

**Herschel HPDP and associated HUI interface needs**  
**ICS team – 12/01/2016 – 2:00pm CET – Room C082**  
**Minutes of Meeting.**

**Present:** KME, IV, EV, EPu, MR, LC (remote), DT

1. Foreword:

Following an action from the HOT core to reorganize the DPUG mandates into dedicated working groups, a proposal will be made whereby the main objectives of the DPUG will be re-assigned as “task forces”. One of them is dedicated to the definition and provision of legacy products, and as a main target HPDPs and Ancillary Legacy Products should be considered. As such the “HPDP working group” is proposed to become this new task force.

2. Review of action items

| <b>AI</b>        | <b>Description</b>   | <b>Actionee</b> | <b>Due date</b>     | <b>Comment</b>  |
|------------------|--|-----------------|---------------------|---|
| <b>HPDP2-AI1</b> | Generate list of ObsIDs that cannot be processed as HiRes with the SPG                           | IV              | End-Oct.            | <b>Closed</b> – Ivan has sent a link to the CVS where the corresponding file resides, see also below<br><br><a href="http://herschel.esac.esa.int/cvs/viewvc/viewvc.cgi/hcss/spire_ia_pipeline_pg/src/main/herschel/spire/ia/pipeline/pg/HiResList.txt">http://herschel.esac.esa.int/cvs/viewvc/viewvc.cgi/hcss/spire_ia_pipeline_pg/src/main/herschel/spire/ia/pipeline/pg/HiResList.txt</a> |
| <b>HPDP2-AI2</b> | Generate list of ObsIDs to be processed by Unimap  | LC              | Mid-Oct.            | <b>Closed</b> – Luca will send list of obsids to the WG   |
| <b>HPDP2-AI3</b> | Come up with typically scaling number for memory needs vs map size for Unimap                    | LC              | Mid-Oct.            | <b>Closed</b> – Luca will send this information by email  |
| <b>HPDP2-AI4</b> | Perform dry run of large Unimap processing on 128 Gb machine to see if this is sufficient memory | LC/BA           | End-Oct.            | <b>Overdue</b> – Luca will look into this when he visits ESAC next week   |
| <b>HPDP2-AI5</b> | Write HPDP user requirements for HUI.  | DT              | Dec. (next meeting) | <b>Overdue</b> – new due date mid February  |
| <b>HPDP2-</b>    | Distribute flow  | KME/EPu         | Mid-Oct.            | <b>Overdue</b> – new  |

|     |                                  |  |  |  |
|-----|----------------------------------|--|--|--|
| AI6 | diagram for PACS HPDP generation |  |  | date after the PACS-S meeting end of January |
|-----|----------------------------------|--|--|--|

### 3. Review current status of HPDP definition per instrument

#### **HIFI:**

- No change to the plans presented in the wiki – it shall be noted that the HIFI ICC has endorsed the current list during the handover meeting in October last year
- No particular progress – part of the products should be generated from the 14.0.1 products so we are waiting for the bulk reprocessing to complete.
- Limited contribution expected from ICC up to March (with exception for line list which come from IRAP – main work of a two years post-doc)

#### **SPIRE-P:**

- PSC work is business as usual – it should be noted, however, that the PSC output is not endorsed by the SPIRE ICC and as such is considered an HSC/NHSC deliverable
- HiRes maps: no longer considered as HPDP, this will be fully taken care of as SPG. The list of obsids concerned by this additional processing can be found at [http://herschel.esac.esa.int/cvs/viewvc/viewvc.cgi/hcss/spire\\_ia\\_pipeline\\_pg/src/main/herschel/spire/ia/pipeline/pg/HiResList.txt](http://herschel.esac.esa.int/cvs/viewvc/viewvc.cgi/hcss/spire_ia_pipeline_pg/src/main/herschel/spire/ia/pipeline/pg/HiResList.txt). This concerns 1028 out of 5885 maps (17.5%). It should also be noted that those products will not really be made very prominent from the HSA perspective as they won't be part of the Legacy Products associated to a given obsid where this extra processing would have taken place

#### **SPIRE-S:**

- Background correction is doing well thanks to the work of Ivan's trainee. They have performed systematic assessment of the source's morphology for all SPIRE-S observations. This is summarized in a twiki page (currently in the sandbox: <http://herschel.esac.esa.int/twiki/bin/view/Sandbox/NewPage2>). This information would be very useful also as a quality information to be populated e.g. in bulk fashion in the framework of DATA-34. The content of this page should also be considered for e.g. HELL. Ivan notes that, although the work of her trainee is decently repeatable in an automatic fashion, it would be of great benefit if it could be redone on the 14 products once they are available. If this shall be done by the trainee, she would need typically one extra month for her traineeship (currently ending on the 10<sup>th</sup> of February). Ivan is looking into options for this (but prospect is not very promising so far). DT will talk to PGL about this too.
- Work doable on the SECT is unclear, both from the manpower point of view (it would be Ivan only), but also from the methodology perspective. The least that could happen is to indicate in the quality summary that the

source is semi-extended and what are the consequences for the calibration and possible cures

