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## ***“West Hill School & Digital Construction”***

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**The McAvoy Group – David Clark**  
**13<sup>th</sup> December 2017**

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**Think Smart. Build Smart.**

# West Hill SEN, Surrey

2 Storey SEN School including hygiene room, hoists, food technology room, classrooms, and ramped access within the modular units

**GIFA = 910m<sup>2</sup>**

**28 Modular Units**



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# West Hill SEN, Surrey

Existing school buildings remained operational throughout the construction – Less site disruption critical for SEN



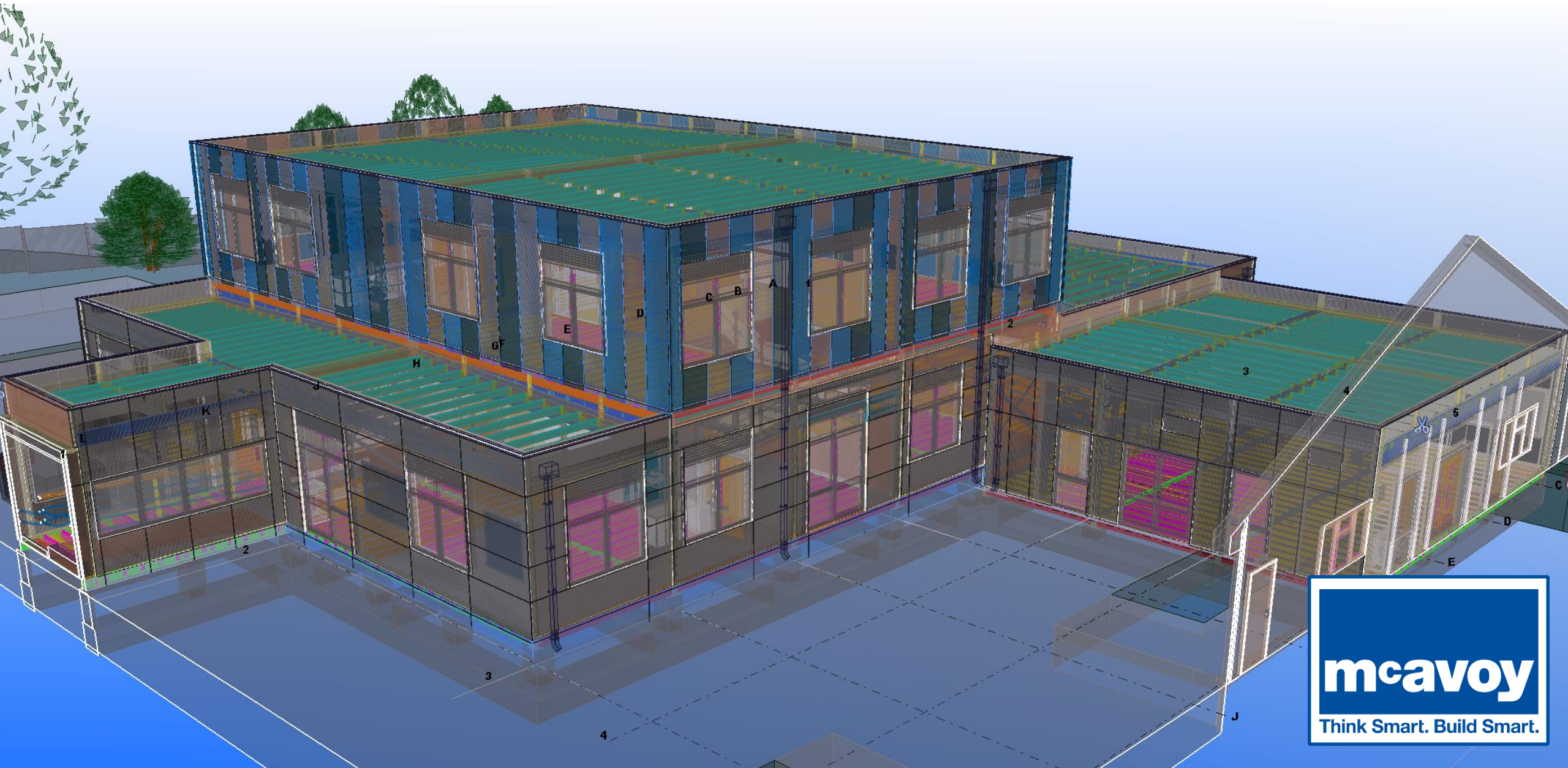
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# West Hill SEN, Surrey

