BIM International/ Collaboration/
Agenda

• Introduction
• BIM at shl
• International collaboration within shl
• Culture of collaboration
• International Standards/ Local Standards
• BIM execution planning
• Actual Cases
• Conclusion
Introductio
n/

• Educated as an Architect in the US.
• Registered architect.
• Member of the Akademisk Arkitekt Foreningen.
• Architect at shl since 2004.
• BIM Manager since 2007.
• Responsible for Implementation of BIM, BIM Execution Planning and BIM for projects.
• Introduced Green BIM to shl.
• Involved with several international BIM projects.
Introduction

1986

London Copenhagen Aarhus Shanghai
BIM at shl

- Started implementation winter 2007.
- Internal BIM group that is responsible for:
  - Implementation
  - Education
  - Working methods
  - Standards
- Use BIM on projects when required.
- Goal to be 100% BIM by the end of year.
BIM at shl/

Project Planning

- BIM Managers
- IT Department
- Project Team

BIM Project
BIM at shl/

Shl Revit Server

- London Accelerator
- Copenhagen Accelerator
- The Hague (Field Office) Accelerator
- Aarhus Host Server

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Culture of Collaboration/
Culture of Collaboration/

Solo BIM VS. Social BIM

Architect

Client

Consultants

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Culture of Collaboration/

Mechanical Engineer

Structural Engineer

Architect

CAD Process

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Culture of Collaboration/

BIM Process

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Culture of Collaboration

- Model should always be present.
- The model is the facilitator of the dialogue.

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Collaboration Tools

- Lync
- Video Link
- Bluestreak
- E-mail
- Project Web
- Smartboards
- Telephone

Good collaboration requires regular communication.
Culture of Collaboration/

Collaboration Tools for Non Users

- IFC Viewers
- Navisworks Freedom
- Autodesk Design Review
- PDF
- Databases
- Dalux BIM Checker

Get everyone involved in the model!
National BIM Standards /

Statsbyg BIM Requirements (N)
AEC BIM Protocol (UK)
RgD BIM Norm (NL)
FIDE (E)

NBIMS (USA)
AIA BIM Protocol (USA)
CIC BIM Protocol (USA)

Common BIM Requirements (FI)
HKIBIM Specification (HK)
Singapore BIM Guideline

NATSPEC National BIM Guide
National Guidelines for Digital Modeling (AUS)
ANZARS (AUS/NZ)

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Open Standards

- Allows each project team member to use any tool available on the open market.
- Facilitates data exchange throughout the project lifecycle.
- Maintains consistent data standards.
- Promote competition among software vendors.
- Maximizes the openness and competitiveness of the market.
- Ensures that project data remains usable in the future.
Standards

- Help clarify the requirements.
- Highly standardized industries benefit the most.

- Be aware that many standards focus on the model (M) and not as much on the Information (I).
Questions

- Who?
- How?
- What?
- When?

Process to combine people of different backgrounds and cultures to work together towards a common goal.
BIM Execution Planning

Basis

- Autodesk Communication Specification.
- Håndbog i 3D-modeller.
Contents

• Project information.
• Scope of the modeling to be completed.
• List of BIM contacts on each consultant team.
• The rules of engagement.
• Sharing and exchange of BIM data.
• BIM design process.
• Collaboration procedures.
• Model structure.
• Model quality control.
• Project deliverables.
• Object ownership and transfer.
BIM Execution Planning

Working Method

• The entire project team responsible for the individual BIM’s should be present.
• BEP needs to be treated as a living document and respond to the project’s requirements.
• Find the risks.
• Have a fall back plan if there is a problem.
• Know the goals and requirements.
• Map processes required.
BIM Execution Planning

Additional Documents

• Model Linking Diagram.
• Model Component Development Definition table.
• Process Map.
• Drawing Naming Convention.
• Shl’s internal BIM Manual.

