Factory Design Utilities not just for Factories

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Senior Technical Sales Specialist D&M

AUTODESK. UNIVERSITY

About the speaker

Designing and Making

I’m an industrial designer turned technical specialist.

I love designing things that can be made.

I love the sea and the mountains.

Which is why I live and work in Barcelona, Spain.

@GeffenJonathan

jonathan.geffen@autodesk.com

Key Learning Objectives

AFTER THIS CLASS YOU WILL BE ABLE TO…

- LAYOUT AND PLAN SPACES WITH FACTORY DESIGN UTILITIES
- MAXIMIZE THE WHOLE PDMC FOR SPACE PLANNING
- SEE OPPORTUNITIES FOR FDU OUTSIDE OF FACTORIES
- OPTIMIZE INTERACTIONS WITH YOUR ASSETS

PRO
HSM
MAX
IN-CAD
M
PRO
NEST
360
AUTOCAD mobile app
AUTODESK RENDERING

AUTODESK INVENTOR PROFESSIONAL 2019
AUTODESK PRODUCT DESIGN & MANUFACTURING COLLECTION
AUTODESK
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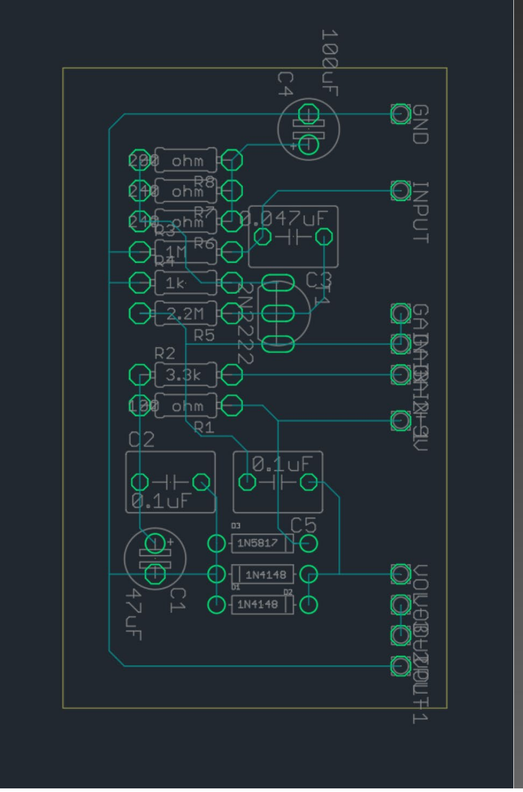
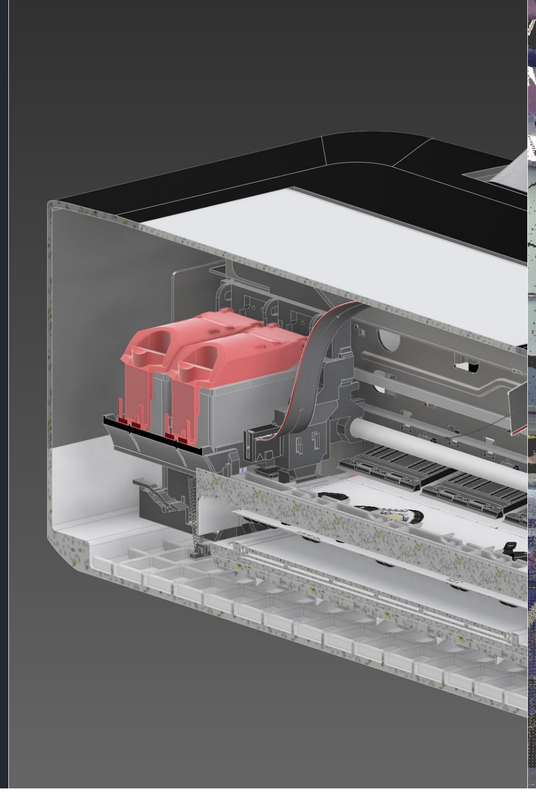
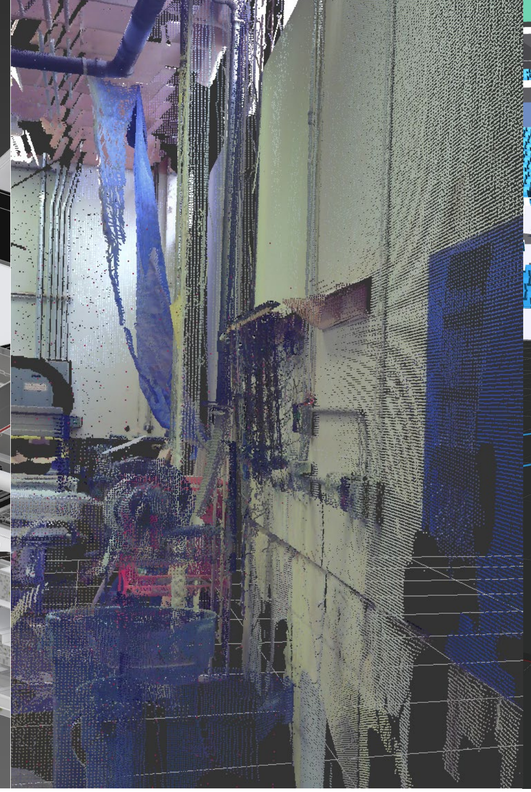
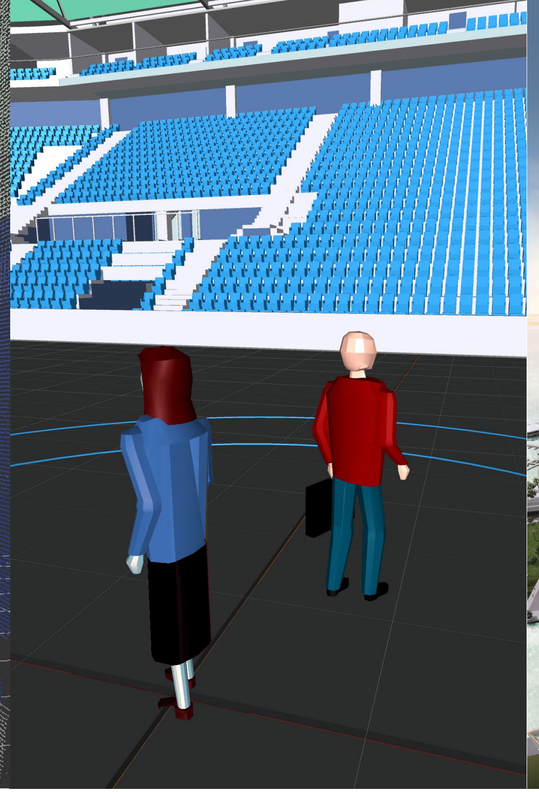
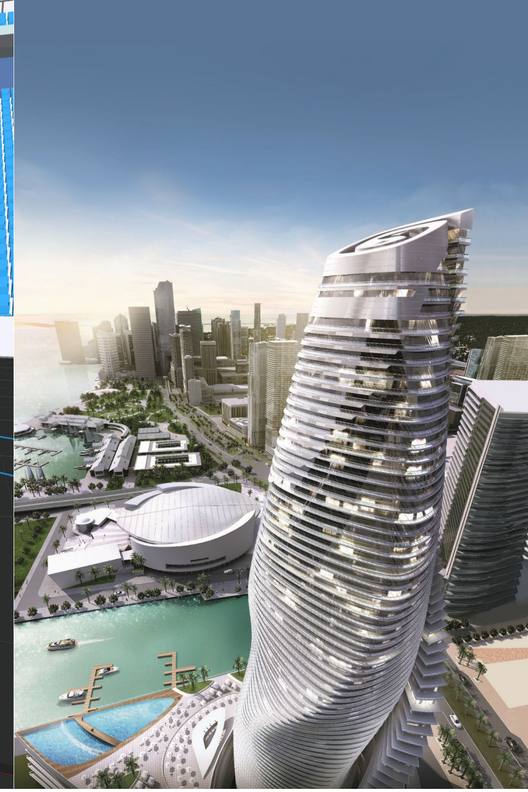