28 steel modules installed within 4 days on site – Weathertight structure rapidly formed

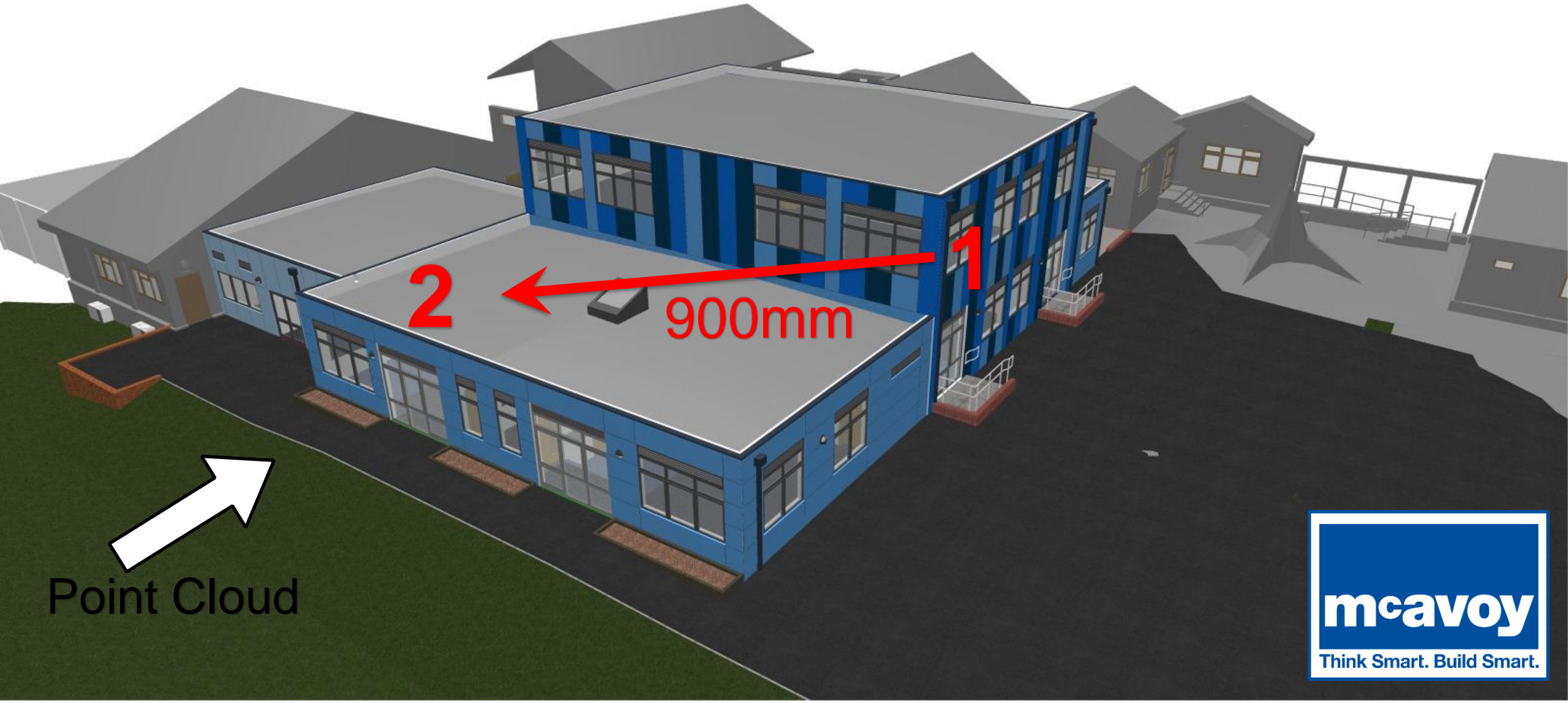


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## West Hill SEN, Surrey - Challenges

- Constrained site
- Two touch points with existing
- Change in Level of 900mm
- Point Cloud Survey



# West Hill SEN, Surrey – BIM / VR / Client Engagement



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# West Hill SEN, Surrey – BIM / VR / Client Engagement



But what next....



