

Herschel MM input for HUG#6

April 8-9 2013



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Leo Metcalfe
Mission Manager



Part I

Conclusions and Recommendations of the Post-Operations Readiness Review

Aims of the Review:



- A. To review and assess the appropriateness of the Post-Operations Phase Plans of the several SGS centres, and the relative prioritisation of tasks within the Plans, to fulfil the aims of the Herschel Post-Operations Phase as originally conceived or as modified by the support needs of the user community that may have become evident in the meantime;
- B. To affirm the adequacy of the assigned resources to accomplish the aforementioned tasks;
- C. To affirm the readiness of the SGS, its structures & mechanisms, to execute the tasks.



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Review Board Composition:



Name	Organisation	Role
KESSLER, Martin F.	ESA SRE-O	Co-Chair – Science Operations Department Head
McCAUGHREAN, Mark	ESA SRE-S	Co-Chair - Research & Scientific Support Dept. Head
METCALFE, Leo	ESA SRE-OOH	Secretary – Herschel Mission Manager
PILBRATT, Göran	ESA SRE-SA	Member – Herschel Project Scientist
LOCK, Tim	ESA SRE-OQ/TEC-Q	Member - Quality Assurance Engineer
RIGOPOULOU, Dimitra	U. Oxford & RAL	University Research Lecturer: Representative of the Herschel Users Group
HARTOGH, Paul	MPS	Researcher: Representative of the Herschel Users Group
BARTHEL, Peter	Univ. of Groningen Kapteyn Institute	Member– Herschel Science Team Mission Scientist
CERNICHARO, José	Centro de Astrobiología	Member– Herschel Science Team Mission Scientist
LUTZ, Dieter	AWG	Member – Member of ESA Astronomy Working Group
O’ROURKE, Laurence	ESA SRE-ODR	Member – Rosetta SGS Development Manager
GABRIEL, Carlos	ESA SRE-OOX	Member – XMM-Newton-SAS Development Manager
PRUSTI, Timo	ESA SRE-SA	Member – Gaia Project Scientist
JENKNER, Helmut	ESA SRE-OOB	Member – Hubble Space Telescope Mission Deputy Head
HELOU, George	NASA	Member - IPAC Executive Director, NASA



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^[1] Dr. Jenkner was prevented by Hurricane Sandy from attending the October 30 meeting.

Observers & Advisors to Board:



Name	Organisation	Role
HELMICH, Frank	SRON	HIFI PI
STURM, Eckhard	MPE	Representing the PACS PI
GRIFFIN, Matt	Cardiff University	SPIRE PI
SHIPMAN, Russell	SRON	HIFI ICC Manager
STURM, Eckhard	MPE	PACS ICC Manager
LIM, Tanya	RAL	SPIRE ICC Manager
APPLETON, Phil	NHSC	NHSC Manager
PARMAR, Arvind	ESA SRE-OO	SRE Science Operations Division Head
ARVISET, Christophe	ESA SRE-OE	Head of Science Archives & Computer Support Engineering Unit
CASTELLI, Chris	UK Space Agency	Head of Space Science
van der LINDEN, Henk	SRON (NL)	Division Head
ROUZÉ, Michel	CNES (F)	Chef de Projet Exploitation
TOMMASI, Elisabetta	ASI	Herschel activities program manager
VANDEBUSSCHE, Bart	K.U. Leuven Representing BELSPO (B)	Head of PACS Centre at Leuven

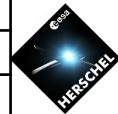


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^[1] Dr. Parmar could not attend due to mission commitments.

^[2] The UK SA representative could not attend due to conflicting commitments.

