HERSCHEL / PLANCK

Organisation of the Herschel-Planck instrument interface management

Doc H-P-1-ASPI-RP-0122

Product Code :

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ENREGISTREMENT DES EVOLUTIONS / *CHANGE RECORDS*

ISSUE	DATE	§ : DESCRIPTION DES EVOLUTIONS *§ : CHANGE RECORD*	REDACTEUR *AUTHOR*
Issue 1 Rev 1	16/04/02	New edition as a document from memo from Nov 2001	
Rev 2	23/10/02	Add section 2.2.4: Ralation with PA, Replace J.Bruston by A.Heske (acting) in section 2.3 & 2.5.111 Add Instruments AIV managers in section 2.3	BC
Rev 3	12/9/03	Comments from Astrium (ref. HP-ASPI-MN-2603) Comments from ESA (mail from J.Marti Canales 31/10/02 Replacement J.bruston → Carsten Scharmberg, G.Lund →G.Doubrovik in text and graphs Precision on the CR process Add refs to FTP site	BC
Rev 4	30/11/03	Update Alenia responsibility (similar to Astrium) Update Astrium Organisation chart (E.Hoelzle → J.kroeker)	BC

TABLE OF CONTENTS

1. CONTEXT

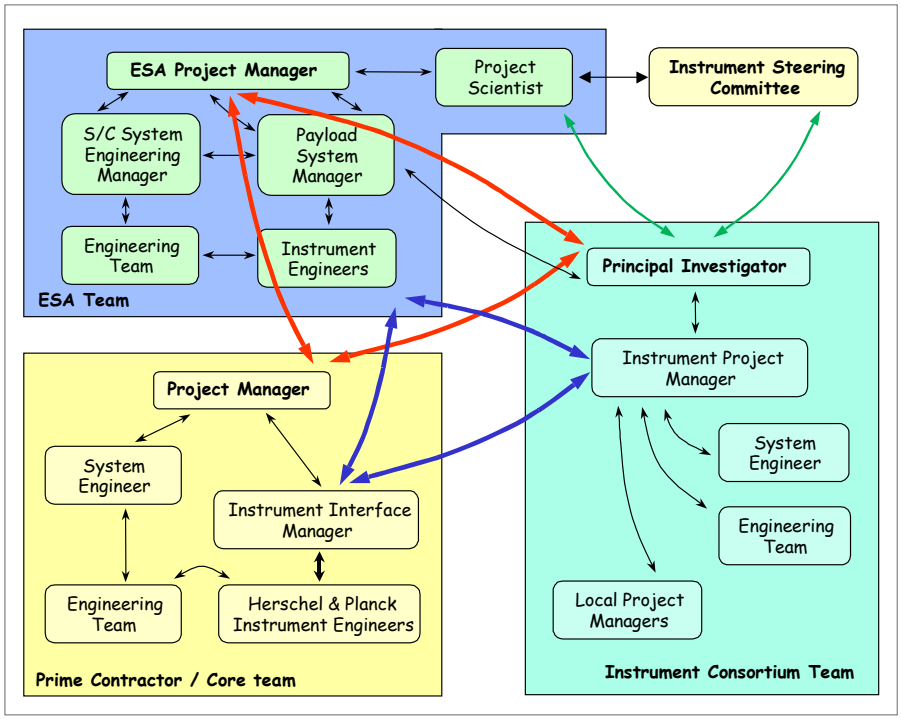
ESA has delegated to industry core team the management of the technical interfaces between the two Spacecraft Herschel and Planck, and the five instruments, and delivery schedule.
The overall Instrument Interface management is described in the IID-A, Chapter 10.
The organisation and duties of ESA and industry are described in the ESA work plan (ref draft 13/09/01, annexed to Minutes of instruments management meeting HP-ASPI-MN-375 – 2001-09-19)
The relations between the industry core team and the instruments are described in the Partnership agreements, established for each instrument (Doc HP-2-ASPI-CO-0060 to 64 for PACS, SPIRE, HIFI, LFI, HFI), and agreed between the instruments and the prime.

The Statement of work and ESA work plan split the ESA/Industry as follows:

- ESA keep the overall responsibility of the instrument design and performances, and of the instrument system & subsystem schedules)
- Industry core team is responsible of the instrument technical interfaces, and of the instruments models delivery schedule (mainly the consistency between instruments and system schedule, and the definition of instruments delivery dates).

This document describes the industry organisation (Alcatel, Alenia, Astrium) related to the Herschel Planck project Instrument interfaces.
This document shall be considered as an applicable document for Astrium and Alenia (as per their statement of work). All what concerns the organisation and process description are firm requirements, whereas the figures giving details industry organisation charts or references shall be considered as information reflecting the current status.

The following chart summarises the overall tripartite organisation ESA/Industry/Instruments



2. INDUSTRY RESPONSIBILITY AND ORGANISATION

2.1 Responsibility

The overall responsibility of instrument interfaces is given to the Prime contractor (Alcatel), with delegation of technical interfaces co-ordination to Astrium (for Herschel instruments FPU, cryostat attached units and cryo-harness) and Alenia (SVM warm units accommodation).

2.1.1 Alcatel:

Alcatel, prime contractor has the overall responsibility of the Herschel and Planck technical instrument interface management: Technical interfaces and delivery schedule.
The objective is to guarantee the technical and programmatic compatibility between the 5 instruments and the 2 satellites. The definition of the interfaces are written in 2 sets of interface documents: IID B & IID A which are the binding documents between the five instruments and the two spacecraft Herschel and Planck.

The tasks identified to reach this compatibility are the following:

1. **Co-ordination of instrument technical interfaces between Instrument and spacecraft engineering teams (chapter 5 of the IID's)**
   - Take into account all requirements of IID-B in the satellite design.
   - Co-ordinate together with the engineering team the definition and evolution of instrument interfaces with the evolution of the spacecraft design.
   - Phase the design activities between spacecraft and instrument design
   - Identify the critical interfaces which will require more effort
   - Co-ordinate interfaces between FPU's (in HPLM and PPLM) and warm units (in SVM).
   - Report and freeze the agreed interfaces in the interface documentation (IID's, ICD's)
2. **Co-ordination of instrument to spacecraft AIV/AIT activities (chapter 6, 7, 9 of the IID's) with the support of the system and modules AIV/AIT teams**
   - Deliverable items refinement (AVM, CQM, FM, FS)
   - Integration activities. Organise phasing and sharing of responsibilities between instrument and AIV team
   - Testing activities: co-ordinate instrument verification requirement (at satellite levels) with the proposed test sequences in AVM, QM, and FM sequences.
3. **Co-ordination of delivery schedule between Spacecraft and instruments (chapter 10 of IID's)**
   - By maintaining fixed milestones for instrument deliveries.
   - By Providing the relevant analyses (optimisation or cost impacts) for instrument & spacecraft schedule harmonisation.
   - As the control of the instrument detailed schedule remains in ESA's responsibility, this responsibility can only be shared with ESA.
4. **Maintain, edition and approval cycle of the IID's**
   - Control and negotiate the proposed evolution of instrument interface requirements (from instrument or spacecraft request).
   - Identify / minimise changes with design, cost & schedule impact
   - Edit and publish the interface document (IID-B's and A) under configuration control
5. **Co-ordination of the Instrument interface team in Alcatel/Alenia/Astrium**
   - Distribution of responsibilities, optimisation of resources.
   - Scheduling of activities
6. **Co-ordination with ESA**

- Overall co-ordination of instrument interfaces
- Consistency between the proposed interfaces to the satellite, and the instrument performances
- Schedules analysis & optimisation
- Support to instrument review (documentation analysis and participation to review)
- Main decisions

The focal points of contacts in Alcatel are:
- Bernard Collaudin for overall Herschel and Planck instrument interfaces.
- Guy Doubrovik for detailed Herschel instrument interfaces
- Jean-Philippe Chambelland for detailed Planck instruments interfaces.

2.1.2 Astrium:

Management of the Herschel instrument FPU's, cryostat attached units (LOU) and cryo-harness interfaces is fully delegated to Astrium.
This means that, points 1 (Design) and 2 (AIV/AIT) described above are applicable to Astrium, tailored to the level of the Herschel PLM design, and Herschel EPLM AIV and Herschel satellite satellite AIT activities.

