MYAA Digital Future

www.myaa.eu

Digital innovation in the design of buildings
Mangera Yvars Architects is an architectural design practice based in London and Barcelona providing architecture, master planning, landscape, interiors design services for clients worldwide.
Thinking Process

Our work relates Culture to Form and Environment, using layers that make buildings unique in their Context.
Thinking Process

Architecture allows us to create public space, identity and by it promote social change.
As architects we do our best to promote sustainability and to protect the environment. We learn from traditional solutions and we implement them through new technologies.
We get inspired by the essence of things

Light  Colour  Calligraphy
Geometry  Gardens  Water
Thinking Process

And... We are interested in:

- Rethinking typologies
- Creating socio-cultural hybrids
- Reinventing Geometry and Programme
- Reconsidering Symbols
Architects Navigate between the Ideal World and the Real World
With BIM is the same
There is an Ideal BIM World
and a Real BIM World
Our first project with BIM 2008
Faculty of Islamic Studies with
ARUP engineering

Learning

Praying
What is BIM in a Design Process?

The digital modeling is not about geometrical shapes, but it is about parametric building objects full of information allowing the sustainability studies and building performance analysis to be part of the design process.

<table>
<thead>
<tr>
<th>Level of Definition (LOD)</th>
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<tbody>
<tr>
<td>L100</td>
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<tr>
<td>L200</td>
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<td>L400</td>
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**BIM Dimensions**

<table>
<thead>
<tr>
<th>3D</th>
<th>4D</th>
<th>5D</th>
<th>6D</th>
<th>7D</th>
<th>8D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling</td>
<td>Time</td>
<td>Cost</td>
<td>Performance</td>
<td>FM &amp;M</td>
<td>Decommissioning</td>
</tr>
</tbody>
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Gresham Smith Blog
BIM MYAA  Experience, Lessons learn

**COST IMPLICATIONS**
- Project Profitability
- Cost: Software, Hardware, Training
- Important that all the team works in 3D

**WORKSHARING**
- Internal organization,
- BIM manager, coordinator, modellers
- Worksharing methods
- LOD Level of Detail

**COMMON DATA ENVIRONMENT (CDE)**
- Cloud working
- Work Flow: WIP, Shared, Publish, Archive
- Clash Detection methodology

**LEVEL OF INFORMATION**
- Include Uniclass, Omniclass
- BIM families included information (BID process)
- Clash detection priority codes
- 4D programme information
- BIM schedules for BoQ (areas, elements, furniture...) filters

**SMALL SCALE**

**MEDIUM SCALE**

**LEAD CONSULTANT**

**MEGAPROJECTS**
The Model Life Flow

- Concept: Architect
- Design: Design Team
- Tender: Procurement
- Construction: Constructor
- As built: Constructor
- In use: Facility Management
BIM Architectural Model

- Daylight analysis
- Fly through visualisations Renders
- ArchiCAD.
- Physical model
- ‘Right to light’ studies
- People Flow
- Crowd Modelling
BIM Structural Model

Generative model with input parameters

Models exported to Robot

Optimised for minimum steel weight avoiding value engineering

Revit model exported into CSC Fastrak

Linked via Geometry Gym and IFC link
BIM Civil Infrastructure

- Earthworks drawing and quantities schedule
- Autotacks for vehicle movement calculations
- Traffic Analysis

Cut & Fill Models
Drainage
Traffic Models
Waste Studies

CIVIL INFRASTRUCTURE

CiViIL INFRASTRUCTURE

Traffic Analysis
Earthworks drawing and quantities schedule
Autotacks for vehicle movement calculations
BIM Central BIM

- Multidisciplinary reviews
- Clash Detection
- BIM used for elemental quantification
- 4D construction studies
BIM 4D Construction Planning

WEEK 2

WEEK 21

WEEK 43

WEEK 59

WEEK 95

WEEK 135

WEEK 149

WEEK 164

WEEK 245

WEEK 253
MYAA BIM Small Scale Lessons Learned

Tradition

Reinterpreting Tradition
MYAA BIM Small Scale

Cost implications

- Project Profitability
- Cost: Software, Hardware, Training
MYAA BIM  Small scale

Important that all the team works in 3D
What is HCC Trying to do?
MYAA BIM Medium Scale Lessons Learned

Tradition

Reinterpreting Tradition
MYAA BIM Medium Scale

Worksharing
- Internal organization, BIM manager, coordinator, modellers
- Worksharing methods
- LOD Level of Detail
MYAA BIM Lead Consultant Lessons Learned

Doha Art District

Qatar Rail National Qatar Museum Metro Site
Mangera Yvars Architects & ASTAD Consult
January 2017
MYAA BIM Lead Consultant Art District Doha
MYAA BIM Lead Consultant Qatar Rail Art District Doha
MYAA BIM Lead Consultant:

Common Data Environment (CDE)

- Cloud working
- Work Flow: WIP, Shared, Publish, Archive
- Clash Detection methodology
- Consultants Review
MYAA BIM Lead Consultant Document Workflows

- **WIP**: Working files sent up to house server building
  - Submits to Manager: files reviewed and approved
  - Model Submittal
    - Standardised checklists and annotations
  - Additional Areas
    - Extensions

- **Shared**: Material that has been checked, submitted to BIM Manager, and is ready for BIM Manager approval (not in Vault)

- **Published(1)**: Material that has been signed off by designers, including design intent file, and is ready for BIM Manager approval (in Vault)

- **Published(2)**: Material that has been signed off by designers, including Bill of Quantities and associated drawings, and is ready for submission (in Vault)

- **Archive**: Material that has been signed off by designers and is complete (in Vault)

※ Submissions through Aconex will be done by design teams at the end of each stage:
- 52-T2+3
- 52-T1
- 52-T2
- 52-T3
MYAA BIM  Lead Consultant Clash Detection

Related Models per Discipline

Check Modeling and coordination clashes

Check assembled models

Clash Analysis

Solved clashes record during the different stages
MYAA BIM Lead Consultant Review

Consultants models Review

Lead consultant Design Review Feedback

Client models and plans review
MYAA BIM Megaproject Lessons Learned

Qatar National Stadium 2022 Lusail
Team Member
5.1.4.3 Step 5 - The Mashrabiya Cladding

The double-curved surface of the vessel sets the geometric definition and panelization of the facade. The facade is comprised of flat panels which are supported by 3D adjustable brackets off the steel structure. The panels are triangular along the diagonal grids to follow the sweep of the surface. The facade grid follows the steel structure and emphasizes the diagrids on the exterior with feature diagrid elements. These elements are a visual continuation of the internal steel structure. Primary and secondary steel members are linear (not curved) and set out on a triangular grid arrangement to follow the curved geometry of the vessel.
MYAA BIM Megaproject

Level of information
- Include Uniclass, Omniclass
MYAA BIM Megaproject

Level of information
- BIM families included information (BID process)
Level of information

- Clash detection priority codes
Level of information
- 4D programme information
MYAA BIM Megaproject

Level of information
- BIM schedules for BoQ (areas, furniture...)

![BIM Schedules for BoQ](imageurl)
- How do you use BIM and for what type of projects it can be used? Do the use of BIM help in your daily work? What are the difficulties found to use it and how did you cope with them? Do you find any difference between the design and construction phases? Is it easy to apply BIM to already built buildings?

- Based on the experience with BIM, how are you facing the uptake of other technologies? Is easy to find people? If not how did you get there? What is the involvement of an architect in the process of improving energy efficiency?