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in progress

Improving health and safety in the built environment

by enabling better planning, risk identification, and communication through Building Information Modelling (BIM)

How the new BIM Part 6: health and safety information management (BS EN ISO 19650-6:2025) can help the built environment to meet its new safety responsibilities

Introduction

Health and safety during the design, construction, and use of buildings should never be a point of compromise or shortcut.

Following the Grenfell Tower Inquiry, the UK government immediately established the Building Safely Programme in response to the tragedy. In 2018, the Building a Safer Future report was published, with recommendations including a new regulatory framework and a **golden thread of information** for all high-rise residential structures, from the initial design intent to construction and occupation.

In October 2023, the new Building Safety Act 2022 came into force in the UK. At its core is the transformation of the culture and practices of the built environment sector. Dame Judith Hackitt, who led the independent review into the Grenfell disaster, said:

> "Transparency of information and an audit trail all the way through the life cycle of a building, from the planning stage to occupation and maintenance, is essential to provide reassurance and evidence that a building has been built safe and continues to be safe."[1]

But how is this audit trail – this golden thread of information – delivered in practice? In a sector that has been slow to digitalize, this requirement presents a challenge, particularly for smaller businesses. It's important to stress that **every** business involved in the design, construction, and refurbishment of 'higher-risk buildings' (HRBs) in England – that is buildings that are a least 18 metres in height or have at least seven storeys – are required to contribute to the golden thread.

There are many layers and aspects of the golden thread, and the new BS EN ISO 19650-6, which is the subject of this white paper, is a small but nevertheless important part, particularly when it comes to building the safety case and, ultimately, the safety case report for HRBs.

However, while we lead this white paper with a very topical matter, it is important to note that building safety and the golden thread is just one area to which the principles and requirements of the new BS EN ISO 19650-6 can be applied. The scope of the standard is much broader than that, addressing the sharing of health and safety information throughout the life cycles of buildings and infrastructure of all kinds.

In this white paper, we'll explore how the new BS EN ISO 19650-6 information for health and safety standard, launched in January 2025, can help organizations of all sizes to improve their health and safety performance and contribute to the golden thread of information.

Within this white paper, you'll discover:

- **The value of structured information;**
- **The importance of communicating risk information;**
- **The key components of BS EN ISO 19650-6.**

The golden thread of information

"The golden thread is both the information that allows you to understand a building and the steps needed to keep both the building and people safe, now and in the future."

Building Regulations Advisory Committee: golden thread report

What is BIM Part 6 (BS EN ISO 19650-6:2025 – Information management for using BIM Part 6: Health and safety information) for?

