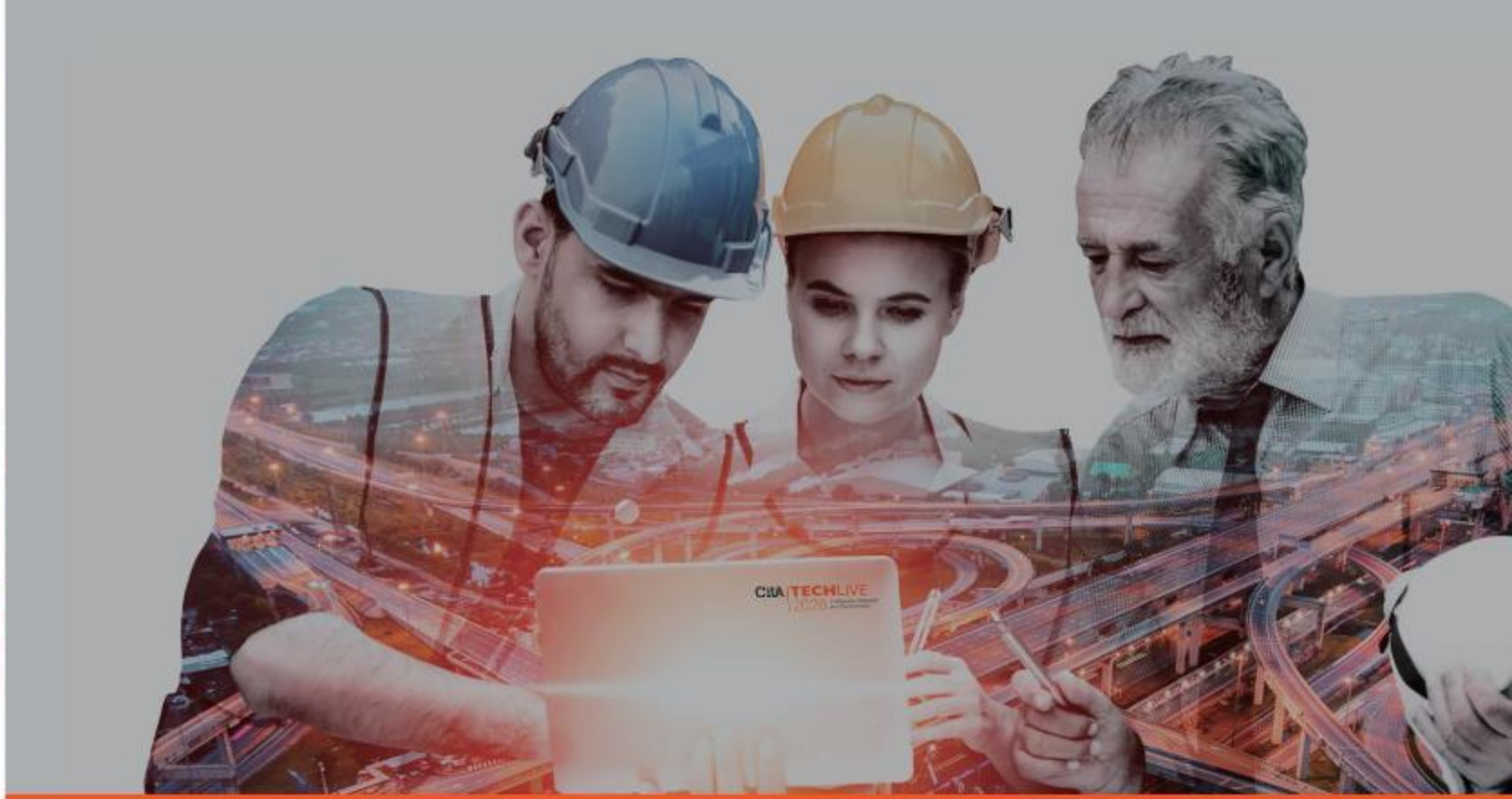
CitA | TECHLIVE 2026

Intelligence, Integration and Transformation



Dexcom Stadium, Galway,
12th November 2026



Shaping the Future of Construction

Dan O'Gorman

Sharpen the Axe: Building the Digital Continuity Spine



A useful planning principle

“Give me five minutes to chop down a tree, and I will spend the first three minutes sharpening the axe.”

