

Planning & managing the development of a **digital
prototype** of the London 2012 Stadium

Ben Haldin
benh@fulcro.co.uk



Agenda

Introduction to Ben Haldin

- 18 years experience of applying 3D CAD , SBM, VDC, and now BIM on major design and construction projects.

Aim of Presentation

- Outline of Fulcro Involvement on London 2012 Stadium
 - What we where asked to do
 - How BIM was integrated into the project
 - Pro's and Con's - OpenBIM
- Share Experience
- Share Challenges
- So we can all improve the industry we work in (and have fun).

Why Should you listen

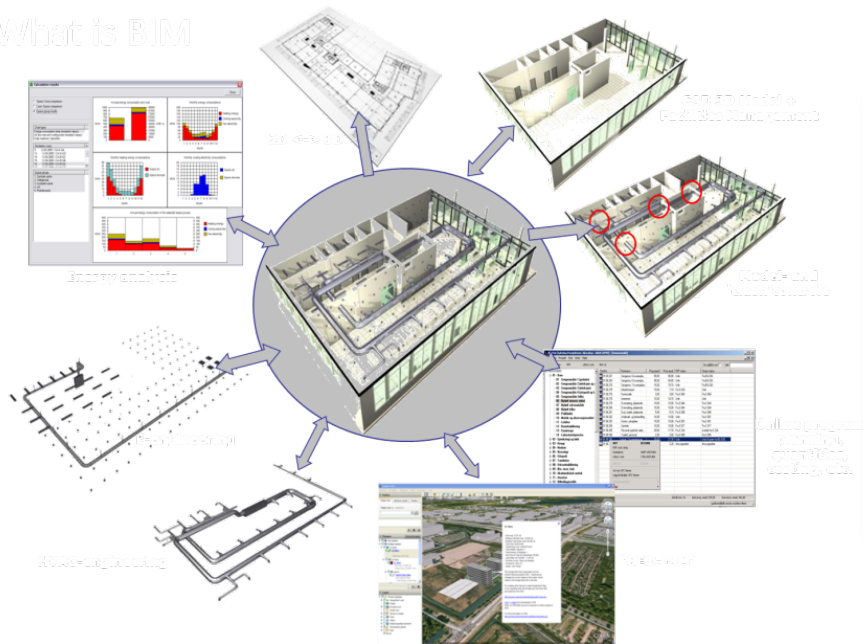
- Because Fulcro has a great story to tell of the real attitudes and challenges to applying BIM.
- It's the last presentation of the day and I want to end on a high 😊.



Who are Fulcro

10 year track record of working together with clients to deliver coordinated production information within a virtual environment.

What is BIM

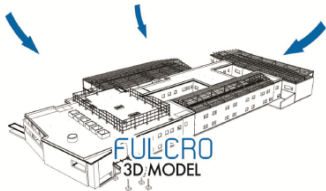


PEOPLE, PROCESS, TECHNOLOGY

STRUCTURAL DESIGN

ARCHITECTURAL DESIGN

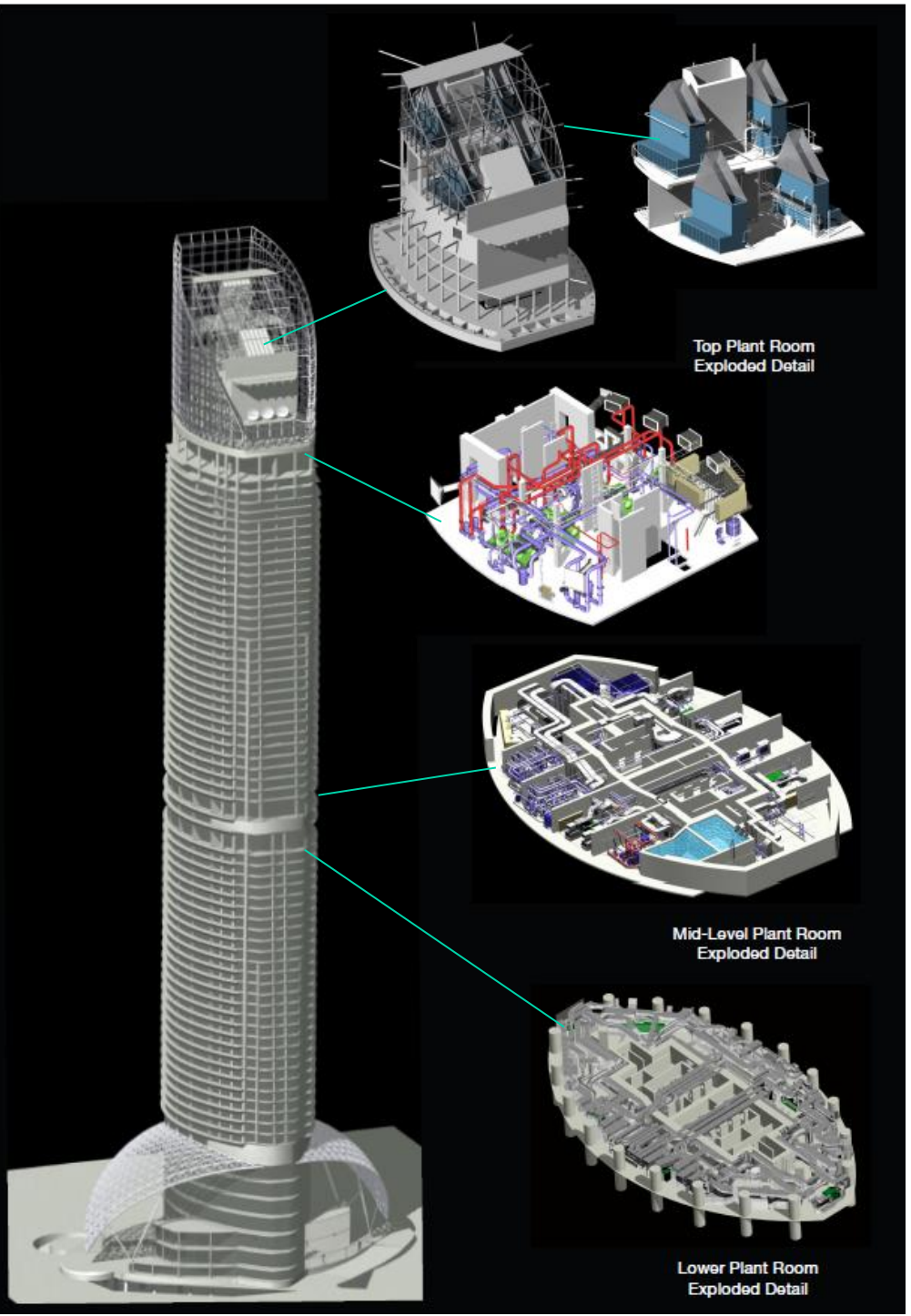
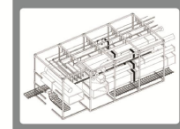
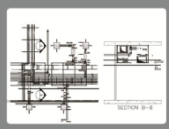
MEP CONSULTANT



