

The Golden Thread

A stylized, white line-art graphic of a city skyline, featuring various building silhouettes of different heights, positioned to the right of the word 'Thread' in the title.

Complete Survey Responses

Understanding the capability
and capacity of the UK built
environment to deliver and
retain digital information

 **GoldenThread**

i3PT



CIOB

January 2021

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INTRODUCTION

On 1st December 2020 a summary report outlining the key findings of i3PT Certification and the Chartered Institute of Building's survey on the golden thread was released, with the information presented under the four headings listed below. This document contains all responses to the survey and can be read alongside the original report, or as a standalone document. The only responses that have not been included in this report are those that include personal information, or that have been considered to be pitches for products or services. Where required some comments have been edited slightly to remove personal information, or to amend small spelling errors, however where the exact intent of the comment is not clear we have left them unedited as to not project an unintended meaning.

SUMMARY OF KEY FINDINGS:

Understanding

Most respondents were confident in their own understanding of the golden thread, however less than half believe that the appropriate people in their organisation share the same level of understanding.

Almost 80% do not feel that it is clear where to go for support, advice and resources relating to the golden thread.

87% of respondents believe that the requirement for a golden thread should be extended to cover a wider scope of buildings, specifically care homes, schools and hospitals.

Responsibilities

There is no clear consensus over who owns project data at the design and construction stages of a project. Respondent groups appear more comfortable assigning ownership responsibilities to other parties, rather than taking on those responsibilities themselves.

There is agreement that the government should not be considered responsible for covering full costs for training, support and technical investments, and that cost should be shared between government, clients and project delivery teams.

Capability

Almost 60% of respondents believe that the concept of a digital golden thread of information is aligned with the UK BIM Framework. The majority also believe that less than a quarter of projects in the UK are currently being delivered to the level of BIM required in the UK BIM Framework. Over 65% of respondents describe their in-house BIM capability as good or excellent.

Respondents estimate that it will take at least two years to implement a golden thread as business as usual for higher risk buildings in the UK.

Almost half of client and facilities management teams do not have the appropriate software and technical capabilities to check that information provided to them by the design and construction teams meet their information requirements and 35% are not confident that they could clearly specify the correct requirements at the outset of a project.

Blockers

75% said that industry culture is the biggest blocker to delivering a golden thread of information, whilst technology was of the least concern.

Respondents believe that legislation, more support and clearer communication are the actions needed to overcome blockers, whilst having more time to prepare, and more financial support are considered less important.

This research tells the story of an industry that understands the need for change and is cautiously hopeful that it can be achieved. When asked if a golden thread of information will enable better decision making and create a clearer chain of accountability across the built environment, 85% agreed.

A number of respondents provided supporting comments to their answers when filling in the survey and these are included under the heading "Other responses" for each question.

All comments have been left anonymous, unless we have received explicit permission to reference the author.

A small number of respondents skipped questions in the survey. Where the total percentage count for any of the questions in this document falls below 100%, this can be considered the "did not respond" percentage.



Q1

Your name?

Q2

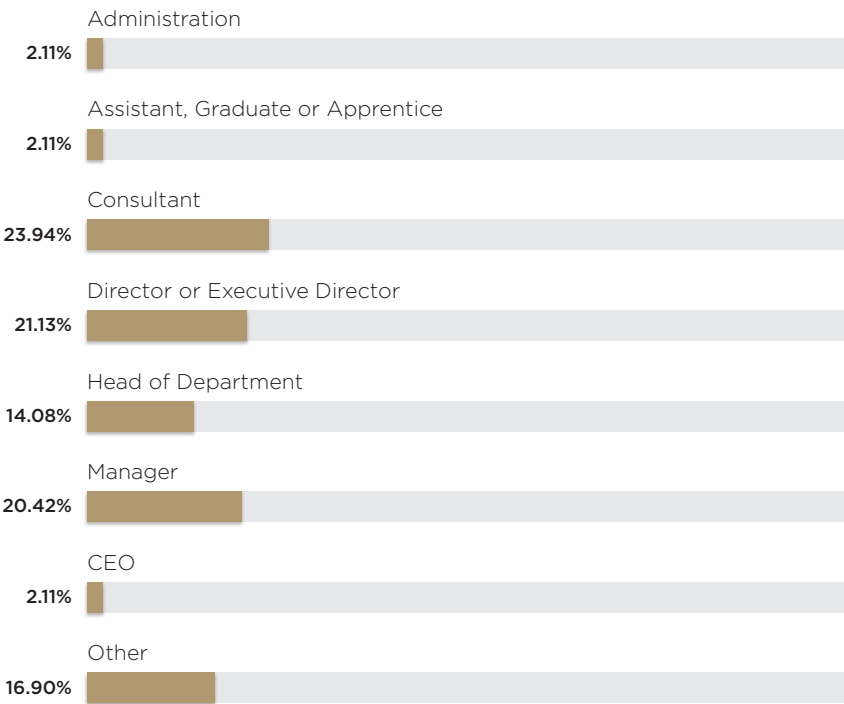
Your email address

***Note:** Personal information has not been published in compliance with GDPR requirements.*

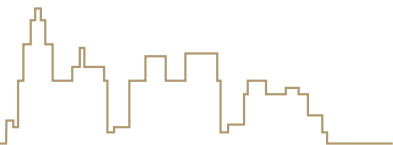


Q3

Which best describes your current role?



Answer Choices	% of Responses	No. of Responses
Administration	2.11%	3
Assistant, Graduate or Apprentice	2.11%	3
Consultant	23.94%	34
Director or Executive Director	21.13%	30
Head of Department	14.08%	20
Manager	20.42%	29
CEO	2.11%	3
Other (please specify)	16.90%	24



Q3 Other responses

Assigned Certifier.

Student.

Assigned Certifier & Architect.

Surveyor.

BCAR Coordinator.

Technical Advisor.

Building Surveyor.

Chartered Engineer, Assigned Certifier.

Certifier (2x respondents).

Construction Quality team member.

CTO Engineer.

Former Design Manager.

Head Detailer and business owner.

Information Management.

Lecturer.

Product manager.

Professional voice of fire and rescue services in the UK.

Project Manager.

Quality Control Lead .

Retired Deputy Fire Marshal - Plans Review.

Retired Design Engineer.

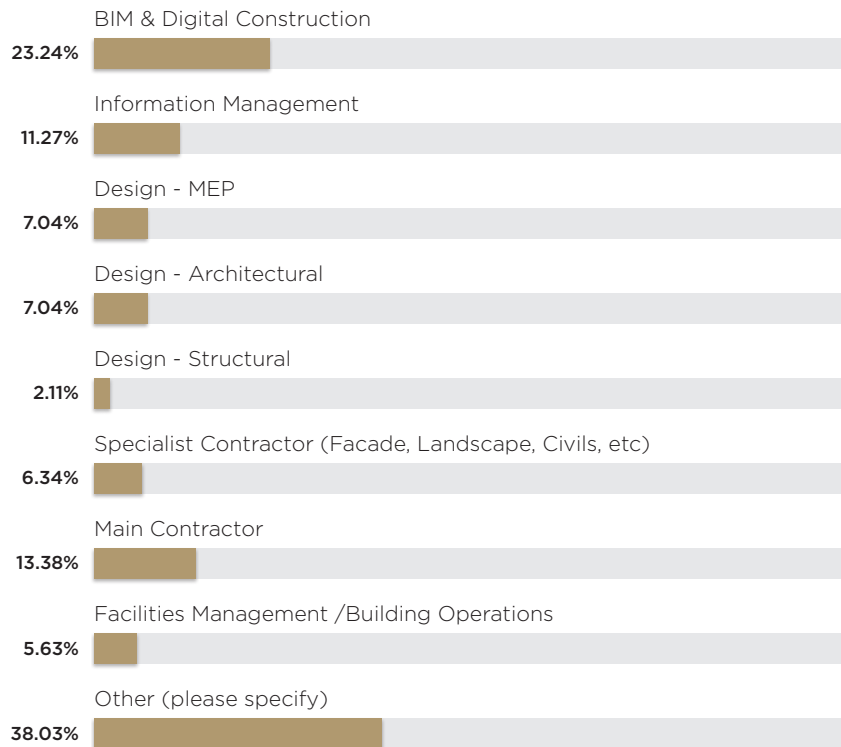
Senior Lecturer in Building Services.

Specialist Facade.



Q4

Which discipline do you work in?



Answer Choices	% of Responses	No. of Responses
BIM & Digital Construction	23.24%	33
Information Management	11.27%	16
Design - MEP	7.04%	10
Design - Architectural	7.04%	10
Design - Structural	2.11%	3
Specialist Contractor (Facade, Landscape, Civils, etc)	6.34%	9
Main Contractor	13.38%	19
Facilities Management /Building Operations	5.63%	8
Other (please specify)	38.03%	54



Q4 Other responses (1 of 2)

All of the above.

Assigned Certifier.

BCAR Coordination.

Building Certification (*2x respondents*).

Building certification (sign off upon completion of construction).

Building Compliance.

Campaign Group to Improve the Industry.

CDM2015 compliance.

Certification.

Chartered Surveyor.

Client.

Client Project Manager.

Client Water Industry.

Competency Management & Analytics.

Compliance Mechanical and Electrical.

Compliance with building regulations.

Construction Contractor.

Cost management.

Design - Fire Engineering.

Design Fire Safety & Accessibility.

Education.

Electrical.

Electrical Design and safety (*2x respondents*).

Electrical Services.

Energy consultant and air tightness testing.

Fire Safety Engineering.

Health & safety.

Health & Safety / CDM.

Housing Association.

Housing maintenance.

Innovation.

I run the Get It Right Initiative which is a group dedicated to improving construction productivity and quality by eliminating error .

IT.

Maintenance Specification Solution.

Manufacturer.

Materials Manufacturer.



Q4 Other responses (2 of 2)

Plans Review for Fire & Life Safety.

Principal.

Professional voice of fire and rescue services in the UK.

Project Management (*2x respondents*).

Project Manager - Client Side.

Provision of Quality Management to construction projects
(IT/AC etc).

Quality control.

Quantity Surveyor.

Real Estate.

Risk Review & Quality Assurance.

Software as a service .

Special Inspector.

Specialist in Fire alarm and Emergency lighting.

Specialist supplier.

Surveyor (gatherer of data).

University - teaching in construction project management.



Q5

Your location - If you live and work in different areas, please specify the area in which you work.*

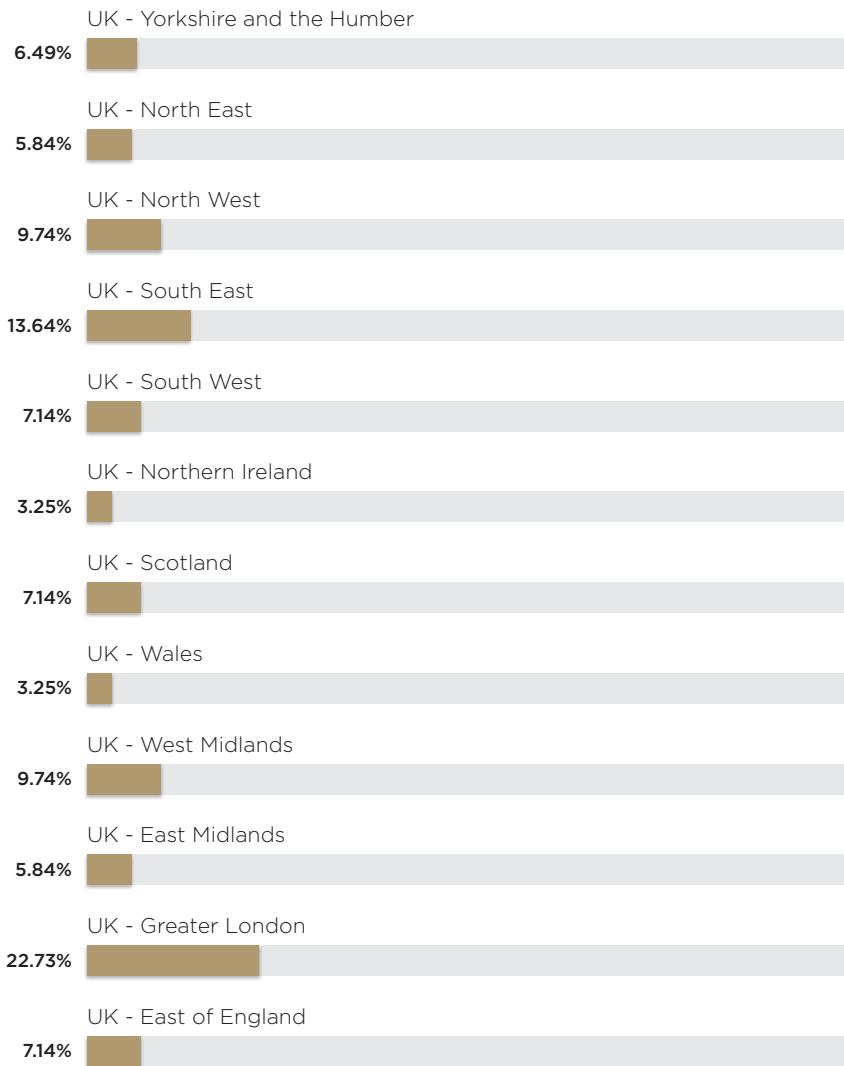
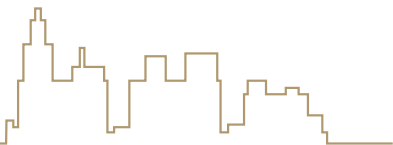


Chart information on next page >>>

***Note:** The recommendations in the Hackitt report and the resulting changes to legislation will be applicable to the UK only; however the issues that have been highlighted are prevalent for the built environment across the globe. With that in mind, although the questions in this survey were written from the point of view of the UK industry, we welcomed responses and input from around the world.



Q5 cont.

Answer Choices	% of Responses	No. of Responses
UK - Yorkshire and the Humber	6.49%	10
UK - North East	5.84%	9
UK - North West	9.74%	15
UK - South East	13.64%	21
UK - South West	7.14%	11
UK - Northern Ireland	3.25%	5
UK - Scotland	7.14%	11
UK - Wales	3.25%	5
UK - West Midlands	9.74%	15
UK - East Midlands	5.84%	9
UK - Greater London	22.73%	35
UK - East of England	7.14%	11
Other (please specify)	7.14%	11



Q5 Other responses

Across the UK.

Australia (2x respondents).

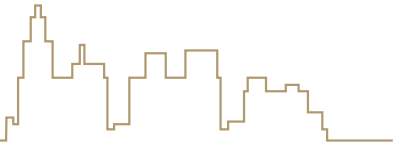
Italy (2x respondents).

Norway.

UK, Australia and North America.

UK National & International.

United States of America (3x respondents).

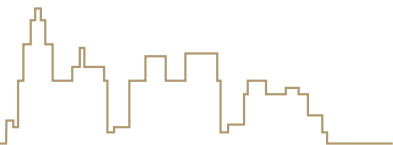


Q6

How do you keep up with the latest industry developments and news, such as the release of new Standards and reports? Please select all that apply.



Answer Choices	% of Responses	No. of Responses
Attend events	63.46%	99
Emails from industry publications	76.28%	119
Reports and Publications	75.00%	117
I don't actively keep up to date with industry developments	3.85%	6
Reading industry trade press	62.82%	98
Other (please specify)	24.36%	38



Q6 Other responses

Actively engage with all parts of the fire sector through proactive regular engagement with (not exhaustive) all fire and rescue services, central and local government, industry groups and trade bodies, standard development committees, professional organisations and the fire sector federation.

CIS.

Colleagues and info notices.

CPD member of Engineers Ireland.

CPD workshops.

Fire Task Group Member within the CIAT.

I am involved in them in first person.

Internal comms and intranet.

Knowledge sharing events within company.

LinkedIn (7x respondents).

LinkedIn connections.

LinkedIn & Magazines (Passive House).

LinkedIn posts; updates from my professional institutions; automatic 'watch lists' in standards subscription services.

Member of a trade body.

Membership of professional body.

Networking.

Networking, CPD.

Networking with peers, LinkedIn, Construction information.

On the job experience and in house code and exchange of views on company intranet.

Participation in R&D or Study groups.

Podcasts, such as the BBC Grenfell Inquiry Podcast.

Researching Standards.

Social media.

Social media, linkedIn etc

Social media and webinar.

Social media such as twitter.

Standards committee member.

Try to be involved in working groups.

Twitter and Google.

Twitter and LinkedIn.

Updates from CEO and others.

University Research.



Q7

Which best describes the role of your organisation in the built environment?

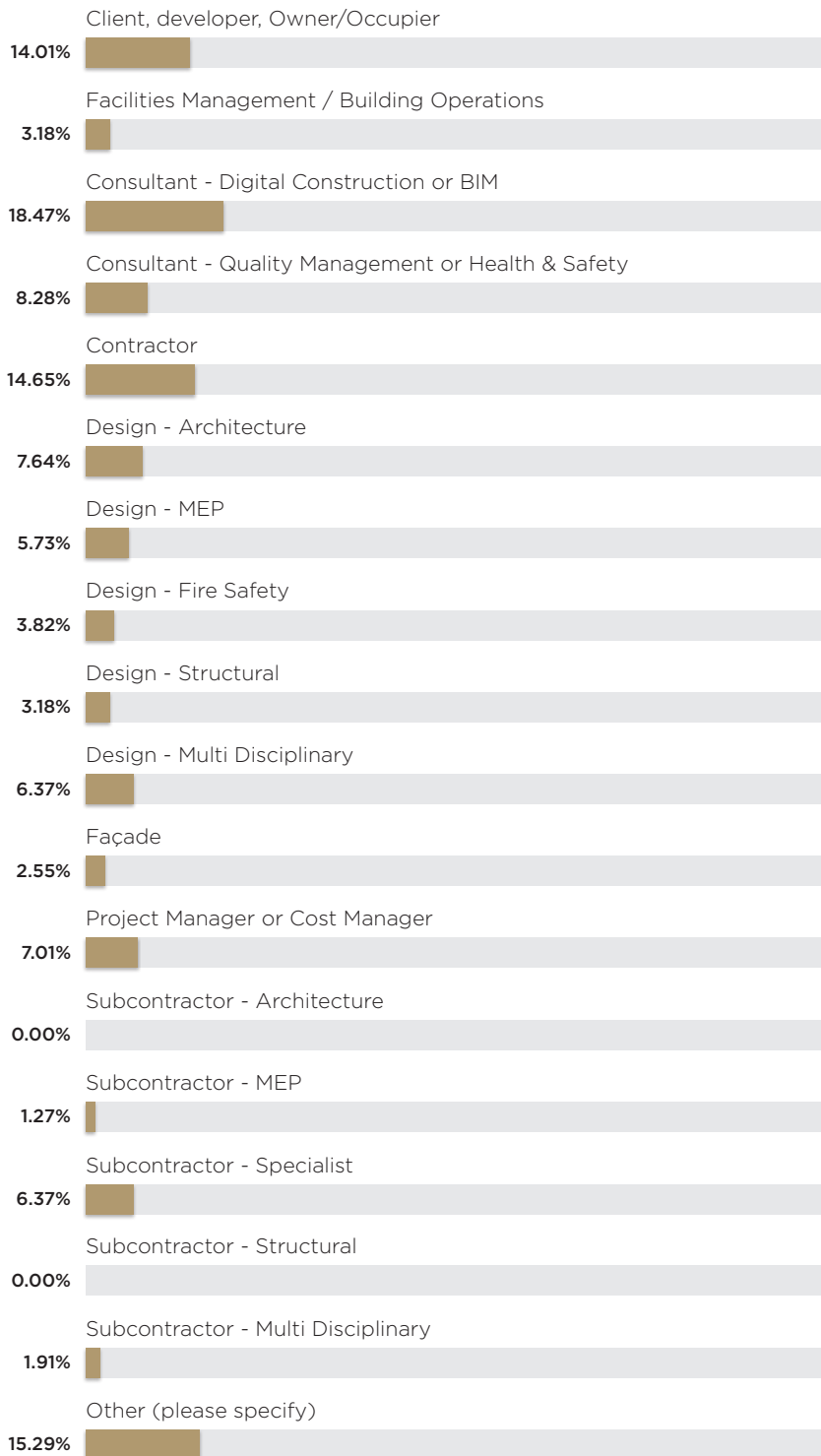


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Q7 cont.

