

Technologie Ausblick Design & Manufacturing

Manuela Zelinka

Sr. Solution Engineer Autodesk

Presenter Title | @socialmedia



About the speaker

Manuela Zelinka - Autodesk Munich

Manuela Zelinka has a degree in mechanical engineering. She started her career at a SolidWorks reseller in 1997. She joined Autodesk in 2002 as a Technical Specialist in the Technical Sales Team in Munich. She has been in the CAD industry for over 20 years and brings in a lot of experience for her Presales role. Her focus is in Autodesk PD&M Collection.

SAFE HARBOR

Angaben über geplante oder zukünftige Entwicklungen für vorhandene oder neue Produkte und Dienstleistungen stellen **keine verbindliche Zusage oder Garantie** bezüglich der zukünftigen Lieferung von Produkten, der Erbringung von Dienstleistungen oder der Entwicklung von Funktionen dar, sondern geben nur unsere **momentane Planung wieder**, die sich ändern kann. **Kaufentscheidungen dürfen nicht im Vertrauen auf diese Angaben getroffen werden.**

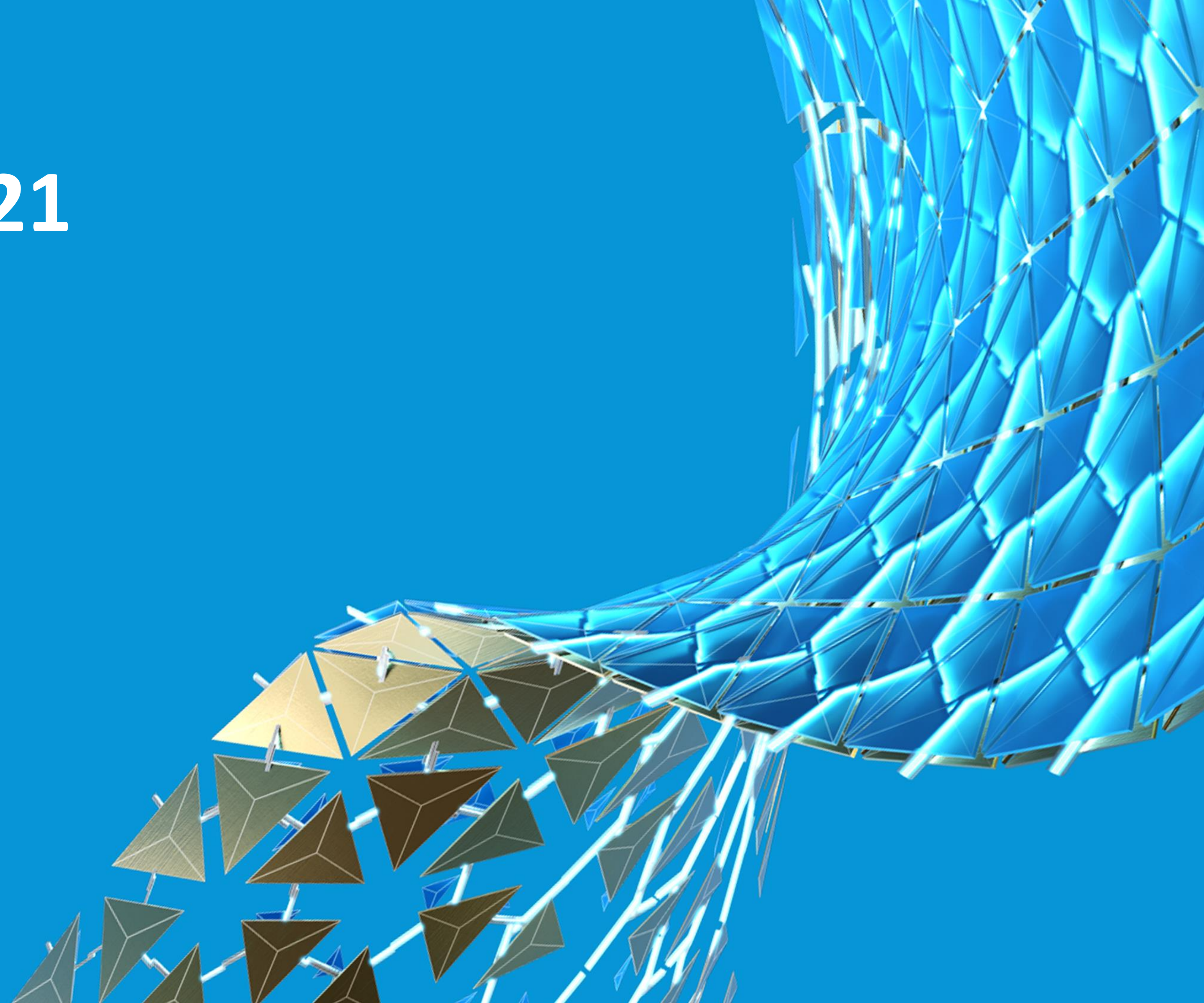
Autodesk ist nicht verpflichtet, im Nachgang diese zukunfts-orientierten Angaben auf Grund von bestehenden oder sich ändernden Umständen oder eintretenden Ereignissen zu aktualisieren.

No Pictures

Neue Technologien in Design&Manufacturing

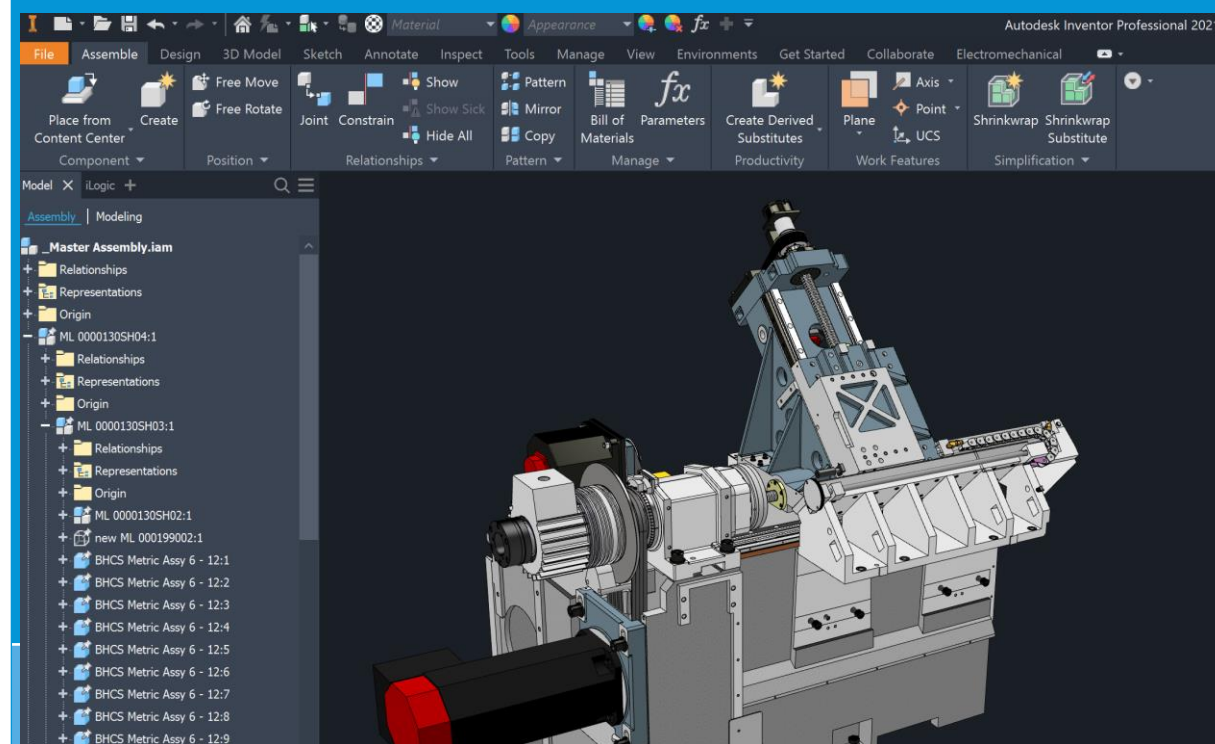
- **Inventor 2021**
 - Hauptrelease und 2021.1, 2021.2
- **PDMC 2021**
- **Zukunft**
 - Strategy
 - Public Roadmap
- **Fusion 360**
 - Generative Design
 - Manufacturing
- **New Trends**

