Introduction

Richard Waterhouse, Chief Strategy Officer, NBS

The UK BIM Framework

Emma Hooper, Digital Information Specialist, Bond Bryan Digital

RIBA Plan of Work 2020 and specification

Dale Sinclair, Director of Technical Practice, AECOM

Summary of findings from the tenth annual BIM survey

David Bain, Research Manager, NBS

The adoption of Uniclass 2015 in Australia

John Gelder, University of South Australia

BIM beyond the labels

Mike Turpin, BIM Consultant and Director, Innovating Futures

In my introduction to the first report, I set out our intention to track changes in attitudes towards BIM, as well as its implementation. We have done this annually, consulting with you, sharing your thoughts and experiences and providing case studies, knowledge and guidance from industry experts and practitioners.

The industry has made great strides over the last ten years. We have gone from limited to almost universal awareness and use by 73% of professionals in 2020. It has required substantial change to workflows but has brought benefits: improved coordination of information, reduced risk, improved productivity, greater efficiency, and operation and maintenance savings. These improvements are helping to create a more efficient, transparent industry that makes fewer mistakes. The Government’s response to the Hackitt Report (announced in April) and the new regulatory framework sets out a role for BIM and digital in establishing a ‘golden thread’ of information. Survey respondents agree that digital technology can help here, with 70% saying that it will improve health and safety, 69% see its potential to address sustainability, and 81% anticipate improvements in productivity.

It is hard to dispute that digital tech and BIM have changed the industry, and that the benefits are real. Repeat clients and construction team members are likely to be the proficient users, gaining the benefits listed above. But scratch the surface and it is not the resounding success that it should be. Even now, only 40% report that BIM is the norm, with a similar figure using the BS and ISO standards processes: a true test of BIM and connected information. Almost two thirds of small practices yet to adopt BIM state that their projects are too small for BIM, and over half that it is not relevant to them, a lack of client demand remaining the most common barrier. Whilst we do need to share these benefits more widely so that one-off clients also request BIM, surely these SMEs should recognize the benefits and promote them to their clients? The challenge now is to make BIM work for all parts of the industry.

But progress is being made. Use of common data environments to share project information is becoming increasingly prevalent, and shows how the industry has moved from being predominantly paper-based. Aligned to this, the last decade has seen a major shift from the production of 2D drawings to 3D digital models. The industry has also made huge progress in developing standards and guidance for BIM with the UK playing a key role, and we’ve delighted to have articles in this report on the new UK BIM Framework, the RIBA Plan of Work and the successful application of Uniclass 2015 in Australia.

At NBS, we firmly believe that well-structured digital information can help us address the challenges we face. Our new cloud-based solutions, NBS Chorus and NBS Source, support the industry by connecting data between specifications, models and manufacturer components - and create a digital environment within which all members of the project team can collaborate. As more people use platforms like these, more technological solutions emerge and familiarity with the standards grows, we hope to see a further shift in the industry with benefits for all.

Ten years ago, the UK Government’s challenge to the industry was to deliver efficiency through digital transformation. The challenges we face now seem even greater than in 2011. COVID-19 has driven changes in living and working conditions; economies and construction are experiencing the largest falls in output seen in decades, and there are significant risks to people’s health and wellbeing.

Before this crisis, the industry needed to respond to the Grenfell Tower tragedy and life outside of the EU, as well as responding to the increasing urgency of keeping rises in global temperature below 1.5 degrees Celsius. These have huge implications for design and construction in the UK and globally. As we reflect on ten years of BIM, digital transformation and the progress that the industry has made, we may want to cast an eye to 2030 and the greater changes needed to meet these challenges.

In 2010, we carried out a survey into an emerging new way of working: ‘building information modelling’. We published the results in spring 2011, noting that it was the first time that 43% of the 400 people who took part in that survey had heard of BIM.
December 2018 saw the first release of these International Standards in the form of:

- **BS EN ISO 19650-1** – the concepts and principles of information management using building information modelling.
- **BS EN ISO 19650-2** – the delivery phase of information management using building information modelling.

These standards build upon the groundwork of some of the 1192 series, as BS 1192:2007+A2:2016 and PAS 1192-2:2013 have now been superseded. It is now much clearer that we are focusing on the management of all information (whether it’s a report, a drawing or a model, etc.).

Parts 3, 4 and 5 of the 1192 series are currently going through the same process of being developed into International Standards. The current timetable for publication is as follows:

- **ISO 19650-3** – due for publication in Q4.
- **ISO 19650-5** – due for publication in Q2.
- **ISO 19650-4** – currently in the early stages of development.

In this age, information underpins everything we do. We require more information than ever before, and our technology creates more than ever before. However, these two developments aren’t in sync, and our exchange of information is often executed poorly.

The new International Standards combat this by providing a framework where information is considered from the outset of a project, using the following principles:

- Information requirements are defined before information is created, to aid selection of delivery teams.
- The delivery of information to meet the requirements is planned and tested.
- The delivery of information is carefully managed within a common data environment.
- The delivered information is checked against the original requirements and either accepted or rejected accordingly.

These measures are there to help reduce the risk and waste associated with information – which is commonplace throughout the design, construction, operation and maintenance of an asset.

Going forward, the ISO 19650 framework provides the foundations to enable machine-interpretable information to be exchanged by technology in a much more efficient way, improving interoperability.

Emma Hooper
Digital Information Specialist, Bond Bryan Digital

The UK BIM Framework

Many of you will be aware of the work that the UK has progressed over the past decade in relation to building information modelling standards, and the 1192 series in particular. The 1192 series became popular not just here in the UK but overseas as well, as clients saw the benefit of its adoption. Following on from this, the decision was made to start to elevate the British Standards to an international level, and this process began in 2014.

Andy Boutle, Head of BIM Kier Construction (guidance author)

‘It is a real privilege being a contributing author to this guidance, to be able give back to industry and help to facilitate the consistent practical implementation of the ISO 19650 series across the built environment. We have a fantastic team of practitioners from varying roles and disciplines working on a pro-bono basis. My hope and belief is that ongoing guidance will help industry to reach a business as usual state for modern day information management practices, building the vital foundations for the path ahead to digital transformation.’

In this age, information underpins everything we do. We require more information than ever before, and our technology creates more than ever before.
The UK BIM Framework

The UK BIM Framework is a live project which started 18 months ago. It’s supported by a team of passionate individuals from different industry sectors and organizations, volunteering their time and sharing their experience and knowledge. The guidance project is open to anyone who is willing to help, and I’ve been fortunate to work on the initiative from the start.

The aim of the guidance is not to replace the standards but to add insight, clarity and tips for practical implementation. It’s therefore helpful to read the guidance and the standards side by side.

