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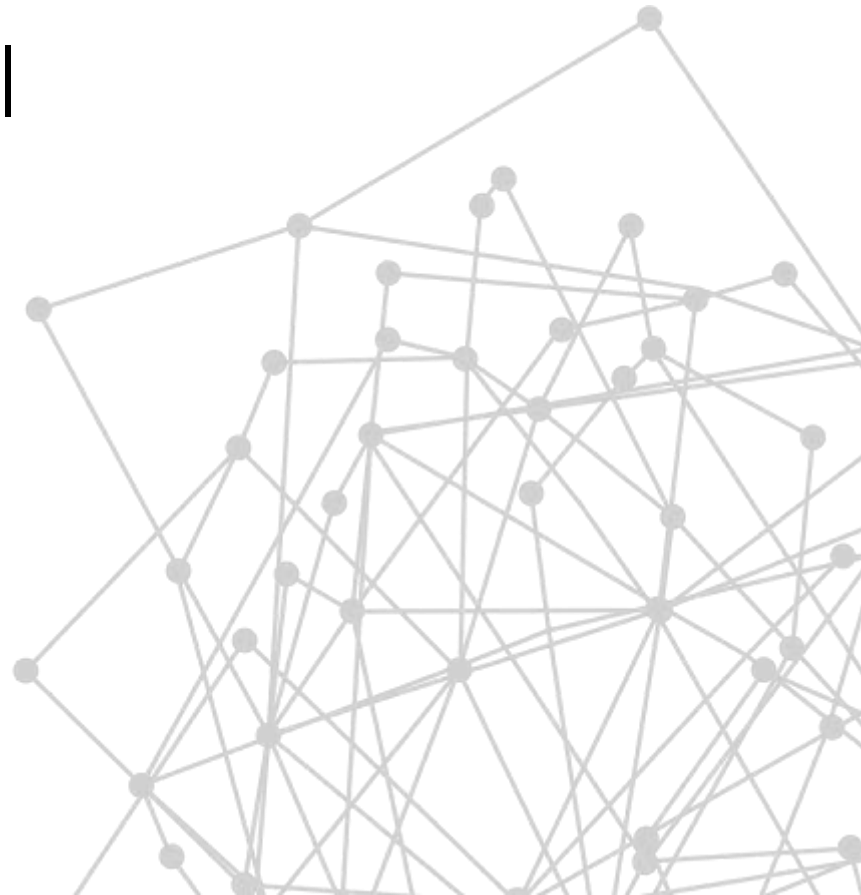
Construction Gone Digital: The Importance of a Global Digital Construction Workforce.

Technology Trends, BIM and the Future of
Construction.

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BIM / Digital
Engineering

Education and Skills
Growth

Construction
Technologies



Established in the UK
2013

Global Client Base

UK, Canada, China and
Australia.



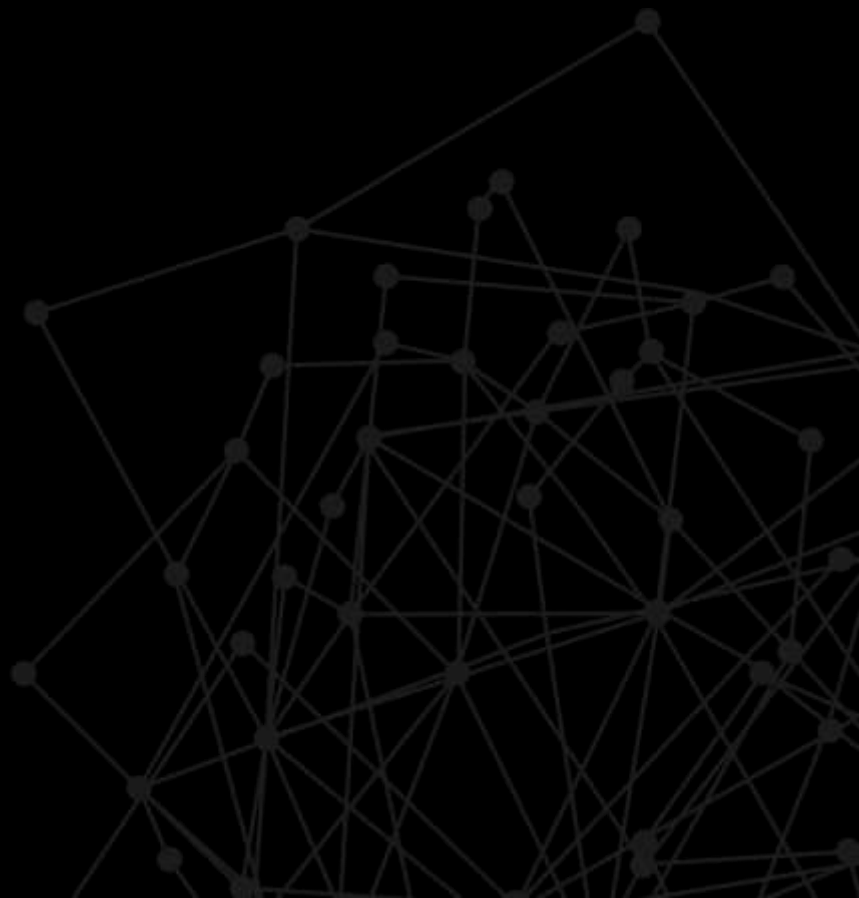
Our Client Base

British
Standards
Institute -
Global Training
Providers

Government:
DPTI, Transport
NSW, Vic
Government

Contractors /
Architects /
Engineers /
Surveyors

Our Aim





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wi3

Recognising & Supporting
Women in BIM





Current
Situation &
Predictions

Construction
Trends 2018-
2025

Current
Situation /
Processes and
Policies

What is today about?

