

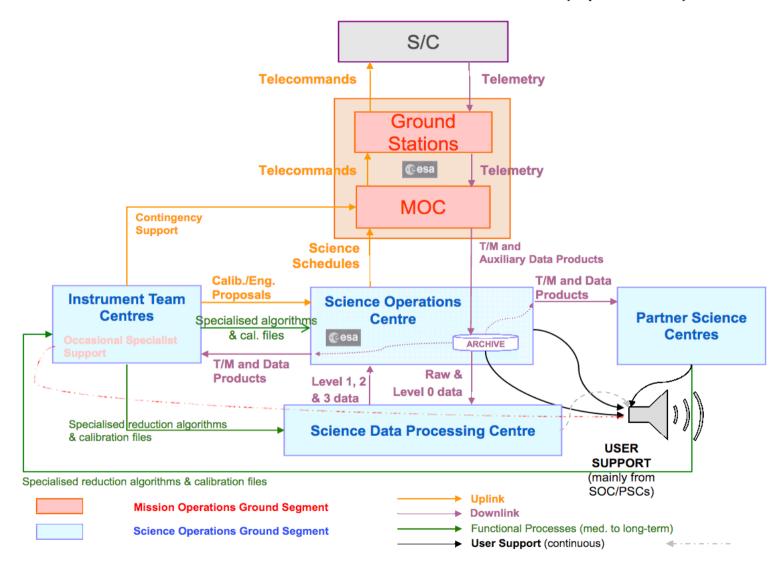
# POPs Overview: Managerial Aspects

P. García-Lario Herschel Mission Manager

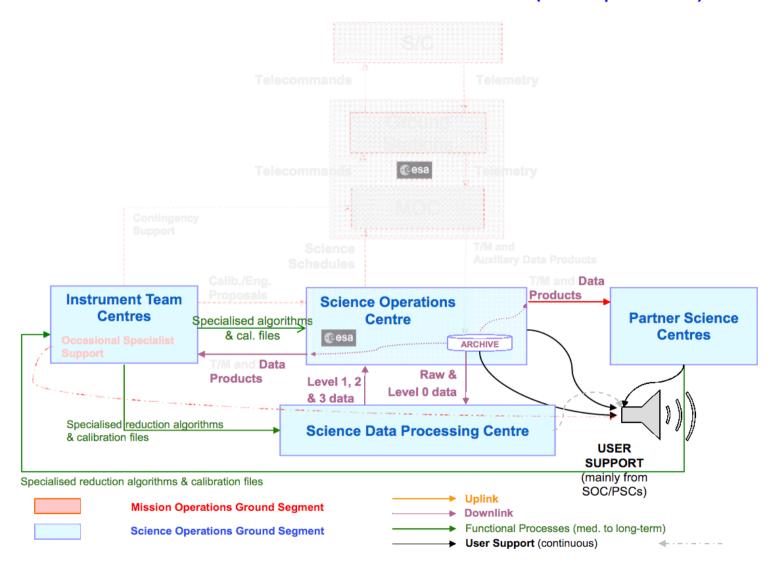
30/05/2016



### **GENERIC MISSION ORGANISATION (Operations)**

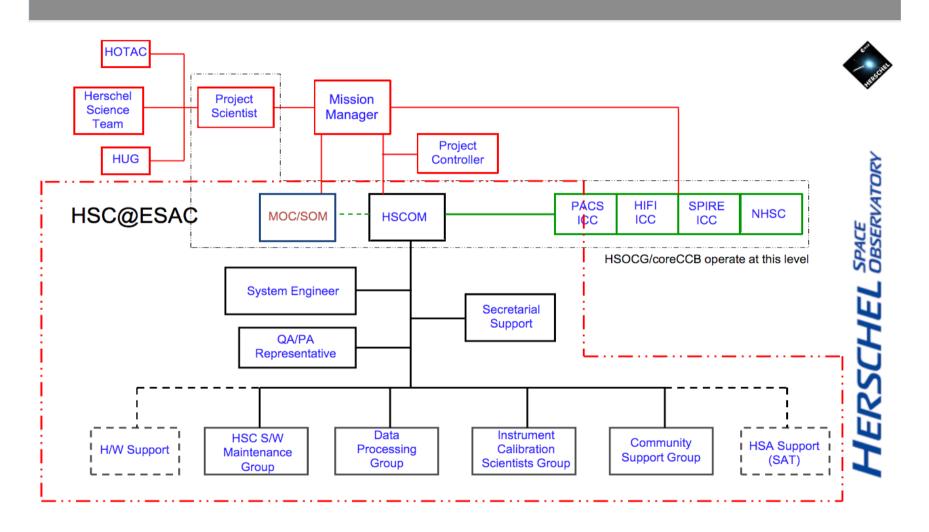


## **GENERIC MISSION ORGANISATION (Post-operations)**



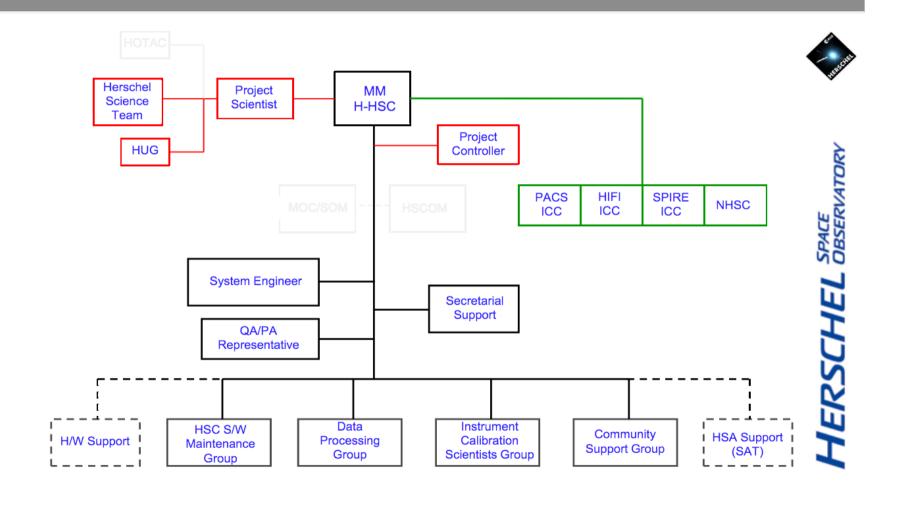
# Organigramme for Operations





# Organigramme for Post-operations





# Main Herschel SGS Organisational Structures in POPs



### Herschel Science Operations Coordination Group (HSOCG – chair MM):

- Quarterly meetings (HSC, HIFI, SPIRE, PACS ICCs, NHSC)
  - Centre managers & other key personnel
  - Mid-term planning
- Weekly Post-Operations Briefing (HSC, HIFI, PACS, SPIRE, NHSC)
  - Monitoring progress / open issues

