Case Helsinki Airport expansion: Open InfraBIM workflow in practise

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Anssi Savisalo | Sitowise | Service Manager
Petteri Palviainen | Novatron/MOBA | BIM Manager
Our core competence is in automation of mobile machinery and digitalized earthmoving

Our solutions: Machine control systems, hardware, software, services

Our customer base consist of contractors, municipalities, machine dealers, machine manufacturers

We are a part of the German MOBA AG
MOBA BUSINESS SEGMENTS

Novatron is the Earthmoving competence center of the MOBA Group
EARTHMOVING BUSINESS AREAS
We have divided our business into three segments

DIGITAL INFRASTRUCTURE
CONSTRUCTION - XSITE
Xsite machine control systems and customer service, open infra BIM

AUTOMATION OF MOBILE MACHINERY
Integrated machine automation solutions

OEM COMPONENTS
Sensors, controllers, HMI’s
EXPERTS OF OPEN INFRABIM

Alongside with Northern Europe, Finland is known for being one of the early adopters of BIM in infrastructure construction. We at Novatron have been developing industry standards in co-operation with BuildingSMART.

Our Xsite® products are designed and built to fully support infraBIM.

We offer educational services for the whole work process

We promote BIM-awareness. Visit the infaBIM OPEN 2019.
Outline of the presentation

- Helsinki Airport expansion project in a nutshell
- Open InfraBIM-workflow in design
- Open InfraBIM-workflow in infra construction
- OpenBIM in Communication and Collaboration
The Helsinki Airport expansion project in a nutshell

Need and demand for the expansion
- To strengthen Helsinki Airport's position as the significant air traffic hub between Europe and Asia.
- To increase the annual capacity from today’s 20 Mio passengers to 30 Mio passengers in the future.

- Total investment with the airport expansion are ~ 900 Mio. €
- Renewal of apron infra: Area is 90 football fields

The project is executed in co-operation with
- Owner: FINAVIA CORP.
- Infra and geo design: SITOWISE
- Infra construction: DESTIA
- Architectural design: PESARK
- Building Structural design: SWECO
- Building services engineering: GRANLUND
- Building geo design: SIPTI
- Building construction: LEMMINKÄINEN
InfraBIM-workflow in design – Design compatibility check

- **Building and Infra (BIM) in the same software** – basic combination model

- **3 different examples:**
  - Supported excavation and sheet piling
  - Pile foundation and drainage system
  - Water supply line and blasting

- **Softwares? TeklaBimSight, Solibri, ...**

- **Demands – IFC and IM3**
  - Design Using Open data exchange formats
  - Support from softwares → Open API’s

- **Benefits**
  - Proactive co-operation
  - Less errors and conflicts
  - The most technical and economic design solution
InfraBIM-workflow in design – Designer’s quality assurance

Designer’s tools in desktop

- Lifecycle - Normally different parties in different phases
  1. Design software
  2. Worksite software
  3. Infra construction machinery simulator

- “Correct data flow” demands
  - Same data – different software – similar view
  - Use of open data formats throughout the process
  - Support from softwares -> Open API’s

- Benefits
  - As-planned model (end-product) is compatible with construction machinery
  - "Do it correctly once"
  - Saving time and money
InfraBIM-based construction and machine control system models in execution

- Quality control at work site
  - Model checking

- InfraKit data management
  - All data exist at InfraKit BIM Cloud
  - Data sharing
  - As-built approvement
  - Documentation
  - **All data used by machine control**
    - *Data sharing <->*
    - 70 folders (including subfolders)
    - 1150 files
    - 110 background/warning maps

- As-Built model
  - Digital quality assurance
  - Finished product of construction

- Documentation
BIM in Communication and collaboration

- **SAME DATA** as used in Design and Construction phases
- **REFINED DATA** in to a Virtual model - tool to
  - *Communicate and Collaborate*

**Used in:**
- Project management
- One visual dashboard to all data.
  - Support in decision-making.
  - 4D/5D: Time and Costs

**User involved-process:**
- Airport and maintenance staff, Stakeholders, Authorities...

**Better end product and more satisfied customer**
Use of BIM models in advanced simulation operations

• Preliminary 5G network planning
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- Outdoor lighting simulation
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• Preliminary 5G network planning
• Outdoor lighting simulation
• Security solutions simulation
• IoT sensor data: case air quality
Thank you for the interest – any Questions?

The outcome is what counts?
In the end, the project delivery was on time and on the money!

Future and collaboration inside the building sector
The change the way we work we need everyone - as shown BIM-workflow does truly work!

BIM-Deployment in project
Best end result => Use BIM in all phases
Second is bigger.
BIGGER IS BETTER.

InfraBIM Open 2018 was the first conference in the world concentrating to open infrastructure BIM. The first year brought together more than 400 participants from 17 different countries. The world had been waiting for this seminar!

That is why the second Infra BIM Open will be held on 15-16 January 2019 in Tampere.

Yes, we do aim to grow. A bit on the absolute number of participants. But even more so on the event quality, content variety and participant experience. To be not-to-miss already before the event kicks off.

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