SPIRE ICC

SPIRE ICC External Requirements Document

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1.1 Purpose & Scope

This document identifies those SPIRE ICC requirements which are expected to be fulfilled externally by other systems, e.g. EGSE, HCSS, HSC, MOC or the SPIRE Consortium. All the input requirements are taken from the SPIRE ICC User Requirements Documents.

1.2 Definitions of Terms and Acronyms

Listing of acronyms that are “unusual” to this URD

AIV	Assembly Integration and Verification
BB	Building Block
BBID	Building Block Identifier
DB	DataBase
CCS	Central Checkout System
EGSE	Electrical Ground Support Equipment
HGS	Herschel Ground Segment
HSC	Herschel Science Centre
HCSS	Herschel Common Science System
HCSSDT	HCSS Development Team (ESA +ICC's)
HSCDT	HSC Development Team (ESA)
ICC	Instrument Control Centre
ILT	Instrument Level Test
IST	Integrated System Test
MIB	Mission Information Base
OBS	On Board Software
OBSID	Observation Identifier
PV	Performance Verification
SCOS	Spacecraft Control Operations System
SPIRE	The Spectral and Photometric Imaging REceiver for Herschel
TC	TeleCommand
TM	TeleMetry
ToO	Target of Opportunity
URD	User Requirement Document

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	Herschel Space Observatory Science Implementation Requirements Document (SIRD) (SCI-PT-03646, Issue 1.1, 18 May 2001)

1.3.2 Reference Documents

RD-1	SPIRE ICC User Requirements Documents (SPIRE-ICS/RAL-PRJ-000543 to SPIRE-ICS/RAL-PRJ-000557)
RD-2	Herschel Ground Segment Design Description (HGSDD) (FIRST/FSC/DOC/0146, Issue 1, Revision 1, 10 December 2001)

RD-3 HGS Interface Requirements Document (FIRST/HSC/DOC/0117 - Issue 2, 06 Decemeber, 2001)

1.4 Overview

The SIRD [AD-1] places several requirements on the SPIRE ICC which it has to fulfill from ILT through to the post-operations phase. These requirements, along with the SPIRE ICC's internal requirements, are all covered in the ICC URDs [RD-1]. Most of these combined set of requirements are expected to be met within the ICC, but a significant fraction will be met by external components with which the ICC interacts. This document associates the component/s with each individual requirement as listed in [RD-1].

1.5 SPIRE ICC Requirements

Table 1 shows all the currently identified SPIRE ICC requirements. The last column indicates the component responsible for fulfilling the requirement, regardless of whether it is internal or external to the ICC.

Table 1: SPIRE ICC Requirements

Requirement	Description	Component/System Responsible
UR-AIV-110	A mechanism for generation of command sequences shall be provided	EGSE-ILT (Test Control)
UR-AIV-120	Command sequences shall be specifiable in the form of a script composed of general purpose programming statements	EGSE-ILT (Test Control)
UR-AIV-130	It shall be possible to translate an observation input (e.g. AOT + parameters) into a command sequence	HCSS CUS
UR-AIV-140	It shall be possible to maintain the instrument On Board Software	SPIRE ICC (with IFSI)
UR-AIV-210	The ICC shall provide a data storage facility	ICC
UR-AIV-220	All input data to a test shall be available from the data storage facility	ICC
UR-AIV-230	All TM received from the EGSE shall be stored in the data storage facility according to the object model required for operations	ICC
UR-AIV-310	The ICC shall provide system for data analysis and display	ICC (QLA/IA)
UR-AIV-320	The data analysis system shall be able to process data in real-time	ICC (QLA)
UR-AIV-330	The data analysis system shall be able to display telemetry data in real-time.	ICC (QLA)
UR-AIV-410	The ICC components shall operate in an environment compatible with the RAL AIV facility infrastructure and network design	ICC
UR-AIV-420	The data storage facility shall not require continuous access to the Internet.	ICC
UR-AIV-430	The ICC components shall be based on maintainable tools and development software.	ICC
UR-AIV-440	The amount, and different types, of hardware required to operate the ICC components shall be minimised.	ICC
UR-AIV-510	The ICC shall maintain a facility to allow the update and verification of test scripts and databases.	ICC
UR-CAL-001	It is hoped that ultimately the accuracy of any reasonable scientific measurement will be limited by the statistics of the data, rather than uncertainties in the calibration. There will be certain exceptions, e.g. very deep integrations may be limited by flat-field errors which would require an excessive amount of calibration time to accommodate. The ultimate accuracy may not be achieved until sometime after the mission, the uppermost priority during the mission must be to ensure that all necessary calibration measurements are taken to meet the eventual goal.	This is more a goal than an actual requirement. The Instrument Team is responsible for the design and testing of the instrument to meet the scientific requirements. During operations the Instrument Team will be subsumed by the ICC which will then become responsible for the inflight calibration
UR-CAL-110	The “files” (or objects or whatever) that will be required for complete calibration of instrument and scientific observations need to be defined. The specifications of	ICC

	these files might be different for different observing modes, although it would be an aim to keep them as similar as possible. It is hoped that most of necessary files will be specified at an early stage, although the contents of these files may not be known until much later). However, as knowledge of the instrument improves it is inevitable that new calibration files will be required. It should be possible to alter these files independently of any procedures that use them (i.e. calibration information should not be hard-wired into code). The file specifications should describe the formats (or interfaces), the parameters that are to be included, whether errors are needed and an allowance a drift of parameters with time, unless there are good reasons to believe that these are immutable (e.g. filter numbers)	
UR-CAL-120	Associated with the calibration files should be standard procedures for applying these files (these might be IA routines or scripts). It should be possible to modify these standard procedures independently of the content of the files themselves. It should also be possible to test new calibration procedures within the IA. Procedures demonstrably offering improvements should be implemented, though it should always be possible to use earlier procedures. It is the responsibility of the ICC to ensure that these procedures (and the associated files) represent the best achievable knowledge of the instrument at that time	ICC (IA)
UR-CAL-130	Corrupted or missing calibration files should be replaced with very little delay. The calibration files available at different sites should be the same, with a few minor exceptions that may be required e.g. while testing	ICC
UR-CAL-140	Some calibration files will require modification as a result of instrument “drifts” or as the knowledge of the instrument improves. It must be possible to make these changes either automatically e.g. as a result of a regular measurement or “interactively” perhaps in response to a one off measurement. It should always be possible to use the calibration files as they would have been at any earlier epoch	ICC (IA)
UR-CAL-210	The ICC shall be responsible for producing a calibration plan. That is a sequence of observations, measurements and analysis that are necessary to provide the data to populate all the required calibration files. Before operations this plan needs to be updated rarely (yearly?) to account for changes in instrument knowledge or measurement/observing facilities.	ICC
UR-CAL-220	The ICC needs to ensure that the necessary laboratory measurements of the instrument are made and that the analysis necessary to turn the laboratory data into calibration files is undertaken.	Instrument Team/ICC

