

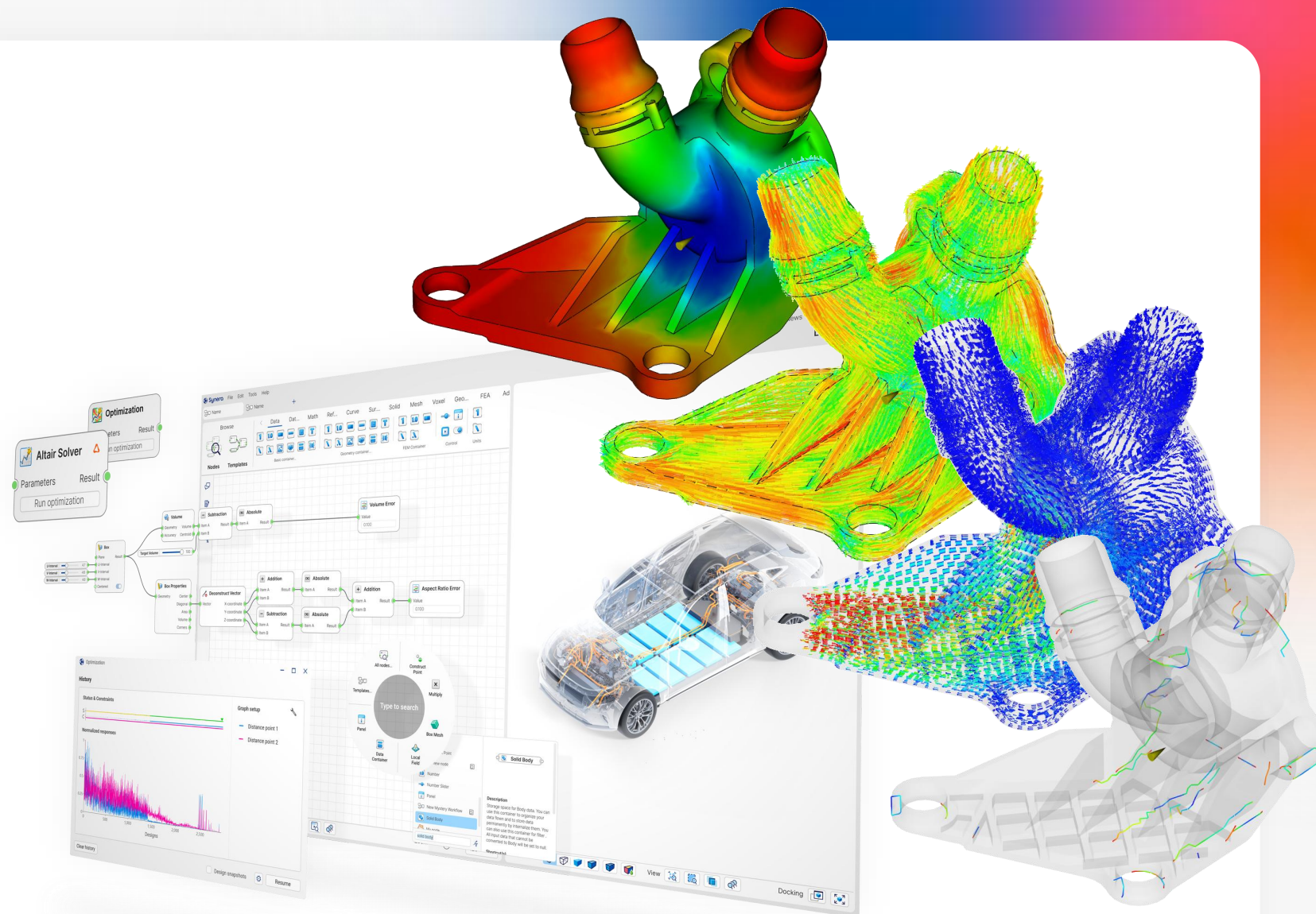


# Using VMAP to visualize Moldflow results in Synera

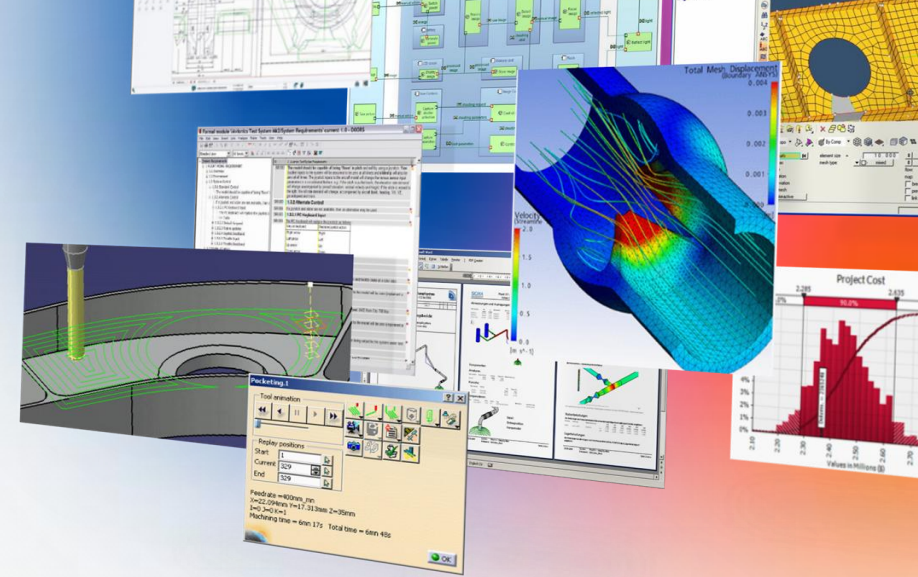
Hendrik Schütte, Synera GmbH  
VMAP User Forum 2026

# Agenda

- Intro to Synera
- Use cases and user value
- Visualization in Synera
- VMAP integration



# We live in a world where engineers...



**...work sequentially**

Hardware development is still done in a linear process



**...are trapped in silos**

Engineers are split into disconnected teams like design, simulation and manufacturing



**...use expert software**

Experts use their own expert tools to provide a new work increment



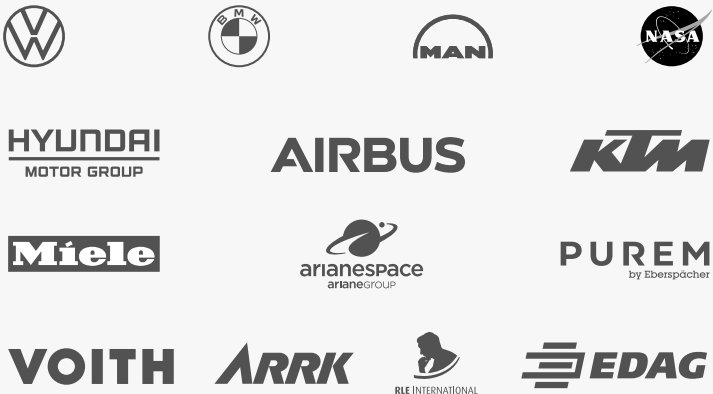
**...rely on their experience**

Experienced engineers outperform others and become bottlenecks in collaboration

**How can product development be accelerated today?**

# Engineering will change. We will be one of the reasons.

Trusted by engineers from



 Founded in 2018

 Headquarter in Bremen

 60+ enthusiastic staff



VC funded by



# A visual Low-Code language made for engineers

## Leverage automation

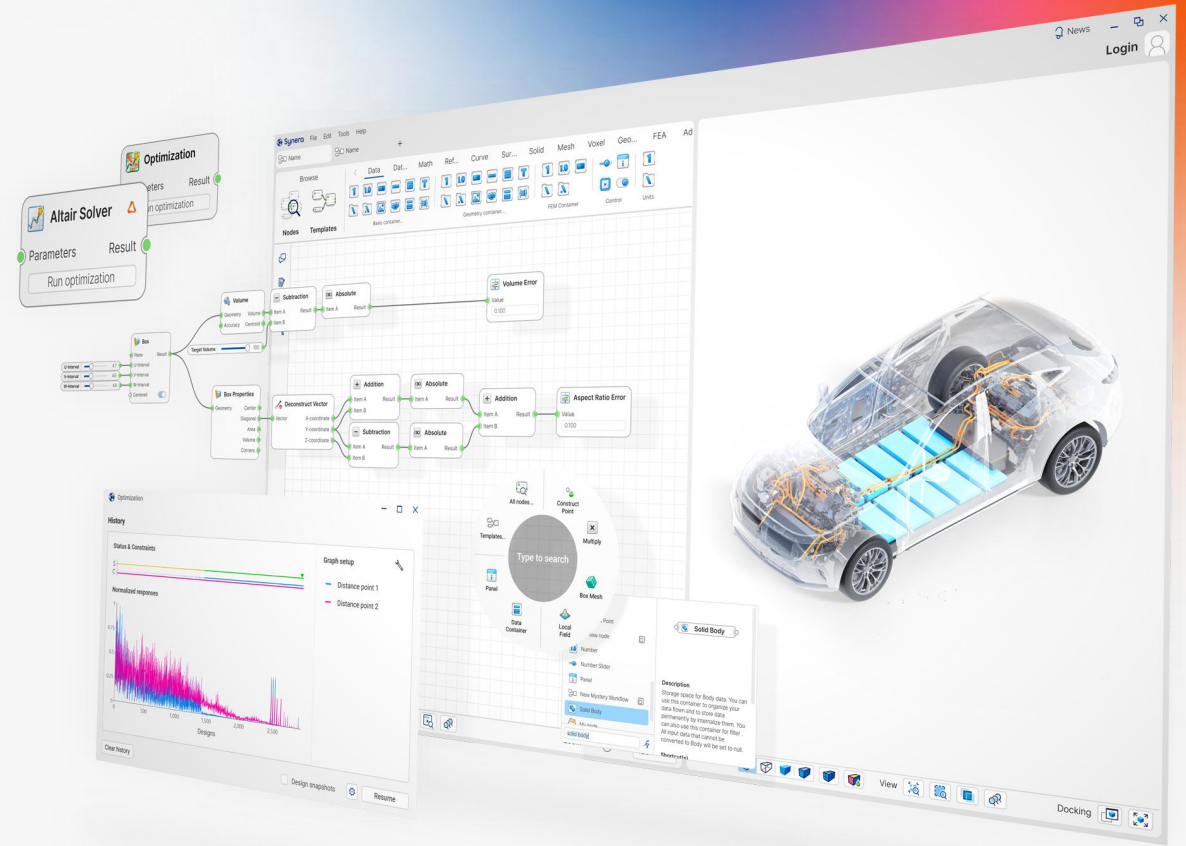
- Automate manual and recurring engineering tasks and steps in the product development process

