

Digitisation for construction product manufacturers: a plain language guide

How manufacturers can structure and share data safely and sustainably.

This document is an extract of the full report that provides guidance on the digitisation of construction product information.

Manufacturers of construction products produce a significant part of the information required to bring about a safer construction industry, but currently, this information isn't structured or shared in a consistent way.

An ever broadening and more complex digital landscape, together with a plethora of solutions providers and a growing regulatory framework, is pushing the sector to act. However, it must do so intelligently, and with an understanding of both the risks and benefits of a future that's constantly evolving.

If UK construction is to meet the challenges of a digital future and respond to the requirements of a new building safety regulatory system, it needs manufacturers to structure and share their data safely and sustainably.

There's no need to wait to digitise your product information. Making the correct changes now will bring immediate benefits to your business and a long-term competitive advantage. This guide will help you identify what those changes are.

This plain language guide has been produced to help decision-makers in manufacturing identify:

- **Why supplying structured data is important.**
- **How to avoid poor investment decisions.**
- **How to set priorities and implement information management.**
- **Safe ways to share this information about your products across the supply chain.**

Contents

2. **What are digitisation, digitalisation and digital transformation?**
3. **How your trade association can help**
4. **Benefits to manufacturers of structured data**
6. **How to digitise construction product information**
7. **Steps to digitisation**
8. **Recommendations**

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What are digitisation, digitalisation and digital transformation?

Digitisation is turning your analogue and disconnected data into connected, digital form. It's about connecting your sources of information so they can work for your business more efficiently and effectively. This guide is about digitisation.

Digitalisation is making this digitised information work for you in your existing business – benefiting from things like e-commerce, product tracking (object identifiers), or contributing to a digital twin, golden thread or building logbook.

Digital transformation is about creating new business applications for data – new business models. These include artificial intelligence (AI) powered predictive maintenance, 3D printing and custom manufacturing, Internet of things (IoT) or Platform DfMA (Design for Manufacturing and Assembly).

To benefit from digitalisation and ultimately digital transformation, manufacturers first need to digitise.



Learning from Grenfell

Since the Grenfell tragedy new legislation and government-supported initiatives are emerging that seek to prevent similar failures in the future.

To avoid tragedies like Grenfell, manufacturers – like all other actors in the supply chain – need the following four characteristics:

- Integrity.
- Competence.
- Compliance.
- Information.

Each of these is explored in the guide.

Information will be central to the post-Grenfell reforms, not least in the concept of the golden thread. If manufacturers don't digitise their product information, they won't be regulatorily compliant. As digitised information becomes a requirement for the golden thread it will also become the standard in construction, including from the early stages of any development.

The key to an effective golden thread is data that's structured, secure, verifiable and interoperable so that it can survive the process and be accessed with confidence.

How should product data be organised?

- **Structured.** Organised according to a predefined schema, data becomes machine readable and easy to analyse.
- **Secure.** Only available to those who are authorised to view it yet available in an emergency.
- **Verified.** Guaranteed to be accurate by being traced back to the source.
- **Interoperable.** Able to be transferred accurately between software platforms, such as those used by different actors in the supply chain.
- **Dynamic.** To be effective some data needs to be dynamic, that is regularly updated so that it remains live, accurate and relevant to its users.

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How trade associations can help

Trade associations are uniquely placed to support the evolution of product data management.

They're the voice of their sector and often represent both manufacturers and installers.

In this role, they can lead their members away from analogue and towards an open digital culture.

An analogue culture:

- Takes a siloed view of information sharing.
- Sees marketing as information control.
- Is reactive to safety issues, apportioning blame after an event.
- Protects its dwindling field of influence.

An open digital culture:

- Encourages innovation in information sharing.
- Sees openness of information sharing as a competitive advantage.
- Is proactive about safety, encouraging discussion of risk and opportunity.
- Has an ever-growing field of influence.

Collaborative template development – an example of a proactive approach

Trade associations can support their manufacturer members to prepare for digitisation by encouraging awareness and taking up proactive initiatives. One example is developing templates of key product information aligned to data standards.

Associations don't need to wait for data dictionaries such as LEXiCON to happen in the UK, they can do it themselves for their own sector. The association knows your products and is in the best position to create compliant technical digital language. It's the association's responsibility to carry out this process in a collaborative way and avoid the temptation to listen only to the loudest voices.