UR-CAL-230	The ICC needs to ensure that the necessary ground-based astronomical observations are made (or have been made) and need to undertake the analysis necessary to turn these data into calibration files.	ICC/Consortium/Other ICCs
UR-CAL-240	The ICC needs to ensure that the necessary space-based astronomical observations are made (or have been made) and need to undertake the analysis necessary to turn these data into calibration files	ICC/Consortium/Other ICCs
UR-CAL-250	Where astronomical or laboratory measurements exist the ICC need to perform the data reduction and analysis necessary to transform these data into calibration files. Where these analysis are repetitive and/or laborious it may be convenient to have these analysis performed automatically.	ICC (IA plus other calibration analysis software)
UR-CAL-310	The ICC shall be responsible for producing an in flight calibration plan. That is a sequence of observations, and analysis that are necessary to provide the data to (re)populate all the required calibration files. Under normal circumstances this plan will be updated/reviewed monthly, it needs to be possible to change this plan more rapidly in response to rejected calibration observations, anomalies in the instrument or in the PV phase.	ICC
UR-CAL-320	The ICC needs to ensure that the necessary observations with SPIRE (and other Herschel instruments) are performed and that the required analysis to turn these data into SPIRE calibration files is undertaken.	ICC
UR-CAL-330	Where astronomical or laboratory measurements exist the ICC needs to perform the data reduction and analysis necessary to transform these data into calibration files. Where these analysis are repetitive and/or laborious it may be convenient to have these analysis performed automatically.	ICC
UR-CAL-340	The calibration activity needs to be assessed in the context of real scientific measurements. Is the calibration adequate for the main scientific goals? Is the calibration accuracy sufficient, over specified, or lacking? Do new calibrations need to be made to address specific scientific goals? What are the calibration priorities?	ICC
UR-CAL-350	Repeat Observations	These requirements were created by referring to the SIRD requirement ICCO-050 for performing instrument calibration.The functionality for them will be provided by the HCSS components CUS and PHS.
UR-CAL-360	Observation Timescales	
UR-CAL-370	Observation Day	
UR-CAL-380	Failed Observations	
UR-CAL-390	Rejected Observations	
UR-CAL-400	Removed Observations	
UR-PHT-110	The ICC is required to define the various operating modes of the instrument	Instrument Team/ICC

UR-PHT-115	Support “specific” instrument mode~~s~~ data (e.g. parallel and serendipity ~~data~~) generated by the photometer.	ICC/HCSS
UR-PHT-120	Process as applicable “specific” instrument modes (e.g. parallel and serendipity data) generated by the photometer. Deliver to the HSC.	Strange requirement. Parallel and serendipity mode data, if available, will be supported by the ICC and the Ground Segment. No formal "delivery" to the HSC is envisaged.
UR-PHT-130	Define Astronomical Observation Templates	ICC
UR-PHT-210	The ICC is required to design the processing software	ICC (IA)
UR-PHT-220	The ICC is required to implement the processing software (TBD what this means)	The ICC has to make the IA system available to the HSC. Whether it is done in a common framework for all the Herschel instruments is still TBD.
UR-PHT-230	The ICC is required to test the processing software (TBD what this means)	ICC
UR-PHT-240	The ICC is required to validate the processing software (TBD what this means).	ICC
UR-PHT-~~240~~ 241	Improve processing algorithms. Deliver updates to HSC	ICC - No formal "delivery" to the HSC is envisaged.
UR-PHT-250	The SIRD requirement ICCA-015 defines (jointly with the HSC) the processing tools and archive access tools to be provided, as well as data quality goals.	ICC/HSC
UR-PHT-310	IA should be multiplatform with goal of platform independence. The platforms that are currently required are Solaris, Linux, DecUltra with a goal of one Windows platform (NT/95/98 or 2000). The list of supported platforms will be subject to change at time scale of one ~~t~~year (TBC).	ICC/HSC
UR-PHT-320	The IA should be designed such that new algorithms can be developed and interchanged with ease.	ICC
UR-PHT-330	IA consists of different generic types of modules (a) interactively processing data (b) visualizing data - at all stages of processing, not just final images (c) input/ output of data	ICC
UR-PHT-340	Interactive analysis will consist of both GUIs and Command Line interfaces A scripting language can be run within IA	ICC
UR-PHT-350	IA will be able to export/ import data in formats than can be imported/exported to/ from other software – which?	ICC/HCSS (TBC)
UR-PHT-360	The possibility that the IA will allow the calling of other data reduction packages and/ or libraries (possibly in other languages) whilst in IA is an open issue. This is expected to be difficult and so is very much a goal rather than a requirement.	ICC/HCSS (TBC)

