Benefits of digital construction

Lee Mullin
Technical Specialist AEC

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1982

No.
maxell Mini-Floppy Disk
MD2
DD
96TPI
Double Sided
MADE IN JAPAN
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PRODUCT AutoCAD-86 (Victor
MODEL NO. Version 1.1
SERIAL NO. 06-00026

2017

Find Skilled Labour

Build More

Poor Productivity

Improve Cashflow

Secure Planning

Ensure Quality & Performance

Higher Client Expectations

Futureproofing

FINANCIAL TIMES

UK rush to build homes compromises quality

Buyers complain of exposed cables, faulty doors and windows, flooding and dodgy plumbing

The Telegraph

UK housebuilders warn labour shortage will hit delivery of homes

THE TIMES

House builders could face land seizure

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Trends – Driving Transformation

Offsite Construction

Productivity & Skills Scarcity

Under investment in Technology

Collaborative Project Teams

BIM Mandates (EIR 2017)

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28%	50%	1.87%
Cost reduction	Reduction in contingency used	Diff between 1st & 2nd bidder

VAN WIJNEN

15%
Reduced Costs

50%
Reduced Schedule

1
Coordinated Model

PLANNING

Land Acquisition

Site Design & Optimisation

Consultation & Permissions

DESIGN

Concept Unit Design

Analysis

Detailed Unit Design & Customisations

Documentation

SALES & MARKETING

Pricing

Customer Personalisation

Customer Sales Experience

Schedule, Progress and Cost

Pre-fabrication and Assembly

Quality, Verification & Performance

Field Execution & Construction Admin

BUILD

Handover & Completion

Operations & Maintenance

Customer Service

OPERATIONS

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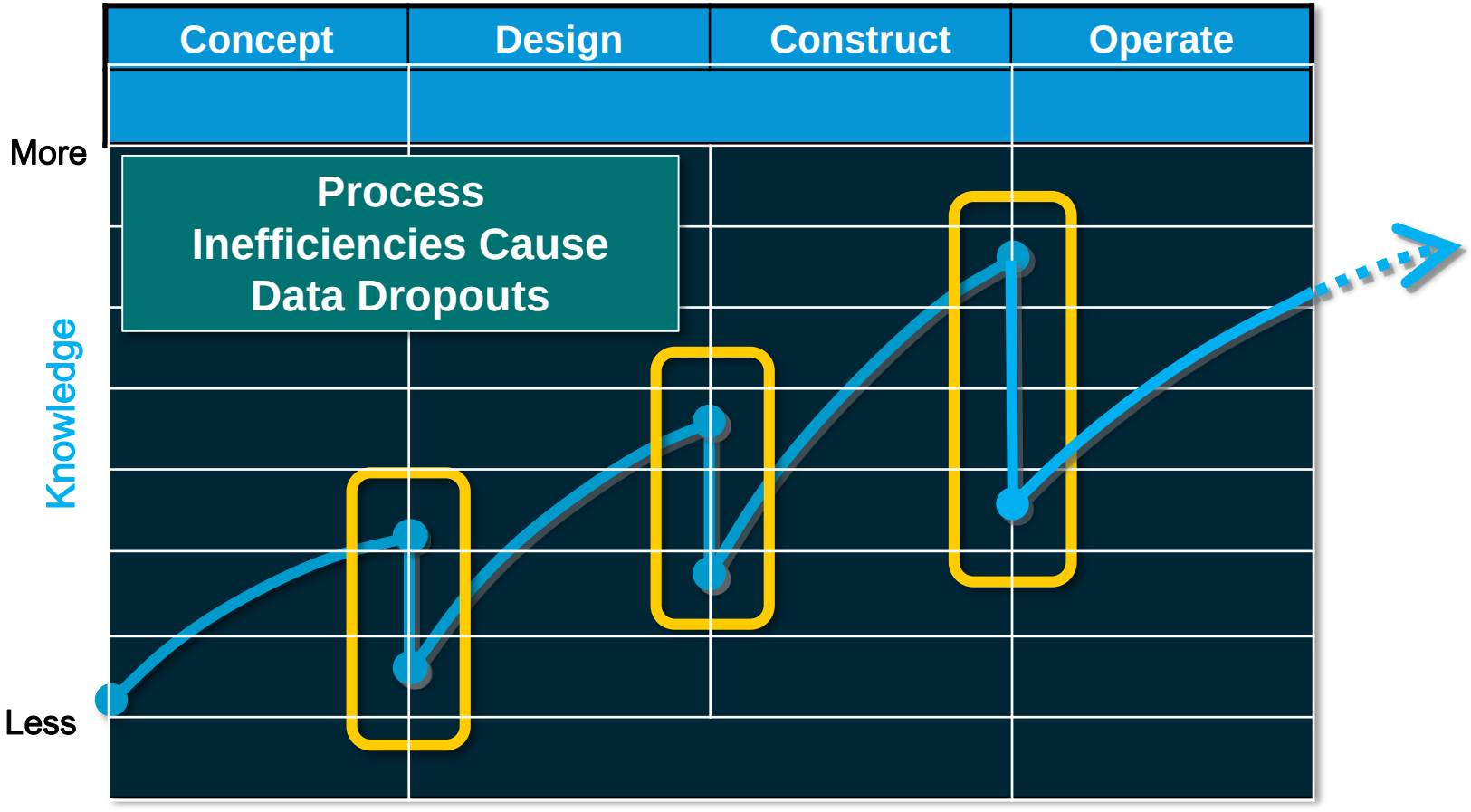
Knowledge Sources



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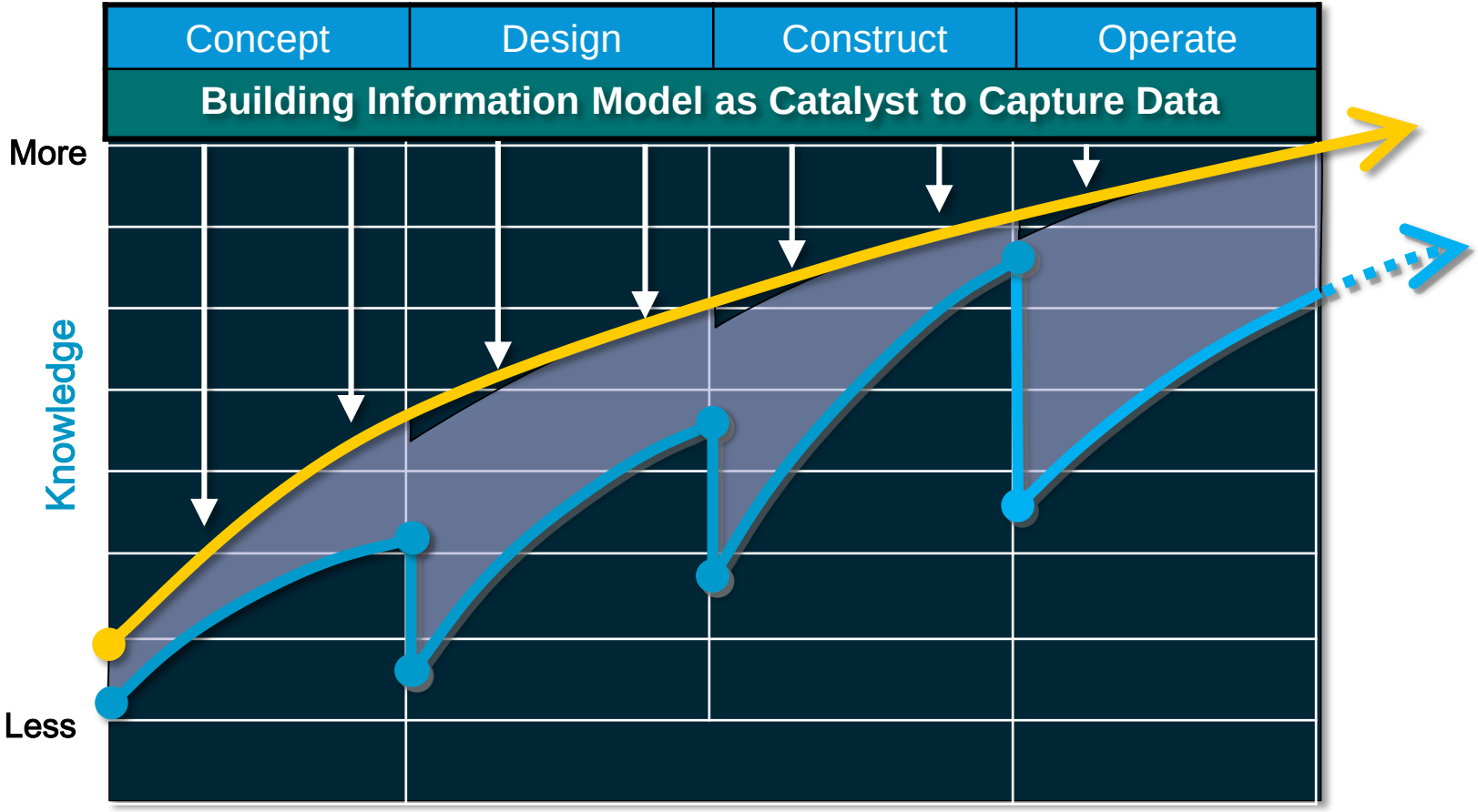