COORDINATION DRAWINGS

OFF SITE ASSEMBLY

PRE-FABRICATION

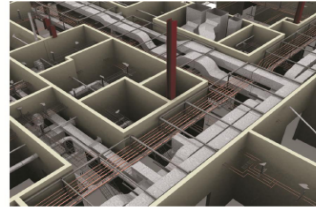
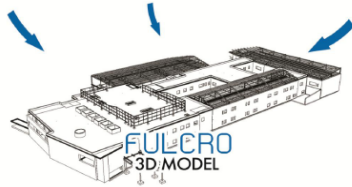


PEOPLE, PROCESS, TECHNOLOGY

STRUCTURAL DESIGN

ARCHITECTURAL DESIGN

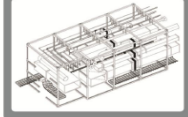
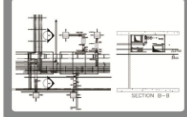
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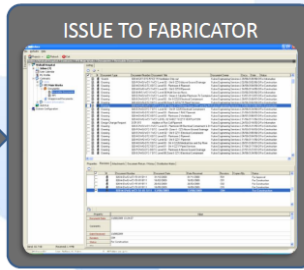
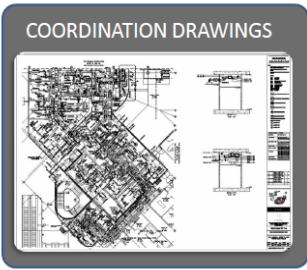
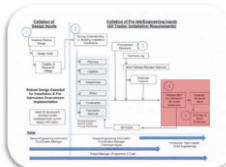
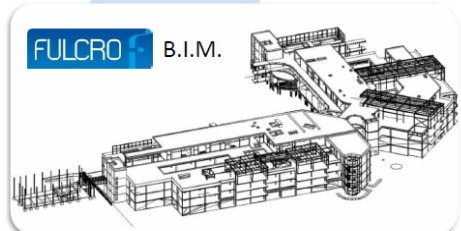
Material take off from 3D model



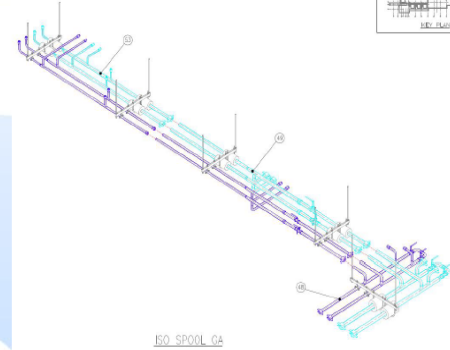
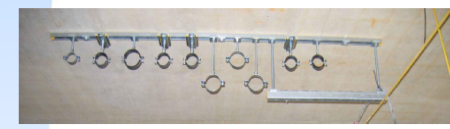
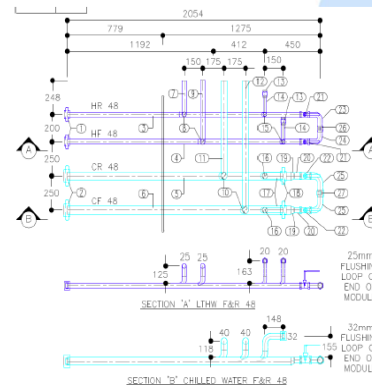
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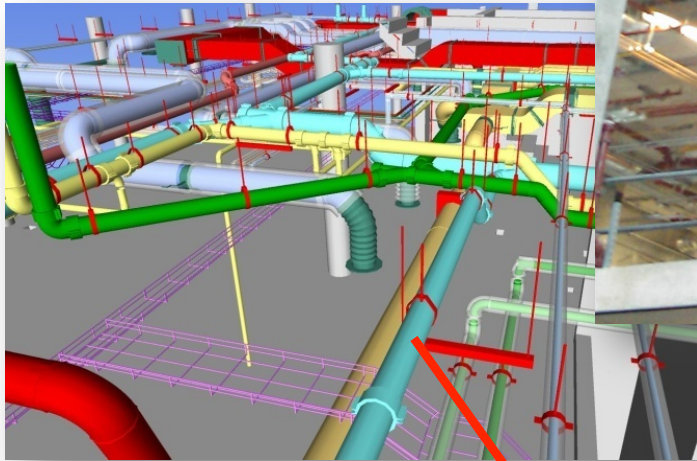
Ductwork CAD/CAM



