AUTODESK UNIVERSITY

Future of Work: How Do You Implement That

CS501147

May Winfield
Global Director of Commercial Legal and Digital Risks| @Buildlaw_Arttea



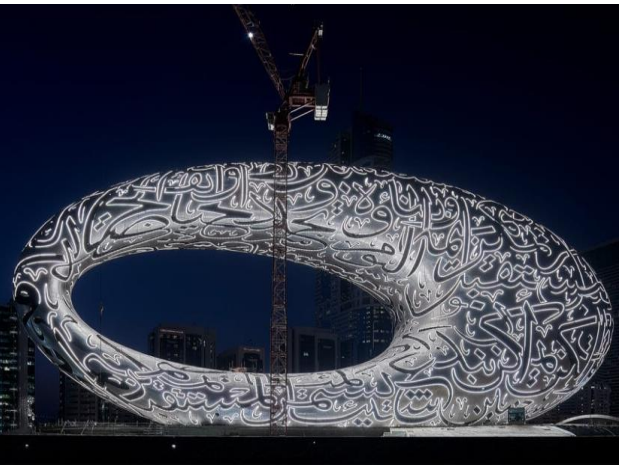
Speaker: May Winfield

- Recognised legal specialist in construction tech and digitisation
- Co-author of various guidance and documents, e.g.
  - Contract template for ISO19650-compliant projects
  - Legal guidance on the ISO19650 standards
  - BIM Practice Note for the JCT standard form contracts
- Member of the Centre for Digital Built Britain's Digital Twins Roadmap and Digital Twins Toolkit Working Groups
- Member of the UK Construction Playbook's Modern Methods of Construction (MMC) Working Group
- Co-founder and Chair of BIM4Legal
- UK BIM Alliance Ambassador



BuroHappold – Future Thinking and Technology

It’s in our DNA



Museum of the Future

Bespoke in-house optimization modelling

3D energy model in which all 12 disciplines interacted in real time, with over 50 sustainable design decisions



The Jewel (*tallest indoor waterfall in the world*)

Used advanced BIM technology to optimize design that was beautiful, buildable and affordable



Academy Museum of Motion Picture

Complex structure that relied on advanced BIM technologies to coordinate designs, optimize engineering solutions, and define methodologies

Learning Objectives

Reduce risks to enable innovation

- **Learning Objective 1**: Learn about common causes of dispute and loss in requiring or accepting requirements for transformational change in projects
- **Learning Objective 2**: Learn how to minimize or avoid causes of dispute and unintended liability in implementing transformational or digital change
- **Learning Objective 3**: Learn about how to best incorporate common future thinking and digital change requirements into contracts and scopes
- **Learning Objective 4**: Learn about the key internal processes that will effectively support the implementation of digital change and transformation

The Likely Big Trends

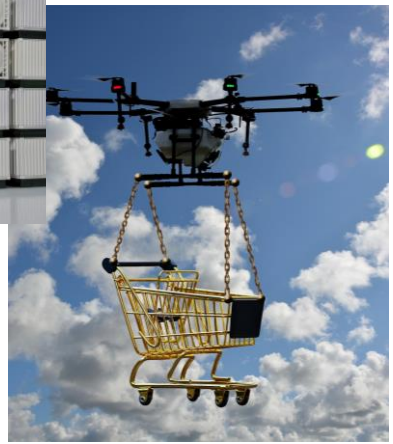
(…BIM is no longer a trend!)

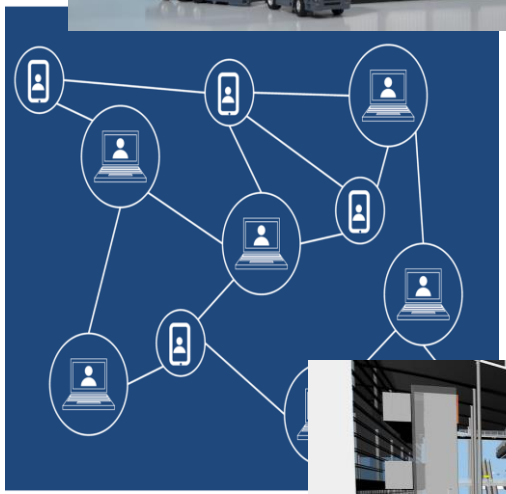
- Prefabrication, modular and offsite construction
- Robotics, drones, automation and wearables
- Big data, AI and predictive analysis
- IoT, Smart Buildings and Digital Twins