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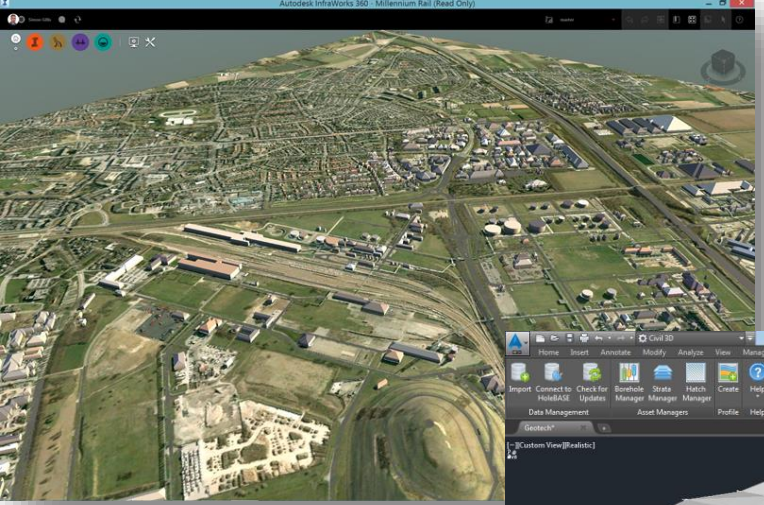
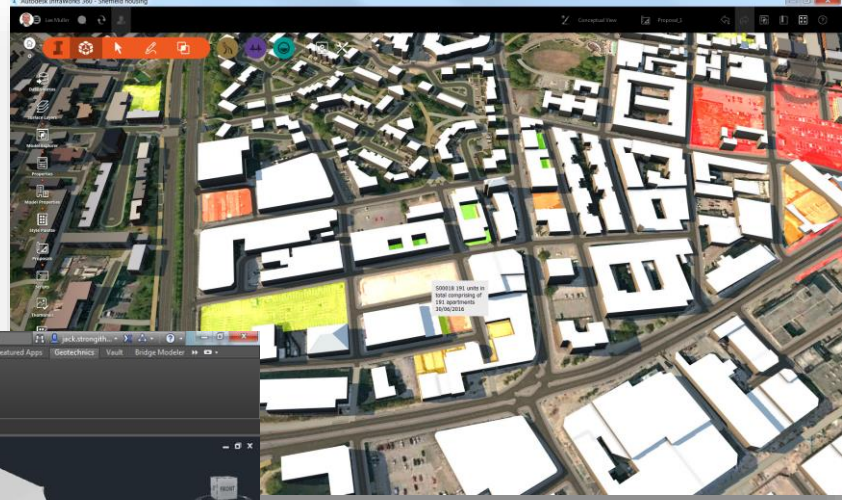
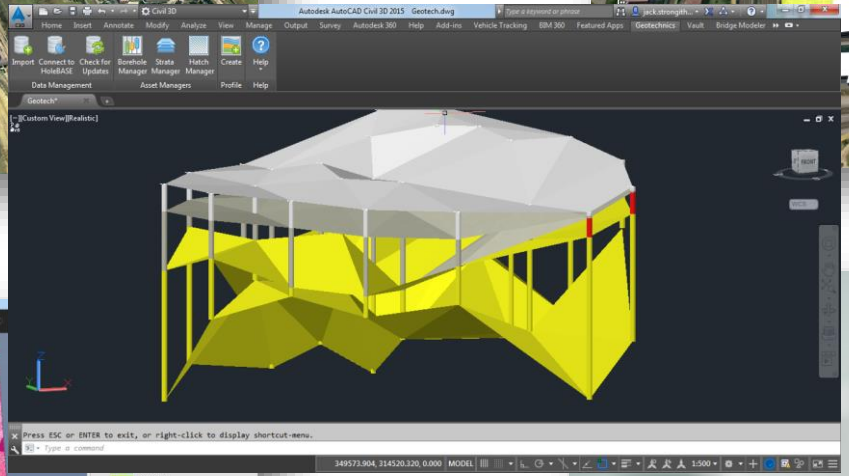
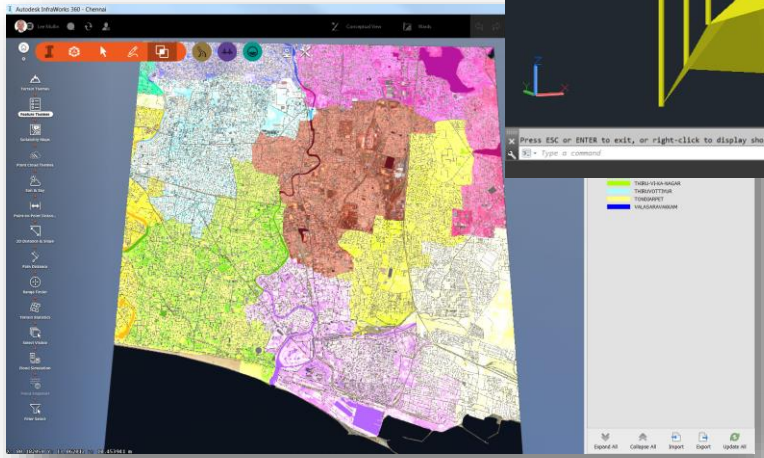
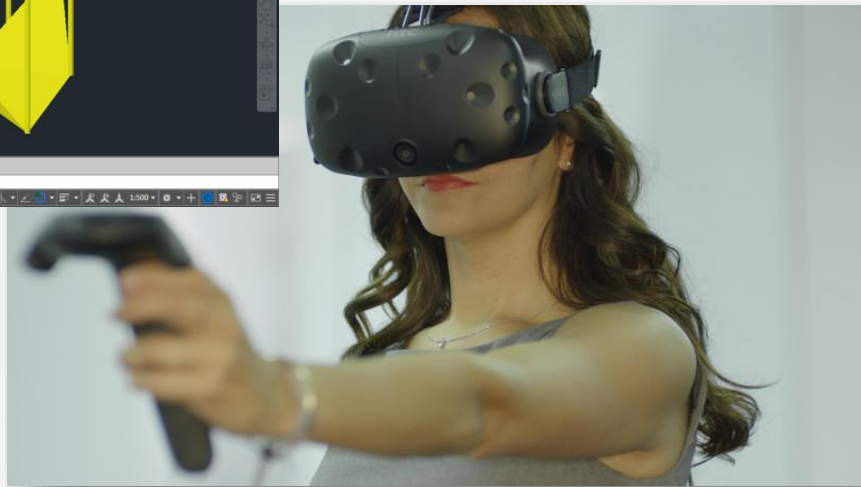