## Process Canvas

- Standardized visual language for all engineering work in an intuitive node editor
- Transparent process documentation to increase IP retention

## 3D Visualization

- Real time feedback of your automation to see the deliverable in any step



# Major software vendors joined our open ecosystem

**20+ Partners**

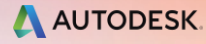
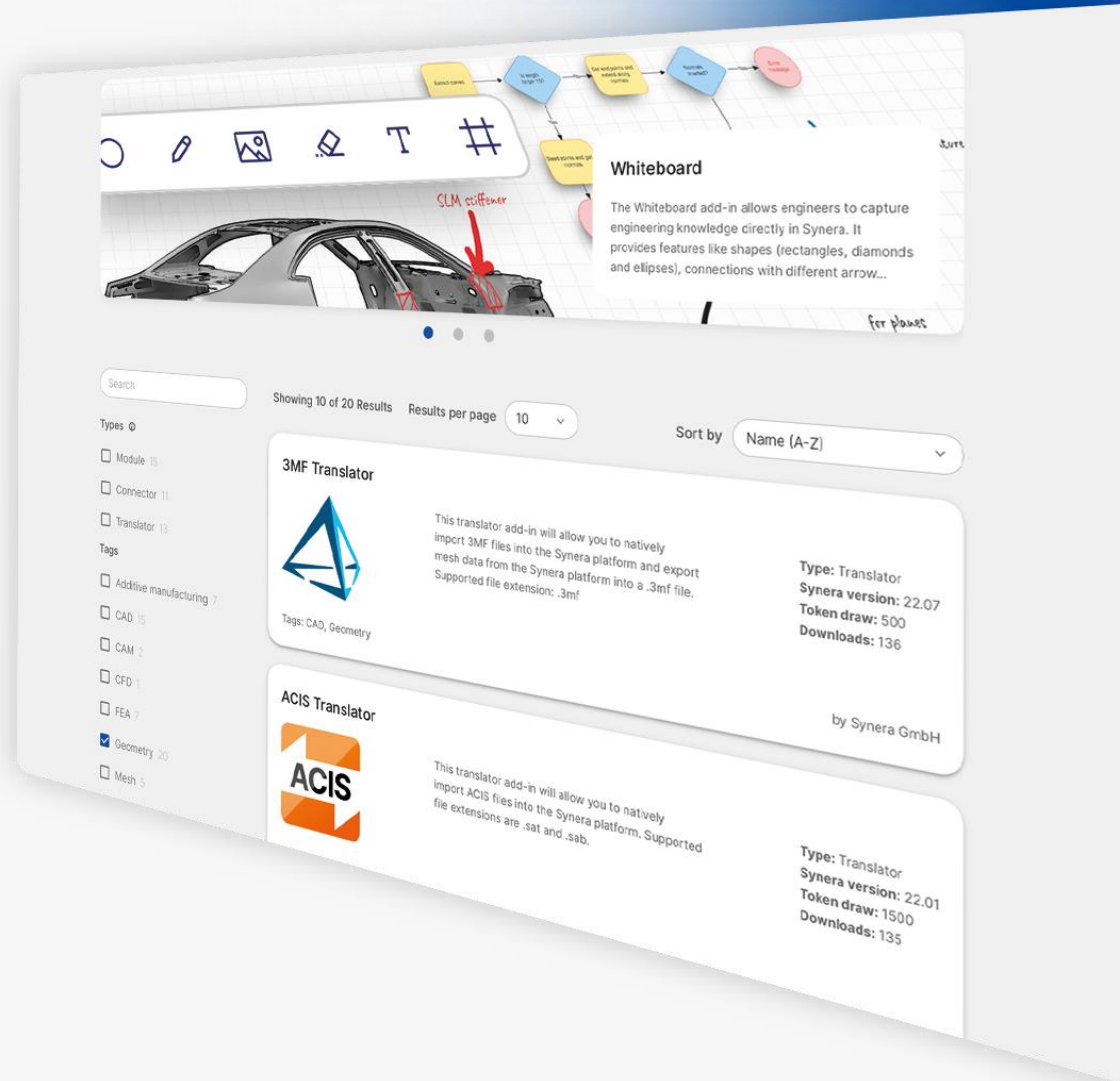
Head start with domain leading partners.

**77 Add-ins**

Partner tools integrated in our platform.

**1 Virtual Currency**

Access everything through a single subscription.



[Check out the marketplace](#)

# A visual Low-Code language made for engineers

## Leverage automation

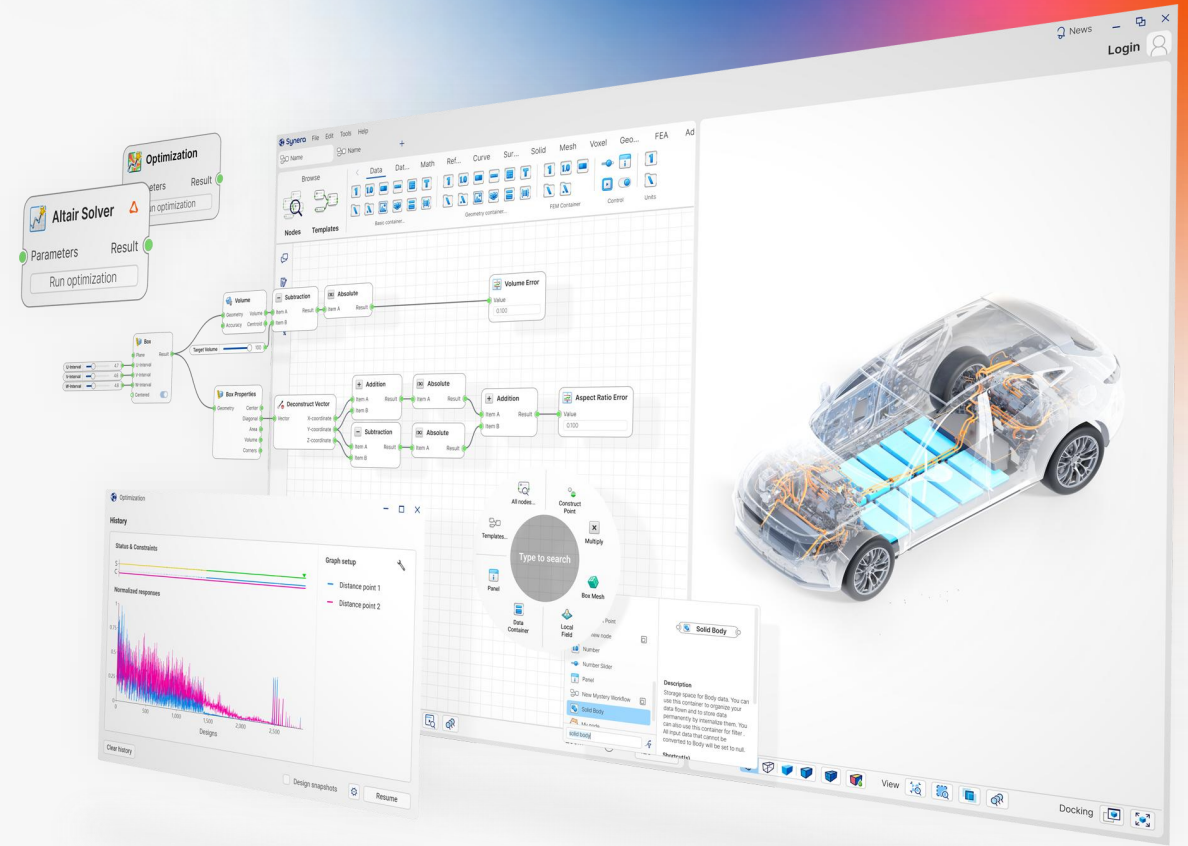
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## Process Canvas

