Archivi Astronomici in Italia IA2 e more...

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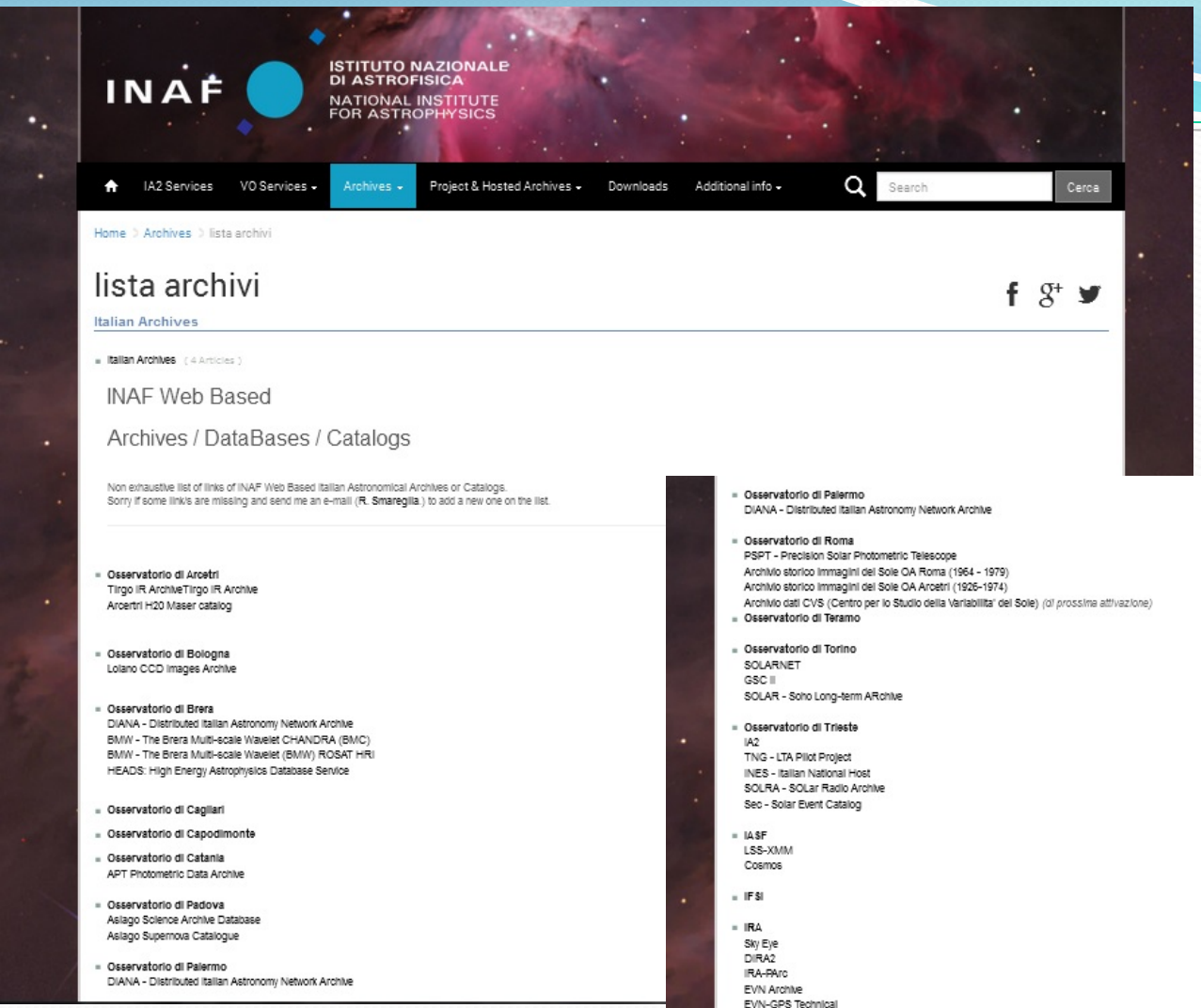
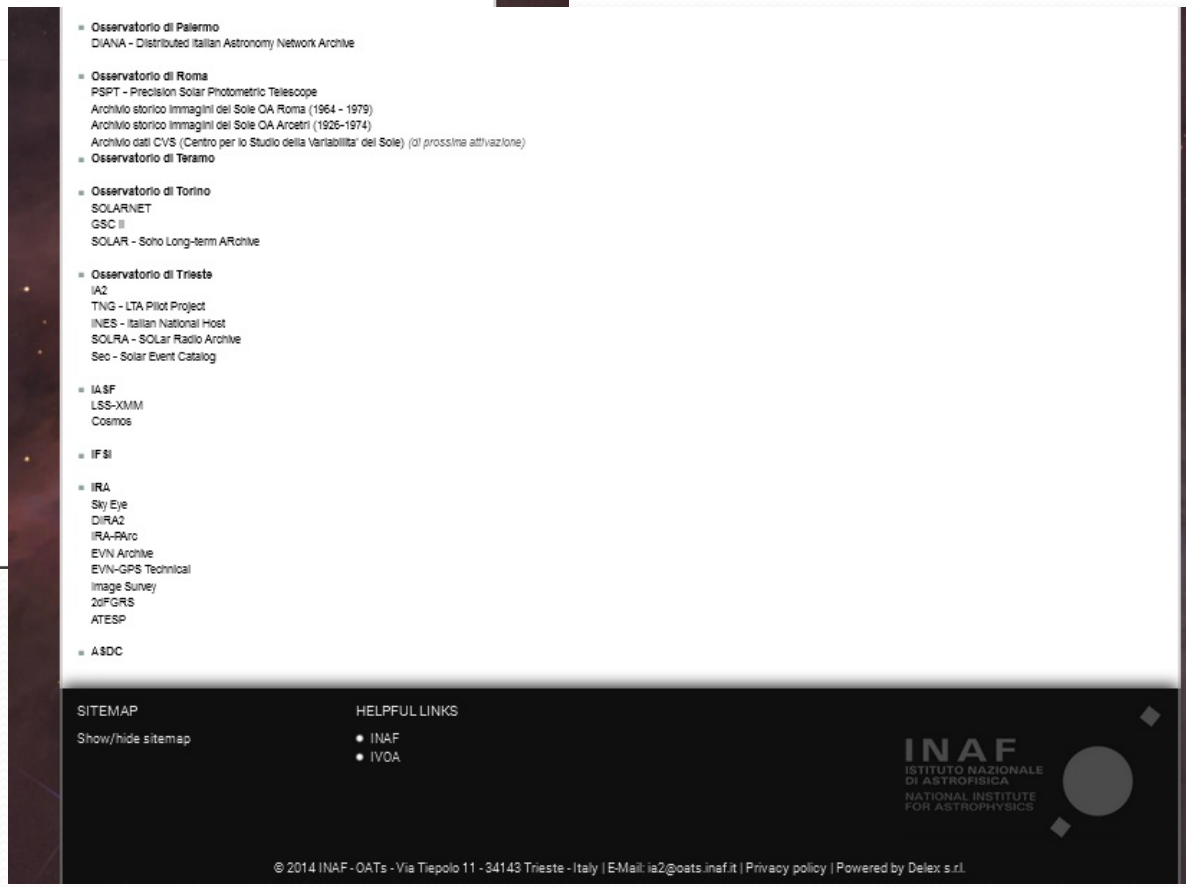
Pula (Cagliari)

Unita' VI-ICT: Questionario CC – Archivi

- Tutte le strutture INAF ospitano archivi
  - In tutto 54 archivi (compresi quelli in sviluppo)
    - 59% pubblici, resto privati o in sviluppo
- Non è particolarmente sentita l'esigenza di avere mirror nazionali di grandi archivi;
- Generale soddisfazione riguardo alle interfacce per accedere agli archivi;
- Il VO non è molto usato;
- Data Curation & Preservation : Non c'è particolare consapevolezza/attenzione al problema della preservazione;
- Lista degli archivi italiani: http://ia2.oats.inaf.it/index.php/italian-archives-mainmenu-70


INAF
ISTITUTO NAZIONALE DI ASTROFISICA
NATIONAL INSTITUTE FOR ASTROPHYSICS
IA2 Services
VO Services
Archives
Project & Hosted Archives
Downloads
Additional info
Search
Cerca
Home
Archives
lista archivi
lista archivi
Italian Archives
Italian Archives (4 Articles)
INAF Web Based
Archives / DataBases / Catalogs
Non exhaustive list of links of INAF Web Based Italian Astronomical Archives or Catalogs.
Sorry if some link/s are missing and send me an e-mail (R. Smaregilia) to add a new one on the list.
Osservatorio di Arcetri
TIrgo IR ArchiveTIrgo IR Archive
Arcetri H20 Maser catalog
Osservatorio di Bologna
Loiano CCD Images Archive
Osservatorio di Brera
DIANA - Distributed Italian Astronomy Network Archive
BMW - The Brera Multi-scale Wavelet CHANDRA (BMC)
BMW - The Brera Multi-scale Wavelet (BMW) ROSAT HRI
HEADS: High Energy Astrophysics Database Service
Osservatorio di Cagliari
Osservatorio di Capodimonte
Osservatorio di Catania
APT Photometric Data Archive
Osservatorio di Padova
Asiago Science Archive Database
Asiago Supernova Catalogue
Osservatorio di Palermo
DIANA - Distributed Italian Astronomy Network Archive


