Digital Construction Working Group

Agenda

Opening – Iain McIlwee

Objectives – Diane Tocco

Keynote Presentation 1 – Legislation: What is the Golden Thread? (20 mins + Q&A)
George Stephenson, Managing Director at ActivePlan Consulting Ltd

Keynote Presentation 2 – FIS Guide: Digital Information Plans and Overview (20 mins + Q&A)
Iain McIlwee, CEO Finishes and Interiors Sector

Open Discussion on Key trends: Digitalisation and challenges in the finishes and interiors sector.
How digitalisation is supporting Compliance, Productivity, Opportunity and Priorities, the opportunities and challenges

Close Meeting – Diane Tocco

Diane Butterworth LTD –

Specialists In Digital Content Supporting
The Workplace & Construction Industry

BIM Objects

Space Planning

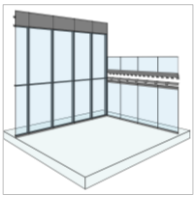
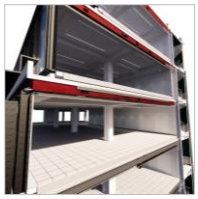
BIM Coordination

2015 → Today

Diane Butterworth LTD –

An example list of our services, software and clients.

Services	Software	Manufacturers
Revit Families	Revit	Furniture
Commercial Interiors	BIM360	Partitioning
3D Visualisation	Navisworks	Ceiling
BIM Coordination	Enscape Rendering	Flooring
Clash Detection	BIM Software (CDE, Management)	Joinery … etc

Diane Butterworth LTD –

Who is Diane!

I am Diane Tocco, previously Diane Butterworth!

BA Hons in Product Design 2011
Office Design Consultant 2011-2015
Founded DBLTD in 2016
Businesswomen of the Year SME MK & Bucks 2021
Chartered Institute of Architectural Technologists (CIAT) Affiliate 2023
BIM & Project Collaboration MSc 2024 (pending!)

DB Ltd was founded as an independent external resource for digital solutions, initial office planning, visualisation and Revit Families.

Diane has grown the business with the industry; as advances in technology occur and the demand increases, the business services have pivoted.

DB Ltd is made up of Diane and her dedicated friend and colleague Sarah Sams.

www.dianebutterworth.com | Instagram | LinkedIn

Digital Construction Working Group

Objectives

Whole group objectives –

- Establish best practices and encourage the sharing of knowledge.
- Help appraise membership and support digital tools as they emerge in the sector.
- Support the implementation of digitisation within organisations by influencing and educating key decision-makers and providers.
- Simplify the understanding of emerging tools and interoperability between them.
- Ensure engagement is active within the sector to the wider conversation of digital construction.

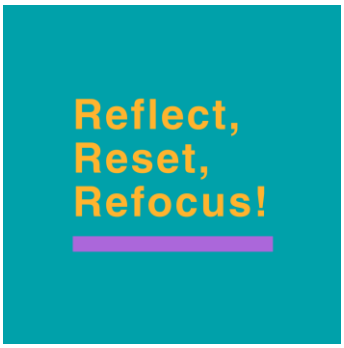
Focus Objectives –

- Support compliance with the more onerous Information Management requirements in the revised Building Regulations (the Golden Thread)
- Integration of digital tools and the impact on the Golden Thread.
- Evaluate the application of BIM to drive improvements in the delivery of training and safeguarding health.

Reminder – Members are reminded that they agree to conform to FIS policies, including the Competition Act 1998.

Digital Construction Working Group

Your Group



- Established Links to BIM Taskforce
- Detailed Guide to BIM
- BIM Process Training Course
- FIS guidance on Pre-Qualification BIM Questions
- PDTs for Partitions and Ceilings

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FIS DIGITAL SPINE

- Surveying
- Specification
- Visualisation
- Analysis and design detailing
- Procurement, quantum and contract management
- Estimating
- Construction and project management (including quality control)
- Workforce management
- Communication

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FIS
FINISHES & INTERIORS SECTOR

WHITE PAPER
INTRODUCTION TO THE GOLDEN THREAD AND DIGITAL INFORMATION PLANS

www.thefis.org

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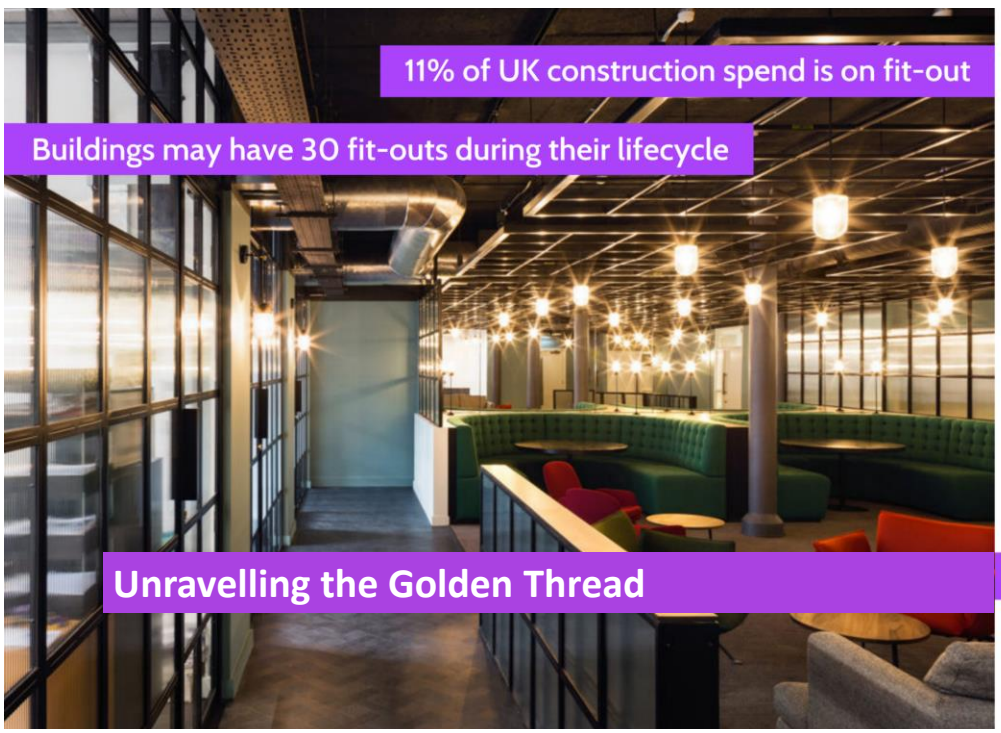