• Project BIM Manual – for shl’s internal team.
BIM Execution Planning

Model Linking Diagram
### BIM Execution Planning

**Model Component Development Definition**

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<th>Project Phase Deliverable</th>
<th>Phase 1</th>
<th>Phase 2</th>
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schmidt/hammer/lassen architects/
BIM Execution Planning/
Process Map
Actual Cases/

• Concert, Congress and Hotel/ Malmö, Sweden.
• Konstitucijos Avenue 21/ Vilnius, Lithuania.
• International Criminal Court/ The Hague, NL.
• Office Tower Warsaw/ Poland.
Concert, Congress and Hotel/
Malmö/
Concert, Congress and Hotel/ Malmö/ 

Project Data
• Client – Skanska Sverige AB.
• 54,000m² Concert Congress Hotel.
• 35,000m² Housing.
• Landscape Architect – SLA.
• Project won as competition in 2008.
• Completion 2014.
Concert, Congress and Hotel/Malmö/

Working Method

- Skanska Sverige both client and contractor.
- Skanska ran the BIM.
- Project needed to fit with Skanska’s working method.
- Skanska provided a BIM Manual to follow.
- The project was awarded in single phases.
- Project was developed in Swedish and Danish.
- Project information based on Skanska’s Shared Parameter file.
Konstitucijos Avenue 21/
Vilnius/
Konstitucijos Avenue 21/
Vilnius/

Project Data

• Office space, restaurants and retail
• In collaboration with Lund + Slaatto Arkitekter, Oslo and Arches Architecturus, Vilnius
• Engineering - COWI and INRE
• Client - Schage Eiendom AS
• 72,300 m²
• Project won as competition in 2009
Working Method

- Model shared in real time over Revit Server.
- The three offices were responsible for specific areas.
- LSA responsible for project.
- Shl responsible for the BIM.
- English used as project language.
- Lithuanian used as permitting and construction language.
- Important to start with the right template.
- Started to work with bi-lingual objects.
Konstitucijos Avenue 21/
Vilnius/
IT Requirement

• All offices need to run Windows Server 2008 Enterprise.
• Hole through partners firewalls.
• Need internet with latency less than 100m/s.
• Workstations need to be powerful to run model.
• Should have an IT agreement.
• Agree on hosting of models.
• Fee for hosting and service.
International Criminal Court/ The Hague/
International Criminal Court/ The Hague/
International Criminal Court/ The Hague/

Project Data

• Office space and courtrooms.
• Client – International Criminal Court.
• 46,000m²
• Engineering Consultants – Royal Haskoning, NL Esbensen Consulting Engineers, DK.
• Landscape Architect – SLA.
• Competition won 2008.
• Completion 2015.
Working Method

- Project developed from Aarhus, Copenhagen and London.
- Models shared internally over Revit Server.
- Models shared between partners over project web.
- Shl responsible for the BIM during design.
- Contractor in Holland took over model for construction.
  - New BIM Execution Plan.
  - Coordinating models.
  - Distribution of models to sub-contractors.
  - RgD BIM Norm standard was introduced at the start of construction.
Office Tower
Warsaw/
Office Tower
Warsaw/

BIM Show Live 2013.04.30
Office Tower
Warsaw/

Project Data
• Office space with restaurants and retail.
• Client – UBS Real Estate.
• 60,000m²
• Local Architect – Epstein.
• Engineering Consultants – Arup.
• Competition won 2011.
• Completion 2016.
Working Method

• Project team distributed across Aarhus, Copenhagen, Berlin, Munich London and Warsaw.
• Shl will take design lead Local architect will assume responsibility for permitting and construction.
• Project working language is English.
• Permitting and construction documents to be completed in Polish.
Conclusions

Points

• Make sure the scope of work in the contract is followed.
• Need to have open dialogue constantly.
• Need to have a BIM Execution Plan in place and use it!
• Need to adapt for the unexpected.
Thanks

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schmidt/ hammer/ lassen architects/