BIM in action:

your roadmap to a more connected
and resilient built environment

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●Building a more resilient world:
Your post-Covid outlook

There's no denying the built environment is still adapting to the shockwaves of the pandemic over two years later. Whilst seismic changes have already been made to strengthen organizational resilience and agility, professionals in 2023 are continuing to adapt to:

- ● The evolving demands of **hybrid working environments**

- ● Rapid rates of **urbanization**

- ● Long-term **supply chain** disruptions

- ● The **global skills shortage**

- ● Increasing **cyber security** threats

- ● Pressure around **climate change and sustainability**

Despite these challenges, **the built environment's post-pandemic landscape is saturated with possibilities** for organizations ready to embrace change. These include:

The circular economy

A renewed focus on material and method innovation through the building lifecycle is being directed to deliver greater value and efficiencies.

Digitalization and automation

The explosion of data now available across the built environment is creating new opportunities for real-time collaboration, predictive analytics and advanced automation.

ESG

Organizations are increasingly developing new environmental, social and governance (ESG) policies and initiatives that citizens, employees and governments demand.

Construction | Industry 4.0

Leaders in the field are redefining expectations by designing buildings that are smart, sustainable and support the health and wellbeing of their occupants.

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● The power of BIM

> "BSI's recent survey reveals that 81% of organizations have invested, or are planning to invest, in BIM over the following 12 months."[1]

To seize new opportunities and accelerate transformation, many within the built environment have utilized **Building Information Modelling (BIM) to deliver more digitally enabled, sustainable and resilient projects**.

How have they achieved this?

BIM's collaborative way of working, underpinned by technology, allows for **more efficient methods of designing, delivering and maintaining physical built assets** throughout their entire lifecycle. It is helping organizations create immediate gains, and **supporting leaders as they lay the foundation for future success**. BIM's connectivity is enabling innovation and proving to be a vital tool in bringing Industry 4.0 projects and smart buildings to life.

[1] https://www.bsigroup.com/globalassets/localfiles/en-gb/built-environment/bsi-be-bim-perspectives-case-studies.pdf

BIM in action

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● BIM in action

Regardless of your role within the built environment, BIM has the potential to help you **seize new opportunities, strengthen operational resilience and supercharge business performance**.

This guide is designed to support professionals like yourself throughout their BIM journey, from establishing a strong foundation for your first project to enabling innovation and achieving success. Within each section, you'll find real-world examples and insights from BSI experts to help you overcome common roadblocks and get the most out of your investment.

● BIM training

Whether you want to implement BIM across your organization or supply chain, enhance your team's understanding of BIM or reassure external stakeholders of your expertise, BSI offers BIM training solutions and qualifications that will give you the **confidence to engage and innovate within collaborative digital virtual environments, whatever your role.**

What are the benefits of BIM?

- ● Faster and more efficient processes
- ● Increased productivity and faster delivery
- ● Reduced uncertainty
- ● Enhanced stakeholder engagement and collaboration
- ● Controlled whole-life costs and environmental data
- ● Avoidance of rework costs

- ● Improved safety
- ● Opportunity to secure both private and public sector contracts
- ● Reduced on-site waste
- ● Increased efficiency and transparency at operational stage

● Your BIM roadmap

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Scaling BIM

Adopting BIM

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● Adopting BIM

"Our recent survey of built environment professionals revealed that only 12% of organizations see themselves as leaders in terms of their digital transformation strategies."[2]

For professionals who haven't yet adopted BIM or are at the beginning of their BIM journey, it can often be tricky to know where to start, particularly if you aren't required to leverage BIM as a legal requirement, you have limited internal resources or you have faced roadblocks during previous digital transformation projects.

We recommend using international standards like the ISO 19650 series as well as familiarizing yourself with regions that are required to use BIM in legislation to better understand what mature BIM projects look like in practice. These regions include the UK, France, Singapore, Finland, Hong Kong and UAE.

This initial process will strengthen your BIM understanding and give you greater visibility over the requirements needed to develop a comprehensive strategy. With this in place, you can then focus on building internal support for BIM and establishing a pilot project.