However, we are less certain on how to specify information, then to manage, deliver and check it. These standards are so important because they give us a platform from which to do this.

Information is the one true asset to rule them all

The UK BIM Framework replaces the bim-level2.org website and consolidates the knowledge resources in one place. This includes:

- Links to all the standards which make up the UK BIM Framework.
- Guidance for those transitioning from the superseded 1192 standards to the ISO 19650 series.
- Soft landings information.
- The ISO 19650 guidance.

The ISO 19650 guidance

The development of the ISO 19650 guidance is a live project which started 18 months ago. It’s supported by a team of passionate individuals from different industry sectors and organizations, volunteering their time and sharing their experience and knowledge. The guidance project is open to anyone who is willing to help, and I’ve been fortunate to work on the initiative from the start.

The aim of the guidance is not to replace the standards but to add insight, clarity and tips for practical implementation. It’s therefore helpful to read the guidance and the standards side by side.

Like the standards, the guidance is split into two parts:

1.0 ‘About ISO 19650 parties, teams and resources’
2.0 ‘About the common data environment (CDE)
3.0 ‘About information requirements’
4.0 ‘About the BIM execution plan’
5.0 ‘ISO 19650-2 clause 5: analysis and activities’
6.0 ‘Information management process summary’
7.0 ‘Summary’

However, when it comes to the associated information, this is an asset in its own right too, and should be specified with similar attention to detail.

Not too many people are familiar with ISO 19650. It’s now the responsibility of those few to help expand and explain ISO 19650 into a digestible, contextualised guide that everyone can understand. This is where the collaborative guidance comes in published on the UK BIM Framework website, where dozens of contributors offer their time for free to help industry grasp ISO 19650’s information management and modelling principles so that we can all move forward, together!“

The second part, now in its third edition, is much more detailed. It currently contains these sections:

- 1.0 ‘About ISO 19650 parties, teams and resources’
- 2.0 ‘About the common data environment (CDE)
- 3.0 ‘About information requirements’
- 4.0 ‘About the BIM execution plan’
- 5.0 ‘ISO 19650-2 clause 5: analysis and activities’
- 6.0 ‘Information management process summary’
- 7.0 ‘Summary’

The definitive industry update
In addition, there are some key messages which are addressed through the standards and guidance, as follows:

- Information management activities are, in the main, appointment-based, not project work stage-based.
- The client has a significant (and arguably the most important) role to play within the information management ecosystem.
- Understanding and defining the purpose for each piece of information is fundamental to determining information requirements.
- Exchange information requirements (EIRs) are a means of specifying what information is required, and are one of the resources used to aid the selection of delivery teams. They are appointment-specific, so there can be many EIRs across one project.
- The common data environment (CDE) is a combination of technical solutions underpinned by workflows. The workflows should be planned first, and the solutions selected to facilitate them.
- The outputs of the information activities are resources and not separate, unconnected documents.

The guidance is an evolving resource. It is updated every quarter, with more sections being included. In the future, additional guidance will be released to support the publication of new standards.

There are also plans to make the guidance much more interactive and connected, so that it is easier to navigate.

I started my digital transformation journey a decade ago. I remember spending hours scrutinizing standards and publications – only to find that they would contradict each other.

We don’t want you to be subject to the same experience, and hope that, through the guidance, you have a useful and reliable point of reference.

The guidance is available to everyone. It’s jam-packed with useful information, and above all it’s free. All feedback is welcomed and encouraged. If you have ideas for content, or you want to contribute, please complete the feedback form on the UK BIM Framework website. We want to make this guidance the best that it can be, and we all need to work together to achieve it.

To download/view the guidance, go to ukbimframework.org/standards-guidance.

Emma is a digital information specialist at Bond Bryan Digital. She is also part of the BSI committee that develops the standards for digital construction, an author of the ISO 19650 guidance, an ambassador for the UK BIM Alliance and on the buildingSMART UK & Ireland committee.
The specification drives the look and feel of a project, and heavily influences its cost plan. New design review tools such as virtual reality (VR) place even more importance on illustrating the right products at the right time.

With this in mind, the RIBA Plan of Work 2020 (reproduced overleaf and highlighting the requirements for exchanging specification information) places emphasis on the role of the specification during the design and construction stages. The outline specification is a crucial design tool during stages 2 and 3, allowing specification decisions to be captured in a document that can be shared with and agreed on by all.

A key inclusion in the RIBA Plan of Work 2020 is the acknowledgement that the stage 4 information from the design team needs to be geared to manufacturing or construction for each building system, with this information being descriptive or prescriptive, depending on the approach. With the former, a specialist subcontractor will pick up the design baton, completing the information for manufacturing and/or construction, with the latter, the design team will issue the information used on-site for construction. For descriptive specifications, design responsibility lies with the contractor, although this responsibility is likely to be passed on to a specialist subcontractor carrying professional indemnity insurance. On a design and build contract, design responsibility rests with the contractor, regardless of who designs: whether the design team or a specialist subcontractor.

A common misconception is that procurement drives this decision-making. This is not correct: specifications can be prescriptive or descriptive, regardless of the procurement route. Traditional contracts have had the ability to facilitate descriptive specifications, via the contractor design portion (CDP), for years. Similarly, prescriptive specifications can be used where a planning consent has stringent conditions relating to materials, or where the client wishes to ensure that specific design aspects will be provided as imagined by the design team, meaning that they are commonplace on design and build contracts.

To phrase this another way, the decision to use a prescriptive or descriptive specification is driven less by procurement and more by topics such as the value proposition. The descriptive-to-prescriptive journey on any project will vary. Some clients may have a range of products used throughout their portfolio of projects, which might be included in the project brief. Other clients may wish the design team to specify anything that is visually important, allowing the contractor to select concealed products. There is no right or wrong decision; however, it’s essential to recognize that the decision must be made at the outset of the project. This allows appointment documents and the building contract to be prepared accordingly, and procurement discussions to be framed appropriately. The RIBA Plan of Work 2020 has, however, been designed in a manner that helps ensure that the complexity of this crucial project interface is clear from the outset.

The specification is the backbone of any project. Products must be researched, selected and agreed with the client, with finishes and facades requiring careful consideration and discussions with clients, planners and other stakeholders.

The specification drives the look and feel of a project, and heavily influences its cost plan.
In some instances, descriptive specifications are used to clearly assign design responsibility to the contractor - specifying the fire, acoustic and durability criteria for partitions, for example. However, the design team might specify products aagnostically, taking design responsibility but allowing the contractor to propose a supplier for certain products. For example, the architect may specify a certain type of brick that is referenced in the planning consent whilst allowing the contractor to select walls ties and lintels, or specify a specific partition build-up, allowing the contractor to propose an alternative.