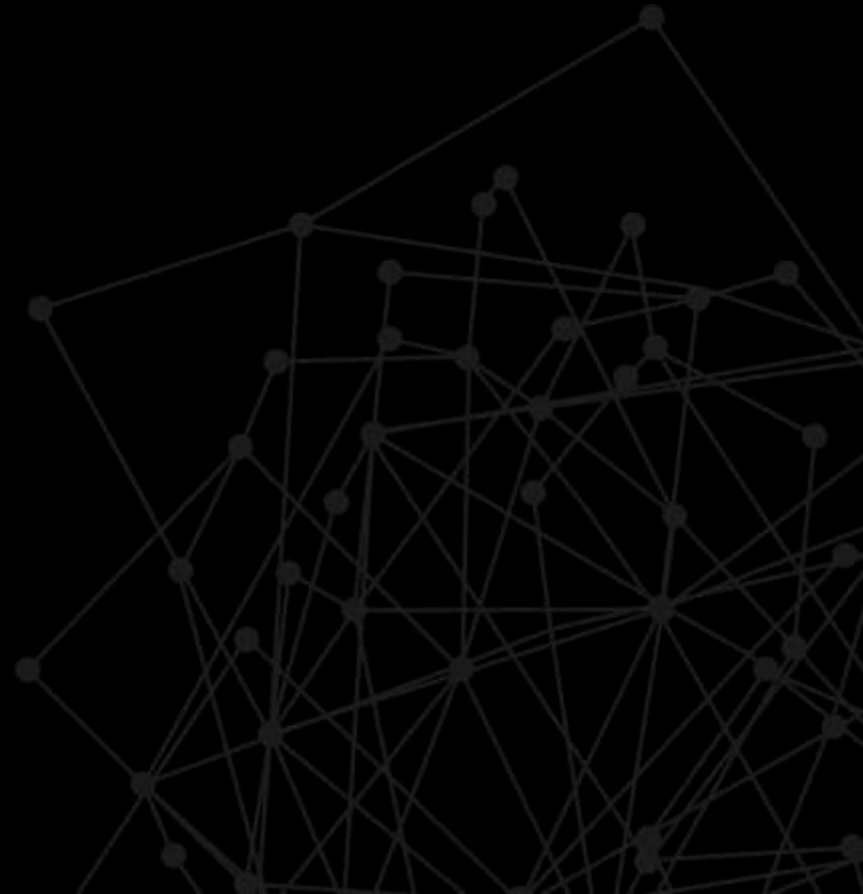


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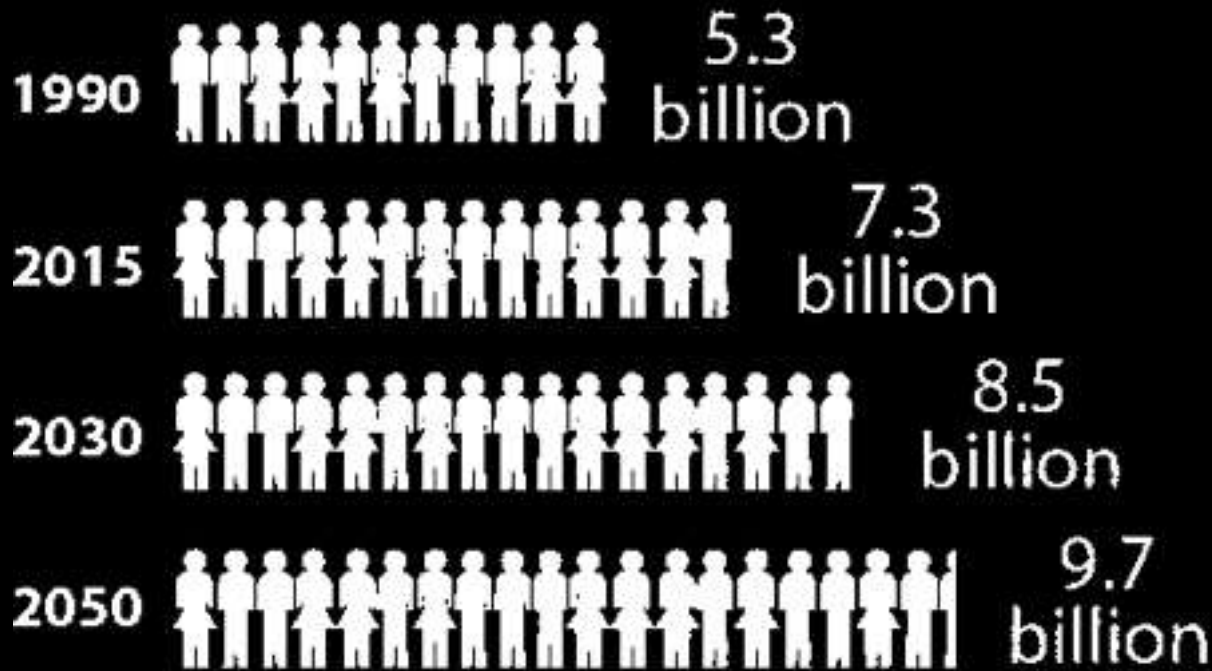
Context



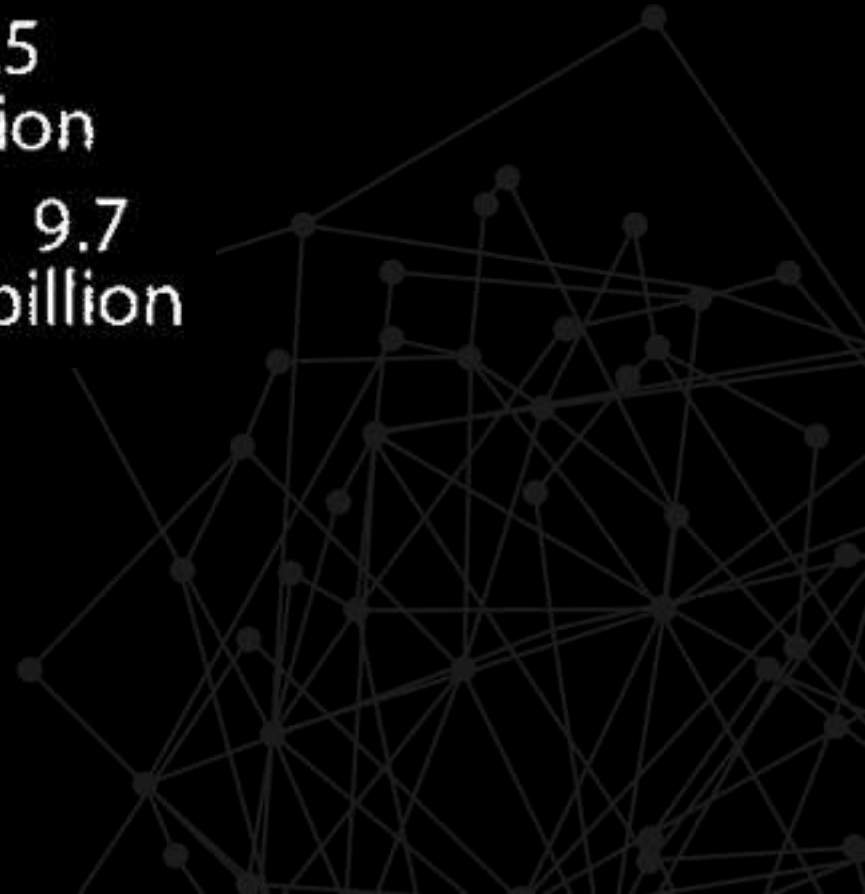
The current world population of 7.3 billion is expected to reach **8.5 billion by 2030**, **9.7 billion** in 2050 and **11.2 billion** in 2100



Project World Population - 2050



11.2 Billion by 2100

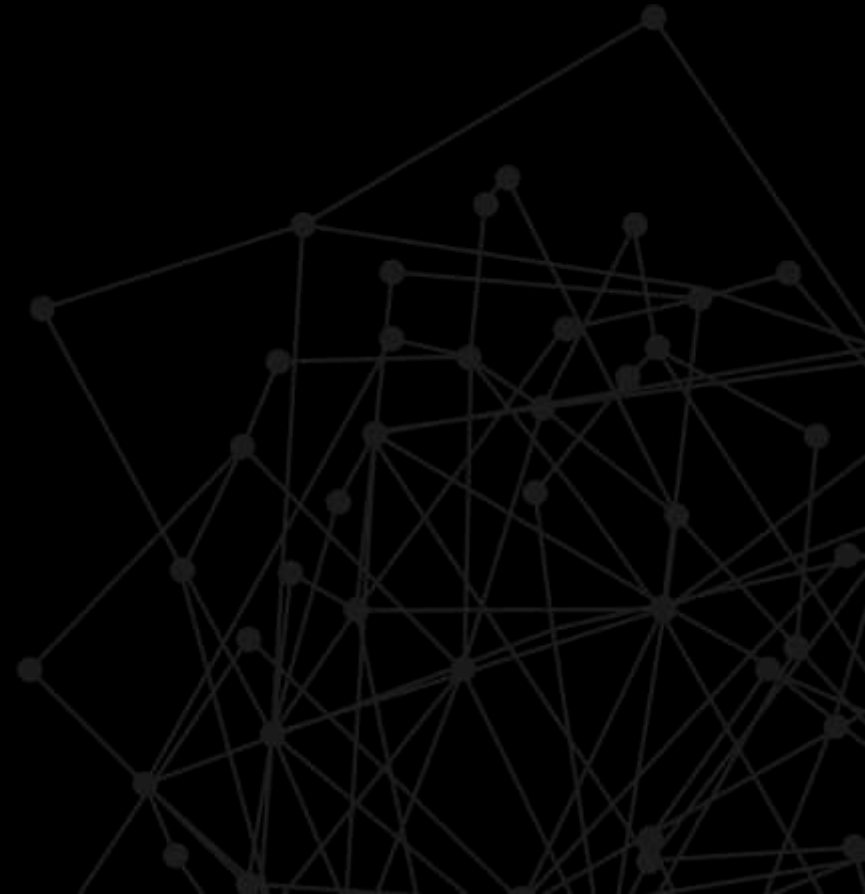


As a result of Population
increases the Global
Construction market is set grow
with it to hit US\$10.5 Trillion by
2025.