Osservatorio di Palermo
DIANA - Distributed Italian Astronomy Network Archive
Osservatorio di Roma
PSPT - Precision Solar Photometric Telescope
Archivio storico immagini del Sole OA Roma (1964 - 1979)
Archivio storico immagini del Sole OA Arcetri (1926-1974)
Archivio dati CVS (Centro per lo Studio della Variabilita' del Sole) (di prossima attivazione)
Osservatorio di Teramo
Osservatorio di Torino
SOLARNET
GSC II
SOLAR - Soho Long-term ARchive
Osservatorio di Trieste
IA2
TNG - LTA Pilot Project
INES - Italian National Host
SOLRA - SOLar Radio Archive
Sec - Solar Event Catalog
IASF
LSS-XMM
Cosmos
IFSI
IRA
Sky Eye
DIRA2
IRA-PArc
EVN Archive
EVN-GPS Technical
Image Survey
2dFGRS
ATESP
ASDC
SITEMAP
Show/hide sitemap
HELPFUL LINKS
INAF
IVOA
INAF
ISTITUTO NAZIONALE DI ASTROFISICA
NATIONAL INSTITUTE FOR ASTROPHYSICS
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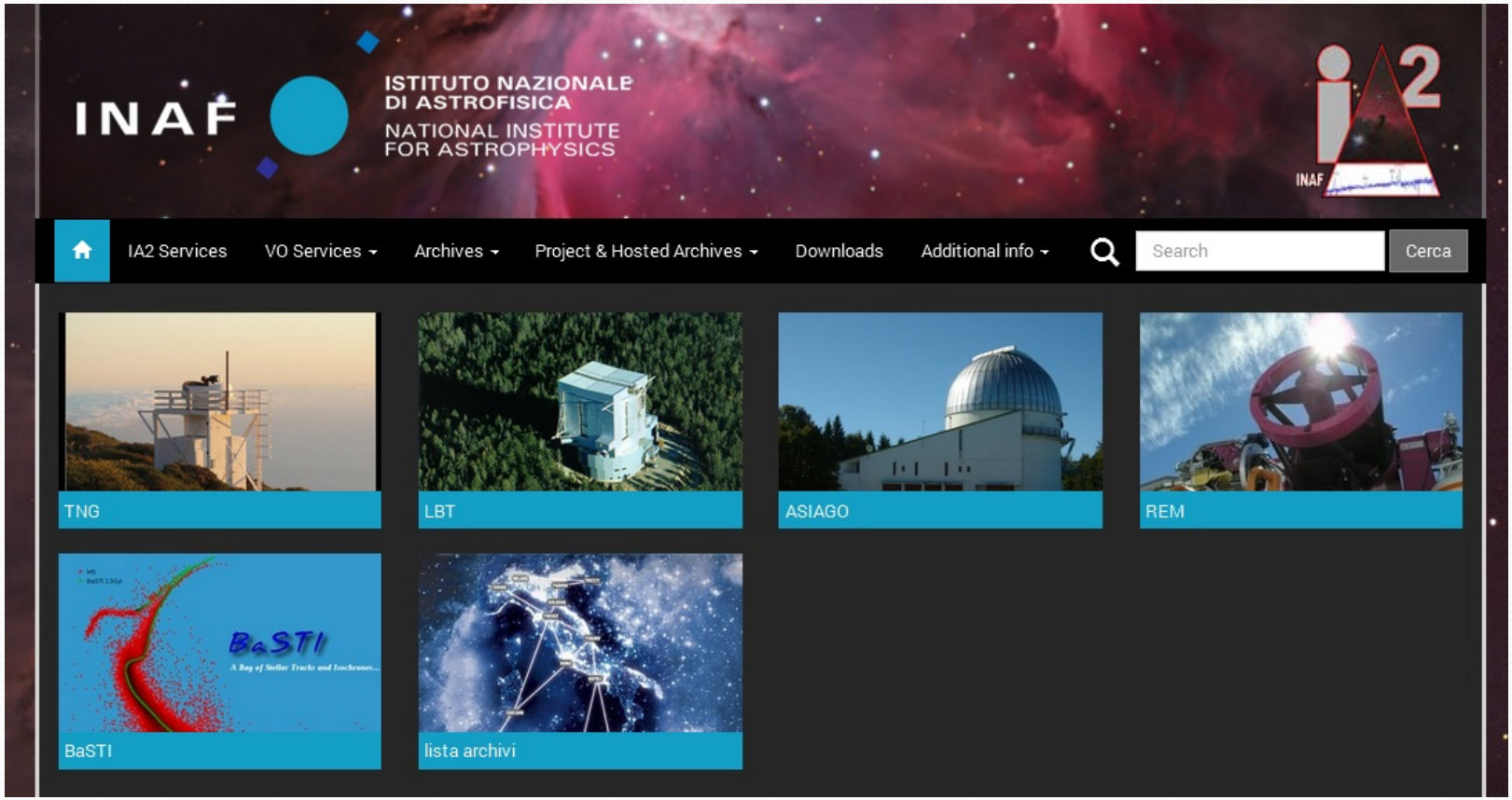
IA2

Centro Italiano Archivi Asrtonomici



Centro Italiano Archivi Astronomici (IA2) main goals are :

- Archiving systems
- safety,
- data curation and preservation,
- distribution over several geographical distributed sites,
- providing services and tools (TWiki, work-flow, etc..)
- data publication in the VO

of *Astronomical Data*

IA2 manages data of several PROJECTS.
Mainly they come from:

- TELESCOPES (raw; INAF ground based)
- SURVEYS (raw and/or calibrated)
- SIMULATIONS (ITVO)

IA2 Projects/Activities

Current status:

Project Name	Project Type	Data Type
LBT ✓✓✓✓	Telescope	image / spectra
TNG ✓✓✓✓	Telescope	image / spectra
GAPS	Survey (TNG)	image / spectra
Asiago ✓✓✓ < 1yr	Telescopes	image / spectra
PESSTO	Survey (NTT)	image / spectra
hosted services		
WGE SDSS redshifts	data mining	catalogue
Planck	early release	catalogue
TIRGO	IR camera	image
WINGS < 1yr	Survey	image / catalogue
INAF-IAPS EPN < 1yr	dust particles (NASA)	catalogue
ITVO	Theoretical Simulation	mixed

Under development:

Project Name	Project Type	Data Type
RADIO	Array/antennas	Images/spectra
SKA.TM.OBSMGT	Observing tools	Meta-data

Add Services/activities:

- Data Hosting:
  Repository of old digitalized book
- Development of FITS standards with Biblioteca Apostolica Vaticana
- VAPE project:
  archive / VO publishing of "astrofili" data
- Via Lactea EU/FP7
- GENIUS (GAIA) EU/FP7
- H2020 ...

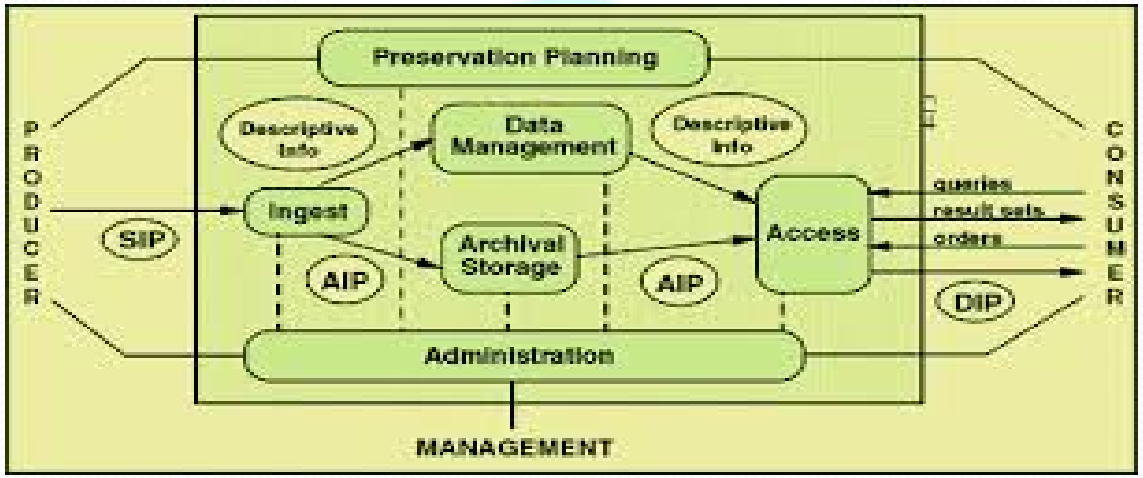
- VO activities

- ICT support

Standards followed

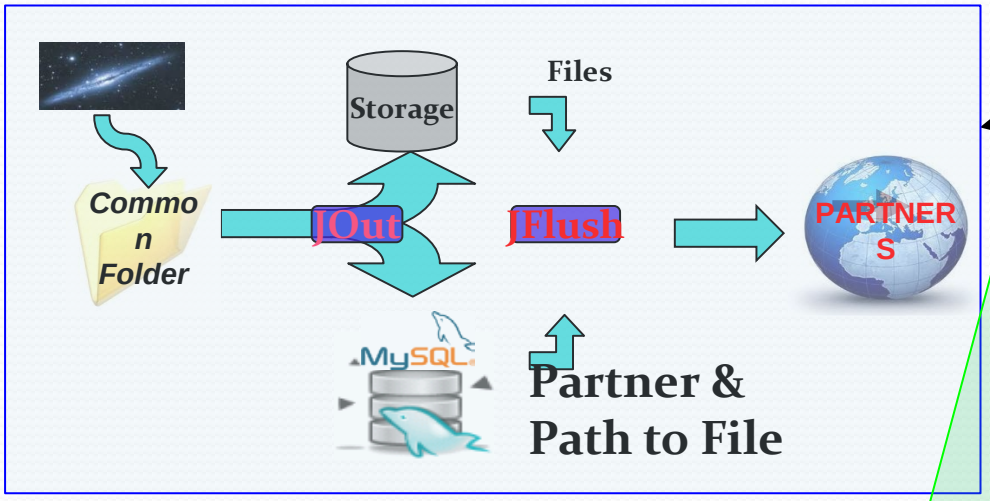
IA2 at the moment manage Astronomical Data mainly in FITS format (Flexible Image Transport System) for images and spectra and GADGET2 for simulations. Current projects implies also the management of Hierarchical FITS and MBFITS formats. IA2 host also survey pipeline and related products and provides support to a survey dedicated TWiki.