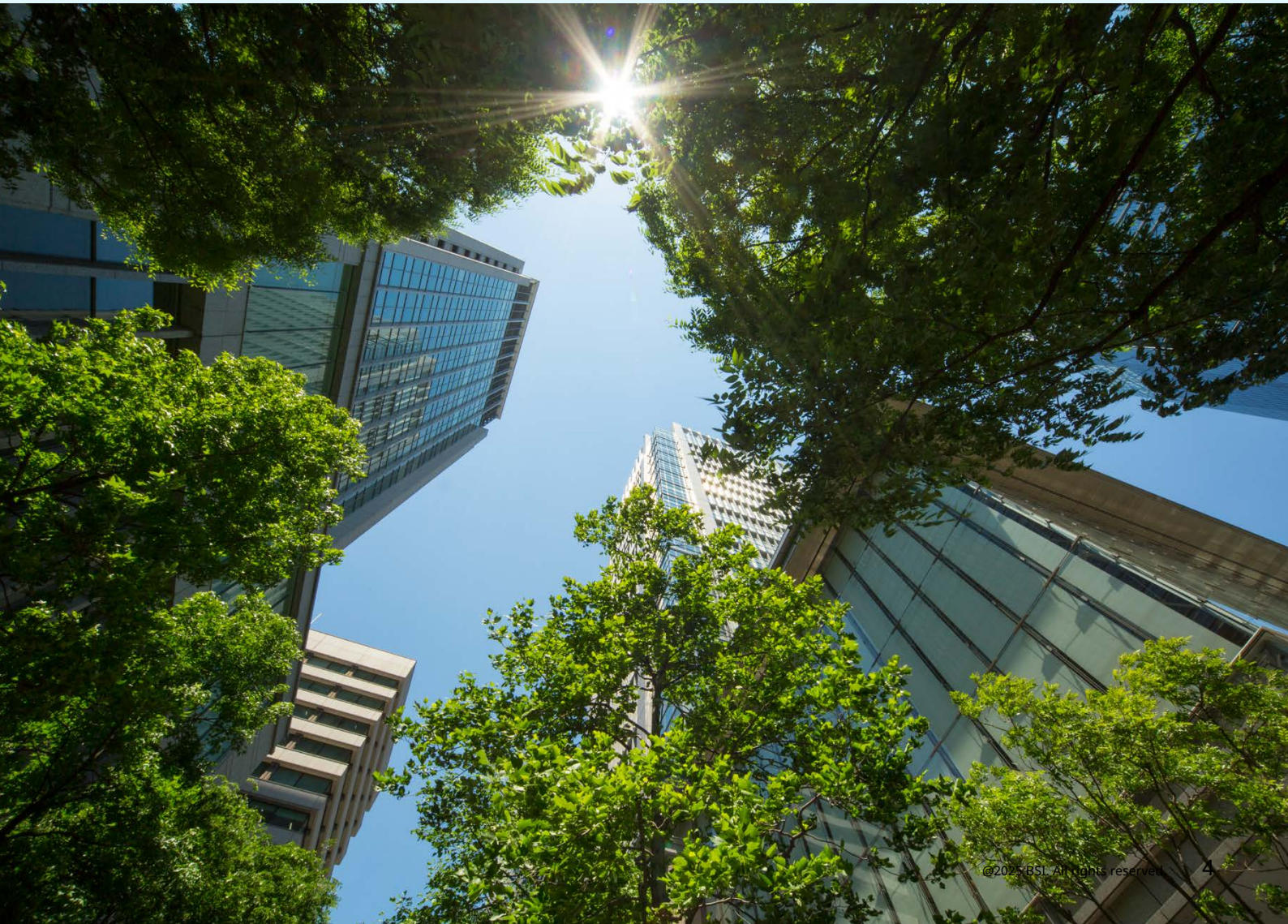
ISO 19650 Part 6 is the new international standard for sharing health and safety information throughout the life cycle of a building. It supersedes PAS 1192-6:2018. Its aim is to improve health and safety performance while also having an added benefit of being able to support the golden thread of information.

As the final addition to the ISO 19650 series, this standard focuses on information management across the entire lifespan of a building, including – but not limited to – BIM. It aligns with the principles of the IMI Framework and other parts of the ISO 19650 series.

BS EN ISO 19650-6 for a global audience

While the foundations of the new standard can be found in the UK, it has been written in consultation with experts around the world to make sure that the ideas in the standard are sufficiently general to be acceptable and understandable anywhere in the sector.

Contents



The opportunity presented by digitalization

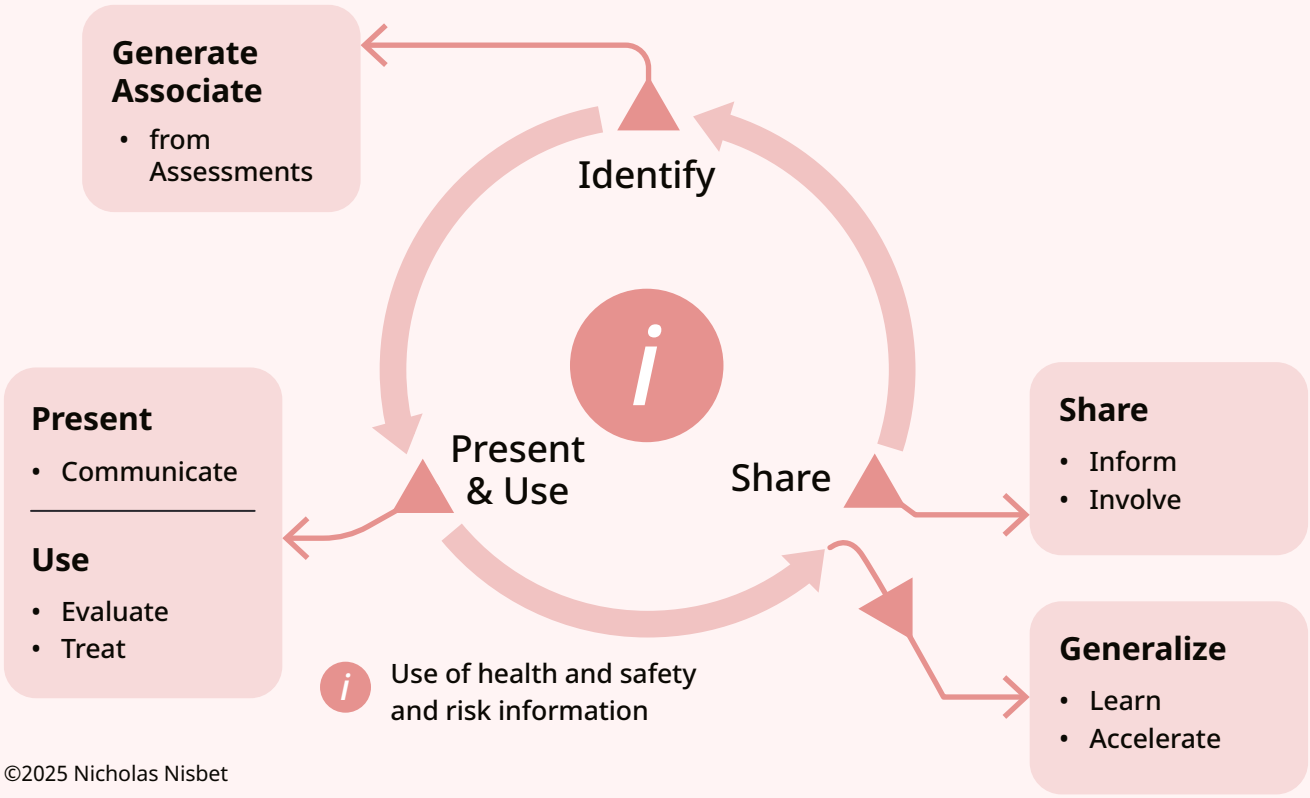
As project and building management complexity increases, so does the importance of providing the right information to the right people at the right time. That requires information to be in a form that is easy to understand and quick and easy to access.