Review Process and Schedule:



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Step	Date	Remarks
Draft Review Procedure released	24/08/2012	
Final Review Procedure issued	21/09/2012	
Review Data Pack available	15/10/2012	Delivery of data pack to Review Board;
Initial inputs from the Board members to the Board Secretary	22/10/2012 @ 14:00 CEST	The Board Secretary will iterate these initial inputs with the presenters for the Review Presentation, so the presentations can be adjusted appropriately prior to the Presentation event;
Review Presentations made available to the Board	24/10/2012	
Presentations made to the Board during in-person meeting at ESAC	30/10/2012 a.m.	See Agenda in Annex B
Board deliberates and raises issues [A]	30/10/2012 p.m.	<p>For any issues upon which the Board cannot conclude on this day, Actions for follow-up will be defined. These may entail any or all combinations of:</p> <ul style="list-style-type: none"> • Actions on SGS components to address Board concerns • Actions on Board members to fully formulate concerns • Follow-on actions for SGS response to concerns
Draft of Board Report compiled	02/11/2012	The Board Secretary will circulate this draft;
Final Board Report and Recommendations Issued	30/11/2012	After endorsement by the Board Chairs, the Secretary will issue the final report and recommendations of the Board.

Review Process and Schedule:



HerschelPopsReadinessReview < HSC < TWiki - Mozilla Firefox

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HerschelPopsReadinessReview ...

herschel.esac.esa.int/twiki/bin/view/HSC/HerschelPopsReadinessReview

Jump Search

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HSC

Hello Leo Metcalfe
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Pacs
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Sandbox
Spire
TWiki

You are here: TWiki > HSC Web > HerschelPopsReadinessReview

Herschel Post-Operations (POPS) Readiness Review

DATA PACK

Reviewable Documents

- [Documents under review in the Herschel Post-operations Readiness Review](#)

Review Presentations

- [Presentations to be given in the Herschel Post-operations Readiness Review - 30th October 2012](#)

Reviewers Comments Received (with initial responses)

- [Reviewers Comments Received \(with initial responses\)](#)

Supporting or Reference Documents

Top-level Post-operations Schedule (milestones and key events)

- [Post-operations Schedule \(milestones and key events\)](#)

Read-only "presentation-like" Status packages (recently prepared status overviews) - [HIFI](#), [PACS](#) and [SPIRE](#)

- [Status packages \(recently prepared status overviews\) - HIFI, PACS and SPIRE](#)

Read-only "presentation-like" Status packages - HSC and core Science Operations

- [Status packages - HSC and core Science Operations](#)

Ancillary Documents (e.g. Herchel Science Archive (HSA) Requirements Documents)

- [Ancillary Documents](#)

Applicable Documents

- [Applicable Documents for the Herschel Post-operations Readiness Review](#)

r8 - 28 Oct 2012 - 03:47:52 - LeoMetcalfe

Review Process and Schedule:



- **Review Data Pack available to Board from Oct.15 2012**
 - **Data Pack can be found at :→**
 - <http://herschel.esac.esa.int/twiki/bin/view/HSC/HerschelPopsReadinessReview>
 - <http://herschel.esac.esa.int/twiki/bin/view/HSC/PopsReadinessReviewDataPack-ReviewersCommentsReceived%28withInitialResponses%29>
- **Board delivered their comments to the Secretary on Oct.22**
- **Comments iterated with the SGS**
- **Comments & SGS Responses to Board prior to Oct.30 Review^(*)**
- **... along with the draft presentations for Oct.30**
- **Presentations made to Board at ESAC Oct.30**
- **Draft Report of Board Nov.5**
- **Final Report Nov.30**



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^(*) Distributed as an external annex to Board report.

Board Assessment of SGS Post-operations Phase Plans



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- **The Board considers that the planning in place for the Post-operations Phase is in a good state, adequately detailed for this stage and essentially credible. It gives added confidence that the Herschel Ground Segment design approach of “Smooth Transition” ensures that the systems to be used in post-operations are precisely those which have been tried, tested and proven in the previous mission phases.**
- **The Board supports the fundamental approach to the Post-operations Phase, in which effort is focussed primarily on the derivation of the best possible set of legacy science data products to become the ultimate content of the Archive. These legacy products will be the output of the systematic data processing pipeline or Standard Product Generator (SPG - with major updates roughly annually during this phase), or in many cases will be product sets crafted by Key Programme consortia under the commitments made when they obtained their observation time.**