For some aspects, a descriptive specification can be the key to unlocking design innovation. For example, by issuing design intent information and a descriptive specification, the design team allows the cladding design team to consider whether the information issued with residual stage 4 information being adjusted to accommodate the design team allows the cladding.

Above and right: RIBA Plan of Work 2020. Template, reproduced courtesy of the Royal Institute of British Architects.

Another important stage 4 decision is the point at which stage 4 information is produced. Design and build procurement may draw down stage 4 information for inclusion in the employer’s requirements, with residual stage 4 information being completed by the contractor’s design team or the novated design team. This interface needs to be considered carefully at stage 1. The client must decide whether the information issued by the design team will be descriptive or prescriptive, and whether this information will be produced before or after the building contract is signed.

Finally, during stage 5 and construction, the final specifications continue to be of importance as they are used to determine whether work is being undertaken to the required quality and that any testing and certification to confirm this is received.

Dale is director of technical practice at AECOM. He is also an RIBA Ambassador for Collaboration and Technical and is on the Construction Industry Council (CIC) Board.

Left: Highlighting the points where specification information needs to be exchanged during stages 2, 3 and 4.
Summary of findings from the tenth annual BIM survey

This survey marks the tenth consecutive year that we have asked design and other construction professionals about BIM. During that time, there has been much discussion about: the benefits or otherwise of BIM; what it is; what it isn’t; and (in particular) how many people are ‘doing’ it.

Even after almost ten years of carrying out this survey, people are still keen to share their views on BIM: we have had one of the largest responses, with over 1000 people completing the survey. We thank them all very much for taking the time to do so.

Over the years, we have also seen growing interest from professionals working in countries around the world – looking at what the UK has been doing. In recent years, this has resulted in a considerable number of responses from people based outside of the UK: the majority come from within the UK, but this year we have people representing every continent (except Antarctica). We highlight some interesting differences, depending on whether or not people are based in the UK. Within this summary you will find three inserts where we focus on some differences in findings by respondents’ location, age and organization size.

In this summary of the results, we present this year’s findings – alongside some comparisons with previous years. We revisit the first survey that we carried out at the beginning of the last decade, which highlights some interesting changes. Over the time that BIM has become part of our industry, and partly because of BIM, many new technologies and ways of working have emerged. Some of these provide an insight into what the future of construction might be like, and help us look ahead to the next ten years.

For this survey to be a success, we rely on the support of the many organizations that help to promote the survey. These organizations are listed on the inside front cover of this report, and we thank them for working with us.

On a final note: we began gathering responses for this survey in December last year. No one had heard of COVID-19, and the survey closed well before the lockdown began in the UK. It’s unlikely that the pandemic has affected the results of this research much, if at all. We report the results as we find them, but are very much aware of the virus’ huge impact on people working in construction, and on society as a whole. We hope that what we learn from this research can provide some useful knowledge to help support the industry working during this unprecedented time, and in the recovery that follows.

Over the years, we have also seen growing interest from professionals working in countries around the world – looking at what the UK has been doing.
We first carried out this survey in 2010/2011, publishing the inaugural report in spring 2011. So, almost a decade later, have things changed? Back then, 43% of respondents were not aware of BIM, and 13% that they had adopted it. Using the same metric as that used in 2011, our survey indicates that 73% of the industry is now aware of BIM adoption: then and now

Almost a quarter (23%) of those ‘using’ BIM state that they do so on all projects. Additionally, almost half (46%) do so for the majority of projects so, for those that have adopted BIM, it is becoming part of how they work.

Last year, we reported a slight drop in BIM adoption. This may have reflected a loss of momentum from government, following its 2016 mandate for BIM. In this section, we explore these trends.

In the last 12 months, on which of these types of project, and with which types of client, have you used BIM?

To pick up the first point: lack of momentum following the Government’s BIM mandate. This year, we asked a new question to find out whether there were differences in the adoption of BIM in terms of the sector or type of work being carried out. Here, we see that survey respondents are as likely to have adopted BIM on private sector projects as on those in the public sector. In fact, if we total up new build and refurb projects (for repeat and one-off clients, for each sector), we find that more respondents have used BIM on private projects (77%) than on public (63%). BIM is more commonly used by repeat clients, especially in the public sector.

In the private sector, BIM projects are also more common among repeat clients, but respondents report that they are more likely to have applied BIM to projects for one-off clients in the private sector than in the public sector. BIM is also more likely to be used on new build projects as opposed to refurbishments.

Therefore, the most common types of projects using BIM are:

- private sector new building projects for repeat clients (62% of those doing private sector new building work used BIM with repeat clients), and
- public sector new building projects for repeat clients (67% of those doing public sector new building work used BIM with repeat clients).

50% of professionals working on private new build projects said that they had used BIM on these types of project for one-off clients. The equivalent figure in the public sector was 40%. Refurbishment BIM projects for one-off clients were slightly less likely in both sectors: 44% for private jobs and 33% for public sector.

BIM principles were also applied in work for other sectors, such as charities. They were slightly more likely to be used for one-off clients: 44% on new build and 40% on refurbishment projects.

These findings suggest that the industry has developed its own momentum for driving BIM forward: with projects in the private and third sectors being commonplace, it is not just about people adopting BIM to meet the requirement on central government projects.

‘I can see the benefits of BIM when working with new-build projects when using fairly standard details (as in BIM objects, wall types and roof types which are available within the software without user configuration) however for renovation works or smaller domestic schemes, the additional time spent modelling existing buildings or working out how to model non-standard details (such as complex existing roof details or unusual bay windows) undermines any potential productivity gains, especially when there would be a loss of productivity associated with learning the software and an increased liability of mistakes are made.’

Note: Percentages in the above chart are based on the number of respondents doing that type of work, e.g. out of the number of respondents said they did private sector new build, 50% used BIM for a ‘one-off’ client. See page 29 for a breakdown of respondents by project type. Considerably more respondents carry out private or public sector work, compared with work in other sectors.
In terms of the second theme introduced above (the BIM support framework): there is still a highly developed, cross-industry network of support organizations, experts and reference documents to help people adopt BIM in a consistent way. We look at the standards in the next section, but in terms of support and information sources about BIM, we see a similar picture to last year. The organizations that people are most likely to turn to are NBS, BSI, the UK BIM Alliance and the RIBA.

In October last year, the UK BIM Alliance, BSI and CDBB launched the UK BIM Framework (ukbimframework.org), designed to be the first stop for anyone who is responsible for specifying, delivering or managing information for an asset. Initiatives like this should make it easier to find out about BIM and to facilitate construction professionals adopting it on their projects.