Here is a suggested process for trade associations:

- Become familiar with the principles of *ISO 23386* and *7*, and *PAS 14191*.
- Work collaboratively with the manufacturer or manufacturers and installer members to develop templates of properties for the products your sector represents.
- Base these templates on the essential characteristics and the requirements within the regulated standards and legislation.
- Add in the MHCLG requirements through their golden thread initiative. This helps cover client requirements.
- Speak to installers, designers, asset managers and other users of the information to ensure their needs are met.
- Liaise with other players in your sector to combine efforts and avoid overlap.
- Ensure you take advice from official sources. Be aware of other initiatives that may take you down a blind alley.
- Make data templates part of your guidance documents on relevant products and systems.
- When national structures are agreed upon, template properties can simply be mapped across.

Encouraging integrity and transparency

Trade associations can play a role in encouraging integrity amongst companies and transparency for test results and accreditations for their products. They have seniority over the sector area and can bring companies with similar needs and requirements together. These companies can gain integrity by pitching themselves against their competitors in an open, collaborative environment.

As the source of expertise, respect and authority over their sector area, trade associations could consider hosting a portal of compliance information for their sector, encouraging transparency and acting as a source for information for third parties.

Working with Government

As the voice of their sector, trade associations can work with Government departments such as the Office for Product Safety and Standards⁵², home of the Construction Product Regulator, to help them develop:

- A transparent, properly funded, genuinely independent test regime.
- A system that ensures all completed test results, including failures, are published by the accredited test centre and accessible to all. This will protect not only the public and our colleagues but all honest professionals.
- A golden thread framework that's based upon structured data provided about products throughout the supply chain.

Share this document with your trade association and ask for their help to start the process.

Benefits to manufacturers of structured data

In 2020, IBM carried out an analysis for a major UK construction product manufacturer prior to a programme of digitisation. The benefits forecast 12 months after its implementation was a 1.56% increase in turnover and a predicted further increase in sales of 6-7% over the following three to five years.

Increased revenue and margins

A manufacturer providing structured product data is more profitable.

Improved trading margin 21% of total saving

Structured data helps manufacturers improve promotional targeting of different offers and supports volume selling, better brand messaging and positioning. It also reduces exposure to less profitable customers and consumers. The study estimated 0.3% trading margin improvements to the company's core products.

Gain market share over competitors 15% of total saving

A structured data approach enables better and more proactive sales management, improved campaign processes and responses, improved targeting and increased revenue per customer. More efficient digital marketing – 10% of total saving - and e-commerce make products more accessible and automated processes more efficient. Online interoperable tools support the specifier and customer and enable cross-selling.

Get involved earlier in projects 10% of total saving

Digitising product data helps businesses move to a solutions-based delivery option, focused on systems and technical support. This positions the manufacturer earlier in the design process, delivering concept solutions rather than competing on price at a value engineering stage. Information requests come earlier, as does the opportunity to contribute to design and value discussions.

A more holistic approach to value 5% of total saving

Market intelligence from structured data informs product development, improves customer service and increases repeat business. Sales are enabled to discuss products and systems from the lifecycle and environmental point of view, and improved product choice reduces servicing and warranty costs. Making environmental data available contributes to environmental impact calculations, lifecycle value and circularity.

Faster product launches 4% of total saving

Market intelligence informs research and development (R&D), optimising product development and identifying new opportunities to reduce costs. The availability of structured data provides a quicker route to market for products, extending the number of selling days.

Improved reach and conversions 1% of total saving

When manufacturers understand which features drive sales, they can sell more products. Better and more complete product information improves the effective reach of campaigns, increases conversion rates for leads and improves the pipeline.

More profitable:

66%
of savings from
increased
revenue and
margins



Improved trading margins
21%

Efficient digital marketing
10%

Faster product launches
4%

Gain market share
15%

Early involvement
10%

Holistic approach
5%

Improve reach and conversions
1%

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Reduced costs
 A manufacturer working with structured data is more efficient.

Brand improvement
 A manufacturer supplying accurate, structured data is perceived as stable and reliable.

Improved productivity
 15% of total saving

Compared to manual methods, updating property values for products in a single source results in at least 50% time saving. Sharing data to third-party data pools accurately and automatically provides additional savings as well as ensuring consistency.

Reduced returns, fines and chargebacks
 5% of total saving

Tracking products through the supply chain provides many benefits alongside removing the cost of errors. Direct customer feedback is improved and actors are more knowledgeable and confident about products. This fosters a better relationship with the supply chain, right through to the end user.