Answer Choices	% of Responses	No. of Responses
Client, developer, Owner/Occupier	14.01%	22
Facilities Management / Building Operations	3.18%	5
Consultant - Digital Construction or BIM	18.47%	29
Consultant - Quality Management or Health & Safety	8.28%	13
Contractor	14.65%	23
Design - Architecture	7.64%	12
Design - MEP	5.73%	9
Design - Fire Safety	3.82%	6
Design - Structural	3.18%	5
Design - Multi Disciplinary	6.37%	10
Façade	2.55%	4
Project Manager or Cost Manager	7.01%	11
Subcontractor - Architecture	0.00%	0
Subcontractor - MEP	1.27%	2
Subcontractor - Specialist	6.37%	10
Subcontractor - Structural	0.00%	0
Subcontractor - Multi Disciplinary	1.91%	3
Other (please specify)	15.29%	24



Q7 Other responses

A group dedicated to changing attitudes to enable the Industry to eliminate error .

All of above for the purpose of teaching and design management for contractors.

Assigned Certifier.

Building Certifier.

Building Compliance.

Building Engineering Services Association .

Campaign Organisation.

Certification.

Certifier and Quality oversight.

Commissioning management - i.e. completing and handing over.

Education.

Electrical design and installation.

Insurance risk advisor and quality assurance.

Managing Agent in house team.

Materials Manufacturer.

Now in education but formerly Design Management (for contractors) .

Quality control.

Retired - Fire Protection.

Software and IT Services.

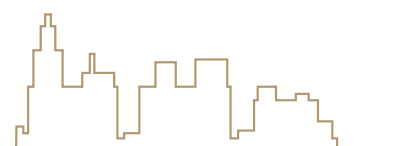
Software Vendor.

Specialist Consultant - golden thread of competence.

Survey.

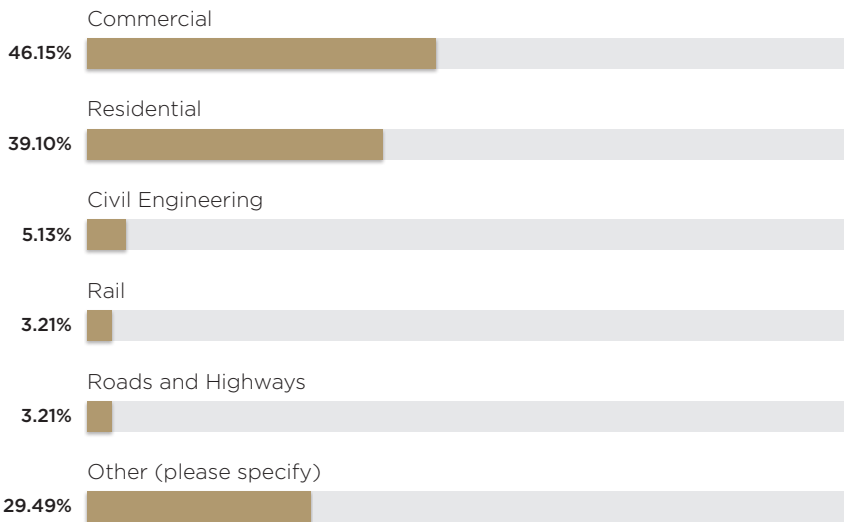
The professional voice of fire and rescue services in the UK.

Workforce management provider.



Q8

What sector does your organisation predominantly work in? (Please select one).



Answer Choices	% of Responses	No. of Responses
Commercial	46.15%	72
Residential	39.10%	61
Civil Engineering	5.13%	8
Rail	3.21%	5
Roads and Highways	3.21%	5
Other (please specify)	29.49%	46



Q8 Other responses

All (7x respondents).

Any building under Infrastructure.

Built Environment.

Community buildings.

Data Centres.

Education (5x respondents).

Electrical - residential, commercial & industrial.

Energy.

Food manufacturing.

Government, Commercial, Education.

Health.

Healthcare, education, workplace, residential, retail, heritage.

Healthcare, Resi.

Higher Education (2x respondents).

Industrial.

Infrastructure .

Logistics.

Major projects and public infrastructure.

Manufacturer of life safety equipment CIE.

Mixed use developments .

Mixed use developments including community infrastructure e.g. sports facilities.

Multiple sectors.

Not applicable.

No predominant sector, all are included.

Pharma, data, process

Public Sector (Health/Educational/Judicial) .

Public Sector - schools/healthcare.

Purpose Built Student Accommodation .

Residential, Commercial Hotels, Mixed Use, Aviation.

Retired - Municipal Fire Service.

Social Housing (2x respondents).

Stadiums.

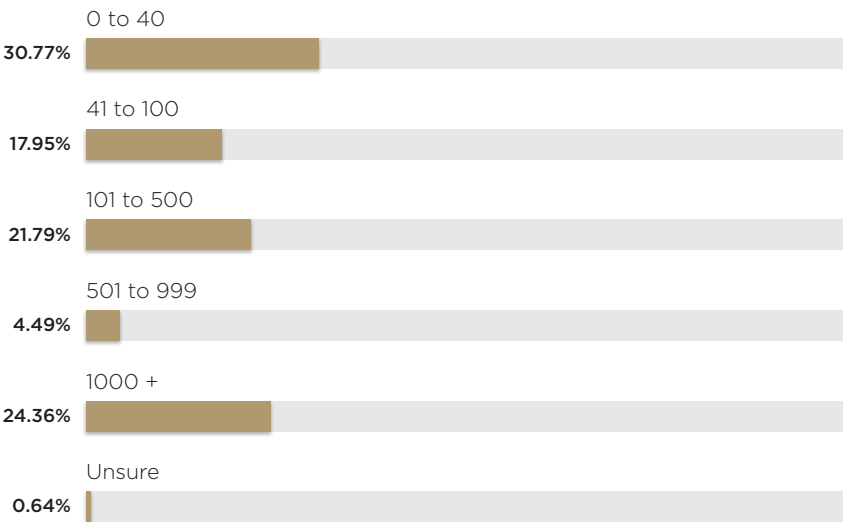
Stadium and Venues .

Water.



Q9

How many people are in your organisation?

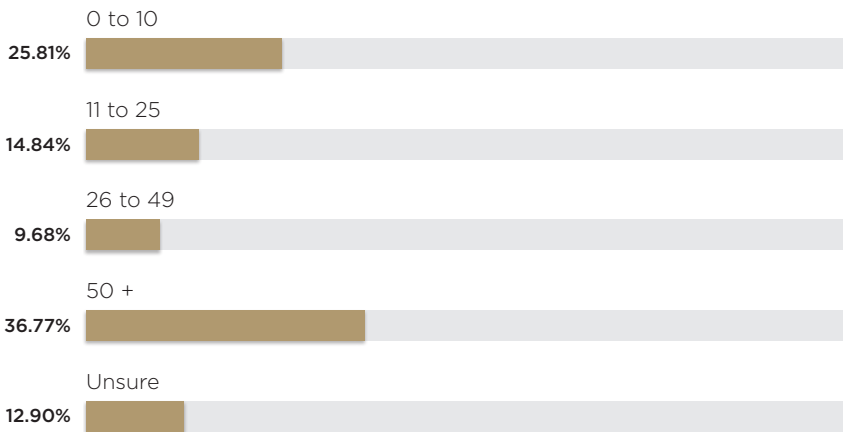


Answer Choices	% of Responses	No. of Responses
0 to 40	30.77%	48
41 to 100	17.95%	28
101 to 500	21.79%	34
501 to 999	4.49%	7
1000 +	24.36%	38
Unsure	0.64%	1



Q10

On average, how many projects does your organisation work on at any one time (concurrently)?

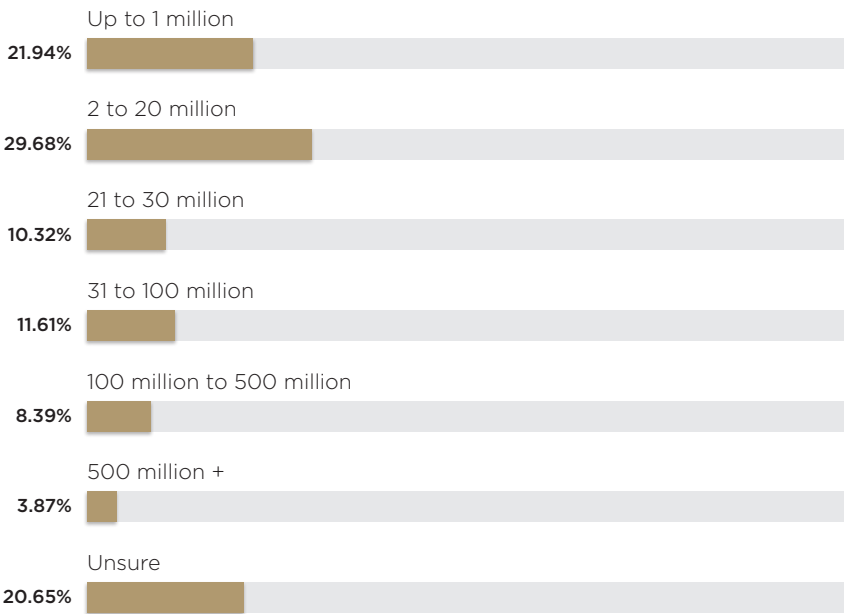


Answer Choices	% of Responses	No. of Responses
0 to 10	25.81%	40
11 to 25	14.84%	23
26 to 49	9.68%	15
50 +	36.77%	57
Unsure	12.90%	20



Q11

What is the average value of a typical project for your organisation?

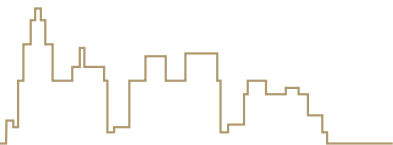
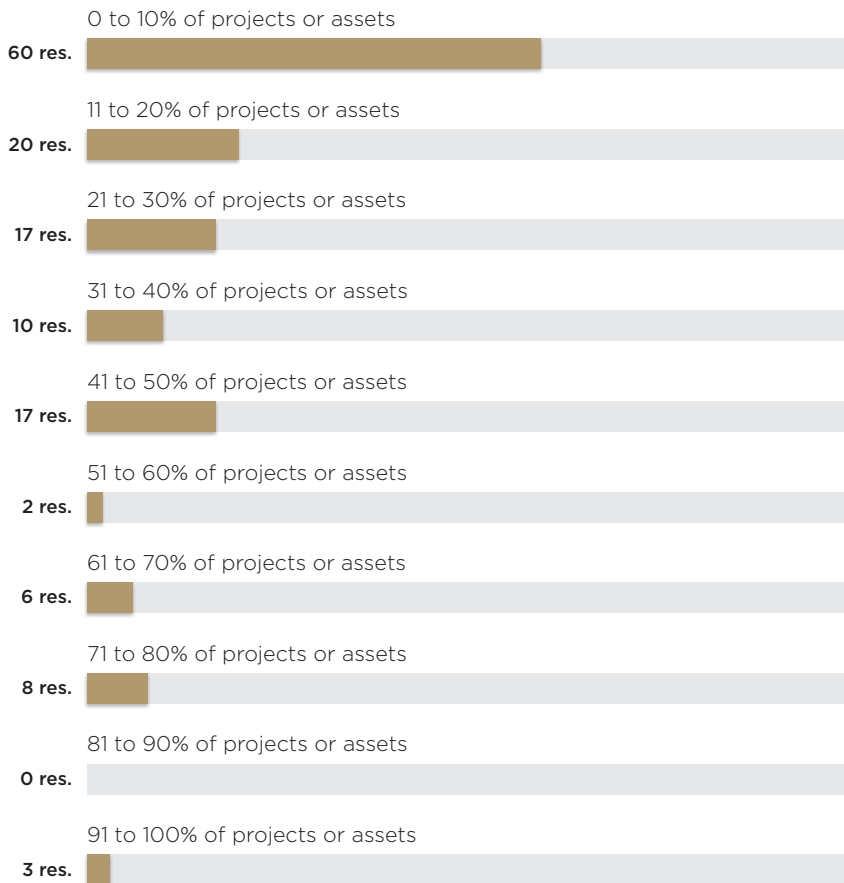


Answer Choices	% of Responses	No. of Responses
Up to 1 million	21.94%	34
2 to 20 million	29.68%	46
21 to 30 million	10.32%	16
31 to 100 million	11.61%	18
100 million to 500 million	8.39%	13
500 million +	3.87%	6
Unsure	20.65%	32



Q12

What percentage of your projects or assets would be defined as high rise residential buildings? (Over 18 metres or 6 storeys in height)



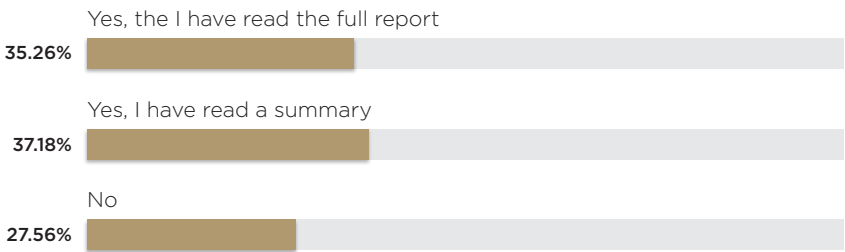
Q12 cont.

Answer Choices	No. of Respondents
0 to 10% of projects or assets	60
11 to 20% of projects or assets	20
21 to 30% of projects or assets	17
31 to 40% of projects or assets	10
41 to 50% of projects or assets	17
51 to 60% of projects or assets	2
61 to 70% of projects or assets	6
71 to 80% of projects or assets	8
81 to 90% of projects or assets	0
91% to 100% of projects or assets	3

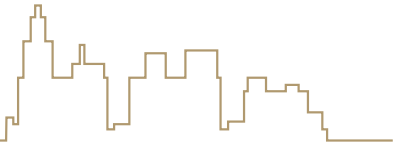


Q13

Have you read the Building a Safer Future report, or a summary of its findings and recommendations?



Answer Choices	% of Responses	No. of Responses
Yes, the I have read the full report	35.26%	55
Yes, I have read a summary	37.18%	58
No	27.56%	43



Q13 Other responses

Essential source for my MSc Risk and Safety Management dissertation.

I think there are very useful recommendations contained within this document that would lead to safer buildings.

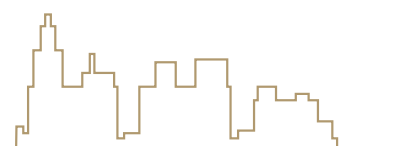
Intend to read full report.

It is important that those reading the Final report have also read the Interim report as without that the final report is missing some of the context.

We had representation at many of the sector working groups which informed the report and have reviewed the report extensively. We also responded to the consultation paper on 'Building a safer future: proposals for reform of the building safety regulatory system'.

Reports are fine but implementation and development are key.

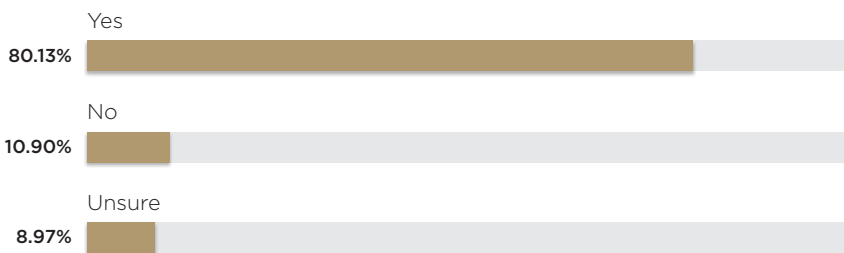
Skimmed both



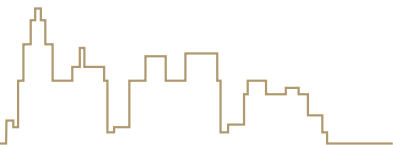
Q14

Do you feel confident that you understand what is meant by the term “digital golden thread of information”?

For a description of the golden thread see chapter 8 of the Building a Safer Future report.



Answer Choices	% of Responses	No. of Responses
Yes	80.13%	125
No	10.90%	17
Unsure	8.97%	14



Q14 Other responses

A fire does not restrict itself to height and I invite anyone to jump from a second floor balcony to escape the flames behind them if they do not understand the Golden thread should apply to all complex buildings.

However it might be that we have heard it all before with the "Planning Supervisor" role a few years back.

I am extremely concerned about the potential gap between VIRTUALISATION in the form of digital records of what should be there, and IMPLEMENTATION - what is checked and confirmed there by appropriate installation and inspection.

In business, the golden thread is setting a goal and plotting a course to achieve it. But this idea of information being passed from designers to contractors, to facilities managers as if it was a neat package, is over simplistic, it doesn't reflect reality. Developing homes and places is a dynamic process that relies on a diverse team, adapting to achieve these goals.

I do, but it is of course possible to interpret it in different ways.

I do not fully understand why the industry is confused on what a digital thread is considering it is spelled out in the report. This is a direct quote from report "information is created, maintained and held digitally to ensure that the original design intent and any subsequent changes to the building are captured, preserved and used to support safety improvements".

I haven't read it so couldn't provide accurate comment.

I think it is a terrible phrase, it is completely unclear just from reading it what it means. I work in the area of design management and BIM and we manage the data flow through design into construction and into operations and we are constantly having to explain what it means as it is not clear, the same as Soft-Landings, the phrase needs to change to get more people to understand it.

I understand it as a concept but feel it would be beneficial to have more detail around the specifics and practicalities - especially what will be required from main contractors during the construction phase of a building.

Instinctively I sense danger. Strong digital management is fine - a bit like the librarian approach of the former document controllers who worked for design managers. The design managers are constantly challenging the design information. That is a cerebral function. Not a digital function. Yes they need support of new digital managers. The best golden thread projects I have worked on are where the same design manager is kept in the team from precontract through to post handover and indeed are the drivers for proof of quality in explaining the testing and commissioning required. Again this is not a digital process.

Must must implicitly include the golden thread of competence. The activity, the information required to carry out that activity, and the competency of the person to carry out that activity, are all intrinsically linked.

That the building owner/occupier has access to the full list of materials that were used in the construction of their building and who specified and approved them.

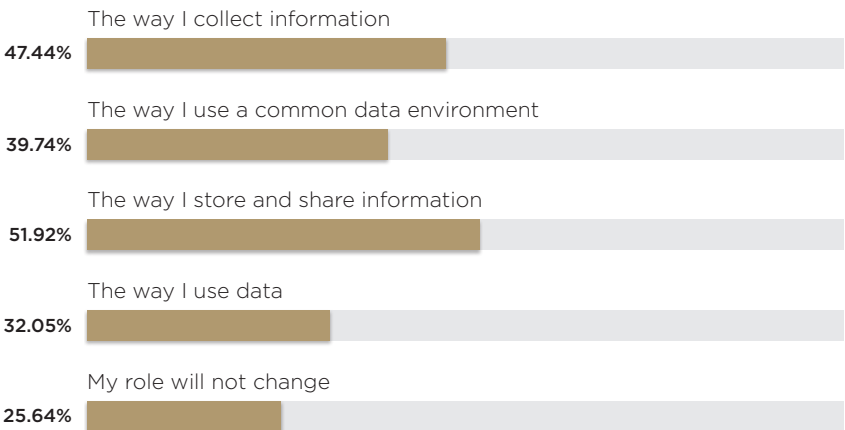
We consider the golden thread of information to be the collation, storage, retrieval and management of all information relating to the building from its planning, design, construction, alteration and management phases throughout its entire lifecycle.

What I can see been stated it in the draft bill and its supporting documentation is very disappointing. Going backwards!!!! Only using BIM Level 1 and CDE with no mention of using 3 or 4D and incorporating H&S and Fire Safety.



Q15

Which of the following elements of your role will need to change to comply with the golden thread requirements? (Please select all that apply).



Answer Choices	% of Responses	No. of Responses
The way I collect information	47.44%	74
The way I use a common data environment	39.74%	62
The way I store and share information	51.92%	81
The way I use data	32.05%	50
My role will not change	25.64%	40



Q15 Other responses (1 of 2)

A lot of the issues relate to 'in-process' validation and record keeping not just completion/handover 'as-built' re CIOB Code of Quality Management. We also need some clear product conformity (even warranty) certification including compliant installers/installation. We might be making something simple - very complicated in many instances

As a business, we are interested to understand how the golden thread will impact our main contractor customers and the potential broadening of the scope of GT to include the collection of digital information outside of building information and fire safety during the construction phase.

Don't know (2x respondents).

I advise clients and will need to help them ask for asset information to be supplied in digital format.

In the U.S there is often a failure to provide a narrative description of design process used to provide compliance. We (Kent WA Fire & Life Safety) were doing a decent job of inventorying active fire protection systems that require scheduled ITM.

I will be using CDE to monitor whether sufficient H&S, fire & structural design and survey info is gathered. Right info to the right people at the right time.