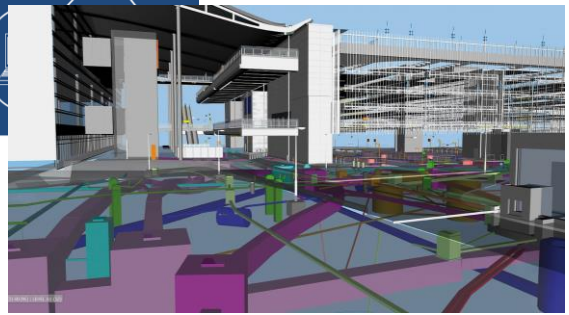
And the smaller trends…

- Blockchain and Smart Contracts
- 3D printing
- Metaverse









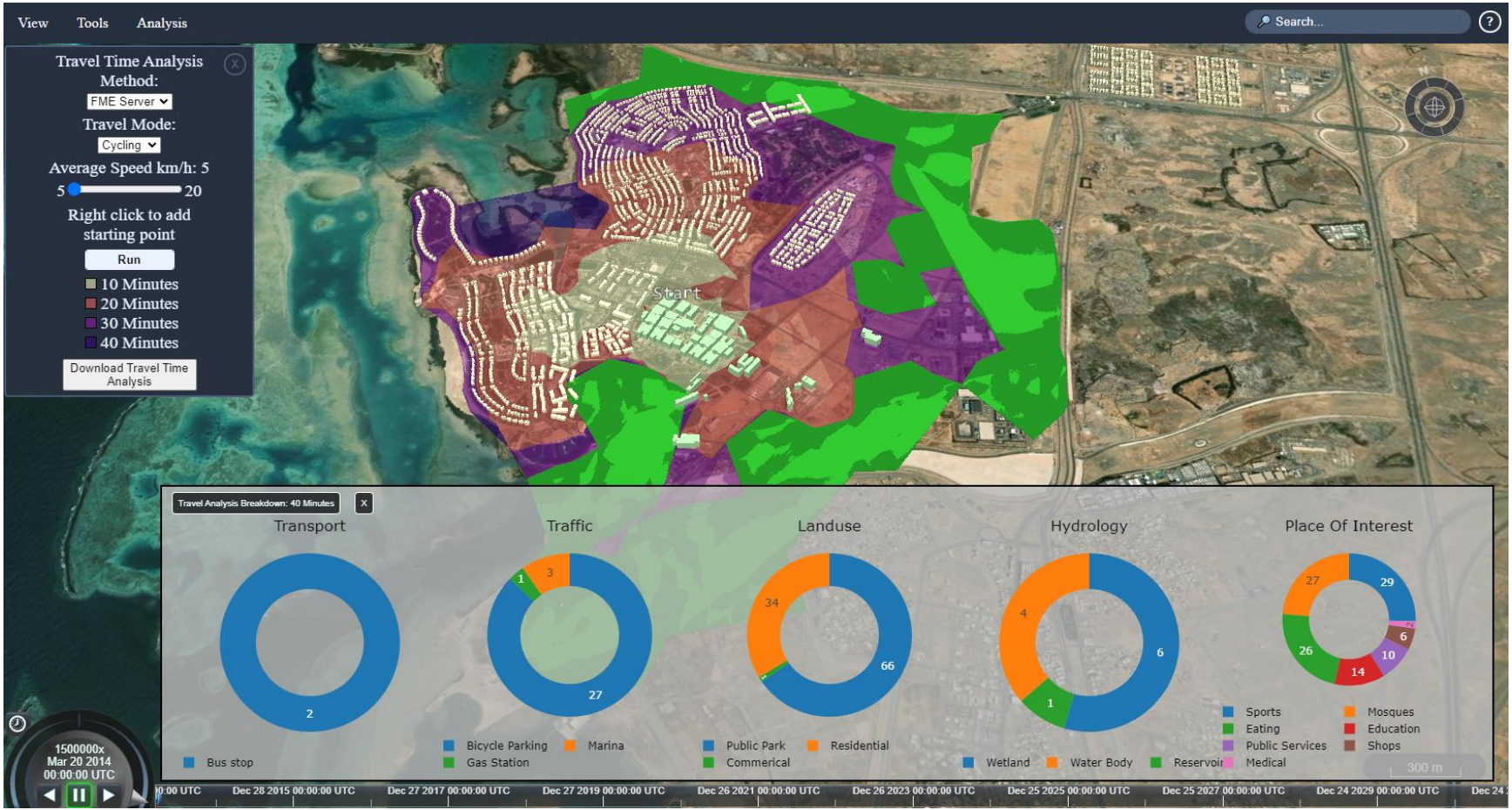
*"Using offsite manufacturing…can routinely reduce construction time and cost by between **30% and 50%**. Applied to £11.7bn of planned infrastructure spending 2022/3 to 2024/5… equate to a benefit of **£3.5bn to £5.9bn**"*

Project Speed and Off-Site Manufacturing Report
Association for Consultancy and Engineering
February 2022

