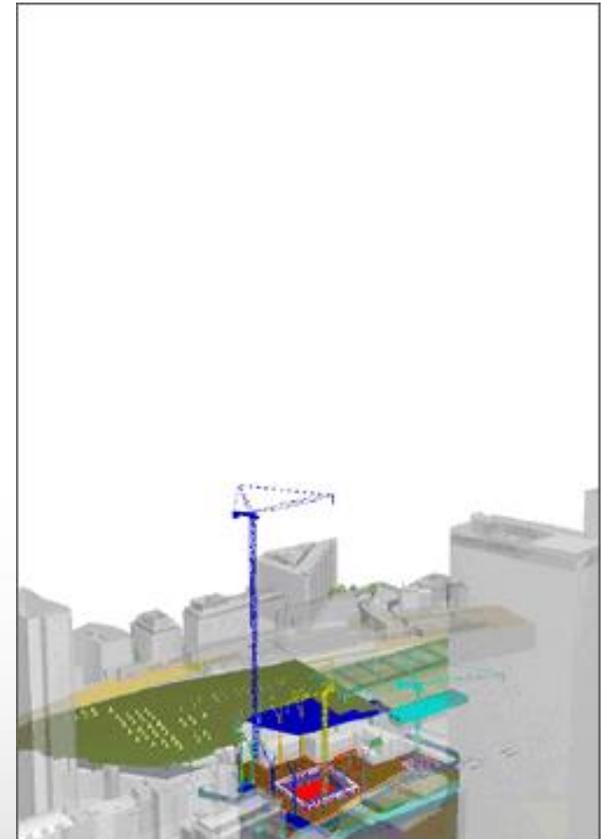




# BIM: A tool for improved project delivery

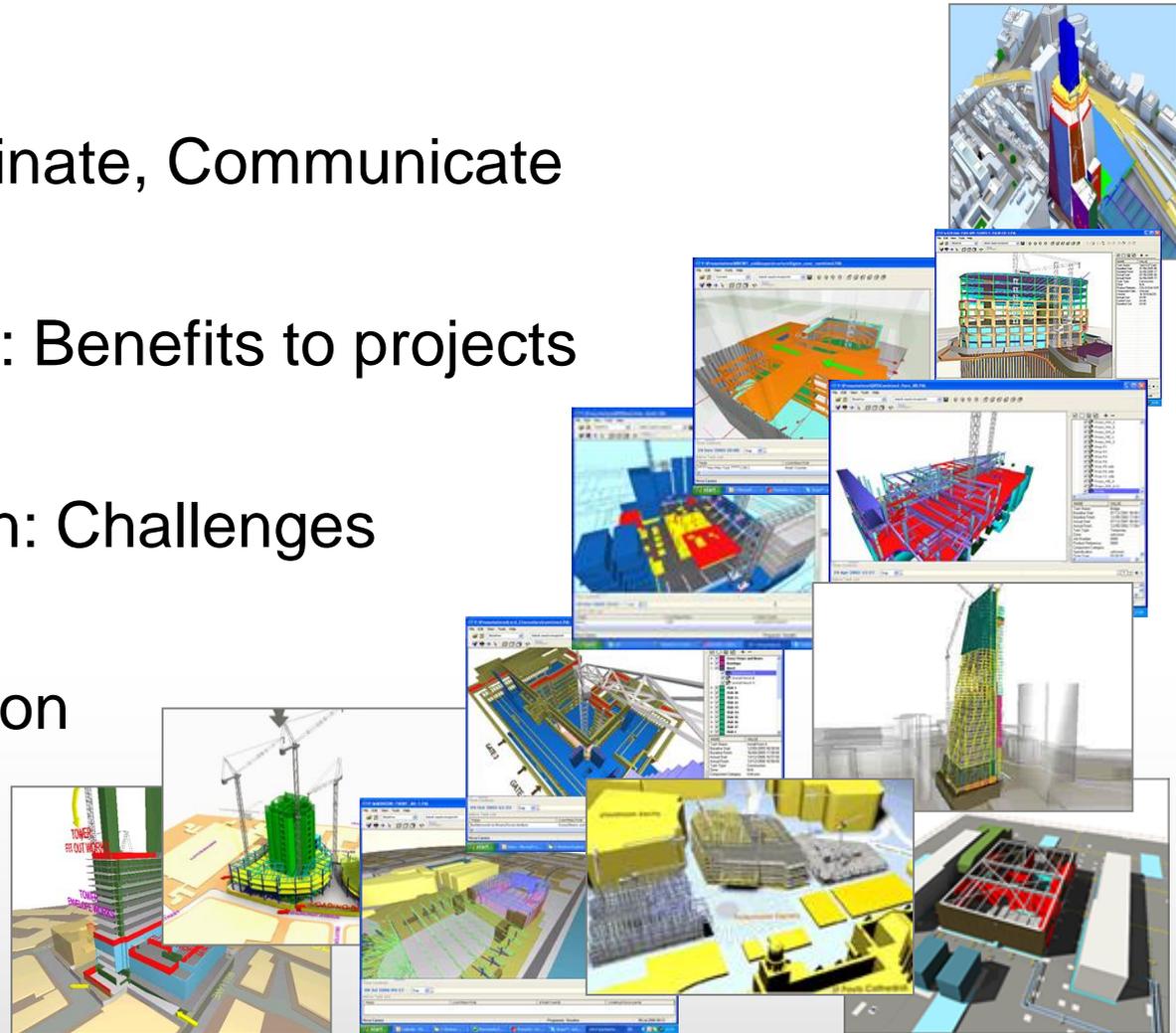


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Lecturer: Construction Management, NMMU





- What is BIM?
- Collaborate, Coordinate, Communicate
- Virtual construction: Benefits to projects
- BIM implementation: Challenges
- Value add proposition
- Conclusions



Images courtesy of A3D



## BIM?

### Building Information Modelling/Management

Definition: 'A digital representation of the physical characteristics of a facility derived from information stored in relational databases.'

- BIM is therefore not CAD
  - I is for Information
  - Object based
  - Parametric models
  - Digital – take-off; transfer; fabrication

[BIM Model presentation](#)





# Collaborate, Coordinate, Communicate



Ground Breaking