Real  
Environment



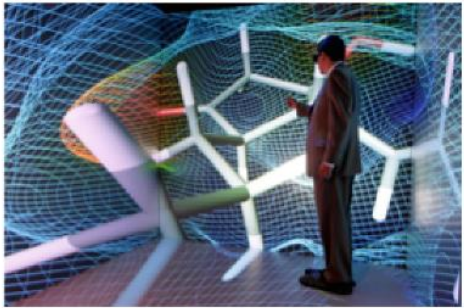
Augmented  
Reality



Augmented  
Virtuality



Virtual  
Environment



Collaborative

*(Inherent Potential)*

Singular



# Advanced Visualisation : *Augmented (AR) or Mixed reality (MR)*



**MICROSOFT HOLOLENS**



**DAQRI SMART HELMET**



**TABLET OR MOBILE DEVICE**



# Advanced Visualisation : *Augmented (AR) or Mixed reality (MR)*



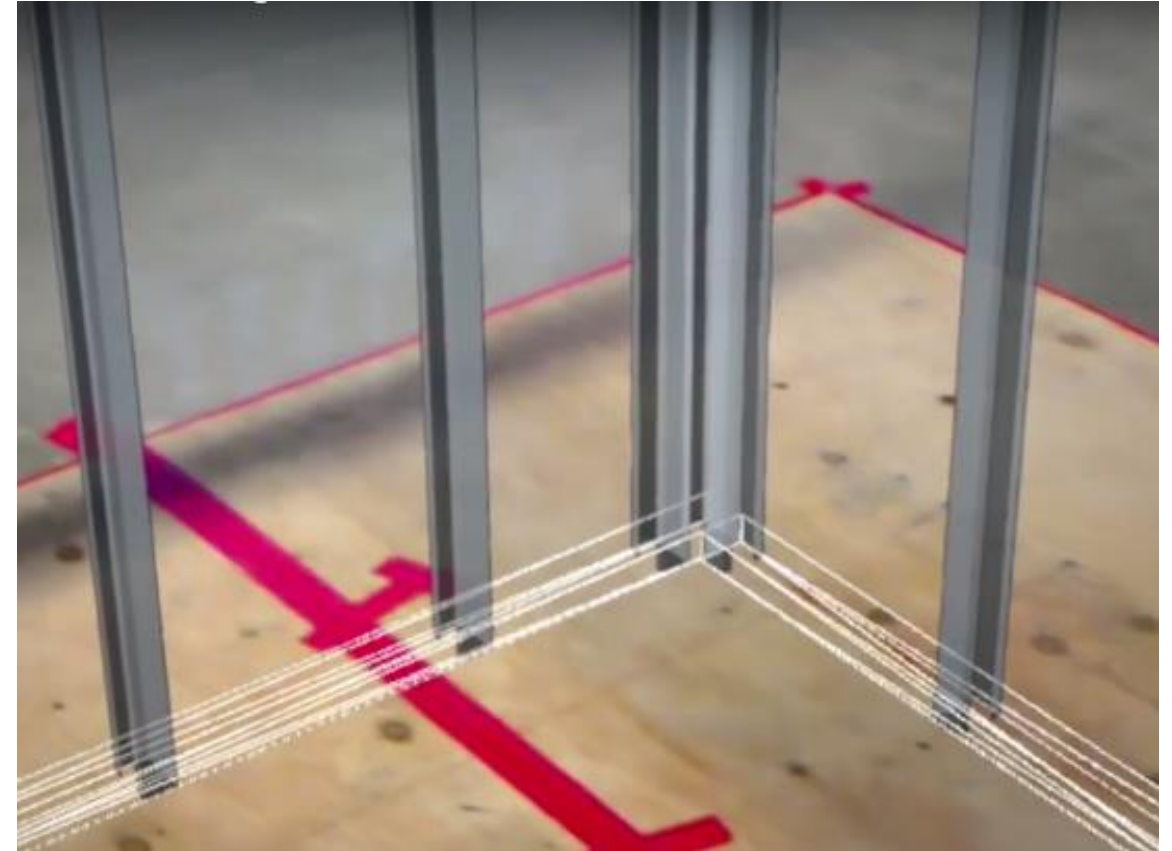
**Deliver drawings, works instructions, and data to the factory & site - in a better way**

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# Advanced Visualisation : *Augmented (AR) or Mixed reality (MR)*



**Proof of concept – bathroom Pod constructed directly from AR model**  
**No drawings, measuring tools, plumb lines etc, just the projected AR model**