### Configuration Control

- Core-CCB (cCCB chair MM) each member (from all centres) represents a subsidiary CCB or a key function – fed by subsidiary ('feeder') CCBs (one per ICC) – weekly meetings
- System-CCB (sysCCB chair DP Dev Manager) meets as necessary during major SW releases – monitor acceptance & e2e tests



# Main Herschel SGS Organisational Structures in POPs



- Cross-Team / Cross-Centre Coordination Groups / Task Forces covering different areas of activity
  - Herschel Archive Group (HAG) led by E.Verdugo
  - Herschel Explanatory Legacy Library (HELL) Group led by M. Kidger
  - Herschel Calibration Steering Group (HCalSG) led by T. Marston
  - Legacy Software Task Force, the evolution of the former Data Processing Users Group (DPUG) – led by D. Coia
  - Legacy Data Products Task Force led by D. Teyssier comprising the Highly Processed Data Products (HPDPs) or the Herschel Point Source Catalogue (HPSC) groups
  - Legacy Training Material Task Force led by A. García
  - Legacy Quality Control Group led by M. Sanchez Portal covering also pointing related issues

(quarterly meetings in most cases – objective oriented)



# **Timing of POPs across all centres**



HSC	
Launch	14 May 2009
Start routine operations	01 Dec. 2009
End routine operations	29 Apr. 2013
End of the run-down (sub-)Phase (iPOP)	30 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 support ends	31 Mar. 2016
SPIRE ICC support ends	30 June 2016
PACS ICC support ends	31 Dec. 2016
NHSC support ends	30 Sep. 2017





# **POPs MILESTONES**



# **POPs Chronology / Main milestones** since end-of-Helium



Herschel Science Team #51 @ ESTEC	Jan. 17-18 2013
HCSS v10.0 released	Jan. 22 2013
PACS / SPIRE Map Making Workshop @ ESAC	Jan. 28-31 2013
HSPot v6.3 roll out (in line with HCSSv10.0)	Feb. 7 2013
HCSS v9.1 (BKRP ends)	March 3 2013
DP Webinars round#4 (after HIPE v10.0)	Feb-Apr 2013
Herschel Calibration Workshop @ESAC	March 25-27 2013
Herschel Users Group #6 @ ESAC	April 8-9 2013
HCSS v11.0 branch-off	April 11 2013
End Helium	April 29 2013
Start of Post-Operations – Run Down Phase (iPOP)	April 30 2013
Herschel Science Operations Coordination Group #13	May 07 2013
Herschel Archive Group (HAG) #1	May 8 2013
Herschel disposal Delta-V (130m/s)	May 13/14 2013
Herschel Science Team #52 @ESTEC	May 13-14 2013
End of KP Wrap-Up Telecons (42)	May 17 2013
P. García-Lario   Herschel Users Group Meeting #10.   ESAC   30-31 May 2016   Slide 10	European Space Agency

# POPs Chronology / Main milestones since end-of-Helium



End-Helium Lessons Learned Meeting @ ESAC	May 28-30 2013	
Final burn and passivation	June 17 2013	
Herschel Data Processing for Newcomers @ESAC	June 24-27 2013	
HCSS v10.3 (BKRP starts)	June 28 2013	
End of Post-Operations – Run Down Phase (iPOP)	June 30 2013	
Start of Post-Operations – Main Phase (mPOP)	July 1 2013	
Herschel Archive Group (HAG) #2	Aug. 6 2013	
Exploiting the Herschel Archive: DP Workshop (NHSC)	Aug. 26-30 2013	
HCSS v10.3 (BKRP ends)	Sep. 5 2013	
HSA v5.0 (with links to UPDPs)	Sep. 9 2013	
HCSS/HIPE v11.0 release	Sep. 29 2013	
HCSS v12.0 branch-off	Oct. 11 2013	
Herschel Users Group #7 @ ESTEC	Oct. 14 2013	
The Universe Explored by Herschel Symposium @ ESTEC	Oct. 15-18 2013	
Herschel Science Operations Coordination Group #14	Oct. 30 2013	
End of MOC support to POPs	Oct. 31 2013	

# POPs Chronology / Main milestones since end-of-Helium



Herschel Science Team #53 @ESAC	Nov. 4-5 2013
DP Webinars round #5 (after HIPE v11.0)	Nov-Dec 2013
Herschel Calibration Steering Group #34	Nov. 27 2013
HCSS v11.1 (BKRP starts)	End Jan. 2014
Herschel Science Operations Coordination Group #15	Feb. 5 2014
HSA v5.2 roll out (access to 'standalone browse products')	March 17 2014
HCSS/HIPE v12.0 release	March 21 2014
Herschel Science Team #54 @ ESTEC	April 7-8 2014
HCSS v11.1 (BKRP ends)	April 10 2014
Herschel Spectroscopy On-line Workshop	April 23-25 2014
Herschel Science Operations Coordination Group #16	May 6 2014
Herschel SGS co-location @ Paris area	May 12-14 2014
Herschel Users Group #8	May 22-23 2014
Herschel Data Processing for Newcomers (@ESAC)	June 24-27 2014
HSA 6.0 (database ready for instrument expert query panels)	End June 2014
HCSS v12.1 (BKRP starts)	July 9 2014

