



## Digital Construction and BIM – Why?

What can it bring to On- and  
Off-Site activities?



# WILLMOTT DIXON CONSTRUCTION

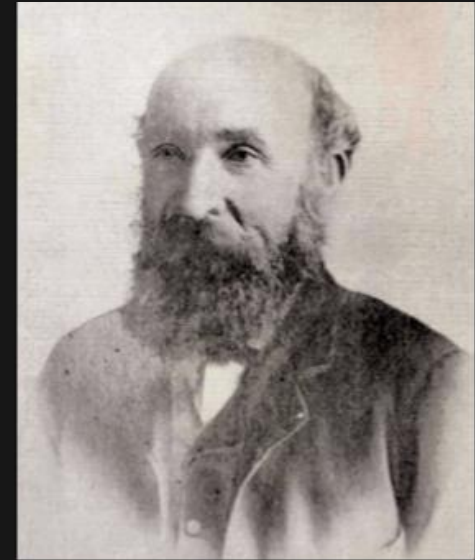
*A Brief History and Overview*

## 1852 – The Start of the Journey

**John Willmott** founds the company following a suggestion from the **Estate Manager** where he's working

**First Project** is to provide labour for excavation and construction of a new well

**£1** contract sum



## 2018 – Where we are Now

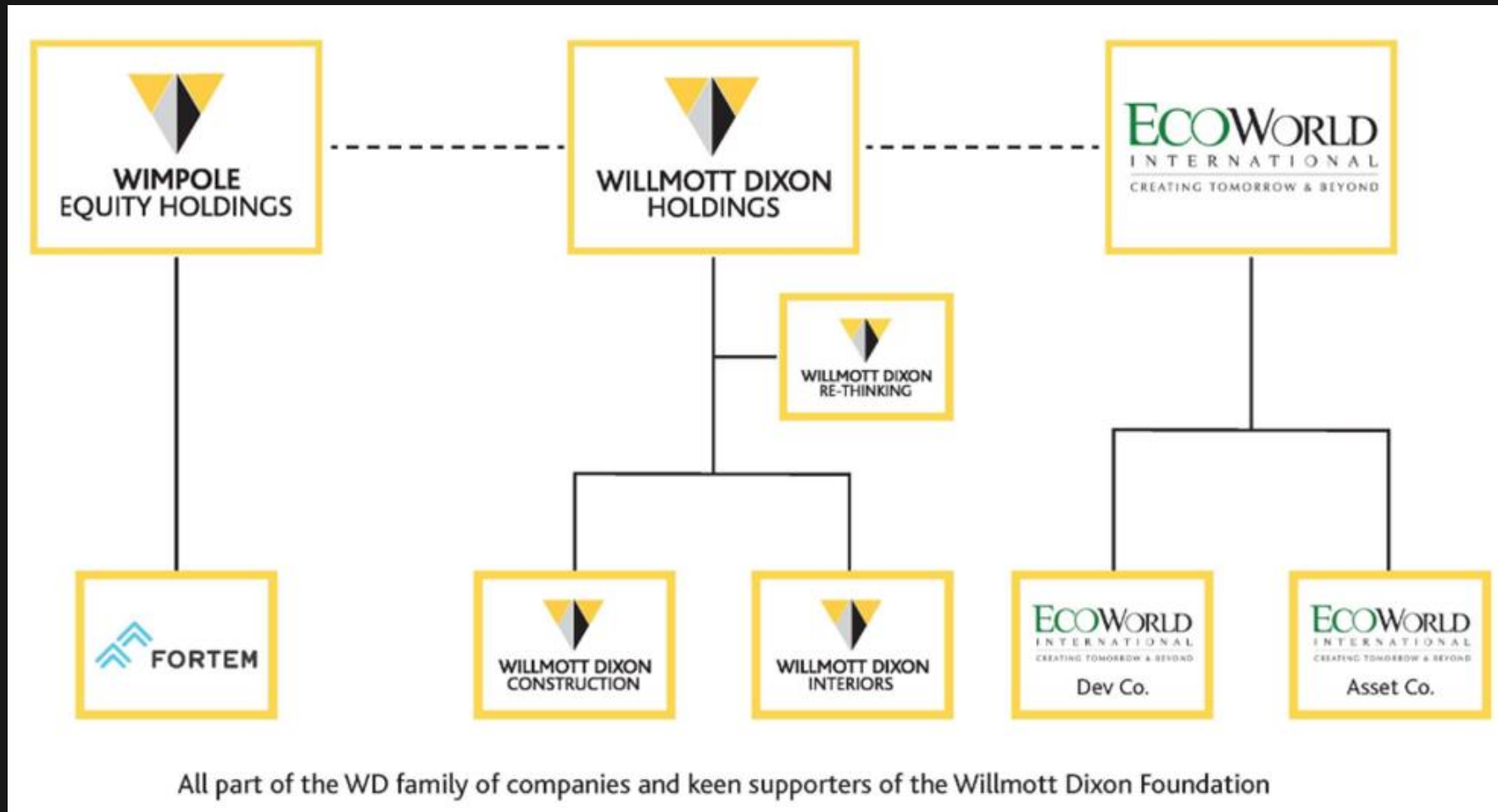
**Rick Willmott** is the Group Chief Executive and is the **5<sup>th</sup> generation** of the Willmott family to lead