Digital continuity is decided before delivery begins: agree the requirements, identifiers and information rules first.

Preparation creates value before procurement, construction and handover begin.



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Trusted data enables digital continuity

Before anyone prices, builds, installs or maintains, the information must be identifiable, structured and reliable.

The Digital Continuity Spine connects requirements, products, assets, locations and lifecycle events across every participating system.



TRUST: five conditions for a reliable Digital Continuity Spine

T

Transparency

Cost, carbon, schedule and compliance decisions remain visible and traceable across the lifecycle.

R

Responsibility

Each required data attribute has an accountable owner, purpose and point of validation.

U

User focus

Information requirements begin with what clients, operators and users need, in line with ISO 19650.

S

Standards

T

Technology

ISO/IEC 25534-1 product of ISO/IEC-JTC 5

The SS Ideal-X Malcom McLean $5.83 to $0.16 per ton ISO 688





Start the spine with agreed design intent



Cost

A budget the design is held to

Carbon

A not-to-exceed $kgCO_2e$ limit

Schedule

Lead times known before tender

Regulation

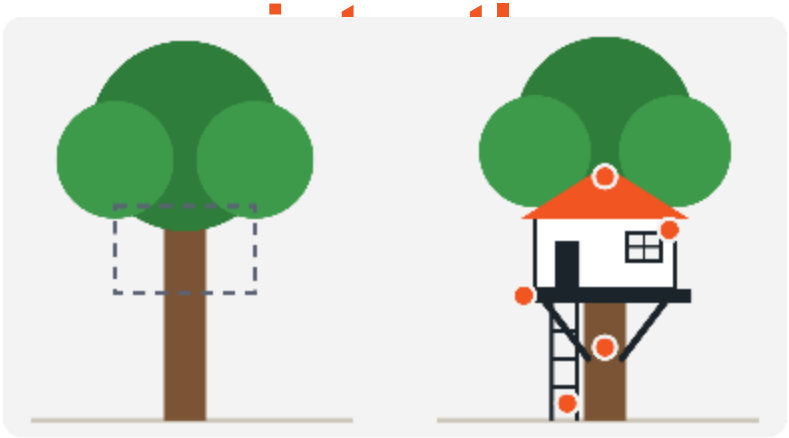
Fire, safety and compliance built in

One agreed intent

Communicated once, machine-readable and linked to a persistent design-stage reference before product selection.

