

Digital Twin Workshop Interactive Session

Claire Ellul

University College London, UK

Overview

- **Results Part 1 – What is a DT?**
 - Your Views
- Results Part 2 – Standards
 - Your Views
- Results Part 3 – Challenges
 - Your Views
- Results Part 4 – Opportunities
 - Your Views

Prioritising Next Steps for NMCA's and Research

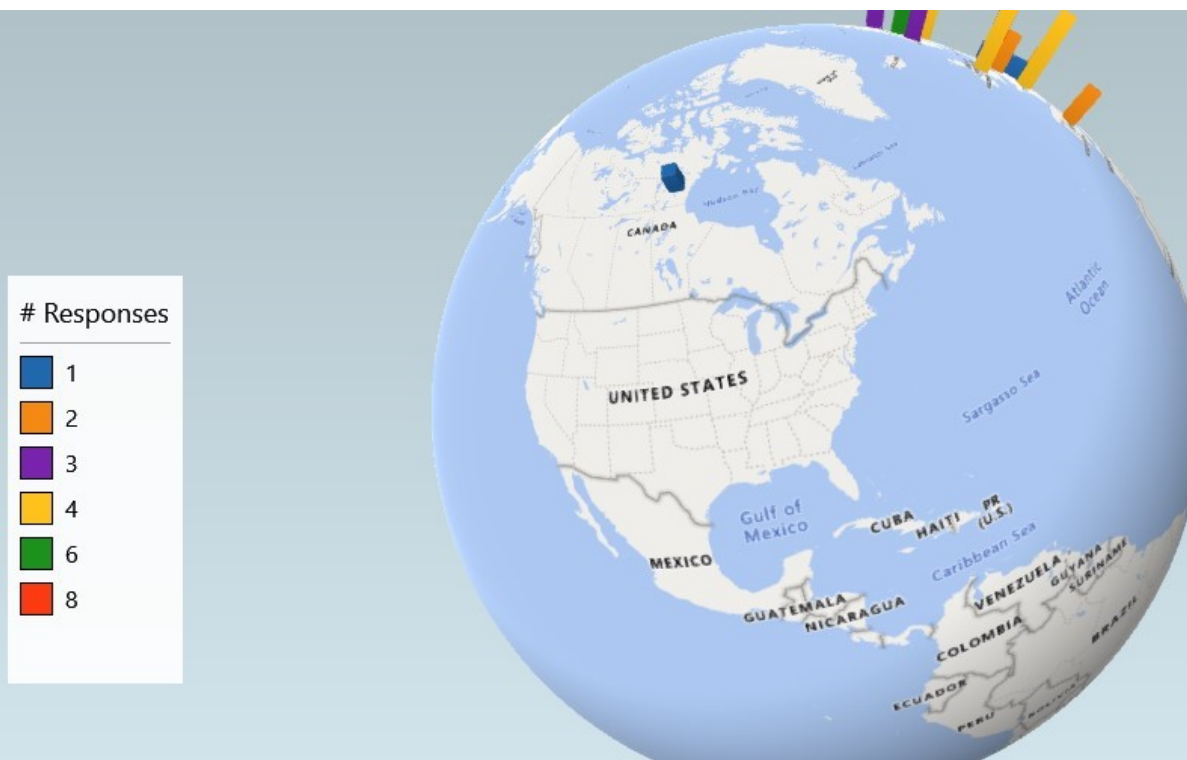
The Questionnaire

- 66 responses
- Will present the results of a first pass through the data
- Many thanks to everyone who participated!