A Real Example: Digital Twins

Using Data to Understand and Shape the Physical World

Digital Masterplan – Travel Time Analysis and Access to Services

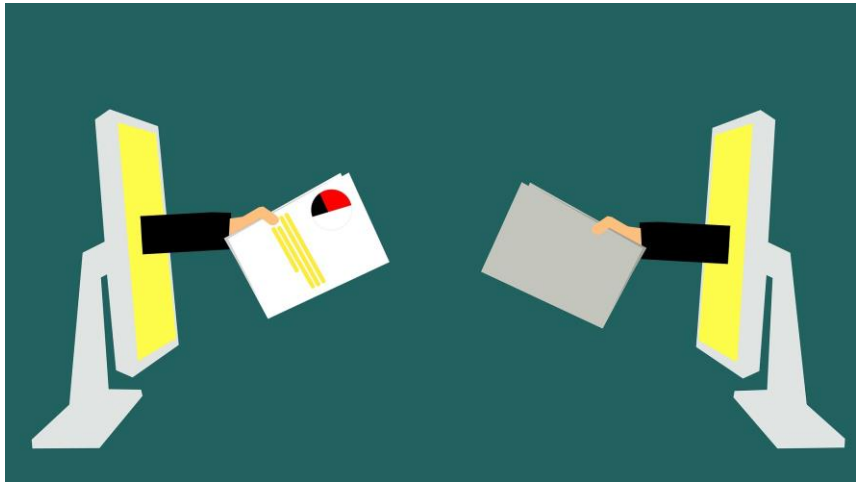


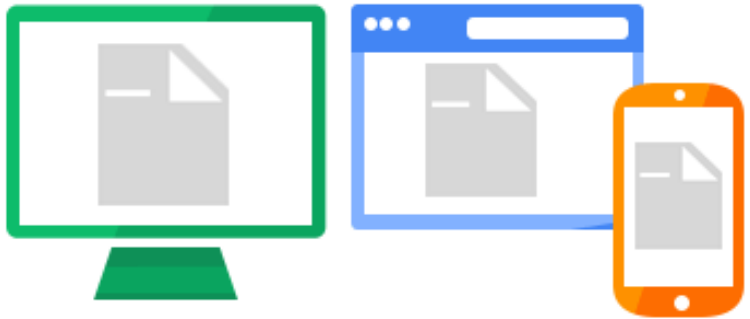
Video – Shadow Analysis

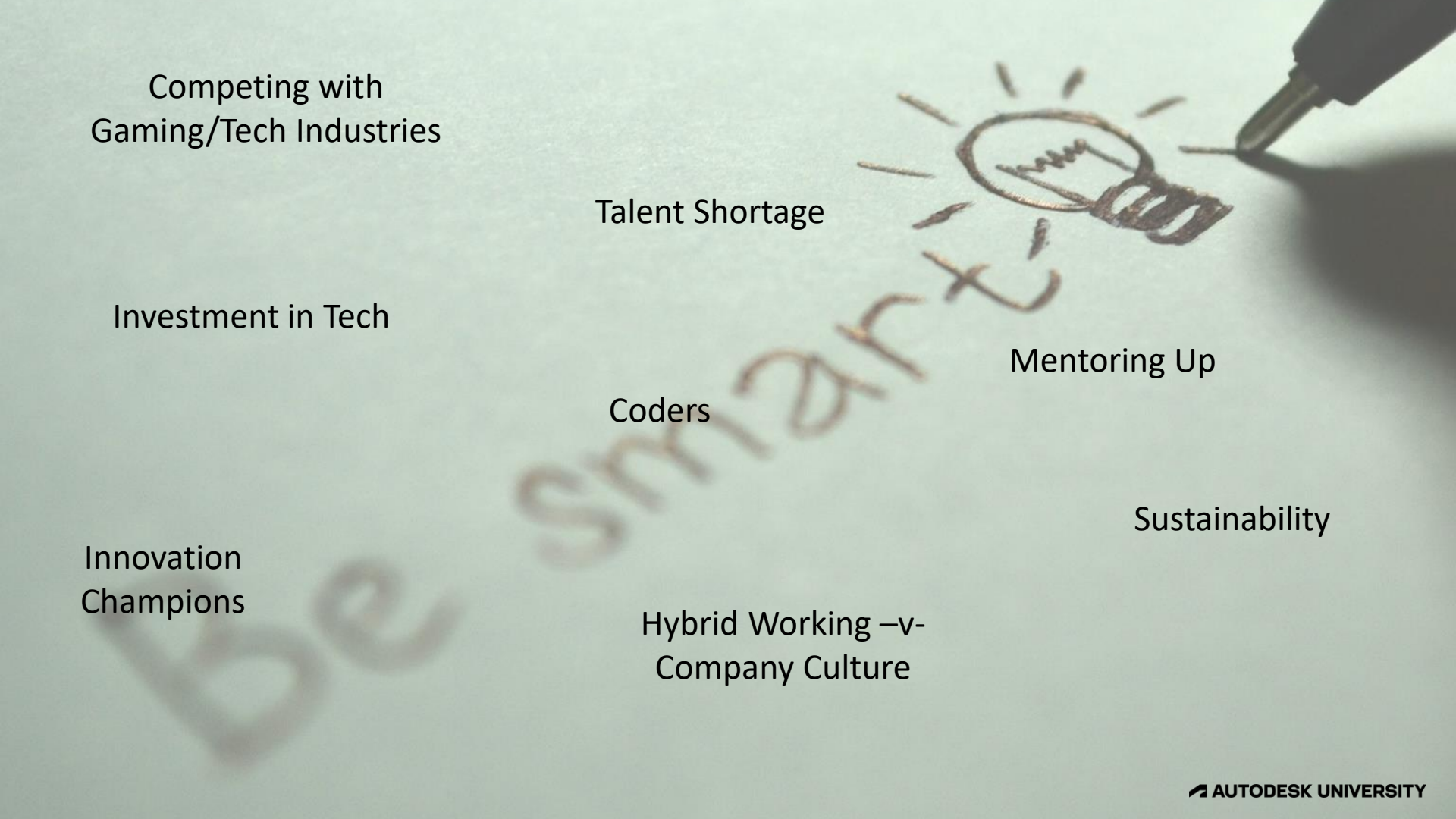


Let’s not forget…

Future of Work(ers)