# Advanced Visualisation : *The Augmented (AR) Worker*





# Advanced Visualisation : *The Augmented (AR) Worker*

STRUCTURE A35-08b  
Steel works

PROGRESS

19.5%

OVERALL PROGRESS

20 %

PROJECT REMAINING DAYS

352 days

EFFICIENCY

High



09:45 AM





# Advanced Visualisation : *Virtual reality (VR)*

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**VR**

VIRTUAL REALITY





# Live Design in **VR**



(Real-time changes seen in VR)



Advanced Visualisation :  
*Virtual reality (VR)*

# Multi-User **VR**





# Staff Training **VR**



**SAFE VR**



**REPEATABLE PROCESS  
TRAINING**



# Best Virtual Reality BIM

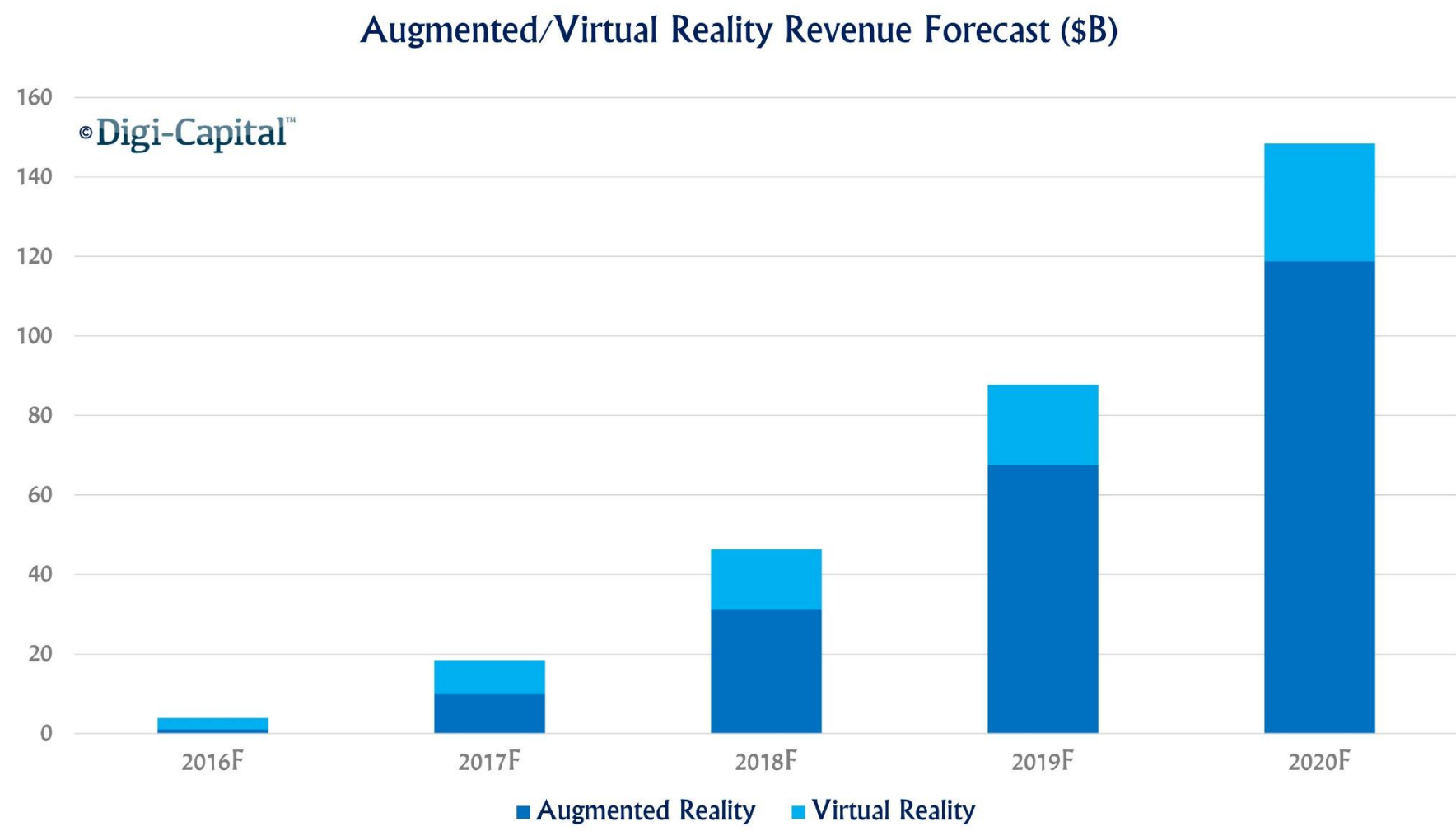
BIM4sme



RICS BIM4SME Awards **2017**