FIS
Representing the finishes & interior sector

Ongoing vetting of contractors

Setting higher standards

Driving quality through a focus on

PRODUCT
PROCESS
PEOPLE

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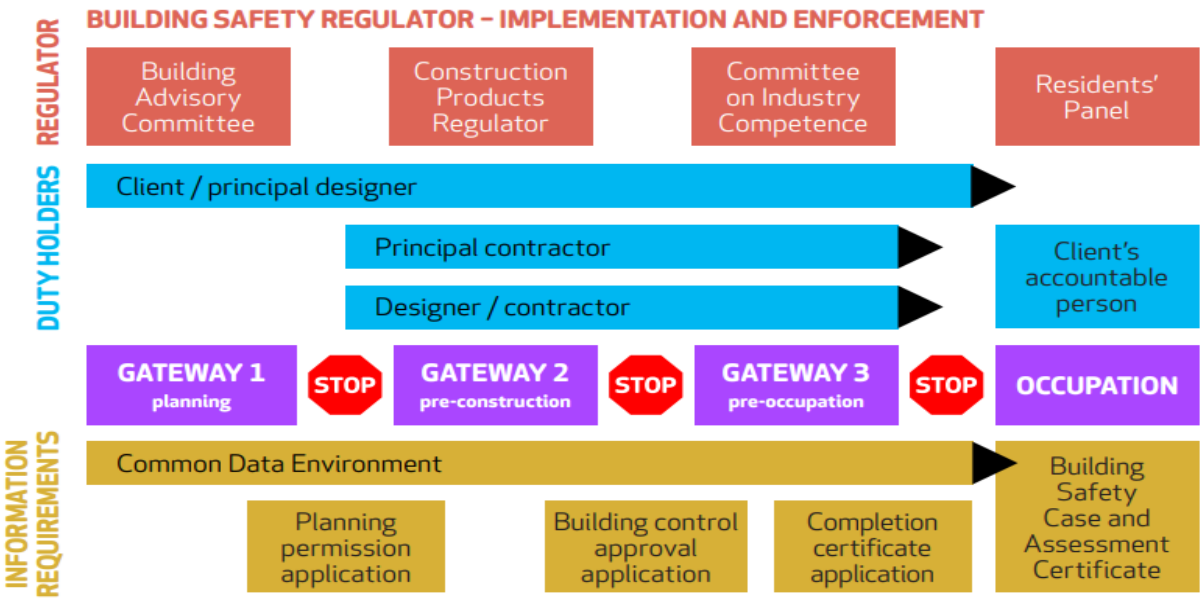
The Building Safety Act 2022: HRBs



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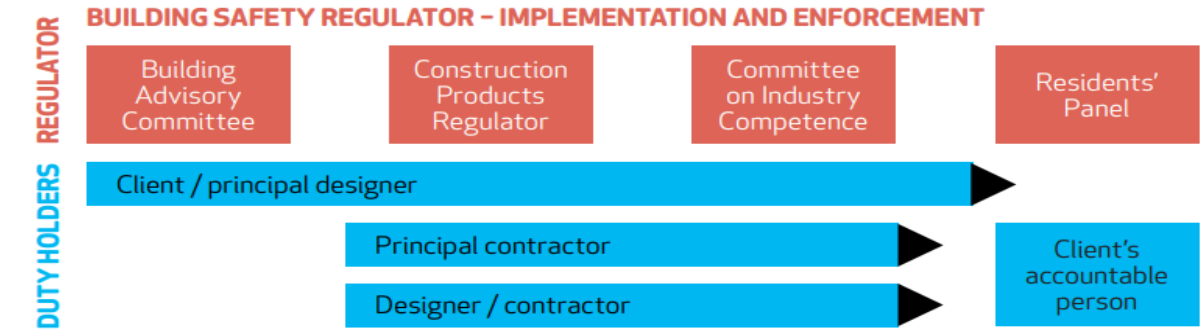
The Building Regulations etc. (Amendment) (England) Regulations 2023 : All Buildings



Dutyholders responsibilities are set down in - The Building Regulations etc. (Amendment) (England) Regulations 2023

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PRODUCT

PROCESS

PEOPLE

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Golden Thread of Building Information

Common Data Environment - A 'single source of truth'

The Right People have the right information at the right time

Right People – those who require the information to carry out a function
Right time – when the receiver needs it, it will add value.
Right Information – the information they need, in a form they can understand and use

