LULEÅ UNIVERSITY OF TECHNOLOGY

E. Chester / 2025

R7023E Datahantering ombord, dataprotokoll och satellitoperationer

Assignment 1: Software Requirements Document

(GROUP ASSIGNMENT)

Overall Task

This assignment is to be completed in small teams of approximately 5 students.

Your task as a team is to prepare a high-level Software Requirements Document (SRD) for the On-Board Data Handling subsystem of a hypothetical spacecraft mission.

The approach to developing, exploring, elaborating, and writing requirements has been provided during the lectures.

Mission Definition

During lectures, the teams have selected the spacecraft objective, and the general orbit type or location, using a specific mission scenario generation tool. Every team has a different mission scenario.

Expected Assignment Output

There are TWO things to create.

[1] A single document containing the SRD (as PDF)

The maximum allowed number of pages shall be (team size × 5); pages after this number will not be read. This is not a target!

The submitted SRD shall represent the collected effort of the whole team.

The submitted document shall include:

- Identification of the team members.
- A short definition of the mission scenario (max. 1 page).
- A list of assumptions your team will adopt in order to prepare the requirements. For example, you may assume a certain availability of ground segment resources/support for your mission. The important assumptions should be described clearly.

- A summary of any analysis you do for the scenario that is used to provide a source of requirements. For example, estimates of the communications periods, durations and gaps. You may use any methods for any analysis, provided it is rational and (briefly) described.

- The main body of the SRD, comprising the developed requirements. If a requirement is derived from a higher-level requirement, they should be cross-referenced.

- For every 3 people in a team, **at least two significant functions** of the OBDH system shall be defined using suitable UML diagrams. (e.g. a team of 7 people are expected to include a minimum of 4 diagrams).

  You are responsible for determining which kind of diagram is suitable, and for producing it to a level of detail that allows: (1) unambiguous interpretation and (2) it to fit on a single page of the document and (3) it to be readable when printed. Therefore, huge or complex diagrams are not useful.

- A short explanation of how you implement version control, configuration management, change control, within your team. (max 0.5 page).

- A way to indicate how the work was distributed in the team (you can do this in each section, or in a table at the end, or in any other way that is logical for you).

- A short conclusion section which reflects on the process, the scenario, and the requirements you have created. (max. 1 page).

[2] A very short presentation

- A very short presentation about your mission and critical requirements that come from your scenario. This will be delivered by an appointed team member to the whole class. This is so that other teams can see and learn about your scenario and compare them.

Notes:

1) You are NOT expected to develop the methods for verifying any requirement, nor to conduct any preliminary design.

2) A traceability matrix is not expected. However, you should indicate any requirements that have links (traceability) back to any assumptions you have made in the scenario.

3) There is no minimum number of requirements. You should elaborate the requirements in a *balanced* way in the time and scope available (that is, do not provide 100 requirements about 1 main function, and only 2 requirements about another function). Go to a level of detail that you are comfortable with.

Deadline

The deadline for submission shall be **30 September 2025**.

Assessment

The submitted SRD documents will be read carefully looking for attention to the expected characteristics of SRD (as defined in lectures; for example, ‘correct’, ‘consistent’, ‘ranked’, etc.)

Evidence will be expected of understanding the process of requirements development as well as suitable contents of the requirements themselves.

The assessment outcome is a PASS / NO PASS grade, which shall apply to the whole team unless there is no evidence that a team member has usefully and proportionally contributed to the outputs.