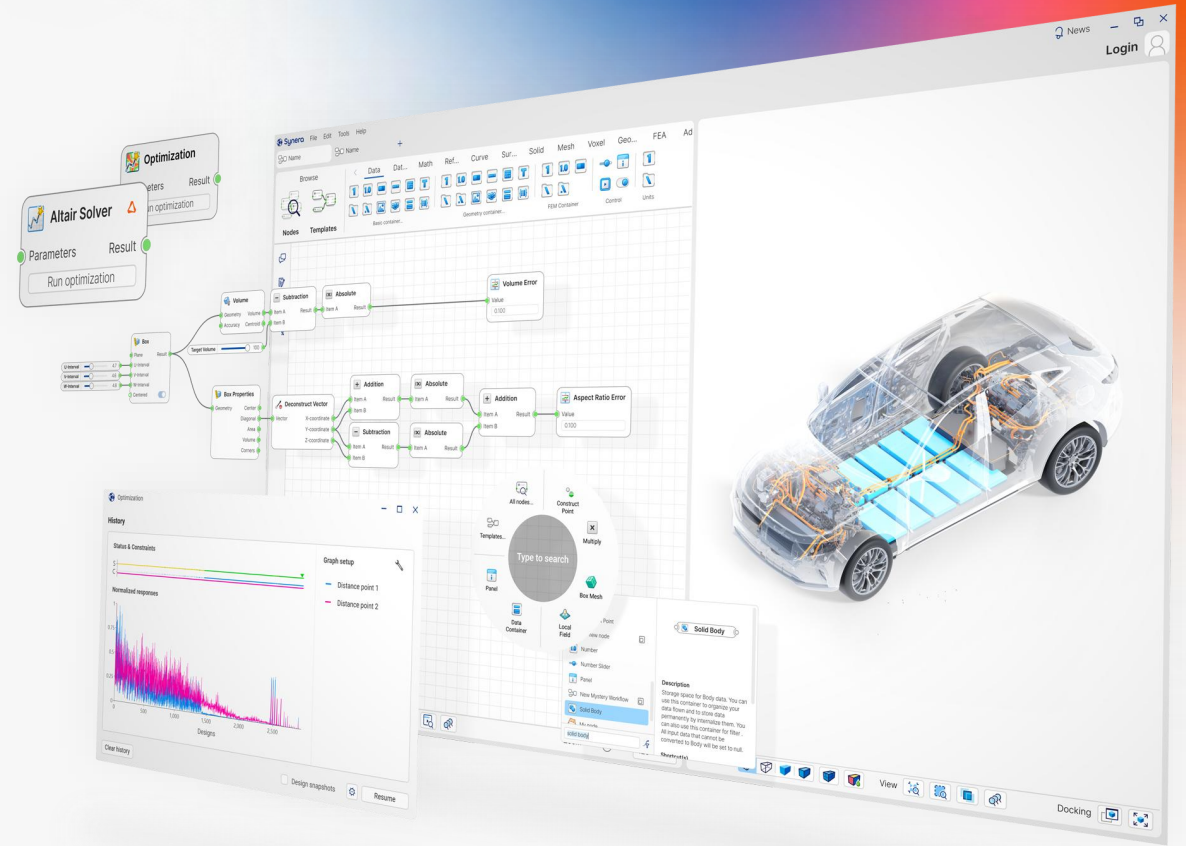
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## 3D Visualization

- Real time feedback of your automation to see the deliverable in any step



# A visual **Low-Code** language made for engineers



Synera File Edit Tools Help Search (Ctrl+Shift+F)

Pump flange wit... New Workflow\*

Nodes Templates Data Data Structure Math Reference Curve Surface Solid Mesh Voxel Geometry FEA AM ML Control MAS Utilities Raphos Office Connector Raphos Tools IM

Radius 51

Circle

Plane Circle

Radius

Construct Pipe Curve

Curve Pipe curve

Radii

Parameters

Segment length 15

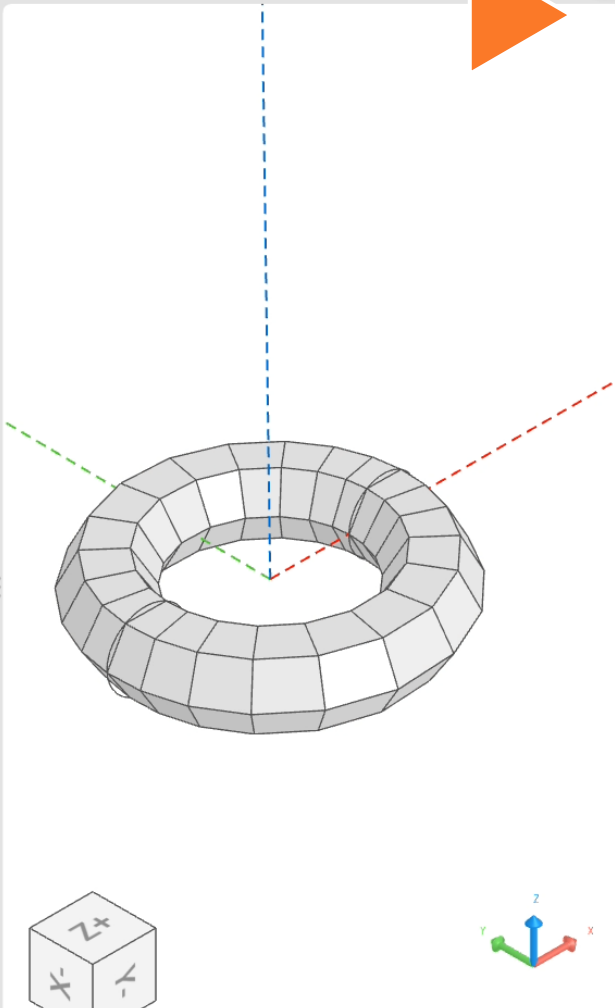
Pipe Mesh

Pipe curve Mesh

Segment length

Sides

Close



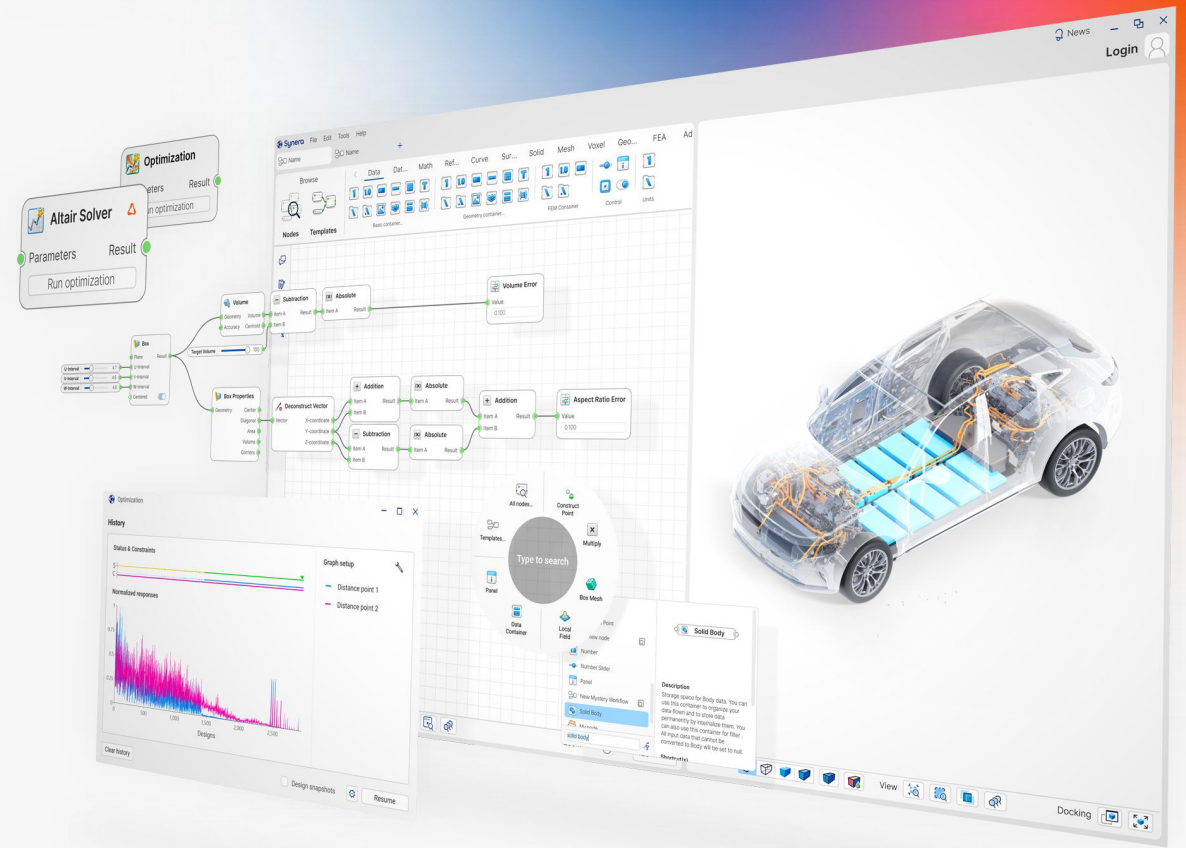
Solution [Play] [Pause] [Refresh] [Checkmark] View [Zoom In] [Zoom Out] [Reset View] [Full Screen]