- **IA2 archives follows the directives of OAIS (Open Archival Information System) standard**:
  - data are

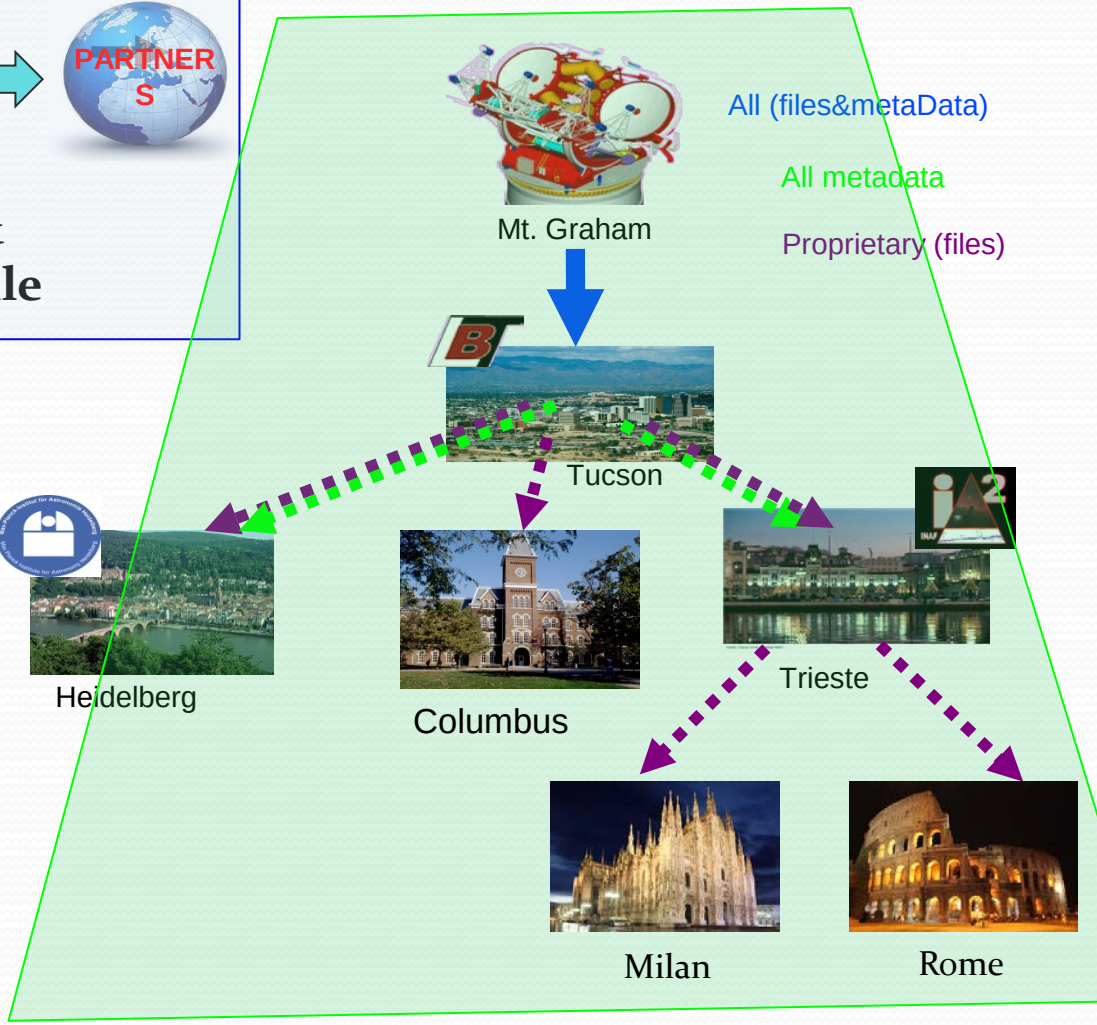


- **IA2 as a service follows the IVOA standards directives** and expose several VO services and several User Interfaces VO compliant.

LBT @ IA2



OAIS standard implementation



Data distribution policy

IA2 Archives new Project:

Internal development: ***NADIR***

Issues to solve:

- Meta-data information could change in:
  - Contents;
  - Format types;
  - Keywords.
- Data formats:
  - Extensive use of ASCII and PH for calibrated data
  - FITS is not the only astronomical format (HDF5, PDS, MBFITS etc..)
  - Standards are evolving

- Consistency in meta-data content both into the file and database in case of value correction
- Data models should be, as much as possible, code independent
- Code re-usability and configurability
- Scalability in both serial and parallel ways
- Consistency over several distributed archives and secure differentiation.

NADIR is one configurable and flexible software that *answer the challenging problem of archiving software reuse and scalability*. It can handle also calibrated data.

NADIR's offered solutions

- Modular software, optimized to be as much as possible flexible;
- Scalability in both serial and parallel data distribution paradigms;
- Handling of calibrated data
- Policy and versions revised easily, in a flexible manner;
- Consistency on geographically distributed archives and secure differentiation in archives content.
- Strong logging and error handling;
- Possibility to correct meta-data content, maintaining consistences across distributed archives;

NADIR Mandatory Requirements:

- **INSTRUMENT;**
- **OBS DATE;**

NADIR functional requirements:

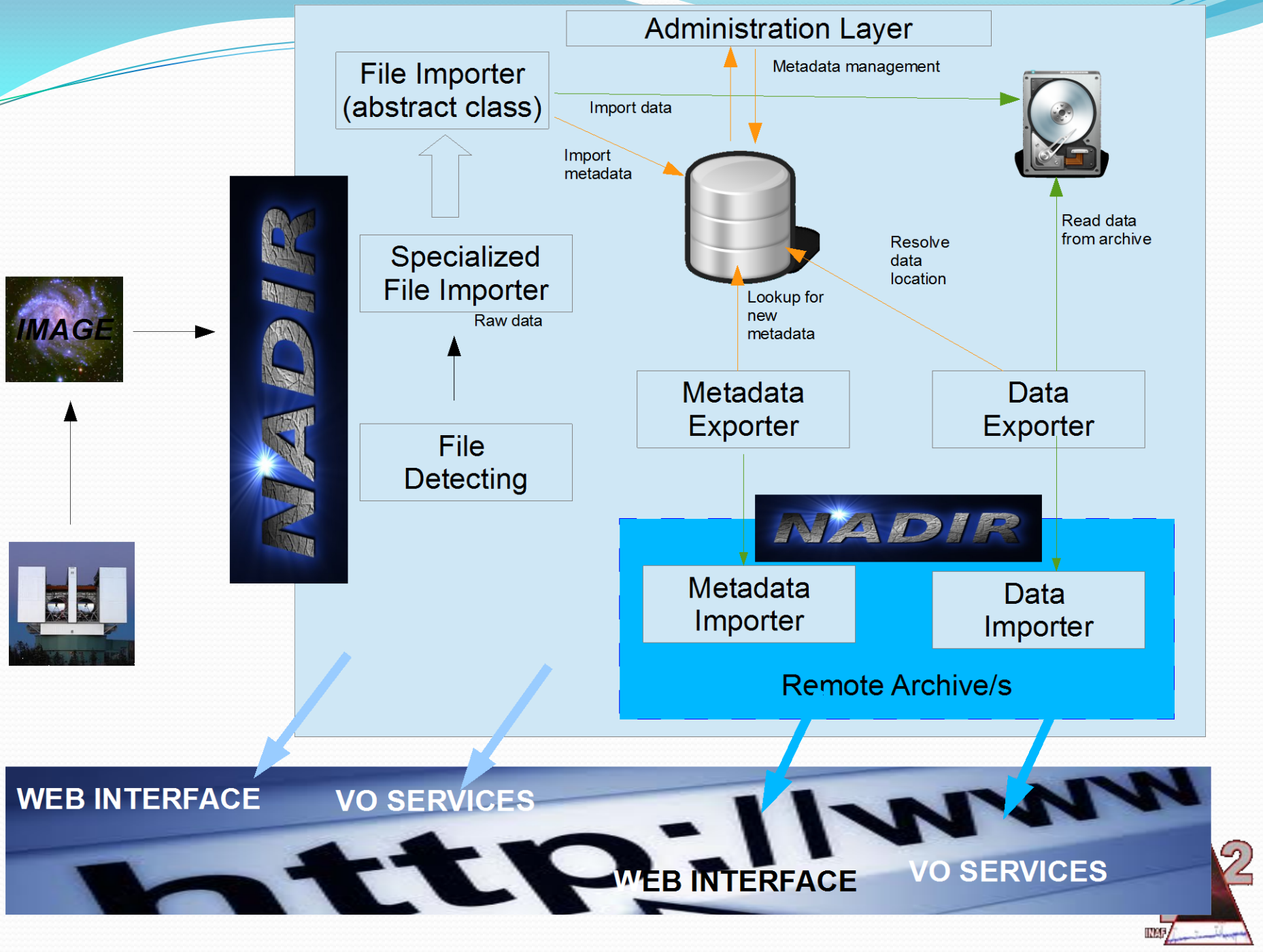
- **PARTNER;**
- **PINAME;**

NADIR non functional requirements:

- **Coherent filling of fits keyword values in terms of types and values consistencies to allow query efficiency;**

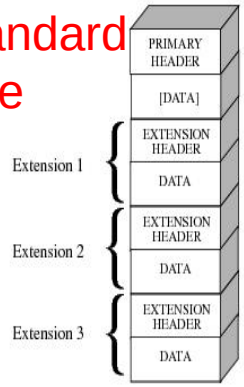
Data propagation depends on ingestion date and policy. Policy depends on OWNERSHIP.