Examples of distribution (run-out) service racks, with spools with pre-built kit form brackets



Who are Fulcro

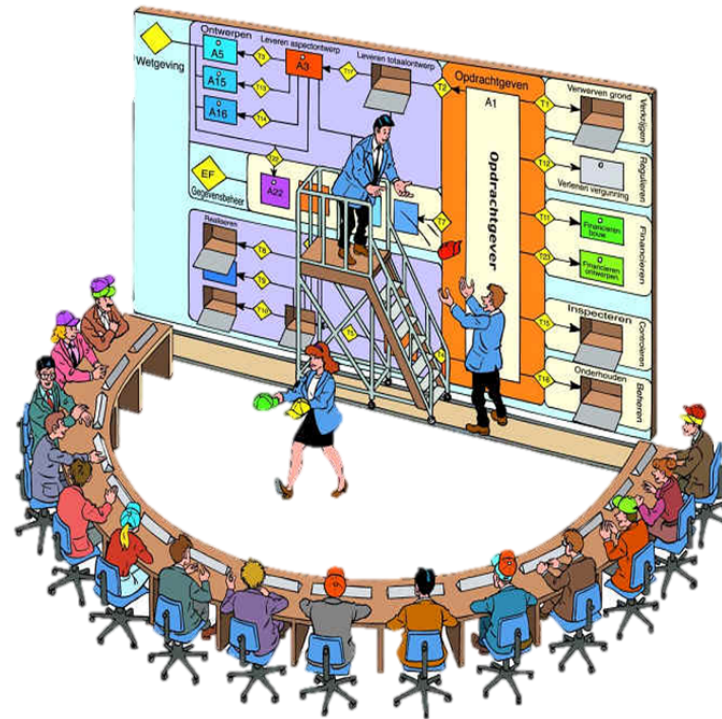
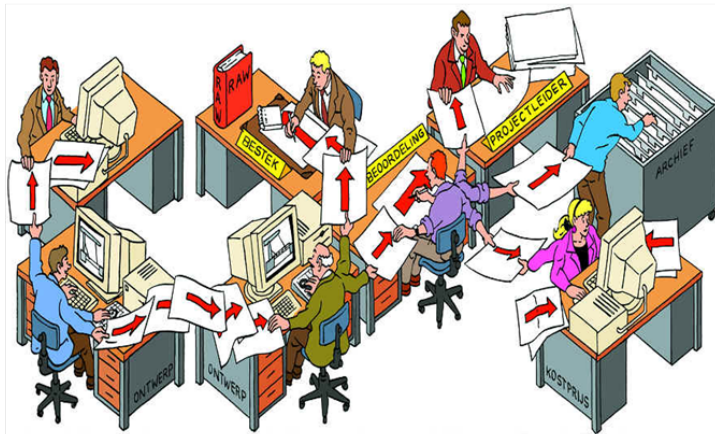


- Accelerated installation programmes
- Project driven common supports systems across all trades
- Reduction in site deviations, resulting in less Record Drawing activities

What we do

We de risk projects by applying technology and process driven through the best people.

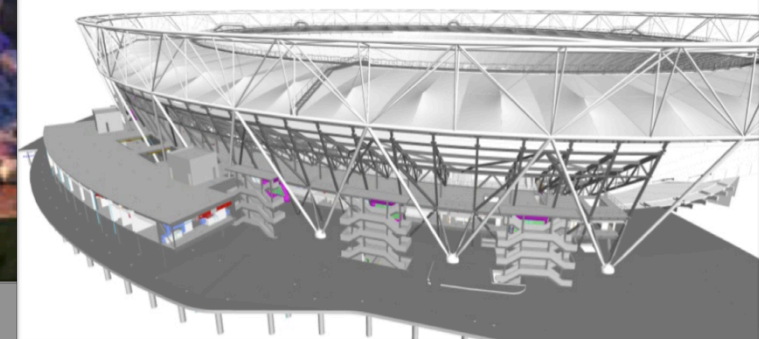
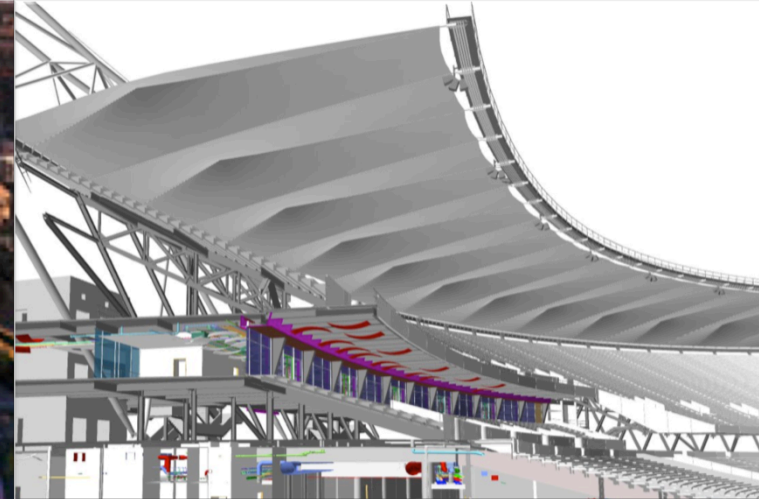
The classic way of working...



