

MAKING BUILDINGS BETTER

BSRIA has always been in the business of measuring, whether it is a physical quantity such as temperature or pressure, a market assessment such as volume of product imported to a given country or a softer, more management-orientated value such as a benchmark or satisfaction score. Measuring is a fundamental characteristic of our industry's operations and it is in BSRIA's DNA.

The need for accurate and more comprehensive measurement has been increasing in response to the revolution that is the low carbon agenda. Revolution is no idle description either. In just over a decade, carbon signatures of new buildings have been required to fall to "nearly zero" – yet few owners were even aware of their building's operational carbon use at the start. In looking backwards over the past few years, I think BSRIA can be proud of its role in promoting the increased use of through-life measurement embedded in processes such as Soft Landings and the associated building performance evaluations.



This growing awareness of the importance of measurement, control and feedback has not gone unnoticed by the manufacturers either. Whilst fully integrated building management systems have been available for decades, we are now starting to see their introduction into smaller and smaller buildings. In fact, applications designed primarily for dwellings are finding a ready market in smaller commercial premises. The keyword here though is "integration". With proper open standards now penetrating more deeply, sensors intended for one use can be shared amongst a variety of applications. For example, PIR intruder detectors can become occupancy sensors for energy control.

There is another BSRIA process that is associated with the collection of measurements. This is the process that turns detailed, often randomly accumulated and frequently disconnected data and information into documents that can be used by our members to guide them in their work. A couple of decades ago this process was greatly enhanced by the availability of a managed construction research programme that not only contributed funds from central government but much more importantly brought focus and long term stability to the accumulation of knowledge. This stability was crucial since it enabled individuals to establish research skills and careers with enduring value to the sector they served. Loss of this programme has also resulted in a loss of cohesion between frontline companies willing to collaborate within the longer term research process.

There is however a new kid on the block that may be about to revolutionise the traditional measure/analyse/publish process that has dominated research and guidance in our sector. As disruptive technologies go, Big Data has managed to remain under the public radar quite well until the recent disclosures of the USA "Prism" project. Under Prism, colossal quantities of data harvested from both open and private sources are analysed to identify supposed threats to homeland security. It is the use of automatic analytics software combined with large arrays of sophisticated new sensing technologies that makes Big Data techniques so intriguing for the built environment sector.

By way of example, consider the problem of maintaining comfortable temperatures in a space. Traditionally we have used lab research on volunteers to establish what "comfort" requires. Ole Fanger took years to generate his widely used algorithms but they still do not cover all the possible variables that affect perceived comfort. We now use a thermostat, with a setpoint guided by Fanger, and assume that all is well with our occupants. In the new paradigm, cameras utilising facial recognition software will be capable of spotting yawning (too hot, too much CO₂) or sluggish activity (too cold). This data is available for every worker in a given space and a "voting" system used to optimise comfort over the group.

But of course there is more. This data could be available from many sources in a Prism type environment. There would now be the potential to mine the data to establish new benchmarks feeding back to the design process that can be tailored to the particular activity type. Schools, offices, homes and shops each can be analysed not just to establish a single setpoint value but to understand in great detail the envelope or distribution of responses. At last, proper large scale data sets can aid our work - and most of what we need to do this is already available through installed BEMS.

There is one further gain possible from this approach. Traditional academic research leading to refereed papers and thence to institutional guidance can take half a working lifetime to complete. Big Data results can be achieved in hugely reduced timespans. Take the case of adverts you see on Google – these are tailored specifically to you based on purchase decisions you may have only made via unconnected sites a few hours earlier. Scary but true.

Big Data is where BIM, Smart Cities, performance contracting and responsive design meet. It challenges all the preconceptions of professional codes, cuts swathes through the notion of privacy and opens up “our” market for knowledge to an entirely new set of competitive players. The next decade is going to be seriously exciting and I am sure BSRIA will remain strong to its ethos of Measuring and Managing in this startling new environment.