Traditional methods of information management are limited. Often, they're little more than text-based checklists that are filed away. Accessing them can be time-consuming and interpreting them can take even longer. In the case of an incident requiring treatment, the necessary information may well come too late.

BS EN ISO 19650-6 helps to give structure to risk information in a way that takes full advantage of the benefits of digitalization. Its scope extends beyond health and safety risks and encompasses incidents and mitigations, too. It provides a standardized data schema that makes it easier to identify, use, learn from, and share risk information.

Importantly, in support of the golden thread, BS EN ISO 19650-6 requires that everyone involved in a project – not just principal designers, principal contractors, or project or building owners – are able to access and contribute to the information held within a shared, digital risk register.

H&S Information Cycle



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The value of structured information

Using structured health and safety information ensures that information isn't lost or overlooked. It can lead to improved safety performance, fewer incidents, avoidance of mental and physical ill health, and more effective communication, ensuring that relevant information is available to the right people at the right time.

At the heart of BS EN ISO 19650-6 is a schema that organizes information about the context, the risks and incidents, and the suggested treatments to mitigate those risks and incidents.

This schema aligns closely with the information requirements of a safety case report. Safety case reports are a new concept for HRBs, and are an important component in managing the golden thread of information.

A safety case report should "make a demonstration that all reasonable steps have been taken to manage building safety risks"[3]. Using the schema will help organizations to build their safety case – and subsequent safety case report – for an HRB.

BS EN ISO 19650-6 includes a helpful annex (Annex C) that was originally in PAS 1192-6. The annex presents standard matrices for combining likelihood and consequence to suggest a level of risk.

Informative Annex C Metrics for risk discussion

Likelihood	
Very High	Almost certain to regularly occur
High	Significant, highly possible
Moderate	Moderate, liable to occur
Low	Low, uncommon occurence
Very Low	Minimal, exceptionally unlikely

Likelihood						
Very High	Moderate	Moderate	High	Very High	Very High	Consequences
High	Moderate	Moderate	Moderate	High	Very High	
Moderate	Low	Moderate	Moderate	Moderate	High	
Low	Very Low	Low	Moderate	Moderate	Moderate	
Very Low	Very Low	Very Low	Low	Moderate	Moderate	
	Very Low	Low	Moderate	High	Very High	