UR-PHT-370	IA will have a help system including reference guides and recipes	ICC
UR-PHT-380	Modules will be open source so that the Astronomer can see the algorithms applied and have the facility to locally modify and run code. – dangerous ?	ICC/HCSS (TBC)
UR-PHT-390	The product generation history will be a component part of the products	ICC/HCSS (TBC)
UR-PHT-400	The data products should be processed to the extent that is required by the quality of the data and by the nature of the observations being carried out. Under each observing mode we specify what the end results of the data processing are expected to be. We do this because the specific processing steps expanded below may not be the only ways of reaching these end-points. N.B. these are all science end points, it may be that there are other engineering/calibration end points which will be of interest.	ICC
UR-PHT-410 to UR-PHT-490	Results from Photometer Observatory Functions	ICC
UR-PHT-500	The Interactive analysis must be capable of processing all observing modes. This section indicates what we currently expect to be the procedures required for each mode. The procedures described here are currently indicated in a flow chart in the Appendix.	ICC
UR-PHT-510 To UR-PHT-600	Data processing steps for all the Photometer Observatory Functions.	ICC
UR-FTS-100	The ICC are required to define the various operating modes of the instrument	
UR-FTS-115	Support “specific” instrument mode~~s~~ data (e.g. parallel and serendipity ~~data~~) generated by the FTS.	ICC/HCSS
UR-FTS-120	Process as applicable “specific” instrument modes (e.g. parallel and serendipity data) generated by the FTS. Deliver to the HSC.	Strange requirement. Parallel and serendipity mode data, if available, will be supported by the ICC and the Ground Segment. No formal "delivery" to the HSC is envisaged.
UR-FTS-130	Define Astronomical Observation Templates	ICC
UR-FTS-210	The ICC is required to design the processing software	ICC
UR-FTS-220	The ICC is required to implement the processing software (TBD what this means)	The ICC has to make the IA system available to the HSC. Whether it is done in a common framework for all the Herschel instruments is still TBD.
UR-FTS-230	The ICC is required to test the processing software (TBD what this means)	ICC

UR-FTS-240	The ICC is required to validate the processing software (TBD what this means).	ICC
UR-FTS-~~240~~ 241	Improve processing algorithms. Deliver updates to HSC	ICC - No formal "delivery" to the HSC is envisaged.
UR-FTS-250	The SIRD requirement ICCA-015 defines (jointly with the HSC) the processing tools and archive access tools to be provided, as well as data quality goals.	ICC/HSC
UR-FTS-310	IA should be multiplatform with goal of platform independence. The platforms that are currently required are Solaris, Linux, DecUltra with a goal of one Windows platform (NT/95/98 or 2000). The list of supported platforms will be subject to change at time scale of one ~~t~~year (TBC).	ICC/HSC
UR-FTS-320	The IA should be designed such that new algorithms can be developed and interchanged with ease.	ICC
UR-FTS-330	IA consists of different generic types of modules (a) interactively processing data (b) visualizing data - at all stages of processing, not just final images (c) input/ output of data	ICC
UR-FTS-340	Interactive analysis will consist of both GUIs and Command Line interfaces A scripting language can be run within IA	ICC
UR-FTS-350	IA will be able to export/ import data in formats than can be imported/exported to/ from other software – which?	ICC/HCSS (TBC)
UR-FTS-360	The possibility that the IA will allow the calling of other data reduction packages and/ or libraries (possibly in other languages) whilst in IA is an open issue. This is expected to be difficult and so is very much a goal rather than a requirement.	ICC/HCSS (TBC)
UR-FTS-370	IA will have a help system including reference guides and recipes	ICC
UR-FTS-380	Modules will be open source so that the Astronomer can see the algorithms applied and have the facility to locally modify and run code. – dangerous ?	ICC/HCSS (TBC)
UR-FTS-390	The product generation history will be a component part of the products	ICC/HCSS (TBC)
UR-FTS-400	Data Products	
UR-FTS-500 UR-FTS-510	Interactive Analysis: Processing of Observing Modes from FTS Observatory Functions	ICC (IA)
UR-FTS-560	Process data from FTS Engineering Modes	ICC (IA)
UR-RIO: No numbered requirements in this URD		
UR-IE-100	The ICC will provide a detailed software model of the instrument performance, to be refined as the instrument hardware develops. How the data reduction algorithms carry out steps such as de-convolution may depend on how the data	ICC

	and housekeeping information are sampled, as well as for example mechanical movement accuracy of the BSM or FTS mechanisms - modelling the options is necessary to plan the best methods. This work needs to be carried out by the ICC team to ensure appropriate algorithms are developed to meet the requirements set out in RD-6, RD-7.	
UR-IE-210	Will need to write specific command sequences which may be high (observation type) or low (individual commands) level to carry out engineering tests.	Instrument Team/ICC EGSE (for Test Equipment)
UR-IE-220	Parameters and information in the observing preparation tool must be easy and quick to modify. If new observing modes are derived as a result of instrument engineering tests it may be necessary to change the parameters and information in the observing preparation tool.	HCSS (CUS)
UR-IE-230	If there is a suspicion that the previous or concurrent operation of another instrument or function (i.e. not SPIRE) has a knock on effect on the SPIRE performance, it will be necessary to request a series of actions involving more than just one instrument to investigate such effects and determine what to do about them.	ICC/HSC Other ICCs MOC
UR-IE-240	The ICC will be monitoring telescope, spacecraft, and SPIRE parameters. The ICC shall also have access to the parameters for the other instruments to check they are not affecting SPIRE performance in some way, and access to the historical status information in the database.	SPIRE ICC in liaison with: HCSS (for access) HSC MOC Project
UR-IE-300	Real time processing and display requirements (as described in the AIV URD)	ICC (QLA)
UR-IE-310	Data reduction system must be sufficiently flexible as to support the rapid implementation of new reduction algorithms. Such changes may be needed for new or modified observing modes, or to remove new data artefacts identified as such by either routine health monitoring, or sometimes as a result of engineering tests (an example might be a noisy detector that cannot be fixed or worked around), or because new reduction steps needed to analyse data from a new engineering test.	ICC (IA) HCSS (IA framework) - TBC
UR-IE-320	The results of any analysis of engineering data should be stored, ideally with the data, such that they can be easily accessed at a later date. For example an engineering test sequence may take data to look at correlated noise and the data reduction may generate a number representing this which should be stored to facilitate monitoring of performance. (Similar requirement as for calibration files, but not actually used to calibrate science data). Any test command sequences or observation	HCSS archive

