SPIRE ICC
User Requirements Documents: Template

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SPIRE ICC

User Requirements Documents
Routine Instrument Operation

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1   Introduction

1.1   Purpose & Scope

This document describes the requirements put on the ICC during routine instrument operations, including monitoring the performance of the instrument and changing observing plans. People involved will include ICC scientists, consortium scientists, FINDAS scientists or astronomers interacting with the ICC via the FSC.

The functions that the ICC needs to provide for routine instrument operation are the same as those described in specific user requirement documents. This URD is thus a textual description of routine operation linking together the relevant URDs.

1.2   Definitions of Terms and Acronyms

URD - User Requirement Document
FSC - First Science Centre
QLA - Quick look analysis
IA - Interactive analysis
FCSS - FIRST Common Science System
FINDAS -

In addition two web pages are available describing terms applicable to SPIRE
http://www.ssd.rl.ac.uk/spire/consortium/information/FIRSTacronyms.shtm
http://www.ssd.rl.ac.uk/spire/consortium/information/FIRSTdefinitions.asp
which are to be updated.

1.3   Related Documents

1.3.1   Applicable Documents

AD-1   FIRST Ground Segment Design Description FIRST/FSC?DOC/0146
AD-2   FSC System URD
AD-3   FINDAS URD
AD-4   ICC as a Whole System Requirements
AD-5   SPIRE ICC Calibration Requirements
AD-6   SPIRE Photometer processing requirements
AD-7   SPIRE FTS processing requirements
AD-8   FSC Requirements of the SPIRE ICC
AD-9   Common Uplink Requirements
AD-10   Astronomical Observation Preparation Requirements
AD-11   AIV requirements

1.3.2   Reference Documents

RD-1   SPIRE ICC URD Scope Document
RD-2   FIRST-FSC URD
RD-3   FIRST-FSC Actor list
RD-4   SPIRE ICC AIV requirements

1.4   Overview

The functions that the ICC needs to provide for routine instrument operation are the same as those described in specific user requirement documents (AD1 - AD10). This URD is thus a textual description of routine operation linking together the relevant URDs to show their relationships to normal operations.

2   User Characteristics

2.1   ICC scientists
2.2   FINDAS scientists
2.3   SPIRE Instrument Scientist
2.4   SPIRE Calibration Scientists
2.5   Consortium Scientists
2.6   Astronomers in General

These roles and functions of these users of the ICC have been described in AD1-AD10

3   Requirements

During routine instrument operations the following general processes are carried out :

Astronomical and calibration observations are prepared, with requirements as set out in AD-10.

These observations are scheduled by the FSC and the relevant commands sent to SPIRE using the common ground segments. The requirements are set out in AD2, AD3, AD8, AD9

Data from SPIRE will be ingested into the database at FINDAS, and it is from here that the ICC will access the data and its associated header information. The FINDAS requirements are set out in AD-3.

ICC scientists and calibration scientists will examine the data for instrument health monitoring purposes, and confirm that reduced data is acceptable. To do this efficiently the data must be reduced in real time, and other reduction or analysis steps or re-reduction that are later necessary must be carried out quickly in at least semi- automated fashion (like QLA) as well as with ILA tools. The data reduction tools and requirements are generally as set out in AD5, AD6, AD7, AD11. It is noted here that some specific algorithms that are applied to the data for health monitoring purposes may not be identical to those for astronomical or calibration purposes.

An additional requirement specific to health monitoring during normal operations is that the ICC should provide software that facilitates the measurement, storage, retrieval and display of values from data over long time periods. For example the mean level of a bolometer during a particular type of observation may be measured for each such observation and then used to track long term drifts in the instrument performance.