BIM in Education: Focus on Local University Programs

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Contents

- About George Mason
- Personal and Professional Profile
- Teaching
- Research
- Professional Activities
- Recruitment
GMU Fast Facts

- 3rd Largest* public in Virginia (30,714 students)
- Distributed University (Arlington, Fairfax, Loudon, RAK)
- Young Engineering program (23 yrs), heavy IT focus
- Civil, Environmental and Infrastructure Engineering
  - 275 undergrad, 75 grad, 8 FT Faculty, ~15 adjuncts
- Past Emphasis: Land Development (Res & Comm.)
- Future: Sustainability, BIM, and Virtual Construction


Sunday, December 14, 2008
BIM & GMU Building Boom

- $3 million / week of construction on campus
- VA PPEA Projects: Dorms, Academic Bldgs, more...
- 50% of projects developed & designed with BIM

Academic VI Engineering Building / Opening Spring 2009
Personal Profile

- Assistant Professor in CM Area (2006-present)
- Background in GIS, Networks, and CAD modeling for Infrastructure and Project Management
- Professional interest in Engineering Education - especially how BIM (and related virtual design methods) will impact the Civil Engineering curriculum
- ASCE Student Chapter Faculty advisor - focus on student activities
Teaching BIM

- Lessons Learned from this week’s presentations
  - Many sessions, many perspectives
  - BIM Pedagogy still not solidified
- My Goal: Embedding BIM in the Civil Eng. curriculum
  - Engender BIM skills as early as possible
  - Reinforce them throughout the curriculum
CEIE472/572 BIM @ GMU

- First Offering Spring 2009
- Theory, practice and software
  - Construction perspective
  - Analysis and Simulation for Sustainability
- Objectives:
  1. Develop fluency in terms & methods
  2. Provide basic introduction to software packages
ENGR117 IT for Engineers

- Freshman computing course
- Revitalized curriculum
  - 3D modeling using Google Sketchup
  - Scripting and numerical analysis
- Objective: Baseline skills and computing knowledge for future course work
Research

- Initial effort: fall 2007 transportation design using BIM
Research: Field visualization and calibration techniques

- **BIM as preferred AE tool for buildings** (2005 - beyond)
- **BIM as preferred tool for construction** (2010?)
  - Constructibility, site logistics, sequencing, etc.
- **BIM as preferred tool for trade- and sub-contractors** (?)
  - Trades and subs still rely on drawings, tapes, levels, etc. for layout and actual building.
- Research for **direct field visualization of model elements** is needed.
Research\textsuperscript{3}: BIM+GIS Integration

- Integrated building evacuation modeling using graph-based models
  - Spatial relationships (adjacency, containment, etc.) not inherent in commercial BIM models. Application of GIS-based network analysis to model inside-out evacuation planning.
  - Identifying relationships useful for first responders
  - In-building utility tracing, shared walls/structural members
Professional Activities

- **Design Build Institute of America (DBIA)**
- **Local:** DBIA-MAR Chapter Owner’s Council
- **National:** DBIA BIM Steering Committee
  - Barbara Heller, Design Strategies, Chair
  - **Goals:** Provide guidance for owners on what to ask for in DB RFPs.
BIMSig (Student Interest Group)

- Founded 2007 - monthly meetings to discuss BIM research, software, applications.

- Spring 2009 - will become a formal student organization with its own governance. Contact Randall Sylvertooth (rsylvert@gmu.edu) for info.
Faculty Recruiting

- Hiring a junior Tenure-track faculty position fall 2009.
  - Strategic investment, target area for growth
  - Emphasis in asset & life-cycle management, geospatial integration, security engineering
  - Backgrounds in Architecture, Engineering, and Design desired.
Discussion and Questions

- Thank you and safe travels home!
- Michael Casey (mcasey4@gmu.edu)