The level of delegation is as follows:
- the instruments engineers in Astrium become the focal point of contact between Astrium and Herschel instrument for the technical activities related to refinement of FPU, cryo-harness, and cryostat interfaces
- the exchange of information can be made directly between Astrium and Instruments (always copy to Alcatel and ESA).
- Astrium can initiate technical working meetings with instrument as necessary to fulfil its design tasks. Alcatel and ESA should be informed about these meetings.
- Astrium instrument engineers will co-ordinate the interfaces between FPU and cryostat attached units with the HPLM engineering team (mechanical interface to Optical bench, thermal design, straylight, cryoharness, ….).
- Astrium instrument engineers will co-ordinate the AIV/AIT activities related to the acceptance, integration, and verification of the various instrument FPU models.
- All aspects related to interfaces with SVM must be processed with Alenia via Alcatel.
- Support to instruments reviews (documentation analysis and participation to review)
- Coordinate AIT activities of the 3 Instruments with the one of the Herschel EPLM and satellite.
- Provide the relevant analyses (optimisation or cost impacts) for instrument & spacecraft schedule harmonisation.

In addition, the effort of design on the interfaces in HPLM should be aimed also at documenting the achievements in the interface documents (IID'B's and A, and interface control drawings). Astrium is requested to organise the scheduling of the interfaces freezing together with instrument, and provide the relevant input for the interface document
The input to IID-B will have to be first agreed between Instrument and Astrium agreed with Alcatel, before to be proposed for update of the interface document.

The focal points of contacts are:
- Siegmund Idler for HIFI FPU, LOU, wave-guides technical interfaces
- Horst Faas for SPIRE FPU technical interfaces
- Dietmar Schink for PACS FPU & BOLA technical interfaces
- J.Kroeker for coordination

2.1.3 Alenia:

Management of the Herschel and Planck instrument warm units interfaces is fully delegated to Alenia.
The level of delegation is as follows:

- the instruments engineers in Alenia become the focal point of contact between Alenia and Herschel instrument for the technical activities related to refinement of warm units and warm interconnection harness interfaces and accommodation
- the exchange of information can be made directly between Alenia and Instruments (always copy to Alcatel and ESA).
- Alenia can initiate technical working meetings with instruments as necessary to fulfil its design tasks. Alcatel and ESA should be informed about these meetings.
- Alenia instrument engineers will co-ordinate the interfaces of the Instruments warm units with the SVM's engineering team (mechanical interface to SVM, thermal design, SVM & instrument harness, ….).
- Alenia instrument engineers will co-ordinate the AIV/AIT activities related to the acceptance, integration, and verification of the various instrument AVM.
- All aspects related to interfaces with PLM's must be processed with Astrium (H-PLM) or Alcatel (P-PLM) via Alcatel system team.
- Support to instruments reviews (documentation analysis and participation to review)
- Coordinate AIT activities of the 5 Instruments with the one of the Herschel EPLM and satellite (for SVM AVM & FM).
- Provide the relevant analyses (optimisation or cost impacts) for instrument & spacecraft schedule harmonisation.

In addition, the effort of design on the interfaces in SVM should be aimed also at documenting the achievements in the interface documents (IID'B's and A, and interface control drawings). Alenia is in charge to organise the scheduling of the warm units interfaces freezing together and provide the relevant input for the interface documents.
The input to IID-B will have to be first agreed between Instrument, Alcatel and Alenia, before to be proposed for update of the interface document.

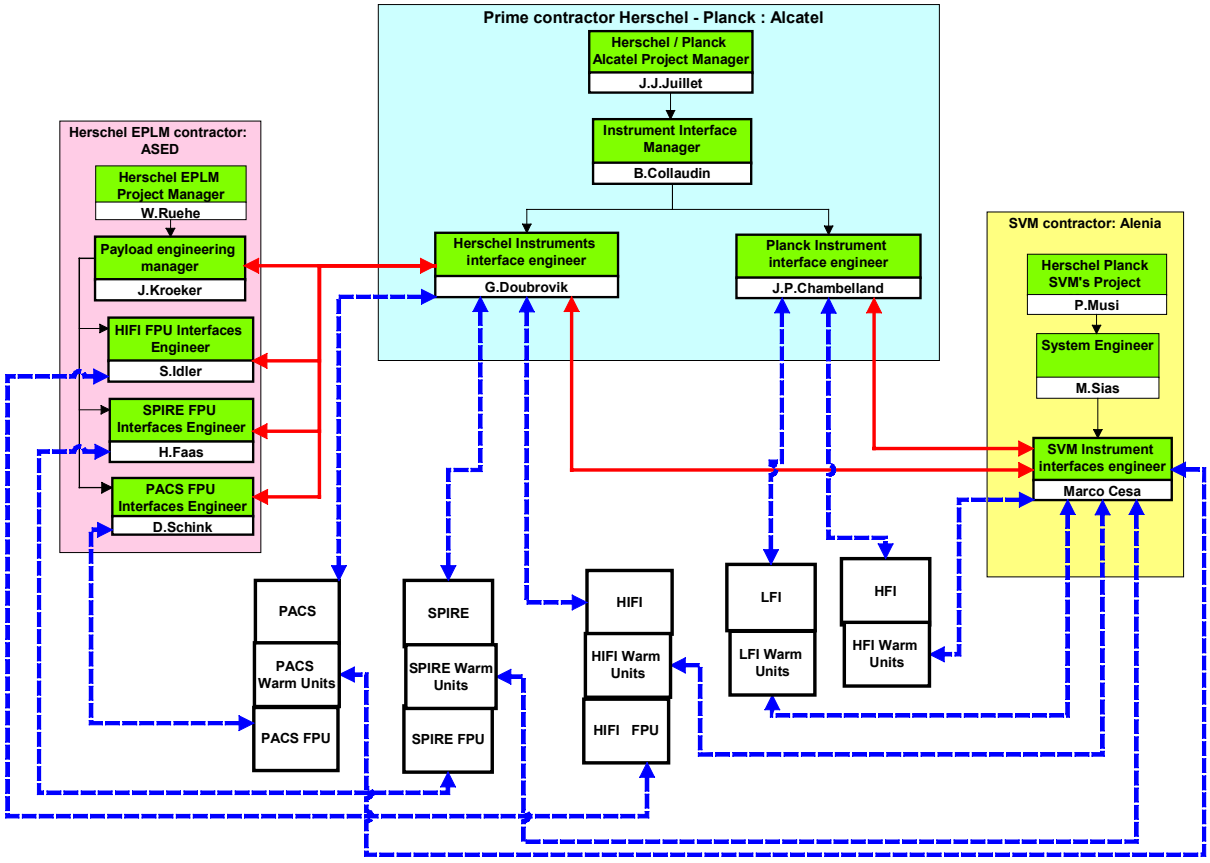
The interface engineer in Alenia is:

- Marco Cesa, supported by the engineering team.