Reduced marketing and selling costs
 8% of total saving

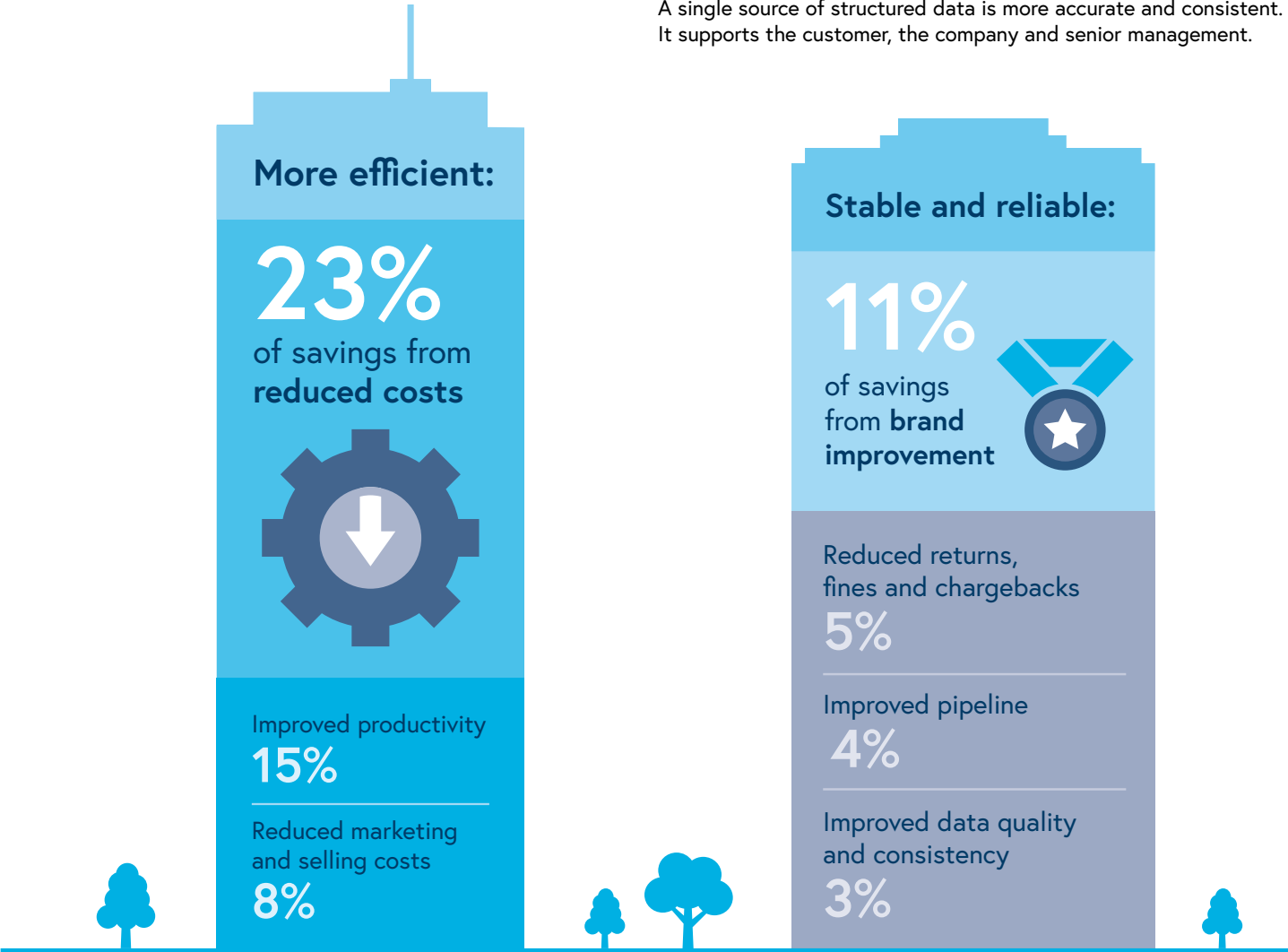
Structured data reduces the cost of lead generation and improves campaign targeting and visibility – and consequently market effectiveness. Better data control reduces reputational risk and sales channels become more efficient with reduced churn. Spend less time communicating about your products while improving results. Provide information more quickly, more accurately and with integrity.

Improved pipeline
 4% of total saving

A smoother flow of sales, marketing and technical information reduces silos within the business, improving decision-making. Supporting the flow of information enables manufacturers to become market disruptors, developing new products or processes and driving change in the market.