ONE AutoCAD

2D SPACE PLANNING & CONCEPTUAL LAYOUT

INVENTOR

3D VISUAL LAYOUT ASSET BUILDER

RECAP

REALITY CAPTURE POINT CLOUDS

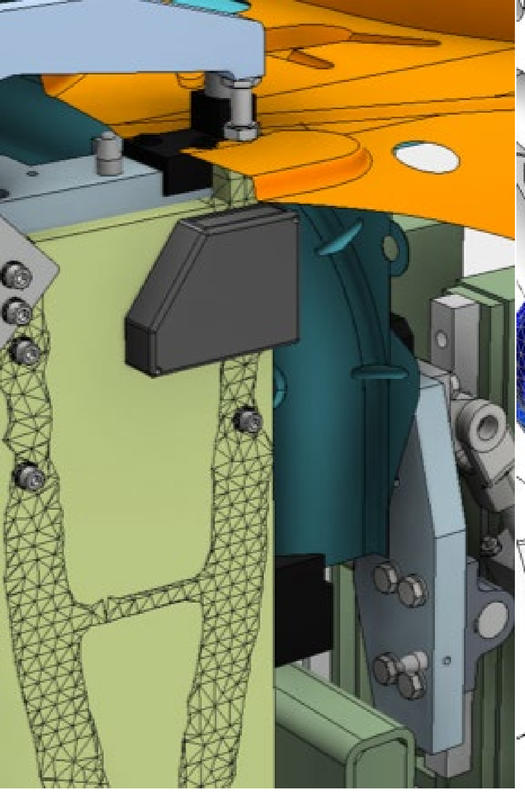
NAVISWORKS

ENGINEERING REVIEW

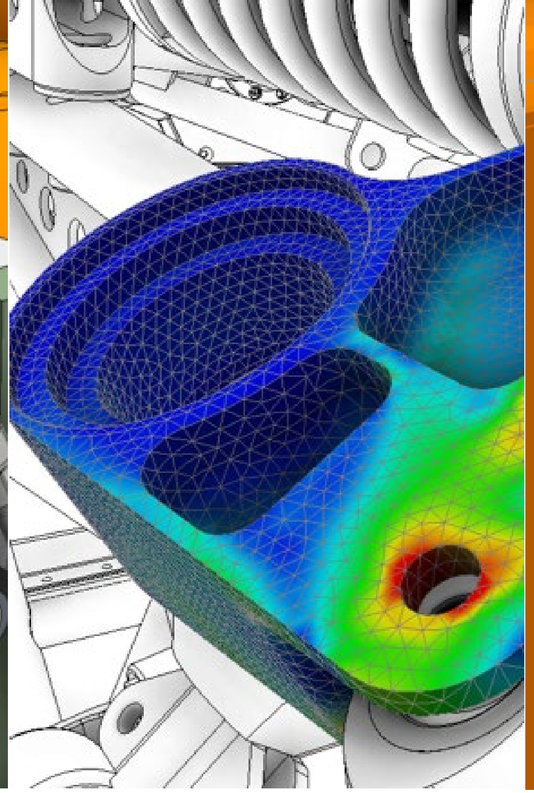
3DS MAX

DESIGN VISUALIZATION

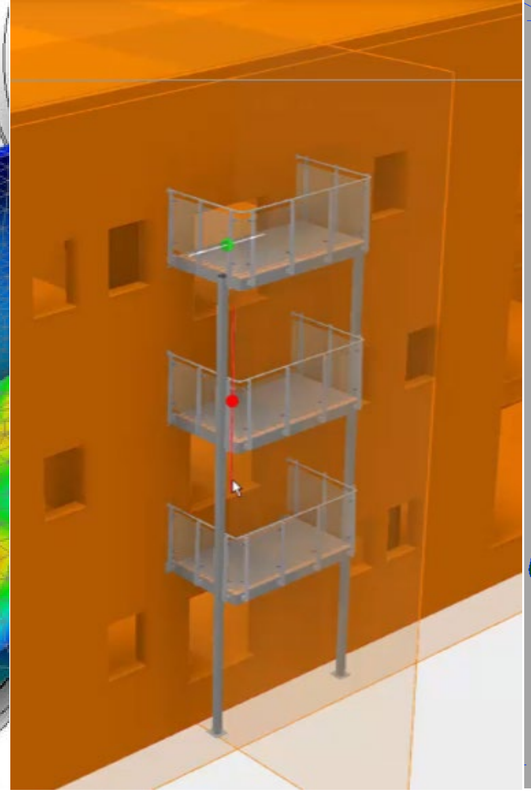
INTEGRATED PROCESS IN PRODUCT DESIGN & MANUFACTURING COLLECTION



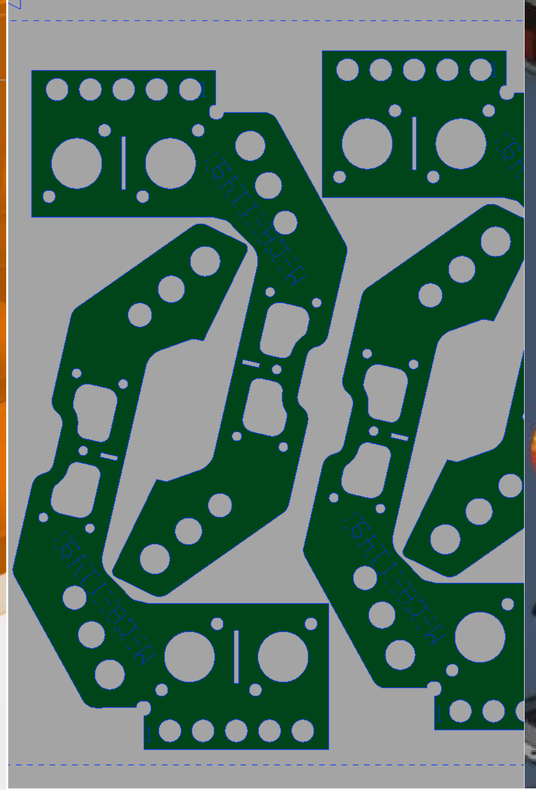
DESIGN & CONSTRUCTION



DIGITAL MEASUREMENTS & SIMULATION



BIM DATA & AUTOMATION

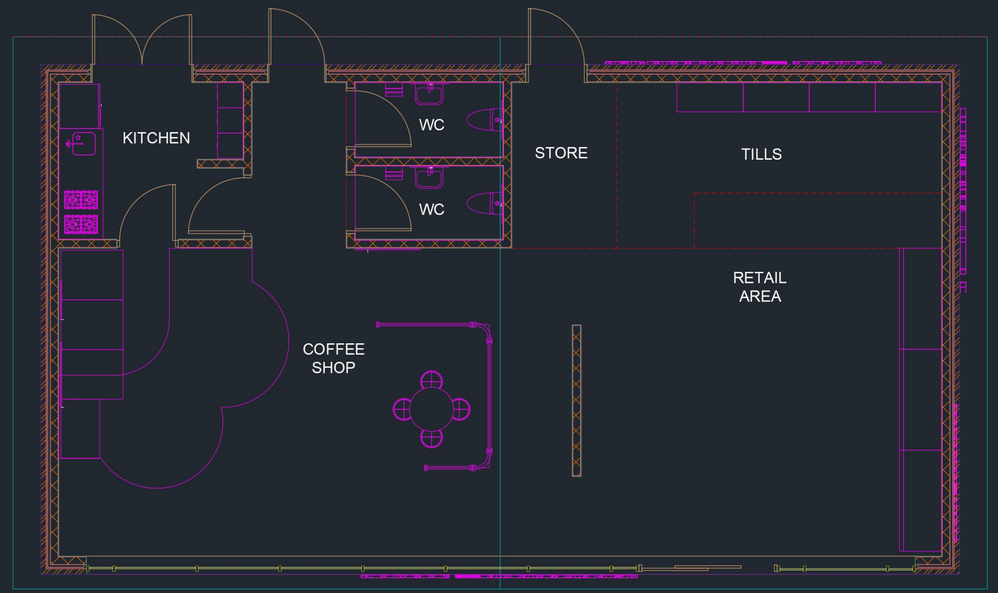


NESTING & 2.5 TO 5 AXIS CAM

FACTORY PLANNING

PRODUCT DESIGN ⟷ *MANUFACTURING*

INTEGRATED PROCESS DIRECTLY IN INVENTOR



Traditional Design Workflows

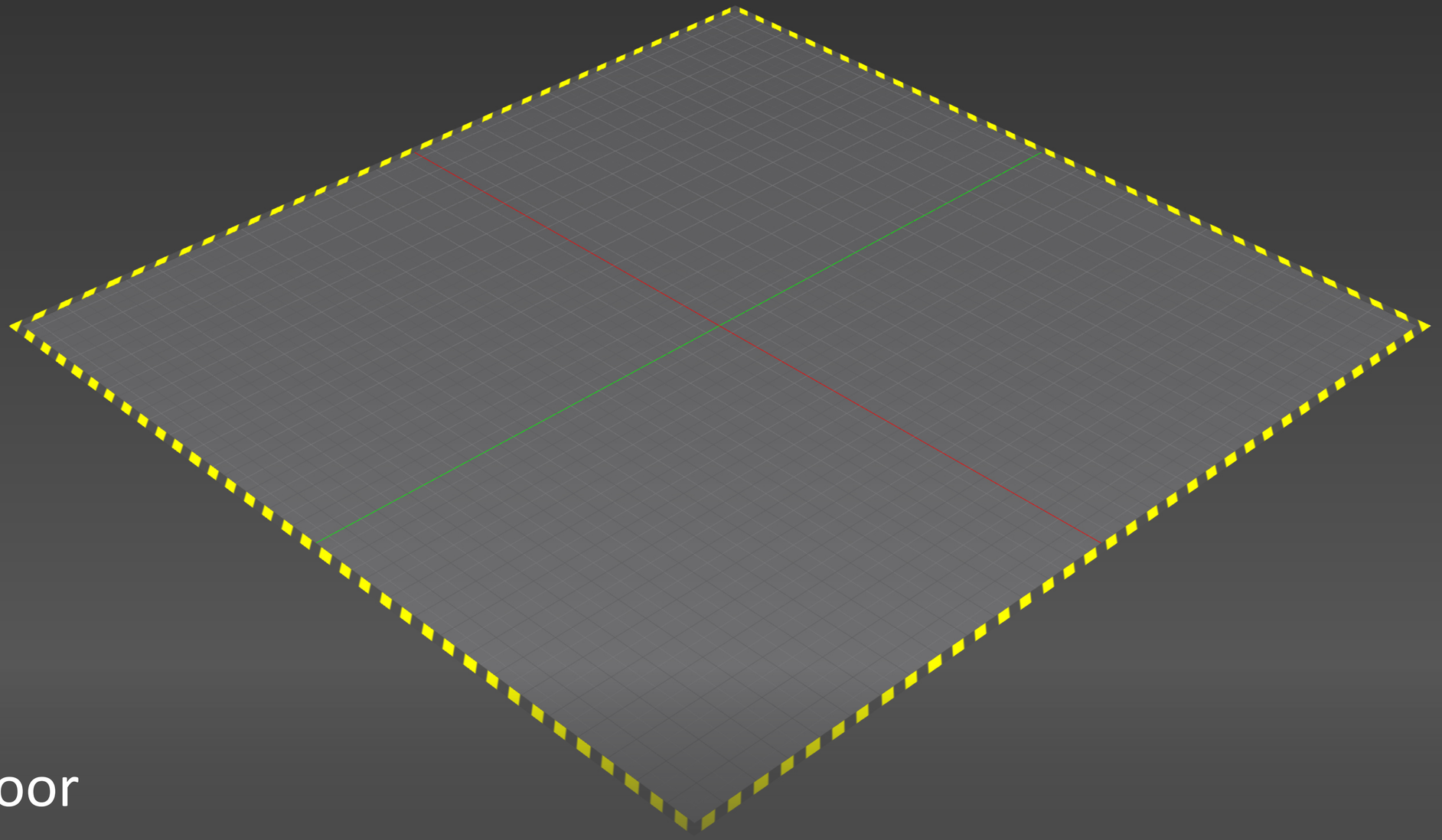
- Problems can be overlooked in 2D
- Unable to collaborate effectively with partners
- Inefficient design practices incur high change order cost
- Unable to detect clashes and keep out zones easily in 2D
- Spend too much time capturing as-built state of the store

Advantages of Factory Design Utilities

1. The Floor
2. Working with AutoCAD / 2D & 3D
3. Functional Assets
4. Extremely Large Layouts
5. Asset Based Design
6. Reality Enabled Asset Layout
7. Ease of Use
8. Tradesmen

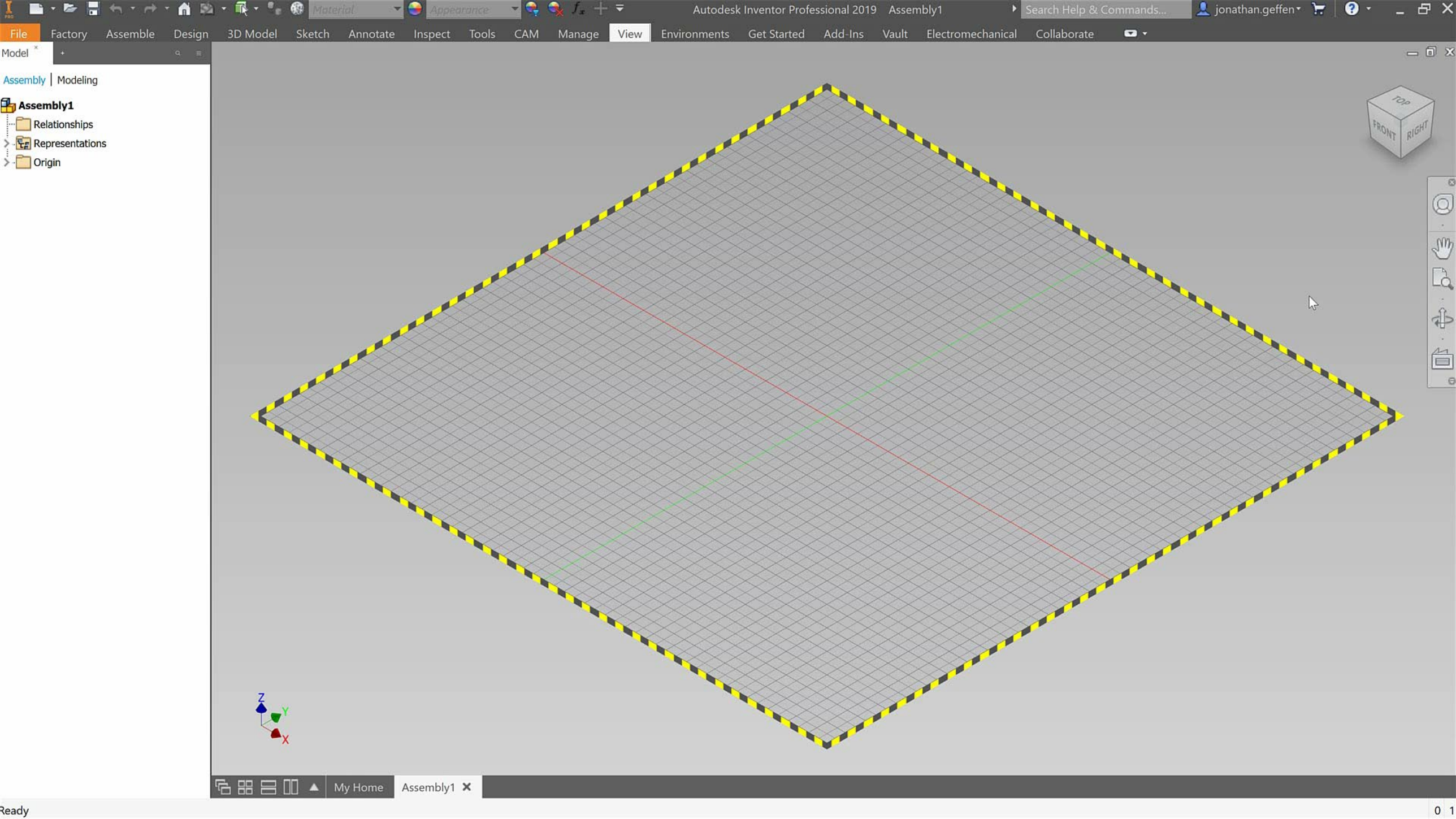
Advantages of Factory Design Utilities

- Meet compressed project schedules
- Adapt to changing business requirements
- Collaborate more effectively with suppliers and partners
- Enhance existing 2D layouts and workflows



The Floor

Any Layout Design created in Inventor, contains this ground plane, or “floor”. You can change the size to layouts that are very large or even very small.