2.2 Organisation:

2.2.1 Instrument interface team

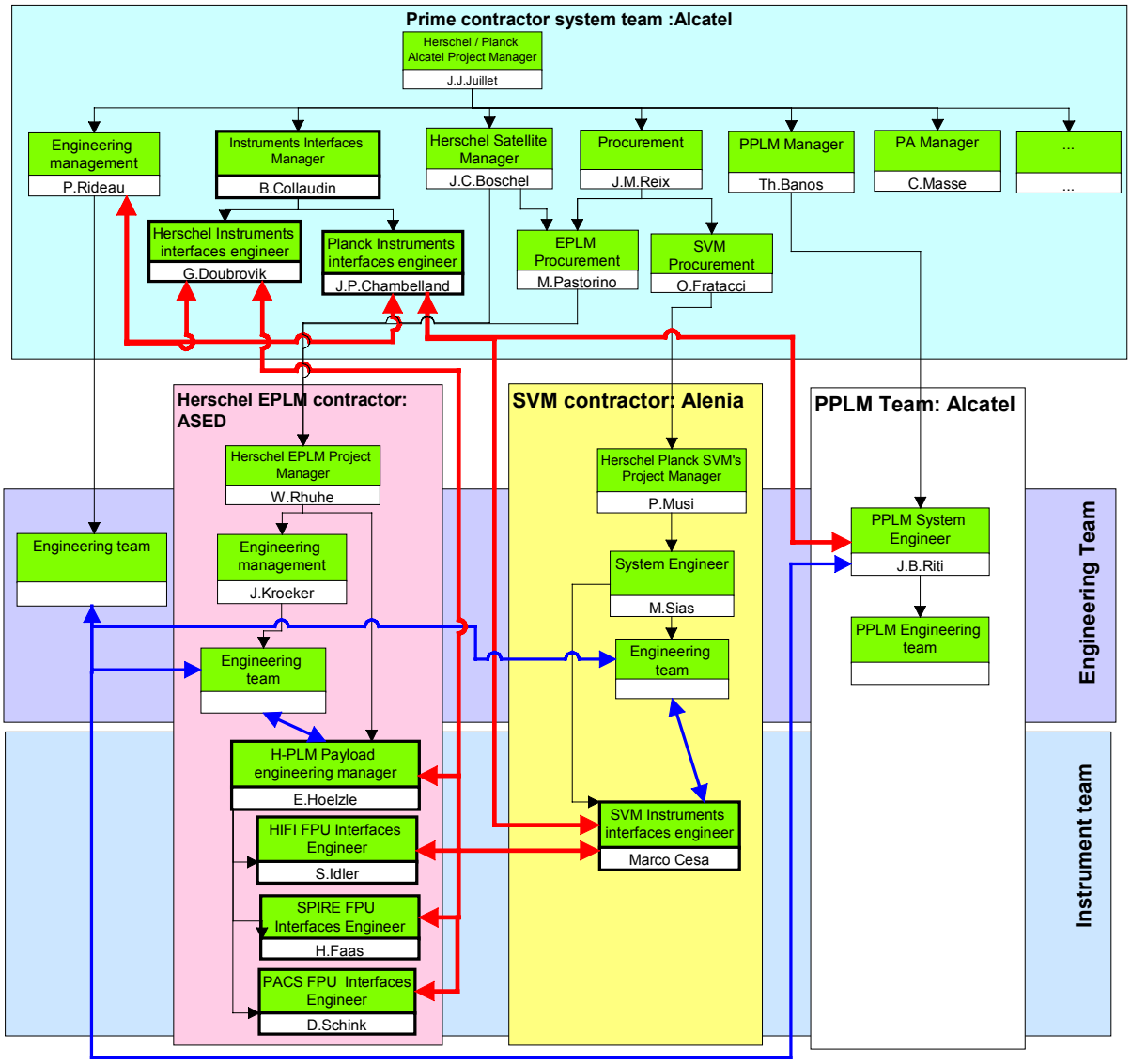
The following organisation chart shows the instrument interface team in industry, the communication link inside industry (hierarchical (thin black) and functional (thick red arrows), and contact points with instrument (thick blue arrows)



(names given for information only)

2.2.2 Relation with engineering

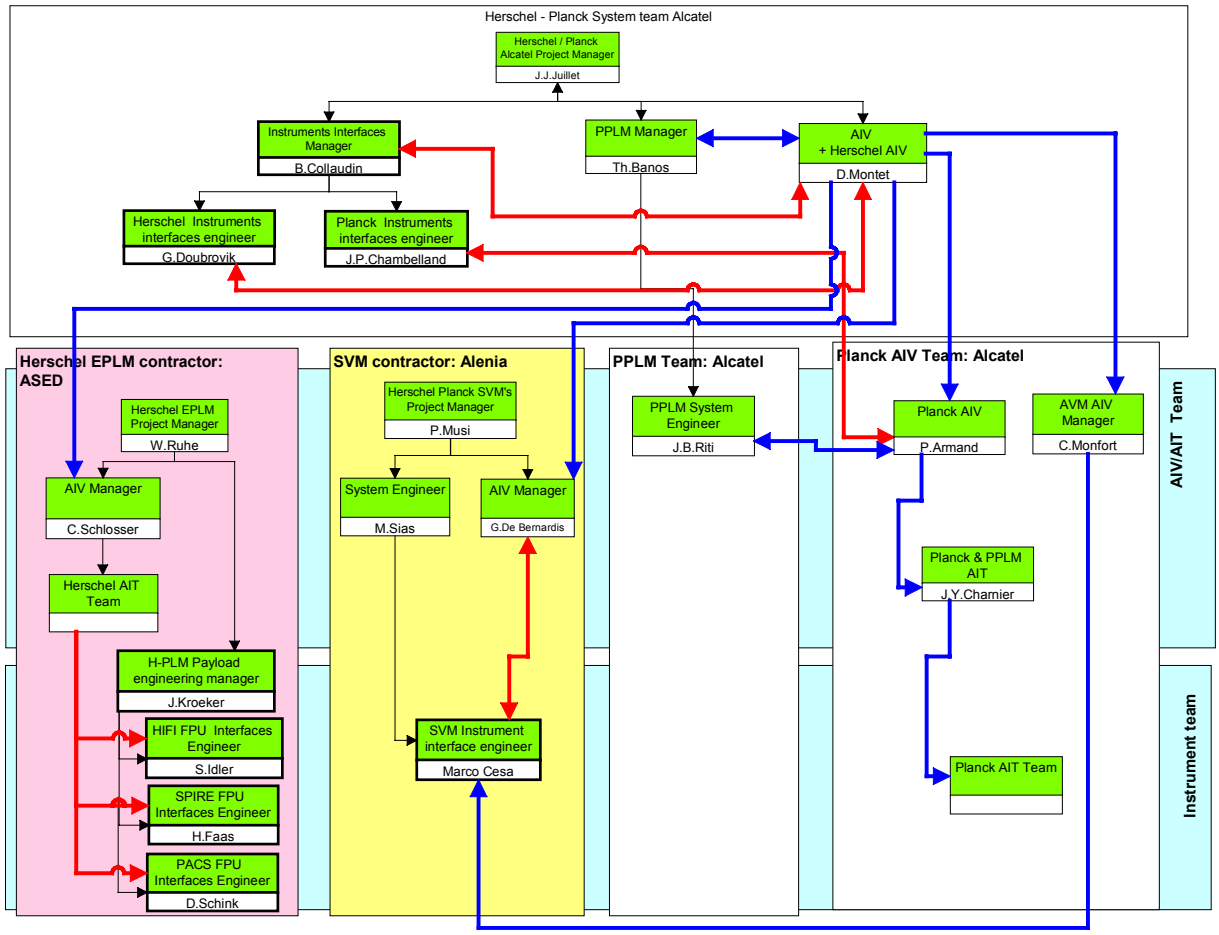
The following chart describes the relationships between instrument interface teams, and engineering teams at Alcatel, Astrium and Alenia.



(names given for information only)

2.2.3 Relation with AIV/AIT

This chart shows the various AIV/AIT team in industry, and their relation with Instrument teams.



(names given for information only)

2.2.4 Relation with PA

The instruments are ESA Furnished Equipments (EFE) , thus the experimenters can not be considered as subcontractors . For PA aspect there is no direct link between instruments and ASPI all the relation will be through ESA. In this frame the ASPI PA activities with respect to these products will be organised as follow .

The main basic hypothesis is that the PI's (Principal Investigators) are compliant to the IID part A and part B and to the PA requirements for H/P scientific instruments PT-RQ-044410 issue 2 .

ALCATEL will focus its PA activities on the following points :

PA management :

The instruments PA Plan will be reviewed to check the compliance to the PA requirements . ALCATEL will participate to the NRB for non conformance having an impact on the interfaces and on system AIT . This suppose that the informations have been communicated to ALCATEL .

ALCATEL will approve the RFD/RFW , for those linked to I/F .

The ADP of the experiments will be reviewed to check that the data concerning the I/F with the spacecraft have been checked and found compliant to the requirements

Expert PA activities :

- EEE : ALCATEL will participate to the parts selections through CPPA management
- Materials/Processes: Review of lists to check the compliance with outgassing requirements
- Reliability : The non failure propagation has to be analysed in the FMECA which have to be submitted to ALCATEL for review
- Safety : Hazards analysis will be reviewed
- Cleanliness : The cleanliness control plan which ensure that the cleanliness requirements will be achieved has to be submitted to ALCATEL for review .
- Software : ALCATEL will review the HSIA (Hardware/Software Interaction Analysis) for non failure propagation to spacecraft software .

The here above point imply that the information are provided to ASPI via ESA.

Alcatel will follow the progress of the scientific instrument PA activities by participating to quarterly progress meeting chaired by ESA.