# **POPs Chronology / Main milestones** since end-of-Helium



Herschel Science Operations Coordination Group #17	September 12 2014
Full Scope Lessons Learned Meeting @ ESTEC	September 22-23 2014
HCSS v12.1 (BKRP ends)	November 10 2014
Star Formation Across Space and Time Conference @ESTEC	November 10-14 2014
HCSS v13.0 branch-off	November 13 2014
Herschel Science Team#55 @ ESAC	November 17-18 2014
Herschel Science Operations Coordination Group #18	January 16, 2015
HSA 6.1 (access to instrument expert panels from the HUI)	February 26 2015
HSA 6.2 (database model evolution/improved performance)	April 9 2015
HCSS/HIPE v13.0 release	April 13 2015
Herschel Science Team #56 @ ESTEC	April 13-14 2015
ALMA/Herschel Archival Workshop @ ESO-Garching	April 15-17 2015
HCSS 13.0 (BKRP starts)	End-April 2015
Herschel Science Operations Coordination Group #19	April 30 2015
Herschel Calibration Steering Group Meeting #36 @ ESAC	May 7-8 2015
Herschel Data Processing Workshop for Newcomers 2015	June 16-19 2015
P. García-Lario   Herschel Users Group Meeting #10.   ESAC   30-31 May 2016   Slide 13	European Space Agency

# **POPs Chronology / Main milestones** since end-of-Helium



Herschel Users Group #9 @ ESAC	June 18-19 2015
HCSS 13.0 (BKRP ends)	Mid-July 2015
HCSS v14.0 branch-off	September 2 2015
HIFI ICC/HSC handover review meeting @ SRON	October 8-9 2015
HSA 7.0 (links to publications/improved geometrical searches)	October 28 2015
Herschel Science Operations Coordination Group #20	November 3 2015
Herschel Science Team #57 @ ESAC	November 4-5 2015
SPIRE ICC/HSC handover review meeting @ RAL	November 18 2015
HCSS/HIPE v14.0 release	December 22 2015
HCSS 14.0 (BKRP starts) – all instruments	Early Jan 2016
HCSS v14.1 branch-off	February 11 2016
Herschel Calibration Steering Group Meeting #37	February 26 2016
PACS ICC/HSC handover review meeting @ ESAC	March 8-9 2016
HIFI Close-Out Telecon	March 17 2016
End of POPs for HIFI	March 31 2016
HCSS 14.0 (BKRP ends) – all instruments	April 6 2016
P. García-Lario   Herschel Users Group Meeting #10.   ESAC   30-31 May 2016   Slide 14	European Space Agency

# POPs Chronology / Main milestones since end-of-Helium



Herschel Science Team #58 @ ESTEC	April 11 2016
Water in the Universe: From Clouds to Oceans @ ESTEC	April 12-15 2016
HCSS/HIPE v14.1 release	April 12 2016
HSA 7.5 release (registry/communications with VO tools)	April 12 2016
HCSS 14.1 (BKRP starts) – only HIFI and SPIRE	April 13 2016
HCSS v14.2 branch-off	April 27 2016
Herschel Legacy Science Phase Readiness Review	May 10 2016
Herschel Users Group #10 @ ESAC	May 30-31 2016
HCSS 14.1 (BKRP ends) - only HIFI and SPIRE	End June 2016
HCSS/HIPE v14.2 release	End June 2016
HCSS 14.2 (BKRP starts) – only PACS	End June 2016
Herschel Explanatory Handbooks & Explanatory Library roll out	End June 2016
End of POPs for SPIRE	June 30 2016



# POPs Chronology / Main milestones since end-of-Helium



NHSC/HSC handover review meeting	Summer 2016
HCSS v15.0 branch-off	September 15 2016
Exploiting the Herschel Science Archive Workshop 2016	October 24-27 2016
HCSS/HIPE v15.0 release	December 2016
End of POPs for PACS	December 31 2016
End of NHSC support	September 30 2017
End of Post-Operations - Main Phase	September 30 2017
End of Post-Operations – Handover Phase	December 31 2017
Beyond Post-Operations – Legacy Science Phase	> January 2018



# **POPs Chronology / Main milestones since end-of-Helium**



NHSC/HSC handover review meeting	Summer 2016
HCSS v15.0 branch-off	September 15 2016
HCSS/HIPE v15.0 release	December 2016
End of POPs for PACS	December 31 2016
End of NHSC support	September 30 2017
End of Post-Operations - Main Phase	September 30 2017
End of Post-Operations – Handover Phase	December 31 2017
Beyond Post-Operations – Legacy Science Phase	> January 2018





# **PERSONNEL**



# **HSC Manpower profile for POPs** (original plans)



2013	2014	2015	2016	2017	
	(fte)				Total (myr)
2.75	2.5	2.5	2.5	2.5	12.8
2.75	2.5	1.6	0.8	0.8	8.5
8.2	7.75	6.85	6.55	5.3	34.7
6.5	5	3.5	3	2.25	20.3
12	7.5	6.25	3.75	0.75	30.3
2	1.5	1.5	1.5	1	7.5
2	1	0.5	0.5	0.5	4.5
36.2	27.8	22.7	18.6	13.1	118.4  European Space Agency
	2.75 2.75 8.2 6.5 12 2 36.2	2.75 2.5 2.75 2.5 8.2 7.75 6.5 5 12 7.5 2 1.5	(fte) 2.75 2.5 2.5 2.75 2.5 1.6 8.2 7.75 6.85 6.5 5 3.5 12 7.5 6.25 2 1.5 1.5 36.2 27.8 22.7	(fte)         2.75       2.5       2.5       2.5         2.75       2.5       1.6       0.8         8.2       7.75       6.85       6.55         6.5       5       3.5       3         12       7.5       6.25       3.75         2       1.5       1.5       1.5         2       1       0.5       0.5         36.2       27.8       22.7       18.6	2.75       2.5       2.5       2.5       2.5         2.75       2.5       1.6       0.8       0.8         8.2       7.75       6.85       6.55       5.3         6.5       5       3.5       3       2.25         12       7.5       6.25       3.75       0.75         2       1.5       1.5       1         2       1       0.5       0.5       0.5         36.2       27.8       22.7       18.6       13.1

# **HSC Manpower profile for POPs** (actual numbers)



	2013	2014	2015	2016	2017	
Operations role		(fte)				Total (myr)
Management and Administration	2.75	2	2	1.5	1.5	9.8
Software Maintenance	2.75	1.75	1.6	0.8	0.5	7.4
Instrument & Calibration	8.2	6.7	6.85	7.5	4	33.3
Community Support	6.5	5	3.75	3.5	2.75	21.5
Data Processing	12	7.5	6.75	3.75	1.5	31.5
Computer / Hardware Support	2	2	1.5	1.25	1	7.8
Science Archives Team (SAT/ESDC)	2	1.75	1.25	1.5	0.5	7.0
Total Manpower	36.2	26.7	23.7	19.8	11.8	118.3

