



Technologies & Infrastructures

L. Bourgès, G. Mella

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Technologies, languages & libraries

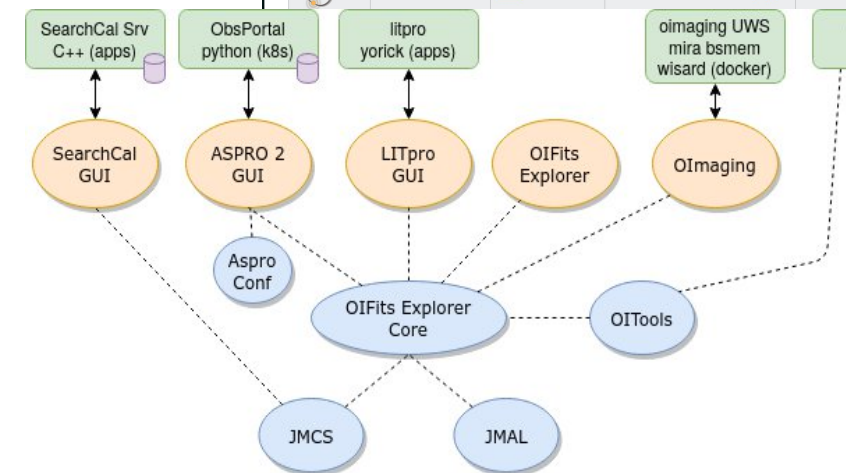
<https://releases.jmmc.fr/index.html>

- **Java**
 - Aspro2 (Swing UI, JFreeChart, JAXB, XML)
 - SearchCal, OIFitsExplorer, LITpro, OImaging (jMCS)
- **Python**
 - A2P2 (p2api eso, catalog api), GPAO strehl
 - ObsPortal (pyramid, sql alchemy, astropy, pyvo)
- **C/C++**
 - GetStar & SearchCal services
- **Web / eXistDB** (XML database & xquery server)
 - OiDB, OiVal, searchFTT services & release page
- **Scientific codes**
 - IDL (actually GDL) (jmdc fit, wisard), C (bsmem, alx), Yorick (litpro, mira), Fortran (gdl build, old procedures)
- Many other tools & scripts (doc, cron, sync, stats...)

JMMC's applications and services releases

Please find below public and beta application links to run our Web, Python or Java applications (JAR or JavaWebStart), get release notes, credits, details...

	Application	Release page	Version	Release date
Java applications				
	AppLauncher	public beta	1.1.9 1.1.10 beta 1	info jar info jar 2023-01-03T15:08 2023-01-02T15:39
	Aspro2	public beta	24.09.1 24.10 beta 1	info jar info jar 2024-10-03T12:54 2024-10-10T13:42
	LITpro	public beta	1.3.1 1.3.1 beta 1	info jar info jar 2023-08-22T11:32 2023-06-21T14:40
	OIFitsExplorer	public beta	0.5.6 0.5.6 beta 1	info jar info jar 2024-10-03T14:04 2024-10-03T13:50
	OImaging	public beta	1.0.6 1.0.6 beta 4	info jar info jar 2024-10-03T14:06 2024-10-03T13:52
	SearchCal	public beta	5.1.7 6.0.0 beta 1	info jar info jar 2024-04-09T09:11 2024-10-10T13:31



Don't reinvent the wheel!

Reuse IVOA standards, tools & libraries

- To handle client / server communication:
 - TAP: Table Access Protocol (OiDB, ObsPortal, SearchFTT, Spica-DB)
 - UWS: Universal Worker Service (OImaging)Rely on TAP Library / [Vollt](#)
- To manage target / calibrator lists
 - VOTable ^[1.2] (Aspro2, SearchCal, SearchFTT & OiDB)
- To exchange target lists, fits images, OIFits files or models between user apps
 - SAMP (java apps & OiDB)

=> IVOA provides a huge and standardized framework for interoperability:

Many open-source implementations available (unmaintained?) to easily deal with VO data & services in JMMC services !

JMMC service overview



AMHRA

Real time astrophysical models

- Kinematics Be disk
- Envelop star (IRS, A6B)
- Binary spiral model
- Analytical limb-darkening Elliptical or Spherical - ALDES

SearchCal

1) Instrumental Configuration 2) Science Object 3) SearchCal Parameters

Found Calibrators

ID	RA	DEC	RA2000	DEC2000	mag	mag_err
1	0.86	23630	03 49 29.04	+24 06 18.5	0.0010	-0.0020
2	0.46	23450	03 49 29.24	+24 02 12.3	0.714	0.034
3	0.46	23450	03 45 39.61	+24 22 03.9	0.936	0.036
4	0.595	23302	03 44 52.54	+24 06 48.0	0.71	0.035

Reduce data

- amdlib
- pndrs

Aspro2

Main settings

Targets: VLT UT1 UT14, HD 1234, HD 1234

Map: VLTI Period 88 - AMBER - A1 G3 E3 Day: 2011-10-15 - Source: HD1234

Prepare Observations

SearchFTT

Gravitty vector: Reddy off, use: Fourier transform.

