Forging Industrialized Construction

Tom Closs
Principal Solution Architect

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About the speaker

Autodesk Principal Solution Architect

Tom Closs has worked with multiple manufacturing technologies since 1994. Prior to joining Autodesk, Tom worked as an Automated Machine, Design Engineer, before moving into consulting full time. Tom joined the Autodesk Vault Team in 2007 and Autodesk Consulting in 2012. Throughout Tom's career, he has completed many large-scale projects from Vault implementations and system integrations to custom tool development and teaching. Tom has worked with a wide variety of technologies, including AutoCAD, Inventor, AutoCAD Mechanical, Revit, Navisworks, Fusion 360, Vault, Fusion Lifecycle, 3DS Max, BIM360, Power Mill, NetFabb and others.
About the speaker

**Autodesk Principal Business Consultant**

Sree is focused on Process Improvement and strategic technology implementation in the Architecture, Engineering, and Construction (AEC) industry. Before joining Autodesk, Sree's career focus has been on continuous improvement with a decade of experience in the General Contracting Industry. Sree started her career in the field and has since worked in different roles managing BIM coordination, Design Management and Preconstruction.

At Autodesk, Sree helps customers implement document management and project management standards and workflows that improve efficiency.
Industrialized Construction Primer
Industrialized Construction

- Industrialized Construction is the framework to apply manufacturing techniques to improve the traditional construction process, removing unnecessary manual labour.
- DfMA is a process enabler for Industrialized Construction.
- Prefabrication a continuum that encompasses the creation of building elements in a controlled environment.
Increasing Complexity  
Increasing Value

Classification of building components, according to degree of system integration and completion

Authors: Rafael Sacks, Charles Eastman, Ghang Lee, Paul Teicholz
People
Design Team

The best design is the simplest one that works. – Albert Einstein

Image courtesy of DLB Associates
Trade Partners/Fabricators

Smart manufacturing employs automated computer-integrated manufacturing techniques and rapid design changes.

Image courtesy of Poole & Kent Corp.
Contractors

Off-site construction and assembly can save resources and time, projects can be completed 33% to 50% faster and safer than on-site construction.
Beyond BIM
Key Objective: Re-use the Digital Data

Connected data flow across multiple work activities – Starts with Design Models/Data

You need the digital data from the Design Intent … to make what was designed
Importance of Stable Product Structures

Building/Construction Structure

- Floor
- Space/Room
- Discipline/Class
- Element

Fabrication Structure

Ground Floor Type XYZ

- Main Assembly: Module
- Sub-Assembly: Module/Asset
  - Kitchen
  - Dishwasher
- Production Assembly
  - Cupboard Run 2
- Production Part
  - Cupboard Panel: (part name)
  - Raw material
  - Machining feature 1
  - Machining feature 2…
Technology
Autodesk Full Lifecycle Platform Support

Autodesk toolsets at the core of the end-to-end process

https://www.autodesk.com/solutions/generative-design/architecture-engineering-construction
Automate Production of Shop Drawings

Building Model

iLogic Model

DA for Inventor
Fusion 360

SIMULATE

GENERATIVE DESIGN

COLLABORATE

MANUFACTURE

AGGREGATE

SIMPLIFY

SHARE
Manufacturing Machining

Use 3D Model to plan, simulate, and program parts machining

Autodesk Advanced Manufacturing: https://www.youtube.com/channel/UCF7yv_mTUQBOxHreCiqNwOA
Use the Right Tool for the Right Job
Multiple Integrated Tools Are Key to Connecting the Data (Example ConXTech)

VAULT: Manufacturing, R & D

INVENTOR: Product & Fixture Design, R&D

REVIT: Structural Design, (LOD 350 Model)

ADVANCED STEEL: Manufacturing Model

NAVISWORKS Project Coordination Schedule Planning
Autodesk Strengths – Integrated Toolsets

Inventor is an Important Component in BIM Workflows