# **HSC Staff 2016 / Organisation in Teams**



- Mission Manager / Head of HSC: Pedro García-Lario
- Project Scientist: Göran Pilbratt (50%)
- Community Support Group: Pedro García-Lario (I), Eva Verdugo,
   Mark Kidger, Rosario Lorente (25%), Miriam Aberasturi (50%) &
   Jean Matagne (50%)
- Instrument Calibration Scientist Team

On-site: David Teyssier (I), Ivan Valtchanov, & Elena Puga

Off-site: Luca Calzoletti, Katrina Exter, Miriam Rengel +

Konkoly contribution

QC Group:

On-site: Miguel Sánchez Portal (I) (50%), Pilar Esquej

Off-site: Ana Pérez García



# **HSC Staff 2016 / Organisation in Teams**



- Data Processing Development Team: Jorgo Bakker (I 70%), Jaime
   Sáiz (50%), Jonathan Cook (50%), Daniel Galán (10%) & Alvar
   García
- DP Liaison Scientist: Daniela Coia
- SW Maintenance Team: **Jon Brumfitt** (I) (50%), **Antonio Villacorta** (25%), **Paolo Pesciullesi** (25%)
- QA/PA: José Marcos (25%), Daniel Galán (10%)
- Computer Support Group: (1.25 ftes)
- Science Archives Team (ESDC) Support: (1.5 ftes)



# **HSC Staff 2016 / Key aspects**



- Sharing resources with other missions at ESAC
  - fundamental to keep the expertise around for as long as possible
  - keep motivation high in a shrinking resources environment beneficial for all parties
  - smooth progressive, negotiated migration to ease the process
- Off-site contractors
  - usually instrument experts working for an ICC for years
  - a nice way to retain expertise at a time when long-term contracts are not possible
  - frequent co-locations at ESAC (typically one week per month)
  - avoid mobility issues
- Working extraordinarily well for Herschel POPs





# **OTHER ACTIVITY INDICATORS**

(excluding rate of new publications)



# Some activity indicators today



Herschel registered users: 3346 – 1 new user per calendar date for years; slightly dropping rate in the last few months; now 1 new user every other date

(+861 since end of Operations on 29 Apr 2013; +21 in the last month)

➤ Helpdesk tickets: 7211 - dropping from ~15-25 new tickets/ week in OPS to ~ 5-7 new tickets/week in the first 2 years of POPs; some additional drop observed in the last few months currently around 3 per week

(+901 since end of Operations on 29 Apr 2013; +17 in the last month)

➤ HIPE user installer downloads – 12368 since June 2010 – 41 last week; maintained or slightly increased level after every major HIPE release: >1000 downloads for 12.1 – 838 downloads of 13.0; 382 downloads of 14.0 since its release in Dec 2015; 63 downloads of 14.1 since mid-April

(+5932 since end of Operations; +105 in the last month)







# **HERSCHEL SCIENCE ARCHIVE**





# HERSCHEL SPACE OBSERVATORY

# Herschel Science Archive: main developments





- HSA 5.0 (9 September 2013)
  - New functionality to ingest and access/query User Provided Data Productsplanned work
- HSA 5.2 (17 March 2014)
  - Serving 'standalone browse products', selected pipeline products for quick look purposes – HUG request
- HSA 6.0 (30 June 2014)
  - New 'Advanced Query Panels' for instrument specific searches allowing much more refined queries – planned work
- HSA 6.2 (9 April 2015)
  - Modification of the HSA data model to improve the performance of the Data Processing system - renovation of the H/W - new machines much more powerful,... - major effort, unplanned

# HERSCHEL SPACE OBSERVATORY

# Herschel Science Archive: main developments





### HSA 7.0 (28 October 2015)

□ Providing links to associated publications and improved geometrical searches by adding footprint information to images (photometric observations) in HSA (Konkoly-led effort) – planned work

### HSA 7.1 (December 2015)

■ Updates to standalone browse products, new format of QC flags, better error handling

## HSA 7.5 (April 2016)

■ Registry and visualisation of standalone browse products through VO tools (Aladin and DS9 for maps; VOSpec, SpecView or CASSIS for spectra, in addition to HIPE); HAIO product multi-retrieval (to avoid crashes induced from ESASky),... - planned work



# Herschel Science Archive: eSa planned developments in the remaining POPS eSA

# life Cher

## HSA 8.0 (Autumn 2016)

Migration to Thin Layer (web-interface vs. Java applet) in line with other archives at ESAC; with access to Highly Processed Data Products (HPDPs) and Ancillary Data Products (ADPs) via dedicated query panels – major effort – necessary to ensure long-term preservation

### HSA 9.0 (2017)

□ Serving legacy products + final tidy up in preparation for the legacy phase – planned work

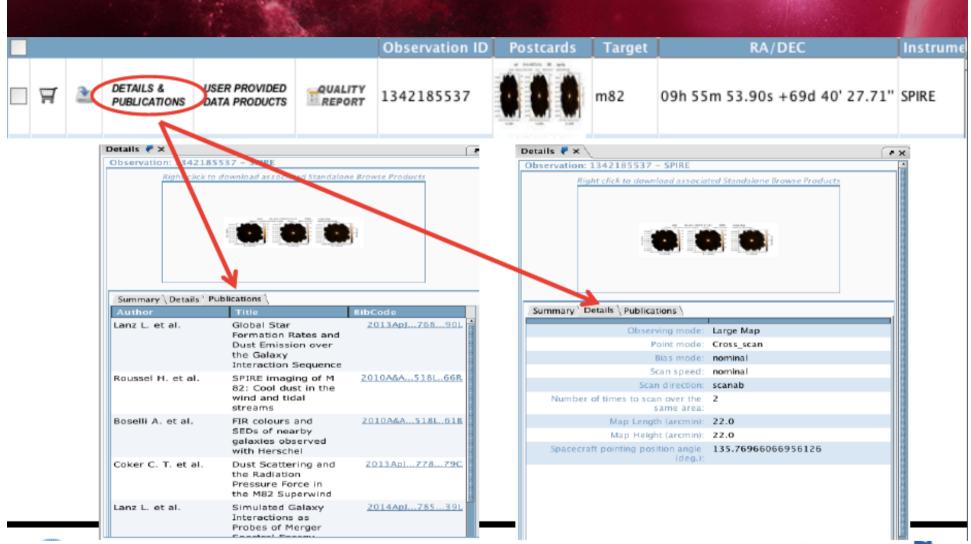
### HSA and ESASky

□ Herschel products (images only for the moment) are already queriable and accessible from ESASky (ESA Multi-Mission data discovery portal) – intention is to extend this interaction to the upcoming Herschel Point Source Catalogue and to spectroscopic products - new



