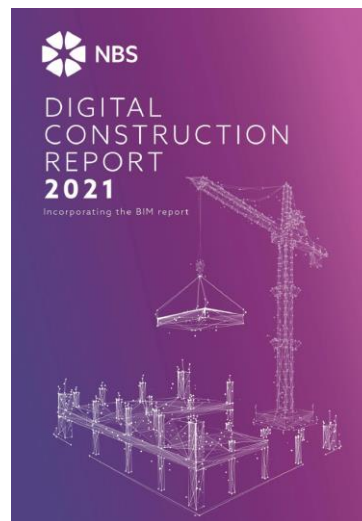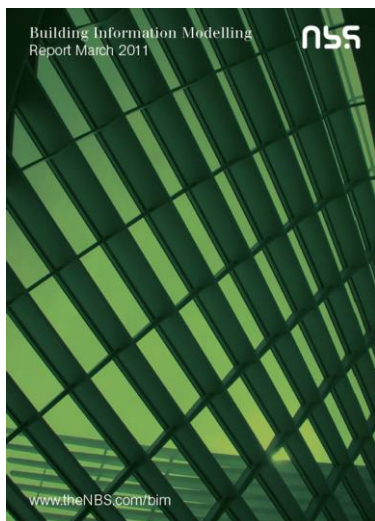# Gathering23
## Accelerating BIM adoption

**CitA**

# NBS and CitA Digital Construction Survey 2023

by David Bain, NBS

Updated: 28 November 2023

## Digital Construction Survey 2023
## Final findings

- First NBS BIM report in 2011
- Evolved into the Digital Construction survey

## The survey

- Sent to built environment professionals
- In the UK, Ireland and beyond
- Partnering with CitA in Ireland
- Also supported by other institutes and membership bodies
- Survey live from July to September
- Total number of responses: 723
- Number of responses from **Ireland: 40**

**NBS** | **Digital Construction Survey 2023**
BIM, Future Technology & Innovation

**CitA** Construction IT Alliance

### Introduction

In this survey, we want to understand your use of, and views about, digital processes and technologies in 2023.

The survey is for designers, specifiers, manufacturers, contractors, clients and others working in the built environment.

The survey should take 10 to 15 minutes. For every completed response we receive, we'll donate £1 to the charity Crash.

If you have any difficulties completing this survey please email us at market.research@theNBS.com.

Press next or ▶ on a mobile device to go to the next page.

Next

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**723**

BUILT ENVIRONMENT
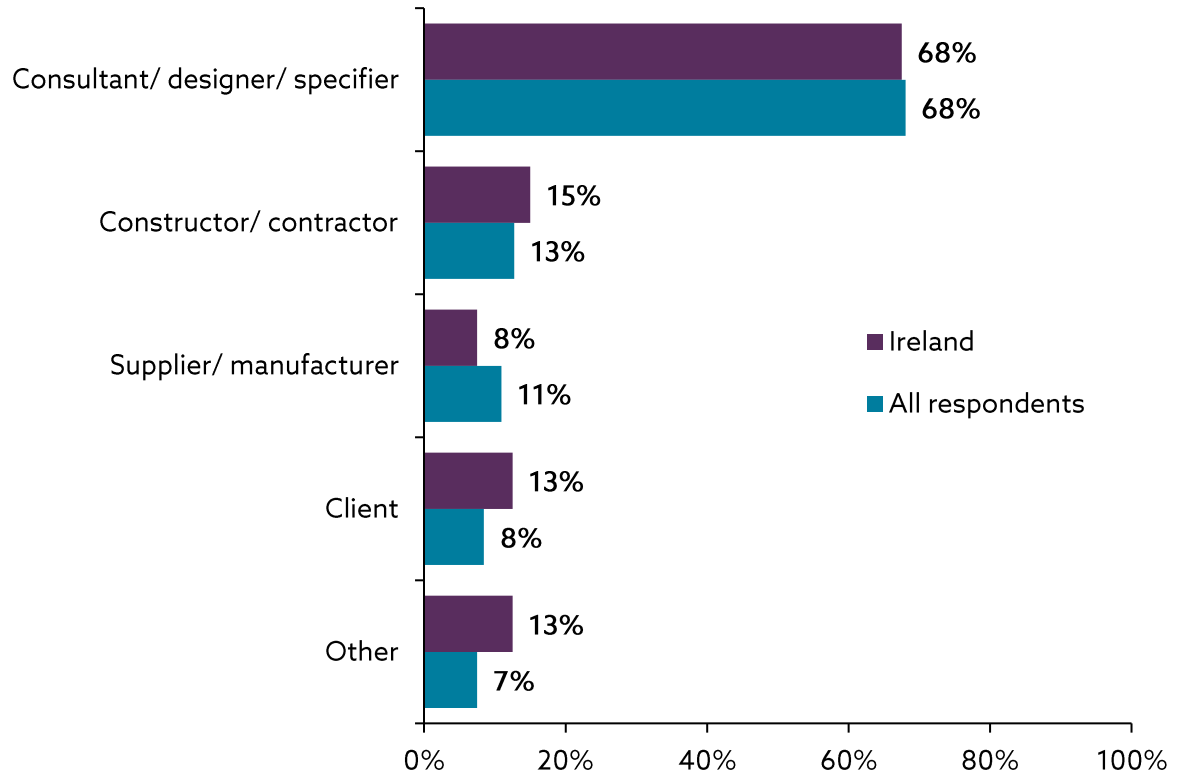PROFESSIONALS
COMPLETED THE
SURVEY

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## Respondent profile

- Over three-quarters of respondents were in the UK
- 6% (40) in Ireland
- Overall, respondents were spread across 60 countries including: USA, India, Canada, Spain, Australia, China, Turkey
- Over two-thirds were consultants / designers
- Constructors, suppliers and clients also represented
- Design practices (architects, engineers, multidisciplinary), local authorities, surveyors, contractors and manufacturers were key organization types
- Architects, BIM specialists, technologists, engineers, surveyors, product and marketing specialists were key disciplines
- There was a range of sizes from micro-organizations to those with over 1,000 people
- Professionals of all ages

### Project role

| Project role | Ireland | All respondents |
|---|---|---|
| Consultant/ designer/ specifier | 68% | 68% |
| Constructor/ contractor | 15% | 13% |
| Supplier/ manufacturer | 8% | 11% |
| Client | 13% | 8% |
| Other | 13% | 7% |

## What is BIM?

- Views are split across definitions
- Many see BIM as enabling transformation or in terms of BS EN ISO 19650, especially respondents in Ireland
- A considerable number see BIM as a way of managing information
- A quarter of respondents overall still view it as 3D models, although this is lower among respondents in Ireland

**How people view BIM**



| | Ireland | All respondents |
|---|---|---|
| Simply 'Better Information Management' | 26% | 31% |
| The foundation of digital transformation | 42% | 29% |
| Process as in BS EN ISO 19650 | 47% | 27% |
| Working with 3D parametric models | 18% | 26% |
| Process as in BS 1192 / PAS 1192 (BIM Level 2) | 16% | 22% |
| Something else | 5% | 11% |

