By **Dael Climo**, *Build Deputy Editor*

Building for change

It's an exciting time for building science as new technologies, old materials and a revised approach to the human-materials interface emerge.

MIT has produced a topographical map for Boston, part of a scheme looking at available roofspace for solar panels.

THE FUTURE OF BUILDING is to use existing buildings to deliver advances in technology, in green materials and in recognising the impact buildings have on humans, according to the three presenters at the Stars of Building Science conference run by UK website Building4change, which is owned by BRE.

The three are members of Building4change's virtual academy of excellence and its Stars of Building Science 2013, a group of 13 people who are top names internationally in building science. The list changes annually and is selected by public vote.

Mapping the city

Christoph Reinhart, head of the Sustainable Design Lab at the Massachusetts Institute of Technology, told the conference that data and modelling have the potential to change the way our cities are designed and operate by using citywide models to provide essential information to public authorities, developers and others involved in shaping the urban landscape.

He presented Mapdwell Solar System, an interactive online rooftop solar mapping tool that lets users precisely estimate the potential of rooftop solar panels for almost any building in a given city, simply by inputting an address.

Massachusetts Institute of Technology (MIT) has already run a test project, producing a topographical model for Boston that covers its 17,000 commercial buildings and launching a solar map of Washington, DC.

Reinhart said modelling could play a key role in helping global cities cope with the massive growth forecast for them, remarking, 'Building science and simulation are now at the point where we can impact not just the building and architecture and engineering community, but the city in general.'

Humane buildings

Professor Vivian Loftness of Carnegie Mellon University (CMU) spoke about the need to not lose sight of human and natural dimensions in designing and building our built environment. Health, wellbeing and productivity need to be considered.

'Building is the last cost-first activity,' she said. 'We are bottom line on our buildings. We keep them for 100 years, while we keep a laptop for 3 years.'

Loftness was involved in the development of CMU's Intelligent Workplace, a living lab that sits on top of one of the university's halls. The lab is continually updated to feature advanced systems, components and materials.

'The Intelligent Workplace is a wonderful place to work, with daylight throughout, fresh air on demand and the ability to adapt spaces and technologies as needed,' she said.

'It is also a wonderful place to undertake PhD research projects, to test the impact of the built environment on thermal comfort, air quality, acoustic quality, lighting quality and the technologies or organisational changes possible in the workplace of the future.'

Old and new combined

The humble straw bale, an ancient building material, was the subject of Peter Walker's presentation. Head of the University of Bath's Department of Architecture and Civil Engineering, Walker is known for his work on Bale Haus, a prototype house at the university that was built using the ModCell system incorporating straw bales.

Peter Walker outlined the latest developments in straw bale construction, including the Leeds low-impact living affordable community (LILAC) housing scheme in Bramley, Leeds, where gas bills for space heating have been reduced by 90%.

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