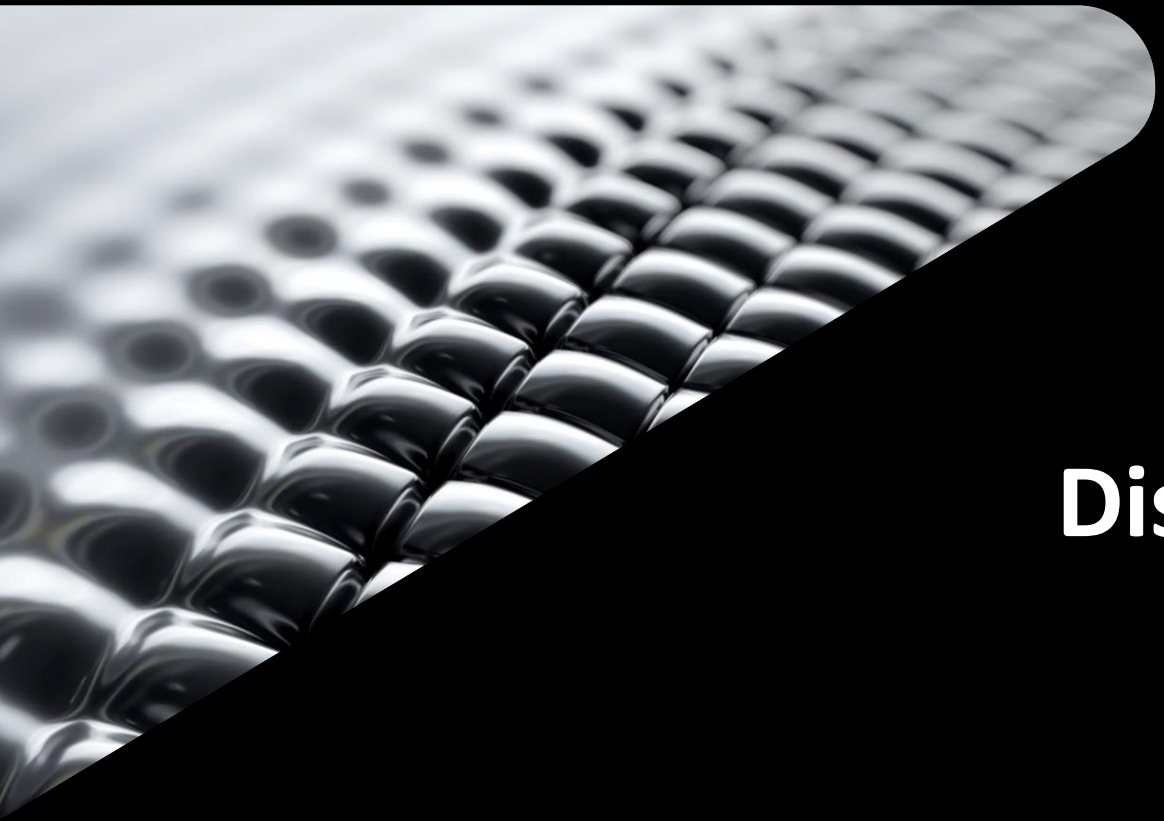





Competing with Gaming/Tech Industries
Talent Shortage
Investment in Tech
Mentoring Up
Coders
Sustainability
Innovation Champions
Hybrid Working –v- Company Culture
Be smart

The Future of Work

Is Now



Disputes and Loss

What and Why

Ownership: Mine And Yours



Design

- Existing Design
- New Design
- Altered or developed design
- Future Design Potential



Physical Objects

- Off-Site manufactured components
- 3D printed objects
- AI-developed articles



Data and Kit-of-Parts

- New data
  - Client-specific
  - Potential for future use
- Existing data
- Knowledge, know-how documentation
- Joint/Unclear ownership
- When can you compete

Liability and Risk



Yours

- Blame for deliverables
- Reliance by others
- Use of others' data
- Programme



Others

- Delay
- Unauthorized
- Standardized process



Client

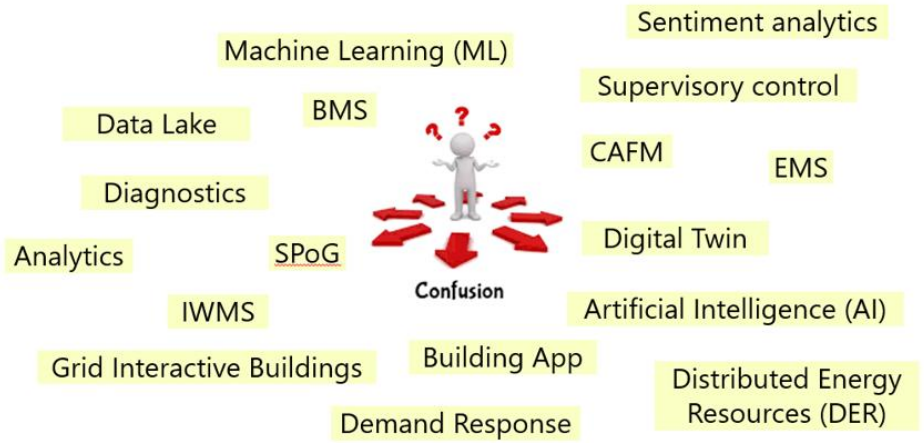
- Controlling others
- CDE
- Relying on their data