	definitions used to obtain engineering data should also be stored such that they can used for future reference, even if there is no requirement to re-run the test.	
UR-ICC-110	There will be a common development environment for software developers, including for example the software tools, tool versions, standard locations for SPIRE-developed libraries, standard build scripts, etc.	ICC
UR-ICC-120	There will be a configuration control system in which all SPIRE software and related files that have reached a `version 1' of maturity are stored.	ICC (CVS)
UR-ICC-130	A sandbox environment will be available for testing software on stored without affecting the `live' software release(s), nor changing the data itself. This sandbox may or may not exist within the HCSS.	HCSS (TBC)
UR-ICC-140	Software for the development release of the HCSS is checked into the central repository. This logs what component of software it is, its version, the date, etc. However, it may be desirable to have a more readily readable source of information on the status of software that is local to the ICC and does not require a lot of interaction with the HCSS (especially for non-developers) *e.g. a forms based set of local web pages that developers can update with textural information of the status of a component of software~~e~~; who ~~it~~ is working on it, what's being done to it, last version submitted to CVS, what changes were made, estimated time of next version, etc.*	ICC
UR-ICC-150	There will be a common system environment set up for ICC Actors such that routine processing, analysis and calibration can be performed without requiring the user to set up their environment ad hoc.	ICC/HCSS
UR-ICC-210	A common document format will be used, which may be different for editable and non-editable documents (source code documentation may have its own format). *The current choice of document formats is Framemaker and Word for editable documents (Word exclusively for externally viewed documents since that is the standard Herschel format), and PDF for non-editable documents. Since Java is the implementation language of the HCSS, JavaDoc will be used for source code documentation.*	ICC/HCSS
UR-ICC-220	Templates will be produced, for supported document formats, for standard types of document routinely produced by the ICC.	ICC
UR-ICC-230	Provide to the HCSS, to the agreed standards all relevant ICC related documentation. This includes: • The ground segment related ICC Operational Procedures (nominal and contingency) • The ICC Operations Plan • Monthly ICC reports	ICC

UR-ICC-310	Each of the three geographically separated sites of the ICC shall have their own local HCSS node. *Since only RAL will host the SPIRE node itself, what the two DAPSASs actually have at their sites needs to be investigated. e.g. it could be a permanent, reliable and fast network connection, or a local read-only copy. The chosen implementation will impose additional requirements on the ICC.*	ICC
UR-ICC-320	Each site will have local support for development and maintenance of their HCSS node.	ICC/DAPSAS centres
UR-ICC-330	Local accounts created for ICC Actors will be set up with a common environment and registered as a database user. They shall also have access (read or write depending on role) to the configuration control system.	ICC
UR-ICC-340	The ICC computing system will allow full access for ICC Actors with accounts who connect remotely whilst working at other sites (e.g. MOC). *TBD: whether this means Herschel sites or from anywhere.*	ICC
UR-ICC-350	The ICC computing system will be maintained regarding security issues, e.g. security patches, firewall configuration, password checking, etc. This requirement has precedence over requirement ~~3.3.4~~ UR-ICC-340 (i.e. if the only way to allow an ICC Actor remote access is to reduce the level of security then that access will not be allowed).	ICC
UR-ICC-410	There will be an up-to-date restricted-access web page listing all the SPIRE members, including details of name, position, address, telephone, email, etc. An up-to-date as possible list of the relevant personnel at the HSC, MOC, PACS & HIFI will be similarly available. *For SPIRE members at least, this web page might be kept dynamically up-to-date by using the user details of HCSS accounts. Peoples' details are subject to the Data Protection Act.*	ICC
UR-ICC-420	During the early stages of PV it may be necessary to have members of the ICC on 24 hour call to react to any unexpected behaviour in the spacecraft or the instrument. It may be the HSC or other ICC members who make such a call. Staff on call will have a means of quick communication (phone/pager) and be able to respond suitably (e.g. connect remotely to the ICC, travel into work, have access to documentation, etc). *This is essential if there will be any situations that have to be dealt with outside of normal office hours.*	ICC Will the expertise of the EGSE group be required during early operations?
UR-ICC-430	To allow efficient communication between the three sites of the ICC users will be able to have a video link with other users from their computers and be able to use a common desktop (i.e. one in which the users can see and interact with same desktop on their computer displays to discuss, for example, code or the results of interactive analysis).	ICC/DAPSAS centres

UR-ICC-440	A restricted-access dynamic web page or some such equivalent that informs HSC, MOC and ICCs members as to which members of the ICC are available on a given day and how they can be contacted. *The intention here is for some system that allows rapid communication rather than, for example, someone sending an email requesting information on a short time scale, or having important information about the health of the instrument but not knowing if the person is in to read it, or if not when they will be.*	ICC/DAPSAS centres
UR-ICC-510	The ICC Manager shall: 1. Establish jointly with ESA the detailed list of ICC tasks and deliveries. 2. Generate the ICC SIP. 3. Establish and maintain the ICC schedule. 4. Manage the ICC interfaces with the ESA Project Team, the other ICCs, the HSC and the MOC. 5. Support the ground segment reviews. 6. Attend the meetings of the ~~F~~-HGSAG. 7. Establish jointly with SCI-SA the set of documents to be produced by the ICC. 8. Provide the infrastructure and facilities to support the work of the ICC.	ICC/HCSS (with inputs from HGSAG, Project Team and MOC)
UR-HSC-110	Repetitive calibration/engineering observations must be submitted as a series of observations (as opposed to submitting a type of observation once and requesting it be re-executed after some specified intervals).	ICC HCSS (CUS, PHS, MPS) MPS will support multiple scheduling and execution of an observation request (HGS Design Description)
UR-HSC-120	Calibration or engineering observations will normally be submitted at fixed times (interval TBD) within the agreed nominal scheduling cycle (duration TBC). For non-nominal instrument behaviour the timescale for submission and planning of an observation will be at least 3 days (TBC).	ICC HCSS (CUS, PHS, MPS)
UR-HSC-130	HSC schedule to MOC may mix calibration and engineering observations with science Observations. i.e. requirement on ICC not to assume a complete OD is available for calibration or engineering observations (unless there is some instrument problem and science observations cannot be performed anyway). *SPIRE must place a UR on HSC to allow it to specify what we want to do in terms of how we submit calibration observations. E.g. we must be able to observe at certain times.*	ICC
UR-HSC-140	Failed calibration or engineering observations must be specifically re-requested by the ICC. The HSC will only reschedule failed science observations.	ICC

