



ESO - EUROPEAN SOUTHERN OBSERVATORY

# EUROPEAN SOUTHERN OBSERVATORY

Organisation Européenne pour des Recherches Astronomiques dans l'Hémisphère Austral  
Europäische Organisation für astronomische Forschung in der südlichen Hemisphäre

## LA SILLA-PARANAL OBSERVATORY

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### Software Design Document for Load Cell Supervision at 3.6 Telescope (Preliminary Version)

AAA-BBB-CCC-nnnmm-0001

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## CHANGE RECORD

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## TABLE OF CONTENTS

1. INTRODUCTION.....	5
1.1 PURPOSE.....	5
1.2 REFERENCE DOCUMENTS.....	5
1.3 ABBREVIATIONS AND ACRONYMS.....	5
STYLISTIC CONVENTIONS.....	5
2. OVERVIEW.....	6
2.1 Software System Description.....	6
2.1.1 MOXA operative configuration of serial ports.....	6
2.1.2 Main Software Actors.....	6
2.2 Basic Operation.....	7
2.3 Main Classes.....	8

## 1. INTRODUCTION

This document describes the development of a Load Cell monitoring software system on the 3.6m Telescope Dome. Before reading this document, you should read [1] in order to know the hardware and operation of the complete system.

### 1.1 PURPOSE

This document is intended as a preliminary description of the Load Cell monitoring software. Here you can find:

- A brief explanation about how the software works.
- A description of the main classes.
- An outline of how the software will be operated. .

### 1.2 REFERENCE DOCUMENTS

The following documents are referenced in this document.

1. AAA-BBB-CCC-nnnmm-0001 , Issue 1, dd/mm/yyyy --- Hardware Design Document – Load Cells Supervision

### 1.3 ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this document:

LSM	La Silla Management
LSO	La Silla Observatory
N/A	Not Applicable
TBC	To Be Confirmed
TBD	To Be Defined
LERO	Load <b>CE</b> ll <b>Re</b> adout <b>MO</b> dule

### STYLISTIC CONVENTIONS

The following styles are used:

#### **Bold**

In the text, for commands, filenames, pre-suffixes as they have to be typed.

#### *Italic*

In the text, for parts that have to be substituted with the real content before typing.

#### Teletype

For examples.

## 2.OVERVIEW

The objective of the software is provide a tool for monitoring, logging and control of the Load Cell Supervisor System, implementing a VLT interface between the hardware of the Load Cell Readout Modules (a.k.a. LEROs), the VLT-SW system and the user.

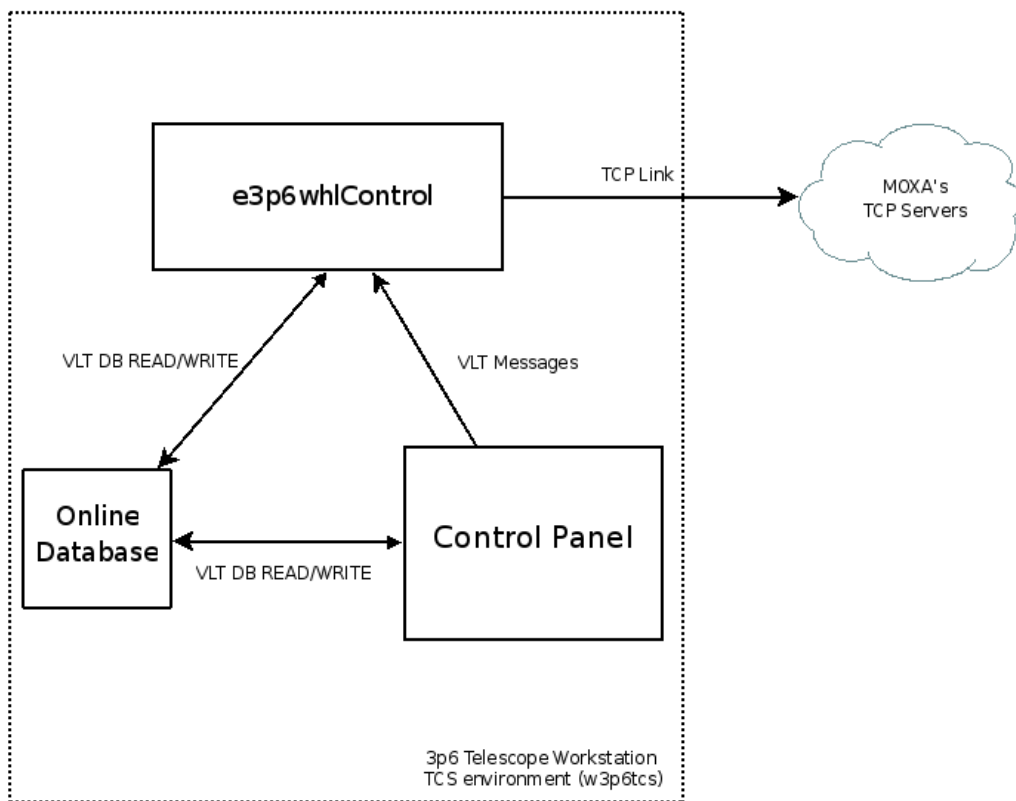
### 2.1 Software System Description

#### 2.1.1 MOXA operative configuration of serial ports

The Serial Device Networking (MOXA) is configured as a TCP stream server, so any data read or command sent from/to the serial port will be read/write through a TCP Socket connection, making the serial interface totally transparent to the software.

#### 2.1.2 Main Software Actors

The following diagram shows the relations between the main actors in the software system:



- **e3p6whlControl:** VLT Server Process under the w3p6tcs environment that provides access to the MOXA TCS Servers.
- **Online Database:** A new point will be added to the w3p6tcs environment online database, in order to store the configuration, state and data of the e3p6whlControl and the data read.
- **Control Panel:** Correspond to the GUI (Graphical User Interface) that allow to the user to monitor the load cell data and interact with the control process and the LEROs.

