Driving the Digital Transformation of the Irish Sector

Vision for an International Centre of Connected Construction – A Knowledge Sharing Opportunity for Ireland's Construction Industry

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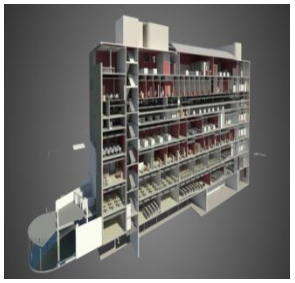
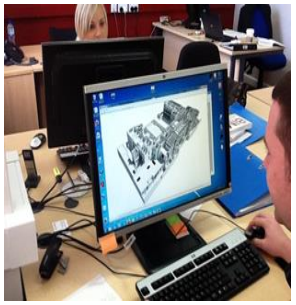
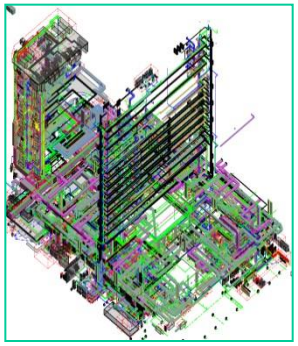
Content







- The Road Map (1)
- BIM in the UK: 2011-2016
- Our response: a two-way collaboration
- BIM beyond 'the Wedge'
  - Industry 4.0
  - Construction 4.0?
- The International Centre for Connected Construction (IC3)
- Knowledge-sharing opportunity?
- The Road Map (2)

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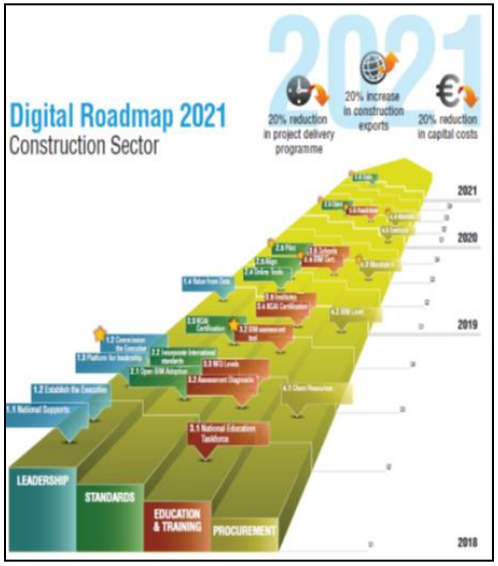
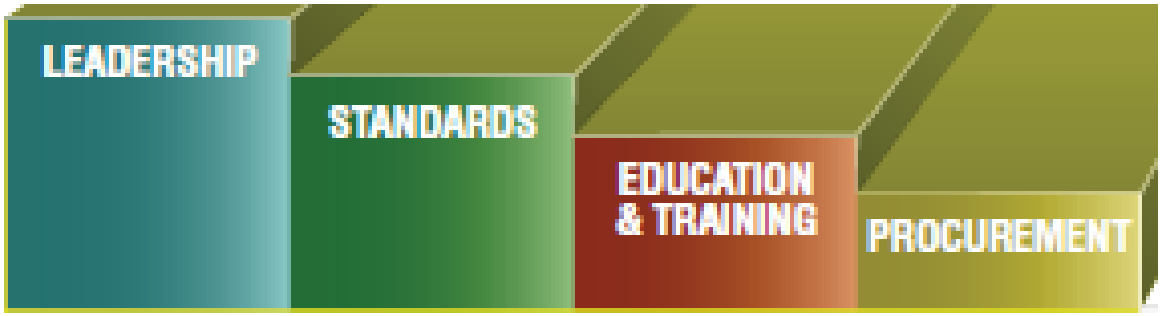
The Roadmap (1)





