



Midlands Highway Alliance Plus  
MHA, MSIG, WMHA: Moving Forwards Together

# Carbon Reduction and Value

Wednesday 22 June 2022

BIM Working Group: BIM from a Value perspective

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# Value of BIM

## 1. An Introduction

Philip Reid, Digital Operations Manager



## 2. Where are we?

Ben McGrath, Consultant Engineer



## 3. In Lincolnshire

John Monk, Head of Highway Design Services



## 4. In Oxfordshire

Tom Scholes, Group Manager –  
Asset Data & Systems



## 5. In Derby

Michala Medcalf, Street Lighting Manager  
Philip Reid, Digital Operations Manager



## Information Management

The ISO 19650 suite provides the tools and framework to ensure we manage the information on our sites better.

Its predecessors were BS 1192 and PAS 1192.

Using BIM is one of the tools for doing that alongside other planning documents.

BS EN ISO 19650-2:2018



BSI Standards Publication

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling





## BIM to IM

### Information Management

**Information management** is a cycle of activity: the **acquisition** of information from one or more sources, the **storage** and the **distribution** of that information to those who need it, and its ultimate disposal through **archiving** and or **deletion**

### BIM

Use of a **shared digital representation** of a built asset to facilitate design, construction and operation processes to form a reliable basis for decisions

Built assets include, but are not limited to, buildings, bridges, roads, process plants.



# The three parts

Management of Documents

Management of Graphical Information (BIM)

Management of Asset Information

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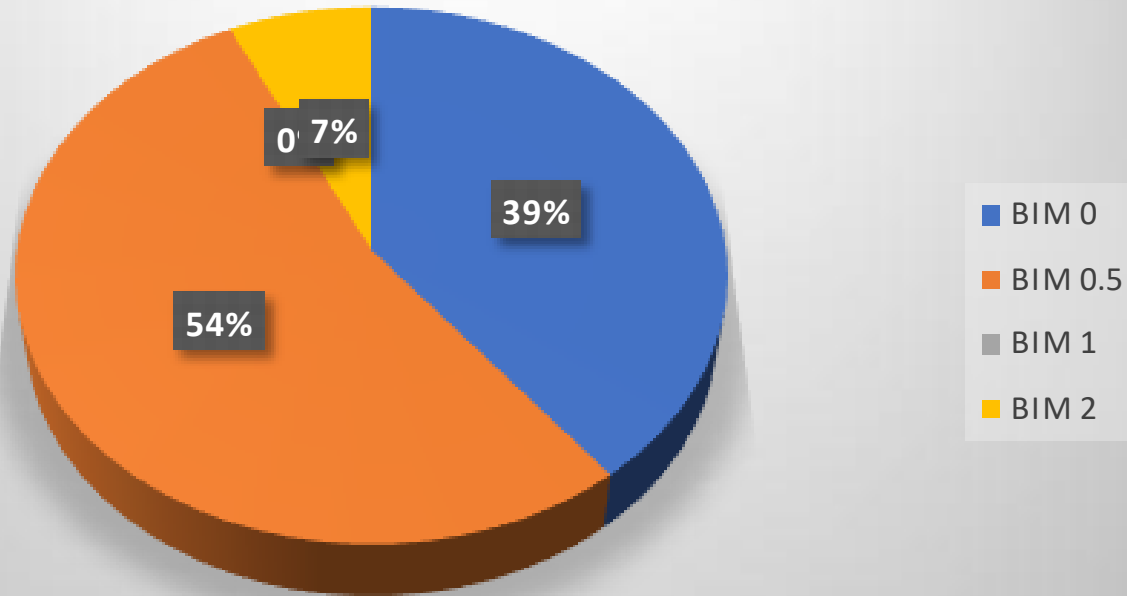
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# BIM Levels

MHA+ BIM Levels



From 28 members (at time research took place) with a max score of 2

MHA+ scores:

11.5/56

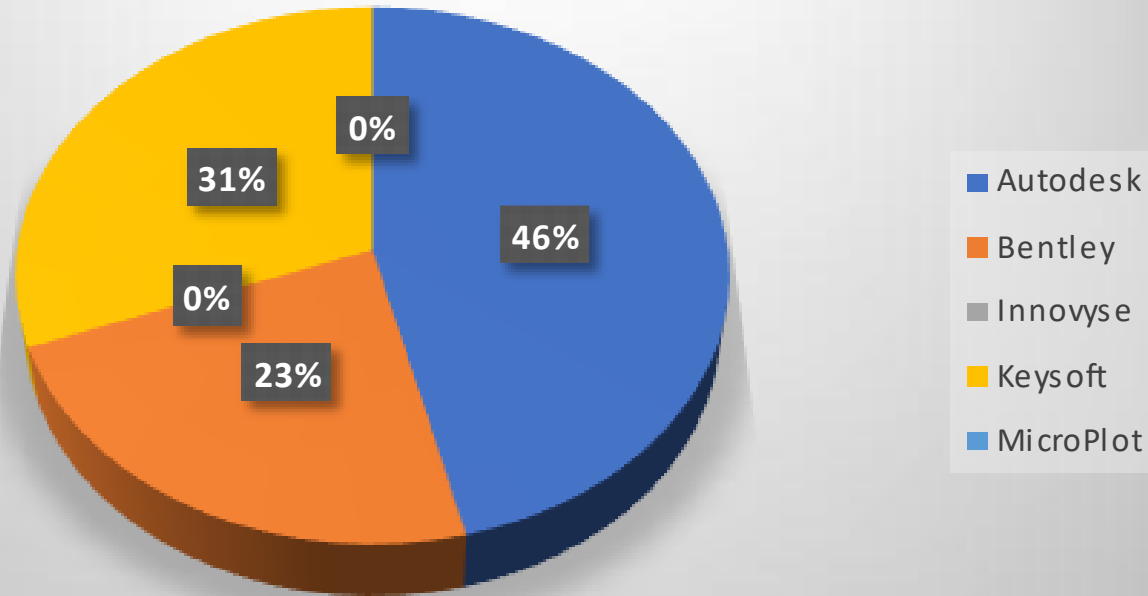
or

20.5% BIM2 compliance



# Authoring Software

## Design Software



46% of those using 3D design software use AutoDesk software such as Civil 3D & Revit

23% use Bentley (OpenRoads)

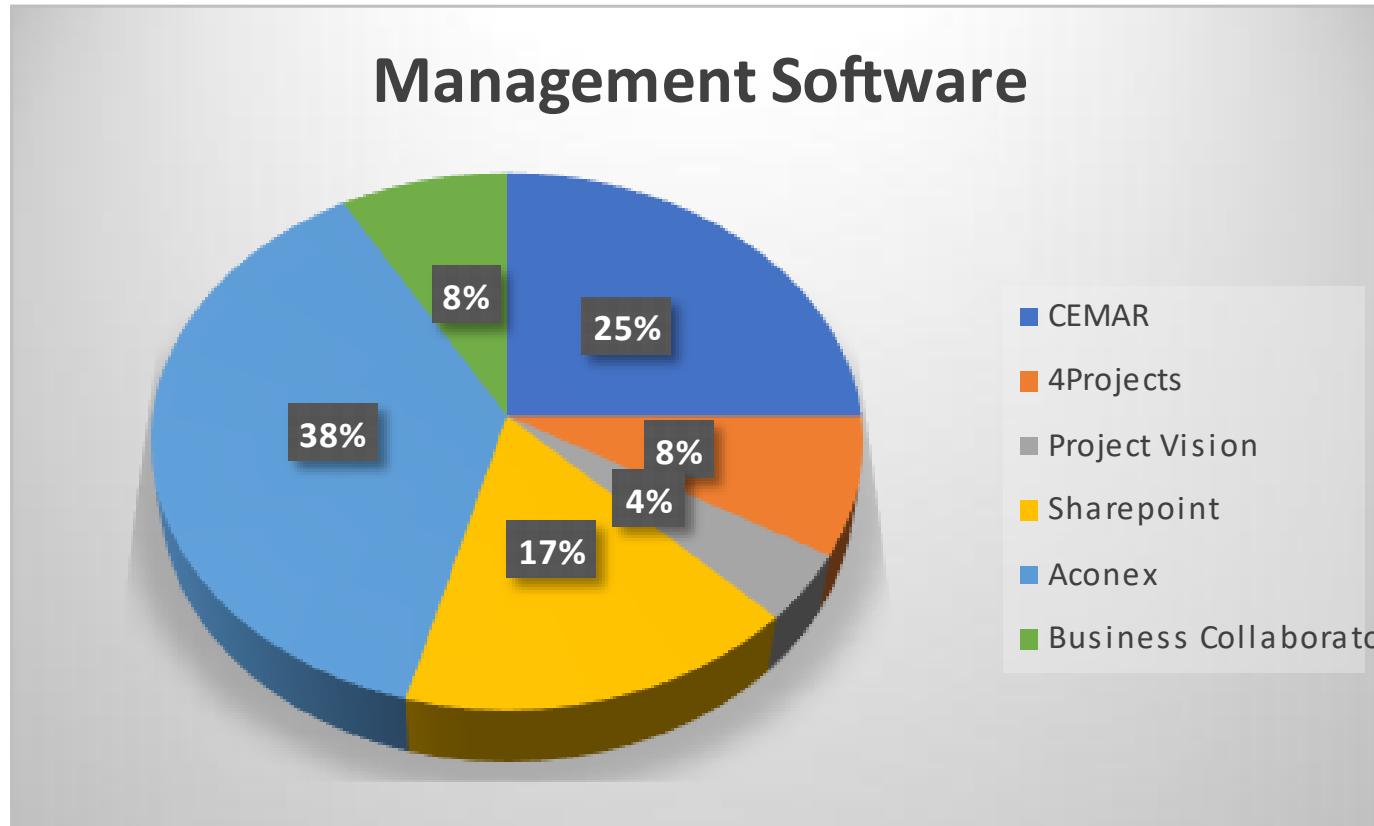
31% use Keysoft\*

\* Though the majority of users don't use the 3D modelling software but do use KeyLines, KeySigns etc





