

# Origin and specificity of EPN-TAP Europlanet - RI

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# Why EPN-TAP ?

- **PDAP** was in very early version dedicated to space agency
- **ObsTap** was in early version dedicated to Astronomy.
- **Need to address any type of data, even mineral sample.**
- **Want to be IVOA compatible for infrastructure and support.**



# PDAP / EPN-TAP

PDAP (Planetary Data Access Protocol), developed by IPDA (mainly by J. Salgado at ESAC).

Currently implemented by ESA/PSA and JAXA/DARTS

## EPNcore Query Keywords

- UID / GID / ObsID
- *DATAPRODUCT\_TYPE* (from list)
- TARGET\_NAME (UAI ref)
- TARGET\_CLASS (from list)
- TIME (MIN/MAX)
- TIME *SAMPLING STEP* (MIN/MAX)
- *EXPOSURE TIME* (MIN/MAX)
- SPECTRAL RANGE (MIN/MAX)
- *SPECTRAL SAMPLING* (MIN/MAX)
- *SPECTRAL RESOLUTION* (MIN/MAX)
- SPATIAL RANGE (C1,C2,C3) (MIN/MAX)
- S\_REGION
- *SPATIAL RESOLUTION* (MIN/MAX)
- *SPATIAL FRAME TYPE* (from list)
- *INCIDENCE ANGLE* (MIN/MAX)
- *EMERGENCE ANGLE* (MIN/MAX)
- *PHASE ANGLE* (MIN/MAX)
- INSTRUMENT HOST NAME
- INSTRUMENT NAME
- MEASUREMENT TYPE
- PROCESSING LEVEL
- DATE (CREATION/MODIFICATION/RELEASE)

## PDAP-core Query Keywords

(V1.0 2013-2011-Nov-09)

RESOURCE\_CLASS -SELECTED FIELD

TARGET\_NAME -

TARGET\_TYPE -

START\_TIME/STOP\_TIME -

MIN\_WAVELENGTH/MAX\_WAVELENGTH -

LATITUDE/LONGITUDE(case map projected)

COORDINATE\_SYSTEM\_NAME

MAP\_PROJECTED (polygon, circle, point)

SPACECRAFT\_ALTITUDE

INSTRUMENT\_HOST\_NAME

INSTRUMENT\_NAME

INSTRUMENT\_TYPE

RETURN\_TYPE

# Optional parameters

| <i>EPNcore</i>                                                                                                                                                     | <i>ObsCore</i>                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <i>target_class</i> (asteroid, dwarf_planet, planet, satellite from IAU + comet, exoplanet, interplanetary_medium, ring, sample, sky, spacecraft, spacejunk, star) | <i>target_class</i> (not mandatory, taken from SSA)                                 |
| <i>target_name</i>                                                                                                                                                 | <i>target_name</i> (list from Simbad + NED + IVOA !, could be the name of a survey) |
| <i>time_min</i>                                                                                                                                                    | <i>t_max</i>                                                                        |
| <i>time_max</i>                                                                                                                                                    | <i>t_max</i>                                                                        |
| <i>time_scale</i>                                                                                                                                                  |                                                                                     |
| <i>time_sampling_step_min</i>                                                                                                                                      | <i>t_resolution</i>                                                                 |
| <i>time_sampling_step_max</i>                                                                                                                                      |                                                                                     |
| <i>time_exp_min</i>                                                                                                                                                | <i>t_exptime</i>                                                                    |
| <i>time_exp_max</i>                                                                                                                                                |                                                                                     |
|                                                                                                                                                                    | <i>t_xel</i>                                                                        |
| <i>time_origin</i>                                                                                                                                                 | <i>t_refpos</i> (NOT MANDATORY)                                                     |



# ObsCore / EPN-Core

EPNcore 2.0

ObsCore 1.1

|                                   |                       |
|-----------------------------------|-----------------------|
|                                   | <i>t_xel</i>          |
| <i>spectral_range_min</i>         | <i>em_min</i>         |
| <i>spectral_range_max</i>         | <i>em_max</i>         |
| <i>spectral_sampling_step_min</i> |                       |
| <i>spectral_sampling_step_max</i> |                       |
| <i>spectral_resolution_min</i>    |                       |
| <i>spectral_resolution_max</i>    |                       |
|                                   | <i>em_res_power /</i> |
|                                   | <i>em_xel</i>         |