UR-HSC-150	A scheduled observation must be unscheduled before it can be modified. I.e. it may not get the same slot on resubmission.	ICC/HSC/MOC
UR-HSC-160	Mission Planning can reject a calibration or engineering observation from a particular OD if it results in a poor Figure of Merit for the schedule. *This is a possibility, to be confirmed or otherwise by HSC, that requires the implications to be addressed.*	HCSS (MPS)
UR-HSC-170	A schedule containing calibration or engineering observations can, on the approval of the Project Scientist, be replaced with one that does not contain the observations, for example in the case of a ToO.	ICC/HSC
UR-HSC-210	Any software provided to the HSC for HSC use or use by the community will be written in Java. *For scripting purposes (within IA for example) the JPython scripting language is currently under investigation. It integrates seamlessly with Java .*	ICC
UR-HSC-220	Any software provided to the HSC for HSC use or use by the community will follow the coding standards for the HCSS.	ICC
UR-HSC-230	Provide IA/QCP tools for the HSC to carry out parallel/co-operative assessment (with the ICC instrument specialists) of the status and behaviour of the instrument.	Instrument Team/ICC
UR-HSC-240	Provide IA tools for interactive analysis of data by the Astronomer using the HSC environment, and IA tools that can be installed at the Astronomer's institute subject to (TBD) supported platforms. *These IA tools will most likely be identical to those provided in the previous requirement. The tools for both remote (i.e. at the HSC) and local installation use will be the same, i.e. SPIRE will only support platforms available at the HSC. The requirement that IA tools can be installed locally has implications for remote access of observations from HCSS databases and possible off-line use.*	ICC
UR-HSC-250	The QCP tools provided to the HSC will allow the systematic and automatic generation of quality control data for each science observation	ICC
UR-HSC-250	As a result of routine QCP carried out by the HSC, the ICC will undertake joint review with the HSC to establish new `nominal' values for instrument/observation parameters if it is thought that current parameters do not produce optimal products.	ICC/HSC
UR-HSC-270	The ICC will provide periodic calibration status reports (to the HSC).	ICC
UR-HSC-280	The ICC will provide the long-term calibration plan and strategy, updated as necessary by ongoing calibrations. The HSC informs the community of the calibration status and strategy at regular intervals.	ICC
UR-HSC-310	The ICC must provide support for the running and	ICC/DAPSAS centres

	maintenance of the local HCSS node at the ICC. *There needs to be an Actor at the ICC with sufficient knowledge of how the local node runs to be able to fix it if it stops, or know who to contact if the problem is serious.*	
UR-HSC-320	The ICC shall provide support to the HSC for definition, design, integration, test and validation of the HCSS.	Joint effort between the HSC and the ICCs
UR-HSC-410	On the raising of an appropriate SPR/SCR the ICC will update code to generate an onboard software memory image and deliver it to the HSC with a software release note describing its implications and updated documentation. This will be more frequent during IST/PV phases. *The OBS URD needs to indicate who is responsible for maintaining code, since IFSI is not around in the operations phase.* *Comment: IFSI is expected to become part of the SPIRE ICC during operations*	ICC (including IFSI)
UR-HSC-420	The ICC shall use the Configuration Control System of the HCSS for all software and documentation of the common system that is jointly supported and maintained by the HSC and ICCs. *CVS (Concurrent Versions System) is currently the implementation of a Configuration Control System*	ICC/HCSS
UR-HSC-430	ICC submit, under configuration control, updates of calibration/engineering files and AOTs to the HCSS such that the best, verified parameters, procedures, etc are used to perform and reduce observations. More frequent during ILT/IST.	ICC
UR-HSC-440	Changes to any system artefact upon which the HSC has a dependency must be preceded by the submission of a SCR.	ICC/HCSS
UR-HSC-450	Following submission of a SCR the relevant artefacts must be checked out of the HCSS and a test plan and test environment created. Updated artefacts must be verified with the CC and CCB prior to checking into the HCSS.	ICC/HCSS
UR-HSC-460	Persistent processing results have to be reproducible, implying traceability of the configuration and input products used to produce new or updated artefacts.	ICC/HCSS
UR-HSC-470	The ICC will produce updates to software it delivers to the HSC, for integration into the HCSS. *To update software we only need submit new versions to the configuration control system. The HSC rebuild the development release of the HCSS each night. The HSC makes development releases `live' on a six weekly cycle.*	ICC
UR-HSC-510	ICC interfaces directly with the HSC Helpdesk (community support) for questions and answers. *During office hours*	ICC
UR-HSC-520	The ICC shall participate as required in pre-launch ground segment integration tests, validation tests and	ICC

	simulations.	
UR-HSC-530	ICC provides information, material and staff appearances requested by the HSC for PR purposes.	ICC
UR-HSC-540	The ICC shall provide, jointly with the HSC: • Instrument Observers Manual • Definition of instrument data to be stored in the science archive and their relationship with HSC & MOC provided items. • Data and operational interface between ICC and HSC. Source: SIRD-ICCF-102 SIRD-ICCF-120 SIRD-ICCF-125 SIRD-ICCF-165	ICC (with HSC)
UR-HSC-550	The ICC shall provide to the HSC: • Instrument calibration, engineering, diagnostic etc requests to the HSC for the upcoming mission planning period. Observation requests? • Proposed changes to instrument operations scenario and coordinate with MOC and HSC.	ICC
UR-HSC-610	The ICC shall ensure development staff are adequately trained.	Instrument Team/ICC EGSE HSC
UR-HSC-620	The ICC shall set up and train the ICC operations team.	ICC HSC MOC
UR-HSC-630	The ICC shall provide instrument training, as required, to selected HSC and MOC staff.	ICC
UR-HSC-710	The ICC shall, jointly with the HSC: ▪ Monitor the run-down activities in order to ensure that all required spacecraft data are secured. ▪ Define the type of data and products to store in the archive. ▪ Support users in data reduction. ▪ Define processing and archive access tools.	ICC/HSC
UR-CUS-110	It shall be possible to provide to the HSC all instrument information needed for the CUS. *Instrument information includes operating mode definitions, building block definitions, TC mnemonics, translation of TC's, sequences of commands for manual commanding by the MOC.* *The actual mechanism and data format of delivery to the HSC is TBD but is expected to vary depending on the information.* *For manual commanding the sequences of commands will be delivered to the MOC via the FSC.*	ICC
UR-CUS-120	It shall be possible to associate CUS commands with the low level instrument commands via a database. *CUS commands are uplinked to the instrument via the S/C CDMS which passes them on to the DPU. On reception the DPU OBS transmits these commands to*	ICC