OIFits Explorer

View Data

VLTI - GRAVITY [1.990 μm - 2.450 μm] - AO-G1-J2-K0 Day: 2016-10-07 09:30:45 - Source: MYSTERYYY



LITPro

Fit Models

Parameters table:

Name	Type	Units	Value	Min	Max	Constraint	Scale	Representation
background	float		0.0					
disk	float		0.0					
disk_BB	float		0.0					
disk_color	float		0.0					
along_dist	float		0.0					
strong_question	float		0.0					

CDS Catalogs

JMJC Stellar Database Catalogue - 200C version 3 (Bouvier - 2007) Tables

Search Criteria

Query by Constraints & applied on Columns (Open Query)

25 rows max. per page, sorted by Instrument descending

Search Data

Filters

Position: alpha cen Radius

Date of observation: after YYYY-MM-DD before YYYY-MM-DD

Instrument: Any Instrument Wavelength range: any value

Collection: Any Collection DataPI name: Any DataPI

Data reduction level: 0, 1, 2, 3 Availability: Public Restricted All

Results

Meta-data will try to follow VO40I proposal and use OI_DB as description in the associated doc

19 observations from 19 offsets files (10 private)

Olmaging

Reconstruct Images

Parameters table:

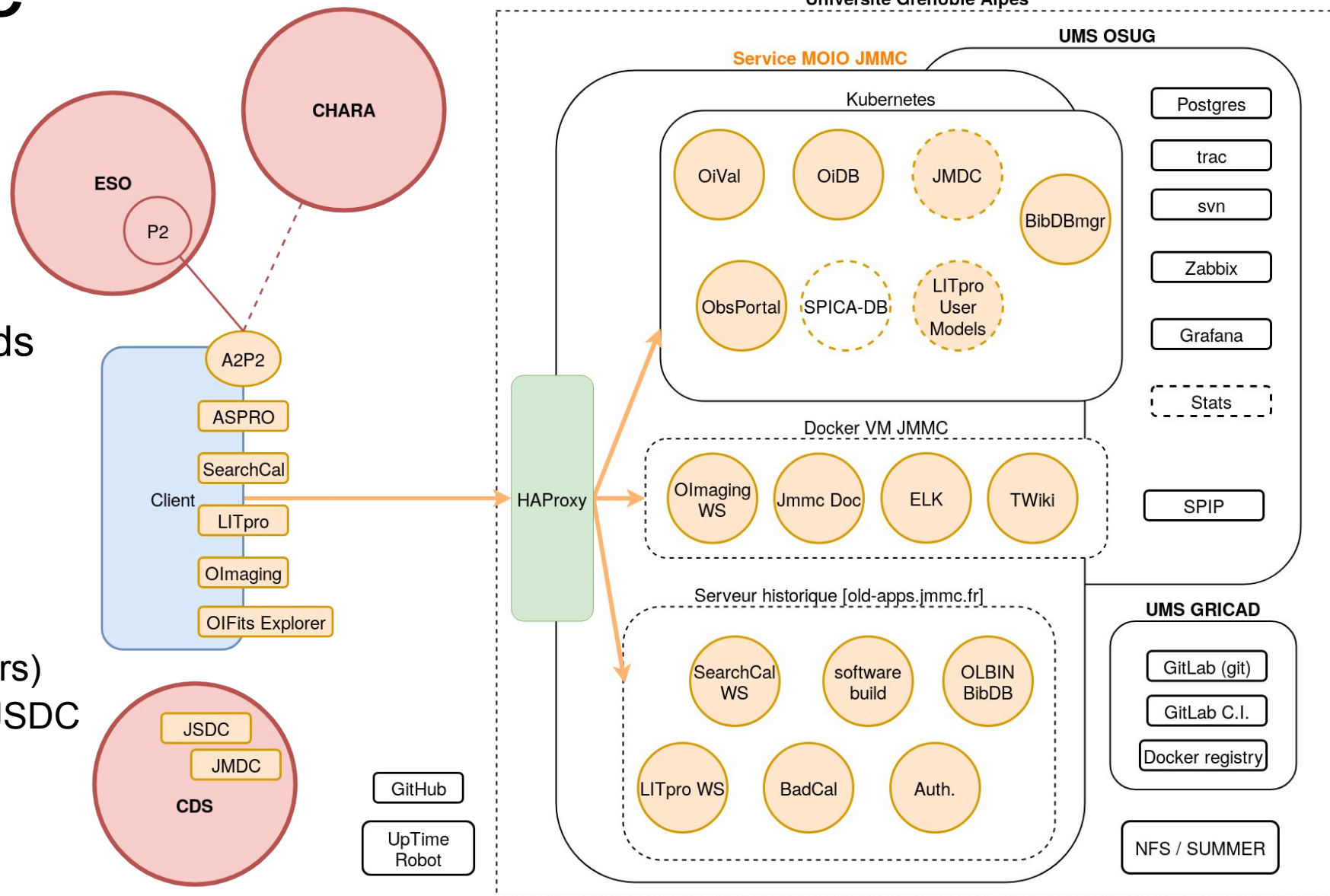
Name	Type	Units	Value	Min	Max	Constraint	Scale	Representation
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disk_color	float		0.0					
along_dist	float		0.0					
strong_question	float		0.0					