... to an integrated proces.

“Thank for the slide Joost”

London 2012 Olympic Stadium



2012 Stadium

Value: n/a

Status: Construction;

To establish a baseline 3d model of stage E design, and manage the incorporation of other trades information into fully co-ordinated digital prototype so that the design could be managed and changes assessed. This model also became a baseline for conflict resolution managed by Team Stadium design managers.

Outline of Fulcro involvement in London Olympic Stadium

The Team:

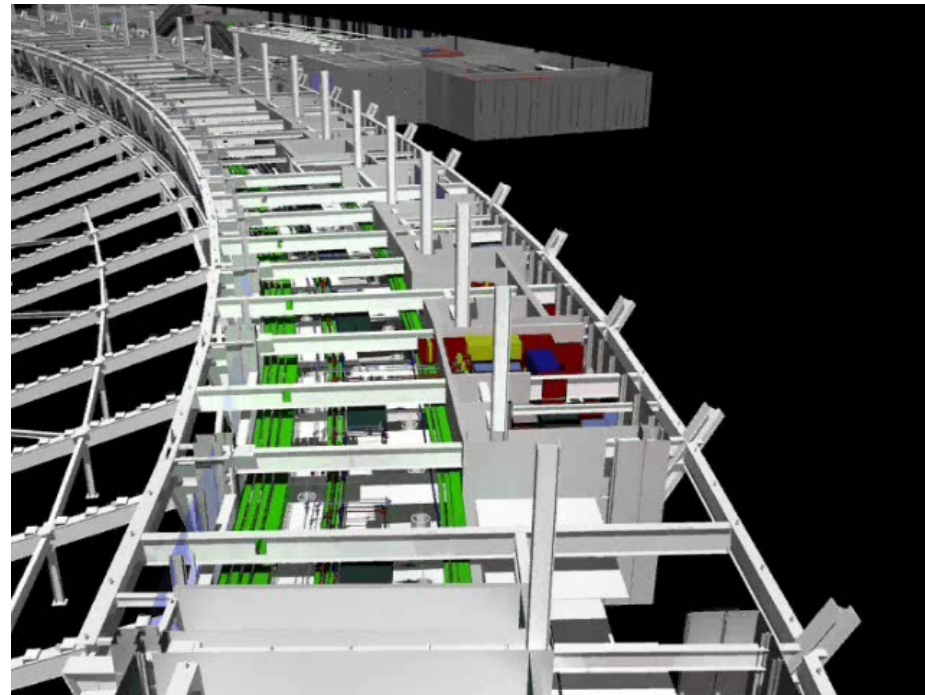


A consortium led by Sir Robert McAlpine built the 2012 Olympic Stadium, called team **'Team Stadium'** . It comprised of Sir Robert McAlpine as the prime contractor and Populus as Architects with Buro Happold as the lead Engineers.

What we were asked to do

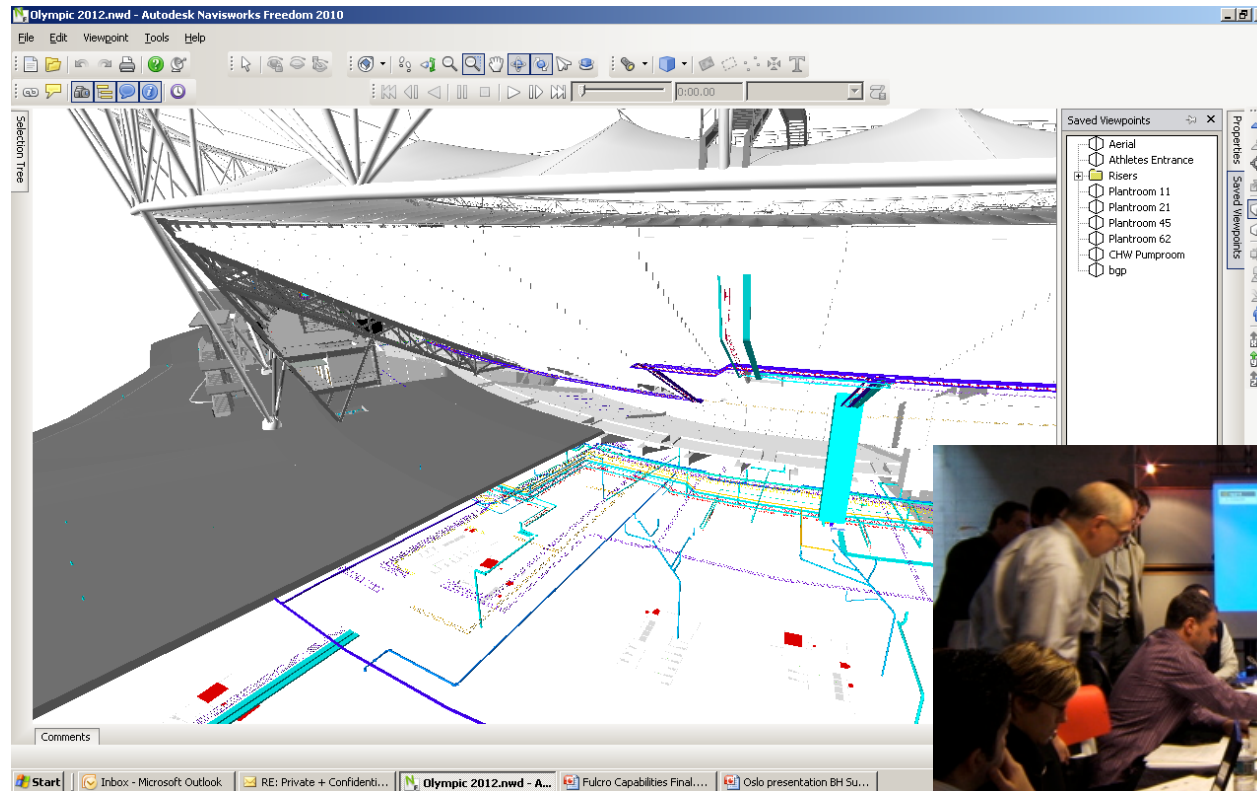
Assemble a basis of design 3D 'integrated' model to demonstrate coordination and communicate the design intent to the installing/constructing trade contractors.