[2] https://www.bsigroup.com/globalassets/localfiles/en-gb/built-environment/bsi-be-bim-perspectives-case-studies.pdf

● Getting started with BIM:
Your checklist

When it comes to adopting BIM, **we recommend following the steps below for a more streamlined implementation process**:

Approach BIM as a change management process for your organization and integrate it as part of your business strategy. Business and project leaders will need to actively support the cultural shift that is required to successfully implement BIM across supply chains.

Get cultural buy-in from key stakeholders early on by using data to demonstrate its quantifiable and commercial value. For example, BSI research suggests that using BIM processes to resolve issues contributes to an average project time saving of 15%.

Work with multidisciplinary teams from across your organization to understand how BIM would fit into your wider structure and identify who will need training and support. As projects will have individuals with different levels of BIM awareness, training and standardization will be key.

Collaborate with third-party experts to help with BIM education and training for teams to help remove any trepidation or concern around implementation. For example, BSI training courses such as 'BIM: Strategic Understanding' and 'BIM Fundamentals' are highly valuable in sharing practical knowledge, innovation and best practice with organizations. It's also important to look for support as you move beyond education towards implementation, leveraging masterclasses such as BSI's 'BIM ISO 19650 Part 2: Project Delivery Phase'.

"As with any other change implementation, people will be at the heart of successful BIM implementation, aligning BIM technologies with processes to achieve better outcomes."

Rahul Shah, Built Environment Director, EMEA, BSI

● Three fundamental elements for successful BIM delivery

Below is a useful tool to employ as you plan your BIM project to ensure that your people, processes and technologies are fully aligned.

People

- ● Agreed BIM culture set and endorsed by senior leaders
- ● BIM has shared ownership
- ● Job functions are defined around specific BIM inputs
- ● BIM is part of daily life

Process

- ● International BIM standards
- ● Business-specific workflows
- ● Procedures and protocols

Technology

- ● Hardware
- ● Software
- ● IT infrastructure
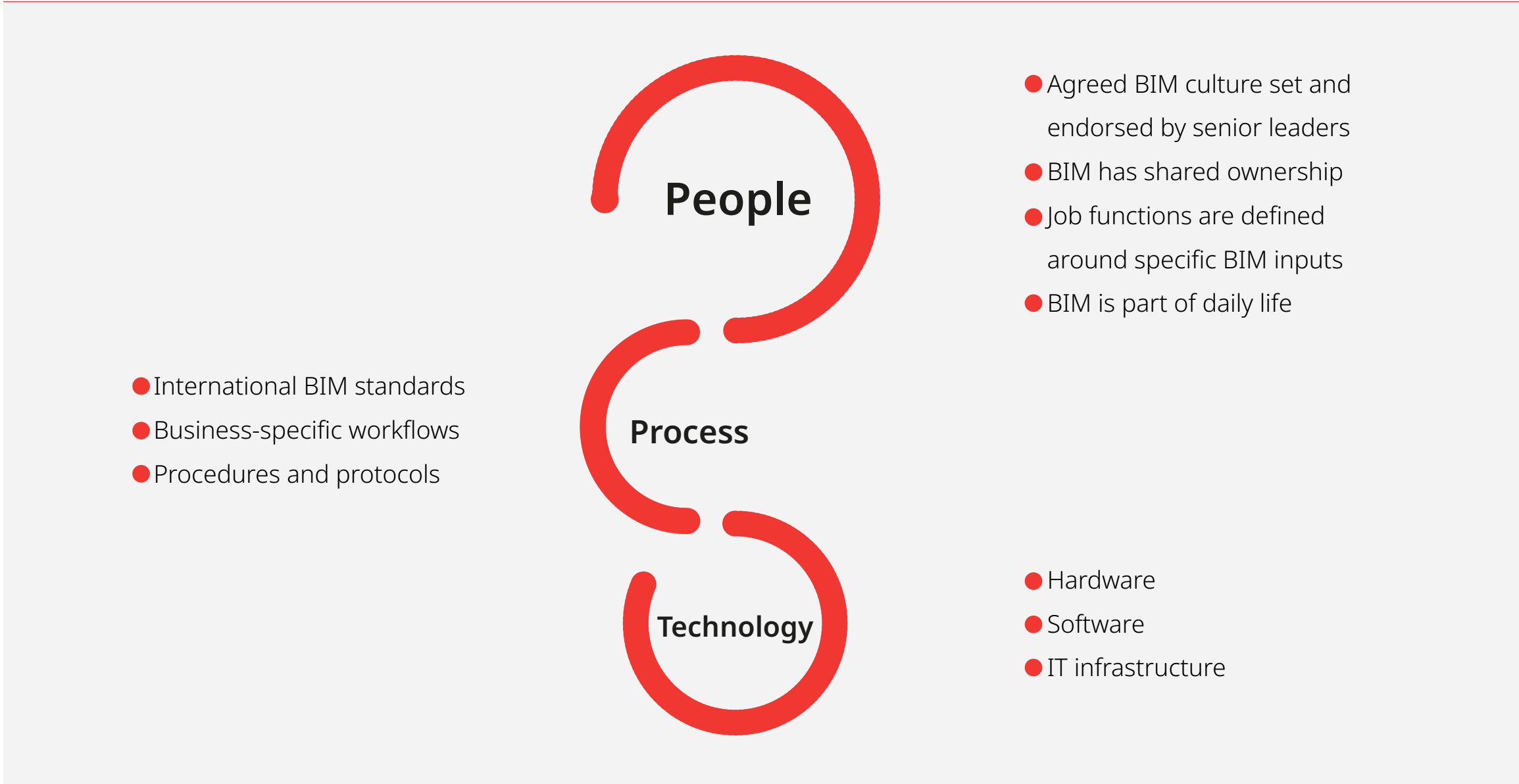
● BIM in action:
Adopting BIM with Taylor Woodrow