- Anomalous data: these are ~10 obsids (list is known) that can only be treated with an ad hoc script currently under the custody of Trevor. This is probably low priority since whatever is not dealt with by the end of March will probably never be treated
- Line list: under custody of Rose, she will visit ESAC at the end of January. A first prototype is expected very shortly after this visit, at latest before the SPIRE-S meeting in Canada (mid-Feb).
- Un-averaged level2: Eva notes that these products do not really qualify as HPDPs as they don't improve the science readiness as such. She will discuss this with Pedro but it looks like the category of Ancillary Products may be more adequate. This would then also apply to the similar product set envisaged by HIFI.

#### **PACS-P:**

- "Additional level 2.5": A list of obsids to be treated is available and will be passed on by Luca. It should be noted that these products will now also have a version reduced by JScanam – this latter should have less trouble than Unimap to compute e.g. the blue band of large merging such as the LMC (longer in computing time but less demanding in memory). Luca recalls that he has still not been able to create the latter map with Unimap (with 64 Gb memory) – see action HPDP2-AI4 to make an attempt with 128 Gb RAM. Eva notes that the current name for this HPDP is confusing as it does not match with the current definition of level 2.5 – we agreed that the name of the final products should be modified.
- For the level 3, we now have two parallel efforts: those involving Unimap (work of Luca), and the work from Javier on e.g. the HiGal fields where JScanam is used to produce king size mosaics – these are not the same obsids. In the HiGal case for example, all tiles are combined, using a common background. Individual tiles will be provided for this HPDP, as well as a full map typically for ESASky. As such we don't really see a problem concerning the potentially large size of those HPDPs (unlike the currently discussed level 3 for SPIRE-P as part of the SPG). We agreed that we should have somewhere the list of the respective obsids considered in both efforts.
- As a side note, the Unimap improvement EXPRO has officially started – the timeline of this project should be kept in mind for the dedicated Unimap improved products
- PACS PSC: source extraction is complete and stored at IPAC – 9 millions source candidates have been extracted. It is expected that a large fraction of those are spurious (~75%, so leaving ~2.5 millions candidates in the end). Now looking into quality assessment to filter out fake detections

#### **PACS-S:**

- Off-centred point source correction: this is to be applied on top of the already available point source correction that comes by default in the pipeline output. Calibration files already exist, although currently not for all spaxels. With a little more work from the ICC this could be made

available now that the beam understanding has improved a lot. So this is depending on the availability of some more software code to be written. Note that this can only be an HPDP as some interactive work is needed esp. to figure out which obsids to contemplate. Also, if the new calibration file is not generated, this HPDP should probably be cancelled

- Long range FF: possibly not needed anymore with what was put in 14.0. This is now in the hands of the Q team and Pili will make some spot checks to confirm that it worked well
- New transient: still pending some bulk job at IPAC to confirm that the new code is doing the right thing overall on most of the unchopped obsids. Right now this is not in the SPG but if nothing funny shows up in the bulk test, this could become SPG. We estimate ~1500 unchopped (on-source) observations
- Bad continuum in unchopped: would be performed as a courtesy – very much depends on how much can already be done with the new transient code. So probably best-effort basis, although priority will depend on number of concerned cases
- Bad transient: for cases that will still need extra work even if the new transient code does a decent job. This needs quite some work to identify which obsids to focus on – typically contemplated for the trainee that Katrina and Elena requested (we will know next week if there are applicants for this project)
- “POC” script: this is for cases where the off-centred target is still mostly on the central spaxel – you need decently bright sources to figure this out. These are typically cases where you want to correct for the pointing jitter
- Background contamination in OFF: probably going to drop, strong dependence on the ICC since the script does not exist yet (the method is known though)

In the end, it became clear that the outcome of the HPDP effort for the PACS-S is still very much depending on decision yet to be taken by the ICC, esp. in the perspective of the affordable objectives of the 14.1/14.2 branches. In that sense we are still missing priorities. One possible approach to priority is to look at the number of obsids expected to benefit from one given HPDP type (see next paragraph). This implies that for each of the identified case, a science-readiness assessment should be given (this will be brought up at the PACS handover at latest). **Eva recommends, however, that we should not wait until e.g. the PACS handover or the next HPDP meeting to get updated about which HPDP will finally be tackled and which not – it is expected that the next news about this should come after the PACS-S meeting in Leuven end of January.**

There is general question from Pedro about the statistics of how many obsids will in the end benefit from HPDP vs those that won't, either because 1) they don't need, 2) we won't be able to cover them – this is to assess the science readiness of our products, and show how we improved on that latter through HPDPs. We would need them for the internal HSC POPS review to take place end of March-beg. of April this year – I will raise an action for this. Katrina recalls

that, if we would need typical examples of e.g. PACS-S HPDP for this meeting, a notice of about 3 weeks would be needed.