2.3 Key personnel:

ESA and Industry Instrument interface Key personnel (as per last status known from Industry)

name	Satellite	company	tel	e.mail	fax	rôle
Gerald Crone	Herschel/ Planck	ESA	+31 71 565 3934	Gerald.Crone@esa.int	+31 71 565 5244	ESA Herschel / Planck payload manager
Carsten Scharmberg	Herschel	ESA	+31 71 565 5786	Carsten.scharmberg@esa/int	+31 71 565 5244	ESA SPIRE & HIFI instrument manager
Astrid Heske	Herschel/ Planck	ESA	+31 71 565 5467	Astrid.Heske@esa.int	+31 71 565 5244	ESA PACS & sorption cooler instrument manager
Javier Marti Canales	Planck	ESA	+31 71 565 4531	Javier.Marti-Canales@esa.int	+31 71 565 5244	ESA HFI & LFI instrument manager
Bernard Collaudin	Herschel/ Planck	Alcatel	+33 4 92 92 30 21	bernard.collaudin@space.alcatel.fr	+33 4 92 92 30 10	Instruments interfaces manager Coordination of Herschel & Planck instrument interface activities Book-captain of IID-A
Jean-Philippe Chambelland	Planck	Alcatel	+33 4 92 92 74 48	Jean-philippe.chambelland@space.alcatel.fr	+33 4 92 92 30 10	Planck Instrument interfaces engineer Contact point and Processing of Planck instruments interfaces, Coordination of Planck instruments interfaces activities between instruments, Alcatel, Astrium and Alenia. Book-captain of the 2 Planck instruments IID-B's (HFI, LFI + SCS)
Guy Doubrovik	Herschel	Alcatel	+33 4 92 92 69 27	guy.doubrovik@space.alcatel.fr	+33 4 92 92 30 10	Herschel Instrument interfaces engineer Contact point and Processing of Herschel warm units interfaces Coordination of Herschel instruments interfaces activities between instruments, Alcatel, Astrium and Alenia. Book-captain of the 3 Herschel instruments IID-B's (PACS, SPIRE, HIFI)
Juergen Kroeker	Herschel FPU's	Astrium	+49 75458 3668	Juergen.kroeker@astrium.eads.net	+49 7545 8 99 84	HPLM System & Payload engineering manager Coordinate the Astrium payload teams (instruments/telescope/straylight)
Horst Faas	Herschel FPU's	Astrium	+49 75458 3990	horst.faas@astrium.eads.net	+49 7545 8 42 43	HPLM - SPIRE FPU interfaces engineer Contact point for SPIRE FPU interfaces Processing of SPIRE FPU & related cryoharness interfaces
Dietmar Schink	Herschel FPU's	Astrium	+49 75458 9414	dietmar.schink@astrium.eads.net	+49 7545 8 42 43	HPLM - PACS FPU interfaces engineer Contact point for PACS FPU interfaces Processing of PACS & related cryoharness interfaces
Siegmund Idler	Herschel FPU's	Astrium	+49 75458 4671	siegmund.idler@astrium.eads.net	+49 7545 8 42 43	HPLM - HIFI FPU interfaces engineer Contact point for HIFI FPU & LOU interfaces Processing of HIFI & LOU & related cryoharness & wave-guides interfaces
Marco Cesa	Herschel/ Planck	Alenia	+39 011 4405724	marco.cesa@sofiter.it	+39 011 7180 637	SVM Instruments interfaces engineer Coordination of instrument interface data for Alenia engineering team.

Instrument key personnel

Instrument	First Name	Family name	Institute	Phone institute	Cell Phone	Fax	e_mail
Principal investigators							
HFI	Jean-Loup	Puget	IAS	+33 1 6985 8665	+33 6 83 83 88 88	+33 1 69 85 86 75	puget@ias.fr
HIFI	Thijs	de Graauw	SRON-Groningen	+31 50 363 4074	+31 6 53 79 54 18	+31 50 363 4033	thijsdg@sron.rug.nl
LFI	Nazzareno	Mandolesi	IASR	+39 051 639 8682	+39 335 6507026	+39 051 639 8724	reno@tesre.bo.cnr.it
PACS	Albrecht	Poglitsch	MPE	+49 89 30000 3293		+49 89 30000 3292	alpog@mpe.mpg.de
SPIRE	Matt	Griffin	Cardif	+44 29 2087 4203	+44 787 96 54 520	+44 29 2087 4056	Matt.Griffin@astro.cf.ac.uk
Instrument Project Managers							
HFI	Jacques	Charra	IAS	+33 1 69 85 85 83	+33 6 87 73 06 76	+33 1 69 85 86 75	charra@ias.u-psud.fr
HIFI	Kees	Wafelbakker	SRON - Utrecht	+31 30 253 5711	+31 6 22 55 92 40	+31 30 254 0860	C.K.Wafelbakker@sron.nl
LFI	Chris	Butler	IASR	+39 051 639 8697	+39 335 65 09 101	+39 051 639 8723	butler@tesre.bo.cnr.it
PACS	Otto	Bauer	MPE	+49 89 30000 3591	+49 160 700 65 62	+49 89 30000 3272	ohb@mpe.mpg.de
SPIRE	Eric	Sawyer	RAL	+44 1235 44 6385		+44 1235 44 6667	E.C.Sawyer@rl.ac.uk
Instrument Project Offices							
HFI	Valerie	Demuyt	IAS	+33 1 69 85 85 13		+33 1 69 85 86 75	valerie.demuyt@ias.u-psud.fr
HIFI		Project Office HIFI	SRON-Groningen	+31 30 2535704		+31 30 2540860	HIFI-Prof@sron.nl
LFI		Project Office LFI	IASR	+39 051 6398697		+39 051 6398724	taddei@tesre.bo.cnr.it
PACS		Project office PACS	MPE	+49 89 30 000 3880		+49 89 30000 3272	pacs@mpe.mpg.de
SPIRE	Judy	Long	RAL	+44 1235 446322		+44 1235 446667	J.A.Long@rl.ac.uk
Instrument AIV/AIT manager							
HFI	André	Chardin	IAS	33 1 69 85 85 38		+33 1 69 85 86 75	Andre.CHARDIN@ias.u-psud.fr
HIFI	Willem	Luinge	SRON-Groningen	+31 50 363 4022		+31 50 363 4033	W.Luinge@sron.rug.nl
LFI	Paolo	Leuteneger	LABEN	+39 2 25075297		+39 22505515	pleutenegger@webmail.laben.it
PACS	Reinhard	Katterloher	MPE	+49 89 30 000 3556		+49 89 30 000 3272	rok@mpe.mpg.de
SPIRE	Eric	Sawyer	RAL	+44 1235 446385		+44 1235 446667	E.C.Sawyer@rl.ac.uk
Instrument System Engineers							
HFI	Guy	Guyot	IAS	+33 1 69 85 85 74		+33 1 69 85 86 75	guy.guyot@ias.u-psud.fr
HIFI	Henry	Aarts	SRON - Utrecht	+31 30 253 5684		+31 30 254 0860	H.J.M.Aarts@sron.nl
LFI	Franco	Monzani	LABEN	+39 225075-245		+39 22505515	monzani@laben.it
PACS	Reinhard	Katterloher	MPE	+49 89 30 000 3556		+49 89 30 000 3272	rok@mpe.mpg.de
SPIRE	John	Delderfield	RAL	+44 1235 446412		+44 1235 446667	J.Delderfield@rl.ac.uk

2.4 Duties (Industry)

	Instruments interfaces Manager.	
Responsible:	Bernard COLLAUDIN, Alcatel	
Duties	Overall responsibility of instrument technical interfaces and delivery schedule. Co-ordination of Instrument interface team Co-ordination of working groups Edition of IID-A Responsibility of IID-A update (collecting technical, schedule & cost impacts, distribution and approval cycle) Monthly Reporting to ESA, and progress meetings: General aspects, Synthesis of main points, co-ordination. Distribution of information common to all instruments Participation to Spacecraft Management and engineering meetings Participation to instrument review Participation to Science team meetings, instrument consortium meetings as needed	
Communication	With Instruments PI's and Project manager	Management issues. Major technical issues (impacting cost & schedule) distribution of information common to all instruments, IID-A approval
	With ESA Payload and project manager	Management issues, coordination.
	With Alcatel Engineering team	Design issues related to Instrument interfaces IID-A update
	With Astrium and Alenia instrument engineers and engineering teams	Management issues,