Inventor 2021

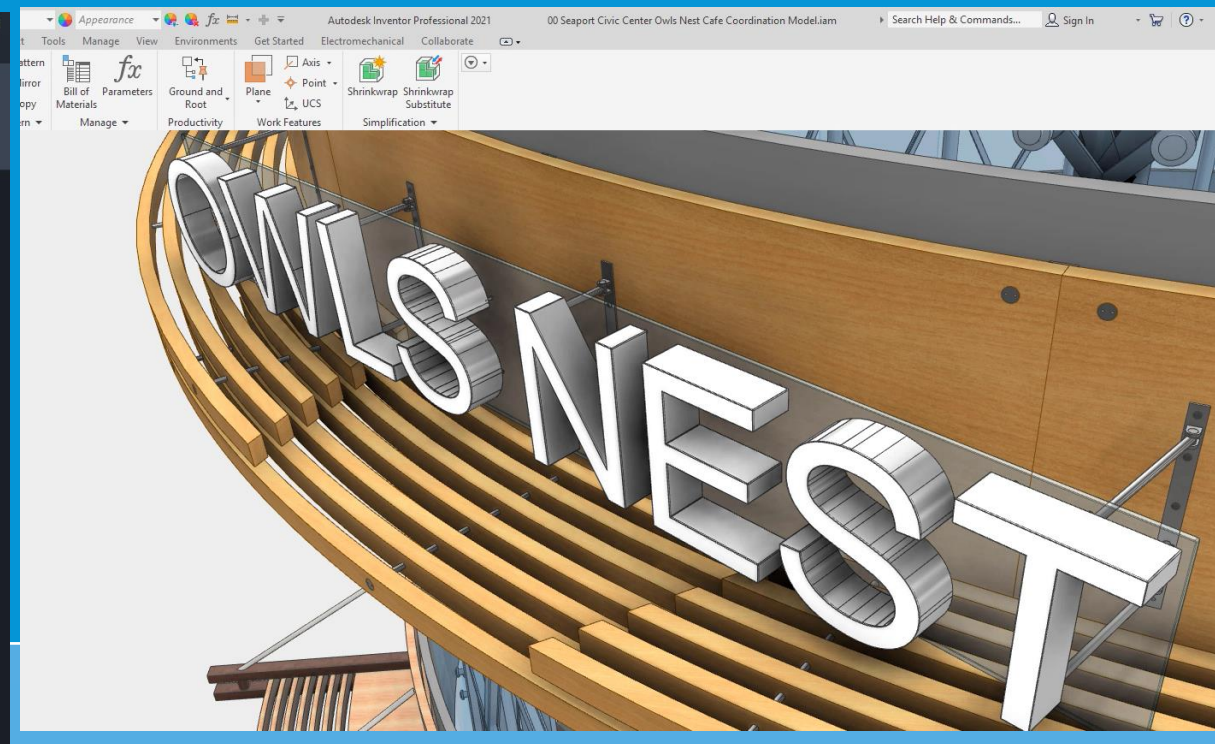


Inventor 2021

Inventor Experience



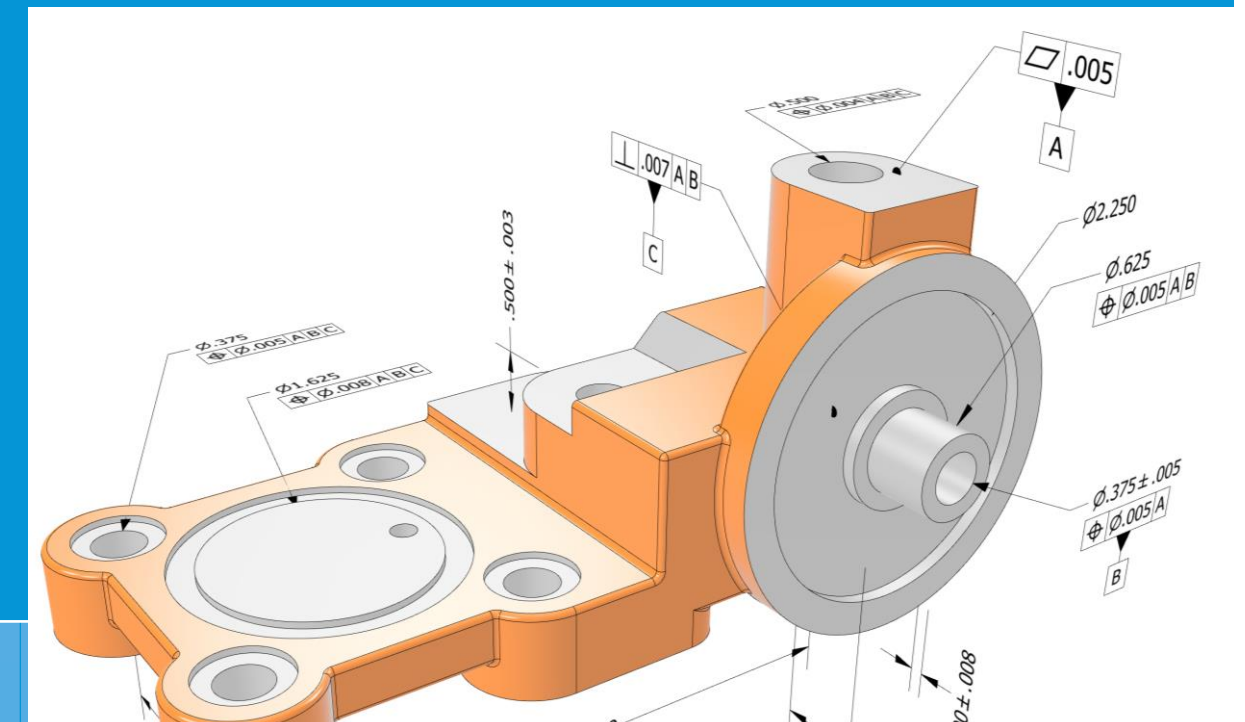
AnyCAD for Revit



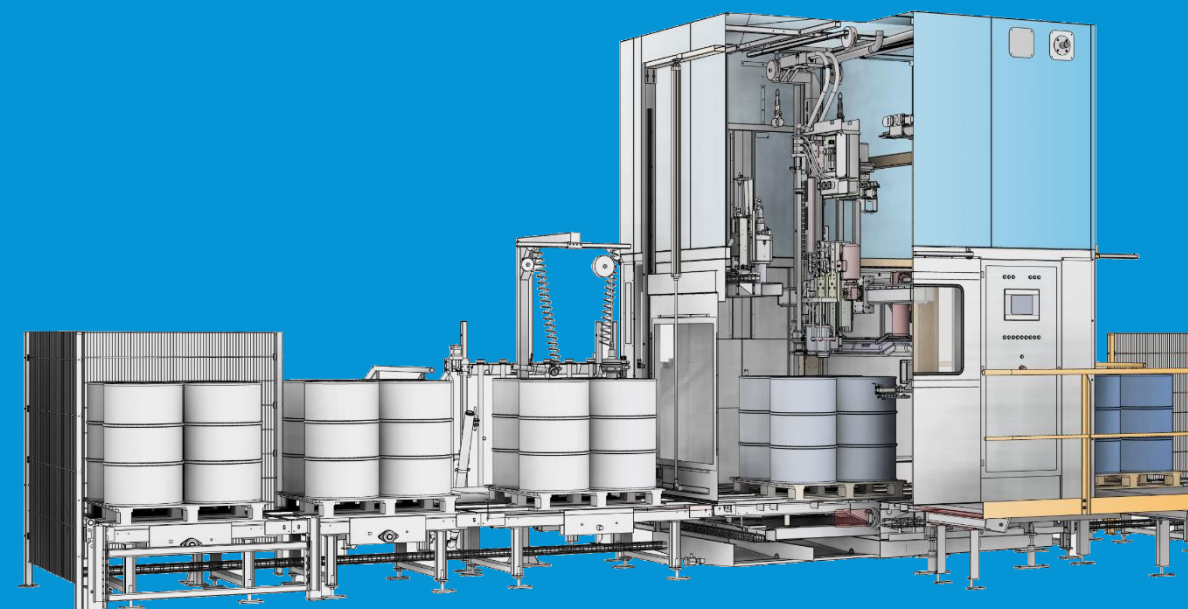
Performance



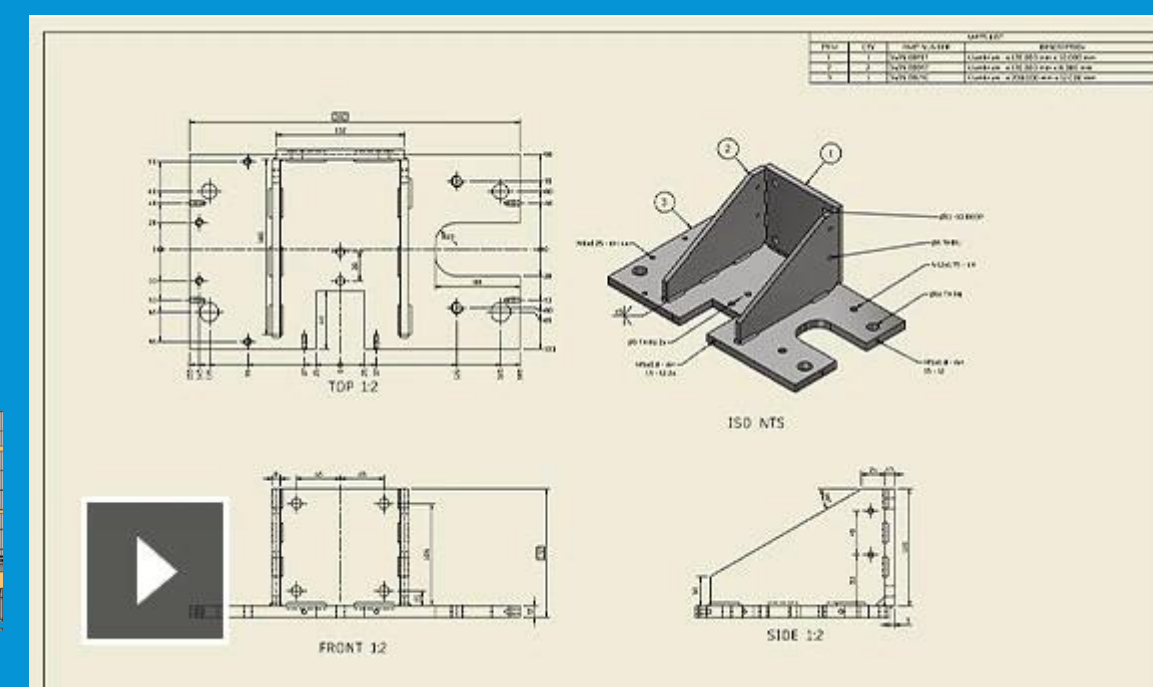
Part Modeling



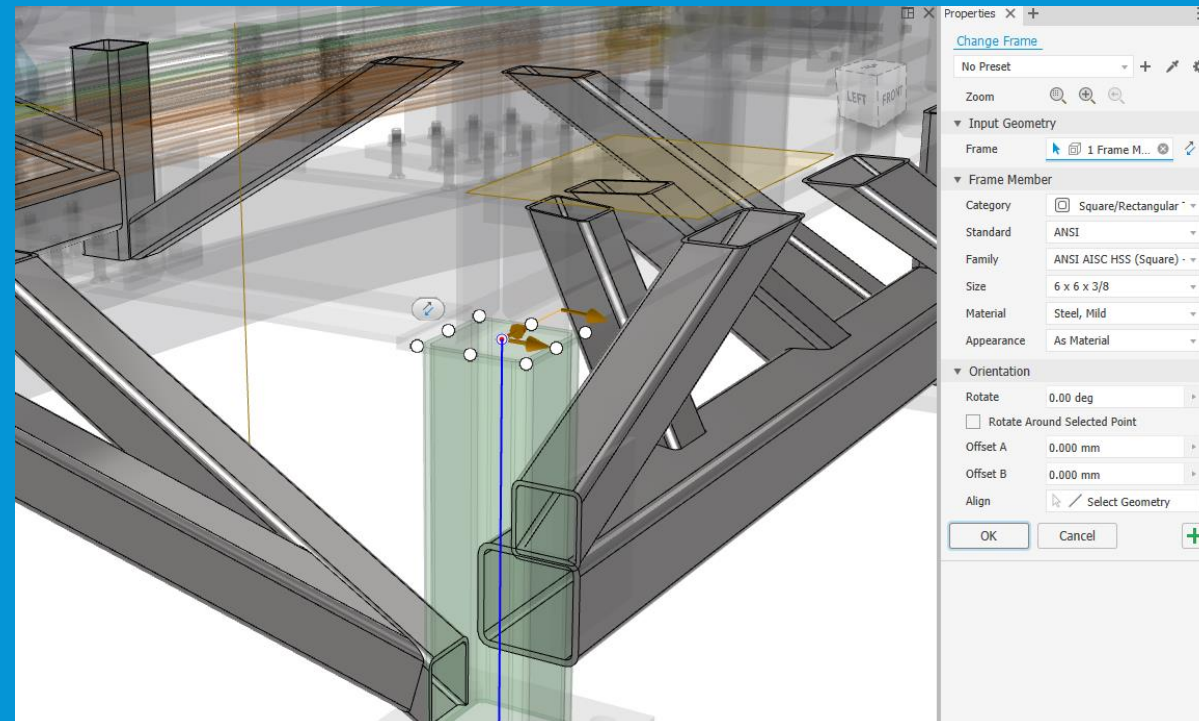
Assembly Modeling



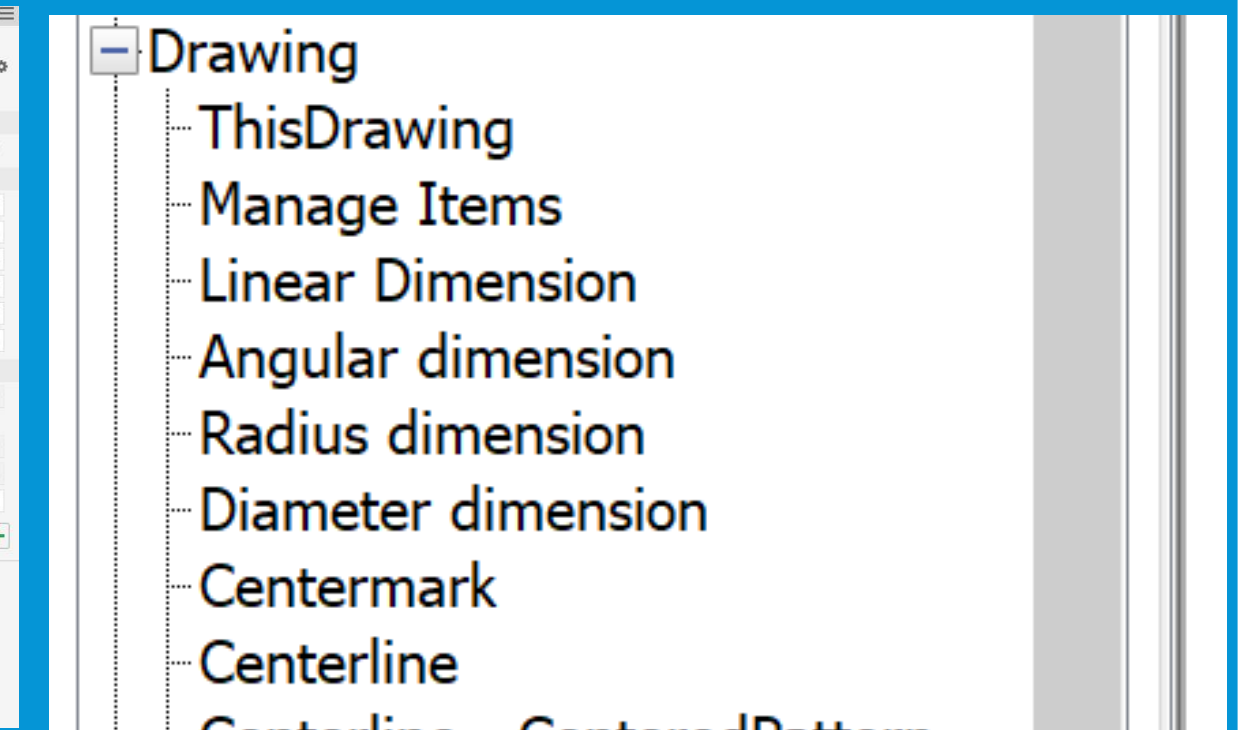
Drawing Creation

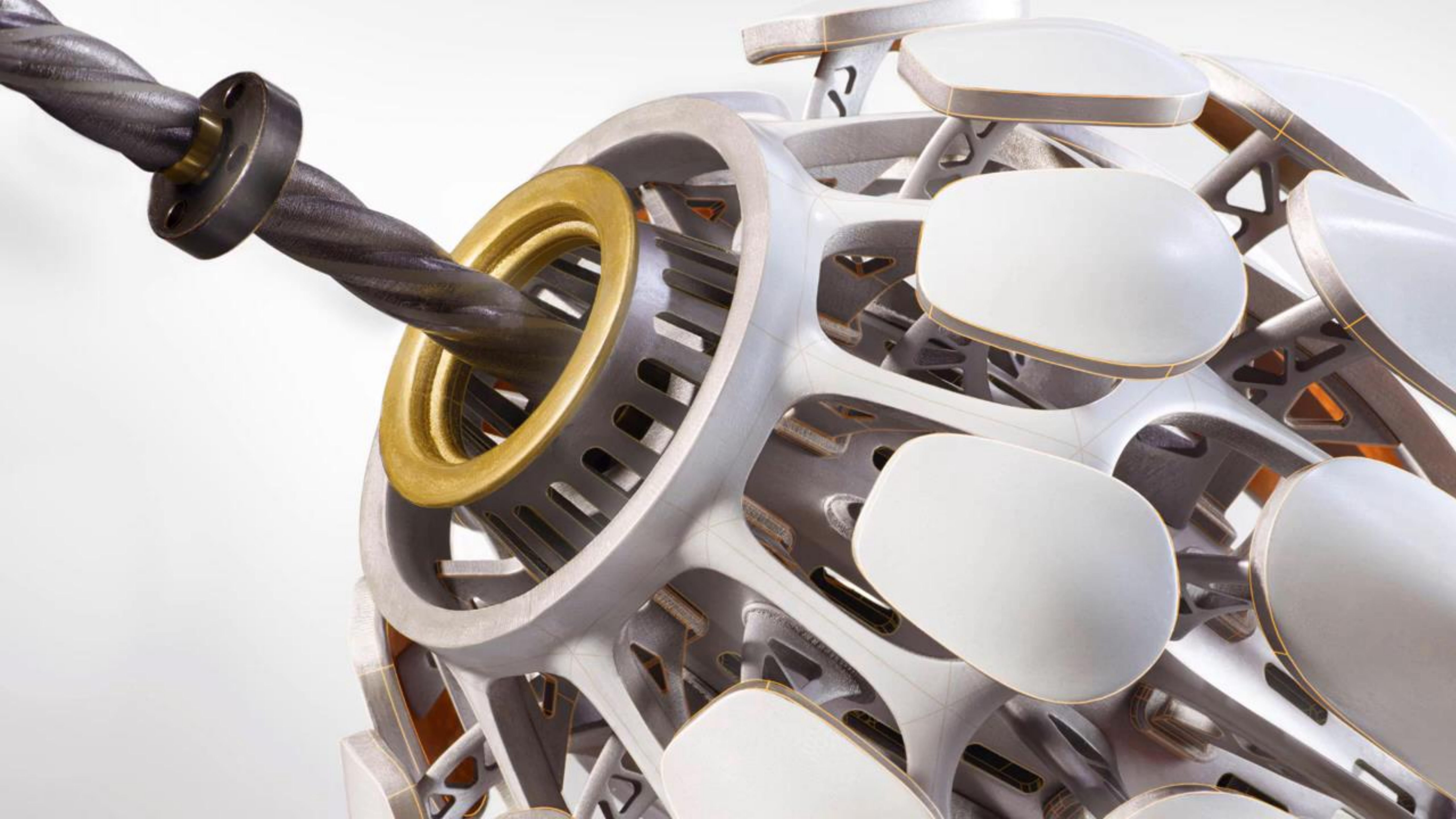


Frame Generator



Drawing Automation





Inventor 2021.1

Inventor Experience

Mittlere Maustaste

Mittlere Maustaste

Pan

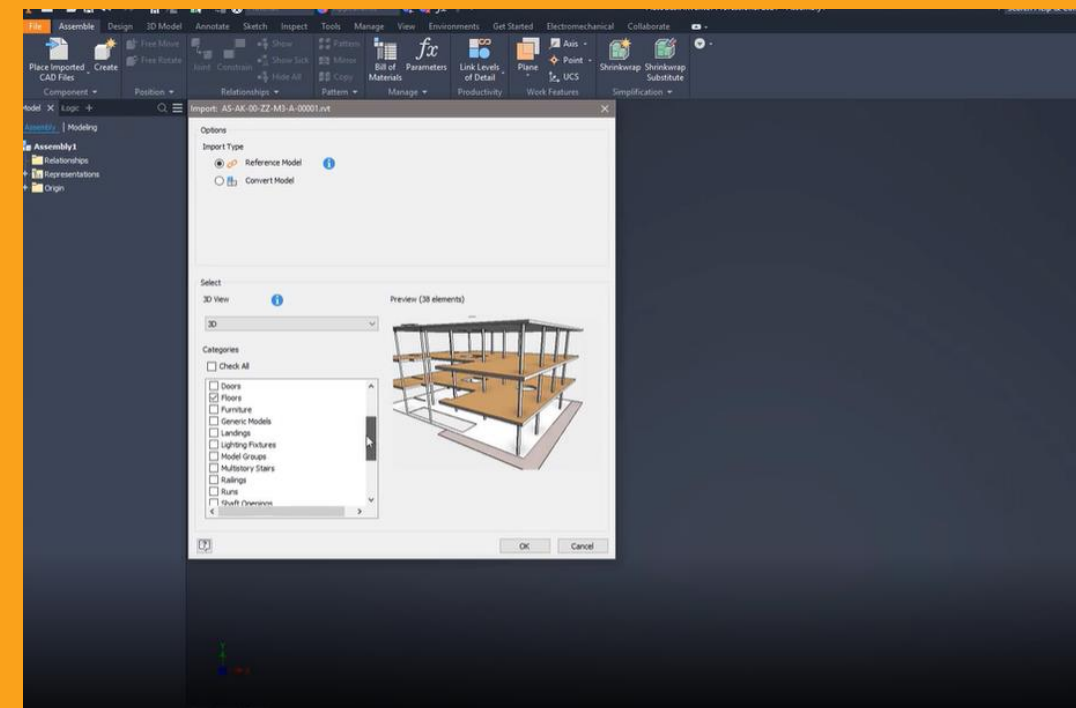
STRG-Taste+mittlere Maustaste

Pan

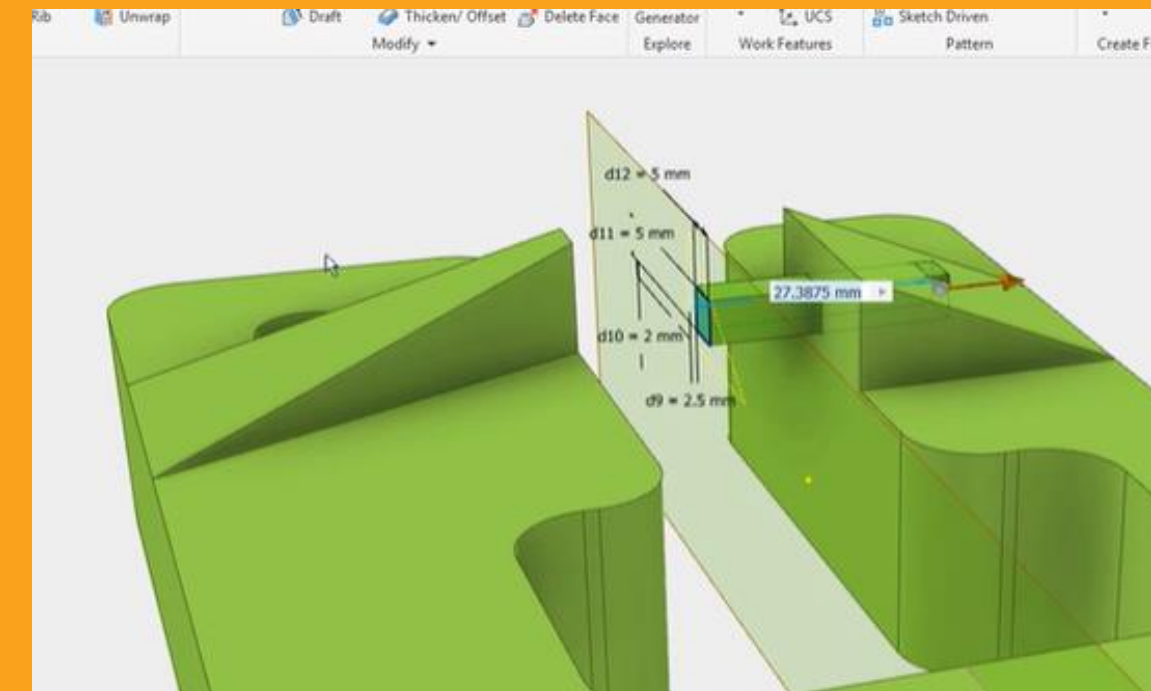
UMSCHALTASTE+mittlere Maustaste

Orbit

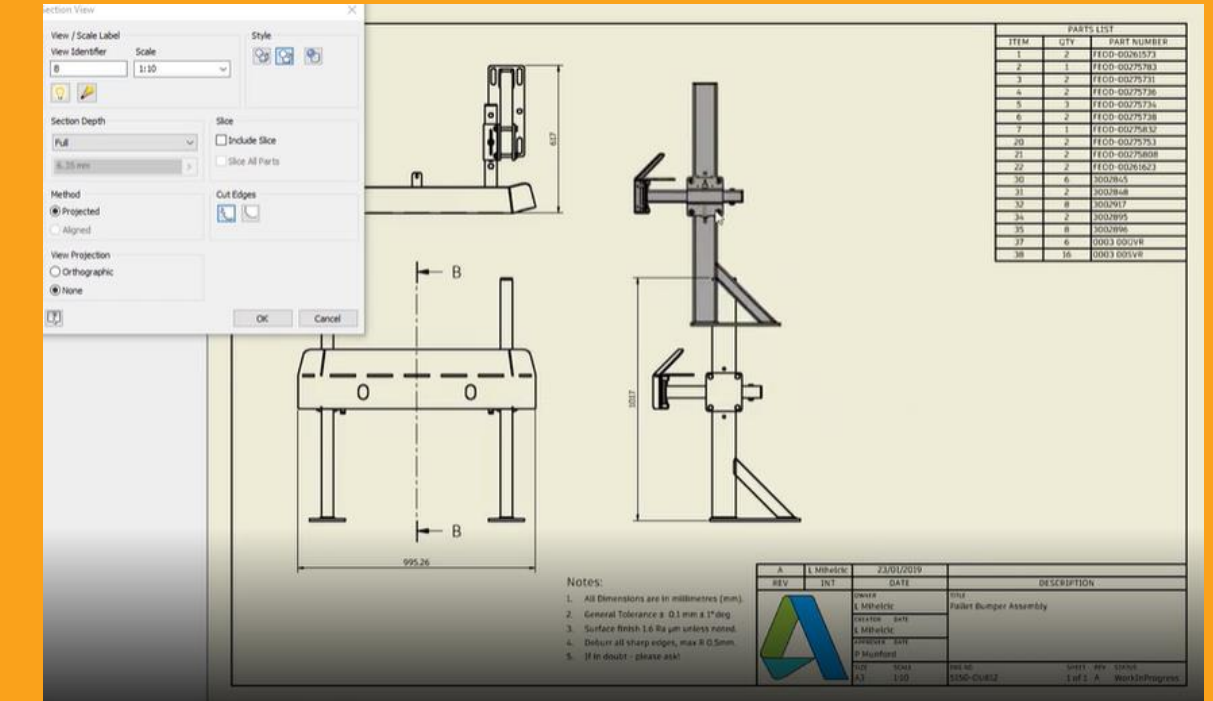
Interoperabilität



Part Modeling



Drawing

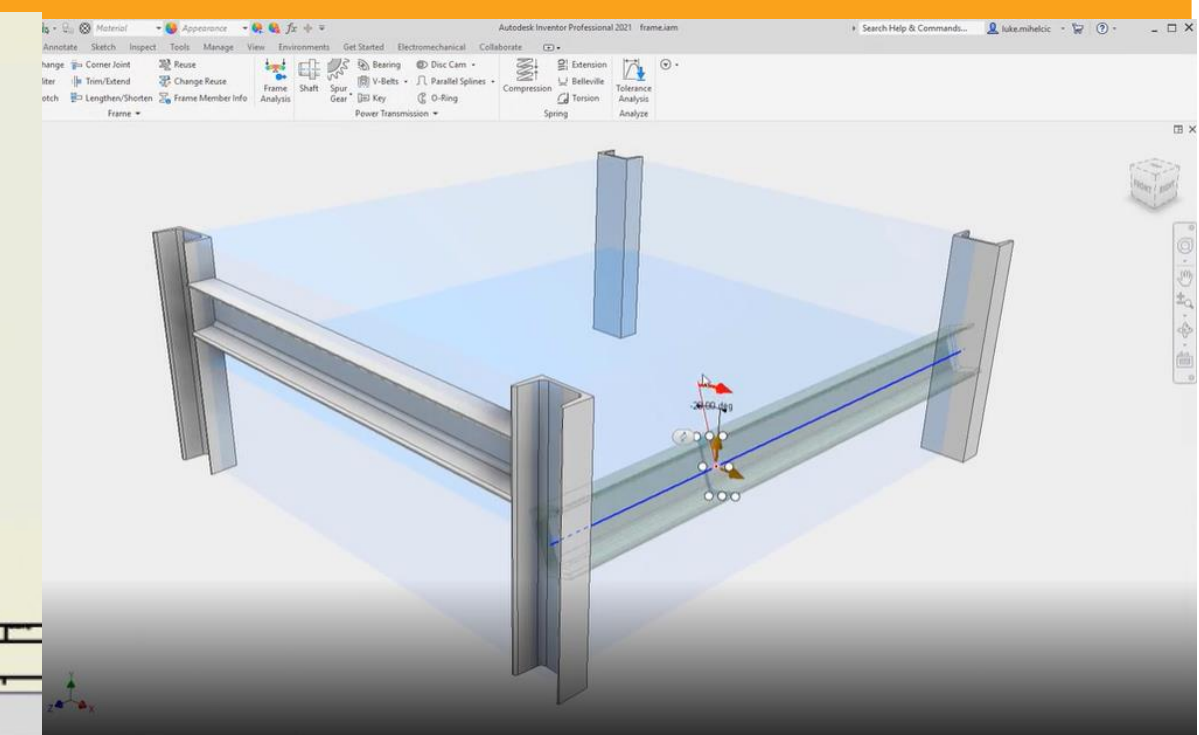
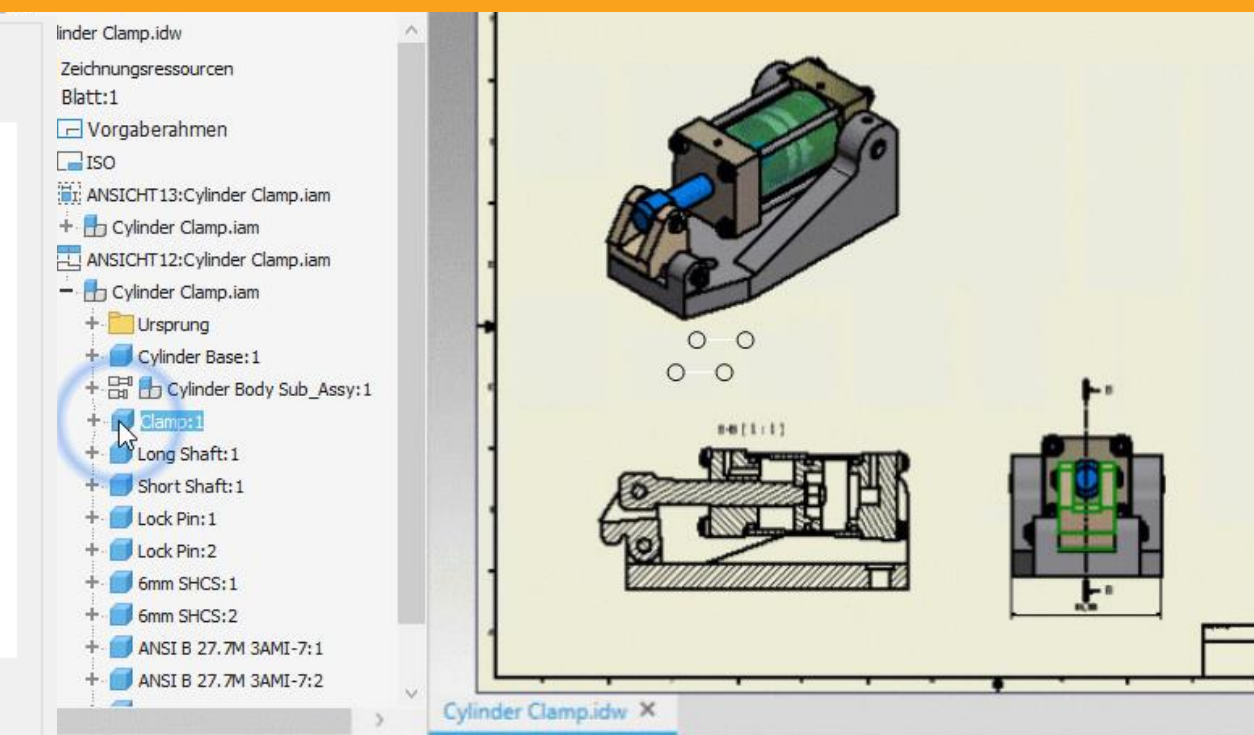
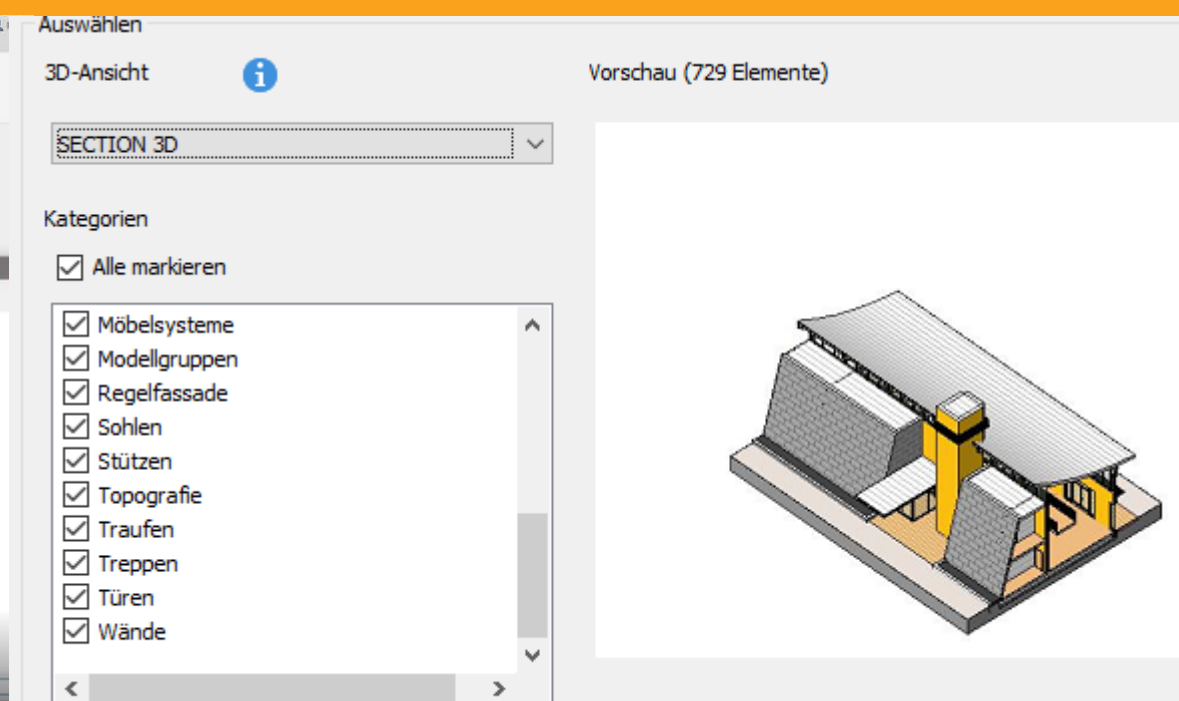
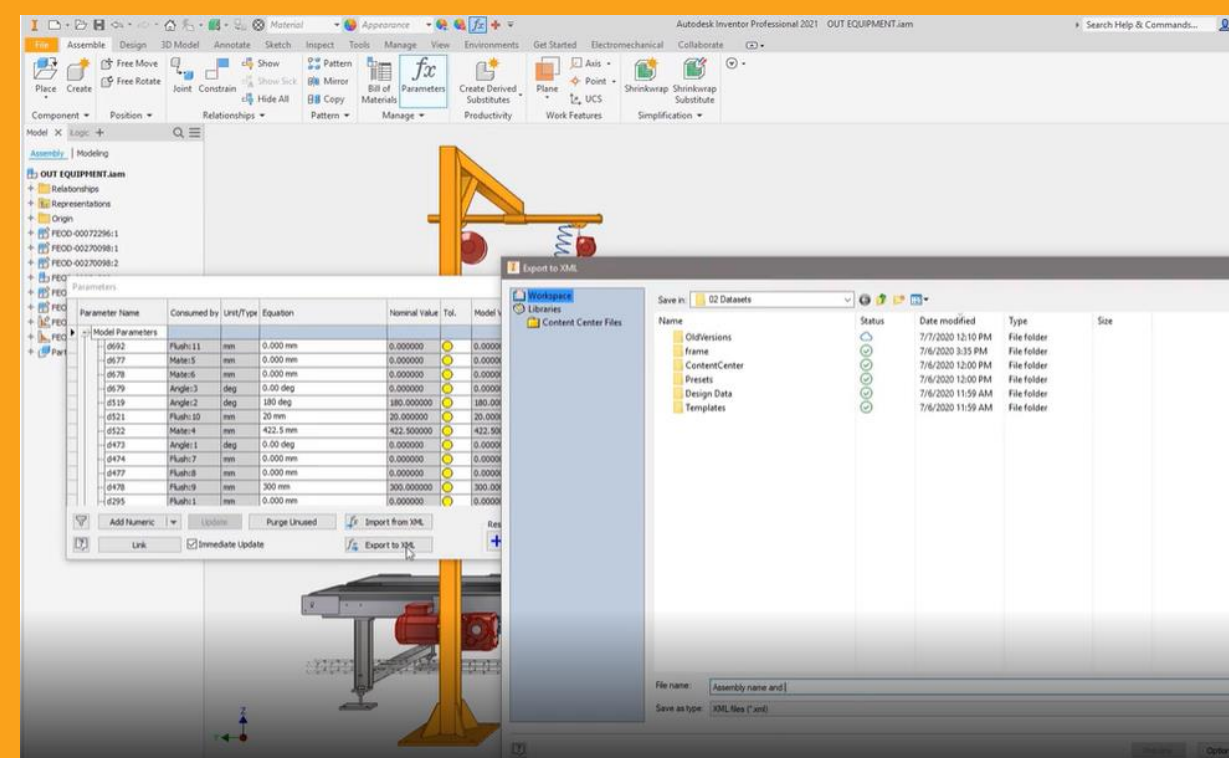


