RISCAuthority guidance

Su Butcher investigates Regulation 38, the golden thread, and the problem of disclosure in the supply chain

Su Butcher, Director, Just Practising Ltd
After training as an architect, Su now helps product manufacturers use digital information management. She has chaired a UK BIM Alliance working group, sits on the IET's Built Environment Panel, and is programme manager for BIM4HAs.
In July 2023, she was awarded Digital Construction Champion of The Year.

REGULATION 38 of the Building Regulations 2010 makes it a legal requirement for fire safety information to be exchanged between the principal contractor appointed by the investor or client, and the responsible person appointed by the building owner or operator under the Regulatory Reform (Fire Safety) Order 2005 as amended by the Fire Safety Act 2021. The regulation is currently framed for health and life safety only, rather than resilience of the built asset, and the information has privity of contract, that is, it is only to be transferred between the principal contractor and the responsible person.

This article provides some context for identifying how to make Regulation 38 information available to insurers so that they can have the information they require to adequately assess risk. As part of this, it will explore the challenges of obtaining information about a building and suggests the components of an effective solution.

It should be noted that this article was written during a period of significant change in the regulatory environment due to the Building Safety Act 2022 and its subsequent secondary legislation.

What is the problem?

The tragedy of the Grenfell Tower Fire in 2017 and the revelations of the subsequent inquiry has created an erosion of trust in the safety of buildings because it revealed systemic problems with building safety.

In her 2021 book *Catastrophe and Systemic Change*, Gill Kernick argues that the Grenfell fire was a 'black elephant' event (a known unknown), not a 'black swan' event (an unknown unknown); the tragedy was predicted and could have been prevented and is not an isolated incident. Kernick argues that a piecemeal approach to change is not sufficient for a systematic problem like Grenfell exposed.

In the fallout following Grenfell several separate issues were explored to seek to prevent future tragedies. These included:

- **Integrity** – such as the Construction Products Association's Marketing Integrity Group and its subsequent Code for Construction Product Information.
- **Competence** – such as the Construction Industry Council's cross-industry Competence Steering Group and the ongoing development of competence frameworks.
- **Compliance** – such as the Hackitt Review of Building Regulations and the subsequent Building Safety Act and emerging secondary legislation and guidance.

At the core of a systemic approach to building safety, however, is another element, information.

In its 2021 plain language guide to digitisation for construction product manufacturers, the IET's Built Environment Panel told a fictional 'data journey' story to illustrate the importance of reliable information (see overleaf). Whilst integrity, competence, and compliance are all essential, without reliable information and in a complex supply chain, construction professionals will not be able to make the right decisions. Without reliable information, the 'black elephant' might be known, but it cannot be prevented from occurring again.

A data journey story

- A building control officer signs off a building based on reference to approved drawings. They don't know that a product had been changed and had no way of telling whether there had been an incorrect specification or substitution.
- The installer worked according to approved drawings but installed a different product. They'd relied on the distributor to supply what was suitable.
- The distributor supplied an alternative product. They checked for suitability against the contractor's order and believed it a suitable substitution based on the product's declared conformance.
- The contractor tendered for the project and chose materials based on previous experience, conversations with the product's sales team, and distributor prices.
- The salesperson offered their product alternatives based on design and performance requirements. As far as they were aware, all the products they offered were suitable.
- The architect used the manufacturer's website to choose a suitable product and obtained approval for the design based on test certificates and building regulations.
- The manufacturer's marketer placed the test certificate on the manufacturer's website. They weren't to know that the certificate was out of date, fraudulent, or obtained by deception.

Everyone in this story acted with integrity to the best of their ability, but there was still a fire and people still died. So, what was missing?

What is the "right information"?

Insurers need quality and verified as-built information about a building, with evidence of competent design, specification, and installation, to accurately assess and price risk. This information needs to be maintained and updated during the lifetime of the building, to continue to support accurate risk assessment and pricing, as well as to support the safe management of a building.

To ensure that the information insurers receive meets these criteria, actors in the supply chain need to deliver the following:

1. The right products and systems, with information attached that is necessary to enable design, construction, operation, and maintenance throughout the life of the building and potentially end of life information for dismantling, reuse, and recycling.
2. These products and systems must be installed correctly.
3. The products and systems must be installed by competent people.