# **HSA v7.0: Links to publications**

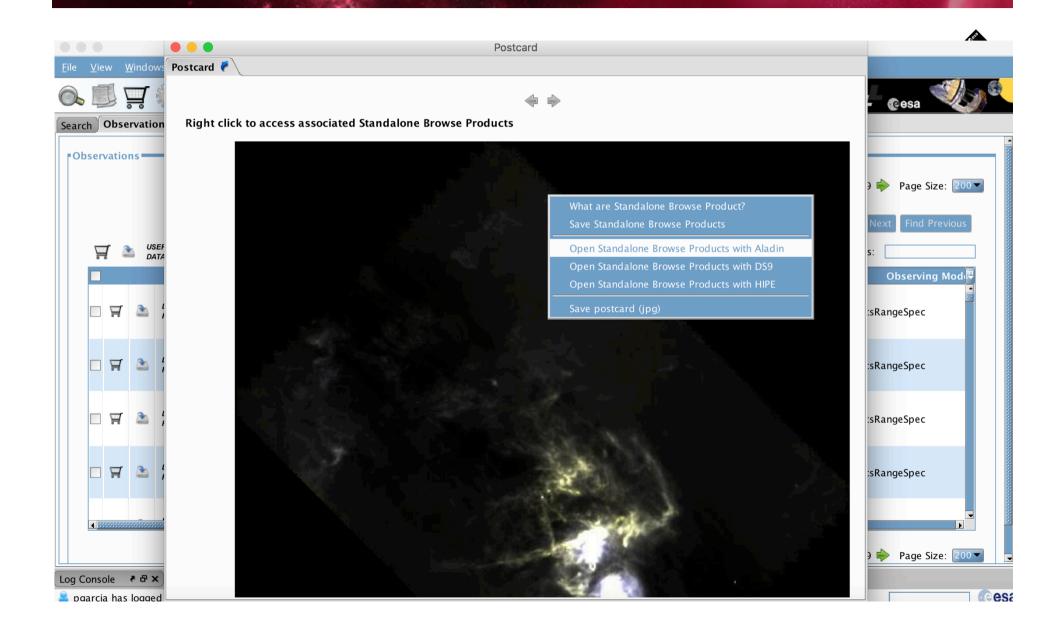






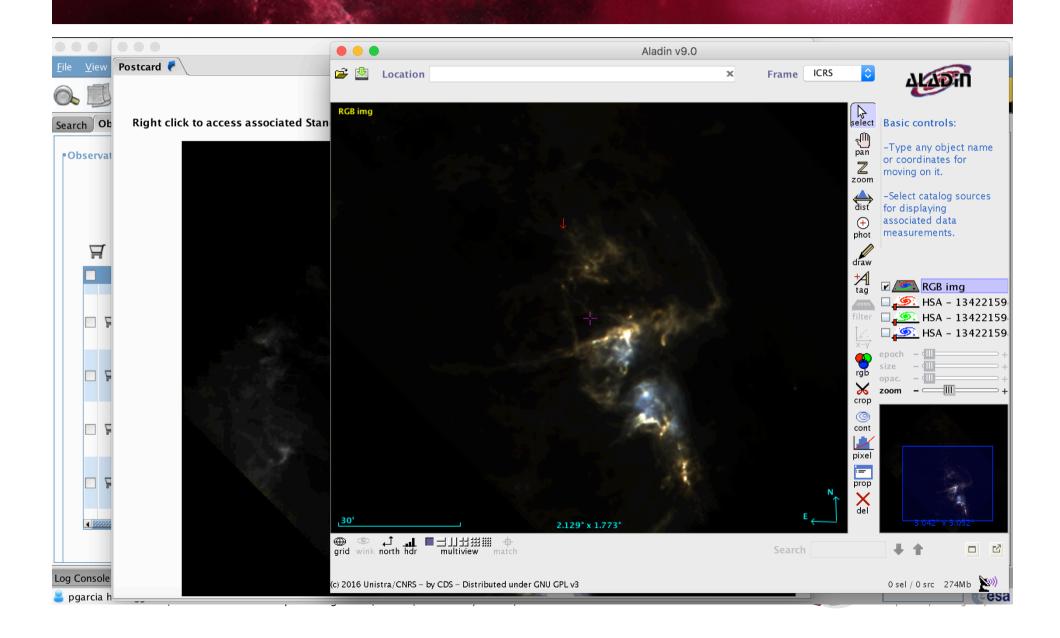
# esa

# **HSA v7.5: Visualization of products**



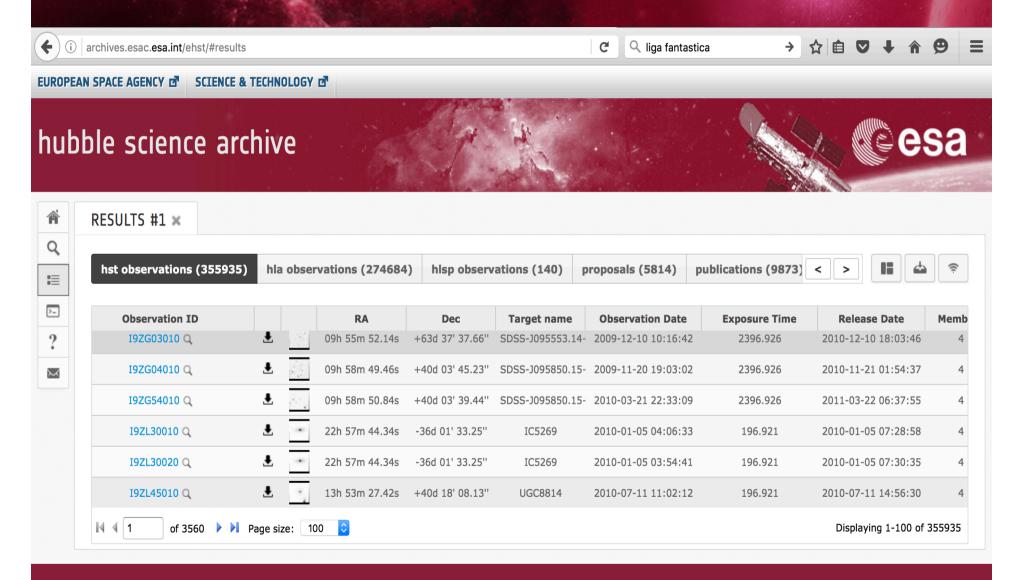
# **HSA v7.5: Visualization of products**





