BIM – Building Information Modeling
Austrian standards and expected benefits for a motorway operator

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Content

- ASFINAG company overview
- Austrian BIM Standards
- BIM - State of the art in Austria
- BIM - State of the art in ASFINAG
- Expected benefits and required changes due to the use of BIM in ASFINAG
ASFINAG was founded in 1982 and is a company of the Republic of Austria.
### ASFINAG in brief

<table>
<thead>
<tr>
<th>Core tasks:</th>
<th>Planning, construction, maintenance, operation, funding and tolling of motorways and expressways in Austria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road network:</td>
<td>2.199 km</td>
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<tr>
<td>Employees:</td>
<td>approx. 2.650</td>
</tr>
<tr>
<td>Operation and maintenance facilities:</td>
<td>43</td>
</tr>
<tr>
<td>Traffic management center:</td>
<td>10 (1 national, 9 regional)</td>
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</tbody>
</table>
| Financing: | Kfz ≤ 3,5 t: toll stickers + special tolls  
Kfz > 3,5 t: mileage-dependant toll  
→ ASFINAG is not government-financed! |
ASFINAG – the Austrian motorway operator
Key Figures

• Length of network: **2,199 km**
• Lane kilometres: approx. **11,600 km**
• Tunnels: **#163 (381 km)**
• Bridges: **5,166**
• Parking facilities: **240** (6,600 truck parking lots)
• Toll revenues: approx. **1,800 Mio. EUR**
• Infrastructure investments +/- **1,000 Mio. EUR**
• Ongoing construction projects per anno: **450**
Austrian BIM standards

07.2015 →
new Austrian standards for „Digital structure documentation“

ÖNORM A6241-1: Digital structure documentation
Part 1: CAD data structures and building information modeling (BIM) — Level 2

ÖNORM A6241-2: Digital structure documentation
Part 2: Building information modeling (BIM) — Level 3-iBIM
ÖNORM A6241-1: Digital structure documentation — Part 1

- Definition of CAD data structures for BIM-Level 2
  - definitions for layers
  - definitions for blocks and attributes
  - coding for information data
  - headers for plans
  - coordinate systems
  - ...

State of play:
- defined for buildings such as houses
- not defined for structures such as bridges, tunnels, …
ÖNORM A6241-2: Digital structure documentation — Part 2

• Definition of project-models
  (basic-model: survey data - cadastre, architecture, structural planning, …)

• Definition of Life-cycle of buildings
  (plan, design, construct, operate,…)

• Dimensions
  (3D, 4D - scheduling, 5D - estimating, 6D – facility management)

• Level of details

• IFC

• ASI-Merkmalsserver (http://db.freebim.at/)
  (web-based database for construction elements)
Organisations - workgroups - BIM

• ASI – Austrian Standards Institute
  creating Austrian BIM-standards

• ÖBV – Österreichische Bautechnikvereinigung
  creating documents for practical use of BIM

• ÖIAV - Österreichischer Ingenieur- und Architekten-Verein
  implementing BIM into building processes
BIM – benefits in building process
in general…

• Getting a higher level of planning reliability and cost certainty
• Timely identification of planning errors in building process
• Getting 3D-visualisations for marketing and public relations
• Getting structures data for maintenance and facility-management
• Getting connected digital data of structures for the whole life-cycle
BIM – State of the art in Austria

• We have just started (2015) with Austrian – BIM - standards and to implement BIM in building processes

• We don’t have much contractors, who are able to work with BIM

• Not enough BIM-coordinators available today

• For structures like tunnels, bridges, … the BIM-CAD-Standards are not defined today
BIM – State of the art in ASFINAG

• We have designed our object-based structure documentation and change continuously from paper-based to electronic document archives

• We are working on a central structure database

• We have now pilot projects using web-based collaboration-platforms for building projects

• We will start with BIM pilot projects this year, to see, how to deal with the new methods
Changes required due to the use of BIM in ASFINAG

• Creating new ASFINAG-BIM-CAD-standards for infrastructure objects (bridges, tunnels, overhead gantries, ...) based on Austrian BIM-CAD-standards

• Establishing new web-based collaboration-platforms for ALL building-projects

• Setting up BIM-Servers for building-projects

• Establishing a central ASFINAG-database for all infrastructure objects
Changes required due to the use of BIM in ASFINAG

- Creating ASFINAG - BIM-drawing libraries
- Establishing a BIM-Model – Management
- Redesigning construction tendering and contract regulations
- Connecting all different internal databases (GIS, SAP, …)
- Redesigning our internal building process because of BIM-digitalisation
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BMG – Baumanagement GmbH (Construction Management)

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