Autodesk InfraWorks 360 - Millennium Rail (Read Only)



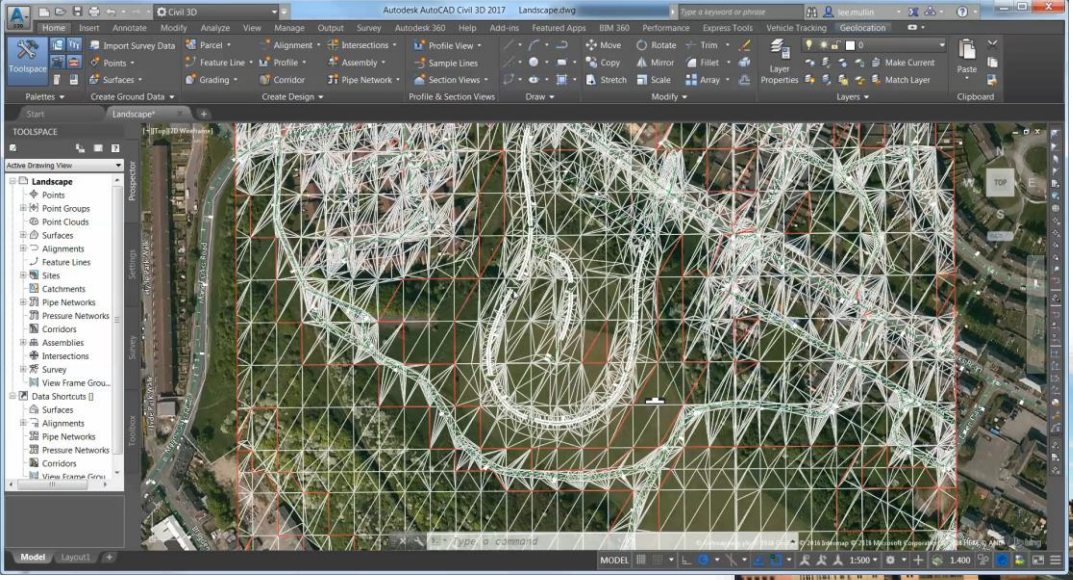

Civil 3D
Autodesk AutoCAD Civil 3D 2015 Geotech.dwg
Home Insert Annotate Modify Analyze View Manage Output Survey Autodesk 360 Help Add-ins Vehicle Tracking BIM 360 Featured Apps Geotechnics Vault Bridge Modeler
Import Connect to HoleBASE Check for Updates Borehole Manager Strata Manager Hatch Manager Create Help
Data Management Asset Managers Profile Help
Geotech*
[-][Custom View][Realistic]
Press ESC or ENTER to exit, or right-click to display shortcut-menu.
Type a command
349573.904, 314520.320, 0.000 MODEL


Autodesk InfraWorks 360 - Chennai



Base models

Existing situation



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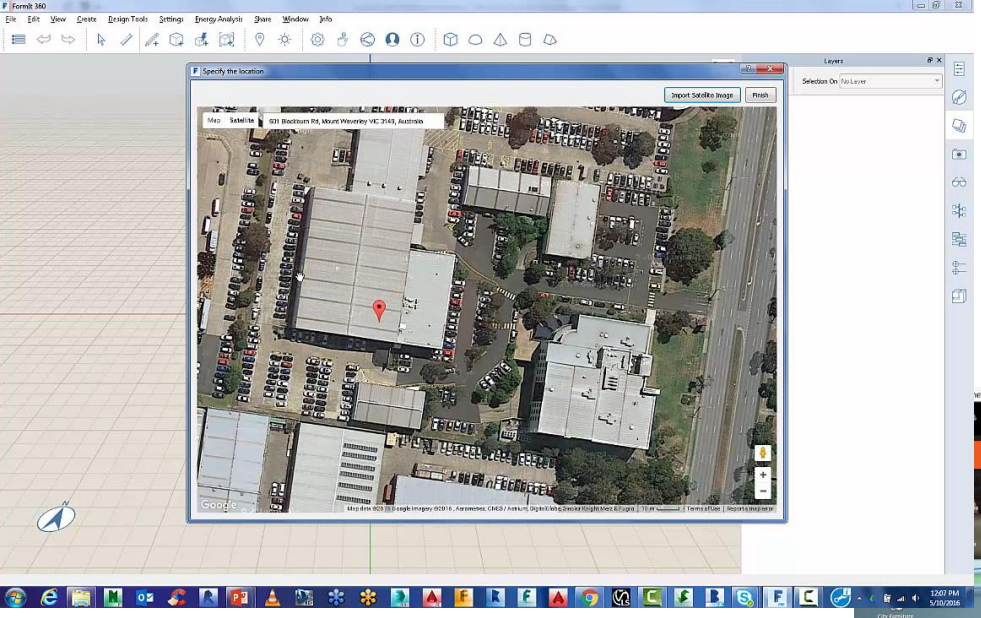