No ownership = no data distribution!


Administration Layer
File Importer (abstract class)
Metadata management
Import data
Import metadata
Read data from archive
Resolve data location
Lookup for new metadata
Specialized File Importer
Raw data
File Detecting
IMAGE
NADIR
Metadata Exporter
Data Exporter
NADIR
Metadata Importer
Data Importer
Remote Archive/s
WEB INTERFACE
VO SERVICES
http://www
WEB INTERFACE
VO SERVICES

Starting from FITS

FITS standard structure



Primary HDU

Two different examples:

fv: Summary of lbcb.20140110.005826.fits in /home/mdm/Desktop/LBT/test_files/lbc

File Edit Tools Help

Index	Extension	Type	Dimension	View		
0	Primary	Image	0	Header	Image	Table
1	LBCCHIP1	Image	2304 X 4608	Header	Image	Table
2	LBCCHIP2	Image	2304 X 4608	Header	Image	Table
3	LBCCHIP3	Image	2304 X 4608	Header	Image	Table
4	LBCCHIP4	Image	2304 X 4608	Header	Image	Table

fv: Summary of lbcr.20080118.201012.fits in /home/mdm/Desktop/LBT/test_files/lbc-

File Edit Tools Help

Index	Extension	Type	Dimension	View		
0	Primary	Image	0	Header	Image	Table
1	LBCCHIP1	Image	2304 X 4608	Header	Image	Table
2	LBCCHIP2	Image	2304 X 4608	Header	Image	Table
3	LBCCHIP3	Image	2304 X 4608	Header	Image	Table
4	LBCCHIP4	Image	2304 X 4608	Header	Image	Table

fv: Header of lbcb.20140110.005826.fits[0] in /home/mdm/Desktop/LBT/test_files/lbc

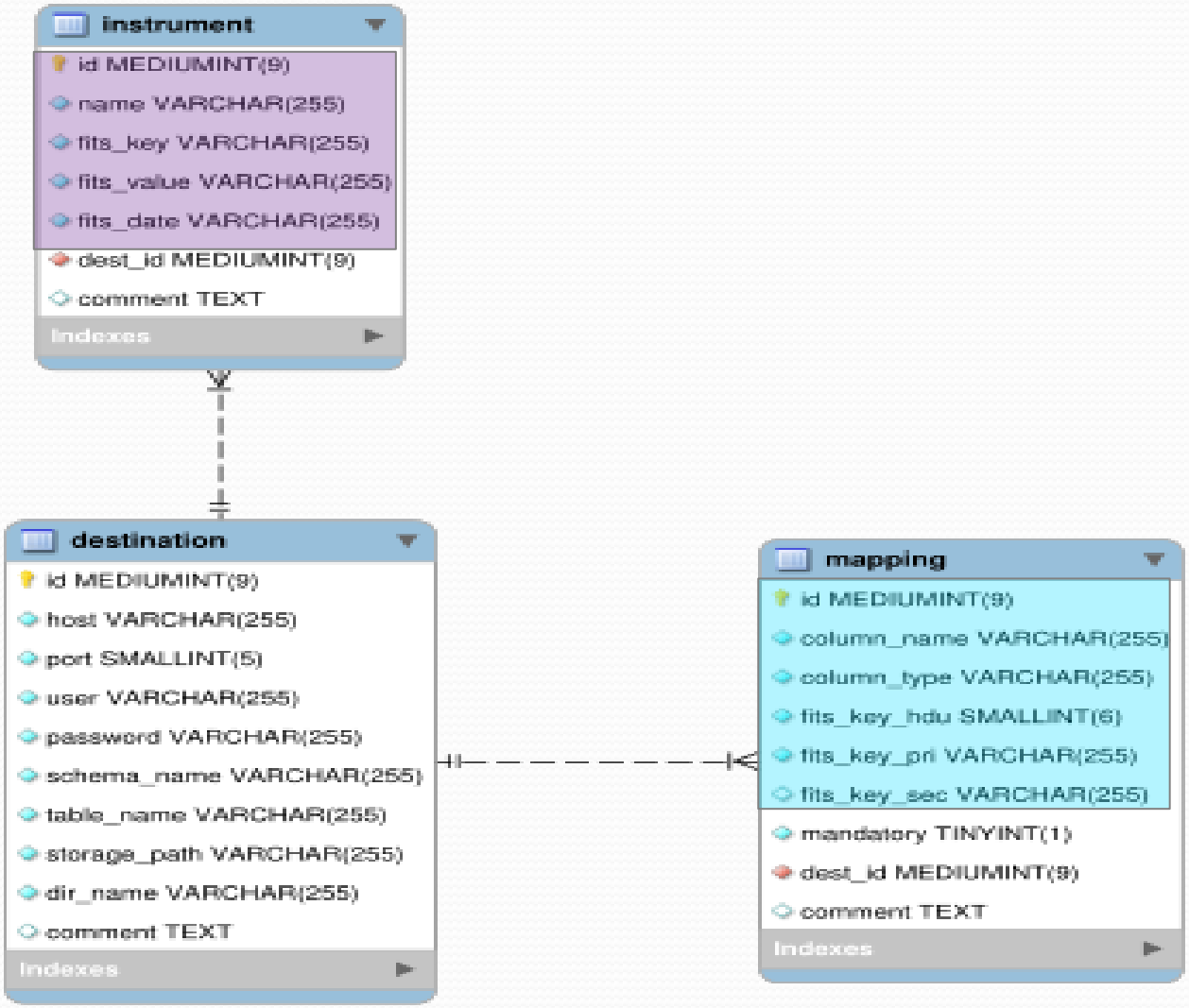
File Edit Tools Help

Search for: Find Case sensitive? Yes

```
SIMPLE  =                    T / File conforms to FITS standard
BITPIX  =                   16 / Bits per pixel
NAXIS   =                    0 / Number of axes
EXTEND  =                    T / FITS dataset may contain extensions
BZERO   =                32768.0 / real
BSCALE  =                    1.0 / real
NEXTEND =                    4 / Number of extensions
DATE_OBS= '2014-01-10T00:58:26.855' / Starting date of the observation
GAIN    =                 1.75000 / ADU conversion factor (electrons/ADU)
RDNOISE =                12.00000 / Read Out Noise in e-
ORIGIN  = 'LBT Observatory'     / data origin
SATURATE=                65536 / Data value at which saturation occurs
EXPTIME =                0.000 / Total Exposure Time (s)
TEXPTIME=                0.000 / Telemetry Exposure Time (s)
FILENAME= 'lbcb.20140110.005826.fits'                  / Name of the FITS file
OBJECT  = 'BinoBias'            / Identifier observation title
OBS_ID  = 'lbcb1389315449'      / unique observation ID
OBSRA   = '00:55:07.674'        / current R.A. in hours
OBSDEC  = '+32:37:07.45'        / current Dec. in degree
OBSEPOCH=           2000.00000 / coordinates epoch of OBSRA and OBSDEC
PMRA    =                0.000 / Proper motion for R.A. in arcsec/hour
PMDEC   =                0.000 / Proper motion for DEC. in arcsec/hour
PROPID  = 'biascheck'           / proposal identification
OS_NUM  =                    1 / Observing Sequence Number ID Template
LBCOBID = 'ob1389315449'        / Observing Block ID
LBCOBNAM= '10Bias_Bino_Checko' / Observing Block ID
PARTNER = 'calibration'         / Observer Name
PI_NAME = 'bias     '           / P.I. Name
MJD_OBS =          56667.04059 / MJD start
UTC_OBS = '00:58:26.86'         / UT at start
LST_OBS = '00:56:48'            / ST at start
AIRMASS =                1.00000 / Airmass at start (from TCS)
LBTLAT  =                32.7013 / Latitude of the telescope [deg]
LBTLONG =               -109.8890 / Longitude of the telescope [deg]
LBTELEV =                    3221 / Elevation of the telescope above sea level [m]
ZD      =               -0.00003 / Zenithal distances in degrees (from TCS)
HA      = '+00:00:43.92'        / Telescope Hour Angle (from TCS)
PA_PNT  =               -0.00260 / Position Angle of the pointing [deg]
ROTANGLE=               73.18051 / Rotator Angle [deg]
PARANGLE=               73.17790 / Parallactic Angle [deg]
TELAZ   = '90:00:13.78'         / Az angle at start N=0,E=+90 (from TCS)
TELALT  = '+90:00:00.12'        / Alt angle at start (from TCS)
TELRA   = '00:55:07.674'        / actual R.A. in hours (from TCS)
TELDEC  = '+32:37:07.45'        / actual DEC. in degrees (from TCS)
EQUINOX =                2000.0 / Standard FK5 [years]
RADECSYS= 'FK5      '           / Coordinate reference frame
PIXSCAL =                0.22400 / Pixel scale [arcsec/pixel]
PIXSIZE =               13.50000 / Pixel size [microns]
DITHSEQ =                    1 / Number sequence of dithering
DITHOFFX=                    0 / Offset in X for the dithering [arcsec]
DITHOFFY=                    0 / Offset in Y for the dithering [arcsec]
TELESCOP= 'LBT-SX  '            / Telescope name
INSTRUME= 'LBC_BLUE'            / Instrument name ('LBC-BLUE' or 'LBC-RED')
FILTER  = 'U-BESSEL'            / Filter
IMAGETYP= 'zero     '           / Observation category
LBCFWHM =              -3600.00 / FWHM value in arcsec from LBC trackers
LBTPRES =                   686 / Ambient air pressure [mbar] (from TCS)
LBTRHUM =                 46.20 / Ambient relative humidity [%] (from TCS)
LBTTEMP =                  -4.4 / Ambient temperature [Celsius] (from TCS)
LBTWNDIR=                 166.0 / Ambient wind direction [deg] (from TCS)
LBTWNSPD=                   5.8 / Ambient wind speed [m/s] (from TCS)
GUISTAT = 'starting'            / Status of autoguider
DETECTOR= 'EEV-BLUE'            / Name of detector ('EEV-BLUE' or 'EEV-RED')
LBCPIPEC= '         '           / Command to be executed on the image
LBCNCHIP=                    4 / Number of active chips in LBC camera
LBCCHIP1=                    1 / 1st chip status (1=on 0=off)
LBCCHIP2=                    1 / 2nd chip status (1=on 0=off)
LBCCHIP3=                    1 / 3rd chip status (1=on 0=off)
```