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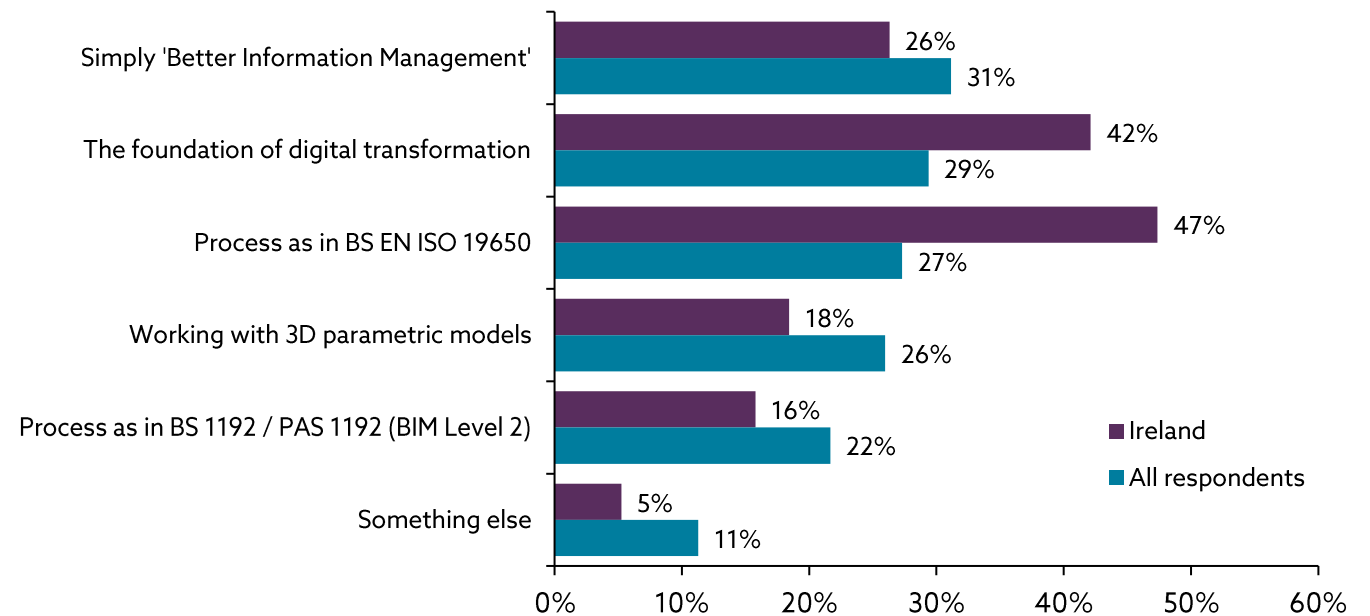
## BIM adoption

- Indications are that adoption in Ireland is around two-thirds
- For the whole sample, it's 70%
- In 2021, these were: 71% (whole sample), 67% (Ireland)
- Many of those who haven't, do plan to adopt BIM

Adopted BIM?



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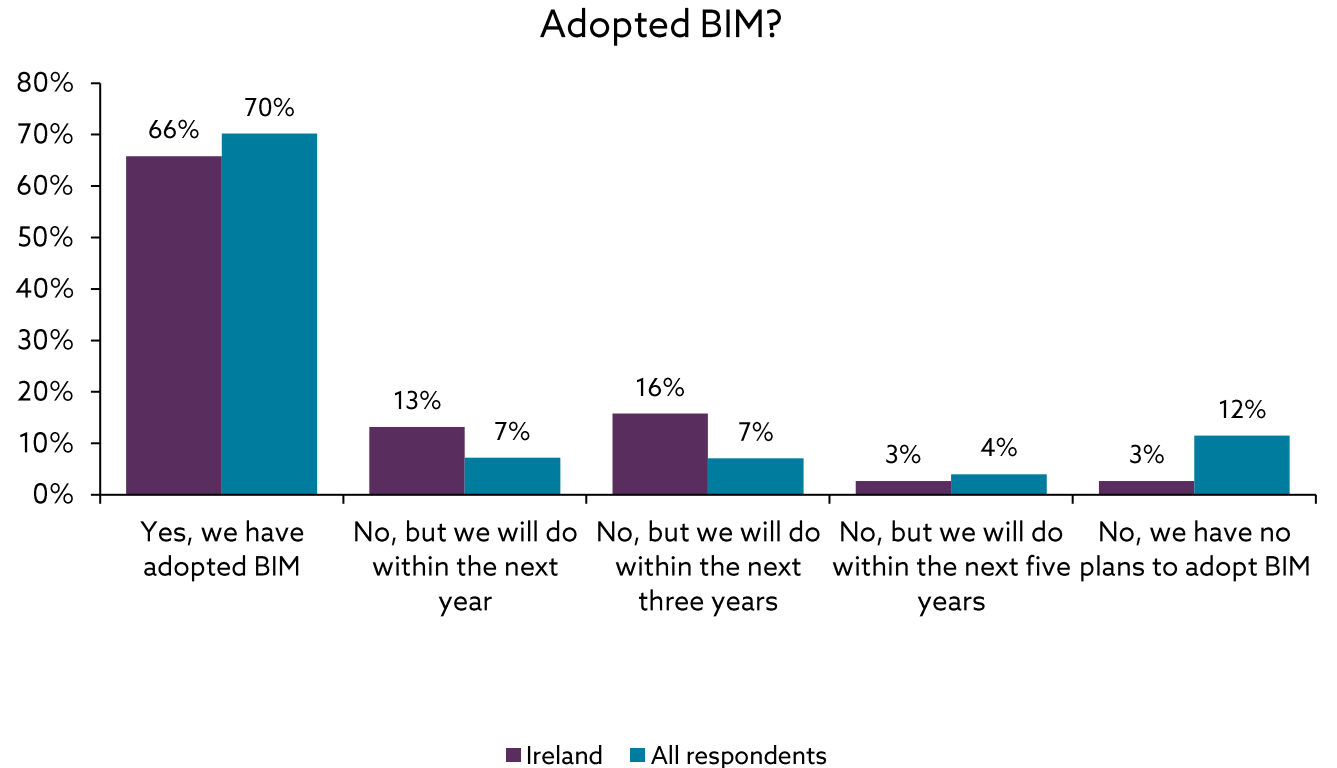
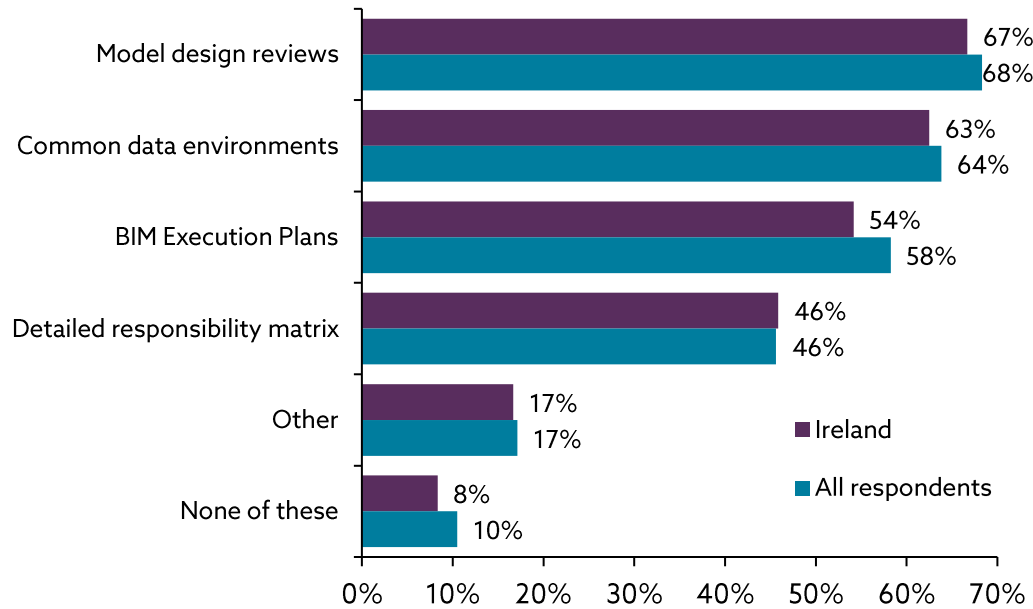## BIM tasks and sharing information

