INTERNATIONAL VIRTUAL OBSERVATORY ALLIANCE
US National Virtual Observatory

IVOA Data Access Layer
TAP Param Query (PQL) Plans

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TAP Param Query (PQL)

- Concept
  - Optimized for simple filter-type queries of a single table
    - Typically an astronomical catalog; also TAP schema
    - Targets typical astronomical catalog query use-cases
  - Higher level of abstraction compared to ADQL/SQL
    - More limited in terms of expression evaluation
    - But integrates support for astronomical data models (GDS/ObsDM)
  - Relys upon main TAP service for common core functionality
    - Table uploads, output formatting, DBMS query execution

- Key Functionality
  - Spatial queries of catalogs/tables indexed by position
    - essentially a generalized cone search replacement
  - Multi-position (multicone) queries (basic cross-match)
  - Table metadata queries
  - Table modify query (track changes) (MTIME)
  - Generic dataset queries

Generic Dataset (GDS) Query

- Concept
  - Query GDS (Observation) data model
    - This is ObsTAP, just using PQL as alternative to ADQL
    - ObsTAP is a simple filter-type query (one table)
    - POS,SIZE, BAND, TIME, PUBDID, TARGETNAME, SPATRES, VARAMP, etc.
  - General data discovery
    - Can discover any type of data, unlike the OO interfaces
    - Association used to describe complex data aggregates
    - Capable of simple whole-file data access/retrieval
- Advantages
  - Higher level of abstraction allows customized semantics
    - Can tolerate missing metadata in discovery queries
    - Possible to support multiple frames/units
    - Abstraction hides details of using spatial indexing backend
    - Can auto-adapt to table being queried (UTYPE, units)
  - Active interface can generate metadata on the fly (e.g. acref URL)
  - Augmented table output possible (auxiliary metadata)

Key Issues

- Multi-Position Query
  - Greater flexibility in identifying columns of positions table
  - Positions uploaded via TAP, or any DBMS table can be used
  - Direct specification of positions via list
- WHERE Syntax
  - Minor issues with current syntax
  - Should we consider a more powerful syntax?

Way Forward

- Timeline
  - WD 0.3
    - Update following interop
  - Prototyping
    - Planned as part of general TAP prototyping
    - Multi-position queries, GDS query, MTIME in particular
  - WD 1.0
    - Following successful prototyping
- V1.0 Recommendation
  - Target for May interop following prototyping