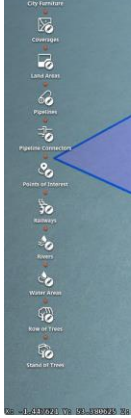

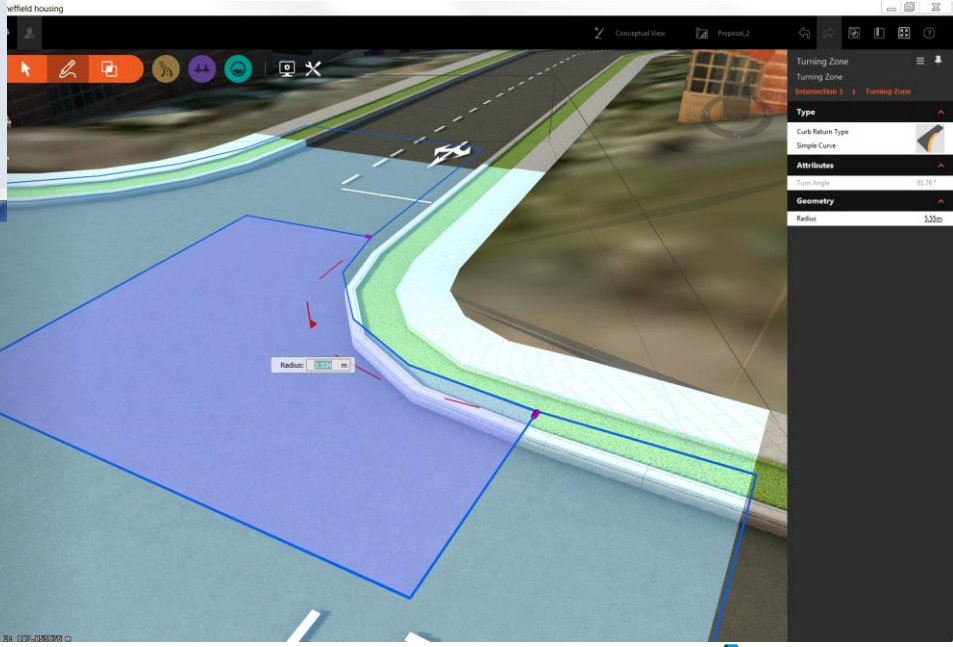

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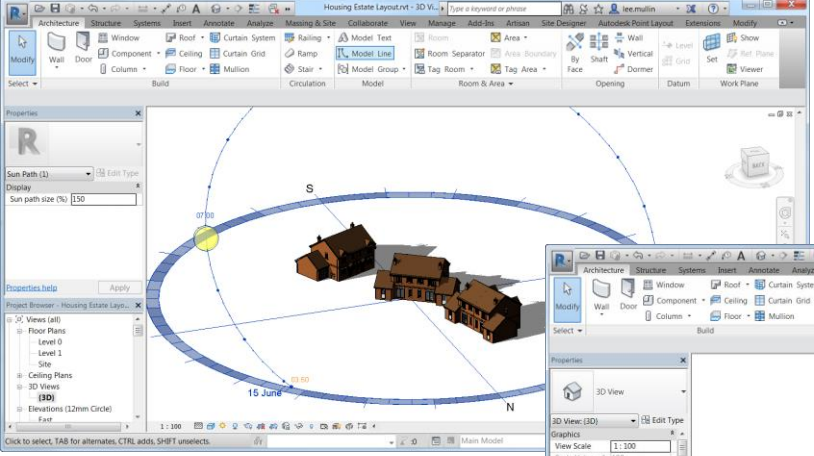
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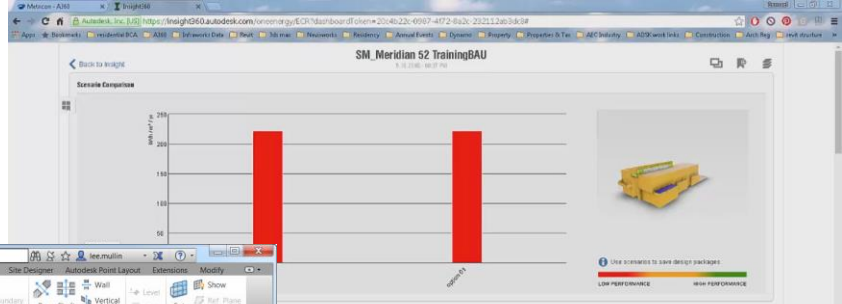
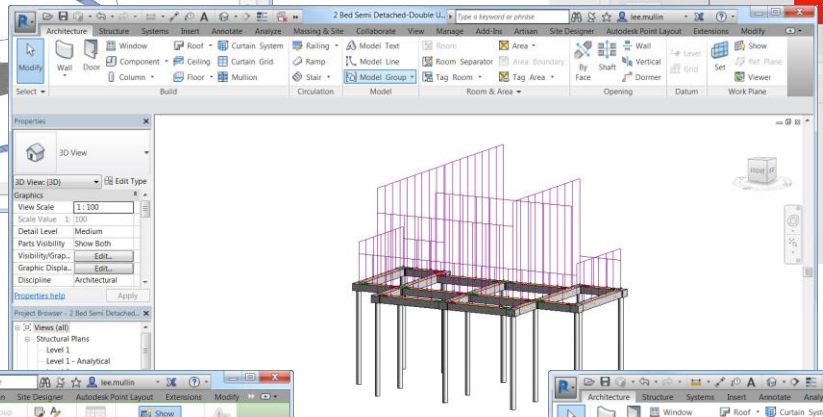
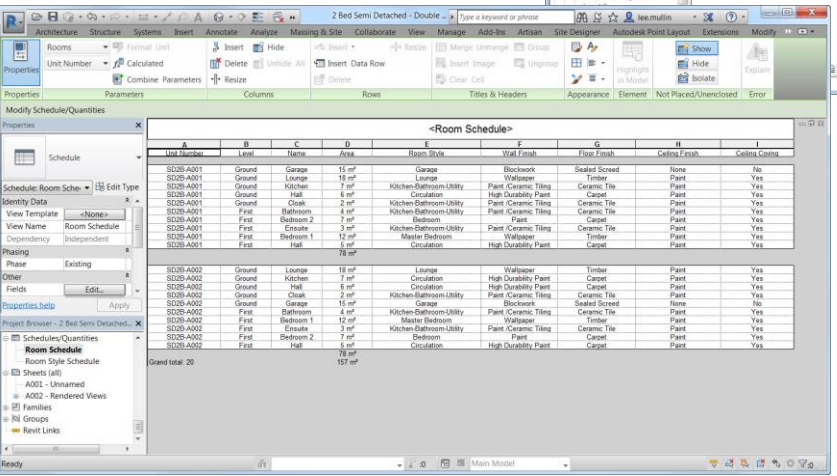
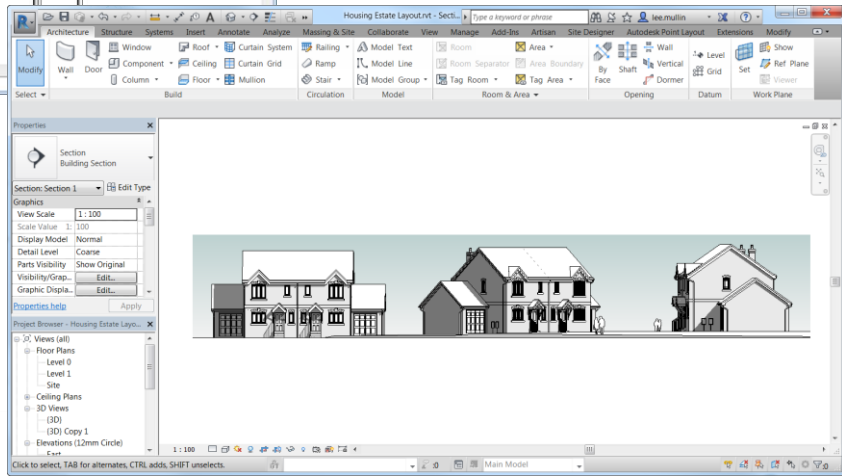