- **Privately Owned** Construction Company
- **£1.2bn+** annual turnover
- **~2,500 employees**
- **90%+** of the population within 2km of a Willmott Dixon project
- **Carbon Neutral** since 2012
- **Won the Queen's Award for Enterprise in:**
  - Sustainable Development (2014)
  - Promoting Opportunity (2018)





# Group Structure



# National Structure

## 6 Regional Offices

- **Birmingham**
  - Milton Keynes
  - Nottingham
  - Oxford
- **Cardiff**
  - Bristol
  - Exeter
- **Cobham**
  - Dartford
- **Farnborough**
- **Hitchin**
  - Chelmsford
- **Manchester**
  - Leeds
  - Newcastle



# Our “Why” – Building Lives Less Ordinary

**The world is filled with enough ordinary.** It’s all of our responsibility to make it **extraordinary**.

That’s why every project we take on at Willmott Dixon has to **deliver a positive and memorable impact**.

**For our customers,** that means opportunities to prosper and grow.

**For our communities,** it means places not just to live in but to thrive in.

**For our people,** it means work that challenges, inspires and really rewards.

- Recognition that each of our Customers has **differing and unique needs**
- **Making the complicated simple** to help push the Customer’s investment further, whatever the economic climate
- Our success is built on a constant drive to understand the needs of each Customer, learn from our experiences, and **build on better**
- Building great business partnerships is like great friendships: **built on trust**