Digital | Secure | Proportionate | Transferable | Accessible

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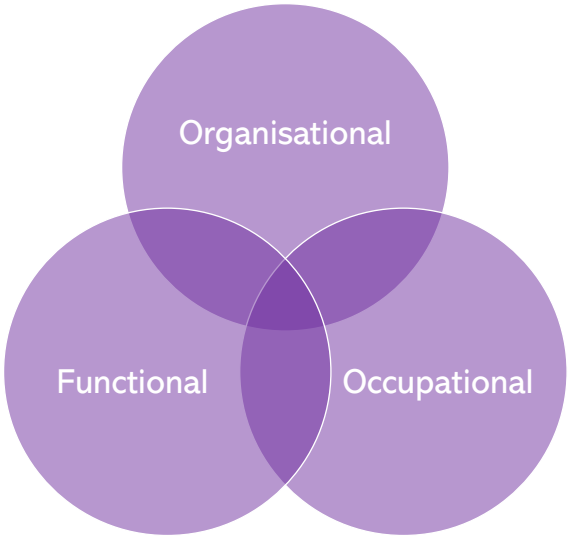
Right People Internal

Who is doing what?

- Design Responsibility Matrix
- Responsibility Matrix (RACI)
- Are they competent?

Organisational Capability

- Quality Management Systems
- Accreditations
- Trade Body Memberships



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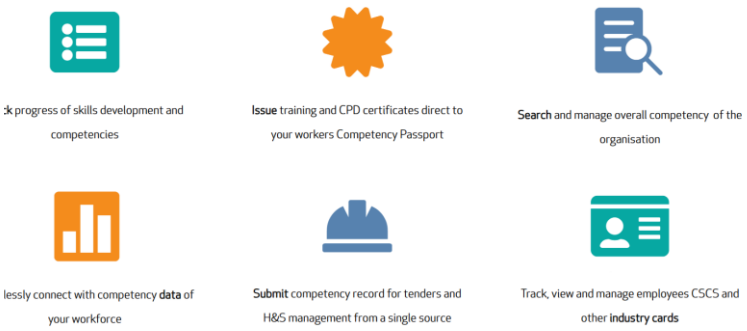

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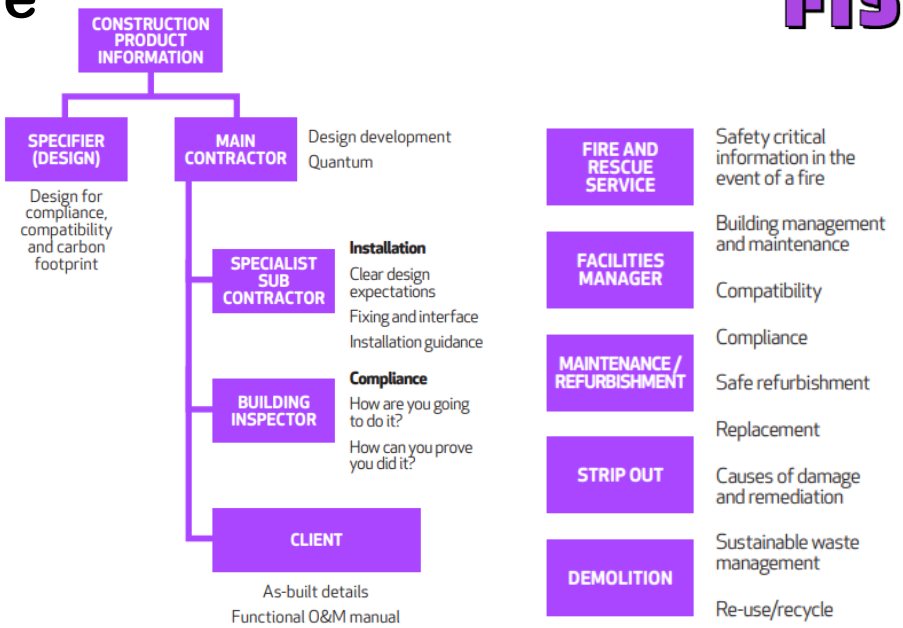
Right People External



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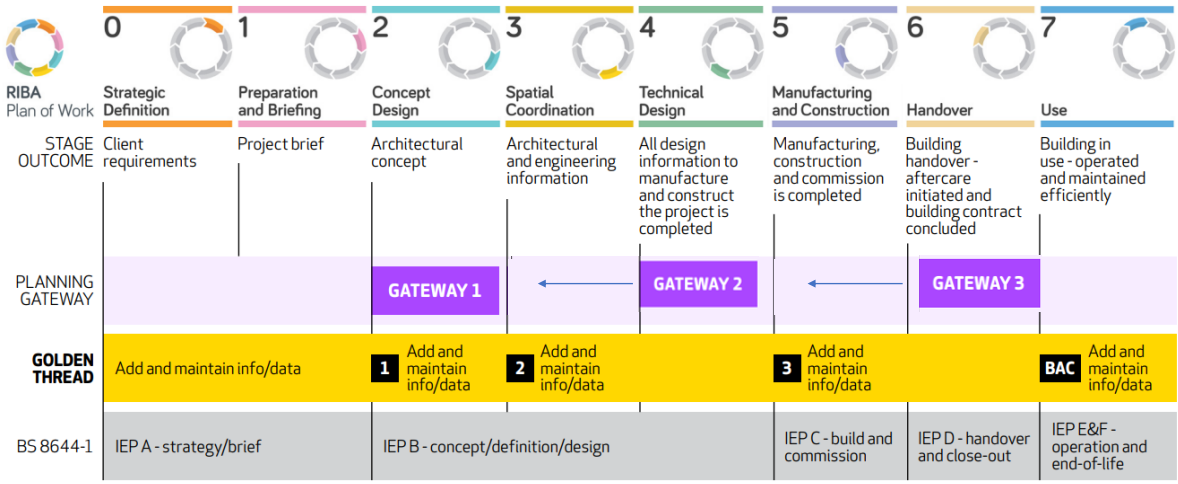
Right Time