We will need.

More Buildings.

More Infrastructure.



Skills shortages
- Labor and
Digital

Government
Commitments -
Standardisation

Lack of
Consistency

What are the issues with this?



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The Hunt for Efficiency

Leading firms are adopting advances in on-site factory and off-site manufacturing and assembly, 3D printing, automation and robotics to improve efficiencies.

The hunt for efficiency



Initial problem for the of the construction iture and relatively ity puzzle has been to solve.

price inflation are forcing the industry to address the fundamental problems that have existed for decades. Meanwhile, the improving global economic landscape and increased commitment to invest in major programmes in real estate and infrastructure are also providing the long-term stability needed to commit to innovation.

Developments such as integrated design and asset management (design, asset, cost and schedule all linked and visualised) are helping better understand the asset,

in on-site factory and 3D printing, automation efficiencies.

management are icking productivity. t alongside the physical nning, delivery and ssets.

Developments such as integrated design and asset management (design, asset, cost and schedule all linked and visualised) are helping better understand the asset, both during construction and handover into operation.

In the near future, the application of blockchain technologies will streamline contractual processes and exciting progress in machine learning will help predict issues in construction and optimise maintenance and operations.

So what do we do?

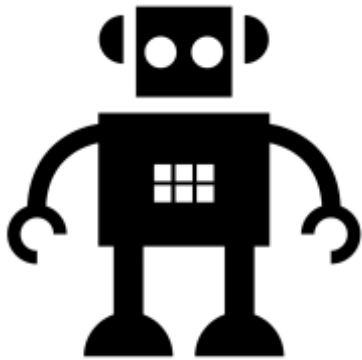
Education is Key.

What is coming?





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Future Skills (Review
Current Trends)



Current Conditions
(BIM / Digital)



Consistency
(Standards /
Processes)

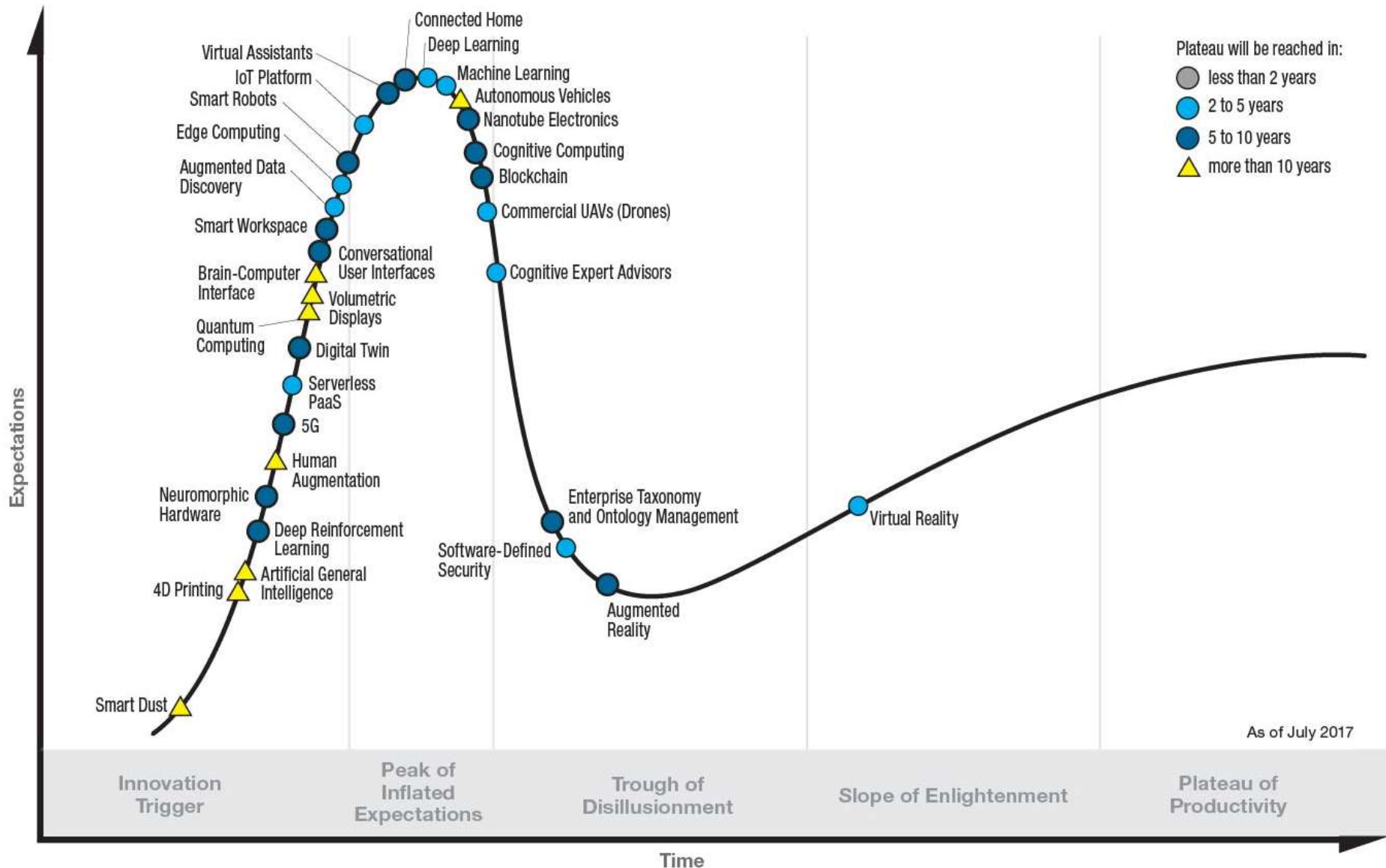


Future Skills

What are the technology trends which may impact the future of the Construction Industry?



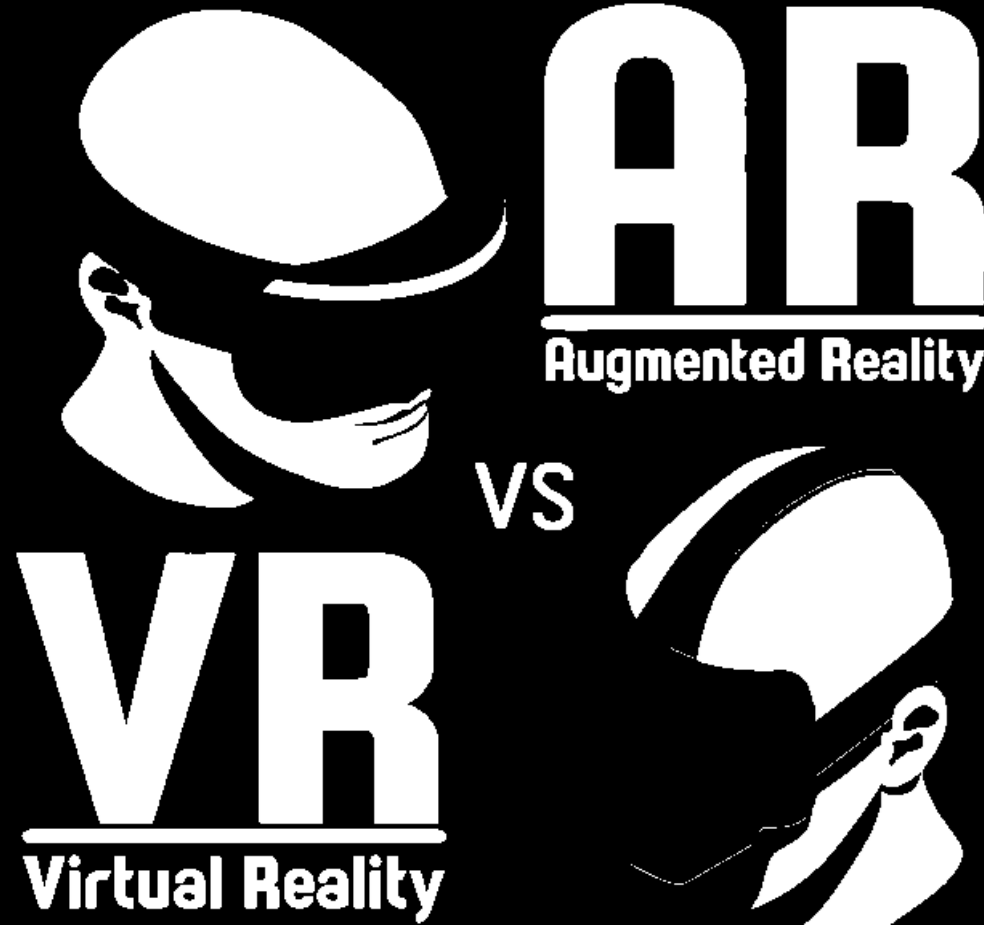
Gartner Hype Cycle for Emerging Technologies, 2017



