



Systems Engineering for PSAS: Base 11 Space Challenge

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Pronouns: they/them

PCC SE





The Setup

Joins Portland State Aerospace Society (PSAS) in August 2018

Opportunity to develop a science communication based project management system

Base 11 Space Challenge

Systems Engineering for undergrads

Why?

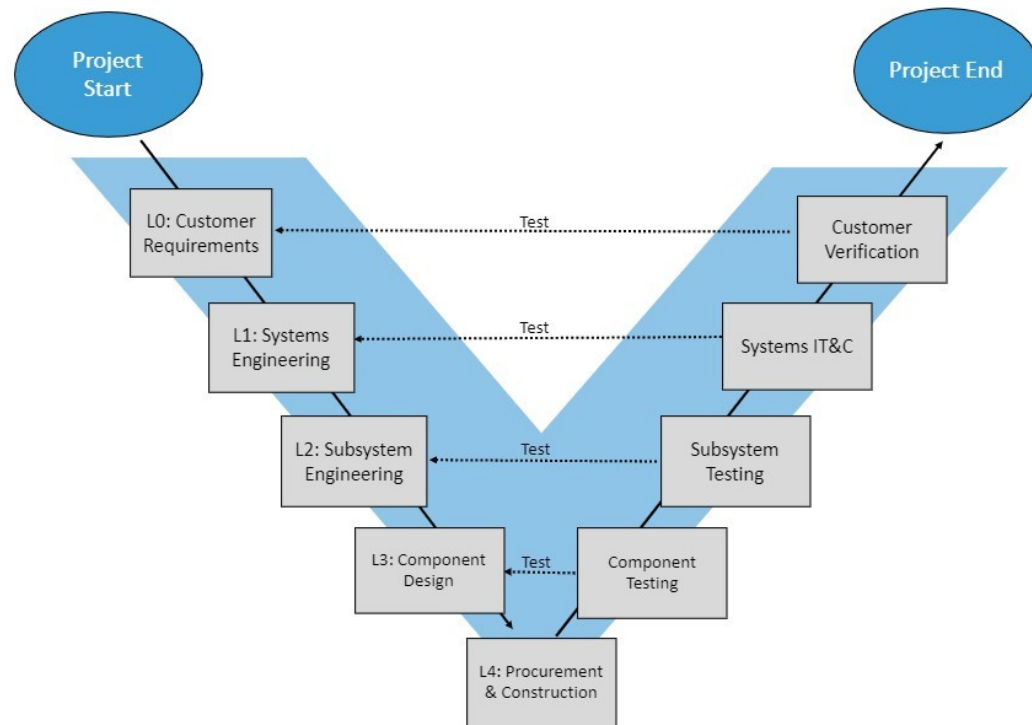
If PSAS is able to develop a repeatable, traceable way to create a documentation system that emphasizes science communication, then they will be able to successfully onboard new students and support retention.



So...what
is Systems
Engineering?

Formal Definition : an interdisciplinary style of engineering management that focuses on how to design and manage complex systems over their life cycles.

How does it
apply?



Three Forms of Documentation



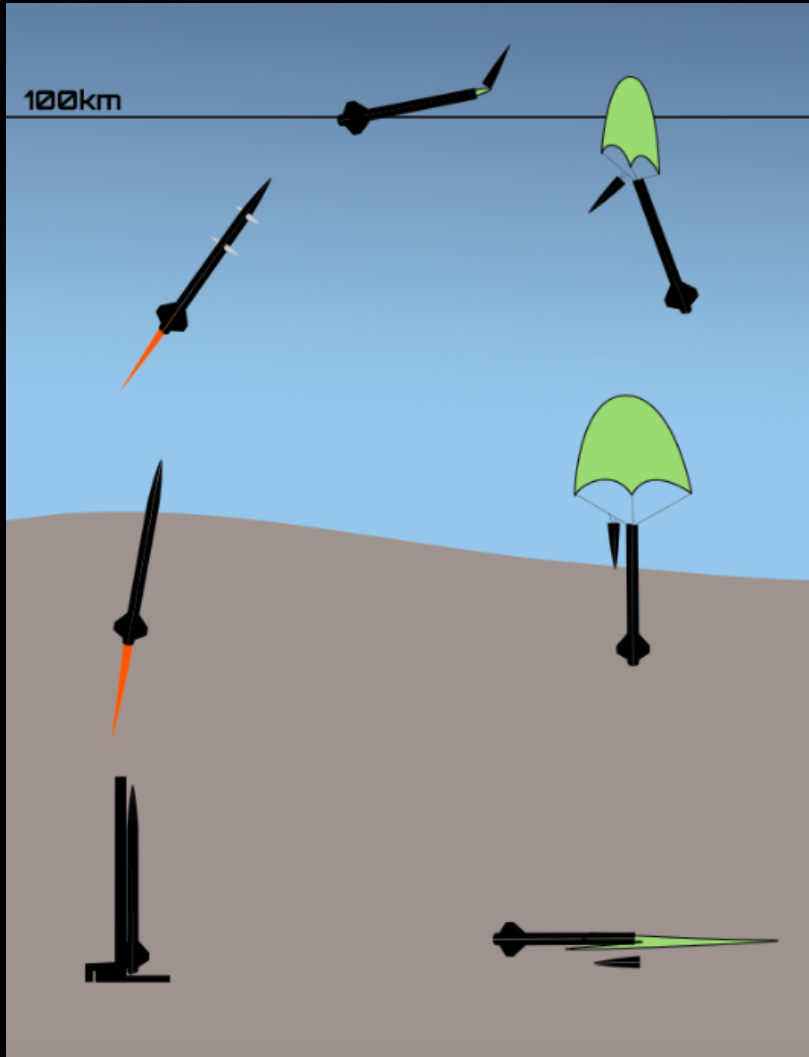
Concept of
Operations
(ConOps)