Figure 2: Aligning BS8644-1 to Gateways and Plan of Work (based on information courtesy of Siderise)



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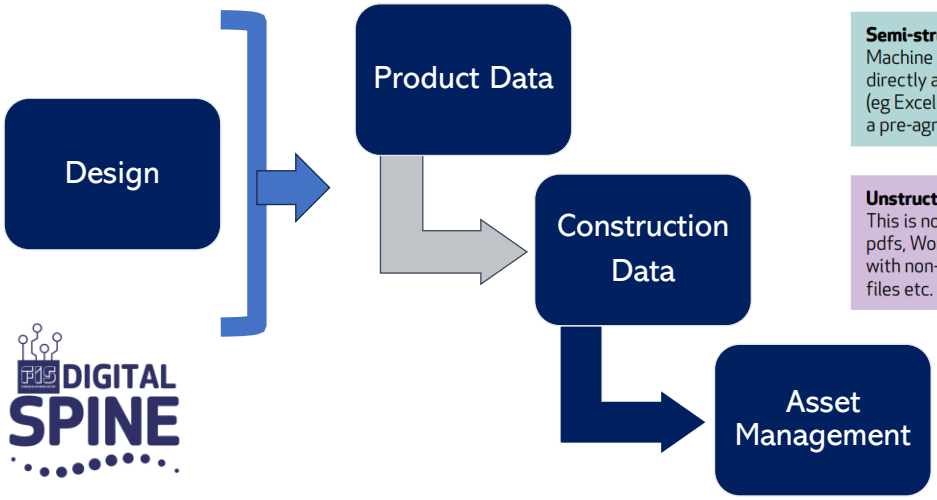
Types of Information



Structured
Machine readable data organised to a predefined schema that can be automatically read and processed by a computer (and is easy to analyse) - eg JSON, XML, CoBie etc. 5

Semi-structured
Machine readable data that cannot be directly accessed and will need uploading (eg Excel spreadsheets or CSV arranged in a pre-agreed set of columns).

Unstructured
This is not readily machine readable - eg pdfs, Word documents, Excel spreadsheets with non-standard column structure, media files etc.

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Right Information

DATA TYPE	GOLDEN THREAD RESPONSIBILITY
Building information: strategic definition and preparation and briefing (RIBA stages 1 + 2) Initially information needs to be captured from the client in the form of employer's information requirements (EIR) for the project.	**CLIENT** • Clearly define client requirements. • Remember it is a responsibility of the client to allocate resource and timescales to suit the complexity of the project.

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Right Information

Design data: concept design and spatial co-ordination (RIBA stage 3)

The next stage is to create design information (ie dimensional requirements, required performance ratings such as fire or acoustic ratings etc).

PRINCIPAL DESIGN TEAM

- A design that allows sufficient space to detail the design (particularly structural and fire safety elements).
- Fire strategy plan and identification of high risk areas.
- The framework for a clear design responsibility matrix.
- The framework for clear information management (ideally specification of process).

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Right Information

Design development data: technical design (RIBA stage 4)

Once the design requirements are determined products need to be selected and product data reviewed. This will take the form of general product information (eg type name, component/instance name, description and classification) and manufacturers' information (ie product data sheets containing specific information on scope of use for the selected/installed product and details of any warranties, installation and maintenance information).

DESIGN TEAM

- Clarity on how both active and passive safety systems support compliance with the fire strategy.
- Product information assembled to evidence performance and detail design (attention to interfaces and fixings is critical).
- Evidence checks have been done to ensure that products are available (you can buy it) and that buildability has been considered (can you build it).
- It is advisable that information management standards and key processes to deliver compliance are included in the specification document to support compliant tendering and procurement.
- A completed design responsibility matrix.

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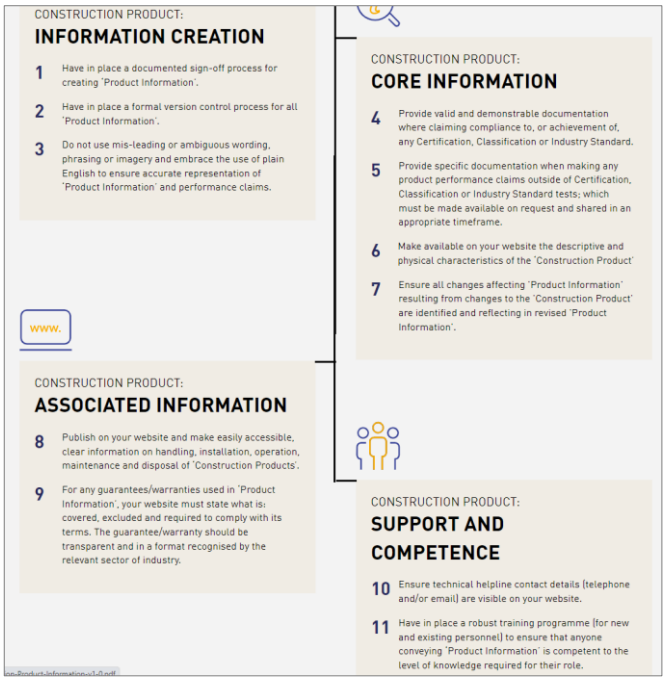

CONSTRUCTION PRODUCT:
INFORMATION CREATION

1 Have in place a documented sign-off process for creating 'Product Information'.

2 Have in place a formal version control process for all 'Product Information'.

3 Do not use mis-leading or ambiguous wording, phrasing or imagery and embrace the use of plain English to ensure accurate representation of 'Product Information' and performance claims.