# Augmented Vs Virtual



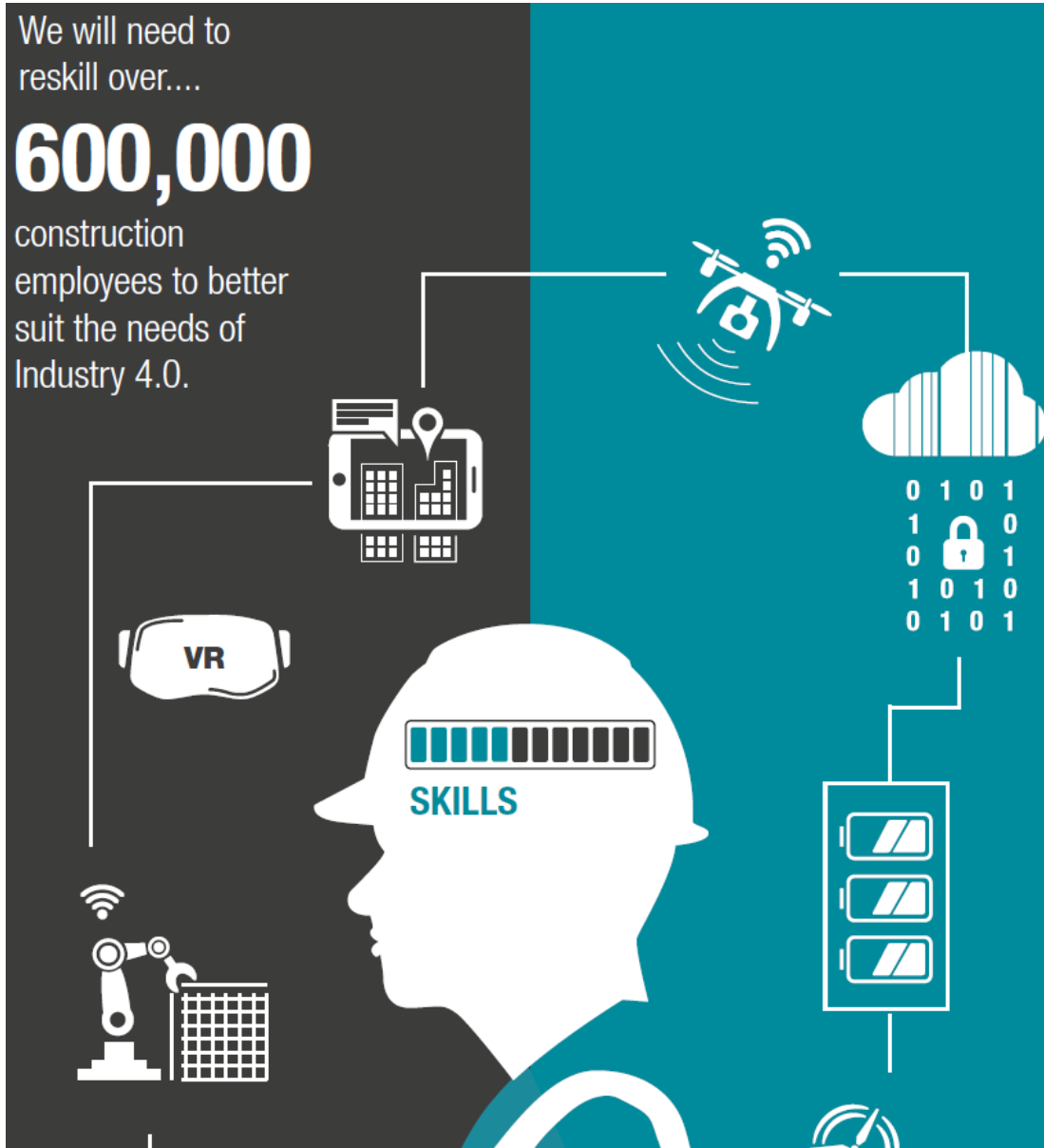
Source : Digi-Capital, 2015





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# The challenge ahead....



Both traditional apprenticeships and the design of the new trailblazer programmes need to incorporate the future need for a multi-skilled, adaptive workforce.

New technological advancements, and the inevitable move to more modern methods of construction and off-site assembly must inform the design of course syllabuses now.

Source : MACE Insights 2017 – Moving to Industry 4.0



# Closing Thoughts....



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# Thank you

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