Gaps and Silence

- Damage
- Corruption
- Monitoring, collating and checking
- Collaboration

Language, Acronyms and Jargon



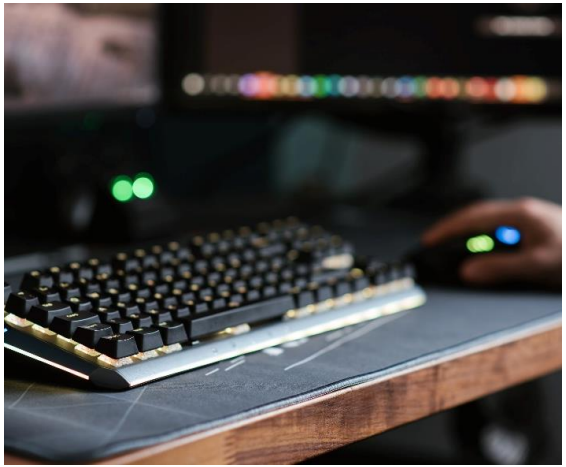


"That's a new word legal came up with. They're still working on a definition for it."

CartoonStock.com



Cost of Training
and Implementation



Software/Hardware



Bad Data

- *30% said **>50%** of their data was bad*
- *34% said bad project data resulted in poor decisions **>50%** of the time*
- *Bad data in construction may have cost **$1.84 trillion** due to poor decision making*
- *Bad data may have caused **14%** of all construction rework, equal to $88.69 billion in avoidable rework worldwide*

[Bad = Inaccurate, Incomplete, Inaccessible, Inconsistent, Untimely]

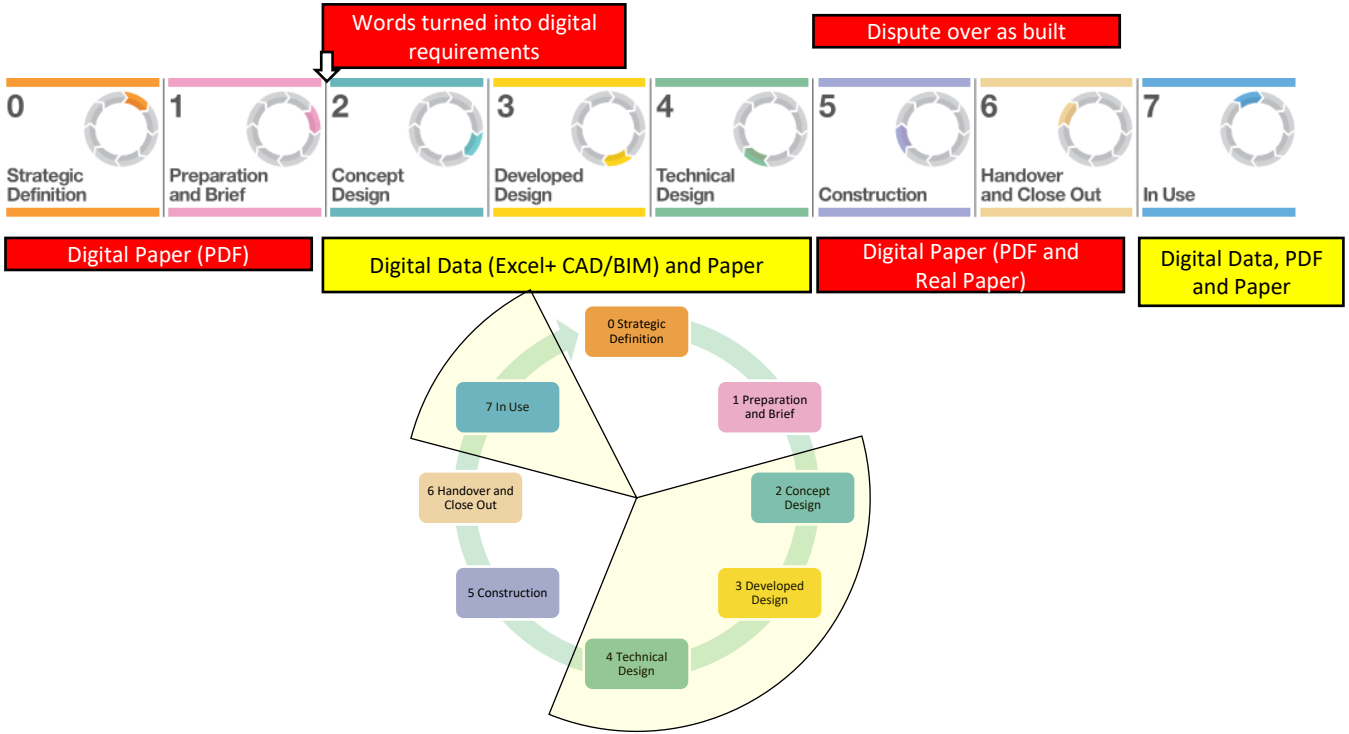
Harnessing The Data Advantage in Construction
Autodesk Report
2022