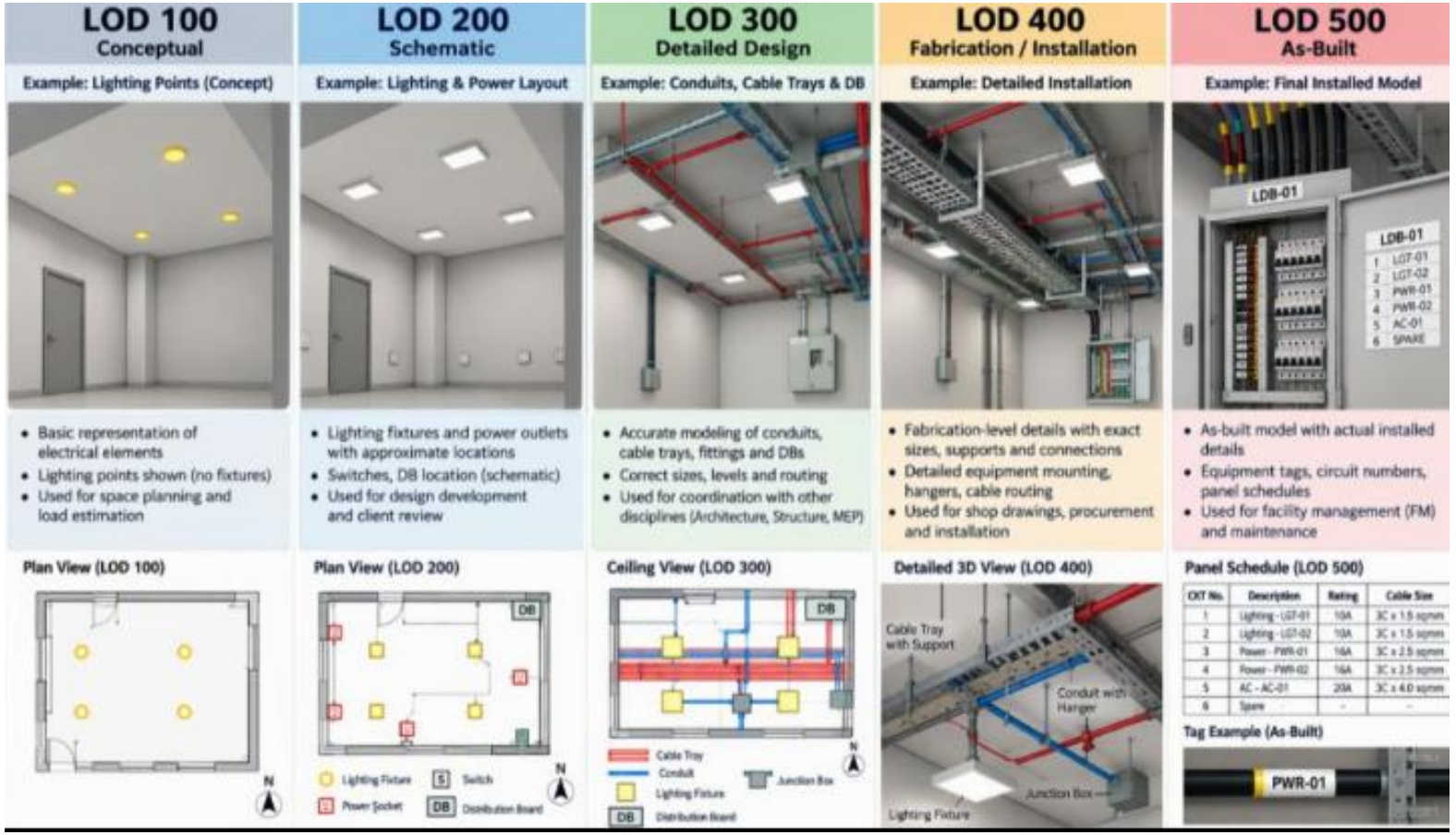


Define enough information to compare bids



The required information maturity should be defined contractually.

Interfaces, quantities and identifiers must support like-for-like tendering.





Begin with information requirements, not the asset tag

OIR
Organisational Information Requirements

→

PIR
Project Information Requirements

→

AIR
Asset Information Requirements

→

AIM
Asset Information Model

Developed together by owner-operators, designers, information managers, procurement and FM, in line with ISO 19650

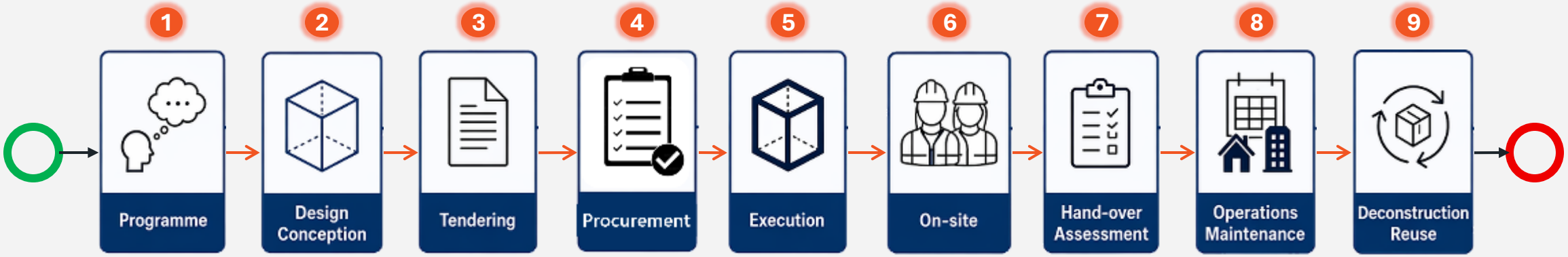
The AIM supports an agreed register of CMAs

