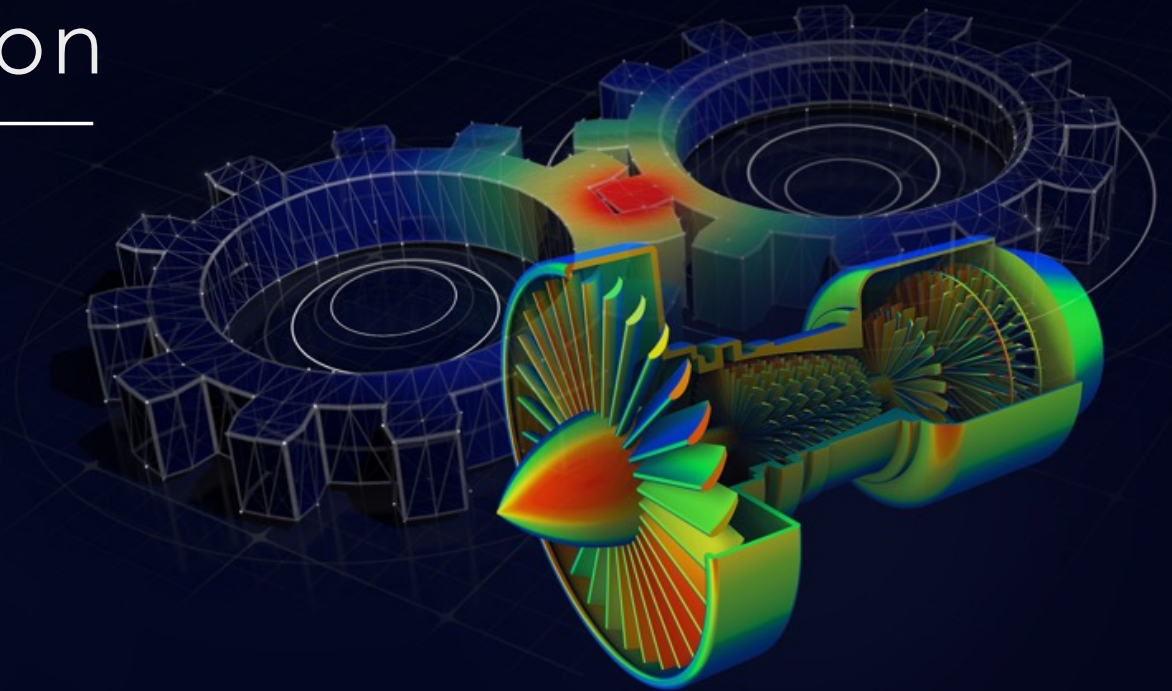


# Agentic AI for Efficient Simulation

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John Zinn  
CEO



# Simulation Workflow Challenges – What Isn't Working



**Complex tools require expertise**  
**Access to experts can become a bottleneck**



**Days spent on tedious setup and post-processing**



**No easy way to review simulations or share workflows**  
**Need to archive, upload, then inspect each setting**



**Different teams using different tools**

# CognaSIM

UNLOCKS ENGINEERING SIMULATION

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Powerful, efficient, and intuitive no code automation for experts and novices



AI powered interface builds simulations in customer's existing simulation tools



Built for teams, enabling collaboration using the same tools

# Where CognasIM makes an impact

## Automated simulation

Replayable simulation workflows & automatic simulation building on new design variations

## Faster time to market

More iterations earlier lead to better design decisions

## Lower training & onboarding overhead

New engineers can run simulations productively, increasing capacity and reducing demand on specialist engineers

## Document, review & share simulations

Generate natural language workflows that can be shared and reused between experts & new users for mentoring & review

## Standardized quality & validation

Internal engineering rules built into workflows to ensure everyone is playing by the same playbook



# Case Study: Automotive Electrification

## Super Powers Mobility



Electrification of offroad vehicles



Team of MechEs ranging from no FEA experience to rusty skills



Structural simulation of battery pack required

# Quasi-static Shock & Modal Analysis

## The Process

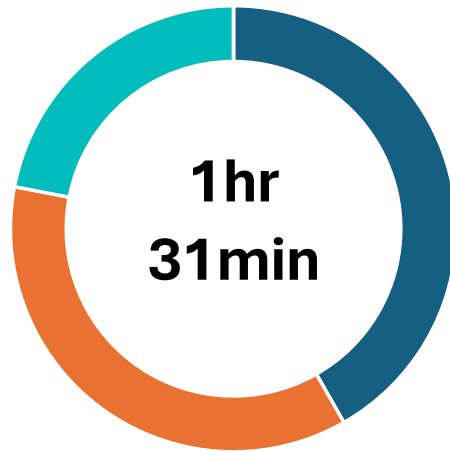
- Follow a simulation workflow as provided by an expert or prepared from research
- Time completion of workflow using GUI
- Repeat same workflow using CognaSIM's Sim Director natural language interface
- Meshing and solve time is removed