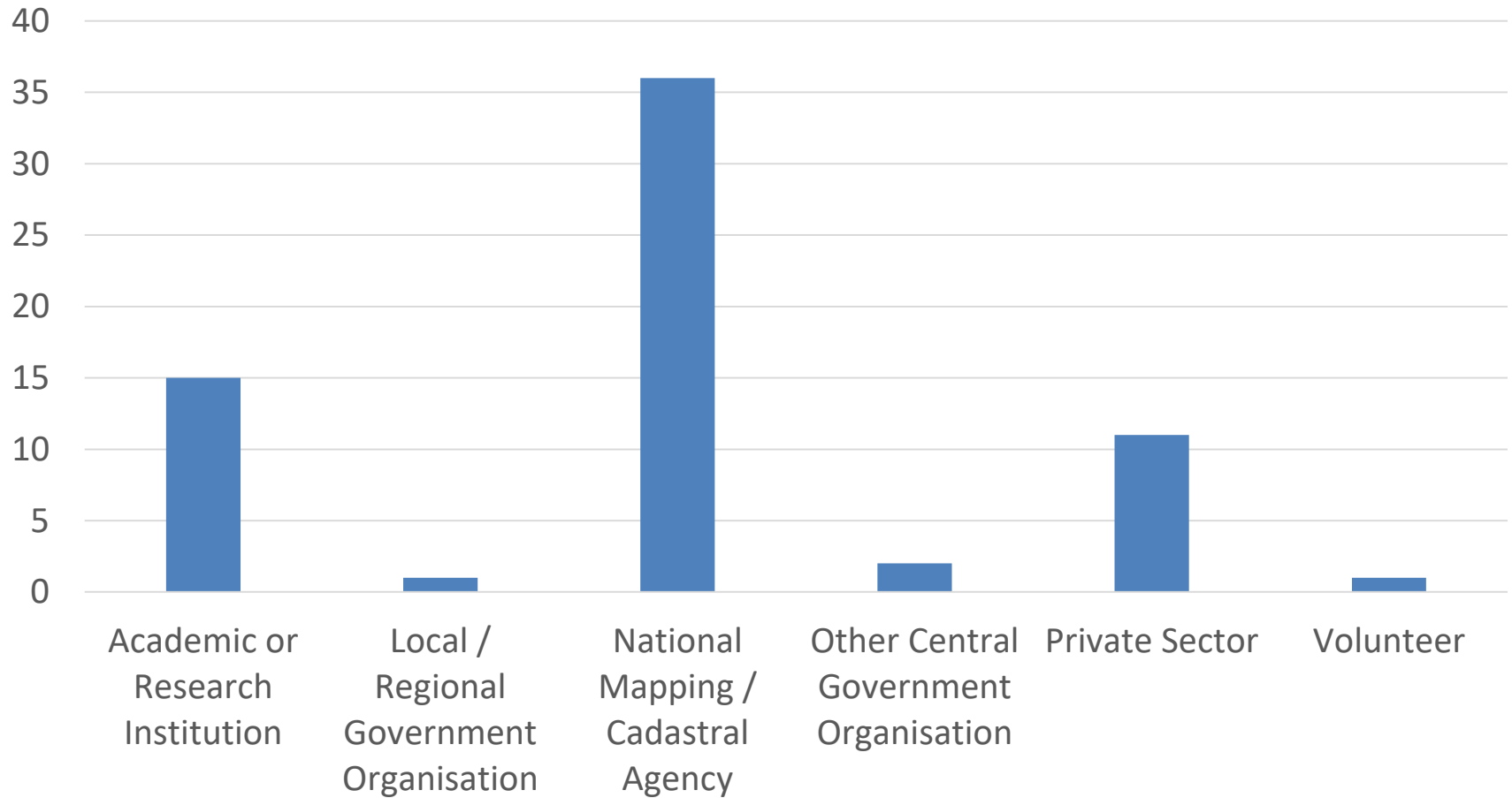
Responses From ..



