BIM Motivation and Education
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Bachelor (7 semesters)
Geomatic Engineering (BIM 6th Semester)

Master (3/4 semesters)
Geoinformation and Management (BIM 2nd Semester)

Distance Learning Diplom (10 semesters)
Focus on Surveying/Land Management (shows high demands on well educated engineering's having knowledge on BIM)
Current Research Project


CityBIM: Integration of Building Models (BIM) and 3D-City Models (GIS) (2018-2020), Partner: VCS, Berlin

IMMOMATIK: BIM and GIS for CAFM applied in real estate (housing associations) (2018-2020), Partner map Hamburg
Professional Network on Digital Data exchange of Surveying-, Geospatial- and Building models (BIM)
BIM for Surveyors Workshop
Topics of the lecture “Surveying and BIM” (Master)
- BIM Motivation (Quality, Cost reduction, Business, Administration)
- Geometry, Topology, Semantics (Parametric Modeling)
- Best practice for engineering surveys and Geospatial/BIM-integration
- Data Exchange with IFC and other buildingSmart/ISO Standards
- BIM Management (EIR, BAP, CDE, roles)
- Legal and business issues (Types of contracts, BIM related laws, professional fee)

Good starting point for education:
- Geomatic Engineering students are very good in 3D-modelling and computer sciences / programming
- Students are highly motivated due to “BIM hype” and excellent job opportunities

Challenge: With BIM students have to gain extra knowledge on Building Construction and Design
Education
Practice #1 BIM basics

BIM as database – not drawing. Query BIM models.

Practice #2 CAD to BIM migration

precise modelling with building objects. Given floorplans, sections and workflows
Practice #3: Creating Types for Object Libraries

- Creating and managing **building elements** (objects) with Autodesk Revit Family Editor
- **Parameterisation** of dimensions and materials
- Showing the importance of **object libraries** also for measuring existing buildings
- Reference-plane and topology of building elements
Practice #4: 3D-Pointclouds for BIM

- **preparation** of the point cloud for BIM Authoring Software
- pointcloud as **reference for the digitalization** of building elements
- **as-build comparison** between an existing model of the building and the point cloud
- PointSense for Revit, Faro 3D Software GmbH (Dresden)
- Point cloud in family editor
- **Semiautomatic detection** and placing of building elements
- BIM-Beautification (89,9° vs. 90°)
Practice #6: GIS/BIM Coordinate Systems

- **Concepts and limitations** of internal, project and shared coordinate system
- Working with **georeferenced** CAD-files
- **Adjusting** a planed building (BIM) to a parcel boundary (Land Management)
- Digital Terrain Models (DTM)
- **3D-City Models**
Practice #7: Setting out

- Creating numbered points in BIM
- managing surveying points
- comparing points as-planned vs. as-built
- slap analysis
- setting out reports
- best-practice workflows
Standards for education

Individual Qualification (launched):
- concepts and principles of openBIM.
- focusses on theory-based learning
- *not* include software training
- can be delivered in a 2-day course.

Professional Certification (late 2018)
- addresses the application of openBIM principles in the project environment.
- practice-driven, comprehensive training
- comprised of specific role based modules (e.g. BIM Manager, BIM Coordinator, Information Manager)
- Each module will require 200+ hours of class learning in addition to live project work.

https://www.buildingsmart.org/compliance/professional-certification/
Establishing a **unique basis** for the education, training and further education of BIM in Germany.

The basic knowledge is consistently based on a dynamic system consisting of the **five BIM factors**: People, processes, data, technology and framework conditions as well as their basic-interactions with their environment.
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