

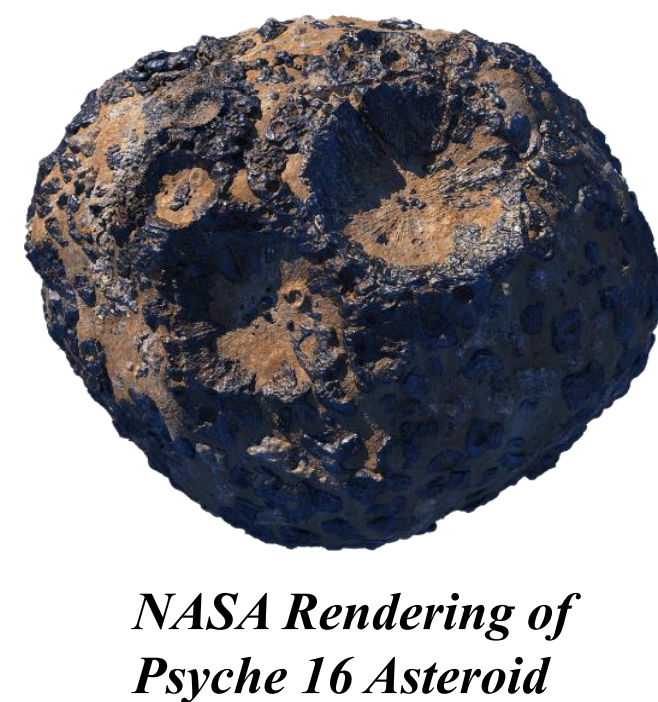
Objective

To acquire and cache samples across multiple surface types on asteroid (16) Psyche 🌠

Background

Psyche is an asteroid with metallic surface. Sampling methods need to accommodate this surface type.

The project is in joint effort with team 502.



Want to know more? Scan here!