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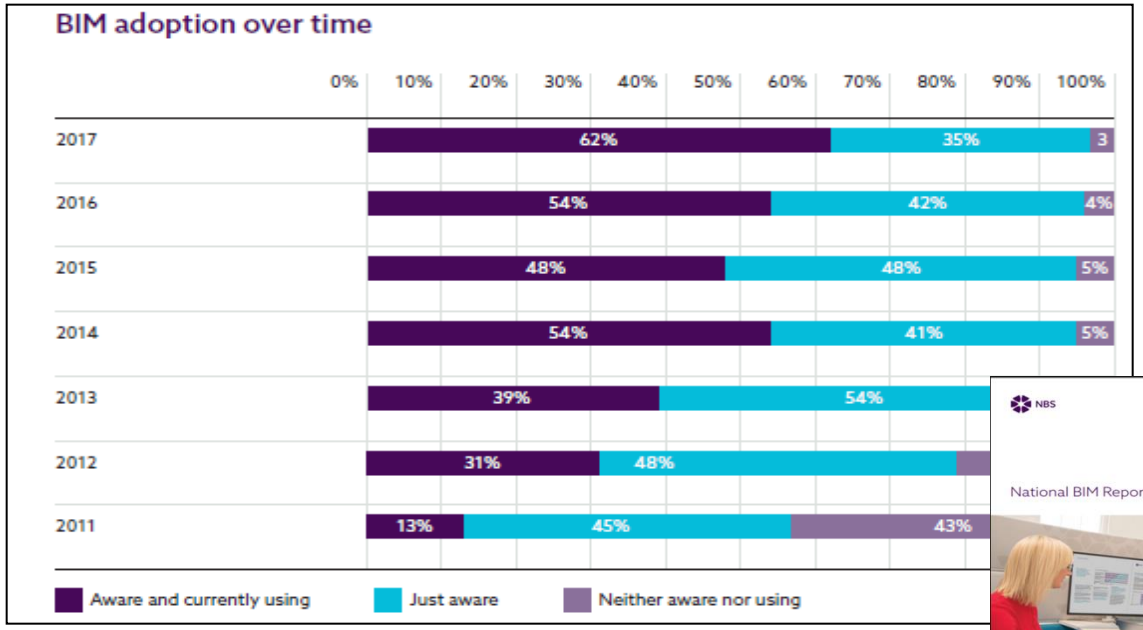
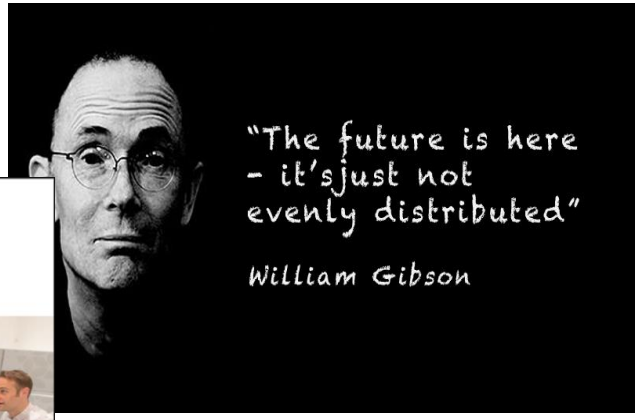
BIM in the UK: 2011-2016

The Government … will "require collaborative 3D BIM (with all project and asset information, documentation and data being electronic) <u>on its projects</u> by 2016."



- **People**
- **Firms**
- **Projects**



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Our response: a two-way collaboration

BIM Academy founded in 2010

Northumbria University

+ Ryder Architecture

Based in Newcastle

Activities

Education

Training

Research

Consultancy

'Spin-out' Co. formed in 2013

Active in: UK, EU, MENA, Far East, Australasia,

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THE AWARDS 2017 — Winner: Most Innovative Contribution to Business-University Collaboration