CONSTRUCTION PRODUCT:
CORE INFORMATION

4 Provide valid and demonstrable documentation where claiming compliance to, or achievement of, any Certification, Classification or Industry Standard.

5 Provide specific documentation when making any product performance claims outside of Certification, Classification or Industry Standard tests; which must be made available on request and shared in an appropriate timeframe.

6 Make available on your website the descriptive and physical characteristics of the 'Construction Product'

7 Ensure all changes affecting 'Product Information' resulting from changes to the 'Construction Product' are identified and reflecting in revised 'Product Information'.

www.

CONSTRUCTION PRODUCT:
ASSOCIATED INFORMATION

8 Publish on your website and make easily accessible, clear information on handling, installation, operation, maintenance and disposal of 'Construction Products'.

9 For any guarantees/warranties used in 'Product Information', your website must state what is: covered, excluded and required to comply with its terms. The guarantee/warranty should be transparent and in a format recognised by the relevant sector of industry.

CONSTRUCTION PRODUCT:
SUPPORT AND COMPETENCE

10 Ensure technical helpline contact details (telephone and/or email) are visible on your website.

11 Have in place a robust training programme (for new and existing personnel) to ensure that anyone conveying 'Product Information' is competent to the level of knowledge required for their role.

www.cpicode.org.uk

FIS

CCPI CODE FOR CONSTRUCTION PRODUCT INFORMATION

FOREWORD

Manufacturers *of* ***Construction Products*** *who choose to sign up to the "Code for Construction Product Information", are agreeing to abide by the clauses in this code to give confidence to those in the supply chain using their* ***Product Information****, that it is clear, accurate, up-to-date, accessible, and unambiguous. The* ***Product Information*** *can therefore be relied upon when making decisions about using those* ***Construction Products*** *at any stage of design, specification, installation, use, maintenance and disposal.*

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Outline information management plan pre-construction

Have you identified how elements in the construction relate to the key packages and who will be responsible for carrying out inspections and signing off all work that relates to any safety critical elements?

Is the 'system owner' clear in any design responsibility matrix and has it been discussed in detail with the appointed specialists so that they understand their responsibilities? It is essential to ensure that parties within each tier of the construction team each carry a degree of responsibility for the compliant construction of the completed element.

Have you confirmed that the contracts accurately reflect above and that any design responsibility has been clearly discussed with the key parties, along with their responsibility for coordinating works?

Have you set down requirements for any appropriate toolbox talks to be delivered to people just before they start work on or at interfaces with safety-critical elements?

Has all current information relating to the design, specification and construction of any element of the works been issued in a timely manner to all relevant organisations and individuals involved in the project? This normally comprises specification, drawings, details and manufacturer's instructions.

REMEMBER Such information must be readily accessible to all operatives involved in the construction of that element (digitally if a higher risk building) or involved in the construction of areas with which it interfaces.

Do you have a process to ensure all materials arriving on site are examined and recorded as compliant with the project specification, prior to their incorporation into the works? Any concerns that such materials do not comply must also be recorded at that stage and passed on to the lead designer.

Have you stipulated in advance of construction evidence required to demonstrate effective installation? **This is particularly important in areas that will be closed in.**

Does your programme clearly identify safety-critical elements that need to be subject to independent inspection? Remember, notwithstanding any independent inspection undertaken, all construction work, especially any work that will subsequently be closed in, must be:

- Subject to detailed inspection and digital recording
- Signed-off as approved by a responsible individual, who is
- Competent to do so.

Before work commences, have you confirmed that design of any element and the interfaces with other elements is complete and, where relevant, signed off prior to construction of that element?

Do you have a process in place to ensure that, prior to commencing work on site, the trade qualifications of all operatives are checked and verified as appropriate for the element of work they undertake?

Do you have a clear change management protocol? Site solutions are often incorporated when tolerances vary, or unforeseen situations occur. Remember no changes to the design or specification of the works should be permitted without approval from the relevant designers, principal designer and the client. As part of this it is advisable to be clear on what constitutes a major change (see below).

Do you have an inspection plan that identifies the nature and amount of the planned resource? Has this been allowed for in the tender process. Remember the requirements in CDM ie resources allowed must be sufficient to undertake the specified level of supervision and inspection. 20

Do you have a competency management plan in place that considers the required level of competence of all involved in installation and how this is verified and recorded? Is this mirrored through the supply chain?

Does your competency management plan cover supervision and inspection? Will inspection, production of the specified evidence, and sign-off, be undertaken by named and appropriately qualified personnel at each level of the supply chain / construction team?

Sign-offs must be subject to monitoring, oversight and review by:

- Senior personnel within construction companies
- Other relevant members of the project team appointed with responsibility for seeing that the construction work is compliant
- Lead designer
- Main contractor
- Client.

