ProvHiPS
## An « on top » provenance implementation

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IVOA
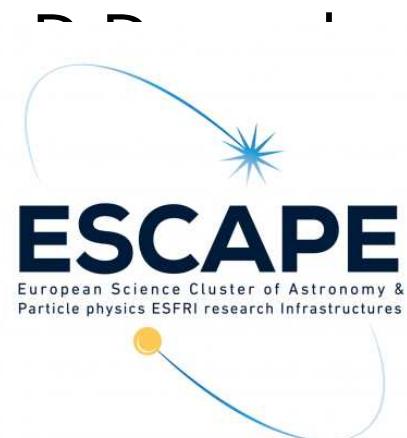
# ProvHiPS project

- Tracing provenance of HiPS and HiPS tiles
    - From HiPS tiles back to raw HST images,
      through « drizzled » images
      and single « calibrated » images
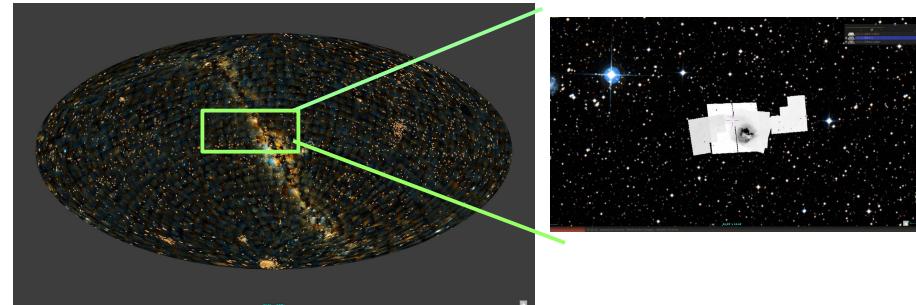
- ProvHiPS is both :
    - A testbed for « On Top provenance »
      for image processing in optical astronomy.
        - See examples next slides
    - A reference implementation of ProvTAP
        - ProvTAP is basically a « TAP schema » mapping the Provenance DM.
        - Allows to deliver provenance information using TAP services
        - ProvTAP is currently adapted by authors with respect to the DM Recommandation
        - Soon published as a Working Draft

«HiPS» Provenance diagram
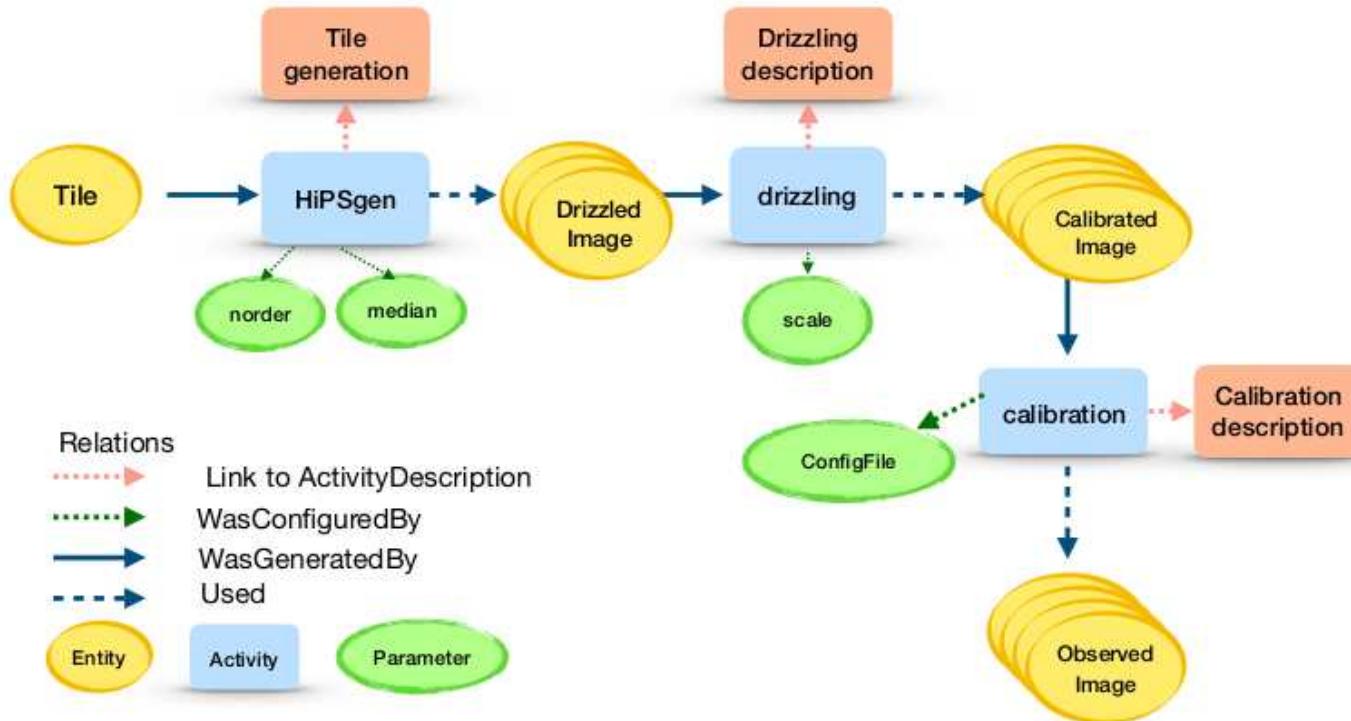
Provenance tracking for Prov-HiPS