#### 4. HPDP and the HUI

DT has not yet produced the user requirement document (HPDP-AI5) – the due date has been moved to end of January. It was noted that several of the requirements identified in the past meeting were very depending on the current HUI Java App. GUI. Since we will eventually move to a thin layer interface, the requirements should be kept at a sufficiently high level that they don't make too much assumption about the interface.

The milestones for the future HSA developments is as follows (no clear timeline known yet – this is to be discussed with the SAT group):

- The first priority is to have the products VO compatible – this will be tackled in the next HSA release
- Then we can start to look into the HPDP implementation
- Finally (or simultaneously) the migration to thin layer will take place. As a side note, one nice illustration of how this could look like is the recently released Hubble ESA archive: <http://archives.esac.esa.int/ehst/>

One possible approach to make our requirements compatible for the last two bullets would be to 1) inherit as much as possible from the UPDP in the first pass through the HPDP implementation, 2) assuming this common approach, change the approach towards UPDP as necessary to fulfill the HPDP requirements, wherever commonality can be maintained. I will work under these assumptions when writing the user requirements.

#### 5. Ancillary Legacy products:

With the mandate of our group going beyond the sole HPDP, plus the fact that discussion on Ancillary Legacy Products have taken place already during the respective HIFI and SPIRE handover meetings, it becomes important to have an overview of all products contemplated by each ICC. There is potentially a lot of commonality between the various ICC and so this group is best suited to make sure they are taken into account for a most coherent set of products.

Also important is the fact that many of those products are only known to a handful of experts and so we should make sure we can collect the products before the ICCs disappear – it is unlike HPDPs where we will be responsible for their creation beyond the ICC lifetime.

A new twiki page was created to compile all Ancillary products that have been identified and mentioned throughout emails or presentations at the handovers: <http://herschel.esac.esa.int/twiki/bin/view/Public/AncillaryLegacyProductsPage>

There is a new action to contact each ICC to comment on the current table. Beside, some of the items proposed by PACS (e.g. Jira and helpdesk dump) are

not popular among every party in the ground segment so we should have dedicated discussion to decide on those – I will check with Pedro whether this could e.g. come from the HSOCG.

There is currently a dedicated disk space that can be used to store those products (together with the HPDPs) – see Eva’s email on the matter:

“The account is available from your home by:

```
> su - updp
pwd: change&n0w! “
```

Some ancillary products have already been put in the dedicated area (e.g. calibrator models, HIFI PSFs, etc). Please have a look at what could already be populated from your instrument.

## 6. AOBs

We should have our next meeting in about 3 months, i.e. in mid-April. We should avoid clashing with the PSC workshop planned at IPAC in the week April 18-22. However we will monitor the progress esp. on the PACS-S HPDP shopping basket, as well as the prospect for Ivan’s trainee to be extended.

## 7. New action items:

| AI               | Description   | Actionee | Due date   |
|------------------|---|----------|--|
| <b>HPDP3-AI1</b> | Provide list of obsids applying to each HPDP and indicate fraction of observations concerned by the contemplated improvement  | All      | Mid-March – this is needed to prepare the HSC POPS review at ESAC                  |
| <b>HPDP3-AI2</b> | Get in touch with instrument experts to create representative HPDPs for illustration at the HSC POPS at ESAC  | DT       | 3 weeks before HSC POPS review at ESAC   |
| <b>HPDP3-AI3</b> | Contact ICC relevant persons to confirm the completeness of the list of items considered for Ancillary Products:<br><a href="http://herschel.esac.esa.int/twiki/bin/view/Public/AncillaryLegacyProductsPage">http://herschel.esac.esa.int/twiki/bin/view/Public/AncillaryLegacyProductsPage</a> | All      | Ideally by the end of January – will be brought up again at PACS handover in March |
| <b>HPDP3-AI4</b> | Get in touch with Pedro to discuss what to do with some of the Ancillary Products requests like   | DT, EV   | Next week – probably during HOT core   |
| <b>HPDP3-AI5</b> | Get in touch with Pedro to discuss how to handle non-averaged level 2 products  | DT, EV   | Next week – probably during HOT core   |
| <b>HPDP3-AI6</b> | Contact Javier Gracia-Carpio to inquire about the exact obsid list is considering   | LC       | Next week – to be discussed  |

|  |                                    |  |                 |
|--|------------------------------------|--|-----------------|
|  | for this level3 king size products |  | during LC visit |
|--|------------------------------------|--|-----------------|