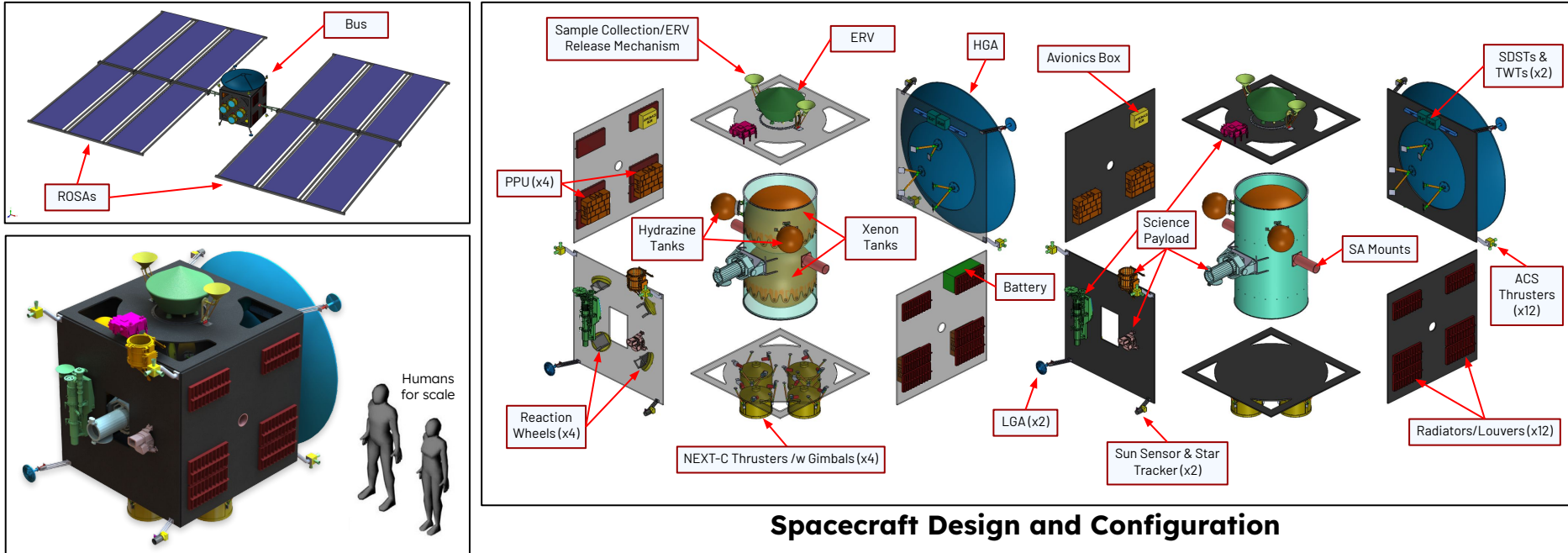


Erik Kramer | Mock Europa Sample Return Mission

Project → A pre-Phase A Europa sample return mission proposal with details for all subsystems

Tasks → Design of **structures** subsystem, **CAD** of all spacecraft components/configurations, **systems engineering** work



Erik Kramer | Mock Europa Sample Return Mission

Objectives

- Develop a proposal, including all spacecraft subsystems, to return a water plume sample from Europa
- Launch within 2030-2033 and have a mission duration of 10-12 years

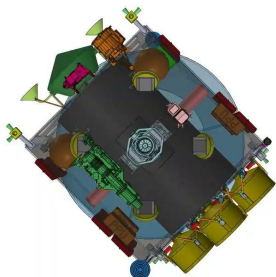
Process

- Used **SolidWorks** to design and model 100+ spacecraft components
- Tracked parts list, mass, and power through linked design spreadsheets, **MEL** and **PEL**
- Assisted other subsystems with **design iterations** and **trade studies**

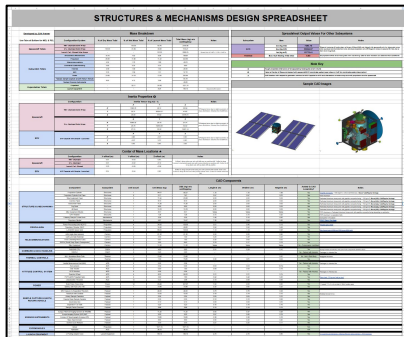
Results

- Produced a comprehensive SEP mission concept, including spacecraft design, that satisfies all level 1 to 3 requirements and lasts 11.14 years
- Collaborated to produce a 130 page report documenting the design and mission proposal

[Click](#) for Transparent Bus Rotation Animation



[Click](#) for Design Spreadsheet Example

A screenshot of a complex design spreadsheet titled "STRUCTURES & MECHANISMS DESIGN SPREADSHEET". The spreadsheet is organized into multiple sections with various tables and data entry fields. It includes a "PARTS LIST" section, a "MASS" section, and a "POWER" section. There are also several small diagrams and charts interspersed within the spreadsheet, including a small 3D model of the spacecraft bus and a diagram of a solar array deployment mechanism.

[Click](#) for Solar Array Deployment Animation