Autodesk Inventor Professional 2019 Assembly1
Search Help & Commands...
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Design
3D Model
Sketch
Annotate
Inspect
Tools
CAM
Manage
View
Environments
Get Started
Add-Ins
Vault
Electromechanical
Collaborate
Model
Assembly
Modeling
Assembly1
Relationships
Representations
Origin
TOP
FRONT
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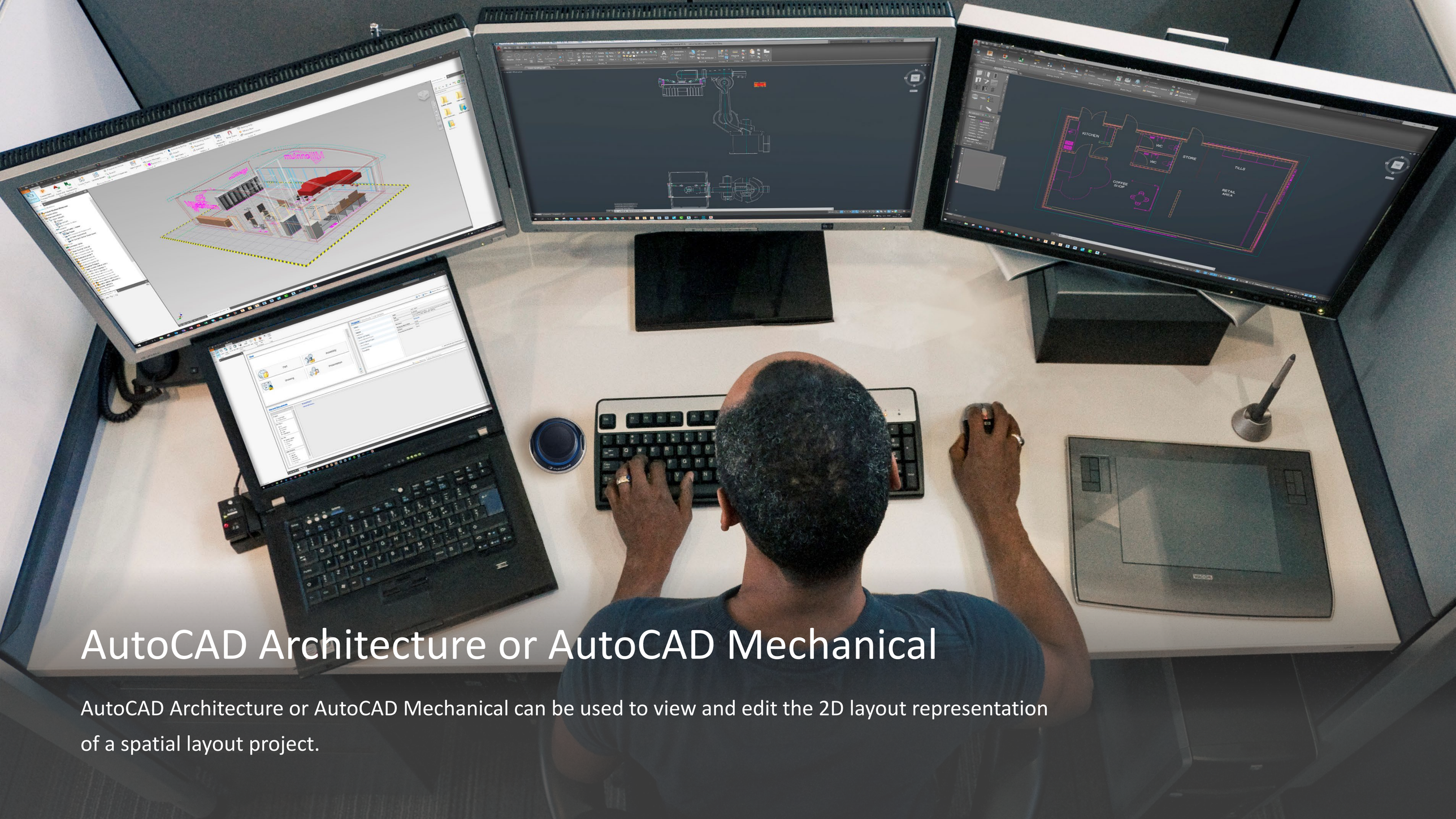
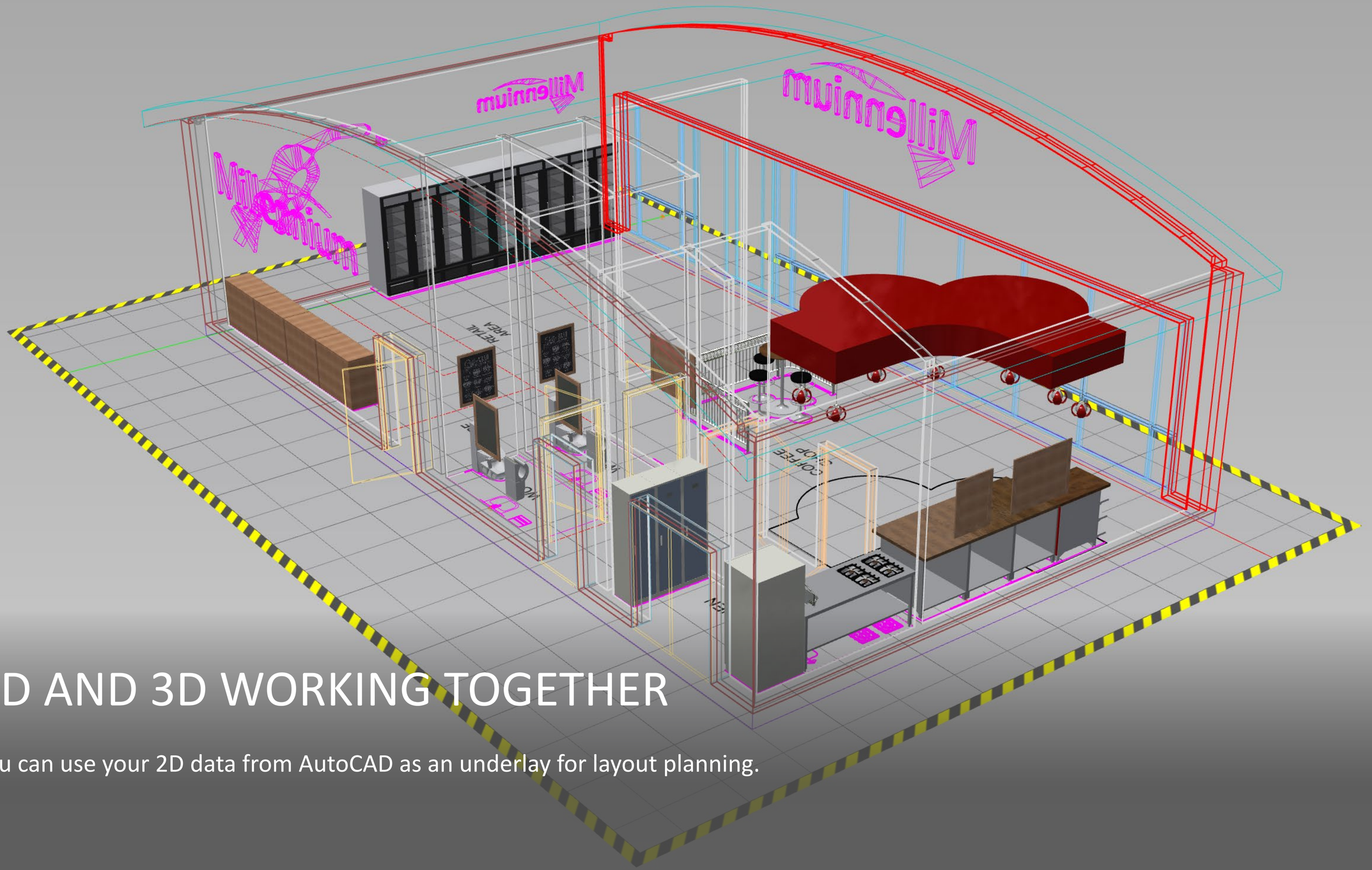
Z
Y
X
My Home
Assembly1
Ready



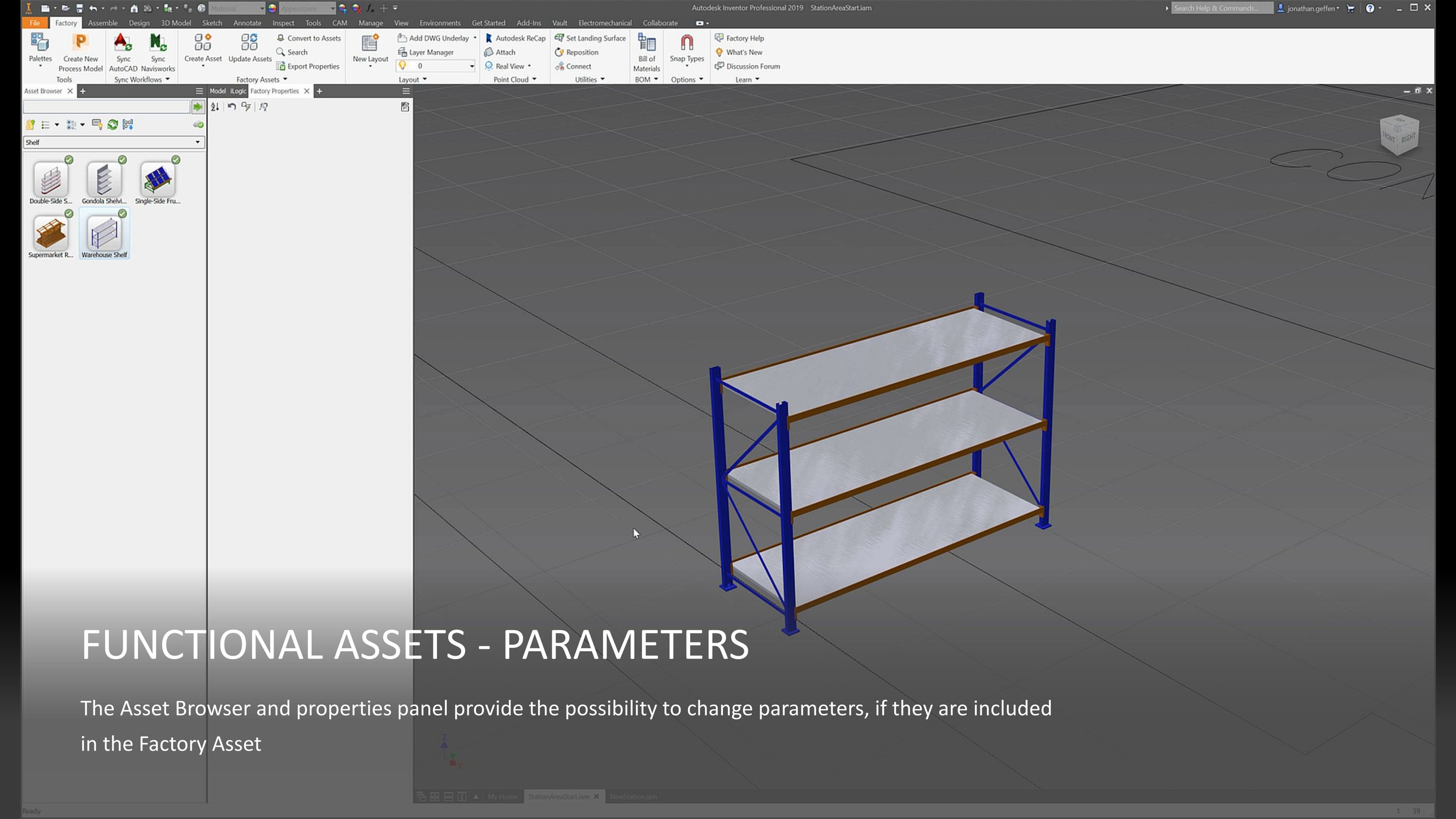
AutoCAD Architecture or AutoCAD Mechanical