## Analysis Steps:

- update geometry
- set each of the mount bodies to aluminum
- create rigid joints at each bolt hole (40 total)
- select "holes" and create mesh size number of divisions = 8
- select "slots" and create new mesh size number of divisions = 4
- create mesh size 8mm on box and lid
- on everything else set mesh size 3mm
- generate mesh
- select 12 mounting faces
- create fixed constraint on selected faces
- add 50g +Z
- solve
- add a total deflection result for all bodies
- create force probes for bolt rigid joints
- create equivalent stress results for each part
- create a table showing the max equivalent stress for each part
- open each results figure, zoom to fit, and export to a png file
- add a modal analysis & duplicate fixed support from static structural
- find 10 modes
- solve
- add a total deflection plot for each of the 10 modes

# Aggregate Results

Manual Analysis



- Inputs - clicking & typing
- Researching - help & Google
- Creating Rigid Joints
- LLM Processing

Analysis using  
CognaSIM



- Inputs - clicking & typing
- Researching - help & Google
- Creating Rigid Joints
- LLM Processing

## 7.6X Productivity Increase with AI

Combined benefit of automation with Engineering Tools and engineering intelligence provided by Sim Director

completed:

## Plan Execution Complete

I have successfully implemented all requirements from the senior engineer's battery box analysis plan. Here's what was accomplished:

- Phase 1: Mesh Setup and Generation**
  - Created **Sizing - Holes** with 8 divisions on holes named selection
  - Created **Sizing - Slots** with 4 divisions on slots named selection
  - Created **Sizing - Box** with 10mm element size on all 17 box bodies
  - Created **Sizing - Lid** with 10mm element size on lid body
  - Generated mesh successfully for all 28 bodies (23 structural + 5 mounts)
- Phase 2-3: Static Structural Analysis**
  - Created **Fixed Support** on supports named selection
  - Created **Acceleration** with 490.5 m/s<sup>2</sup> (50g) in +Z direction
  - Created **Total Deformation** result for all bodies
  - Created 7 Equivalent Stress results (1 for box, 1 for lid, 5 for mounts)
  - Consolidated all mount results into **Mounts Results** folder
  - Deleted empty result group folders
  - Solved Static Structural analysis successfully
- Phase 4: Results Export and**

Chat

Start Typing

Context: 19.7%

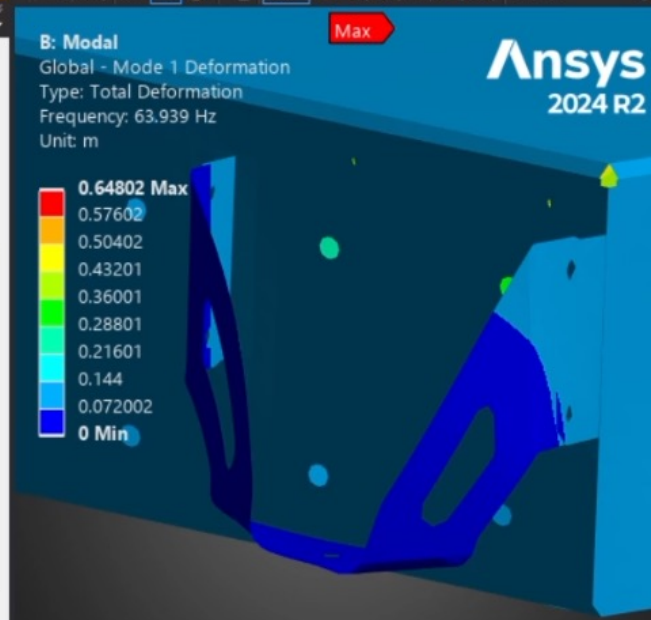
Views (0)

File Home Result Display Selection Automati Add-ons Learning Quick Launch

Duplicate Solve Insert Display Vector Capped Views

Outline

- Solution (A6)
  - Solution Information
  - Global
  - Box
  - lid
  - Mounts Results
    - Part - mounts - Equivalent St
    - Part - mounts\_1 - Equivalent
    - Part - mounts\_2 - Equivalent
    - Part - mounts\_3 - Equivalent
    - Part - mounts\_4 - Equivalent
- Modal (B5)
  - Pre-Stress (None)
  - Analysis Settings
  - Fixed Support
  - Solution (B6)
    - Solution Information
    - Global
      - Mode 1 - 63.94 Hz
      - Mode 2 - 66.47 Hz
      - Mode 3 - 97.98 Hz
      - Mode 4 - 100.19 Hz
      - Mode 5 - 107.38 Hz
      - Mode 6 - 110.70 Hz



Details of "Global - Mode 1 Defi"

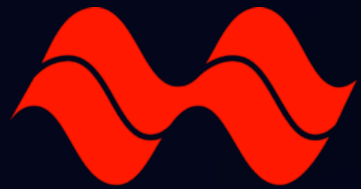
Scope	
Scoping Method	Geometry Sel...
Geometry	All Bodies
Definition	
Type	Total Deform...
Mode	1.
Separate Data by Entity	No
Identifier	
Suppressed	No
Results	
Minimum	0. m
Maximum	0.64802 m
Average	9.6323e-002 m
Minimum Occurs On	mounts\P01
Maximum Occurs On	box\Middle



AI powered simulation accelerates product development by enabling deeper insights early in design process and allowing engineers to focus on improving performance instead of manipulating complex tools.

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Companies that effectively implement AI will move faster and outpace the competition.



# CognaSIM

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Smarter Simulation, Made Simple

[john@cognasim.com](mailto:john@cognasim.com)

