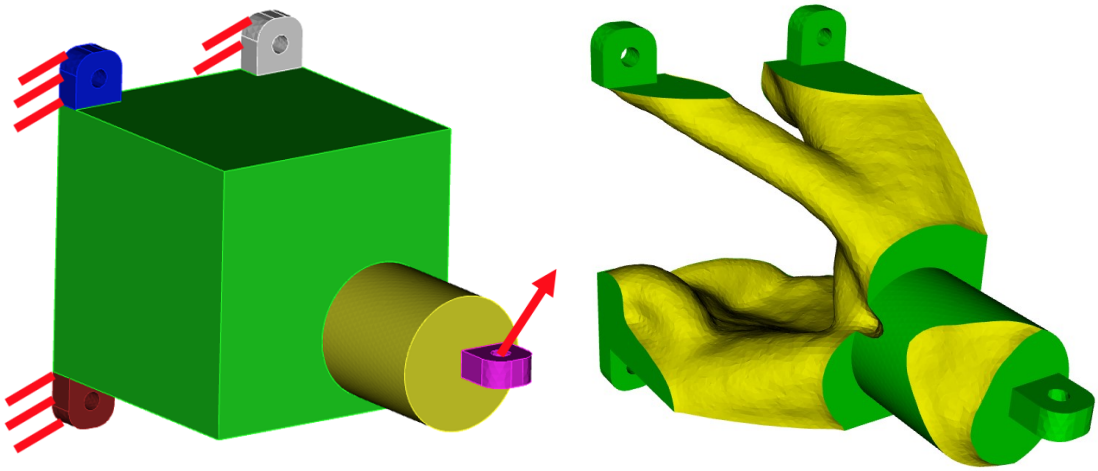
# Plato 2.4 Release Notes

Plato 2.4 includes a beta release of GPU-enabled capabilities provided through the Plato Analyze physics solver. This first release of the Plato product with Plato Analyze includes support for optimization problems requiring linear mechanical and thermal physics. The Plato Analyze solver was architected from the ground up for performance portability and has demonstrated extremely fast solve times on GPU hardware. This in turn makes for much faster optimization runs where the physics solve is the most time-consuming part. Below are examples of mechanical and thermal optimization problems using these new capabilities.

## Mechanical

This example demonstrates a compliance minimization problem where the goal is to make the structure as stiff as possible. The front magenta tab is loaded as shown and the rear tabs are fixed. This optimization run used a mesh containing 666K linear tets and took ~2.5 minutes wall clock time. The run consisted of 25 iterations made up of 26 physics solves, optimization updates at each iteration, and file I/O at each iteration. This problem was run on a Tesla V100 GPU.



## Thermal

This example demonstrates a problem involving 2 structural objectives and 1 thermal objective. The structural objectives are to maximize stiffness and the thermal objective is to maximize thermal conduction. Prioritizing the structural vs. thermal produces different designs and the designer can decide on a design based on which objective is more important. Each run at a given prioritization consisted of a model with 320K linear tets, 30 iterations, 3 physics solves per iteration (2 structural and 1 thermal), and took total time of about 3 minutes on a single Tesla V100 GPU.

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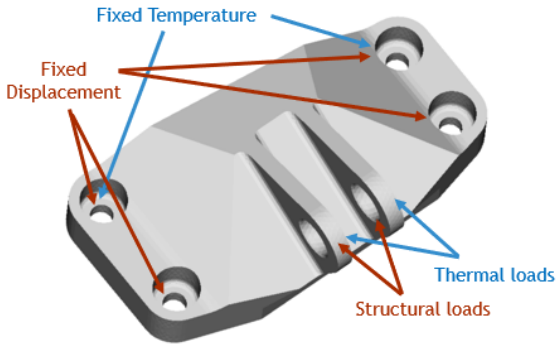


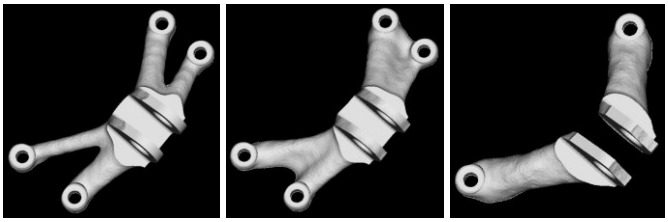

All Structural | 10x Thermal | All Thermal

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