	Herschel Instruments Interfaces Engineer.	
Responsible:	Guy Doubrovik, Alcatel	
Duties	Responsibility of Herschel Instruments technical interfaces and delivery schedule. Responsibility of the IID's Change process. Edition of Herschel instruments IID-B's (SPIRE, PACS, HIFI) Monthly Reporting related to Herschel instruments. Co-ordination of FPU interfaces (Astrium) and Warm units accommodation (Alenia). Organisation, chair of Herschel instruments technical meetings. Management of related actions. Participation to Herschel instruments reviews. Participation to instruments testing Maintain Herschel instruments budgets (Mass, power demand, dissipation, ...).	
Communication	With Herschel Instruments PI's and Project managers	Technical and schedule issues. IID-B's
	With ESA Herschel Instrument engineers	Reporting, approval for CCN's
	With Alcatel Engineering system team	Circulation of Change requests, collect impacts, get actions

	With Astrium payload team	Co-ordinate FPU activities and interfaces with the rest of Herschel FPU and cryostat attached items interfaces H-PLM design issues related to instruments
	With Alenia Payload engineer	Warm units accommodation

	Planck Instruments interfaces Engineer.
Responsible:	Jean-Philippe Chambelland, Alcatel,
Duties	Responsibility of Planck Instruments technical interfaces and delivery schedule. Responsibility of the Planck IID's Change request. Edition of Planck instruments IID-B's (HFI, LFI, Sorption cooler ICD) Monthly Reporting related to Planck instruments Co-ordination of FPU interfaces (Alcatel Planck team) and Warm units accommodation (Alenia). Organisation, chair of Planck instrument technical meetings. Management of related actions. Participation to Planck instruments reviews Maintain Planck instruments budgets (Mass, power demand, dissipation, …).
Communication	With Planck Instruments PI's and Project managers With ESA Planck Instrument engineers With Alcatel Engineering system team With Alcatel PPLM Engineering team With Alenia Payload engineer

	Astrium H-PLM Payload Engineering Manager
Responsible:	Juergen Kroeker, ASED
Duties	Delegation of Herschel Instruments FPU technical interfaces. Responsibility of Herschel Telescope technical interfaces Monthly Reporting related to Herschel instruments FPU's Coordination of Astrium Payload team Coordination of FPU interfaces with Astrium Engineering team, and with Alcatel Participation to Herschel instrument interface meetings Participation to Herschel instruments reviews Maintain Herschel instruments FPU budgets (Mass, power demand, dissipation, …).
Communication	With Herschel Instruments Project managers, and system engineers With ESA and Alcatel Herschel Instrument engineers With Astrium Engineering system team With Astrium AIT team With ESA Telescope managers.

	HIFI FPU interfaces engineer
Responsible:	Siegmund Idler, ASED
Duties	Focal point of contact for HIFI Cold units (HIFI FPU, LOU). Delegation of HIFI Instruments Cold units technical interfaces. Monthly Reporting related to HIFI instruments Cold Units. Co-ordination of HIFI Cold units interfaces with Astrium Engineering team, and with Alcatel Organisation of HIFI Cold units dedicated technical meeting as needed to freeze technical interfaces. Participation to Herschel instrument interface meetings

	Maintain HIFI Cold units instruments budgets (Mass, power demand, dissipation, …). Analyse instrument proposed changes from HIFI interfaces. Propose updates to IID-A related to HIFI Cold units Herschel Instruments FPU AIV & AIT activities coordination
Communication	With HIFI Instruments Project manager Engineering team With ESA HIFI Instrument engineers With Alcatel Herschel Instrument engineer With Astrium Engineering system team With Astrium AIT team

	PACS FPU interfaces engineer
Responsible:	Dietmar Schink, ASED
Duties	Focal point of contact for PACS Cold units (PACS FPU, BOLA). Delegation of PACS Instruments Cold units technical interfaces. Monthly Reporting related to PACS instruments Cold Units. Co-ordination of PACS Cold units interfaces with Astrium Engineering team, and with Alcatel Organisation of PACS Cold units dedicated technical meeting as needed to freeze technical interfaces. Participation to Herschel instrument interface meetings Maintain PACS Cold units instruments budgets (Mass, power demand, dissipation, …). Analyse instrument proposed changes from PACS interfaces. Propose updates to IID-A related to PACS Cold units. Interface for optical & straylight activities.
Communication	With PACS Instruments Project manager & Engineering team With ESA PACS Instrument engineers With Alcatel Herschel Instrument engineer With Astrium Engineering system team With Astrium AIT team

	SPIRE FPU interfaces engineer
Responsible:	Horst Faas, ASED
Duties	Focal point of contact for SPIRE Cold units (SPIRE FPU, BOLA). Delegation of SPIRE Instruments Cold units technical interfaces. Monthly Reporting related to SPIRE instruments Cold Units. Co-ordination of SPIRE Cold units interfaces with Astrium Engineering team, and with Alcatel Organisation of SPIRE Cold units dedicated technical meeting as needed to freeze technical interfaces. Participation to Herschel instrument interface meetings Maintain SPIRE Cold units instruments budgets (Mass, power demand, dissipation, …). Analyse instrument proposed changes from SPIRE interfaces. Propose updates to IID-A related to SPIRE Cold units Interface for all IID-A update activities.
Communication	With SPIRE Instruments Project manager & Engineering team With ESA SPIRE Instrument engineer With Alcatel Herschel Instrument engineer With Astrium Engineering system team With Astrium AIT team

	Alenia SVM Instrument Interface Manager
Responsible:	Marco Cesa, Alenia
Duties	Delegation of Instruments warm unit accommodation in Herschel and Planck SVM. Co-ordination of Warm units technical interfaces with Alenia Engineering team and Alcatel Monthly Reporting related to instruments warm units accommodation Participation to instrument technical meetings Maintain instruments warm units budgets (Mass, power demand, dissipation, …). Propose updates to IID-A related to SVM description and Instrument warm units accommodation Management of Instrument interfaces for AVM testing activities
Communication	With Alcatel Instrument team With Alcatel Engineering and AIT team With Alenia Engineering and AIT team With ESA Instruments engineer With instruments as needed for clarification

2.5 Communication:

Daily communication is established by telephone, e.mail, or fax.
Important mails should have a project reference, and be sent in addition to project offices.

2.5.1 Communication flows

2.5.1.1 Communication of Industry with Instruments

2.5.1.1.1 Instrument to industry:

The following list gives the contact points and copy list for each instrument

Purpose		Send to (contact point):	copy to			
Herschel	Herschel warm units	Guy Doubrovik	Marco Cesa		ESA	bernard Collaudin
Herschel	PACS FPU	Dietmar Schink	Juergen Kroeker	Guy Doubrovik	Astrid Heske	bernard Collaudin
Herschel	SPIRE FPU	Host Faas	Juergen Kroeker	Guy Doubrovik	Carsten Scharmberg	bernard Collaudin
Herschel	HIFI FPU	Siegmund Idler	Juergen Kroeker	Guy Doubrovik	Carsten Scharmberg	bernard Collaudin
Planck	Planck FPU	Jean-Philippe Chambelland			Javier Marti Canales	bernard Collaudin
Planck	Planck Warm units	Jean-Philippe Chambelland	Marco Cesa		Javier Marti Canales	bernard Collaudin
Planck	Sorption cooler	Jean-Philippe Chambelland	Marco Cesa		Astrid Heske	bernard Collaudin

2.5.1.1.2 Industry to instruments

Technical communication shall be made to Instruments project manager, copy to project office, + copy to the relevant technical engineer. Communication issued by Astrium and Alenia shall include Alcatel and ESA relevant instrument engineer in the copy list.

Communication with managerial impact should be addressed to PI, copy project manager, and project office, copy to the ESA payload manager.

Important communications should have reference numbers.

2.5.1.2 Communication of Industry with ESA

Each responsible of a specific instrument or FPU communicates mainly with the corresponding instrument manager in ESA:

- J.Marti Canales (HFI, LFI)
- A.Heske (SCS, PACS)
- C.Scharmberg(HIFI, SPIRE)

2.5.1.3 Communication among Industry

Regular (weekly) teleconference between Alcatel and Astrium shall be held to co-ordinate Herschel instruments interfaces, initiated by Alcatel Herschel instrument engineer.
Management meetings shall be organised as needed

2.5.2 Communication tools

2.5.2.1 Informal communication

Email or phone.

2.5.2.2 Formal communication

mails or faxes with reference number.
Copy to project office.
This applies for reply to action, and important mails which will need to be refer to.
Faxes should be also sent by e.mail for storage, and better quality.

