

Assessment 2 Description

1 Introduction

Communicating effectively is an important skill for engineers, particularly in technical disciplines. This is especially the case during industrial system design and integration projects where there are many interfaces between contributing components. In addition to the technical aspect, people with differing skills may need to work together, or at different times; in order to do this effectively they need to speak the same language. That language is documentation, and here, a picture is definitely worth a thousand words.

In order to maintain integrated systems (whether locally, or distributed), it is important that it is supported by high quality documentation. One way to measure this is to consider how easily someone with no knowledge of your work could pick it up and start contributing effectively. When generating your outcomes for this assessment, continually reflect on what you have designed / learnt / modularised / connected to put your integrated solutions together. If you had to leave in a hurry, how would you most quickly explain your systems architecture, and how it works, to someone else?

You have worked, or are working on, projects that have elements of system integration. You are encouraged to use one of these projects (eg. capstone) as a case study for this assignment. If you have not got a suitable project (or previous project) you can develop a design for a smart mechatronic system that detects and displays how long someone washes their hands for (including electronic sensing, CAD designs of mechanical mounting structures, etc).

2 Aim

The aim of this assessment is to explore methods of producing quality engineering documentation.

3 Objective

The objective of this assessment is to generate documentation at the system, and subsystem levels.

4 Necessary Competencies

This assessment relies on the following competencies:

- Mechatronics Engineering (Mechanical, Electrical, Software/Firmware)
- Systems thinking
- Logical structure in written / visual communication in a technical setting

5 Requirements

This assessment has the following requirement/s:

- System Level documentation (Labelled System Architecture Diagram)
- Mechanical Subsystem Documentation (Dimensioned CAD Drawings of 3 parts and how they fit together)
- Electronic Subsystem Documentation (Schematic Capture, PCB Layout, Bill of Materials)
- Soft/Firmware Subsystem Documentation (Algorithm Architecture flow diagram, 1 page of well-formatted and commented code)

6 Submission

Please submit as a ZIP file, containing all documentation. Your documents would form the basis of appendices in a system commissioning report - you don't need to write this report.

7 Grading

This assessment accounts for 40% of the course's final grade. Marks will be 10% for each of the four requirements listed above.

The following rubric will be used to mark this assessment:

Table 1: Marking Rubric.

Fail Range (40-49.99)	C Range (50-64.99)	B Range (65-79.99)	A Range (80-100)
<i>Poor</i>	<i>Adequate</i>	<i>Good</i>	<i>Excellent</i>
Documentation skills require further development. Some elements not attempted, or of inadequate suitability	Communication skills through documentation are developing. The documents show elements of system integration, and are largely complete.	The documentation shows a complete picture of the system, supported by strong discipline-specific communication media	The documentation exemplifies that of a professional engineer. It is flawlessly presented and credible to be published in a systems commissioning report