I believe there are many other areas that are not listed above that need to change. As the Rt Hon Robert Jenrick MP said that they will "deliver a radically new building safety system for the future". This includes much more than the digital aspect, it is also a culture shift as Mr Jenrick went on to say a "longer term and more fundamental culture change" in our industry is needed.

Influence the (CDM) Client to that ownership of the information required and recorded in the development of the golden thread.

I work in quality advisory so helping people maintain their golden thread on projects.

Moving to a digital approach.

Not applicable - I am lecturer.

Not sure (3x respondents).

Potential competency tests and requirements.

Previously we asked for information from the higher chain and accepted what they said. It is now apparent we cannot always rely on the higher chain. We would highlight that we still struggle with gaining information and there is a strong pressure to encourage people lower down the chain to take responsibility. Right person for right task is NOT always adopted. Insurance caveats are not helping with this.

Potentially a greater onus on checking set out of as-builts versus reality. Fee's will need to reflect additional scope. Review of Sub-Contractor change management may increase.

Retired.

Sub contractors and consultants will have to vastly improve how the issue design information, i.e. as intended by BIM level 2 otherwise they will be filling in a lot of spreadsheets.

The elements selected will not be direct to my role but the service solutions my association provides.

The entire process needs to move to digital, as a single jump. It has to be done with a single universal standard of data, having everyone exchanging machine readable information that is owned by the project not the MC or designer.

The main change will actually be how our appointing party uses the information.



Q15 Other responses (2 of 2)

The vast majority of our work is already in a rigorous BIM environment. However, I would expect a greater requirement from clients to update, assure and verify the accuracy of our end-of-project deliverables (e.g. fire safety related drawings). This was not one of the options offered above, hence me ticking the "my role will not change" box!

The way I retrieve information.

The way we advise people to utilise their data, providing even more reason to effectively manage a common data environment.

We consider the way information (as described in question 14 above) will need to change to ensure it can be used by all who need access to it, this will include ensuring it can be accessed and interpreted by all who need it. British Standards are currently developing BS8644 setting out standards for digital information requirements. In setting out the requirements of a management system for a building, it may be useful to base this on BS9997 Fire Risk Management Systems.

We technically know how to do it but driving the industry Culture change will be very difficult.

We will need to integrate the workflows from external silos and exchange non-graphic information with Quantity Surveyors, Project Managers, CDM consultants, OSM fabricators. We would want to exchange information on a single platform rather than interlinked CDE's. So we would need to find an EDMS (electronic data management system) that can read the information coming in and structure it correctly.

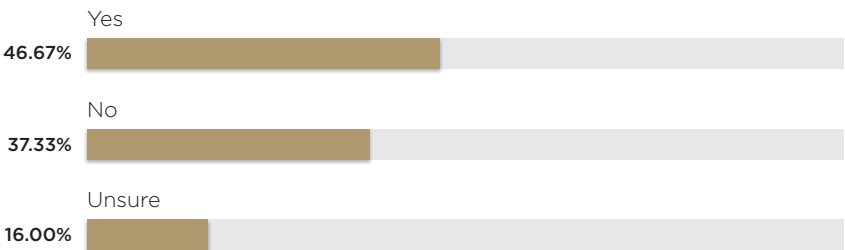
While it will be more of the same, I hope that the specific elements of what is required will change.

Will require additional electronic means of tracking products.



Q16

Do you believe that the appropriate people within your organisation understand what is meant by a digital golden thread of information?



Answer Choices	% of Responses	No. of Responses
Yes	46.67%	70
No	37.33%	56
Unsure	16.00%	24



Q16 Other responses (1 of 2)

A lot of it will come via the Pre-Construction and project teams. I would suggest very few understand what is likely to be required.

A number of colleagues pay 'lip service' to the concept and are in agreement that it is important to the overall asset management process going forward, but are unsure how to deliver it and the potential cost and risk implications of getting it 'wrong'.

But many architects have still not grasped how future building design will be affected by the Bill and the requirement for digital records.

Company still operates as if it is 1990.

I am aware that our compliance manager and his team have been looking closely at this paper.

I do not believe that the GT impacts our organisation specifically but it will impact our main contractor customers and we would benefit from more information on what will be required from main contractors as duty holders during the construction phase.

I don't think our company prompt CPD throughout all levels so I do think some people will just be unaware of what is happening around them.

I think they understand the concept, but, the reality is still undefined.

It is very difficult to see the process of getting a project delivered as a single linear process supported by a lifecycle digital roadmap. The fee structure and scope for consultants doesn't encourage you to look beyond the next stage and cross disciplinary working and info sharing isn't always practical. Its not so much that there isn't a willingness on the part of designers to embrace the end to end 360 degree management of the design process, it is simply that they are not resourced to do so. There are huge efficiencies to be gained in the latter stages of a project where we can utilise fluid data management techniques. However we do not have resources to build these systems early on. The task to scope set digital delivery should be procured by the client separately and assigned to a dedicated project manger or information manager, we called it the 'digital delivery champion' on one project, they were also asked to plot a road map for success in quality and sustainability. These three project objectives were closely aligned, Quality - data - sustainability.

Its another layer of bunk in the mind of most.

Key persons within the organisation understand, but the wider a general understanding is not quite there yet

No training budget has been put aside for H&S and CDM for technical roles particularly project managers and QS's.

Not a term or a process that has been used in RoI to date and if introduced in RoI would need up-skilling.

Our Head of Health and Safety, Director of Sustainability and Community, Development Director and Director of Project Management all know and understand the issue.

The industry as a whole doesn't understand this at all.



Q16 Other responses (2 of 2)

There is a real training need for Project / Site Managers - the CITB are not aligned with delivering post-Grenfell world management training in a meaningful way.

This terminology appears to be unique (so far) to the UK.

Too many clients are still not insisting on BIM let alone a digital thread of information.

Total lack of understanding and qualified staff at all levels.

We consider there are many people within UK fire and rescue services who understand what is meant by the term but also acknowledge there is work to do to raise this awareness across the services as a whole, especially with the proposed development of the standards as discussed above.

We have in-house training software and a process to ensure the golden thread exists on our projects.

We think we do but with information continually changing it is not always clear. Dame Judith Hackett's view and Government's are not the same. Also in reality the approach is causing further issues where media and especially information presented through social media is making the whole area very grey...again.

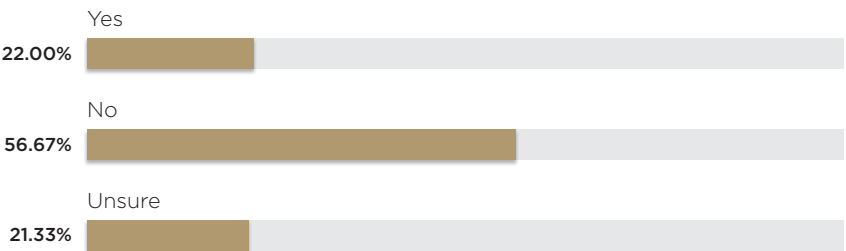
Wider than BIM and Quality teams, all teams involved in the support and delivery of projects will need to develop their understanding.

Yes, a lot of the key players do, but not all. The industry still has not come to terms fully with what is required.



Q17

Do you think your organisation will need to hire new staff or seek help from a consultancy specifically to understand and deliver the golden thread recommendations?



Answer Choices	% of Responses	No. of Responses
Yes	22.00%	33
No	56.67%	85
Unsure	21.33%	32



Q17 Other responses

Anyone working on HRRB will need additional staff. In existing building it is a certainty as there is a new role of Building Safety Manager, of which there are at a minimum 1,000 required in the industry. My organisation will need 50+ staff. For our new builds (Design and build) this is a little less clear. Certainly there will be more resources required, but it is not known if this will happen though existing staff (ie process taking longer) or though new staff or though additional packages of work.

As the professional voice of the UK fire and rescue service and to ensure consistency, we will play a vital role in informing fire and rescue services to make them aware of the requirements under the recommendations. As highlighted in our response to the consultation identified in question 13, we believe there will be a need for central investment to allow fire and rescue services to implement the required digital resource to support this.

Depends on complexity of the requirements and associated technologies.

I see in house training and awareness will be the answer rather than new staff or use of external consultants.

I think the staff we have could manage albeit with some up-skilling required. A dedicated information manager for each project could be required which would perhaps be an additional client appointment or extension of a project team members role.

If the process is clearly defined then it should be easy to follow.

In house expertise is almost no existent, in theory we have this knowledge but they have made zero impact in acting like a modern company.

It shouldn't be a requirement at our supply level. If we are required to adopt this approach we may have to cease trading. We are advocates of changed and strongly support the approach. However, it seems business as usual with people who are not at delivery level telling people what to do from a distance.

Not amongst the Contractors I have worked for. There is still a barrier when client teams retain control of the model.

Seek help from a consultancy.

The process needs to come and meet us. We are willing to embrace digital collaboration, but we have invested heavily in BIM but found that certain stakeholder and statutory bodies are stuck in the old archaic practices and unwilling to embrace the new methods of delivery.

They ideally should identify and upskill those competent they still employ with experience etc.

To understand no. To deliver, yes, we run our own CDE platform. So more work will be required to change it.

We are a consultancy, which expects our project team members to be capable of delivering the requisite level of information whether via the BIM process or associated methodologies - we have BIM expertise and understanding, but have not yet decided whether we would need specific additional staff rather than training.

We have the capability and understanding, however the size of the organisation means that current understanding is not widespread.

We have the skill set just maybe not the right culture throughout so maybe need a consultant to drive understand, change and culture.

We will be offering consultancy services to assist those who do not have the required knowledge or experience.

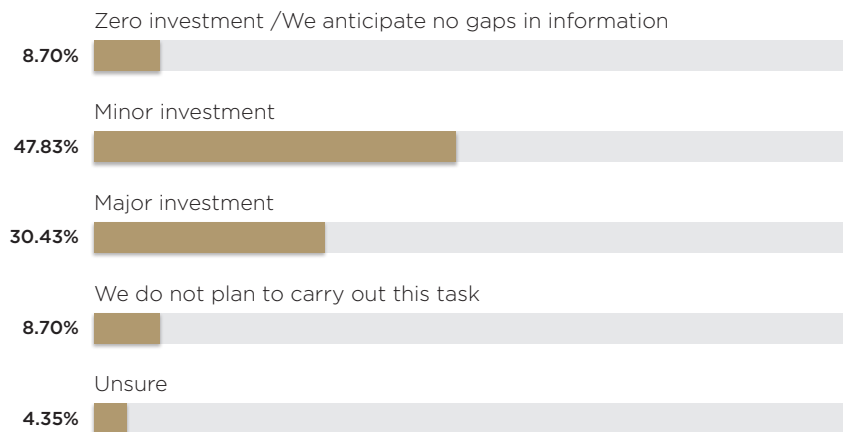
We will stick at what we are good at, this is increasingly looking like a specialist discipline.

Wrong way to do it - it should recruit the skills.



Q18

It is recommended that asset owners identify and fill in any gaps in golden thread information for their existing assets. What type of investment might your organisation need to make to carry out this task?*



Answer Choices	% of Responses	No. of Responses
Zero investment /We anticipate no gaps in information	8.70%	2
Minor investment	47.83%	11
Major investment	30.43%	7
We do not plan to carry out this task	8.70%	2
Unsure	4.35%	1

***Note:** This question was asked specifically to building owners, facilities managers and developers.



Q18 Other responses

Need to know what we are buying to do it.

We engage a design team and consultants to fill this gap, our scope mapping and design responsibility gap analysis closes these deficiencies. It makes sense to have a consultant to manage this niche, but it is up to the legislation to clarify these roles and responsibilities.

We have estimated over a five-year period there will be an cost to industry of up to £2.6 billion being spent in complying with the new legislation, mainly spent on filling in the gaps. These numbers come from governments economic assessments.

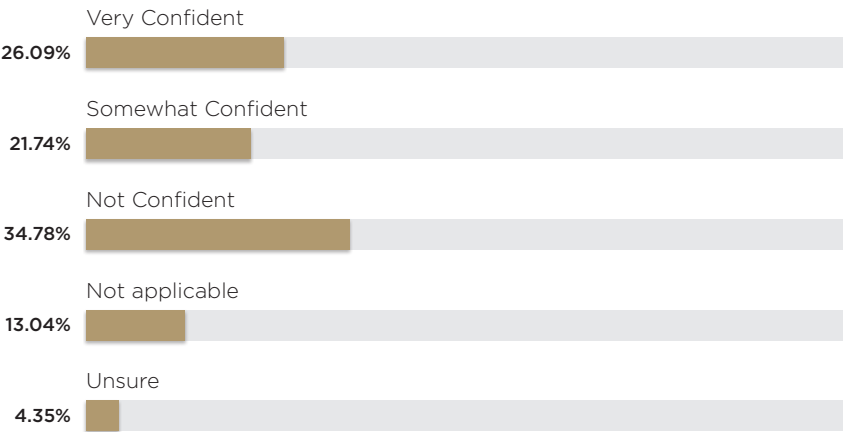
We have no plans to create HRRD in the immediate future.



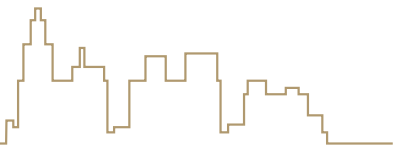
Q19

How confident are you that your organisation could clearly specify golden thread requirements to your supply chain at the contract initiation stage of any new high rise residential projects?

Note: This question was asked specifically to building owners, facilities managers and developers.



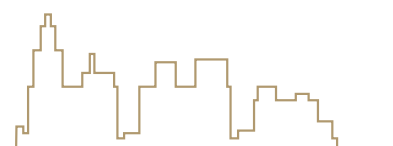
Answer Choices	% of Responses	No. of Responses
Very Confident	26.09%	6
Somewhat Confident	21.74%	5
Not Confident	34.78%	8
Not applicable	13.04%	3
Unsure	4.35%	1



Q19 Other responses

No one can be sure yet, as legislation and regulatory regime are not in place. But we have a good idea of what will be required and a strategy and plan on how to be ready.

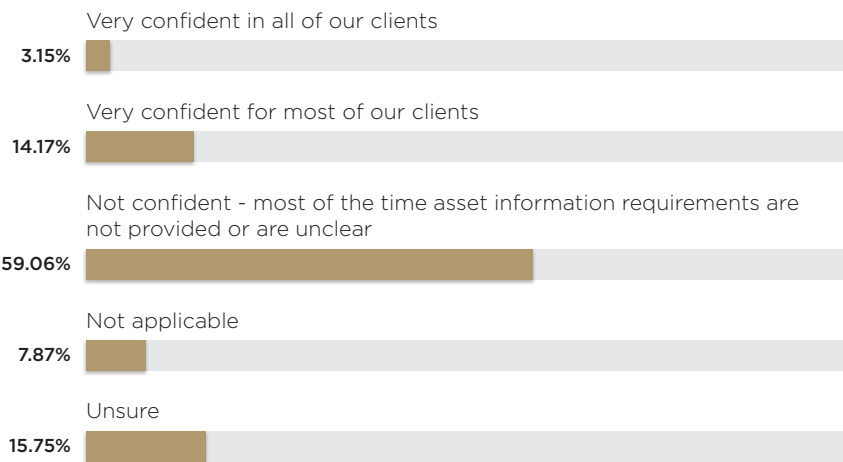
We know how to deliver quality, safe resilient buildings, but we do not feel we should articulate an arbitrary set of requirements that are solely a political reaction to systemic failures. It is better to set outcomes and let the industry use ingenuity and innovation to meet the objectives set by the legislature.



Q20

How confident are you that your clients will clearly specify requirements for a digital golden thread of information at contract initiation stage for new high rise residential projects?

Note: This question was asked to all parties apart from building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Very confident in all of our clients	3.15%	4
Very confident for most of our clients	14.17%	18
Not confident - most of the time asset information requirements are not provided or are unclear	59.06%	75
Not applicable	7.87%	10
Unsure	15.75%	20



Q20 Other responses (1 of 2)

As a Housing Association we are the client in our project.

As the Building Regulations evolve to incorporate the recommendations of the Hackitt report and Building Safety Bill, and the new Building Safety Regulator and Gateways are mandated, there will undoubtedly be a significant requirement for all relevant building Clients to comply with these standards and so will have to specify the golden thread within their contracts.

As the professional voice of the UK fire and rescue service and to ensure consistency, we will play a vital role in informing fire and rescue services to make them aware of the requirements under the recommendations. As highlighted in our response to the consultation identified in question 13, we believe there will be a need for central investment to allow fire and rescue services to implement the required digital resource to support this.

As we develop and drive the asset information requirements we will ensure all clients fully understand their requirements.

...but why should that matter? We shouldn't need our clients to issue detailed specifications when we're the experts and we know what the relevant good industry practice is?

Current position is 'Not confident'. However, our technology is specifically designed to help address issues in the initiation stage of our projects.

Generally other than in a number of specific client situations, they are generally a) not sure of what it is, b) not sure how to obtain information, c) concerned about potential costs (whether in capturing/validating data and d) value of data captured (e.g. a lot of developer clients still have a fairly blinkered view of asset management benefits other than that strictly necessary to comply with statutory requirements). Obviously as consultant/advisers we strongly push both the need for and benefit of wider applications of this but I suspect unfortunately without the 'stick' of legislative demand, a number of clients will not fully engage with the process. It must be said however that clients with a more long term interest in their property portfolios are more open to and understanding of the benefits.

I am not sure whether main contractors have been briefed clearly enough on requirements for a GT of information during the construction phase at this stage.

If the process is a requirement then we are confident it will be followed however if its guidance then some developer clients may not adopt it.

If we are involved from the early stages we can advise on a comprehensive set of asset information requirements. Unfortunately most client organisations have very little understanding and usually specify a "copy paste, BIM lvl 2" statement in their requirements.

Procurement is the achilles heal - where contracts are written by lawyers who have no knowledge and experience of criminal law and the principles of a integrated project team approach. The problem is they make a living and money by their projects having disputes and claims. Only one that I know that is proactive is Towers & Hamlet who developed PPC 2000. Which applied with the right level of carrots and sticks managed and monitored by a Clients core Team will be more than successful in delivering value, if over the project is over 2 years.

It is something the main contractor or insurers will probably drive. It needs to be Legislated to drive the change in the current economic environment where everyone is try to be as cost effective as possible otherwise nothing will change.

Most.

Most clients see BIM as there to improve design and construction, not to support asset/facility management. They will need educating.

Most will not have any knowledge and will expect their contractor/ designers/ project managers to provide this,

Must include the golden thread of competence - also an information asset.



Q20 Other responses (2 of 2)

Not always considered by clients, but more of who owns the data attitude is coming through.

On most projects the contractor has the key to the data as the common data environment sits on their side, under their control. Most clients are willing to accept this I have experienced contractors closing non-compliances without any oversight by the design team. It is critical that a suitable CDE is controlled by the client and written as such into the contracts. A process on how comments are made and non-compliance are raised is critical to ensure we move away from email chains and verbal agreements on site. All queries/issues should be raised on a single platform which is searchable to ensure this golden thread is maintained.

Predominately, private sector experience demonstrates a lack of knowledge when advising Clients on asset information requirements. Much of this stems from the lack of a mature BIM environment, issuing of O&M information in hard copy form is still common place - even on high-value developments. Witnessed first hand on a £200M build within the 'City'. Much education required.

Some Clients will demand this but others will not want any additional expense - e.g. we already get a cdm safety file and O&Ms.

The consultant has a vital role in advising clients.

This is a subjective item and varies dramatically between client types. Some are sophisticated and demand a high level of data to be presented at completion and others are very uninformed about what level of information they should require at completion stage.

Typically our clients don't specify any information requirements at all. Contractors we regularly collaborate with have no interest in using BIM or digital workflows and we have not seen a use of a Project CDE yet. Some clients and contractors are only just starting to use an EDMS, which lacks the functional requirements of a CDE as set out in the ISO 19650 suite of documents.

Unless mandated by law, we will see shallow data dumps rather than rich embedded, meaningful useful data.

We just have to look at BIM for example and despite the Government drive most don't understand their roles or that they need to define it.



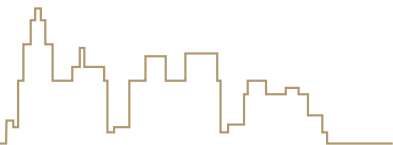
Q21

How long would it take you to update missing golden thread information for all of your existing assets?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Less than 12 months	21.74%	5
1-2 years	17.39%	4
Over 2 years	30.43%	7
We do not plan to carry out this task	21.74%	5
I don't know	8.70%	2



Q21 Other responses

Five years for larger clients at least.

