arbn well arc by arbnco

2019

The challenges of the Built Environment

Using digital transformation to generate value from the creation and management of physical assets in the face of pronounced climate change

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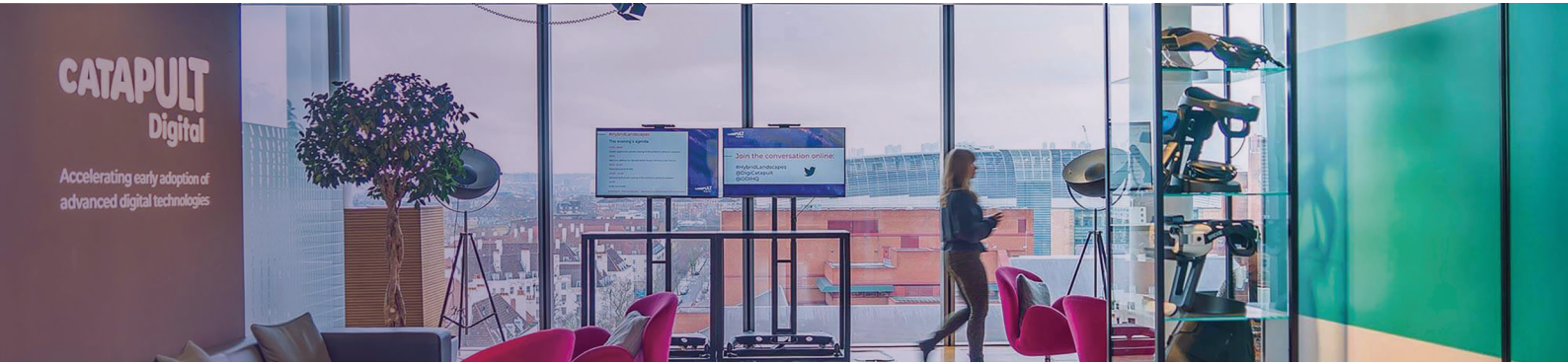


On the 16th September 2019, arbnco and Arc welcomed esteemed experts from a wide variety of specialisms to participate in a round-table discussion on the topic of workplace wellness. The discussion focused on how actions taken for the benefit of the health and wellbeing of occupants can deliver returns on investment for employers, landlords and facility managers.

We would like to thank all of the participants for joining and contributing to the session - we have captured the essence of the discussion within this report and invite all to join the ongoing dialogue in our LinkedIn group 'Health and Wellbeing in the Built Environment'

https://www.linkedin.com/groups/13764373/

A TRANSFORMATIONAL REVOLUTION

In the last decade the developed world has started to embrace the advantages which digitisation can bring to the way in which we view engineering, manufacturing and infrastructure developments. This fourth industrial revolution, the digital revolution, has indeed revolutionised the way in which we approach the world around us. It has removed the boundaries to thought and given the opportunity for unfettered imagination to create what only 20 years ago would have been deemed impossible. Digitisation now pervades every aspect of life, from the way we work, to how we live and communicate.

As our world addresses the impact of climate change and the expanding demands for carbon neutral developments, we now have the opportunity to address how we live and consider the environment surrounding living spaces - the Built Environment.

This environment can be anticipated and tested before construction starts - the technology is now available to create the 'Virtual Twin' of an object, whether small or large. Scale is no longer an obstacle to design, development or construction.

By configuring relevant and accurate data, with the ability to input from real physical, biological and chemical data sources in three dimensions, it is possible to generate in the virtual world the twin of its real world counterpart. Accessing and analysing this data from sensors feeding a data platform, it will be possible to shape new built developments, anticipate where people will live, work and play, optimise energy use, provide the transportation requirements relevant to the contemporary world and ask the difficult 'what if' and 'if we' questions in future scenario modelling.

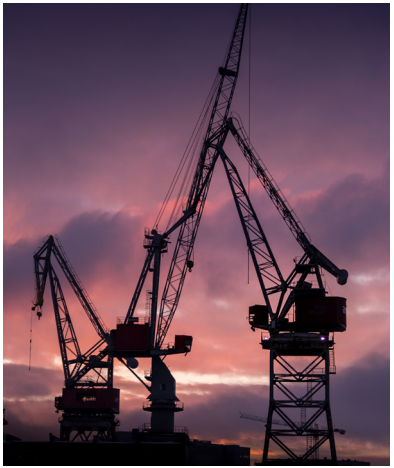
CONSTRUCTION TRANSFORMED

How does anyone know if the design is the best for the environment, for the people or for the building itself?'

Stacy Van Dolah-Evans, Global Executive, Schneider Electric

The construction industry, where little has changed in terms of the techniques used for over 100 years, is starting to grasp the value of operating in the digital world. Building Information Modelling (BIM) is literally taking on new dimensions, both at the design stage and during construction, and ultimately in building management, enabling built assets to be managed economically and effectively, using real-time sensor data fed onto a data platform to breathe life into the Virtual Twin, data ranging from energy consumption, through space planning and usage, to fabric wear and tear.