1. **Project definition and design:**
   Draft the CMA register
2. **Contractor appointed:**
   Confirm its scope and delivery in the BIM Execution Plan (BEP)
3. **Track & Trace to deliver operational excellence:**
   Retain the manufacturer's GTIN and serial number; assign a GIAI where the owner requires a persistent asset identity for CMAs. To facilitate faster response times linked GIAIs to their relevant GLNs.



How global standards can create digital continuity across the built environment

Nine lifecycle stages connected by identity and event data



The Digital Continuity Spine

Party/Function	What	Where	When	Why	How
GLN or GSRN	GTIN/SGTIN GIAI	GLN	EPCIS 2.0	Business step	SoPs & Best Practices
Org. function or service relationship,	Linked identities, not one identifier	Site, floor, room and model position	Event time and record time	Business step and disposition	Condition, Alert or other observation



Why open, interoperable persistent identifiers matter??

- *CBAM*
- *EUDR*
- *Carbon footprint reporting*
- *CSRD & CSDDD revisited*
- EPBD recast transposed
- A more informed client base

1 Proven

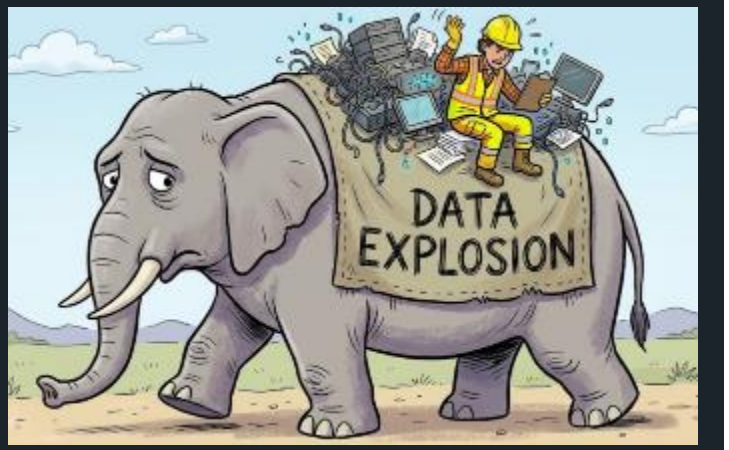
Helse Sør-Øst, and New Drammen Hospital.

2 Connected

DPPs, buildingSMART International, Digital Link and EPCIS 2.0 are ISO/IEC standards too.

3 Actionable

One identity across BIM, ERP, CDE and FM:
identify, capture, link and share.



Reuse Lessons Learnt supported by track & trace to the GS1 Global Standard

This is why reporting obligations are growing exponentially



Appendix: related initiatives supporting digital continuity



Related initiatives, one Digital Continuity Spine

Standardisation & Effective Collaboration - 10 Frameworks 11 hospitals	Nata Zaman, NHS
FEED: Front End Engineering & Design	Alan Hore, CitA
Faster outcomes but needs accurate data	Claude, Anthropic
MIH: a consistent approach to manufacturers' information	Alex Small, MIH
Updated ISO 19650: Better Information Management for an agentic led future	Davitt Lamon, NSAI
DPPs ISO/IEC JTC 5 & the ISO/IEC 25534 series	Sean Dennison, GS1 Ireland
ICMS 3 cost and carbon guardrails	Mary Flynn

The appetite keeps growing. Together, these keep the project afloat.