Zoom 100

Render mode [Wireframe] [Solid] [Shaded] [Hidden Lines] [Hidden Surfaces] [Hidden Edges] [Hidden Faces] [Hidden Volumes]

View [Top] [Bottom] [Left] [Right] [Front] [Back] [Isometric] [Perspective] [Orthographic] [Isometric] [Perspective] [Orthographic]

# A visual Low-Code language made for engineers



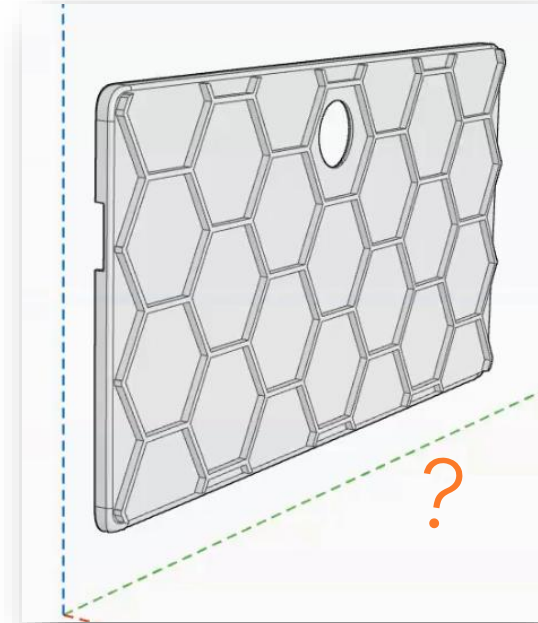
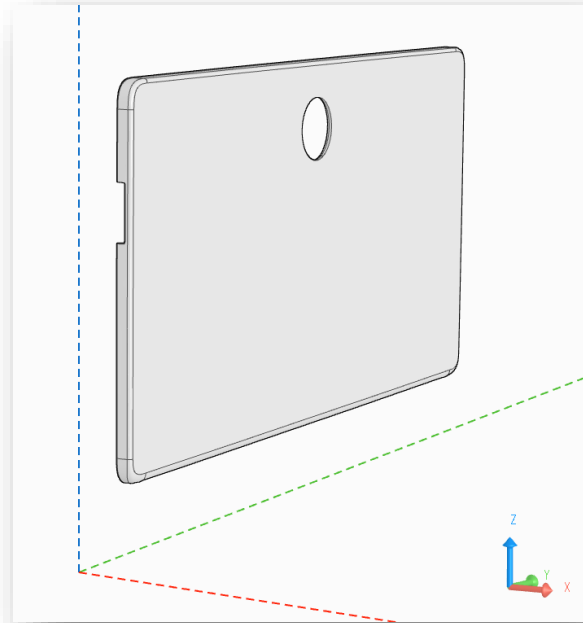
Watch the video

# Example

**Application:** cover plate

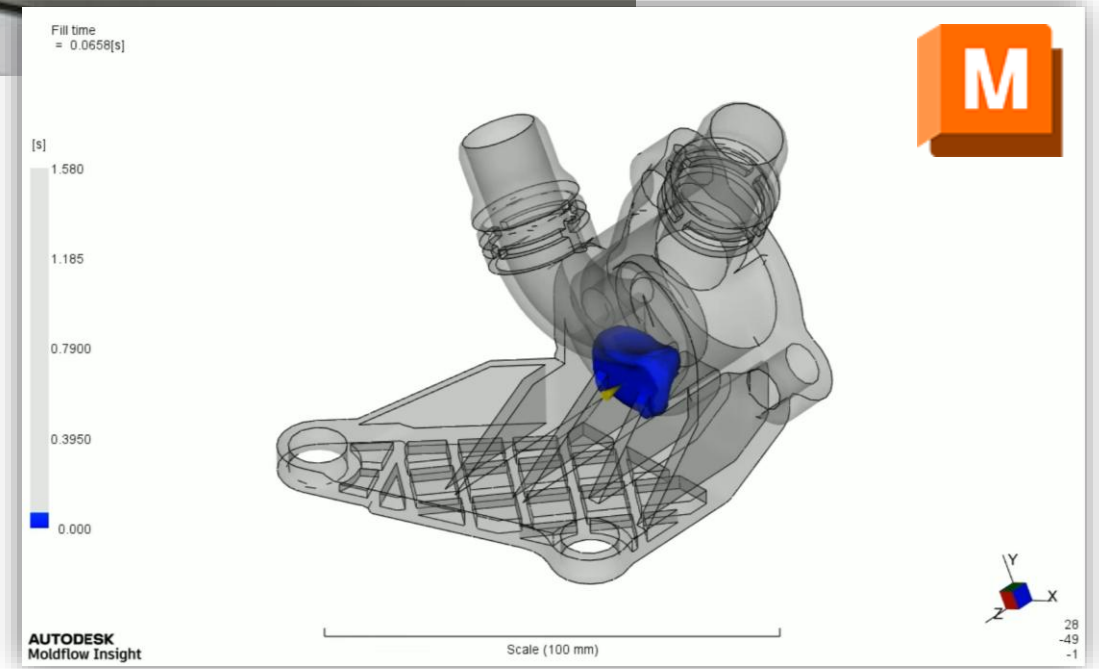
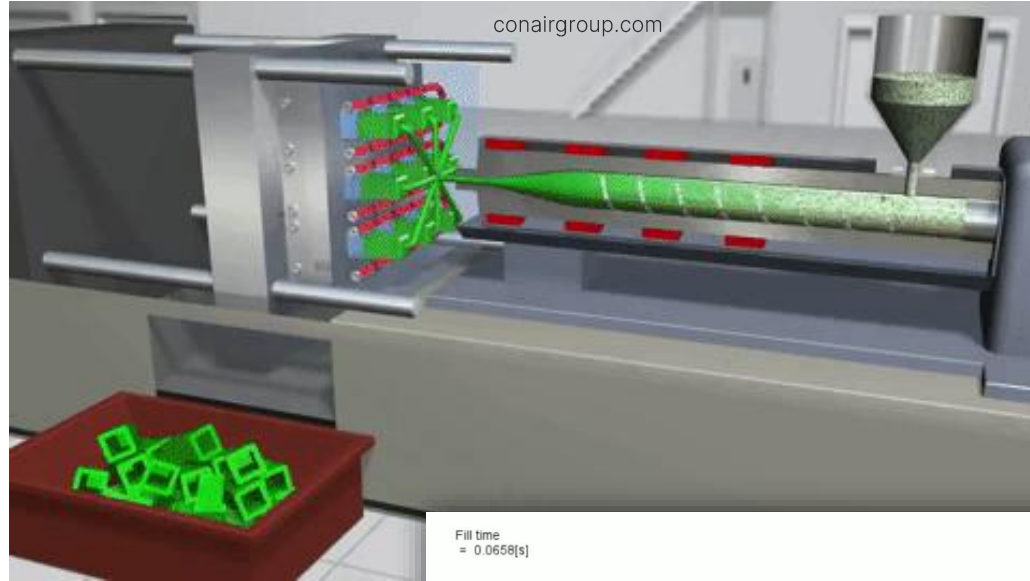
**Goal:** Find a design ...  
... using available design space  
... leading to low warpage

## Design optimization



# Intermezzo: Autodesk Moldflow

- Can simulate filling and cooling behavior of plastic parts during injection molding
- Key questions:
  - Does my part fill?
  - Does it lead to defects like air traps or weld lines?
  - How much does the part warp due to shrinkage?
- Acquired by Autodesk in 2008
- [www.autodesk.com/de/products/moldflow/](http://www.autodesk.com/de/products/moldflow/)