DATE_OBS= '2014-01-10T00:58:26.855' / Starting date of the observation

NADIR Data MODEL



NADIR Configuration

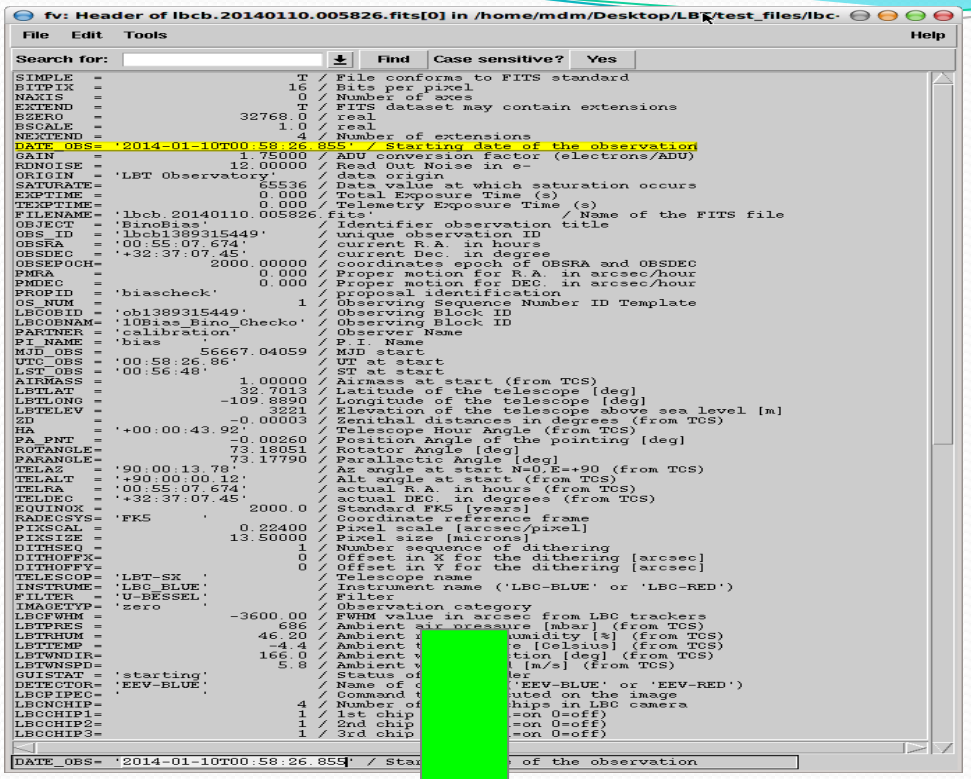
id	host	port	user	password	schema_name	table_name	storage_path	dir_name
4	localhost	3306	user	password	lbt_metadata	warning	/mnt/storage	warning
5	localhost	3306	user	password	lbt_metadata	luci	/mnt/storage	luci
7	localhost	3306	user	password	lbt_metadata	lbc	/mnt/storage	lbc
8	localhost	3306	user	password	lbt_metadata	mods	/mnt/storage	mods
9	localhost	3306	user	password	lbt_metadata	pis	/mnt/storage	pis
10	localhost	3306	user	password	lbt_metadata	irt	/mnt/storage	irt

Instrument mapping

id	name	fits_key	fits_value	fits_date	dest_id	comment
4	Warning	NONE	NONE	NONE	4	
5	Lucifer	INSTRUME	Lucifer	DATE	5	
6	Lucifer2	INSTRUME	LUCI2	DATE	5	
7	LBCBlue	INSTRUME	LBC_BLUE	DATE_OBS	7	
8	LBCRed	INSTRUME	LBC-RED	DATE_OBS	7	
9	MODSBlue	INSTRUME	MODS1B	DATE-OBS	8	
10	MODSRed	INSTRUME	MODS1R	DATE-OBS	8	
11	Pisces	INSTRUME	PISCES	DATE	9	
12	IRT	INSTRUME	IRTC 2 - Xeva 538	DATE	10	

id	column_name	column_type	fits_key_hdu	fits_key_pri	fits_key_sec	mandatory	dest_id	comment
127	DATE_OBS	varchar	0	DATE_OBS	DATE_OBS	0	7	
117	DEC	varchar	0	OBSDEC	OBSDEC	0	7	
115	EXPTIME	double	0	EXPTIME	EXPTIME	0	7	
110	EXP_ID	varchar	0	FILENAME	FILENAME	0	7	
124	FLT_ID	varchar	0	FILTER	FILTER	0	7	
129	INSTRUMENT	varchar	0	INSTRUME	INSTRUME	0	7	
122	LBCOBID	varchar	0	LBCOBID	LBCOBID	0	7	
111	NAXIS1	decimal	0	NAXIS1	NAXIS1	0	7	
112	NAXIS2	decimal	0	NAXIS2	NAXIS2	0	7	
121	OBID	varchar	0	LBCOBFIL	LBCOBFIL	0	7	
119	OBJECT	varchar	0	OBJECT	OBJECT	0	7	
118	OBJNAME	varchar	0	OBJNAME	OBJNAME	0	7	
123	OBNAME	varchar	0	LBCOBNAM	LBCOBNAM	0	7	
113	OBSERVER	varchar	0	OBSERVER	OBSERVER	0	7	
126	OBS_TYPE	varchar	0	IMAGETYP	IMAGETYP	0	7	
130	PARTNER	varchar	0	PARTNER	PARTNER	0	7	
131	PINAME	varchar	0	PI_NAME	PI_NAME	0	7	
120	PROPID	varchar	0	PROPID	PROPID	0	7	
116	RA	varchar	0	OBSRA	OBSRA	0	7	
128	TELESCOPE	varchar	0	TELESCOP	TELESCOP	0	7	
125	TEMPERAT	double	0	CCDTEM	CCDTEM	0	7	
114	USER_ID	varchar	0	LBCUSER	LBCUSER	0	7	