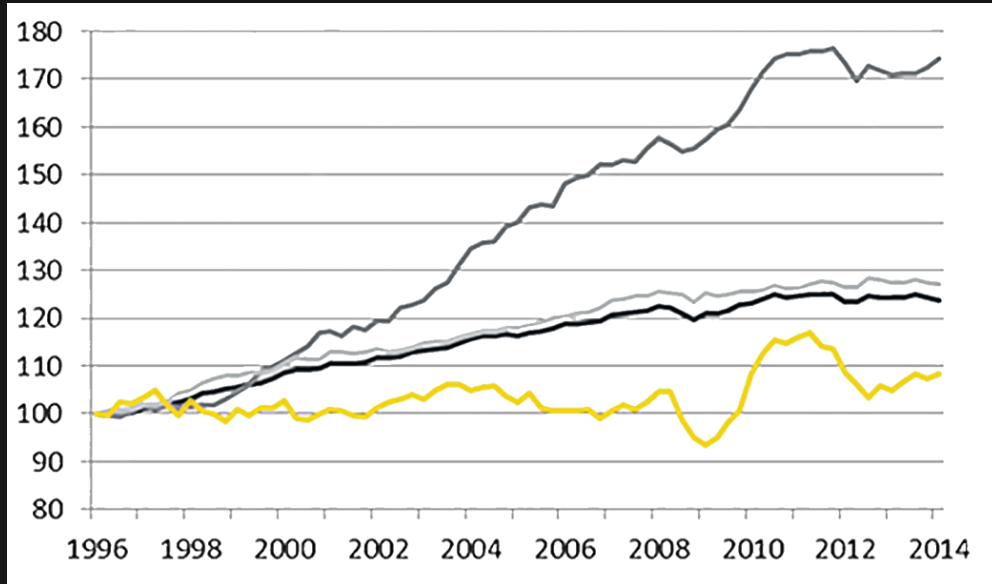
# BIM and Digital Construction

*What is BIM and Digital Construction?*



# Why was BIM Introduced?

Increase in output relative to employment  
(Index, 1996 = 100)

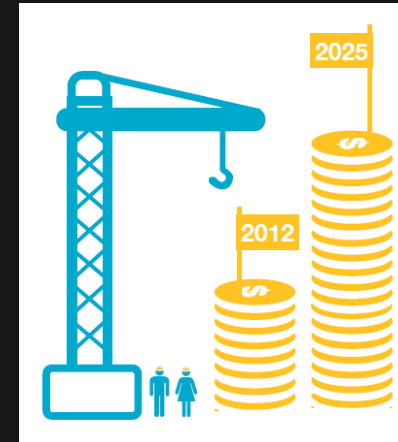


(EC Harris ONS 2014)

- All Jobs
- Manufacturing
- Total Services
- Construction



Construction contributes nearly  
**£90bn** to the UK  
Economy, 6.7% of the total



Global construction output is  
forecast to increase from around  
**\$8.5 trillion** today to \$12 trillion in  
2025\*

\* Source: Global Construction 2025

# How was BIM Pushed? – The Mandate

Part of the UK **Government Construction Strategy** published in 2011

From **April 2016** all “**Centrally Procured**” projects to use BIM Level 2

Only applies to **Public Sector** works

## Lower costs

33%

reduction in the initial cost of construction and the whole life cost of built assets

## Faster delivery

50%

reduction in the overall time, from inception to completion, for newbuild and refurbished assets

## Lower emissions

50%

reduction in greenhouse gas emissions in the built environment

## Improvement in exports

50%

reduction in the trade gap between total exports and total imports for construction products and materials

# What is BIM? – The Definition

Building Information Modelling

Better Information Management

Building Information Model

Built Infrastructure Model

Etc.

In short... There isn't an industry wide agreed definition

**There is no legal definition of BIM**

Government BIM Task team **disbanded** when the mandate landed

**Lack of industry leadership** to help provide clarity

Everyone interpreted things differently

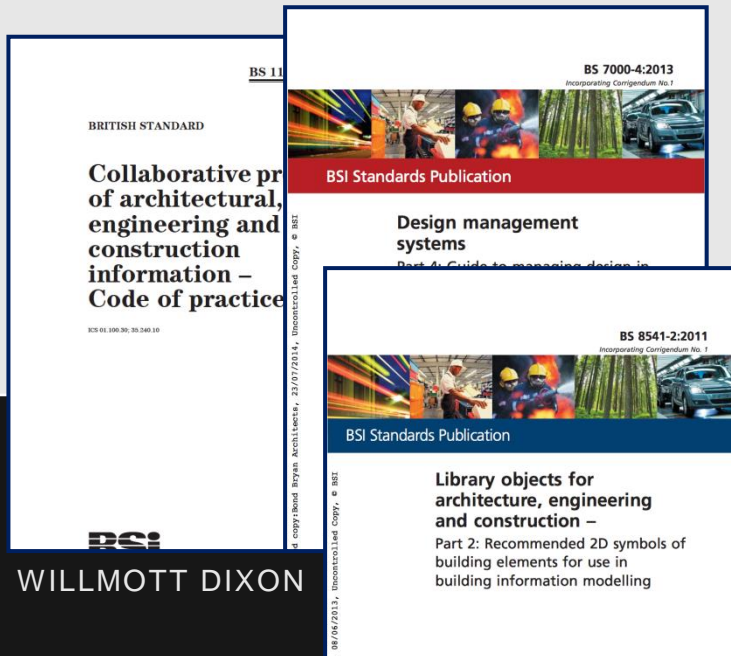
UKBIM Alliance now set up to help provide leadership