This is the case again this year, with 80% of organizations that have more than 50 employees having adopted BIM, compared to 62% of those with 15 staff or fewer. We also find this year that younger professionals are more likely to say that they have adopted BIM than older respondents. We explore these themes further in the insert opposite and on page 21. We also see above that while many refurnishment and one-off projects have been carried out using BIM, these are still less common. To manage information digitally for an existing building, there are costs associated with scanning it to gather that data. As a key benefit of BIM is to improve the supply of information over an asset’s lifetime, it is unsurprising that repeat clients who have been able to review past projects are more likely to recognise the benefits of BIM and to ask for it.

In terms of the third point (why momentum has slowed now that the majority state that they have adopted BIM): we can take a look at those who have not yet done so. Logic would dictate that they have not adopted BIM or because the barriers are too great. We have previously highlighted the differences between larger and smaller organizations, where BIM adoption has been much greater among the former. But what does ‘doing’ or ‘using’ BIM really mean?

There has been much debate about what BIM is in practice, and the extent to which people are implementing it consistently. Sometimes people have confused BIM with simply creating 3D models. We asked those respondents in the UK, the figure for small practices has improved compared to last year, where it was 56%. The group most affected are the smallest micro-practices: only 42% of those with one or two staff state that they have adopted BIM. However, the small practices that are using BIM are as likely as bigger organizations to recognise its benefits, reporting that it has made them more productive and that they have adopted it successfully - although those small practices yet to adopt BIM are less convinced of its benefits than larger companies. Despite this, among the smallest practices who have not adopted BIM, over half (55%) do intend to do so.

When we explore the barriers stopping small practices from moving ahead with BIM, there are some differences compared with larger companies. Almost two thirds (66%) of small organizations say that their projects are too small (compared with 26% of large organizations) and, similarly, 52% say that BIM is not relevant to their projects (compared with 17% of large organizations). This is a bigger issue than cost, although the latter is more likely to be a challenge for small practices (49%, compared to 39% of medium and 44% of large organizations).

Small practices are no more likely to cite lack of training and expertise as a barrier, in fact, more of the larger organizations highlight this. So, a lot of this is about BIM overlides perceived suitability of BIM for small projects. Can the success stories from the smallest practices be shared with their contemporaries to help them realize the benefits of BIM? And can BIM be applied in such a way as to improve information management on small projects?

‘Nothing I have ever seen about BIM overcomes the barriers to very small companies using it’ i.e. – no client demand, unsuited to small projects, time, cost and lack of interest and ability for small contractors to use it.

The definitive industry update

National BIM Report 2020

18
Thinking in more detail about BIM, in the last 12 months, which of the following things have you been involved with, in some way, on BIM projects you have worked on?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM execution plans</td>
<td>67%</td>
</tr>
<tr>
<td>Common data environments</td>
<td>67%</td>
</tr>
<tr>
<td>Information standards</td>
<td>58%</td>
</tr>
<tr>
<td>Exchange information requirements</td>
<td>56%</td>
</tr>
<tr>
<td>Information production methods and procedures</td>
<td>54%</td>
</tr>
<tr>
<td>Information protocols</td>
<td>46%</td>
</tr>
<tr>
<td>Detailed responsibility matrix</td>
<td>42%</td>
</tr>
<tr>
<td>Task information delivery plans</td>
<td>38%</td>
</tr>
<tr>
<td>Master information delivery plans</td>
<td>32%</td>
</tr>
<tr>
<td>None of these</td>
<td>7%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2%</td>
</tr>
</tbody>
</table>

Thinking about the projects where you have adopted BIM, which of the following approaches has your organization adopted with respect to sharing information?

<table>
<thead>
<tr>
<th>Approach</th>
<th>Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following a naming convention for all information that is shared</td>
<td>68%</td>
</tr>
<tr>
<td>Exchanging information in IFC format</td>
<td>62%</td>
</tr>
<tr>
<td>Clearly indicating what the shared information is suitable for (e.g. for information, for review, as a record)</td>
<td>61%</td>
</tr>
<tr>
<td>Highlighting amended information through the use of revision codes</td>
<td>46%</td>
</tr>
<tr>
<td>Classifying information using Uniclass 2015</td>
<td>38%</td>
</tr>
<tr>
<td>Exchanging information in COBie format</td>
<td>33%</td>
</tr>
<tr>
<td>None of these</td>
<td>5%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>4%</td>
</tr>
</tbody>
</table>

Focus: is it an age thing?
It can be tempting to assume that the older someone is, the less likely they are to embrace new ways of doing things. Sometimes this is unfair, and there are many examples of experienced professionals who are innovators, and see the potential in new technologies. However, the more experienced generations have to actively change how they do things, whereas many ‘millennials’ who began reaching adulthood around the turn of the century have grown up with the internet, mobile devices and touchscreen devices. Working with digital information is what many have always known. So, one could argue that embracing BIM (which has at its heart well-managed, digital information, and uses a range of digital tools) is more straightforward for younger professionals.

The survey data bears this out: 80% of those under 35 state that they have adopted BIM, compared with 75% of those aged between 35 and 54, and 60% among those over 55. Among those who have yet to adopt BIM, only 71% of under-35s say that they will never do so; this rises to 19% for over-55s. There are some links between age and other factors. Younger professionals are more likely to work in larger organizations, and they are also more likely to be in architectural technologist or BIM manager roles. This suggests that decisions about BIM adoption are influenced by a combination of things.

There is a more mixed picture in terms of use of new technologies: age appears to have limited influence on things like cloud computing. However, in some cases, younger professionals are more likely to use new technologies. For instance, 46% of under-35s use virtual, augmented or mixed reality, compared with just 25% of those over 55. Attitudes to the transformative potential of digitization also differ considerably by age. This time, the difference is more pronounced between those under 54 and those over 55. Over 80% of the former believe that digitization will transform the whole construction industry, compared with just 63% of the latter.
While it is clearly a good thing that BIM leads to more productive and profitable organizations and projects, it also needs to contribute to improved outcomes for those who own, manage and use the asset. This is the case: respondents to this survey have consistently agreed that BIM results in operation and maintenance savings, with 74% saying so in 2020.

I see BIM improving efficiencies significantly when an asset is in use. There will be good communication and clear task briefing between facilities managers and operatives who carry out repairs and maintenance of the assets.

I think a major benefit is the accuracy and reliability of our information.

'The evolution of the construction industry has been accelerated by BIM processes and technologies.'

Interestingly, many of these figures have not varied greatly since we started asking the industry about BIM in 2010. Back then, many felt that BIM improved productivity, profitability and coordination of documents. The challenge for many has been to make the investment of adopting BIM and there being a sufficient driver from clients to encourage this. More on this in the next section.