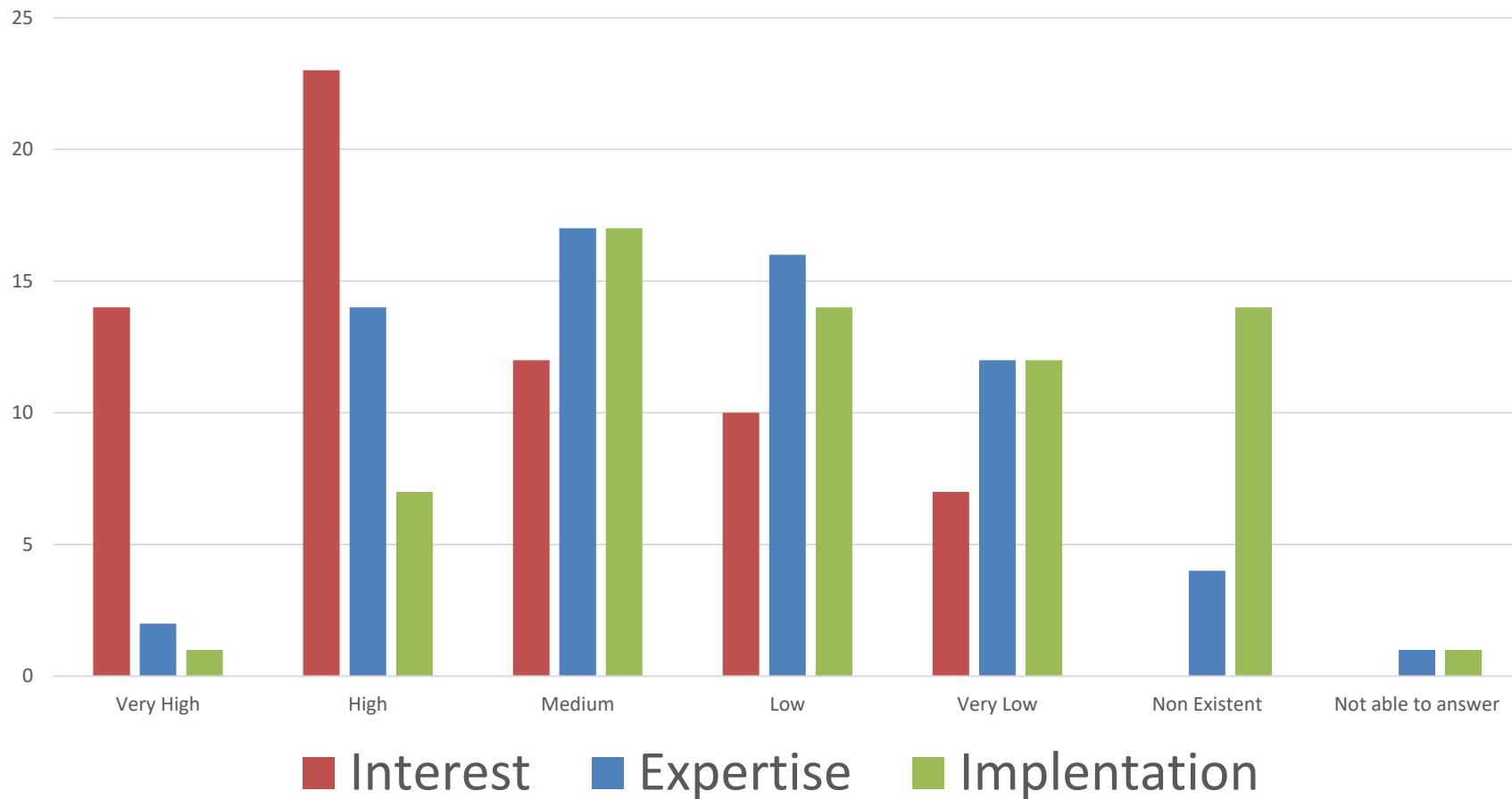
Responses From ..