Inspections should generally be undertaken during the course of the work and must not be left until the work is finished.

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Right Information

Construction data: manufacturing and construction (RIBA stage 5)

As products are installed it is necessary to capture field information eg information collected onsite such as installer, installation date, inspection records (including photographs), any approved changes etc.

CONSTRUCTION TEAM

- Ensure an accurate 'as built' record is available to support quality management, building control approval and maintenance
- A clearly defined change control process to manage unforeseen issues.
- Information on how to manage the building are presented to the principal designer to support the creation of health and safety and building safety pack (the operation and management (O&M) file including fire safety procedures).

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Inspection outline for safety critical elements

- Relevant parts of the specification used for the installation of the element including its performance requirements and drawings marked to show where the element(s) is/are installed.
- Purchase orders, invoices and delivery notes; material inspection reports – for example, made when materials arrive on site.
- Details of benchmark samples or mock-ups prepared, together with approvals that they have been received.
- Site works inspection reports - uniquely numbered, dated and if necessary for identification purposes, geolocated, digital images and video logs. These are particularly important for elements that will be covered in (built into the building fabric and hidden from view).
- Details of any future inspection and maintenance requirements for the element.
- Manufacturer's instructions, packaging labels collected on site, product standard compliance details, product certificates, etc.
- Records of installer/contractor personnel, including qualifications and experience.
- Reports on any initial briefing of the contractor/installer prior to construction of the relevant element.
- Test results and their written interpretation, reports from independent inspections (including third party installation certification schemes together with details of their accreditation).
- Sign-offs prepared by a designated individual confirming that, following inspection, the installation of the safety critical element has been found to be compliant.

Change control:

- The name of the individual recording the change
- A description of the proposed change
- An explanation of the reason why the change has been proposed
- Whether the change is a notifiable change or a major change
- A list of the name and occupation of each person, if any, whose advice was sought in relation to the proposed change and a brief summary of any advice provided
- An assessment of which agreed document is affected by the proposed change and confirmation of a revised version
- An explanation, in relation to the proposed change, of how the building work will, after the proposed change is carried out, meet all applicable building regulations
- A revised version of any agreed document affected by the change

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Change control:

- The name of the individual recording the change
- A description of the proposed change
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FIS DIGITAL SPINE

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- Estimating
- Construction and project management (including quality control)
- Workforce management
- Communication

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PRODUCT
PROCESS
PEOPLE

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State of Readiness

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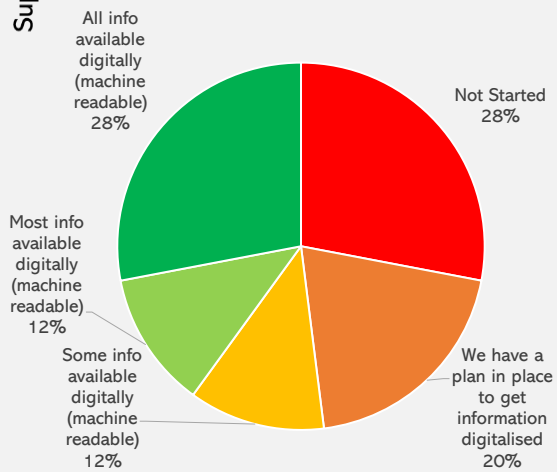
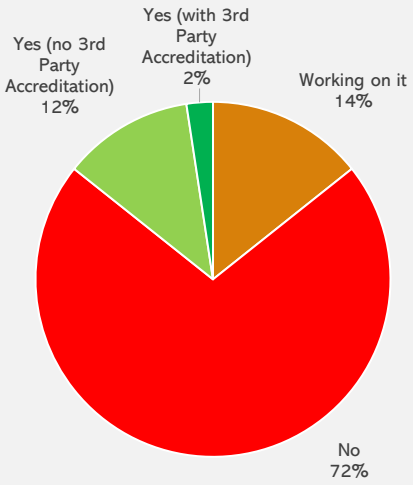
Suppliers:

How ready is your business to meet new Digital /Golden Thread Requirements in the Building Regulations?



Contractors:

Have you got a detailed Digital Information Management Plan in place?



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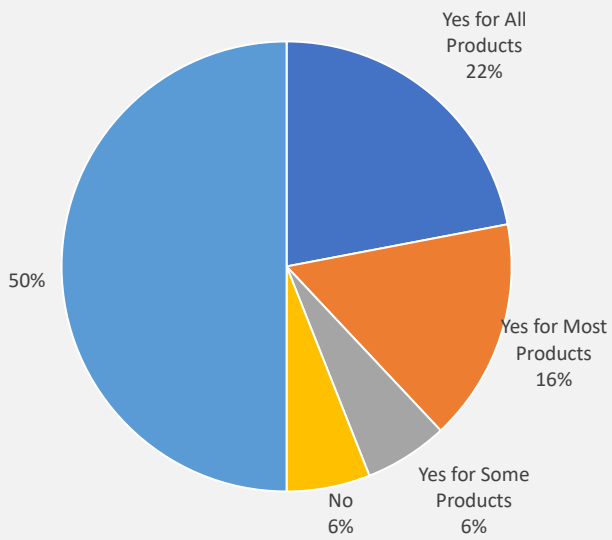
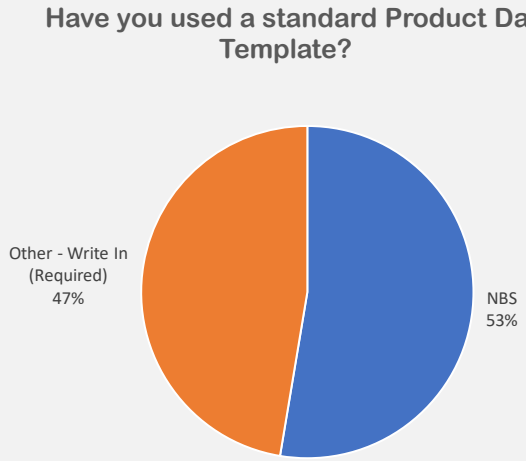