Systems
Engineering Master
Plan (SEMP)



Work Breakdown
Structure (WBS)



ConOps

- big picture, describes the lifecycle of the project easily to someone without a technical background

Systems Engineering Master Plan (SEMP)

- a longer document intended to guide the work of all those involved in the project. The SEMP is comprised of three main sections: technical project planning and control, systems engineering processes and engineering specialty integration.

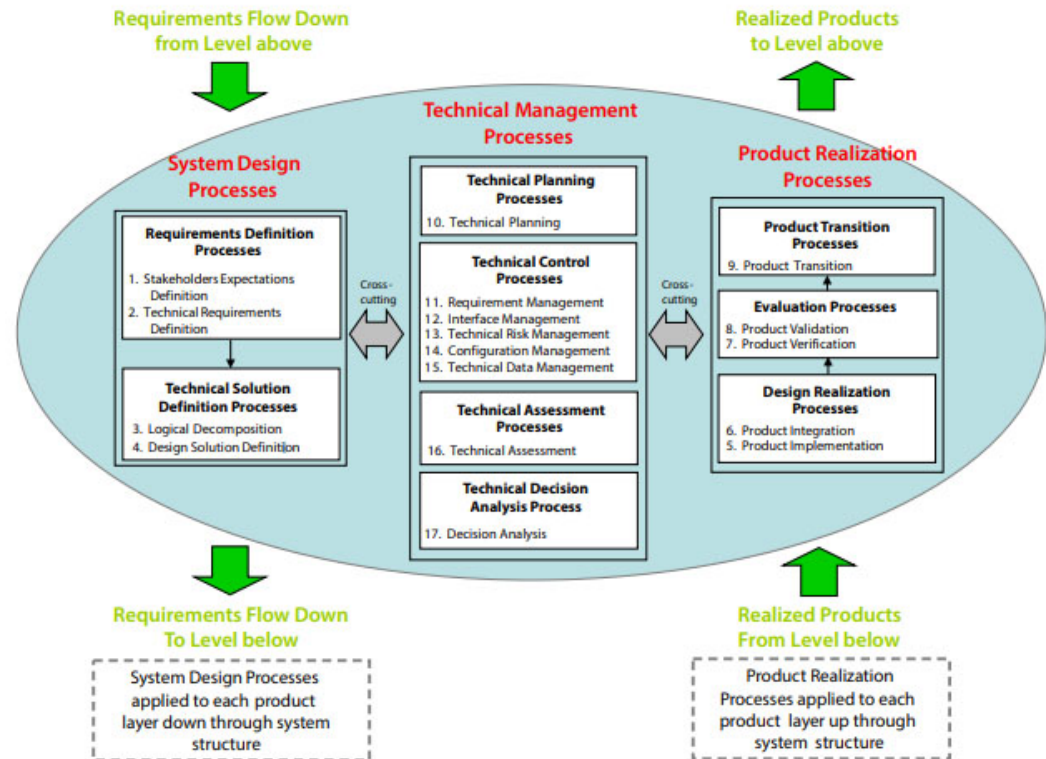
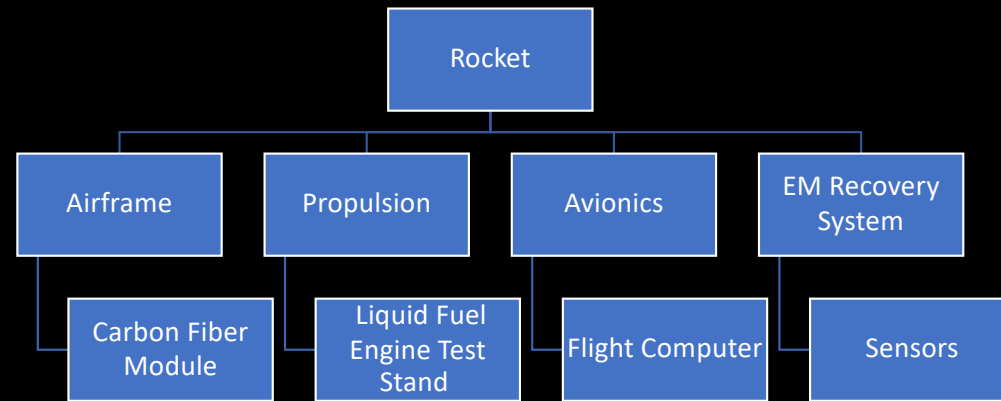