# What is BIM? – The Standards

## BIM Level 1

- BS1192:2007 + A2:2016
- BS8541-2:2001
- BS7000-4:2013



## BIM Level 2

- BS1192:2007 + A2:2016
- PAS1192-2:2013
- PAS1192-3:2014
- BS1192-4:2014
- PAS1192-5:2015
- PAS1192-6:2017
- BS8536-1:2013
- BS7000-4:2013
- BIM Protocol (CIC)
- Digital Plan of Work
- Uniclass 2015
- NBS Toolkit
- ISO 19650?



# What is Digital?

Current Buzzwords:

- AI
- Digility
- Blockchain
- Smart Cities
- Internet of Things
- Big Data
- Industry 4.0
- DfMA
- The Cloud

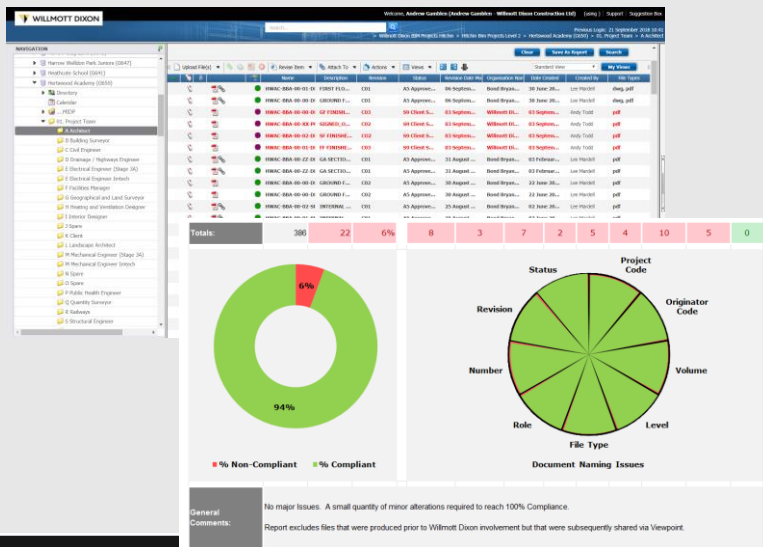
# BIM v Digital

## BIM

- A process backed up by standards
- Provides a Data Foundation

## Digital

- Builds off the Data Foundation of BIM and uses Technology to provide efficiencies
- Promotes Collaboration / Mindset Change