AutoCAD Architecture or AutoCAD Mechanical can be used to view and edit the 2D layout representation of a spatial layout project.



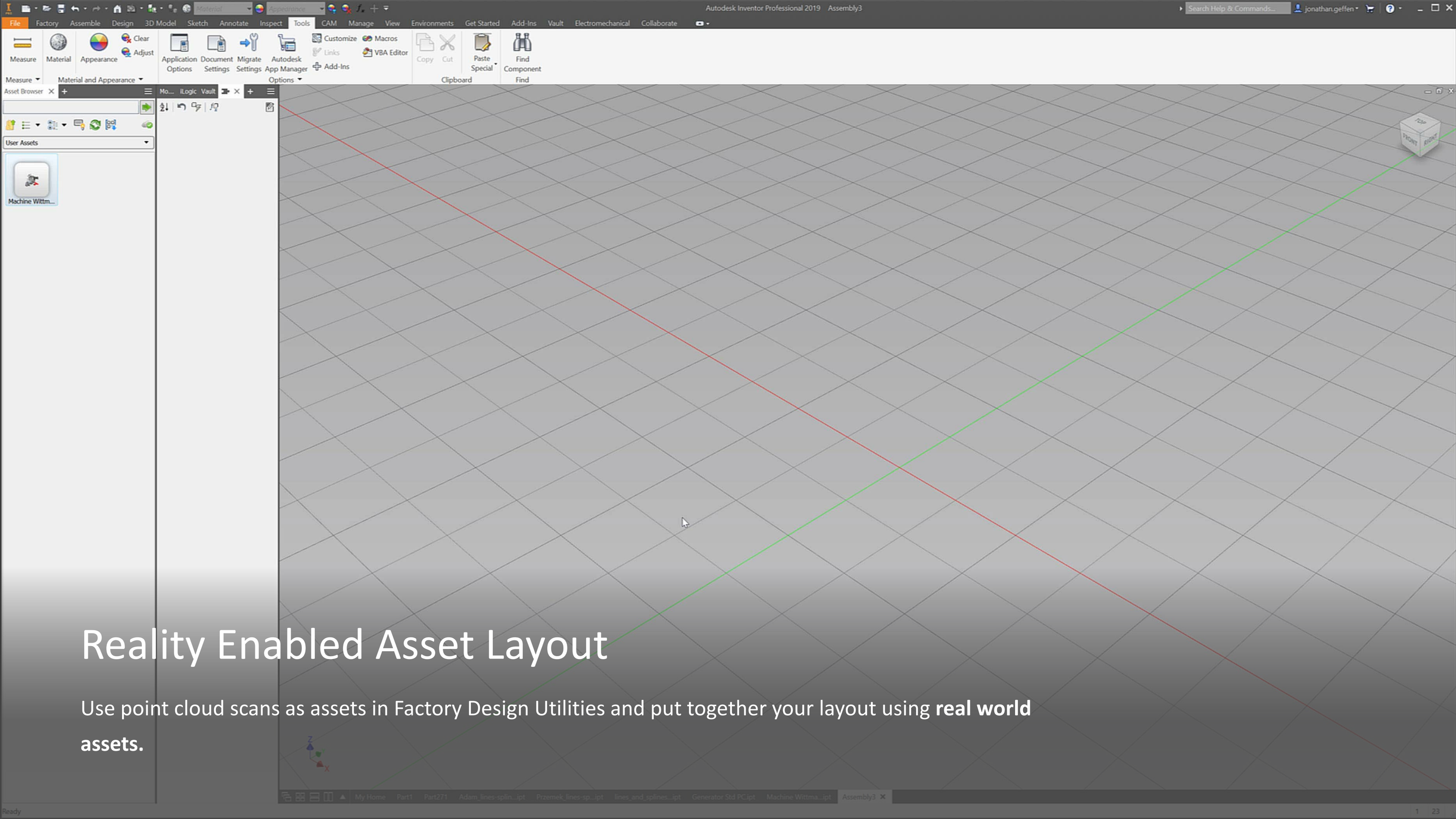
2D AND 3D WORKING TOGETHER

You can use your 2D data from AutoCAD as an underlay for layout planning.



FUNCTIONAL ASSETS - PARAMETERS

The Asset Browser and properties panel provide the possibility to change parameters, if they are included in the Factory Asset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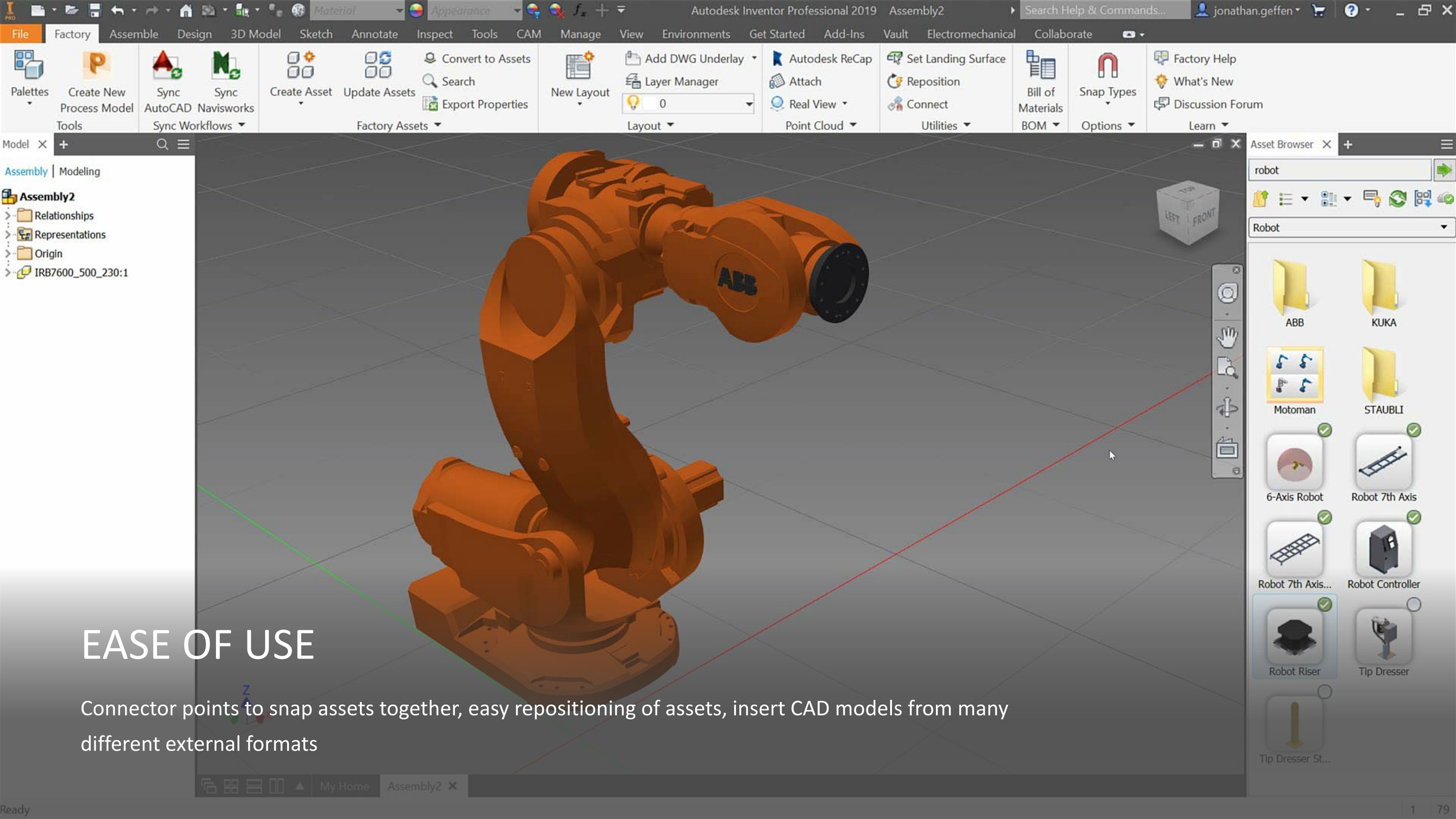
File Factory Assemble Design 3D Model Sketch Annotate Inspect Tools CAM Manage View Environments Get Started Add-Ins Vault Electromechanical Collaborate
Measure Material Appearance Clear Adjust
Application Options Document Settings Migrate Settings Autodesk App Manager
Customize Macros Links VBA Editor Add-Ins
Copy Cut Paste Special Find Component
Measure Material and Appearance Options Clipboard Find
Asset Browser
User Assets
Machine Wittm...
Reality Enabled Asset Layout
Use point cloud scans as assets in Factory Design Utilities and put together your layout using **real world assets.**