FIGURE 2.1-1 The Systems Engineering Engine (NPR 7123.1)

Work Breakdown Structure



- A deliverable-oriented breakdown of a project into smaller manageable pieces

Toolkit



Opensource software

Google Drive

Github

Jupyter Notebook



PhD student specializing in Systems Engineering



1 undergrad with executive functioning skills

How Data Was Collected

- Weekly mentored meetings
- Google Form surveys
- Researching different existing templates to emulate and adapt to student friendly format

What Was Discovered

- High Level Project Management in High Level Academia
- No pre-existing undergrad student models
- Team lead students were at capacity
- Data was less quantitative, more qualitative



Readjustments

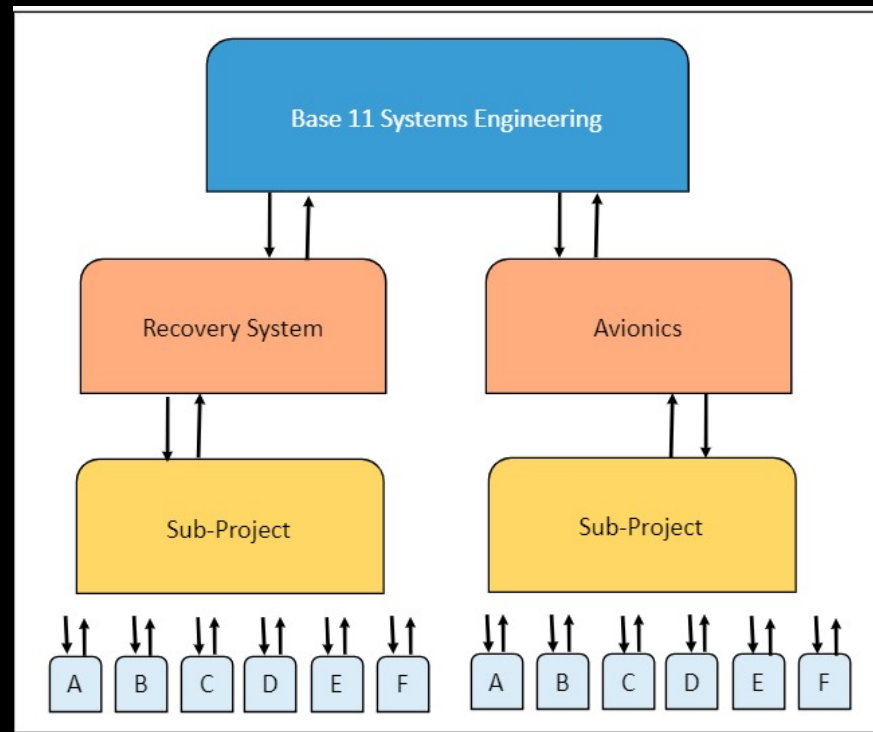
Brief overview meeting

- What would you like to see?
- How can we make it better?
- How do you want to participate?

Rocket Brunch: LOX and Bagels

- SYSE overview and progress
- Team feedback

Student generated/applied flow chart



Going Forward...



Original SYSE team will continue editing documentation over the summer and onward

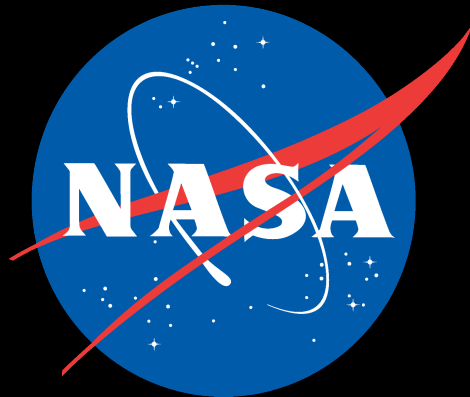
PSAS team gives feedback at pre-scheduled meetings



Implement SYSE development into annual project curriculum for the new year



Investigate opportunity to continue improving PSAS team structures



Acknowledgements

- Oregon Space Grant Consortium
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