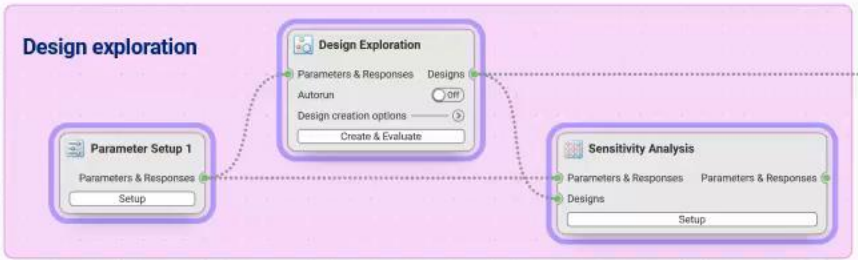




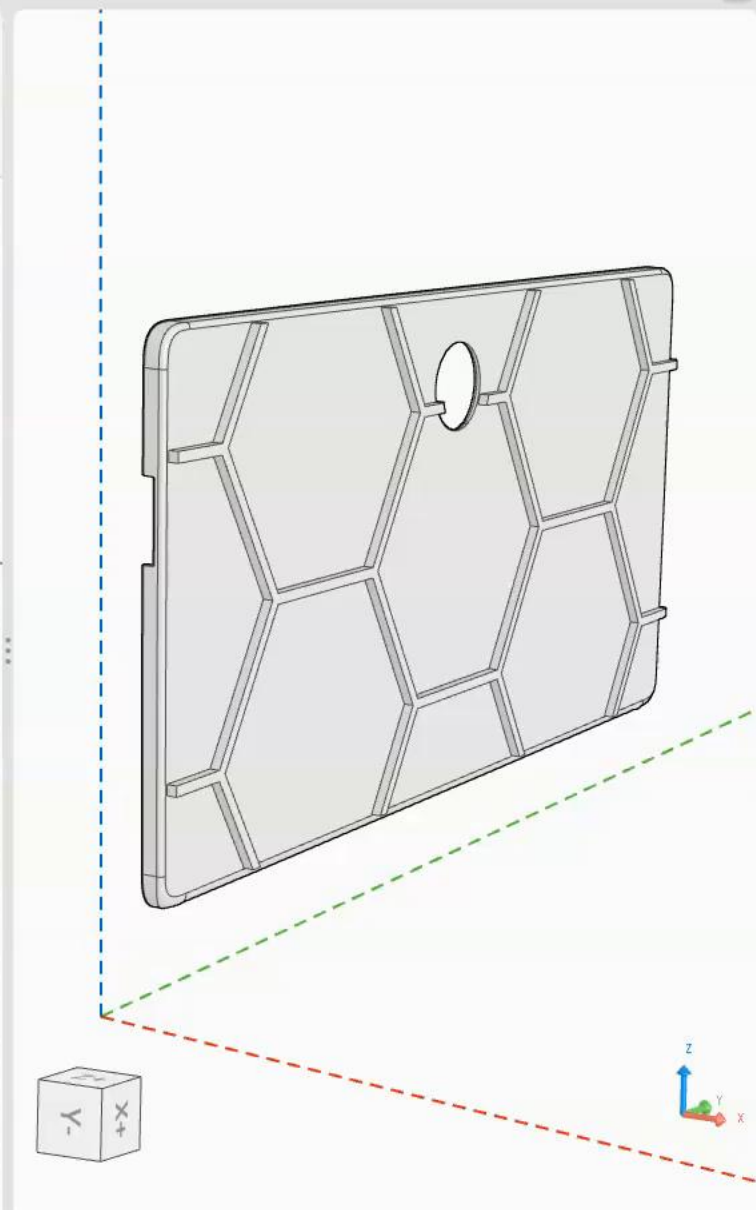
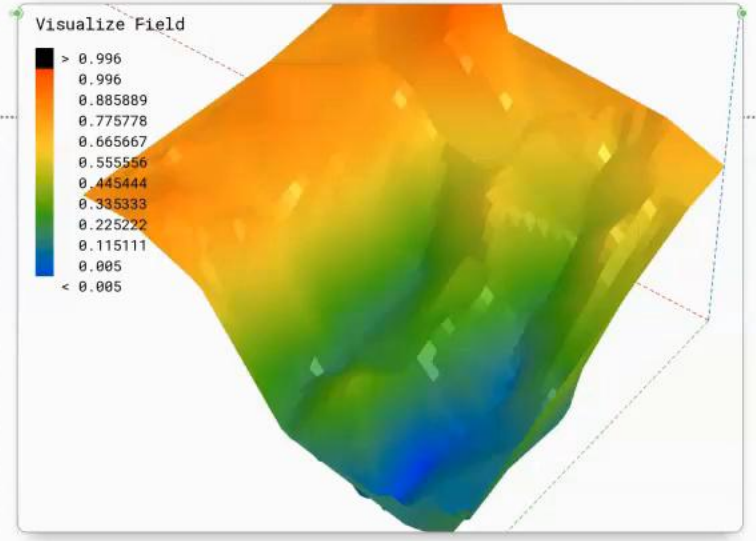
Browse | **Data** | Data Structure | Math | Reference | Curve | Surface | Solid | Mesh | Voxel | Geometry | FEA | AM | ML | Control | Utilities | IM

Nodes | Templates | Control | Import | Export | Excel

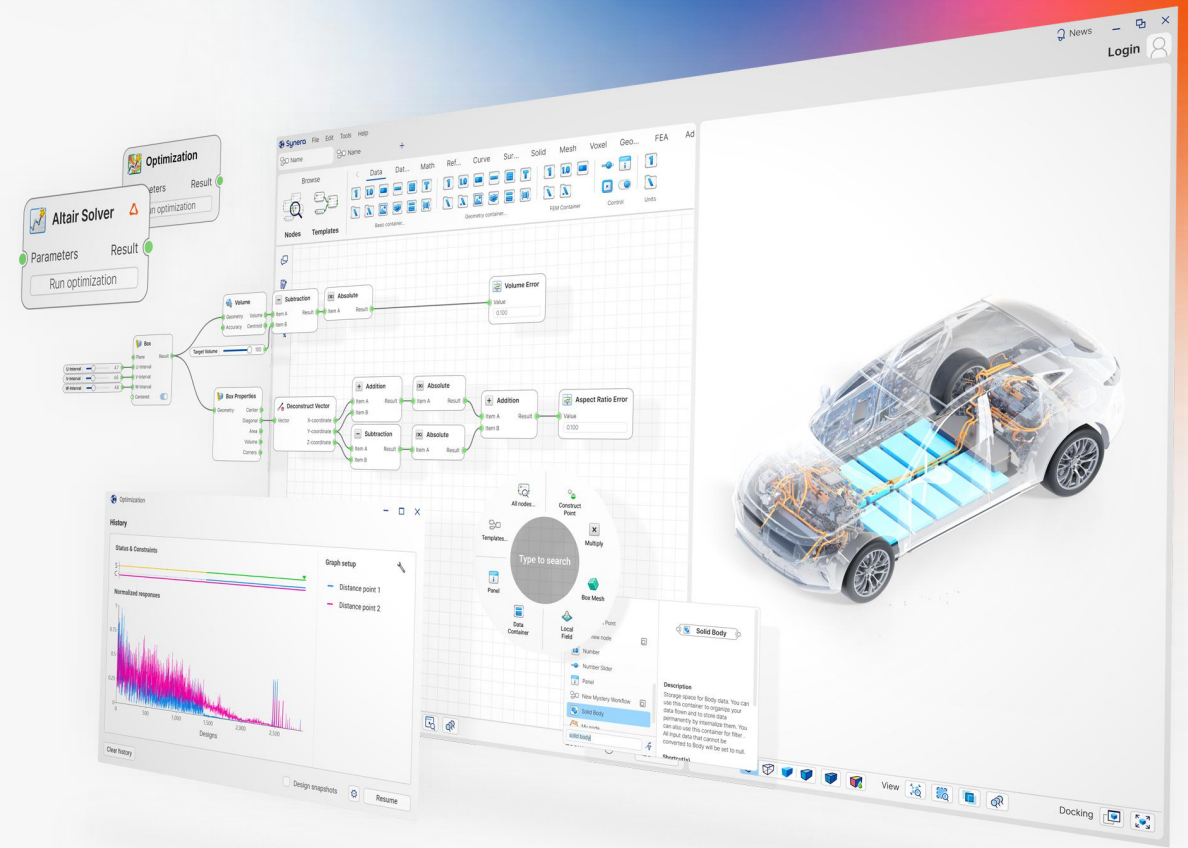
Copy | Paste | Undo | Redo | Zoom In | Zoom Out | 100%



