



Australian National University

PROJECT REVIEW - WEEK 8

Prepared For

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Document Identification

Document Revision Number	001
Document Issue Date	April 23, 2017
Document Status	Final

Introduction

Project Review 2 (PR2) follows on from Project Review 1 (PR1), which was submitted on Monday March 20, 2017. PR1 contained a section introducing the project, that included a project description, context and motivation. This is located in Section 1 of [1]. This document does not contain a similar introduction, but instead begins with an outline of the project objectives and deliverables, as these required updating from PR1 due to evolving client expectations and project progress (Section 1). Following on from this is Section 2, which provides an overview of the groups project management strategies. Section 3 outlines the work that has been completed since the previous Review. The document ends with a summary of work that will be undertaken in the immediate future (Section 4).



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Acronyms

AITC Advanced Instrumentation and Technology Centre.

ANU Australian National University.

CD Conceptual Design.

EOS Electro-Optic Systems.

GSL Guide Star Laser.

IDD Interface Design Document.

NDA Non-Disclosure Agreement.

PR1 Project Review 1.

PR2 Project Review 2.

SRRO System Requirements Reviews Opening.

SSRP System Requirements Reviews Preliminary.

SSS System Subsystem Specification.

1 Project Expectations

1.1 Refined Objectives

The Minimum and Extension goals of the project were outlined in PR1 [1]. The Minimum Objective was, and remains a System Subsystem Specification (SSS) document, however the contents of this document have been updated. Extension Objective 1 has also been updated based on client feedback, while Extension Objective 2 remains unchanged. A summary of the updated objectives is provided below.

The SSS document contains a Requirements Verification Matrix, which is a collation of the operational requirements of each component (i.e. the three Guide Star Laser (GSL) and the telescope within its dome). The document also includes a Requirement Conflict Identification Table, in which all the conflicts between components have been listed alongside potential solutions. In order to facilitate easy readability, a final section has been added to this document that aims to summarise and convey the requirements simply and clearly. The SSS is discussed further in Section 3.

In PR1 it was stated that Extension Objective 1 was to be a Conceptual Design (CD) [1]. This objective has since been changed from a single CDs to multiple designs. This is because our client has indicated that they would prefer to have designs that incorporated **A)** the three lasers and the telescope, **B)** the Electro-Optic Systems (EOS) and Australian National University (ANU) GSLs and the telescope, **C)** the Toptica and ANU GSLs and the telescope, and **D)** the ANU GSL and the telescope [2]. The reason this objective has been updated is that it has now been clarified that it is highly unlikely that the EOS GSL and the Toptica GSL will require simultaneous interfacing. If EOS completes their laser by the project end date it will be interfaced, if it is not completed then the Toptica will be purchased and interfaced instead. This ensures that the ANU GSL is compared to at least one other GSL. CD (**D**) is also required in order to provide a clear indication of the relative conflict resolution of the ANU GSL by itself, compared to mounting it with a second GSL. Thus, if it proves impossible or very difficult to interface two GSLs simultaneously, a CD of the main laser - the ANU GSL - will still have been completed.

The Extension Requirement 2 for the project remains a design prototype as outlined in PR1 [1].

1.2 Refined Deliverables

A document tree illustrating the updated document/artifact structure is included as Figure 1 below.

1.2.1 Project Pro Forma

The first deliverable was a Project Pro Forma document, the contents of which were discussed in PR1 [1]. A first revision of this document was delivered to the client on March 17, and a second revision, complete with requested changes (available here [3]) was delivered on March 31 and approved by the client on April 21st. The delay between delivery and approval was due to our clients busy schedule.

1.2.2 Minimum Objective: SSS

The second deliverable is the Minimum Objective: the SSS. A three stage reviewing process for this document is outlined in the Project Pro Forma. The first of these reviews, a System Requirements Reviews

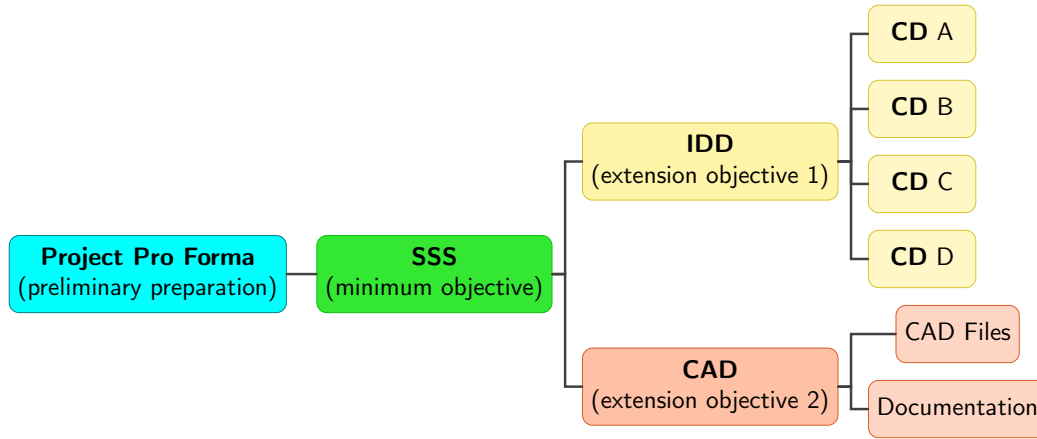


Figure 1: Document Tree - the complete document hierarchy

Preliminary (SSRP) was conducted at a client meeting on March 31 (minutes available: [4]). This review confirmed that we were on the right track, and could continue collecting requirements. The second review, a System Requirements Reviews Opening (SRRO), was begun on April 21, at which time a first draft of the SSS was distributed to representatives of the various stakeholder groups (the Advanced Instrumentation and Technology Centre (AITC), the ANU and EOS) with feedback pending.