Global Spending on augmented and virtual reality (AR/VR) will nearly double from \$9.1 billion in 2017 to \$17.8 billion in 2018.



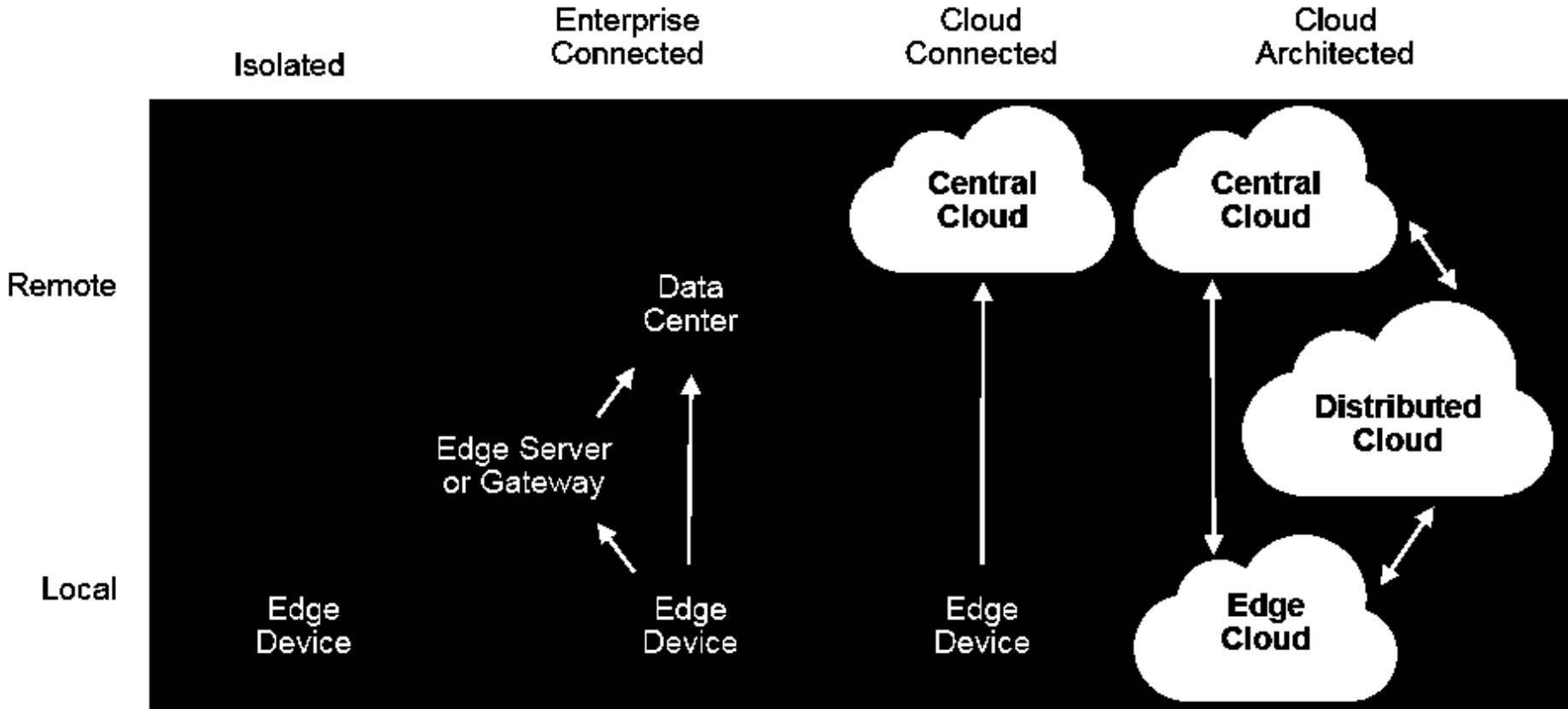
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Cloud Computing will allow small business to connect to a wider global environment.