*x = Spacing [mm]*  
*y = Thickness [mm]*  
*z = Warpage in z-direction [mm]*



# A **visual** Low-Code language made for engineers



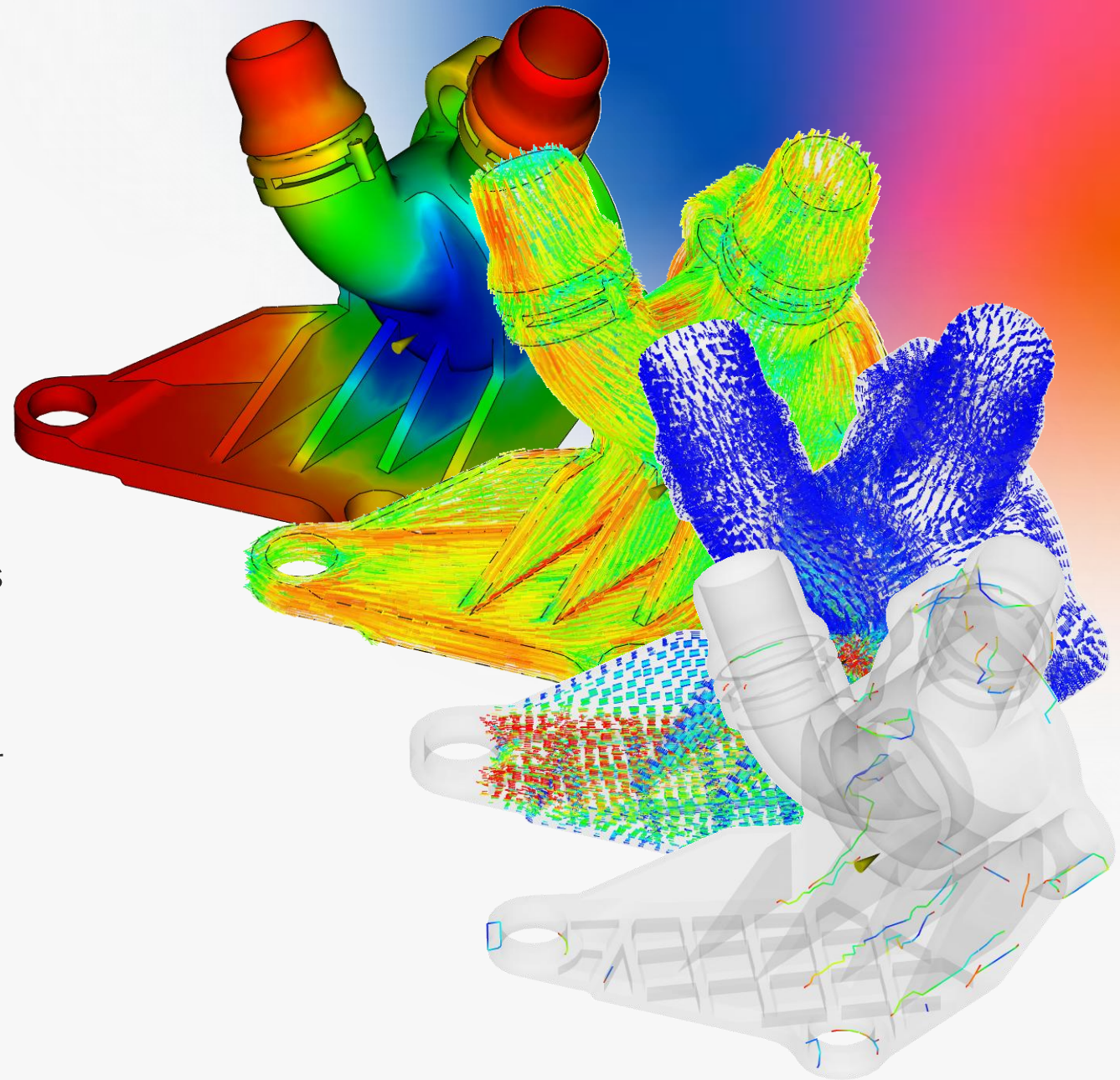
# The challenge: visualizing results from Autodesk Moldflow in Synera

Moldflow results are stored in several separate binary files

Many different result types (field and history data, nodal and elemental, static and transient results, vectors etc.)

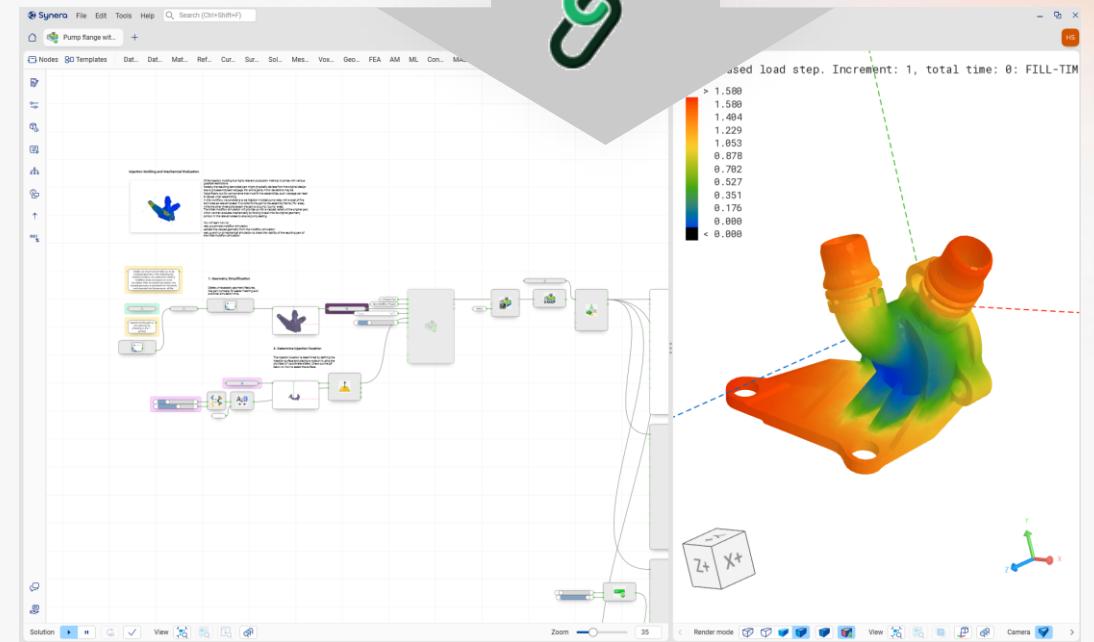
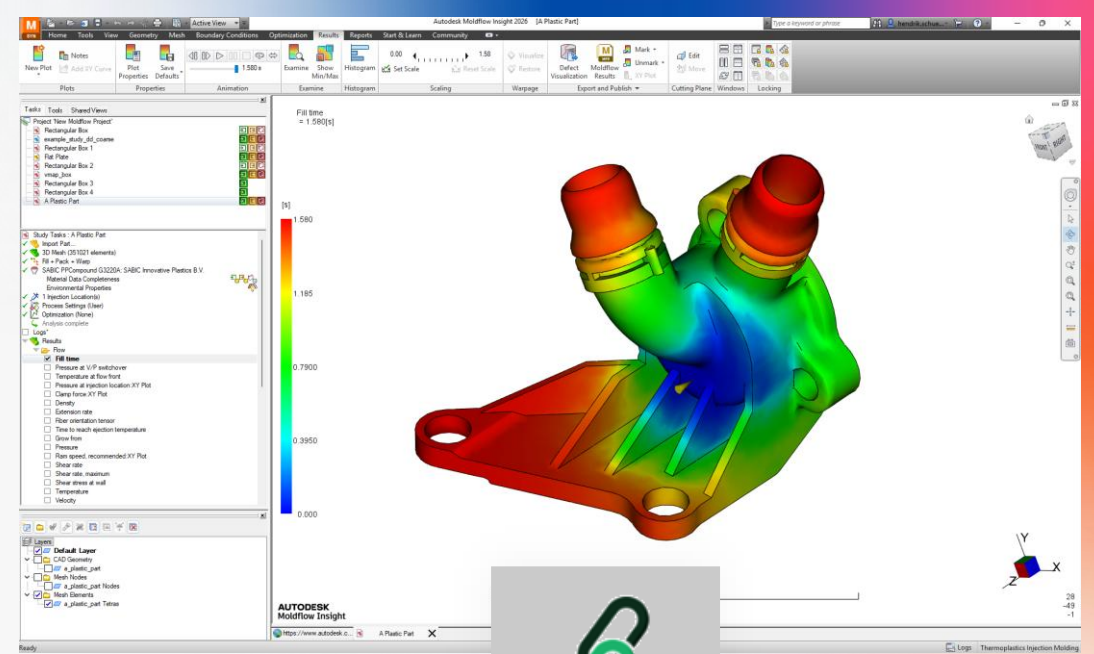
Different visualization types per result (e.g. single color for air traps, contour for filling or shrinkage)