Board Assessment of SGS Post-operations Phase Plans



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- **At the same time the Board recognises the importance of the Data Processing software itself, including the Herschel Interactive Processing Environment (HIPE), through which the greater part of the product generation must be accomplished.**
- **The Board affirms the importance of clear and comprehensive documentation to support and permit interpretation of the science products in the archive and endorses the plans to iterate towards the final optimised legacy through annual coordinated releases of the data processing software, refined calibration files, reprocessed data products, and archive.**
- **At the same time, the Board sought and received assurance from the SGS that the propagation of improvements to the community would not be limited to these annual releases: “Patch” releases – especially relevant to the software – will be maintained at roughly 6 weekly intervals between main releases.**

Specific Findings & Recommendations of the Board



R1:

The Board urges the SGS to give consideration to its highest priority tasks, looking across activities and over time, with a view to further prioritisation to secure the most vital activities, as far as possible, against contingencies. Such a refined adjustment of priorities might benefit from a reconsideration of the distribution of specific tasks across centres. It shall also ensure that newly developed interactive data processing tools produced during the Post-operations Phase have, as their final goal, the inclusion of their functionality (where applicable & with sufficient time in advance to ensure integration) into the pipeline running at HSC.



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R2:

The Board urged that (the) various Lesson Learned events be coordinated with the central event to be organised by HSC in the first half of 2013. Indeed, there should be some urgency about the capture of such knowledge, given the remarks already made about the retention of expert manpower.

Specific Findings & Recommendations of the Board



R3:

Recognising the resource-limited character of what may be achieved in post-operations, especially in the area of enhancements in data processing capabilities and the data processing framework, the Board suggested to specifically raise awareness in the community of these limitations.



R4:

The Board drew attention to the undoubted synergies which exist between the exploitation of the Herschel data and the unfolding of its legacy, and the contemporaneous emergence of facilities like ALMA and SOFIA. The ALMA and SOFIA communities will surely draw upon the support of the Herschel team in the Post-operations period. The Board urged the SGS to be attentive to develop the Herschel legacy in conjunction with the emergence of other major facilities.

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Conclusion of the Report



The Board concluded that the Review had indeed been carried out according to the procedure [AD.01]. It confirmed that the actual scope of the review matched that expressed above in section A. Regarding objective B, the Board noted that post operations efforts would be resource-limited – hence R1 above. The Board concluded (addressing objective C) that the SGS will be ready to undertake the post-operations tasks after LHe boil-off and encourages the various partners in this successful collaboration to take close note of its other recommendations above.

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Part II

Herschel Project Summary Status at start of Post-Operations

Objectives of Herschel Post-Operations Phase

Funding Approved from earliest mission phases, to provide:

- high quality community support for ongoing data exploitation
- create, advertise, and deliver, the Herschel legacy for posterity
- derive lessons learned & identify items for future re-use
- enable personnel to perform their own data exploitation
- Beyond POP – the Legacy Science Phase:
 - the Herschel legacy archive will be maintained indefinitely by ESAC SAT
 - no ‘Herschel-specific’ activities funded



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The POP is – and always was!
an integral part of the funded Herschel mission!

Timing of Post-operations for Herschel Science Centre (HSC)



OPERATIONS coming to a close:

- Launch on 14 May 2009
- In-orbit science mission ends Mar./Apr. 2013 (just over 1400 ODs)

POST-OPERATIONS (4 yrs 9 mts compared with original 5yrs 3 mts):

- shortened to absorb budget impacts of extra LHe life
- **3-month in-orbit wrap-up** (MOC activities + some instrument engineering)
- **51 months (4 yrs 3mts) of primary post-operations**
- **3 mts wrap-up / handover to ESAC Science Archives Team**



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Timing of Post-operations across all Centres