SM_Meridian 52 TrainingBAU
Scenario Comparison

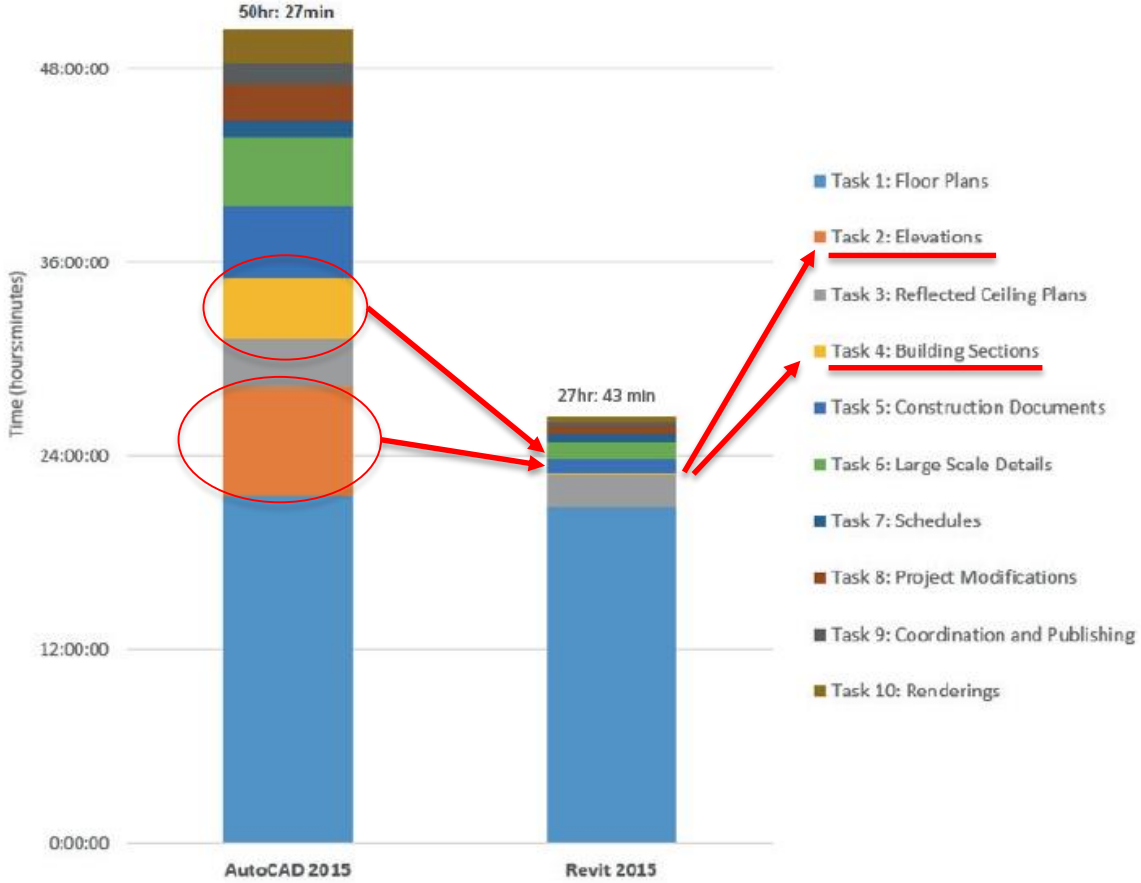
Operating Schedule
The typical hours of use by building occupants.
Current Setting:
24/7 - 12/5




<Room Schedule>



AutoCAD vs. Revit Documentation



- Set up time for project using Revit is on par with AutoCAD.
- The benchmarking study shows an overall savings in time of approximately **50% for the entire workflow**
- Even more time saving are made with revision to the master document
  - AutoCAD = 29 hours
  - Revit = **7 hours**

Image courtesy of Mactaggart and Mickel Homes

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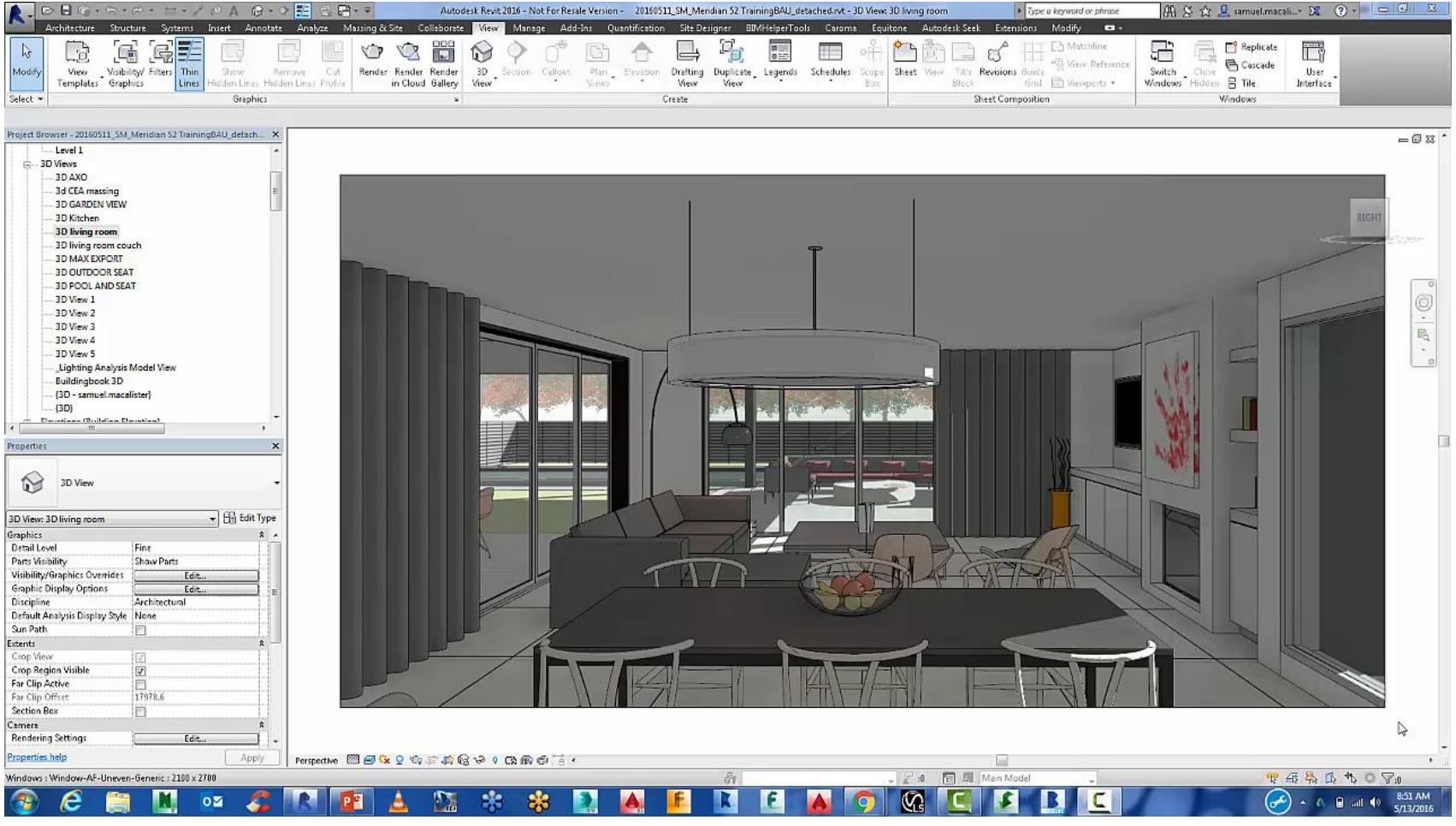