Improved data quality and consistency
 3% of total saving

A single source of structured data is more accurate and consistent. It supports the customer, the company and senior management.



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How to digitise construction product information

This section of the guide sets out the steps to take to structure your product data.

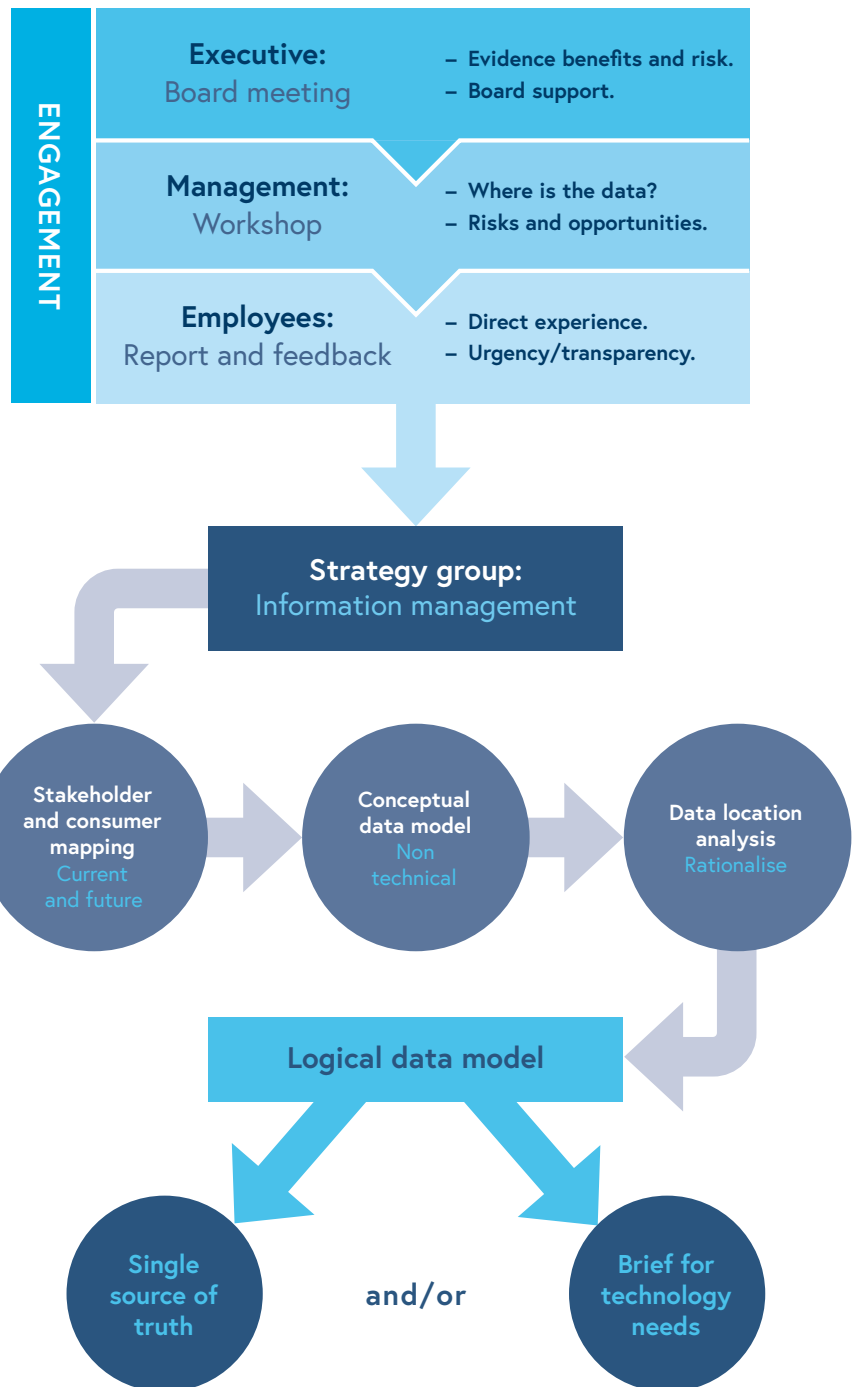
Many manufacturers hold their data in several different places such as spreadsheets, databases, ERP systems, accountancy programs and manufacturing records. The first step to digitisation must be to connect these sources.

On the right is an example procedure for developing a data strategy that you can adapt to suit your own business structures. Whether you're a small and medium-sized enterprise (SME), mid-level company or a major international corporation, all companies will encounter similar issues and the principles will be the same.