2.5.2.3 Exchange of data – Instruments FTP site

An ftp site (hosted by Alcatel) has been set-up to keep important data available to all parties, or to exchange large files.
The URL is the following:
ftp access: ftp://ftp.hp-instruments.as-b2b.com (or ftp://username:passord@ftp.hp-instruments.as-b2b.com)
http access: http://www.hp-instruments.as-b2b.com/share.php

One username per instrument has been defined (XXX2industry), + one for industry and ESA (industry2instruments), generic name XXX = SPIRE, PACS, HIFI, LFI, HFI, JPL)), and 3 main folders are used per instrument:

- XXX_to_Industry
- Industry_to_XXX
- Industry_to_instruments

The access rights are given by the following table:

folder accessible for:			Herschel						Planck						All	All
			HIFI		SPIRE		PACS		HFI		LFI		JPL		Industry/ESA	All
		Directory														
		/	HIFI_to_Industry	Industry_to_HIFI	SPIRE_to_Industry	Industry_to_SPIRE	PACS_to_Industry	Industry_to_PACS	HFI_to_Industry	Industry_to_HFI	LFI_to_Industry	Industry_to_LFI	JPL_to_Industry	Industry_to_JPL	Industry_to_instruments	Public
User	**Username**	**Access rights**														
Administrator	bcollaud	r	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir	rwdmkdir
Industry/ESA	industry2instruments	r	r	rwdmkdir	r	rwdmkdir	r	rwdmkdir	r	rwdmkdir	r	rwdmkdir	r	rwdmkdir	rwdmkdir	rwdmkdir
HIFI	hifi2industry	r	rwdmkdir	r	0	0	0	0	0	0	0	0	0	0	r	rwdmkdir
SPIRE	spire2industry	r	0	0	rwdmkdir	r	0	0	0	0	0	0	0	0	r	rwdmkdir
PACS	pacs2industry	r	0	0	0	0	rwdmkdir	r	0	0	0	0	0	0	r	rwdmkdir
HFI	hfi2industry	r	0	0	0	0	0	0	rwdmkdir	r	0	0	0	0	r	rwdmkdir
LFI	lfi2industry	r	0	0	0	0	0	0	0	0	rwdmkdir	r	0	0	r	rwdmkdir
JPL	jpl2industry	r	0	0	0	0	0	0	0	0	0	0	rwdmkdir	r	r	rwdmkdir

r=read, w=write, d=delete, mkdir=create directory

Currently the "Industry_to_instrument" folder contains the following information:

- Herschel Cryoharness
- IID's
- Meetings
- Documents
- Publications
- Warm interconnecting harness
- Planck applicable drawings
- Usefull Information – Addresses
- Harness docs industry database

Administrator of the site is : Bernard Collaudin, and shall be contacted for all demand for access, or to report any problems.
Access (usernames, password) are distributed by the administrator on demand

2.6 Management Tools:

2.6.1 Meetings

2.6.1.1 Instrument Interface meetings

2.6.1.1.1 Objectives / Goals

- Status of instrument interfaces, budgets and schedule (one instrument at a time)
- Identification of evolutions of the interfaces, agreement and proposed update of the interface documents
- Identification of critical interfaces having impacts on the interface, or on the delivery schedule.
- Delegate solution of technical problems to engineering teams (action or specific technical meetings), or to the relevant working groups
- Initiated by Alcatel Instrument engineer

2.6.1.1.2 Participants

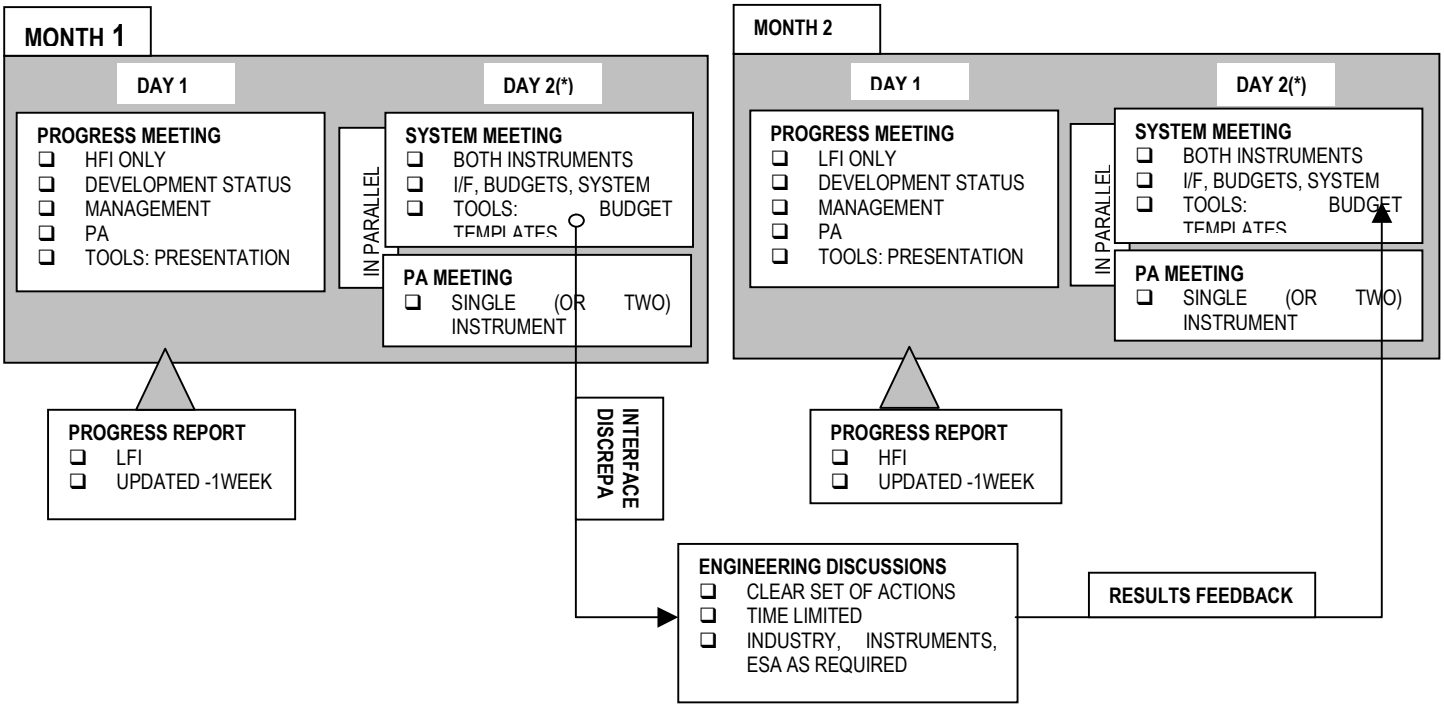
- Alcatel Instrument engineer (chairman), supported by Astrium or Alenia instrument engineer as relevant.
- Instrument project manager
- ESA instrument engineer
- ESA & Alcatel PA engineers as needed
- Support form system engineering team as needed
- Support from instrument engineering team as needed.
- Support from PA as needed (ESA , industry, instrument)

2.6.1.1.3 Frequency

Every 1 -2 months.
Meeting plan shall be established for the next 3 to 6 months

2.6.1.1.3.1 Specific Planck meeting organisation

Planck interface meetings are coupled with Instrument progress meetings (chaired by ESA) in the following way.



2.6.1.2 Technical working meetings

2.6.1.2.1 Objectives / Goals

Resolution of specific interface or design problem involving interaction between industry and instrument specialists. Initiated by industry (instrument or FPU interface engineer), or instrument.

2.6.1.2.2 Participants

- As needed

2.6.1.2.3 Frequency

- As needed

2.6.1.3 Instruments AIV/AIT meetings

2.6.1.3.1 Objectives / Goals

Preparation of test programme, preparation of specific AIT tasks involving interaction between industry and instruments.

2.6.1.3.2 Participants

- Instrument engineers
- AIV & AIT key personnel
- Engineering support as needed.

2.6.1.3.3 Frequency

- To be commonly agreed. Bi-montly up to 6 months before integration, them monthly basis.

2.6.1.4 Instrument Management meetings

2.6.1.4.1 Objectives / Goals

Regular evaluation between ESA, Alcatel, Astrium & Alenia of the instrument interface management & organisation

2.6.1.4.2 Participants

ESA & Industry instruments teams

2.6.1.4.3 Frequency

As needed, Initiated by ESA or Alcatel

2.6.1.5 Logistic for meetings

Initiated by industry. Chaired by AIT/AIV.