# ObsCore / EPN-Core

| <i>EPNcore 2.0</i>                                                                      | <i>ObsCore 1.1</i> |
|-----------------------------------------------------------------------------------------|--------------------|
| <i>c1min</i>                                                                            |                    |
| <i>c1max</i>                                                                            |                    |
| <i>c2min</i>                                                                            |                    |
| <i>c2max</i>                                                                            |                    |
| <i>c3min</i>                                                                            |                    |
| <i>c3max</i>                                                                            |                    |
| <i>spatial_frame_type</i> ( <i>celestial, body, cartesian, spherical, cylindrical</i> ) |                    |
| <i>s_region</i> ( <i>yet only for body</i> )                                            | <i>s_region</i>    |
|                                                                                         | <i>s_fov</i>       |
| <i>ra</i> ( <i>optional</i> ) <i>also c1</i>                                            | <i>s_ra</i>        |
| <i>dec</i> ( <i>optional</i> ) <i>also c2</i>                                           | <i>s_dec</i>       |



# ObsCore / EPN-Core

| EPNcore              | ObsCore                        |
|----------------------|--------------------------------|
|                      | <i>s_xsel1</i>                 |
|                      | <i>s_xsel2</i>                 |
| <i>c1_resol_min</i>  | <i>s_resolution (optional)</i> |
| <i>c1_resol_max</i>  |                                |
| <i>c2_resol_min</i>  |                                |
| <i>c2_resol_max</i>  |                                |
| <i>c3_resol_min</i>  |                                |
| <i>c3_resol_max</i>  |                                |
| <i>incidence_min</i> |                                |
| <i>incidence_max</i> |                                |
| <i>emergence_min</i> |                                |
| <i>emergence_max</i> |                                |
| <i>phase_min</i>     |                                |
| <i>phase_max</i>     |                                |

# ObsCore / EPN-Core

| <i>EPNcore</i>                                                                                                                         | <i>ObsCore</i>                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <i>granule_uid</i>                                                                                                                     |                                                                                                     |
| <i>granule_gid</i>                                                                                                                     | <i>obs_collection / Obs_publisher_did</i>                                                           |
| <i>obs_id</i>                                                                                                                          | <i>obs_id</i>                                                                                       |
| <i>processing_level</i> (CODEMAC 1-> 6)                                                                                                | <i>calib_level</i> (0->3)                                                                           |
| <i>measurement_type</i>                                                                                                                | <i>o_ucd</i>                                                                                        |
| <i>dataprodut_type</i>                                                                                                                 | <i>dataprodut_type</i>                                                                              |
| <i>instrument_host_name</i> (list in preparation IAU+PDS + ...)                                                                        | <i>facility_name</i> (not ref in tab B Obscore 1.1)                                                 |
| <i>instrument_name</i>                                                                                                                 | <i>instrument_name</i>                                                                              |
| <i>creation_date</i>                                                                                                                   |                                                                                                     |
| <i>modification_date</i>                                                                                                               |                                                                                                     |
| <i>release_date</i>                                                                                                                    | <i>release_date</i> (not mandatory)                                                                 |
| <i>dataprodut_type</i> (image, spectrum, dynamic spectrum, spectral_cube, volume, movie, cube, time_series, catalogue, spatial_vector) | <i>dataprodut_type</i> (image, cube, spectrum, sed, time series, visibility, event NOT MANDATORY !) |



# ObsCore / EPN-Core

| <i>EPNcore</i>                          | <i>ObsCore</i>           |
|-----------------------------------------|--------------------------|
| <i>service_title</i>                    |                          |
| <i>At the level of service</i>          | <i>obs_publisher_did</i> |
| <i>access_url</i> (optional)            | <i>access_url</i>        |
| <i>access_format</i> (optional)         | <i>access_format</i>     |
| <i>access_estsize</i> (optional)        | <i>access_estsize</i>    |
| <i>Optional polarisation parameters</i> | <i>pol_xel</i>           |
|                                         |                          |