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BIM Academy – Activities

Education

Training

Research

Consultancy

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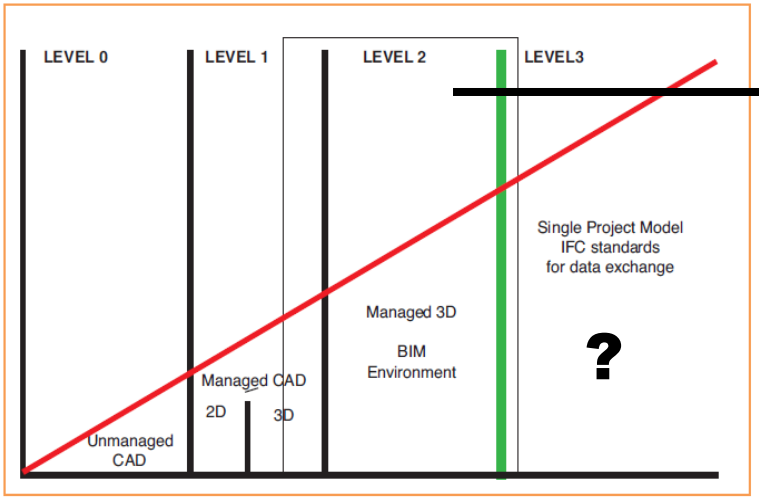
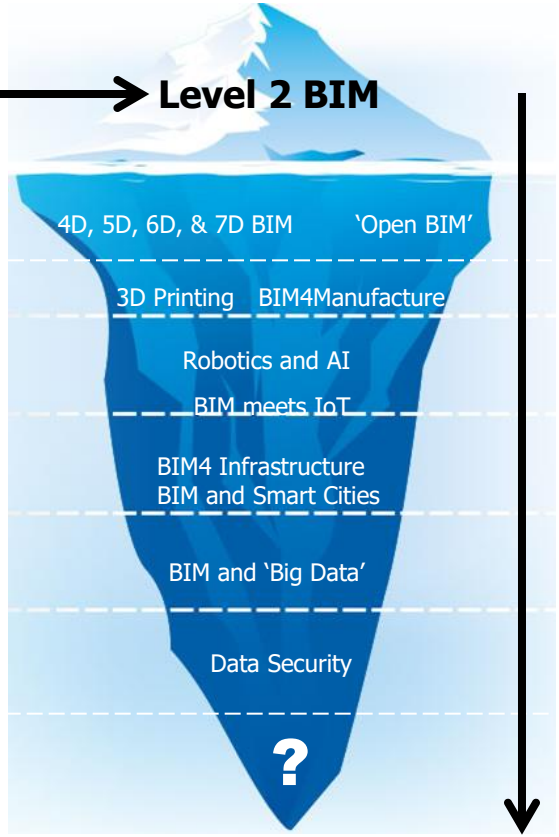
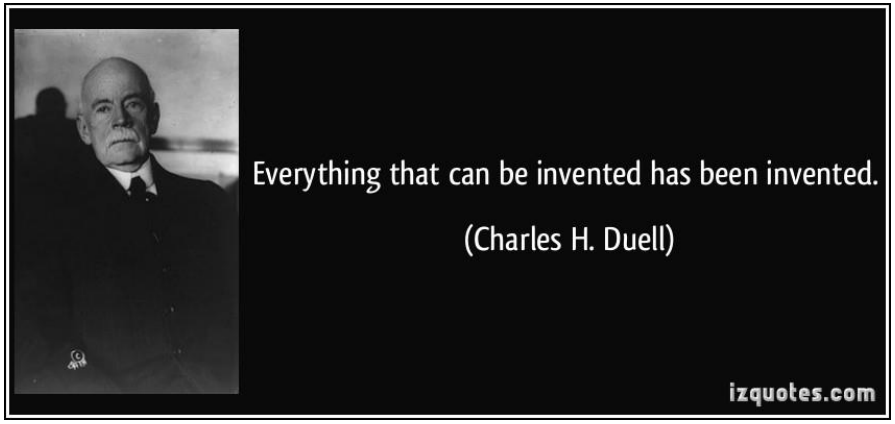
BIM beyond 'the Wedge'



BIM Maturity Diagram

(adapted from Bew & Richards)





Commissioner
US Office of Patents,
in 1899

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‘Industry 4.0’

1st Industrial Revolution

- *Machines, driven by*
- *Water & Steam Power*

2nd Industrial Revolution

- *Electricity*
- *Mass-production*

3rd Industrial Revolution

- *Computers*
- *Automation*
- *Robotics (1.0)*

4th Industrial Revolution

- *Cyber-physical systems*
- *Cloud computing*
- *‘Big Data’*
- *Semantic Web (I.o.T.)*
- *Artificial Intelligence*

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‘Industry 4.0’ to ‘Construction 4.0’

- Machines,
- Water & S

- Electricity
- Mass-prod

- Computers
- Automatio
- Robotics (

- Cyber-phy
- Cloud com
- ‘Big Data’
- Semantic
- Artificial In

Is there a ‘Construction 4.0’?