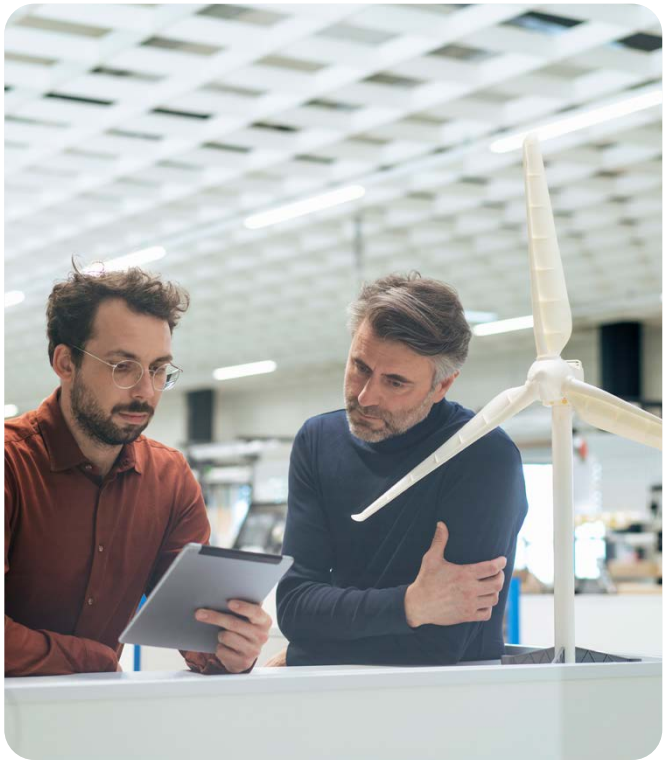
Consequence	
Very High	Catastrophic, serious
High	Major substantial impact
Moderate	Moderate, notable impact
Low	Minimal, insignificant impact
Very Low	Minor negligible impact

Level of risk	
Very High	Unacceptable, very urgent
High	Consider reduction, urgent
Moderate	Permissible, short term
Low	Permissible, medium term
Very Low	Permissible, long term

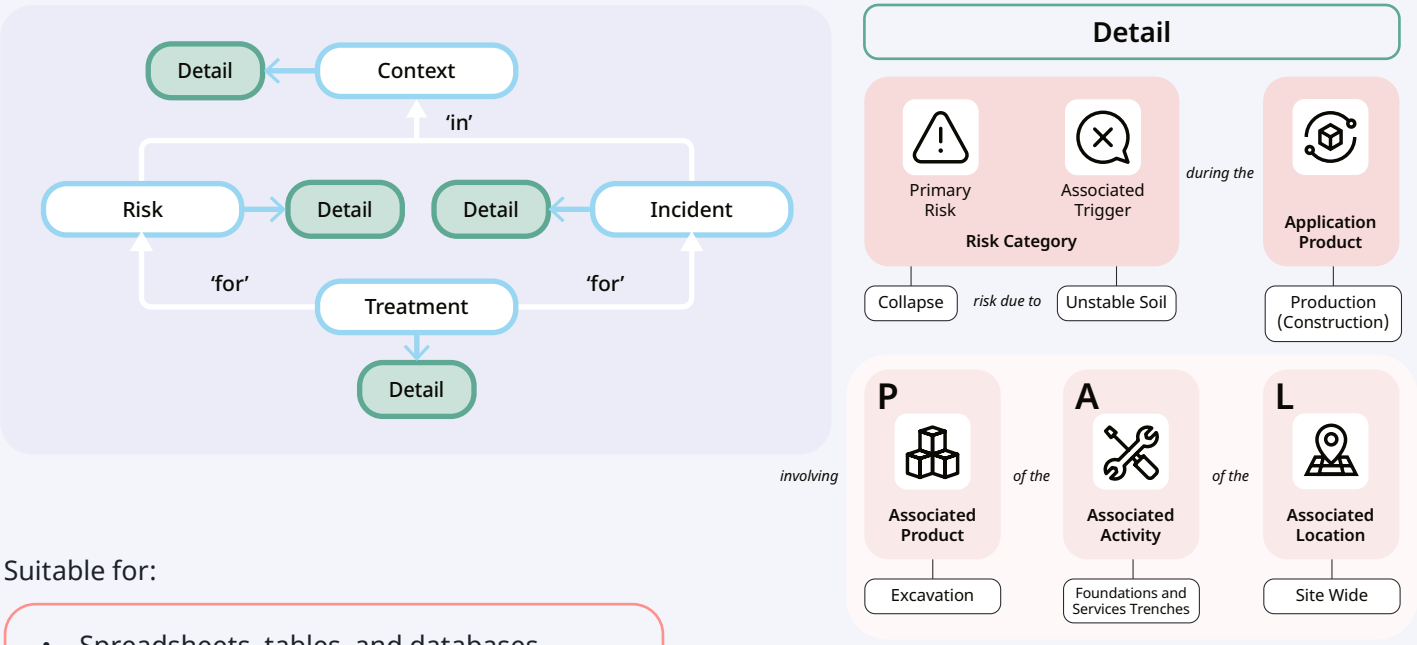
The structured information can be applied to a variety of formats for sharing. This includes:

- Design models;
- 4D representations;
- Databases;
- Gantt charts;
- Project planning tools;
- Spreadsheets
- Tables.