Do you have Product Data Sheets (developed from Product Data Templates) available for your products?
Yes for All Products 22%
Yes for Most Products 16%
Yes for Some Products 6%
No 6%
50%


Have you used a standard Product Data Template?
Other - Write In (Required) 47%
NBS 53%

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What are the biggest challenges in terms of information provided by SUPPLIERS?
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
60.00%
Scope of performance is confusing
We get too much information, it is impossible to process
Key information is invariably missing related to fixings and...
Information in different formats and therefore difficult to...
It is not readily supplied with the product we have to hunt it...
There is a lack of time in the process to manage these issues
Differing formats between suppliers makes it difficult to...
End-of-life information is not clear
Other - Write In (Required)

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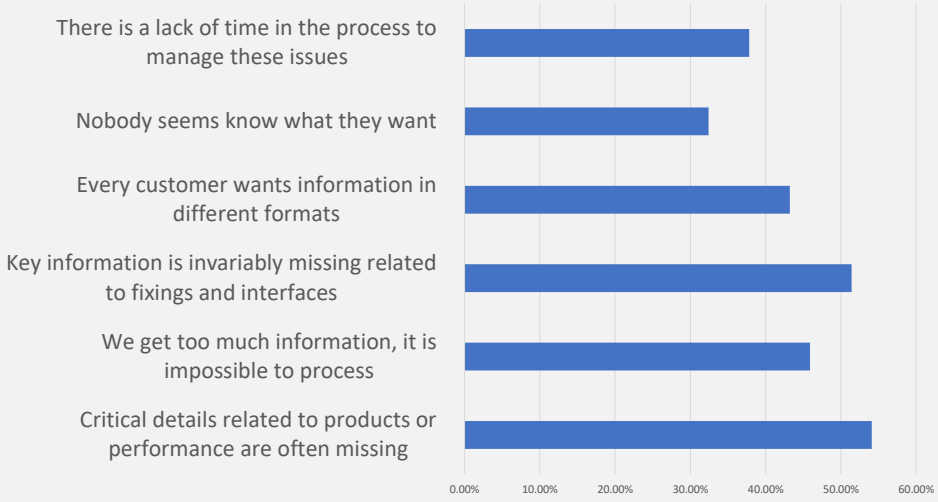
What are the biggest challenges in terms of information provided by EMPLOYERS in terms of supporting digitalisation ?



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	Not relevant	No provision currently	Planned	System in place
Dynamic marking to relay critical maintenance/safety information (e.g. QR Codes on fire doors)	25%	58%	14%	3%
Supply Chain Planning/Competence Management Tools	20%	49%	9%	23%
Surveying e.g. Lidar or point scanning	28%	47%	3%	22%
Specialist Procurement and Tendering Software	22%	47%	8%	22%
Visualisation Tools (e.g. 3D Modelling, virtual or augmented reality)	31%	37%	9%	23%
Specialist Estimating Software	14%	32%	8%	46%
Construction Management Tools (that support sharing of most up-to-date drawings/details)	8%	32%	8%	53%
Clash Detection	43%	31%	3%	23%
Design Software	38%	27%	3%	32%
Site Inspection/Snagging Tools	3%	23%	8%	67%
Recording as built details (e.g. photographing hidden details to demonstrate compliance)	5%	19%	14%	62%
Digital copy of O&M	3%	18%	11%	68%

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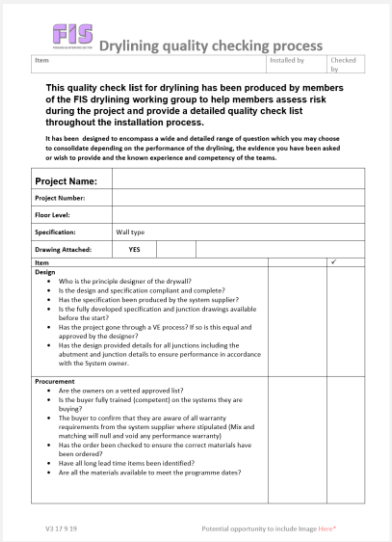


FIS Drylining quality checking process

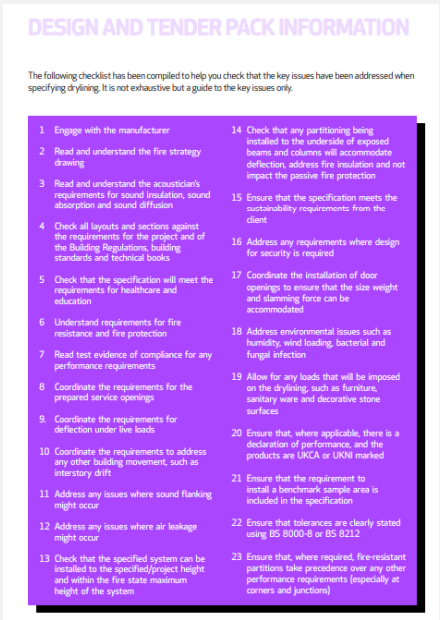
Item	Installed by	Checked by

This quality check list for drylining has been produced by members of the FIS drylining working group to help members assess risk during the project and provide a detailed quality check list throughout the installation process.