...and what is the role of BIM?

Yes there is / there will be

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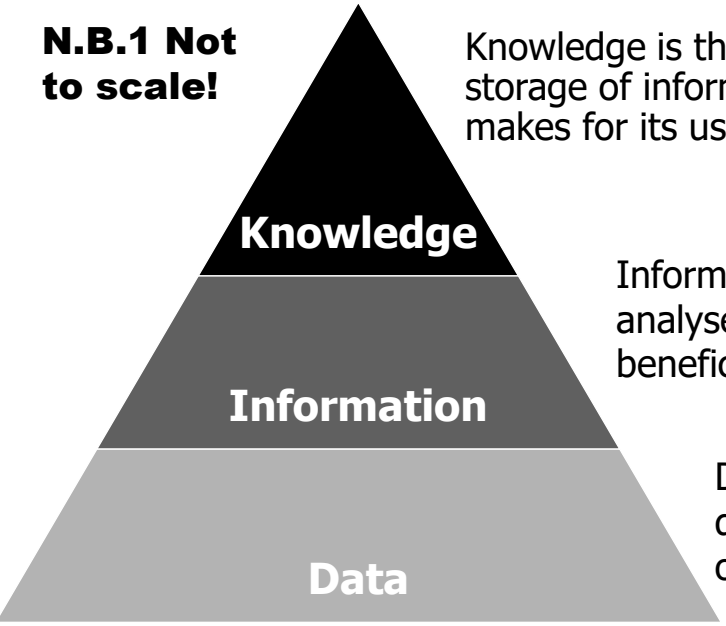
BIM and 'Big Data'

N.B.1 Not to scale!

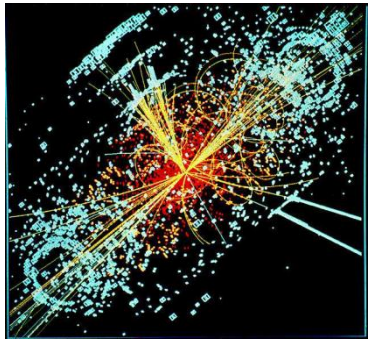


Knowledge is the collection and storage of information in a way that makes for its useful application

Information is data that have been collated, analysed and formed in a way that can be beneficially exchanged between users

Data are observations taken in a particular way – deliberately, accidentally, or automatically - by humans or machines (including, increasingly, sensors)

BIMs offer fixed fields in which data can be structured



- 'Big Data' refers to
- "... a massive volume of both structured and unstructured data that is so large that it is difficult to process using traditional database and software techniques."
- 90% of the data in the world today has been created in the last two years
- This doubles every 18 months
- By 2020 this is estimated to amount to 40 Zettabytes (10^{21} bytes)