A Real Example: Information Management

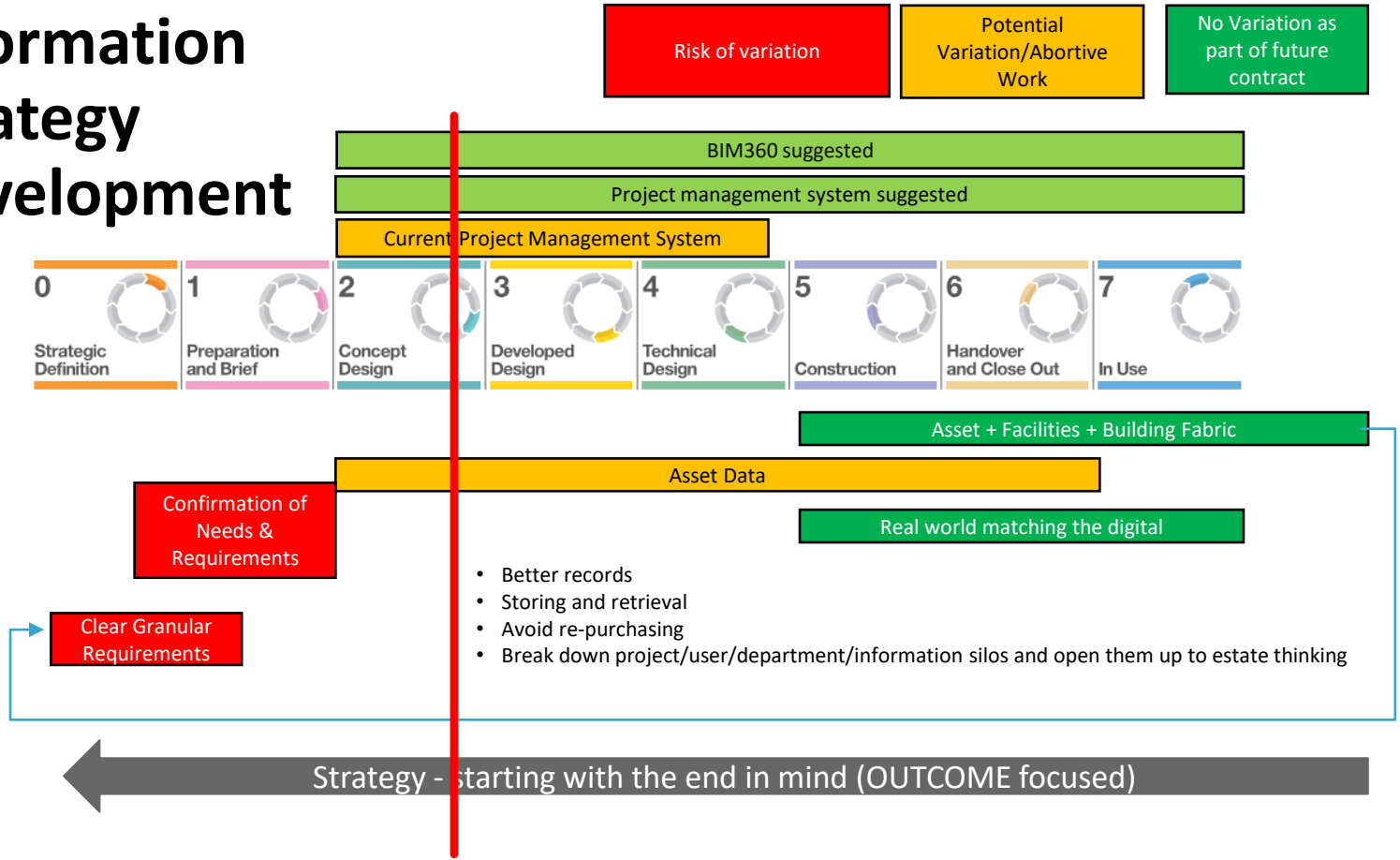
Making your data work for you

Information Exchange Gaps

Fragmented approach to data



Information Strategy Development





Avoiding Disputes and Liability

How

Clarity

Words are mightier than the sword

What do you actually mean? What are you agreeing to?