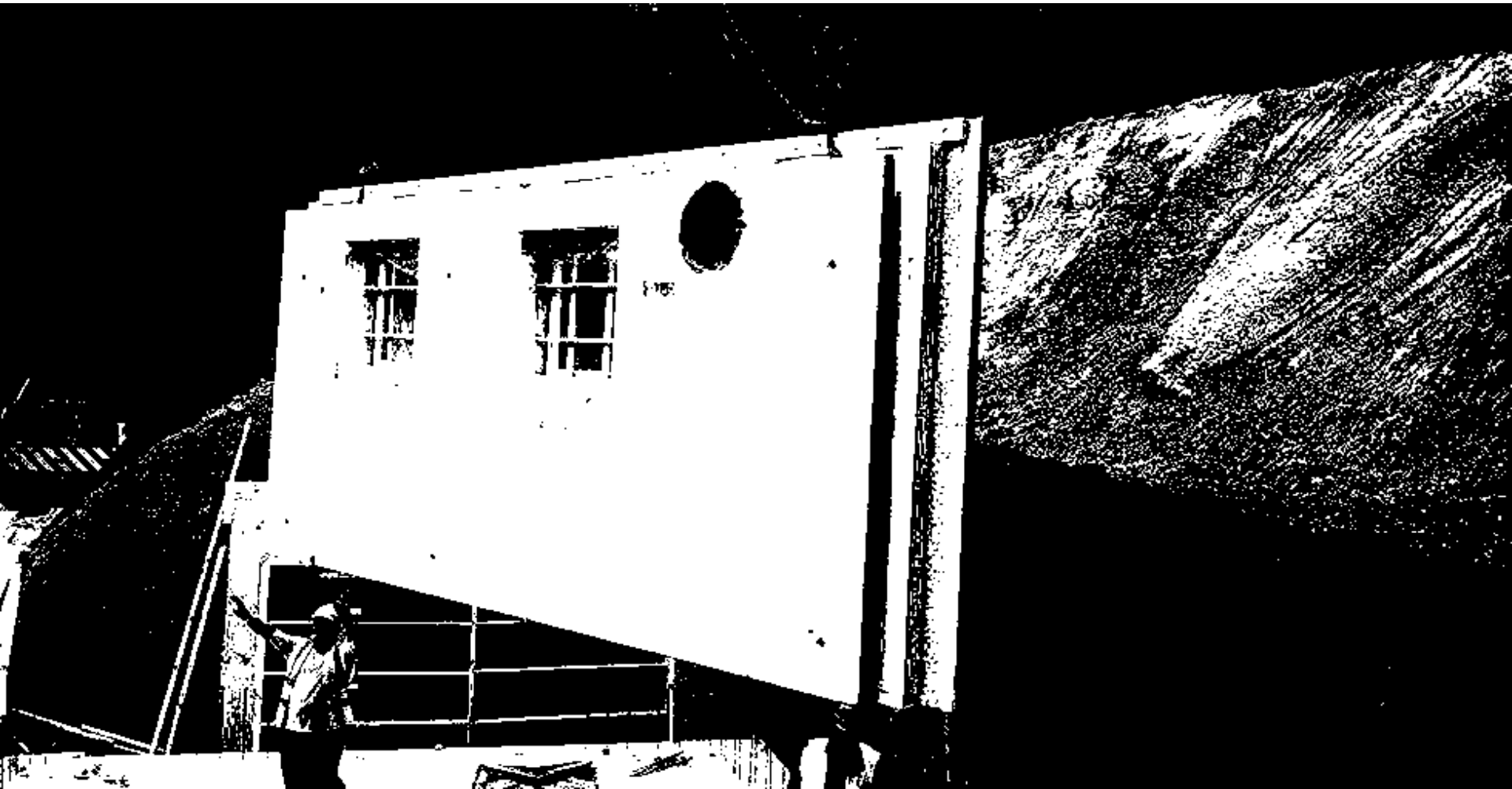
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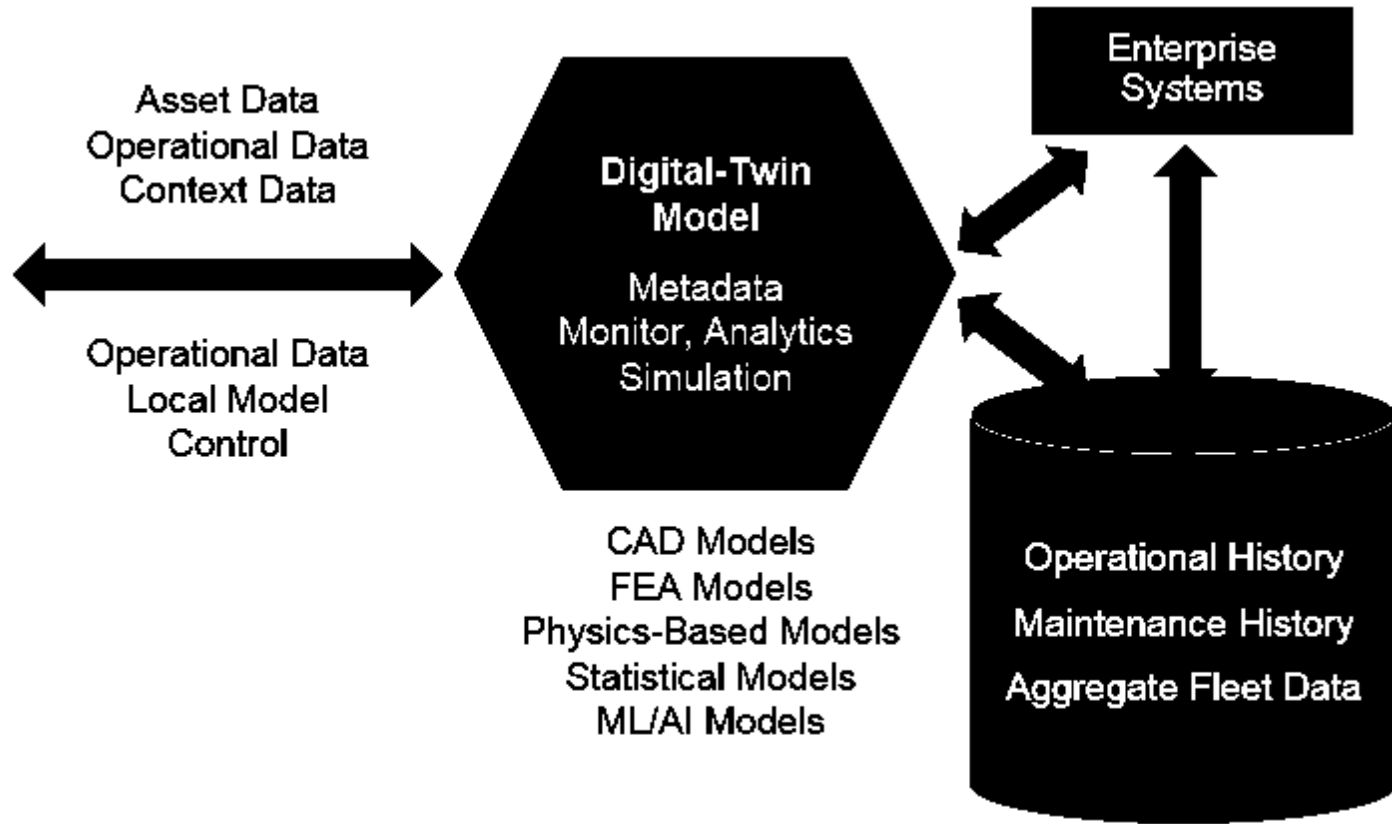
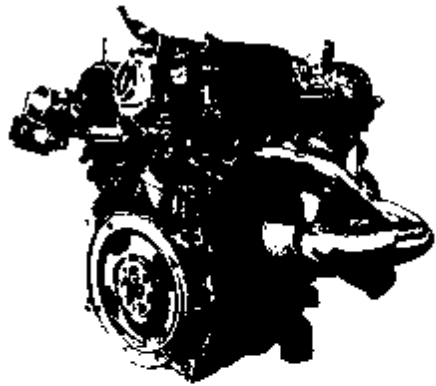
Tools, processes and
methodologies for offsite
fabrication will be
commonplace.



“To obtain the highest value from digital twins, the enterprise must address the digital ethics issues raised by different parties interacting with the data from not just the enterprise, but also its partners and customers.”



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Drones will become more widely used to evaluate jobsites and act as building and contractor surveillance. Rather than paying for security personnel drones are able to take the place of humans.



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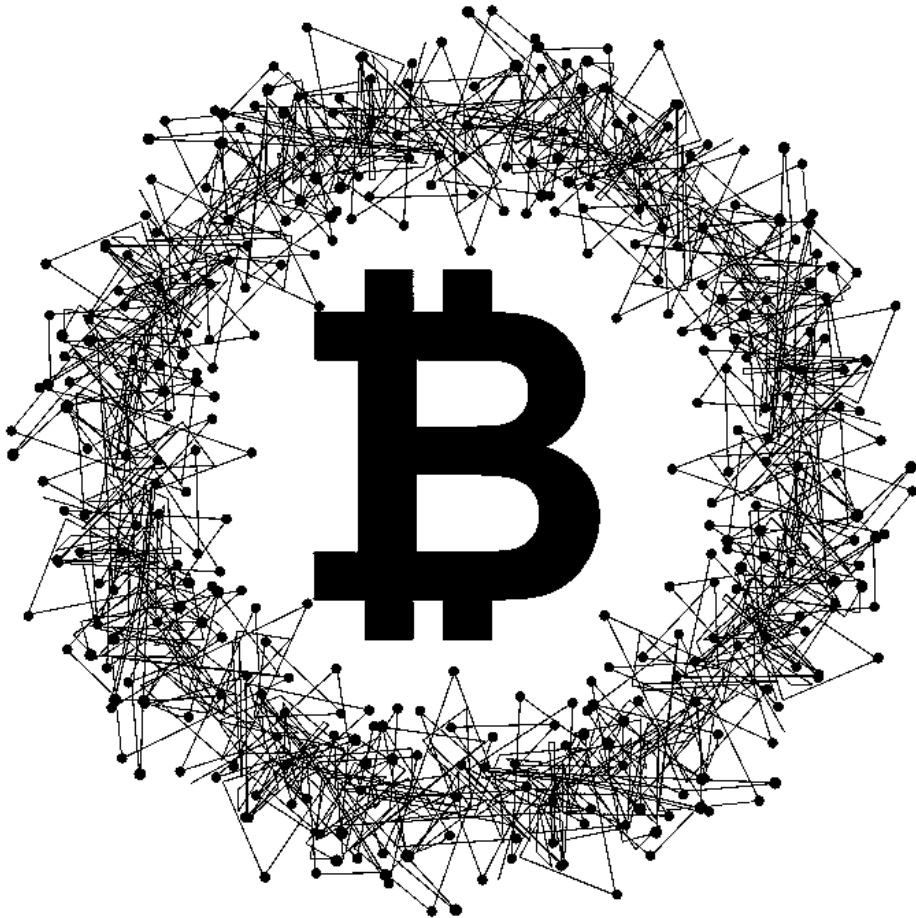
Wearable Technologies will form part of Construction processes during design, Construction and Operation.





