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 5th 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

All part of the WD family of companies and keen supporters of the Willmott Dixon Foundation
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?

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

(EC Harris ONS 2014)
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

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<thead>
<tr>
<th>Lower costs</th>
<th>Faster delivery</th>
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<td>33%</td>
<td>50%</td>
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<td>reduction in the initial cost of construction and the whole life cost of built assets</td>
<td>reduction in the overall time, from inception to completion, for newbuild and refurbished assets</td>
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<th>Lower emissions</th>
<th>Improvement in exports</th>
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<td>50%</td>
<td>50%</td>
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<td>reduction in greenhouse gas emissions in the built environment</td>
<td>reduction in the trade gap between total exports and total imports for construction products and materials</td>
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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
- BS8541-2:2001
- BS7000-4:2013

BIM Level 2
- 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?
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.
Thank You

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