

CHARA Meeting 2017
2017/03/14 - Pasadena

Service Status & Perspectives

Laurent Bourgès – Guillaume Mella – Gilles Duvert

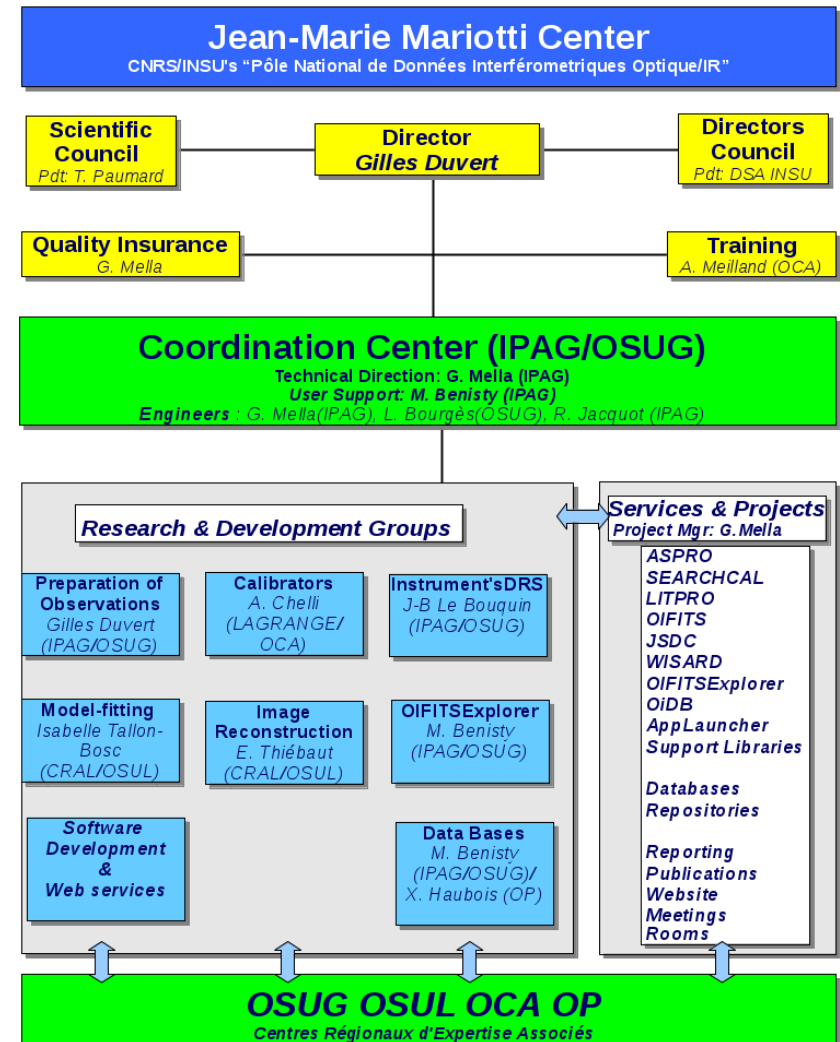
REF: JMMC-PRE-0000-0022

PLAN

- JMMC organisation
 - R&D groups
 - People involved
 - CHARA & ESO collaborations
- Service overview
 - Status
 - Perspectives
- Summary
- Feedback ?