	the appropriate instrument sub-system. Within a sub-system each such command corresponds to low level commands which are executed sequentially to carry out the instrument operations. The required database associates these low level commands with the CUS commands.	
UR-CUS-130	All the uplink TC information needed to associate it with the downlinked TM should be present within the TM itself. *The HGS design provides the concept of Observation Identifiers (OBSID's) and Building Block Identifiers (BBID's). The OBSID uniquely identifies an observation execution during all phases of the mission while the BBID divides up an individual observation execution into its key components. The HK and science TM packets form an observation will be tagged with these identifiers enabling packages such as IA and QLA to process the data easily. It is therefore important that the BB's in Observations are defined to make the TM processing tasks as smooth and as self-reliant as possible. This requirement puts an explicit requirement on the instrument team.*	Instrument Team/ICC
UR-CUS-140	It shall be possible to keep all the instrument information relevant to the CUS under configuration control. *The CUS DB needs to be kept under configuration control locally at the ICC as well as at the HSC.*	ICC/HCSS
UR-CUS-210	It shall be possible to install the CUS after delivery from the HCSS on a local system. *Resources will be available locally to take delivery, install and run the CUS component in the overall HCSS release. The most likely scenario is that the entire HCSS will be delivered to the ICC by the HCSSDT, including the CUS.*	ICC/HCSS
UR-CUS-220	A test facility shall be available at the ICC to ensure that the CUS does not have any adverse effects on the instrument. *This test facility will perform preliminary checks on the CUS before being used on the instrument to carry out ground tests, calibrations and observations. Note that this requirement puts explicit requirements on the AIV programme and facility.*	AIV EGSE Instrument Team ICC
UR-CUS-230	It shall be possible to test and check an observation mode to ensure that it does not compromise the safety of the instrument. *An observation mode consists of a series of BB's. The ICC must test and validate these modes in such a way that the execution of one BB does not leave the instrument in a state in which the following BB cannot be executed. This could happen, for example, because either the instrument is not in the correct mode to continue observing or it has failed in some way.*	Instrument Team ICC AIV EGSE

	To perform this task the CUS implementation at the ICC will need to support several CUS DB's.	
UR-CUS-310	It shall be possible to send CUS problem reports to the CUS developers in the HCSSDT. *The ICC would need to communicate with the overall HCSSDT to ensure that all problems encountered are effectively reported. It is expected that this process will be handled seamlessly in the HCSS.*	HCSS/ICC
UR-CUS-410	It shall be possible to access the HSC CUS system. *The ICC should have full network access to the HSC system to use the CUS implementation in the officially released CUS DB.*	ICC/HSC
UR-AOP110	The time estimator is one of the key elements in estimating the actual feasibility of given science programs (the other one being the simulator tool described in another section of the URD). Therefore it should in principle be available at the time the Guaranteed Time science program is elaborated.	ICC/HSC
UR-AOP120	Almost by definition, the time estimator tool will be used from or at different institutes. It is therefore advisable that the tool be available in such a way that it requires little or no modification to run on different platforms.	ICC/HSC
UR-APO130	Although this is already implicit, the time estimator should support all official SPIRE observing modes, for both broad-band imaging and spectro-imaging.	ICC
UR-AOP-140	The instrument parameters (noise levels, sensitivities, transmissions, etc) accessed by the time estimator tool must be able to evolve as rapidly as our knowledge of them. The system shall be designed in such a way that the resources required by this task are kept to a minimum.	ICC/Instrument Team
UR-AOP-150	To avoid mismatches between predicted times and actual observing times, values of the instrument parameters should strictly reflect our knowledge of them. No rounding should occur.	ICC
UR-AOP-160	The instrument's logic and principally its timing, should be followed as close as possible. This is in order to include all possible dead-times (telescope motion, buffer times to avoid command collisions…) so that the time computed to reach a certain goal is as close as possible to the actual observing time. Any modification of the instrument's logic shall be reflected in the time estimator tool as soon as possible.	ICC HSC Herschel Project Team MOC
UR-AOP-170	The time estimator tool is however not meant to produce a meaningful instrument command sequence, which is of no use to the observer. In designing the output content and format, one must remember that parameters such as sensitivity, signal-to-noise, observing time, should be easily accessible to the user. The output of one estimation shall be in a form that allows a quick comparison with outputs from previous estimations.	ICC

