MEGARA CONTROL SYSTEM

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MEGARA (Multi-Espectrógrafo en GTC de Alta Resolución para Astronomía) is an optical Integral-Field Unit (IFU) and Multi-Object Spectrograph (MOS) designed for the GTC 10.4 m telescope in La Palma. The MEGARA Control System will provide the capabilities to move the different mechanisms of the instrument, to readout the data from the detector controller and the necessary routines for the Inspector Panels, the MEGARA Observing Preparation Software Suite, the Data Factory and the Sequencer strategies.

The **MEGARA control system hardware** will be divided into two separated parts (physically or logically depending on the final electronic cabinet(s) characteristics). The Control cabinet will gather all the workstation and interface to the GTC control system. The Power Cabinet will gather all the power electronic, mainly DC motor drivers and power supplies. Both cabinets will be equipped with an AC panel that provides a filtered 220 V AC to the cabinets.

The **MEGARA Control System software** will be able to fully control and monitor the internal activities of the instrument: move mechanisms; read, assemble and save science detector images; report status and events to the GCS environment. The Software will integrate into the GCS environment and allow complete control through the use of the GCS Inspector and Sequencer. A set of Data Reduction Pipeline components will be provided to reduce and analyze the acquired data. The following software packages will be provided as part of the MEGARA Control System:

The **MEGARA Mechanisms Control System** receives the positioning demands requested by the user (i.e., shutter, focusing, grating exchange mechanisms, etc.) in the Observing blocks and interfaces with the Instrument mechanisms controllers. This system also request and receives the monitors and alarms generated by the different mechanism.

MEGARA **Observing Preparation Software Suite (MOPSS)** consists on three software components designed to assist observers to optimally plan their observations with GTC/MEGARA: the Exposure Time Calculator, the Image Simulator, and the Fiber MOS Positioning tool. We describe in more detail these software tools in the MOPSS contribution.

MEGARA Data Factory. The goal of the data reduction activities is to supply the user with data corrected from instrument signatures that can be used at different stages of data acquisition and analysis. It is composed by:

Data Factory Pipeline. It is a component of the GTC Control System. It will be run automatically by the GCS or on demand from the Inspector. It will not produce any scientific quality data.

Data Reduction Pipeline. Its goal is to supply users with a final data set in physical units, with which they can begin their scientific analysis, without the need of additional data processing. The DRP is not integrated with the GTC Control System.

Inspector Quick-look tool. One of the panels of the GTC Inspector shall be used to visualize the images produced by MEGARA during an observing run. The user shall be able to manipulate the image to enhance different aspects of it.

MEGARA Data Acquisition System implements the control and monitoring of the instrument detector. It has a tight relation with the Detector Controller and associated Hardware. There will be an Acquisition Mode associated to each Observing and Calibration Mode.

MEGARA Sequencer Process implements the coordination strategies of the subsystems to be used by the observation sequencer. It will consist of a library that would incorporate the instrument specific processes that will be linked to the Sequencer main process.

MEGARA Inspector Panels includes the instrument specific user interface components. It shall consist of a library that would incorporate the instrument specific GUI panels that will be linked to the Inspector main program.

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