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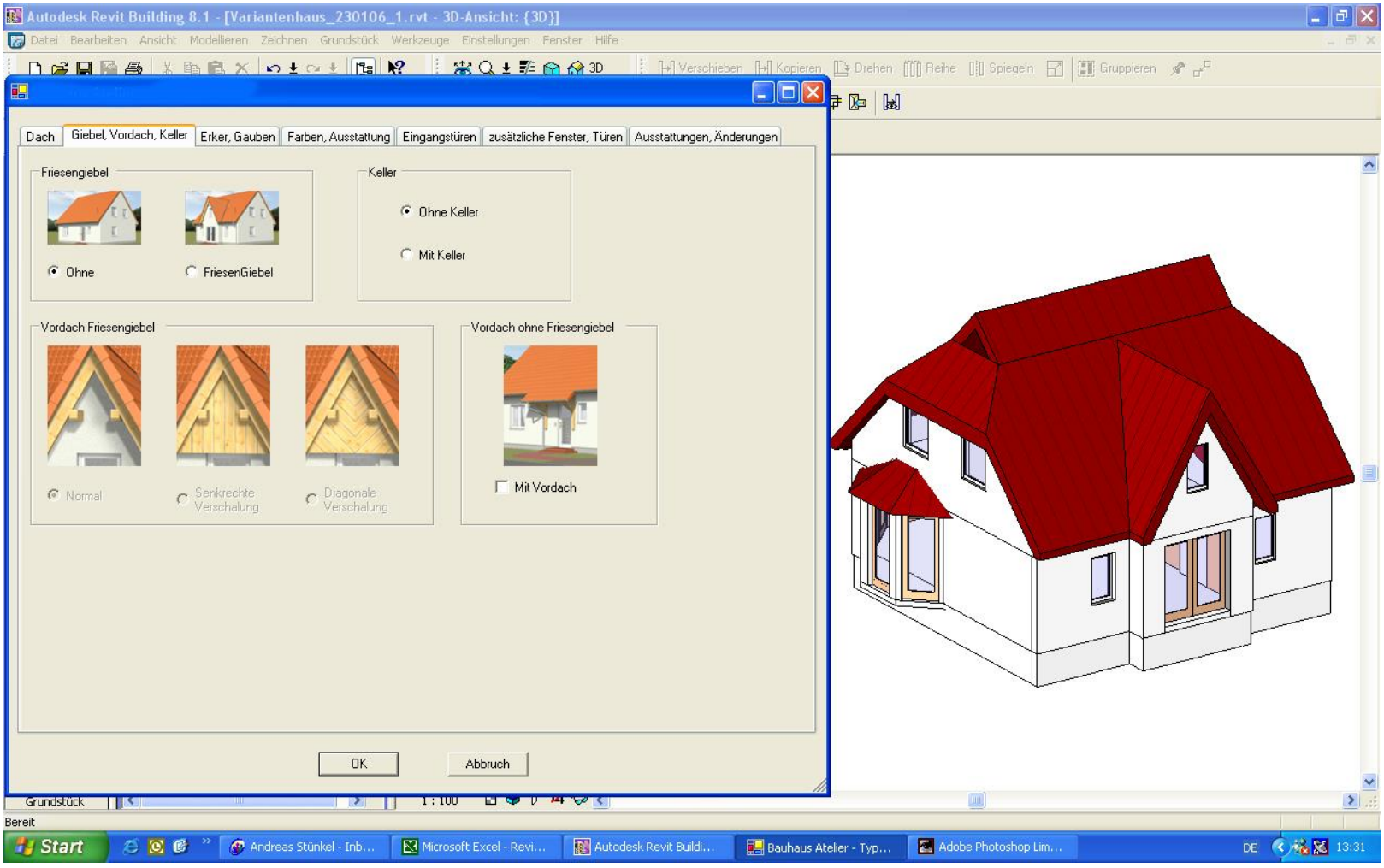

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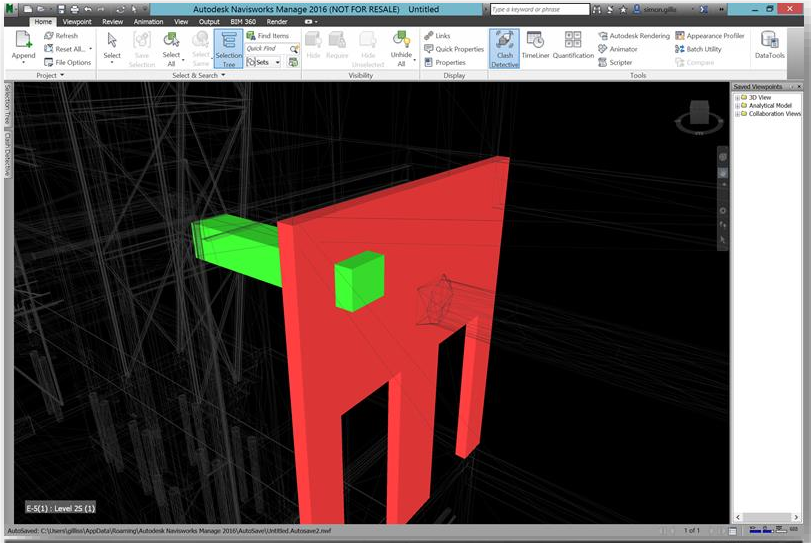

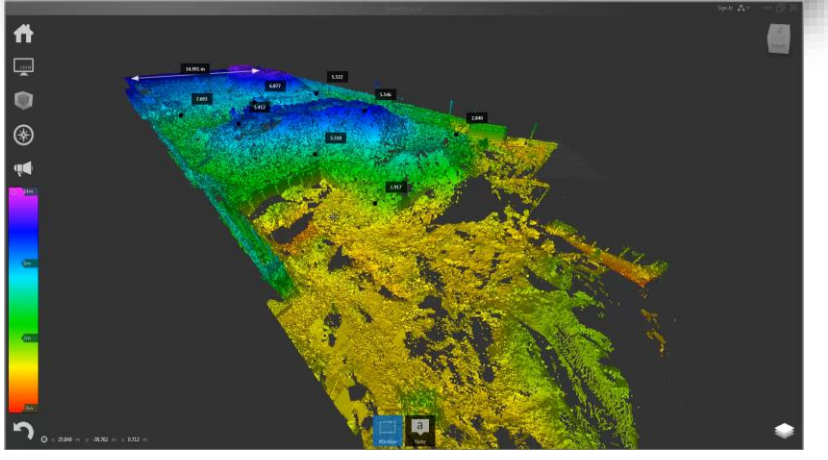

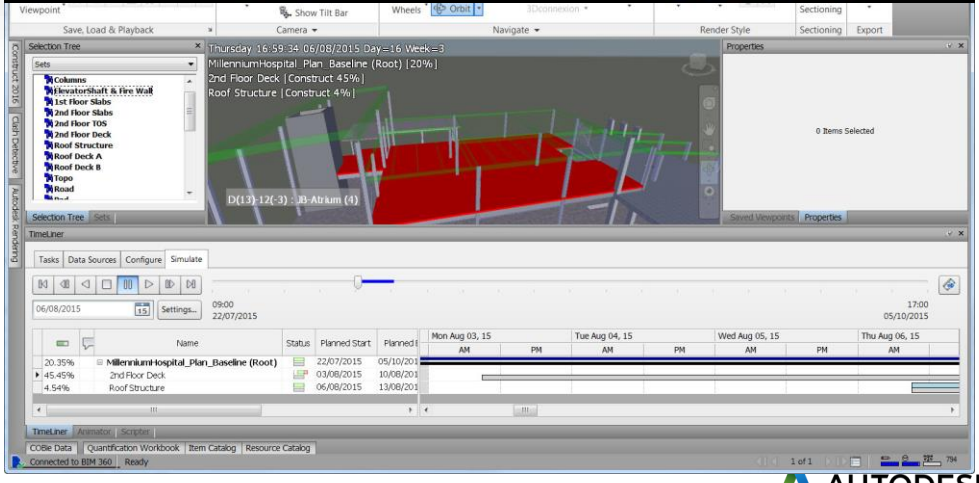

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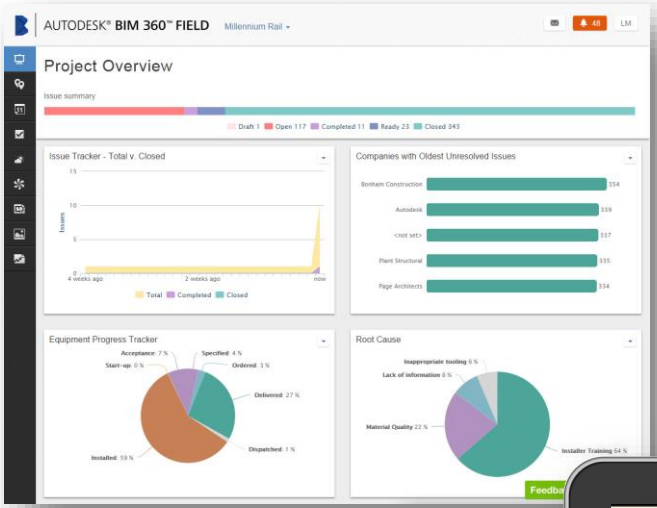