If all these criteria are met, then the information received by insurers will have travelled a secure, reliable data journey and will enable an audit trail back to the source of the information, be that the manufacturer of the product, the designer who made the decision, or the installer who installed it correctly.

The concept of the golden thread of Information has been developed to articulate this need. It was first mooted by Dame Judith Hackitt in her review of the building regulations in 2018 and now forms part of the new building safety regime, but currently applies only to higher risk buildings. The principle of a golden thread is, however, necessary to ensure confidence in risk assessments for any building. Let's explore the three criteria a little further.

1. The right product

Key to knowing that the product is right are:

Correct specification

Designers make decisions about what products are to be used and what specific performance characteristics they must meet. The overarching characteristic is that the products must be suitable for the space, risk, and the purpose group of building for which they are located in. They must also be demonstrated to be able to work as a complete fire safe system of components alongside the other materials and systems they interface. Only by recording the journey of how the products were formulated, can decisions be taken during the design phase or later in the project to allow the products to be possibly substituted or even substituted at a later design stage. Products need to be compared according to information about their performance characteristics which need to be assessed by a competent person to meet both the requirements of a wider system (such as cladding, hot water, fire compartmentation) and the overall brief for the project.

Testing and certification

Certification provides evidence that a product will perform as outlined on the certificate. It gives a specifier confidence in a product.

Some manufacturers provide third-party certification which includes a field of application report detailing where and how to use the product or system alongside other products and systems and supersystems in the building.

Testing, classification, and certification is part of a wider group of performance data which includes information on test standards, environmental performance (including certification), hazardous materials data, and data on compatibility.

Not all products have testing regimes, and the current testing and certification regime has been described by the Morrell/Day report as inadequate. No design professional has the expertise to evaluate the appropriateness of all products without the support of testing regimes to either designated standards (currently under the Construction Product Regulation) or third-party testing and certification for products which are not covered by the Regulation.

Correct identification

People who choose, buy, install, or own a product must be able to connect the product with the correct information about it. This connection provides confirmation that the product specified is the one intended, and later that the intended product is the one that has been installed. It also provides the installer with confirmation of the manufacturer's requirements for installation, and the maintainer of that product with information about how it should be maintained.

An identifier consists of a long set of digits which can be attached or linked to a product, and machine readable via a barcode, QR code, RFID, etc. and thereby automatically connect to a whole range of information about the product. >>>

Marketing

Specifiers rely on manufacturer's information about products to enable them to make comparisons and assess the availability and suitability of them for their requirements. They need to be assured that the information provided to them is accurate and up to date but also not misleading.

2. Correct installation

To ensure products are installed correctly we need to address the following factors.

The specification

Under the CDM Regulations 2015, designers are responsible for eliminating or reducing risk during the pre-construction phase of a project. The designers' decisions must therefore be followed, and any errors or omissions identified and corrected. Any change to the design makes the person changing the design into the designer with equal responsibility. In the HSE's overview of the new building control regime for higher-risk buildings, any change to the design after Gateway 2 (equivalent to building control approval) must also be recorded, notified, or approved dependent on its significance.

Manufacturer's requirements

Products and equipment must be installed in accordance with the instructions provided by the manufacturer, to ensure they will perform as specified, to ensure they are installed in accordance with the certified method of installation, and to meet the terms of any warranty.

Building systems

A systems approach to construction sees a building as several elements working together instead of as individual products. For example, a fire door is part of a compartmentation system but is also a system itself, an assembly comprising a door frame, glazing, a door leaf, ironmongery, intumescent fire, and smoke seals, all which need to work together.

All the elements need to be suitable for the purpose, to be combined and installed to conform with the manufacturer's installation requirements in the correct supporting structure to enable the system to function correctly.

3. Competence

To ensure the correct choice and installation of products and systems also requires awareness of the following:

Evidence of competence

To ensure that design, specification, installation, and maintenance is carried out by competent people measured against a recognised base line, these people need to evidence their competence and this evidence needs to be checked. A record needs to be made and kept as part of an audit trail.