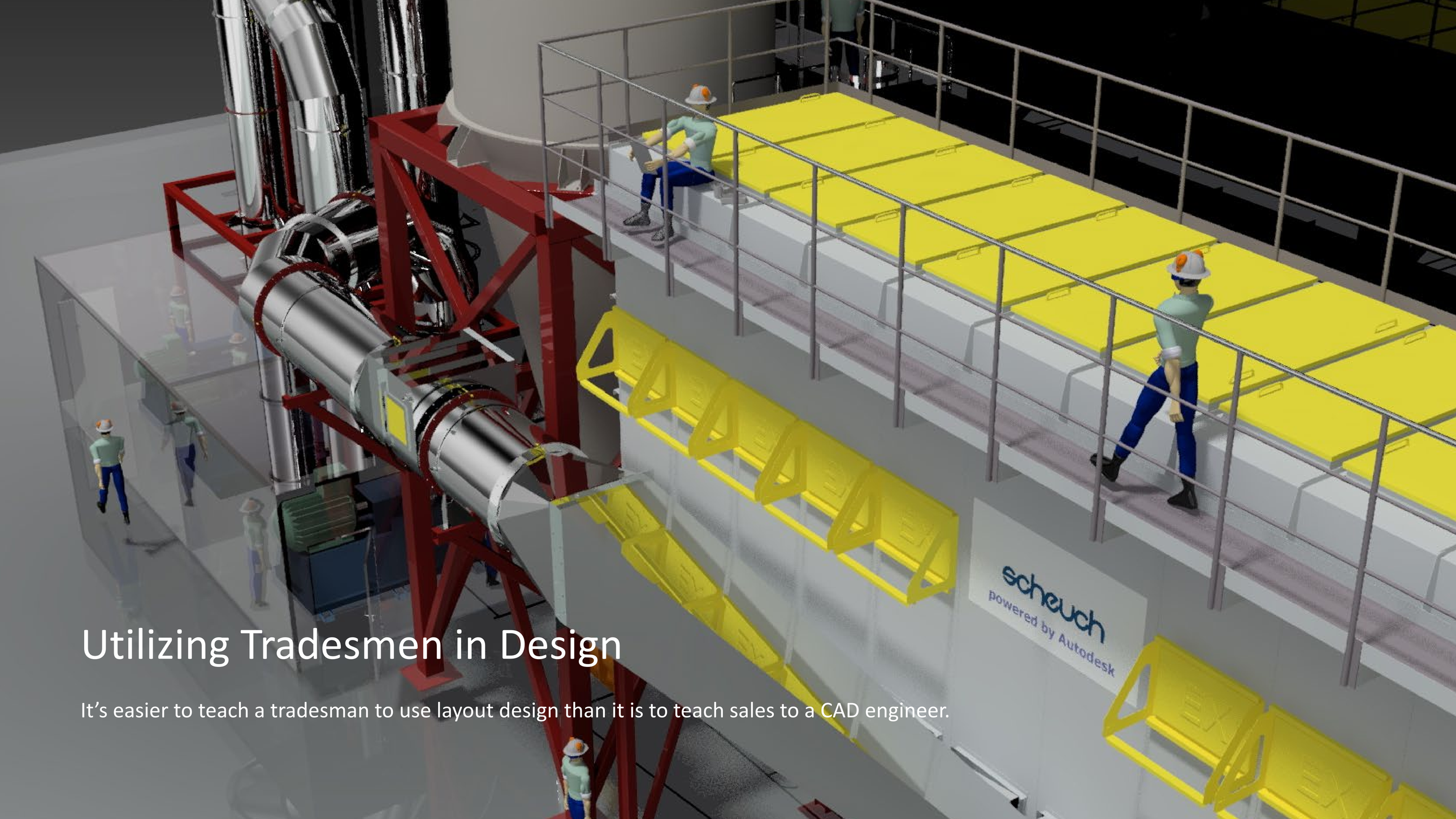
ASSET BASED DESIGN

Simply drag and drop assets that ‘snap’ together like LEGO bricks.



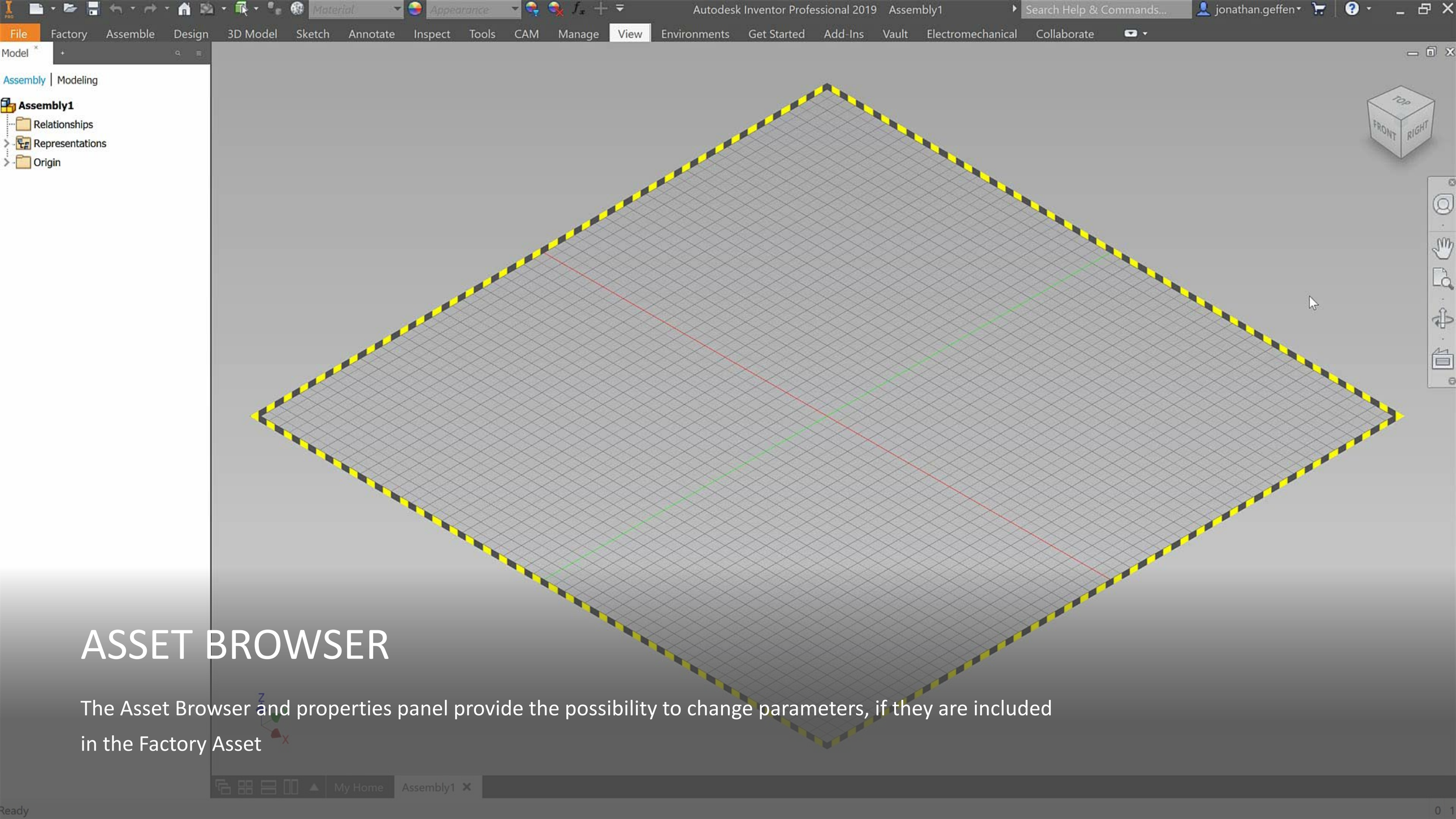
EASE OF USE

Connector points to snap assets together, easy repositioning of assets, insert CAD models from many different external formats



Utilizing Tradesmen in Design

It’s easier to teach a tradesman to use layout design than it is to teach sales to a CAD engineer.

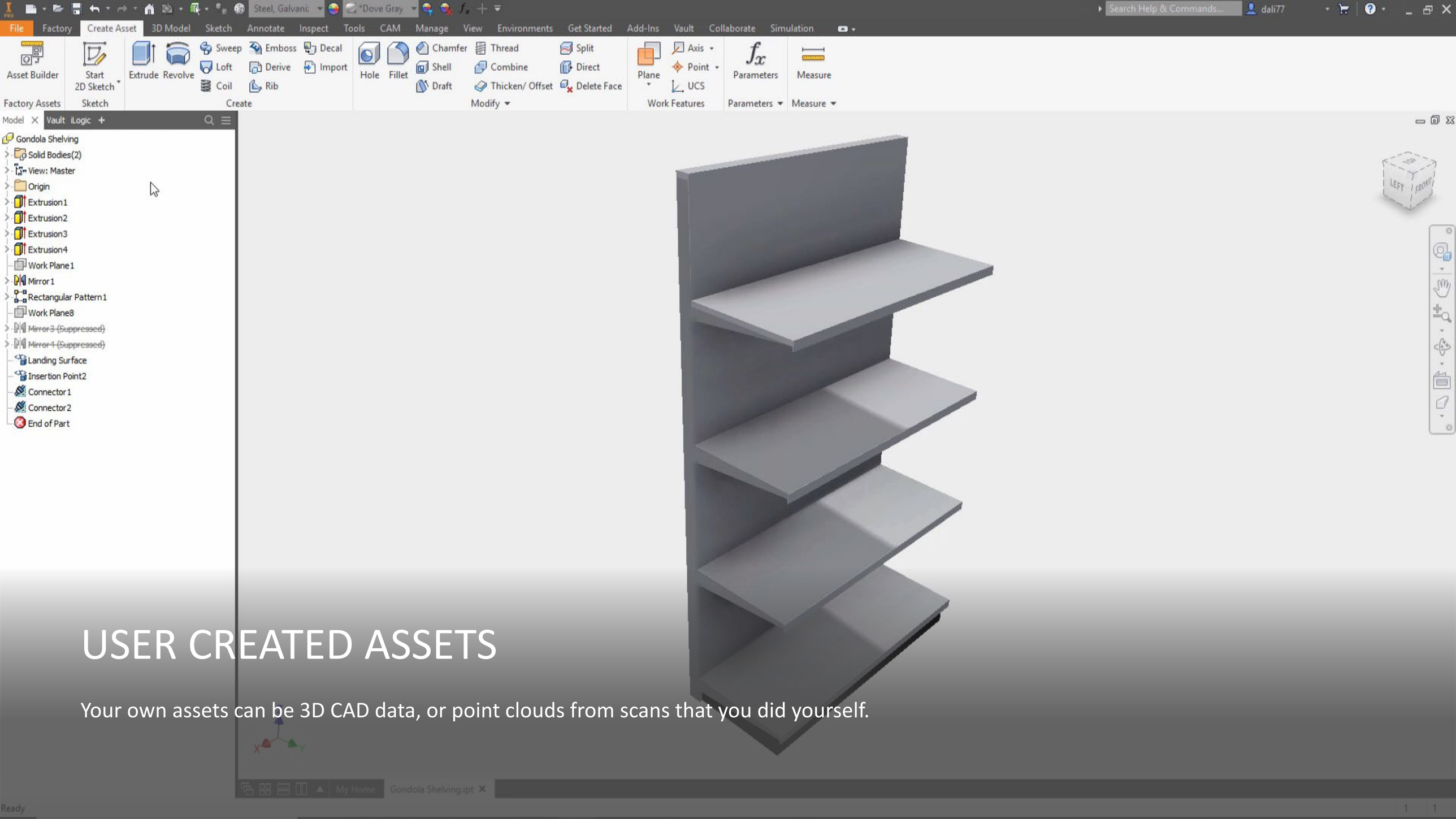


ASSET BROWSER

The Asset Browser and properties panel provide the possibility to change parameters, if they are included in the Factory Asset

Uses for Factory Design Utilities, other than Factories

Retail



USER CREATED ASSETS

Your own assets can be 3D CAD data, or point clouds from scans that you did yourself.