ltiples

ProvHiPS ADQL query examples

- Finding out drizzled images « progenitors » of a specific HiPS tile :

  select e.e_name, e.e_comment, a_name, a_starttime, a_comment, ee.e_name, ee.e_comment from entity e

  join wasgeneratedby on e.e_id = wgb_entity

  join activity on wgb_activity = a_id

  join used on a_id = u_activity

  join entity ee on ee.e_id = u_entity

  where e.e_name like '%Npix9199544'

- Finding out drizzling activities attributed to a specific agent

  -

ProvHiPS ADQL query examples

- Displaying some activity documentation for a specific activity through its activity description

- Finding out other products of a drizzling activity which generated a specific drizzled image

select e.e_name, e.e_comment, a_name, a_starttime, ee.e_type, ee.e_name, ee.e_comment from entity e

join wasgeneratedby w on e.e_id = w.wgb_entity

join activity on w.wgb_activity = a_id

join wasgeneratedby ww on a_id = ww.wgb_activity join entity ee on ee.e_id = ww.wgb_entity

where e.e_name = 'j8de38020_drz' and ee.e_id != e.e_id

HiPS tile progenitor

TOPCAT(48): Table Browser

Window Rows Help

Table Browser for 48: TAP_54_entity,wasgeneratedby,activity,used,entit...

	e_name	e_comment	a_name	a_starttime	a_comment	e_name	e_comment
1	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8e614010_drc	Drizzled HST image from ACS centered on 53.0...
2	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt37011_drc	Drizzled HST image from ACS centered on 53.0...
3	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt37021_drc	Drizzled HST image from ACS centered on 52.9...
4	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt37031_drc	Drizzled HST image from ACS centered on 52.9...
5	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt38011_drc	Drizzled HST image from ACS centered on 53.0...
6	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt38021_drc	Drizzled HST image from ACS centered on 53.0...
7	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt38031_drc	Drizzled HST image from ACS centered on 52.9...
8	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt39011_drc	Drizzled HST image from ACS centered on 53.0...
9	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt39021_drc	Drizzled HST image from ACS centered on 53.0...
10	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	j8mt39031_drc	Drizzled HST image from ACS centered on 52.9...
11	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jbwjq1020_drc	Drizzled HST image from ACS centered on 53.0...
12	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn602010_drc	Drizzled HST image from ACS centered on 53.0...
13	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn602020_drc	Drizzled HST image from ACS centered on 53.0...
14	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn602030_drc	Drizzled HST image from ACS centered on 53.0...
15	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn604010_drc	Drizzled HST image from ACS centered on 53.0...
16	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn604020_drc	Drizzled HST image from ACS centered on 53.0...
17	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn609010_drc	Drizzled HST image from ACS centered on 52.9...
18	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn609020_drc	Drizzled HST image from ACS centered on 52.9...
19	HST_V_Order10_Npix9199544	Npix9199544 tile of HST-V HiPS of size 12.25 a...	HST_V_Order10_Npix9199544_Generation	2019-01-09T02:34Z	hipsGEN version 10.101 generation of Npix91...	jcn611010_drc	Drizzled HST image from ACS centered on 52.9...

Total: 36   Visible: 36   Selected: 0

used
valuedescription
wasassociatedwith

Service Capabilities

Query Language: ADQL-2.0   Max Rows: 1000000 (default)   Uploads: unavailable

ADQL Text

Mode: Synchronous

```
select e.e_name, e.e_comment, a_name, a_starttime, a_comment, ee.e_name, ee.e_comment from entity e
join wasgeneratedby on e.e_id = wgb_entity
join activity on wgb_activity = a_id
join used on a_id = u_activity
join entity ee on ee.e_id = u_entity
 where e.e_name like '%Npix9199544'
```

Co-generated products of a specific activity