Record of installation and maintenance

To ensure that installation and maintenance is carried out in the correct way and by competent people, a record of installation and maintenance of products and systems needs to be created and maintained.

Client responsibilities

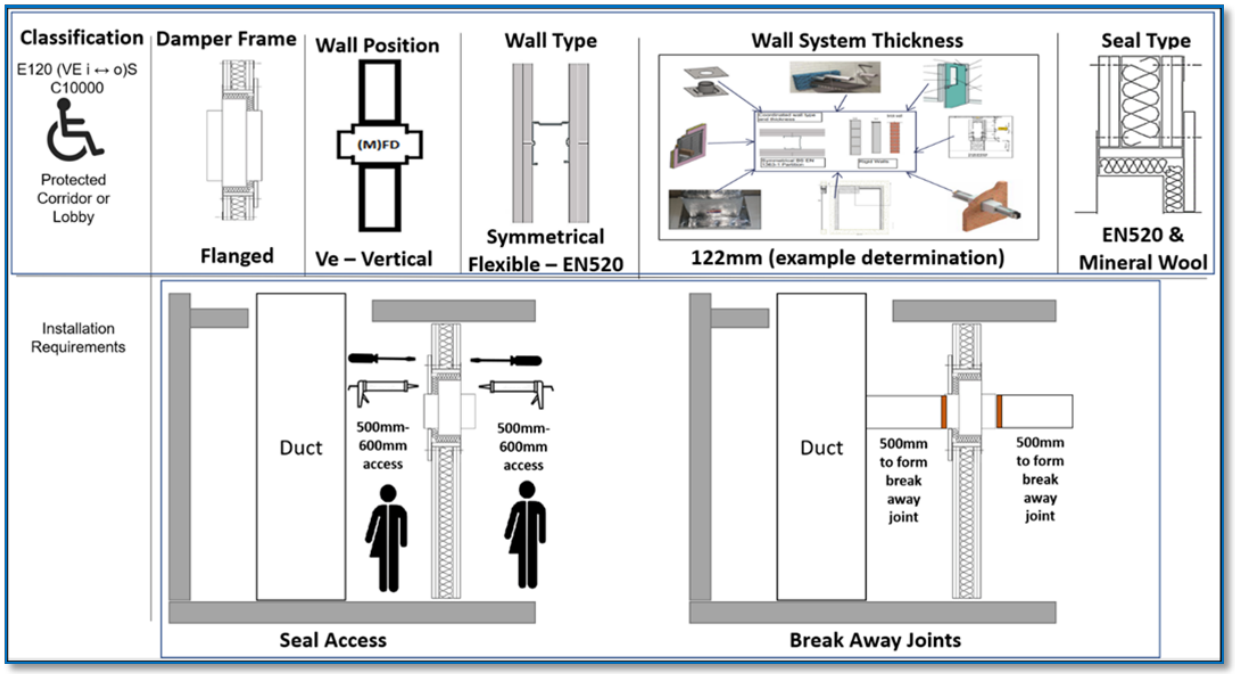
Under the new building regulations regime for higher risk buildings, clients as duty holders have responsibilities to make suitable arrangements for planning, managing, and monitoring a project to deliver compliance with the building regulations. In practical terms this means:

- appointing the right people with the right competencies,
- ensuring these people have systems in place to ensure organisational as well as functional compliance,
- provide information to designers and contractors and
- cooperate and share information with other duty holders.

Clients therefore are responsible for ensuring the competency of the principal designer and contractor, and jointly for information sharing.

Implications for insurers

Any solution that assists insurers in evaluating risk needs to take account of the impact of all these factors described above, to ensure the right information has been received and can be relied upon. However, this is not how the construction industry consistently works, at least some of the time, and the reality is like that shown in the data journey story.



Examples of components of and considerations for passive fire systems. *Source: NAAD22 p121*

Challenges to getting the right information

Why might getting hold of reliable, trustworthy information out of the construction process be a problem? There are three main areas to consider: the digital maturity of the sector, the nature of the design and construction process, and the effect of the market.

Digital maturity, information management, and digitisation

The amount of information generated about a building of even a modest size is huge. Hundreds of different products, each with their own information, creates millions of data points.