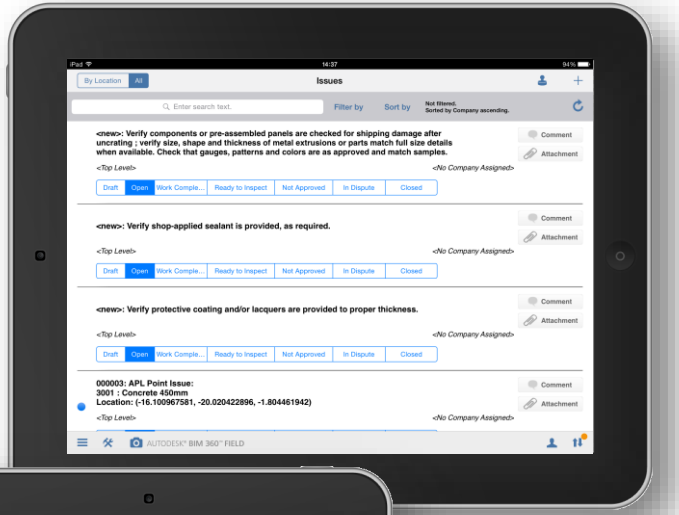

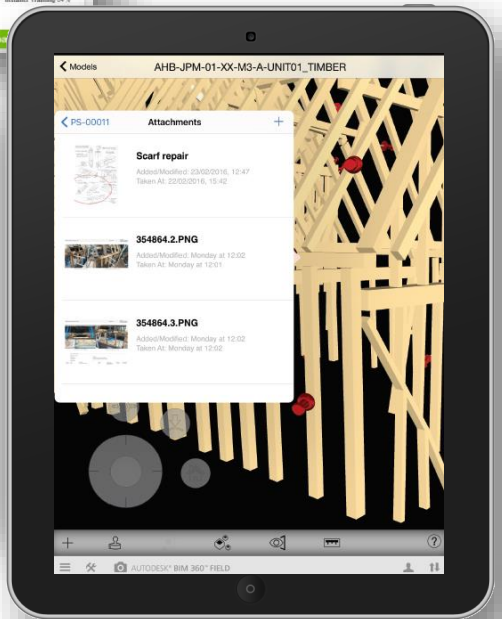

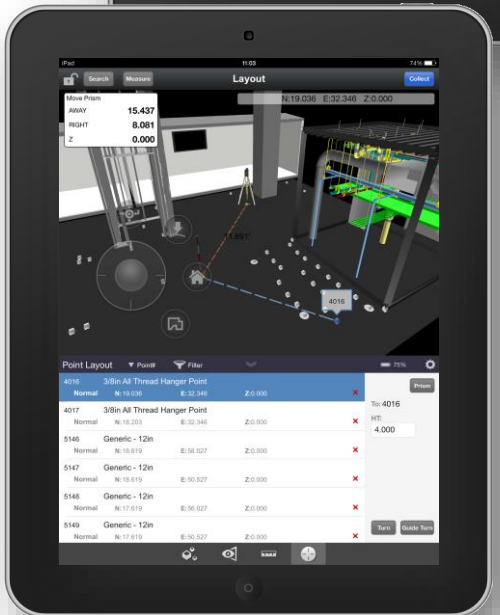

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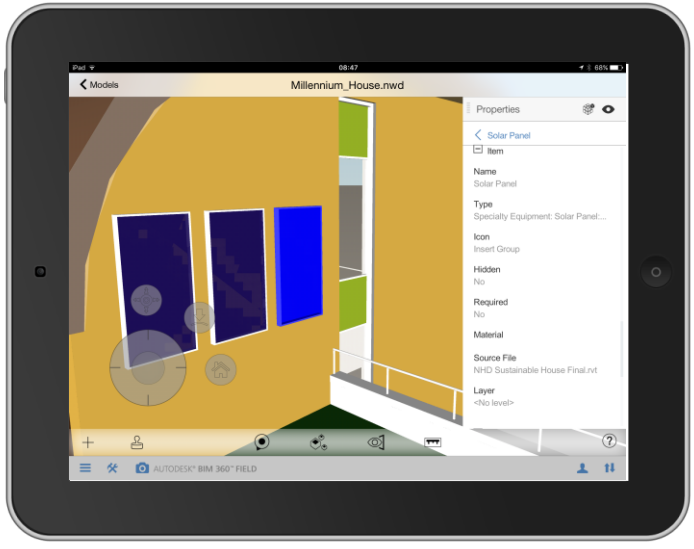

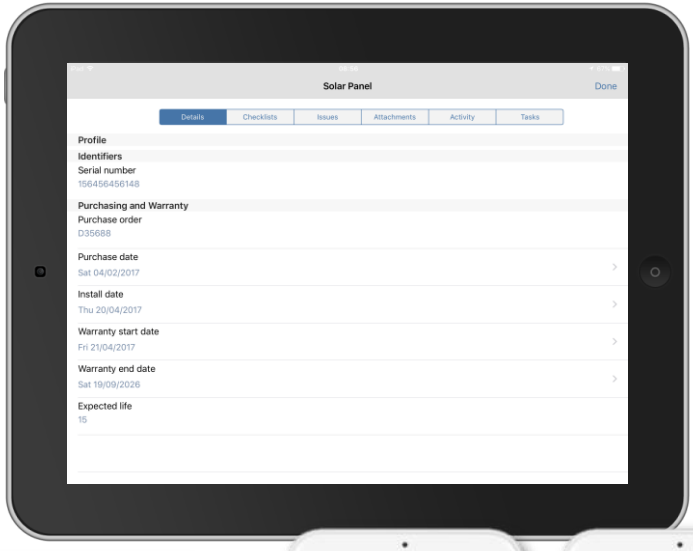

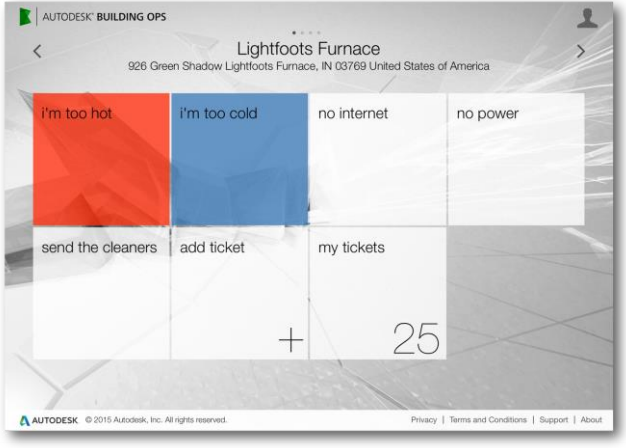

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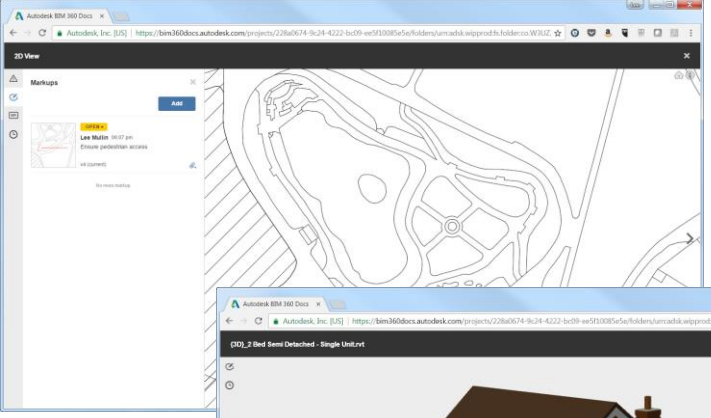

