Project Name:		
LCH Clearances		
Business objective served by this project		
Creates an automatic system to track and enforce LCH propagation windows.		
Project Manager/Leader:	Project Sponsor:	PDS Version/Date:
Arturo Núñez	Gustavo Arriagada	1 / 2010-10-20

Project Description

Issue Statement:

The LCH Clearances project provides tools to track and enforces LCH propagation windows. The user requirements document, SCI-OCS-LGS-01 by Dolores Coulson and Bryan Miller, defines

> *an automatic system to track and enforce LCH propagation windows. This should be a comprehensive system that should help Queue Coordinators (QCs) visualize shuttering windows (the complement of the propagation windows, the periods when the laser must not be propagated towards a given target) so that they can schedule observations in the propagation windows, aid observers to be more aware of shuttering windows for the current target, shutter the laser or prevent propagation within shuttering windows, and prevent exposures from starting that would continue into shuttering windows.*

Project Objective Statement (POS):

The goal of this project is to provide software support to keep track of propagation windows, which currently relies solely on the vigilance of the nighttime summit staff. In particular, the major features of this software will include

- An automated system to store and process LCH data, to make it available to other Gemini Systems
- A system to automatically generate laser target lists
- A visualization feature to preview shuttering windows to allow queue coordinators to easily see the optimal time to schedule observations
- Improvements to existing software to help avoiding shuttering windows, including visualization features for planning, visual and audible alarms and interlocks systems

Project Flexibility:

Flexibility Matrix	Least Flexible	Moderately Flexible	Most Flexible
Scope		✔	
Schedule			✔
Resources	✔		

Major Deliverables:

- A Laser Target Database to store information from the Space Command
- A Software system (including updates to existing operational software) to track and enforces LCH propagation windows. The Observing Tool, Queue Planning Tool, LTCS and Seqexec (among others) are software systems that will require modifications to satisfy the user requirements.
- Operational / user documentation describing basic operation and clarifying any unusual or more involved steps.
- Technical documentation with an architectural overview.

Assumptions:

- The format of the information coming from the Space Command is well known, documented and standardized.

- The user requirements have been reviewed and approved by the systems engineering group.

IS and IS NOT:

- **IS:** New software development to automate and simplify tracking and enforcing LCH propagation windows
- **IS:** Updates or extensions to existing software systems, including the Observing Tool, Queue Planning Tool, LTCS and seqexec.
- **IS NOT:** A replacement for SALSA, but it requires some aspects of this project to be completed. These aspects are included in this project.

Strategy and Resources

Milestones and Stages:

The following are the principal stages of the project and the identified milestones:

- User requirements consolidation

  Systems and science consolidate and agree upon the user requirements

  - User requirements document is produced by science and approved by systems engineering.

- Evaluation Phase

  Software review with Science and Systems the user requirements and prepares a Conceptual Design

  - Kick off meeting
  - Conceptual Design Review
  - User requirements baseline

- Elaboration Phase

  Following the Conceptual Design Review, in this phase software requirements are extracted, tests plans are produced and the overall software architecture is produced.

  - User test procedures.
  - Testing platform in place
  - Software Requirements Document
  - Design Review

- Development Phase

  In this phase the different subsystems are implemented or updated.

  - ICD for the Laser Target Database
  - Laser Target Database Implemented
  - TBD milestones for the Target List Generation
  - LCH alarm system implemented
  - QPT updated for LCH
  - OT updated for LCH
  - LGS Visualization Ready
  - Seqexec updated for LCH
  - LTCS updated for LCH

- Internal Testing Phase

  During this phase, software pass integration tests based upon the user tests procedures

  - Software ready for Acceptance Tests

- User Acceptance Test Phase
    - Software AT Passed
    - Software installed in production

Estimated Costs:

- No equipment or resources beyond those afforded for normal software development.

Core Team Members(see Guidelines for Developing New Projects document):

- Arturo Nunez (Project Manager)
- Richard McDermid (Project Scientist)
- Gelys Trancho (Systems Engineer)

Extended Core Team Members:

- Nicolas Barriga (software development)
- Javier Lührs (software development)
- Pedro Gigoux (software development)
- TBD HL Engineer (software development)
- TBD RT Engineer (software development)
- Shane Walker (consultation on existing OCS infrastructure, codebase)
- Richard McDermid (science support)
- TBD science staff members (testing)

Dependencies that require coordination:

- TBD

Risks and Issues:

- User requirements have not been finalized yet.
- Some tasks from the SALSA project are required for this project. Since SALSA is not a band 1 project for next year, the required tasks were added to this project, but they need to be reviewed and included in a coherent way into the project structure.
- Systems engineering has raised concerns about the validity of the existing user requirements. This needs to be resolved and it is contemplated as the first phase of the project. Time estimates and resources for that phase should be reviewed by science and systems.
- Several software engineers are required for this project in order to reduce the schedule. It is possible to reduce the number of software people involved.
- We need to prioritize the different requirements (once we get a final version), so we can evaluate options of reducing scope, etc.

Supplemental Resources:

- None