- Bently MicroStation
- Max
- CADduct
- Xsteel
- RevitArchitecture
- Revit Structural
- Solidworks
- ...others

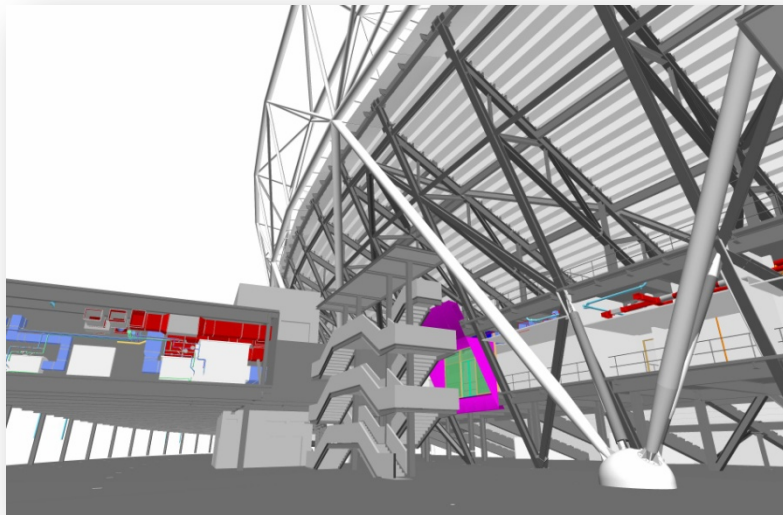
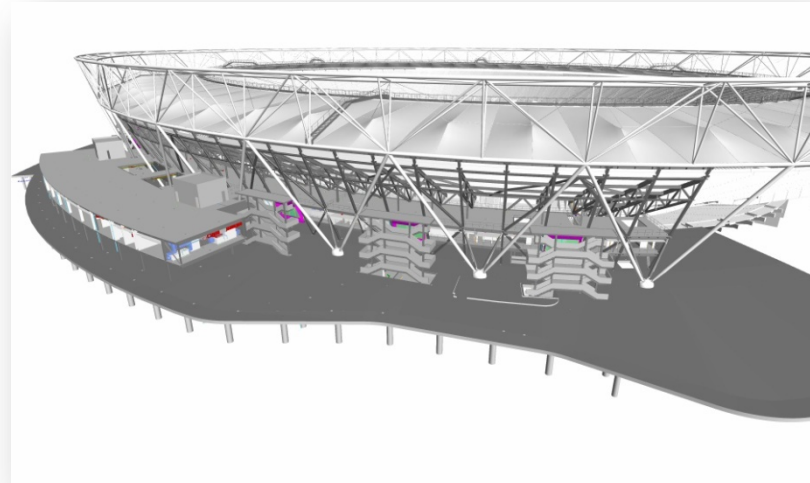
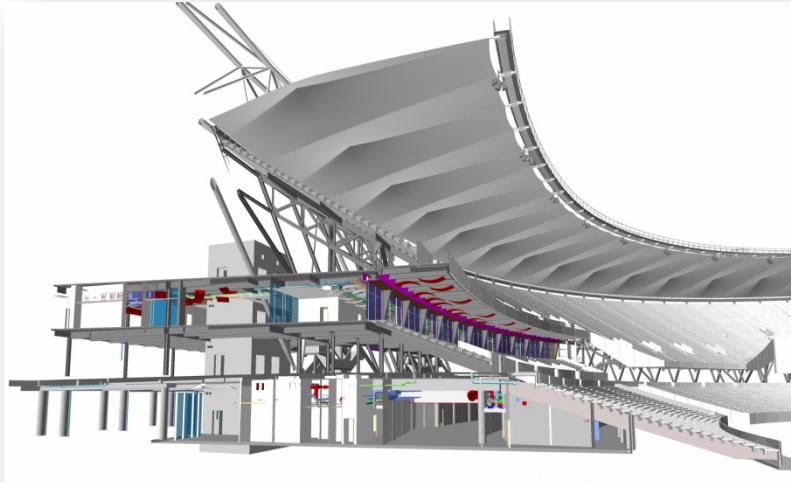