It is not unusual for the information about a building at handover to be provided in analogue form – operation and maintenance instructions, manufacturer's literature, as built drawings, and signed test and commissioning sheets may be provided in printed form in dozens of archive boxes, or as pdfs on DVDs. When someone needs to access a subset of this information, doing this efficiently and knowing the information is correct and complete when it is in analogue form is impossible. This process also makes it nearly impossible for the receiving party of handover documents to check if they have everything they need.

To make large quantities of information, and subsets of it, available to the supply chain, to designers, and to clients, the information needs to be arranged in a structured, digital form.

Construction is not digitised

Digitisation is the process of converting analogue and disconnected data sources into connected digital form. The reason why handover information is commonly provided in analogue form is that the construction industry is generally not digitised. The sector has been slow to adopt process and technology innovations and less than 1% of revenues are spent on R&D.

Whilst larger companies may have adopted digitisation (though anecdotal evidence suggests this is patchy), most construction companies (94%) and manufacturers (67%) have fewer than 10 employees. Our industry is made up of micro businesses.

Building Information Management (BIM), the process for creating and managing information on a construction project throughout its whole life cycle through digital means, is not well adopted, and where it is used, this is in a siloed way.

In 2020, Yale professor of architecture, Phil Bernstein, described the evolution of BIM from the big vision of a single federated information model into "*lots of little BIMs*" where each actor produced their own model for their own purposes, sometimes stripping out the data from the model before and replacing it with their own. The UK BIM Alliance raised a similar concern in a report in 2018. In this situation there is no 'chain of custody' for the information, it cannot pass securely through the supply chain.

BIM is a concept developed and understood largely by designers and contractors and less by manufacturers and clients, leading to a lack of structured information entering the supply chain and a lack of it being used by clients. This is known as the BIM Gap or the BIM Bubble. Even well-established and recognised organisations such as the UK BIM Alliance (now called nima) recognise this and are shifting to talking about information management and engaging more with parts of the sector who have not adopted BIM.

Manufacturers are not digitised

Manufacturers did not embrace BIM during the period of the government mandate of 2016. In the spring of 2023, the Institution of Engineering and Technology commissioned some independent research with telephone interviews of 80 C-Suites in manufacturers who supply products into the UK construction supply chain.

More than half of those interviewed said they supply safety critical products yet only 8% of the manufacturers said they had ever produced BIM objects. Their primary way of providing product information is pdfs, hard copy brochures, and a manually updated website.

Manufacturers surveyed equated digitisation with their own internal processes, such as the requirements of the government's 'Making Tax Digital' initiative. They did not recognise digitisation in the context of safety critical information, compliance information, or giving the supply chain structured product data.

Clients are not digitised

In 2018, a group of G15 housing associations founded BIM for Housing Associations (BIM4HAs), a client-owned, run, and led initiative to encourage better information management in the social housing sector. This group has produced a Toolkit which aims to translate the UK BIM Framework (the UK interpretation of the ISO 19650 series of standards) so that it is easier to use by the sector.

Workshops with BIM4HAs members identify a lack of information management competence generally within the housing sector, illustrating perhaps one reason why there has not been a significant client pull for structured data about buildings.

Lack of digital skills in construction

There is a major shortage of digital skills in construction. The IET Skills for a Digital Future Survey in 2023 reported a growing digital skills gap across industry. In 2022, Autodesk and the Considerate Contractors Scheme reported that 20% of construction professionals they interviewed said that construction talent shortages over the next decade will be caused by a shortage of digital and technology skills.

A recent workshop between built environment, manufacturing and tech professionals organised by the Apollo Protocol Initiative highlighted a general lack of digital literacy, particularly amongst business leaders. This included a lack of understanding of basic principles, such as the the difference between ownership and hosting of data, a lack of understanding of how data can be kept alive and valuable, and a perception of information management as expensive.

A digital golden thread

The definition of the golden thread was published by the MHCLG Building Regulations Advisory Committee in July 2021 as part of their golden thread report. Part 4 of the definition read:

"The golden thread information should be stored as structured digital information. It will be stored, managed, maintained and retained in line with the golden thread principles... The government will specify digital standards which will provide guidance on how the principles can be met."