The key to ensuring that the risk information is meaningful, usable, and searchable is the application of PAL (carried over from PAS 1192-6), which serves to associate a risk, incident, or treatment with physical products and materials (P), activity (A), or location (L). Further information about the association of risk information can be found in Annex B of the standard.



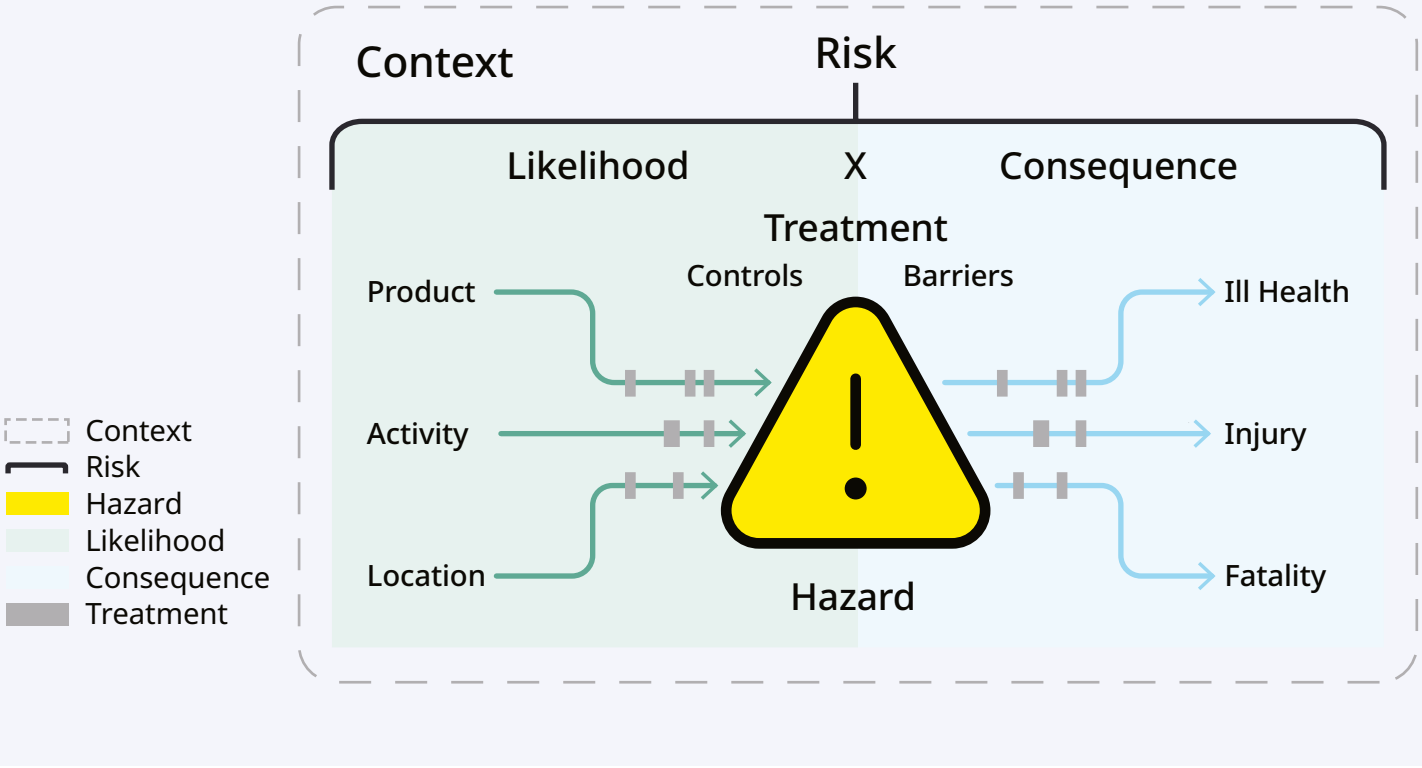
Schema for sharing H&S information



Suitable for:

- Spreadsheets, tables, and databases
- BIM, Gantt and 4D

The importance of context



Understanding the context of a hazard is essential information in being able to assess the level of risk. The context helps to identify the characteristics of the location, product, systems, element or plant or equipment, as well as the scope of work activity that is to be carried out.

Enhancing the communication of risk information

The core objective of BS EN ISO 19650-6 is to make risk information meaningful and easy to share. In turn, this makes it easier for relevant parties to contribute to the golden thread of information required by the Building Safety Act. This is supported by a central idea of the creation of a risk library that can be shared within and across teams, projects, and the wider sector.