### BIM tasks that people have been involved with
(those who have adopted BIM)

| Task | Ireland | All respondents |
|------|---------|-----------------|
| Model design reviews | 67% | 68% |
| Common data environments | 63% | 64% |
| BIM Execution Plans | 54% | 58% |
| Detailed responsibility matrix | 46% | 46% |
| Other | 17% | 17% |
| None of these | 8% | 10% |

### Adoption of approaches to information sharing
(those who have adopted BIM)

| Approach | Ireland | All respondents |
|----------|---------|-----------------|
| Following a naming convention for all information that is shared | 88% | 77% |
| Exchanging information in IFC format | 46% | 56% |
| Classifying information using Uniclass | 42% | 49% |
| Exchanging information in COBie format | 21% | 36% |
| Other | 8% | 6% |
| None of these | 4% | 6% |
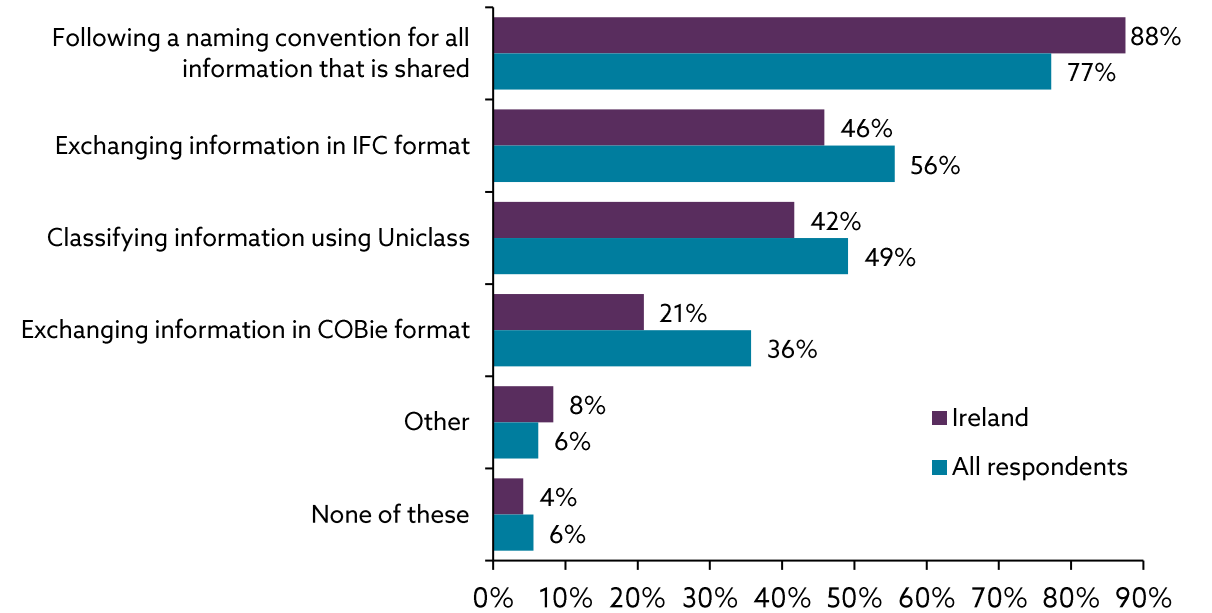
- Indications are that results follow a similar pattern to those in 2021

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## Classification

- Indications are that Uniclass is the most commonly used classification system
- Around a third also using their own system or CAWS

### Most commonly used classification



| Classification | Ireland | All respondents |
|---|---|---|
| Uniclass | 55% | 46% |
| Our own 'in-house' classification system | 38% | 33% |
| Common Arrangement of Works Sections (CAWS) | 31% | 33% |
| Omniclass, including Uniformat and Masterformat | 0% | 8% |
| Other | 7% | 7% |

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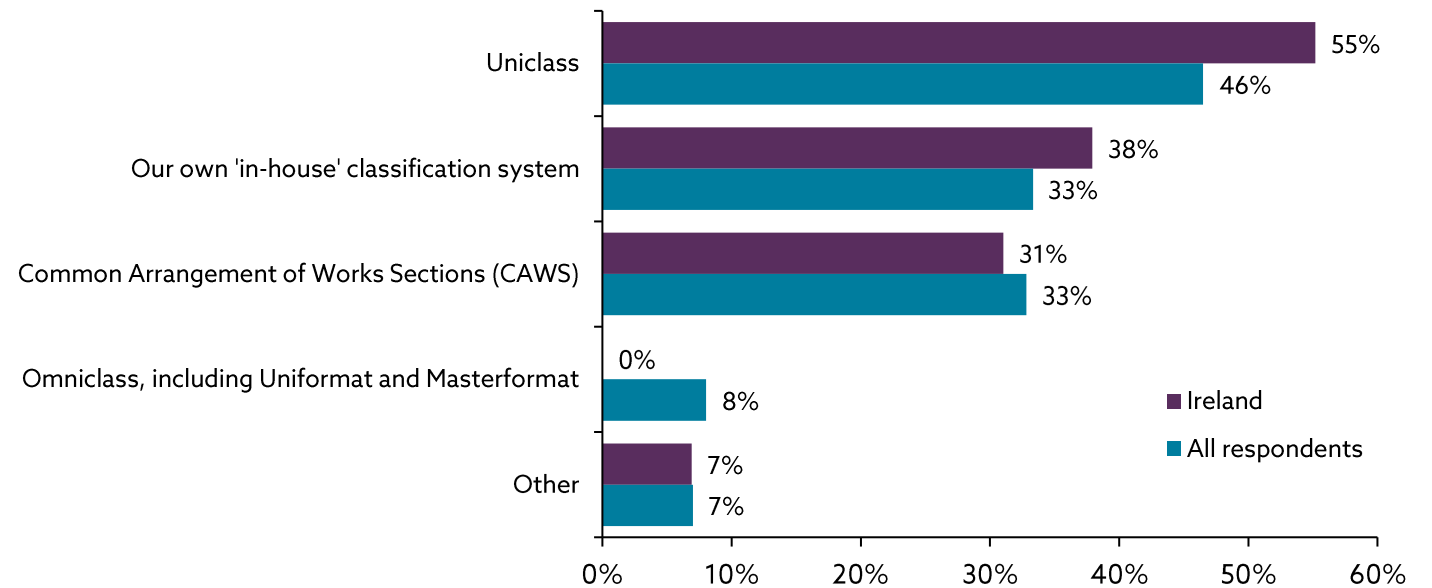
# Cloud computing

- Use of cloud computing has increased since 2021

## Use cloud computing?

| Category | Ireland | All respondents |
|---|---|---|
| We use it now | 84% | 80% |
| We will use it within one year | 5% | 6% |
| We will use it within three years | 8% | 3% |
| We will use it within five years | 0% | 2% |
| We have no plans to use this | 3% | 9% |