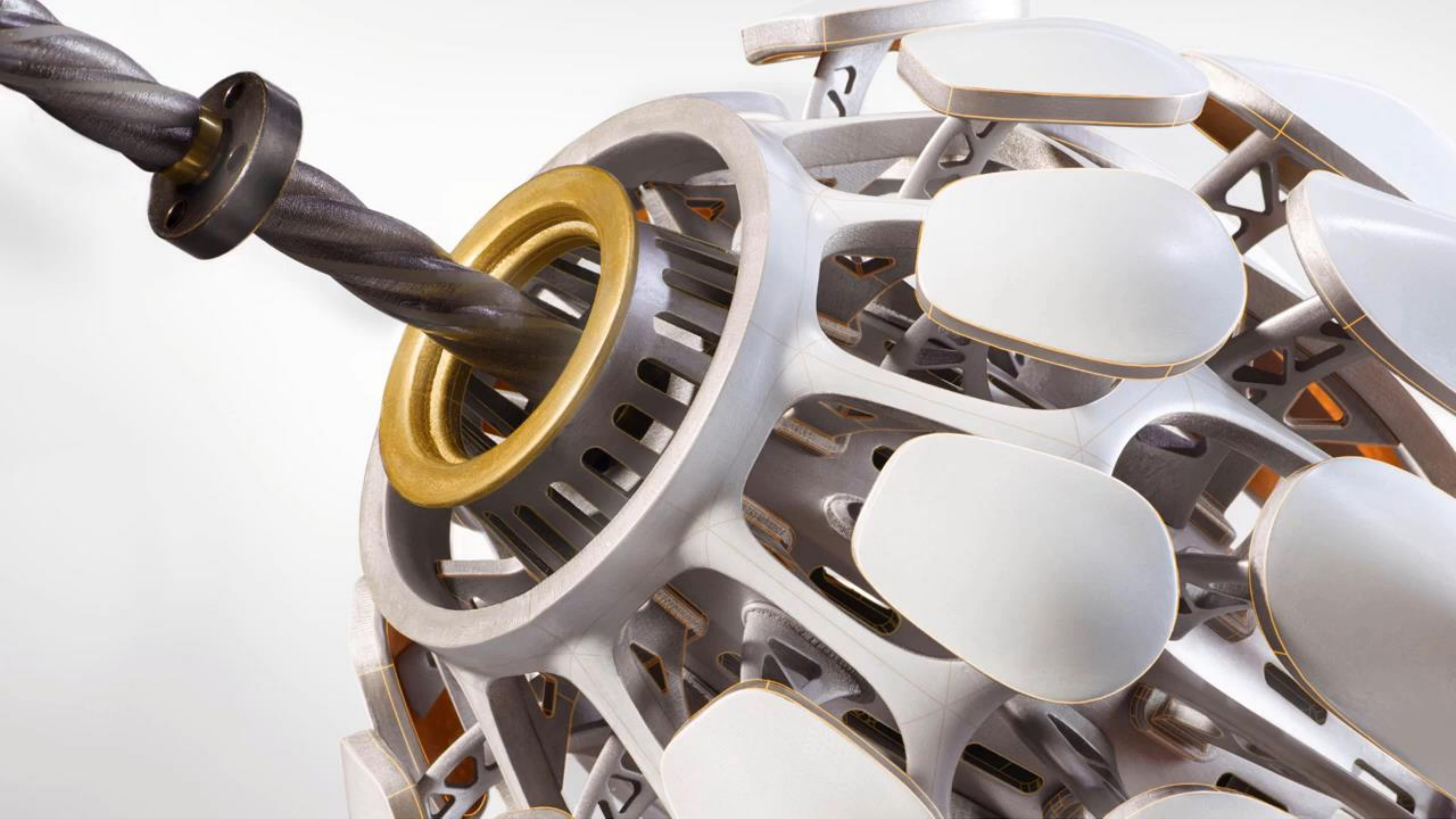
F(x)

DWF

General

Frame Generator

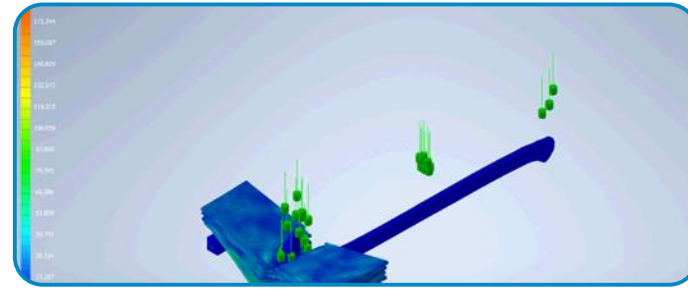




Product Design & Manufacturing Collection 2021



Procut Design & Manufacturing Collection 2021



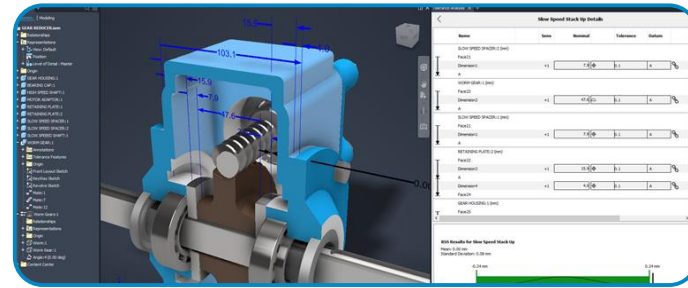
Inventor Nastran

- Quasi-static (no inertia)



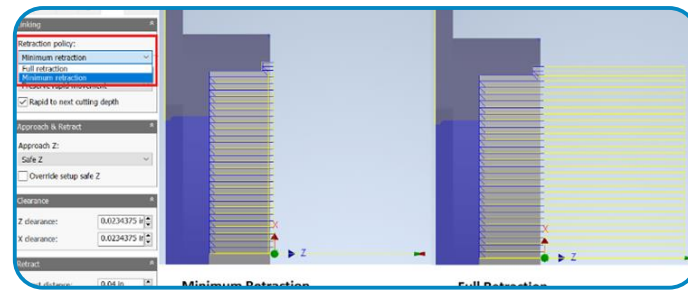
Inventor Nesting

- Overall usability improvements
- Increased Automation



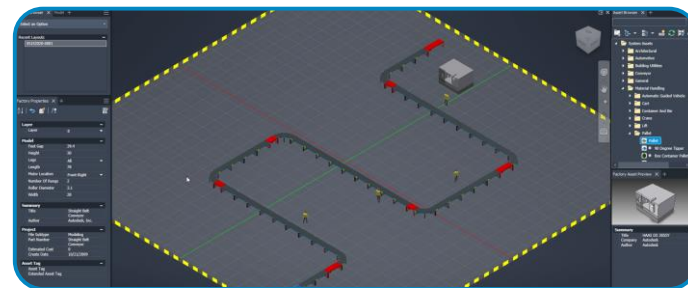
Inventor Tolerance Analysis

- assembly stability issues that contained:
- Tolerance Feature annotations
- More Joints than Constraints



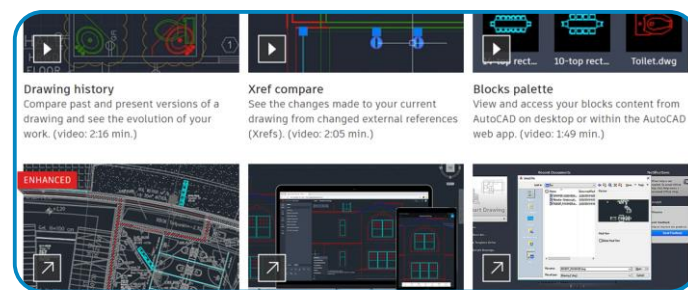
Inventor CAM

- Turning
- Overall usability improvements



Factory Utilities

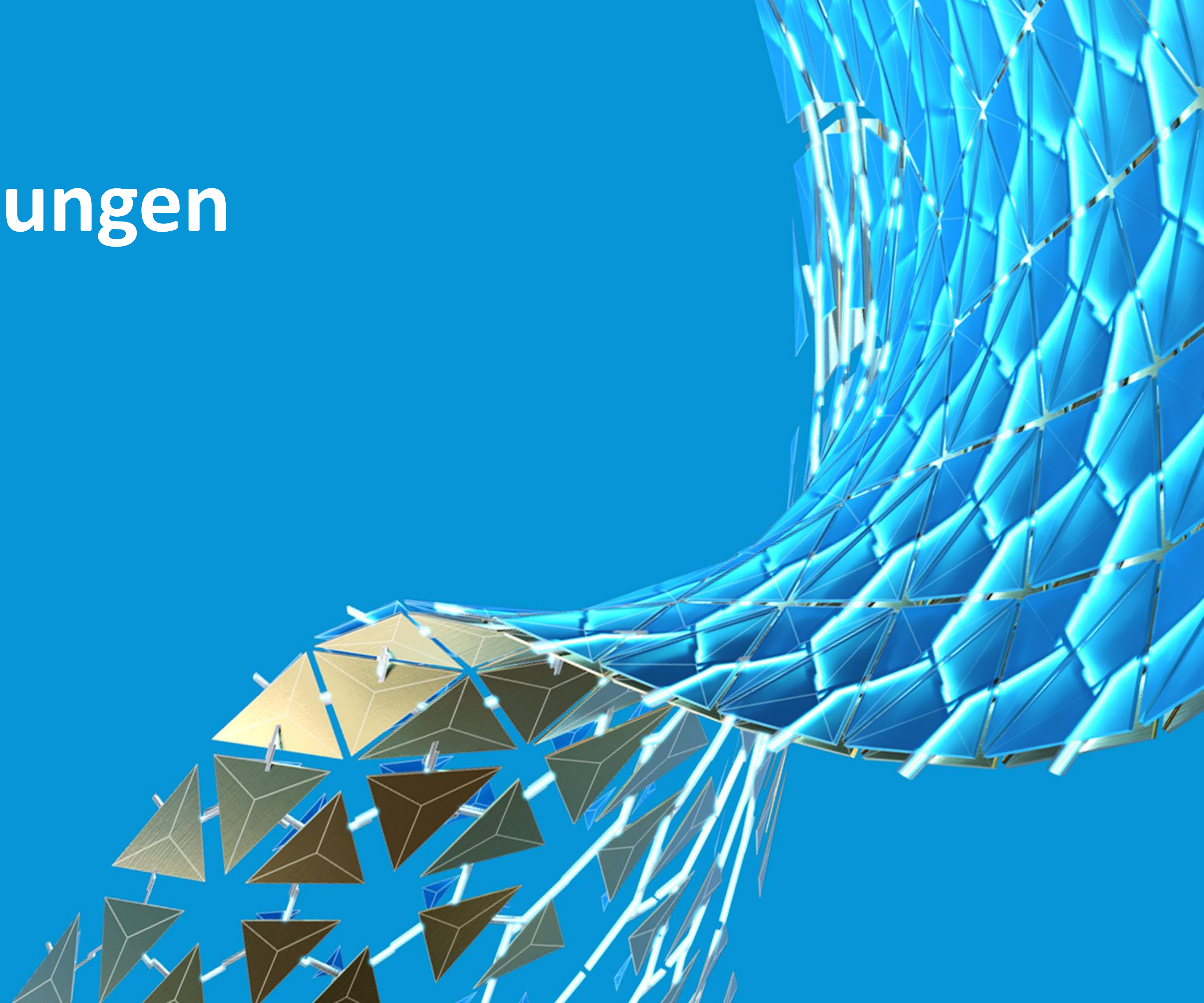
- “color-controlled” connections
- Import Asset Properties

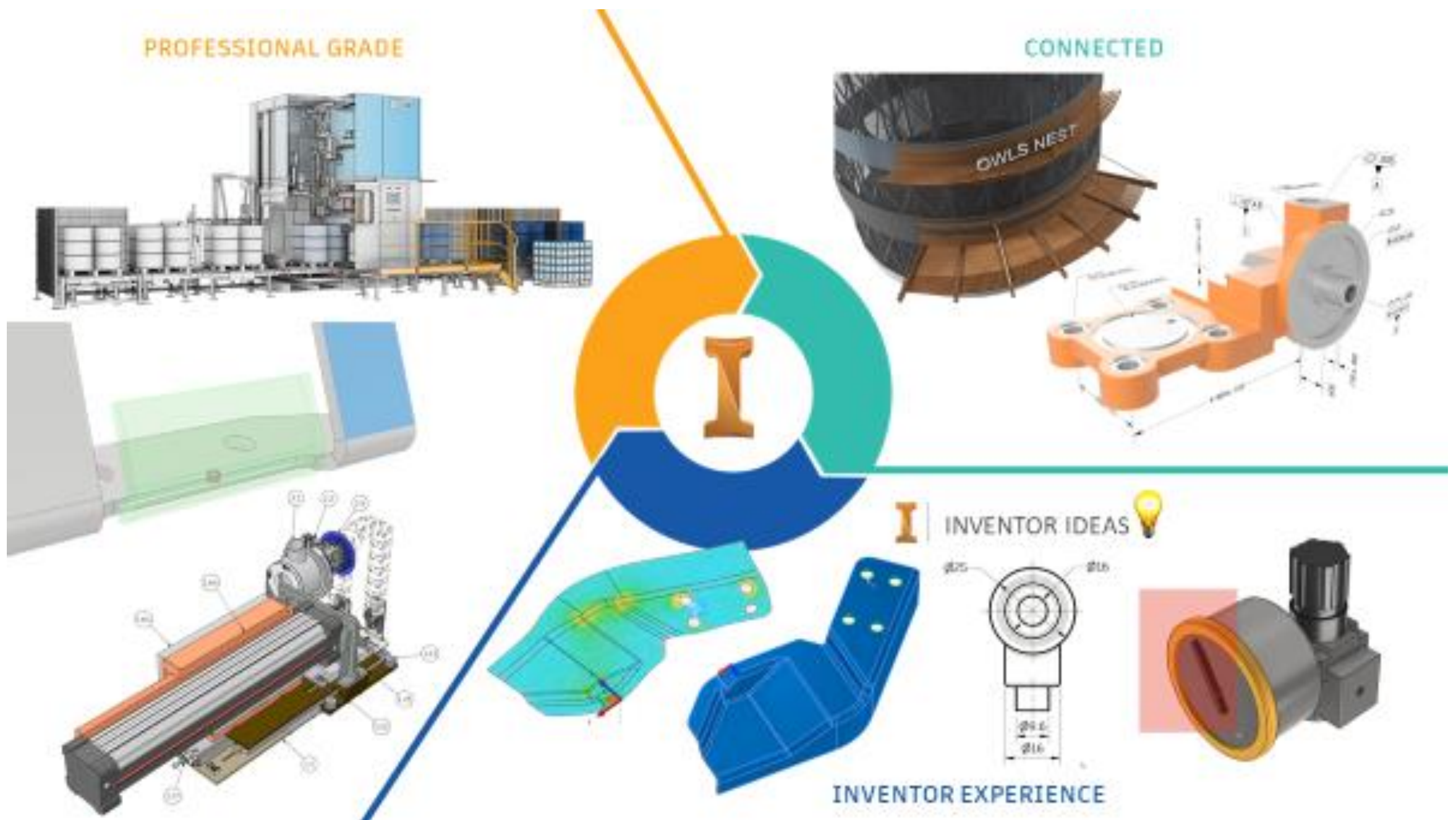
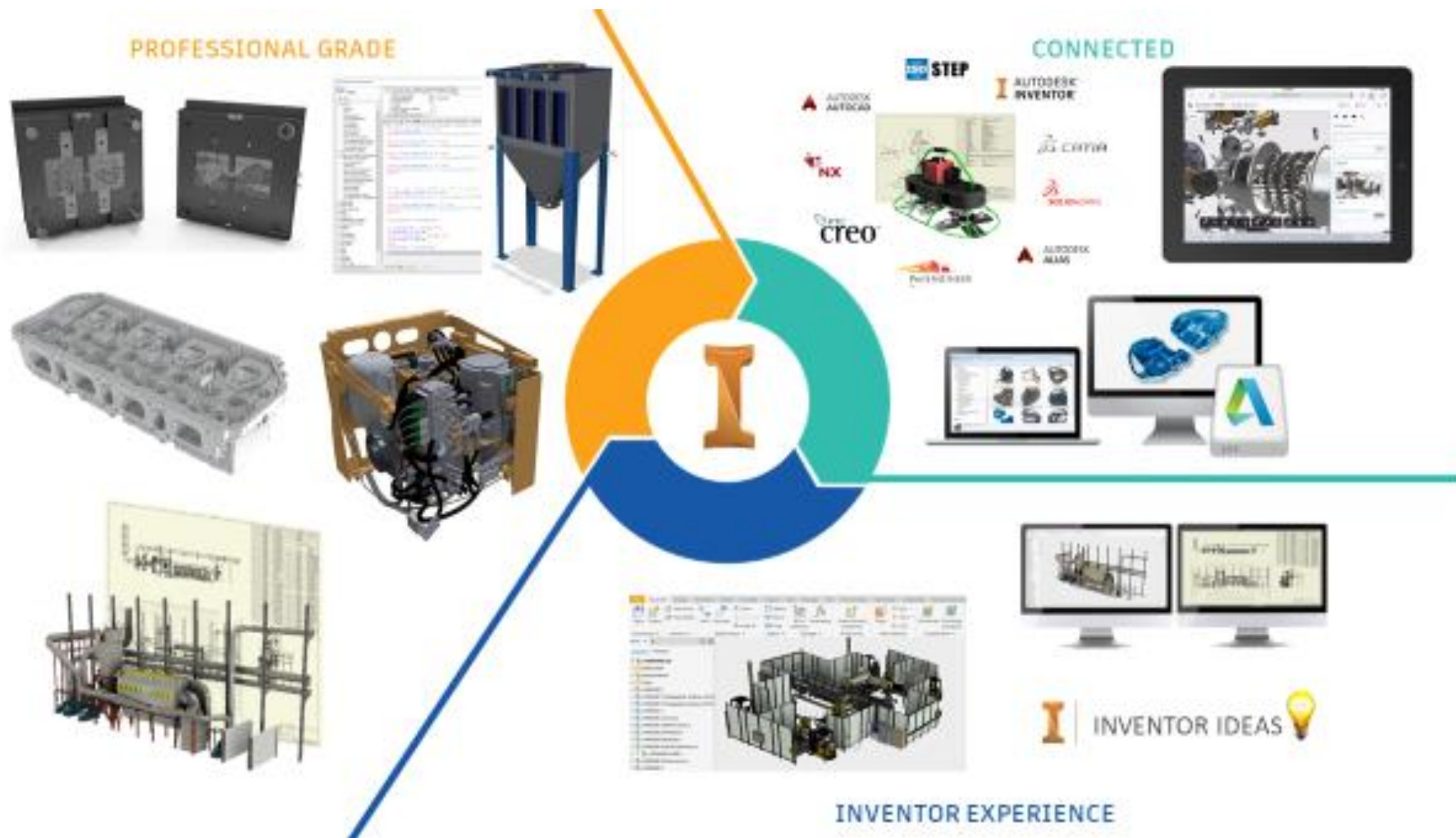


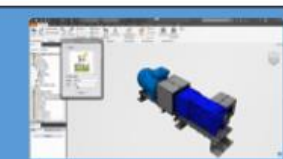
Autocad

- Drawing History / Xref Compare
- Performance Enhancement

Unsere Planungen





Increase Innovation Capacity	
Improve Product Quality	
Win More Business	
Collaborative and innovative design	

Increase Innovation Capacity		
Improved Performance for Assemblies and Drawings	Open, edit, and navigate faster with Inventor assemblies and drawings. Improved 3D Section View (also in Express Mode). 2021: focus on performance enhancements continues	NEW 2021 2020 2019 2018
	Get the design to manufacturing faster. Stay on schedule and save on cost.	
Measure Command	Specify the flange angle By Value or By Reference . Use the By Reference option to select a planar face, a planar surface, an origin plane, or a work plane to set the flange angle.	NEW 2021
	Speeds up the design process of sheet metal parts.	
Unwrap Contiguous Faces	The measure command was simplified to one button as opposed to distance, angle, loop, and area. Measure Command is now supported in Drawing Files. NEW 2021	2018 2019 NEW 2021
	Less time is spent on which button to use. Click one button or keyboard shortcut to measure distance, angle, loop, or area.	
Frame Generator Enhancement	A new Unwrap command can flatten surfaces that cannot be calculated with the standard metal flat pattern commands to Unwrap. NEW 2021	2020 NEW 2021
	Unwrap lets you export a surface that can be exported in different formats.	
Frame Generator Enhancement	Significant improvements are made to the Frame Generator. Many of the Frame Generator commands now use the property panel UI. Improvements in several commands like insert, notch, trim, reuse were added. NEW 2021	2020 NEW 2021
	Design your Frame faster and in an easier way. Use the Integrated functionality and more streamlined workflows to get your work done.	

Why update Autodesk Inventor?
knowledge.autodesk.com

ein Blick zurück

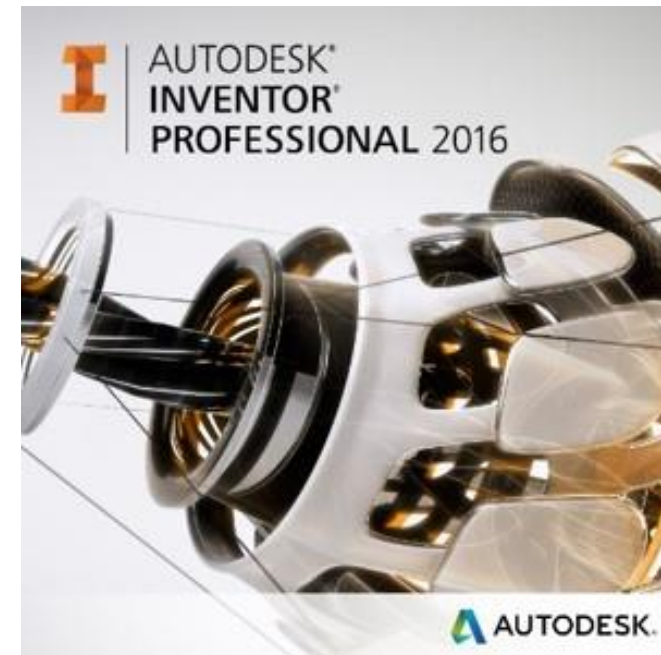


Express mode



Express mode Improvements

Create Component (in place)
Use the section view command
Create / Edit Work Features
Pattern Component
Copy / Mirror Component
Assemble
Point Cloud commands



Multi-thread support

AnyCAD additions,
CATIA
SolidWorks
Pro-E/Creo
NX
Alias
STEP
IGES
Rhino
SAT
Parasolid Binary files