The value this generates is significant, a value which is at the heart of arbnco technology developments as it drives a new revolution in environmental monitoring in the Built Environment, to enhance not only the long-term sustainability of the assets but, significantly, to improve the health and wellbeing of the people who live and work in those places. Such wellbeing increasingly is central to employers' thinking when creating strategies for people in the workplace and it features in the creation and development of new, 'smart' communities.



LEGACY VS NEW

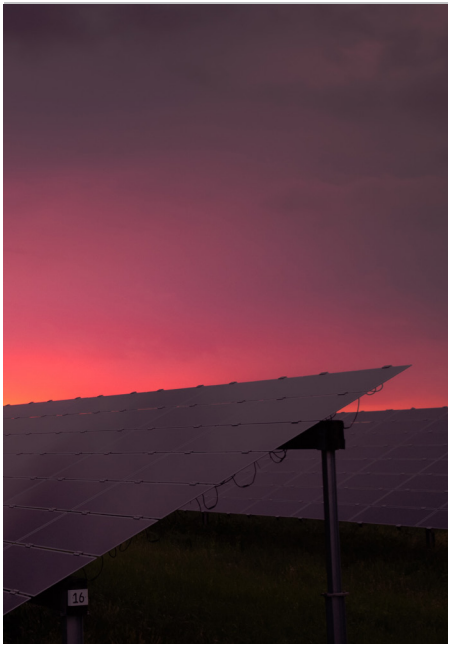
However, many existing assets would benefit from environmental monitoring, though retrofitting of sensor and monitoring technology can be complex, especially in buildings where few of the original architects' drawings exist. Of course it can be done but there is little that can be done to change the materials used in the construction process, materials which in themselves are not readily conducive to improving the sustainability of the asset nor to enhancing the wellbeing of its occupants. It is however a very different story when creating new assets and the full power of digitisation can be employed. The virtual twin is a powerful ally in the creation of environments for health and wellbeing and for infrastructure sustainability, enabling sensor locations to be tested in numerous scenarios at the architectural design stage, to ensure optimal placement for effective data collection, analysis and the application of remedial measures from the management information obtained.

'We need to challenge clients to think about the H&W of communities...'

James Low, Associate Director – Sustainability, Mace

THE ENERGY REDUCTION CONFLICT

There is an issue central to such sustainable environments, which is the inevitable conflict between the desire to achieve energy cost reductions and the need for a healthy environment in terms of temperature, air quality and contrast of light and shade. Getting the balance right is where the real value resides. The internal environment should create a relationship between an environment for people, the preservation of the building fabric and the search for alternative sources of energy to power the assets in the face of global climate change. The value spectrum thus created is where long term sustainability resides.

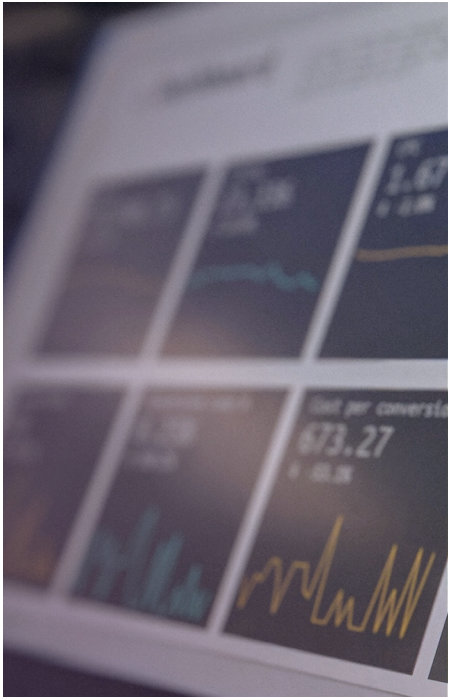


'We need good quality data ...the culture should be to disclose air quality data... if not why is the data being hidden?'

James Low, Associate Director – Sustainability, Mace

DATA AND NEW THREATS

The value created is inherent in the data and the analytics employed. How this data is controlled, analysed and applied is a key business element. The digitised world has many advantages but has, conversely, created new threats to business security. Consideration needs to be given to the cyber threat and the relative competitive advantage to be gained whether data is held or shared with partners, facility managers and users. Every circumstance will be different and careful due diligence will need to be applied when assessing the value of retaining or sharing such data. This data increasingly will become a vital business asset as it enhances the lifestyle of the people involved. In a highly competitive market, the recruitment, retention and development of people is central to the success of a business and its long term growth. The wellbeing or wellness of people will become a key business asset ranked alongside market share, sector leadership, business information, assets, investors and profitability.



VALUE PARTNERSHIPS

'We need to understand what data we want.....there is wastage in the supply chain.... a chain is defined by links..... link in the chains lose visibility of where value could be added.'

Stacy Van Dolah-Evans, Global Executive, Schneider Electric

It is becoming increasingly clear that to drive the maximum value from managing the Built Environment in the digital age, a strong and complementary partnership will be required which incorporates architects, construction entities, facility managers, energy providers and the data sensing and application partner. To this can be added investors and the system integrator. All have a role in the enterprise as we strive to create the environment we are seeking and the essential value spectrum linking the wellbeing of people, the assets being used and the energy transformation climate change is demanding. Provided we start now there is no hurdle which cannot be overcome as we develop the smart cities and communities of the future.

Thanks for reading

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