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BLOCKCHAIN



Current Requirements

What do we need to address now which will support industry?





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A high-contrast, black and white 3D architectural rendering of a building's facade. The image is dominated by a grid of white lines on the left side, which recede into the distance, creating a strong sense of perspective. The right side of the image shows a complex, textured surface of the building, possibly a facade with many windows or a highly detailed structure, rendered in a dark, almost black color with some white highlights that define its form. The overall aesthetic is technical and digital.

BIM



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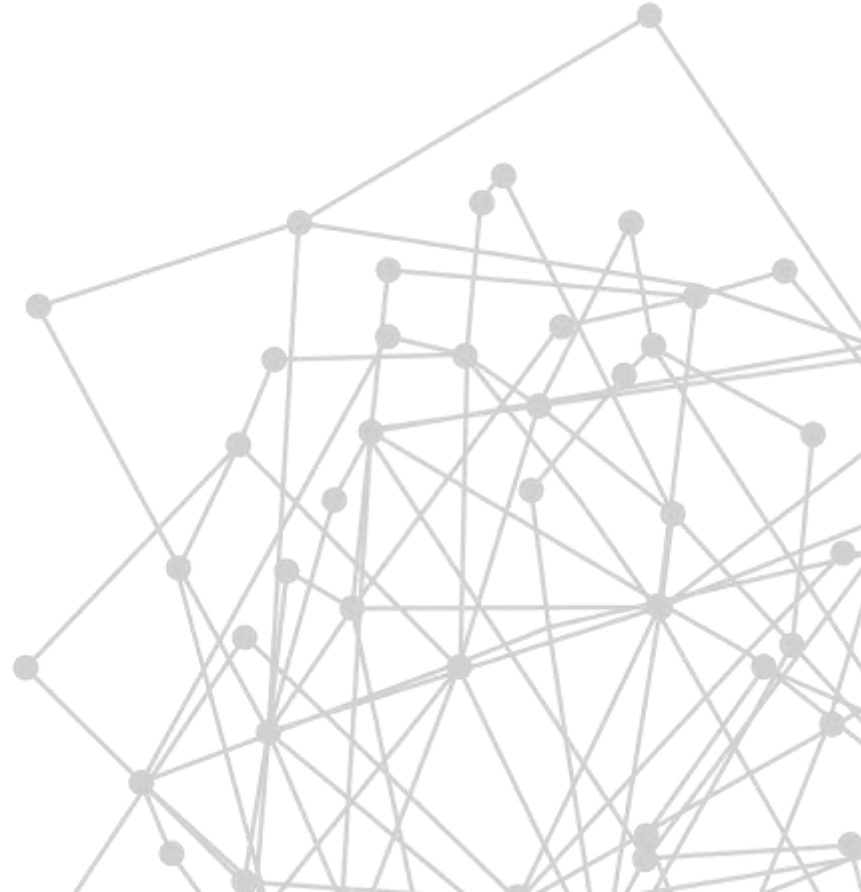


HM Government





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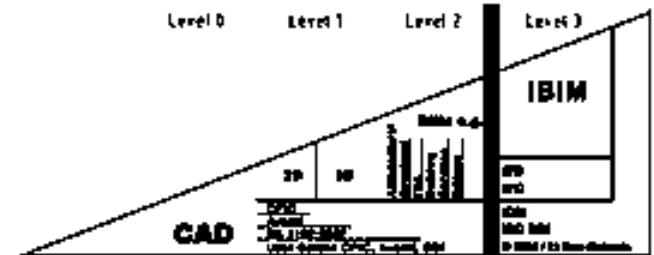
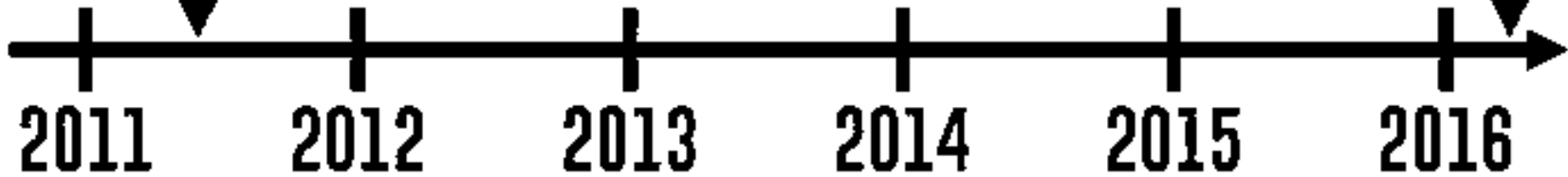
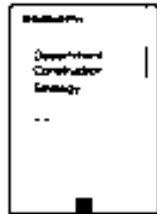


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Government Construction Strategy - May 2011