Interoperability

Multithreading
Reference Model update



Performance Enhancements

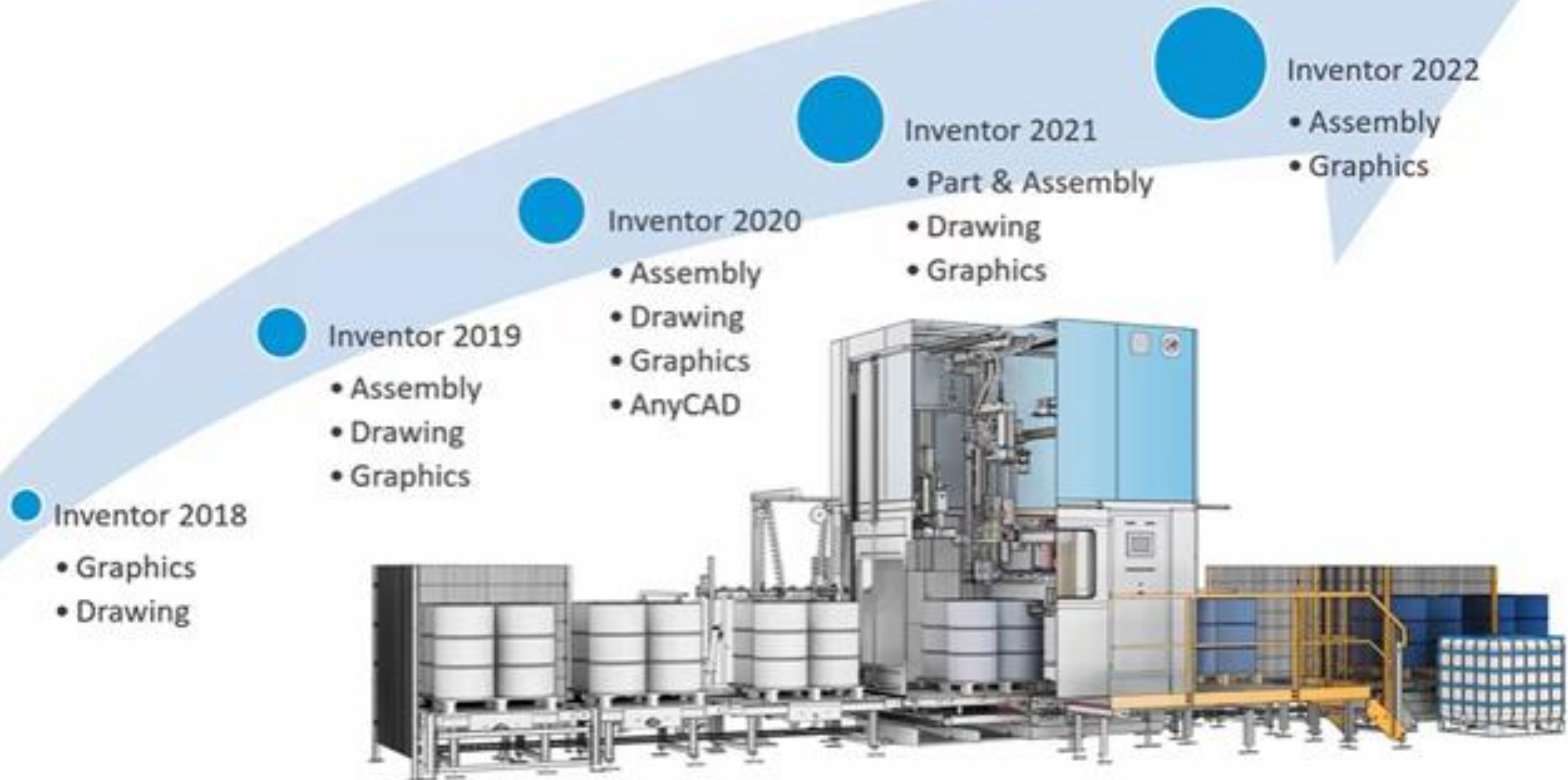
Defer drawings
Turn off model preview
Hidden line removed view display
View navigation - pan, zoom, and orbit
Drawing view creation, preview, and edit



Performance Enhancements

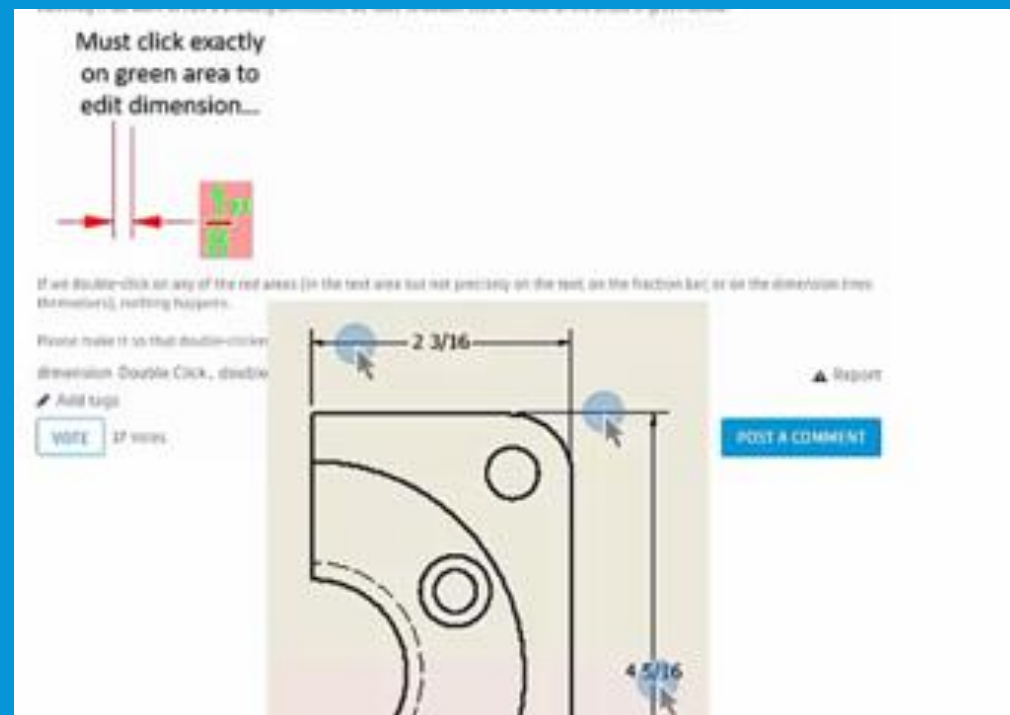
Drawing view creation
Incremental drawing view update
Rendering of 2D geometry
Incremental Rendering
Assembly section view
Edit in place
File open, out of date icon
Assembly feature compute

Performance Enhancements

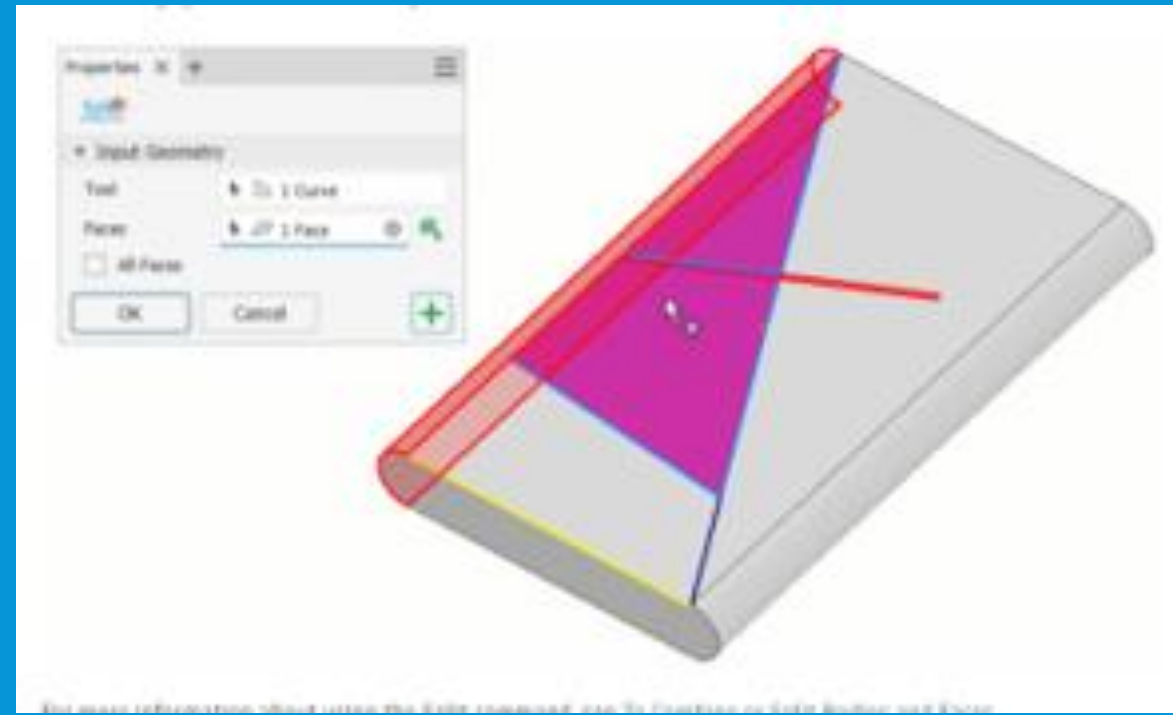


Inventor 2021.2

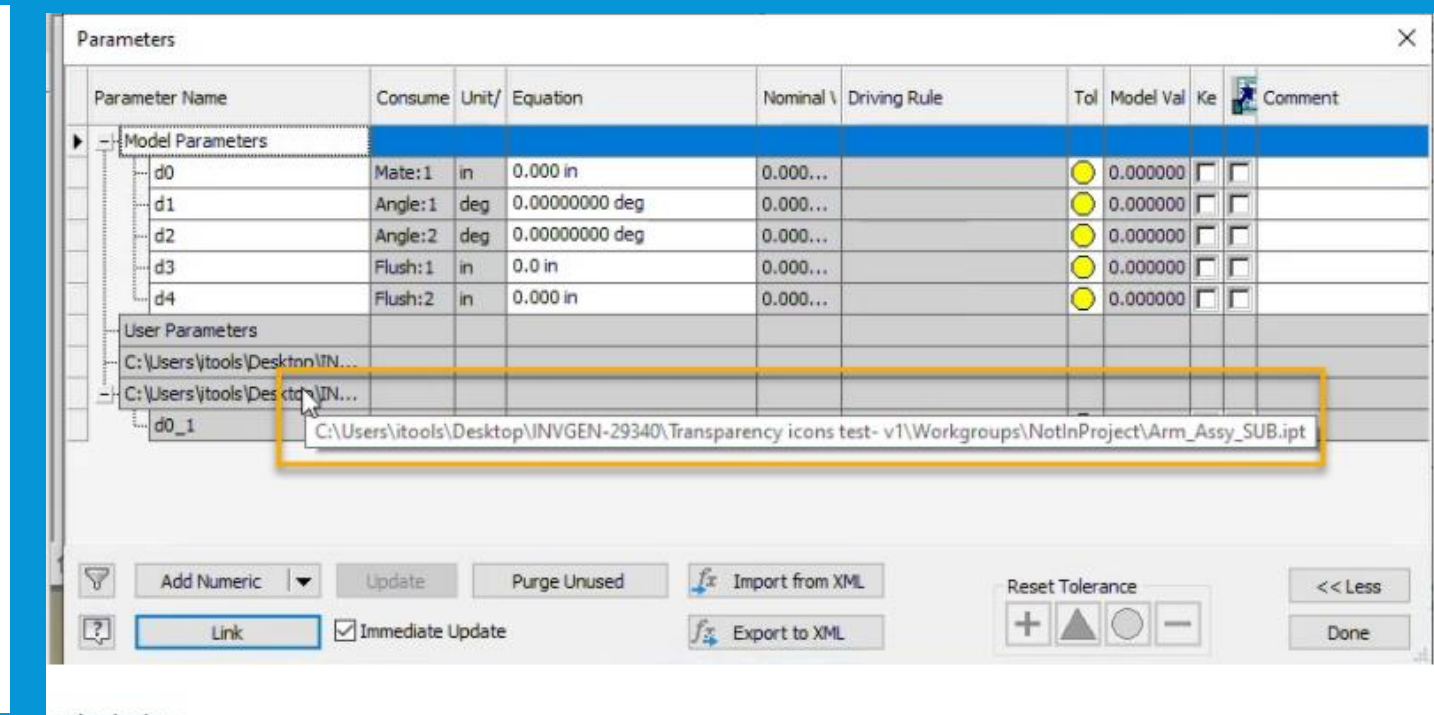
Drawing



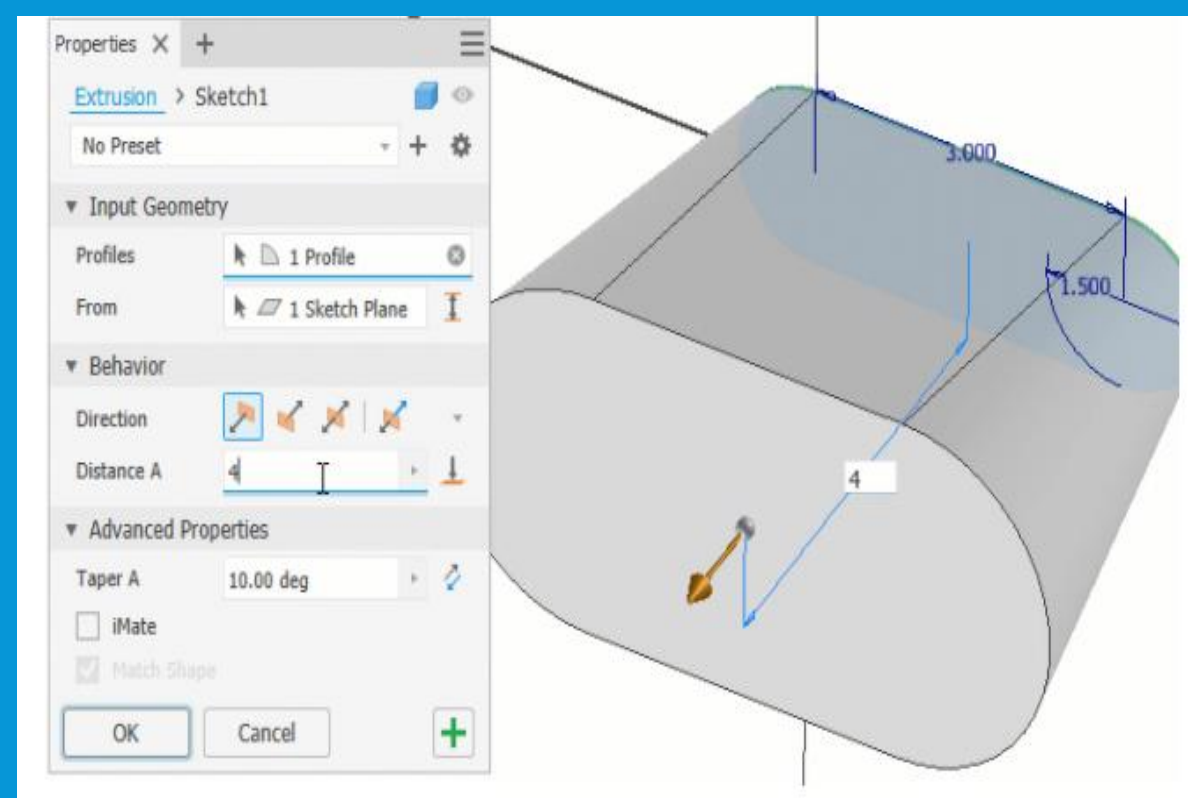
Part



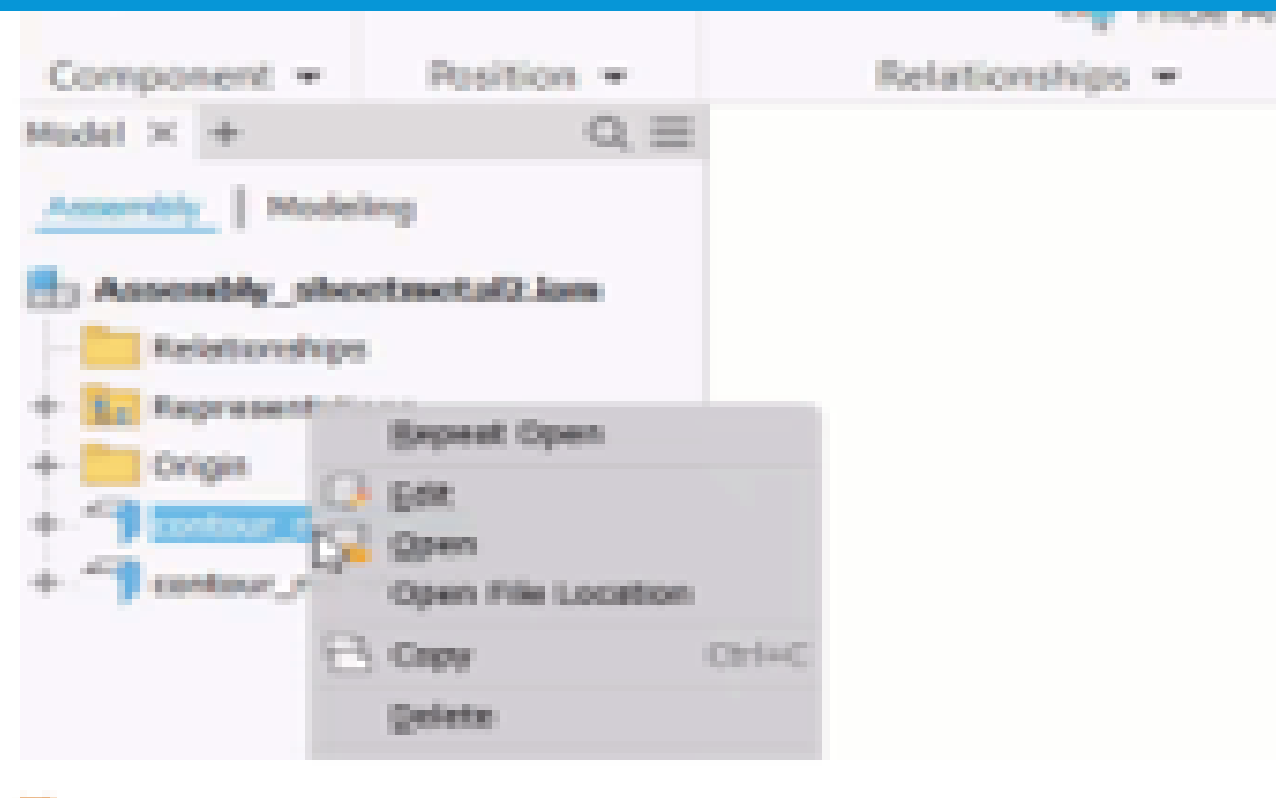
General



Part



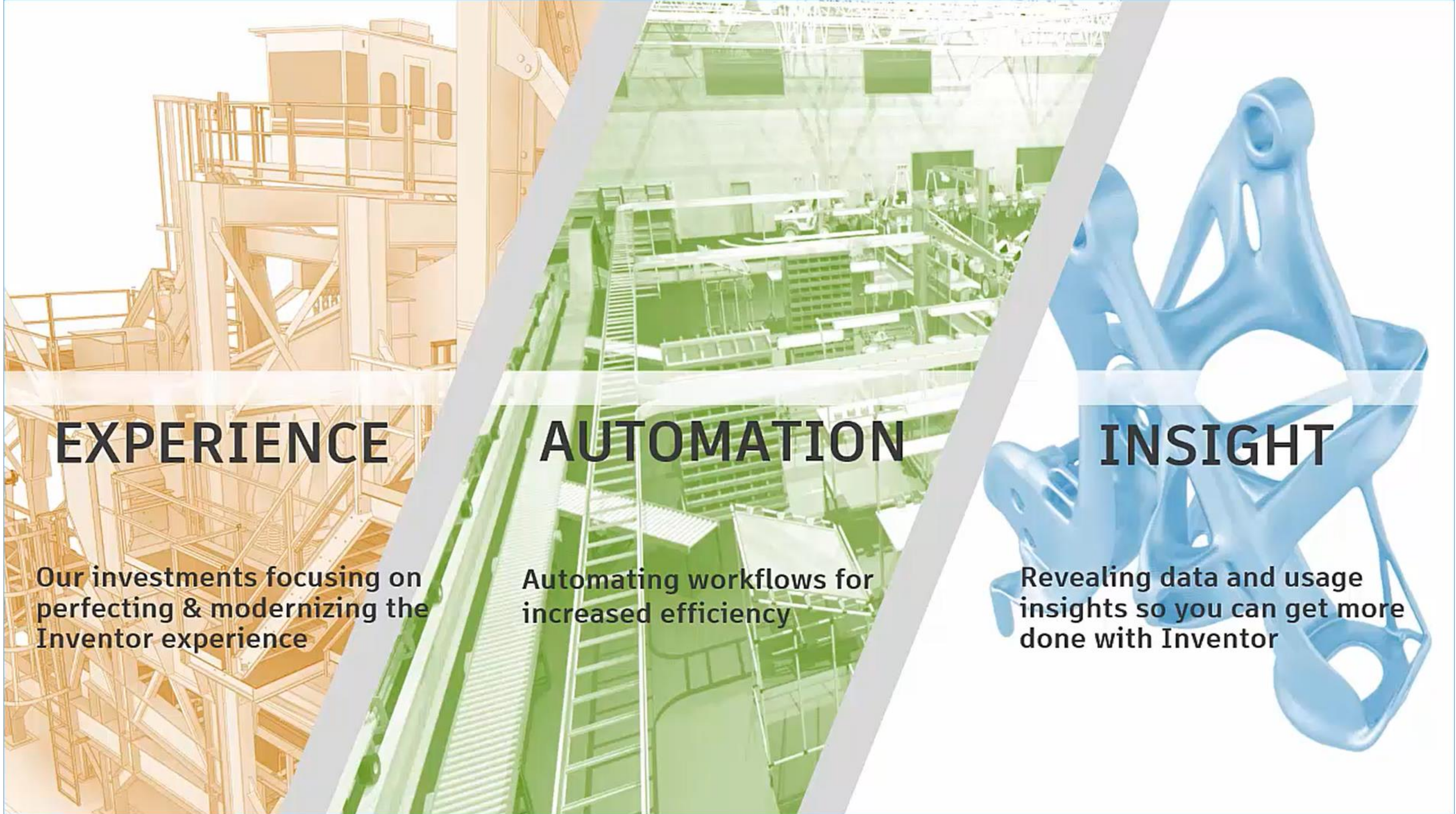
Productivity



Translators



Roadmap Inventor



EXPERIENCE

Our investments focusing on perfecting & modernizing the Inventor experience

AUTOMATION

Automating workflows for increased efficiency

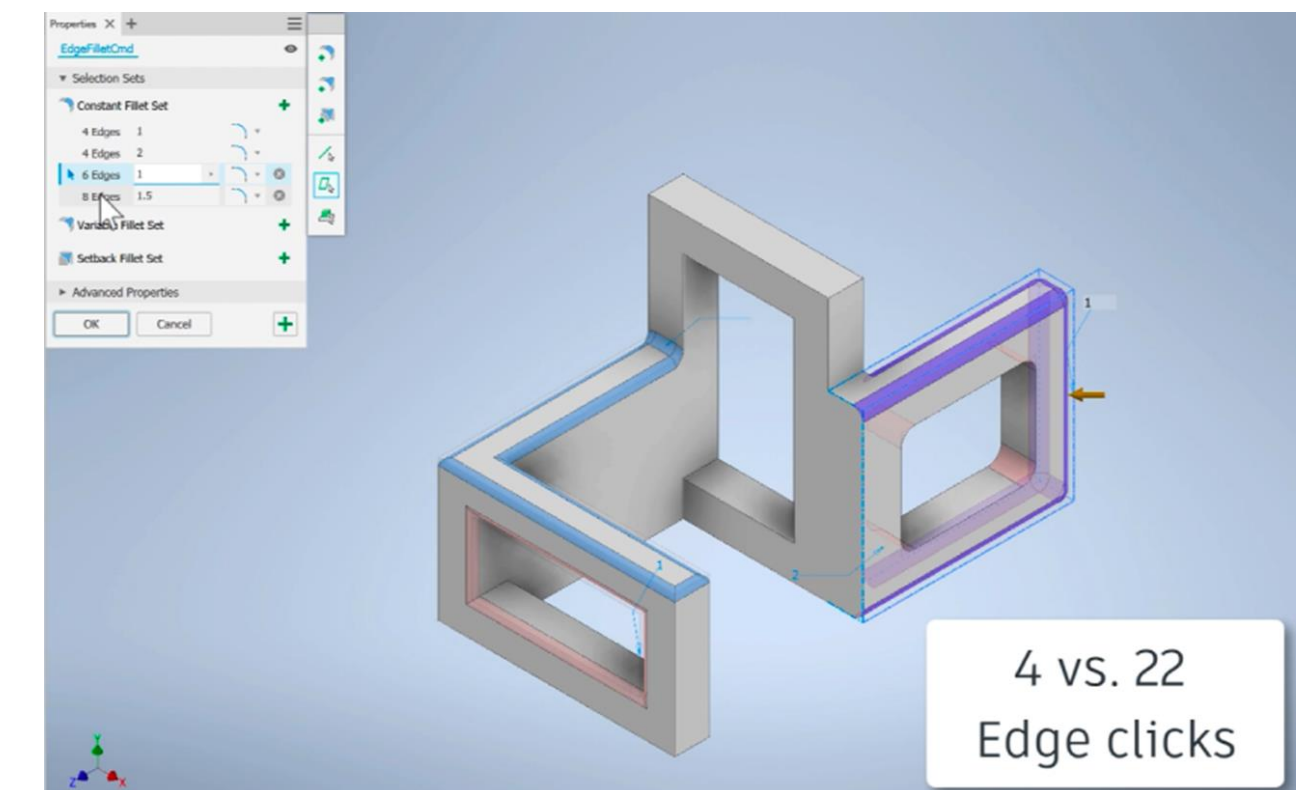
INSIGHT

Revealing data and usage insights so you can get more done with Inventor

Inventor Roadmap

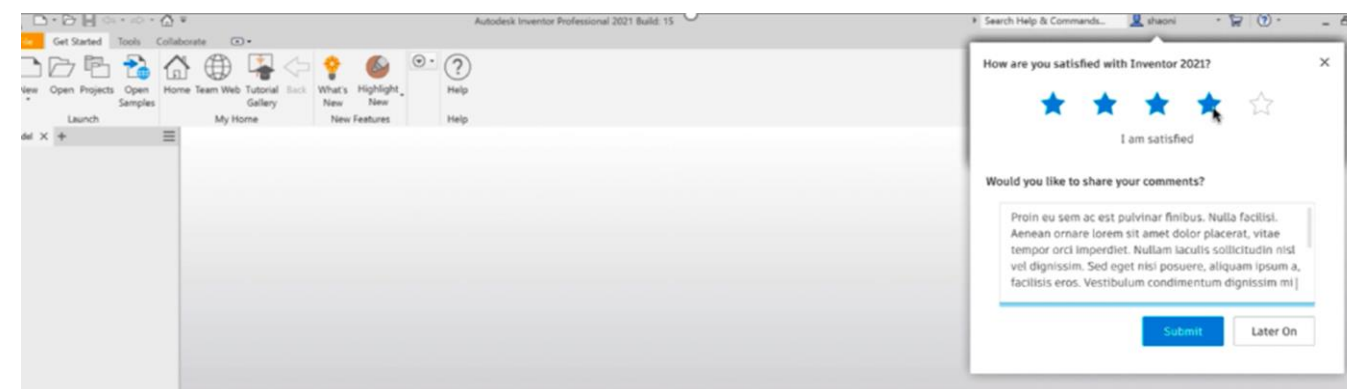
EXPERIENCE

- move commands to the modern panel architecture
- additional selection filters and framework enhancements within the panels for complex commands like **Fillet**, **Chamfer**, and **Loft**
- **Installation / Deployment**
- **Instance properties**