What we were asked to do

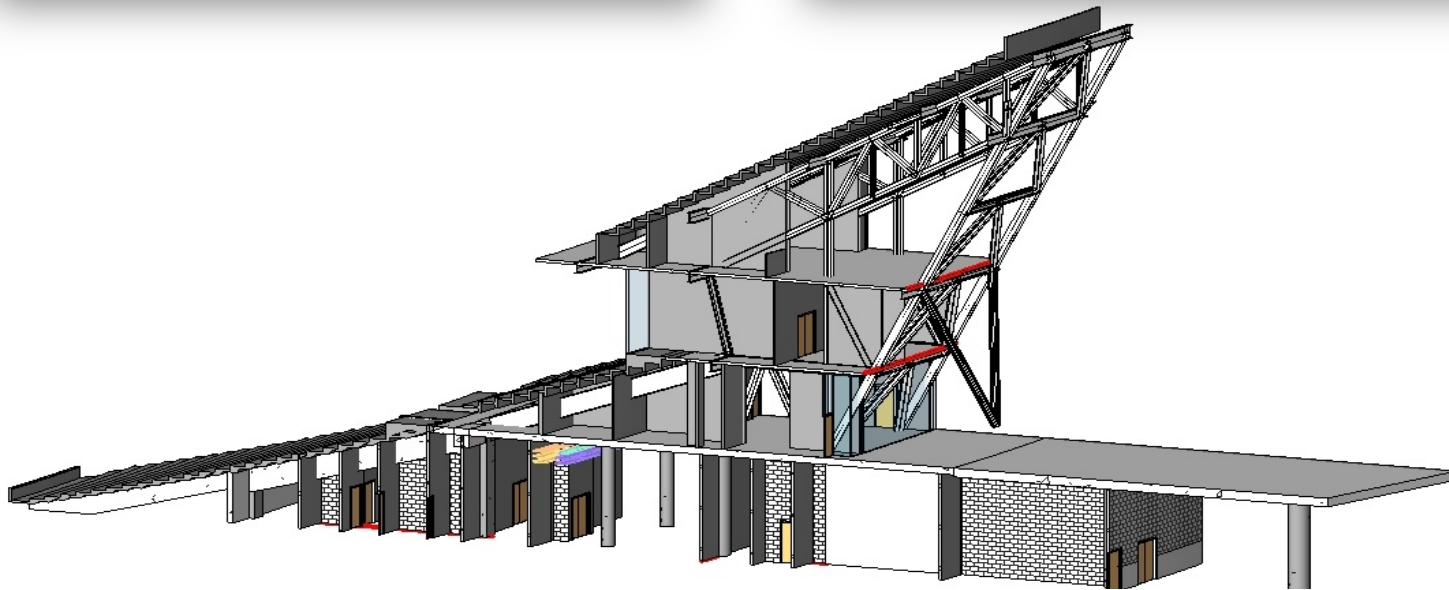
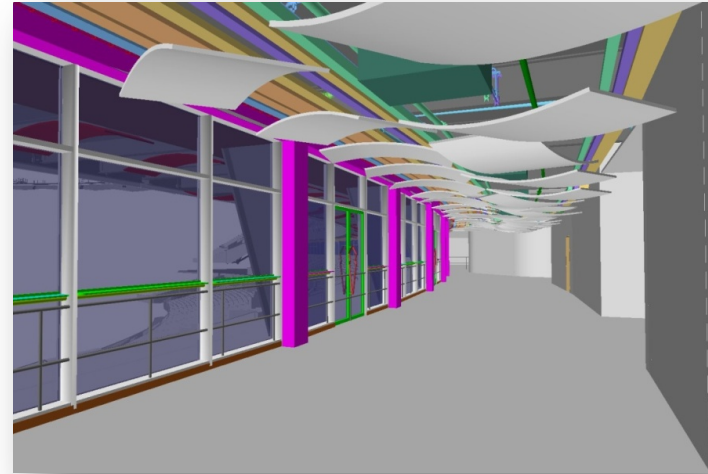
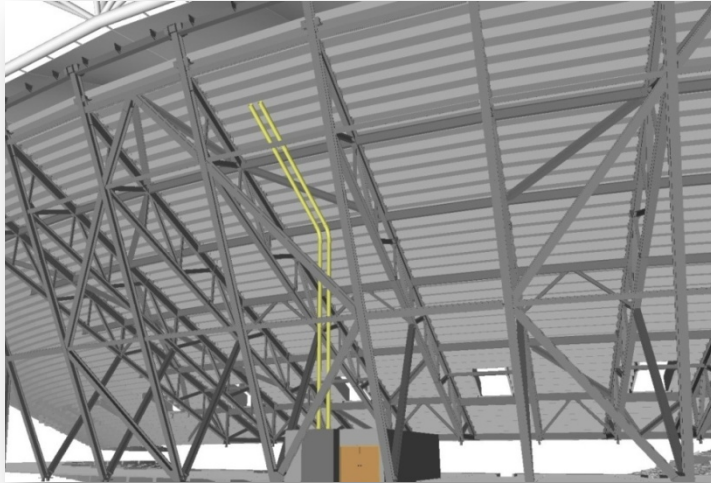
Manage the federated model and chair weekly workshops to review/test/validate the design/construction detailing.