Some things have changed, however. Over the last decade, we have seen manufacturers providing their information as digital objects. The use of these objects has grown to the point where 81% of respondents to this survey now state that they need manufacturers to provide them.

Does this requirement for digital objects and the increase in adoption of BIM mean that it’s now the norm? 40% think that it is (three percentage points higher than last year). The insert on page 25 explores some of the differences in findings depending on whether or not people are based in the UK. Now, though, UK’s address some of the reasons why BIM isn’t further embedded after ten years of the Government and others promoting its use.

'Perhaps more focus on the main benefits of BIM would lead to its more widespread adoption i.e. clash detection/clash avoidance, the coordination between the disciplines and the 3D visualisation. The rest is either box ticking or showing off. It is a shame that there are not graduated standards for small works, medium works, large works, and mega works. It does not appear right or necessary for all the standards to be applied to the same manner over different scale of works.'

Of those who have embraced BIM, over two thirds (68%) report that they have done so successfully, up from 63% last year, and only 5% wish that they hadn’t. Over half (58%) of those yet to adopt BIM are concerned that they’ll get left behind, but 14% do still say that they would rather not do so.

The support network, standards, guidance and training programmes that have grown up around BIM would appear to be making a difference, as people’s knowledge has increased. While cost remains an issue, many will now have made investments in new technology platforms (even if they are not all using them to apply BIM principles).

Despite the UK being a key player in developing the standards for BIM globally, it isn’t always business as usual here.
Lack of client demand, cited by 64% of this year’s respondents, remains the greatest barrier among those yet to adopt BIM. Aligned to this, 45% say that the projects they work on are too small (this figure has actually increased since last year), or that BIM is not relevant to their projects (36%).

There may be several explanations for this perceived lack of impetus from clients. Our BIM surveys over the last few years have highlighted a loss of momentum from government in driving forward and enforcing the mandate for BIM on central government-procured assets. This has likely enforced the mandate for BIM on central government initiatives, like the RIBA, are also active overseas.

Our BIM surveys over the last few years have shown to provide in recent years’ improvements in managing information. The real world is still built with actual materials which are described in 2D drawings which are published from the BIM models, printed on paper and read on dirty construction sites… models have serious limitations, and we must detail a great deal in 2D, even to the extent of transferring 2D views of the 3D model into purely 2D plans, sections and elevations, just so we can get the drawings to be published as reliable construction contract documents.‘

‘Clients are the main driver as main contractors and suppliers won’t bear the increased cost just for their own benefit, despite the positive ROI BIM has shown to provide in recent years’.

‘I work on a Government site and there is NO demand for it on projects. This isn’t setting a good example’. ‘I think the cost of BIM and the need for full collaboration is one of the main issues. Small firms cannot justify the expense, training, computers etc. and clients generally are not requesting it’.

Focus: outside looking in

Over the years that we have carried out this survey, a growing number of professionals based outside the UK have completed it. For the last two surveys, around a quarter of respondents were based in other nations. There could be various reasons for this. Some may well have strong connections to the UK, perhaps working for global companies with UK HQs. The UK’s professional institutes, like the RIBA, are also active overseas.

The UK has played an active role in driving forward BIM adoption: through government initiatives, the strong support network that has developed, and its central role in developing standards such as the ISO 19650 series. Perhaps this has led to interest from professionals in other countries to follow the UK’s progress and take part in the survey? Certainly, respondents outside of the UK are much more likely to think of the UK as the leader in BIM: 48% compared to 27%. The difference here is mainly accounted for by a high proportion of UK professionals agreeing, or disagreeing about the UK being a leader in BIM, or not knowing. It implies that those outside the UK have a clearer view about this.

When asked, at the beginning of the last decade, which main digital design tool people used, none of the tools geared to creating 3D models were used by more than 10% of respondents. In 2020, we see that things have shifted to the most popular tool being Autodesk’s Revit, used by exactly half of this year’s respondents. This is followed by Graphisoft’s ArchiCAD, with 16% saying that this is their main design tool.

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A key aspect of BIM is the information associated with the 3D model and the specification is a key part of this. A majority (59%) of users in the UK use NBS to develop specifications. Within NBS, there is also a move to the cloud with almost a quarter of NBS users already using NBS Chorus. From our own analytics we can see that, as of May 2020, there are over 1500 organizations subscribing to NBS Chorus, with this number growing each month. Most of us work with word-processing documents and spreadsheets, and for many years the most common approach has been the use of Microsoft Office on a desktop or laptop. In 2020, for the first time, the use of Microsoft’s online version of Office (365) is used by more people than its desktop counterpart. This marks a key moment in the progression towards cloud-based ways of working.

“There are now and useful tools coming out every day to help us automate and create smart design through algorithmic programs and software. Exciting to watch as things progress.”

“I think the biggest problem is getting the smaller sub contractors on board. Once many of our own have been shown the physical benefits they are completely sold on the idea.”

A digital future?

BIM and good information management are the foundations for the introduction of new digital tools and ways of working. These technologies go hand-in-hand with BIM to improve the visualization of designs for clients, the sharing of technical data with other project team members, and the connection of different types of data across the project and within an asset. The technologies used by most people now relate to cloud computing (42%) and immersive technologies, including virtual, augmented and mixed reality (38%). Cloud computing can include quite a range of things, such as carrying out major tasks like writing specifications or sharing models over the internet via a common data environment.

It can also include more straightforward tasks such as using online storage and file transfer, or online word-processing packages such as Microsoft Office 365. It is likely that people’s perception of cloud computing varies: it is possible that some who may be using it in some way may not have classed themselves as doing so.

Architects and other designers have been using virtual reality to bring designs to life for clients for some time. Others, such as those managing buildings, have been applying augmented reality to do things like overlay instructions and maintenance data to assist those carrying out repairs.

‘New technology and innovations will always seek to improve the industry. I see BIM as the foundation to the technologies which are or will be available’.

‘Absolutely agree that full integration of technology and BIM is essential but this needs momentum and someone to drive it.”

This survey was carried out before the COVID-19-induced lockdown began in the UK. It would be reasonable to think that the use of these technologies has increased since then. Nonetheless, 88% of survey respondents anticipate using cloud computing within five years, and 78% immersive tech. We may now see the move towards these numbers accelerate.

