

INTERNATIONAL VIRTUAL OBSERVATORY ALLIANCE
US National Virtual Observatory

IVOA Data Access Layer Simple Image Access Version 2 (SIAV2)

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SIA Version 2

- **Status**

- SIAV2 Concept document presented in Trieste
- Working out details of architecture, functionality, models
- Related efforts underway, e.g, TAP, DM, GWS

- **Topics for Today**

- Related Developments
- SIAV2
 - SIAV2 Scope
 - SIAV2/DAL2 Concepts
 - SIAV2 Functionality
- Roadmap

<http://www.ivoa.net/internal/IVOA/SiaInterface>

Related Developments

- **DAL2 Architecture**

- Generic dataset, generic vs typed interfaces, complex data
- Data models, dataset metadata, use of UTYPE
- Virtual data, common service elements
- Service interface, Grid capabilities

- **TAP**

- Multi-position queries, table uploads
- Grid capabilities (UWS, VOSI)

- **Data Models**

- Photometry model, Observation model

SIAV2 Scope and Priorities

- **Update service interface to DAL2 standards**
 - Query interface, query response, dataset metadata
 - Keep basic interface simple to understand and use
- **Generalize to multidimensional data (cubes)**
 - Major class of data not yet supported (radio data cubes)
 - Cube data very large – needs VO capabilities for basic access
 - Not that hard – model is already multi-dimensional
- **Feature enhancements**
 - Multi-position queries, regions
- **Grid capabilities**
 - Async (UWS), vospace, VOSI, eventually authorization