It has been designed to encompass a wide and detailed range of question which you may choose to consolidate depending on the performance of the drylining, the evidence you have been asked or wish to provide and the known experience and competency of the teams.

Project Name:			
Project Number:			
Floor Level:			
Specification:	Wall type		
Drawing Attached:	YES		
Item			✓
Design • Who is the principle designer of the drywall? • Is the design and specification compliant and complete? • Has the specification been produced by the system supplier? • Is the fully developed specification and junction drawings available before the start? • Has the project gone through a VE process? If so is this equal and approved by the designer? • Has the design provided details for all junctions including the abutment and junction details to ensure performance in accordance with the System owner.			
Procurement • Are the owners on a vetted approved list? • Is the buyer fully trained (competent) on the systems they are buying? • The buyer to confirm that they are aware of all warranty requirements from the system supplier where stipulated (Mix and matching will null and void any performance warranty) • Has the order been checked to ensure the correct materials have been ordered? • Have all long lead time items been identified? • Are all the materials available to meet the programme dates?			

V3 17 9 19 Potential opportunity to include Image Here*



DESIGN AND TENDER PACK INFORMATION

The following checklist has been compiled to help you check that the key issues have been addressed when specifying drylining. It is not exhaustive but a guide to the key issues only.

1 Engage with the manufacturer
2 Read and understand the fire strategy drawing
3 Read and understand the acoustician's requirements for sound insulation, sound absorption and sound diffusion
4 Check all layouts and sections against the requirements for the project and of the Building Regulations, building standards and technical books
5 Check that the specification will meet the requirements for healthcare and education
6 Understand requirements for fire resistance and fire protection
7 Read test evidence of compliance for any performance requirements
8 Coordinate the requirements for the prepared service openings
9 Coordinate the requirements for deflection under live loads
10 Coordinate the requirements to address any other building movement, such as interstory drift
11 Address any issues where sound flanking might occur
12 Address any issues where air leakage might occur
13 Check that the specified system can be installed to the specified/project height and within the fire state maximum height of the system
14 Check that any partitioning being installed to the underside of exposed beams and columns will accommodate deflection, address fire insulation and not impact the passive fire protection
15 Ensure that the specification meets the sustainability requirements from the client
16 Address any requirements where design for security is required
17 Coordinate the installation of door openings to ensure that the size weight and slamming force can be accommodated
18 Address environmental issues such as humidity, wind loading, bacterial and fungal infection
19 Allow for any loads that will be imposed on the drylining, such as furniture, sanitary ware and decorative stone surfaces
20 Ensure that, where applicable, there is a declaration of performance, and the products are UKCA or UKNI marked
21 Ensure that the requirement to install a benchmark sample area is included in the specification
22 Ensure that tolerances are clearly stated using BS 8000-8 or BS 8212
23 Ensure that, where required, fire-resistant partitions take precedence over any other performance requirements (especially at corners and junctions)

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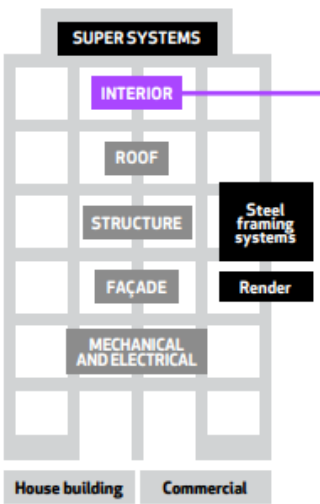
System based thinking



INTERIOR SYSTEMS

Walls	Ceilings	Flooring	Staircases
Partitioning	Suspended	Raised access	Stairs
Masonry walls	Metal furring	Raised hollow	Balustrades
Drywalls	Acoustic baffles	Others	
Access panels	Chilled		
Doorsets	Stretched		
Operable walls	Discontinuous		
Surface finishes			
Penetration seals/ firestopping	Penetrations, fixtures, fittings and interfaces: often overlooked in specifications and detailed with 'site solutions'.		

In turn, components are made from a collection of products. It is important to determine seller of the product, and their level of responsibility. This should be represented in the design responsibility matrix.

Figure 3: Building systems, an introduction to interior super systems

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FINISHES & INTERIORS SECTOR

Digital Construction Working Group

Discussion

FIS DIGITAL SPINE

Key Trends –

Digitalisation and challenges in the finishes and interiors sector. Ow digitalisation is supporting Compliance, Productivity, Opportunity and Priorities. Opportunities and Challenges.

- Does anybody feel like they have the Golden Thread covered?
- What (if anything) is being specified in terms of digital tools or standards?
- Where are the obstacles/barriers to integrating technology?
- Where are the critical disjoins? Is there key areas where a more standardised approach could be useful? Do we need to define Critical Information Exchange Points? Is that possible on a sector level?
- What good stuff is out there that we should be heralding?
- What skills are we lacking? Where do businesses need help?
- What help do people need?

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PRODUCT

PROCESS

PEOPLE

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FINISHES & INTERIORS SECTOR

WHITE PAPER

INTRODUCTION TO THE GOLDEN THREAD AND DIGITAL INFORMATION PLANS

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