1.2.3 Extension Objectives 1 & 2

As the project is proceeding ahead of the initial schedule, the team has begun work on Extension Objective 1 in parallel with the SSS. This objective involves delivering four CDs and corresponding documentation in the form of an Interface Design Document (IDD). Further details are provided in Section 3. If Extension Objective 1 is completed, the project will proceed to Extension Objective 2.

2 Project Management

2.1 Document Control

As stated in PR1, all project documents are located in a Google Drive folder (available here [5]). This folder contains a Contents Page available here [6], and team organisation documents such as a Project Schedule [7], and a to-do list/time sheet [8].

2.2 Client Engagement Strategies

In order to engage with the client, the group has, and will continue to spend working hours on Fridays at the Mount Stromlo Observatory. During these hours our weekly client meeting takes place (meeting agendas and minutes for these, as well as tutor and group meetings are available here [9]). Being on-site also allows for easy access to other stakeholders from the AITC, ANU and EOS, many of whom have information critical to our project. Being able to go to their offices when questions have arisen has proven much more efficient than trying to work via email.

2.3 Conflict Resolution Framework

We have not had the need to apply any conflict resolution strategies in our project so far. However, if there are any issues or personal grievances, our policy is to resolve them in-person during our various meetings. This ties into our client engagement strategy, as the entire group works at Mount Stromlo on Fridays, which provides sufficient time to discuss issues and prevent conflicts from arising.

2.4 Risk Mitigation Strategy

We have implemented strategies that aim to identify, analyse and mitigate risk. The three major risks that we have identified are:

- That we do not meet our project deliverables.
- That our work is not useful to our client.
- Whoever takes over the project after us is unable to use our work.

We have sought to minimise these risks by holding regular meetings and reviews which always include our client and often include stakeholders from other involved companies. These meetings and reviews give all relevant stakeholders the opportunity to be updated on our progress, thus ensuring that we are working effectively and providing optimal value. Furthermore, our work is self-contained, and documented in a manner such that our client, and other staff or engineers, can follow on from where we finished.

3 Project Progress

3.1 Project Pro Forma

Following a number of concerns our client had with the Pro Forma we have revised the document to better reflect our clients expectations. Our client was worried that there was too much of a focus on the project management and requirements gathering side of the project, whereas she was more interested in seeing conceptual designs. The updated Pro Forma, which was approved, is available here [3].

3.2 System Subsystem Specification

Significant progress has been made on the SSS since PR1. Specifications for the Topica Laser, EOS Laser and the telescope dome have been added, such that these three systems are close to being fully specified. Due to a Non-Disclosure Agreement (NDA) the values for a large number of Topica Laser requirements have been redacted. Finding specifications for the ANU GSL has proven difficult, as it is still in development. Fortunately, this also means there is flexibility for the ANU GSL to be modified if required. Our client is aware of this issue and we have been working closely with her to get any specifications as they become available.

With the SSS in a near complete state work has started on finding any clashes between specifications. So far there have only been minor clashes identified. These clashes are available in the Requirements Conflict Identification Table within the SSS. To better convey how each system fits together, a table has been created that articulates the main requirements for each subsystem. For the same reason, a power system

interface diagram and a control system interface diagram have been created. The current SSS is available here [10].

3.3 Extension Objective 1 - Conceptual Designs

Preliminary work has started on conceptual designs for the project. These designs are in fulfilment Extension Objective 1, and are available here [11]. These designs have thus far involved simple illustrations of how the different laser heads could physically interface with the telescope, however, work has also begun on a full CAD model of the telescope and dome, complete with the three lasers and their peripherals. This model is based off documents provided by EOS which have been augmented to include our solution. At this stage, the original EOS files are pending approval for wider release, but files containing solution components are available here [12].

3.4 Deliverables

Deliverable	ENGN4221	Client	Week Completed	Revision
PR1	×		5	Final
PR2	×		8	Final
Project Pitch 1	×		5	Final
Project Pitch 2	×		8	Final
Project Pro Forma Document		×	5	001
Project Pro Forma Document		×	7	Final
System Subsystem Specification		×	4	001
System Subsystem Specification		×	6	002
System Subsystem Specification		×	7	003

Table 1: Revision history of main deliverables

4 Next Steps

The team is hoping to conduct the final review of the SSS document during the week of May 1. Before this, the Requirement Conflict Identification Table within the SSS will need to be updated with calculated values. A few more holes in the requirements will also need to be filled.

Many of the requirements regarding the ANU GSL are still unknown, as it is currently being developed, however, additional requirements will need to be gathered either from the developing company (if possible) or our client.

In the mean time, the team will continue brainstorming potential designs, and checking these against the conflicts. The CAD model of the design will also be completed. Finally, the project poster (begun on April 21) will be completed by Friday of Week 9, and the second project pitch will be practised before it's presentation in Week 8.

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