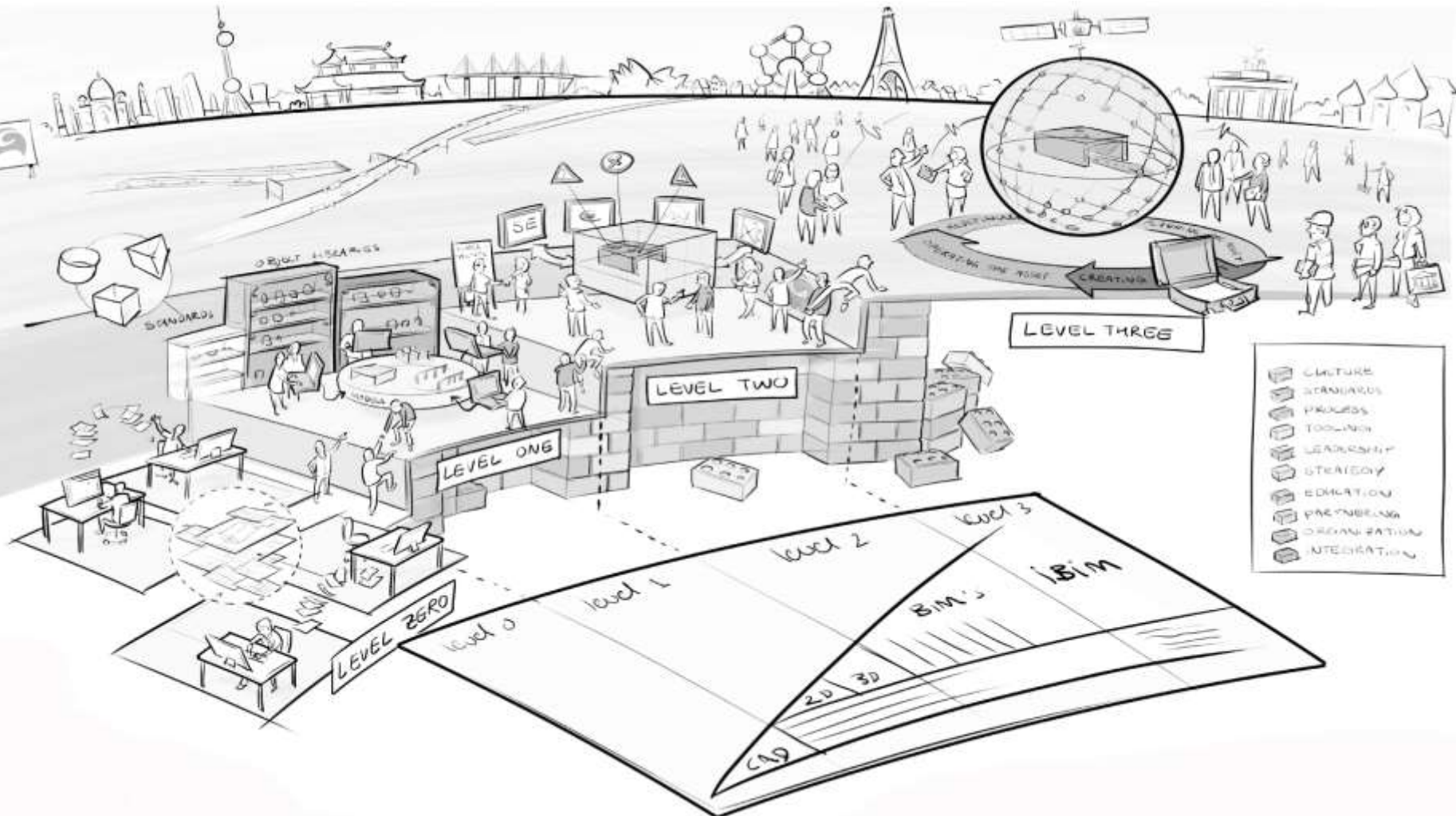
Level 2 BIM 2016





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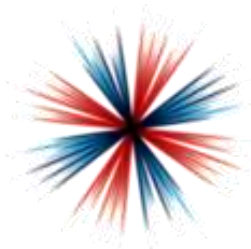


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Digital Built Britain

Innovate UK



**INDUSTRIAL
STRATEGY**





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BIM Level 2 Compliance
**DEMONSTRATING
INDIVIDUAL AND TEAM
BIM CAPABILITY**

bsi.

BSI Training Academy -
New BIM training courses
now launched.

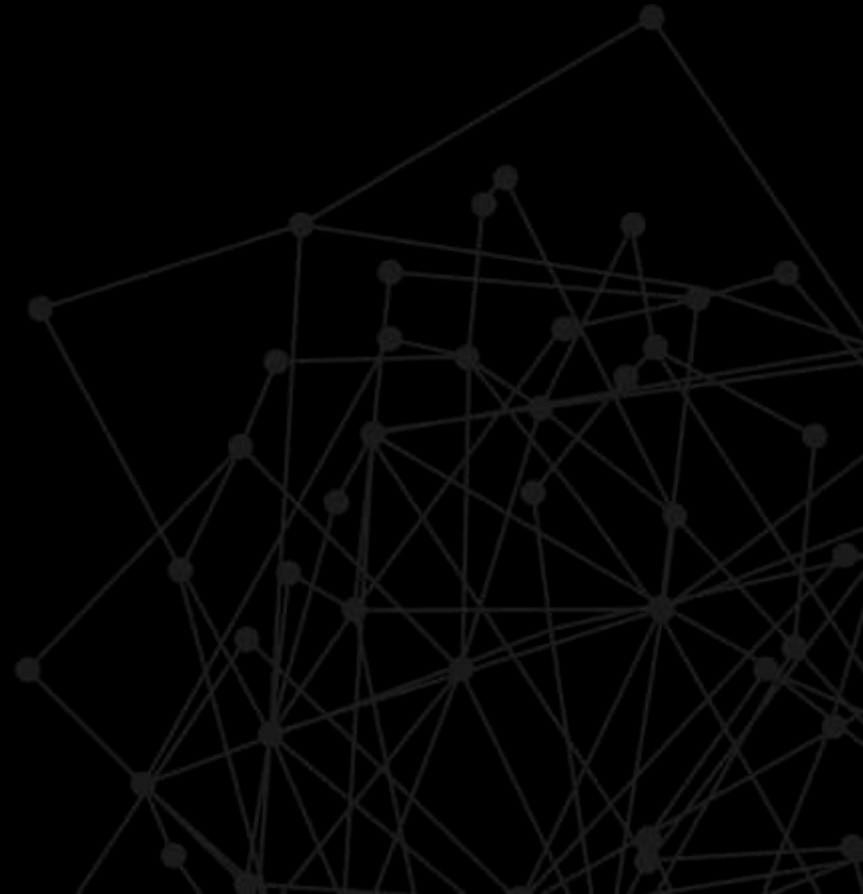


BAF

BIM Academic Forum



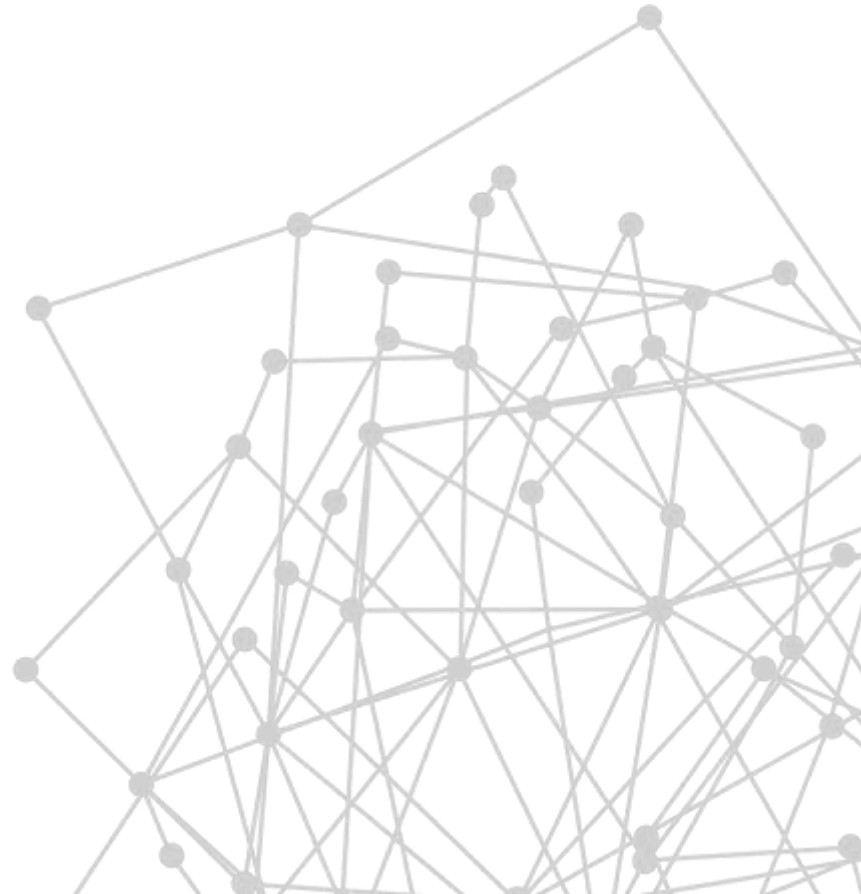
Consistent Processes / Standards



UK BIM Level 2 and the Standards, Processes and Framework are now being adopted Globally.



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“Standards play an important role in ensuring the wider adoption of BIM technologies, processes and collaboration by ensuring the same accurate data can be accessed throughout the supply chain”

*Mark Bew. Chair of the HM
Government BIM Task Group*





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PAS 1192-2:2013

Specification for information management for the capital/delivery phase of construction projects using building information modelling



PAS 1192-5:2015

Specification for security-minded building information modelling, digital built environments and smart asset management



PAS 1192-3:2014

Specification for information management for the operational phase of assets using building information modelling



PAS 1192-6:2018

Specification for collaborative sharing and use of structured Health and Safety information using BIM



In Australia alone- the reference to PAS 1192-2 is happening across the majority of our State Government Departments.