# **HSA v8.0: Migration to Thin Layer**









# DATA PROCESSING / HCSS



# HERSCHEL SPACE OBSERVATORY

# Pipelines / Data Procesing Main developments





## HCSS v10.0 (released 22 January 2013)

■ Bulk reprocessing with v10.3 (June-September 2013); first one after end-of-Helium – first time the full contents of the archive were reprocessed

http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew10x

# HCSS v11.0 (released 29 September 2013)

□ Bulk reprocessing with v11.1 (January-April 2014) – first time 'level 3 – big mosaics' were included

http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew11x



# **Pipelines / Data Procesing Main developments**



### HCSS v12.0 (released 21 March 2014)

□ Bulk reprocessing with v12.1 (July-November 2014) – took much longer due to serious infrastructure issues and database model problems, unable to cope with data processing needs

http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew12x

## **HCSS v13.0 (released 13 April 2015)**

- Last chance to incorporate major changes to instrument pipelines: Unimap map-maker for PACS photometry; new SPIRE pipeline
- □ Bulk reprocessing using HSA 6.2, containing the new database model; together with new hardware, completed again in around 2.5 months (April to June 2015) with the much improved performance of the new system

http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew



### Pipelines / Data Procesing Main developments



#### HCSS v14.0 (released 22 Dec 2015)

- □ Last version of the software to be released with all ICCs around last opportunity for changes to the HIFI pipelines versant free / Java 1.8 / Jython 2.5 branch-off on 2<sup>nd</sup> Sep 2015
- □ Bulk reprocessing with HCSS 14.0.0 completed 12 April 2016
- Highlights:
  - General: final pointing improvements, reformatted QC products, improved standalone browse products, new cal trees for all instruments
  - HIFI: sideband ratios (bands 1-4), updated calibration files
  - PACS: new spec cal for extended sources; new level 2.5 phot SSO products, new level 2.5 and level 3 products for some observing modes
  - SPIRE: spec extended source calibration significantly updated
     <a href="http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew14x">http://herschel.esac.esa.int/twiki/bin/view/Public/HipeWhatsNew14x</a>





## esa

## Pipelines / Data Processing: Main developments

- Major issues during the last bulk reprocessing exercise
  - Memory requirements both for the generation of large level 2.5 photometry SPIRE mosaics and for the generation of level 2.5 maps of PACS (using Unimap 6.3.2)
  - Generation of standard level 2 products just take a few weeks while 'extended' data products (based on more than one AOR) can take much longer (typically 2 months!)
- We also took the opportunity to try reprocessing all previously declared failed observations in the archive (with limited success, as expected)
- New ESAC Grid infrastructure used working fine (but policy on queues should be revised to avoid big jobs competing with new small jobs launched a posteriori, sometimes by other missions) full migration was a major effort - unplanned work



# HERSCHEL SPACE OBSERVATORY

European Space Agency

#### Pipelines / Data Processing: Beyond 14.0 - Remaining Work in POPs



#### HCSS v14.1 (released 12 April 2016)

- short cycle that started in mid-Feb with RC1
- □ Originally envisaged as placeholder to accommodate any further software update affecting the SPIRE pipelines – last opportunity for SPIRE to get their products bulk reprocessed – improvements mainly affecting SSPEC
- □ HIFI identified a few small additional issues that deserved correction for posterity – Decided to go ahead with a full bulk reprocessing both for SPIRE and HIFI with v14.1, taking place as we speak, with foreseen end in June.

#### HCSS v14.2 – planned release end June 2016

- □ Placeholder to accommodate any further software update affecting the PACS pipelines – last opportunity for PACS to get their products bulk reprocessed
- ☐ This will be a full bulk reprocessing for PACS-only and will take place in June-July 2016



European Space Agency

#### **Pipelines / Data Processing Beyond 14.0 - Remaining Work in POPs**



#### **HCSS 15.0 – planned release end December 2016**

- Bug fixing-only version
- No changes to pipelines or anything which requires reprocessing
- Just changes to the HIPE framework no ICCs around for validation / testing
- □ Code freeze on 15 September 2016
- No more SW developers around @ HSC as of 1 January 2017
- ☐ HCSS v15.0 is the version to be provided (within a virtual environment work yet to be done) to legacy users of the Herschel software

#### Other activities under consideration

- Export some of the existing tools within HIPE to Python to facilitate use outside Herschel and/or by other projects
- ☐ Potential use of Spectrum Explorer or Spectrum/Cube Tool Box as VO tools? - under discussion









#### **INSTRUMENT CALIBRATION**





### **Instrument Calibration: Main developments in POPs**



#### Consolidation of calibration models



- □ Coordinated by HCalSG, which held the last (#37) meeting (webex telecon) on 26 February 2016 work considered now completed
- Support instrument calibration improvements
  - ☐ In coordination with the ICCs, testing and validation of new cal trees delivered with every new version of HCSS
- Consolidation of pointing related improvements
  - No more software updates expected in this area after the last updates in HCSS 14.1 - effort led by HSC
- Cross-calibration
  - HSC-led task
  - □ Refereed paper, close to submission (work led by Elena Puga)
     (see David Teyssier's presentation on Legacy Calibration)



European Space Agency

# HERSCHEL SPACE OBSERVATORY

### Instrument Calibration: Remaining work to be done in POPs



### Transfer of calibration-related information into legacy infrastructure



- Currently residing in public Twiki pages (documents) or dedicated ftp repositories (calibration files / those used by the pipelines are also part of HSA)
- □ All of this needs to be transferred to a legacy repository (see Documentation and Data Products presentations) and make it available to legacy users through our Cosmos web pages (or the HSA)
- Homogenization, structure adapted to Legacy Science Phase needs
- □ Adding / updating instrument calibration documents –we know some will come late (after ICCs are not 'officially' around) – and may be even when there is no more Herschel-specific funding – support may be needed in LSP
- □ Including calibration web pages prepared by Tony Marston with links to models (stars, asteroids and planets) to be served also through the HSA user interface as of HSA 8.0 (end of 2016)