Management company and facilities management tasks.

This will simply happen at the timescale given by the new regulator. The current thinking with my peers is up to three years.

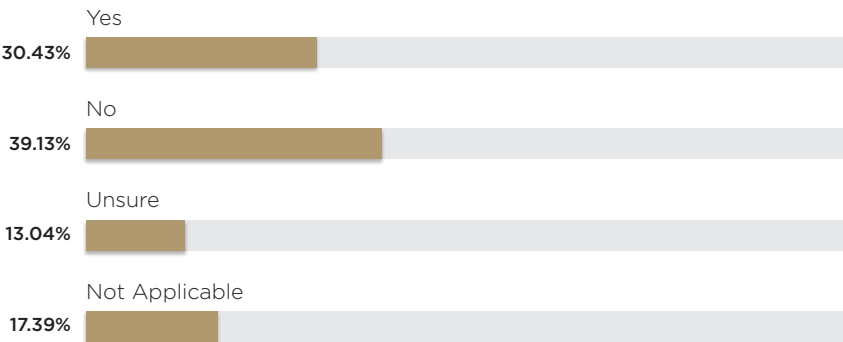
We don't own any residential assets over six stories.



Q22

Are occupants of your assets able to access information such as current and historical fire risk assessments, safety case documentation and information on the maintenance of safety systems quickly and easily?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Yes	30.43%	7
No	39.13%	9
Unsure	13.04%	3
Not Applicable	17.39%	4



Q22 Other responses

Controlled by the FM team.

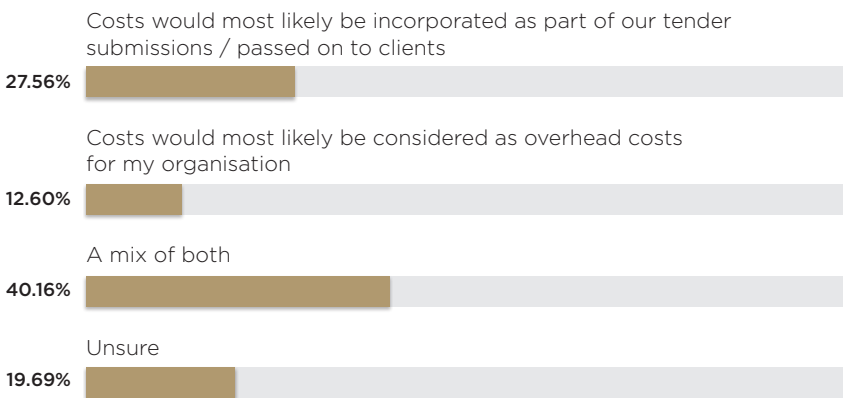
FRA available online.

Management companies and our FM partners have this information, but it is somewhat of a mixed bag. It's done well on certain assets, can depend on postcode.



Q23

Would your organisation be most likely to incorporate costs for implementing the golden thread Requirements in to project tenders, or absorb them as part of overhead costs?*



Answer Choices	% of Responses	No. of Responses
Costs would most likely be incorporated as part of our tender submissions / passed on to clients	27.56%	35
Costs would most likely be considered as overhead costs for my organisation	12.60%	16
A mix of both	40.16%	51
Unsure	19.69%	25

***Note:** This question was asked to all parties apart from building owners, facilities managers and developers.



Q23 Other responses (1 of 2)

Additional services would require additional fee to cover. Industry fee's already a race to the bottom.

As a Principal Design consultancy, our deliverable includes development of the 'golden thread' therefore the cost will be incorporated into our tender. However our specific use of Technology and blockchain may be considered an organisational overhead.

As the professional voice of the UK fire and rescue service and to ensure consistency, we will play a vital role in informing fire and rescue services to make them aware of the requirements under the recommendations. As highlighted in our response to the consultation identified in question 13, we believe there will be a need for central investment to allow fire and rescue services to implement the required digital resource to support this.

As they have little to no understanding of how to properly implement this cannot say will be able to cost this correctly, at least initially.

Costs will be absorbed but not by choice.

Depends if economies can be achieved by the use of the golden thread which may defray and additional costs .

Depending on the evidenced commitment in delivering the requirements of the golden thread. If the client has asked for a response, but has not updated their processes or approach appropriately then I would not price for it.

End of the day - its the Developer/Client to invest to save than passing the risk to the consultants and the supply chain than sharing risk and reward.

Highly dependant on the clients information requirement specifications. Aim is to be ready for the change that it becomes a natural workflow in our everyday way of work so will aim to be part of overhead in the long term.

It completely depends on the project and the brief/EIR documentation. More emphasis needs to be made on the importance of clear EIR documentation.

It would depend on project and client profile.

Not applicable. (2x respondents).

Not relevant to our organisation.

Our costs for CAD software licences and associated cloud servers, peripheral plug-ins, NBS, sharefile, training and hardware are a huge burden, we simply could not wear CDE cloud costs with the size of data sets and models being generated for urban projects.

Savings from investment will cover costs See separate attachment The benefit of investing in design management.

Someone has to pay for this - and it will need to be validated / audited to be useful.

The costs of helping clients ask for asset information must be charged for, but the payback is considerable, not jut in compliance but in FM economy over time.

There should be savings not costs if the same team with the knowledge in their heads oversees the quality of data for inputting as digital record from start to finish of a project. It goes wrong when there is discontinuity of people with the knowledge of why changes are made.



Q23 Other responses (2 of 2)

There should not really be costs associated with the golden thread as this is no different to Asset Information Requirements that are specified for all buildings. It will be dependent however upon the extents of the golden thread requirements / attributes, as if overbearing attributes / datasets are required then there will obviously be a cost to this (for example like for schemes where unnecessary COBie deliverables or datasets are specified in an EIR but of no use to the Client or their FM Team).

This is likely to vary by client and/or project e.g. project value, complexity, size, sector will all influence the final decision.

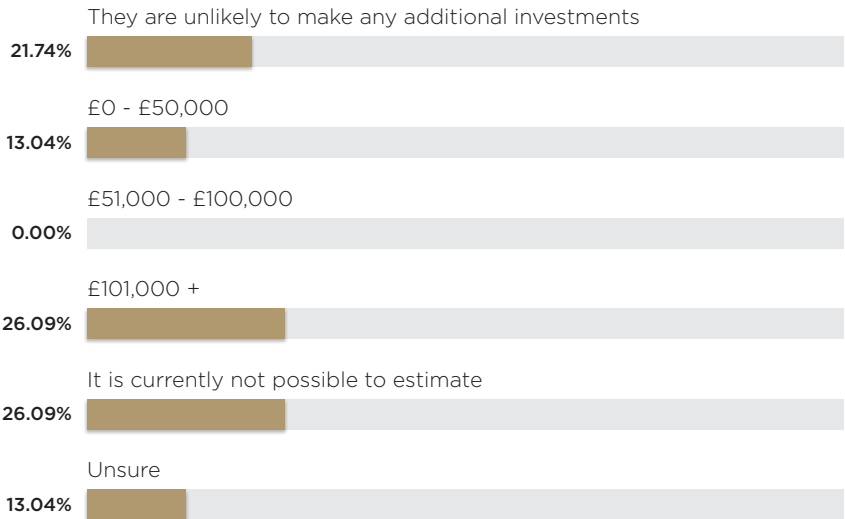
We have software we use already which helps maintain the golden thread however I suspect in terms of improving handover documentation re O&Ms this will be incorporated into tenders.



Q24

How much money do you expect your organisation would need to invest to implement the golden thread recommendations across all of its portfolio?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
They are unlikely to make any additional investments	21.74%	5
£0 - £50,000	13.04%	3
£51,000 - £100,000	0%	0
£101,000 +	26.09%	6
It is currently not possible to estimate	26.09%	6
Unsure	13.04%	3



Q24 Other responses

At least an order of magnitude more than this.

It may become an additional resource on design teams, but we feel this service is being provided, it is being done inefficiently, we pay for rework because of ambiguity and mistakes in interpreting regulations.

Need to understand the requirements to use systems such as BIM modelling and the financial implications.

Not sure why these are being asked.

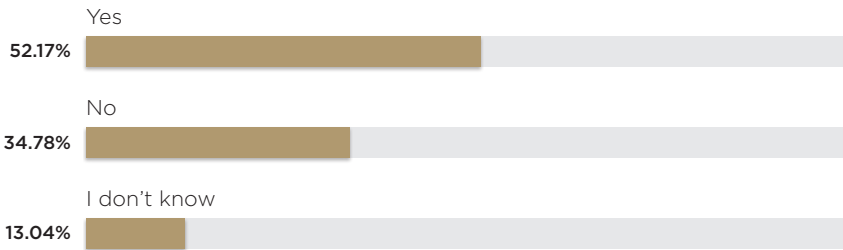
The digital thread is a little thin in its aims and requirements.



Q25

Do you have an OIR (Organisational Information Requirements) or set of strategic information requirements that sit across your whole portfolio?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Yes	52.17%	12
No	34.78%	8
I don't know	13.04%	3

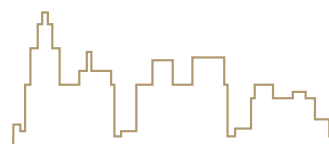


Q25 Other responses

Not even doing correct version of BIM.

We do but they are not great.

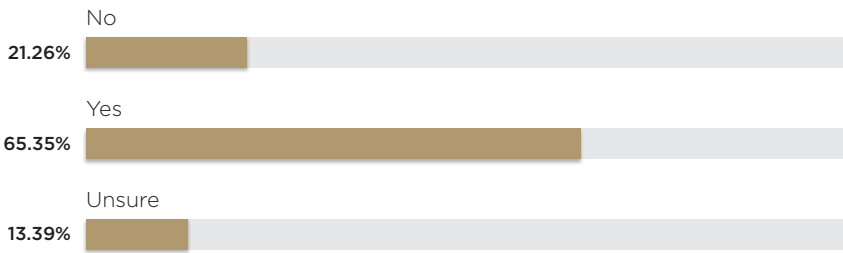
Yes we have a detailed EIR.



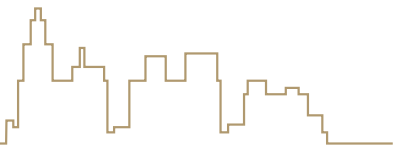
Q26

Do the needs of the eventual occupant, facilities manager or estate management team affect the way you manage and store information on a project?

Note: This question was asked to all parties apart from building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
No	21.26%	27
Yes	65.35%	83
Unsure	13.39%	17



Q26 Other responses (1 of 2)

At least this should be YES for every project.

At the moment no.

At the outset of a project we always review our clients specific requirements in relation to BIM and when preparing tender documentation we review in detail with our clients their requirements for the Safety File.

Each project is meticulously tracked for liability and life cycle.

In our projects, the client is often the occupier and it is therefore essential that all data is managed and stored in a way that is meaningful and accessible to them.

Manage from approved submittal- moved to shared area for safety file .

Massive scope for improvement on this.

No. From previous experience of developing a 'golden thread' solution, the storage and management remains the same. Tailoring the information for the audience is key but the core record remains the same.

Nobody asks them or involves them client side.

Not applicable.

Sometimes e.g. certain student accommodation operators who have a good understanding of whole life cost.

Sometimes. Not always.

The FM sector needs to be open to change and evolve in the way they manage and store information. We hope that the new building safety regulations acknowledge this and do not allow a "light touch" approach that does not consider integrated information (Models, O&MS, Drawings, Sensor Data Streams, etc). Dissociated documents are not acceptable just because they are digitised, most of the proposed workflows are exactly that and will not solve the problem.

The information is fundamentally stored for the Occupant/FM use. Therefore it should be stored with ease of accessibility and clarity as primary objectives. We do a lot of work in the FM/Operational side of asset management and are acutely aware of the need for robust collection and storage of data (this was my view prior to the tragic situation which arose at Grenfell).

The residents need to trust that any individual, team or organisation entering a building to identify requirements, inspect, install or check that the right task, product or procedure, underpinned by the right information, is completed by competent individuals and that this is fully traceable. This is not simple; so what is required of a functioning competence system to ensure this?

There system to store this important information and data etc needs to be robust and auditable.

This is very important. But the lack of input form the operational team should not hinder good process and standard delivery of asset and performance data.

We consider this to be at the core of the need to inform the golden thread of information and it is these multiple needs of multiple stakeholders that need to be addressed as part of the Regulation 38 working group and the development of BS 8644. Whilst not aimed at UK fire and rescue services, we consider it appropriate to highlight the information required by fire and rescue services when engaging that is a key part of the golden thread. The main requirements are for the provision of the Regulation 38 information under the Building Regulations during the consultation process, which ultimately, informs the premises fire risk assessment, which the fire and rescue service will request at occupation stage during an audit. We consider there are many issues with the handover of the Regulation 38 information with it being poor at best. We are working with the Joint Regulators Working Group in an attempt to address this issue.



Q26 Other responses (2 of 2)

We do keep record of O&Ms but ultimately we do not generate them (only review). The storing of the actual O&M would be by the client.

We have to make sure it is easy to retrieve and handover so the teams can pick it up and understand their buildings.

We try to manage and store information on. Project in line with the information management function described in the ISO19650 suite of documents. Our clients typically do not use this, not have a consistent information management process. (Our clients may own multiple site across the UK).

We try to present the data in accessible format.

We work to ensure all information is stored effectively and data is validated to ensure the full thread of information can be found.

Yes, but only if contractually required currently.

Yes, for PRS or operator clients, they are prepared to invest in well structured and organised information delivery processes, but these a small fraction of our client base.

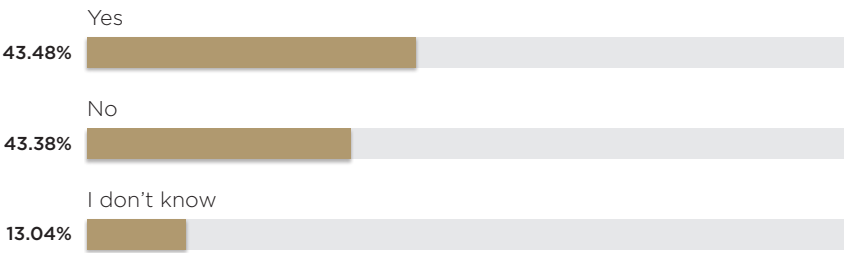
Yes, in some vital respects, since these groups should already be entitled to full consideration under CDM-2015 requirements.



Q27

Does your organisation have the hardware, software and technical capability to check that information provided by the design and construction teams meets all of the projects information requirements?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Yes	43.48%	10
No	43.48%	10
I don't know	13.04%	3



Q27 Other responses

But we have plans in place.

Need internal client capability.

Please remember the report does not mandate BIM.

Some, only for asbestos information.

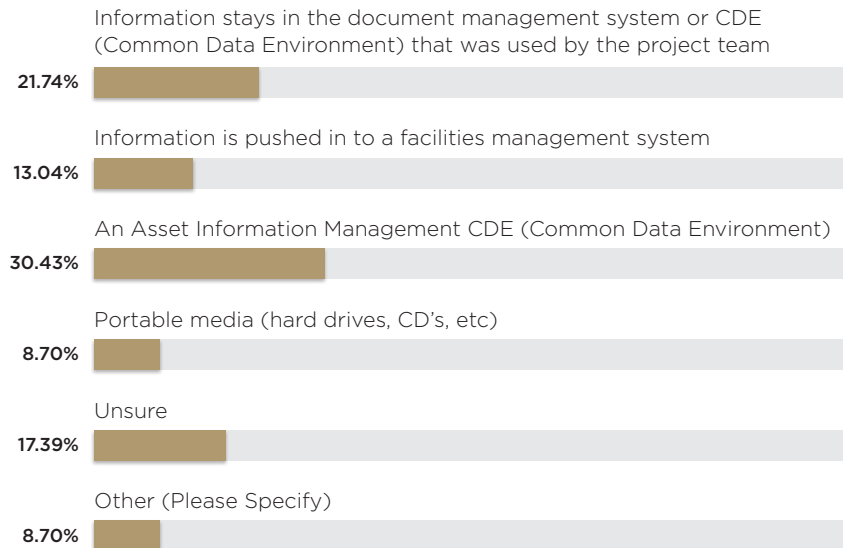
We authorize certain information digitally.



Q28

Where does your organisation store information that is passed on to them at construction handover?

Note: This question was asked specifically to building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Information stays in the document management system or CDE (Common Data Environment) that was used by the project team	21.74%	5
Information is pushed in to a facilities management system	13.04%	3
An Asset Information Management CDE (Common Data Environment)	30.43%	7
Portable media (hard drives, CD's, etc)	8.70%	2
Unsure	17.39%	4
Other (Please Specify)	8.70%	2



Q28 Other responses

Multiple locations. So all of the above.

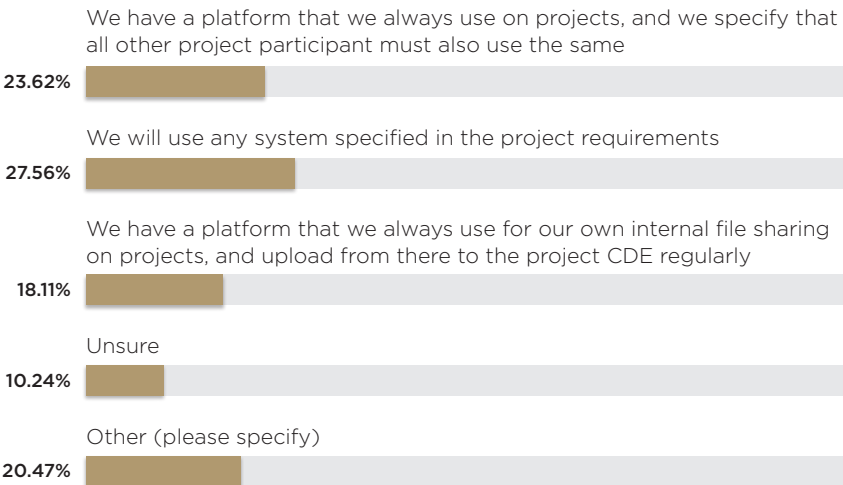
Own developed approach.



Q29

How do you determine which information management platform or common data environment (CDE) your organisation uses on projects?

Note: This question was asked to all parties apart from building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
We have a platform that we always use on projects, and we specify that all other project participant must also use the same	23.62%	30
We will use any system specified in the project requirements	27.56%	35
We have a platform that we always use for our own internal file sharing on projects, and upload from there to the project CDE regularly	18.11%	23
Unsure	10.24%	13
Other (please specify)	20.47%	26



Q29 Other responses (1 of 2)

Both Answer 2 and 3.

Currently in the process of reviewing business digital strategy including transition to a new integrated CDE platform. Processes for the Integration of project building safety information such as drawings, material/systems specification and performance, change control records and approvals inspection test plans , work inspection sheets, QA, photographic records etc are being developed.

Generally use CDE made available to us on project by project basis.

If none is specified we use our preferred option.

If not specified, we use our own; however on many of our larger projects we will use a client-specified (and often client-managed) CDE.

It would depend on the specific project requirements. However we would use our own processes if the was no particular client requirement.

Most Clients do not specify what in their contracts. Those that have are only using selected high value projects. Even then they are not providing a robust EIR particularly on H&S / CDM Info & data and no mention of the PIM, AIR let alone OIR!

Not applicable. (2x respondents)

Solutions will be defined on case by case basis and solutions require an exchange and management definition and mechanism.

The use of a CDE varies from project to project which some clients outlining a preference for a certain platform in some instances or designers outlining a preference in other instances. Recently, our go to platform has been CertCentral which we are now recommending to our clients and see this as becoming one of the leading platforms in Ireland.

There are lots of good platforms to use now.

This is usually dictated by the client or contractor.

Too often, the Employer's Agent insists on using one version of CDE while the Contractor has invested in another CDE platform. This is a recipe for poor sharing of files and in frustration the senior people revert to attachments to e-mail which is even worse.

Typically the CDE is defined by the provider of the relevant service. During Design, the architect uses a system, typically pot-tender the Principal Contractor specifies a system. Prin-D proposes that our platform be used as a Client-led regulatory (CDM2015) compliance platform. All project duty-holders are required to use the platform. Relevant Information can be uploaded by relevant duty-holder and verified by another stakeholder. Integrations with commonly used CDE/File-sharing systems are being developed.

Use of cde outlined by the main contractor.

We are a specialist to platform providers.

We are aware there are different systems used by UK fire and rescue services but generally, they all take the form of a centralised internal premises information storage and management system. We are working with UK fire and rescue services and government in pursuing options to promote consistency of system use.