Regulation defines the obligation. GS1 helps connect identity to information.

1 · REQUIREMENT

The CPR sets it

The Construction Products Regulation establishes a Digital Product Passport framework,

2 · INFORMATION

The DPP holds it

Structured access to required performance, conformity, safety and circularity information.

3 · CONNECTION

GS1 connects it

Identify trade items, assets, parties and locations

Physical product → GS1 key + data carrier → GS1 Digital Link → DPP, BIM, ERP, CDE and FM records

An interoperability layer, not another platform.

GS1 track and trace standards support DPP, BIM, CDE, ERP or FM systems;

GS1 Standards allows all solutions to refer to the same identified objects.

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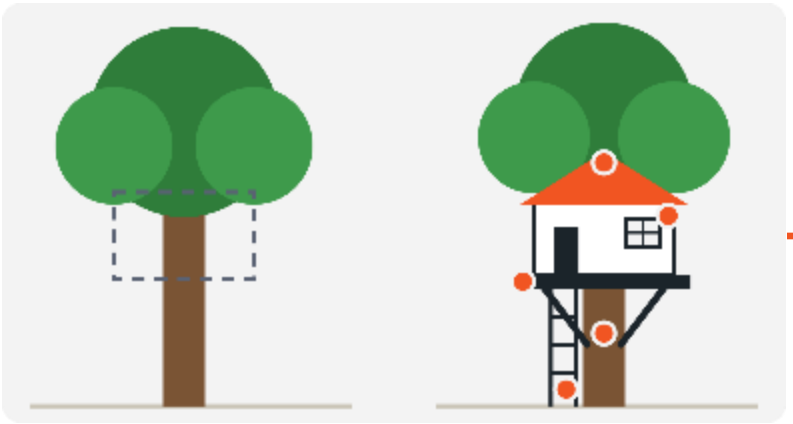
Digital continuity requires validation

AI may draft and check. Accountable professionals decide and approve.

Sharpen the Axe: apply human oversight to trusted data



Worked example: one coordinated model supports the tender package



Measured BoM
Candidate products linked by GTIN

BoQ
18 lines, each with a reason

Carbon (LCA)
A1–A3 against a limit

4D programme
Planner's dates

→ **Job check**
Do the files agree?

→ **NEC4 Option B**
Contract Data, Scope, Z1

→ **Sign-off**
QS, planner, contracts lead

■ People own and decide □ Claude drafts and checks Live demo: tree-house tender package

Illustrative example

Tree-house tender package

A worked example of one model feeding the BoQ, measured BoM, carbon assessment, 4D programme and an NEC4 Option B package. Click any part of the tree-house, or drag the date.

Click here for interactive session

Design: **LOD 350** | Dates: **planner's programme** (sample) | Illustrative data only

37	€6,394	636 kgCO₂e	700 kgCO₂e	8 weeks	61%
Model elements	Pre-tender estimate	Carbon, A1–A3, model basis	Carbon limit	Programme	Job check fit



Illustrative future DPP access pattern

Breakdown | BoQ | Measured BoM | Carbon | 4D programme | Job check | NE

Every element in the model, grouped by type, with cost shared from the BoQ lines mapped to it. Select a group to find it in the model.

Group	IFC class	Elements	Cost	kgCO₂e
Pad footings	IfcFooting	4	€242	72
Posts	IfcColumn	4	€168	11
Knee braces	IfcMember	4	€53	4
Bearers and header	IfcBeam	3	€160	15
Floor joists	IfcBeam	7	€134	12
Tree attachment bolts	IfcMechanicalFastener	2	€370	12
Decking	IfcSlab	1	€346	22
Walls	IfcWall	4	€2,070	257
Roof	IfcRoof	2	€578	136
Door	IfcDoor	1	€260	25
Windows	IfcWindow	2	€280	30
Ladder	IfcStair	1	€320	20
Guardrail	IfcRailing	1	€273	15
Rope swing	IfcBuildingElementProxy	1	Unpriced	0
Outside the model (NONE lines)			€1,140	
Total			€6,394	636