JMMC platform infrastructure

- Network and data centers greatly hosted, thanks to UGA, OSUG & OCA
- 2002: Self-administrated server deployed (devops engineers)
- 2009: Leave bare metal to adopt Virtual Machines (proxmox)
- 2015: Migrate from 1 fat monolithic VM to docker containers (HA fail-over)
Few critical services not yet migrated due to lack of manpower!
- 2019: Adopt kubernetes (K8S OSUG) for new services
 - reliable : liveness probes / standard deployment recipes
 - configurable : kustomize overlays (beta <=> public, blue-green modes)
 - extensible : looking forward using automatic scalability to handle intensive scientific analysis !
- 2024: still lot of old services to maintain & migrate in the JMMC platform...

Infrastructure @OSUG

- Datastore : 2 TB
- HAProxy : ~ 50 backends
- 6 VMs
 - 8 containers
- 15 pods K8S
- Databases :
 - 5 postgres databases (OSUG) + 1 mysql (users)
 - New SPICA, JMDC & JSDC catalogs stored on the shared postgres server



Infrastructure @OCA

MesoCentre SIGAMM

- Services AMHRA
- SUV node:
 - GRAVITY pipeline
 - MATISSE pipeline
- Services SPICA
 - Linked with ObsPortal & OiDB services
 - JMMC web accounts

AMHRA
Analysis and Modeling at High Angular Resolution
Principal investigator: Armando Domiciano

AMHRA develops and provides online astrophysical models and data analysis tools dedicated to the scientific exploitation of high angular and high spectral facilities such as ESO-VLT. It is aimed at users seeking to prepare, model, and analyze interferometric observations, notably those from the second generation of VLT instruments, GRAVITY and MATISSE, with unprecedented capabilities on high spectral and spatial resolution.

AMHRA provides:

- Polychromatic images from astrophysical models with fast computation time (real time models)
- Polychromatic images from a precalculated grid of astrophysical models
- Spectro-interferometric observables from model images (OIFits modeler)
- Analysis and model-fitting tools for spectro-interferometry

This service was initially published under the name "Analyse et Modélisation en Haute Résolution Angulaire".

AMHRA is a working group of MOIO/JMMC and is supported by the Observatoire de la Côte d'Azur (OCA) through the DOMINO expertise center. MOIO is a French AA-AN05 SNO supported by CNRS-INSU.



SPICA DFQS Home Catalogs About Contact

Hello, thiellement! Logout

Catalogs - SPICA DFQS

Welcome, thiellement!

PI Names You Can Modify:
domiciano jorak

Catalog prefixes you can modify:
spica_test

Choose a catalog:
spica_test_2023_06_07

Fetch Data

Data Table

show 10 entries Search:

Action	spicadb_id	target_main_id	piname	progname	comments	piname2	progname2	cor
Modify	14	" 2: Pup B	jorak	S06	HD 62863 / EB* / another star ~15as / separation 0.5mas / components diam 0.17 and 0.17mas	None	None	
Modify	79	" 1: Cast	domiciano	S07	HD 108283 / SpType=F1IV.npS_sh / angdiam=0.53 mas / vsini=201.0 km/s	None	None	
Modify	89	" 5: Pup	domiciano	S07	HD 17584 / SpType=F2III / angdiam=0.83 mas / vsini=137.0 km/s	None	None	
Modify	90	" 17: Pup	jorak	S06	HD 34364 / EB* / separation 0.6mas / components diam 0.12 and 0.12mas	None	None	

Development forges

- Few legacy codes still hosted @ svn.jmmc.fr
- Infrastructure projects & services @ <https://gricad-gitlab.univ-grenoble-alpes.fr/OSUG/JMMC>
 - Continuous Integration => docker images
 - 23 repositories
- Open-Source migration mostly finished @ <https://github.com/JMMC-OpenDev>
 - JMMC-OpenDev organization created on 2014
 - All java modules on GitHub since 2021.06
 - Last 'opened' project: SearchCal server 2024.06
 - 55 repositories
- Trac ticketing system: public web form + internal access
 - Automatic bug report and User support

Perspectives

- Relocate few important services onto new maintainable servers:
 - User accounts management (mysql db + http API)
 - Java application build & packaging
- Follow OSUG's cluster strategy:
 - Move remaining services & docker instances from VMs to Pods
 - SearchCal is currently leaving our outdated app server ! => new docker image instantiated on 'fatmem' nodes (8gb min)
- Finalize the infrastructure migration:
 - Decommission useless, legacy & deprecated services
 - Upgrade / refactor / repackaging old but mandatory scientific services

JMMC

Questions ?