We can assess system and make recommendations or adopt client systems. If neither option is available we will use our in house document management system but this is not a true CDE.



Q29 Other responses (2 of 2)

We consult with clients to understand their needs and can recommend cde options.

We have a platform we use for every projects' CDE.
We use the clients CDE when provided but this is very rare.
The clients either do not have one or they get one mid-way through the project. The contractors have one that we transition to mid-way through the project after novation - usually mid stage 4.

We have an internal system but tend to issue to a project specific platform.

We help our clients pick the most suitable common data environment that suits the project/clients requirements.

We provide systems to support the capture of digital information on construction sites.

We use a cloud servers associated with our BIM modelling package and a Microsoft file server. We have to manually transfer information across CDE sites, its extremely time consuming and can be prone to error, which can be consequential.

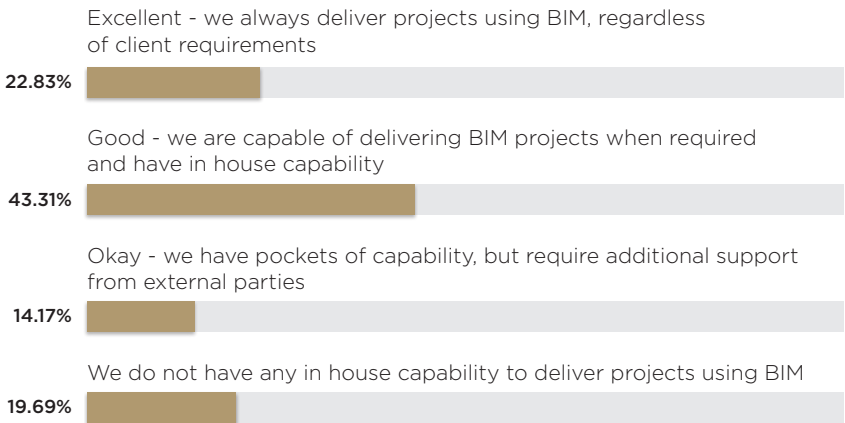
Where one exists it is client hosted so varies between clients.



Q30

How would you describe your organisations BIM capability?

Note: This question was asked to all parties apart from building owners, facilities managers and developers.



Answer Choices	% of Responses	No. of Responses
Excellent - we always deliver projects using BIM, regardless of client requirements	22.83%	29
Good - we are capable of delivering BIM projects when required and have in house capability	43.31%	55
Okay - we have pockets of capability, but require additional support from external parties	14.17%	18
We do not have any in house capability to deliver projects using BIM	19.69%	25



Q30 Other responses (1 of 2)

Again involving and educating Clients/ Developers on incorporating H&S /CDM info & data is extremely poor due to their lack of education of risks and H&S duties etc.

As CDM consultant we are supported by the Design team with regard to BIM use. We are capable of storing and viewing any BIM related file.

BIM used on approx 90-95% of projects now.
It is preference now.

Company CDE designed for BIM Integration, company does not do any design work.

From a competence assurance perspective we help organisation upskill works so complaint to digital standards.

In general, I have not had that many BIM jobs. There is a poor understanding of the PAS1192 BIM naming convention.

In theory we have this ability but it's use is almost non existent unless required by a contract, but general knowledge of how to implement and use it is virtually nil.

It would be worth noting that we deliver the graphic side of BIM in an exemplar fashion, but the non-graphical side is quite archaic.

It's not our capability that worries me - the information received is often very poor and incurs delays in full redesign of building services - also it doesn't capture everything we might need to know in the future. A number of projects see it as fancy or even a fad.

Massive room for improvement.

Ourselves and the UK fire and rescue services have limited knowledge on BIM.

Not relevant to what we do. Hopefully all of our Members do have BIM platforms.

Once again we provide a light product solution to support our clients in use of our solutions that is evolving to meet future requirements.

Our issue is that we are never required to deliver BIM projects by clients. We use BIM workflows out of personal choice and often find ourselves working alongside other consultants who only work in 2D. So we typically build models containing information that is never used.

Some contractors excuse themselves from active management of BIM by choosing to rely on client design teams for BIM and that is wrong.

Some elements of BIM are costly and add more costs than they deliver savings, therefore to deliver excellent BIM is to deliver the right amount not all of it all the time.

The scale of our projects does not require BIM capability.

This is an area that is rapidly developing. We still find that often client are not interested in receiving BIM from designers at project conclusion.

This is not relevant to our organisation.

To clarify the above, not all our services/projects would utilise BIM, e.g. QS work.

We do not rely on BIM to deliver our service, but will use the models as a verification tool.

We have BIM objects but requests for those are infrequent.

We have in-house BIM capability which is utilised in a number of ways specifying project requirements/execution plans etc as well as co-ordinating upload/interface with project CDE software.



Q30 Other responses (2 of 2)

We have set up systems and have invested in BIM for over 7 years. However, we are never involved in the BIM process. We adopt BIM principles where and when we can but our sector seems to be excluded. We would be happy to adopt BIM as a standard practice but our clients, in the main, don't ask for it and where they have, have refused to pay for it.

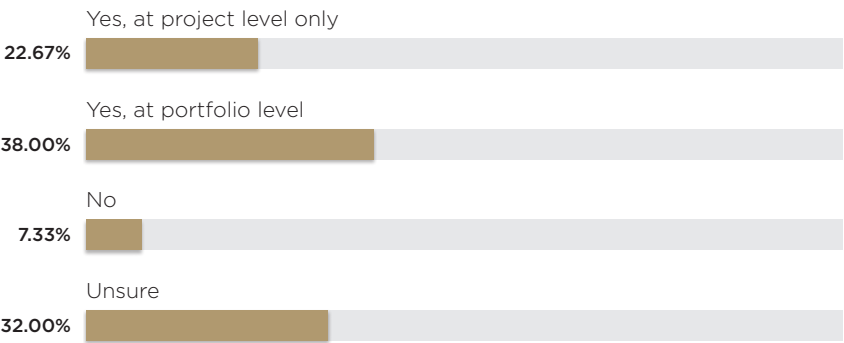
We were excellent and mandated BIM level 2 on everything but This has had to be dropped recently to be more efficient in the current Environment.

We would probably deploy BIM on more projects even when not a requirement but restricted by model availability from other disciplines.



Q31

In the case of a trigger event such as system failure, does your organisation have a plan in place for information retrieval at both a project and portfolio level?



Answer Choices	% of Responses	No. of Responses
Yes, at project level only	22.67%	34
Yes, at portfolio level	38.00%	57
No	7.33%	11
Unsure	32.00%	48



Q31 Other responses

Again involving and educating Clients/ Developers on incorporating H&S / CDM info & data is extremely poor due to their lack of education of risks and H&S duties etc.

As previously discussed, UK fire and rescue services will have their own local resilience plans depending on their systems.

Both project and portfolio level.

Fully certified for business continuity.

More than likely but having only recently joined the business cannot confirm one way or another.

Not relevant.

Project and office backup and redundancy + DR policy.

Unsure but would assume at portfolio level.

We are currently working on replicating our CDE back to our own servers. Our CDE is backed up by duplicating to a second site and security is PEN tested etc. regularly.

We have data backups, but I am not sure of the details. Like last backed up time, how much data/information we would lose.

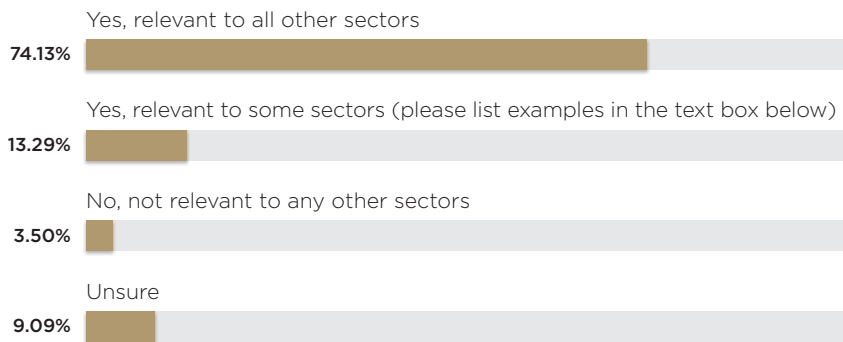
We would have project information to hand, design and as-builts, but it would not typically be us that are contacted to retrieve such information.

Yes we have full retrieval at project and organisation levels.



Q32

Building a Safer Future was written specifically to respond to safety concerns in High Risk Residential Buildings. Do you believe the recommendations in the report are relevant to other sectors of the built environment, such as commercial and office buildings, and infrastructure?



Answer Choices	% of Responses	No. of Responses
Yes, relevant to all other sectors	74.13%	106
Yes, relevant to some sectors (please list examples in the text box below)	13.29%	19
No, not relevant to any other sectors	3.50%	5
Unsure	9.09%	13



Q32 Other responses (1 of 2)

Absolutely, applying a consistent approach to quality standards across a range of sectors that affect users/ occupants of buildings and infrastructure would stop the risk of creating a silo approach for HRRB's and other schemes that meet the BSF criteria. E.g. workforce in offices/commercial buildings.

All buildings above single storey where vulnerable people reside e.g. care homes, boarding schools, university accommodation, hospitals, hotels etc.

All sectors excluding single family dwellings (houses).

Based on perceived risk - where people sleep, likelihood of presence of vulnerable people, Mixed use or complex building, Height, and other risk parameters.

Buildings in the 11-18m range would certainly benefit from the findings. To say a building of 18.1m is at risk from combustible cladding and a building of 17.9m is not is not a reasonable assertion.

Care homes & schools Care homes, theatres, healthcare.

Commercial, Office, Hotel - high rise generally.

Fire tests already show significant failures leading to dangerous conditions well below 18m.

High rise commercial should have similar standards - client on current project is pushing for this for insurance purposes.

Hospitals, care homes and any other building that may have high dependency occupants.

Hotels.

Hotels, student accommodation and mixed use schemes. Any >6 storey building now needs the design of cores and service / riser routes to accommodate future buildability issues and compliance.

I don't think all sectors need to adopt to the same level and building risk needs to be considered, however, safety should be adopted in all builds.

Industry will not take it seriously though - look at their reaction to the enquiry. It will provide lots of work but consultants will not take responsibility for their decisions or try and avoid them contractually through legal words and passing on responsibility.

Infrastructure projects should contain this information. I do not see that commercial buildings should fill this role.

It should be extended. For example laying out manholes may not be classed as high risk until it's pointed out that they are extremely deep and downstream from a filling station.

It's about good management of our assets and the people who use them. In particular, they should be used for sheltered and supported housing.

Its relevant to any residential building, including hotels, student accommodation, market and social housing and later living developments. The golden thread element is relevant to all building types as the basis of efficient facility management.

Low rise and high rise residential encounter same or similar issues as they use the same processes.

Regardless of type and scale of construction, it is the safety of end users and occupants that must not be forgotten.

Risk is elevated in residential because people might be sleeping in the event of an emergency.



Q32 Other responses (2 of 2)

The new legislation sets out to broaden the scope to more than residential buildings.

The same failures of responsibility can occur.

There are risks in use of all buildings.

We also believe there is scope to extend the concept of the GT beyond building and fire safety information, around capturing digital information relating to other aspects of the construction phase of a building, including supply chain visibility, workforce management in general, competency management, task management and material management. Essentially providing digital information on all aspects of the construction phase for visibility and traceability purposes.

We consider the construction sector is broken as we constantly see buildings that are not fit for purpose with serious defects that can result in situations where fire and rescue services consider prohibiting the use of the building. Additionally, the risk from fire is not necessarily directly linked with height and there are other informing factors e.g. vulnerability of occupants, that need to be considered. In our responses to government consultations e.g. the ban on combustible material in external walls, we have asked for the scope of the new regulator to be widened to encompass other high-risk buildings. It is pleasing to see the scope of the new regulatory regime will be flexible (as indicated in the draft Building safety Bill), we do however, consider that the draft Bill could be strengthened.

Without reading the report, I'm unsure, but would expect there to be cross overs in terms of good practice or requirements which would increase the safety of our buildings.

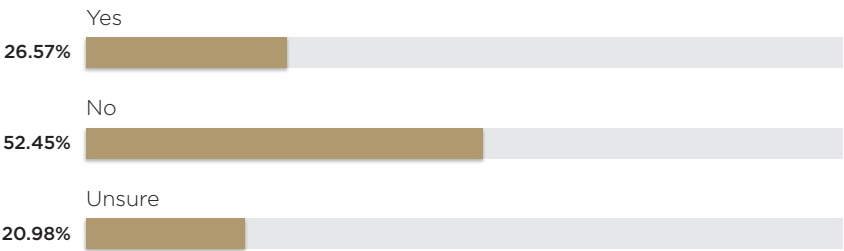
Yes buildings with the required risk profiles should be relevant, such as HRRBs, hospitals, care homes, student accommodation, hotels, secure / prisons, where occupants would live/sleep must have the golden thread. Some other sectors have a lower risk profile, such as offices, libraries, retail, etc, but should have the golden thread requirements due to their possibilities of being converted into Residential, etc. However other sectors such as industrial (manufacturing), leisure (sports stadiums), agricultural, that may have floors above 18m, that have different fire risk profiles that would not really benefit from the golden thread.

Yes, Fire doesn't care what type of building it is in or how high above ground. You could apply a proportionate, risk based approach to project safety and compliance.

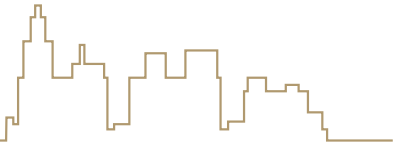


Q33

The report states that information and data must be available to those who are authorised to use it in a secure and accessible format. In your experience, does the industry have the appropriate security-compliant technology infrastructure and process in place to ensure this?



Answer Choices	% of Responses	No. of Responses
Yes	26.57%	38
No	52.45%	75
Unsure	20.98%	30



Q33 Other responses (1 of 2)

CDEs provide a vehicle for holding the data securely. Not many use this concept after handover, but will need to do so. Email is too often used to share large data, specifically using 3rd party file servers which are not secure.

Experience from Main Contractor where Building file compiled by external party (DFM Systems).

Generally, yes.

Have you ever tried to get your information back out of one of these systems?

I believe most organisations do, but as the industry is so broad and varying in size and skills/capabilities this may vary across the construction industry?

I believe this is key aspect that requires further consideration as some information may be deemed to have no risk can be wrongfully purposed and data collectively may pose a risk.

I think it varies across the industry.

In the good parts.

It exists overseas but the U.K. is woefully uninterested.

It is quite fragmented, I would expect some provider would develop a unified platform that manages the process end to end and pulls in all the various silos and platforms. The gateways should all look the same - Input, Control, output with the control providing a review status of return, condition and accept.

Largely dependent only client abilities but it is taking place on our projects.

Main Contractor can restrict access to data when the CDE sits on their side and not the clients.

Mainly clients need to do this.

May be it could be utilised better.

Most software and platform solutions are outdated and based on rehashed technology from the 80s and 90s. There are very few digitally integrated examples that combine models, O&MS, drawings, survey information and the continued maintenance information of assets.

Needs to learn from accountability and compliance in sectors such as finance.

Not all companies are using secure CDE, many are using internal systems or a combination of digital and paper filing

Platforms are available but in general use.

Still further development and clarification on what softwares and infrastructure is robust and accredited to the required standards.

Technology is available, but it is not used widely. This conversation could be expanded into how blockchain is used as part of a CDE.

The current issue with security is that while an EDMS such as Viewpoint or Asite can be secure once documents are downloaded there is no way to stop people sending them on to others. Also few companies have restrictions on flash drives etc so data can easily be taken 'off-site'.

The technology is there however the processes that are used on these systems, in some instances, need to have a more security focused process. It is possible but the upskilling of the industry is still required.



Q33 Other responses (2 of 2)

There are secure platforms available, however, there isn't a robust process in place.

Though it does rely on users behaviours.

Unable to comment as I'm not a IT security expert.

Unless there is experience of secure government schemes knowledge of what is really required for data security doesn't exist.

We already work with many sensitive customers.

We consider this may be better answered by members of the BS 8644 committee and those with experience of security and technology.

We do, but it's not commonplace in industry.

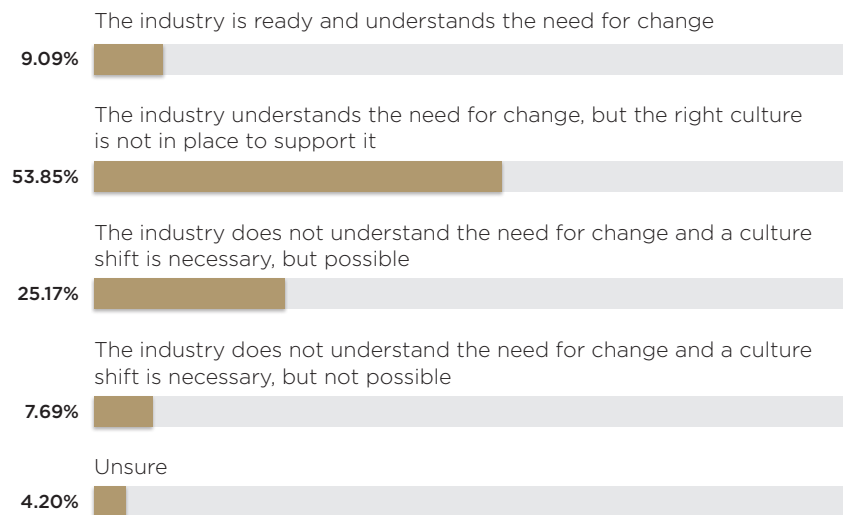
Whether they know this or know how to access the appropriate tools and use them securely is a different question.

Yes on the security, not sure on the processes.



Q34

In terms of culture and mindset, how ready is the industry to implement the changes needed to deliver and maintain a digital golden thread for high rise residential assets?



Answer Choices	% of Responses	No. of Responses
The industry is ready and understands the need for change	9.09%	13
The industry understands the need for change, but the right culture is not in place to support it	53.85%	77
The industry does not understand the need for change and a culture shift is necessary, but possible	25.17%	36
The industry does not understand the need for change and a culture shift is necessary, but not possible	7.69%	11
Unsure	4.20%	6



Q34 Other responses (1 of 2)

A single approvals process for Planning, building control, fire evaluation, sustainability, safety, occupation certs would have more leverage to effect change. The gateways would have the potential to stall projects if a minimum standard can not be met.

Answer is based on personal experience of working in a sector of the industrial and manufacturing industry. I see examples of other sectors where the golden thread would be attempted, but on projects I work on mainly this would not be considered by clients.

Clients need to accept an increase in build costs to accommodate the new requirements.

Contractors carrying out residential multi unit are poor.

COVID -19 recession has made the change impossible without legislation.

Driven by tight margins, a rigid procurement system and wildly bespoke projects leads to a batshit crazy industry that will under price and under deliver routinely when they do know what is required and when they're uncertain about what's required they will lie, cheat and obfuscate to pretend to have delivered.

I don't believe the vast majority of the industry understands or appreciates the meaning of "golden thread".

I don't think we know the cost or how to get there.

Industry will not take it seriously though - look at their reaction to the enquiry. It will provide lots of work but consultants will not take responsibility for their decisions or try and avoid them contractually through legal words and passing on responsibility.

Large sections of the industry understand the need but the culture shift required is huge and potentially the biggest challenge that is faced. Shareholders/investors are focussed heavily on ROI, partly why BIM never took hold. Masses of work to do here.

Like the rest of British industry, it only knows what it already knows, is not interested in finding and using modern, efficient, faster and cheaper ways of working. A senior management failure as it's beyond their knowledge and understanding, don't know how to implement change and think that spending money on anything is saving money.

Once again there is spectrum across the sector at different stage on the journey of acceptance and migration to a future new way of working. As legislative mandates come into effect this will drive the culture change and industry acceptance,. This still leaves the issue of resource capability in terms of cost/funding, skill in what will be a even more challenging market potentially suppressed by global impacts.

Ownership of data, storage, consistency of format and process will evolve and those in large construction organisations have this in place, however clients are not all yet on board, they need to be part of the consultation process.

Programme always triumphs over quality without robust procedures and third party oversight in place.

See attachment The benefit of investing in design management.

The industry cannot change unless the trades and supply chain are brought to the table and given clear measurable benchmarks to aspire towards.

The industry does not understand competence - never mind recognition of the need to digitise information concerning work activities, people and competences.

The industry has always responded well to change in my opinion. For this change to occur clients needs to understand their roles and responsibilities far better through the specification, design, construction and in particular the operation of assets.