The Project Team



Process Mapping



"Big Room" Planning



Coordination Session



Exterior Wall Modeling



BIM Coordination



Mechanical System Clashing Image

*"I feel sorry for the person who can't get genuinely excited about his work. Not only will he never be satisfied, but he will never achieve anything worthwhile." - Walter Chrysler*

New + Emerging Technology Implementations: Scenario Based Project Planning

- A new team dynamic
- Interoperability
- Iterative Analysis
- Simulation of systems
- Sustainability modelling
- Lifecycle design database



# Build virtually 1st

- Plan better

Make mistakes in virtual space

Run scenarios

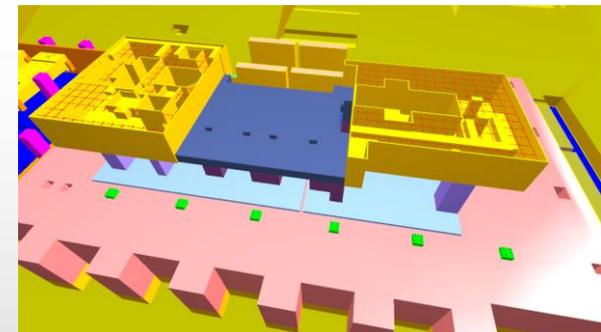
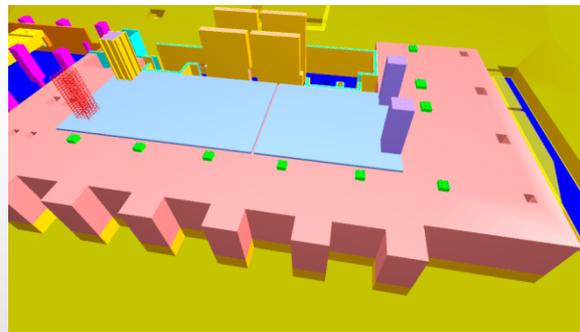
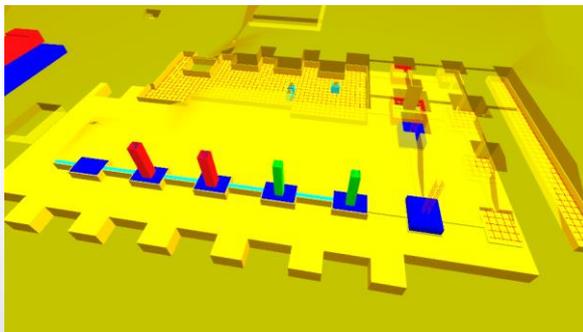
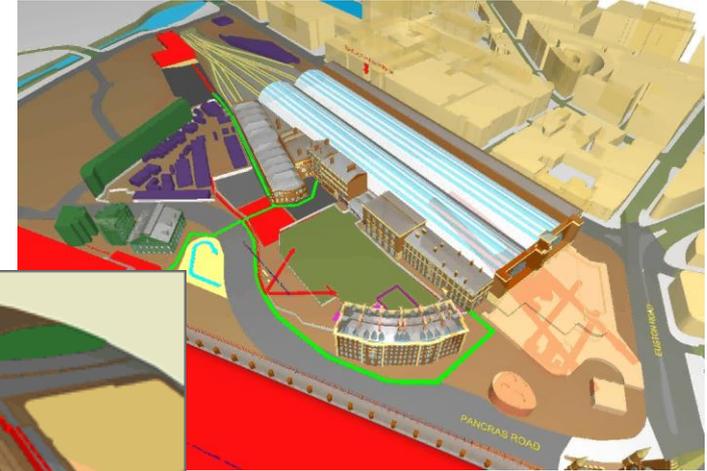
Location based planning