Ireland ■ All respondents ■
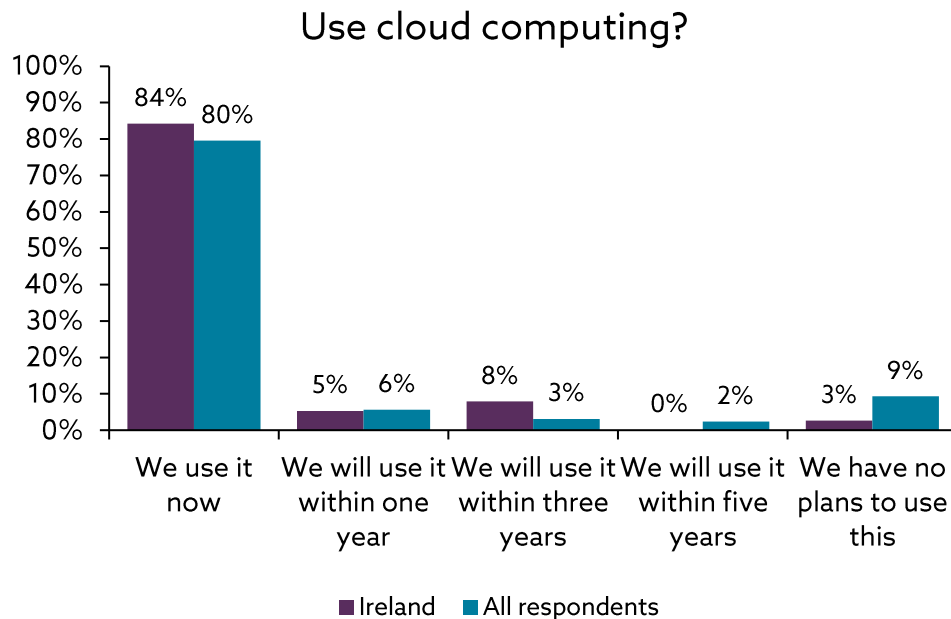
## Aspects of cloud computing used

| Aspect | Ireland | All respondents |
|---|---|---|
| Information storage (such as OneDrive, Google Drive, iCloud) | 94% | 89% |
| To share documents and information with clients | 75% | 77% |
| Collaborating with project team members to produce models, specs and other documents | 81% | 74% |
| Digital signatures and contracts/ forms of appointment using cloud-based software | 22% | 32% |
| Other | 9% | 5% |

■ Ireland
■ All respondents

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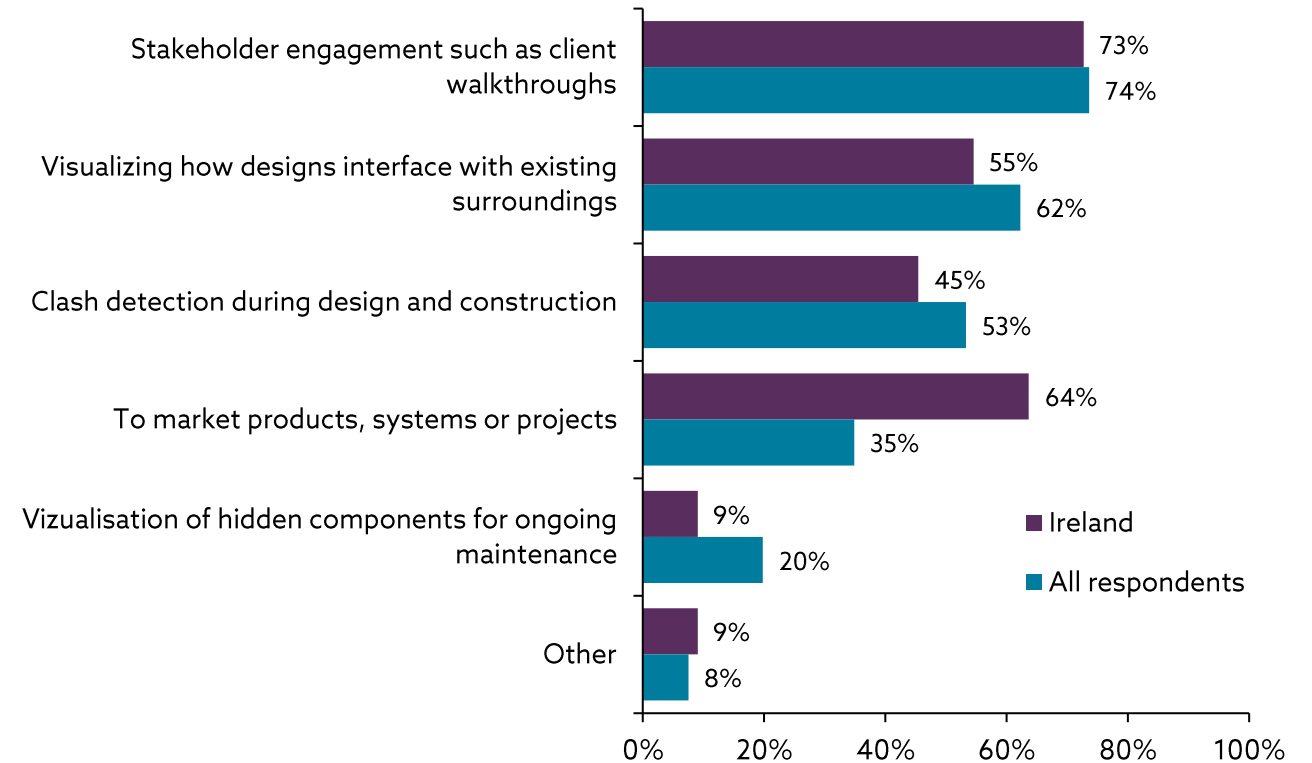Accelerating BIM adoption

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## Immersive tech (VR, AR, MR)

How immersive tech used

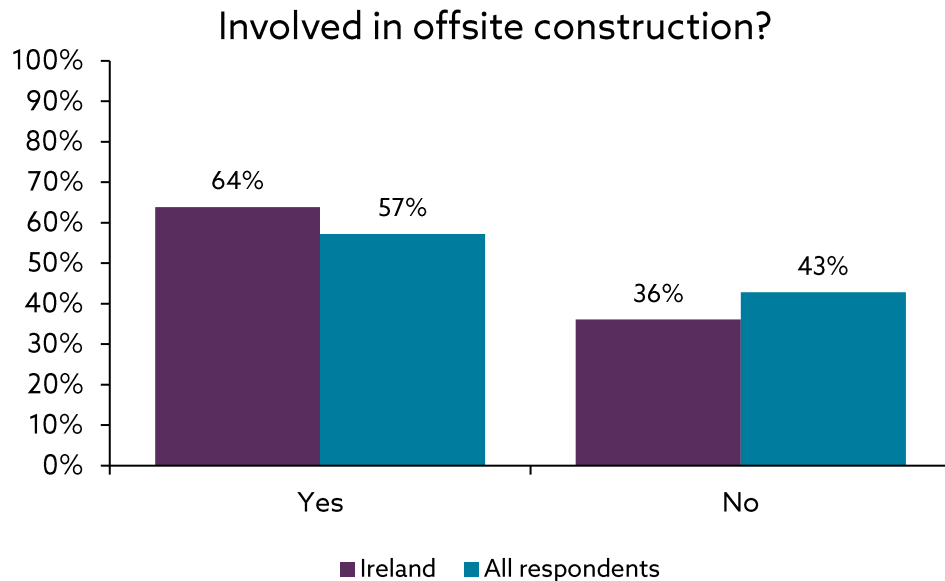- Indications of an increase in the use of virtual, augmented or mixed reality in Ireland, but little change overall

### Use immersive tech?



Chart "Use immersive tech?" (Ireland / All respondents):
- We use them now: 33% / 36%
- We will use them within one year: 0% / 10%
- We will use them within three years: 9% / 10%
- We will use them within five years: 24% / 8%
- We have no plans to use them: 33% / 37%



Chart "How immersive tech used" (Ireland / All respondents):
- Stakeholder engagement such as client walkthroughs: 73% / 74%
- Visualizing how designs interface with existing surroundings: 55% / 62%
- Clash detection during design and construction: 45% / 53%
- To market products, systems or projects: 64% / 35%
- Vizualisation of hidden components for ongoing maintenance: 9% / 20%
- Other: 9% / 8%