AutoCAD Architecture 2017

Type a keyword or phrase | dali77

Factory | Home | Insert | Annotate | Render | View | Manage | Add-ins | A360 | Vision Tools | Express Tools | Vault | Featured Apps | BIM 360 | Performance

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Get Started

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A360

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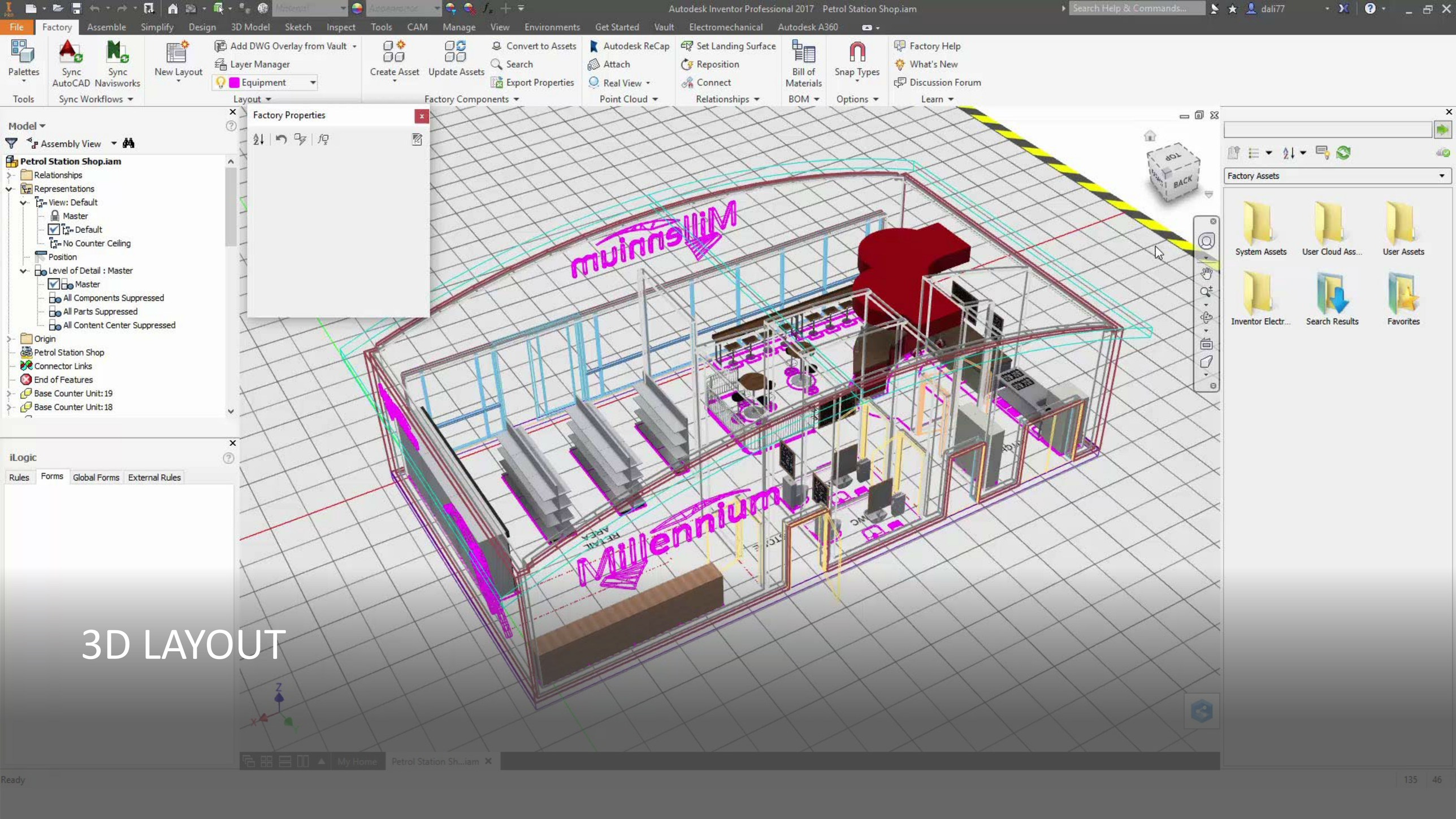
2D LAYOUT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Assembly View
Petrol Station Shop.iam
Relationships
Representations
View: Default
Master
Default
No Counter Ceiling
Position
Level of Detail : Master
Master
All Components Suppressed
All Parts Suppressed
All Content Center Suppressed
Origin
Petrol Station Shop
Connector Links
End of Features
Base Counter Unit: 19
Base Counter Unit: 18
Factory Properties
iLogic
Rules Forms Global Forms External Rules
Factory Assets
System Assets
User Cloud Ass...
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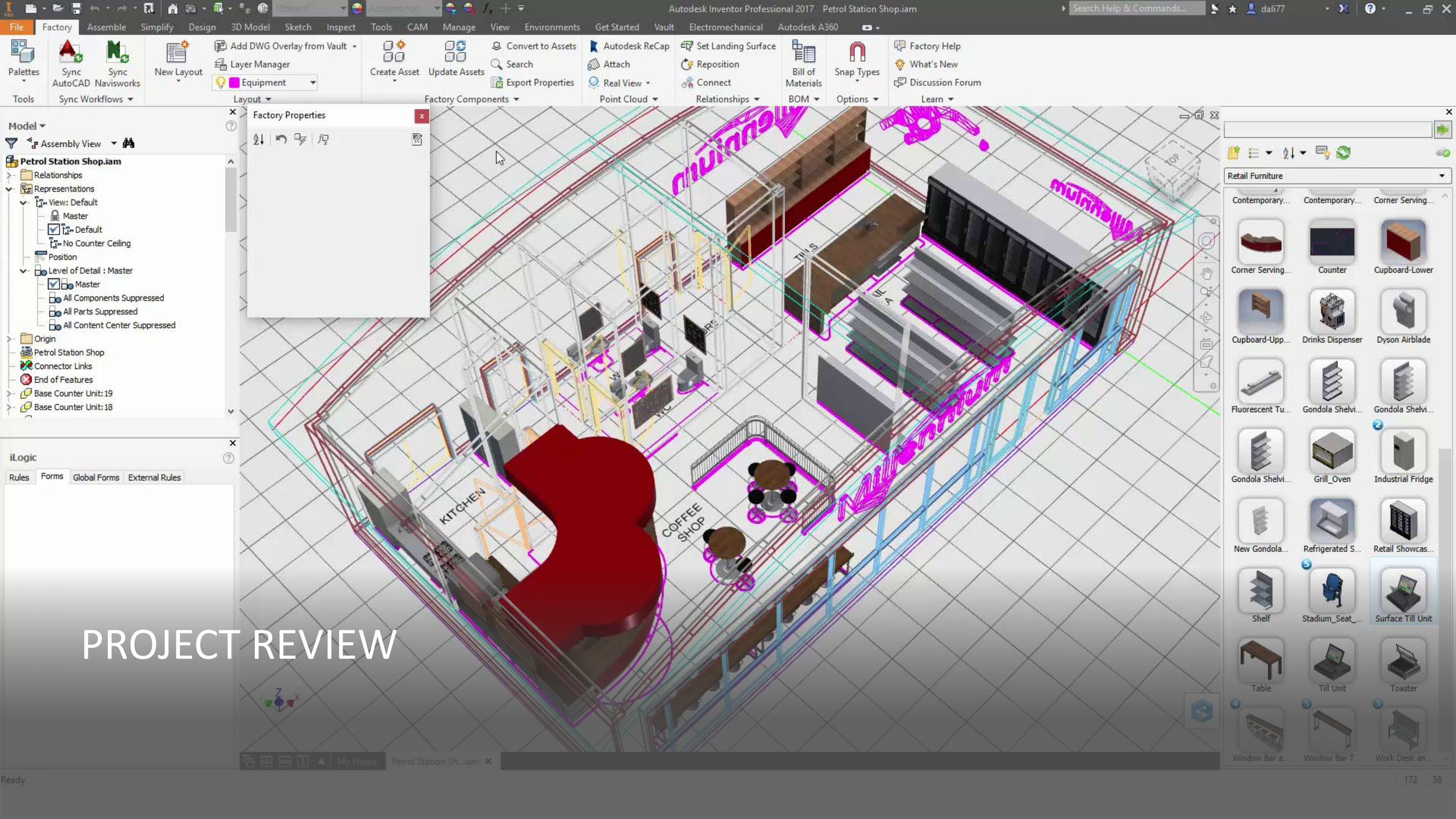
My Home
Petrol Station Sh...iam
Ready

3D LAYOUT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Base Counter Unit:18
Factory Properties
iLogic
Rules Forms Global Forms External Rules
KITCHEN
COFFEE SHOP
Retail Furniture
Contemporary... Contemporary... Corner Serving...
Corner Serving... Counter Cupboard-Lower
Cupboard-Upp... Drinks Dispenser Dyson Airblade
Fluorescent Tu... Gondola Shelvi... Gondola Shelvi...
Gondola Shelvi... Grill_Oven Industrial Fridge
New Gondola... Refrigerated S... Retail Showcas...
Shelf Stadium_Seat_... Surface Till Unit
Table Till Unit Toaster
Window Bar a... Window Bar T... Work Desk an...
My Home Petrol Station Sh...iam
Ready
PROJECT REVIEW

Electrical Substation

AutoCAD Architecture 2013 - NOT FOR RESALE StationAreaStart.dwg

Type a keyword or phrase

emeaFDSteam

Factory Home Insert Annotate Render View Manage Plug-ins Online Roombook Vault SketchBook Designer

Tools
Wall Door Window Roof Slab Stair Space Enhanced Custom Grid Ceiling Grid Box
Build
Line
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Modify
demo LowVoltage
View Layers
Multiline Text
Annotation
ByLayer Transparency Transparency 0
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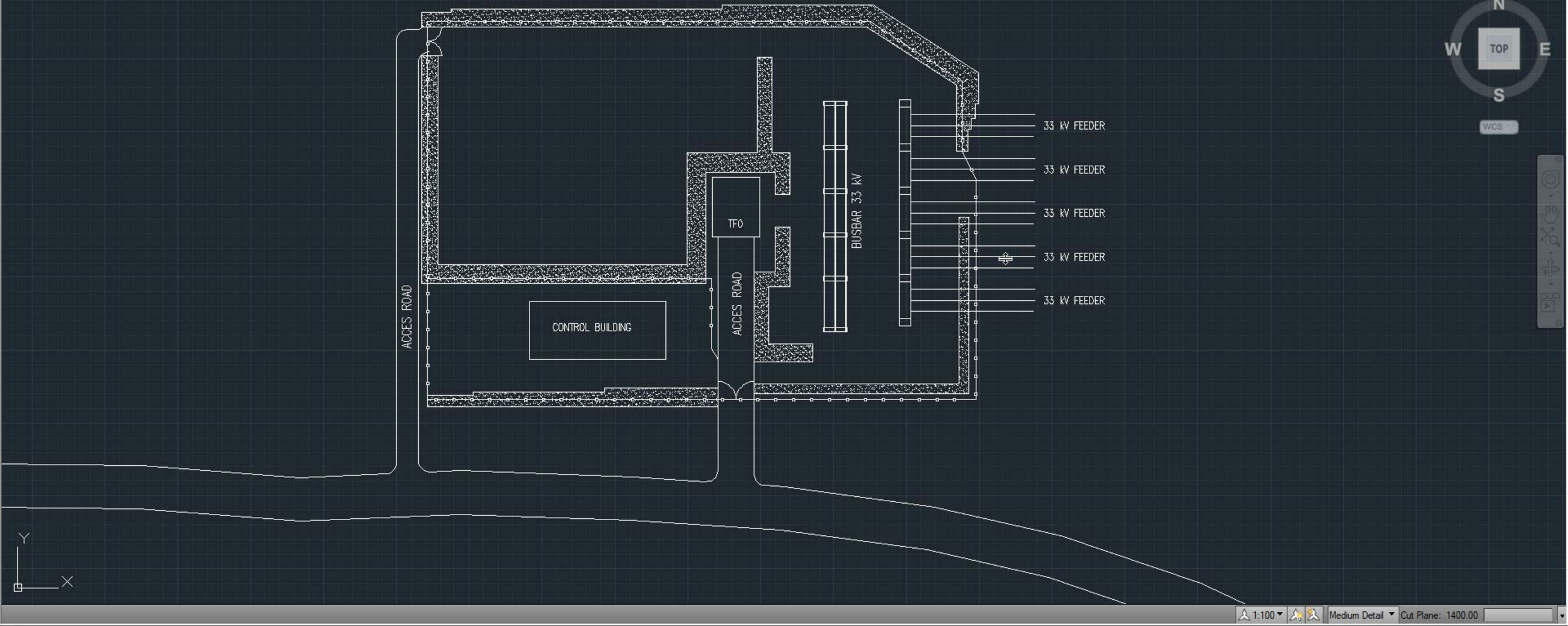
Inquiry
Vertical Section Horizontal Section Section Line Elevation Line
Section & Elevation
Detail Components
Details