#### **DATA PRODUCTS**

(beyond the pipeline)



# HERSCHEL SPACE OBSERVATORY

#### **Enhanced products (UPDPs and HPDPs)**



#### User Provided Data Products



- □ Provided by users in the community on a voluntary basis (although Key Programmes were committed to deliver them!)
- □ Chasing KP PIs promised deliveries continuous effort during POPs but little manpower available
- Collection of new UPDPs from the community of non-KP PIs was also encouraged
- Ingestion of UPDPs in HSA + delivery of associated catalogues to VizieR
  - 22 UPDPs (from 14 different Key Programmes plus a few other) already in HSA
  - Herschel Observing Log (37,093 entries) in VizieR plus many other (around 90)
     Herschel catalogues
- UPDP Statistics twiki:
  - http://herschel.esac.esa.int/twiki/bin/view/HSC/StatisticalUpdpReports
    - Only around 1/3 of the KP observing time has been fed back in HSA so far



#### **Enhanced products (UPDPs and HPDPs)**



#### Highly Processed Data Products

- Hipechell
- Added value products provided by experts at the HSC / ICC / NHSC on a best effort basis
- E.g. Herschel Point Source Catalogue: collaboration between HSC/NHSC and Konkoly Observatory, coordinated by a Working Group chaired by Luca Calzoletti
- Other enhanced legacy products that go beyond the SPG pipeline products: HIFI spectral scans and spectral maps, line list catalogues (SPIRE, HIFI and PACS?); PACS (notably un-chopped mode observations) spectrometer data generated through interactive data reduction,... http://herschel.esac.esa.int/twiki/bin/view/Public/HPDPDefinitionPage
- Looking for other possibilities in coordination with ICCs and/or expert groups in the community some EC funded FP7 programmes may be potential contributors but they may deliver after the end of 2017 support may be needed here as well in LSP

(see David Teyssier's presentation on Legacy Data Products

# HERSCHEL SPACE OBSERVATORY

#### **Ancillary Data Products (ADPs)**



#### Ancillary Data Products

- □ Data (products, tables, plots, etc..) generated in the course of the different phases of the Herschel mission which are not necessarily linked to any particular observation in the Herschel Science Archive, but which contain valuable technical or scientific additional/complementary information that we would like to preserve for legacy purposes
- Examples are the planetary, asteroid and stellar models used by the various instruments for their calibration, PSFs, filter transmission curves, trend analysis plots, etc...
- A list of data sets identified so far which could potentially qualify as Ancillary Data Products to be ingested in the HSA in the future can be found at:

http://herschel.esac.esa.int/twiki/bin/view/Public/AncillaryDataProductsPage







### **QUALITY CONTROL**



#### **Quality Control activities in POPs**



#### Systematic population of QC Summary Reports in HSA

□ 77.4% of the science observations in the archive have their QC Summary Report completed

**Quality Control Progress Tracking** 

Instrument	All Science	QC finished	QC finished %	New this week
HIFI	9118	9093	99.7	0
PACS	22812	14198	62.2	203
SPIRE	7079	6900	97.5	0
TOTAL	39009	30191	77.4	203

- Priority given to HIFI and SPIRE in the last few months; now starting with **PACS**
- Working on scripts that should automatically update the QC information in HSA
- QC information on pointing quality: observations affected by astrometry shifts as they were taken at warm beta angle conditions: analysis will lead to new flagged observations (work on-going)

#### **DOCUMENTATION**

# HERSCHEL SPACE OBSERVATORY

#### **Herschel Explanatory Supplement**





#### Explanatory Supplement (Handbooks – 4 volumes)

- □ Four Handbooks (will NOT be printed), one per instrument plus a general one on the mission/spacecraft – evolution of Observers Manuals towards versions oriented to legacy archive users – Top level (Level 0) documentation in HELL
- □ All volumes will need to undergo a thorough revision by HSC/ICC management before being declared final currently draft versions
- □ First versions expected by end June 2016 PACS HB writing 'conclave' took place in Madrid in mid-April similar exercise for the HIFI HB in October 2015 in Holland



# HERSCHEL SPACE OBSERVATORY

#### **HELL: Herschel Explanatory Legacy Library**





#### Herschel Explanatory Legacy Library

- □ Collection of technical documents physical repository will be in principle Livelink (OpenText), organised in 3 Levels, from 1 to 3, in decreasing order of relevance – but see technical issues recently found in the Documentation presentation later today
- HSC will support reorganisation of instrument-specific twiki pages, identify missing/obsolete docs (e.g. quick guides for newcomers), classification in levels from 1 to 3
- As for the Handbooks, a first version of HELL is expected to be rolled out by end June 2016

(see presentation by Mark Kidger on Legacy Documentation)



## HERSCHEL SPACE OBSERVATORY

#### **Other Herschel documentation**





#### DP (HIPE internal) Documentation

- □ Coordinated by the DP Editorial Board led by Alvar Garcia, updated with every new documentation build – problems with cross-links in PDF format – keep html version? – work on-going
- ☐ Plus some twiki pages (What's New, HIPE Known Issues, ...), updated by hand

#### SGS Twiki

- Documentation internal to the Science Ground Segment relevant parts will be migrated to the COSMOS environment, as part of HELL
- Note that Twiki is not the same as Mediawiki, used by other projects any suggestion regarding long term preservation of these pages would be welcome







#### **COMMUNITY SUPPORT**



#### **Community Support activities in POPs**



#### Helpdesk support

- Most frequent topics in POPs: Data Reduction, Data Analysis, UPDP deliveries, publication tracking, DP workshops FAQ updates
- Migration to a new version of Kayako (4.0), used by other missions @ ESAC took place last week (will facilitate long term preservation of our Helpdesk system) in line with other installations at ESAC
- ☐ At best effort basis after end 2017? does not seem a good solution...

