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1. Basic Organisation of the SPIRE Systems Team

In addressing who does what in the SPIRE systems “team” I realise it is now time to set out how we will manage the configuration control of the instrument level design and implementation from now on. Here then is a suggested way forward.

A configuration control board or System Design Co-ordination Team will be established that will have the ultimate authority for all design changes following the agreement and issuing of the project controlled documents – including the ICDs. This will consist of only a few people who will co-opt experts from the systems team as needed. Below the co-ordination team the systems engineers and scientists with responsibility for different design areas will form a flat structure reporting directly to the co-ordination team.

2. Personnel and Job Descriptions

These are the people currently working on the instrument systems engineering and the roles assigned to them. The roles are not exclusive and it is recognised that no one person necessarily has all knowledge/skills/time necessary to carry out the tasks listed.

2.1 System Design Co-ordination Team

Matt Griffin (QMW) – PI

- Overall responsibility for SPIRE Project direction and strategy
- Point of Contact to ESA; SPIRE consortium and the scientific community
- Pokes into scientific performance of SPIRE – specifically observing modes; detector performance and global scientific return of the project

Bruce Swinyard (RAL) – Instrument Scientist

- Overall responsibility for instrument scientific performance
- Ensures instrument as built is compatible with SRD and IRD
- Pokes into all aspects of instrument “scientific” design
- Ensures instrument performance models are built
- Defines instrument operations
- Defines instrument Calibration Requirements
- Responsible for overall instrument AIV plan

John Delderfield (RAL) – Instrument Systems Engineer

- Overall responsibility for instrument technical and engineering implementation
- Ensures instrument as built is compatible with spacecraft technical specification
- Pokes into all aspects of instrument interfaces; budgets and engineering implementation
- Ensures all documentation relating to instrument implementation: interfaces; specifications; budgets etc is self-consistent and configuration controlled.
- Also acts as overall Electrical Systems engineer

Colin Cunningham (ATC) – FPU Systems Engineer

- Acts as consultant on all aspects of cold FPU implementation
- Particular responsibility for EMC/EMI protection
- Responsible for specification of EMC/EMI models

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Ken King (RAL) – Project Manager

- Overall responsibility for instrument schedule and deliveries to ESA
- Overall responsibility for instrument development plan
- Pokes into ICC and ground segment activities from “on high”

2.2 Systems Engineering Team

Sam Heys (RAL) – FPU Thermal Engineer

- Responsible for Thermal Mathematical Model of SPIRE FPU
- Responsible for configuration control of all cold FPU thermal design parameters: conductance; dissipation; thermal capacity etc
- Responsible for the definition of the thermal interface between the SPIRE FPU and FTBs and the FIRST spacecraft

Lionel Duband (SBT) – Cooler Engineer

- Responsible for detailed design and implementation of 300 mK cooler
- Consultant on all aspects of sub-Kelvin hardware implementation

Terry Cafferty (JPL) – Detector Thermal Engineer

- Consultant on all aspects of detector system thermal design and implementation.

Berend Winter (MSSL) – FPU Structural Engineer

- Responsible for all aspects of the structural design and implementation of the FPU
- Responsible for FE model and analysis of SPIRE FPU
- Responsible for the specification of the vibration environmental test levels for the SPIRE FPU and sub-systems
- Responsible for the definition of the mechanical interface between the SPIRE FPU and FTBs and the FIRST spacecraft

Kjetil Dohlen (LAM) – FPU Optical Engineer

- Responsible for overall optical design of the SPIRE instrument
- Responsible for specification and configuration control of optical components: type; position; size etc.
- Responsible for definition of optical alignment plan.
- Responsible for the definition of the optical interface between the SPIRE FPU and the FIRST telescope

Tony Richards (RAL) – Optical Straylight Analyst

- Responsible for “incoherent” radiation straylight model of instrument in the FIRST environment
- Responsible for defining optical beam envelopes as “engineering model” entities
- Responsible for defining detailed optical design of all straylight baffling within the SPIRE instrument

Martin Caldwell (RAL) – Diffraction Limited Optics Analyst

- Responsible for modelling instrument response in terms of Gaussian beam modes and quasi-optical design

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Jamie Bock (Caltech/JPL) – Detector Systems Physicist

- Responsible for all aspects of the detector system design and implementation
- Point of contact for all matters relating to the detectors (team of specialists working at Caltech/JPL/University of Colorado)

Anna di Giorgio (IFSI) – On Board Software Engineer

- Responsible for OBS definition and implementation

Riccardo Cerulli-Irelli (IFSI) – DPU Engineer

- Responsible for defining specification for SPIRE DPU
- Responsible for definition of interface between DPU and the FIRST spacecraft.

Christophe Cara (SAp) – DRCU Engineer

- Responsible for design and implementation of the DRCU
- Overall responsibility for the definition of the interface between the DRCU and the DPU; the DRCU and the FPU; between the different parts of the DRCU and between the DRCU and the FIRST spacecraft

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Didier Ferrand (LAM) – MCU Engineer

- Responsible for design and implementation of the MCU
- Responsible for detailed definition of the MCU interfaces

Frederick Pinsard (SAp) – DCU Engineer

- Responsible for the design and implementation of the DCU
- Responsible for the detailed definition of the DCU interfaces

RAL new recruit – Assistant Instrument Systems Engineer

- Precise responsibilities TBD

Sunil Sidher – Operations Scientist

- Responsible for detailed implementation of operating modes in terms of commanding and telemetry definition
- Responsible for defining and controlling ICC to Instrument interfaces

Skills/areas missing from the list:

- *Detailed EMC modelling – New recruit should be able to pick this up in due time*
- *Electrical Systems – SAp are quite clear that this is not the role of Christophe Cara – John Delderfield will take this role from now on.*
- *Operations – I can do this at least for the time being but we are going to need someone to look after the systems aspects of the detailed implementation of, for instance, the OBS; the telemetry format contents list etc etc. Ken suggests this is the job of the Operations Scientist Sunil Sidher – I have indicated this above and in figure 1.*

3. Organisation

Figure 1 shows the basic organisation of the SPIRE system team indicating spheres of influence and information flow. Also shown are two arrows – one from the Sub-systems and one from ESA/Prime. These indicate that information relating to the system level design of the instrument will also flow into the system co-ordination team from these other directions. Information will also

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be generated from the activities of the system engineering team. The co-ordination team will review this and the information will be relayed to the sub-systems and back to ESA/Prime as appropriate. This definition of the information flow does not preclude contact and discussion between all parts of the SPIRE team and/or ESA/Prime. However, no design change discussed between parties is given **Official status** until reviewed and agreed by the co-ordination team.

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Figure 1: System Team Organisation and Information Flow