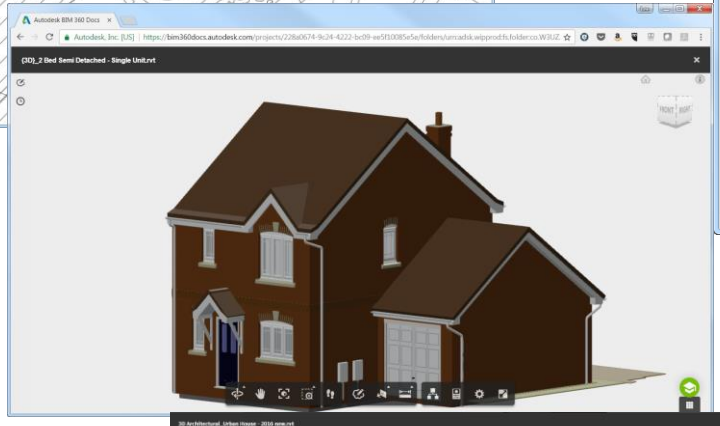

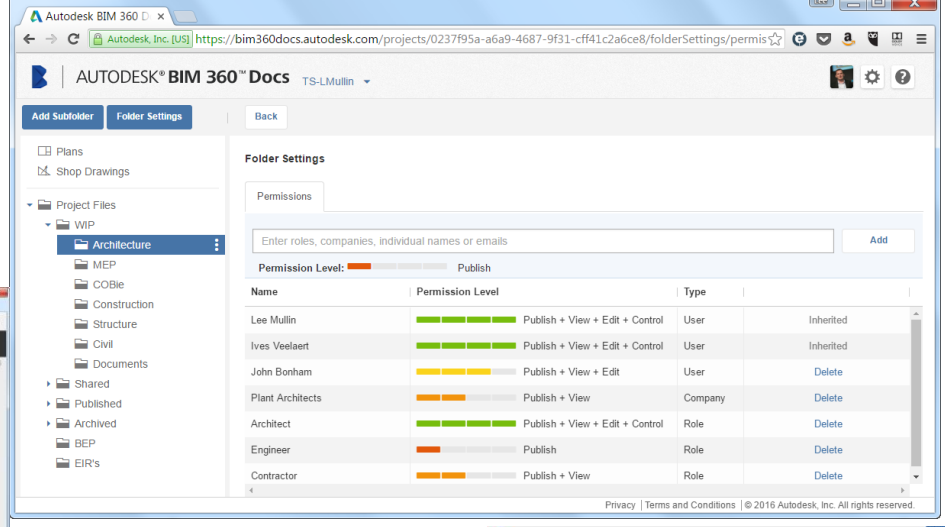

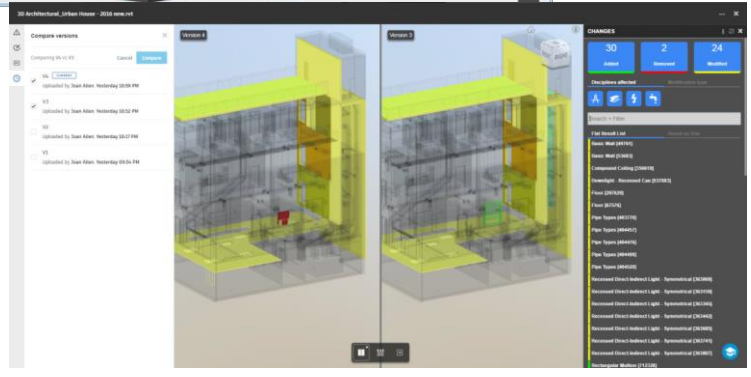

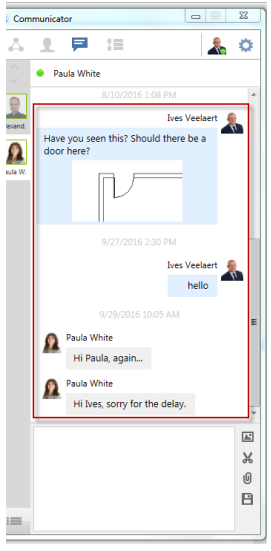

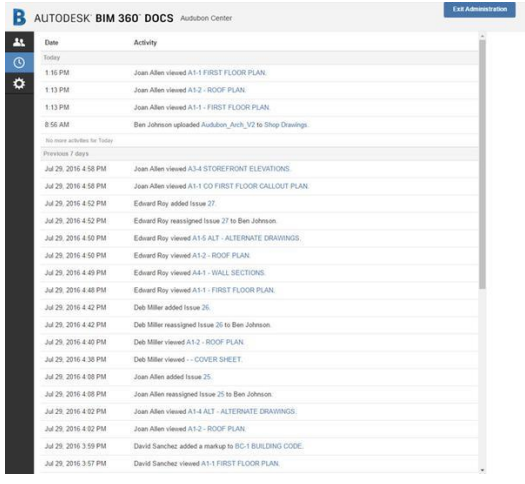

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OPEN ECOSYSTEM

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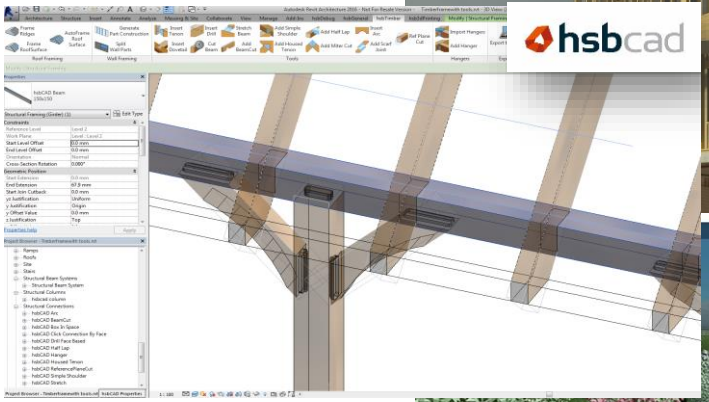

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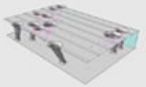
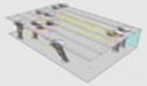
Generative design is the process of **defining high-level goals and constraints** and then using the **power of computation** to automatically explore a wide design space and identify the best design options.

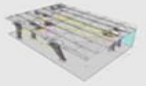
EFFICIENCY THROUGH SEGMENTATION

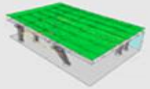
Single Experiment with Three Objectives

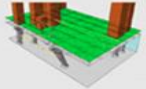
1. Objective
Maximize circulation path (model will tend to get as large as possible)
2. Objective
Maximize retail surface area over column surface area (model will tend to shrink)
3. Objective
Minimize total structural members (model is predicted to shrink and flatten out)











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