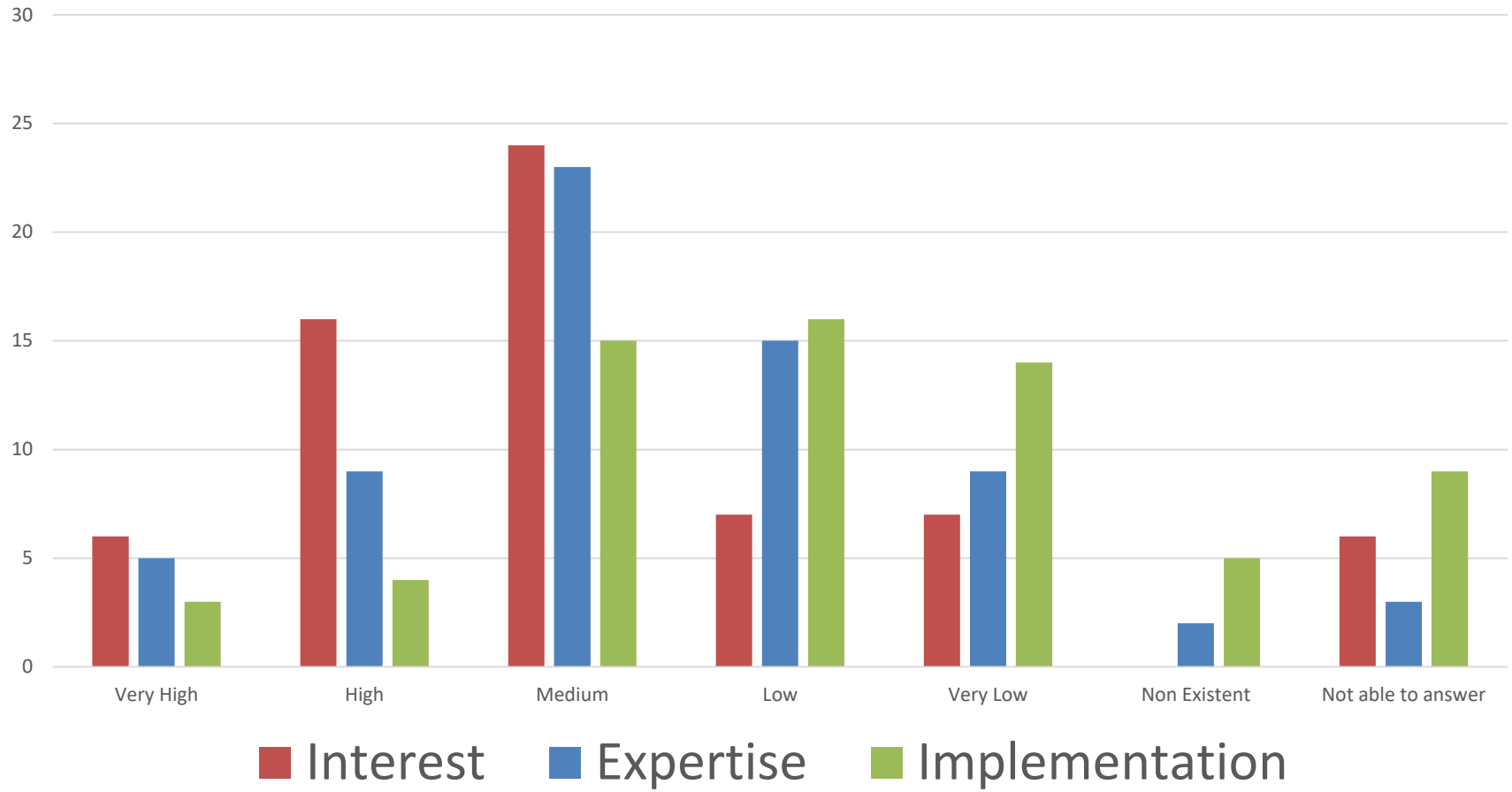
Organisation Type



Within My Organisation ..



Within My Country ..