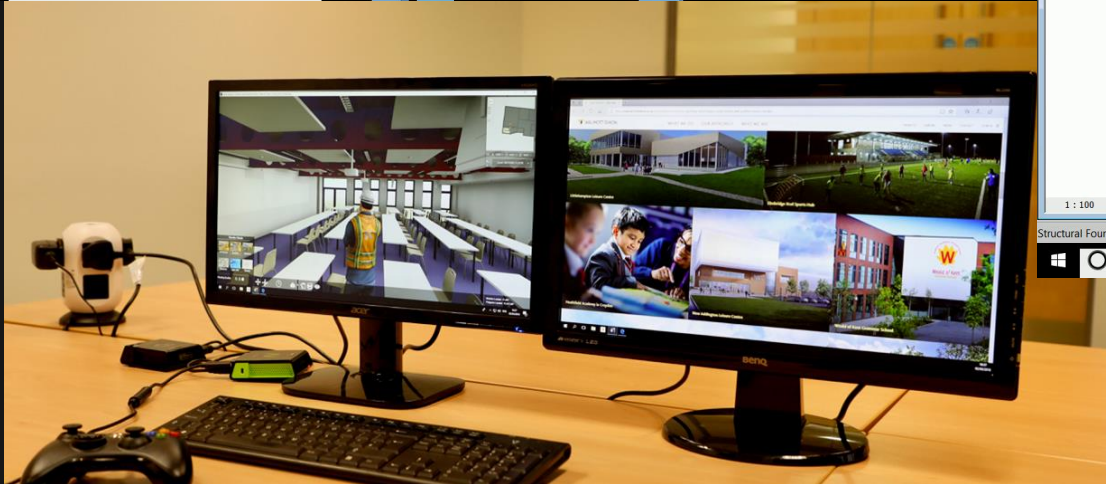
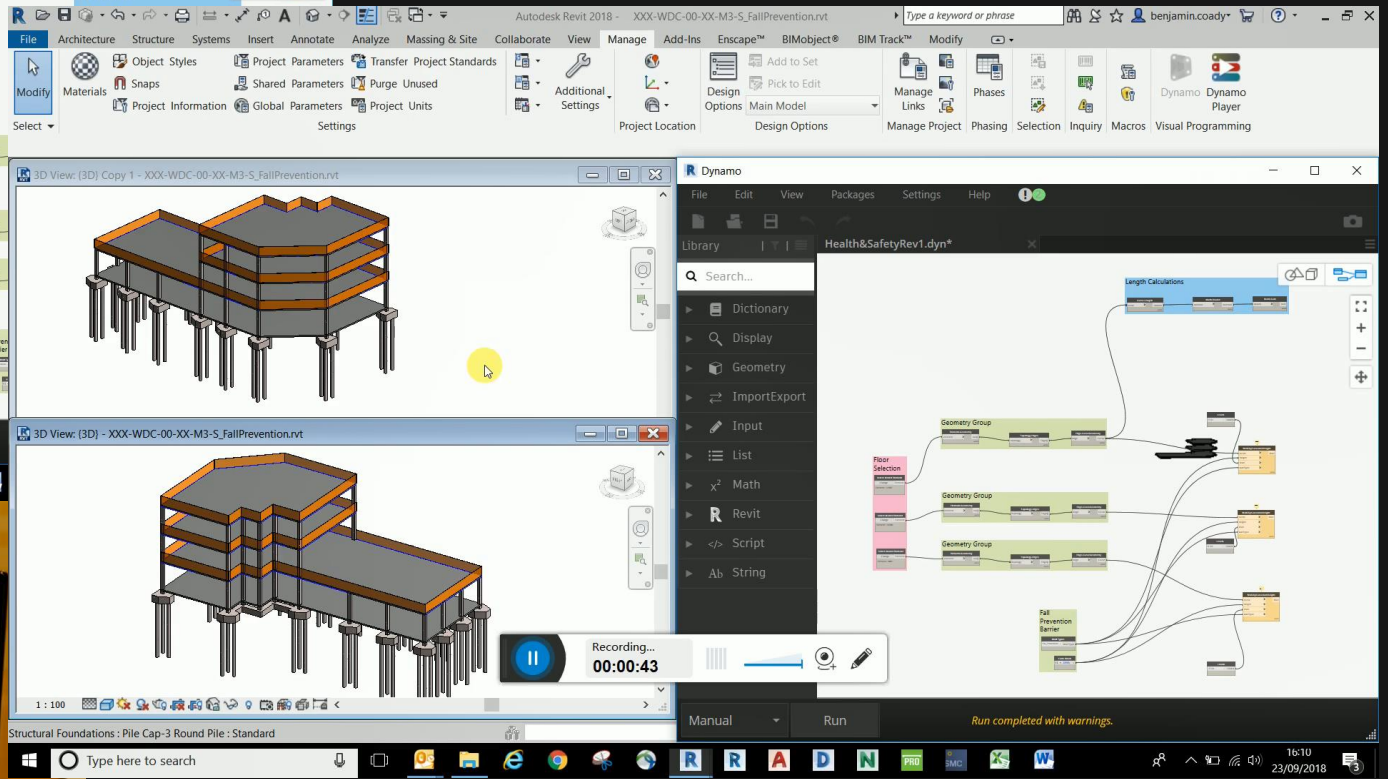