#### Web - Cosmos environment / Twiki updates

- Regular updates e.g. posting of Latest News, links to HIPE installers and calibration files, new documentation as it becomes available, etc.
- Upgrade of the HSC Twiki to v6.0 (Jerusalem) took place on 23 September 2015
- New orphan web pages for HPDPs / ADPs plus those to host the upcoming HELL pages
- □ Discontinued after end 2017 what if a new doc arrives?

ERSCHEL SPACE OBSERVATORY

#### **Community Support activities in POPs**



#### Regular communications to users

- ☐ E-News (mass-mailings to all Herschel registered users) latest was #35 in February 2016 with: information about the bulk reprocessing with 14.0.1 on-going; release of a new, improved version of the Observing Log; and some Herschel-related science conference announcements
- ☐ General announcements and dedicated messages to subsets of users when necessary – e.g. version 14.0 data products available in the Herschel Science Archive last month
- Will be discontinued after end of POPs difficult to reconcile with promotion of Herschel awareness that may stimulate archival research



#### **Promoting Herschel Awareness**



#### Access to the Herschel data outside our environment

- ☐ Through VizieR since October 2013 it also provides direct links to postcards - and through them to the 'standalone browse products'
- ☐ Through the Herschel Publications Tool by selecting the observations used in a given refereed paper
- ☐ Through SIMBAD queries (this requires prior cross-matching between the Herschel Observing Log and individual SIMBAD objects - a difficult task that has recently been resumed) – so far only for a small number of Herschel observations
- ☐ And from ADS (through the existing 'link to data' functionality) including proposal abstracts

#### Herschel data in the Virtual Observatory

- Many Herschel-related catalogues (up to 94) are available through VizieR, some of them associated to UPDPs received at the HSC or delivered by users as added-value data and a few small data sets provided by users
- ☐ Since HSA 7.5, all Herschel data (standalone browse products) is made available through the VO!



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#### TRAINING THE COMMUNITY





#### Training activities and training material



#### Herschel Training Workshops

- ☐ Yearly event last on 16-19 June 2015, following the nice experience we had with the same kind of workshop in previous years
- □ This year: 'Exploting the Herschel Science Archive Workshop' 24-27 October 2016, less concentrated on DP issues; more on general information about legacy resources and data mining
- It will be an on-line workshop, with participants connecting through webex – probably be the last one of the series

#### Herschel academy (collection of video-tutorials)

- ☐ We want to build a set of video tutorials for legacy training purposes
- Shorter than 3-5 minutes, addressing very specific topics related to data mining, data access, data processing and data analysis
- Some of the existing ones may have become obsolete: validity is being reviewed - effort led by A. Garcia
- Outsourced to a external company?







#### ICC/NHSC TO HSC HANDOVER

(Life without ICCs/NHSC)



# is 30

#### ICCs/NHSC Wrap-Up/Handover Meetings:



#### 6-9 months before formal ICC end-of-support date

- HIFI ICC: 8-9 October 2015 @ SRON-Groningen / formal end of HIFI ICC was 31 March 2016
- SPIRE ICC: 18 November 2015 @ RAL, UK/ formal end of SPIRE ICC is 30 June 2016
- □ PACS ICC: 8-9 March 2016 @ ESAC / formal end of PACS ICC is 31 December 2016
- □ NHSC: summer 2016? / formal end of NHSC is 30 September 2017

#### Coincident with an ICC meeting and part of it

- 1.0-1.5 days, preferably at the end of the ICC meeting
- Attended by relevant ICC/HSC (NHSC) staff

#### Main goals

- ☐ Identify work packages and priorities (must do / can do / nice to have)
- Agree on deliverables
- Define / transfer responsibilities
- Make commitments (management)



#### ICC/NHSC Wrap-Up/Handover Meetings



#### **Meeting format**

- ☐ ICC presentation(s) covering different POPs areas (legacy software, calibration, data products, documentation)
  - What the ICC can do with the available resources in the remaining time (and cannot be delegated)
  - What the ICC would like to do if time permits
  - What the ICC can delegate/transfer to HSC/NHSC
  - What the ICC will be unable to do and cannot be delegated
- ☐ HSC presentation(s) covering different POPs areas (legacy software, calibration, data products, documentation)
  - What the HSC needs from the ICC (and cannot be delegated/transferred)
  - What the HSC would like to get from the ICC (and cannot be delegated/ transferred)
  - What the HSC can assume as delegated/transferred work packages/ responsibilities
- Negotiation/Executive Session where actions, work packages and responsibilities are (re-)defined and agreed
- Report/Minutes agreed by all parties
- Final Close-Out Telecon (in the last month of activity of the ICC)



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#### ICCs/NHSC Wrap-Up/Handover Meetings: **Outcome**



#### **Demonstrated successful format**



- Bulk reprocessing strategy (e.g.: HCSS-14.0 will be the last bulk reprocessing for HIFI; 14.1 for SPIRE and 14.2 for PACS)
- ☐ Last calibration tree updates per instrument
- □ Deliverables: missing documents / consolidated list of level 1/2/3 docs
- Commitments made regarding delivery dates/timescales (on documentation)
- ☐ Handover of ICC-owned SW modules strategy to follow
- QC population strategy
- Expert Reduced Data Sets / HPDPs planned at ICC/HSC

#### Main concerns

- ☐ Late delivery date for some key Level 1 documents (refereed papers) in some cases
- ☐ Tracking of commitments made through regular interactions
- Mutual trust is fundamental (and recognised professional commitment) over the years)







#### **LEGACY SCIENCE PHASE**

(Herschel in 2017 and beyond – life without HSC)



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#### **Preparing the Legacy Science Phase (LSP)**



#### This by necessity will include:

- Providing Herschel Legacy data and data products through HSA
- Providing Herschel Legacy software and tools
- Providing Herschel Legacy documentation
- Maintaining the Herschel Helpdesk at 'best effort' basis
- Maintaining the Herschel Refereed Publications Library (SCI-S)
- Maintaining the Herschel Publications Tool and publ-obsid links

#### This implies maintaining

- HSA, including associated ftp repositories
- HSC Cosmos website, as is, it must not break in the future, and the documents populating the Cosmos website
- Helpdesk, at best effort basis
- Virtualised software tools (HIPE, HSpot, more?)
- Publications list in ADS format (SCI-S)
- Publications tool, for links etc, linking pubs with OBSIDs need