Q34 Other responses (2 of 2)

The industry understands the need to change but we are at the very early stages of developing the right culture to drive effective change. The level of fragmentation in the supply chain is a barrier that needs to be addressed.

The progress on digital capability is extremely varied. Some Consultants and contractors are (arrogantly) saying are we beyond BIM now, whereas others are barely capable of sharing accurate 2D data.

The sector is driven by short term profit /cost rather than long-term added value. Most of the value/cost is concentrated on speculation and land price, the rest is scraped along the value chain to actually deliver and operate the project. This is a fundamental flaw that will not be easily changed without appropriate legislation.

There is a culture of bullying, passing the buck and ignorance towards the change.

There needs to be a example of prosecution and considerable high fine £??m and individuals named and shamed. HSE should prosecute who are involved in the Didcot Power Station collapse Principal Designer's directly working for the Principal Contractor who have no in house capability to carry out the role.

This starts at the top and during the project set up phase. Those tasked with completing a project do not have accuracy of 'as-fitted' records as a priority, only their hand-over in whatever state they may be. Often those with the detailed records, the architects and design consultants have long been paid and lost any interest and the Project Managers do not want to pay them to come back and check the records are correct. Even the clients engineers are seldom involved to the extent that they need to be to ensure the records are in an acceptable state. Big, long standing, organisations like the old CEGB do this well. Companies for whom this is the first large project seldom realise the importance.

Too many managers in our social housing sector clients have risen through the ranks of their councils or housing associations and they regretfully do not possess either the aptitude or incentive to understand complex safety policies and enforce compliance with a resistant and essentially pig-ignorant workforce. A recent case in point a skilled joiner refused to accept it was unsafe to use combustible packers in fixing a fire door frame because he 'knew' the risk of heat and flames penetrating the finished fire-proofed gap wall was remote. You would be surprised how unions would rise to defend any censure of that particular individual. The point being made here is it proved impossible after 10 hours of online research to uncover any evidence to prove it was unsafe to use combustible packers. The culture shift necessary is to make a central pool of best practice accessible to all those engaged in property construction, including those with no academic ability. Policy-makers forget that many construction site workers have poor learning capabilities and impaired reading and writing skills. They will never have read a standard in their lives.

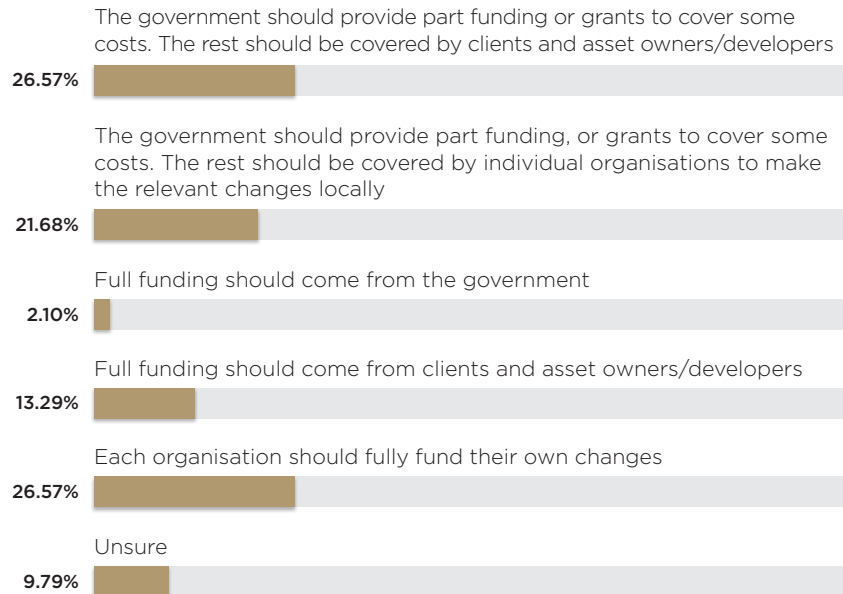
Unless there is inescapable accountability right up and down the award, costing, design, supply and commissioning chain, I fear all we might see is boilerplate clauses and limitations.

We consider 'cultural change' to be one of the biggest challenges facing the construction and built environment sector, with the issues around the existing Regulation 38 problem as previously discussed being inextricably linked to the golden thread we consider there is much work to do to achieve this change. We believe this will be assisted and achieved through the development of standards and application of appropriate technology and more importantly, the change in the current regulatory regime.



Q35

Who is responsible for funding any training, support, and appropriate technical investments needed to implement the golden thread requirements?



Answer Choices	% of Responses	No. of Responses
The government should provide part funding or grants to cover some costs. The rest should be covered by clients and asset owners/developers	26.57%	38
The government should provide part funding, or grants to cover some costs. The rest should be covered by individual organisations to make the relevant changes locally	21.68%	31
Full funding should come from the government	2.10%	3
Full funding should come from clients and asset owners/developers	13.29%	19
Each organisation should fully fund their own changes	26.57%	38
Unsure	9.79%	14



Q35 Other responses (1 of 2)

All businesses should regard this as an investment and bear their own costs.

As an Industry we have a moral obligation to address and so hence the Industry should pay. Having said that the end result will of course be that Clients pay.

Asset owners get the most value from this so should understand there may be a cost to deliver the greater value.

Building safety should be standard models in higher education construction related courses. It is part of natural evolution of changing how we deliver projects however looking back at BIM implementation and missed targets, the new regulation will help push change forwards. Even the implementation of REVIT type design software caused cost issues for smaller design practices. The purchasing of software and licences without any pipeline or confirmed project I would have thought would deter some SME's. Clients also, need to upskill, need support and this could be a substantial additional cost, particularly LA's who may not do a lot of HRRB development work, a one off cost could be extremely expensive.

Commercial reality in this Covid-19 recession. The golden thread has to be funded by the client and subsequent owners.

Government could support smaller businesses but larger organisations have not only the capacity but (arguably) an obligation to skill-up and train their staff and direct supply-chain.

I do not see why the State should collect the cost of ensuring that financiers, clients, professionals, artisans and asset managers deliver safe buildings. Alternatively, it could be funded by the State/HSE from penalties.

If an organisation does not understand its requirements and how to satisfy them, then they should not be classed as competent and qualified.

If you're don't understand and not interested in better ways of working, you will not invest in them.

In the same way that BIM was mandated, government must do this again but also support (smaller) companies where needed. There are many benefits from traceability in construction not just for safety but also quality and commercial reasons.

Individual organisations should utilise R&D opportunities and funding to help them Innovate where necessary. Asset owners/developers already see the value of a Digital Record (golden thread). Therefore Innovative organisations, supported with Govt Funding will offer 'golden thread' as a value proposition to Asset owners/developers. The cost is absorbable.

It should be a normal part of development and maintenance costs.

There will need to be a mixed-model here, For new builds point 4 should clearly apply. For existing stock it will require any combination of 1-3 in the private sector.

It would be pretty disgraceful for industry to ask for hand-outs to do what essentially they have been paid for all along - this is shameful! They also need to be working to BIM on government projects - this is mandated - so why do they need any more money? They need to accept responsibility for what they are doing.

It's a bit of all of these - everyone needs to do their part. Currently so much of the 'change' gets pushed down the hierarchy but fees only go down. A realistic view needs to be taken about the complexity of what is being asked for and the time and effort that will be required to deliver that. I think cost is a major blocker.

Probably all of the above is needed.



Q35 Other responses (2 of 2)

The challenge remains the sector operates with high risk and low margins and that will initially be more challenging due to global events and subsequent economic downturn. A staggered approach will be required on implementation, more over on legacy building and combination of funding strategies will be required depending on circumstances.

The government should legislate for the required golden thread requirements and the industry should follow. Roles and responsibilities should be clear and individuals should sign off on aspects within their scope on a project by project basis.

This should be to the SMEs that do not have the resources or cashflow and make very small incomes from projects.

We consider this will be a sector wide responsibility as it is the sector as a whole that needs to embrace the change, and as a sector, this change should be driven now and not waiting to be told or for regulation as Dame Judith identified.

We pay enough levy and it needs to support managers and consultants as much as trades - it currently is bound in silo thinking and needs to recognise common skills throughout various roles / trades - its not all about safety - quality is the new safety.

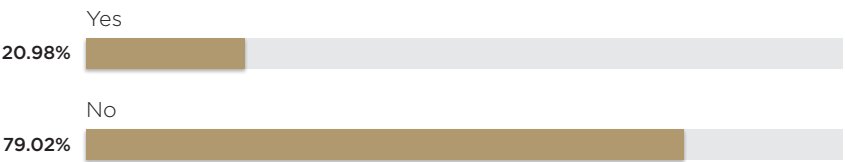
We view the Golden Tread requirements as a form of Quality assurance, and the 'Digital record' as best practice. I think funding the Golden thread is a collective responsibility across the industry.

With costs to implement coming from client.



Q36

Is it clear where in the industry organisations and individuals can go for support, advice and resources relating to the golden thread requirements?



Answer Choices	% of Responses	No. of Responses
Yes	20.98%	30
No	79.02%	113



Q36 Other responses

I believe that there is a requirement for more information and support on the subject and clear definition on future mandates and requirements

I have yet to see a co-ordinated response from the professional bodies regarding IMPLEMENTATION rather than comments on the policy direction.

I was not aware you could go to an organisation for support.

Investing in design management would be a good place to start.

Its soundbites really.

Not applicable in ROI?

Simple diagram showing the requirements of the golden thread requirements across the life of a project would be useful and easy guidance.

The requirements of the golden thread need to be defined and then should be incorporated into Approved Document B.

There are good resources all over, but they are not commonly understood.

There are too many talking shops and associations with their own interests - CIOB are about the best at the moment conceptually but there is not really a cohesive or common approach.

They should just read the rules and do what they are paid for.

This is an area where further education by Professional Organisations and Construction Organisation representative bodies and local government agencies.

This will need to be made clear.

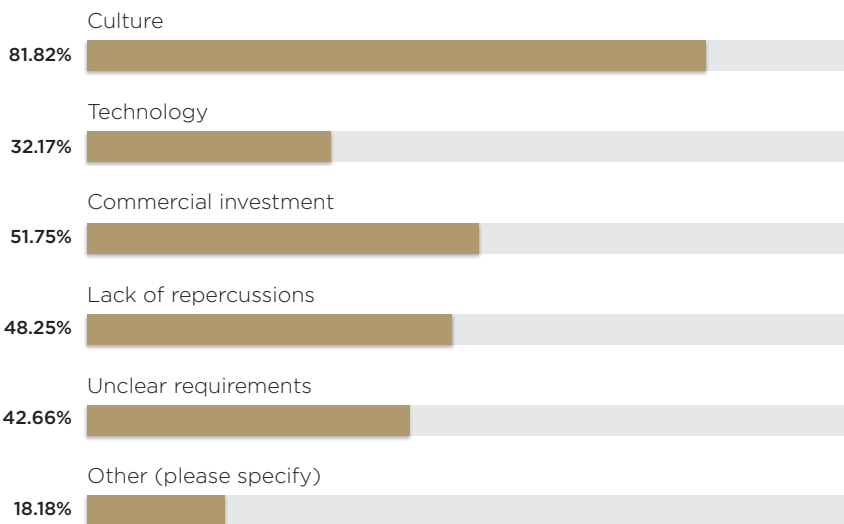
Unsure.

We consider this is developing all of the time with the ongoing work as already discussed, and will be informed as the Safety Case framework is developed by the new regulator.



Q37

Which of the following do you foresee as blockers to the industry when implementing the golden thread? Please select all that apply.



Answer Choices	% of Responses	No. of Responses
Culture	81.82%	117
Technology	32.17%	46
Commercial investment	51.75%	74
Lack of repercussions	48.25%	69
Unclear requirements	42.66%	61
Other (please specify)	18.18%	26



Q37 Other responses (1 of 2)

Accessibility across the industry is key. Every solution posed so far is exclusive rather than inclusive. I believe people are taking a complicated route to solve a simple problem.

All of the above to some degree or other but investment is probably the biggest of these for me.

As said above immaturity in understanding competence, part of the golden thread, and awareness of competency management & analytics technologies (type of AI) which are here to use now More emphasis needs to be made on clients to ensure the right briefing documentation (EIR etc) are in place. Defining the requirements.

Building regulation will need to have teeth which it currently does not have. Gateway 3 will need to be properly policed, with occupancy blocked until the golden thread is in place.

Contractors and designers have absolutely no long-term interest in buildings / their performance and impacts of these; this is blindingly obvious.

Cost.

Entrenched thinking.

If the 'golden thread' information is to be useful, it will need to be verified as being accurate upon hand-over. If it is not, it will be worse than useless. I see no dialogue at all about this critical aspect of the process - WHO will be responsible for verifying the accuracy of the information; HOW will they provide the assurance that it is; and WHEN will this verification be offered to the recipients/users of the information in the next stages of the premises' lifecycle?

Insurance blockers / caveats , etc. Small margins on contracts mean that there is pressure to keep costs tight.

Lack of proper communication to all parties/persons involved & ignorance.

Lack of skills Lack of knowledge Lack of collaboration Commercial sensitivity.

People with little knowledge usually have the last word on these matters. If we had more engineers on Company Boards we might get somewhere.

Quick flip mentality amongst developers.

Requirements must be clear in dismissing antique, siloed, dissociated technology and means of managing information. Culture and Investment incentives must target added value to the economy and society rather than speculation and profit for the sake of owning land/assets. Empty multi-million pound residential buildings built on speculation purposes may stimulate the economy in the short term but they are a huge part of the problem as they suck up resources from the wider sector.

See attachment The benefit of investing in Design Management.

Should be defined requirements on projects, BIM Level 2 was a mandate that seemed to focus industry on how they should deliver a project. But personal experience was that projects would get 'downgraded' from Level 2 to Level 1 when it would be apparent the work required for data capture and management for a COBie schema. Unfortunately I think the same would happen if there was ever a mandate for golden thread, there needs to be a major upskilling of teams on projects that we are typically associated with.

The risk of virtualisation not reflecting the actual installation, or its actual operation, seems to me to be significant.



Q37 Other responses (2 of 2)

The golden thread concept will work well in HRO organisation, but will become a safety liability when operations are handed over to organisations (such as social housing landlords) that cannot afford to responsibly deal with existing hazards that plague their housing stock such as asbestos and legionella hazards. Unless there is an enforced culture change, the operatives who will maintain social housing buildings will not be of the required calibre to reliably update the BIM systems to maintain the golden thread. Crap in - Crap out applies here.

There is no consistent place to capture the initiation and feasibility stages of a project. e.g. - Site appraisal and acquisition - Site investigation and surveys - Early hazard identification/assessment the golden thread should start long before the Designer is appointed. The appointed designer will benefit from Pre-Design Information (PDI).

There needs to be a mixture of 'stick and carrot' if the culture is to be shifted.

There will be the usual cynics and naysayers who will try and duck out of this - also you wouldn't want to be the first What if someone gets it wrong? Finally its part of the job - not a job or department in itself - especially post-Covid.

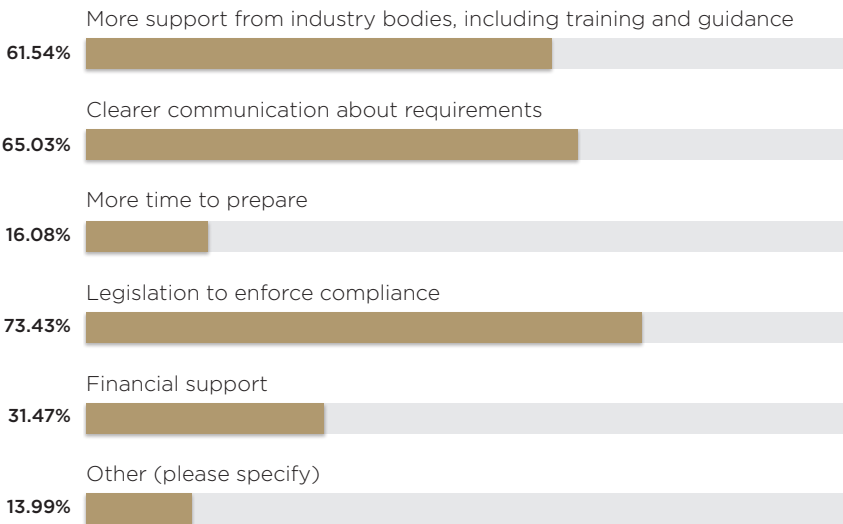
Too many interactions of different designs - Architectural practise needs to take responsibility for all design, or Main contractor has to have sufficient design capabilities in house. At present Architect is in bed with client and then states anything complex is down as specialist design or CDP and the co-ordination in interactions are usually where issues occur which end up in no bodies package, bounces between architect and main contractor until a solution is found onsite and then drawn retrospectively.

We consider lack of repercussions will not be a blocker as long as the proposed new regime is robust enough and supports effective enforcement. Investment can always be blamed but as this will be a requirement of the new regime it should not be an excuse.



Q38

What action is needed to ensure the industry can overcome these blockers?
Please choose all that apply.



Answer Choices	% of Responses	No. of Responses
More support from industry bodies, including training and guidance	61.54%	88
Clearer communication about requirements	65.03%	93
More time to prepare	16.08%	23
Legislation to enforce compliance	73.43%	105
Financial support	31.47%	45
Other (please specify)	13.99%	20



Q38 Other responses

All the above - lets do it properly not quickly.

Clear pricing expectation for delivery of these extra services.

Culture shift in the industry.

Enforcement of legislation.

Financial penalties - proper licensing to stop poor contractors from getting future work.

Guidance will be critical.

In my social housing sector, the only way the golden thread would work is if decisive enforcement was exercised to drive out the middle management that shares the same cavalier attitude to H&S as the workers below them.

Incentive through the planning system - the easiest way to any developers heart. If they can obtain a relaxation of some form for providing a golden thread they would do so.

Integrate within T&C planning process, planning conditions.

Leadership. Until the Industry leaders step up to the plate and really mean what they say about getting it right rather than shedding crocodile tears then there is no chance. Maybe CEO's need to be threatened with prison as they were by John Prescott over H&S and then we will see real buy in.

Legislation and a clear roadmap for what needs to be achieved, and what should not be accepted moving forward. This is a very sensitive matter that will only be solved through legislation and broad support from industry leaders.

Plain English guidance or Clear workflows to follow/guide.

Pressure from funders to ensure compliance.
Follow the money!

Pressure on insurance companies to take us off their blacklists!

Professional & Trade Bodies are blockers to progress as seek to protect their own turf.

Prosecutions and naming and shaming.

Social housing providers will need financial support to set up their asset requirements initially.

The industry needs to change its culture and become professionals.

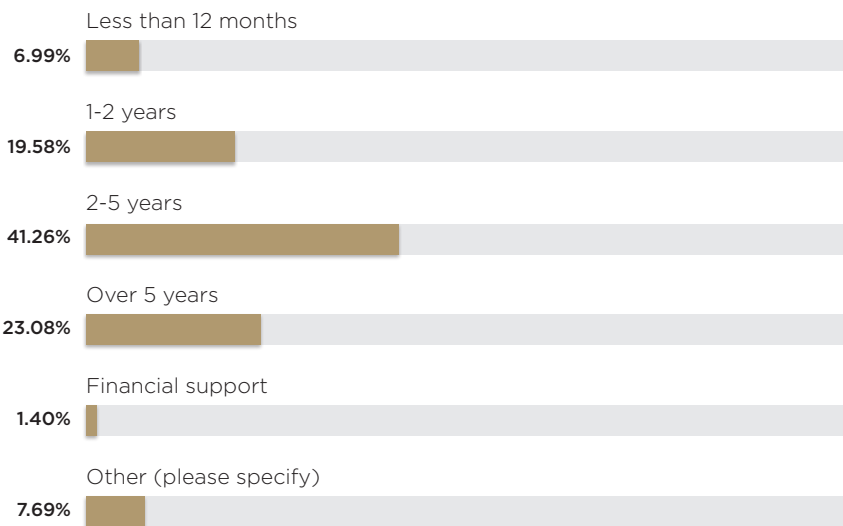
Unsure.

We consider the support and guidance will come as it is developed, however, as previously discussed it is important for the sector to drive the change without being told what to do although it is acknowledged this can create barriers.

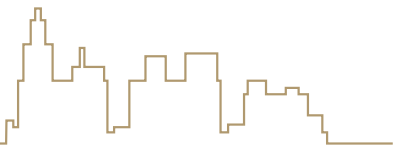


Q39

Realistically, how long do you think it will take the industry to implement the changes necessary to deliver and maintain a digital golden thread of information as business as usual on all high rise residential projects?