UR-AOP-210	It is expected that, due to the rather long lifetime of the Herschel telescope, the time estimator tool will be maintained by persons that may not have participated in its development. Thus the tool shall be well documented, both in its algorithmic part and in its structure, to allow quick identification of the parts to upgrade.	ICC
UR-AOP-220	It is almost inescapable that the time estimator will be upgraded to reflect either real changes in the instrument performances, modification of AOTs, or improvements regarding the knowledge of the instrument. These changes should therefore proceed through clearly identified and documented versions in order to minimize the risk of users unknowingly running obsolete versions.	ICC/HSC
UR-AOP-230	Given the foreseen lifetime of Herschel/SPIRE, it is clear that the tool will be used during the mission, and there is a high probability that instrument parameters will vary. Thus care should be taken to reflect any modification of the instrument parameters that could be introduced in other ICC subsystems should be introduced in this system as well.	ICC
UR-AOP-310	The tool shall allow the user to rapidly explore the parameter space for a given observation. Therefore a minimal set of input values shall be defined that ensure that all these values are absolutely mandatory for the computation, and cannot be meaningfully replaced by default values.	ICC/Instrument Team
UR-AOP-320	The tool is not intended to provide an accurate simulation of the actual observation, but rather allow the observer to find an instrumental set-up that will permit to reach the scientific goals. Therefore the tool should be able during its computation to distinguish between point and extended source (selected by the user), but it is not required that it is able to simulate the observation of a given map.	ICC/Instrument Team
UR-AOP-330	In the operating wavelength range of SPIRE, the background can be important and place limitations to the observing capabilities of some AOT. Since the FIR/Submm background is not constant on the sky, the time estimator tool should be able to provide the user with suitable background data or allow the to enter background values.	ICC/Instrument Team
UR-AOP-340	SPIRE has broad imaging bands and is also a spectrometer. Therefore a complete description of the targets also includes their spectral energy distributions. The time estimator tool should allow its user to choose between various spectral energy distributions and modify their parameters at will. A meaningful default set of values shall also be defined	ICC

UR-AOP-350	All sources of noise should be included in the computation of the estimated signal-to-noise ratio, i.e. all instrumental but also all sky sources of noise. Confusion noise should thus be considered as well in the computation. Given that the value of the confusion noise can be definition-dependent, the noise sources and their amplitude should be well-documented.	Instrument Team /ICC
UR-AOP-410	It is foreseen that users will play with the time estimator tool, make a number of test cases, and then use them off-line to design an observing strategy. Therefore the tool shall be able to create synthetic outputs where the values of input parameters (sources, background, AOT parameters), the time estimator tool version number, and the result of its computations (preferably on a graphic form) are all available.	ICC
UR-AOP-420	A mechanism shall be defined that allow the parameters of a given time estimation to be stored and replayed, without forcing the user to enter/select them one by one from independent notes. This will also allow quick comparison between different versions of the tool.	ICC/HCSS
UR-AOP-510	The main mode of interaction with the time estimator tool should be through a graphical user interface, allowing selection of input information from buttons, menus and command boxes.	ICC/HCSS
UR-AOP-520	The tool should be able to read its complete set-up from a single user-defined location (e.g. a file) so that the user can rapidly configure the tool in a given set-up and replay a test case.	ICC/HCSS/HSC
UR-AOP-610	It is clear that the system described here shares some common modules with the instrument simulator described in another section of this URD, although it is intended toward simpler-minded users that do not make a complete simulation of the sky they want to observe. Therefore the ICC shall make sure that common modules between the time estimator tool and the instrument simulator are identified and developed only once, or at least by the same team.	ICC
UR-AOP-620	A number of systems are already identified that provide some sort of simulation of the instrument. The ICC shall regularly survey the internal consistency of all these systems, and take appropriate actions when such a consistency is no longer maintained.	ICC
UR-AOP-630	Herschel users of the time estimator tool will be members of the SPIRE consortium (What about other ICC members?). The ICC shall therefore ensure that it has the proper resources, both in manpower and documentation, to provide the necessary training for the consortium members.	ICC
UR-AOP-640	The time estimator tool is expected to be delivered or made available to the HSC for use by the broader community of Herschel observers. The SPIRE ICC	ICC/HSC

	shall ensure that the development choices made for the time estimator tool comply with the HSC expectation.	
UR-AOP-650	General observers will use the time estimator tool independently of the ICC, and will only interact with the HSC. In SPIRE's interest, the ICC shall make sure that along with the tool's actual delivery, necessary expertise and documentation are also transferred to the HSC.	ICC
UR-AOP-660	It is expected that the HSC will probably not be able to handle all user's question on the time estimator tool, or will discover problems in the tool's functioning. The ICC shall identify a contact person, in the team responsible for the development and maintenance of the time estimator tool, to ensure proper information exchange between the ICC and the HSC.	ICC
UR-OBS-100	It shall be possible to provide to IFSI all the instrument information needed for the OBS development in a TBD format.	Instrument Team/ICC
UR-OBS-110	The ICC shall have in house facilities to maintain and modify the OBS, recompile it and generate new memory images for subsequent installation. *This resource is required for all phases of the mission. It is envisaged that during ILT substantial OBS updates will take place, whereas during IST, SCP and operations phases the updates will consist of relatively small changes.*	ICC/Test Facility
UR-OBS-120	**UR-OBS-120:** It shall be possible to test and check the OBS to ensure that it does not compromise the safety of the instrument. *The ICC must test and validate the OBS functions to ensure that the execution of one function does not leave the instrument in a vulnerable state or whereby the next instrument command or function cannot be executed.* *To perform this task the OBS implementation at the ICC will need to support several OBS images All the testing activity should happen in the context of the OBSMF.*	ICC/Test Facility
UR-OBS-130	It shall be possible to keep all the OBS memory images under configuration control at the ICC. *The OBS images need to be kept under configuration control locally at the ICC as well as at the HSC.*	ICC
UR-OBS-140	It shall be possible to install the OBS image from the OBSMF. *Resources will be available locally to receive and install the new OBS image from the OBSMF. It is expected that this task will be performed by the On Board Software Management (OBSM) component of SCOS-2000. During operations the MOC will use SCOS-2000 to compare the new image (supplied by the ICC via the HSC) with the one already installed,*	ICC/SCOS-2000