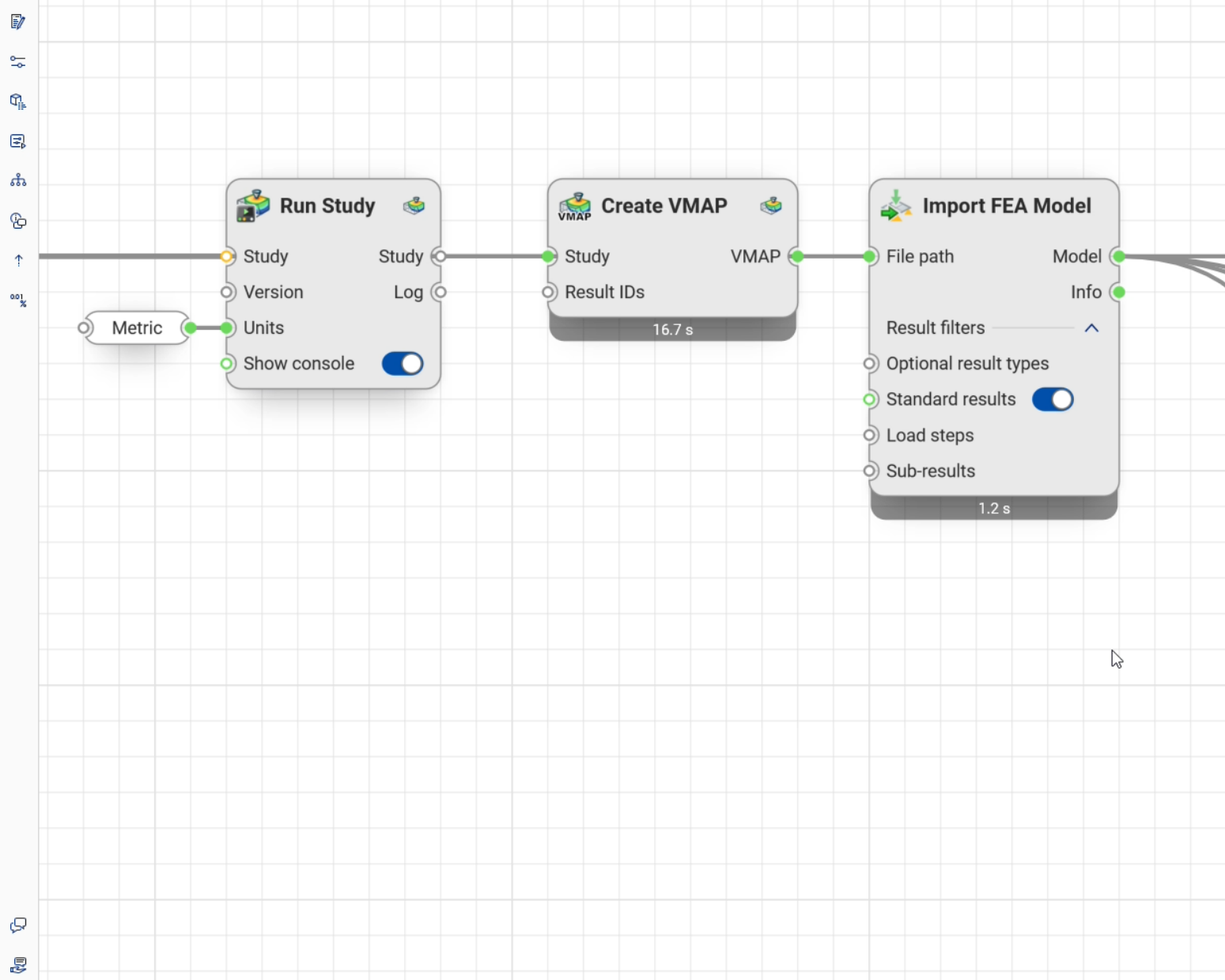
...



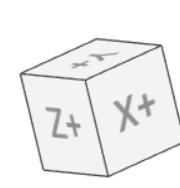
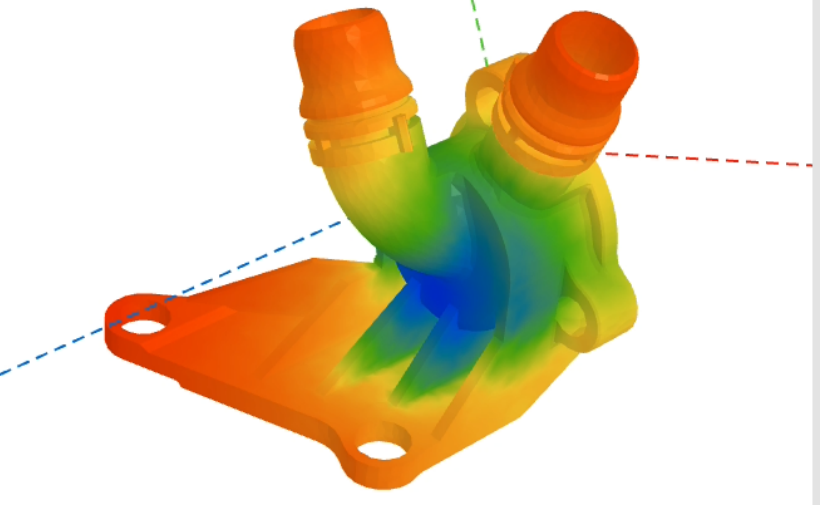
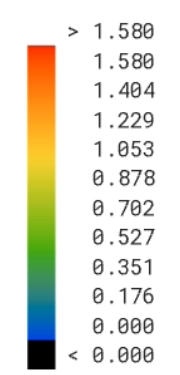
# The solution: Using **VMAP** as standard between Moldflow and Synera

- Uses the Moldflow mesh and results exported in XML format (per nodes / elements, per time step)
- VMAP extension for Moldflow has been written at the Materials Innovation Institute (M2i)
- Able to create .h5, .vmap files and .vtu for visualization with open source viewer Paraview
- VMAP file can be imported to and visualized by Synera
- Current limitations: beam elements are not supported (e.g. when modeling runners or cooling channels in more complex simulations)





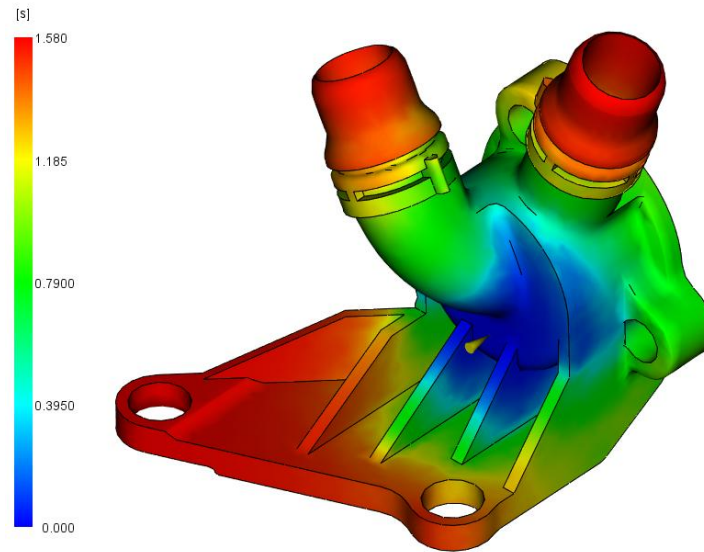
Time based load step. Increment: 1, total time: 0: F



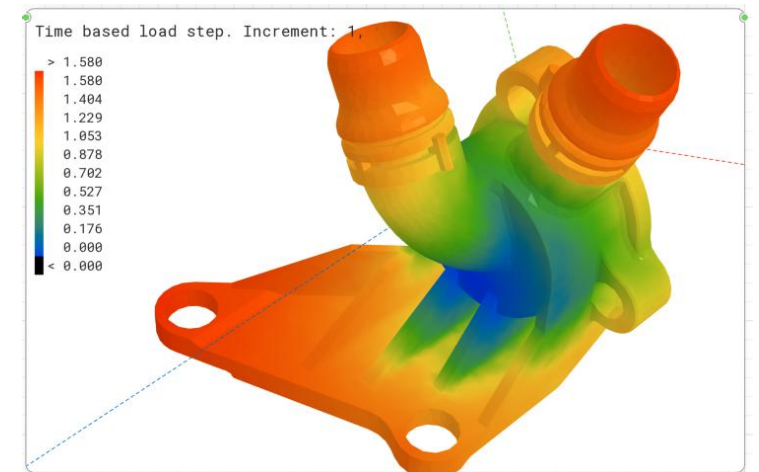
# Comparison

Fill time result

Autodesk Moldflow



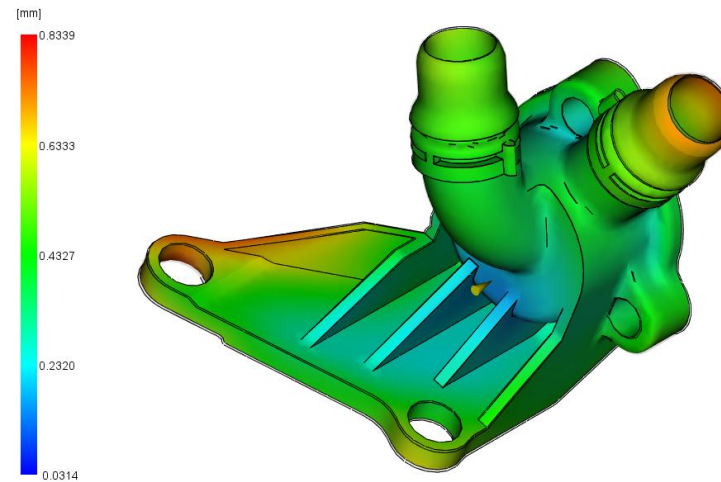
Synera using VMAP



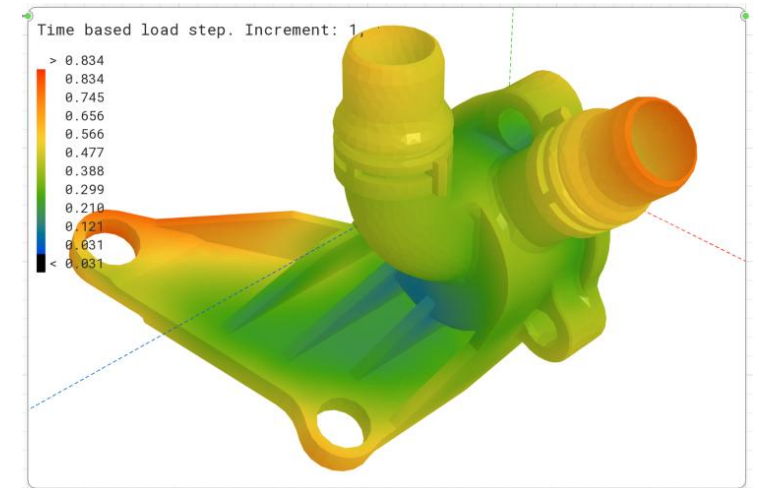
# Comparison

Warpage (deflection)

