

**Herschel HPDP and associated HUI interface needs**  
**ICS team – 16/09/2015 – 10:00 CEST – Room E018**  
**Minutes of Meeting.**

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

1. Review of action items

- A dedicated wiki page was created (<http://herschel.esac.esa.int/twiki/bin/view/Public/HPDPDefinitionPage>), and populated with initial list of contemplated HPDP. The page was updated just prior to the meeting with a redistribution of the PACS-S HPDP and some new inputs to the SPIRE-S HPDPs.
- User requirements for querying and serving of HPDPs in the HUI have not been received yet but this item is addressed in the agenda item 3.

2. Review current status of HPDP definition per instrument

**HIFI:**

- No change to the plans presented in the wiki
- Progress made in the creation of HPDPs for spectral cubes in band 6a (work by ICC)
- Improvement of code (processing speed in particular) allowing the identification of lines for the line catalogue products. The code now also works on single LO tunings (albeit with the degeneracy of sideband assignment). The line list HPDP work will be continued by a postdoc at IRAP (Toulouse) beyond the end of the HIFI ICC life.

**SPIRE-P:**

- PSC work is business as usual – W/S in Konkoly next week. Bernhard reported at the weekly briefing that they had extracted ~2.53 million sources so far, with 45% of the SPIRE sky coverage considered so far.
- HiRes maps: in the end, as much as can be, those products will be generated by the SPG and co-exist in the observation context. There will exist exceptions where those are too demanding to generate in the bulk reprocessing (e.g. LMC, HiGal), so those may need to be generated manually and distributed as HPDP. A list of the latter should be generated (new AI).

**SPIRE-S:**

- Ivan has started to look into background contamination correction with his trainee. They are reprocessing all SPIRE spectra with the background contamination correction and looking at flux mismatch in the overlapping area to decide if there is sufficient improvement to make it an HPDP or not. So far they did not consider doing the same with the SECT as this intrinsically contains an ambiguity between pointing offset and semi-extended source – in essence it could only be done for sources where the size is known (e.g. the AGB monitoring sources). For those observations where there is known semi-extended issue but no correction will be

applied, a dedicated quality message must be fed. This however increases the importance of having the SECT available as a tool outside of HIPE.

- The work on the spectral feature products continues at good pace (resp. Rose Hopwood). Currently looking into simulations to assess completeness and reliability of spectral feature detection (esp. how to use the goodness of the fit and the evidence). There is some trouble in case of resolved lines because the line width is fixed during the fit.
- There's a new potential HPDP on the spectrometer that relates to the spectral maps. Currently the default products use a naïve interpolation that can lead to NaNs in some pixels. A regridding task similar to the HIFI one would guarantee a proper assignment of flux in each pixel. It is TBD if this could be an SPG or an HPDP (see also SPIRE-6293).
- Similarly, non-averaged level 2 spectra products could be generated as HPDPs (note: HIFI is also considering a similar HPDP).

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

- Luca and Bruno have created new Unimap level 2.5 in the LMC/SMC and XMM-LMS cosmological fields. So far they could only cover the blue channel maps, however, the shorter wavelength maps cannot be processed with a 64 Gb machine. On-going discussion with Jorgo and CSG in order to get access to a bigger machine – this would only be needed for short periods, but several times since the Unimap parameters would need to be tuned by try-and-fail. No definitive solution found yet.
- Related to the above, Luca will be looking into an exhaustive list of the concerned ObsIDs. He is also trying to derive the typical rule of thumb for computer memory needs with respect to map size (new AIs).

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

- Katrina and Elena have re-organised the list of potential PACS-S HPDPs in the twiki page. There is a distinction between items that end up in the SPG or not could (this depends on the progress of on-going development, or the success of current implementation and validation). Those cannot reasonably be considered for the 14.0 release so they could only be accommodated by a 14.x release if SPG would be the preferred approach.
- The number of possible processing scenarii is large so there is an action to prepare a diagram with all possible workflows and decision points, for products that will feed into either SPG or HPDP. Related to this is the question of how many products will eventually co-exist as level 2.5 products, and finally as Legacy product (see agenda item 4).
- Katrina has started working on the line feature catalogue together with an under-graduate in Leuven. Feasibility study on-going – results expected beginning of next year.

