The Use of BIM and Mobile Computers in Skanska

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Ilkka Romo, Skanska Oy
Presentation content

- Skanska Introduction
- BIM in Skanska Finland
  - Early phase design
  - Visualizations
  - Design coordination
  - Site area planning and safety
  - Construction planning
  - Pre cast elements – prefabrication
  - Mobile tool applications
  - FM / Maintenance
  - Future development
  - Video of Site BIM
Skanska in short

- Founded 1887 in Sweden
- International business since 1897
- Listed on the Stockholm Stock Exchange
- 2013 revenues: SEK 136 billion
- 10,000 ongoing projects
- 57,000 employees
- A Fortune 500 company
- Member of UN Global Compact
We are active in selected home markets

Revenue by geographic areas
Nordic countries 43%
Other European countries 19%
The Americas 38%
BIM is globally used in Skanska

"We at Skanska have conducted extensive work in developing BIM with all of our global business units.

BIM is changing the construction world, get ready to take advantage of all the benefits it offers – let’s do it together”

Johan Karlström
President and CEO, Skanska AB
Better BIM tools for projects through global collaboration

Share and develop best practices:

**Preliminary design**
- Daylight and shadow studies
- Energy zoning
- Initial energy analysis
- Initial carbon footprinting

**Design**
- Detailed energy and lighting analyses
- Carbon footprinting

**Construction**
- Supply chain interaction
- Customer interaction

**O&M (Operation and Maintenance)**
- Verification of performance
- Effective asset management
- Plan facility improvements and renovations
AM information is created during design and construction

Produces informations in correct format and systematically named/coded

Spaces, systems, equipment, requirements, locations

Product data, final locations, equipment numbers, warranties, manuals, spare parts

Uses and maintains information
BIM in Skanska Finland

- The majority of Skanska’s residential and commercial development projects are modeled completely by designers
- Architectural, structural, MEP and increasingly geotechnical models
- Skanska is using models through different business processes, estimation, scheduling, purchasing, and construction
- More than 200 BIM projects during last years
BIM Steps in Skanska Finland

The first BIM project

BIM Group

BIM roadmap

Completely modelled residential projects

Implementation in commercial projects starts

2005 2006 2007 2008 2009 2010 2011 2012 2013

Global Skanska BIM Competence Center 2009-12

Final breakthrough with clear business benefits

• Model coordination
• Estimation & tendering
• Sales and marketing
• Site, logistics & safety
• Mobile tools in use

Residential BIM → Commercial BIM → Collaborative BIM
Common Bim Requirements 2012

Series 1: General part
Series 2: Modeling of the starting situation
Series 3: Architectural design
Series 4: MEP design
Series 5: Structural design
Series 6: Quality assurance
Series 7: Quantity take-off
Series 8: Use of models for visualization
Series 9: Use of models in MEP analyses
Series 10: Energy analysis
Series 11: Management of a BIM project
Series 12: Use of models in facility management
Series 13: Use of models in construction
BECT - Precast Concrete Modeling Guidance
BIM – information is essential

2D drawings

Reports

BIM Model

Information of components and spaces

- Identification
- Quantities
- Spaces
- Materials
- Locations
- Properties

- IFC standard enables the use of information in different phases
BIM enables quick analyses for supporting early decision making.
BIM visualizes projects

BIM based visualization brings new buildings, spaces and areas into life

- Visualization is based on the architectural model, completed with information from structural and MEP models, selected materials and surrounding environment
- Still pictures, animations, virtual tours, stereo 3D presentations
- Visualization supports strongly customers’ decision making, giving realistic impressions of alternatives.
Ipad Apps – Skanska Kodit

Available in Appstore
Starting with geotechnical design
BIM improves design quality

BIM based design coordination reduces errors and improves collaboration among the design team

- Constructability analyses
- MEP equipments coordination
- Reservations for piping
- Tracking down missing or wrong-sized openings
- Model checking and clash detection is an essential part of the design process
- Solibri Model Checker tool based on the IFC standard

As Oy Helsingin Esmeralda

17 June 2014  ICIS 2014 / Ilkka Romo
Fall protection planning with BIM

- Falling is one of the most important reasons for fatal accidents
- Fall protection can be planned with BIM:
  - Type of safety equipment
  - Locations
  - Quantities
  - Installation order
Estimators tool
### Quantities for procurement

![Building Model](image)

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**June 2014**  
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Site area planning

- Updated area plans
- Storage
- Logistics
- Cranes
- Lift plans for materials
- Introduction for workers and visitors
- Dangerous areas
Schedule planning and control
Follow up / control of precast concrete element schedule by using BIM
Design, planning and production collaboration
Creating a production model for site

- Geotechnical
- Structural
- Architectural
- HVAC-models
- IFC FORMAT
- Site planning and safety
- Electrical

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June 2014
The use of production model

- Prefabrication information
- Site planning and safety
- Supply chain management, Logistics
- Purchase packages
- Drawings, Reports, measurements, co-ordinations,
- Details: ARC, Structural, MEP
- Scheduling (4D)
Mobile 3D models (Field 3D -software)

Supervisors, subs, clients, surveyors

- Viewing 3D details with subs and blue-collars
- Solving installation order
- Getting information of components
- Quality and safety checking
- Measures and quantities
- Improved communication
Future with BIM

- Paperless process
- Better communication
- Whole supply chain connected
- Shorter project delivery times
- Improved productivity
Increased use of IT on sites sets demands on processes and systems

- Improved user experience & ease of use
- Mobility – use, modify and add data with tablet/mobile
- Better information integration between the systems
BIMCON Research Goals

1. BIM (Building Information Model) -based information flow through project phases and between participants in construction
2. Procedures and tools for contractors and suppliers to integrate product and production data into this flow
3. Take a full advantage of new tools \( \Rightarrow \) re-engineering processes
Further information of BIM

RYM PRE research Program, BIMCON working package leaded by Skanska

Goal:

The first research program of RYM Oy is the PRE (Built Environment Process Re-engineering) program to be implemented in 2010-2013. Its aim is to create totally new procedures and business models for the real estate, construction and infra sectors. They will be more user-centred and supported by product model-based data management over the entire life cycle of the real estate, infrastructures and communities in question. The adoption of new business processes allows a significant increase in productivity and quality.

Results:  http://rym.fi

BIM in Skanska:

Skanska has been developing BIM globally together with all business units. More information about BIM in Skanska:  http://skanska.com/BIM
Build it first virtually!

Thank you for your attention!