Whilst these digital standards have not yet been produced, in their publication of the outcome of a consultation on the new safety regime DLUHC confirmed that they would not mandate "*a single IT system*" for the golden thread, but "*information and documents should be able to be transferred electronically to other persons without the data in it being lost or corrupted.*" DLUHC confirmed they would work further with the regulator to develop guidance on the golden thread.

Sectors of the industry working on higher-risk buildings will need to provide building information in digital form, which should give insurers of higher risk buildings greater confidence. Insurers could use this requirement as an opportunity to generate client pull for information about all relevant buildings to be generated and provided in the form of structured data.

In the context of a lack of digital awareness and skills this requirement should however be identified as a potential source of additional risk to an industry that does not currently have the resources to digitise.

There are three key requirements to consider with regard to the golden thread:

1. How one can arrive at the appropriate selection of products and a system approach.
2. How products can be traced throughout their life.
3. The strategy of the building in fire and its management processes in use.

The Product Data Template dilemma

The lack of understanding of Information Management described above can be illustrated by how the construction industry in the UK has failed to develop Product Data Templates (PDTs).

A Product Data Template is a common way of describing product characteristics in a structured way. A data template provides a common data structure linked to a credible source of information such as a standard. However, data templates also provide a logic for machine reading by software and thereby, alongside data dictionaries which enable the mapping of concepts used by different actors, are the building blocks for structured data about products and systems.

In the UK, before and after the development of standards for product data templates (EN ISO 23386 and EN ISO 23387) the focus, via a project called LEXiCON was on manufacturers trade associations collaborating to produce templates of all the characteristics of their products and systems. This has proved difficult. Better progress has been made in Europe where Construction Products Europe are spearheading the development of data templates, data dictionaries and SmartCE marking, and working directly with the EU to develop Digital Product Passports (DPP).

When collaboration in the UK has been possible, the tendency has been to generate huge templates of all possible information about one product type. An example is the Guild of Architectural Ironmongery's Doorset Template which includes over 160 characteristics. Whilst this is useful as a starting point it is significantly different to the information that is required by any particular actor, such as an insurer or asset manager as opposed to an installer or wholesaler. The emphasis is on identifying all the information that could possibly be provided.

To create a requirement for structured data, specific actors need to focus on the information they require and request it by developing a data template aligned to open data standards. One example is BIM4HAs' Door Template of 28 characteristics, developed from the work of a group of asset managers and manufacturers, and focusing specifically on the information asset managers require.

The learning for insurers from this challenging environment is that the information they require needs to be clearly articulated and structured according to data standards to enable those who supply that information to do so according to the same standards.

The design and construction process

In addition to the challenge provided by a lack of digitisation, a lack of digital skills and a lack of understanding of information management, the nature of the design and construction process has also had its effects.

Design before build

One of the intentions of the new safety regime for higher risk buildings is to make procurement more collaborative, shifting more design decisions to before construction starts on site. After a higher risk building receives Building Regulations Approval (Gateway 2) all changes must be recorded in a Change Control Process; some must notify the regulator and major changes require a change control application and approval by the regulator. This has led some architects to speculate that the commonly used 'Design and Build' procurement process, whereby the contractor takes over responsibility for the design at tender, will become 'Design **before** Build'.

Given the way in which buildings are constructed using a multi-tiered supply chain with several layers of contractors and subcontractors, this may be difficult to achieve within current practice.

For example, a dryliner is often a key participant in the execution of internal fire compartmentation. Conventionally, a dryliner company will not be commissioned until after work commences on site and will be given three weeks from instruction to procure materials, check their contract and drawings and start work, though it is not uncommon for less time to be available. Recent research by the sector body, Finishes and Interior Sector (FIS) suggested that only 3% of drylining contractors are confident they are always given adequate design information to detail the construction before they are expected to commence.

If this methodology continues, should the dryliner identify any problems with the work they have been contracted to do, this would now constitute a major change post Gateway 2. Commercial pressures, including pressures of time or constraints caused by other design decisions impinging on space, may mean the installer does not have the time or the space to do the job properly.

