

**Title:****New Control System for the 30m Telescope:  
System Architecture: Overview****Identifier - Master URL:**

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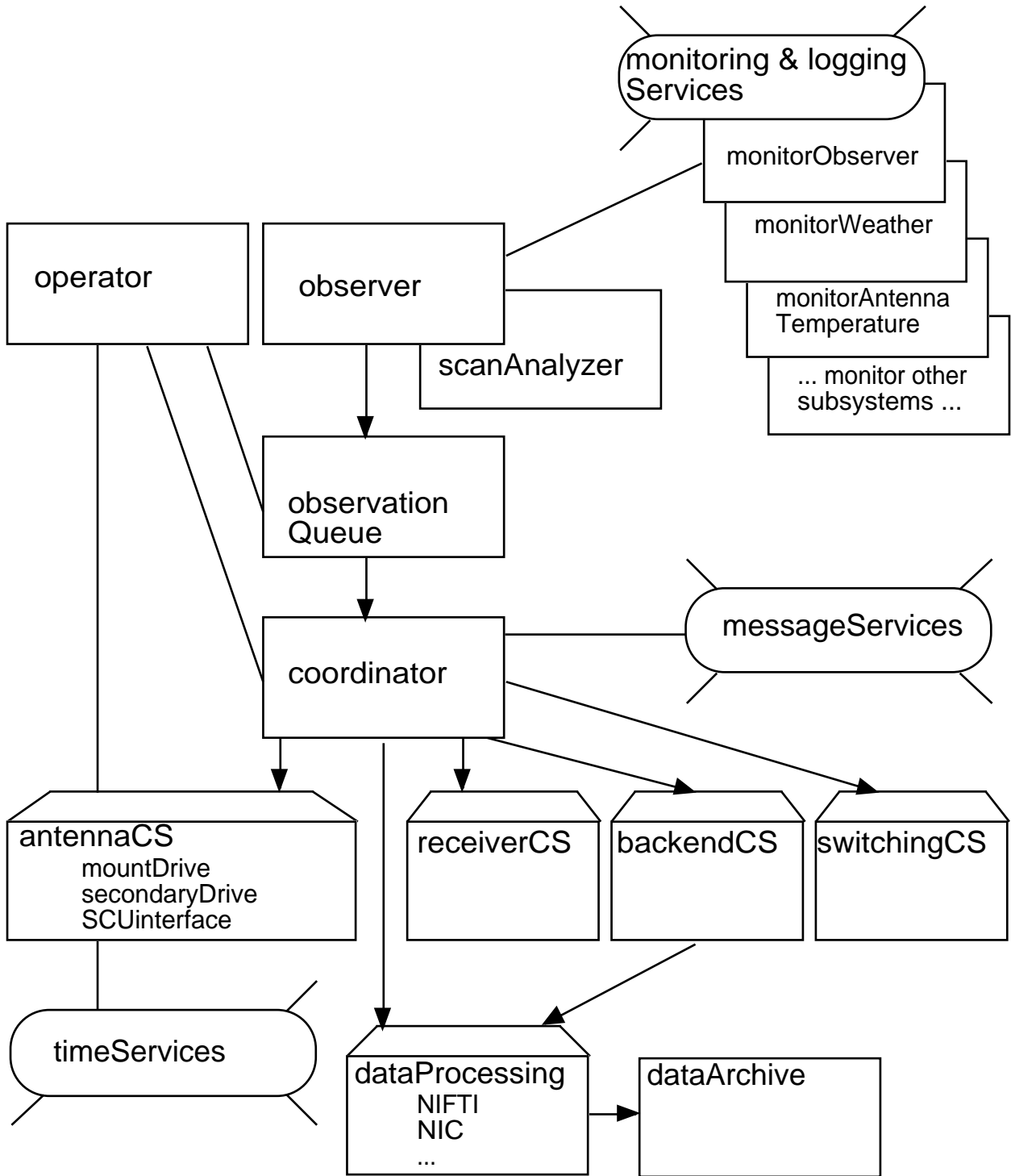
**Subject and Keywords:** new control system, NCS 30m, system, architecture

**Description - about this document:**

New Control System for the IRAM 30-m telescope (NCS 30m). It contains a diagram with a simplified overview of the system architecture and definitions of some essential components and subsystems with their agreed-upon short designations.

(Diagram and description are informal and simple-minded, i.e., they do not follow any standardized method, but hopefully are easy to understand for everyone)

# Diagram: Top Level Overview System Architecture



Notes: only some major logical links are shown by connecting lines (not all interactions)  
 arrows indicate the major flow from the observer's commands to control of subsystems and data

2002-11-28v1.3.2 drawn by HU

## Overview of Subsystems (SS)

- **operator**  
(operator's user IF)  
supervise and control overall operations
- **observer**  
(astronomer's user IF)  
specify observations online or offline and submit them to observation queue
  - **scanAnalyzer**  
(closely linked to or part of the observer SS)  
analyzes specified observing modes into detailed setup specifications and subscan sequences
- **observationQueue**  
contains submitted specifications for observations and delivers them one at a time to coordinator for execution  
v0: single in, single out  
v1: FIFO = first in, first out  
v2: more features
- **coordinator**  
gets specifications for observations from the observationQueue; executes observations; coordinates the various hardware control and processing systems
- **Control Systems (CS)**  
(the software for each of the following CS has a top "coordinationLayer" that implements the interaction with the coordinator SS; this layer is indicated by the "roof" in the diagram)
  - **antennaCS**  
controls the antenna hardware
    - **antennaMountDrive**  
controls the movement in the main axes, azimuth and elevation
    - **secondaryDrive**  
controls all movements of the secondary
    - **SCUinterface**  
implement the software interface to the SCU (servo control unit)
  - **receiverCS**  
controls the receivers and the calibration system

- **backendCS**  
controls the backends and implements the backend data acquisition
  
- **switchingCS**  
controls the timing, phases, and devices for the switching modes  
(frequency, wobbler, beam switching)
  
- **dataProcessing**  
controls the online merging and processing of the data and implements the interface  
from raw data to the data processing software (NIFTI, NIC, etc.)
  - **dataArchive**  
implements the archiving of the data
  
- **monitoring and logging Services**  
provide general facilities to monitor (display online) and log (keep a record of) the  
status of the system; this includes:
  - **monitorObserver**  
implements a monitor display for the setup and observations specified by the  
observer
  
  - **monitorWeather**  
implements monitoring and display of data from the weather station
  
  - **monitorAntennaTemperature**  
implements monitoring and display of data from the temperature sensors in the  
antenna
  
  - ... monitoring the other subsystems ...
  
- **messageServices**  
provide general handling of messages between the subsystems
  
- **timeServices**  
provide general time information to the subsystems