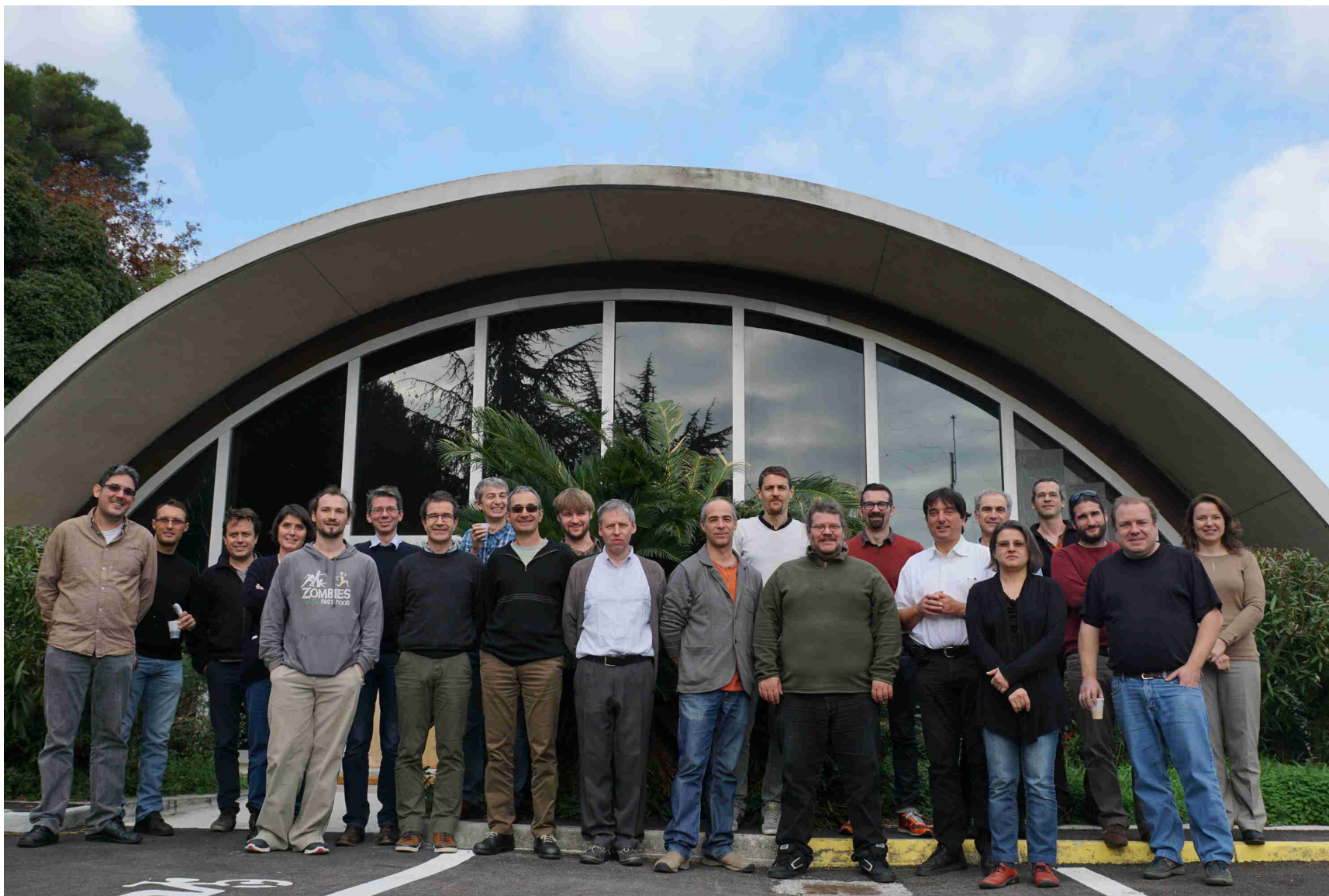
JMMC Organisation

- R&D working groups:
 - ASPRO: the Astronomical Software to PRepare Observations (ASPRO)
 - Catalogue of calibration sources (SearchCal)
 - Instrument Data Reduction Software
 - Model fitting
 - **Image reconstruction**
 - Optical Interferometry Database (OiDB)
 - Technical staff and software developement
- Training / Support



JMMC Organisational Chart 2016

JMMC People



CHARA & ESO collaborations

- No contract but best-effort:
 - CHARA:
 - ASPRO 2 (POPs / Horizon / CHARA & instrument setup)
 - OIDB L0
 - ESO:
 - ASPRO 2: VLTI & instrument setup
 - calibrator catalog
 - OIDB L0
- Improve communication (meetings, contacts)

JMMC Service overview

- Observation Preparation:
 - ASPRO 2
 - SearchCal & JSDC
- Data Processing:
 - Amdlib (VLT AMBER), PNDRS (VLT PIONIER)
 - OIFits Explorer
- Data Analysis:
 - Model fitting: LITpro
 - Image reconstruction: **Oimaging** (mira / wizard / bsmem)
- Databases: OIDB, OLBIN BibDb

ASPRO 2

- 2016:
 - Export OB (GRAVITY)
 - Noise modeling & OIFits simulator improvements (MATISSE): [see SPIE 2016](#)
 - Enhanced OIFits viewer
- Future:
 - OB: ESO VOT4 integration / simplify VEGA StarList (to CHARA OB ?)
 - Group meeting needed
 - Import / export generic OBs
 - Observation strategies (groups, labels, priority)
 - Large-Program handling (tags, merge target lists)



SearchCal / JSDC 2

- 2014-2016:
 - Huge effort on theoretical approach: JMDC / JSDC: [see Chelli \(2016A&A...589A.112C\)](#)
 - JMDC: [Vizier II/345](#) New measurements are welcome !
 - JSDC 2 release: [Vizier II/346](#) (~450 000 stars with SpType)
 - SearchCal Server & GUI upgrade in progress to use the new diameter computation algorithms
- Future:
 - New SearchCal 5.0 release coming soon:
 - use internally JSDC 2 to be faster and more accurate
 - Only JSDC scenario [BVIJHKLMN]
 - New GetStar service

