AUTODESK UNIVERSITY 2014

Building Information Modeling and Virtual Design and Construction for Executives

Melinda Hoffman – LPCiminelli

Code CO5643

Learning Objectives

At the end of this class, you will be able to:

- Understand what BIM and VDC are in construction
- Discover BIM and estimating
- Understand how BIM is utilized after design for clash detection and simulations
- Understand BIM-project closeout and future of the model with the owner

About the Speaker

Presenter Biography

Melinda S. Hoffman
Virtual Construction Manager, LP Ciminelli
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Melinda manages the emerging Virtual Design & Construction department at LPCiminelli handling all the Building Information Modeling (BIM), Mobile Technology with a two-person staff. Her duties include training Revit, aiding in pre bid estimating and visualizations, managing workloads for staff, laser scanning to document existing conditions, model logistics and scheduling and coordination. She assists project teams with preconstruction services, to establish & implement virtual construction procedures and techniques to assure timely modeling. She collaborates with the clients' design team and in-house estimating on the use of models for 5D quantity takeoff and pricing. Ms. Hoffman leads clash detection and RFI resolution with project teams during preconstruction efforts. Additionally, she assists with creating marketing visualizations to convey logistics plans during business development efforts.

1. **Building Information Modeling**
    a. ***a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.***

2. **Virtual Design and Construction**
    a. ***the management of integrated multi-disciplinary performance models of design-construction projects, including the product (i.e., facilities), work processes and organization of the design - construction - operation team in order to support explicit and public business objectives.***

3. **The D's**
    a. ***2D CAD involves a design based upon the data that was program***
    b. ***3D CAD involves data intelligence and linking of a database to generate a BIM***
    c. ***4D CAD involves the scheduling and sequencing of construction process***
    d. ***5D CAD involves the cost and resources to complete the project.***

4. **Integration of BIM and Estimating**
    a. ***Visualize areas for better understanding***
    b. ***Extraction of quantities (based on model accuracy)***
    c. ***Create in-house models for generic spaces, value-engineering and quantities***
    d. ***Estimating cut & fill quantities for excavation***

5. **4D Sequencing**
    a. ***Construction delivery schedules***
    b. ***Coordination with other buildings or trades***
    c. ***Understanding logistics & phasing***

6. **Benefits of coordination process**
    a. ***Resolve clashes virtually before shop drawings are ordered***
    b. ***Save time and money by identifying constructability issues***
    c. ***Understand sequence of installationbetween trades***
    d. ***View models in the field to aid ininstallation and verification***

7. **Utilizing as-built models**
    a. ***Ability to use later for additions and/or renovations***
    b. ***360 photography (laser scans) for MEP verification***
    c. ***Differences between design intent and actual installation can vary greatly***
    d. ***Can utilize for Facility Management***

8. **Mobile Technology**
    a. ***View Drawings***
    b. ***Punchlists***
    c. ***RFI's and Submittals***

   d. *Markups*
   e. *View Models*

9. **BIM and project Closeout**
   a. *Updating model with as built information*
   b. *Including specifications and equipment maintenance with model elements*
   c. *Handing over models for owners when required*

10. **Augmented Reality**
   a. *Ability to see model in place as construction is going on*
   b. *Show the owner the building on the site live where they are standing*
   c. *Use mobile technology to understand impacts of specific projects on the site*

11. **Building Lifecycle**
   a. *Updating changing equipment*
   b. *Updating spaces/people*
   c. *Change order and work requests*
   d. *Who updates the model?*

12. **Facilities Management**
   a. *Utilitzing models beyond As Builts:*
   b. *Data Entry for As Builts*
   c. *The "I" in BIM*
   d. *Understanding what the owner wants to utilize for Facilities Management*
   e. *Building extra into the contract for FM*