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Radio data (Marco Iacobelli, Markus Demleiner, Markus Nullmeier, Mireille Louys, François Bonnarel)

LOFAR group (and probably also SKA and other SKA pathfinder like ASKAP) may not be able to provide access to (fully) reduced (and science ready) data in a near future. They can give access to visibility and partially reduced data. That's what they want to expose in the VO.

During the split sessions, we only concentrated on data discovery. Data formats and model (visibility FITS dialect or HDF5) has not been considered but the user can be informed of available formats via the format field of the Obscore response (or via DataLink if several formats are available).

We examined use cases for data discovery, in order to answer the basic question: what is important to get for metadata for discovery ? We concluded it is possible to consider multi-steps discovery (successive pruning of the query results).

Basic set of parameters for searching radio data:

- \*position or name
  - > selection is made with an intersect mode between observation "coverage" and Region of Interest (Cone search or what ever).
- \*spectral (frequency) range
- \*spectral resolution
- \*time range
- \*time resolution
- \*data type (beam-formed, interferometric)
- \*calib level (raw, processed, ..)
- \*polarization (available Stokes parameters)

All these are available via Obscore. The intersect complex (elliptical) field of view may be difficult to compute. As a workaround a raw radius can be given instead for primary selection.

Additional tricks for selection

+ uv plane characterization : this is best done by plotting nr. of baselines (or power) against distance in uv plane (spatial resolution and radius of fov can be estimated from that). No simple set of numbers can summarize this. Loading this plot in an Obscore extension may be difficult to standardize... The idea was given to attach such plots to the Obscore results using DataLink.

+ In the same way the coverage image (with response variations) could be attached to the Obscore results via DataLink (if available, because could be difficult to compute)

+ Provenance or configuration features may be important for selection.

---> Beam or correlated mode of the reduction (it's related to reduction pipeline parameter values)

---> number of "stations" number and nature of antenna for each station (may have consequence on spectral range)

---> same observation may produce a whole set of dataproducts  
How to expose them with the main (combined) observation ?

Provenance details may be added to the mandatory Obscore table, or accessible via DataLink. Selection on some provenance parameters may be done via a ProvTAP implementation.

Basic data products info to be displayed:  
public/proprietary data, pointing position (ICRF obscore standard (with equinox), but what for Sun or planets? to be checked), sas id, time and frequency resolution, antenna, instrument\_filter, link to list of stations, link to uv-dist plot (tool to be developed)

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