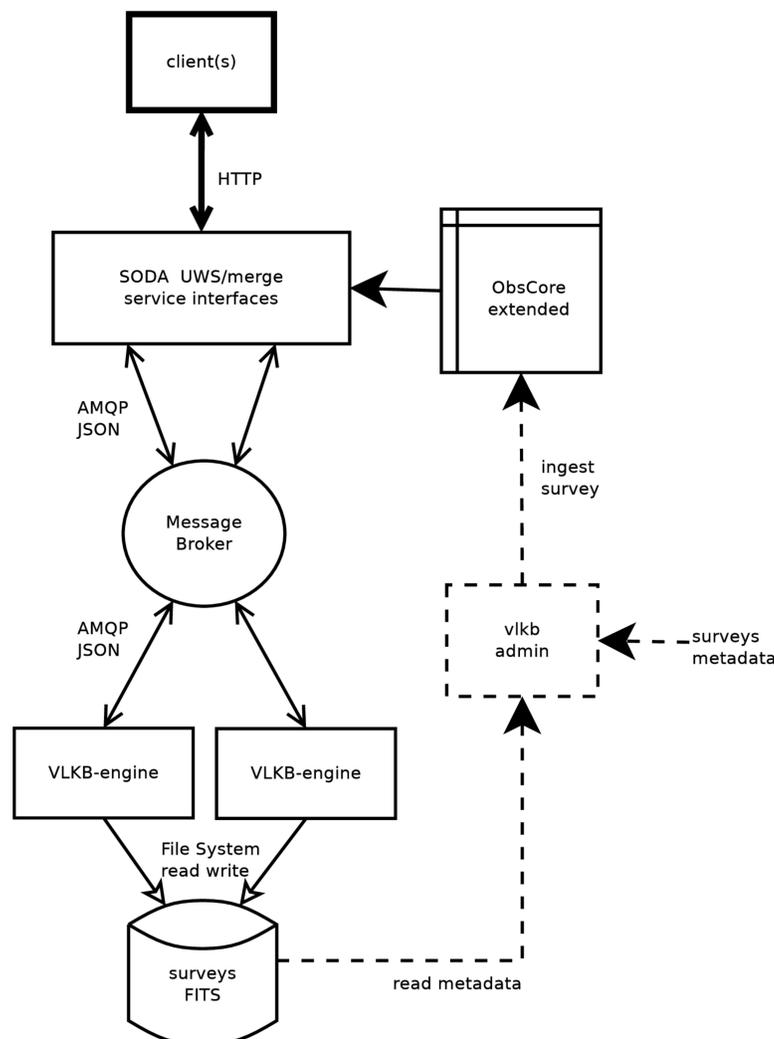


VLKB dataset-access services

Via **L**actea **K**nowledge **B**ase stores data-sets of Galactic surveys taken on different molecular lines with the aim to provide unified access.

- * *Client(s)* access data-sets through HTTP
- * *Service API's*: SODA, UWS-merge (demosaic)
- * Actual computations in *VLKB-engine(s)*
- * *Message Broker* cross-connects engine(s) & interface
- * Survey's metadata in *ObsCore table* in DBMS
- * *Surveys' FITS-files* in persistent storage



New Survey added through *vlkb-admin* console: becomes accessible after ObsCore table is updated.

SODA

Data access to reduce network load by returning only the requested slice of the FITS HDU data. The request identifies the HDU of interest (ID) and a sky-area (CIRCLE POLYGON) and optionally spectrum (BAND) in WCS coordinates.

Parameter	Support	Multiplicity
ID	Mandatory	allowed
POS	Not supported	-
CIRCLE POLYGON	Mandatory	no
BAND	Optional	no
TIME	Not supported	-
POL	Not supported	-

Sky and spectrum coordinate system conversions apply:

- * VLKB: GALACTIC, Velocity in LSRK frame
 - * SODA: ICRS, Wave in Barycentric frame
- FITS header must contain all keys needed for *conversions* (incl. spectral axis).
 Conversions, overlaps are computed by AST-library.

Technologies

- Client(s): VisIVO desktop client for VLKB
- Service-API: J2EE servlets, filters, VOLLT/UWS library
- Messaging: AMQP, RabbitMQ, rabbitmq-c library
- VLKB-engine(s): AST-library, Montage package
- DBMS: PostgreSQL with pgSphere
- Cloud: GARR
- Authorization: OAuth2/OIDC deployed at:
 - * IA2 proprietary, GMS
 - * NEANIAS A&A (Klockwork)

UWS for merge

VLKB-merge (demosaicing) service combines data from two or more FITS files, if data are

- * taken from adjacent regions of the sky
- * from the same survey, molecular line and transition.

This is a proprietary service, not standardized by **Virtual Observatory** specifications.

However, computation typically takes too much time for synchronous access, we apply VO's UWS specification providing asynchronous interface.

Parametrization is three-fold:

- * UWS job related parameters (VO standard)
- * mandatory triple [survey, species, transition]
- * sky, spectrum region definitions (like in SODA)

Computational engines, which execute Montage modules, can be added /removed to adjust to the throughput.

Authorization

Token-based OAuth2/OIDC supported. Client(s) authentication provided by deployment site's infrastructure. VLKB-services interface the site's A&A by configurable J2EE filter modules.

Authorization information: PUBLIC | PRIVATE with groups
 Granularity is one FITS-HDU (extends ObsCore table):

- * FITS-HDU has assigned group(s) for access
 - * Authenticated user belongs to group(s)
- Access is granted if User & HDU group lists overlap.

The legacy VLKB-services deployed against

- * NEANIAS A&A
- * IA2 site A&A

will be updated with VO-standardized interfaces.