Question

- The term Digital Twin means different things to different people - please provide a 1 or 2 sentence explanation of a Digital Twin in your own words.

What is a DT

- 62 valid responses

OVERVIEW

- 35 mentioned “digital copy of the real world”

DATA

- 13 mentioned data
- 13 mentioned 3D
- 6 mentioned geospatial data

What is a DT

REAL TIME

- 10 mentioned real time connection
- 2 mentioned digital/real world connection but not specifically in real time
- 3 mentioned two way information flow
- 3 mentioned “dynamic”

USERS/BENEFITS

- 5 mentions that a DT should be beneficial
- 11 mentions of specific applications

What is a DT

COMPONENTS

- 12 mentions of analysis
- 4 mentions of visualisation
- 7 mentions of decision making

OTHER

“reflects life in an inhabited place”

“changes to the physical without human intervention”

“level of detail is a key differentiator”

“stakeholders from different sectors”

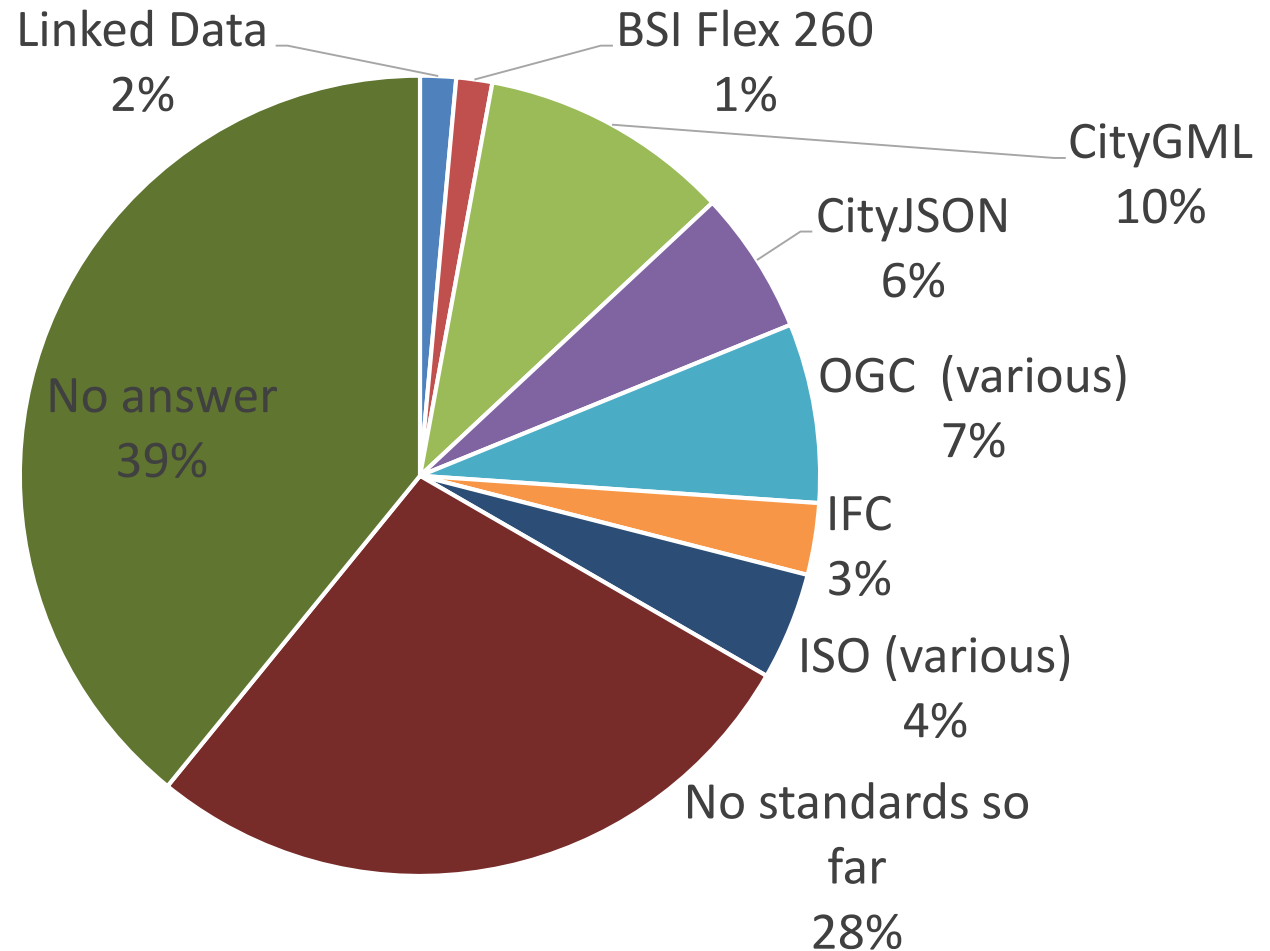
“lowers costs and the chances of failing”