DAL2/SIAV2 Concepts

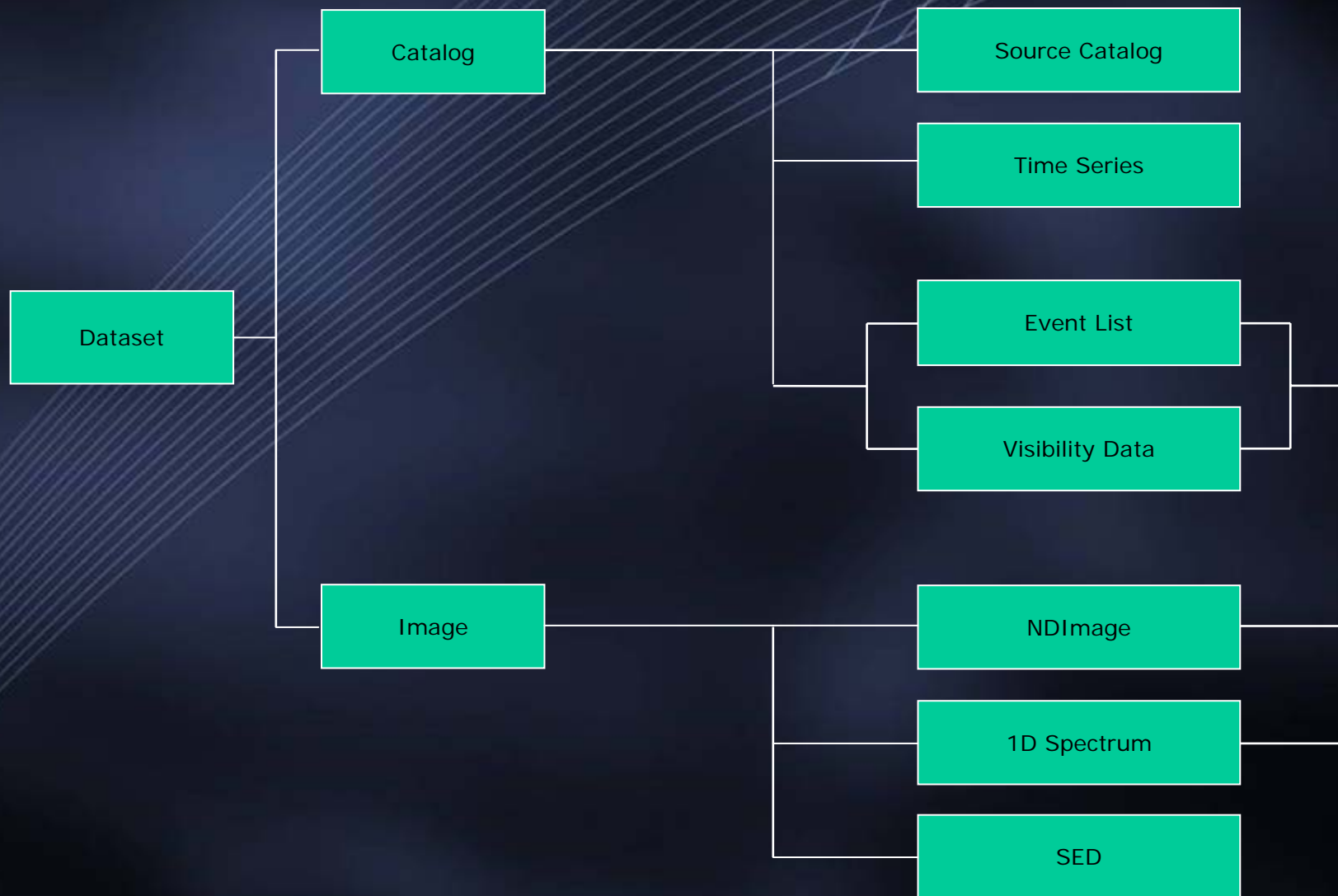
- **Generic dataset**

- Root of dataset class hierarchy
- All typed, specialized, instrumental datasets derive from it
- Can discover and describe any type of data
- Can relate different types of data in a single query

- **Inheritance**

- Main query parameters are shared
- Most dataset metadata is shared (generic dataset metadata)
- Query interface implementations mostly common

Historical DAL Service Architecture (Cambridge UK, May 2003)



Current DAL class hierarchy of data and their associated services



DAL2/SIAV2 Concepts

- **Complex data**
 - An association of primary datasets (catalog, image, spectrum etc)
 - Usually with some additional metadata
 - e.g. using metadata extension mechanism
 - Association can be made dynamically in query response
- **Example**
 - Survey field with spectral cube, 2-D projection, source catalog
- **Issues**
 - Open ended – every use case is different
 - Need use cases

DAL2/SIAV2 Concepts

- **Associations**
 - Basic mechanism used to describe complex data
 - Already used in SSA query response
- **Many examples**
 - Multiformat, preview, multiresolution, multiband, replica, etc.
- **Issues**
 - Ok for simple cases; could be cumbersome if assoc too large
 - but too many things can change between records
 - Need use cases

SIAV2 Functionality

- **Single-position queries**
 - Much as for SIA V1 (POS, SIZE; add spatial frame)
 - Archival, cutout, reproject, mosaic, etc.
- **Multi-position queries**
 - Same SIA query performed on many positions simultaneously
 - Should use same position table as for TAP etc. (all of DAL2)
 - position table can be uploaded in-line in query
 - or could be a URI ref, DBMS table, in a VOSpace
- **REGION-based queries**
 - This is also being prototyped in TAP
 - Used for discovery, not for defining image boundary
 - Can use REGION to constrain a position table

Cube data access

- **Cube access**
 - Technique is to describe geometry and WCS of output image
 - Service then makes the requested image
- **WCS model and usage**
 - Uses "Mapping" model based upon FITS WCS
 - STC used to define coordinate systems
- **Polarization model and usage**
 - Polarization parameters enumerated as part of data
 - Stokes parameters (I,Q,U,V) are most common
 - Single polarization axis with discrete sample "coord" values

Roadmap

- **Specification**
 - Sketch service interface (fall 2008)
 - Start on SIAV2 working draft (early 2009)
- **Prototyping**
 - Begin protye implementations (early 2009)
 - Prototypes (NVO, CDS, ESAC, others?)
 - unlikely to implement cube access initially
 - probably will include UWS, multi-pos
- **Working Draft**
 - First working draft for WG discusussion (May 2009)
- **Longer Term**
 - Prototype cube access with data providers