About: Taylor Woodrow is the civil engineering division of VINCI Construction UK, which forms part of VINCI, a world leader in concessions and construction known for innovation, creativity and technological mastery.

Certification: ISO 19650 parts 1 and 2, PAS 1192.

"Through BIM, we have instant access to all the project data, so at handover we can simply pass the relevant digital files to the client to meet all their information management requirements. It makes for a much smoother process, resulting in fewer disputes and really significant time and cost savings."

Implementing any new way of working presents challenges, and for Taylor Woodrow BIM was no exception. **"Technology has only been a small part of it – a massive part has concerned culture,"** explains Scott Bennison, Digital Operations Manager. "People are naturally more comfortable sticking with familiar methods than adopting new ones. It's taken a big push to embed change, including leadership commitment, communication, training and BSI's support assessments on the certification requirements for the BIM standards ISO 19650 parts 1 and 2 and PAS 1192."

The key to success has been to persuade teams of the need to 'start with the end in mind', and to work with BIM consistently and conscientiously from project tender right through to completion and handover. Bennison's advice to

SMEs commencing their BIM journey is to engage with their larger contractors. "It's important to talk to the right people. The best BIM contacts may be at head office, rather than on site or at project level. Also, have a look at the ISO standards and speak to BSI."

Taylor Woodrow's enhanced BIM capability has **strengthened the organization's business by helping it secure UK public sector contracts while increasing the number of commercial tenders**. Clients who engage with BIM-ready companies can also be reassured that they're transacting with an organization ready to change, adapt and innovate.

Utilizing BIM

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●Utilizing BIM

For professionals who have already adopted BIM, it's vital to remember that **it's a process and not just a tool**. To better manage risk and create long-term opportunities from BIM, teams must regularly review **how it is being utilized across different projects**, as well as staying up to date with the **latest legal requirements and technological developments.**

BIM Training Masterclasses

Leveraging guidance from third-party experts is incredibly valuable during this process, which is why BSI have developed masterclasses like:

- **ISO 19650-2 Project Delivery**
- **ISO 19650-3 Operational Phases of the Assets**
- **BS 19650-4 Handover Information Exchange**
- **ISO 19650-5 Security and BIM**
- **PAS 1192 Part 6: Health and Safety**

Self-evaluation: Questions to ask BIM users

For organizations looking to advance or improve their BIM adoption, **it's critical that they evaluate their current BIM strategy to ensure they are maximising its potential and identifying areas of improvement**. To start this process, we recommend answering the following questions:

- Is your team using BIM to simply create drawings more quickly **rather than integrating it with the rest of your workflow**?

