Persistent Dataset Identifiers

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Motivation

- This is about ***Astronomical Digital Objects***:
  - Publications – in a wide sense
  - Datasets – in a wide variety of places
  - Information on physical objects – as in NED and SIMBAD
- In order to make them useful they need to be:
  - ***Linked***
  - ***Preserved***
- Linking allows:
  - Searches – Discovery – Analysis
  - and requires:
    - Identifiers

Identifiers

- Articles: bibcodes, DOIs
  - http://adsabs.harvard.edu/abs/2008ApJ...685..919T
  - http://dx.doi.org/10.1086/591019
- Astronomical Objects: SIMBAD, NED
  - http://simbad.harvard.edu/simbad/simid?Name=NAME%20LMC&Ident=%403133169&submit=submit
- Services: IVOA identifiers
  - ivo://CDS.VizieR
- Data Products: IVOA IDs, ADEC IDs, URIs, DOIs?
  - ivo://CDS.VizieR/J/other/APh/26.282
  - Ivo://ADS/Sa.CXO#obs/123
  - http://www.sdss.org/10.1086/317056/tab1

Dataset Identifier Specification

- In 2003, the IVOA adopted a draft for the syntax of IVOA Identifiers:

  ivo://AuthorityID/ResourceKey

  – Both Static and Dynamic Data product support

- Also in 2003, ADEC approved the definition of dataset identifiers, with ADS as naming authority:

  ivo://ADS/FacilityId#PrivateId

  – Properties: unique, permanent, resolvable, verifiable

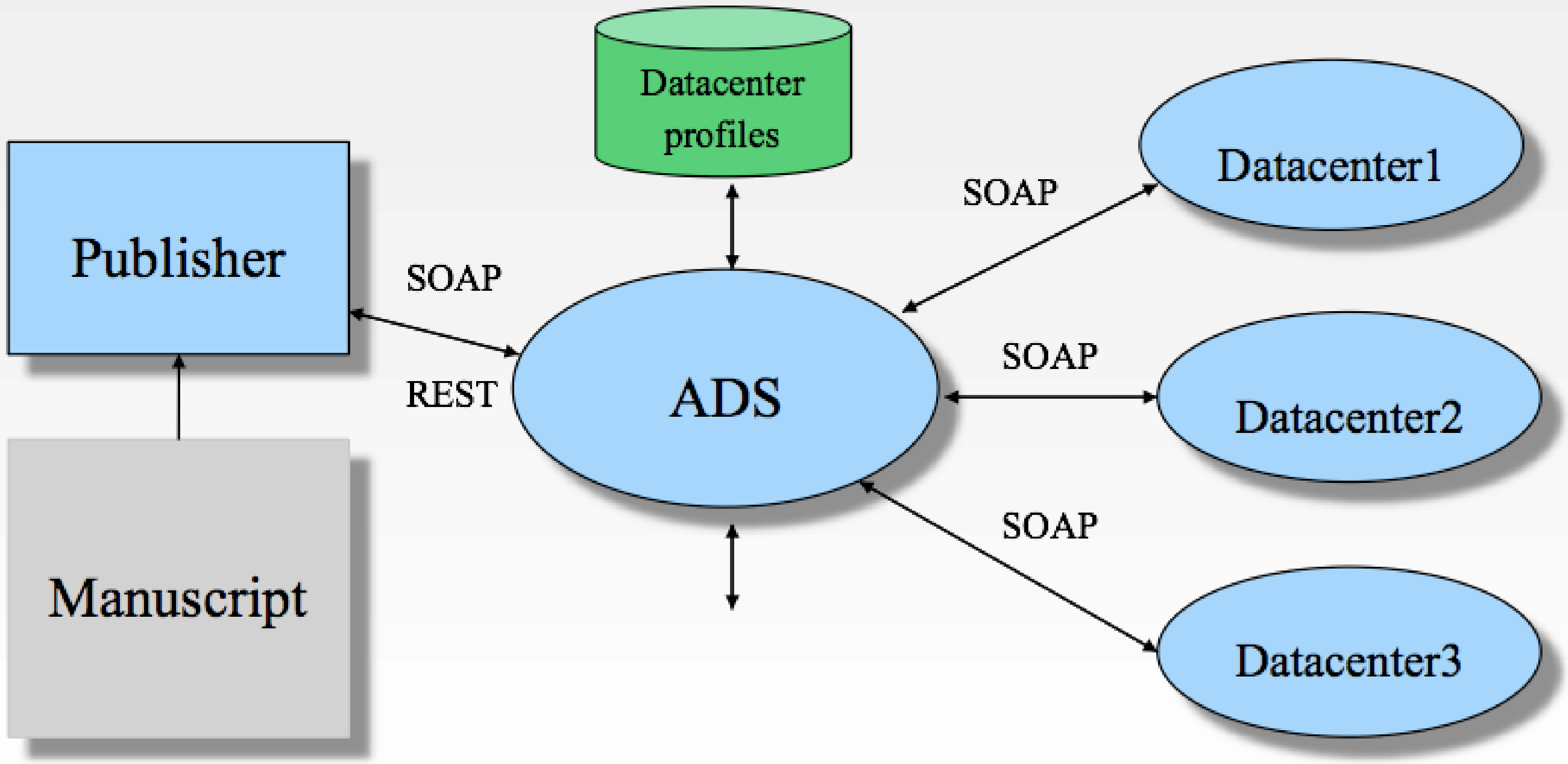
  – Broad range of granularity (at facility’s discretion)