**Which project extranets or common data environments do you use?**

- Microsoft SharePoint: 50%
- Aconex/Conject: 39%
- Causeway Livelink: 36%
- Autodesk Projects: 36%
- Aite: 32%
- Microsoft OneDrive: 30%
- Bentley Projectwise: 23%
- Google Drive: 18%
- Delta/Union Square: 11%
- Clearbox/Blithtra: 9%
- Procore: 5%
- Huddle: 5%
- Group BC: 4%
- Causerway Livelink: 2%
- Newforma: 2%
- Documentum: 1%
- ShareFile: 1%
- Other: 12%
Almost a third of respondents are using drones for surveying and scanning sites, for instance, especially for difficult-to-reach places such as bridges. Around two thirds expect to use drones within five years. A similar proportion of professionals (30%) report that they are designing for off-site construction. The advantages of these technologies, as well as 3D printing, may reduce risk; it can help make a journey more profitable. There is a plethora of new tools to aid the construction sector will transform the way they work. 78% believe that it will transform the whole construction industry. They see real potential and new ways of working in digital transformation, improving productivity (78%), speed of delivery (74%), health and safety (70%) and ability to meet sustainability challenges (69%). These are some of the major challenges of our time. "I believe the biggest barrier to adopting these technologies is attitudes and a lack of sharing the benefits to the client. If these are overcome, we already know the other benefits in terms of time, cost and quality and I think it will significantly improve the way we work and the assets we produce."

We have posed similar questions to designers and other construction professionals in recent years, and the response is consistent: they see digitization as a means of improving the way that people work and achieving better outcomes for the built environment.

Thinking about the digitization of the construction sector, how far do you agree or disagree that digitization will do the following?

- Transform the way we work: 89%
- Improve the productivity of the construction sector: 81%
- Transform the whole construction industry: 78%
- Improve the speed of delivery: 74%
- Improve construction health and safety: 70%
- Help the construction sector meet the challenges of sustainability: 69%
- Help us export more: 44%

Final thoughts

The growth in the awareness and use of BIM is indisputable. Its benefits are widely recognized: it increases productivity; it improves the operation and maintenance of buildings; it reduces risk; it can help make organizations more profitable. There are internationally recognized standards for people to follow, and cross-industry organizations ready to provide advice and training. Product manufacturers are increasingly providing information in digital formats, moving away from printed literature and trade shows towards standardized, structured data delivered in the cloud. All of this seems to suggest significant progress. There is a plethora of new tools to aid digitization, and these have made a significant difference to how people work compared to ten years ago. The industry has definitely changed.

But only 40% say that BIM is the norm for project information. While many recognize the benefits, and plan to adopt BIM and to use new technologies, there are challenges holding people back. Key themes that continue to be present each time we carry out this survey are: the role that clients have to play in encouraging BIM use on projects; and (aligned to this) the need to enable BIM in a way that improves outcomes for all types of project. Many professionals state that it is not appropriate for small projects. For BIM to be truly universal, and to be business as usual across the industry, these issues need to be addressed.

So, fast-forward another ten years: what will things look like in 2030? Perhaps the new UK BIM Framework will have helped to provide the practical guidance that organizations of all sizes need to move ahead. ISO 19650 will also have been in use and helping to standardize BIM processes for over a decade. The industry’s leaders will be digital natives, with an approach to information management that is likely to be ‘digital first’. The attraction of using exciting digital tools will mean that organizations will need to structure their data in digital formats. External legal, economic and environmental drivers will continue to exert their influence, such as the new regulatory framework for building safety, which stipulates the establishment of a digital thread of information. These sorts of drivers make it ever more likely that the adoption of BIM and of digital technologies will only continue to increase over the next decade but processes and tools need to be applicable to all project types, organization sizes and roles across the industry.

How we did the research and who took part

We carried out an online survey between December 2019 and the beginning of March 2020. We received responses from 1061 construction professionals. All organization sizes were represented, from micro-practices of one or two people to large practices with over 500 staff. As previously, responses came primarily from the design community, with 27% being architects. Engineers were also well represented. Over a quarter were architectural technologists or BIM managers. However, other members of the project team also participated, including: contractors, project managers, cost consultants, manufacturers, surveyors and clients. Those doing private, public and work in other sectors were well represented, as well as those doing new build and refurbishment work.

Respondents came from across the UK, and almost a quarter were working outside of the country. There were respondents based in six of the world’s continents.

People of all ages were well represented. Individuals were engaged in a variety of roles that covered tasks from developing drawings and models to writing specifications, coordinating information and sourcing or creating digital objects. Working with digital information has become commonplace, with almost two thirds viewing models, 55% creating drawings or models using 3D tools, over half checking models and 41% producing digital objects.

Including yourself, approximately how many people are employed in your organization?

- 1 – 2: 9%
- 3 – 5: 8%
- 6 – 15: 15%
- 16 – 25: 6%
- 26 – 50: 10%
- 51 – 100: 11%
- 101 – 250: 10%
- 251 – 500: 6%
- 501+: 24%

Which age range do you fall into?

- Under 25: 4%
- 25 – 34: 23%
- 35 – 44: 29%
- 45 – 54: 24%
- 55 – 64: 15%
- 65 – 74: 4%
- 75 or over: 1%

In the last 12 months, which of the following project types have you been involved in?

- Private sector – new build: 73%
- Private sector – refurbishment: 53%
- Public sector – new build: 53%
- Public sector – refurbishment: 39%
- Other sector e.g. charity – new build: 10%
- Other sector e.g. charity – refurbishment: 11%
A classification system is needed – one comprising multiple tables, each for objects of different classes. Just one table, covering one object class, is not enough to serve many needs along the project timeline and across the various disciplines.

The adoption of Uniclass 2015 in Australia

Classification is needed in the construction industry. It was needed in a pre-BIM environment (an early example being the Swedish Sambetskomitten for Byggnadsfrågor, SfB, which was launched in 1950), and it is needed even more in a BIM environment where the benefits of digital interoperability are likely to be huge.

Over the years, this need for classification has resulted in a multitude of classifications – in different countries, across different disciplines, and even for the same purpose in the same place. This has reflected and reinforced professional and other information silos, frustrating efforts to coordinate, and now stymying digital integration.

Classifications have three levels of use. There are those who design, develop and maintain the classifications. There are those who apply the classifications to information about particular objects, such as manufacturers and model software developers. And then there are designers, specifiers, builders, maintenance workers and others who use the classifications assigned to the objects that they are dealing with without knowing or caring where they came from. The author has operated at all three levels. But for most, object classification is ‘under the hood’. That does not mean that it is not important, and that an appreciation of it isn’t useful.

Furthermore, it has been fantastic to see its adoption internationally. This article [link] from John Gelder explores how Uniclass 2015 is becoming the classification of choice across Australia. It is either recommended or required for work for the Office of Projects Victoria, Transport for New South Wales, the Rail Industry Safety Standards Board and Austroads. Clearly, the industry needs support in terms of working with and producing well-structured information. At NBS, we have been working through all of the specification and manufacturer product content that we publish and classifying it to the Uniclass 2015 structure. We are pleased to say that this exercise is now complete, and users of the NBS Chorus specification platform and the NBS Source manufacturer product platform can now benefit from it.