By bringing the information into a shared space it encourages and allows discussions about risk and appropriate treatments and responses to take place. BS EN ISO 19650-6 requires that information is not only accessible, but clear – especially when it comes to risk and treatments. It makes it more than simply data; it becomes a vital resource, part of a shared knowledge base that benefits everyone involved in a project or a building.

Naturally, a shared resource of this kind can sometimes demand a degree of interoperability and transparency that might make some uncomfortable. However, this is a vital step-change in ensuring that that health and safety information isn't held in a silo but is instead used to significantly improved the health and safety of a building during all phases of its life cycle.

Eliminating risk at the preliminary design phase

Because BS EN ISO 19650-6 enables scenarios to be created and linked to possible treatments, it makes it possible to identify and mitigate risks at the earliest design phase.

Identifying and communicating potential issues helps improve health and safety for workers during construction and for users afterwards, while also preventing the need for repairs or structural alterations. This clearly presents significant economic and environmental benefits.

Combining key data fields with a sub-scheme of risks and incidents enables the creation of risk scenarios that capture effectively the often dynamic and multi-faceted nature of health and safety risk. This can be achieved particularly effectively when using design software to create visualizations.

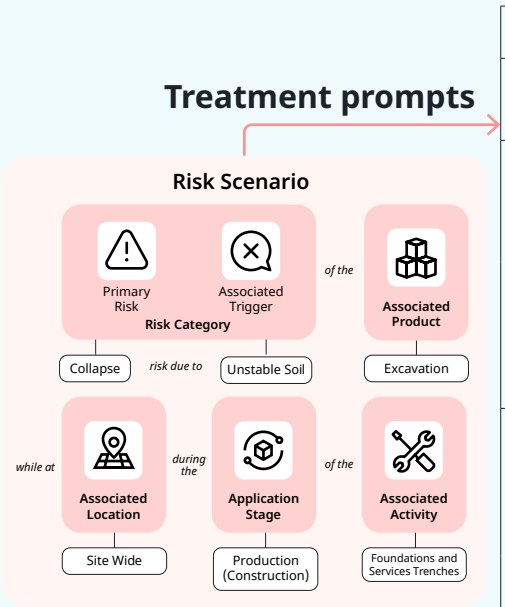
Example

When using information to create a visual representation of a risk scenario in design software, complex challenges can be more readily understood and communicated. Designs and processes can be tested and practiced in a safe environment, with the possibility to detect coordination issues before a project has even begun.

Note: What BS EN ISO 19650-6 is and what it isn't

- BS EN ISO 19650-6 is about sharing risk information it is **not** about risk assessment.
- Frameworks for risk assessment are addressed in the ISO 31000 series.

Risk Treatment Matrix



		Treatment Category			
Treatment Application Stage		Eliminate	Substitution / Reduce	Control	Inform
Design	*Preliminary*	Piled foundation design	Use cantilevered ground beam	Use trench boxes	Supply information on temporary works design
	Detail		Ensure adequate space to place the excavated soil	Keep traffic routes at safe margin from excavation	
Production (construction)	*Pre-Start*		Design out requirements for people to access excavations		Ensure contractors have relevant information
	Site Work		Batter sides of excavation		Ensure temporary works requirements are met

Source: Discovering Safety, Construction Risk Library User Guide. Contains public sector information licensed under the Open Government Licence 3.0

The three main components of BS EN ISO 19650-6

BS EN ISO 19650-6 is structured around three main parts which, when combined, can help organizations to make an important and powerful contribution to raising the safety of the sector globally. They are:

1. **How to structure health and safety information.**
2. **The information requirements to be integrated into contracts and project agreements.**
3. **Alignment of the process with the overall BS EN ISO 19650 framework.**

BS EN ISO 19650-6 complements the procedures outlined in BS EN ISO 19650-2 and -3, with additional considerations for structuring and ensuring accessibility of information. In the UK, for instance, it recommends classifying risks using the Uniclass RK risk table.

The classification of risk in occupied buildings remains a legal obligation under the Building Safety Act.

Why should you use BS EN ISO 19650-6?

The need for a standardized approach to health and safety is evident. The built environment sector is undergoing reform around the world to make it safer, and to make sure that construction products are manufactured, delivered, and installed competently, competitively, and professionally.

Smart construction is gaining traction, making full use of digital to drive through this reform by enabling the development of collaborative partnerships in the design, construction, and operation of buildings.