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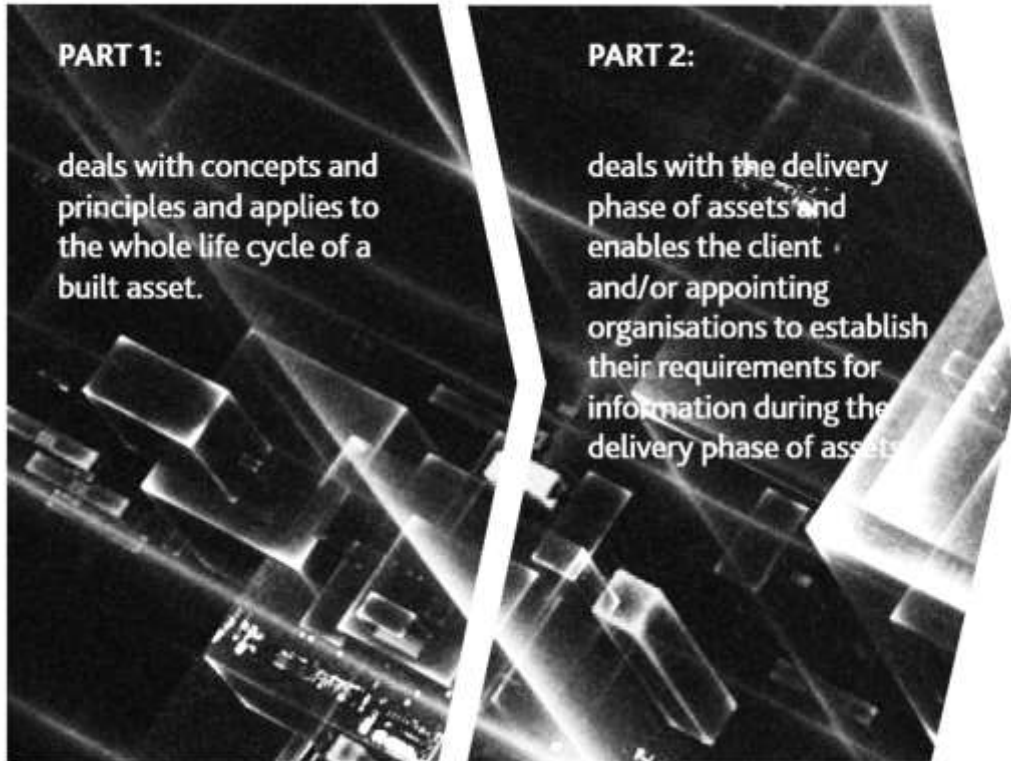
Transport
for NSW





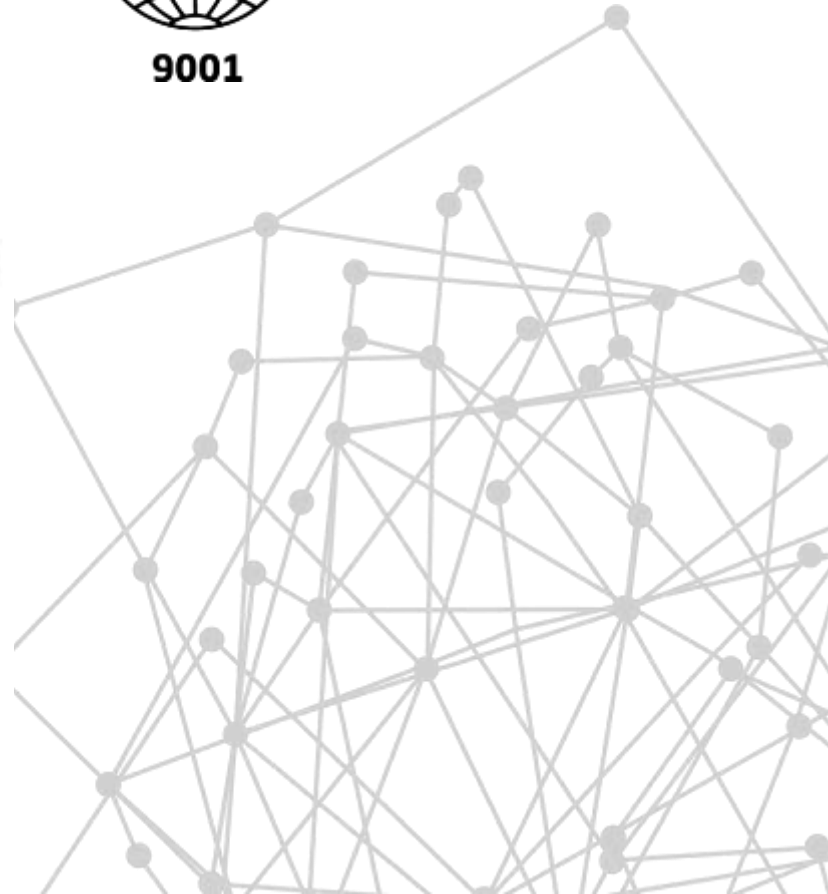
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ISO19650 STAGES



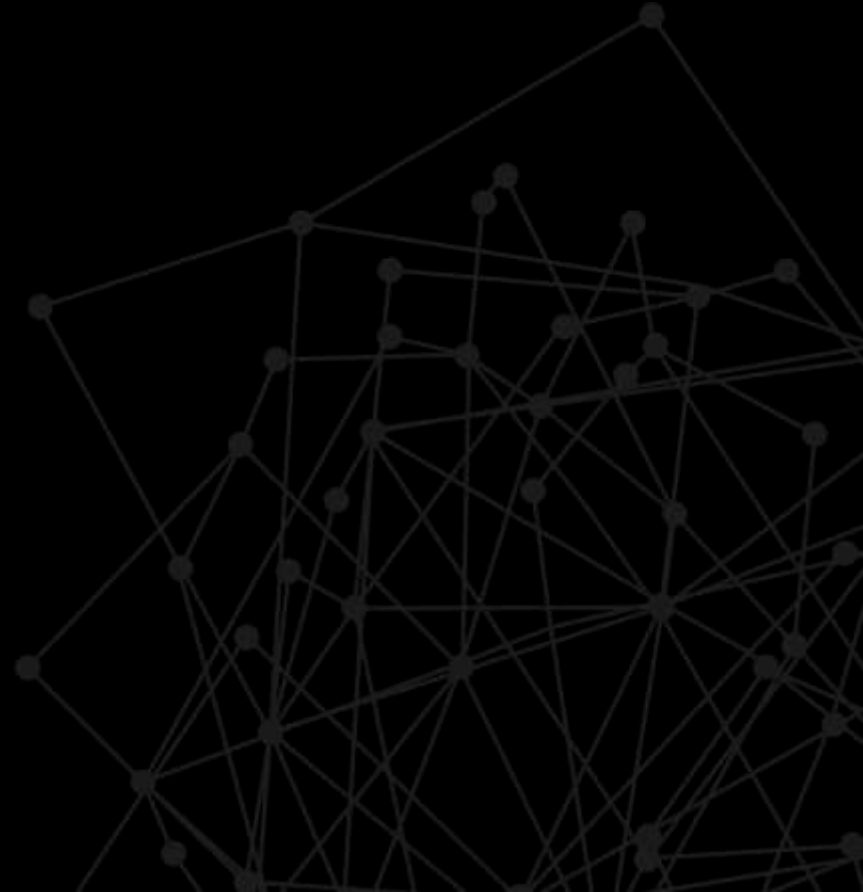
PART 1:
deals with concepts and principles and applies to the whole life cycle of a built asset.

PART 2:
deals with the delivery phase of assets and enables the client and/or appointing organisations to establish their requirements for information during the delivery phase of assets.



Education is key.

Global working is our future.



In order to stay ahead of the curve our employees do not need to be faster or cheaper than machines.

Organisations should focus on helping employees develop, hone and capitalise on the capabilities that are uniquely human, such as collaboration, communication and integration.

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