Dataset Identifiers: Examples and Use

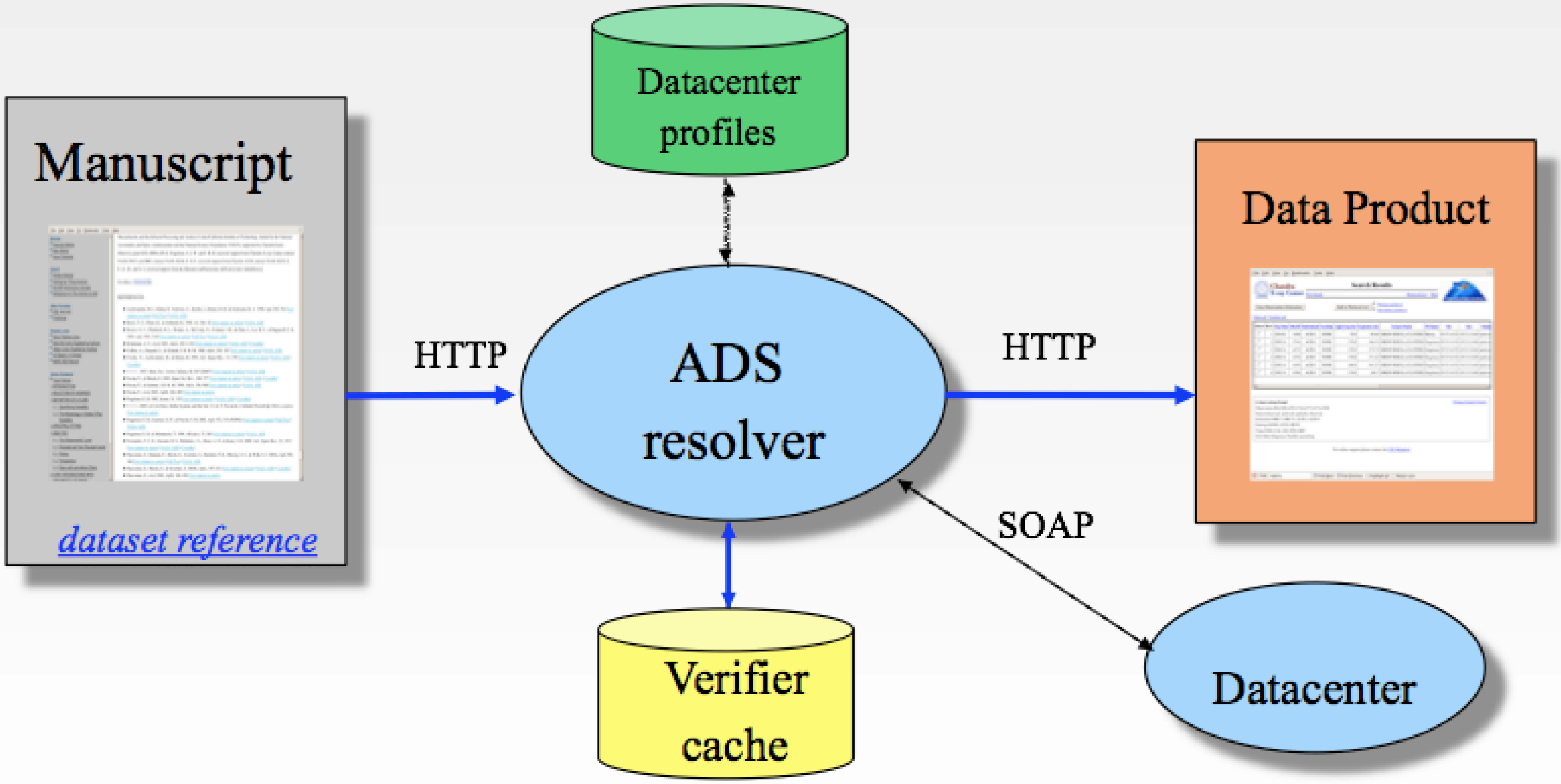
- Observation:
  - ivo://ADS/Sa.CXO#obs/123
- Predefined collection of observations:
  - ivo://ADS/Sa.CXO#DefSet/ChandraDeepFieldN1
- Contributed dataset:
  - ivo://ADS/Sa.CXO#Contrib/2007/MAUG1
- Atlas:
  - ivo://ADS/IRSA.Atlas#2006/0701/121559_24406

