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MEDIA BRIEFING

Designers, developers must reassess asset health strategies

Fast-growing markets such as the UAE need to pay greater attention to maintaining the quality of ageing buildings and infrastructure

As the UAE accelerates towards the next phase of urban development, planners, developers and asset managers need to become more cognisant of their approach to asset health strategies.

According to Cyril Lincoln, executive vice president and global head of real estate finance & advisory, investment & agency services at Mashreq Bank, ageing structures in the UAE will require more resources to ensure their structural integrity and that future proofing ongoing developments is a must.

AT A GLANCE

- Planners, developers, designers and asset managers need to reassess structural health strategies
- Sustainable and high-quality infrastructure forms an important part of the UAE's long-term visions, but challenges such as climate change necessitate agile response
- Use of digital solutions such as IoT and digital twins can ease monitoring and allow for timely action
- Building up the skills to utilise digital monitoring solutions is key

"The UAE is at an advantage because it has already adopted best practice in construction where possible," says Lincoln. "But it is important to regularly audit building health to avoid any preventable mishaps."

The delivery of sustainable and high-quality infrastructure is a key objective under both federal and emirate level visions in the UAE, and municipalities help ensure compliance across all construction and real estate activities.

For example, the Abu Dhabi Building Codes include standards on property maintenance which detail the minimum requirements for both existing buildings and those under construction.

"The proactiveness and agile response of the UAE's building codes and systems is appreciable," says Lincoln. "It is important to remain future-prepared, however, especially in the face of challenges such as climate change."

Climate change

Design codes and municipality regulations set the standards required for buildings and other structures based on historical conditions.

However, the potential impact of climate change and ageing building stock means that design codes alone are not enough to ensure quality and safety.

"Climate change is here and it is very real," says Lincoln. "What governments, developers and engineers now need

Florida's Miami Condo Collapse

On 24 June 2021, a 12-storey building partially collapsed in Florida, US' Miami area. The buckling of the beachside Champlain Towers South Condominium resulted in the death of 98 people and left 11 others injured.

The building was just days away from making long-needed overhauls, based on a 2018 report that recommended nearly \$9m in repairs.

The primary trigger of the damage is said to be long-term degradation of reinforced concrete structural support caused by weather intrusions. Other factors include sudden sinking of the ground, insufficient reinforcing steel, and corruption during construction.

In the days following the collapse, local authorities announced that high-rise buildings older than 40 years and taller than five stories would undergo an audit in the next 30 days. The audit resulted in closure and evacuation of several vulnerable structures in Miami.



Tackling climate impact through better design

Architecture 2030 is an independent, non-profit organisation established in 2002 in response to the ongoing climate emergency. Its aim is to transform the built environment from the major emitter of greenhouse gases to a central solution to the climate crisis. The group's action plan has two main objectives:

- Achieve a dramatic reduction in the energy consumption and CO2 emissions of the built environment by 2030, and a complete phase-out of fossil fuel CO2 emissions by 2040; and,
- Advance the development of sustainable, resilient, equitable, and zero-carbon buildings communities and cities.



to do is find ways of working with what we have and build climate-resilient structures.”

Studies conducted by the UAE's Ministry of Climate Change and Environment highlights that direct impacts of extreme weather events, as well as slow-onset phenomena such as the rise in global sea levels, could disrupt the daily functioning of transport and infrastructure, impact the value of real estate, affect environmental assets, and damage the tourism industry.

“The UAE government has been proactive with its approach, putting into places measures to build more climate-resilient buildings while also retrofitting existing structures,” says Lincoln.

Recent years have seen climate change climb higher on national agendas across the world as well as in the UAE. The nation's Vision 2021 goal positions resilient and environmentally-conscious infrastructure as a long-term objective.

Taking responsibility

Lincoln says that it is not just the developer's onus to ensure the long-term structural health of built assets – the entire ecosystem needs to responsibility.

“Developers of course need to be aware of the challenge, especially since most developers retain the asset and have fully understanding of the building,” he says. “But we need to think about ‘health’ right from the conceptual and design stages.”

At the operations and maintenance stage, skimping on facilities management contracts will turn out to be detrimental in the longer run.

“Poor maintenance may not have any impact in the short-term, but could erode cashflows from an asset, and ultimately result in irreversible damage,” says Lincoln. “Once a building has reached that stage, it will be impossible to restore it back to its full health and the owner and/or operator will have to face a costly decision.”

According Lincoln, establishing awareness across the industry is a must.

“Players need to be aware that cutting corners will require paying the price.”

He adds that while banks and other financiers may not be directly involved in operations or maintenance, they still need to be aware of the implications of not following “best practice”.

“And in case of building that generate long-term cash value, deteriorating asset health will affect the ability of that structure to repay loans – which does affect us,” says Lincoln.

Digital solutions can be installed in buildings to improve monitoring and long-term maintenance.

Sensors connected through the internet of things (IoT) can help collect data and analyse the condition of a building. In case of changes in performance or quality, timely upkeep can be conducted.