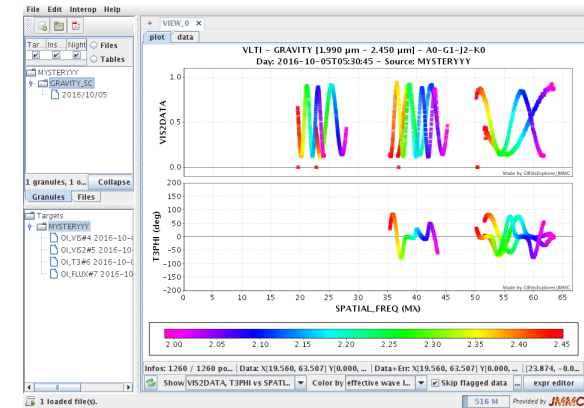
Data reduction software

- 2016:
 - New version of OIFITS format available: OIFITS 2 (Duvert, Young and Hummel 2017, A&A, 597,A8)
- Future:
 - Upgrade amdlib / pndrs / gravity drs to produce OIFITS v2 files ?

OIFits Explorer

- 2016:

- Improved plots (colors, point selection)
- Added OI_Spectrum plot
- Preliminary data view as granules (target / instrument / nights / files)

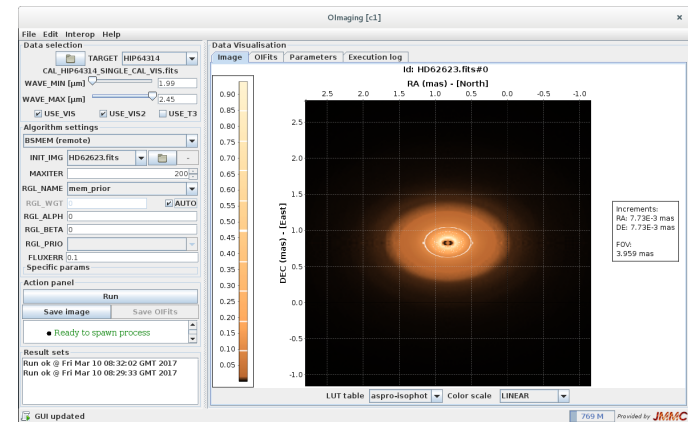
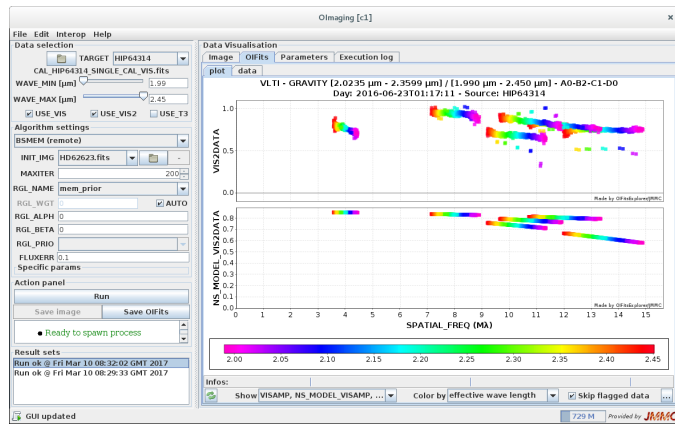


- Future:

- Flag data & export (merged) OIFits files
- OIFits 2 support: upgrade the OITools library (github)
- Re-implement completely the data selection (workspace / dataset / subset) graphically or by using filter criteria
- GUI improvements:
 - Overlay simulated data vs observation data for LITpro / Oimaging

LITpro: [see Isabelle report](#)

- 2015-2016:
 - New Fitter support (gutsy & genetic fitters): global min.
 - User model support (yorick) = replace the present functions by an algebra combining:
 - a set of basic model functions with
 - a set of operators (transforms & filters)
- Future:
 - Improve chi2 map
 - Beta test new fitter implementations
 - Finalize the User model implementation + GUI enhancements + web model function repository
 - OIFits 2 support (OI_SPECTRUM, OI_VIS diff)