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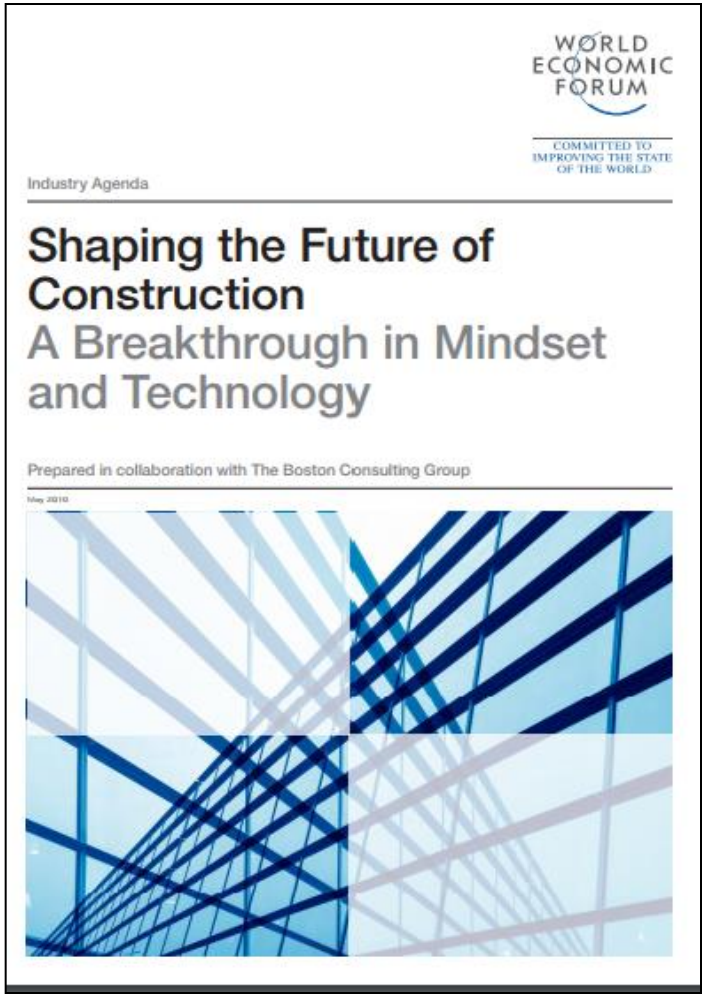
‘Construction 4.0’



- Integrated and collaborative BIM
- 3D Printing (Contour Crafting)
- Digital manufacture (CNC)
- Laser scanning
- Robotics and drones
- Sensor technologies (IoT)
- Machine Learning (AI)
- ‘Big Data’ analytics

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Our response: a three-way collaboration

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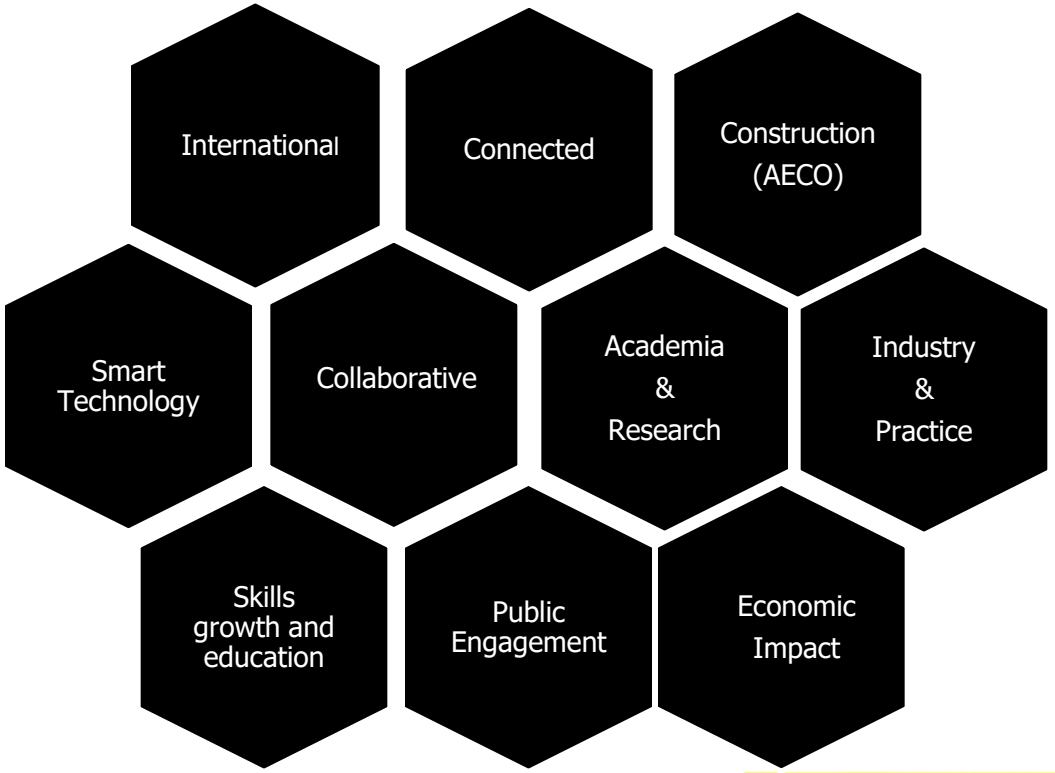
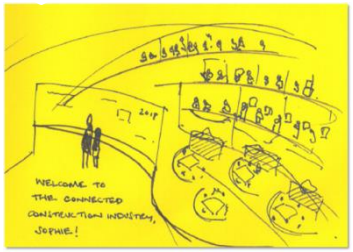
International Centre for Connected Construction (IC3)*