2.6.1.5.1 Preparation

Agenda should be sent by the chairman to all participants 1 week before the meeting, with clear objective, subject list and preparation responsibilities
Evolution of interface documentation should be prepared with a wish list allowing industry to discriminate changes with cost impacts from changes without impacts.

2.6.1.5.2 Management of minutes and actions.

Minutes are written by the Meeting secretary.
Minutes shall be reviewed and signed at the end of the meeting, and (preliminary) copy of the signed minutes shall be provided at the end of the meeting.

Electronic copy of the handout (powerpoint or pdf) sent to the chairman before the meeting.
Minutes are typed or scanned, and combined with attachments.
Action are typed, included into Action management tool, and distributed (excel) the next day.
Minutes are made available on ftp
(dedicated folder: ftp://ftp.hp-instruments.as-b2b.com/industry_to_instruments/meetings/)
or by e.mail within 3 days (meeting database)
Open action list distributed on a regular basis.
Answer to action shall be configured (ref. number) shall include the meeting and action reference in the mail title, and be send on time to the relevant people, copy to the meeting chairman, and the relevant project offices.

2.6.2 Progress reporting from Instruments

2.6.2.1 Objective goals

Status of instrument with enlightening of critical points

2.6.2.2 Delivery

Monthly

2.6.2.3 Typical content

1. GENERAL
    - 1.1 Instrument Performance
    - 1.2 Problem Areas and Remedial Action
    - 1.3 Meetings held
    - 1.4 Documents issued
2. INSTRUMENT MANAGEMENT
3. INSTRUMENT ENGINEERING
    - 3.1 Instrument Design changes
    - 3.2 PA/QA
    - 3.3 Budgets
    - 3.4 AIV
4. INSTRUMENT SUBSYSTEMS
5. SCHEDULE
6. ACTION ITEM LIST

2.6.3 Progress reporting Industry To ESA

2.6.3.1 Objective goals

Monthly status of instrument interfaces.

2.6.3.2 Delivery

Together with the industry monthly report

2.6.3.3 Typical content

n: ESA FURNISHED EQUIPMENT INTERFACES – Instrument interfaces
- *n.1 Work performed*
  - n.1.1 General
    - *n.1.1.1 Meetings with Instruments*
    - *n.1.1.2 Management*
    - *n.1.1.3 Budgets*
    - *n.1.1.4 IID's*
  - n.1.2 Herschel Instrument interfaces
    - *n.1.2.1 General*
    - *n.1.2.2 PACS*
    - *n.1.2.3 SPIRE*
    - *n.1.2.4 HIFI*
  - n.1.3 Planck instrument interfaces
    - *n.1.3.1 HFI*
    - *n.1.3.2 LFI*
    - *n.1.3.3 SCS*
- *n.2 Documents issued*
- *n.3 Problem area and possible solutions*
- *n.4 Future outlook*

2.6.4 Working groups

2.6.4.1 Objectives / Goals / Assignment

Working groups are working meetings regrouping of specialists from Instrument, Industry, ESA, to solve specific technical problems common to instruments, or affecting the instrument performances or interfaces in a common way.
A clear objective is to reach an agreement on the content of IID-A.
More than meetings, the working groups must be organised as working forum, with a specific mailing list, and a responsible/point of contact, leading the working group.
Meeting groups can be common to both spacecraft (EMC, data handling), or specific to Herschel or Planck.(telescope, AIV)

2.6.4.2 Initiation / Termination of a Working group.

Working groups should be initiated during the Instrument technical meetings, where clear assignments and task or set of tasks are given, together with the relevant input, and requested output.
Conclusion on a specific topic should be published as a technical note, agreed by all parties, and distributed to in instrument interface management team.
Working group should be terminated when the assigned tasks are executed.
Working group meetings are stored also on the ftp server.

2.6.4.3 Existing / desirable working groups

2.6.4.3.1 Working groups chaired by Industry

- EMC Working group: (Andre Luc) (current task: EMC modelling)
- Data management / Power working group (P.Couzin /K.R.Hibbert) (active current task: Science Data rate for instruments)
- Cleanliness Contamination (C.Masse) (current tasks: contamination levels requirements for spacecraft)
- Herschel Thermal/Cryogenics (Astrium A.Hauser)

2.6.4.3.2 Working groups chaired by ESA

- Herschel Telescope/Straylight /Alignment working Group (D.de Chambure/ESA, Alcatel Participant: P.Martin) (current task: alignment plans, and telescopes interfaces)
- Planck Telescope working group (D.de Chambure/ESA, Alcatel participant: T.Banos, J.B.Riti, D.Dubruel)
- Planck Cryogenics (R.Bathia, Alcatel Participant: E.Gavilla) (initiated task: Planck coolers system aspects).

2.6.4.3.3 Working groups chaired by Instruments

- Herschel EGSE working group (Chaired by O.Bauer, Alcatel participant F.Chatte)

2.6.4.4 Participants, responsibility

One designated specialist representative from each organisation per working group (ESA, Instrument, Alcatel, Alenia, Astrium)
+ specialists as needed, designated on a case by case basis.

Minutes and actions are managed and distributed by the working group chairman.

3. UPDATE OF INSTRUMENTS INTERFACE DOCUMENTS IID A & B.

3.1 Objectives

Description of the update process to get an agreed and consistent set of Herschel & Planck Instrument Interface documents (IID A describing the spacecraft interfaces, and the 5 instruments IID B).
Consistent mean that the IID-B document should be consistent with the current instrument status, and the IID-A consistent with both the IID-B and the current Spacecraft design (at the current review).
Agreed means that they can be signed by Instrument and industry as requirement and commitment.

Update of interface document will follow the review cycle:
IID-A will be updated together with the spacecraft review, IID-B's will be updated with instrument reviews.
Intermediate update (revision) can be needed in case of a major modification.

3.2 Organisation

3.2.1 IIDA

The Change request method is not used for IID-A, as no ECP is expected from instruments, and because the acceptance process by 5 instruments in parallel is not practical. However, the changes are tracked in a red-lined version of the document, and important changes must be proposed and agreed before implamentation.
The IID-A is updated to reflect the spacecraft design evolution or of the agreed changes of the instruments (compatibility with IID-B's).
The document is updated with input from payload teams and engineering teams from industry (Alcatel, Astrium, Alenia).
The main modifications will have to get the agreement of ESA and instruments (circulation of red-lined chapters) before to be implemented in the main document. The red lined document will be distributed to ESA and instrument via ftp.
IIDA must be approved by ESA & Industry : Alcatel, Astrium & Alenia (signatures), and agreed by all Instruments.

3.2.2 IID-B

Proposed changes are discussed in instrument interface meetings before they are issued. Changes with cost & schedule impacts are identified and configured (change requests).

Instrument will issue intended change list which will be evaluated by industry to identify the changes that will have design impact (cost or schedule).
Instrument can also propose changes to IID-B, to reflect the assumption and formalise the data given by instruments and currently used for the design