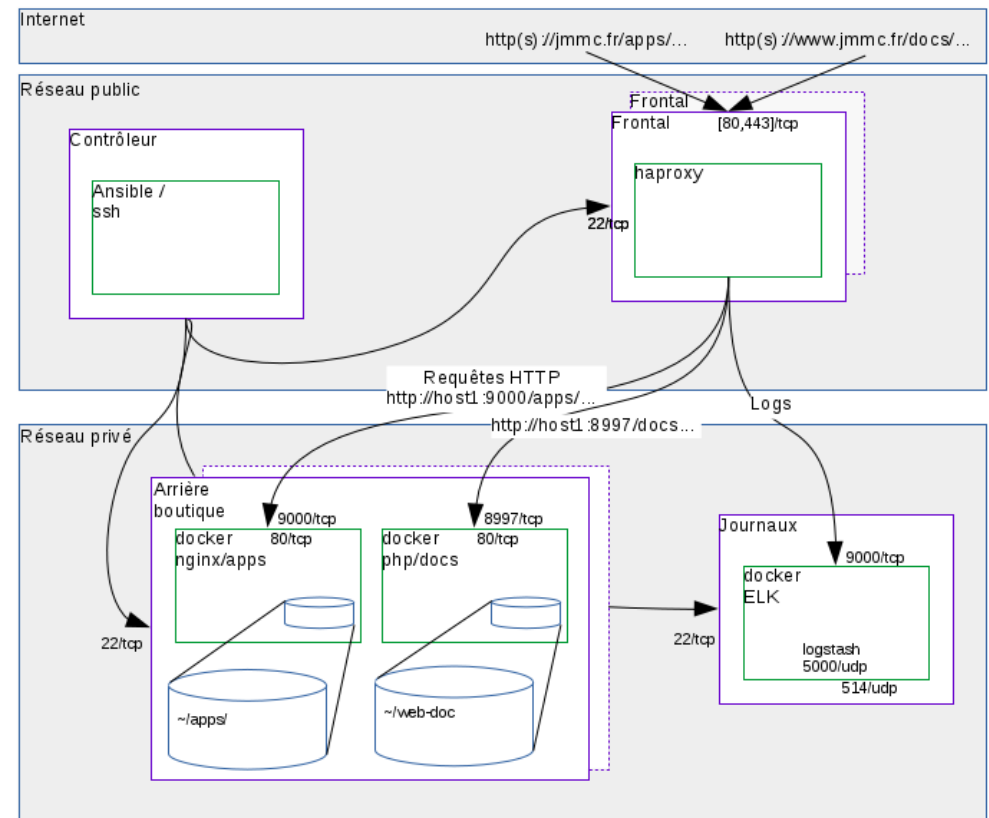
- JRA4 Opticon project initiative = interface + report
 - New Oimaging GUI supporting BSMEM run locally or remotely (JMMC new server with docker images):
 - still in "internal" alpha testing during few weeks
- Future:
 - Beta Release with remote BSMEM / WISARD
 - Improve model vs observation data on OIFits viewer plots
 - Complete list of supported software (mira, irbis, squeeze...)

O₁DB

- 2016:
 - Associate PI from ESO Programs (PIONIER)
 - Added usage statistics
- Future:
 - OIFits QuickView on the web portal
 - Update Observations logs CHARA (L0) automatically ?
 - Import Observations logs ESO VLT1 (L0)
 - Improve exchanges with CDS (A&A...) to better collect published OI data (L3)

JMMC Infrastructure

- Push OSS contributions:
 - OITools ...
- Server upgrades:
 - 1 VM to many VM (micro-services)
 - VMWare + Docker approach
 - Migration in 2017: service by service
 - frontend/backend architecture
 - more modularity = less dependencies, more scalability, more reliability



Summary



VLT



CHARA

Prepare Observations

SearchCal

SearchCal interface showing query parameters and found calibrators.

aspro

aspro interface showing observation configuration and a map of the observation area.

Reduce data
amdlib
pndrs

View Data

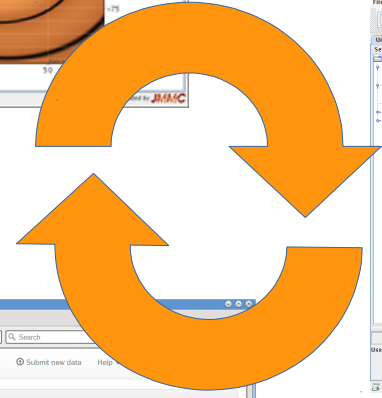
Olexplorer interface showing spectral data plots and target information.

Fit Models

LITPro

LITPro interface showing model fitting parameters and plot settings.

CDS Catalogs



OiDB

OiDB interface showing search filters and results for astronomical observations.

L0 to L3
DataBases

Reconstruct Images

OImaging

OImaging interface showing reconstructed astronomical images.



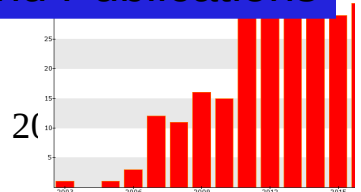
+ Training

+ User Support

+ OLBIN forum
And Publications

JSDC
JMDC

CHARA



Last word...

- Feedback is always welcome !
 - Bug reports
 - Enhancement requests
 - User support

Thank you for your attention