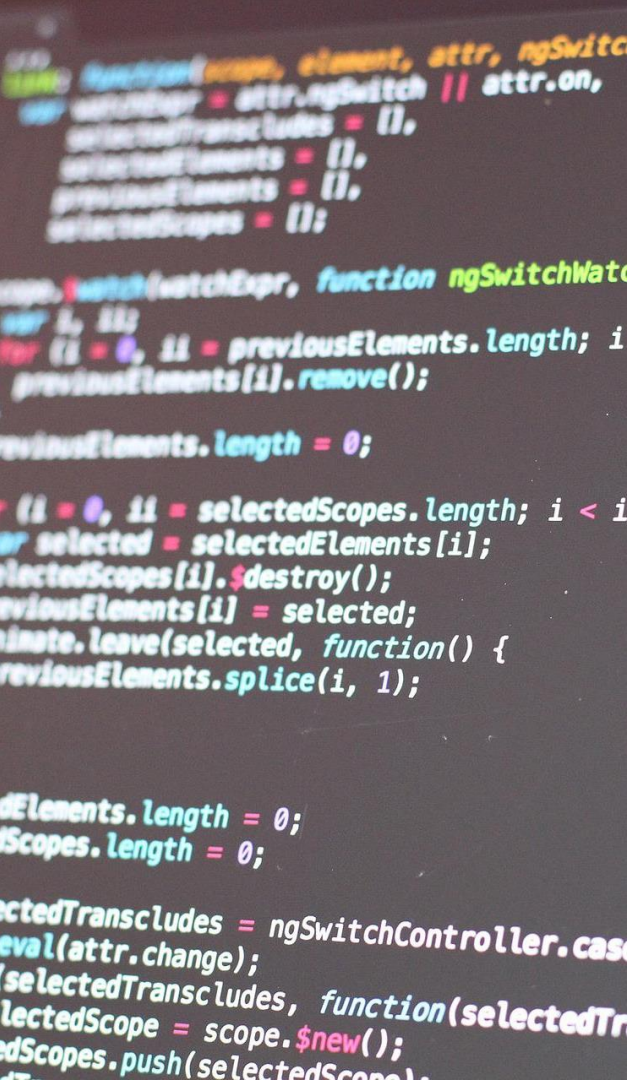
- Uninsured obligations
  - Over-promising
  - “Best” or “Highest”
  - Fit for purpose
- Get paid
  - Missing or inaccurate
  - Compensation events
  - Variations



- Definitions –v- Jargon
- Clear, achievable deliverables
- Documents detail
  - Deliverables’ content
  - Intended result
  - Process (as needed)



- Coordination Role
  - Verifying/Validating
  - Monitoring/Checking
  - Scope
- Relevant standards
- Available guidance



Data-Specific Considerations

- You are/are not obligated to
  - Verify accuracy or completeness
  - Validate format and uncorrupted
  - Seek out all relevant published information
  - Continue to update the design, advice or deliverables (till when?!)
- Entitlement to retain data for
  - Internal R&D
  - Promotion/Future pitches provided it is anonymized

That’s Not Me: A Non-Exhaustive List



Exclusions

- Not responsible for **others’** design, works or deliverables (subject to any review or co-ordination obligations)
- Not responsible for arranging/paying for **licenses** for the client for publicly-available software or third-party software
- Fitness for purpose of design and services

Clarifications

- What **has been** priced for
- What specifically **hasn’t been** priced for
- What likely occurrences will attract **additional** fee/time/requirements
- Report/Advice can be relied on by whom, and for what



Contracts and Scope

Help/Hindrance

What do you want?
“I Want Some Stuff”

I want…





Undeliverable Deliverables



“Do Revit COBie 3D BIM”

No Gaps…

Who Does What, When and How



Sufficient Detail

- Scope
- Deliverables and purpose
- Post-completion systems
- Records
  - Internal
  - Emails
  - Minutes
  - Change Orders



Responsibilities

- Reliance
- CDE
- Process
- Checking and control
- Transport and transfer
- Design life/Durability



Miscellaneous

- Contractual collaboration and standardization
- Agreed digital strategy
- Insurance

Copyright and Future Use



- Copyright for
  - Design
  - Models
  - Existing Data
  - New Data (including databases)
  - Source code and object code
  - Kit-of-Parts
  - Software (including publicly-available software)
  - Digital tools
  - Documents (including manuals, technical documents and calculations)
  - Internal correspondence and notes

- Non-exclusive, transferable, irrevocable, royalty-free licence to reproduce for:
  - Any purpose related to the Project
  - Any purpose related to the party's commercial and other activities
  - Any future projects

- Right to use its general knowledge, skills and experience, and generic ideas, concepts, know-how and techniques acquired or used in the Services/Project

- Will not be in direct competition with the Project **or** May independently develop something which is competitive/similar to the Deliverables



Internal

Process

Have a Plan



Failing to plan is planning to fail

What is the digital strategy – what tech and resources are required to fulfil it?

- Availability now or upcoming – when is right for you
- Balancing and support
- Staff recruitment and retention

Agility and flexibility – different projects, margins and needs

- Staged implementation
- Embedding learning, plus supply chain training
- Being ready for continuous upgrade
- Collaborating with wider industry

Making things accessible

- Easy, intuitive, non-technical
- Realizing the return on investment (keep an open mind)

The People Element: People-centric value

- Hybrid working –
  - Culture and workplace attracts talent and clients
  - Agility in facilitating collaboration
- How do teams/organisations:
  - Spend their time
  - Use space
  - Use technology effectively
- Setting the norms (e.g. *https://www.brightspotstrategy.com/ workplace-policies-procedures-noise-management/*)
- Feedback loops – Evolution and refinement



