

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

Gerald Egger, ASFINAG 66th TEM Meeting Warsaw, April 6, 2016





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Group of companies

ASFINAG was founded in 1982 and is a company of the Republic of Austria



Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft

ASFINAG Bau Management GmbH ASFINAG Service Alpenstraßen GmbH ASFINAG Commercial Services GmbH ASFINAG Commercial Services GmbH



ASFINAG in brief

Core tasks:
 Planning, construction, maintenance,

operation, funding and tolling of motorways

and expressways in Austria

• Road network: 2.199 km

• **Employees**: approx. 2.650

Operation and

maintenance facilities: 43

Traffic management

center: 10 (1 national, 9 regional)

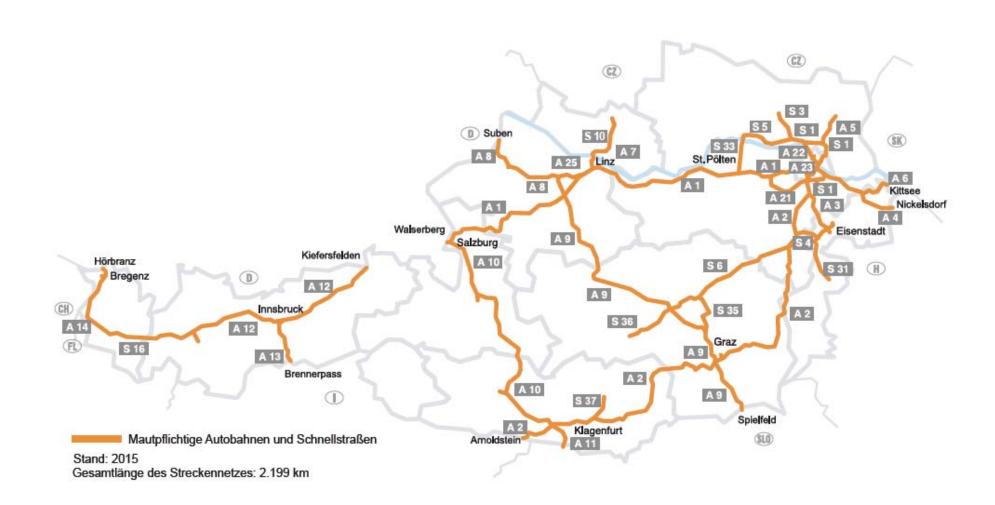
• **Financing**: Kfz ≤ 3,5 t: toll stickers + special tolls

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

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(basic-model: survey data - cadastre, architecture, structural planning, ...)
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Definition of Life-cycle of buildings

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(plan, design, construct, operate,...)
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Dimensions

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(3D, 4D - scheduling, 5D - estimating, 6D - facility management)
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- 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 facilitymanagement
- Getting connected digital data of structures for the whole lifecycle



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 availably 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 collaborationplatforms 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 BIMdigitalisation





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