Gathering23
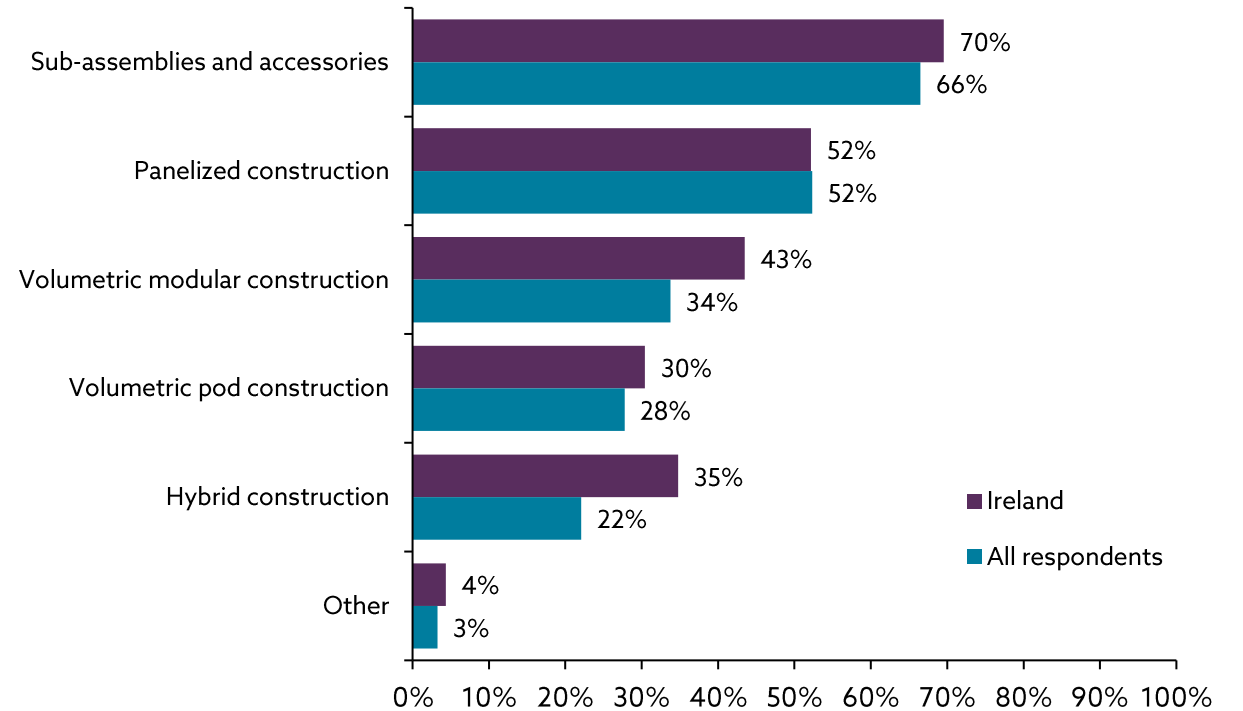Accelerating BIM adoption

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## Off-site construction

- Indications are that projects using off-site construction methods have increased since 2021

**Involved in offsite construction?**
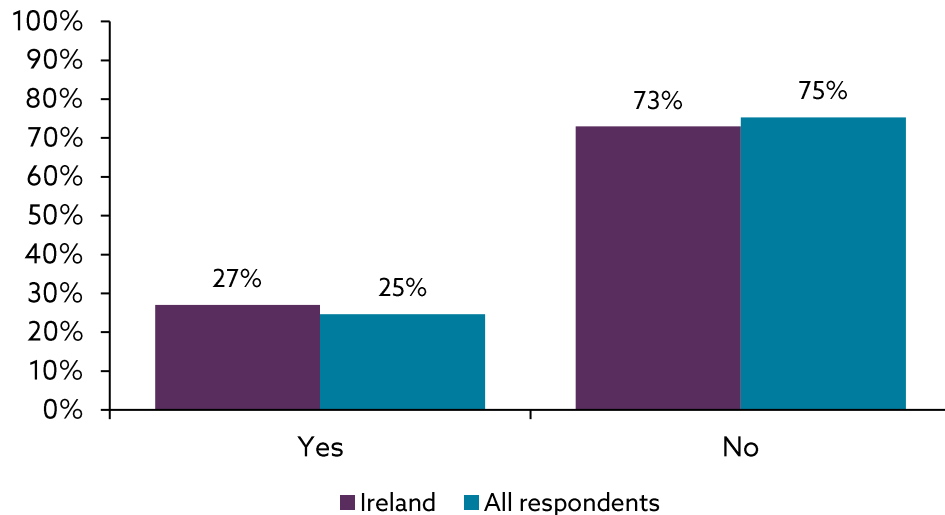


Ireland: Yes 64%, No 36%
All respondents: Yes 57%, No 43%

■ Ireland  ■ All respondents

**Type of offsite construction involved with**



| Type | Ireland | All respondents |
|---|---|---|
| Sub-assemblies and accessories | 70% | 66% |
| Panelized construction | 52% | 52% |
| Volumetric modular construction | 43% | 34% |
| Volumetric pod construction | 30% | 28% |
| Hybrid construction | 35% | 22% |
| Other | 4% | 3% |

■ Ireland  ■ All respondents
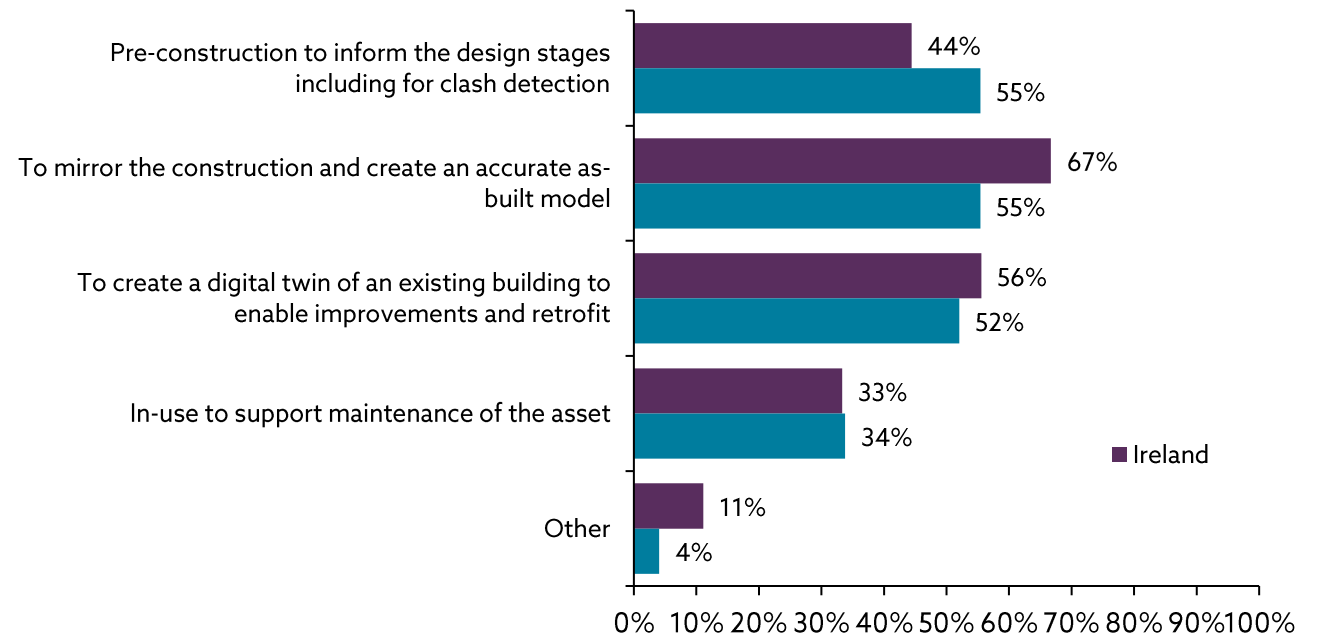
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## Digital Twins