Door 700 × 1500

IFC class	IfcDoor · Door
Design identity	DAI:TH-DOR-01 (proposed DAI)
Location	GLN 0614141001026
Product	Door set, ledged and braced, 700 × 1500 mm · Joinery supplier [to be named] GTIN 9520019000019 https://id.gs1.org/01/09520019000019
Asset	GIAI 0614141DOR-01 assigned at installation
BoQ lines	L.1 Ledged and braced door, 700 × 1500 mm
Activity	A90 Fit door and windows Thu 13 May 2027 to Fri 14 May 2027
Cost share	€260.00
Carbon	25.0 kgCO₂e (A1–A3)

1 | Cross-match schedule

Attribute	Specified requirement	Camden / Chadwicks	Result
Product ID	DAI TH-DOR-O1	**GTIN 5391234567892 Sample Only**	VALIDATED CDE REF XXXXXX
Door configuration	Single leaf, ledged and braced	Camden framed ledged & braced door	Broad match
Nominal leaf width	2'8" / 813 mm	813 mm / 32 in	Match
Nominal leaf height	6'8" / 2,032 mm	2,032 mm / 80 in	Match
Door thickness	38 mm nominal	44 mm published	Deviation: +6 mm
Timber / boarding	Softwood, vertical T&G; 19–22 mm boarding	Solid pine TG&V construction (manufacturer brochure)	Broad match; board gauge unverified
Horizontal ledges	3 no. nominal 150 × 38 mm	Ledged construction; precise count/dimensions unverified	Verify
Diagonal braces	2 no. nominal 100 × 38 mm	Braced construction; exact count/dimensions unverified	Verify
Surrounding frame	Solid WD softwood, nominal 100 × 75 mm	Not included in confirmed leaf listing	Separate item required
Frame rebate	½ in / 12.7 mm deep; width suits leaf	Not specified with door leaf	Specify for 44 mm leaf
Hinges	3 no. 450 mm black steel strap/T-hinges	Not confirmed included	Separate item required
Lock / keeper	Surface-mounted rim lock, keys and handles	Not confirmed included	Separate item required
Finish	Ready for paint or stain	Pine; paintable/stainable	Match in principle
Application	Non-fire-rated internal or sheltered external	Brochure states internal/external subject to care instructions	Confirm exposure/finish
Fire performance	No fire rating specified	No verified fire classification	Do not assume fire rating

Identification field	Available information
Product description	Camden Framed Ledged & Braced Door
Manufacturer / product family	Indoors / B&G Home
Merchant	Woodworkers, Dublin
Merchant SKU	FLB8032
Alternative merchant SKU	Chadwicks 17665
Manufacturer GTIN-13 / GTIN-14	**GTIN 5391234567892 Sample Only**
GS1 Digital Link	Cannot establish without an authentic GTIN
Complete doorset identifier	Requires confirmation of a separately traded complete kit
Installed asset identifier	Could subsequently be assigned a GS1 GIAI by the asset owner



The continuity check identifies where connected records disagree

60%

of matched money sits within 20% of the model quantity

+28%

walls billed at 18.0 m² against 14.07 m² measured

730

$kgCO_2e$ on BoQ quantities, against a 700 limit. Model quantities give 636

1

element with no BoQ line: the rope swing is modelled but unpriced

One inconsistent quantity affects both cost and carbon

The over-billed walls inflate the price and push carbon over the limit on paper. The check does not fix the files. It tells the team where to look, biggest money first.

Illustrative example data

1.6% to 2.7% is a realistic, conservative target

- **McKinsey:** digital transformation cuts construction costs by 4%–6%. Our range is about half.
- **KPMG and Atkins (CDBB):** information management saves 1.6%–18% by lifecycle stage.
- **Centre for Construction Best Practice:** 412 UK public projects with early contractor involvement: 1.6%–1.8% under budget.
- **Autodesk and FMI:** bad data causes 14% of all construction rework.
- **Laing O'Rourke:** Grange University Hospital delivered under budget and four months early.
- **Sisk:** live model checks gave a 50% efficiency gain in BIM management.
- **Turner & Townsend and SCSI:** the range is below one year of construction inflation (4%–4.5%).



