanding of the unique challenges associated with designing and constructing tall buildings.



Real-World Application

Theoretical knowledge is valuable, but its real worth is realized when applied to practical scenarios. PMTB includes hands-on projects that allow students to apply their learning to real-world situations. This practical experience is invaluable in preparing civil engineers for the challenges they will face in their careers.



Specialized Knowledge

One of the keyways in which these programs shape the future of civil engineers is by offering specialized knowledge. Students are exposed to advanced topics such as performance-based seismic design, and wind engineering and structural health monitoring. This specialized knowledge equips graduates with a competitive edge, making them sought-after professionals in the field of structural engineering.



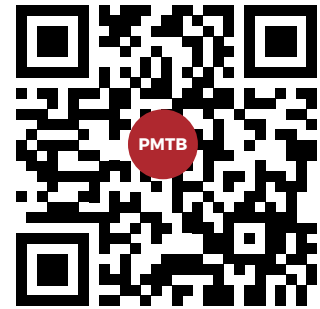
Recommendation

The Professional Master in Structural Design of Tall Buildings is playing a pivotal role in shaping the future of civil engineering. By providing specialized knowledge, fostering an interdisciplinary approach, promoting real-world application, this program prepares engineers to tackle the complexities of designing and constructing the skyscrapers that define our modern cities. As the demand for tall buildings continues to rise, the graduates of these programs are well-positioned to lead the way in creating the structures that will shape our urban landscapes for generations to come.



PROFESSIONAL MASTER IN STRUCTURAL DESIGN OF TALL BUILDINGS

Click or Scan QR
for more info



Offered by
**SCHOOL OF ENGINEERING &
TECHNOLOGY (SET)**

Be a part of Global Network of fellow
Professionals & Alumni from over 50
countries through self-paced blended
learning (online + in-class) approach

**ENROLL NOW
FOR August
2026 INTAKE**

PROGRAM HIGHLIGHTS



Aligned with
industry trends



Applied
Learning



Flexible
learning



Experience
Campus Life



World-class
Faculty



Flexi-payment



www.linkedin.com/in/aitpmtb



www.facebook.com/aitpmtb



pmtb@ait.ac.th



www.solutions.ait.ac.th/pmtb