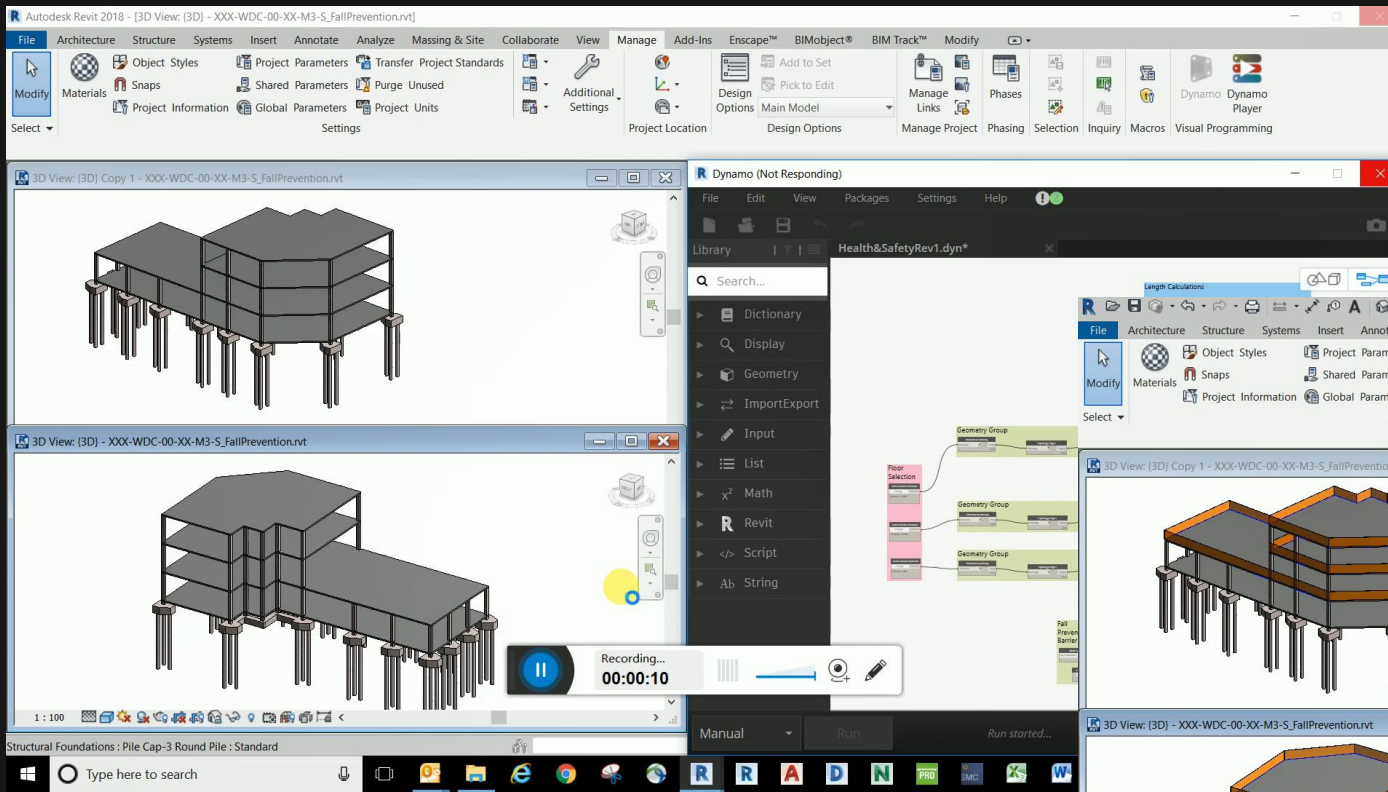