- The use of digital twins on projects looks to have increased since 2021
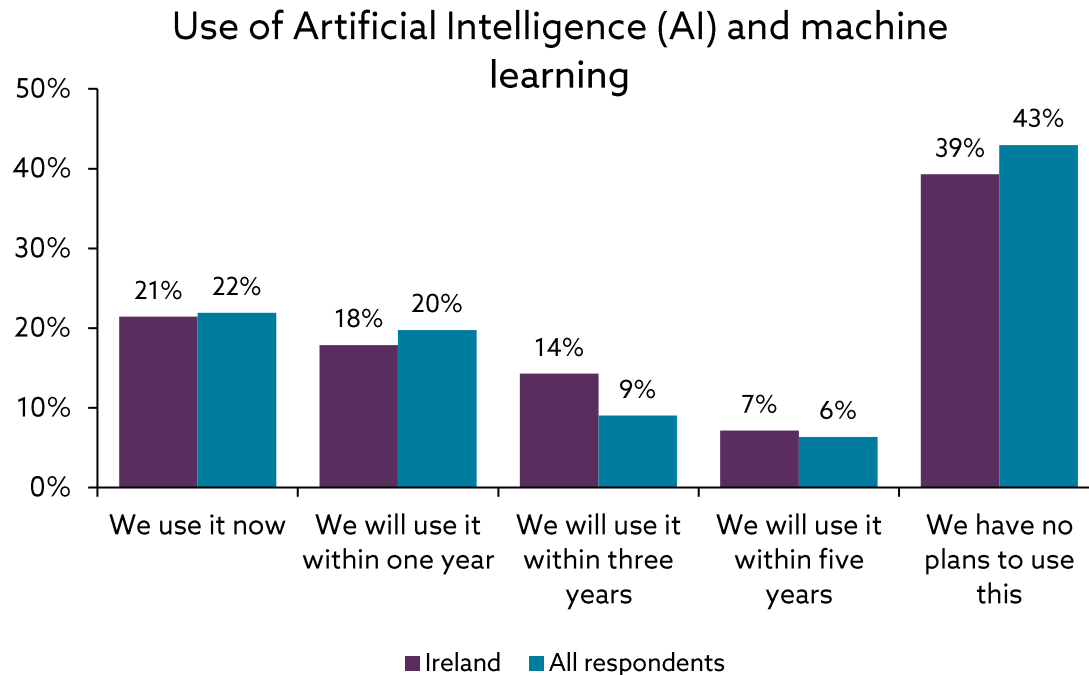
### Involved in a project using digital twin?



| | Ireland | All respondents |
|---|---|---|
| Yes | 27% | 25% |
| No | 73% | 75% |

### How the digital twin(s) is used



| | Ireland | All respondents |
|---|---|---|
| Pre-construction to inform the design stages including for clash detection | 44% | 55% |
| To mirror the construction and create an accurate as-built model | 67% | 55% |
| To create a digital twin of an existing building to enable improvements and retrofit | 56% | 52% |
| In-use to support maintenance of the asset | 33% | 34% |
| Other | 11% | 4% |

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## Artificial Intelligence

- A considerable minority are using AI

### Use of Artificial Intelligence (AI) and machine learning



Ireland  ■ All respondents

**Ways of using AI**

*'For data analytics and reporting'.*

*'Machine learning… [helps] us with developing and optimising early stages of design model options and optimisation on much larger scale and faster'.*

*'As a tool for information and learning'.*

*'Report writing'.*

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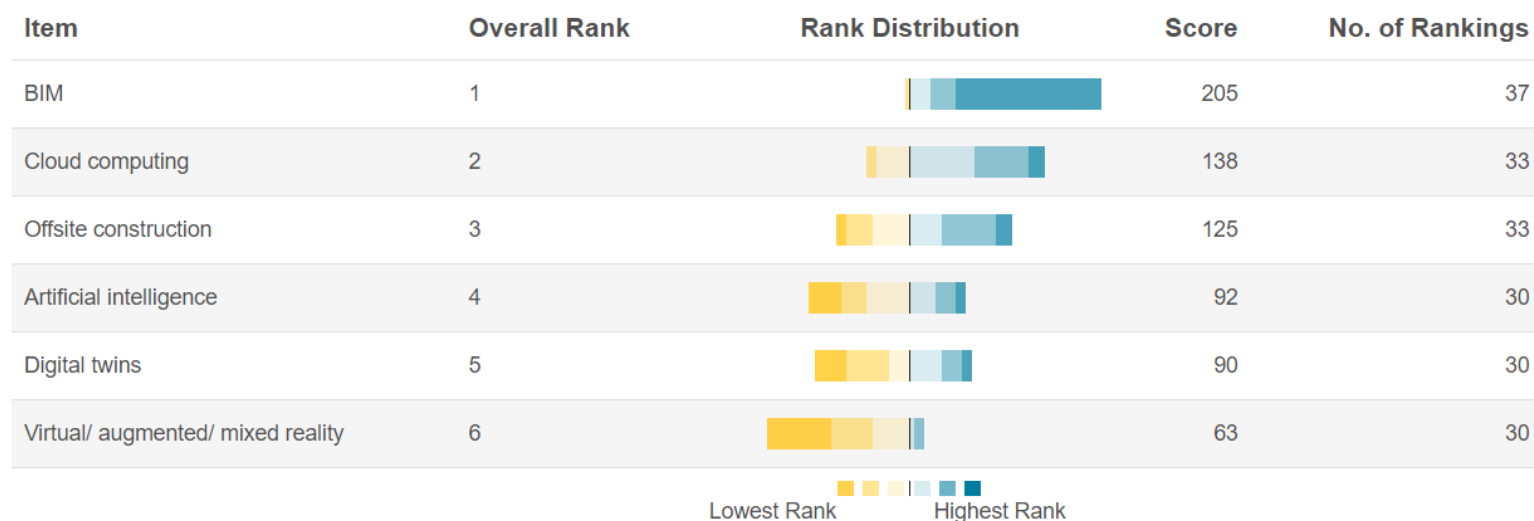NBS CitA

## Most influential tech / ways of working

What has the potential to transform the built environment for the better over the next five years?

Ranking for all respondents and those in Ireland:

1. BIM
2. Cloud computing
3. Off-site construction
4. Artificial intelligence
5. Digital twins
6. Virtual/ augmented/ mixed reality

### Detailed scores and ranking among respondents in Ireland

Thinking about their potential to transform the built environment for the better over the next five years, which of the following technologies or ways of working do you think will be most significant? (Ranking question.)

| Item | Overall Rank | Rank Distribution | Score | No. of Rankings |
|------|--------------|-------------------|-------|-----------------|
| BIM | 1 | | 205 | 37 |
| Cloud computing | 2 | | 138 | 33 |
| Offsite construction | 3 | | 125 | 33 |
| Artificial intelligence | 4 | | 92 | 30 |
| Digital twins | 5 | | 90 | 30 |
| Virtual/ augmented/ mixed reality | 6 | | 63 | 30 |

Lowest Rank      Highest Rank

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*'From experience, the **public sector is being drastically left behind** the private sector in digital transformation. No clear plan or emphasis is being put on the adoption of digital, so the gap is beginning to grow between public and private.'*

*'In Ireland the **implementation of the CWMF** will help push BIM adoption and digitisation as a whole.'*