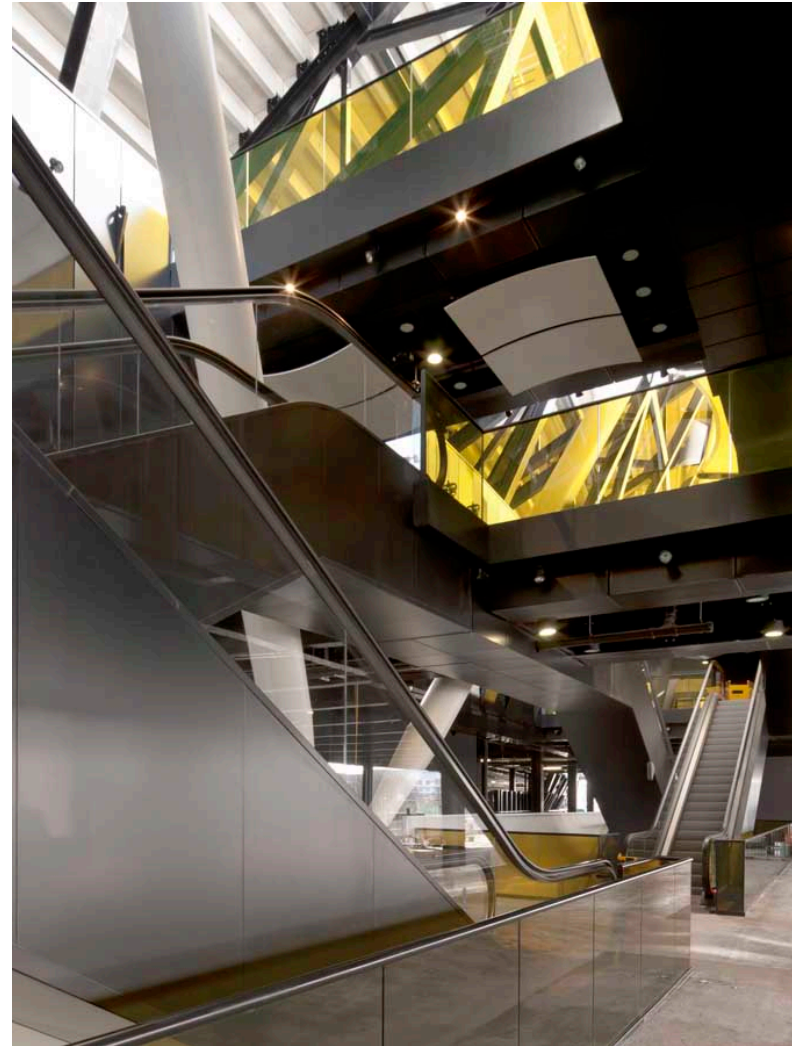
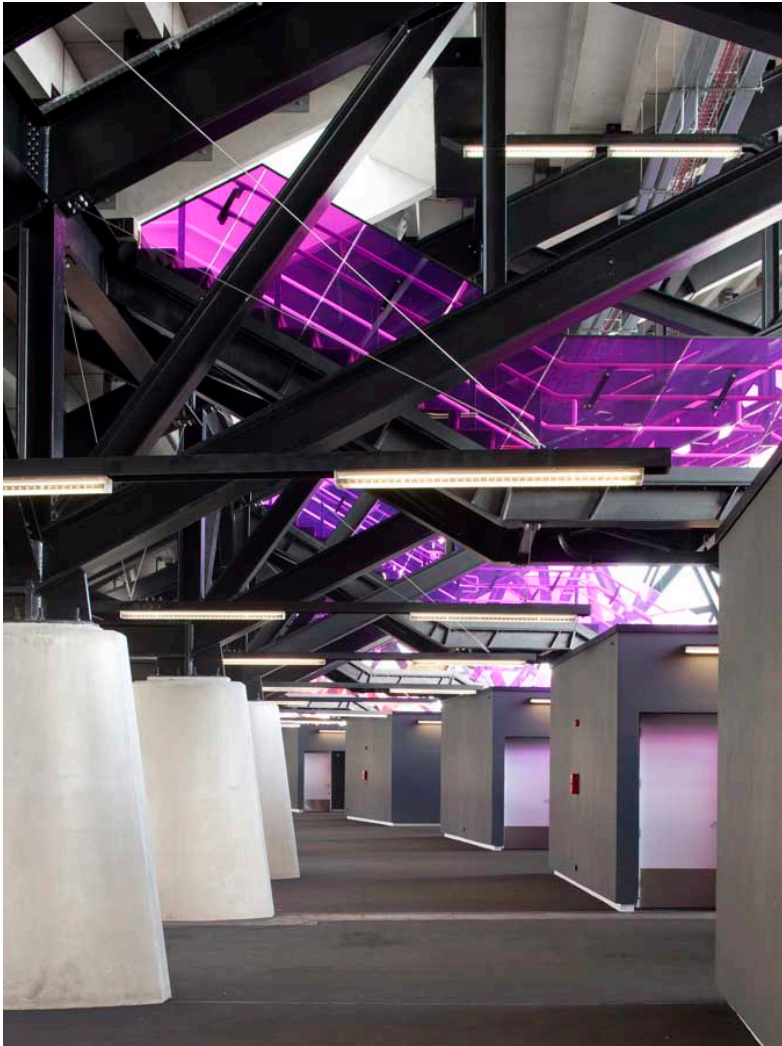