	generate patches and then upload them via a series of TC's. (What happens during ILT and IST? It is not clear whether memory patching with SCOS-2000 is possible with the current release, i.e. 2.0)	
UR-OBS-150	It shall be possible to communicate OBS problem reports and achieve satisfactory solutions.	ICC (including IFSI)
UR-CON-110	The ICC will need to be able to extract specific information from the relevant expert(s) swiftly and painlessly. This information might be specifications of instrument sub-systems; models of sub-system behaviour; example scientific data; simulated data; expected results; etc. etc. The information could be in any format, document; image; phone-call; software; etc. etc..	ICC
UR-CON-120	The ICC should be open to suggestions and advice from Consortium Experts.	Consortium and ICC
UR-CON-130	The ICC should be able to store and retrieve the information it extracts from the Consortium Experts. This “knowledge database” should be easily searchable probably using keywords as entered by the person who requested the data. “Off the shelf” products are likely to be available and required for other purposes.	ICC
UR-CON-210	The ICC should enable Consortium Astronomers to use the latest, experimental data-reduction techniques and have a responsive feedback mechanism to utilise their experiences. Software that is available in Beta test should feel as similar as possible to alpha released software.	ICC and Consortium
UR-CON-310 (typo in URD - mis-labelled UR-CON-210)	ICCF-146 provide support to “key programme” (e.g. large surveys) as required, including *(see corresponding HSC requirement: FSCF-0*25): – support in the definition processing of (selected) programme inputs (TBD) – (specific) data processing (TBD)	ICC (TBD)
UR-MOC-110	SIRD requirement: ICCF-170 Define jointly with the MOC, other ICCs and the HSC, the data and operational interface between the ICC and the MOC. – the interface will be defined in an ICD produced by the MOC. The interface will be identical for all ICCs. *Note: ICCF-170 refers to the so-called ICC@MOC i.e. to the ICC system deployed at the MOC to support the Commissioning and Performance Verification phases. This system, which will be left at the MOC, can be “re-activated” in case of serious instrument problems during the routine phase. In routine phase there is no direct MOC-to-ICC (i.e. the so-called ICC@ICC) interface. The interface is non-real time and is via the HSC.* *Note: There are no formal data or operational interfaces between the ICCs. It is expected, however, that communications between the*	ICC/MOC and other ICCs

	ICCs will be frequent and extensive in order to achieve the commonality objectives of the Herschel programme	
UR-MOC-120	Deliver to the MOC the necessary hardware (Instrument Station) and software (RTA and QLA, etc.) required to support the Commissioning and Performance Verification phases (the so-called ICC@MOC). Support installation as required.	ICC and MOC
UR-MOC-210	Provide to the MOC the operations staff (instrument specialists) required to support the Commissioning and Performance Verification phases.	ICC/DAPSAS centres
UR-MOC-220	Provide instrument training, as required, to selected HSC and MOC staff. *Note: Training shall take place in accordance with a training plan approved by ESA. The plan shall identify duration of each training activity and number of staff involved -trainers and trainees*	ICC
UR-MOC-230	Support the MOC by providing updated instrument databases. *Note: This extends SIRD requirement ICCF-085 into the context of operations.* *Comment: This will be done via the HSC*	ICC
UR-OTH-110	The ICC shall make sure that all possible sources of commonality between its systems and those developed in the other Herschel ICCs are searched for and identified. The SPIRE ICC shall team up with the other Herschel ICC to try and design ways to make single developments of these common systems possible. Comment: Is this not already being done in the HCSS and the Herschel Ground Segment System Engineering Group?	ICC/HSC/Other ICCs
UR-OTH-120	We assume that the other Herschel 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.	ICC/Other ICCs
UR-OTH-130	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~~ understood by the other ICCs. This is to allow them to notify the SPIRE ICC of their possible interest in participating to this new development.	ICC/Other ICCs
UR-OTH-210	It is likely that there will be a ground- or space-based preparatory calibration program for Herschel. 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.	ICC/Consortium
UR-OTH-220	Given that the three Herschel 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	ICC

	calibration sources.	
UR-OTH-230	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 Herschel calibration measurements, to ensure this compatibility.	ICC/Consortium
UR-OTH-240	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. Comment: It needs this information from the other ICCs as well.	ICC/Other ICCs
UR-OTH-250	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. Comment: Similar information also required from other ICCs.	ICC/Other ICCs
UR-OTH-260	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), as well as on the satellite performances as a whole (background levels, pointing accuracies and so on). 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 Satellite status is made available in an appropriate form to the other ICCs.	ICC
UR-OTH-270	It is to be expected that as the SPIRE ICC gains a better knowledge of the instrument behaviour, 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 Herschel ICCs. Comment: Is this really a formal requirement on the ICCs?	ICC
UR-OTH-280	It is to be expected that the HERSCHEL 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. Comment: A common IA framework will facilitate this work.	ICC

UR-OTH-290	It will quite likely happen that some calibration observation will highly benefit from joint measurements by two or more Herschel 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.	ICC
UR-OTH-300	Similar needs for SPIRE expertise will quite likely occur in the other Herschel 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.	ICC/Consortium
UR-OTH-310	If possible, the SPIRE ICC should contact the other Herschel ICCs to identify early on the person in charge of acquiring SPIRE expertise, so that close contact can be maintained with them throughout the mission.	ICC
UR-PUS-110	The SPIRE ICC may be requested (by HSC) to assist in generating Press Releases to accompany e.g. publication of science articles using SPIRE. This assistance might take the form of proof reading, or providing instrument specific expertise.	ICC/Consortium
UR-PUS-120	The SPIRE ICC may be requested (by HSC) to assist in generating permanent Public WWW pages. This assistance might take the form of proof reading or providing instrument specific expertise (TBC).	ICC/Consortium
UR-PUS-130	The SPIRE ICC might be requested (by the HSC) to assist in other Public Relations activities (e.g. public talks, educational tools, commissioning PR products). This assistance might take the form of proof reading, locating text/images or providing instrument specific expertise.	ICC/Consortium
UR-PUS-140	Components of the ICC might be visited by members of the public e.g. VIPs or school children.	ICC
UR-PUS-210	The SPIRE ICC (prompted by the SPIRE consortium) might decide to initiate a Press Release. There needs to be a suitable mechanism to do this.	Consortium/ICC
UR-PUS-220	The SPIRE ICC might decide that it wants its own public WWW pages.	ICC
UR-PUS-230	The SPIRE ICC might want to undertake other Public Relations initiatives (e.g. to satisfy internal funding authorities). This might include educational tools, posters etc. It might be worth noting where other ICC activities could be adapted for	ICC

	Public Relations with minimal effort.	
UR-PUS-240	The SPIRE ICC might require privileged access to general Herschel PR material in order to fulfil other PR tasks.	ICC/HSC