Model-assisted checking: AI reads and compares; people decide

LIVE MODEL
Revit 2027 project file

→

READ-ONLY BRIDGE
Built-in MCP server

→

AI ASSISTANT CHECKS
Queries, measures, flags gaps

→

TEAM DECIDES
Designers, QS, planner sign off

BoM

Live quantities by element; flags items with no GTIN or DAI before tender

BoQ

Line mapping rerun on every design change; gaps caught **while cheap to fix**

Carbon (LCA)

$kgCO_2e$ updates with the design; limit breaches seen as they happen **in line with Carbon Footprint Caps by 2030**

4D programme

Planner's activities linked to live element IDs; dates stay the planner's

NEC4

Version comparisons evidence remeasurement, early warnings and Z1 checks

The AI assistant may query and check but must not change the controlled model of record

Agree information security, confidentiality and permitted-use controls before using AI with project data

Illustrative future-facing workflow. Confirm product capabilities, contractual status and information-security controls before use.

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One Digital Continuity Spine across the lifecycle

DESIGN INTENT
Requirement reference
DAI Persistent design-stage reference
Not a GS1 Standard

→

PRODUCT TYPE
GTIN
Trade item or product type

→

INSTALLED ASSET
GIAI
Owner-managed asset, where required

→

PARTY / LOCATION
GLN
Legal entity, function, site, room or digital location

→

STANDARDS-BASED ACCESS
Digital Link
Links to evidence, manuals, DPP and warranties

EPCIS 2.0 event dimensions: What · When · Where · Why · How

Classification already gives the structure

Product group → Class → Features → Values → Units

Neutral	150	120	2+ million	1+ billion	10+ billion
and not-for-profit	countries, 25 industries served	GS1 Member Organisations	companies use GS1 standards	products carry the GS1 barcode	barcodes scanned a day

A candidate product/asset set for professional review and approval

EPCIS 2.0 *(Electronic Product Code Information Services 2.0) is the global GS1 Standard for capturing and sharing supply-chain event data. It provides a common language and data model that lets organisations track the lifecycle, movement, and status of products across the supply chain.*



A shared Digital Continuity Spine creates value for every partner

Manufacturers

- Connect users to current information through a GS1 barcode, QR Code with a GS1 Digital Link URI, or EPC/RFID tag

Designers

- Use GTINs, serial numbers, GIAIs and GLNs appropriately in specifications and BIM

Contractors

- Maintain traceability from delivery through installation
- Access trusted product and installation information
- Record key site and installation events
- Provide structured, reusable information at handover

Owner-Operators

- Set clear information requirements from the beginning
- Give assets and spaces consistent identities
- Connect handover information with facilities systems
- Support safer maintenance, easier compliance and better lifecycle decisions

Core identifiers: GTIN for trade items • GLN for parties and locations • GIAI for owner-managed assets



Is your building data ready to work harder?

- Can every location be identified consistently?
- Can everyone confirm which products were specified & installed?
- Can each maintainable asset be traced throughout its lifecycle?
- Can authorised people & activities be recorded where required?
- Can information move reliably between project & FM systems?





1 | The Challenge



Without a common standard...

information can be fragmented and hard to use.

2 | Introducing GS1



GS1 provides the common standard...

a trusted way to identify, connect and make sense of information.

3 | Bringing it Together



GS1 brings it together...

turning disconnected data into a clear, structured flow.

4 | A Useful Future



GS1 makes the thread useful.

Trusted identity. Real value. A more connected world.

Products | Supply chains | Assets | Information | People

GS1® THE STANDARD THAT MAKES A BRIGHTER TOMORROW

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Thank you for your time

For more info, please send me an email at dan.ogorman@gs1ie.org