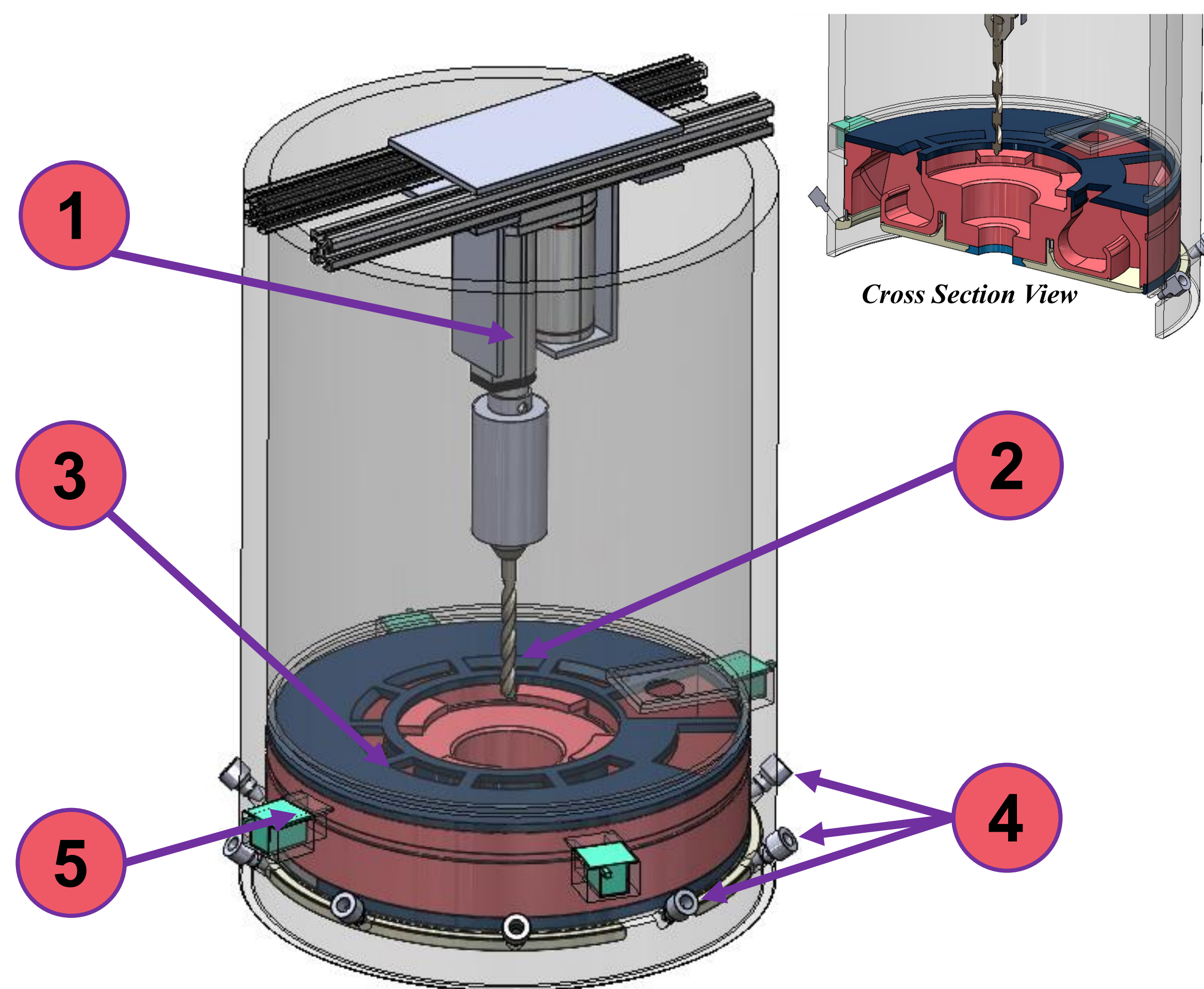
About Psyche Mission

About Team 501 Project



Design

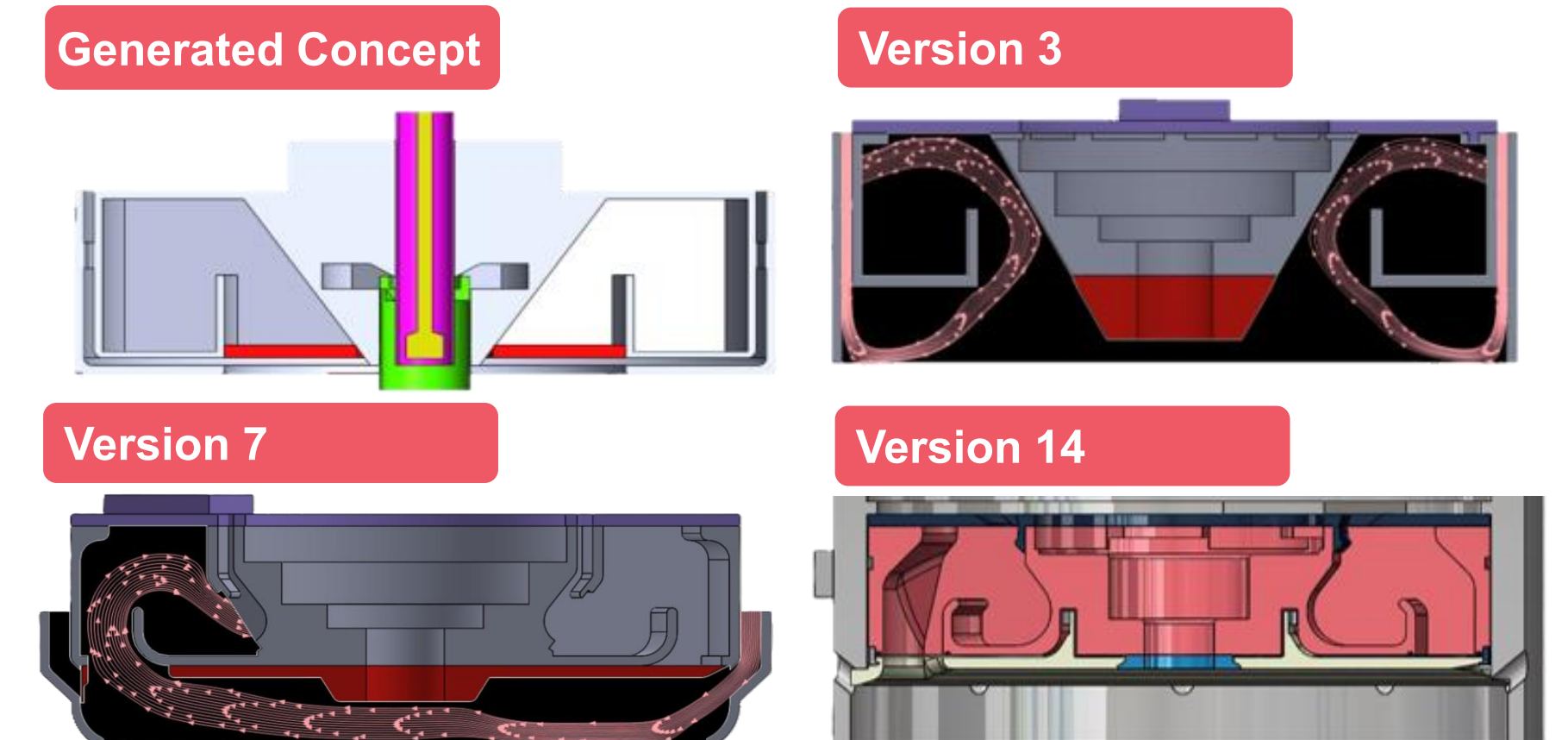
The final concept is a form of gas blast combined with a drilling structure.