Autodesk Moldflow



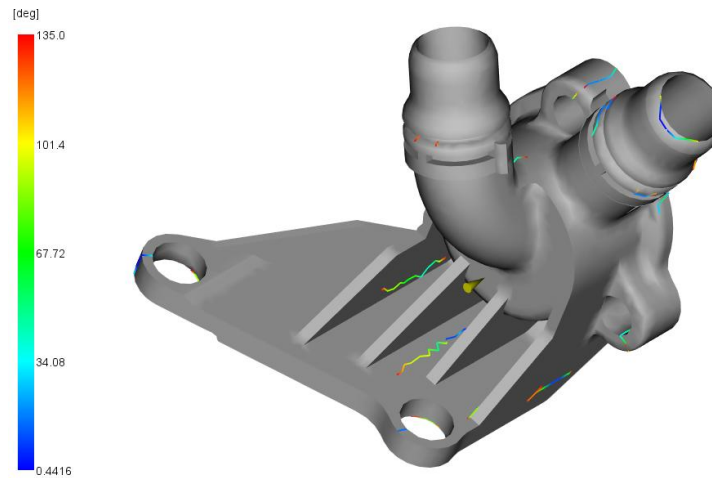
Synera using VMAP



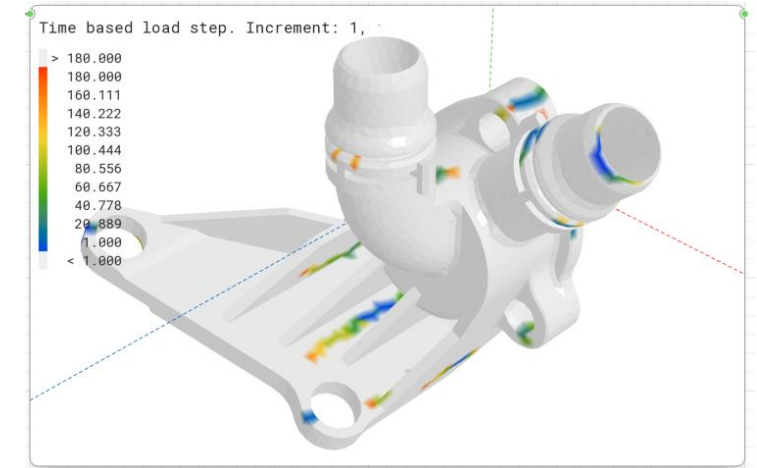
# Comparison

Weld line angle

Autodesk Moldflow



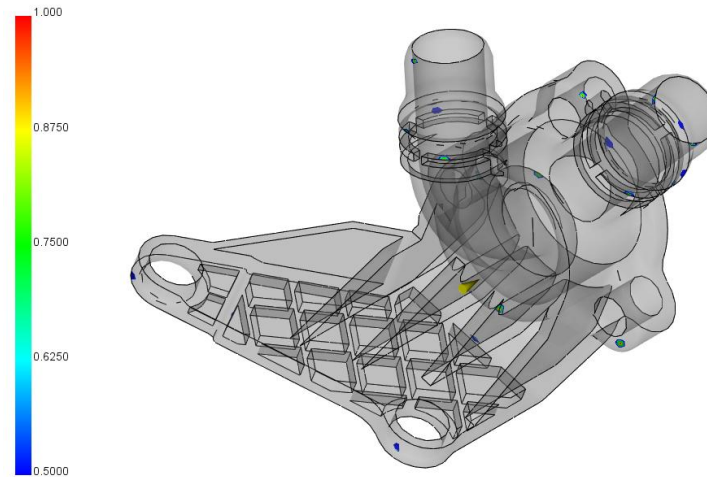
Synera using VMAP



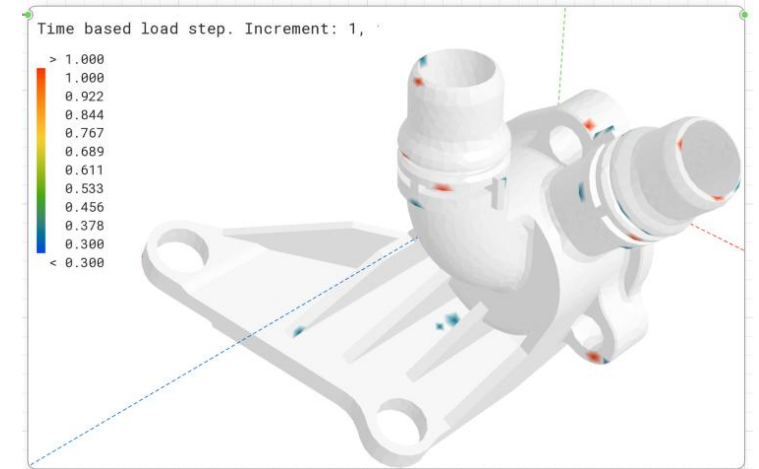
# Comparison

Air traps

Autodesk Moldflow

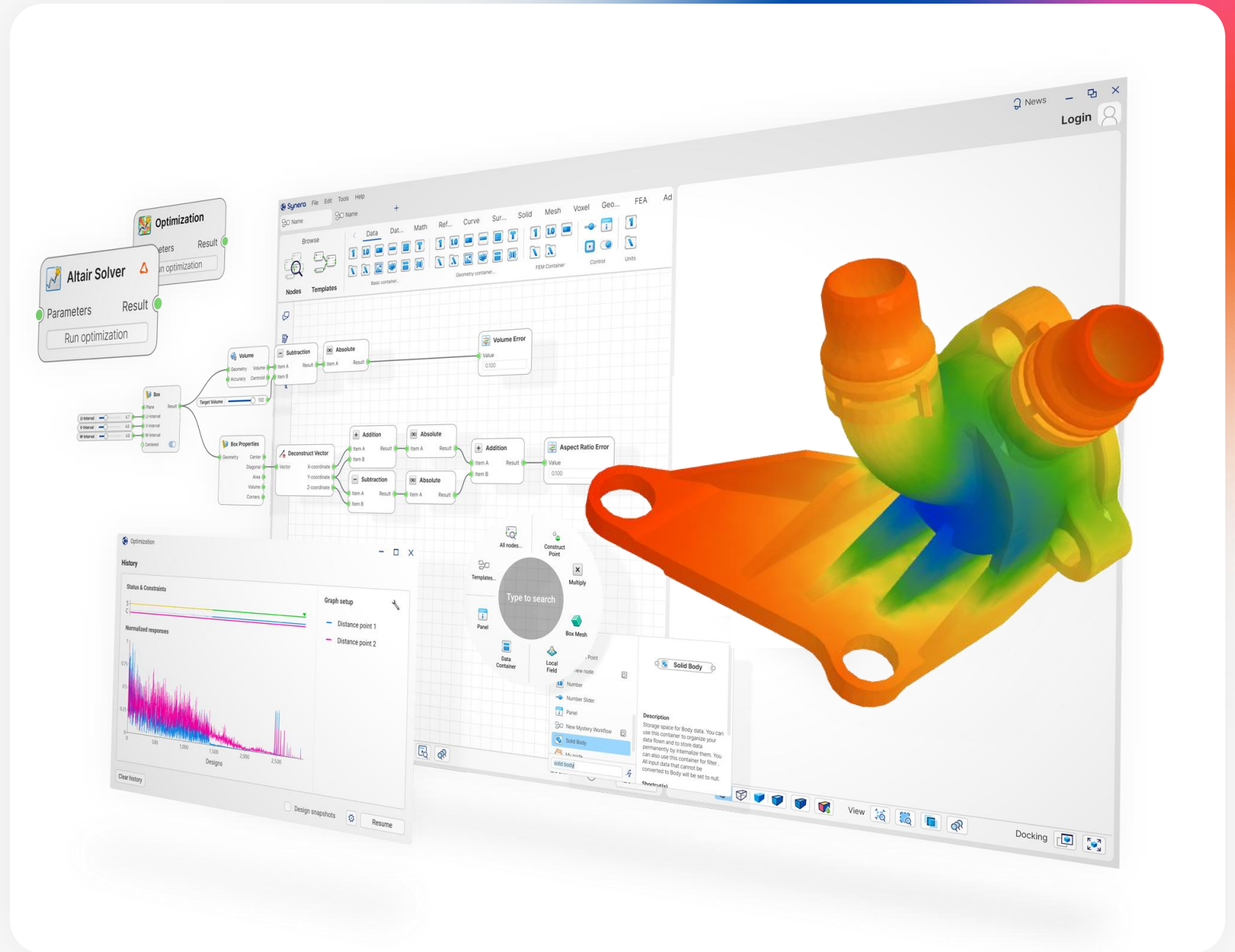


Synera using VMAP



# Summary

- VMAP enables direct user feedback and interaction through visualization.
- Scalable and interoperable through multiple 3<sup>rd</sup> party software packages.



**Thank you!**