Result for meta-data



exp_id	ra_c	dec_c	object	propid	[illegible]	temperat	obs_type	date_obs	telescope	instrument	partner	piname
lbcb.20140110.005826.fits.gz	00:55:07.674	+32:37:07.45	BinoBias	biascheck	[illegible]	-86.2	zero	2014-01-10T00:58:26.855	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.005900.fits.gz	00:56:04.021	+32:37:07.94	BinoBias	biascheck	[illegible]	-86.2	zero	2014-01-10T00:59:00.253	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.005933.fits.gz	00:56:37.574	+32:37:08.24	BinoBias	biascheck	[illegible]	-86.2	zero	2014-01-10T00:59:33.682	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010007.fits.gz	00:57:11.033	+32:37:08.53	BinoBias	biascheck	[illegible]	-86.2	zero	2014-01-10T01:00:07.080	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010041.fits.gz	00:57:45.191	+32:37:08.84	BinoBias	biascheck	[illegible]	-86.2	zero	2014-01-10T01:00:41.150	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010114.fits.gz	00:58:18.798	+32:37:09.14	BinoBias	biascheck	[illegible]SEL	-86.2	zero	2014-01-10T01:01:14.735	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010148.fits.gz	00:58:52.303	+32:37:09.44	BinoBias	biascheck	U-BESSEL	-86.2	zero	2014-01-10T01:01:48.149	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010241.fits.gz	01:36:45.401	+32:43:44.73	BinoBias	biascheck	U-BESSEL	-86.2	zero	2014-01-10T01:02:41.854	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010315.fits.gz	02:47:03.683	+31:23:41.75	BinoBias	biascheck	U-BESSEL	-86.1	zero	2014-01-10T01:03:15.252	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.010349.fits.gz	02:47:03.682	+31:23:41.75	BinoBias	biascheck	U-BESSEL	-86.1	zero	2014-01-10T01:03:49.650	LBT-SX	LBC_BLUE	calibration	bias
lbcb.20140110.091149.fits.gz	11:25:49.157	+13:59:35.09	focus field		V-BESSEL	-85.9	FOCUS	2014-01-10T09:11:49.449	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.091338.fits.gz	11:25:49.157	+13:59:35.10	focus field		V-BESSEL	-85.8	FOCUS	2014-01-10T09:13:38.962	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.091528.fits.gz	11:25:49.156	+13:59:35.08	focus field		V-BESSEL	-85.8	FOCUS	2014-01-10T09:15:28.334	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.091658.fits.gz	11:25:49.157	+13:59:35.10	focus field		V-BESSEL	-85.8	FOCUS	2014-01-10T09:16:58.968	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.091824.fits.gz	11:25:49.156	+13:59:35.09	focus field		V-BESSEL	-85.7	FOCUS	2014-01-10T09:18:24.115	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.092230.fits.gz	11:25:49.156	+13:59:35.07	focus field		V-BESSEL	-85.6	FOCUS	2014-01-10T09:22:30.646	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.100311.fits.gz	11:25:49.157	+13:59:35.08	focus field		V-BESSEL	-84.8	FOCUS	2014-01-10T10:03:11.320	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.100501.fits.gz	11:25:49.157	+13:59:35.10	focus field		V-BESSEL	-84.7	FOCUS	2014-01-10T10:05:01.360	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.100648.fits.gz	11:25:49.154	+13:59:35.06	focus field		V-BESSEL	-84.7	FOCUS	2014-01-10T10:06:48.932	LBT-SX	LBC_BLUE	calibration	
lbcb.20140110.100821.fits.gz	11:25:49.159	+13:59:35.12	focus field		V-BESSEL	-84.7	FOCUS	2014-01-10T10:08:21.427	LBT-SX	LBC_BLUE	calibration	

Structured Data

Data formats like MBFITS, ROOT, HDF5, PDS, etc... need to be handled as structured informations and are the perfect case for using relational DBs.

One example currently under study at IA2 and IRA is MBFits format.

Hierarchy is given by some variables in MBFits structure:

i. Number of sub-scans (m);
ii. Front End Back End (FEBE) configuration (n);
iii. Base Band (k).

FEBE configuration number determines:

1) <FEBE-NAME>-FEBEPAR.fits number in root dir of MBFits;
2) <FEBE-NAME>-ARRAYDATA-<BASEBAND>.fits and <FEBE-NAME>-DATAPAR.fits number in the sub-scan dir.

Base Band number determines:

1)<FEBE-NAME>-ARRAYDATA-<BASEBAND>.fits number Associated to the same FEBE.

Sub-scan number can be retrieved reading:

SCAN.fits, HDU: SCAN-MBFITS, chiave: NSUBS.

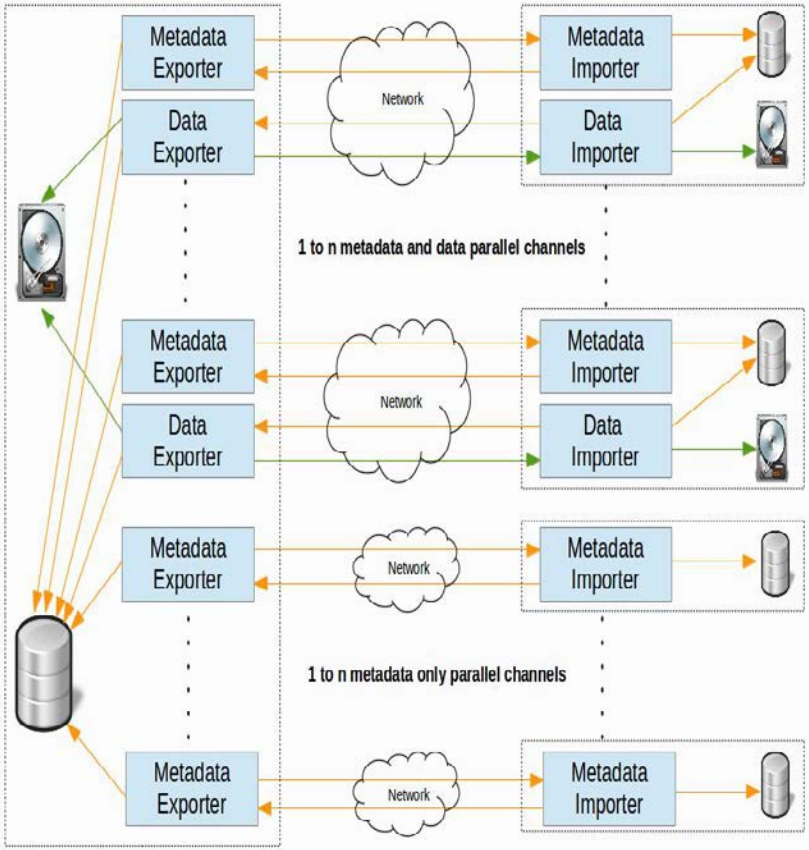
```
/MBF-ROOT
|
|-> GROUPING.fits
|
|-> SCAN.fits
|
|-> <FEBE-NAME>-FEBEPAR.fits
|
|-> /1
|    | -> <FEBE-NAME>-ARRAYDATA-<1>.fits
|    |
|    | -> <FEBE-NAME>-ARRAYDATA-<k>.fits
|    |
|    | -> <FEBE-NAME>-DATAPAR.fits
|
...

|-> /m
|    | -> <FEBE-NAME>-ARRAYDATA-<1>.fits
|    |
|    | -> <FEBE-NAME>-ARRAYDATA-<k>.fits
|    |
|    | -> <FEBE-NAME>-DATAPAR.fits
```

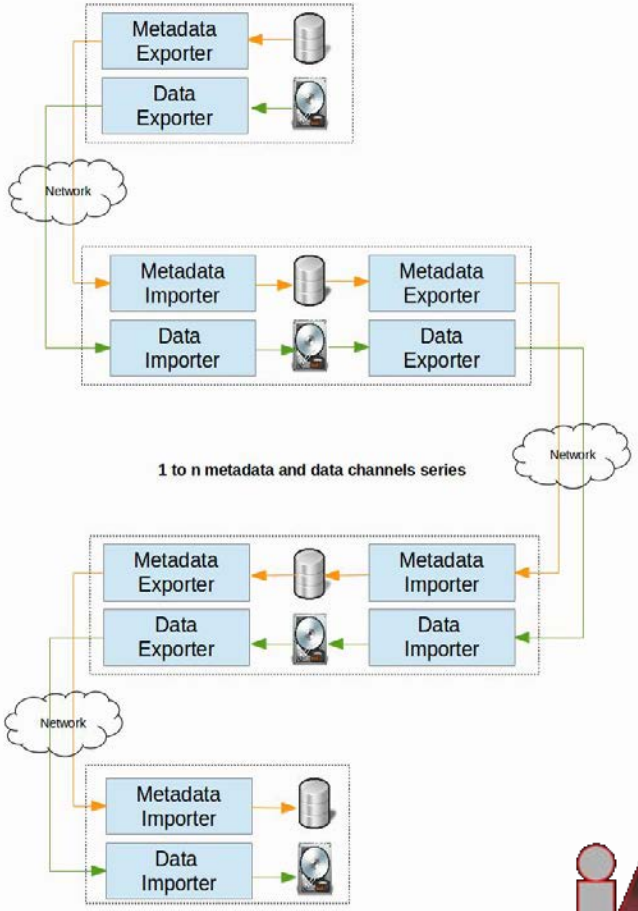
DATA MODEL is currently under study and will probably integrated into a VO standard definition for data publication.