- **Are your clients able to use records** even after they've been handed over to the facilities manager?

- Have you got the **right templates in place**?

- Do your teams or suppliers have the correct **level of knowledge**?

- Does your organization have **pockets of good BIM knowledge but not throughout the business?**

Once the answers to these questions are collected from those involved throughout the entire project lifecycle, **professionals can then identify what areas of expertise are missing from their current approach**. This exercise will also reveal **which teams need additional technical support** when it comes to executing BIM. After all, a culture of continuous learning gives professionals across the built environment a better opportunity to collaborate, innovate and thrive, using the latest technology and knowledge.

● Creating a BIM roadmap

An important part of strengthening your BIM usage is not just evaluating its short-term success, but also setting long-term goals for what you want to achieve with it. A useful process is physically mapping out your organization's business goals and planned digital transformation journey (whether that's over the next 12 months or even five years), and identifying how BIM aligns with this. You can split this roadmap out into three core streams:

1 BIM development projects

This stream uses learnings collected from either your BIM pilot or from previous BIM projects. The purpose of this process is to **identify which areas of your BIM strategy need immediate improvement, and which areas can be supported either through additional training** (such as BSI's 'BIM: Strategic Understanding' and 'BIM: Strategic Application' courses) and certification. This can be particularly **helpful if you are looking to scale BIM or overcome technical roadblocks** as it allows you to make incremental changes over a set timeframe.

2 Digital transformation goals

As BIM can be paired with other technologies such as augmented reality or virtual reality, you can begin to **align investment opportunities and combine project start dates** to maximize the efficiency of both technologies when you map them out together.

3 New business opportunities

As you plot your business goals and targets against your timeline, it's important to remember that **BIM can be a great way to create new revenue opportunities**. Being able to demonstrate your mature BIM knowledge and capabilities can help you **win projects in international markets and even allow you to offer consultation services or manage BIM for other organizations** (BIM-as-a-Service). Certification is critical for this, and should be fed into your roadmap if you have not already done so.

●BIM in action:
Utilizing BIM with Willmott Dixon

About: Willmott Dixon, founded in 1852, is a privately owned contractor that carries out a wide range of construction in the UK, including public sector, commercial and residential building projects, as well as interior fit-out and refurbishment.

Certification: ISO 19650 parts 1 and 2.

> "We chose BSI Kitemark certification for design and construction with BSI, as it is the most well-known and respected certification body in the market."

Willmott Dixon's collaborative and forward-thinking approach made it an early adopter of digital construction, utilizing tools like BIM and augmented/virtual reality, allowing design intent to be shared in a more collaborative and accessible environment. "Our goal is to change the way construction is delivered, permanently – adding value by enabling us to model and shape outcomes and make more collaborative decisions," says Tim Carey, Director.

Alongside rationalized BIM processes, the company places great emphasis on promoting a 'fully digitally enabled business', investing in role-specific training to upskill its teams to work effectively within a digital environment, with supporting digital managers then able to focus on training, mentoring and cutting-edge innovation.

As part of its overall drive towards becoming a data-driven organization, Willmott Dixon is beginning to quantify and analyze the benefit of adopting digital construction, despite the challenges caused by the many variables involved in construction projects. This dataset, which now spans 277 BIM projects since 2015, has highlighted a direct correlation between digital adoption and a reduced number of defects, higher customer satisfaction scores and greater programme certainty.

Scaling BIM

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⬤ Scaling BIM

For those professionals who are confident in their BIM abilities and are proactively looking at **ways to accelerate transformation or scale their BIM initiatives**, there are plenty of opportunities – particularly when it comes to **sustainability and smart buildings**.

Construction 4.0

What does the future of BIM look like and how can organizations capitalize on Construction 4.0?

There's no denying that **the future of the built environment will be centred around three core characteristics: agility, interoperablity and resilience**. As we've seen in regions such as Korea and Dubai, the creation of smart cities and buildings relies on technologies and processes that bring together experts from across borders and facilitate unrestricted collaboration. Processes like BIM.