Answer Choices	% of Responses	No. of Responses
Less than 12 months	6.99%	10
1-2 years	19.58%	28
2-5 years	41.26%	59
Over 5 years	23.08%	33
Never	1.40%	2
Unsure	7.69%	11



Q39 Other responses

As long as there is clear leadership from both the Government, BSR and Developers/Clients.

At least, how much notice did the production side of the industry take of the Egan report?

Based on impacts such a Covid19 accelerating business development and technologies to support and assuming that various recommendations move in law as minimum requirement.

Certainly more than 5 years. As Dame Judith has complained, the industry is fragmented and it moves extremely slowly. I feel that the advent of one umbrella engineering institution could accelerate that change if it were to bring more consistency and economies of scale.

Could be done in months IF the industry WANTED to.

Hopefully much quicker for early adopter schemes but bedding in and consolidation of the requirements will take a little longer.

However this is unlikely because the construction industry believes in death by committee rather than strong leadership. So I expect a quick turnaround on a document followed by zero follow up and implementation.

It will take as long as the legislation/ regulator gives us.

It would be wise to implement a solution that works for all building/construction types, not just HRRBs.

Projects have long programmes, the full implementation will take a while and then needs to be tested, lessons learnt, best practice taken forward.

So far we have taken a top down approach. If a 'golden thread' is described clearly and Mandated. The Capability/technology already exists to roll it out immediately. The culture 'ignorance and indifference' is the biggest shift required

The expectation that the legislation will not apply until 2024 allows time for implementation.

This will depend on numerous factors such as the in-house expertise that an organisation has access to. Organisations who have done nothing since GT requirements were first published may struggle to achieve within 5 years. If organisations have worked constantly then less than 2 years is realistic, 2-5 years seems a sensible middle-ground.

Timing will be dictated by many stakeholders.

Unfortunately I don't see the golden thread of information becoming business as usual for a while based on experiences with the BIM Level 2 mandate on projects.

Unless forced.

Unless further regulation.

We consider the changes should be implemented now and evolve as the sector learns more, to put a timescale defeats the objective of making change now.

With the current culture there will be no change whatsoever.



Q40

Who owns the data and information relating to an asset at each stage of a project?

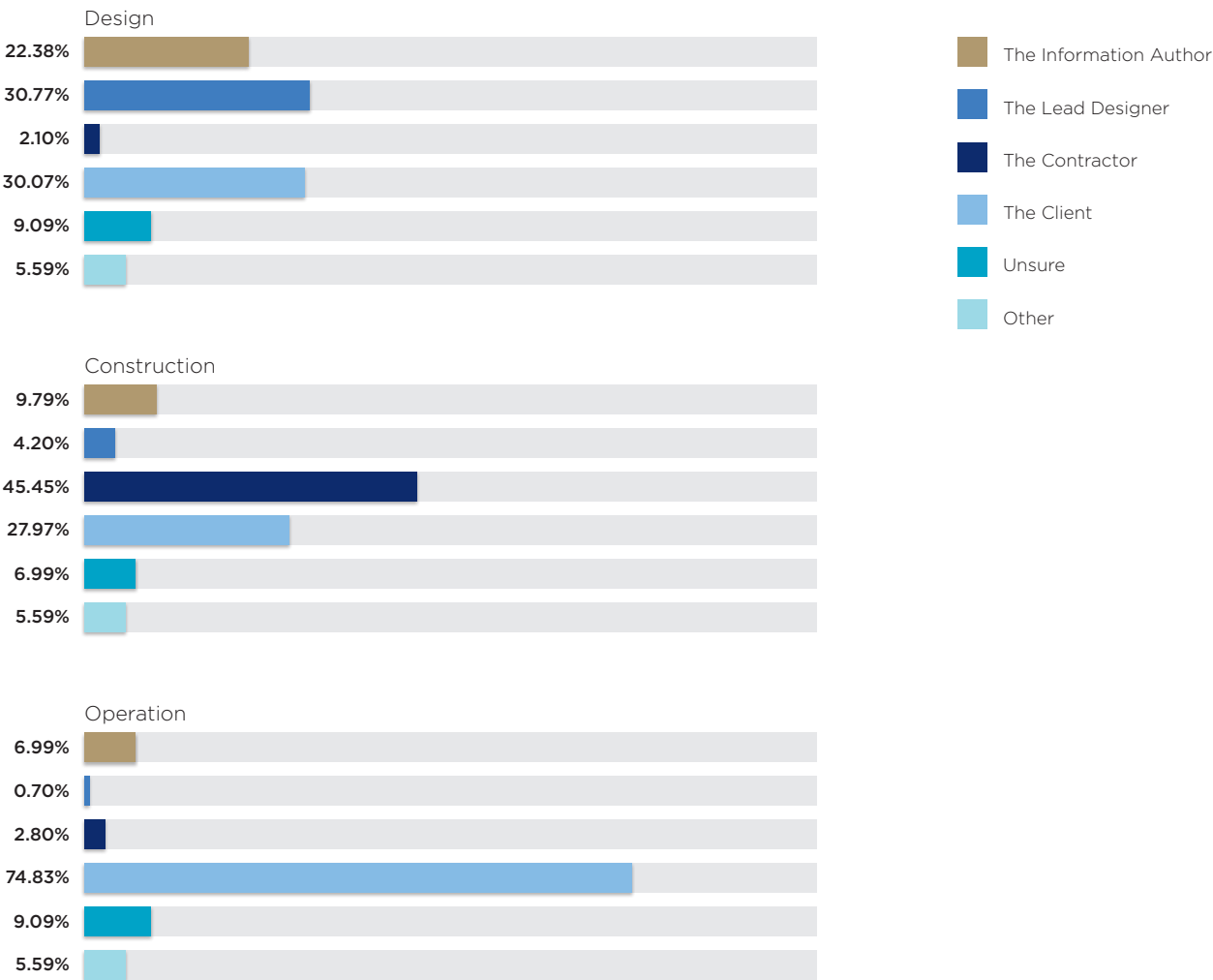


Chart information on next page >>>

Q40 cont.

Design: Answer Choices	% of Responses	No. of Responses
The Information Author	22.38%	32
The Lead Designer	30.77%	44
The Contractor	2.10%	3
The Client	30.07%	43
Unsure	9.09%	13
Other	5.59%	8

Construction: Answer Choices	% of Responses	No. of Responses
The Information Author	9.79%	14
The Lead Designer	4.20%	6
The Contractor	45.45%	65
The Client	27.97%	40
Unsure	6.99%	10
Other	5.59%	8

Operation: Answer Choices	% of Responses	No. of Responses
The Information Author	6.99%	10
The Lead Designer	0.70%	1
The Contractor	2.80%	4
The Client	74.83%	107
Unsure	9.09%	13
Other	5.59%	8



Q40 Other responses (1 of 2)

All should be in a CDE and determined by EIRs in ISO 19650.

As 'owns' is not defined I'm going for client. For who is responsible for I would say it's the information author but ultimately the client pays, therefore the client owns.

Building Owner / operator.

Data (and information Documents, etc..) are not "owned" by any one person or organisation. They are owned and used by multiple organisations and people.

Depends on the contract.

Even the word "design" has many meanings. Only the designer can be responsible for the overall parameters and major decisions, only the contractor can be responsible for detail which has little impact on the overall scheme, e.g. which MCB feeds a particular circuit. Confusion about this can lead to no one taking responsibility for keeping adequate records.

For the Construction Stage I feel the data will be split between the contractor and client. Some data at this stage will need to go to the client with other data, site logistics etc, is not necessarily needed by the client.

Further clarification on question.

It has to be collaboratively owned. The report nominates dutyholders and accountable persons - surely they should have a stake in the ownership.

Manufacturer owns the product data. Designer (not necessarily Lead Designer) owns the data that describes how products are arranged/connected to create the asset (their design). Contractor owns the data of how the asset was put together/constructed and when. Client owns data on how the asset performs in use and when/how maintained.

Not sure I understand the question.

Not sure if this is a test or it is different for different companies. Our contracts specify we own the data.

...obviously the author 'owns' it until they offer it as a contractual deliverable, but once it's handed over it should be owned by those with control over the relevant premises life-cycle stage. HOWEVER if a premises remains occupied whilst it's being worked on, then the situation will be far less clear and neat!

Ownership is likely to vary depending on the development and contracting format adopted.

Ownership presumably is who needs to ensure it is provided. On hand over the client should own all the data and keep it up to date.

Strictly speaking the Client ultimately owns the Data at every project stage. In practical terms it passes through the CDM stages.

Subject to procurement route / contract.

The client has rights to all information at all stages, but copyright and liability remain with the authors.

The Client is the Commissioner and Employer. The client 'owns' the Data throughout an Asset lifecycle (30 - 100 years). Once they pay for it... =]

The client is the single consistent contractual link across all project phases.

The Client should be paying for it via the contracts (procurement again)!!!! is the owner !!!!!

The copyright belongs to the creator, of parties have rights to use this information.

The operations supplier.



Q40 Other responses (2 of 2)

The owner of the asset. The responsibility for delivering the data and information in compliant format depends on who has responsibility for the stage of the project process. BSF defines accountable persons. A collaborative approach to projects rather than splitting design - construction - operation would reduce the risk of muddying the ownership issues.

The Owner owns all of it as well. They own what they pay for.

The term "owns" I've interpreted as "who is responsible for". None of these parties should be able to "disown" responsibility (or seeking qualified advice to accept the "data and information") right through to the first operator's manuals. There should be a formal sign-off by all these parties in order to avoid due diligence duties being missed at any stage.

This is a HUGE question with HUGE ramifications.

This is subject to the project procurement.

This is a very muddled picture at the moment and depends on the method of procurement. Ideally - on projects with contractor design - as follows Pre-contract - The authors of the information Construction - The Contractor (as they are responsible for completion of design development) Operation - The Client organisation - although in reality it will be managed by the client's FM Department.

This was hard to answer. The author owns their own design information and the grant a license to the client. See the CIC BIM protocol.

We are excluded from this level of information.

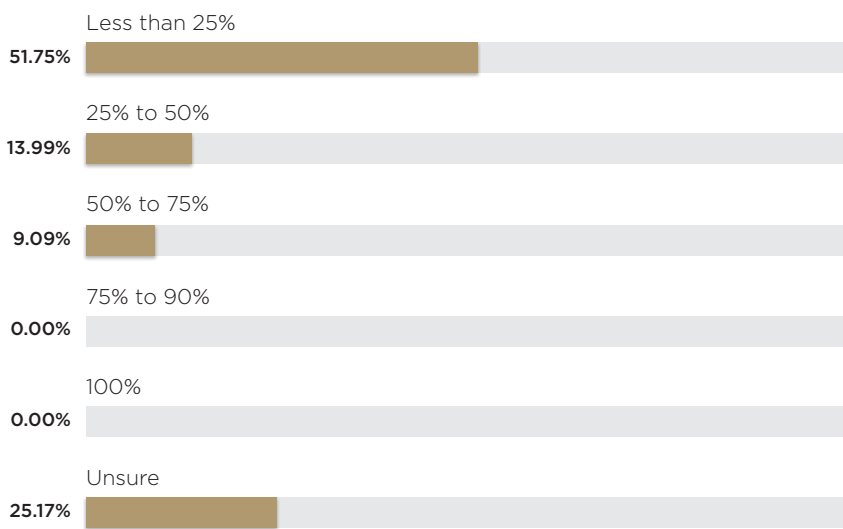
We consider it all sector stakeholders at all relevant stages, without ownership from all we will not see the cultural change in responsibility required.

Whoever carries the warranty and PI insurance.

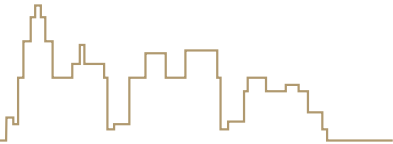


Q41

To comply with the golden thread recommendations BIM is cited as the most appropriate method for delivering projects and managing information. In your experience, what percentage of projects in the UK are currently being delivered in line with industry BIM standards and the UK BIM Framework?



Answer Choices	% of Responses	No. of Responses
Less than 25%	51.75%	74
25% to 50%	13.99%	20
50% to 75%	9.09%	13
75% to 90%	0%	0
100%	0%	0
Unsure	25.17%	36



Q41 Other responses

At a guess.

BIM assist compliance with the golden thread... However, does BIM Produce the golden thread? A lot of 'golden thread' related information is within BIM. How do Clients and building users Get it Out of BIM...????

BIM is used in part rather than to the 'Level 2' standard in PAS 1192. Only larger projects use it, so the vast majority of projects by number don't do so. By value the figure is higher. ISO 19650-2 will help more users to get on board, once the golden thread is mandated.

But there is a wide variation between sectors and regions. And on many projects BIM is only used for design and build and asset data is not requested or collected.

Can only comment upon our projects, all of which are undertaken in a BIM environment.

Delivered at most, consultants and a few sub designers design only would be higher but the creation of the model and the required data would not be structured enough to meet the requirements of a golden thread.

Don't work in UK. In Ireland id say 90-95% projects now in BIM.

From my experience of private sector residential accommodation, way less than 25%. However, mandating BIM use is the way forwards and can be applied to existing stock.

In my experience 0% have implemented BIM.

It is poor - only detailed design practices and D&B contractors see the value with clash detection are doing it to save money or make the project work for them due to the low fee (1% profit margin) to win it.

Less than 5% really, there is a lot of BIM that looks photo real and immersive but is like a western film set, there is no substance to it.

Most of them are not doing it properly/following the ISO.

Most with 3D models but BIM is not 3D models and a bit of coordination.

Not applicable.

The production of models in 3D is now more than 25%, but the use of information attached to BIM objects is not yet 25%.

The report highlights BIM but the governments Explanatory Memorandum did not go that far. Merely an Electronic Record. This could be 2D pdf / cad drawing and an excel spreadsheet. Anything is better than nothing and this format would be more accessible to the widest number of users.

There is still resistance to BIM for projects that are small or not deemed to be beneficial such as mainstream housing developers.

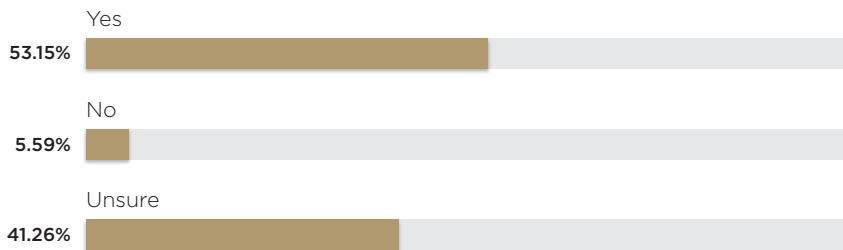
This is purely anecdotal, based on the fact that we are very very rarely asked by our customers to assist with helping them with COBie data or even container naming we can only conclude its not being asked for in the market in general.

We're finding there is more and more effort by delivery teams to work to BIM standards and the framework however we still find the biggest 'blocker' are clients who don't understand what they need to ask for and have no plan in place for how they are going to use the information moving forward. As a result they tend to ask for 'everything' just to be on the safe side but then go for the lowest common denominator when it comes to cost as they simply don't understand what is involved in delivery.



Q42

Does the concept of a digital golden thread of information align with the UK BIM Framework standards and guidance?



Answer Choices	% of Responses	No. of Responses
Yes	53.15%	76
No	5.59%	8
Unsure	41.26%	59



Q42 Other responses

19650/ level 2 would be the most efficient way to produce the information but hardly anyone understands how to do this which results in some bastardised level 1 approach with data almost impossible to validate efficiently,

Appointment documents are key to this. If designers are not appointed to meet the standard, the thread is lost at the start. PII cover clauses need to reflect the requirements to manage information correctly. While there is no requirement or risk attached to non compliance, there will be no change.

BIM is fundamental to producing the golden thread...
How will the Thread be Visualised..???

BIM needs to be reviewed for golden thread requirements. OK for professionals but needs other methods of communication for others.

But not all sectors are able to deliver BIM as it should be delivered. Not because they are not willing but because others around them don't understand the requirements.

Having a schema for file exchange and an overly complicated process for information management is not the same as delivering what is appropriate. It is possible to deliver entirely in compliance with the standards and have added no value, nor produced any life cycle asset data, because these have not been asked for. The existing system is full of overly complex systems and nomenclature that prevent it achieving the benefits it aims to implement as the outcome is lost in the process of upskilling the team who become overly focused on naming files properly.

I believe that it does.

I believe there is commonality, but there are wider aspects that are still to be resolved and it requires further collaboration across industry specifically from Building Operation and operators as the data bias still remains from a D&B perspective.

It aligns if you have experience delivering but newcomers will find shortcuts to deliver "digitised" information that bypasses BIM. Digital CAD generated PDFs are not the same as a comprehensive set of models and associated information.

Its the plan - the delivery is different - value engineering and problem solving are what we think we do.

Its scope is far wider and (as I said before) the practical aspects of the verification and assurance of 'golden thread' info as it is passed from party to party is not dealt with in the Standards referred to.

Lack of ambition and foresight means that BIM is seen as an obligation not an efficiency.

Needs to be specific and state exactly what, when and who within the EIR referring to the PIM, AIR & OIR etc including H&S Risk Information.

Partly, needs further development.

Probably not as UK BIM Framework standards behind the curve to practice...need more digital knowledge of standards as a service solutions.

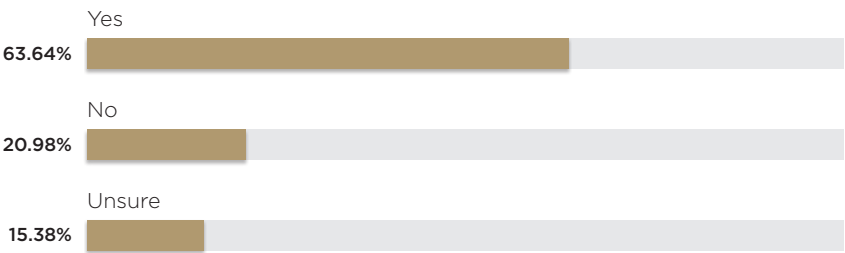
The COBie method of data exchange is quite crude, it would be more useful to see an exchange of information with an asset management portal like SFG20 from BESA (no connection). Expanded perhaps to cover facade and fire doors and the passive elements of a building.

Yes - but the BIM Framework may not capture the reality of checking and evidence recording processes actually carried out on a project. See attachment The benefit of investing in design management.



Q43

The Building a Safer Future report states that the industry should make use of technologies that are already available to deliver golden thread requirements. Do you believe that the right technologies are readily available and accessible?



Answer Choices	% of Responses	No. of Responses
Yes	63.64%	91
No	20.98%	30
Unsure	15.38%	22



Q43 Other responses (1 of 2)

Absolutely - it is the behavioural and contractual relationships that are missing. If these were in place the technology would still deliver the requirements.

Again there are so many platforms being used by few that are not compactable with each other - hence the need to specify which in the project EIR within the contract.

BIM And Safety File BIM models can be difficult to read without the right training.

Blockchain.

But BIM is NOT necessarily the complete answer. Transactional information like orders, despatch notes/ delivery notes, invoices etc. Are unlikely to be in IFC format. There are other standards for sharing business documents in a structured format used by ERP systems. Don't reinvent the wheel.

But they could be made far more efficient, the process it too time consuming and Techincal. Its used as a opportunity to massively inflate costs by consultants and suppliers.

DOI for products require development.

Existing solutions are too complex or cost prohibitive. Proposed solutions are based on unproven technology and potentially complicate and alienate parts of the industry.

I believe that there are technological elements that deliver solutions in part but the relationship and governance around the use, interaction and consistency between technology platform outputs requires further harmonization.

I have developed a 'real world' solution based on available technology.

I think it needs a review, it may be already in existence and it may be a mix of old and new?

In addition to BIM, other technologies should be considered to capture information during the construction phase, to provide visibility of activities on site.

In design not sure about transition from construction to operation.

It's not just about the data storage, but about the understanding of the data. Too easy for it to be a 'Tick box exercise' with no understanding of what the form means!

Lots of good technology available but is everyone using the same thing and how do we ensure all are trained in the difference.

On our Eire projects, they have a system where they have a specialist consultant dedicated to compliance and a national digital platform for viewing the status of projects. The mix of project platform and statutory platforms seems to be effective in that jurisdiction as far as I know. Must look into it more.

Particularly the 'immutability' of Distributed Ledger Technology.

Some tweaks are required.

Somewhat available, not widespread.

The right technologies are available but this statement is misleading. It can be interpreted that the easiest path, i.e. technology people are comfortable with, should be the way forward as it would be less disruptive. This should not be the case as most of the industry uses obsolete and outdated methods.