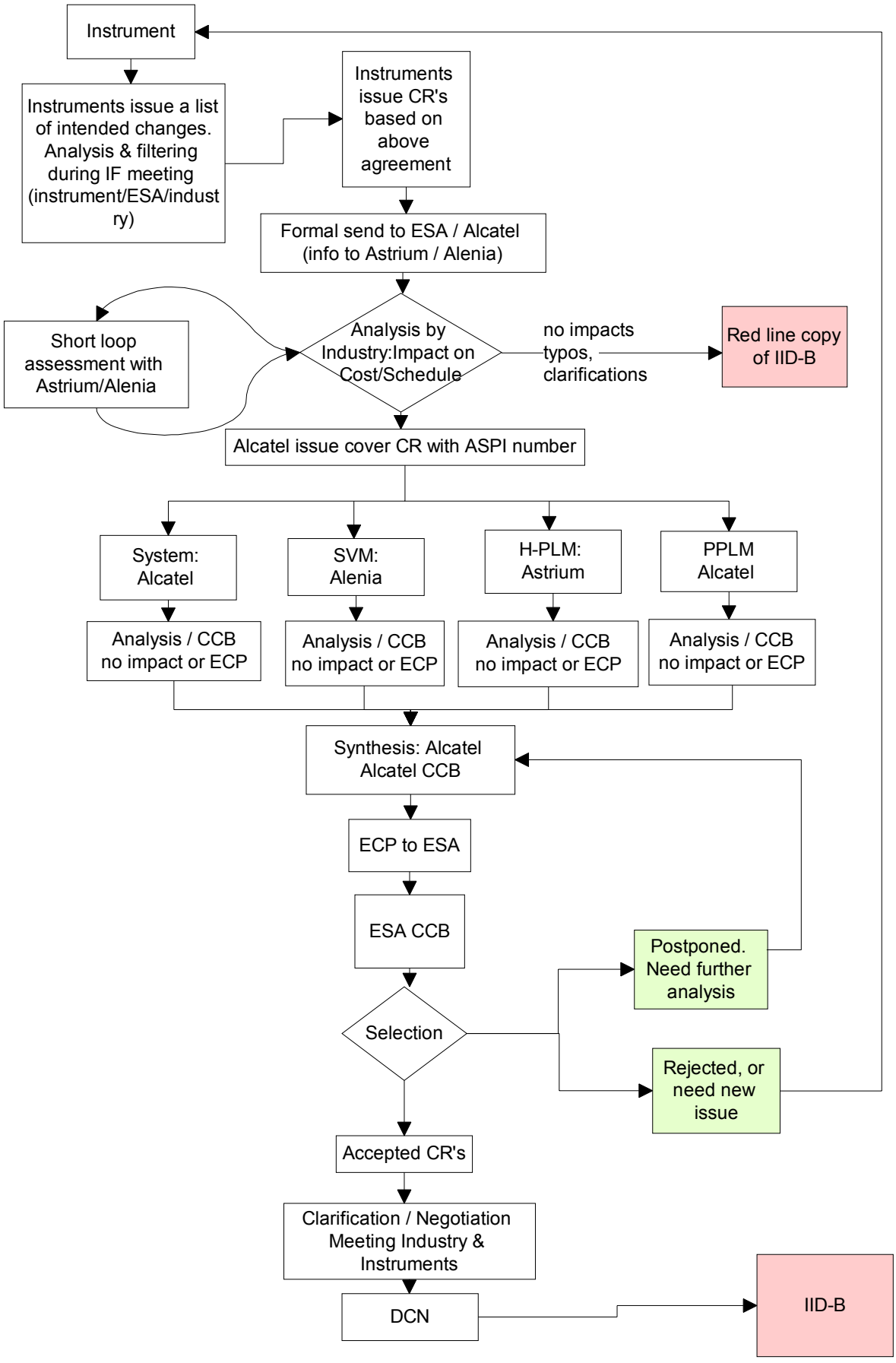
This list is reviewed by ESA/industry,

- to identify the changes which have cost & schedule impacts,
- to identify which changes must be included in the next version of IID-B.

The change list will be discussed in the interface meeting (or dedicated meeting / teleconference) where changes are explained, negotiated (agreed, or rejected). A the end of the meeting, the list of changes should be agreed and signed.
Changes without cost & schedule impacts are to be implemented in a red line version of the IID-B.

For the changes that have cost or schedule impact, a change request is issued, and action are taken (with identified responsible) to evaluate the impacts (design, cost, schedule), and an ECP is established by industry to ESA. A maximum of 4 weeks should be allowed to propose the ECP.
Change requests and follow on documentation will be made available in real time on the ftp server:
ftp:// ftp.hp-instruments.as-b2b.com/industry_to_instruments/IIDs/Change-requests/

IID-B must be approved by ESA and Instrument, and agreed by Industry.



ANNEX: 1 DUTIES OF AIV/AIT KEY PERSONNEL.:

	Herschel/Planck AIV Manager
Responsible	Denis MONTET, ALCATEL
Duties	Co-ordination of industry AIV/AIT teams Coherence of overall development and verification philosophy from instrument level up to Herschel and Planck satellites taking into account: - design peculiarities of instruments (AVM/CQM built standard,…) - qualification status of instruments - specific instrument testing at PLM & System levels - programmatic constraints (cost and schedule impacts on Satellite delivery due to delivery dates of instruments) Propose update of IIDA related to general AIV aspects Review and approval of "Tests Requirement Specifications" from Herschel instruments Follow-up of Herschel instrument development and verification tests.
Communication with	ESA AIV Manager ESA Payload Manager ALCATEL Instrument Interface Manager ALCATEL Engineering Manager ALCATEL AIT/AIV Team Astrium AIV/AIT Manager ALENIA AIV/AIT Manager

	Planck AIV Manager
Responsible	Pierre ARMAND, ALCATEL
Duties	Coherence of Planck development and verification philosophy from instrument level up to PPLM and Satellite levels taking into account: - qualification status of Planck instruments - specific instrument testing at PPLM & Planck S/C levels - programmatic constraints (cost and schedule impacts on Satellite delivery due to delivery dates of Planck instruments) Propose update of IIDA related to Planck AIV aspects Review and approval of "Tests Requirement Specifications" from Planck instruments Follow-up of Planck instrument development and verification tests.
Communication with	ESA AIV Manager ESA Planck Instruments Engineers ALCATEL Planck Instruments Engineer ALCATEL Engineering team ALCATEL AIT team Planck Instrument AIV Managers

	Herschel EPLM AIV Manager & Satellite AIT Responsible
Responsible	Christian SCHLOSSER, Astrium
Duties	Coherence of Herschel EPLM development and verification philosophy from instrument level up to EPLM taking into account: - qualification status of Herschel instruments - specific instrument testing at EPLM level (including EQM) and then at Herschel S/C level - programmatic constraints (cost and schedule impacts on Satellite delivery due to delivery dates of Herschel instruments) Propose update of IIDA related to Herschel AIV aspects Review and approval of "Tests Requirement Specifications" from Herschel instruments Follow-up of Herschel instrument development and verification tests Co-ordination of Astrium AIT team Coherence and management of overall Herschel AIT work plan from instrument level up to EPLM and satellite levels taking into account: - interfaces with instrument - definition of the necessary AIT documentation from instruments - definition of the necessary support from instrument during AIT phases Review and approval of AIT documentation from Herschel instruments
Communication with	ESA AIV Manager ESA Planck Instruments Engineers ALCATEL AIV Manager ALCATEL Herschel Instruments Engineer ALCATEL Engineering team Astrium Engineering team Astrium Herschel Instruments Engineers Herschel Instrument AIV Managers

	SVM AIV Manager
Responsible	Guiseppe De Bernardi, ALENIA
Duties	Coherence of AVM and PFM development and verification philosophy at SVM level taking into account: - design peculiarities of instruments (AVM built standard,…) - specific instrument testing at SVM level Review of specific AVM "Tests Requirement Specifications" from Herschel & Planck instruments
Communication with	ESA AIV Manager ESA Instruments Engineers ALCATEL Instrument Engineers ALCATEL Engineering team ALCATEL AIV Manager ALCATEL AVM Manager ALENIA Instrument Engineer ALENIA Engineering team Instrument AIV Managers

	AVM AIV Manager
Responsible	Catherine Montfort, ALCATEL
Duties	Coherence of system AVM development and verification philosophy from SVM level up to Herschel and Planck satellites taking into account: - design peculiarities of instruments (AVM built standard,…) - specific instrument testing at SVM & Satellite levels Review and approval of specific AVM "Tests Requirement Specifications" from Herschel & Planck instruments
Communication with	ESA AIV Manager ESA Instruments Engineers ALCATEL Instrument Engineers ALCATEL Engineering team ALCATEL AIT team ALENIA Instrument Engineer ALENIA AIV/AIT Manager

	Planck AIT Responsible
Responsible	Jean-Yves CHARNIER, ALCATEL
Duties	Co-ordination of ALCATEL AIT team supported by: - Bernard DUBOIS, ALCATEL, for EGSE interfaces - Philippe SCHLOSSER, ALCATEL, for MGSE & mechanical integration - Jean-Pierre HAYET, ALCATEL, for electrical integration and tests Management of the Planck AIT work plan taking into account - interfaces with instrument - definition of the necessary AIT documentation from instruments - definition of the necessary support from instrument during AIT phases Coherence of overall Planck AIT from instrument level up to PPLM and satellite levels taking into account: - design peculiarities of instruments - specific instrument testing at PPLM & Satellite levels - programmatic constraints (cost and schedule impacts on Satellite delivery due to delivery dates of instruments) Propose update of IIDA related to general AIT aspects Review and approval of AIT documentation from Planck instruments
Communication with	ESA AIV Manager ESA Instruments Engineers ALCATEL Instrument Engineers ALCATEL Engineering team Planck Instrument AIV Managers

END OF DOCUMENT