BIM, like nearly every solution in the built environment, is evolving quickly. Innovators are already integrating their BIM solutions into cloud environments through a shared model (also known as Open BIM). They are also exploring different BIM dimensions that could cover time, cost and even the management of the building's lifecycle.

For organizations looking to secure their place in the future of construction, you will need to leverage this **digital-first approach and utilize BIM**. Not only will this help architects design without limitations, it will also **help make even the most complex and large-scale projects safe and efficient**.

This will require investing in and supporting built environment professionals as they expand their knowledge around Smart Buildings and Construction 4.0.

Sustainability

How can BIM help organizations leverage circular economy principles and strengthen company culture?

When it comes to helping built environment professionals meet their sustainability goals, BIM is an incredibly valuable tool. **It allows organizations to calculate more accurately the amount of materials they'll need**, it can help them choose more eco-friendly products/services, and it can provide individuals with simulation models to calculate the energy efficiency of a building. It gives professionals the **control and visibility needed** to adopt circular principles across the lifecycle of project, as well as lay the foundation for IoT projects like digital twins.

The savings and efficiencies created as a by-product of BIM can then be **invested back into projects, such as the development and sourcing of eco-friendly materials or strengthening an organization's Diversity and Inclusion programme**. When it comes to attracting younger generations of built environment professionals, these kinds of factors will be critical for the long-term success of a company.

Bringing BIM visions to life

In order to realize these ambitions, **incremental growth is key for long-term success**. You will need a strong BIM foundation which you can build upon, as well as access to the right support and tools to help you remain compliant and productive. **The BSI Kitemark is a great way to ensure you have the knowledge and processes in place to scale your BIM initiatives and take on digital transformation or sustainability projects**.

![Ballast Nedam logo]

●BIM in action:
Scaling BIM with Ballast Nedam

About: Ballast Nedam is a Dutch construction and engineering company. Part of the large Turkish multinational construction and contracting company Rönesans Holding, it employs around 2,000 staff and delivers projects both in the Netherlands and internationally, notably in Turkey and Russia.

Certification: ISO 19650 parts 1 and 2.

> "We realized that BIM is more a matter of standardizing processes than modelling. For these processes to be sustainable requires procedures and standards that are accepted and embedded throughout the company."

Through a forward-thinking approach and collaboration with customers and partners, Ballast Nedam achieves ground-breaking built environment solutions. This approach has led the company to **invest constantly in innovation and digitization of its work processes**, enabling it to build a solid foundation in BIM and to become a **pioneer of BIM internationally**.

Serkan Sen, Head of BIM, Building Design & Engineering, explains how a key goal of working to ISO 19650 has been to enhance process efficiency at Ballast Nedam: "A conscious look at our processes, and how we can organize them more efficiently, is in our corporate DNA, so this is a key reason why we wanted to take this step."

All Ballast Nedam's working methods are now digitized and standardized in line with the requirements of ISO 19650, increasing transparency, efficiency and quality in projects and processes. BIM has enabled much improved detection of building design clashes, leading to fewer problems materializing as projects develop, and potentially large time and cost savings in rectifying them.

As a result of its certification and continued excellence, **Ballast Nedam is an industry leader in high-level cross-border BIM collaboration**. It has leveraged its international ownership structure and strategy to operate information models across the supply chain, using digital collaboration in projects with Turkish clients and subcontractors.

●Start your journey to a more connected, resilient built environment

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● Start your journey to a more connected, resilient built environment

Whether you're an owner, design consultant, main contractor, subcontractor, or project manager, BSI's qualifications and training will help you to understand the opportunities that collaboration brings within a virtual digital environment.

Why BIM qualifications and training?

● You may want to know how to implement BIM within your organization or supply chain, or expand BIM knowledge internally so that all teams have a good understanding.

● You may have a specific requirement for more detail – whether that's health and safety or asset management.

● You may want to use BSI's BIM qualifications to demonstrate your knowledge, skills and experience within BIM, whether that's to reassure your employer, your supply chain, or to increase opportunities to win more tenders.

What are the benefits?