A number of different countries around the world are following the UK’s approach to BIM. It will be interesting to see how many follow Australia by also embracing Uniclass 2015 for classification.
Classification systems

A classification system is needed - one comprising multiple tables, each for objects of different classes. Just one table, covering one object class, is not enough to serve many needs along the project timeline and across the various disciplines. The NCC's partial 'Entities' classification is useful at certain stages and to certain users (e.g. architects and other designers, building control authorities), but not to manufacturers and installers. The NCS is, likewise, useful at certain stages and to certain users (e.g. specifiers, quantity surveyors, subcontractors) but is not of much interest to planners or manufacturers.

The system must be coherent. An integrated sequence of coordinated tables is needed to create a coherent object hierarchy. This is especially the case for BIM, in which modelling essentially maps big things to little things. For example, it maps buildings to elements, elements to systems, and systems to products (and vice versa). Since each of these object classes will have its own classification table, it would make sense if they were designed with each other, and modulated, in mind. An incoherent collection of unrelated tables is not good enough.

None of the tables mentioned are part of a classification system of the kind outlined in ISO 12006-2:2015. Current classification systems include Omniclass from North America,20 CoClass from Sweden21 and Uniclass 2015 from the UK.22 Table 1 shows how they correlate to the ISO and to each other. Only two might be regarded as coherent - CoClass and Uniclass 2015.

Since Australia has no such system of its own, the question is which of these classification systems should be adopted here, if any? The answer so far has been Uniclass 2015, although this adoption is in its early stage. Among major clients, the Office of Projects Victoria recommends it.23 Transport for New South Wales (TfNSW) requires it, and is actively engaged with NBS in its ongoing development.24 The Rail Industry Safety Standards Board (RISB) recommends it.25 The use of Uniclass 2015 was recommended to Austroads in 2018.26 Client adoption means that their supply chains will also use it for civil works and for architectural works. However, most States have no requirements for classification in their BIM implementation guidelines. For example, SA does not stipulate an approach to classification, leaving this to the contractor.27 The relevant Queensland document makes no mention of classification.28

As for Australian BIM tools, NBS Chorus uses Uniclass 2015 as its ‘native’ classification system (others can be used).29 The new NBS Source product – for proprietary objects, their geometries and properties - also uses it as the ‘native’ classification system.30 Autodesk Revit, Graphisoft ArchiCAD and Vectorworks’ 2020 SP3 amended Uniclass 2015 for objects linked to NBS Chorus.31 Both NATSPEC and NZ Masterpec included a requirement that ‘BIM objects shall have a Uniclass 2015 classification system’ in the 2018 draft of the Open BIM Object Standard (OBOS), but this has been dropped in the published version.32 However, its use is supported (after a fashion) in the NATSPEC BIM ‘Properties Generator’, along with Omniclass and the NCS.33

Classification tables

Individual unrelated classification tables are not enough. Current classifications in use in the Australian construction industry include:

- The National Classification System (2019), published by NATSPEC.34
- The classification used to structure the ANZ Standard Method of Measurement of Building Works (2018), published by AQIOs and NZIQs (Australian and New Zealand Institutes of Quantity Surveyors, respectively).35
- The North American Omniclass Table 22, ‘Work results’, (2012), used by SpecPack.36
- The project phases classification used in the Australian Institute of Architects ‘Client architect agreement’ (2019).37

- The property classification used to structure the Australian Building Codes Board 'National Construction Code' suite.38
- The property classification used to structure the Green Building Council of Australia 'Green Star' suite.40
- The buildings classification given in the ABCB’s NCC (2019).41
- All seven classifications were developed independently of each other and do not align – they were not intended to be interoperable. The first three concern the same object class, on a given project, it is possible that all three could be used. In particular, it would have been useful if the first two aligned (NCS and the ANZ SHM).

so Australian specifications could ‘talk to’ bills of quantities, and vice versa. This was the case in the UK some years ago. The NBS and NES national building specification systems and the RICS standard method of measurement used the same classification (Uniclass 1997, Table 1, ‘Work sections for buildings’), enabling interoperability. But this has never been the case in Australia and, since RICS (the Royal Institute of Chartered Surveyors) released the NRM (New Rules of Measurement) in 2012, it is no longer the case in the UK.42


The National Classification System is available online at: www.thenbs.com.au/nbsplugs/australian-national-classification-system/

ANZ SHM is available to purchase online at: www.aqio.com.au/AQIOs_Website/Shop_Shops/AQIOs_Warehouse/Product/ANZ_SHM.html

SpecPack is available to purchase at: https://specpack.com.au

1 These are: Concept Design, Design Development, Design Development/Construction, Construction Documentation, Contractor Selection, and Contract Administration. Also in use for project phases in the RIBA Plan of Work 2020

2 BDS (2018), ‘Application of Uniclass 2015 for Transport for NSW’ , Part 1: Our decision: BDS has selected Uniclass 2015, developed by the NBS, as the preferred classification system. This move by the NSW government follows comprehensive analysis of the current state, and comparative research of available classification systems, industry-wide, against ISO 12006-2:2015.


5 NBS Source launched in the UK in April 2020: www.thenbs.com/bbe-source

6 For the various NBS plug-ins, see: www.thenbs.com/a/products/the-quick-rating-system

7 OBOS is a free online at: https://bim.thenbs.com/our-tools/omniclass

8 National BIM Report 2020

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The Systems table could also accommodate 10^6 objects, and it currently classifies around 1500. All this room is needed to ensure adequate space around each object for the addition of further objects in the future. CoClass does not have this space for expansion.

One point to note for those who have looked carefully at Table 1 is that the ‘Work results’ table is considered redundant in Uniclass 2015 and will not be included. Mapping between object classes (e.g. ‘Complexes’ and ‘Entities’) is properly done in BIM tools such as Autodesk Revit and NBS Chorus. Conventionally, ‘Work results’ (or work sections) are used for mapping from ‘Systems’ to ‘Products,’ which is done in the ‘Systems’ within NBS Chorus. Separate ‘Work results’ sections would only duplicate this mapping.

In NBS Chorus, future mapping from ‘Complexes’ to ‘Entities’ would be done in the ‘Complexes’ ‘sections’ of what would be a ‘lifetime’ specification and so on.

Perhaps a significant omission in Uniclass 2015 is the ‘Properties’ table. Readers views on the need for this would be welcome. This would have to serve all the other tables, e.g. classifying properties for ‘Products’ and ‘Activities.’ The properties assigned by BIM tools (geometric and otherwise) would all be classified, facilitating digital searching for compliant proprietary objects, or against attributes of interest such as flammability. Work on this table has commenced. Proposed tables beyond the ISO include ‘Districts’ (or ‘Precincts’) and ‘Regions’ (both in draft). These would allow Uniclass 2015 to be used to support Smart Cities initiatives.