Design of systems

The systems approach to construction is critical to building safety, not least in passive fire protection. However, the processes currently in use for the design of such systems have been recognised as inadequate and non-standard. Work is underway to develop new processes.

The Passive Fire Knowledge Group, formed by Tier 1 contractors and specialist installers and supported by trade associations (ASFP, BESA, FIS, and GPDA), has a Process Working Group chaired by Paul McSoley of Mace. The group has identified a major shortage in expertise in the design of passive fire systems for compartmentation and is developing a series of standard processes and workbooks to support better passive fire design and product selection.

The workbooks respond to

- the need to flag up issues and errors at the design stage and not on site where change is difficult and costly,
- the increasing complexity and range of products and new European standards,
- the range of actors involved in designing and installing the systems, none of which have all the information they need to ensure correct decisions are made.

Each process workbook delineates a clear sequence of steps to generate selection and classification of elements of a system, such as a fire damper within a compartment wall. There are five steps for Quality Assurance, commencing with the building type and space risk and ending with a system selection, and seven steps for Quality Control including digital records and information for operation and maintenance. The outcome is a classification code which embodies all the decisions made about the fire damper and its surroundings. The use of a code enables the outcomes to be simply digitised and handled as part of an information management system.

It is hoped that when completed, these processes will be widely adopted and will eliminate many of the errors and costly and inadequate amendments to passive fire systems currently experienced.

Systems failure

The construction industry is not the same as a manufacturing environment, which is more controlled and optimised to create the same result time after time. Construction projects are by their nature bespoke in part and this can create problems, especially with systems.

The incorrect design, procurement, or installation of a product can jeopardise a whole project with a wide range of trades working in sequence and a complex supply chain delivering products over a long period. For example, a procurer or an installer, if incompetent or simply poorly informed or inadequately supplied, may change the ironmongery on a BS EN 1634-1 tested fire doorset because the correct ironmongery is not available. This can have a knock-on effect on following trades.

One solution to this is for construction to adopt 'modern methods' and become more like a manufacturing environment, as outlined in Mark Farmer's *Modernise or Die*, but the vast majority of the construction industry will never become a manufacturing environment and the boundary between the manufacturing environment that does exist (for example, for off-site manufactured timber building elements) and conventional site processes can create its own risk, such as the inadequate design of firestopping between components.

The effect of the market

The third area which can be considered as affecting the ability of the supply chain to disclose information is the effect of the market. We've already seen how procurement processes can affect participation. Here we look at some direct market effects.

Walled gardens

Following the publication of the BIM Mandate in 2011 many companies stepped forward to provide a variety of services to clients, contractors, consultants, manufacturers and suppliers, including software. Some software companies have a business model that involves creating a 'walled garden' for customer data as a way of retaining customers. The walled garden makes it generally difficult for software users to take their information out of a software platform to provide it to others in a useful format.

In July 2020, 35 large architects' practices wrote an open letter to Autodesk, publisher of Revit, the leading BIM software, criticising the lack of development of the platform and its lack of openness and interoperability with data. Movement towards open data standards in such companies was described as glacially slow.

Product databases are also notorious walled gardens. Manufacturer information sits, unverified and often unmaintained, in numerous sites, many of which the manufacturers must pay for. The Building Safety Act may eventually break this dysfunctional data market, and last autumn, Construction Products Europe won an EU tender to research product databases and come up with a solution, but in the meantime the internet is awash with poor, outdated, incomplete, inaccurate, and ungoverned information about products.

The identifier market

Product identification is an essential part of accurate, reliable information about products. Identifiers provide a potentially future proof link back to a single source of truth about the products they are attached to, the manufacturer.

Identifiers can provide information about the standards a product complies with, certification, versions, installation, and maintenance instructions. They can be used to ensure the status of products before, during, and after installation, potentially removing unauthorised substitution and enabling traceability, recycling, and reuse. If an identifier is persistent it would be possible for this information to be available even if the manufacturer no longer exists.

Identifiers are common in retail, publishing (books and music), pharmaceuticals, and the military, but it is a relatively new market in construction with several competing initiatives and no agreed approach.