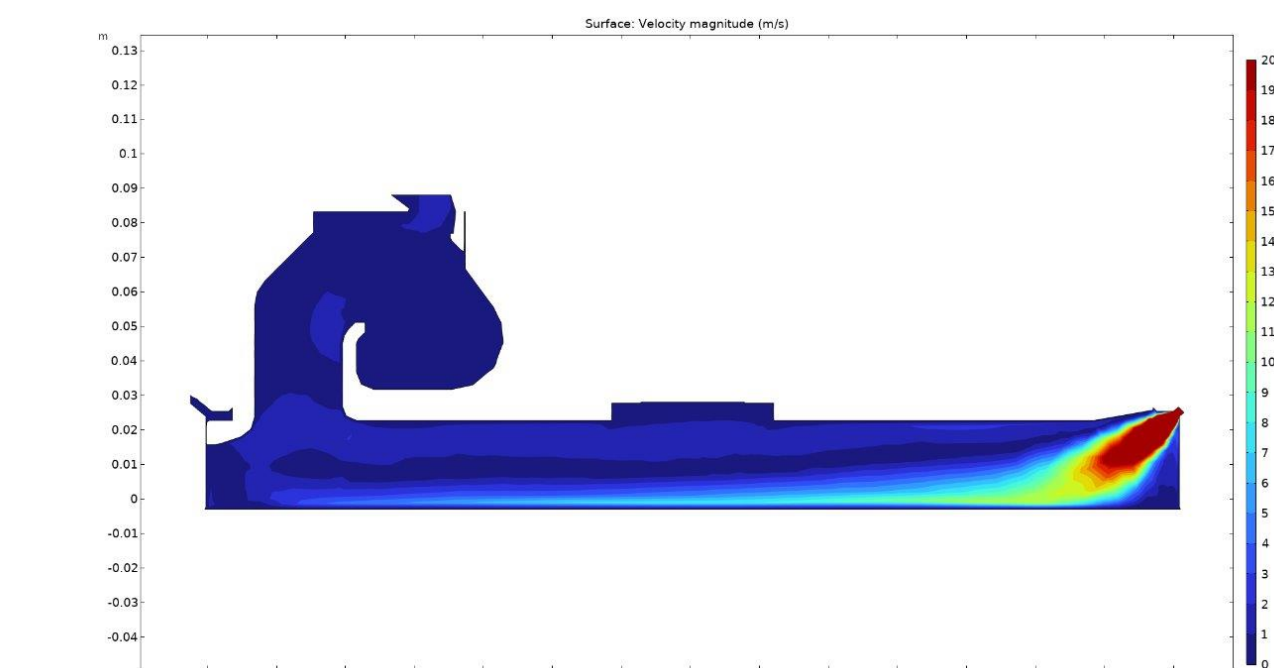
1. Actuator: Moves the drill up & down
2. Drill: Drills into Psyche's surface
3. Main Body: Stores samples
4. Gas Blast Inlets: Directs gas to move samples
5. Detachment Clips: Separates body for retrieval

Accomplishments

Team has made 14 design iterations & models

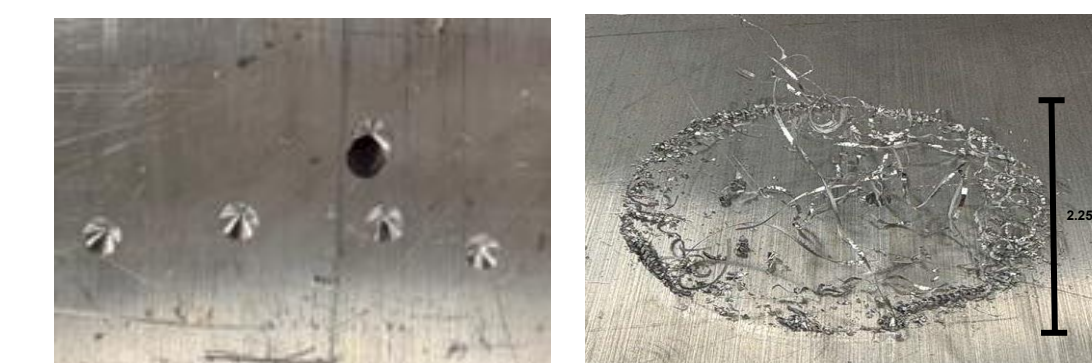


(Top) Version History of Gas Blast Head



COMSOL Flow Model Models that showed higher flow velocity suggested a better design for gas blast to move regolith

Design can drill into metal & gas blast can move grains into storage chamber



Metal Holes & Shavings from Drilling



Collected grains

Working Design