Q43 Other responses (2 of 2)

There is no current thinking & recognition that knowledge (such as knowledge in standards) can be digitised. CDBB DCOM A Call to Digitise' report (DCOM, 2019), states that, so far, there has been no meaningful suggestion of either the digitisation of the regulations or compliance systems despite the concerns raised by the Hackitt Review around responsibility and departure from regulations being a systemic problem.

There is still no easy way to gather and update asset information - more work needs to be done on cloud based external project databases of information and data templates. COBie helps but it's really just a summary and can be labour intensive.

There is too little emphasis on stage inspections - IMPLEMENTATION - to support the data which is being recorded. The example of Clerks of Works has been cited many times.

They are available but not readily accessible and in use. Differing levels of usage between principal contractors and sub contractors.

We believe distributed ledger technology (blockchain) has a particular use case with regard to the golden thread of information due to it's inherent trust and immutability.

We have them, almost no one is using them, have heard complaints that "I don't to pay for that software on my project" from senior management on 100M plus project.

Yes, because we have developed one specific to the golden thread. But no other suitable platforms exist to my knowledge and other platforms are slow to change - See recent criticism of Autodesk.

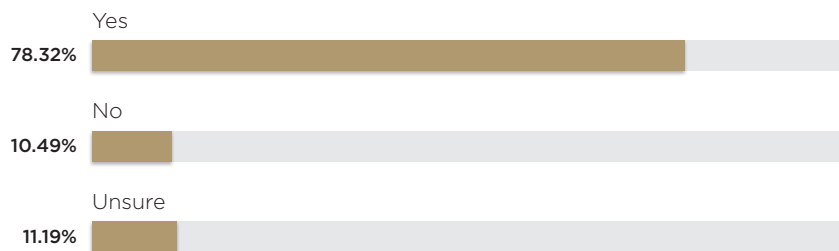
Yes the technologies are available it is that they are not connected. Also the tech is just one part, you need the knowledge that goes into the tech and the knowledge is not standardised and digital at present.

You find hardware technology is available but software requirements/solutions not always suitable.



Q44

The New Building Safety Bill (to come before Parliament this Summer and expected to become law in 2021) looks set to bring in gateways at key project stages, where a regulator will review project information and agree compliance to Health & Safety requirements before a project can commence to the next stage. The client or building owner will be deemed legally accountable for compliance. Do you feel that legislation like this is the most effective way to improve behaviour?



Answer Choices	% of Responses	No. of Responses
Yes	78.32%	112
No	10.49%	15
Unsure	11.19%	16



Q44 Other responses (1 of 2)

Alongside support and guidance.

Anything voluntary will be of variable consistency and effectiveness, however the aim should be to encourage developers to want to demonstrate their competence rather than have it seen as red tape or in some ways a process that takes place out of sight of the general public/future residents.

As an industry, we have demonstrated quite thoroughly that unless robust external gateways are enforced, we can't be trusted to maintain the safety of the premises that we are working on. The commercial pressures to cut corners or to proceed before the necessary safety checks have been completed are too irresistible.

But it is part of what is required.

But won't change the unprofessional attitude that currently pervades the industry.

Clear legislation apportioning responsibility will ensure a higher level of compliance.

Construction tends to be a risk dump and I am sure there are lawyers already drafting contract clauses to pass on this responsibility in some way!

Forces the industry to do something, may possibly make ourselves look stupid by not preparing to implement the requirements costing us time and money.

Funders need to step in and take responsibility for how their money is spent.

However it will red tape construction

I do not believe it is possible to ensure a satisfactory level of compliance via self-regulation by the development industry.

I keep coming back to this idea of a dedicated specialist with responsibility for managing compliance and safety with the possible addition of climate adaption and data management. An Independent Construction Auditor or such like to coordinate responsibility, accountability and getting through those gateways.

If it can be delivered consistently, efficiently and responsively and not arbitrarily, opaquely without recourse

If it is not mandated or can be left until later stages of the project, then it will not be implemented properly or at all. It is usually too late, which is what has been found to have happened in the Grenfell public enquiry.

It will help.

It will require on-going monitoring of inspection and documentation by an independent & impartial responsible person and company.

Need to tie in to stop people bidding for failure to engage.

Not applicable in Ireland.

Not being able to proceed past a gateway without proving compliance introduces a commercial (£) driver to comply with regulation. This will be game-changing.

Not sure developers will embrace this - people will look for ways around this - build a max of 6 occupied floors - and it will cause delays and massive cost surely unless it replaces something rather than adds to regulation (which apparently has failed to deliver to date).

Only because everything else seems to have failed. Feels like a last resort for a process that really shouldn't need it but, it turns out, has not been properly understood or effectively managed for many years.



Q44 Other responses (2 of 2)

Projects are too messy to allow this to work well. Partial handover and contracts that include design development will all make this difficult to administer effectively. "As fitted" records are always a requirement of the contract but seldom are these adequately checked in the rush to complete and I don't see this changing. The contractor says that they are correct and the owner wants to believe that they are correct so no one wants to check them except the maintenance engineer who is not party to the decision to accept the project. Is an external tick box going to change this?

Should have followed the RIBA Work Stages where these could have been enhanced to include specific related to building safety and CDM combined.

Similar in Ireland and it's paid lip service at best! Regulators need TEETH.

The industry has failed to do the basics right. Unfortunately it needs legislation for compliance.

There seems to be leakage potential around designers/specifiers/cost consultants.

This legislation is a good start, but more stringent methods maybe required and additional measures will be required as technology progresses. This legislation is a good step, but shouldn't be the end of the road or a silver bullet to fix the industry.

Unfortunately necessary!

Unfortunately yes, contracts and law with consequences will improve behaviour, we also need champions to spread the benefits this will bring.

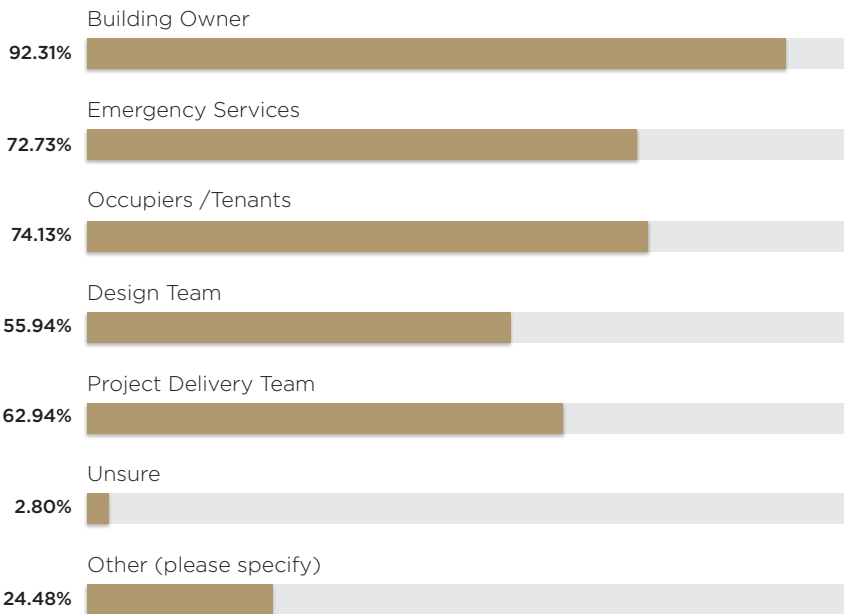
We have called for changes to the regulatory regime to address the issues where ambiguity exists e.g. between the Housing Act and the Fire Safety Order and to address the issues during building construction. We believe there needs to be a change in the regulatory regime to provide a robust accountability framework supported by effective and efficient enforcement. Whilst this is not the only answer it will contribute to the much needed change.

Who pays them? Ultimately whoever pays them will be able to influence, costs will get pushed lower and lower until a point is reached where little more than a glance can be made without spending too much of the fees....



Q45

Who is golden thread information collected for/who will use it?
(Select all that apply)



Answer Choices	% of Responses	No. of Responses
Building Owner	92.31%	132
Emergency Services	72.73%	104
Occupiers /Tenants	74.13%	106
Design Team	55.94%	80
Project Delivery Team	62.94%	90
Unsure	2.80%	4
Other (please specify)	24.48%	35



Q45 Other responses (1 of 2)

All

All user and service providers including FM and building operatives maintaining the building. The Golden thread operates end to end through an assets life and therefore requires all actors within this cycle to be able to access and update information on assets.

Also the FM team and their supply chains within the client organisation.

Building safety manager.

Certifiers and Insurers.

Design team and delivery team are temporary therefore the GT information is for those who own and use the building.

Fire Consultants, supply chain.

FM team if they manage the building, responsible person.

Future users.

If ALL the necessary information is captured in a structured format then a form of automated compliance checking may be possible. Therefore a "checking organisation" might need it.

In the event of an accident causing death or injury it may be used during the investigations to check if due diligence was carried out by the responsible design, construction, development and certification companies.

Insurance companies - re defects Building surveyors and others specifying maintenance or remediation during the building's lifetime.

Insurers, legal bodies and regulatory bodies.

Insurers, Statutory bodies, funders.

It is a platform for a new information driven economy.

It should be clear that the golden thread benefits all stages, it is a build-up of information rather than just a means to an end.

Local Authorities in the event of failure.

Maintenance contractors.

Materials Manufacturers, Fabricators, Applicators.

Planning, Development, Suppliers/Supply Chain.

Quality Assurance / Inspectors.

Refurbishment/Maintenance contractors. The Golden thread will be Pre-Construction information (PCI) to future contractors. Too much money has been spent re-surveying assets (i.e. for Asbestos) due to poor record keeping.

Regulators.

Regulator. Anyone who interacts with a building in a way that can make it less or more safe.

Should be all - but need legislation a stick to drive it initially and carrots via reward and recognition to incentive.

Subsequent refurbishers.

The Design and Delivery teams will contribute to the golden thread for the benefit of Owners and users of the building. Retention of the golden thread will benefit Design and Delivery teams when/if the Asset is refurbished or at end of life. The retained golden thread will have relevant information to the new project, and always be kept digitally up to date.



Q45 Other responses (2 of 2)

The emergency services may be able to use some of the information, but the chain of responsibility should not be visible to them for security reasons. The plans and data on construction are obviously fine, but little else is likely to be useful. They can always ask the owner for other details if good reason is given.

The golden thread information is a part of the ISO 19650 EIR for Asset Information. As such it is delivered by the project delivery team for the benefit of owners and users, and the emergency services.

The information is collected for everyone who may be involved in the building throughout its lifecycle. This will include (not exhaustive) the occupier/s, the owner, the management, maintenance staff (internal and external), contractors, developers (alterations/change of use), fire and rescue service (audit/inspection and operationally) and many more.

There are business intelligence opportunities for the main contractor too.

Those responsible for ensuring the competence of the actors (man or machine) doing the work.

To support the NDT too.

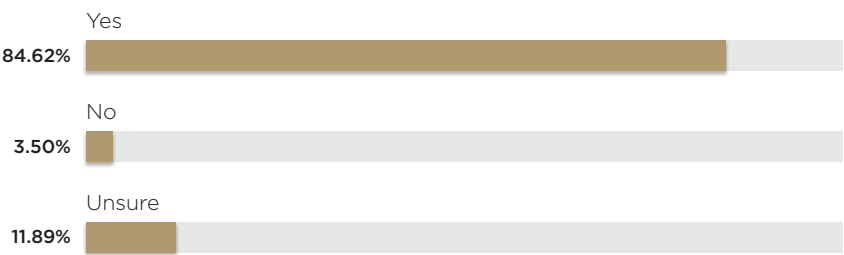
Well all really, I'd like to think the Insurers will take heed of it.

What about the occupants ? Why should they be denied access ? Why should the data be private ? Should there be a forced disclosure procedure for occupants to gain the data?



Q46

Do you believe that a digital golden thread of information will enable better decision making and create a clearer chain of accountability across the built environment?



Answer Choices	% of Responses	No. of Responses
Yes	84.62%	121
No	3.50%	5
Unsure	11.89%	17



Q46 Other responses

Again needs strong leadership, built into project contracts via the EIR etc and monitored by the Clients core team.

But it will take time to change the mindset.

Does not currently seem to be enough discussion around the decision support element.....

Hopefully.

If it can be adopted correctly. We currently ask critical questions, query specifications, request review by engineers - fire specialists, etc and don't get responses.

Industry will avoid it; clients won't see it as their responsibility.

It should do, however given the current state of construction and redevelopment in particular of existing buildings, there is always a lack of relevant and current information relating to the individual assets.

It will help the move to Whole-Life Value in design and construction.

It will take a seismic shift in Industry attitudes to change!

Its always the D&B contractor's fault Need a cultural shift to make consultants and materials suppliers and installer more accountable - PI insurance could be a driver or a barrier.

Only if means are put in place to ensure it is accurate (i.e. it reflects reality and not just what the model believes the assets look like)! It will also have to be maintained and updated by those who are its custodians throughout the buildings' life-cycles (including during occupation, and it must be regularly checked and verified as remaining accurate).

The use of Blockchain to secure a 'golden thread' creates immutability and enables enhanced verification of individuals and information. Increased accountability.

Two questions in one. The golden thread will not do any of this, it is just a phrase.

UK is very good at compliance but often ignores the real benefits. e.g. CDM regs.

Unless the procurement culture changes then no.

Unequivocally.

We consider accurate and accessible information to all who may need it across a building's lifecycle can not only enhance the safety of the building users, but also inform other uses. It will allow decisions to be informed e.g. original design/fire strategy, identify key safety measures that need to be maintained and not compromised e.g. fire resisting compartmentation and inform the ongoing management of the building throughout its use.

Will depend upon implementation and legislation.

Yes but a golden chain isn't a silver bullet, its just one leg of the chair. It need a legislative stick, competent accredited tradespeople and fitters, insurance backed certification, open shared digital data platforms, and multidisciplinary communication using data exchange across platforms built on common mapped data dictionaries.

Yes, having an audit trail and a clear record of decisions and assurances, could bring about a fundamental change in the culture of our industry. As one Client of mine once said, I need to know which one throat to choke.



Q47 Other responses (1 of 3)

As previously stated.

At present the electrical industry has many difficulties with this, and is my area of expertise. Discussion is underway with Government on a number of fronts.

Bring it on!

Building control in my experience don't know enough and accept a form / report without question - too box ticking exercise. Load bearing panelised systems and loads applied a great example.

Buildings have always told their story. The 'digital twin' would have to be meticulously created as the construction is taking place and meticulously maintained and kept up to date to be of optimal use. I don't trust that will ever happen. BIM will only stop some gaps. We will always still rely on looking to the building, including opening up, in order to get the building itself to tell its story.

Contractors will generally do the minimum required to fulfil requirements and accuracy of records will be difficult to verify.

Design and build is a risk to full implementation of the golden thread. Particularly the value engineering processes and passing of responsibility for procurement down the line.

Expect push back from clients/developers on paying for this service and the outputs unless mandatory.

For the development of the golden thread criteria, should you require assistance or contributions I would be more than happy to assist. I currently sit on the CIAT Fire Task Force and also am an RICS certified BIM Manager, so have invested extensive time in fire design and Grenfell.

I believe that collaboration across the sector through industry bodies is key to ensuring the right and manageable solution(s) are consistent in order to be implement and to bring better outcomes for the current and future built environment.

I don't believe the constraints are in anyway technical. There has been attitude of doing things with the least amount of admin on construction sites, just to get the job done. With the right software tools, and approaches, the admin burden should not be an issue either.

I find it frustrating it has to become a legal requirements because the concept of the digital golden thread had been around for along time and technology has been available to enable it and it forms the basis of good quality management. It makes me sad as an industry we have to be wait to be forced to do something before implementing something new.

I think the greatest challenges aren't in the areas that are most discussed (i.e. during project works) - the greatest challenges will be a) to ensure that the information is accurate every time it's handed from one party to another (if it's inaccurate then this might have severe safety implications, as it cannot be relied upon, especially during emergencies); and b) to put in place controls to ensure that alterations aren't made to the physical assets without being captured in the golden thread information - ESPECIALLY during occupation. Information is an asset, and it cannot be expected to remain useful unless it's actively maintained - building owners will have to accept this task and be diligent about fulfilling it.

If this is not managed correctly this could put pressure on the wrong people. Building safety needs to be holistic, breaking responsibility down into individual silos will NOT work. It's like asking boots to come up with the cure for COVID - you wouldn't. You need experts to report to that look at the whole building. If insurance applied to the whole building and these requirements were part of the requirements for insurance it may stand a chance.



Q47 Other responses (2 of 3)

Imperative to draw in project management procedures and cost management procedures into digital collaboration. Linking all goals and tasks to construction stage using a universal ontology. A golden chain must start at project initiation. The outcomes for quality and operational safety must be priced and locked in then.

Indecision will lead to pathetic and inadequate implementation.

Industry will not take it seriously though - look at their reaction to the enquiry. It will provide lots of work but consultants will not take responsibility for their decisions or try and avoid them contractually through legal words and passing on responsibility. Industry stops needs to looking for money to do what it is paid to do.

It ties in with the CIOBs emphasis on Quality Management.

It's great to see this level of assurance being used to drive a learning culture. Clients can definitely help partners get it right. Opportunity for greater sharing of information and learning across all industry through common standards, consistent language and standardisation.

It's the culture change that is most important.

Legislation will be required to drive professional and ethical behaviours and avoid any short cuts. Professional Institutions are well placed to lead on some aspects of the recommendations, specifically competence assessment at an individual level, not at company level.

Lets do it.

Make it clear competence is also part of the golden thread of information. Recognize we are in era of big data but next tsunami if the digitisation of knowledge.

Managing agents seem to have been left out of the discussion.

Mandating the use of BIM for all HRRB's within scope would be a huge step forwards for the private sector with spin-off benefits for industry. There is enough digital technology available to build the digital record needed providing organisations are willing to invest the resource. For those that are unwilling they will need to be compelled to do so, unfortunately enforcement is often needed in these cases.

Many different individuals and organisations will contribute to post-construction changes to buildings. golden thread is one means to capture such information and attribute responsibility.

Massive disconnect between design team/subcontractors along supply chain creating project, and between project team and the end-user... Wrong information, information overload, lack of information being provided. Full systems analysis and Use Cases required from conception to completion and beyond.

None (4x respondents).

Our professional organisations should start with digital platform suppliers and get them to build out a solution and devise the golden thread from the ground up. It is clear it will be built off NBS and Uniclass, but closer integration with NRM, PMBOK, ICMS and SFG20 data dictionaries should be a top priority to get a single point of truth.

Personally I think it's a way forward however lots of things need to change before I think it is fully implemented.



Q47 Other responses (3 of 3)

Should have not put ourselves in the position where people have lost their lives and have to be told how to do things correctly.

The industry is capable and tools are in place. Time and time again construction has proved that it's culture cannot change without the external pressure of effective legislation. Put it into law, require it in consultant and construction contracts and require it to be demonstrated as part of the planning process and it will happen.

The technology for BIM is there to document and track all aspects of construction and life cycle. However, the industry must raise the standard of excellence and accountability to ensure transparency for due diligence. There must be consistent protocol, policies, and procedures that are used as benchmarks for success while the understanding that periodical implementation of review must be exercised. BIM is not a blanket solution to a laissez faire approach; BIM is an incremental layering process that is set in place to create a digital rendering of a structure that allows for a global picture to be evaluated and assessed. Each step in BIM creates a map and a safeguard for liability and to mitigate errors.

The tendency is to pass down requirements to subcontractors, at the bottom of the supply chain, with no support from the main contractor. For this to work we need a change in the dynamic between Client- Main Contractor and Sub Contractor.

There will have to be a change in procurement practices which can be expected to be resisted on grounds of cost.

These already stated with each of the previous questions comments e.g. Client's procurement, contracts, RACI with the Gateways on who is doing what and when and how etc, EIR with PIM, AIR & OIR with H&S Risk Information.

This should expand beyond building safety to other areas such as energy efficiency and carbon footprint. More links to the national digital twin vision.

Training and education of key stakeholders is essential to the success of this initiative to change assist construction companies and design teams to evolve.

We have found a lack of systems to support (CDM) Client at the initiation stage of a project. If the golden thread of Information was not commenced before the appointment of a Designer, it is likely to be missing fundamental information. (CDM) Client organisations have the opportunity to Start their projects right and consistently across their portfolio. It is incumbent of them to take the lead with ensuring information about their asset is correctly compiled and available.





KPMG has provided a review role on the methodology and presentation of analysed data in this report.*

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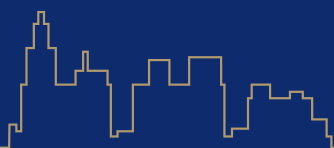
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FOR MORE INFORMATION

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