*'The importance of creating a **detailed an accurate model** of a building should be reinforced to make sure that less time is spent onsite resolving issues.'*
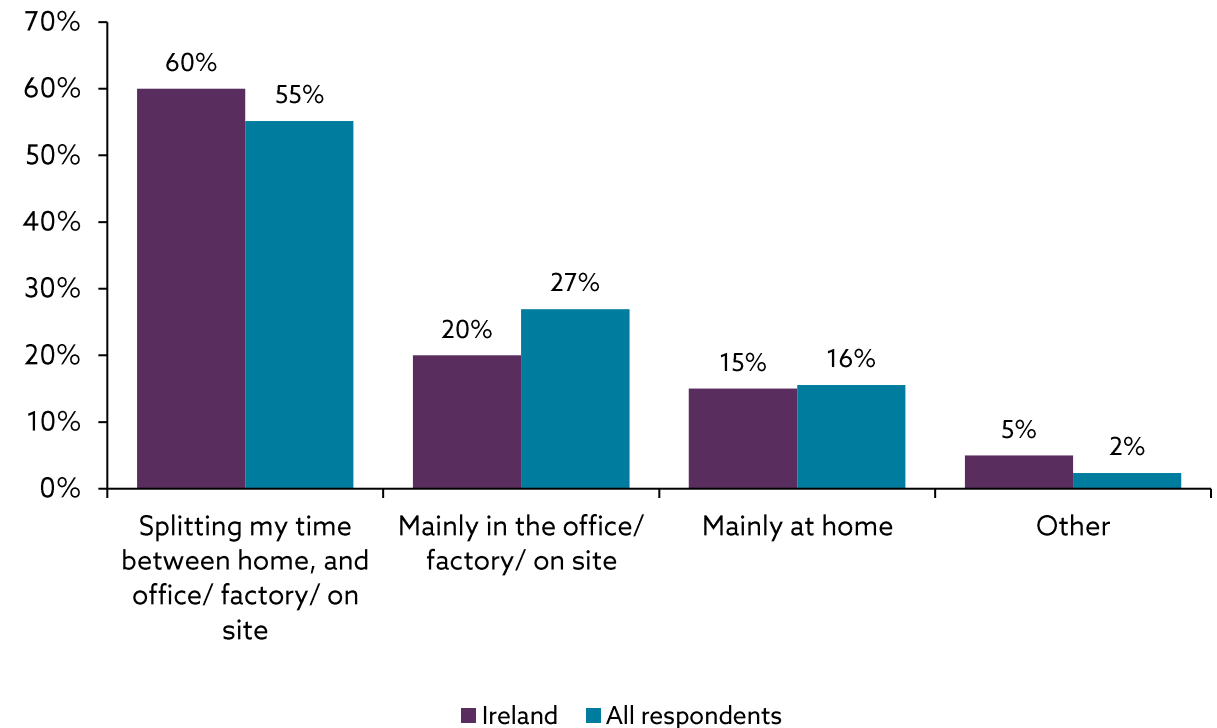
*'The cost of software for **small practices** to grow and progress with BIM makes it very difficult. The focus appears to be with larger scale projects. This I see as a massive issue. If the smaller companies with smaller projects can't afford to take advantage of the BIM packages then the slower the process throughout the industry for transforming and improving.'*

*'The main issue I see is getting agreement on fees. The workloads have shifted and 'academic' BIM has workflows in place which are great but **'practical' BIM** takes over and if someone doesn't get paid for a task, they are not going to do it.'*

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## Hybrid working

- Over half expect to have a hybrid working arrangement
- Very similar to 2021
- Hybrid seems to have become the norm for many

### Where expect to be based over next five years



Legend: Ireland, All respondents

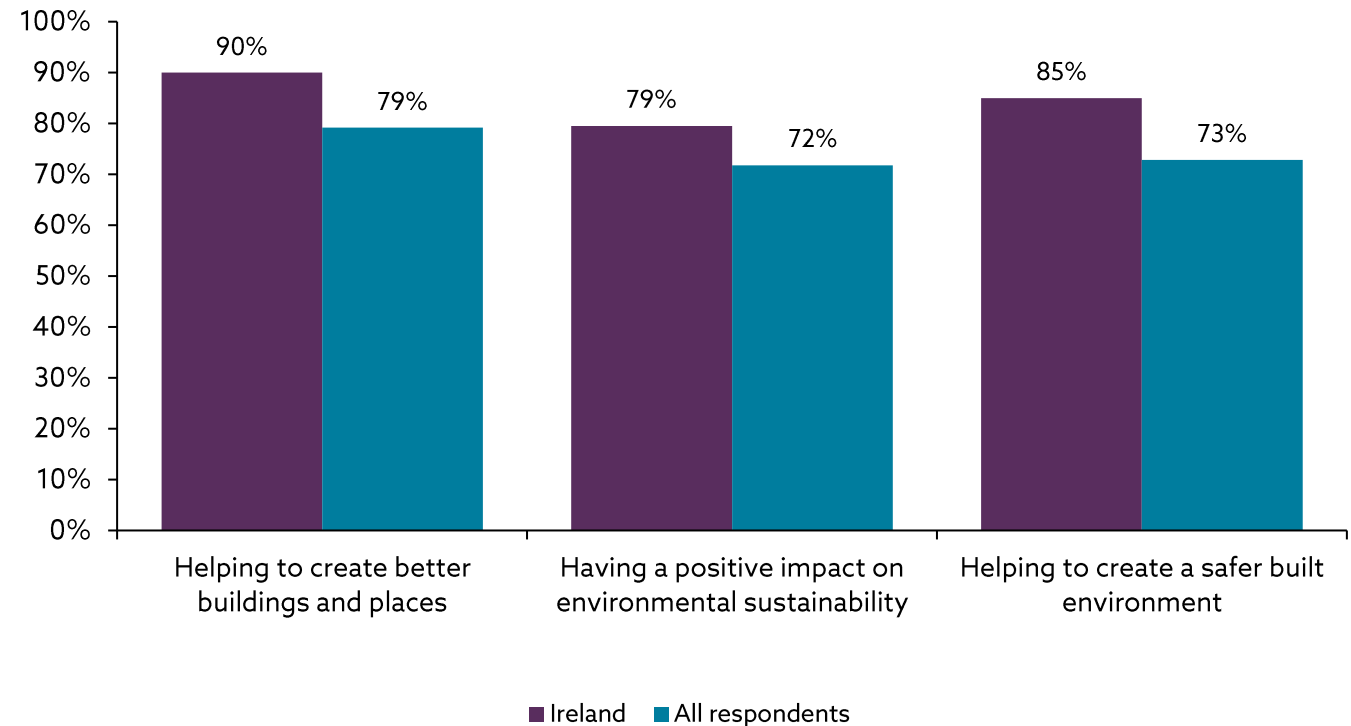| Category | Ireland | All respondents |
|---|---|---|
| Splitting my time between home, and office/ factory/ on site | 60% | 55% |
| Mainly in the office/ factory/ on site | 20% | 27% |
| Mainly at home | 15% | 16% |
| Other | 5% | 2% |

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## Digital tech's positive impact