[−][Top][2D Wireframe]



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Type a command

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MODEL Elevation: +0.00

Endless Possibilities

Hallen Halls 2,4
Hallen Halls 1,3,5
Freigelände Outdoor Area
Eingangshalle Ost Entrance Hall East
Congress Center Leipzig CCL
Hallen Halls 2,4
Freigelände Outdoor Area
Eingangshalle Ost Entrance Hall East
EXIT
Shop
WC
FLUCHT- UND RETTUNGSPLAN
Garderobe
ZDF
Kino!
Comeback
ALEXANDER OSANG
MICHAEL DEGEN
SLAVOJ ŽIŽEK
Amos Oz
Judas
WIR ERBEN
JULIA FRIEDRICHS
das blaue sofa

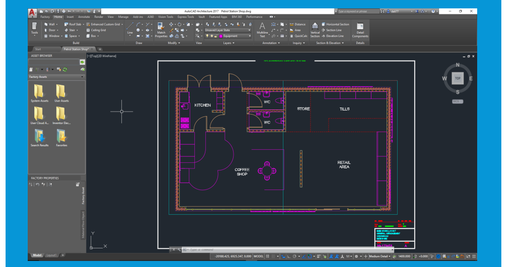
TRADE FAIRS

SPACE STATIONS

PLAYGROUNDS

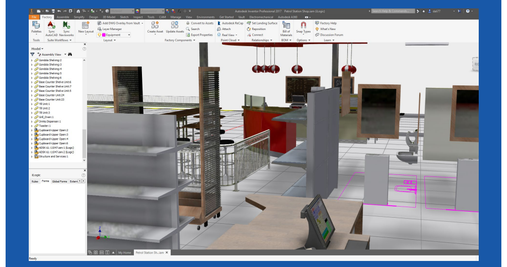
SERVER/IT CONFIGURATION

Layout Design Workflow Summary



MAINTAIN EXISTING LAYOUTS

CONCEPTUAL DESIGN LAYOUT



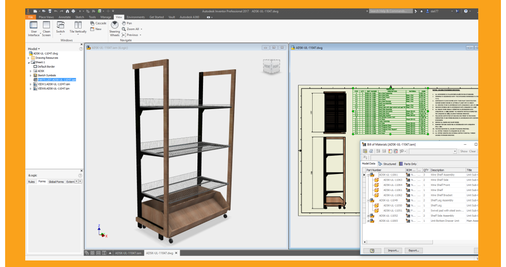
3D VISUAL LAYOUT MODELING

INTELLIGENT MODELS

EQUIPMENT REPORTS

UTILIZE MODELS FROM 3RD PARTIES

ELEVATION VIEWS



ASSET LIBRARY CREATION

CONFIGURABLE EQUIPMENT

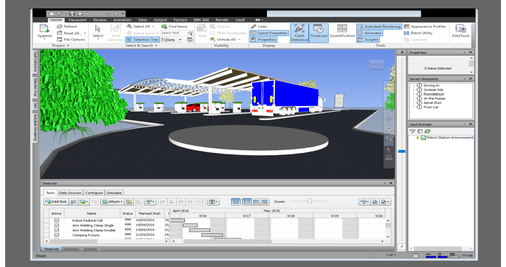
MANAGE EQUIPMENT PROPERTIES

ASSEMBLY INSTRUCTIONS

BILLS OF MATERIALS

BIM CONTENT CREATION

DESIGN VALIDATION



3D REVIEW

PROJECT COORDINATION

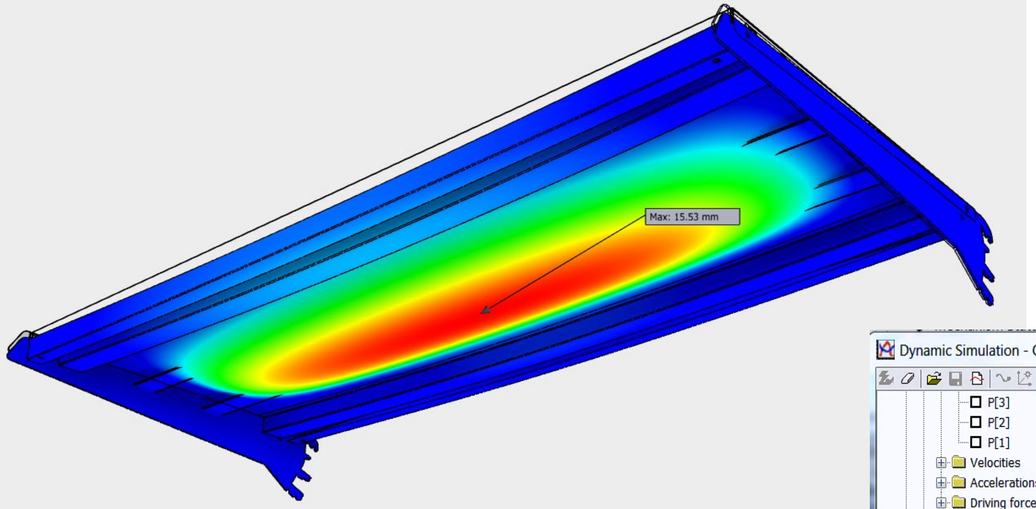
VISUALIZATION

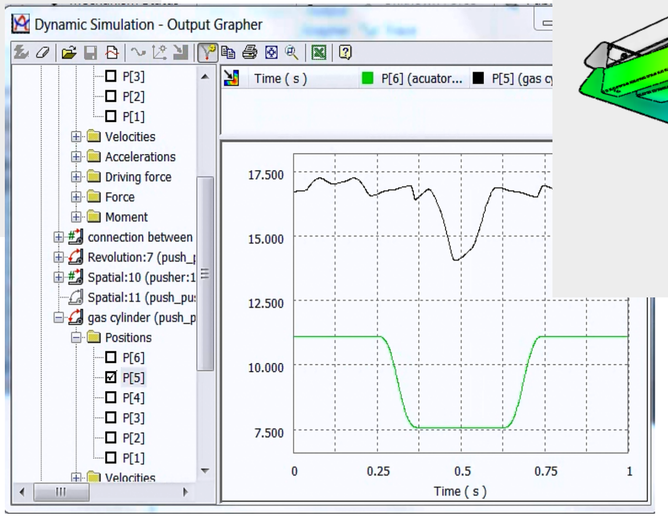
PROJECT TIMELINE ANALYSIS

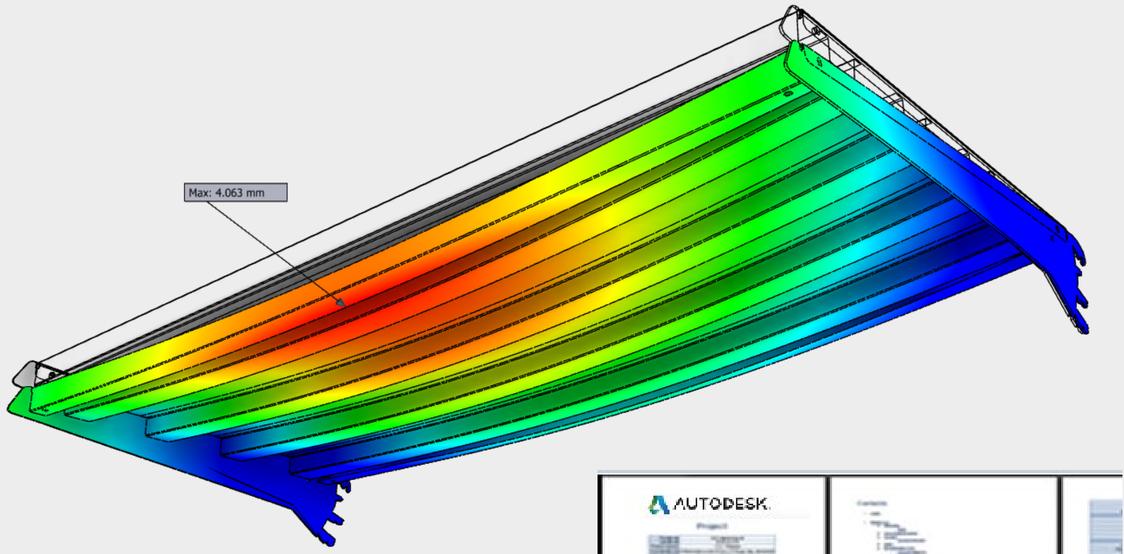
CLASH DETECTION OF SERVICES

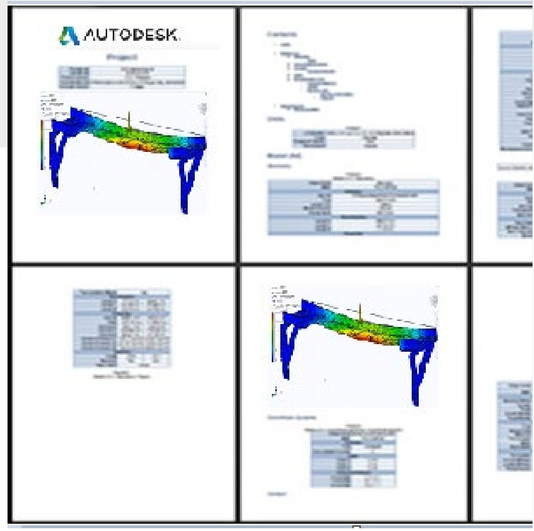
SITE INSTALLATION DELIVERABLE

Going Further…



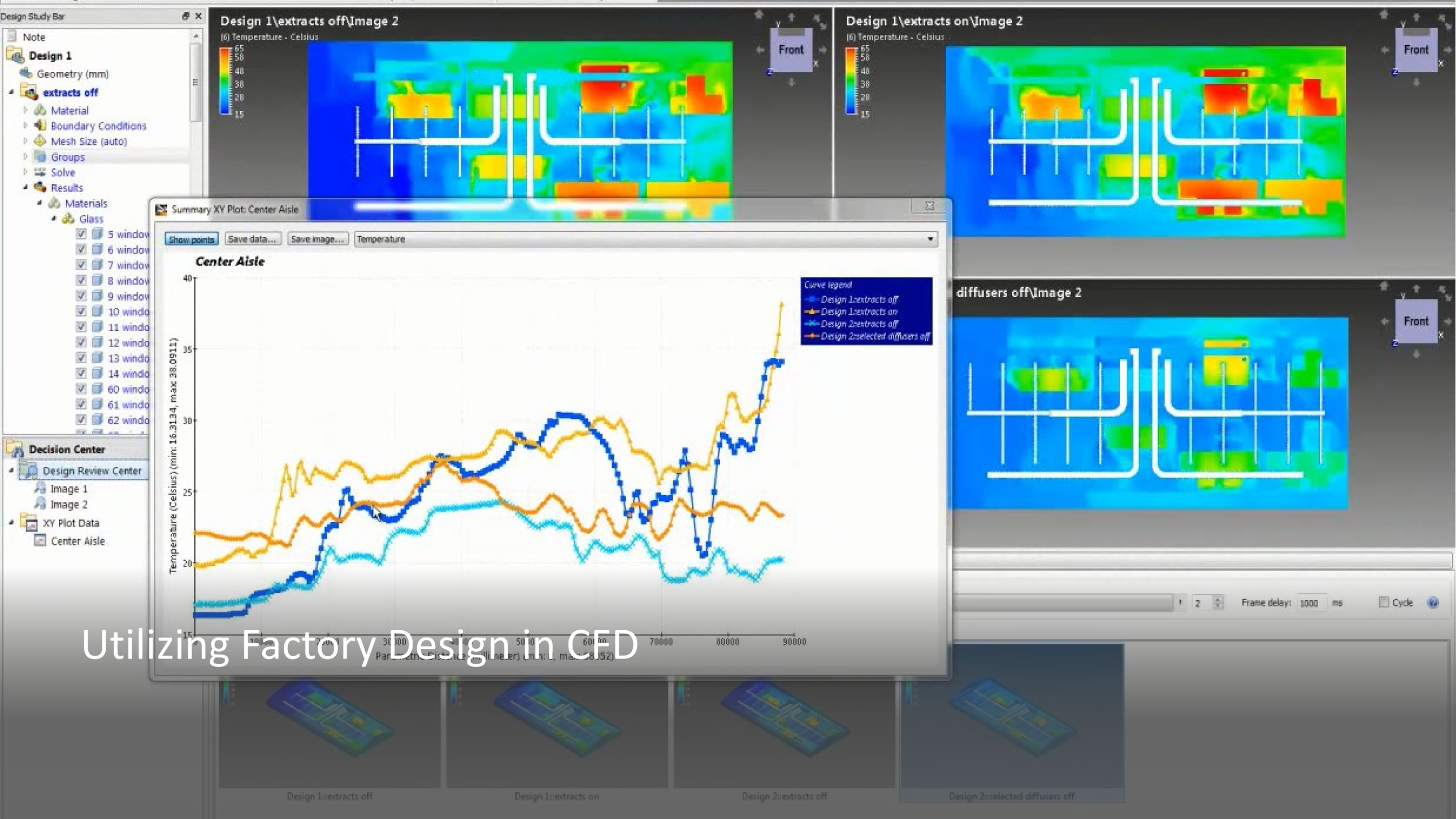




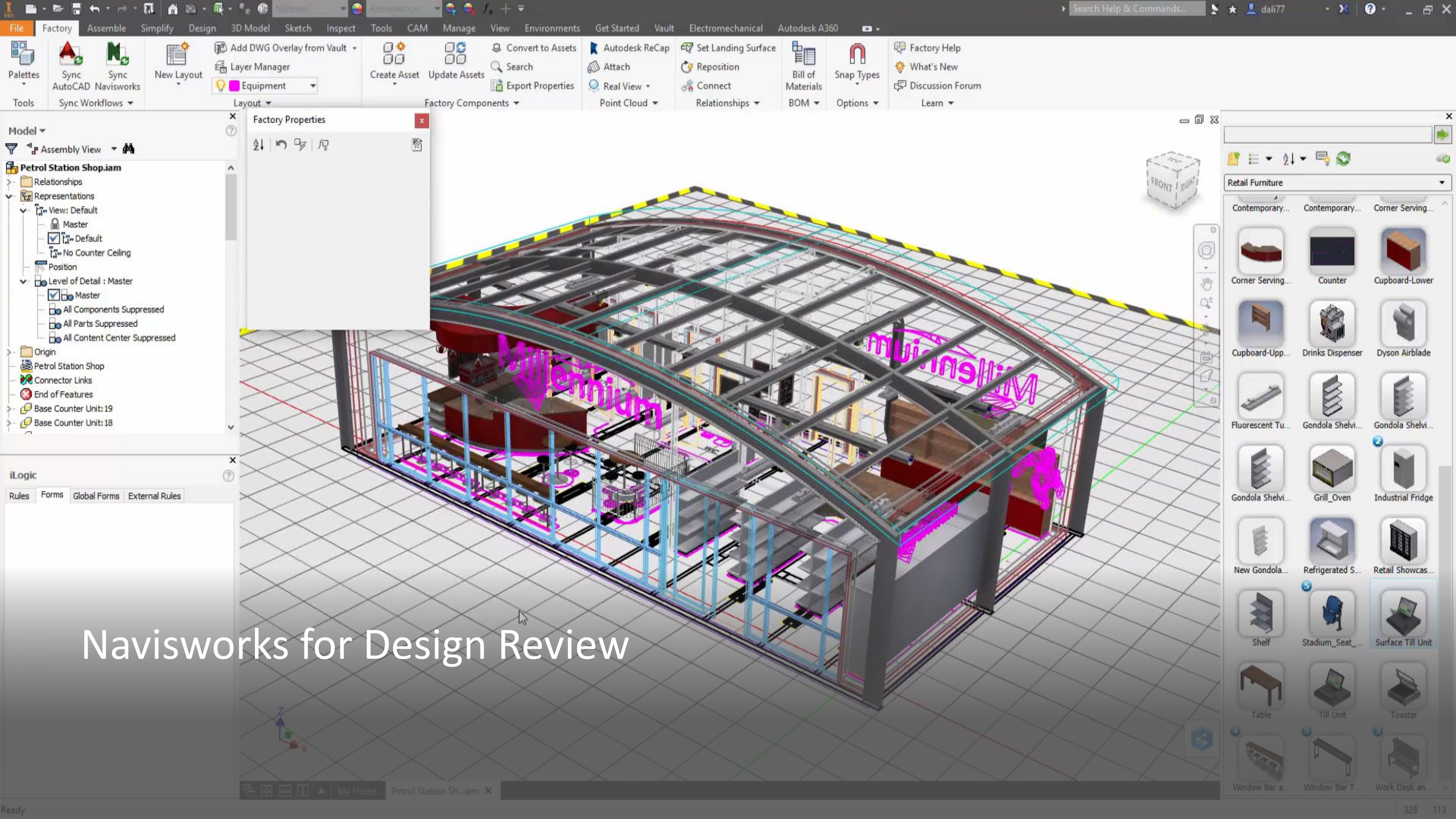


Asset Validation

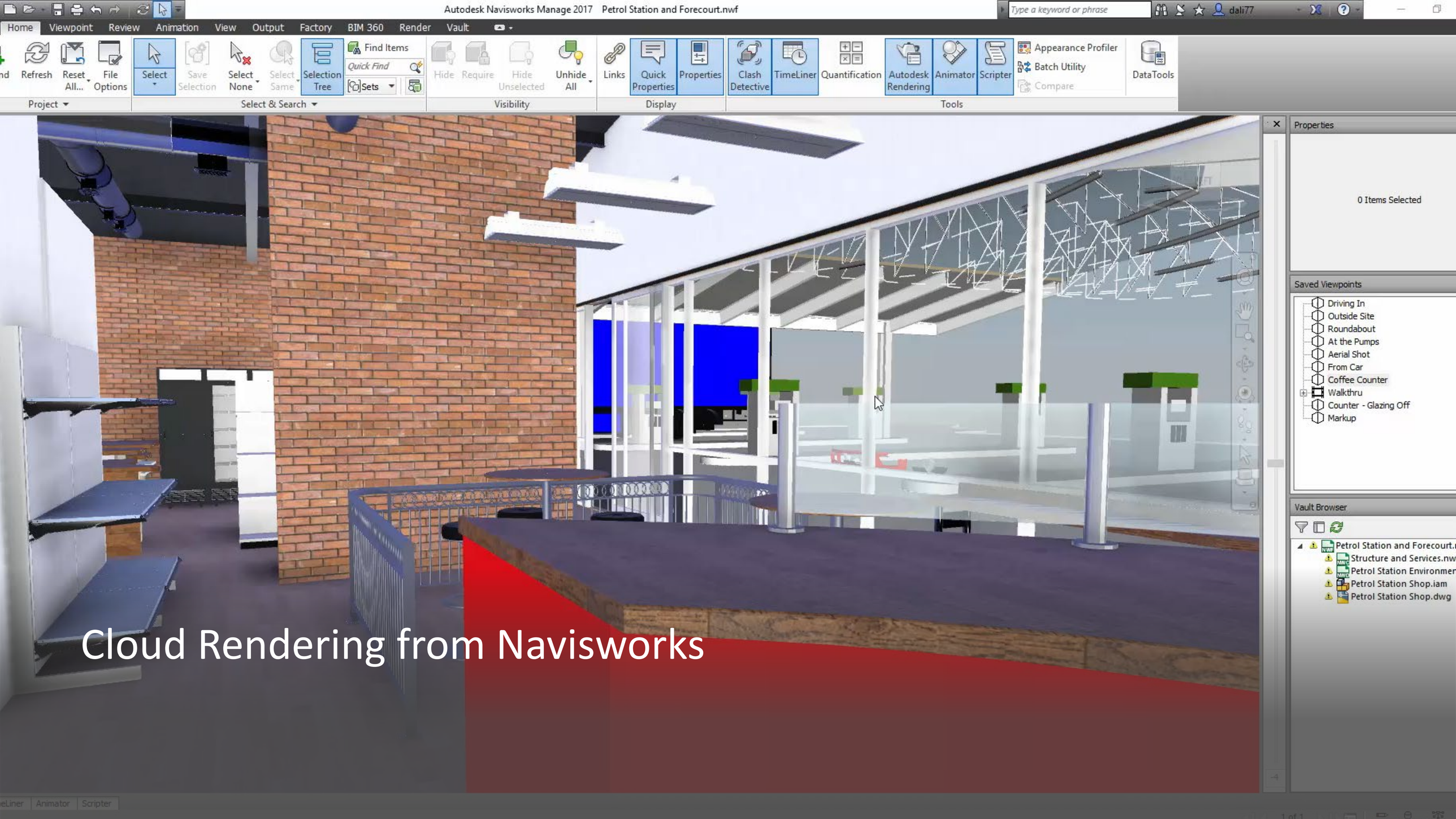
- Validate the product performance before the product is built
- Size components based on end requirement
- Ensure reliability
- Try alternate designs in a virtual environment