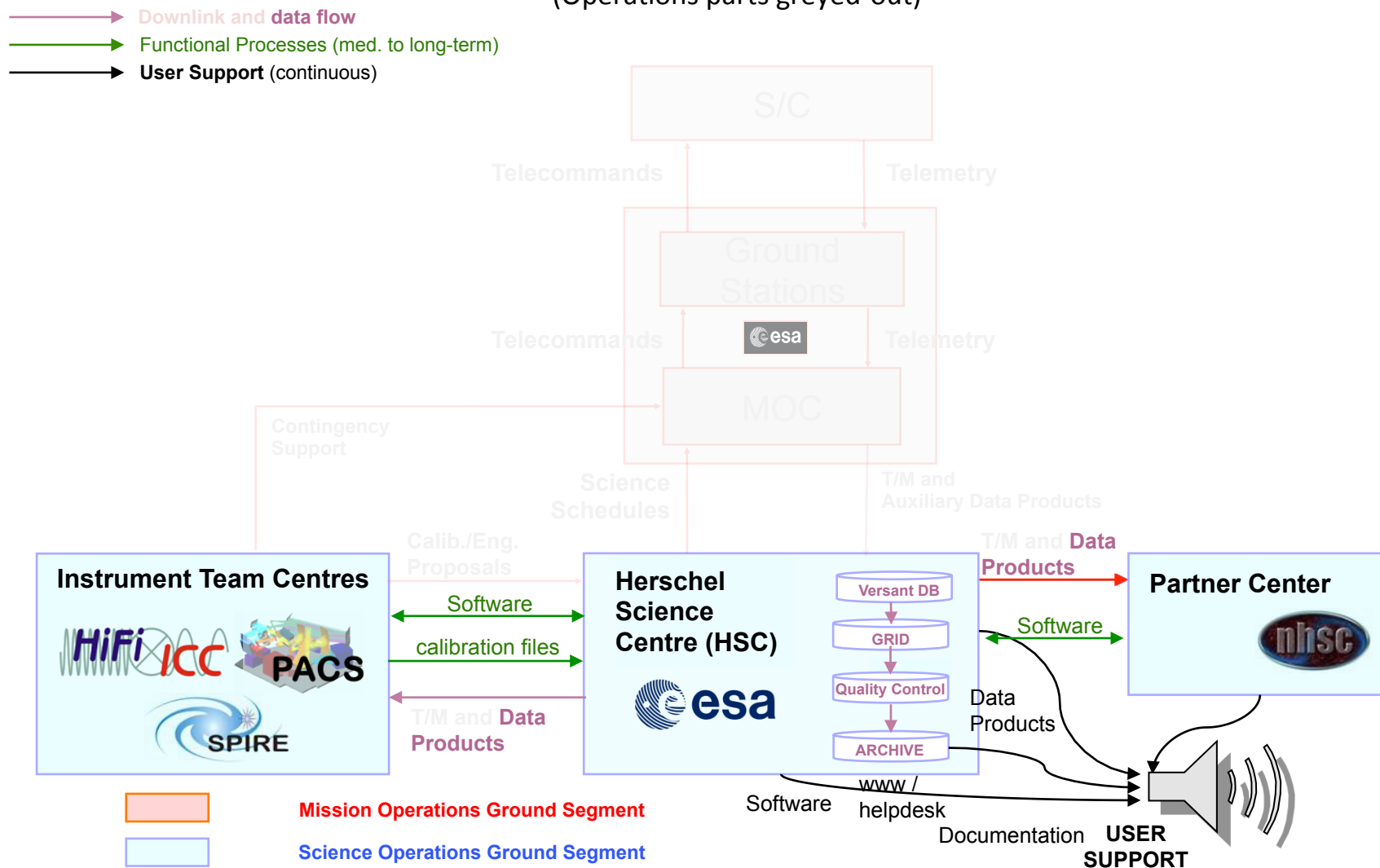
HSC	
Launch	14 May 2009
Start routine operations	01 Dec. 2009
End routine operations	early April 2013
End of the run-down or initial (sub-)Phase (iPOP)	~31 June 2013
End of the main (sub-)Phase (mPOP)	30 Sep. 2017
End of post-operations Phase (hPOP)	31 Dec. 2017
ICCs & NHSC	
HIFI ICC wraps-up	31 Mar. 2016
PACS ICC wraps-up	31 Dec. 2016
SPIRE ICC wraps-up	31 July. 2016
NHSC wraps-up	30 Sep. 2017