- Reduce risk

Visual coordination

Increased task activities

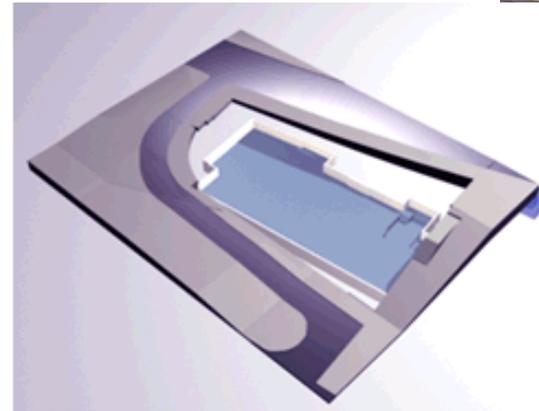
- Education tool





# Challenges in implementation

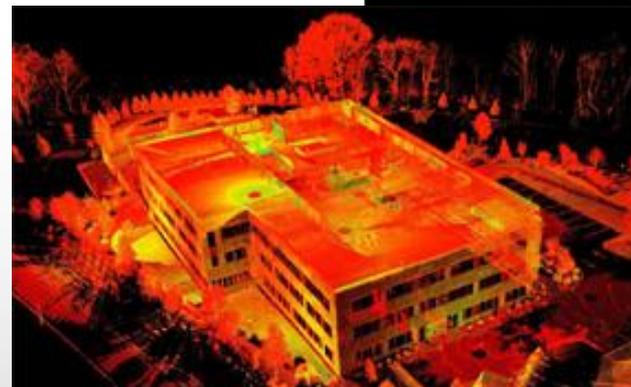
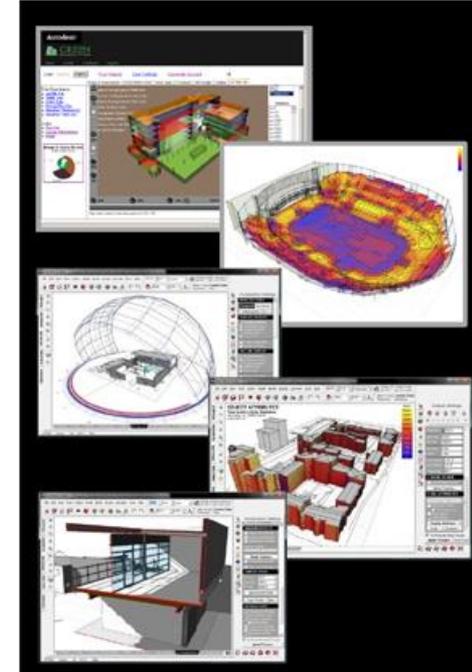
- Collaborative project environment
  - Contractual agreement
  - Software systems
  - Single project language – IFC's
- Concept acceptability
  - Open book scenario
  - Hierarchy buy-in
  - Technophobia
  - New ideas overload
  - Life cycle implementation - COBie





# Value add proposition

- Detailed design at warp speed
  - Reducing clashes
  - Greater coordination
  - Improved competitiveness - geographical
- Lifecycle design database
- Iterative Analysis/Simulation of engineering
- Waste reduction
  - Output to off-site automation process
  - Energy efficiency savings





# Other potential benefits

- Automated take-off
  - Bills generated from model
  - Digital procurement lists
  - Automated tracking of changes
- Logistics efficiency
  - Lean construction methodology
  - Logistics tracking
- Digital Fabrication
  - CAD-CAM pre-fabrication
  - Robotic shaping of forms
  - 3D printing of objects





- BIM is a revolutionary tool;
- Contract delivery processes will change as a result;
- Faster and more sustainable project delivery will occur;
- Risk and its allocation will need to be addressed;
- Is this Construction for the digital age?