BS EN ISO 19650-6 provides the framework required to maximize the opportunity digitalization, and BIM in particular, presents in the creation of a sector:

- **Increased safety:** it supports the use of health and safety and related information to provide a safer and healthier environment for end users as well as for design, construction, operation and maintenance personnel;
- **Strengthened risk mitigation:** it can help mitigate the inherent health and safety risks and hazards across the building life cycle;
- **Improved performance:** it can result in improved health and safety performance, and fewer incidents and associated impacts;
- **Better communication:** it provides for clearer, more assured and relevant health and safety information to the 'right people' at the 'right time', and enables designers and contractors working on all kinds of building works to have clearer and more efficient information management;
- **Cost effectiveness:** it can reduce construction and operational costs by treating risk and thereby reducing losses, waste, stand down time and the need for rework;
- **International application:** as an international document, it can encourage more effective collaboration on global projects.

(Source: BS EN ISO 19650-6:2025 Overview of Standard)

Next steps

Communicate the benefits of BS EN ISO 19650-6 to strategic leaders within your organization. Their commitment to implementing the standard and to continual improvement is essential.

BIM services from BSI

Standards

BSI Knowledge, our online platform, gives you access to BIM standards as well as over 9,000 standards related to the built environment, including construction and civil engineering-specific standards.

BIM courses and qualifications

Better understand what BIM is, how to implement it, and build capability to achieve continued best practice with our BIM ISO19650 courses and qualifications.

BIM Certificate of Conformity

This solution has been developed for any organization involved in using BIM. It will help you demonstrate your BIM capability through independent and impartial third-party verification.

BIM Kitemark certification

Differentiate your BIM projects and elevate your credibility with independent BSI Kitemark certification for BIM. With certification, you can drive progress in a competitive market by proving compliance, demonstrating BIM maturity and implementing resilient, digitally-secure processes across the value chain.

Once certified, annual surveillance visits will ensure adherence to the latest standards.

BIM Gap assessment

This optional assessment helps you to identify any gaps in documentation that are required by the standard. Gap assessments help you prepare your management team for deeper involvement and help employees grasp necessary changes, saving you time and money. Additionally, it serves as a valuable project management aid, streamlining the process and highlighting potential risks and opportunities.

BSI products and services

BIM BS EN ISO 19650-6: Health and safety training courses

This course will help give those tasked with implementing health and safety collaboratively in their organizations and projects an understanding of the business case and other benefits to their organization, their clients/stakeholders and supply chains, and the encapsulation of these ideas in standards and best practice.

This course will also help in obtaining the benefits of digitization, lean and collaborative approaches to risk management on the delivery, and use of buildings.

BSI certification solutions

The application of BIM brings greater opportunities to foresee health and safety risks earlier in the delivery and management of projects, as well as greater access to trusted, searchable information.

The BSI Kitemark for Health and Safety, based on BS EN ISO 19650-6:2025, the specification for collaborative sharing and use of structured Health and Safety information using BIM, is available to all organizations involved at any stage in a building's life-cycle.

This Kitemark validates the adoption of processes and outputs according to BS EN ISO 19650-6:2025. You can also use it as evidence to support the effective management of the international standard Occupational health, safety,2 and wellbeing (ISO 45001:2018).

The BSI Kitemark for Health and Safety allows incorporation of the BSI Kitemark for BIM Security (ISO 19650-5).

Suitable for any organization within a project team, the BSI Kitemark provides a robust measurement of a company's delivery of BIM projects, certifying businesses for their diligence in design and construction, supply chain management and delivery of customer service excellence. As with other BSI Kitemarks, organizations holding the BSI Kitemark will be routinely assessed, providing clients with complete confidence in their delivery to industry standards.

The BIM Kitemark for Design and Construction is being upgraded to incorporate BIM Security (ISO 19650-5). This will allow you to demonstrate that your project delivery is managed within security-minded processes, giving confidence and trust to your customers in your application of BIM and your overall digital and information security.

- Demonstrate compliance against ISO 19650-1 and ISO 19650-2.
- Demonstrate digital security with ISO 19650-5.
- Kitemark certification also helps you demonstrate capability against the requirements on the UK National Annex and compliance BS 1192-4.

> "The BSI Kitemark is a respected brand. Applied to our services it will reinforce client confidence and prove greater quality in the delivery of BIM projects."
>
> **David Throssell, Head of Digital Construction, Skanska UK**

Why BSI?

For over a century BSI has championed what good looks like and driven best practice in organizations around the world. As one of the founding members of ISO, we help make sure international standards developed address today and tomorrow's business and social needs, while delivery real benefits to an organization and all its stakeholders.

We work closely with leading manufacturers to ensure their products meet the latest Regulations to gain market access.