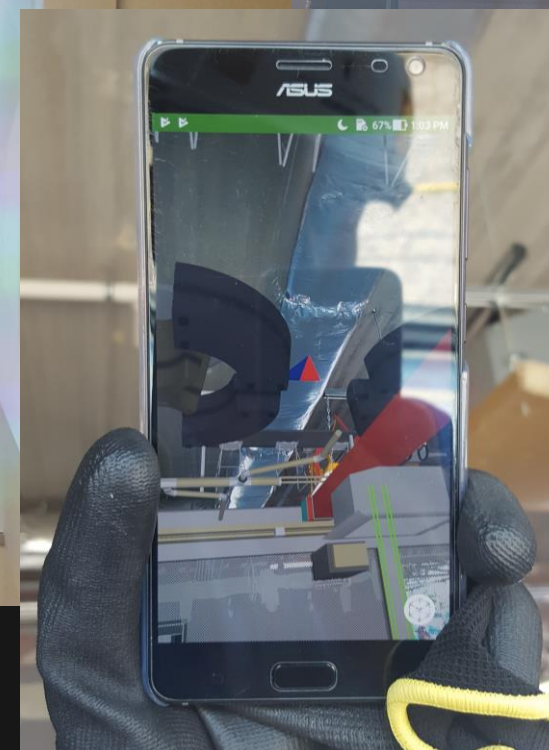
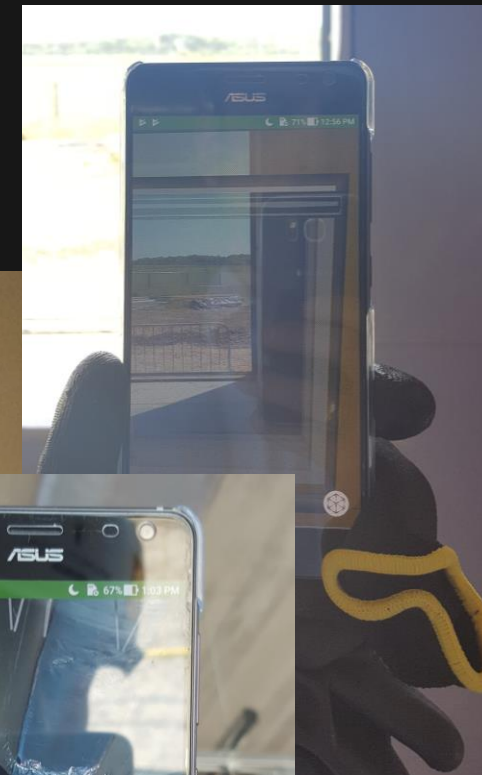