Utilizing Factory Design in CFD



Navisworks for Design Review


Autodesk Navisworks Manage 2017 Petrol Station and Forecourt.nwf
Type a keyword or phrase
dali77
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Viewpoint
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Animation
View
Output
Factory
BIM 360
Render
Vault
Refresh
Reset All...
File Options
Project
Select
Save Selection
Select None
Select Same
Selection Tree
Find Items
Quick Find
Sets
Select & Search
Hide
Require
Hide Unselected
Unhide All
Visibility
Links
Quick Properties
Properties
Display
Clash Detective
TimeLiner
Quantification
Autodesk Rendering
Animator
Scripter
Appearance Profiler
Batch Utility
Compare
DataTools
Tools
Properties
0 Items Selected
Saved Viewpoints
Driving In
Outside Site
Roundabout
At the Pumps
Aerial Shot
From Car
Coffee Counter
Walkthru
Counter - Glazing Off
Markup
Vault Browser
Petrol Station and Forecourt.
Structure and Services.nw
Petrol Station Environmer
Petrol Station Shop.iam
Petrol Station Shop.dwg
Cloud Rendering from Navisworks

More Factory Design for Non-Factory Designers?

Other Relevant Classes

Wednesday, Nov 14, 9:15 AM – 10:15 AM – Murano 3303, Level 3
IM226618 - Factory Design Utilities for the Product Designer

60 Instructional Demo
Pete Strycharske

Thursday, Nov 15, 8:30 AM – 10:00 AM – Lido 3001A, Level 3
MFG197453-L - How Any Inventor User Can Benefit from Utilizing the Factory Design Utilities

90 Minutes Hands-On Lab
Rusty Belcher | Todd Schmoock | Vikas Saxena | Scott Hallmark

Thursday, Nov 15, 9:15 AM – 10:15 AM – Lando 4204, Level 4
MFG224693 - 10 Factory Design Utilities Tips and Tricks You Should Know Before Leaving AU

60 Instructional Demo
Peter De Strijker

Q & A

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