#### **Third parties HPDP:**

Not discussed during the meeting.

### 3. HPDP and the HUI

The following use cases were discussed:

- a) Serving (one of more) HPDPs as a whole
- b) Serving sub-categories (e.g. Doc, Catalogue, Data, Postcards, etc) of a given HPDP
- c) Serving HPDPs matching one or more obsids (also applicable to point source or line catalogues)

Eva recalls us that the HSA only contemplates two kinds of operations:

- Action buttons: e.g. full or selected downloads
- Query buttons: returns lists of obsids. Uses filters based on the ingested meta-data

She also recalls that there are no meta-data extracted for HPDPs, so that the only identifiers one can rely upon is the ObsID.

The general agreement is that we should re-use as much as the existing concepts developed for UPDPs as possible. As such Eva proposed a new sub-panel with a scroll-down menu listing all existing HPDPs, with “info” tooltip, and a “Download” button, that could further unfold as a list of the sub-categories retrievable as a whole (use case b).

An immediate distinction we agree should be made with the current UPDP approach is that use case a) (full HPDP download) should be achievable from the main HUI panel, and not indirectly via a query (as is the case for UPDPs).

Like for UPDPs, querying the HSA with some HPDPs ticked off should be combinable with any other filters offered in the main HUI panel (e.g. those from instrument advanced panels).

Like for UPDPs, there shall be a “search HPDPs” allowing to apply finer filtering to HPDPs. Those need to be accompanied with special labels that need to be “stamped” to each HPDP upon ingestion in the HSA (dedicated xml file). We need to agree on which filters to apply here (e.g. catalogues, photo vs spectro, etc) – a first go at those will be proposed by DT in the first draft of the user requirements (see thereafter).

Concerning the use case c, we agreed that it would be preferable to revisit the meaning and actions associated to the “HPDP” labels present respectively at the top of the result list and on the line associated to each ObsID – for the latter we prefer that this serves the HPDP material associated to the ObsID only.

There’s a new AI on DT to start writing formal requirements for the HUI services on HPDPs.

#### 4. Legacy products:

Some discussion went on concerning the meaning of the postcard in the perspective of Legacy Products being in many cases upgrades to the stand-alone browse products (i.e. SPG output). Because Legacy Products could either be SPG

outputs or HPDPs, and not be necessarily represented by the postcard, the proposal is to have a new column “Legacy Product” similar to that of UPDP or HPDP, that would allow to perform downloads of such products without having to pass through the display of the postcard and the infamous right-click.

Overall, however, there is general agreement that, when an HPDP provides an improved version of an SPG product and its associated postcard is changed, we should display this postcard – this also implies that HPDP need to come associated with postcards. In this case we also agreed that the column should be named “Legacy Postcard”. If this is technically unachievable we then should rename the current postcard column as “SPG postcard”, and have the HPDP postcard displayed e.g. when clicking on the “HPDP” label on a given ObsID line.

5. New action items:

<b>AI</b>	<b>Description</b>	<b>Actionee</b>	<b>Due date</b>
<b>HPDP2-AI1</b>	Generate list of ObsIDs that cannot be processed as HiRes with the SPG	IV	End-Oct.
<b>HPDP2-AI2</b>	Generate list of ObsIDs to be processed by Unimap	LC	Mid-Oct.
<b>HPDP2-AI3</b>	Come up with typically scaling number for memory needs vs map size for Unimap	LC	Mid-Oct.
<b>HPDP2-AI3</b>	Perform dry run of large Unimap processing on 128 Gb machine to see if this is sufficient memory	LC/BA	End-Oct.
<b>HPDP2-AI5</b>	Write HPDP user requirements for HUI.	DT	Dec. (next meeting)
<b>HPDP2-AI6</b>	Distribute flow diagram for PACS HPDP generation	KME/EPu	Mid-Oct.

We should have our next meeting in about 3 months, i.e. after the validation campaign of HIPE 14, but before the Christmas break.