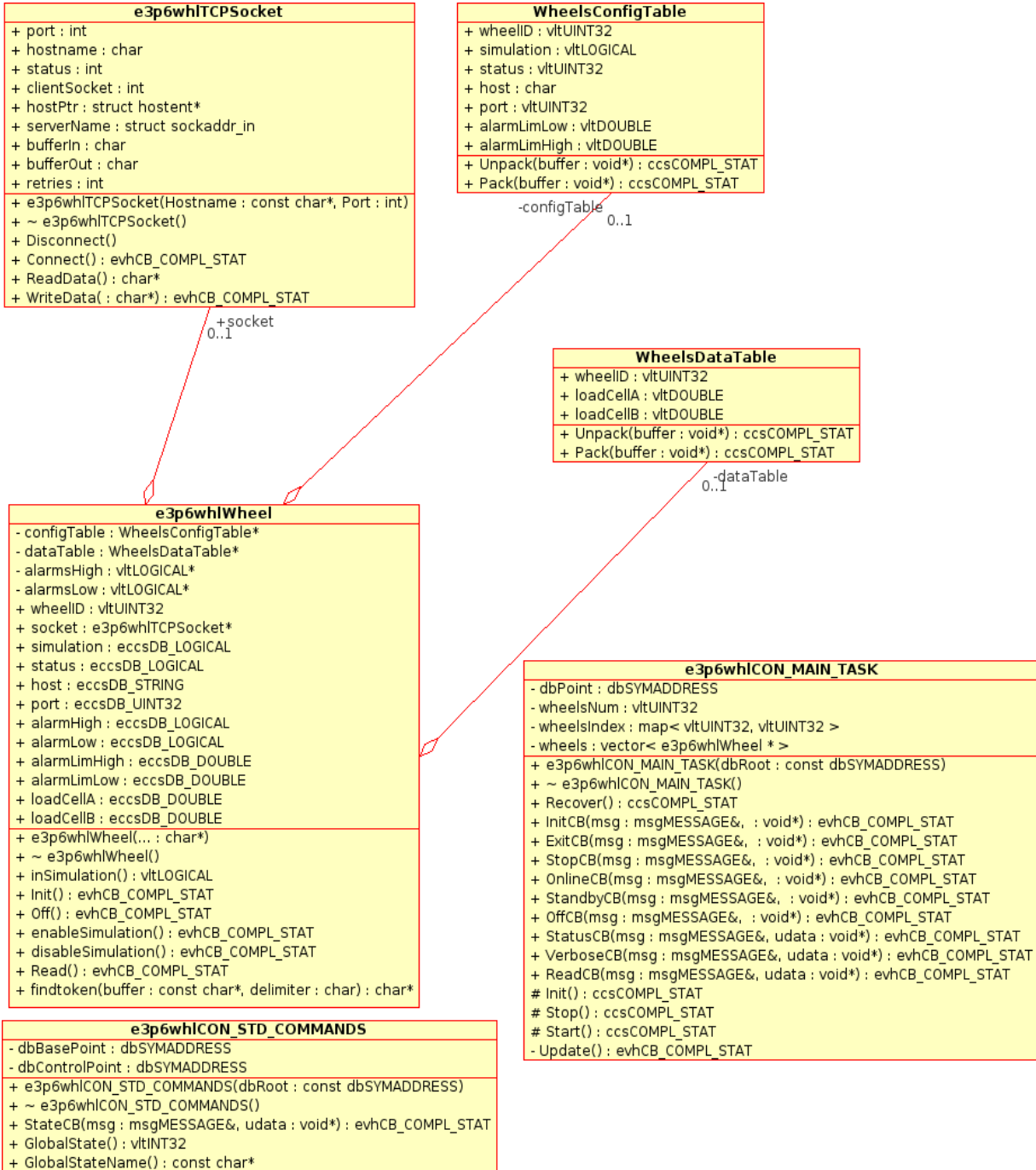
## 2.2 Basic Operation

When e3p6whlControl process is initialized, it reads for every wheel (or its associated LERO) the network(IP, Port) and state(simulation) configuration from the OLDB and create a socket connection for every wheel that is not in simulation mode. After that, it start the monitoring process that poll every wheel according to the time defined in the OLDB. This time can be changed by the user in the control panel. To put the e3p6whlControl process online, it is necessary that every wheel did initialized correctly. If there is some wheel not connected or that fails in the initialization, the user can put it in simulation mode and reinitialize the system using the control panel.

The control panel provides the following features to the user:

- Display the load cell information for every wheel
- Display an alarm when the data read is out of limits
- Allow to the user to initialize the control process
- Allow to the user to start/stop the simulation mode of a wheel
- Allow to the user to modified the monitoring time and start/stop the logging.

### 2.3 Main Classes



The purpose of this classes is:

- **e3p6whlWheel:** This class is the interface between the control process and the LERO of a single wheel. A vector of e3p6whlWheel will be created in order to manage all the wheels.
- **WheelsConfigTable:** Provides access to the Control point of the e3p6whl branch in OLDB.
- **WheelsDataTable:** Provides access to the Data point of the e3p6whl branch in the OLDB.
- **e3p6whlCON\_MAIN\_TASK:** Manages all the messages sent to the e3p6whlControl process related with the LERO's, using the corresponding e3p6whlWheel object.
- **e3p6whlCON\_STD\_COMMANDS:** Manages any other standard command sent by the user.
- **e3p6whlTCPsocket:** Implements the TCP Socket communication with the MOXA's TCP Servers.



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