



# Inside information

**Dr Jim Glockling** speaks to FRM about a recent talk he gave in Washington DC on the part Building Information Modelling plays when disaster strikes

**E**ARLIER THIS year, building design experts from across the globe gathered in the USA's capital city for a four day conference, which focused on the development of innovative solutions for the built environment.

Jim explained that the main reason he was asked to deliver a presentation was to explain how Business Information Modelling (BIM) can be implemented as an immensely good vehicle for giving measure of a building's resilience to all manner of attack. This could include – but need not be limited to – vandalism, burglary, theft, social unrest, fire and flooding. There are things you can design into building to help make it more resilient, but at the moment we have no real measure of their effectiveness. RISCAuthority believes that a 4D BIM model can accommodate these factors by a very simple method. By attending this conference, Jim said, he was hoping to learn that such an initiative was already in place and working in the US – and could be adopted. Sadly this was not the feedback he received, but delegates did agree that it is good idea. In addition, many offered great support to pursue this concept, including the key BIM software manufacturers that will help RISCAuthority to progress with its proof of concept study.

The audience were startled by examples of major fires in the UK involving significant commercial buildings that were constructed with combustible materials. The first example given was the recent fire at the University of Nottingham, where a multi-million pound laboratory constructed from timber was completely destroyed by a fire. Jim explained that the FPA and RISCAuthority are opposed to combustible materials being used as part of the structure, insulation or cladding of commercial buildings, particularly when classed as high risk environments where more resilient materials could be used.

A prime example of combustible materials being used in a high risk environment is a project that is currently underway in Leeds to construct a waste and recycling facility out of timber frames. The site will be the largest of its kind in Europe and will be approximately 100m long and 50m high. Jim told delegates that on the face of it this facility is the convergence of two key areas of concerns for insurers – combustible construction and the waste sector – and only time will tell if it's a marriage that works. But, with waste fires being a big issue in the US as well, the concept of this recycling facility being made out of timber staggered the audience.



### Management responsibility

It's Jim's view that we should be less sympathetic to companies that go out of business as result of a major fire. Statistics suggest that 80% of businesses that are affected by a major incident close within 18 months. But Jim believes this figure is actually indicative of poor management: the ability to develop resilience within a company in the interests of its shareholders is a core responsibility of all managing directors as defined by Companies House. People can plan to protect themselves and their businesses from the risk of fire, and consideration should always be given to assess what type of building should be built to support the nature of the business and its resilience objectives.

In the UK there is a near absolute separation of life safety and property protection, which allows consideration up to evacuation before structural collapse, and after that there is no further interest in mandation. In many areas in US legislation, property protection is used as an inherent part of achieving life safety goals and, as such, many UK challenges do not manifest in the US. This makes the UK fairly unique and, according to Jim, it probably explains why we have larger problems than many other countries. A good example of this differing philosophy is that in the UK we don't mandate the use of sprinklers in warehouses unless they are over 20,000m<sup>2</sup>, whereas in the rest of Europe sprinklers are mandatory in warehouses between 1,000m<sup>2</sup> to 5,000m<sup>2</sup>.

In the UK, if you simply seek to design a building without specific additional requests to achieve resilience objectives, you will get a building that satisfies only the mandated minimum requirement and that is most likely the cheapest to construct. We already have an established route for defining 'sustainability' that might favour renewable, recycled and highly insulating materials, many of which are associated with poor fire performance via BREEAM ratings; but we currently lack something to counter balance that for resilience. Jim told delegates that implementing BIM will help bring in additional measures that could start to deliver 'resilient sustainable' buildings.

**“ Implementing BIM will help bring in additional measures that could start to deliver resilient sustainable buildings ”**

### BIM software

BIM is a 3D CAD package that details physical and performance properties associated with all deployed materials and products. Currently, these are properties that ensure buildings are compliant with mandated factors such as air quality, lighting and thermal performance. After the virtual construction of a building is complete, BIM software allows you to run code to identify non-compliances.

RISCAuthority is proposing that if you have implemented BIM methodology, then why not bring in additional properties that are resilient relevant. By simply running an extra bit of code, businesses could assess their buildings for combustible content, potential for fire spread, fire ingress, physical attack, and flood etc. This would be very useful information for building owners and insurers, to help assess the resilience of the property and its ability to support their business. The benefit of loss mitigation systems, such as fire suppression and security systems, could also be demonstrated.

BIM systems need to be knowledgeable on product properties and are therefore linked into substantial databases produced by the suppliers. The proof of concept project suggested by Jim seeks to define these fields for supporting resilience reporting.



## Looking ahead

Jim closed his session by saying that BIM is a simple measure to improve a business's knowledge of a building for resilience and to provide an overall resilience score for the building in relation to fire, theft, social unrest and flood. This would prove immensely helpful to businesses, insurers and building owners. A tool like this could be used in the design stage and lead to an adjustment of some design details, such as a recommendation to install a sprinkler system or suggest the selection of non-combustible materials to raise its resilience score. This will ultimately help to establish the best balance between sustainability and resilience. It will subsequently support the company to meet its resilience objectives and will certainly aid the provision of insurance.

RISCAuthority is now moving forward with a proof of concept study for BIM that has received wide-ranging support from entities such as the Smart Building Group and manufacturers of BIM software. Jim said the ideal scenario is to take a building that's already been built using the BIM process and get a download of its make-up and parts. Working with industry, the software would augment the field data for all these parts with resilience relevant data. This would then be programmed back into the model and used to develop reports. An interactive tool would be available to enable people to see how decision choices directly change the resilience of buildings to the full range of perils. This tool would be freely available on the RISCAuthority website ([www.riscauthority.co.uk](http://www.riscauthority.co.uk)) to promote the idea and see if it can gain enough support to become a readily available solution ■

**Dr Jim Glockling was talking to FRM editor Mark Sennett. For more information, view page 5**

*If you would like to request more information or to be involved with RISCAuthority's proof of concept study for BIM, email [jglockling@thefpa.co.uk](mailto:jglockling@thefpa.co.uk) – Jim's presentation can be downloaded from the RISCAuthority website at [www.riscauthority.co.uk/free-document-library/presentations.html](http://www.riscauthority.co.uk/free-document-library/presentations.html)*



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