

IVOA SIA v2 Services for NED

With feedback on SIA2 2015-07-30 and
related specifications

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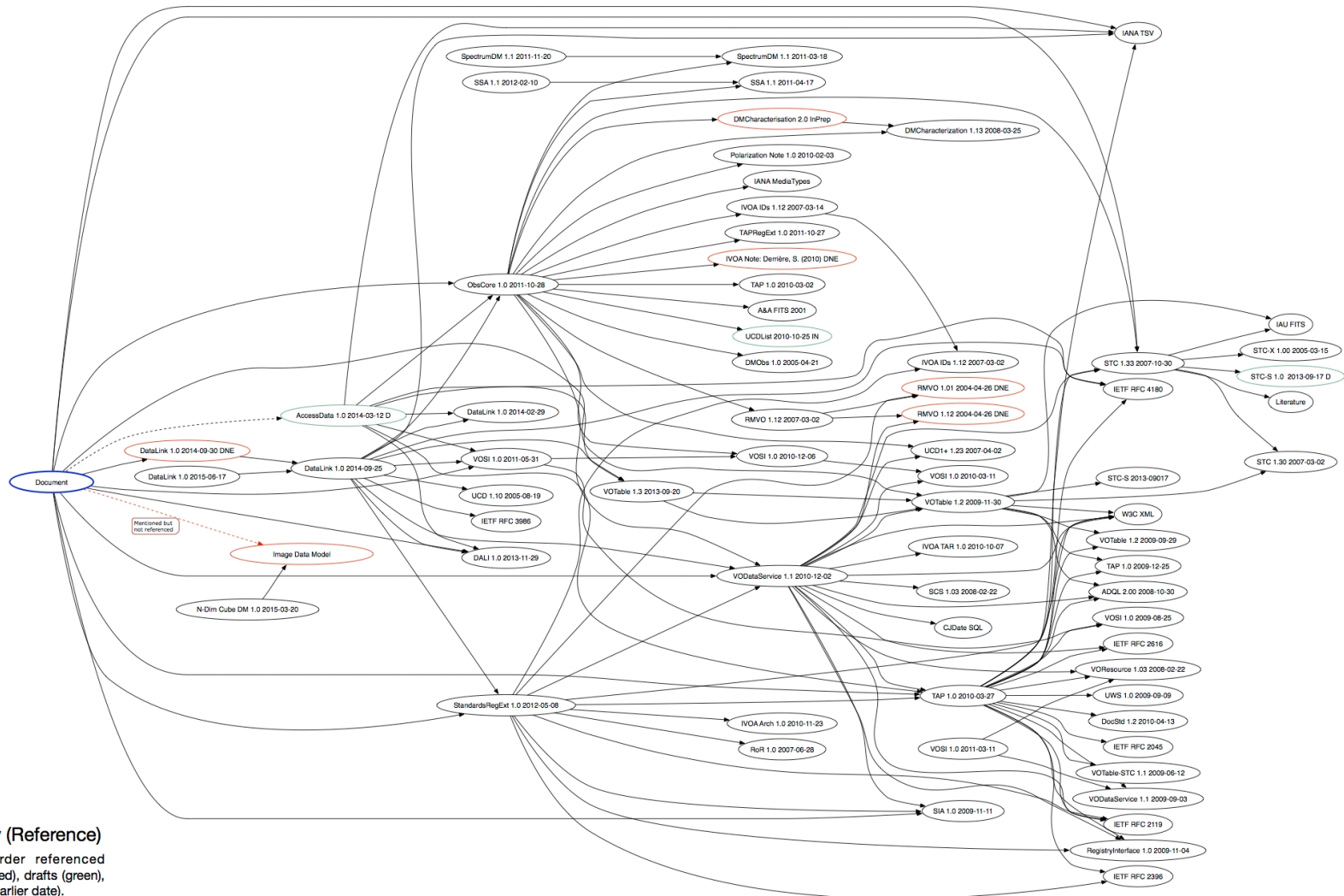
NED's Image Archive and Current SIA Service

- The NASA/IPAC Extragalactic Database (NED) provides a large archive of FITS images spanning a wide variety of telescopes, instruments, and spectral regions ranging from X-rays through radio frequencies.
- NED currently provides about 430,000 images with valid WCS FITS header keywords
 - About 20,000 files are hypercubes
 - The content is growing rapidly
- Most of the images were contributed by authors, who wish to share their data, linked to other information in NED.
- All NED images can be queried by object name (target) on the NED interface.
- The subset with valid WCS FITS header keywords can be queried by position using Simple Image Access (SIA v1.0) interface, integrated into a service operated by IRSA.

SIA2 and IVOA Specs

- We evaluated SIA 2.0 2015-07-30 (Proposed Recommendation) as a reference.
- The SIA2 document tree references
 - Multiple instances of the same document
 - Misidentified or missing documents
 - Documents with various levels of maturity (other than Rec)
 - Example: do we use the version/date of VOSI referenced by DataLink, or the version/date referenced by ObsCore? Which one should be referenced by SIA2?
- This complexity presents a barrier to IVOA interoperability

Document Reference Tree



Plan

- In order to proceed, NED plans to suggest to NASA/NAVO an implementation standard based on the available versions of IVOA specifications, including:
- Currently
 - SIAv2 (2015-07-30) (Proposed Recommendation)
 - DALI 1.0 2013-11-29 (Recommendation)
 - AccessData 1.0 2014-03-12 (Working Draft)
 - N-Dimensional Cube Model 1.1 20150320 (Working Draft)
 - DataLink 1.0 20140930 (Proposed Recommendation)
 - Support Interfaces 1.0 20110531 (VOSI) (Recommendation)
 - et al.

Plan

- NED will support an SIA2 image data query service for Data Discovery (returning a list of objects for which metadata is available) constrained by position (POS, a single range or cone), or target name (TARGET, 'Recognized Object Name' in NED parlance).
- Additional query parameters that will be supported in our first SIA2 prototype instance are BAND, SPATRES, FOV, EXPTIME, and TIME.
- The "AccessData" specification requires the filtering, transforms, pixel operations, and functional operations on parts of Images. NED has no current plans to support transforms, pixels operations or functions.

Summary

- The SIA v2 spec (2015-07-30) is an adequate basis for the *query specification* of a NED implementation.
- However, other specifications **necessary to build an operational service** are not all the IVOA “Recommended” level.
- So, NED, coordinating with NAVO, will identify an interim implementation for NED.
- Using an existing architecture from other SIA2 service implementations (e.g., KOA (IPAC) and CAOM (CADDC)) is the most practical approach.
- IVOA document reference complexity is a barrier to interoperability.