Where users insist on retaining an existing classification table or system but others in a project are using Uniclass 2015, then two-way mapping will be needed. For the purposes of BIM, this digital management should be possible, which requires simple 1:1 mapping. This means that an object in the existing table corresponds exactly to an object in Uniclass 2015, e.g. they both have ‘clay bricks.’ However, for many objects this will not be the case. Instead, we will find many, many 1, 0, 1, 0 and many many mappings. All require human intervention for resolution, which is anti-BIM.

To avoid this, ultimately everyone will have to use the same classification system, to ensure full interoperability and to maximize the benefits of BIM. National adoption of a single classification system is good, and international adoption is better.

Conclusion

A coherent classification system for construction is essential if we are to realize the full benefits of BIM. This is why the UK Government ran a competition for the development of such a system in 2014, which was won by NBS with Uniclass 2015. As a result, Uniclass 2015 is now an official component of the UK BIM Framework, and promoted in BS EN ISO 12006-2:2020 (National Foreword). In turn, ISO 12006-2:2015 is mandated by ISO 19650-2:2018 (clause 5.1.7c), which has been adopted in Australia. When we began this work, we thought that it might only be used by NBS. But now we see the classification system being adopted very much more widely, including in Australia. The tables have been copied thousands of times worldwide. The adoption and implementation of Uniclass 2015 will expand into the future.
As a term, BIM is now well embedded in the vocabulary of the majority of people working in the construction industry, but what does it mean?

When we talk about BIM, we are talking about building information modelling, building information models or ‘better information management’ – or perhaps a variety of other suitable explanations for this acronym. Most of the time when we are talking about BIM, we’re more focused on the ‘I’ than the ‘B’ or the ‘M’: we are really talking about BIM as the improved use and exchange of information across the ‘design’, ‘build’ and ‘operate’ phases of a project.

But is this understanding as well embedded as the acronym itself?

In more general terms, BIM is a label. It is an insignia that we use to more easily define the digital transformation now widely spreading its way through the construction industry like concrete being slowly poured into a slab. Like the concrete making its way inch by inch (or should that be millimetre by millimetre?) across the formwork, it needs some structure and guidance to develop into the right shape. Maybe even some assistance along the way, making sure that it gets into all of those difficult corners for a smooth and consistent finish. However, sometimes when we use labels such as BIM we end up losing focus on what truly matters – and that is the end result. That may mean meeting the handover aspirations of the building operator, achieving the cost and waste reduction targets of the Government Construction Strategy or providing 3D model visualizations for stakeholder engagement and improved coordination. These aims and ambitions are the drivers for change, and should be at the forefront of the conversation – rather than masked by the ever-changing label that we hang them on.

Does it matter that one definition of BIM is different to another? Does it matter that one journey takes a different road to another? As long as the collective industry is moving forward towards that destination, we can reflect on the positives of that success. We can move our energy away from debating terminology and keep the vehicle moving.

Mike Turpin
BIM Consultant
and Director,
Innovating Futures

Sometimes when we use labels such as BIM we end up losing focus on what truly matters – and that is the end result.
During the past ten or more years of the UK’s digital transformation journey, we have seen the many evolving facets of BIM. These include: the transition of design from 2D CAD drawings to 3D models; the progression of standards from BS to PAS, and then to the International ISO; the introduction of COBie, and the resulting attention to data for operation; and (who can forget?) the widespread adoption of clash detection, and the many dimensions (4D, 5D, etc.) of BIM implemented during construction. All of these identities of BIM are very different, but in each case and on each project, they are equally important to the stakeholders who benefit from them. Like eggplants and aubergines or chips and fries, these things are one and the same to the majority of the population. As we take the next steps on the UK’s journey towards digital maturity, a traditional and notoriously analogue industry is about to see the next phase of these discussions: the ‘digital twin’.

CDBB are currently defining the direction of the UK Digital Twin Initiative and have published the roadmap for its development (as above). Alongside all of this, we must still consider the high-level reason why we and the industry have adopted BIM in the first place – and that is to realise the benefits and value that its successful implementation can deliver. In fact, we must remember that this was the UK Government’s driver for BIM from day one: to deliver value from 2D CAD drawings to 3D models; the transition of design for these future assets which are handed over to them. It is fundamental to helping meet these and other critical parts of the UK’s digital transformation journey, a traditional and notoriously analogue industry is about to see the next phase of these discussions: the ‘digital twin’.

Whilst we are still on this road to the future of our industry, it is my opinion that we need to refine our outputs – from focusing on what we can do to focusing on what we should do. We should be reflecting on our own selves, our own teams, or our own company’s reasons for BIM, and how it provides an outcome for us. That could be an increase in quality, an increase in efficiency, a reduction in cost, more project wins or a whole host of other goals. It’s these goals and our personal ambition to reach them which will ultimately make a success of BIM for us, our teams and our organizations – and the wider industry will benefit from this. As the saying goes, sometimes you have to be selfish to be selfless.

Whatever the term BIM means (or whatever a person understands it to mean), we expect BIM to meet three key criteria. When reviewing anything you’re doing, ask yourself whether it delivers:

- **Better Decisions**
- **Better Thinking**
- **Better Outcomes**

BIM can be the foundation that enables us to build a tower towards far greater outcomes and opportunities, but only if it is solid, complete and without defects, before we begin to load too much on top of it. That being said, we should now be considering the design for these future plans and looking at all possible options to help steer our future development in the direction that best meets our vision and goals. Undoubtedly, our future will change in ways that we could never have predicted, and we will have to be able to flex and adapt to this whilst still moving forward as an industry. We are already seeing sustainability and climate change soar higher up the national and global agendas. We are seeing the continual demand for more housing, better social care and increased infrastructure capacity.

How can your adoption of BIM be a part of meeting these and other critical parts of our future? Alongside all of this, 2020 has seen the tragic global pandemic which is COVID-19 and that has had a precedent impact on every aspect of life as we know it. Perhaps now more than ever, we need to use the tools that we have to help achieve prosperity from catastrophe?

**Better Outcomes**
- Lower costs: 33% reduction in the initial cost of construction and the whole life cost of built assets
- Faster delivery: 50% reduction in the overall time, from inception to completion, for new build and refurbished assets
- Lower emissions: 50% reduction in greenhouse gas emissions in the built environment
- Improvement in exports: 50% reduction in trade gap between total exports and total imports for construction products and materials

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**Construction 2025**: One potential outcome of BIM is to help achieve the targets set out in the Government’s Strategy.