







Standardization: The Success Factor in 5D Estimating

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AEC Industry has a poor track record of reliable estimates

- Owner risk exposure
- Lack of transparency
- Artificially high project costs
- Contingencies on top of contingencies
- Inefficient project delivery
- Potential for conflicts









The Goal of 5D BIM: Accurate and Timely Estimates

- Verifiable and quantifiable nature of BIM provides accurate and timely estimates
- Risk reduction
- Best in class pre-construction services
- Construction phase change management









Power of 5D at Project Outset

Define steps and resources needed for:

- On site construction
- Prefabrication
- Continuous estimating and collaboration with builder







BIM Data Extraction Remains a Challenge

- Wealth of rich data
- Types of data:
 - Geometry
 - Object properties
 - Custom parameters
 - Model's unique structure









Standardized 3D model templates

- Importance
- Model QA/QC
- Structure
- Examples







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Standardized Estimating databases

- Importance
- Structure
- Examples



Standardized data extraction tools and processes

- Integrated model
- Middleware concept
 - Data mapping







- Existing Conditions Models
- Laser scanning
- Ground Penetration
- Radar (GPR) conversions
- Safety & Logistics Models
- Animations, renderings, walkthroughs
- BIM driven prefabrication
- Laser accurate BIM driven field layout

5D

ESTIMATING

- Real time conceptual modeling and cost planning (DProfiler)
- Quantity extraction to support detailed cost estimates
- Trade Verifications from
 Fabrication Models
- Structural Steel
- Rebar
- Mechanical/Plumbing
 Electrical
- Value Engineering
- What-if scenarios
 Visualizations
- Quantity Extractions
 - Prefabrication Solutions
 - Equipment rooms
 - MEP systems
 - Multi-Trade Prefabrication
 - Unique architectural and
 - structural elements

6D

SUSTAINABILITY

- Conceptual energy analysis via DProfiler
- Detailed energy analysis via EcoTech
- Sustainable element tracking
- LEED tracking

7D

- FACILITY MANAGEMEN APPLICATIONS
- Life Cycle BIM Strategies
- . BIM As-Builts
- BIM embedded O&M manuals
- COBie data population and extraction
- BIM Maintenance Plans and Technical Support
- BIM file hosting on Lend Lease's Digital Exchange System

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Critical Success Factors in 5D Estimating

SCHEDULING

Simulations

Project Phasing

Lean Scheduling

- Last Planner

Installation

Visual Validation for

Payment Approval

- Just In Time (JIT)

- Detailed Simulation

Equipment Deliveries









Data Coding Standardization

- Data intensive process
- Data accuracy
- Work Breakdown Structures
- Data from other sources











5D BIM Human Factors

- Resistance to change
- Training
- Estimators trust of the data
- Productivity
- Eliminate silo thinking









- Optimization requires builder integration
- Design-Bid-Build
- Design Assist

5D initiative

- Design-Build
- IPD and variants









Critical Nature of Planning

- Project Success is determined during the planning stage
- Start with a model
- 5D BIM and Project Pro-forma analysis and feasibility







BIM Specification Plan and Level of Development







Standardized Levels of Estimating

- Range Estimating
- Collaborating Estimating
- Systems Pricing









Connection Between Preconstruction Services and 5D BIM

- Range Estimating
- Collaborating Estimating
- Systems Pricing







5D Estimating and Big Data

- Big Data has arrived to the AEC industry
- Historical cost data
- Leveraging data across the enterprise
- Obtaining business knowledge and wisdom
- Unstructured data

















Questions and Answers