1 Practitioner

Full understanding of the value drivers – why BIM and Information Management is important in the built environment

Thorough knowledge of Information Management and Collaborative working principles during Project Delivery

Detailed understanding of Information Exchange, Data Schema and Quality

bsi BI Information PRACTITIONER

2 Professional

Practitioner plus full understanding of Information security and associated governance

Skilled in applying Information Management principles to improve Health & Safety

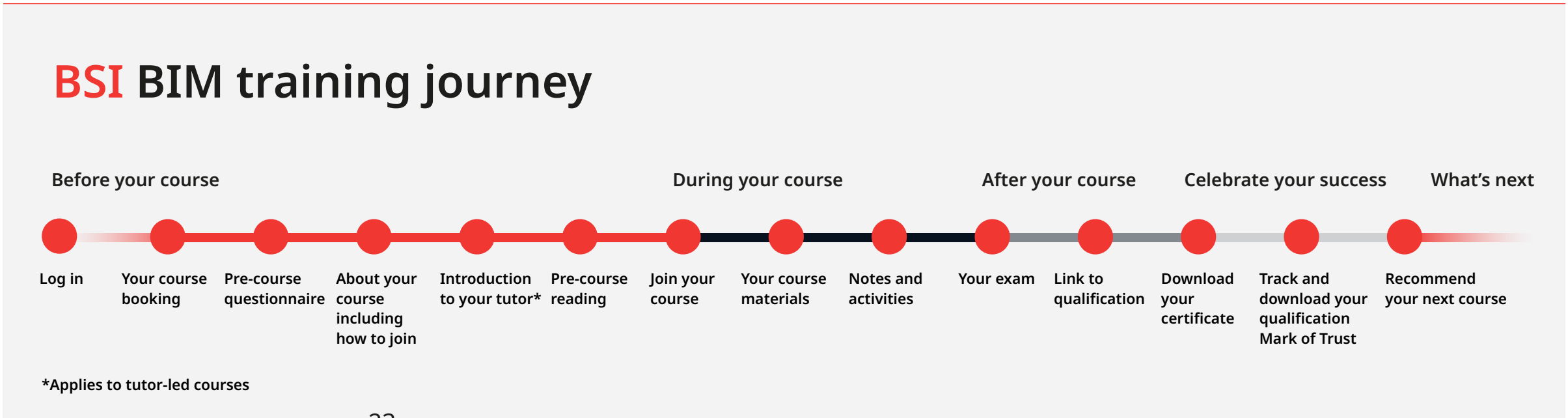**bsi** BIM Project Information PROFESSIONAL

3 Certified Professional

Practitioner and professional plus proven industry experience of applying Information Management and Collaborative Working principles in practice

bsi BIM Project Information CERTIFIED PROFESSIONAL

What does BIM qualifications and training look like?

BSI BIM training journey

| Before your course | | | | | | During your course | | After your course | | Celebrate your success | | What's next |

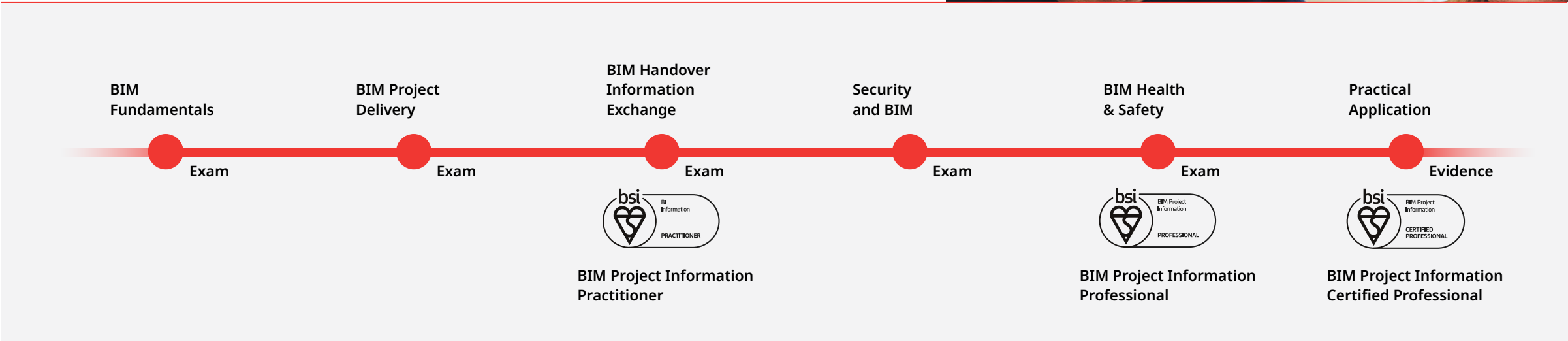| Log in | Your course booking | Pre-course questionnaire | About your course including how to join | Introduction to your tutor* | Pre-course reading | Join your course | Your course materials | Notes and activities | Your exam | Link to qualification | Download your certificate | Track and download your qualification Mark of Trust | Recommend your next course |