We focus on delivering a testing and certification partnership underpinned by quality, safety, reliability and accuracy aligned to your product development requirements. That's why we're best placed to help you understand standards and to meet the requirements.

From shaping collective best practice with our knowledge solutions to product testing, certification, and environmental health and safety professional services, we are committed to innovating and collaborating with our clients to build a safer more resilient tomorrow – one that protects buildings, assets, the environment and most importantly people.

References

1 Building a Safer Future. Independent Review of Building Regulations and Fire Safety: Final Report

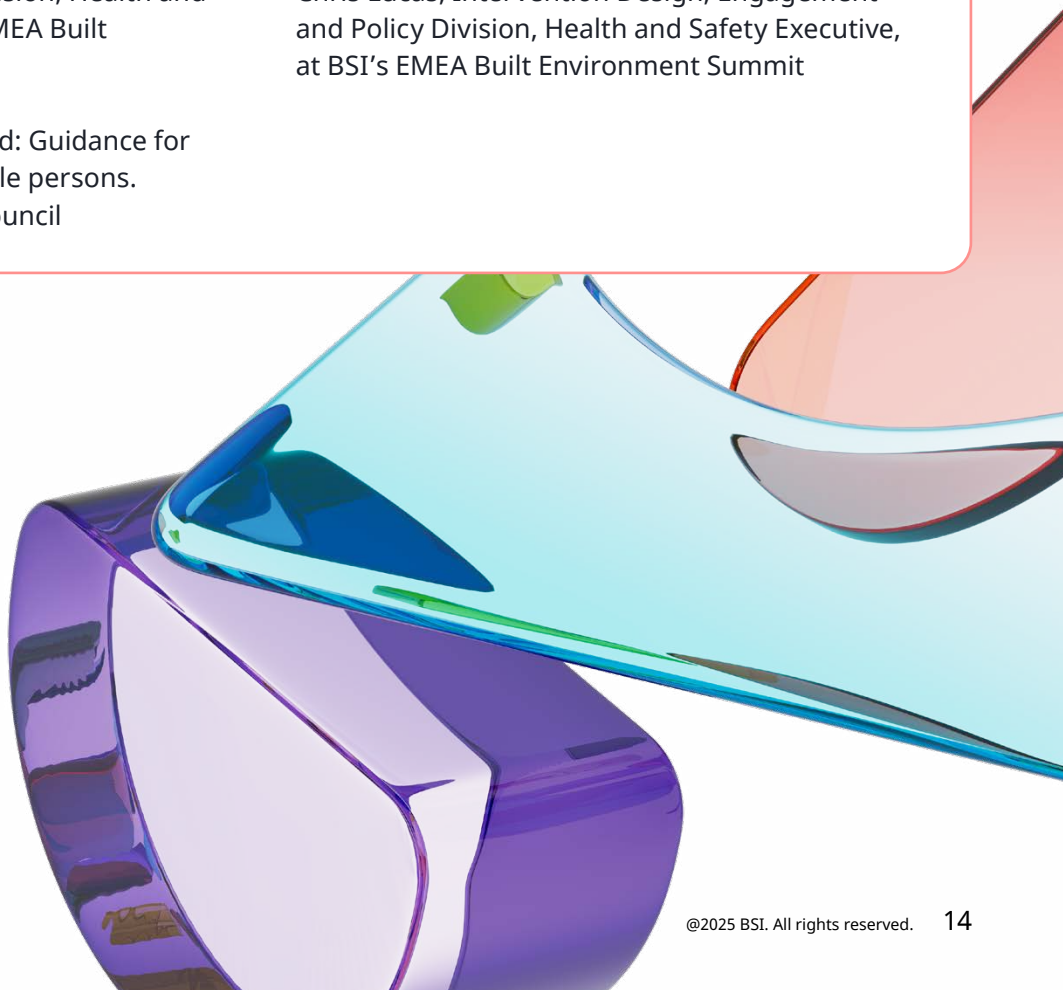
2 BS EN ISO 19650-6 as an Enabler. Presentation by Chris Lucas, Intervention Design, Engagement and Policy Division, Health and Safety Executive, at BSI's EMEA Built Environment Summit

3 Delivering the golden thread: Guidance for dutyholders and accountable persons. Construction Leadership Council

Sources

BS EN ISO 19650 Part 6: 2025 – Health and Safety Information. Presentation by Nick Nisbett, Consultant, buildingSMART UKI, at BSI's EMEA Built Environment Summit

BS EN ISO 19650-6 as an Enabler. Presentation by Chris Lucas, Intervention Design, Engagement and Policy Division, Health and Safety Executive, at BSI's EMEA Built Environment Summit



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