An effective identifier system needs to be scalable and affordable for manufacturers. This means it needs to be

simple to use for all their products, it must link into their own data systems effectively and not create a walled garden of costly hosted data they cannot afford to maintain. The system needs to be extendable from an SKU level (type of product) to individual product level (e.g. a GUID) which would enable carbon footprint to be calculated, for example.

At least one of the heavily marketed solutions on the market does not fulfil these requirements. For the construction product market to adopt identification, there needs to be consensus around a solution which the market (manufacturers and their customers) will trust.

The UK has added another layer of complexity to this dilemma by developing its own UKCA marking system independently from Europe-wide CE marking. CE marks record that the manufacturer attests the product complies with harmonised standards.

The Morrell/Day report describes the venture into UKCA marking as a 'distraction' and points out the pressure it has put on testing capacity. With many manufacturers supplying both EU and UK markets, having two marks makes no sense, and puts the UK at a disadvantage when EU manufacturers are pushing ahead to evolve CE marking into a truly digital offer.

Construction Products Europe have spearheaded the development of SmartCE Marking which enables the transfer of harmonised data from construction products into the value chain, effectively making CE marks machine readable and the data they connect to machine readable via an XML structure. The Spanish construction products association have taken this venture further to look at linking the system to environmental information, CAD drawings, and proposing a file integrity system to allow verification.

The new Construction Product Regulation advocates for a smart Declaration of Performance (DoP) and ISO has published a standard for defining data templates for Environmental Product Declarations, ISO 22057 which will enable environmental information to also enter the digital value chain.

Competence and integrity

The Hackitt Review identified the lack of a coherent approach to competence across the construction industry and argued for increased levels of competence particularly in the field of higher risk buildings. The CLC has been leading initiatives towards improving competence and following its benchmarking of current competence in May 2022 different sectors of the industry have set up their own initiatives to develop competence frameworks. One example is the Joint Competence Initiative for The Building Envelopes Sector (JCI). Anecdotal evidence suggests that it will be some years before these frameworks are in place.

The Code for Construction Product Information (CCPI) is an initiative which seeks to drive higher standards in marketing integrity by signing up manufacturers to declare that the information they provide is '*clear, accurate, up to date, accessible, and unambiguous*.'

Whilst this is a laudable venture, it has attracted some criticism as another standalone initiative when this work should properly be carried out by the Advertising Standards Authority. Signing up to the CCPI is a significant cost and some manufacturers report that this voluntary scheme is distorting the market over the white labelling of products. CCPI registered manufacturers must identify original products at source, but nonregistered manufacturers do not.

White labelling is a major challenge to product safety. Distributors often use a business model whereby they provide several manufacturers' products under the same label as if they were the same. This enables them to ensure a consistent supply chain of product but breaks the connection back to the manufacturer (and any warranty). There has been some success in Norway where plastic drainage pipe manufacturers have persuaded distributors to keep their identifiers to enable installers to know what products they are installing.

Ultimately, the issue of integrity will be resolved when the case for disclosure of product information is made effectively to manufacturers, and the CCPI will be superseded by the Construction Product Competence Standards.

What would 'good' look like?

It is in this context of lack of understanding of digital and information management, an adversarial industry and emerging regulation that one should ask, if these challenges were to be overcome, what does good look like?

How should information be organised?

To satisfy user needs for accuracy, relevancy, comprehension, and manageability, an approach based on a digitised industry will ultimately be required. That solution must be based on structured, secure, verified, and interoperable data.

- Structured data is data that has been defined and organised in such a manner that it is searchable and immediately identifiable and machine readable within an electronic file. This means it needs to be defined in a standardised way and identified by naming conventions and presented in a standardised format.
- Secure data is only available to those who are authorised to view it.
- Verified data can be confirmed to be accurate by being traced back to source, such as to a verified test certificate.
- Interoperable data can be transferred accurately and without loss between software platforms such as those used by different actors in the supply chain.
- Governed – so that data can be trusted, actors need to know that the data is covered by a governance process to ensure it is accurate and up to date.

When structured – defined and organised in a standardised manner - data becomes machine readable, searchable, and immediately accessible with confidence.

Information is an asset which can provide insights to enable better decisions, but its value chain needs to be recognised and maintained. There should be no single-use data. By structuring data according to open standards and making it interoperable, value can be maintained.