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Digital Twin Related Standards?



Others ..

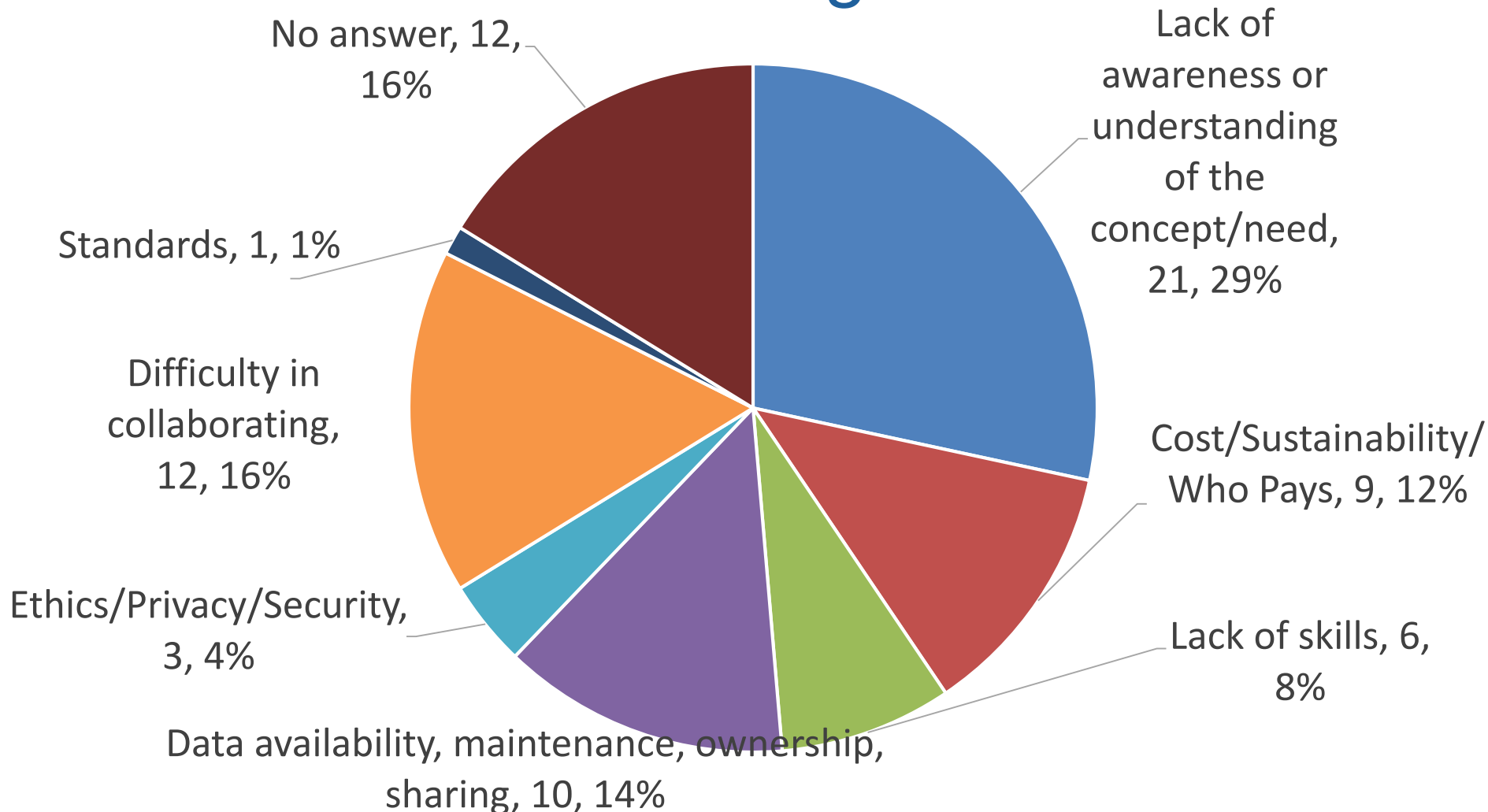
- UK Gemini
- Plateau (Japan)
- Open 311 (USA)
- Digital Twin Information Management Framework (UK)
- Proposal for DT for the Built Environment (The Netherlands)

