

8 Organisation and management structure of the PI consortium

The management organogramme for the SPIRE consortium is shown in Figure 8.1. Individuals and teams are shown in blue, facilities in yellow, and major activities in white.

8.1 The PI and the Co-PI

The PI is Dr. Matt Griffin of Queen Mary and Westfield College, London. The role and responsibilities of the PI are as given in the FIRST Science Management Plan. There will be a French Co-PI, Dr. Laurent Vigroux of SAp, Saclay. The position of Co-PI reflects the major contribution to the project from France.

8.2 The SPIRE Steering Group

The SPIRE Steering Group will be responsible for the overall direction of the project, and shall agree all major policy and strategic decisions concerning the instrument development and the international allocation of tasks. It will also have the power to revise the list of SPIRE Co-Investigators and Associate Scientists. It will comprise the PI, the Co-PI and one member from each of the participating countries (France, Italy, Spain, Sweden, UK, USA). The members shall be senior figures representing the project within their own countries and before their national space agencies, and shall work to ensure that the project has the necessary support from those agencies. In particular, they shall assist the PI in solving problems associated with funding and manpower resources within their countries.

At the commencement of the project each contributing nation will commit to delivering an agreed package of work. This package can only be changed by agreement with the PI and the SPIRE Steering Group. Within each country, attribution of resources between contributing groups will be dealt with on a national level (e.g., within the UK, PPARC will set up a steering group to advise them of such issues and to act as an independent monitor of the UK elements of the project). The PI and the Steering Group will be given visibility of such attributions. In the case of problems which cannot be solved by the Steering Group, the matter will be decided through the intervention of an *ad-hoc* group representing the appropriate national funding bodies.

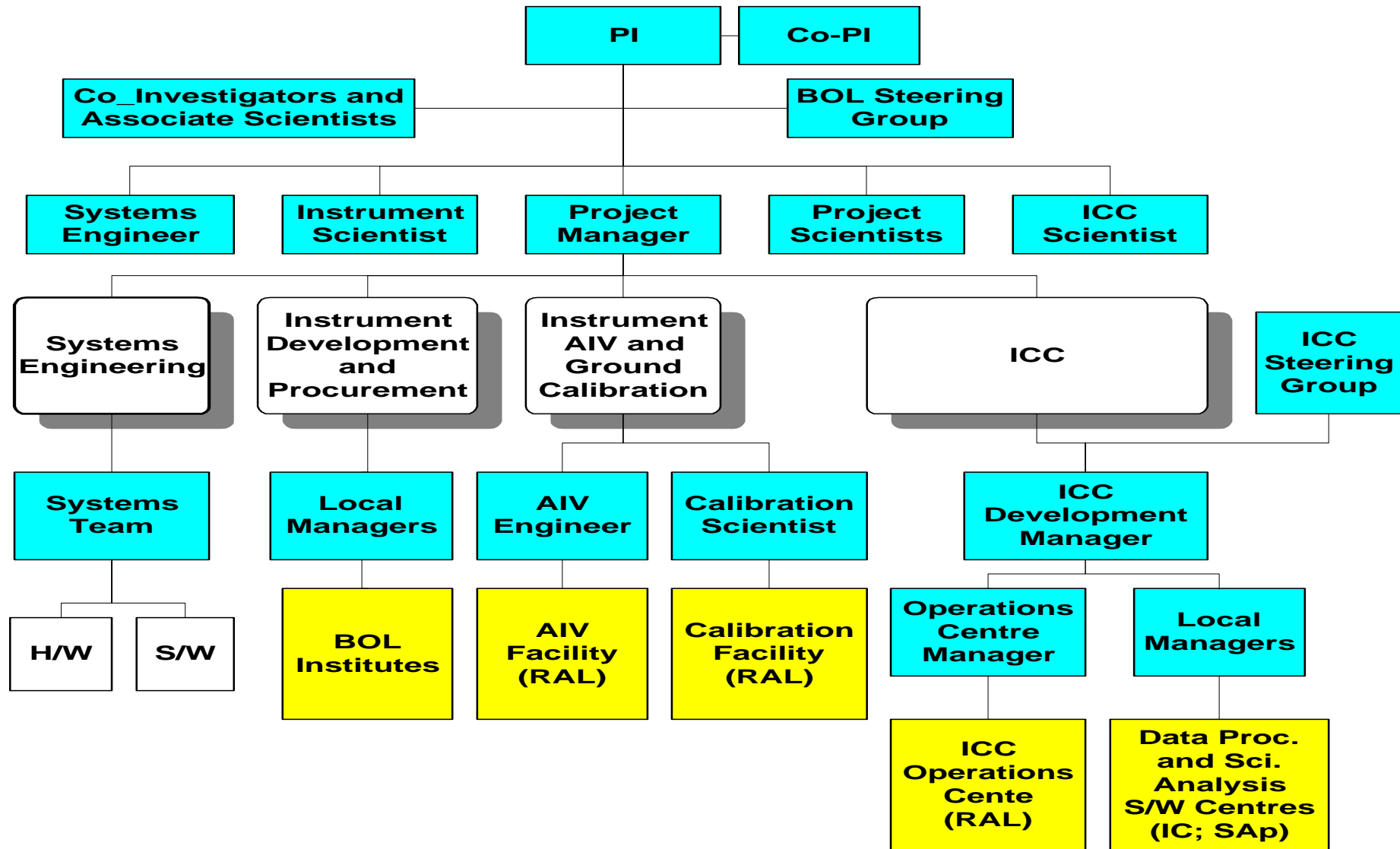
The SPIRE Steering Group shall have the PI as chairman and the Co-PI as Co-chairman. The position of Co-chairman reflects the agreement that all major project decisions shall be arrived at by consensus. Its membership will be as follows:

PI	Matt Griffin, QMW, London
Co-PI	Laurent Vigroux, SAp, Saclay
France	Jean-Paul Baluteau, LAS, Marseille
Italy	Gianni Tofani, Osservatorio di Arcetri, Firenze
Spain	Ismael Perez-Fournon, IAC, Tenerife
Sweden	Göran Olofsson, Stockholm Observatory
UK	Michael Rowan-Robinson, Imperial College, London
USA	Andrew Lange, Caltech, Pasadena

8.3 Co-Investigators

In addition to the PI and the Co-PI, there shall be *one* named Co-Investigator from each institute having hardware and/or ICC responsibilities. This policy has been adopted to avoid having a very large number of Co-Investigators, with consequent dilution or blurring of key responsibilities in such an extensive and complex consortium. The Co-Investigators

- (i) represent institutes which have significant hardware or ICC responsibilities;
- (ii) have corresponding obligations to the SPIRE consortium;
- (iii) are senior scientists in those institutes;
- (iv) shall assist the PI in solving problems associated with work allocated to their institutes;



- (v) shall participate in the definition and co-ordination of the Guaranteed Time programme;
- (vi) shall have an automatic right to access to Guaranteed Time data in recognition of these duties.

Participation by Canada in the SPIRE consortium is being considered by the Canadian Space Agency. At this time, no decision or commitment has been made by these countries. In the event of an acceptable proposal being made from Canada to make a substantial contribution to the project, some redistribution of work will be negotiated and a Canadian Co-I will be appointed. Expression of interest has also been received from Finland and Poland, to which the same considerations apply.

8.4 Associate Scientists

Many individuals, both astronomers and engineers, will also participate in the SPIRE project either by contributing to project work at Co-I institutes or by being involved in formulating the scientific case for the SPIRE or in the definition of the Guaranteed Time programme. Such contributions to the project shall be recognised within the consortium through the position of Associate Scientist. Associate Scientists can be appointed by the SPIRE Steering Group at any stage during the project.

8.5 Project Manager (Dr. Ken King, RAL)

The management of the instrument development shall be under the control of a single project manager who will

- (i) define the overall schedule necessary to meet the project milestones;
- (ii) monitor the project-wide deployment of resources;
- (iii) define deadlines and requirements for institute project managers and advise them on project-wide priorities;
- (iv) proactively manage technical and schedule risks;
- (v) monitor progress in participating laboratories;
- (vi) instigate project reviews, studies and assessments as necessary to resolve issues and ensure a successful project;
- (vii) represent the SPIRE project to the ESA management team.