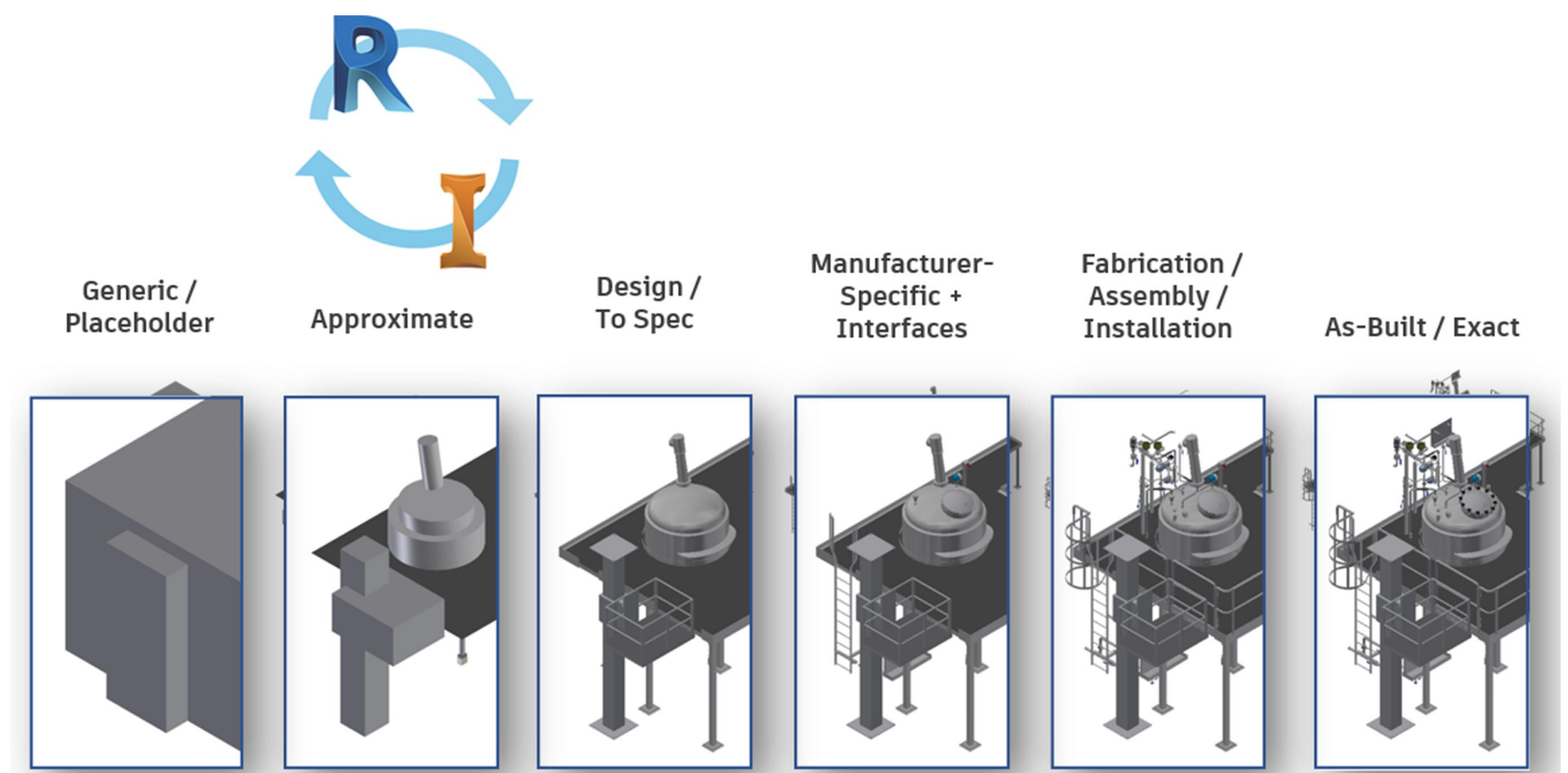
INSIGHT

- provide feedback directly to the Inventor team integrated in Inventor session

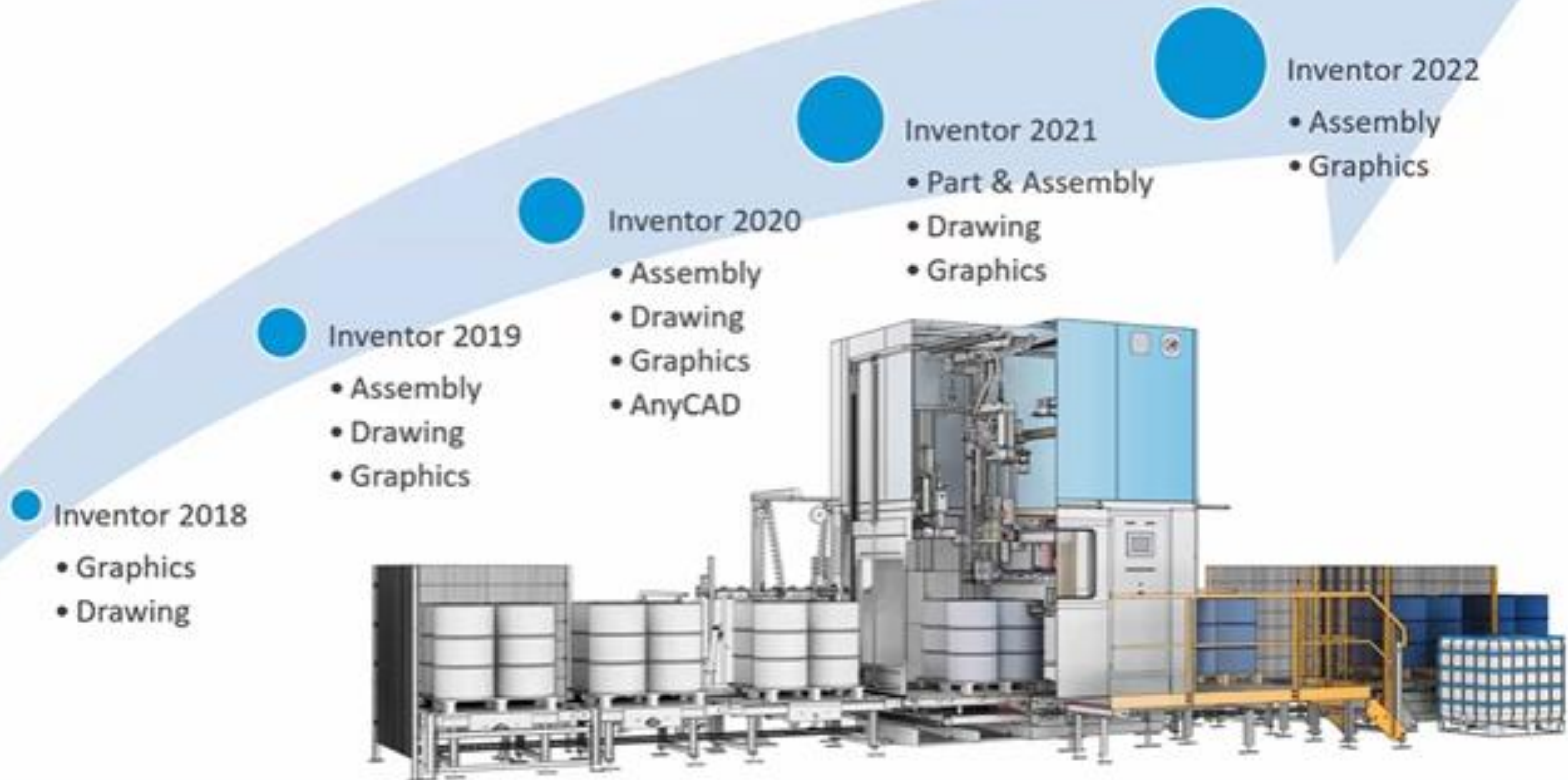


AUTOMATION

- advanced tools to prepare data for Revit Exchange



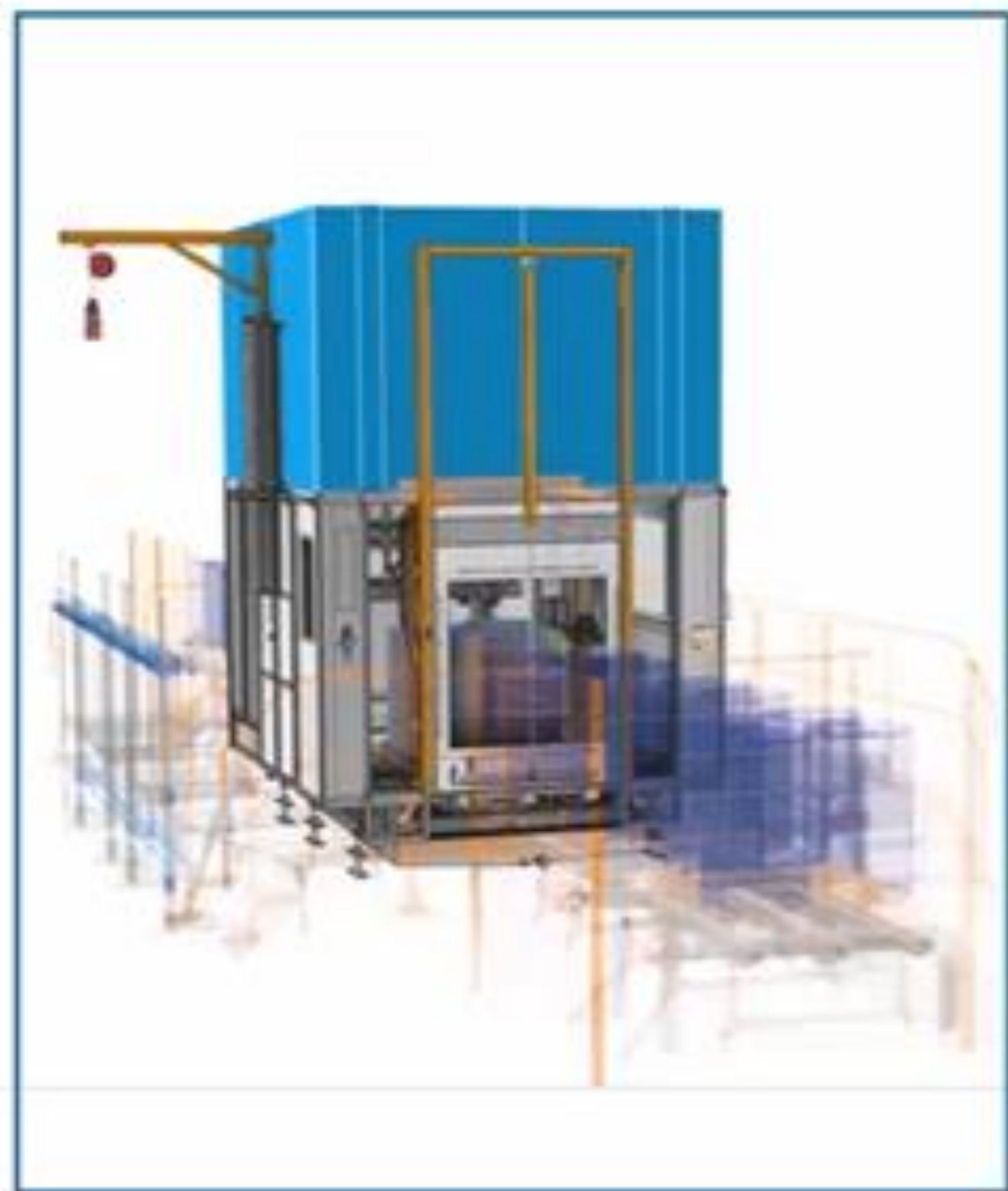
Performance Enhancements



Performance

the 5th Release since INV2018

Continuous improve performance in large assembly modeling workflows



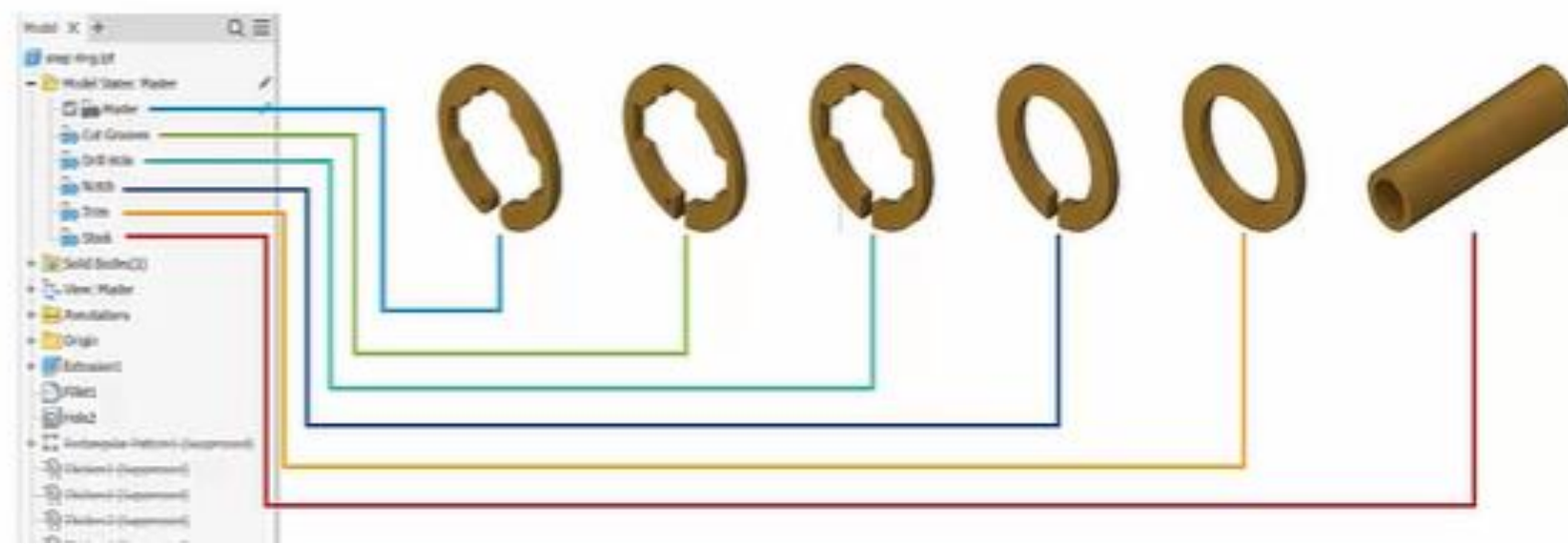
Assembly workflows, In-Place Edit



Speed Navigation



Profile, Solve, Together



Model states

Manufacturing States



- Manufacturing stages: stages of a part and assembling process stages
- Sheet metal (already in first release)
- weldments

Simplification



- Simplify complex design
- Same usage downstream like the other model state

Family of...

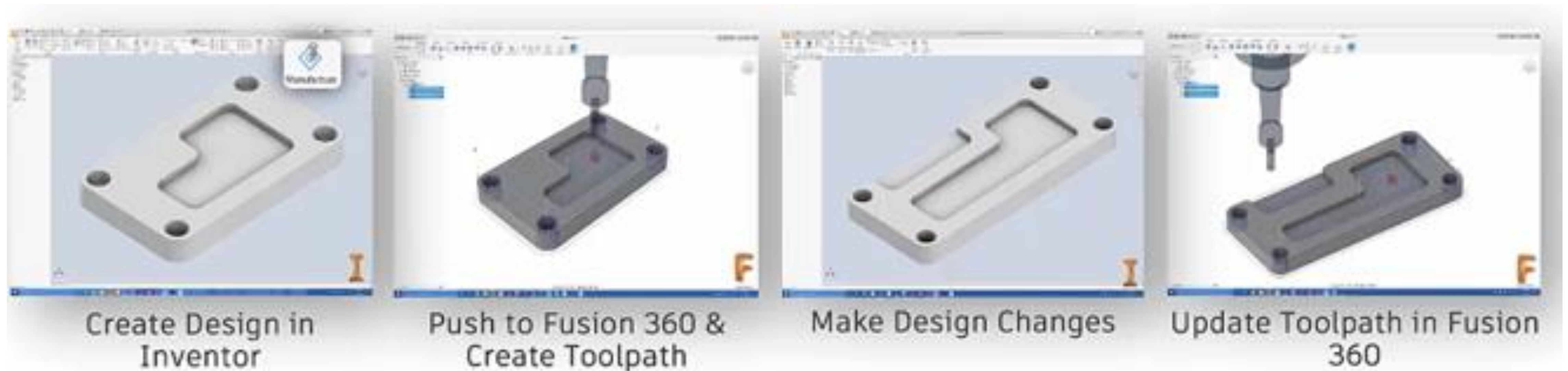


- Build up a product line (part or assembly)
- Stored in SINGLE file!

Stored in SINGLE file!

MFG Interop

- One Click Workflow : Push Inventor Part to Fusion 360
 - Generativ Design
 - Manufacturing Workflow

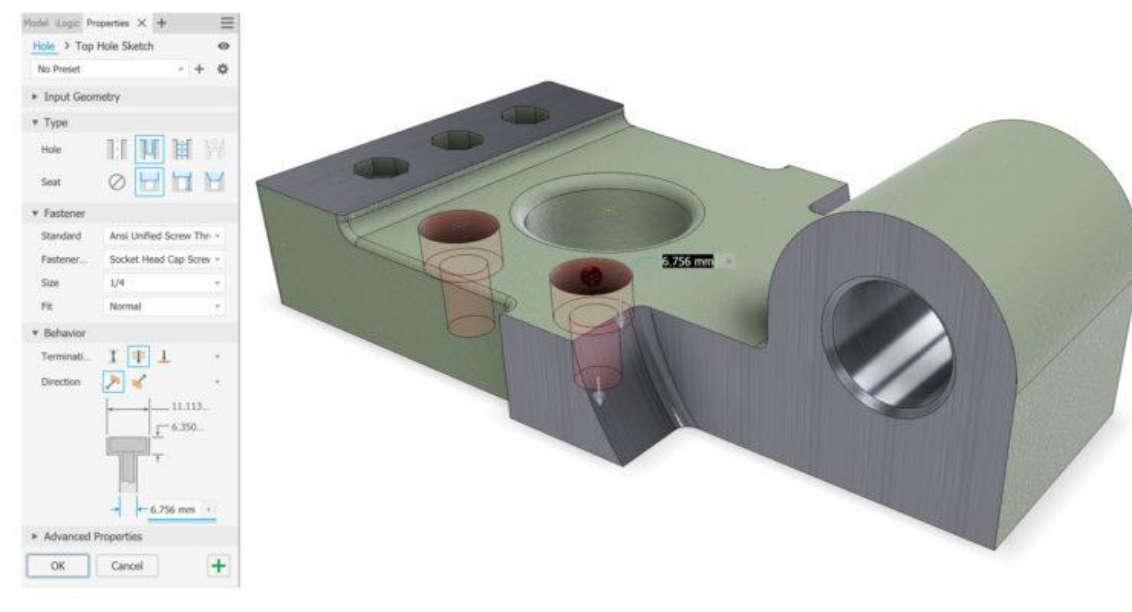


Automatisierungsstrategie



Automatisierung

Parametric Modeling



Specialized toolsets



New product configuration



Sales enablement



Extends capabilities

```
' Get a parameter using two different methods
Dim var1 As Parameter
Set var1 = partDef.Parameters.Item("Length")
Dim var2 As ModelParameter
Set var2 = partDef.Parameters.ModelParameters.Item("Length")

' Verify that the variables are references
If var1 Is var2 Then
    MsgBox "The two variables refer to the same object"
End If
```

Cooperative initiatives



Cooperative initiatives

- Bereitstellung aller Möglichkeiten zur Automatisierung auf der Forge-Plattform.
- die Möglichkeit, die Kern-API von Inventor in der Cloud zu nutzen
- Verlagerung der Verarbeitung in die Cloud

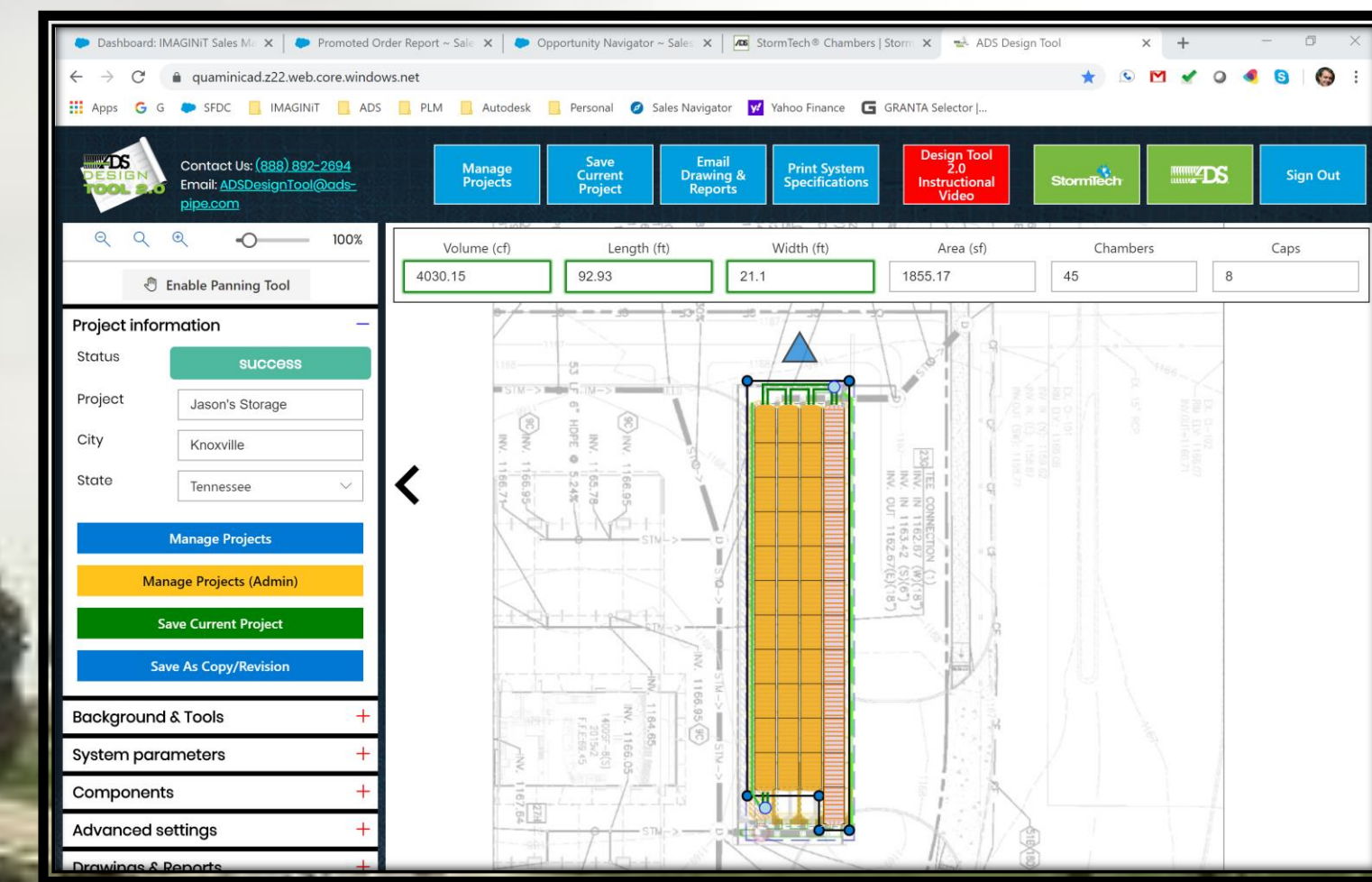


Kunden

Advanced Drainage Systems

ADS liefert Lösungen für die
schwierigsten und beständigsten
Wasserwirtschaftsprobleme.