This process has the benefit of ensuring support from all levels of your organisation. While board level support is essential, so is support from those responsible for generating and managing your existing data sources.

Remember that structuring your data is an ongoing improvement challenge; you may identify problems that will take time and resources to resolve, or the process may be relatively simple.

Either way, data management is a continuing process, not a one-off event.



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Steps to digitisation

Managing your own product data may seem like a daunting prospect, but remember you already have this information – all you need to do is structure it.

1 Step one: executive buy-in – board meeting

The company leadership must first recognise there's a problem with product data management so that they become sponsors of the initiative.

- Gather examples of how poor data management is generating unnecessary risks and waste in the organisation, and examples of positive improvements by data-driven companies.
- Present the initial findings to the board and allocate a board-level key project sponsor and resource for the next stage.

2 Step two: management buy-in – management kick-off workshop

This workshop helps second-level management identify the nature of the problem within your business, selling the need for change. Ask questions such as:

- Where do we store our data?
- Who decides my name?
- How do we start to become accessible, transparent and secure?
- What will happen to our business if we make no change to how we create, use, store and structure our data?
- What are the opportunities if we organise our data better?

3 Step three: employee buy-in – share with your employees

Second-level managers are tasked with sharing the outcomes of the workshop with their colleagues using the document you've produced and invite feedback. This has two purposes:

- To instil a sense of urgency and that change is coming.
- To generate additional information from colleagues that may have been missed during the workshop, such as a database you forgot you had.

4 Step four: strategy group – conceptual and logical data model

The strategy group should include representatives from all departments who're responsible for product information management. Find out where people go for answers and make sure they're included. This could include IT, R&D, planning, sales, marketing, transportation, finance or operation managers. The first task of the strategy group is to create a conceptual data model for the business' product data, and then create or commission a logical data model.

5 Step five: data location analysis

Now that you've located all sources of product data in the company, and the needs of all stakeholders and consumers, you can interrogate and rationalise these sources to identify and resolve issues.

This process is the first step to producing a logical data model. Remember to identify and focus on every need for data across the company and be influenced by the users' search terms when deciding on names. Doing this exercise helps you identify areas of waste, duplication and error.

6 Step six: solution development

Decide how your data sources will be connected internally. The principle is to aim for a single source of truth, but this may not be possible if you have existing internal systems that cannot be changed. If that's the case, make sure they can be adapted to feed into a single source, or between them, provide one.

Recommendations

The challenge of restoring confidence in the construction sector is a complex one, but it needs to be achieved through simple steps. Our plain language guide sets out a straightforward way in which construction product manufacturers can comply with regulations, demonstrate integrity and transparency, and help make buildings safer.



For manufacturers

Why should manufacturers implement digitisation? Because it makes sense for compliance, commercially and for the future.

Regulation is coming post-Grenfell and digital transparency will be key. It's only through this digital transparency that industry and society can differentiate between compliant and non-compliant manufacturers. There are also commercial benefits for example, zero-carbon initiatives will require traceability of products and evidence of conformance. Information will need to be presented to customers in a more structured form.

- **Read the guide.** The full guide sets out a simple process to implement internal digitisation as a first step to compliance and commercial benefit.
- **Make a commercial decision.** Manufacturers can make commercial decisions about how to proceed in line with the standards to ensure compliance.
- **Work with your trade association.** Ask your trade association to support this work for your sector and talk to your fellow manufacturers.



For the UK Government

With a strong record of digitisation and the commitment to a digital economy, the UK Government is in a strong position to take the lead in encouraging manufacturers to digitise.

- **Understand the sector.** The current landscape of construction product manufacturing, while innovative and profitable, is also complex and messy. Understanding the nature of the sector will help the Government to support initiatives that manufacturers can implement. The Government should encourage those working on policy initiatives to engage with SMEs directly through their trade associations.
- **Support the digitisation agenda.** Manufacturers are the originators of much of the key data in construction and are therefore crucial to a digital construction economy. By taking a digital-first approach to its policy initiatives, regulation and guidance, UK Government can encourage manufacturers to digitise.
- **Communicate digitisation to manufacturers.** The Government needs to take the lead on communicating that digitisation is necessary, that it's easy to implement – even for SMEs – and set out in simple terms the ways in which manufacturers can do this.

For further information and to read our full guide, visit theiet.org/product-manufacturers

Read our blog in the IET Communities: bit.ly/ManufacturersPLG

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