Integrating the IA2 astronomical archive in the VO: the VO-Dance engine.

Virtual Observatory (VO) protocols and standards are getting mature and the astronomical community asks for astrophysical data to be easily reachable. This means data centers have to intensify their efforts to provide the data they manage not only through proprietary portals and services but also through interoperable resources developed on the basis of the IVOA (International Virtual Observatory Alliance) recommendations. Here we present the work and ideas developed at the IA2 (Italian Astronomical Archive) data center hosted by the INAF-OATs (Italian Institute for Astrophysics – Trieste Astronomical Observatory) to reach this goal. The core point is the development of an application that from existing DB and archive structures can translate their content to VO compliant resources: VO-Dance (written in Java). This application, in turn, relies on a database (potentially DBMS independent) to store the translation layer information of each resource and auxiliary content (ucds, field names, authorizations, policies, …). The last token is an administrative interface (currently developed using the Django python framework) to allow the data center administrators to set up and maintain resources. This deployment, platform independent, with database and administrative interface highly customizable, means the package, when stable and easily distributable, can be also used by single astronomers or groups to set up their own resources from their public datasets.
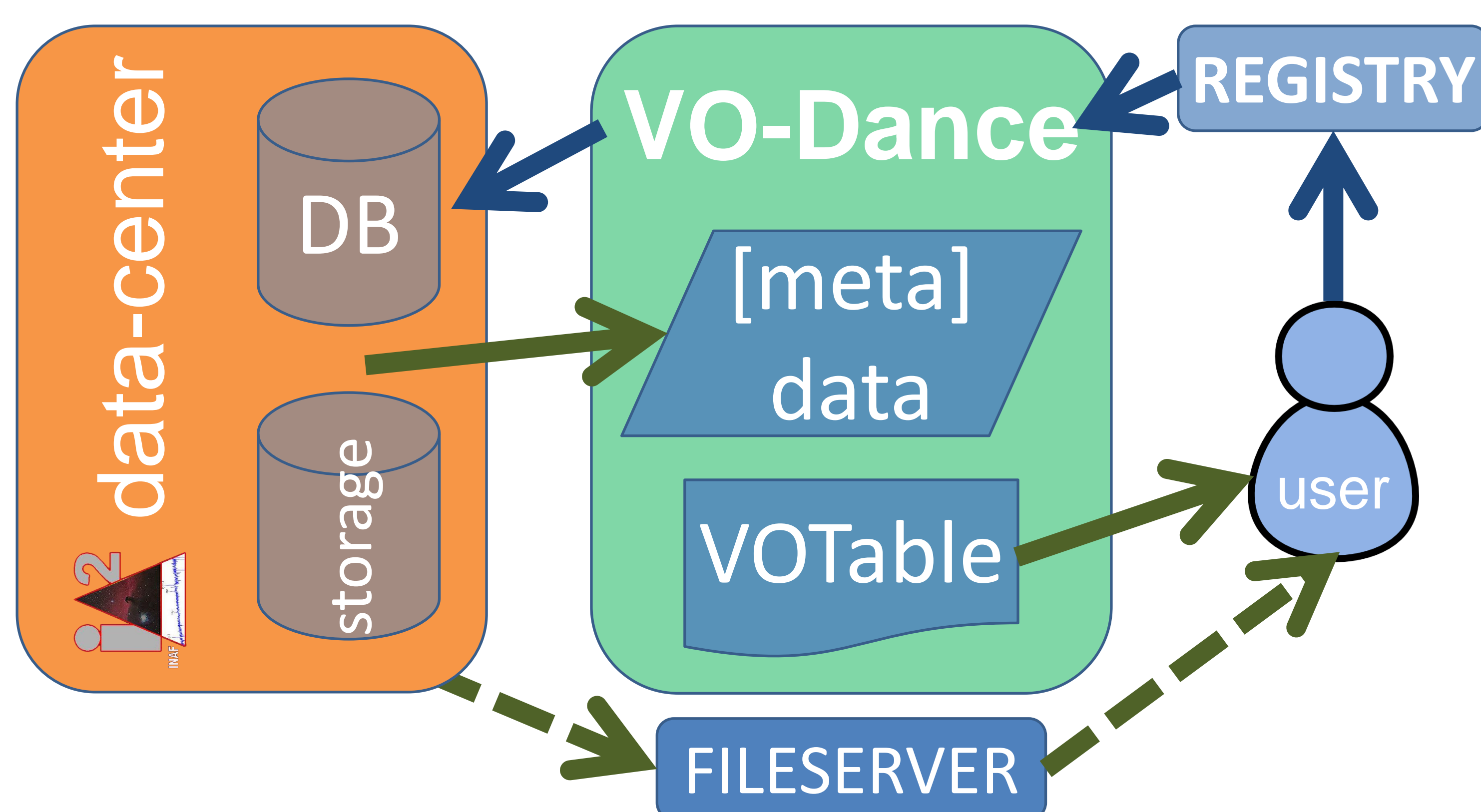
The IA2 data center maintains a set of astrophysical image archives (LBT, TNG and REM data), a theoretical cosmological archive (ITVO) and provides hosting for data of two projects (ULP and ATCG). Besides storage and DB based metadata support IA2 provides also access to the data through dedicated portals and services (it also hosts a mirror of the BaSTI simulated stellar evolution project's portal, which, in turn, was developed by IA2 in collaboration with the INAF-OATeramo). For further information on the data center itself have a look at the poster: Knapic & Smareglia "From LBT to TNG: an easy way to inherit archiving system".

Since IA2 considers serving public data through VO protocols and standards an effective way to foster astrophysical research, then a tool has been developed to allow easy and fast VO resources publishing: VO-Dance. This web application plays the role of a transformation layer between the data center architecture and the VO compliant requests by the user. This is performed exposing resources' endpoints (each service has a unique endpoint) that catch the query, translates it to an archive understandable request, retrieves the results (in the form of metadata or data) and finally serves them in VO compliant form to the user. Eventually (on user's request, based upon the VOTable output) data is served to the user by a FileServer application (independent from VO-Dance). The VO-Dance structure itself (see below) helps also IA2 to host external data archive and databases (once remote access in granted) transferring them to the VO world in an easy way.

VO-Dance application is composed by:
- Java web application: the engine;
- Internal DB: translation information repository;
- Administration interface

and is (fairly) platform and DBMS independent (both for internal and archive DB). At present IA2 data center uses VO-Dance to serve MySQL and Oracle stored metadata.

The application can run on a server different both from the DB server's one and the storage's one. An example is the TIRGO-ARNICA SIAP resource which DB is located in Trieste and the storage in Arcetri (Firenze).

At present it serves **SIAP** and **Cone Search** resources, the **SSAP** capability will be present in the release planned for December 2011, and **TAP** will be the next protocol to be integrated in the system.

IA2 deployed 19 VO resources using VO-Dance:
- 4 SIAP services:
  - 3 TNG imaging services (OIG, NICS and LRS instruments)
  - 1 TIRGO/ARNICA IR imaging archive
- 15 Cone Search services:
  - 11 for the ERCSC Planck data release
  - 4 from phot.redshifts for candidates QSOs and phot. galaxies

http://ia2.oats.inaf.it ☞ VO-Dance

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