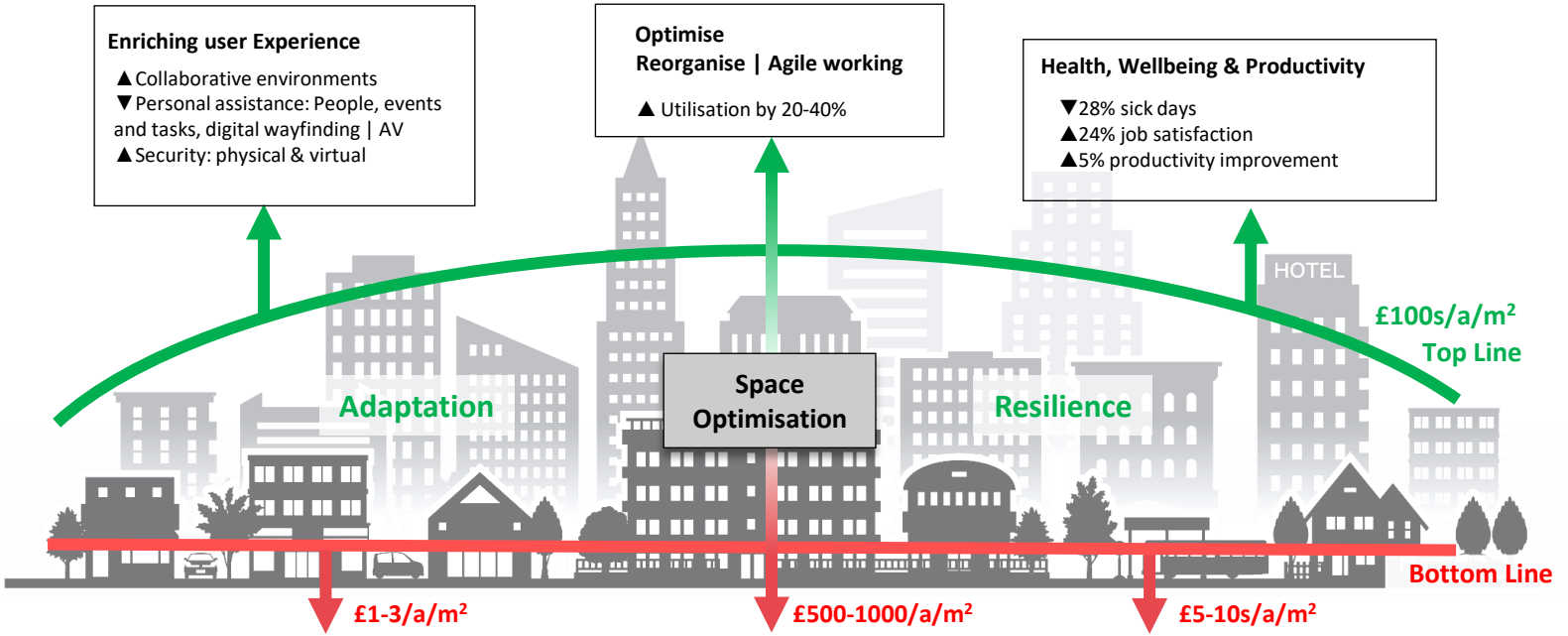




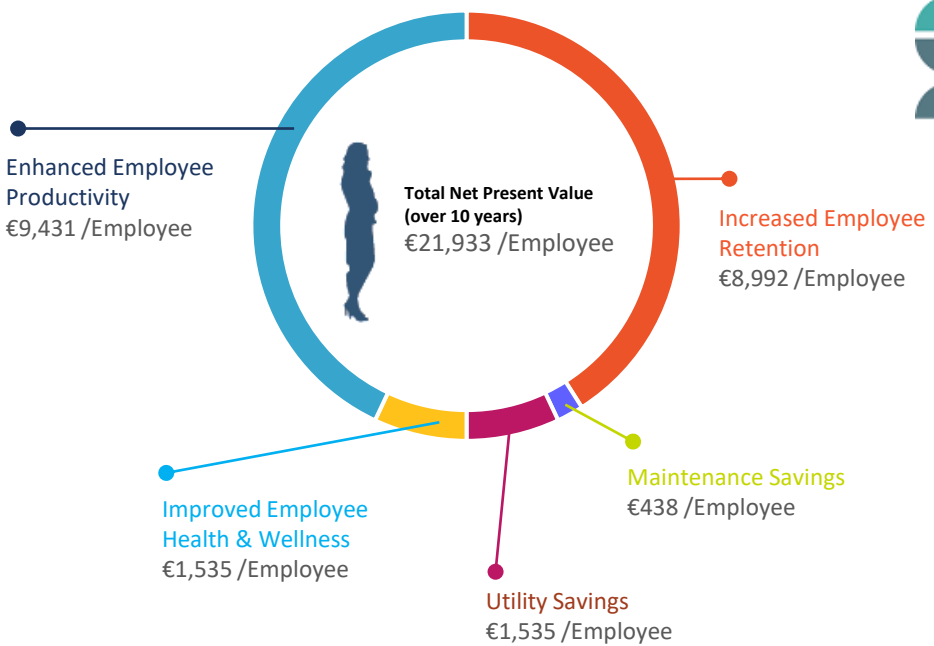
A Real Example: Smart Buildings

Because the Future has to be smart(er)

It’s not about tech, it’s about holistic building performance…



The Human Capital perspective…



stōk

Research: Stok

The financial case for Quantifying the bottom line of improved Productivity, retention, and wellness

So what should we do… the soundbite version


Start with a blank
sheet of paper

“Companies that familiarise themselves with the next normal and move quickly will be best positioned to both create value and maintain their competitive edge”

The Next Normal in Construction
McKinsey Global Institute
June 2020

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