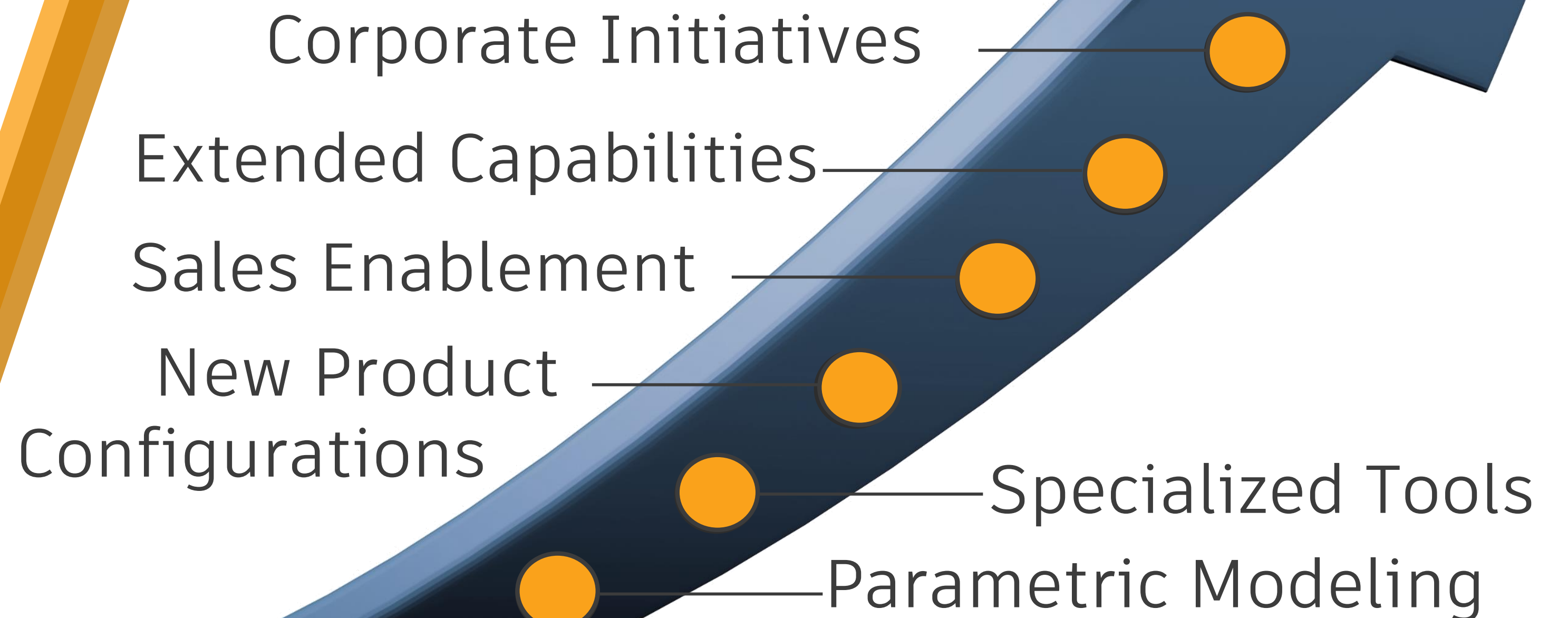
"Wir verkürzten die Entwurfszeit und ermöglichten Kunden, Händlern, Bauingenieuren und Verkäufern die Selbstbedienung über Websites".



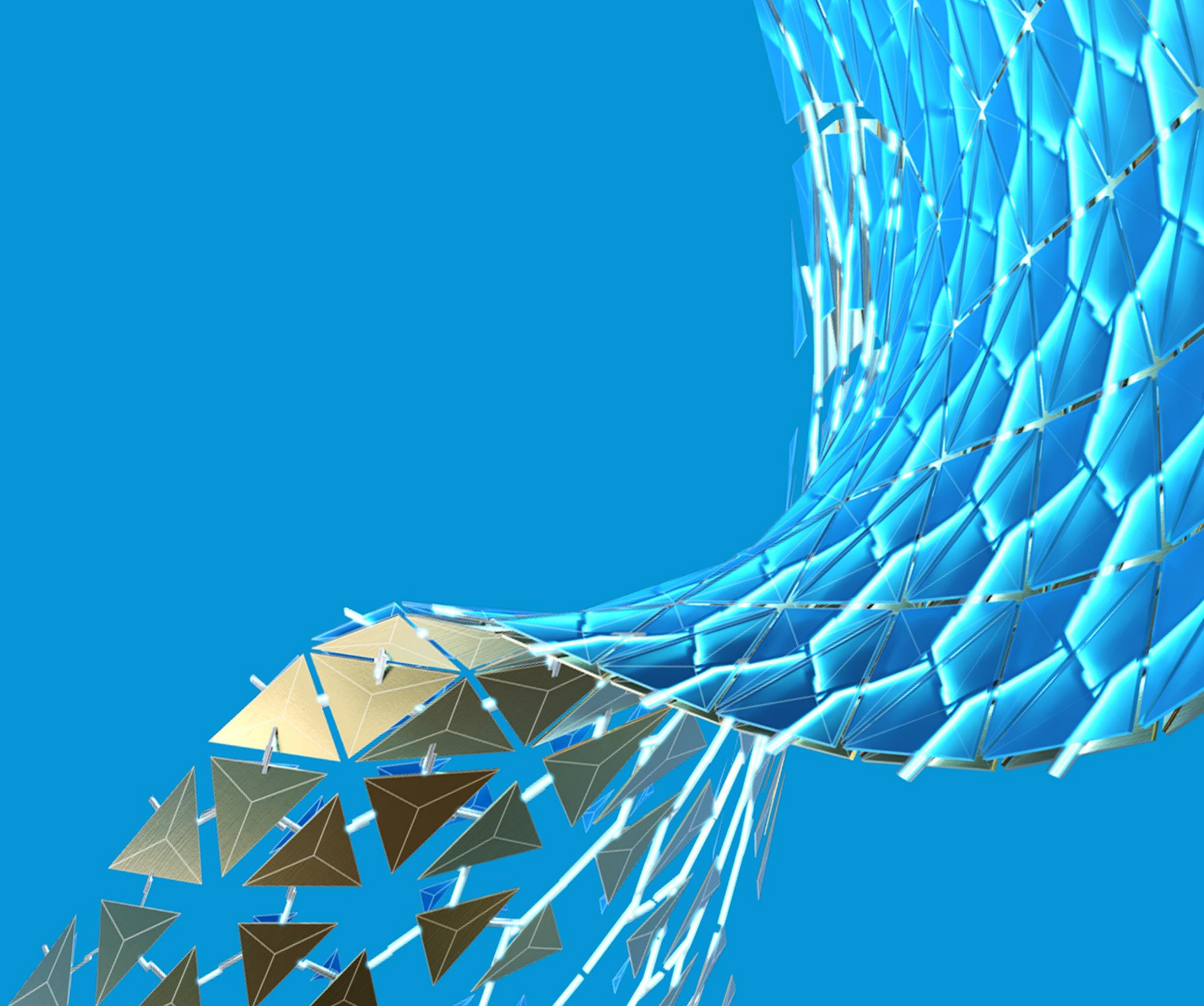
Design Automation

Inventor

Die in Inventor angebotenen Automatisierungswerkzeuge sind speziell als skalierbare Lösung konzipiert, die mit dem Erreichen Ihrer gewünschten Ziele reift



Fusion 360



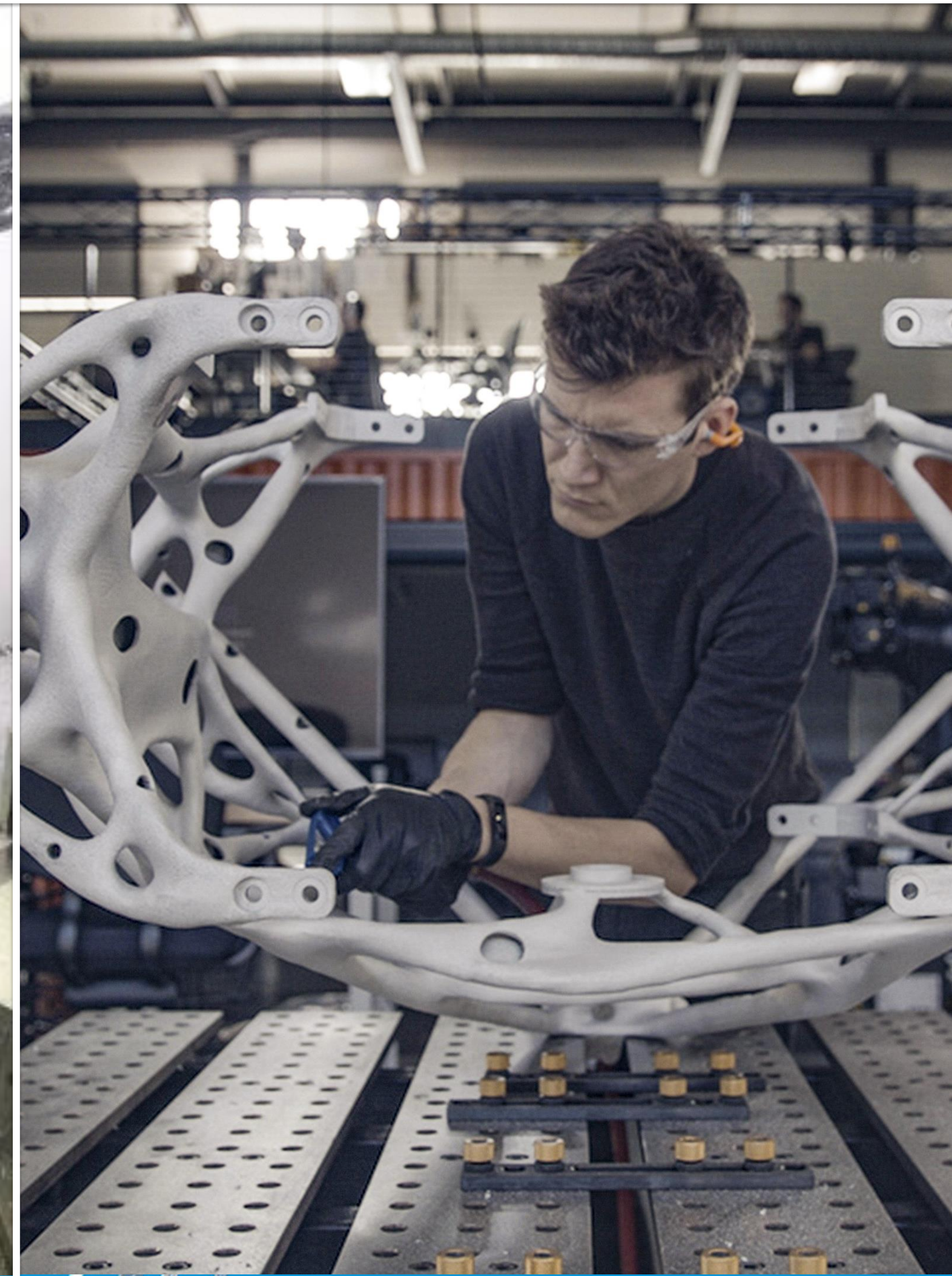
Core Functionality



Advanced Manufacturing



Generative Design





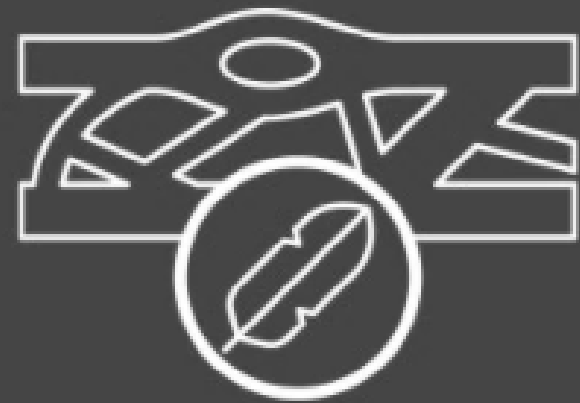
FUSION 360

Ein Produkt grenzenlose Möglichkeiten

Was Sie über **generative Design** wissen sollten

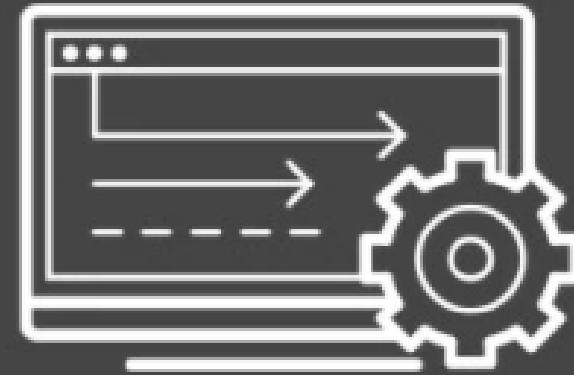
- Fusion 360 und generatives Design ist in Ihrem Abonnement der **Product Design and Manufacturing Collection** enthalten.
- Generatives Design in Fusion 360 ist **NICHT** nur für **additive Fertigung** gedacht. – Es kann Ihnen bei der Lösungsfindung helfen.
- Designs für **2,5-, 3- und/oder 5-Achsen-Fräsooperationen, Wasser-, Laser-, Plasmaschneidoperationen und Druckguss.**
- **Lerninhalte** stehen zur Verfügung
 - Tutorial Gallery" im Register "Get Started", "My Home"-Panel auf dem Ribbon oder eine detailliertere Übersicht über das Tutorial [here](#).

Generative Design



GEWICHTSREDUZIERUNG

Reduktion des Gewichts
und Materialverbrauchs
unter Einbehaltung der
Konstruktionsziele



LEISTUNGSOPTIMIERUNG

Untersuchung mehrerer
Fertigungsmethoden.
Optimierung der
Widerstandsfähigkeit und
Behebung von Schwachstellen



BAUTEILKONSOLIDIERUNG

Untersuchung
unterschiedlicher
Konstruktionslösungen um
Montagekosten zu senken und
die Lieferkette zu vereinfachen.

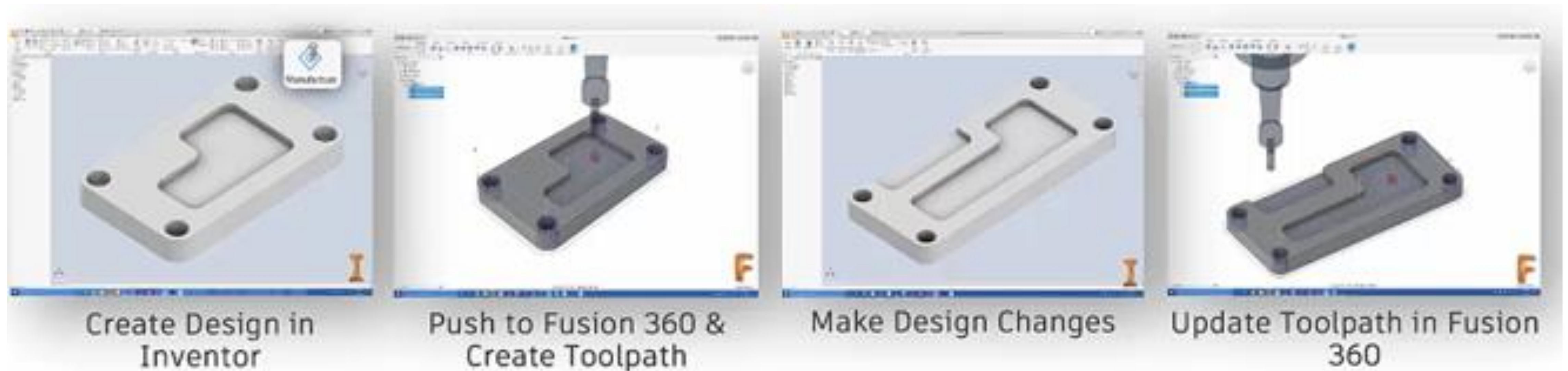


NACHHALTIGKEIT

Reduktion des Gewichts und
der Produktionsabfälle.
Wahl nachhaltigerer
Materialien.

Zusammenspiel Inventor-Fusion 360

- One Click Workflow : Push Inventor Part zu Fusion 360
 - Generativ Design
 - Manufacturing Workflow



CAMplete

Autodesk Acquires CAMplete

- CAMplete Solutions Inc., mehr als 20 Jahre Lösungen für Post-Processing und Maschinensimulation
- Partnerschaften mit den weltweit führenden CNC-Maschinenherstellern
- Maschinendefinition, um G-Code für ihre 3- und 5-Achsen-Fräsmaschinen zu simulieren, zu verifizieren und zu optimieren.



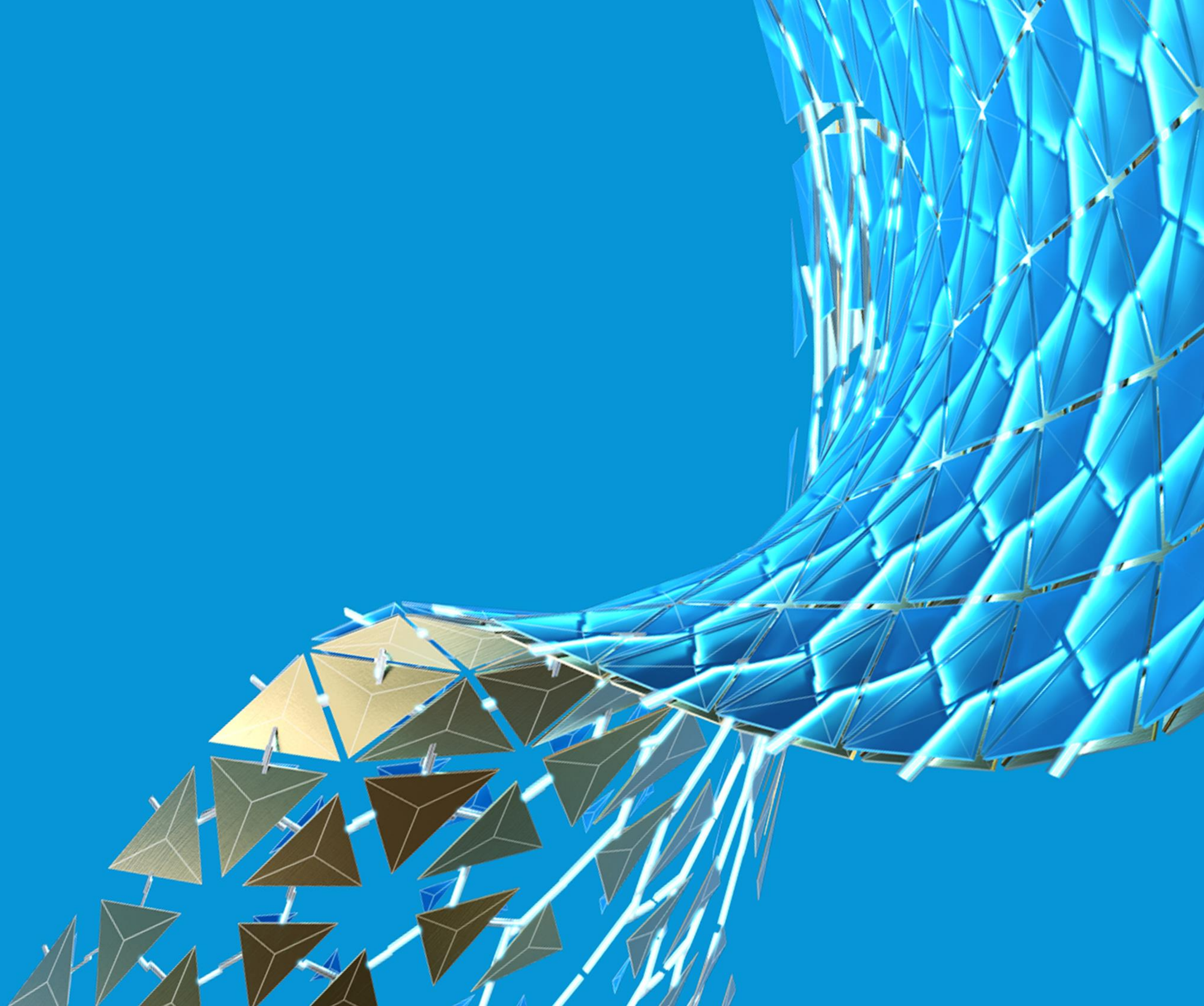


- 22. Oktober

Version 2021.0 - neue Version von Moldflow Insight, Synergy und Adviser

- **More NEWs on Mainstage**

New Trends



Trends in Manufacturing

- Robots
- Virtual reality
- Connectivity



AUTODESK®
PROJECT SUGARHILL



<https://www.youtube.com/watch?v=akJp4j-myal>



Summary

- Ihre Produkt Ideas werden gesehen, validiert und versucht umzusetzen

Make your voice heard

- Neue Ansätze, die durch Cloudtechnologien möglich werden

Forge

Seien Sie gespannt auf die Zukunft!