The Project Manager shall rely on the PI and the SPIRE Steering Group for policy definition, and the Project Scientists, Instrument Scientist, and Systems Engineer for detailed advice.

8.6 Project Scientists (Dr. Walter Gear, MSSSL; Dr. Jean-Paul Baluteau, LAS)

The two Project Scientists shall

- (i) specify and update the scientific goals for the instrument;
- (ii) oversee the instrument design and capabilities with respect to these goals;
- (iii) maintain a performance model of the instrument;
- (iv) assist the Instrument Scientist in defining the detailed specification of the observing modes, ground and in-orbit calibration strategy, and data-reduction requirements;
- (v) together with the ICC Scientist, take responsibility for the specification of the requirements for the data reduction and science analysis software;
- (vi) be members of the ICC Steering Group;
- (vii) advise the PI on all of these issues.

Dr. Gear and Dr. Baluteau have special experience in extragalactic and galactic astronomy, respectively, and both of them are experienced observational astronomers with an intimate knowledge of submillimetre instrumentation, including continuum imaging (Gear) and spectroscopic instruments (Baluteau).

8.7 Instrument Scientist (Dr. Bruce Swinyard, RAL)

The Instrument Scientist shall

- (i) define and update the detailed system and subsystem requirements;
- (ii) define the AIV plan;
- (iii) define the ground calibration plan;
- (iv) lead the design the of the AIV and ground calibration facilities and oversee their commissioning and operation;
- (v) organise and lead instrument design reviews;
- (vi) advise the PI and project manager on all of these issues.

8.8 Systems Engineer (Dr. Louis Rodriguez) and Systems Team

The Systems Engineer shall organise and chair a Systems Team which will oversee the systems design and specification of the instrument. It shall also include the Project Manager, the Project Scientists, the Instrument Scientist, specialist engineers, AIV and PA experts and others as appropriate. Whilst being constituted and operated as a single team, it shall have two sub-groups, one with particular responsibility for software and one for hardware, with named Systems Engineers responsible for each. The Systems Team shall

- (i) oversee the specification and control of all internal and external interfaces;
- (ii) establish necessary procedures and teams for monitoring system aspects of instrument design, construction, calibration, operation;
- (iii) identify and take action on actual or potential problems at system level;
- (iv) advise the PI and the Project Manager on all of these issues.

8.9 ICC Scientist (Dr. Sebastian Oliver, ICSTM)

The policies for the development and operation of the ICC shall be directed by an ICC Steering Group (see below), chaired by the ICC Scientist. The ICC Scientist shall chair the ICC Steering Group, and shall work to ensure that the ICC will provide the astronomical community with the highest quality tools for analysis and exploitation of SPIRE data.

8.10 Local managers and institute responsibilities

Each SPIRE institute with hardware and/or ICC responsibilities will have a single local manager who will report to the Project Manager on all aspects of the planning and progress of work in that institute. At the time of writing, the local project managers (some of whom are in an acting capacity, pending availability of major project funding) are as follows:

Institute	Role	Local Manager
Caltech/JPL	Bolometers (option)	James Bock
CEA, Grenoble	³ He cooler	Lionel Duband
CEA, SAp	Bolometers (option); Warm electronics and related On-board S/W; ICC DAPSAS Centre; Ionising radiation effects testing	Jean-Louis Augueres
DESPA	FTS control electronics (withSAp)	Guy Michel
IAC	Warm signal proc. electronics (withSAp)	Jose Miguel Herreros
IAS	Ground Calibration support	Francois Pajot
IFSI	Digital Processing Unit and related On-board S/W	Riccardo Cerulli
ICSTM	EGSE; ICC DAPSAS Centre	Tim Sumner
LAS	Optics; FTS mechanism; cold vibration	Dominique Pouliquen
MSSL	Focal Plane Unit Structure	Wilf Oliver
NASA, GSFC	Bolometers (option)	Harvey Moseley

Institute	Role	Local Manager
Padua	ICC manpower	Paolo Andreani
QMW	Focal plane arrays; filters, dichroics, polarisers; internal calibrator for photometer	Bruno Maffei
RAL	Project management; AIV and groundcalib. facilities; ICC Operations Centre	Ken King
ROE	Chopper; FTS internal calibrator	Fraser Morrison
Stockholm Obs.	Instrument simulator	H D Floren

8.11 AIV Engineer

The AIV Engineer shall establish and operate the AIV facility at the Rutherford Appleton Laboratory, under the guidance of the Instrument Scientist.