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* Coming soon?

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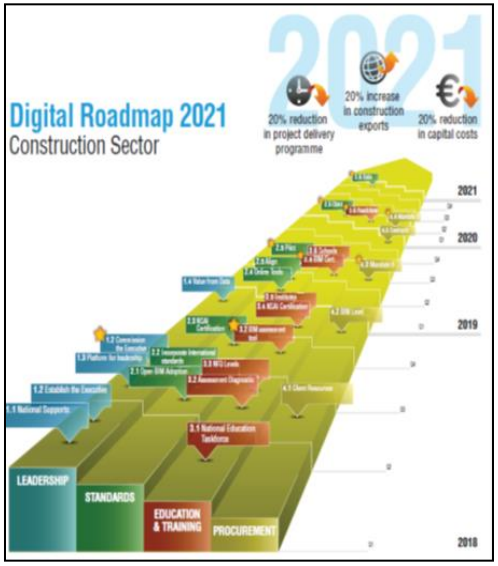
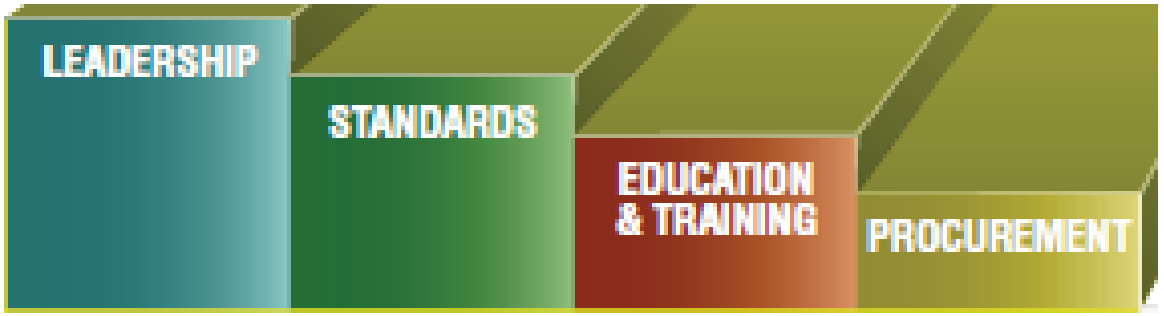
The Roadmap (2)





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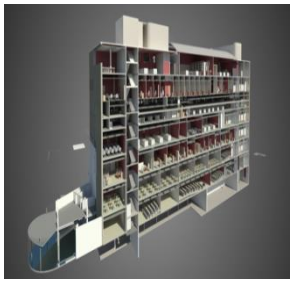
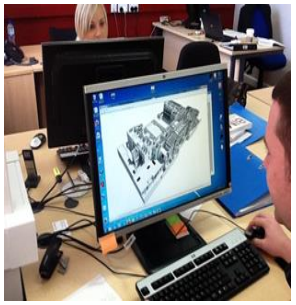
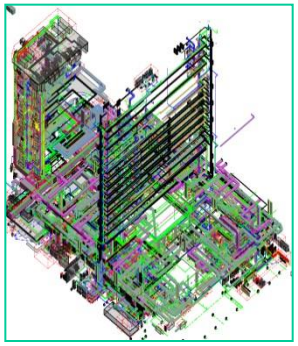
Summary







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