After a spate of high-rise fires across the country, the UAE moved to address issues surrounding building materials, alarm systems and regulations in both existing and planned structures.

But the major upgrade was a smart fire alarm system called 'Hassantuk', which centralised the detection and response to incidents across residential and commercial buildings.

The platform utilises artificial intelligence to continuously connect, monitor and alert authorities and asset owners. In May 2021, real estate service provider FAB Properties noted that more than 90 per cent of its assets were linked to Hassantuk.

A similar system could be launched to monitor the health of buildings as a whole, with the support of private and public sector entities.

It can also help create greater confidence for long-term buyers of properties.

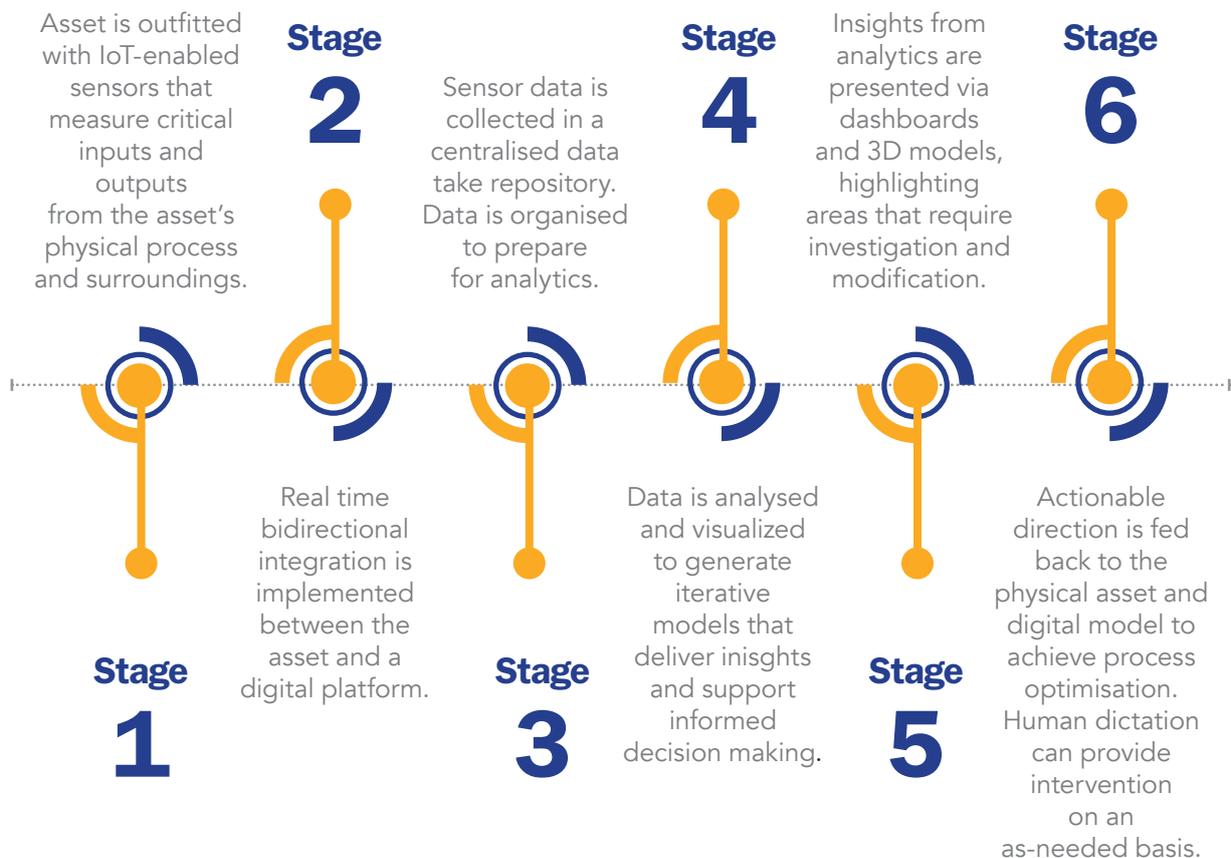
But gaps in labour markets could mean that the availability of skilled personnel to manage such digital solutions is limited.

"And, if we do have the data, how can we ensure senior executives and decision-makers are equipped to make use of the information?" says Lincoln. "These are important questions to address, and the UAE is best placed to spearhead change in the region."

DIGITAL TWIN ARCHITECTURE

A digital twin utilises spatial data to provide the core framework, equipment and engineering data to understand the systems, and IoT with sensors to capture real time data. The aggregated data conducts simulations using physics-based modeling to run "what-if" scenarios to optimise performance. Digital data is then able to deliver actionable insights geared toward efficiency while reducing wasted resources.

A dynamic digital replica of the asset, or a virtual copy of the building is finally created by collating the historical and live data feeds.



Source: Digital twin: the Age of Aquarius in construction and real estate, Ernst & Young, May 2021

This briefing is brought to you by the MEED-Mashreq Real Estate Partnership

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