# Management Software



# Future Research

## Asset Management

Looking into what software is used for Asset Management across the MHA+ members

- Confirm appears to be predominant but there are others
- Looking at possibilities of using MHA+'s influence to get software developers to develop a streamlined transition from BIM software for design and construction and into Asset Management without the current labour intensive processes



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# North Hykeham Relief Road

- £155M – 71% funded by DfT
- Funding allocated 2020
- *In line with DfT expectations, 2019 bid stated the scheme would be BIM Level 2 compliant*
- *Also .....existing document management system not fit for major infrastructure projects*



# Lincolnshire CC – BIM journey

- Now committed to BIM ..... What next??
- A standing start!
  - Terminology and standards
  - BIM Audit by WSP
  - Recommendations around templates and Common Data Environment
- Internal business case for BIM / ProjectWise / OpenRoads
- EIR and AIR templates – focus the mind
- Working towards all projects being BIM compliant OR BIM principles



# LCC – Added benefits of BIM

- Workshops towards implementation
  - With asset owners, maintenance teams, asset management system
- Advantages beyond the projects:
  - Quality, consistency & accuracy of information added to asset management system
  - Asset management and maintenance efficiencies
  - Requirements of CDM Health & Safety file
  - Now driving a move to a Digital Engineering Strategy
- Consider how the principles can apply to all types of works
  - Even S278s and S38s?



# Lincolnshire CC – Beyond BIM

- The Digital Opportunity
- Digital Transformation programme which utilises Technology to:
  - Enhance delivery performance
  - Provide an efficient and effective delivery model
  - Futureproof Lincolnshire's Highways service



# Lincolnshire CC – Beyond BIM

- Examples:
  - Digital Twins – Connected vehicles / Smart assets
  - Reality Capture – Laser scanning assets / LiDAR / Drone proof of concept
  - VR & AR – Design reviews and public engagement
  - Artificial Intelligences – gulley sensors, congestion management
- Helps deliver corporate and industry wide targets such as for Net Zero and Social Value





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# Our Approach

- BIM has clear benefits at all stages of construction projects and onto Maintenance
- Major projects are just one element of what adds/changes/deletes assets on our Network
- We focused on getting BIM and optimised for Major Projects, but our overall approach is to implement the proportional version of BIM for every change agent
- Coordinate useful data into standardised channels from any source



## So Far

- Appointed a Fixed Term BIM transition specialist.
- Worked with us for x months at a total cost of £xxx
- Tasked with creating the BIM platform (CDE, EIR, AIR etc)
- But crucially also the required culture change:
  - Engaging capital project managers with the end goal
  - Ensuring contracts include BIM requirements
- Pandemic hampered the last bit
- BIM Specialist has now gone



# Into the Future

- Taking the momentum and making it stick
- Maintaining the CDE
- Enforcing the BIM requirements
- Making BIM proportional for ALL changes to the network and assets:
  - Major projects
  - Minor civils
  - Adoptions/Stoppings Up/Diversions
- Iterating the AIR to make sure we are only collected needed data



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# Information Management DCC

One build scheme and three design and build schemes

Considering the three main types of Information Management:

- Document Management
- Graphical representation of the Scheme (Digital Twin / BIM)
- Structured handover of asset information



# Document Management

- Workshop / training day for DCC, Jacobs and Eurovia project team
- Information Execution Plan (BEP) – drafted and agreed setting out how documents will be managed, labelled, approved and exchanged between parties
- Common Data Environment provided and configured with automated Information delivery plan, approval workflows and document numbering (training provided to all parties)



# Graphical

- Drone Derived digital twin in place to which design, utility and as built information will be published



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# Asset Information

- Currently agreeing which asset information requirements will be handed over, provided by the Contractor / Designer
- Have a technical solution in place ready



## Key Driver's

- Challenging Major Infrastructure Project
- In-depth Lessons Learnt
- Recommendations and benefits

## How we are delivering a BIM future

- Early Contractor Involvement
- Execution Plan
- Trial across suitable schemes in adopting the BIM principals



## Summary – This isn't new

- Good Information Management is part of Good Project Management
- It is something you already do, remember when CDM was introduced?

*Implementing these ways of working is a bit like that...*

### Right Information

Ensure that people have access to the Right Information.

*Not ALL the information or Data, just the information that they need*

### Right Place

Where do they need this information, at home, on site, in the site office

### Right Time

Both in time for them to do their part of the project and also available at the time of the day when they need it

### Right Person

Ensure that the right person has access to this information – considering security





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# Summary – There are benefits

- Lower Costs, **Less Emissions, Less Waste**
- Smoother Construction Process
- Less Defects
- Faster Handover & Softer Landings
- More complete and faster CDM Health and Safety file
- Better information to facilitate better maintenance
- Less wasted time spent searching for the information
- Lower whole life cost
- More effective asset management

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