## BIM/Digital – What Have the Impacts Been?

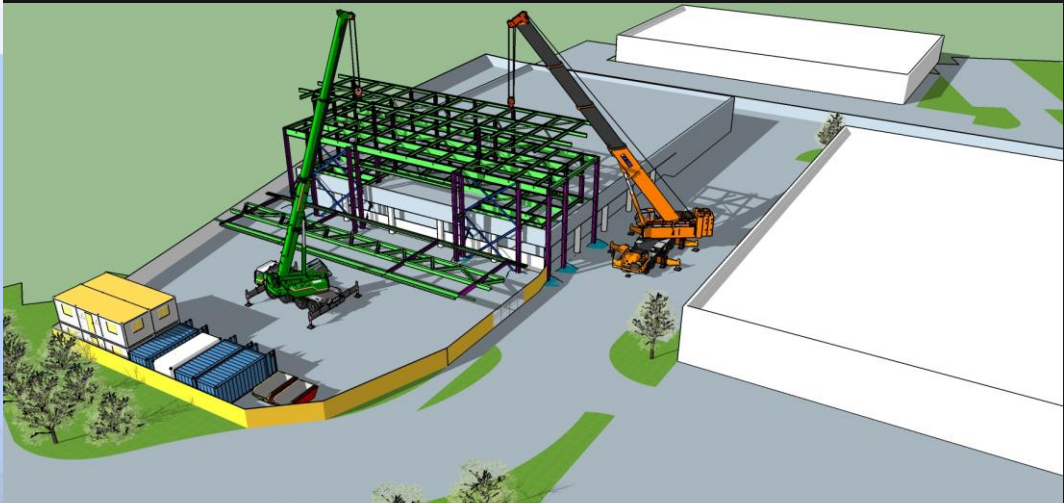
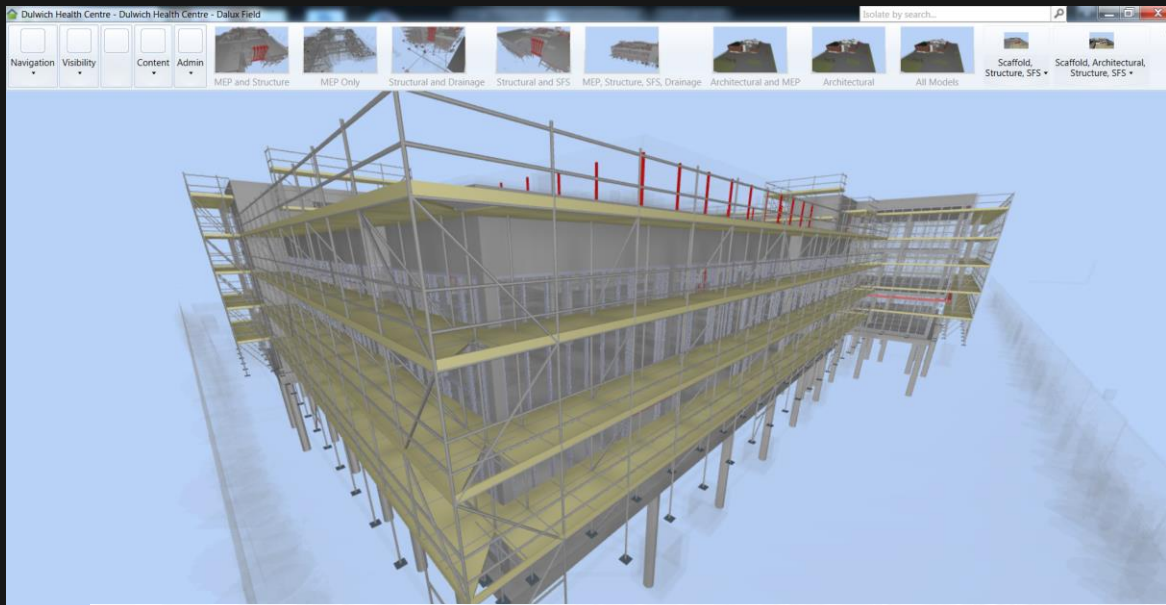
How has BIM/Digital changed things so far?











20 January



## BIM/Digital – Can it Impact Off-Site?

What uses are there for Off-Site Manufacturing?

# How to get BIM/Digital to Effectively Work

## The Blockers

Mindset

Construction too focused on the Company rather than the Project

Software not able to speak to each other

Infrastructure (The Internet)

Hardware (Battery Life)

## Ways to Overcome

Focus on the End-User

Simplicity

Speed

Has to be easier than the current way

Work primarily within current technological limitations, but investigate Ground-Breaking technologies occasionally



## Where can Value be Added?

### Data:

- Standardised data allowing quick access to the necessary information
- Creation of Product Libraries
- Analysis on collected data to see trends
- Using the Data to enable robotics to function

### Visualisation/Quality:

- Use of Point Cloud scanners to compare completed panels/units to the design
- Virtual Tours for Customers to aid sign-off
- VR can be used for training
- AR can be used for repetitive work orders
- Construction Simulations
- RFID chips, Barcodes, QR Codes
- Using “Tracers” to overlay work onto reality

There are hundreds of other applications where value can be added

# Product Libraries and Data Handover

What are Product Libraries?

- Database of products which contains specific information against each product

Why use Product Libraries?

- Reduce the time wasted collecting the same information multiple times
- Clearly see where products have been used

How does this help with Data Handover?

- Only need to access one location to enable provision of the requested data

How has CoBuilder helped?

- Once information on a product is entered into the system, it can be referenced again at any time
- Simplistic interface for Supply Chain to enter information
- Simple, yet complicated, system for attaching information to items in the model

How could these work for Offsite Manufacturers?

- Enables provision of an “As-Built” model containing all required information to the Customer/End-User. In a perfect world, this is your O&M.



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SINCE 1852

# Thank You

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