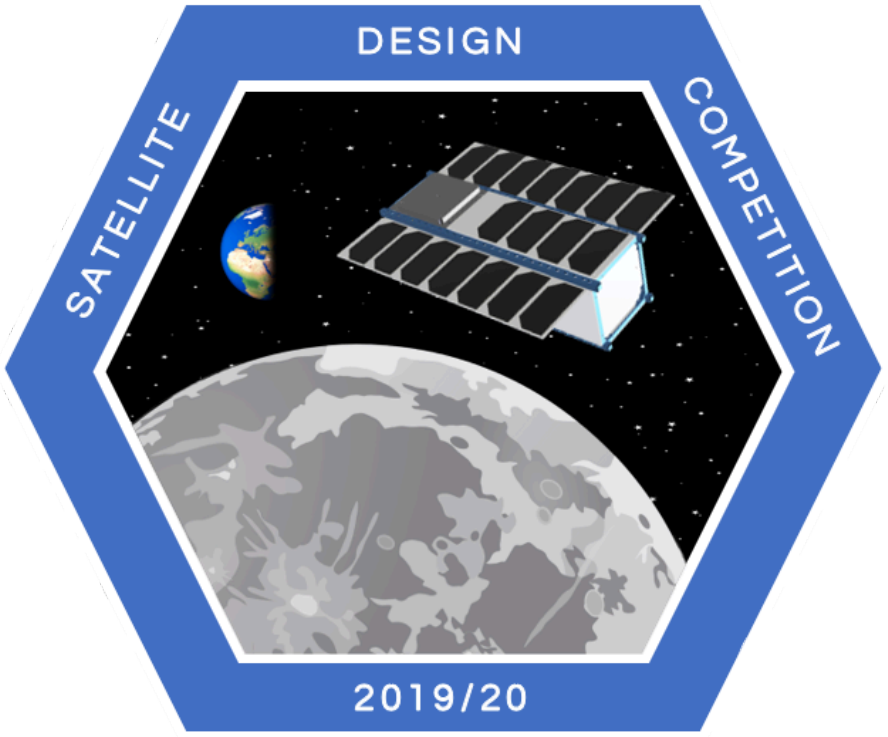

Satellite Design Competition
Critical Design Review

<Team Name>

<University>

2019-2020

Satellite Design Competition

<Team Name>

Guidance

The Critical Design Review (CDR) demonstrates the maturity of the project is sufficient to proceed to full-scale fabrication, assembly, integration and testing. Normally carried out at the end of phase C (detailed definition phase) of a project, the CDR is a major milestone in the development of a space mission. According to ECSS-M-ST-10C Rev. 1, the following aspects need to be addressed:

- Qualification and validation status of critical processes and their deployment readiness for phase D (qualification and production phase)
- Compatibility with external interfaces
- Final payload and mission designs
- Assembly, integration and test plans
- Flight hardware/software manufacturing, integration and testing

This template has been provided as a guide, but its structure can be altered to better reflect the team's work. Notes have been added to clarify what is expected from each section. High resolution files of the Open Cosmos, UKSEDS and SSPI logos, and the Satellite Design Competition mission patch will be made available on the UKSEDS website and must be included on the title page. The recommended font for the body of the text is Questrial, Arial or Times New Roman at 10-12 point, 11 point preferred. **There is no page limit for the CDR, but teams should be aiming to have between 20–30 pages for the body of the report, including references and appendices.** Appendices are optional and could contain background or contextual information that is not essential to the project. For more details on the content expected in the PDR, please see appendix E.2 of the Satellite Design Competition Rules and Requirement document and the referenced ECSS standards.

This document will be reviewed by a panel of industry experts and the reviewers will return a set of points to be addressed and clarified. **There is a prize for the overall best CDR and SSPI are interested in publishing the five best CDR reports**, therefore the quality expected of the CDR, both in terms of content and formatting, is similar to that of a published journal paper.

We advise teams to use this Google docs version to gather all information from different members within your team, download the file as a docx and complete final formatting through Word. The deadline for the submission of this PDR is 22nd March 2020, please submit as a pdf.

Contact satellites@ukseds.org if you have any further questions.

Team Name:
University:
Date Submitted:

Contents

Introduction

Use this section to give a brief introduction of your team.

Mission Statement

A mission statement is a short statement of the overall goal of the project.

Mission Objectives and Requirements

Mission objectives are criteria used to measure the success of a project and mission requirements detail what is needed technically to complete the project. Provide a summary of the provided and derived requirements for the satellite as presented in the PDR, in addition to any new requirements.

Project Management

Assigned Roles and Team Roster

Include a full table of all individuals who contributed to your project, their roles within the team, their year/course and their contact details.

Project Schedule

Include your proposed schedule for the project, from inception to completion. Include a work breakdown structure, any milestones and the proposed test plan.

Project Budget

Include your proposed budget for the project, detailing both income and expenditure. This may also be a good section to include your overall mass budget.

Project Risks and Mitigations

Identify the major risks associated with your project and satellite design, and how you expect to mitigate these risks throughout the development process.

Mission Analysis

This section should contain the high-level lunar nanosatellite mission designed in conjunction with Open Cosmos' beeApp software. The objective is to state what orbit the satellite should be injected into to maximise revisit times of historic lunar landmarks.

Detailed Design

Give an overview of the detailed design and highlight all changes made since the PDR, including reasons for those changes. Describe how the design addresses the requirements. Following the overview, a detailed assessment of each subsystem is required. The subsystems listed below have been included as examples, but can be altered to better reflect the breakdown of your project. Ensure that you have detailed information on how the subsystems interface with each other and with external surfaces.

Payload Subsystem

Power and Electrical Subsystem

Attitude and Orbit Control Subsystem

Mechanical Subsystem

Software Subsystem

Operations

Include an overview of the operations plan for the competition challenge day in the mystery room.

Manufacturing

Include details of your manufacturing plan.

Testing and Validation

Include a detailed testing plan, both for software and hardware.

References

Appendices

Include appendices if needed.