Example Images from the prototype



Example Images from the prototype





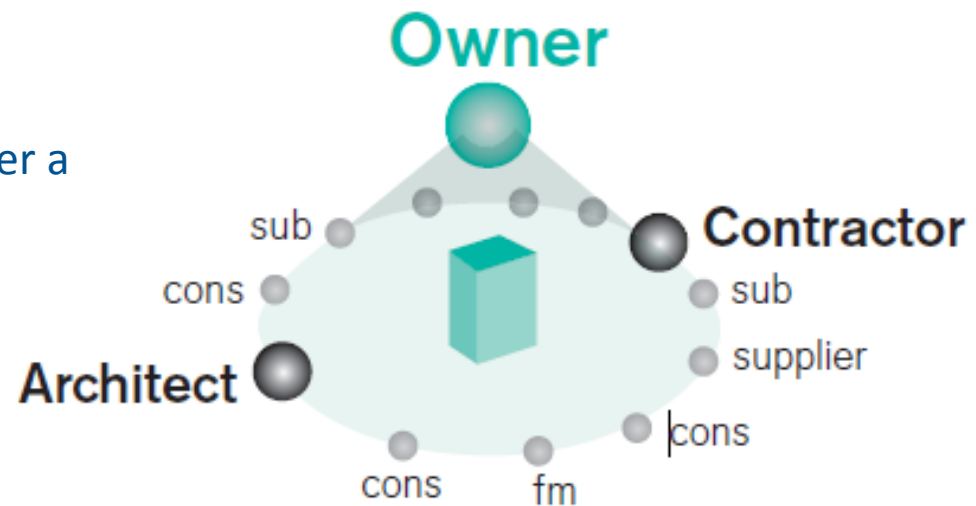


What we were asked to do

- On the 2012 project we used a wide range of software products from Microstation to Solidworks, and some IFC exchange was needed.
- We mapped the CAD information flow and used IFC to get CADduct into Revit as we find it performs better.
- We consulted with supply chain and installing contractors to advise on model content and information exchange.

Integrated Project Delivery

'We helped deliver a little bit of this'



Outcomes

o The Outcome

- Information of the right **quality/validation** delivered at the right **time** throughout the design/procurement/construction phase

o Delivered by

- The integrated, planned & managed development of a **digital prototype** asset.

o Allowing

- Improved planning, control and management of construction
- Enhanced communication of data and information
- Effective resource utilisation and coordination of activities
- Reduction in costs associated with design, construction and fabrication phases
- Reduction in labour requirements
- Reduction in material waste and improved sustainability
- Increased ability to simulate design variables through assembly & sequencing
- Leverage of data for downstream uses which supports decision making

Thank you for listening

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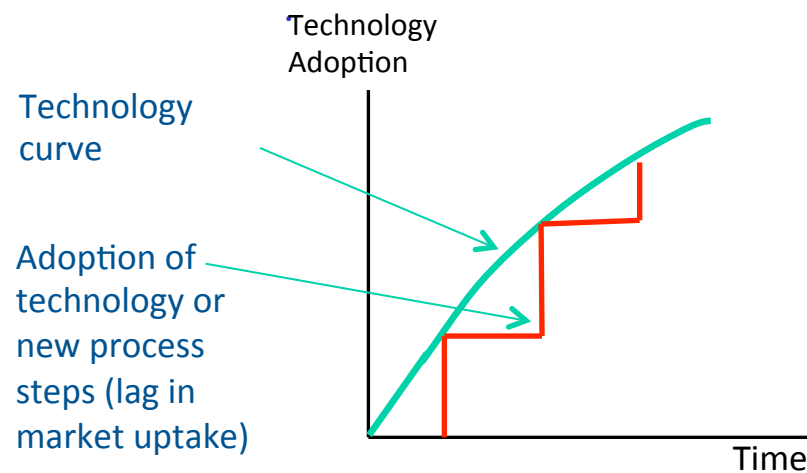


The Challenge In The UK

‘Without prejudice’ in the UK industry;

- does not fully understand BIM,
- certainly do not understand OpenBIM and IFC driven methodology.

Technology is running too fast and people and the process required are not in place to meet the needs of the industry.

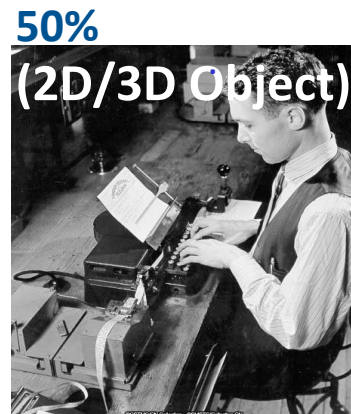


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Creation of basic digital data



Effective management & structure data of tasks or physical objects



Automated processing of information data-mining & analysing (model related database) – real-time simulation

Really have finished now !

Thank you for listening

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