Enabling effective data exchange

Interoperability

Key to effective data exchange is interoperability. The Gemini Principles define interoperability as:

"A characteristic of a product or system, whose interfaces are completely understood, to work with other products or systems, at present or in the future."

Interoperability enables data exchange independent of the technologies used similar to how standard electrical sockets and energy standards in homes allow white goods purchased in any store and made by any company to be plugged in and used all over the UK. Government has recognised the importance of interoperability. The recent government response to their Cyber-Physical Infrastructure consultation gave interoperability a wider definition to include the non-technical requirements such as common frameworks, commercial models, and ethics.

Respondents to the consultation identified barriers to interoperability that include a lack of these common frameworks, standards, open data protocols, and tools, and urged government to create a culture of trust, promote open-source technologies and incentivise open sharing protocols. However, whilst many of these frameworks already exist for construction, it is largely that they are not recognised and adopted widely.

Open standards for data

Open standards for data improve interoperability, enable comparability (such as comparisons of products), and aggregation (such as information from subcontractors). Construction needs to use open data standards to enable their clients to access valuable insights from their buildings.

BuildingSMART has adopted the principles of interoperability and open standards for data into Building Information Modelling and developed OpenBIM Standards. These are also aligned with the ISO 19650 suite of standards for BIM. By requiring and using OpenBIM standards the construction industry could avoid walled gardens, 'blue tape', and inefficiencies associated with proprietary software solutions.

Included in OpenBIM standards are IFC (Industry Foundation Classes) a data structure for information exchange and MVD (Model View Definitions) such as COBie, a subset of IFC which is used for handover information. Whilst discussion continues as to whether these standards are sufficient, they start from the premise of a data schema which enables interoperability and thereby avoid silos of data which cannot be shared.

Exchange of fire safety information

BS 8644-1: Digital Management of Fire Safety Information is a code of practice derived from Regulation 38 for the digital handover of information for fire safety.

When published this document caused some concern within the OpenBIM community because, whilst it attempts to align with open data standards (using a schema known as FIREie), the data schema has not been developed within the OpenBIM system of IFC and COBie Standards. As a result, it cannot be automated, for example. There is also concern about the ability of the industry to deliver to BS 8644-1 as it currently stands.

Nima (formerly the UK BIM Alliance) have set up a working group with BuildingSMART UK and Ireland to help assist BSI and the committee which developed the standard to align it with IFC.

An effective solution

The above sets out a range of challenges the construction industry is facing in order to deliver reliable information throughout the supply chain and ultimately at handover.

In order to use Regulation 38 effectively, insurers need to be confident that the information they are supplied with is reliable, and should consider the following questions:

1. What information do you need?
2. How can it be obtained reliably?
3. How can it remain auditable and secure throughout the life of an asset?
4. What solution would help drive digitisation in the supply chain?
5. What initiatives should be supported?

In order to answer these questions effectively it is recommended that insurers should address the following:

1. Engage collaboratively with the existing sector and cross-sector groups supporting their sector to improve information exchange. These should include FIS digital working group, Passive Fire Knowledge Group's Process Working Group, ASFP, BuildingSMART UK and Ireland, nima, IET Built Environment Panel Product Data Working Group, BIM for Housing Associations, The Joint Competence Initiative For The Building Envelopes Sector, and manufacturers working with the Construction Product Association and Construction Products Europe on digital developments and product data flows.
2. Recruit data specialists to assist in developing the solution to compensate for the lack of data skills in the supply chain.
3. Articulate your specific requirements based on risk.
4. Consider how the information required can be used in asset management to avoid duplication of work.
5. Require digitised submissions by specifying the requirements in a structured format.
6. Identify what information will need to be traced back to source, such as a test certificate on a manufacturer or third-party website. Advocate for unique identifiers on key safety critical products to support this.
7. Align these requirements to openBIM standards to reduce the blue tape burden on the supply chain.
8. Require that practitioners providing the information are certified to ISO 19650. They should be experienced in working with structured data and will be managing risk better than those who are not.
9. Advocate for collaborative working in the supply chain, referring to the government's Collaborative Procurement Guidance for advice. ◀

RISCAuthority