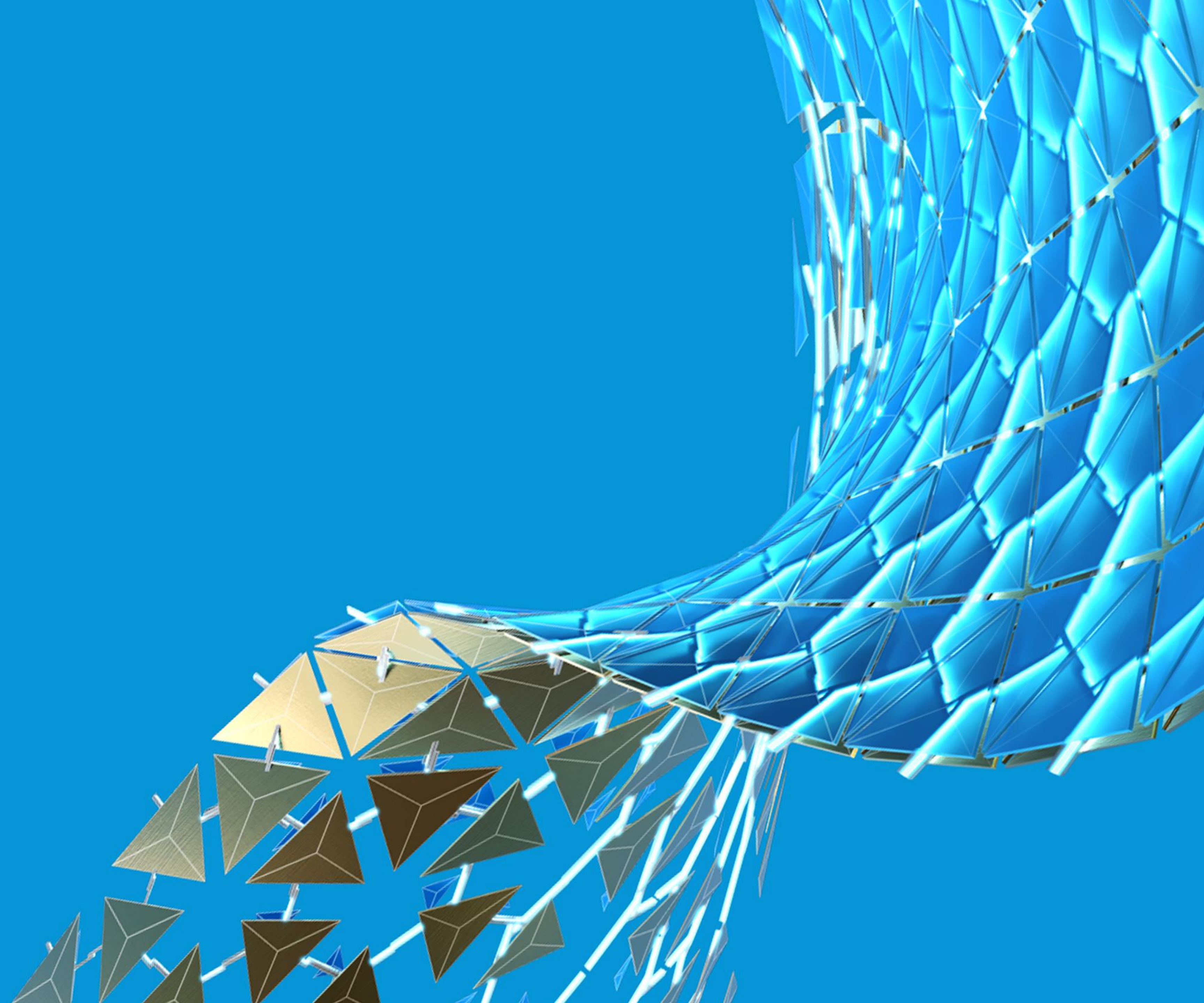


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PDMC 2021



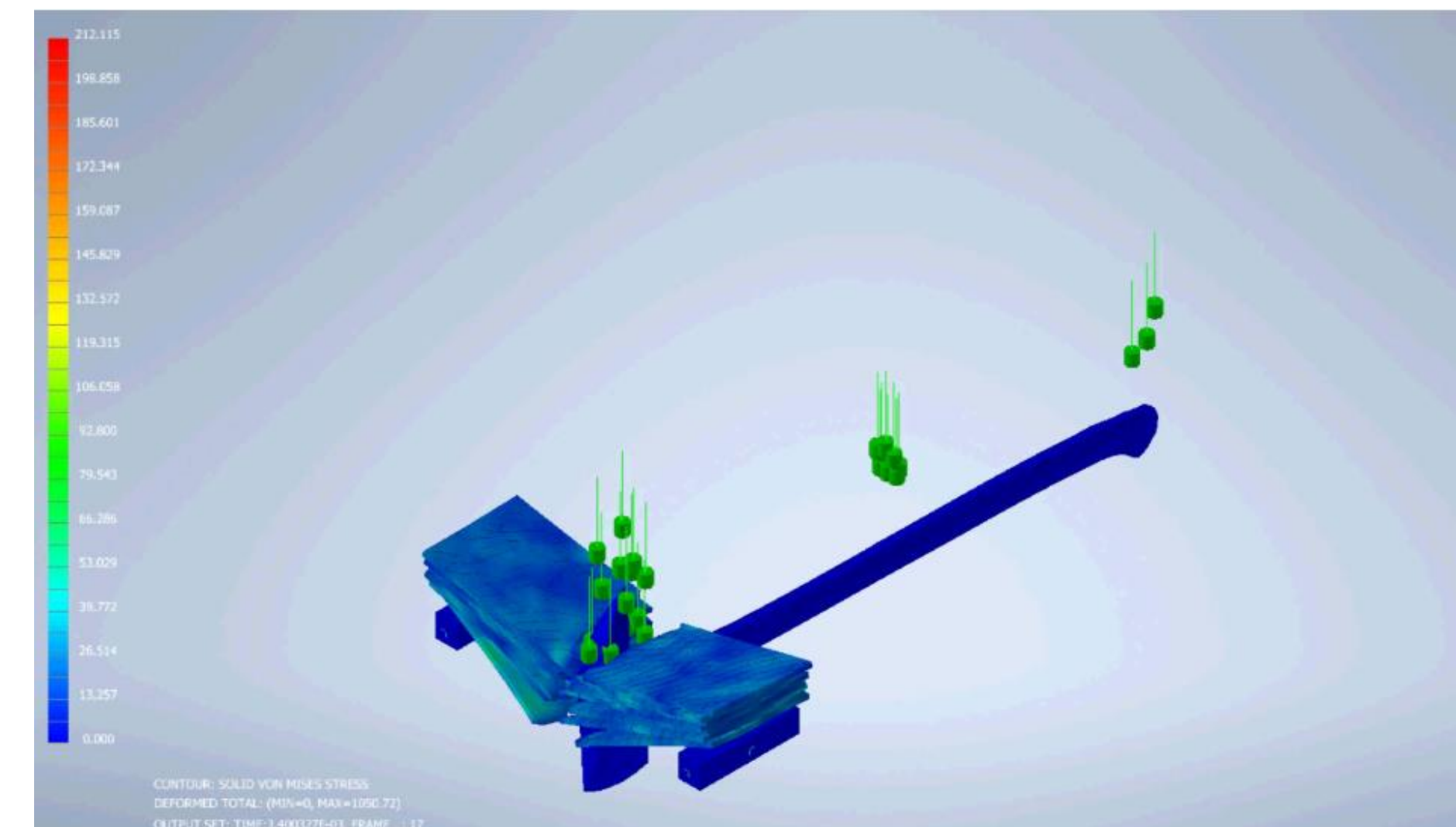
Inventor Nastran

Explicit Analysis ...snap-fit assemblies, drop tests, impact test, or crash simulations

- General element library – solids (TET4 and TET10), shells (only QUAD4), beams, etc.
- Highly nonlinear materials
- Rigid bodies can be created by assigning a “Rigid” material
- Large deformations and rotations
- Material deletion
- Large arbitrary and evolving contact deformations

Quasi-static analysis

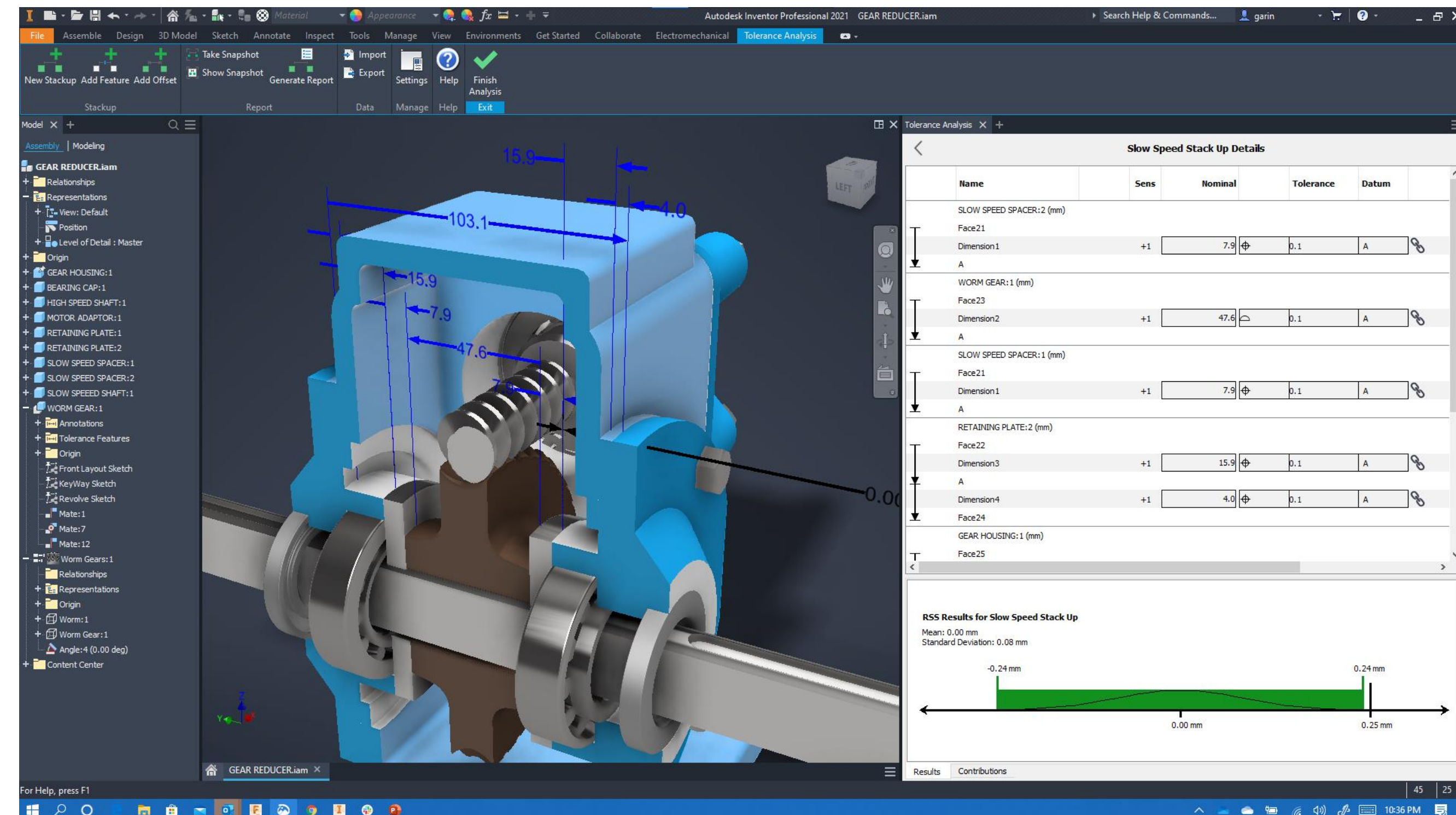
- No inertia - Explicit solver
- automatically scale all the time-dependent curves



Inventor Tolerance Analysis

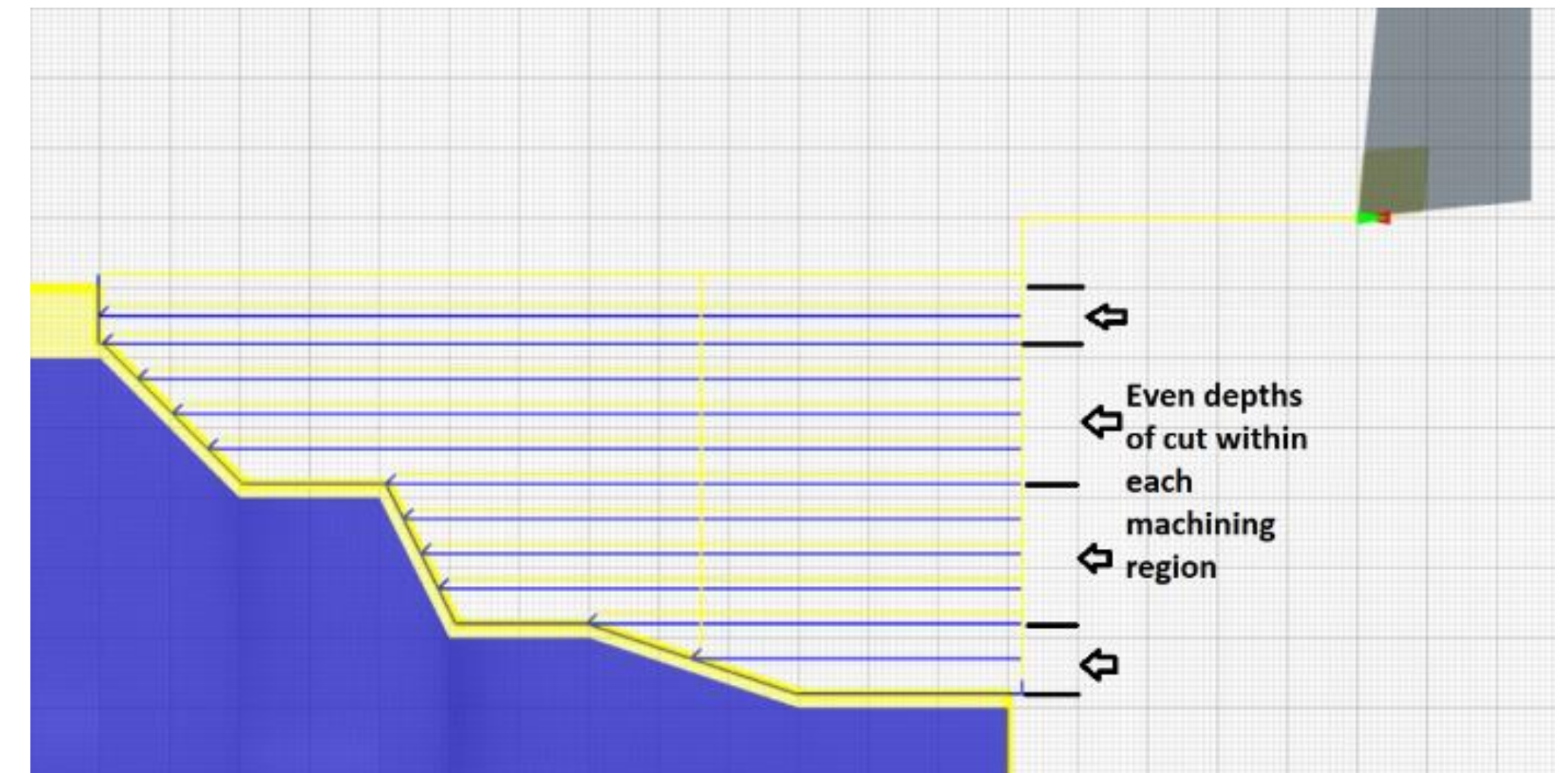
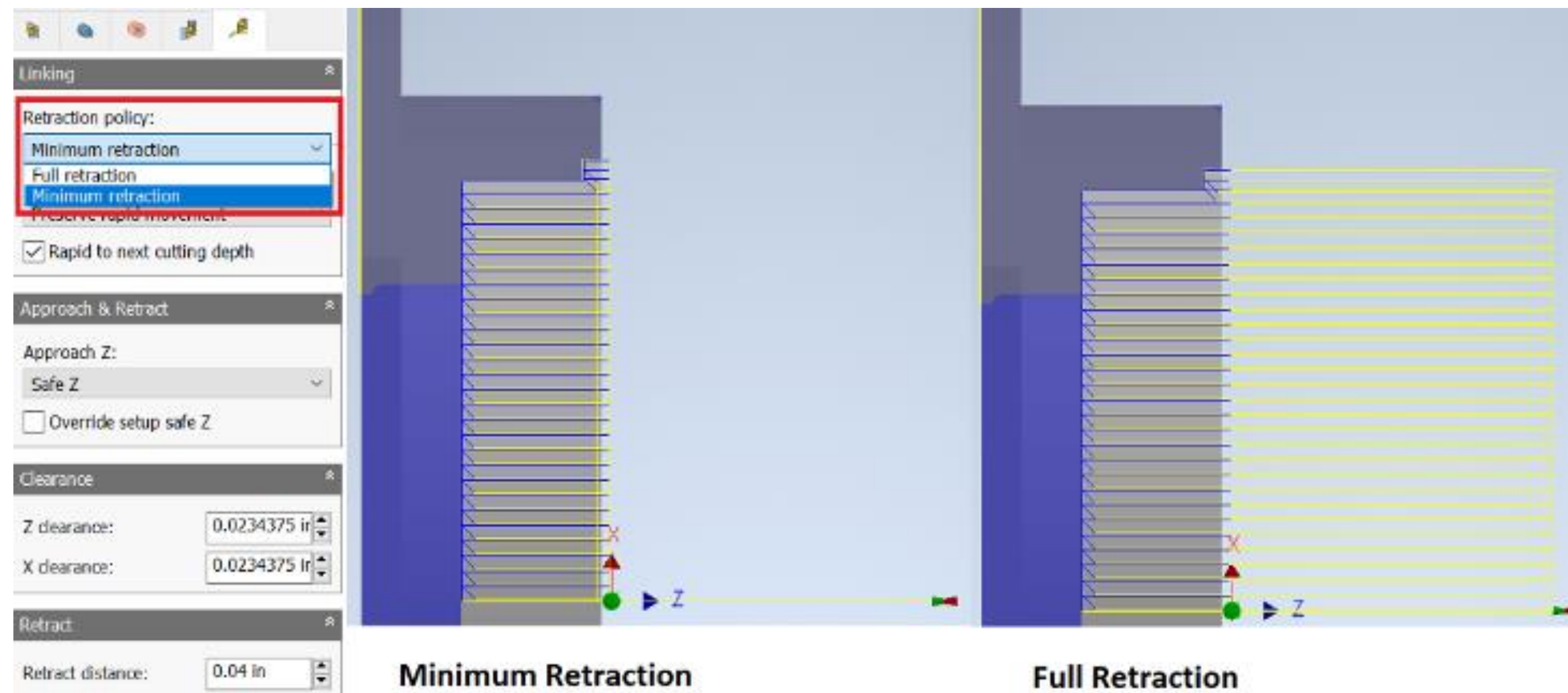
we worked on assembly stability issues that contained

- Tolerance Feature annotations
- More Joints than Constraints
- blocked renaming components



Inventor CAM

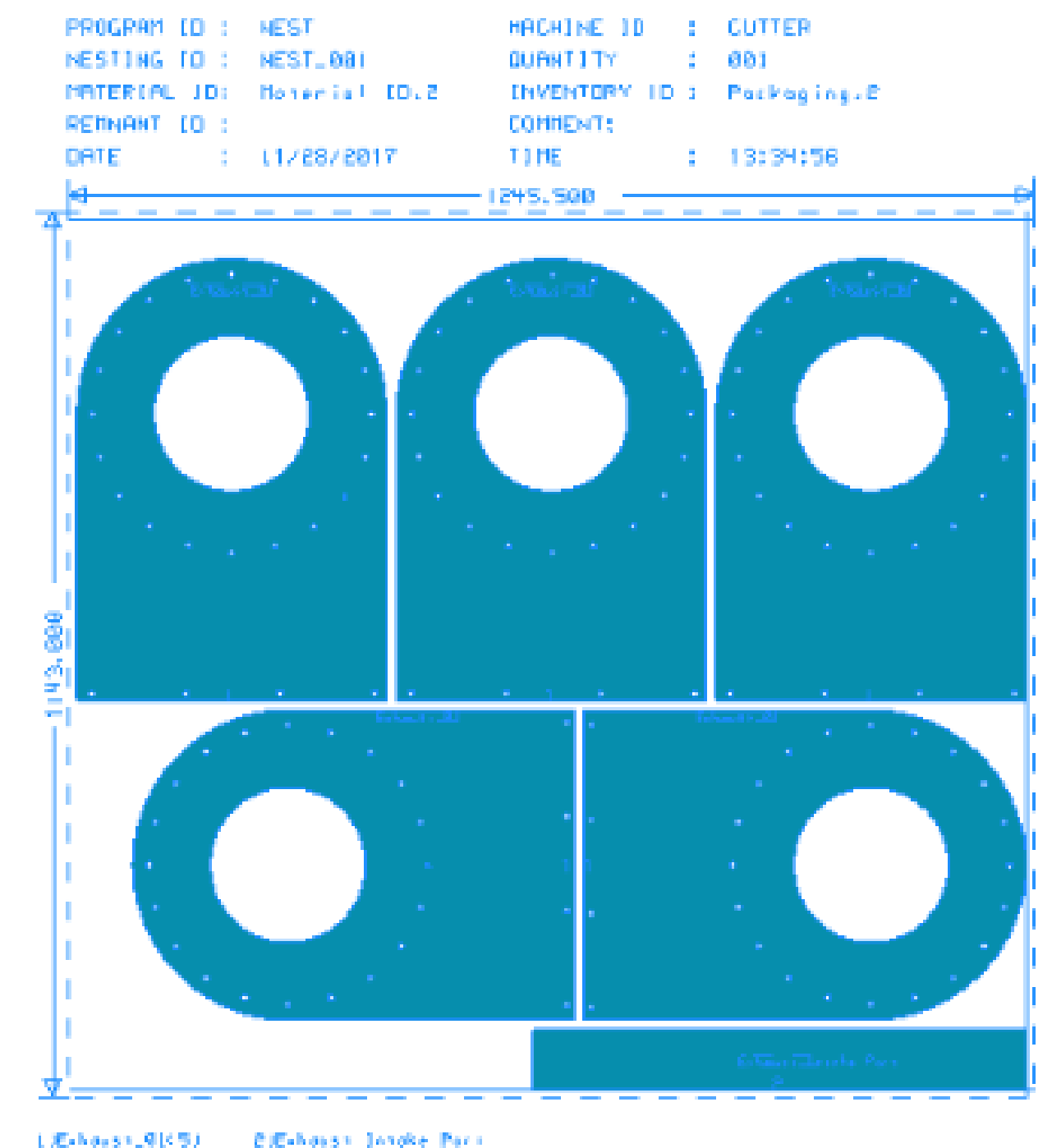
- Turning Profile Roughing
 - supports “in computer” compensation for G71 and G72 canned cycles
 - new parameter “Retraction Policy”
- Profile Roughing: Depths of Cut
- Parting Reduced Spindle Speed



Inventor Nesting

For more details, you can review the release notes [here](#).

- **Overall usability improvements:** ‘Create Nest Study’ and ‘Edit Nest Study’ dialogs are now thematically grouped with a tabbed design to make it more intuitive and easier to use.
- **Increased Automation:** New option in Create Nest Study: “Automatically Manage Nests” that
 - Automatically adds newly created party to the nest in the nesting study
 - Creates new nests if a new part is created with a new material that wasn’t used before, or if an existing part is changed to a material that wasn’t previously used.
 - Nests will get removed if there are no more objects in the nest



Factory Design Utilities

For more details, you can review the release notes [here](#).

- **Support for Dark Theme:** Inventor's Dark theme features a dark blue user interface with a complementary Color Scheme.
- **Enforcing “color-controlled” connections:** Create a color-assigned connector Asset. Factory now only allows the same color connectors to connect in Inventor and AutoCAD. The green color is a universal color for the connector, which means it will connect to any other color connector, and any other color connector can be connected to a green one. (Parameter propagation still works through connections).
- **Reset Connector Color:** In order to restore a connector to universal green color, you don't have to go back inside the color selection dialog to pick the correct green color. Instead, you can reset it to the default color in the context menu.
- **Import Asset Properties:** Import spreadsheets with asset properties, previously exported from a layout through the Export Properties command, to load back into a layout and apply to the current assets.

File Factory Assemble Design 3D Model Sketch Annotate Inspect Tools Manage View Environments Get Started Add-Ins Collaborate Electromechanical

Place from Content Center Create Free Move Free Rotate Joint Constrain Show Show Slick Hide All Pattern Mirror Copy Bill of Materials Parameters Create Derived Substitutes Plane Axis Point UCS Shrinkwrap Shrinkwrap Substitute

Component Position Relationships Pattern Manage Productivity Work Features Simplification

Layout Browser Model

Select an Option

Recent Layouts

05152020-0001

Factory Properties

Layer

Layer 0

Model

Feet Gap 39.4

Height 30

Legs All

Length 78

Motor Location Front-Right

Number Of Rungs 2

Roller Diameter 3.1

Width 28

Summary

Title Straight Belt Conveyor

Author Autodesk, Inc.