8.12 Calibration Scientist

The Calibration Scientist shall establish and operate the Ground Calibration Facility at the Rutherford Appleton Laboratory, under the guidance of the Instrument Scientist, and shall be instrumental in transferring the expertise so acquired to the ICC Operations Centre.

8.13 The Instrument Control Centre (ICC)

The ICC shall have three parts:

- (i) an Operations Centre located at the Rutherford Appleton Laboratory in the UK. This will be the sole point of contact for communication with the MOC and FINDAS. Operations Centre staff will include people seconded from the various SPIRE institutes.
- (ii) two Data Processing and Science Analysis Software Centres (DAPSASCs), one at Imperial College (ICSTM) in London and one at SAp, Saclay.

This structure has been devised to maximise the efficiency of the ICC from the point of view of instrument operations and quality of the data processing software. The Operations Centre, and its manager, will be the only interface with ESA. The DAPSASCs will allow the widely distributed expertise within the consortium to be brought to bear in an organised way on the task of producing and refining data processing software. At four people shall be provided from each of the UK hardware institutes, two from Italy, and two from France (at least in the early years of operations). In addition, appropriate staff from SPIRE hardware institutes, including the DAPSAS Centres, will spend extended periods at the Operations Centre during critical periods such as commissioning an PV phases.

Specific DAPSAS tasks are:

- (i) production, and delivery to the ICC Operations Centre, of instrument data-processing software;
- (ii) revision, enhancement and updating of data processing software, especially during flight operations;
- (iii) quality control and calibration of SPIRE data;
- (iv) preparation and planning of PV and routine phase observations;
- (v) reduction of data taken in special observing modes (e.g., serendipity).

The DAPSAS Centres shall be connected to the Operations Centre via high-speed data links. In carrying out their functions, they shall rely on the expertise and efforts of the various SPIRE hardware-providing groups, and shall organise and channel this expertise for the maximum benefit of instrument operation. During routine operations, DAPSASC staff shall participate actively in ICC activity although physically located at the two centres.

8.13.1 The ICC Steering Group

The ICC shall be managed by the ICC Steering Group chaired by the ICC Scientist and comprising the PI, the Co-PI, the Project Scientists, the Instrument Scientist, the ICC Development Manager, the Managers of the DAPSAS Centres, and the Systems Engineer. It shall define the scientific policies for ICC development and the tasks to be carried out by the two DAPSASCs. The implementation of these decisions shall be the responsibility of the ICC Development Manager, and, subsequently, the ICC Operations Manager.

8.13.2 The ICC Development Manager (Dr. Ken King, RAL)

The ICC Development Manager will represent the whole of the ICC to ESA during the development phase. After ICC readiness, this post will no longer be necessary; the ICC Manager from ESA's point of view will then be the Operations Centre Manager.

8.13.3 The ICC Operations Manager

When ICC development is complete, the position of Operations Manager will replace that of Development Manager. During FIRST operations, the holder of this position shall represent the ICC to the MOC and to ESA.

8.13.4 The SPIRE Data Analysis and Calibration Group

The in-flight calibration strategy and detailed definition of SPIRE calibration observations shall be done by a team of the appropriately qualified individuals from across the consortium. This will evolve from the ground calibration activities. Key people in the team will include the Instrument and Project Scientists, the ICC Scientist, and the managers of the DAPSAS Centres. This group will also evaluate the quality of the standard data-processing methods, identify anomalies and instrumental effects and work on developing improved and enhanced data analysis routines, and assign tasks for implementing them in updated versions of the ICC software. Participation by FSC staff in this group will be highly desirable.