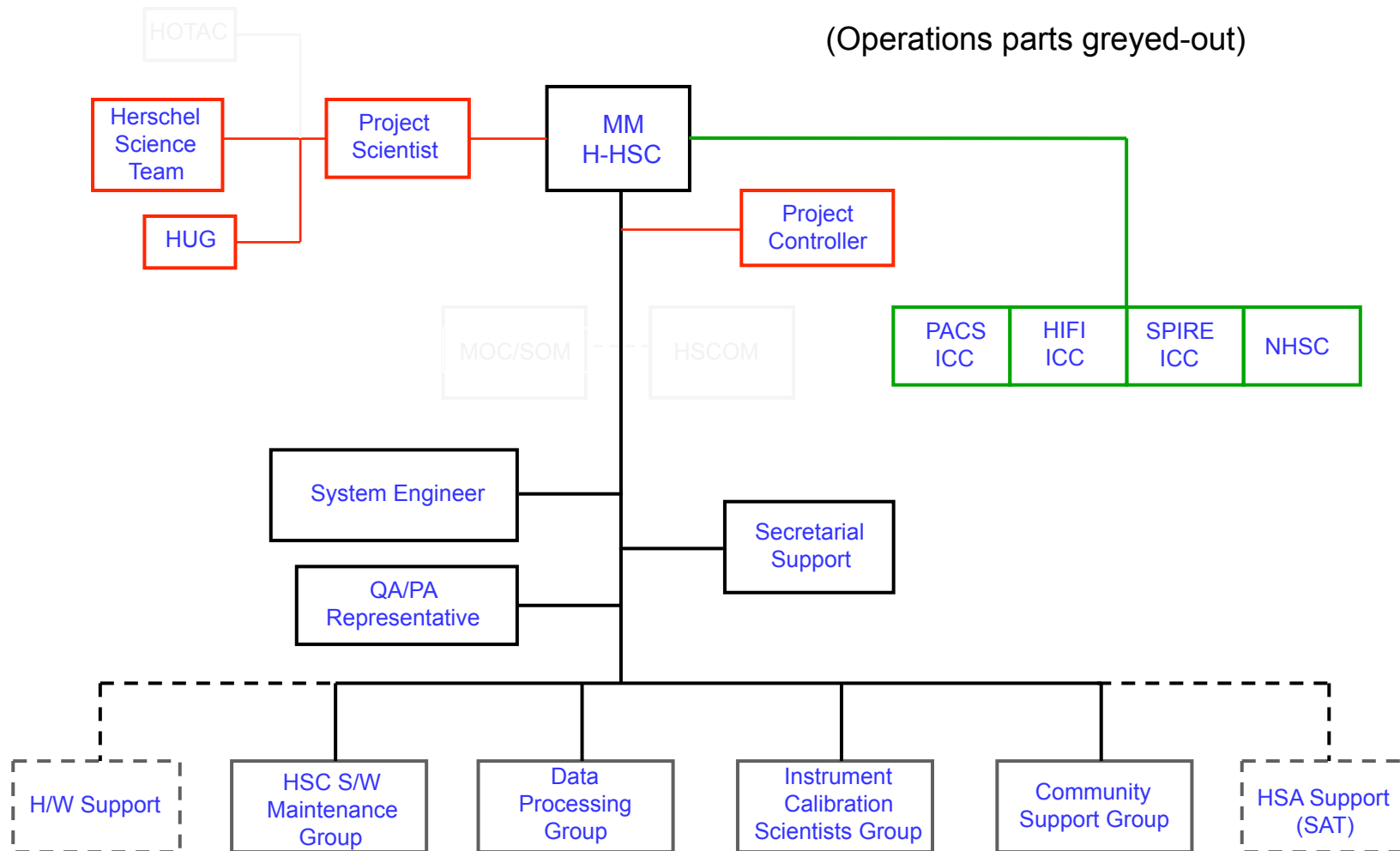
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Herschel Science Ground Segment: Workflow : Post-operations

(Operations parts greyed-out)



Organigramme for Post-operations



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Post-Operations Phase (POP) –

Overview of resources across Centres for Herschel POP:



	Management	Non-DP S/W Maint.	Calibration	Community Support	Data Processing	H/W Support & Archive	
	myr	myr	myr	myr	myr	myr	myr
HSC	12.35	8.58	29.5	20.25	34.0	12.0	116.7
HIFI	0.5		23.7	3.7	15.8		43.7
PACS	4.0		17.5	27.0	24.0		72.5
SPIRE	2.1		7.0	5.9	25.5		40.5
NHSC	9.2		13.0	11.4	14.0		47.6
	28.15	8.56	90.7	68.25	113.3	12.0	321

