SPIRE-ICS-PRJ-000556

SPIRE ICC

User Requirements Document
Interactions with PACS and HIFI ICCs

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Draft 2

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1 Modification history

Date	Version	Author	Change description
16/07/00	D1	M. Sauvage	Document creation
5/12/00	D2	M. Sauvage	Rephrased some requirements, used document template.

2 Introduction and Context

This subsection of the SPIRE ICC URD is intended to cover the topics described in the URD Scope Document as follows:

> **Requirements stemming from the need (1) to cross-check calibration measurements obtained by other FIRST instruments, (2) to transfer information SPIRE may obtain on instrument and telescope status, and (3) to coordinate observations of a given source with multiple FIRST instrument. There are also requirements stemming from areas of commonality.**

In fact the last sentence of this description is concerned with actions that will have to be taken earlier in the development of the project than all first three points.

Before going on to the requirement section, let us make this summary more explicit by describing in more details the type of interactions that are foreseen between the ICCs. These will actually be different when one is dealing with building ICC systems or with the actual instrument control.

When building ICC systems, the main reason to interact with other FIRST ICCs is to try and identify areas when common system can exist and design, if possible, ways to make a single development rather than one in each ICC. When dealing with actual instrument control, the main reason to interact with other FIRST ICCs will be to exchange knowledge on the status of the instruments. Similar interaction should occur between the SPIRE ICC and the FSC, but these are covered in a different section of the ICC URD.

The two distinct areas we have just identified lead us to two distinct sections of the present URD section

3 Development of ICC systems

Once again, the main rationale here is to identify areas of common interests of need between the ICCs

3.1 Commonality

The ICC shall make sure that all possible sources of commonality between its systems and those developed in the other FIRST ICCs are searched for and identified. The SPIRE ICC shall team up with the other FIRST ICC to try and design ways to make single developments of these common systems possible.

1 - Source Here

2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

3.2 Visibility

We assume that the other FIRST ICCs will also try and identify these common areas. Thus the SPIRE ICC shall implement an internal structure that clearly identifies a person leading each development of the ICC, so that interfaces between the SPIRE and the PACS and HIFI ICCs can be promptly established.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

3.3 Notification

As new needs, or new systems, are found to be requested by the SPIRE ICC, it shall design a system such that these decisions can be easily noticed and understand by the other ICCs. This is to allow them to notify the SPIRE ICC of their possible interest in participating to this new development.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4 Instrument Control and Monitoring

Here we are mainly dealing with the first part of the above summary.

4.1 Preparatory program

It is likely that there will be a ground- or space-based preparatory calibration program for FIRST. The SPIRE ICC shall be in close contact with, or participate to, the team in charge of this program, in order to make sure of its relevance for the SPIRE instrument.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.2 Calibration sources

Given that the three FIRST instruments have some wavebands in common, the SPIRE ICC shall check whether its chosen external calibration sources can be shared with the other ICCs, or whether it can use other instrument's calibration sources.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.3 Calibration models

Prediction of the calibration sources flux will very likely rely on models. The SPIRE ICC shall ensure the compatibility of its models with those used by the other ICCs, or design ways, possibly through new FIRST calibration measurements, to ensure this compatibility.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.4 Publication of calibration sources and models

To allow an easy access to its calibration source lists and models, for consultation by the other ICCs, the SPIRE ICC shall make this information available to the other ICCs in one form or another and maintain it up-to-date.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.5 Instrument status

Due to the build-up of instrument expertise, it is assumed that the calibration accuracies of the SPIRE instrument as well as other calibration-related properties (i.e. photometric calibration, spectral response) will evolve in time. The SPIRE ICC shall make sure that the information on the calibration status of the instrument is made available in an appropriate form to the other ICCs.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.6 Telescope status

It is also foreseen that the increased instrument expertise will lead to the ability for the SPIRE ICC to derive information on the telescope status itself (e.g. beam profile). This information can be quite relevant to other ICCs (it can be cross-checked with PACS, and is of key importance to a non-imaging instrument such as HIFI). The SPIRE ICC shall make sure that this general information on the telescope status is made available in an appropriate form to the other ICCs.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	Commissioning

4.7 Observing expertise

It is to be expected that as the SPIRE ICC gains a better knowledge of the instrument behavior, it will be able to issue recommendations on the proper/best use of each SPIRE AOTs. The SPIRE ICC shall make sure that this information is properly conveyed to the other FIRST ICCs.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	AVM

4.8 Instrumental effects

It is to be expected that the FIRST instruments will suffer from similar instrumental effects. Much insight can be gained in their treatment and correction when comparing the approach chosen by other instrumental team. Therefore the SPIRE ICC shall make sure that it has the right interfaces for these collaborations to occur.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	Commissioning

4.9 PACS and HIFI expertise

It will quite likely happen that some calibration observation will highly benefit from joint measurements by two or more FIRST instrument. To be able to judge the feasibility of such measurements the SPIRE ICCs shall make sure that it has gathered the proper training and expertise with PACS and HIFI. In particular, the SPIRE ICC shall make sure that it has internal access to the tools required to prepare an observation with PACS and HIFI.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	Ground Segment Testing

4.10 External SPIRE expertise - resources

Similar needs for SPIRE expertise will quite likely occur in the other FIRST ICCs. The SPIRE ICC shall make sure that it has the necessary resources to provide the training and information required by external ICC members to obtain this expertise.

1 - Source	Here

2 - Importance	Highly desirable
3 - Frequency	Yearly
4 - Phase	Ground Segment Testing

4.11 External SPIRE expertise – persons

If possible, the SPIRE ICC should contact the other FIRST ICC to identify early on the person in charge of acquiring SPIRE expertise, so that close contact can be maintained with them throughout the mission.

1 - Source	Here
2 - Importance	Highly desirable
3 - Frequency	Not applicable
4 - Phase	Ground Segment Testing