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Non-Technical Challenges



Non-Technical Challenges

- Lack of Awareness or Understanding of DTs
 - Understaffing
 - Lack of a clear definition
 - Other priorities e.g. land cover mapping
 - No clarity on a need for a DT at national level
 - Some see DT as a new name for national mapping
 - DT is vast and difficult to narrow down what it means/doesn't mean
 - Few geospatial DTs as examples
 - Low level of interest

Non-Technical Challenges

- Data availability/ownership/sharing
 - How to use the DT data in an ethical manner
 - What data to keep and what to throw away
 - Who owns the data
 - Data open or closed
 - Data privacy

Non-Technical Challenges

- Collaboration Challenges

How to coordinate within an organisation

How to coordinate across multiple authorities

Lack of collaboration between academia and government

New communities disregard existing expertise

Buzzwords

No clear scope and areas of responsibility for stakeholders

Non-Technical Challenges

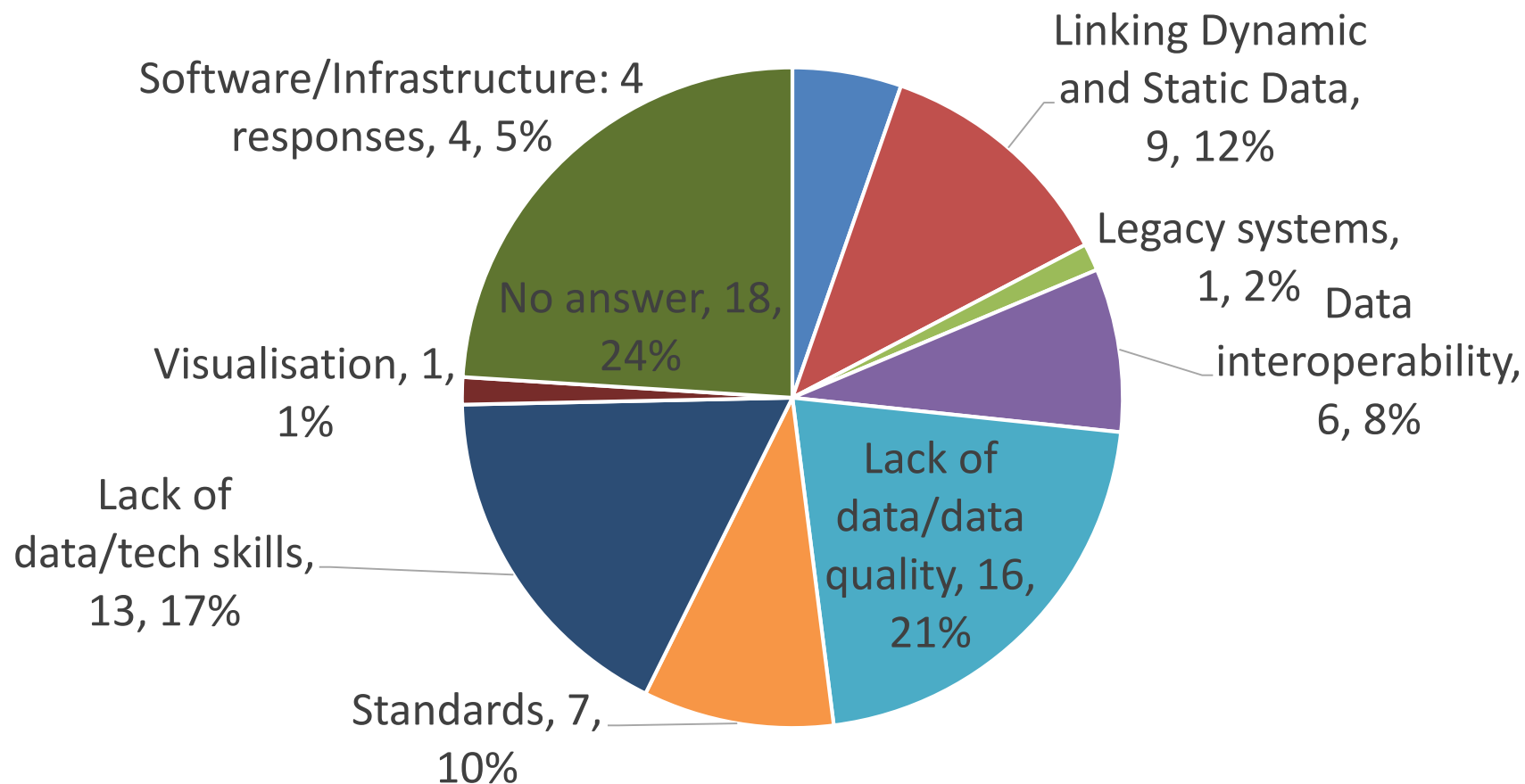
- Other comments

“digital twinning requires thinking from a different direction – fixes the location first and then answers questions, rather than finding the most suitable location”

“DT can have a very large ecological footprint”

“Legislation is a problem”

Technical Challenges



Technical Challenges

- Linking Dynamic and Static Data

How to configure the data flow – in particular if it should be bi-directional

Updating management systems and processes to be as close to real time as possible

When/how to update the underlying map data

Sensors/IoT are not managed within the geo domain

What is the optimal level of detail

Technical Challenges

- Lack of Data/Tech Skills

No practical knowledge – we're still thinking in 2D

Lack of expertise in 3D content creation

Lack of BIM know how within GIS institutions

Need to improve how we write software

Need to improve how we communicate the data/results

Very competitive job market

Technical Challenges

- Standards

Standards are not mature enough to deliver data – is GML enough?

In many cases the implementations touch on domains that are covered by multiple standards

Conversion between standards, with resulting information loss

3D Standards might not be adequate for fast display of data on the web

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Opportunities

Encourage interdisciplinary collaboration	7
Promote the use of geospatial data and techniques	7
Improve services/help society	2
Meet the needs of a specific use case	14
Promote communication	4
Act as a framework for other dat	2
Education/training	6
Business opportunities	3
No answer	14

Use Cases

- Education
- Marketing
- Project management
- Urban areas administrative management
- Agriculture - greenhouses, farms, water management
- Urban planning (2 mentions)
- Life sciences/environmental situations
- Sustainable design
- Traffic information on different modes of transport
- New build/green infrastructure
- Energy efficiency
- Telecommunication
- Mission planning
- Flight simulation

Thank You