*Applies to tutor-led courses

● Choose your BIM qualification
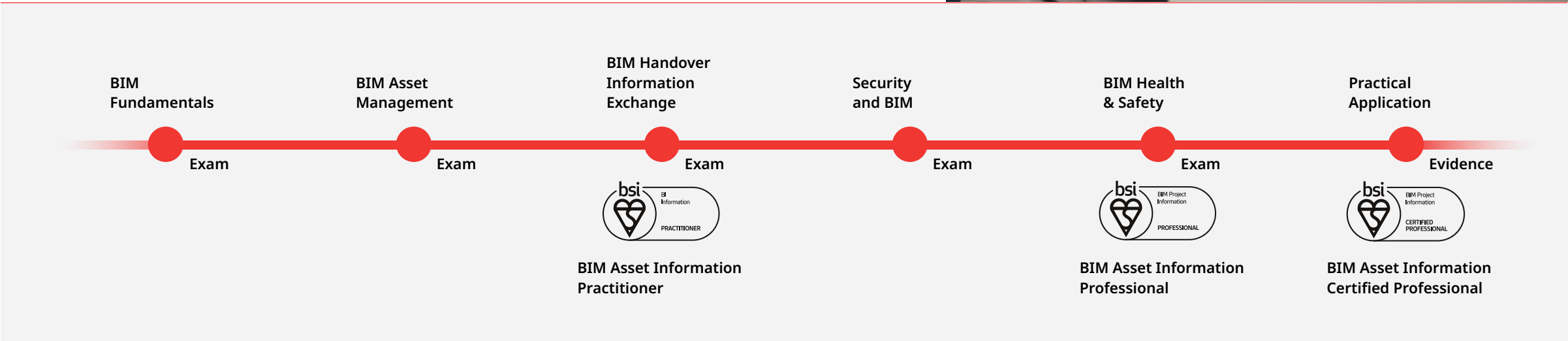
BIM Project Information qualifications

BIM is used by project managers to improve communication, coordination and collaboration on projects. Your BIM Project Information qualification can help you to drive BIM projects forward, increasing the operational efficiency of project teams.

BIM
Fundamentals — Exam

BIM Project
Delivery — Exam

BIM Handover
Information
Exchange — Exam

BIM Project Information
Practitioner

Security
and BIM — Exam

BIM Health
& Safety — Exam

BIM Project Information
Professional

Practical
Application — Evidence

BIM Project Information
Certified Professional

BIM Asset Information qualifications

Owners of large properties, estates or portfolios of assets need to be confident that their assets are maintained effectively and cost efficiently for operational and maintenance purposes.

Having a qualification in BIM Asset Information will give confidence in your skills and experience.

BIM
Fundamentals — Exam

BIM Asset
Management — Exam

BIM Handover
Information
Exchange — Exam

BIM Asset Information
Practitioner

Security
and BIM — Exam

BIM Health
& Safety — Exam

BIM Asset Information
Professional

Practical
Application — Evidence

BIM Asset Information
Certified Professional

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For additional information around BIM training and certification, as well as other success stories from BSI clients, please explore the resources below.

Your BIM resources:

- [Little book of BIM](#)

- [BIM perspectives: unlocking value](#)

- [A guide to BSI BIM Training courses available](#)

To register for more information:

● Visit **bsigroup.com** and search for **'BIM training courses'**

OR

● Email us at **info.nz@bsigroup.com**