# Optional parameters

| <i>EPNcore</i>                   | <i>ObsCore</i>                                 |
|----------------------------------|------------------------------------------------|
|                                  | <i>dataprodukt_subty</i>                       |
| <i>At the level of service</i>   | <i>obs_publisher_did</i>                       |
| <i>In registry</i>               | <i>obs_creator_name</i>                        |
|                                  | <i>obs_creator_did</i>                         |
| <i>access_estsize (optional)</i> | <i>access_estsize</i>                          |
| <i>In registry</i>               | <i>publisher_id</i>                            |
| <i>bib_reference (bibcode)</i>   | <i>bib_reference</i>                           |
|                                  | <i>data_rights (Public/Secure/Proprietary)</i> |
|                                  | <i>s_unit ?</i>                                |
|                                  | <i>s_stat_error</i>                            |
|                                  | <i>s_pixel_scale</i>                           |
| <i>time_origin</i>               | <i>t_refpos</i>                                |
|                                  | <i>t_stat_error</i>                            |

*t\_calib\_status (calibrated, uncalibrated, relative, raw)*



# Optional parameters

| EPNcore | ObsCore                                    |
|---------|--------------------------------------------|
|         | <i>em_ucd</i>                              |
|         | <i>em_unit</i>                             |
|         | <i>t_calib_status</i>                      |
|         | <i>t_stat_error</i>                        |
|         | <i>em_ucd</i>                              |
|         | <i>em_unit</i>                             |
|         | <i>em_calib_status</i>                     |
|         | <i>em_res_power_min / em_res_power_max</i> |
|         | <i>em_resolution</i>                       |
|         | <i>em_stat_error</i>                       |
|         | <i>o_unit</i>                              |
|         | <i>o_calib_status</i>                      |
|         | <i>o_stat_error</i>                        |



# Optional parameters

| EPNcore                          | ObsCore                                                       |
|----------------------------------|---------------------------------------------------------------|
| <i>Soon define in EPN-CORE</i>   | <i>pol_states</i> (I Q U V RR LL RL LR XX YY XY YX POLI POLA) |
| <i>proposal_id</i>               | <i>proposal_id</i>                                            |
| <i>access_md5</i>                |                                                               |
| <i>thumbnail_url</i>             |                                                               |
| <i>file_name</i>                 |                                                               |
| <i>species</i>                   |                                                               |
| <i>alt_target_name</i>           |                                                               |
| <i>target_region</i>             |                                                               |
| <i>feature_name</i>              |                                                               |
| <i>solar_longitude_min / max</i> |                                                               |
| <i>target_distance_min / max</i> |                                                               |
| <i>target_time_min / max</i>     |                                                               |
| <i>earth_distance_min / max</i>  |                                                               |



# Optional parameters

| <i>EPNcore</i>                                   | <i>ObsCore</i> |
|--------------------------------------------------|----------------|
| <i>sun_distance_min / max</i>                    |                |
| <i>particle_spectral_type</i>                    |                |
| <i>particle_spectral_range_min / max</i>         |                |
| <i>particle_spectral_sampling_step_min / max</i> |                |
| <i>particle_spectral_resolution_min / max</i>    |                |
| <i>mass</i>                                      |                |
| <i>sidereal_rotation_period</i>                  |                |
| <i>mean_radius</i>                               |                |
| <i>equatorial_radius</i>                         |                |
| <i>publisher</i>                                 |                |
| <i>spatial_coordinate_description</i>            |                |
| <i>spatial_origin</i>                            |                |



# Optional parameters

| <i>EPNcore</i>          | <i>ObsCore</i> |
|-------------------------|----------------|
|                         |                |
| <i>time_scale (UTC)</i> |                |
|                         |                |

## Conclusion :

- \* EPN-TAP derive directly from ObsTap**
- \* EPN-TAP must handle all type of data including catalogs.**
- \* EPN-TAP try large set of optional parameters to prepare next version.**
- \* Context of EPN-TAP is different, come as the only protocol for all type of data.**