Meta-data and data distribution

Parallel distribution

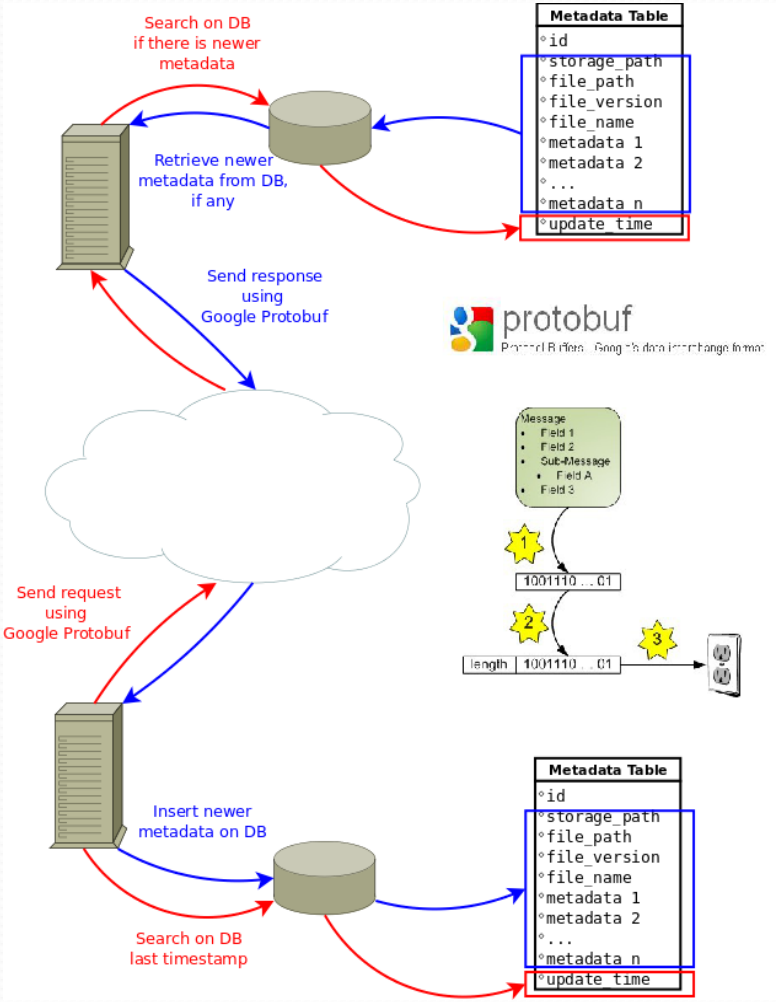


Serial distribution

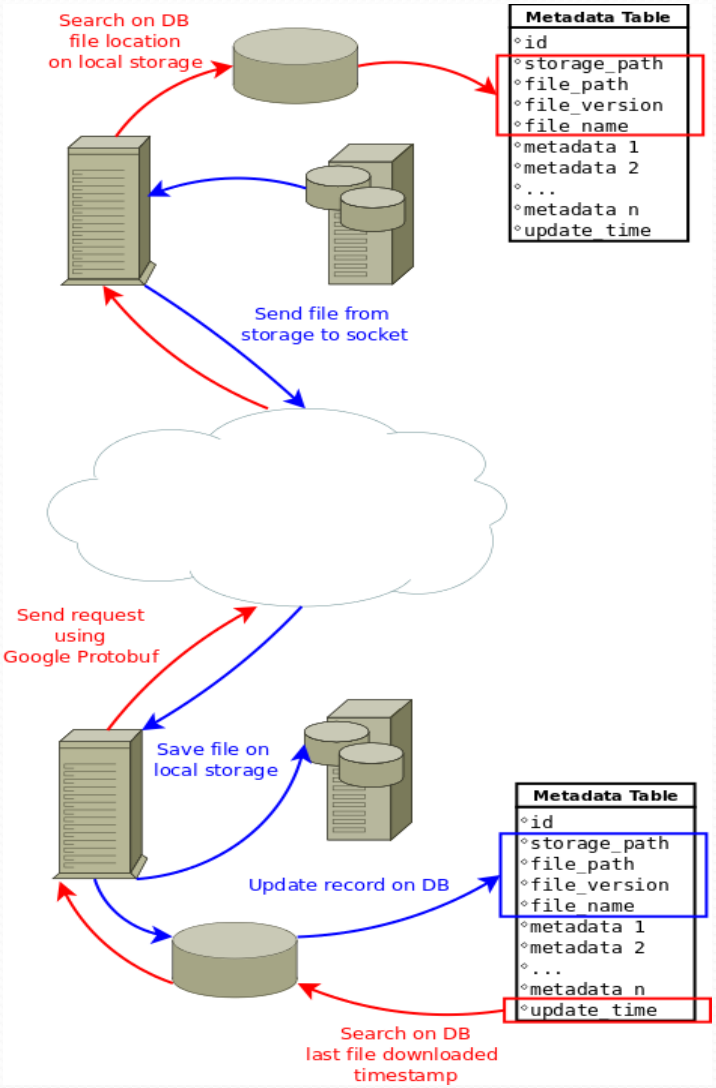


Distribution mechanisms

Meta-data distribution mechanism



Data distribution mechanism

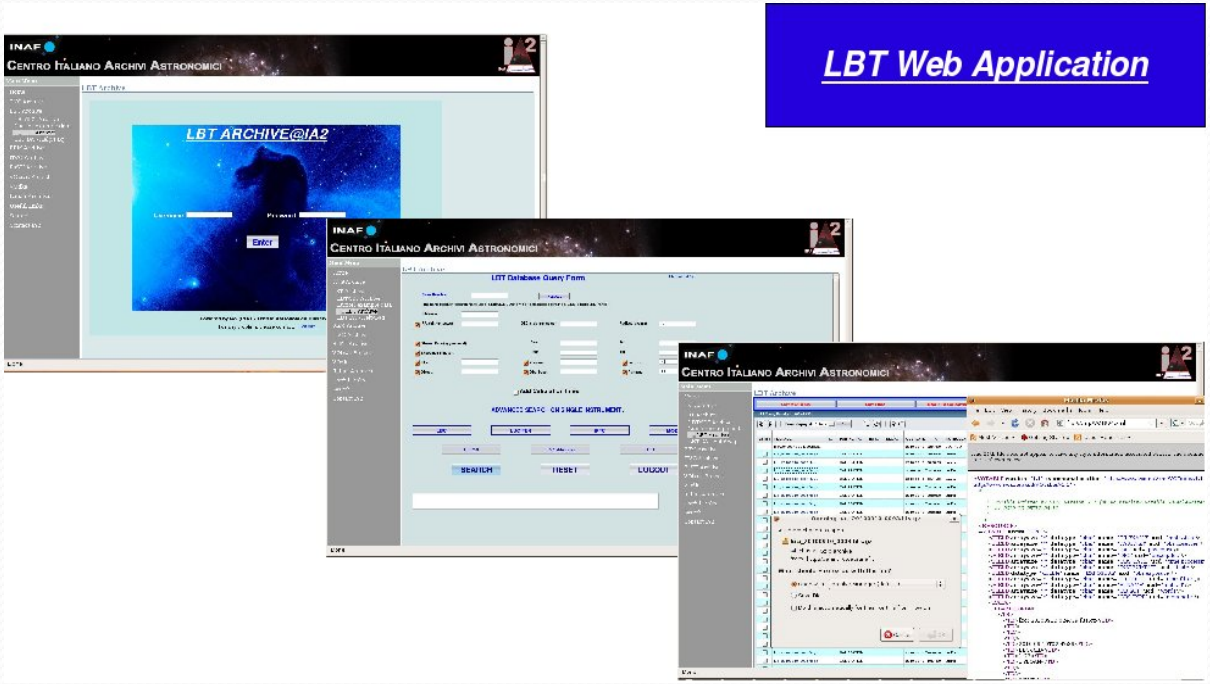


But an archive is not only that... You want more from your data!

Archive means having raw, science ready products (calibrated data, catalogs and so on..) possibly VO compliant and/or accessible by VO services (it doesn't mater if the archives are local or remote). So:

* **data interfaces**
* **vo services**
* **work-flows / pipelines**
* **data curation and preservation (DOI / SSO)**

IA2 on the WEB



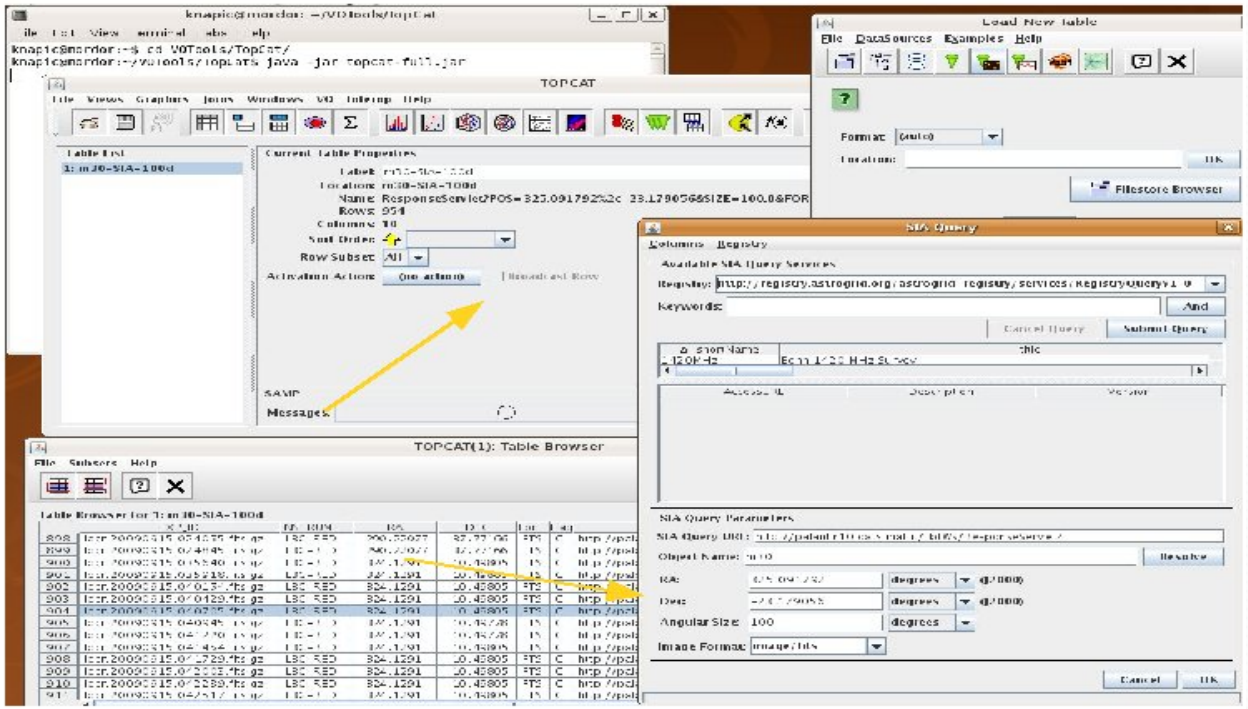
A new interface management system is under development (v0.99)

i.e.