Post-Operations Phase (POP) – Top-level HSC Manpower Profile for POP



	2011	2012	2013	2014	2015	2016	2017	
Operations role	(fte)							Total (myr)
Management and Administration	4.75	3.75	2.60	2.50	2.50	2.50	2.25	12.35
Software Maintenance	7	5.4	2.88	2.50	1.60	0.80	0.80	8.58
Instrument & Calibration	8	8	8.00	7.00	5.50	5.25	3.75	29.50
Community Support (incl. Archive Sci.)	8	8	7.00	4.50	3.50	3.00	2.25	20.25
Data Processing (incl. Q)	14.7	13.8	12.75	8.50	7.25	4.5	1.00	34.00
Computer / Hardware Support	3	3	2.00	1.50	1.50	1.50	1.00	7.50
Science Archives Team (SAT)	3	3	2.00	1.00	0.50	0.50	0.50	4.50
Total Manpower	48.5	45	37.23	27.5	22.35	18.05	11.55	116.7

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- ❑ **Manpower profiles – globally (bottom row) and per main task area**
- ❑ **There exists for HSC a breakdown of manpower per detailed WP for > 160 WPs**
- ❑ **Some manpower sharing with other projects already in place and fundamental to expertise management and retention in the phase. Administrative flexibility for this increased as a result of Herschel / Rosetta / other agreements.**

!!The various centres are one facility!!



**!! The system doesn't know or care that
it is distributed !!**

!! We have shared responsibilities !!

**!! We are in constant dialogue with our
users!!**

Characterising the Role of Herschel Science Centre



HSC IS:

- The working interface between Mission & Scientific Community
 - anticipate community of ~5000 astronomers worldwide over life of mission
 - coordinates all the support functions across the Science Ground Segment
- Acts as a hub linking activities of itself, Instr. Centres & NHSC
- Maximises scientific productivity of mission within the constraints

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Direct User Demand and Support



- >2450 registered (~8 new per week avg. during past 2 years)
- ~6240 Helpdesk questions (20 per week) since 2007
- ~20% max. of 35000 science obs. will be linked to publications by the end of the ~4-years of Operations
- 4.75 years of POP to support Community with remaining 80%
 - ❑ Explanatory Documentation, www and helpdesk
 - ❑ Provision of steadily improving calibration
 - ❑ Best achievable standard data products
 - ❑ User Support Data Processing Workshops
 - ❑ Organisation of science conferences & science workshops



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The Data Products are the Legacy!



- Standard Pipeline (SPG) Products from bulk reprocessing
- On-demand Reprocessing in Herschel Science Archive (HSA)
- Interactive Analysis (>6100 downloads so far)
- Refined User Provided Data Products ([UPDP](#)) at least from the 42 Key-progs.

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Herschel Post-Operations Phase Major Milestones



- Major POP Milestones:==>



ID	Review/ Meeting title	Date	Chair
S-Her-LHe-LL	End-Helium Lessons Learned Meeting	May 2013	Her. MM
S-Her-POPS-MC	Post-Operations Mid-Course Review	~June 2015	H/SRE-O H-SRE-S
S-Her-POPS-H/P/S ICC	Centre wrap-up Status Assessments	Around Centre closures (see schedule)	MM
S-Her-POPS-Legacy	Legacy Readiness Review	~June 2017	H/SRE-O H-SRE-S

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CONCLUSIONS:



- HSC, the PI teams and NHSC are nominally funded to support the Community through Herschel Post-operations (POP)
- POP lasts from mid-to late 2016 for Instrument Centres, to late or end 2017 for NHSC and HSC respectively
- HSC, assisted by the other centres, provides a wide range of vital & enabling support services to the extensive, growing and highly active Herschel user Community
- The vast bulk of Herschel science data remains to be exploited at end-LHe
- Much work remains for this phase to ensure that the Herschel legacy is secured in the Legacy Archive products and Legacy Documentation to serve the Community for decades to come ...



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