- Usage:
  - In 2004, ApJ introduces the capability to reference datasets in manuscripts
  - Tagging and verification of datasets during editorial process

Current Implementation



Linking


Datacenter profiles
Manuscript
dataset reference
HTTP
ADS resolver
HTTP
Data Product
SOAP
Verifier cache
Datacenter

Lessons Learned

- It works and works well when used
- It has been crucial in a prototype semantic browser
- But only NASA data centers participate
- Issues:
  - Requires commitment from archives
  - Requires effort from authors, editors, and archives
  - No stick for data centers
  - No carrot for authors and editors
  - Not enough community buy-in
  - No silver bullet for curators – still a lot of manual labor

Persistent IDs in Digital Library World

- Permanent URLs (PURLs - OCLC)
- Handles (CNRI)
- Digital Object Identifiers (DOI)
- Archival Resource Keys (ARKs)
- EZIDs

Why “ADS” Dataset Identifiers?

- We need something that works now
- And guarantees these properties:
  - Unique
  - Verifiable
  - Persistent – in perpetuity
  - Covers all types of research items:
    data products, articles, objects, services
  - Leads unambiguously to dataset
  - Allows facilities flexibility in the definition of its private keys
  - Does not require version specification
- The *ADS* Naming Authority in
  ivo://ADS/<facilityID>#<privateID>
  per definition implies these requirements

Next Steps

- A repository for data products that need to be preserved
  - Data from projects and facilities that have a limited lifespan
  - Data behind plots, images, tables in articles that are not being preserved elsewhere
  - Anything else that is quoted in the literature or worth to be preserved
- A registry specifically for Dataset Identifiers
  - ADS serves *de facto* as such a registry, but it should be designed and implemented properly

Securing Long-term Stability

- This does not preclude a future change to, e.g., DOIs (bibcodes and DOIs coexist peacefully)
- A registry that can resolve Dataset Identifiers can also translate them
- The important issue is to design and implement the role of Dataset Identifiers such that all essential requirements are met; that will safeguard future development
- The ADEC Dataset Identifier specification (including its requirements on the facilities) satisfies this requirement