- The majority believe that digital tech is having a positive effect
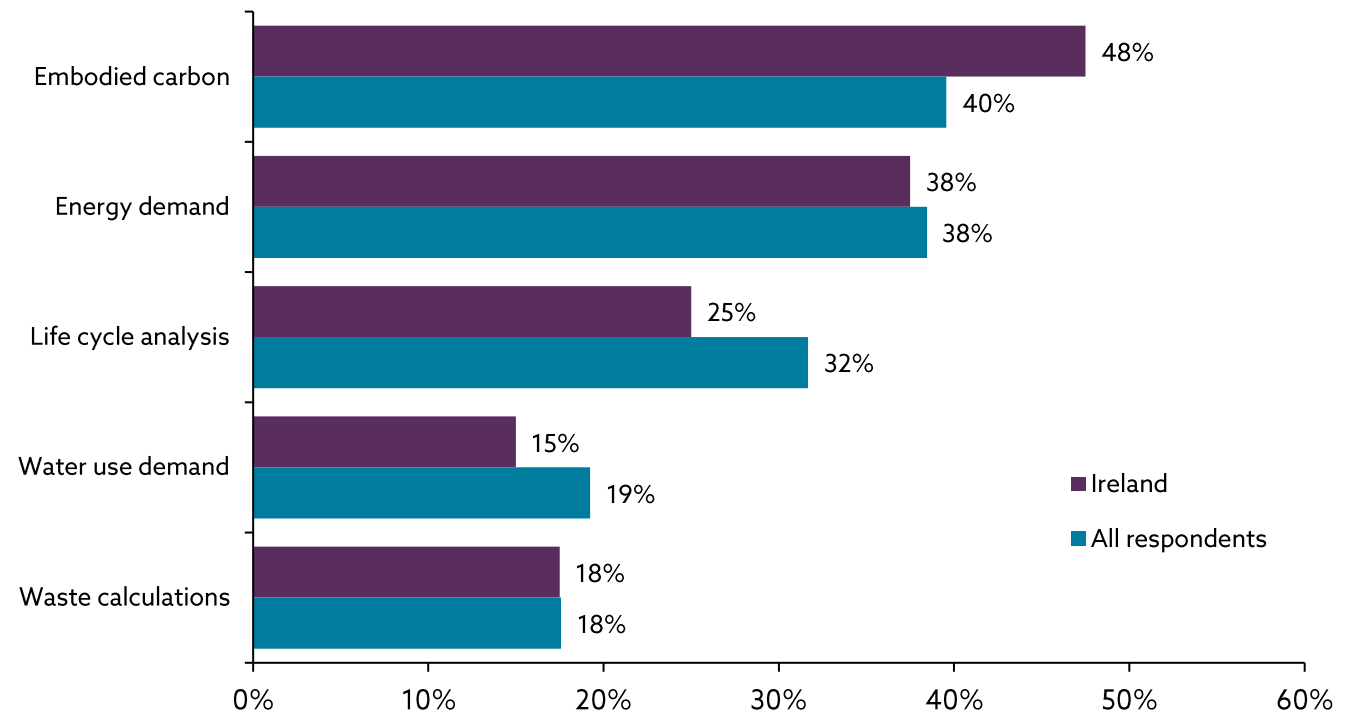- Few disagree with this
- Very similar to levels in 2021

Those agreeing that digital tech and ways of working are...



Helping to create better buildings and places — Ireland 90%, All respondents 79%

Having a positive impact on environmental sustainability — Ireland 79%, All respondents 72%

Helping to create a safer built environment — Ireland 85%, All respondents 73%

■ Ireland  ■ All respondents

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## Using digital tech to calculate environmental metrics

- At least 40% use digital tech to calculate embodied carbon
- Almost 40% calculate energy demand
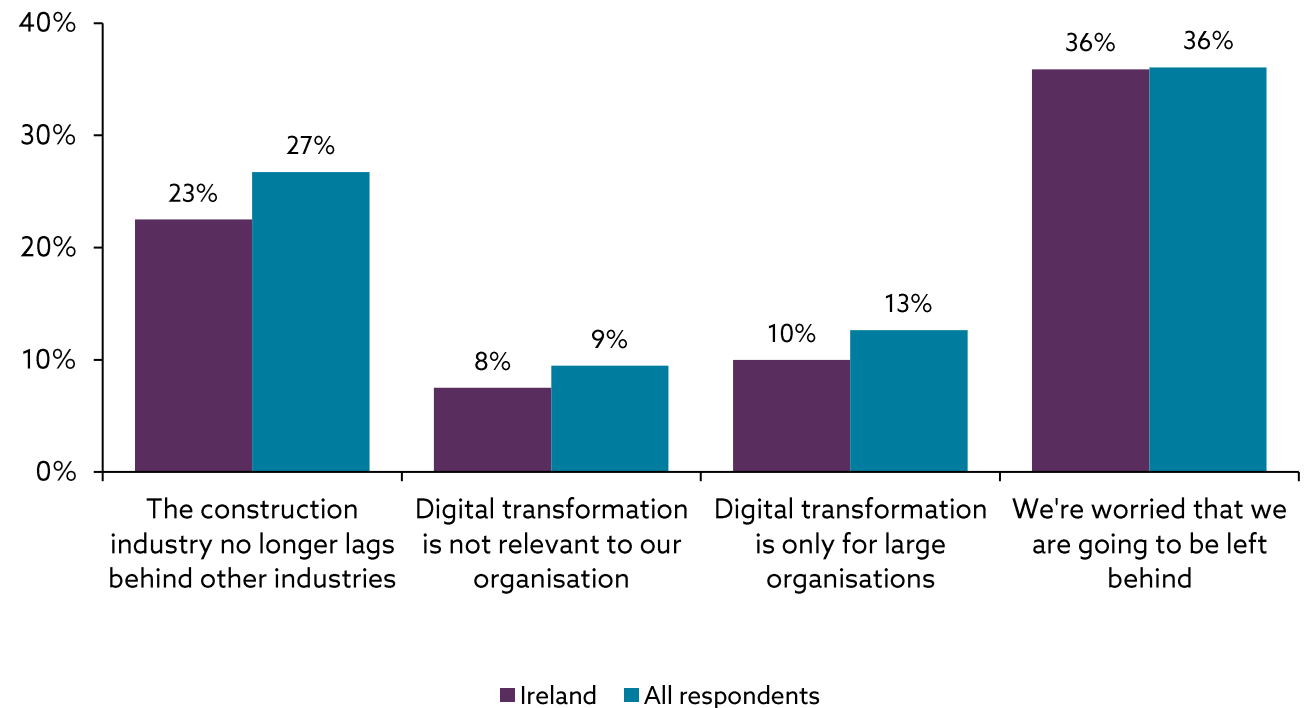- Also used by some to do life cycle analysis, waste calculations and to measure water use demand

Used digital tech to calculate environmental sustainability metrics



Legend:
- Ireland (purple)
- All respondents (teal)

| Metric | Ireland | All respondents |
|---|---|---|
| Embodied carbon | 48% | 40% |
| Energy demand | 38% | 38% |
| Life cycle analysis | 25% | 32% |
| Water use demand | 15% | 19% |
| Waste calculations | 18% | 18% |

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## Has construction caught up?

- Around a quarter agree that construction no longer lags behind
- But many more *disagree* with this
- Digital transformation is relevant for the vast majority of organizations – of all sizes
- Just over a third worry they'll be left behind

### Those agreeing that...



Bar chart categories:
- The construction industry no longer lags behind other industries — Ireland 23%, All respondents 27%
- Digital transformation is not relevant to our organisation — Ireland 8%, All respondents 9%
- Digital transformation is only for large organisations — Ireland 10%, All respondents 13%
- We're worried that we are going to be left behind — Ireland 36%, All respondents 36%

■ Ireland ■ All respondents

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## Closing thoughts

- Still a debate about the meaning and value of BIM.
- But BIM still seen as having the potential for most positive impact.
- Challenge is to apply it to non-building, refurb and small projects.
- People generally see digital ways of working as having a positive effect.
- Adoption of different digital technologies appears to be growing.
- And the use of digital tech to calculate environment metrics shows how it's being used in practice.
- There are similarities between the picture in Ireland and the UK.

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## Download the report

- You can download the full report here:
- https://www.thenbs.com/digital-construction-report-2023/

- Thank you.



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