Project

File Subtype Modeling

Part Number Straight Belt Conveyor

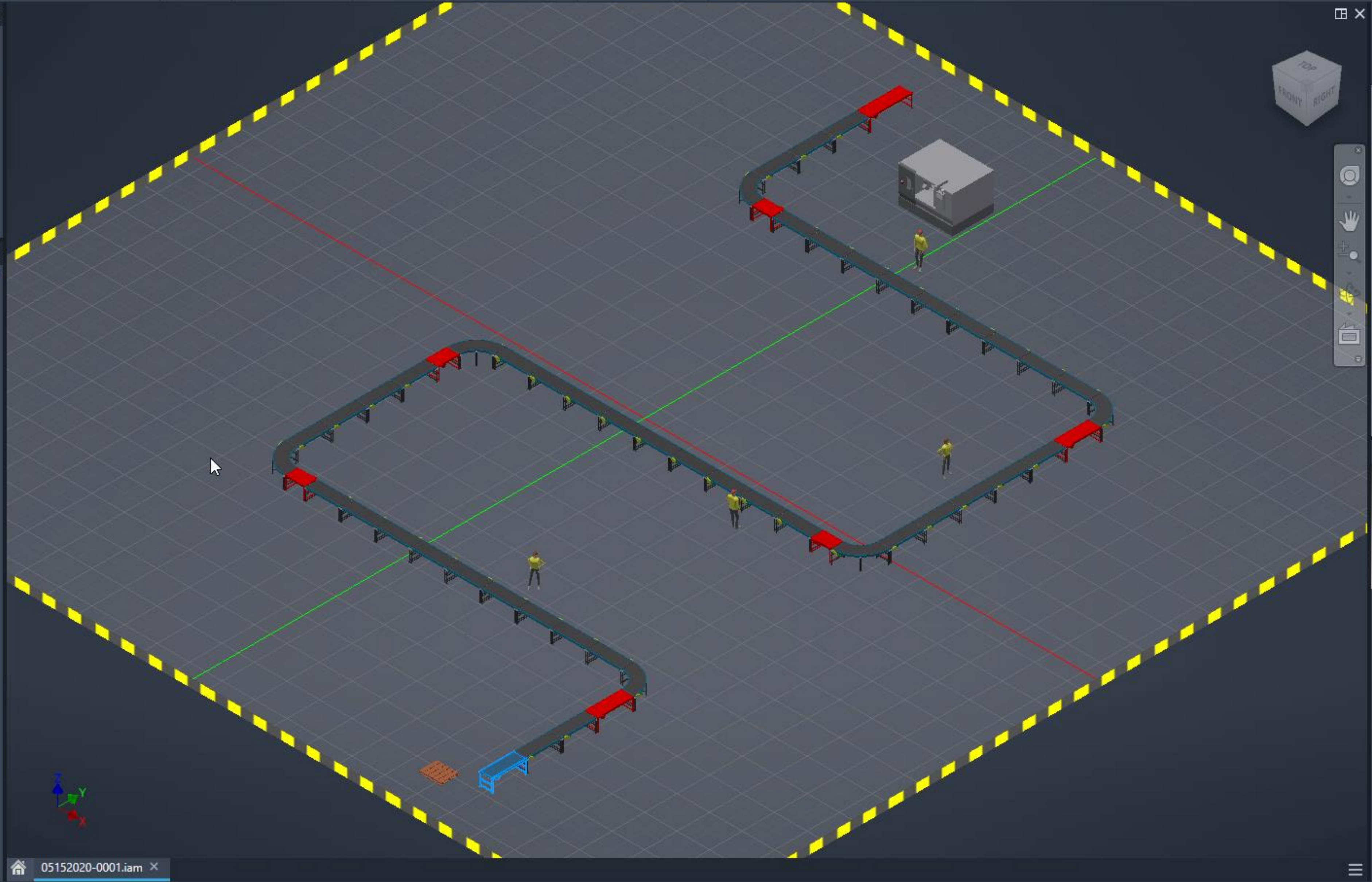
Estimated Cost 0

Create Date 10/21/2009

Asset Tag

Asset Tag

Extended Asset Tag



Asset Browser

System Assets

- Architectural
- Automotive
- Building Utilities
- Conveyor
- General
- Material Handling
 - Automatic Guided Vehicle
 - Cart
 - Container And Bin
 - Crane
 - Lift
 - Pallet
 - 90 Degree Tipper
 - Box Container Pallet

Factory Asset Preview

Summary

Title HAAS DS 30SSY

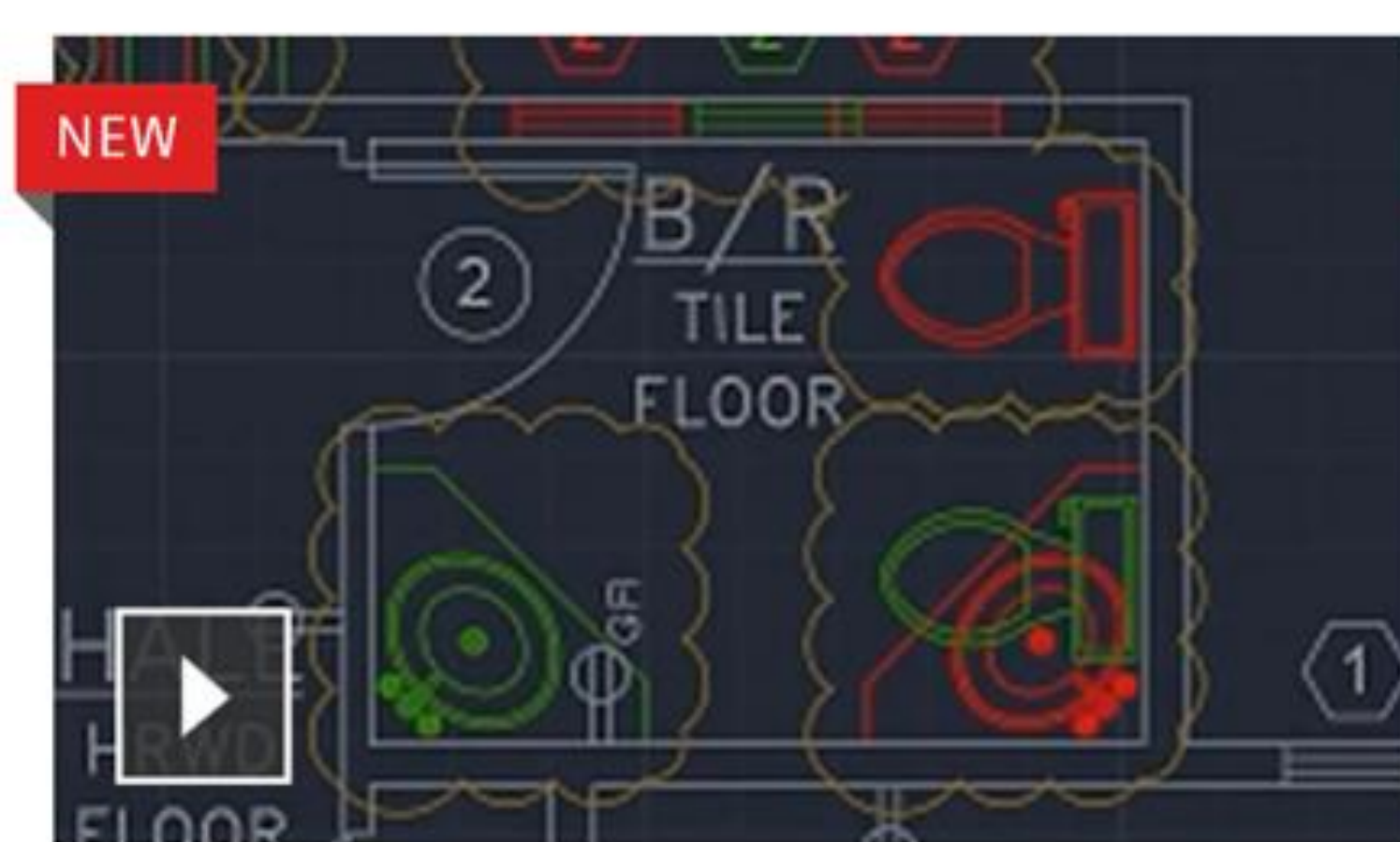
Company Autodesk

Author Autodesk

AutoCAD

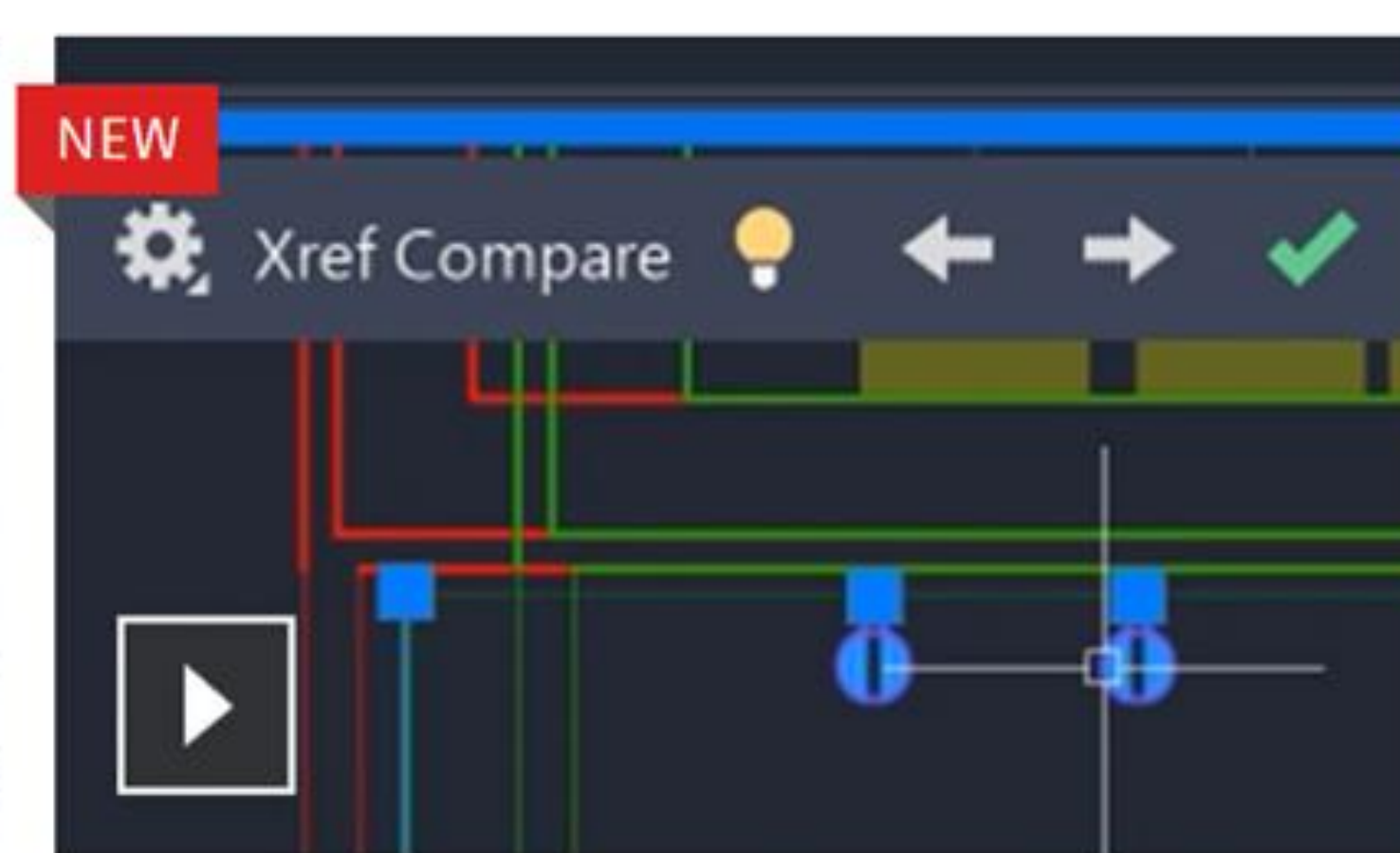
There are some great enhancements in AutoCAD 2001, here are a few of them.

- **Drawing History** – Compare past and present versions of a drawing and see the evolution of your work
- **Xref Compare** – See the changes made to your current drawing from changed external references
- **Block Palette** – View and access your blocks content from AutoCAD on desktop or within the AutoCAD web app
- **Performance Enhancement** – Experience faster save and install times. Leverage multicore processors for smoother orbit, pan, and zoom operations.
- For more details review the AutoCAD [What's New](#) page.



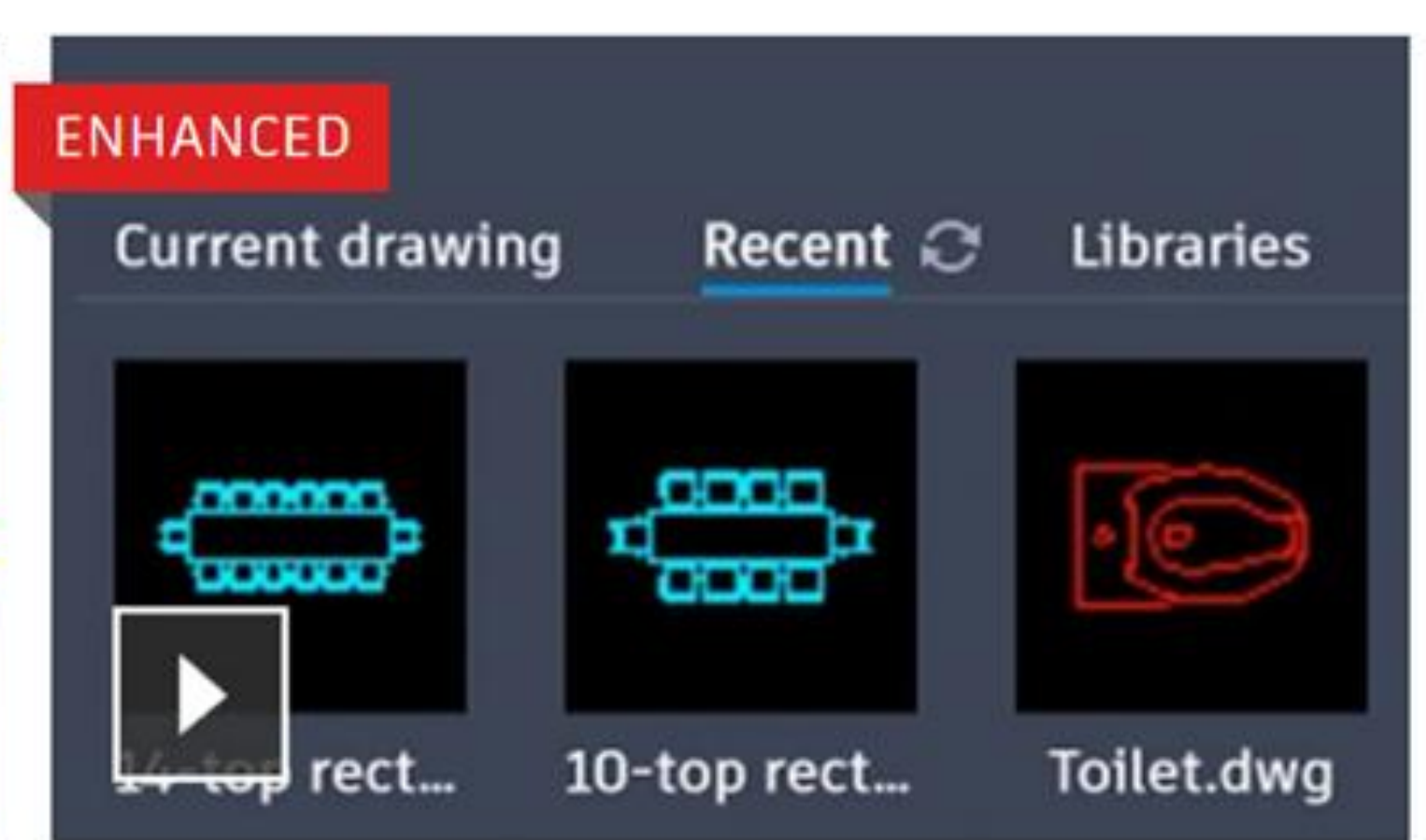
Drawing history

Compare past and present versions of a drawing and see the evolution of your work. (video: 2:16 min.)



Xref compare

See the changes made to your current drawing from changed external references (Xrefs). (video: 2:05 min.)



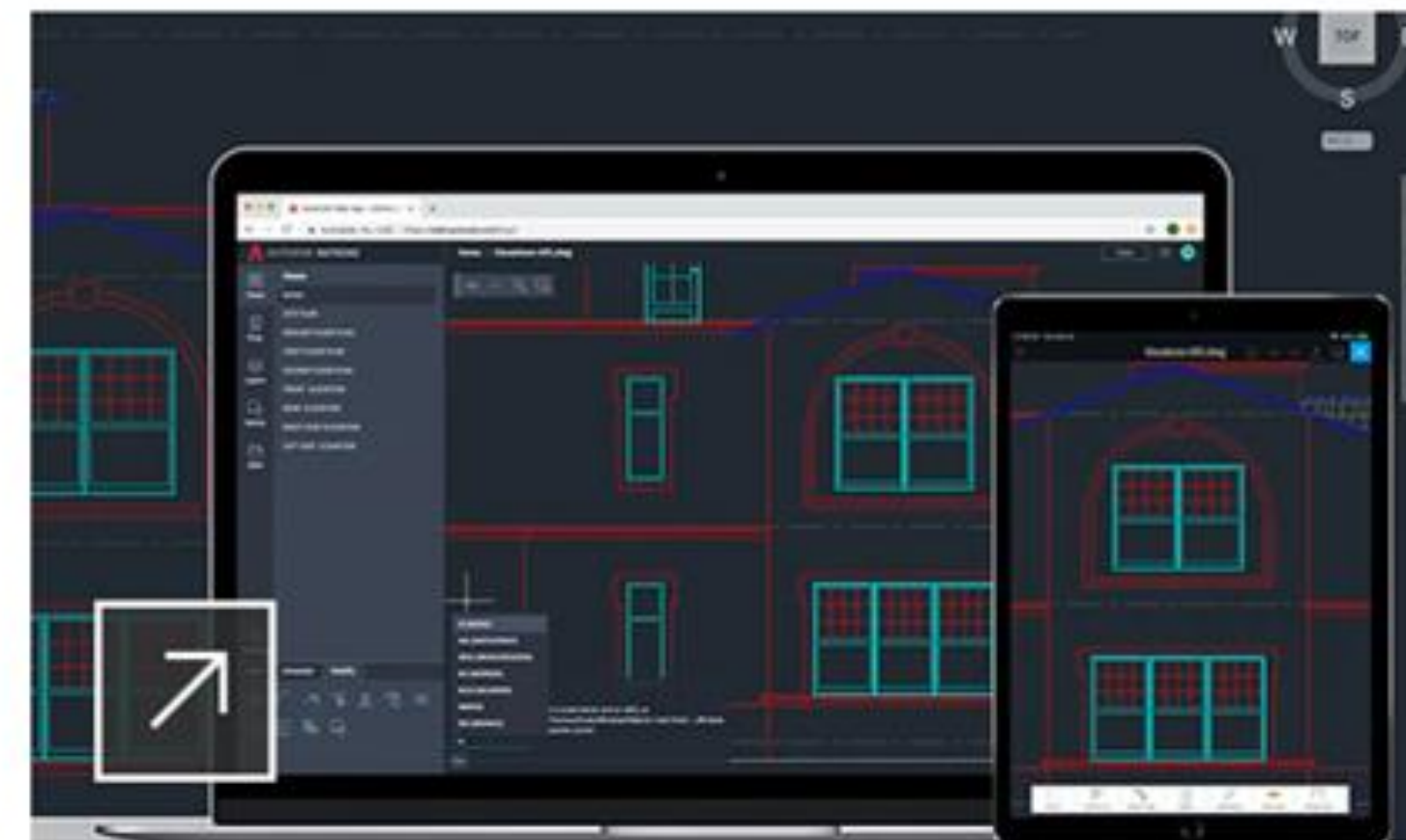
Blocks palette

View and access your blocks content from AutoCAD on desktop or within the AutoCAD web app. (video: 1:49 min.)



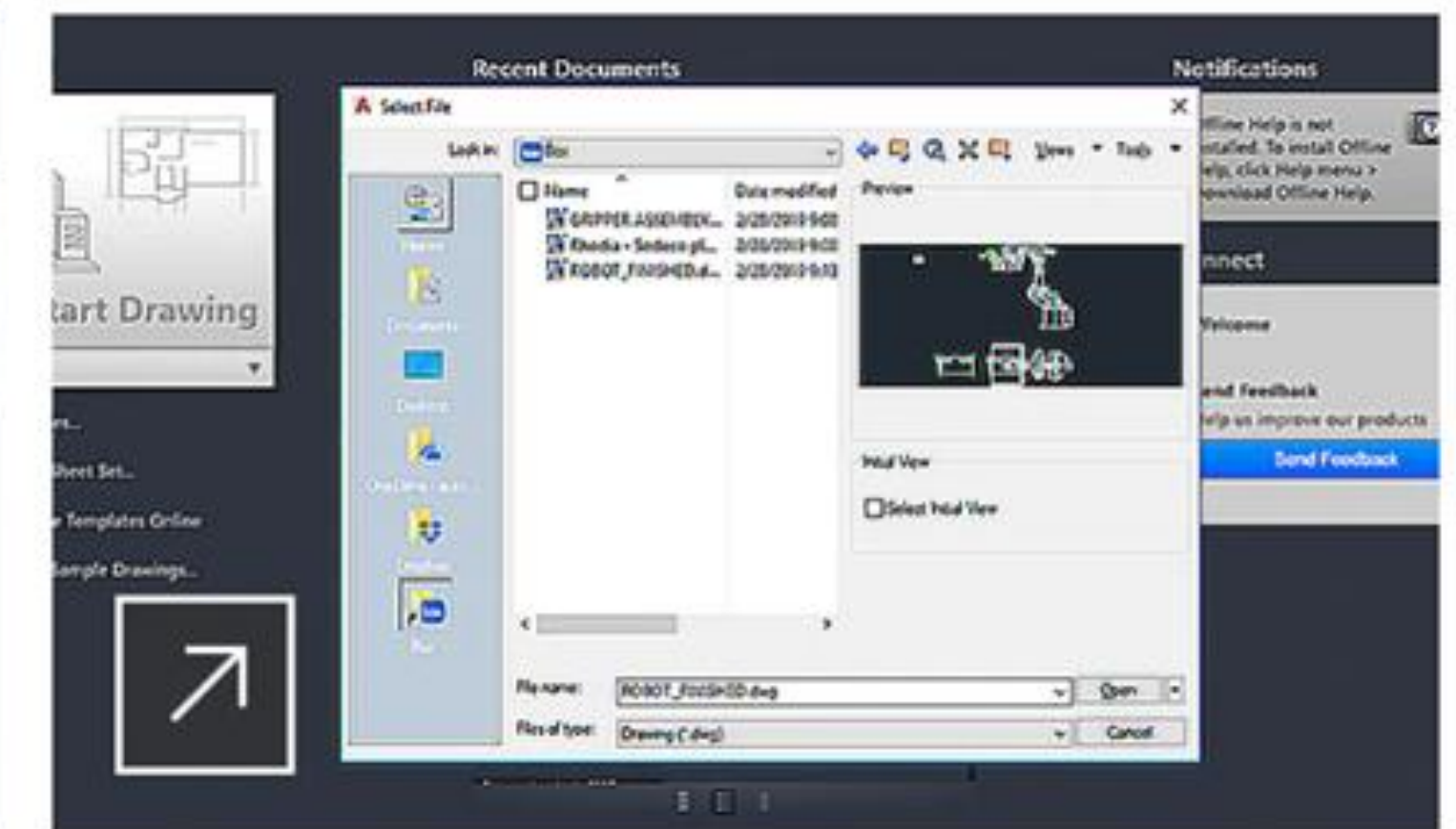
Performance enhancements

Experience faster save and install times. Leverage multicore processors for smoother orbit, pan, and zoom operations.



AutoCAD on any device

View, edit, and create drawings in AutoCAD on virtually any device—desktop, web, or mobile.



Cloud storage connectivity

Access any DWG™ file in AutoCAD with Autodesk's cloud, as well as with leading cloud storage providers.

New product configuration

- Illogic: Add rules that drive parameters, parts, and features
- build this intelligence into the model,