- Image preview;
- VOTable SAMP binding;
- Multi-threading downloads
- …..

IA2 on the VO

VO Service & TopCat



IA2 VO tools are ready to publish:

* public data (both raw and calibrated);
* catalogs;

What is publishing into the VO?
What's the VO?

VO @ IA2

Services:

- SIAP (Simple Image Access Protocol) Services
- Cone Search services
- SSAP (Simple Spectral Access Protocol) services
- TAP (Table Access Protocol) services
- EPN TAP (EuroPlanet TAP)
- VO standard compliant Graphical User Interfaces

Resources:

- VO Services Registry hosting
- Educational VO compliant Resources
- CoSADIE VO Schools (learn the VO)

Tools:

- VODance – VO compliant data publication tool
- Powered IA2TAP – VO compliant catalogs publication tool

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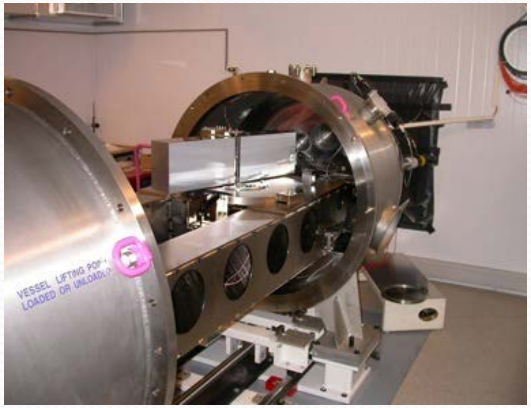
Data reduction @ IA2: the GAPS experience

- **GAPS**, *Global Architecture of Planetary Systems,* is a long-term program for the comprehensive characterization of the architectural properties of planetary systems as a function of the hosts' characteristics (mass, metallicity, environment).

- GAPS has been approved by Italian TNG TAC:
  - **AOT 26** (Aug 2012-Jan 2013): 36 nights
  - **AOT 27** (Feb 2013-Jul 2013): 40 nights
    + long-term status proposal approved for 2 years.



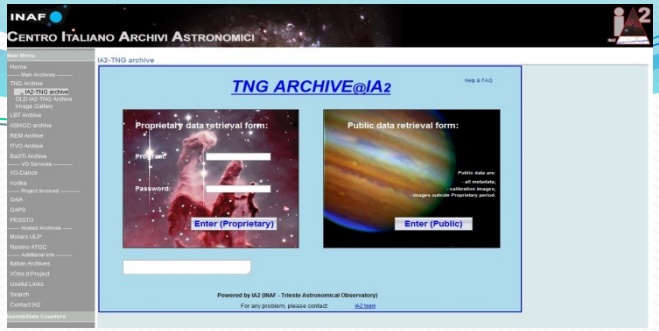
~ 50 INAF and associated scientists in Italy;

~15 scientists from foreign institutes.

Wide range of sci. expertise

- High resolution spectroscopy
- Stellar rotation and activity
- Crowded stellar environments
- Formation of planetary systems
- Planetary dynamics

GAPS requests



1. Strong **interaction** with HARPS-N@TNG private data;
2. Customizable **re-process** of GAPS data with appropriate spectral line mask and option/s;
3. Perform **queries** on additional meta-data content;
4. A **repository** where **to access, synchronize, share and search** for interesting data;
5. A flexible and collaborative **tool to manage additional info** about the project and the observations.

yabi

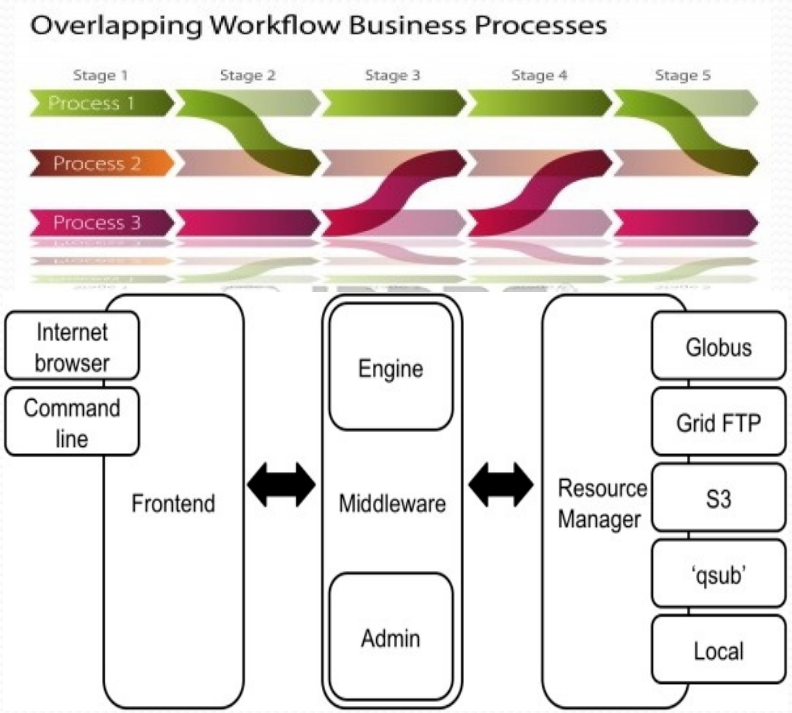
ownCloud

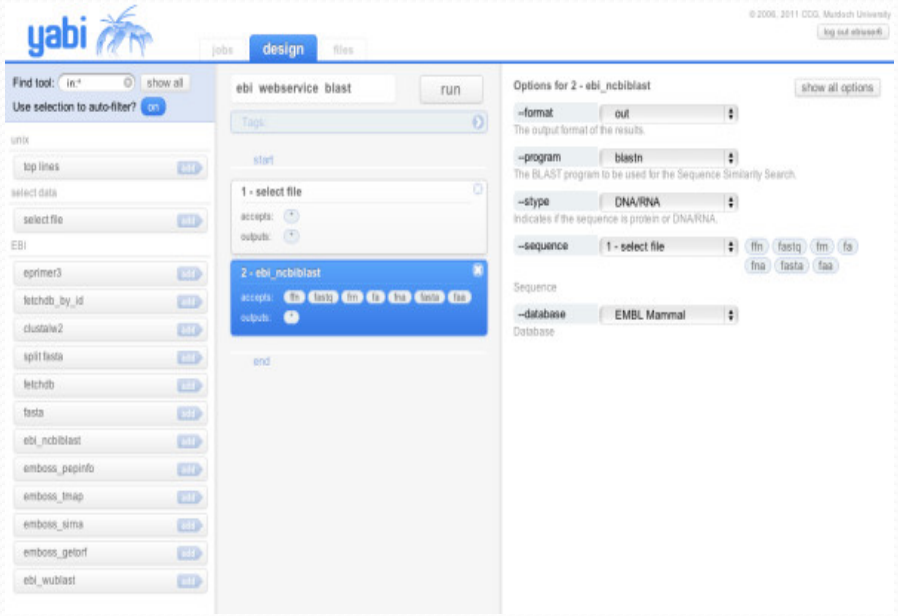
collaborate with TWiki

Yabi – how to handle pipelines

Yabi is:

- an open source software system designed to provide transparent access to high performance computing
- a web-based user service intended to target an audience which may not have specialized programming skills
- a ‘middleware’ responsible for process management and ‘resource manager’
- stack to provide users with an intuitive, easy to use, abstraction of compute and data environments





Lesson Learned with GAPS

Observation results **are not only** raw or calibrated data:

- Time series
- Catalogs
- New masks
- Alternative reduced data
- Scientific and ancillary data shared via Owncloud
- Data researchable and downloadable from wiki pages too and linked to night logs (collaborative tool)

References:

YABI : https://bitbucket.org/ccgmurdoch/yabi/overview
OWNCLOUD : http://owncloud.org/
TWIKI : http://twiki.org/

But an archive is not only that... You want more from your data!

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* **vo services**
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Easy access to **your** data

Additional tool for TNG Observatory will be a **Grouping** software. It will allow a contributed management and distribution of programs credentials and privileges. It is also the first step to the SSO (Single Sign On) technology adoption (under development).

Grouper™

Grouper is an enterprise access management system designed for the highly distributed management environment and heterogeneous information technology environment common to Universities. It could work on top of Identity managers like IDEM (for the Italian counterpart) and is compatible with SHIBBOLET

DOI (Digital Object Identifier):

DOI is a character string used to uniquely identify an object such as an electronic document. The ***DOI*** for a document is ***permanent***, whereas its location and other meta-data may change. Referring to an on-line document by its DOI provides more stable linking than simply referring to it by its URL, because if its URL changes, the publisher need only update the meta-data for the DOI to link to the new URL.

doi®

References:

GROUPER : http://www.internet2.edu/products-services/trust-identity-middleware/grouper/
IDEM : https://www.idem.garr.it/en/
SHIBBOLET: http://shibboleth.net/
DOI: http://www.doi.org/

What IA2 can do:

IA2 can actually provide:

- Archiving system (raw and calibrated) with NADIR;
- Data curation;
- Graphical User Interfaces;
- VO compliant data and catalogs publication;
- Work-flow system for pipelines management;
- Data sharing area;
- Collaborative tools

What IA2 will provide in the near future:

- New Graphical User Interfaces;
- Grouping tools and SSO technology;
- Science Gateway (StarNet project collaboration) with most of the more performance visualization tools like VISIVO
- DOI system adoption

Thank you for your attention!!!

Riccardo

in behalf of IA2 team:

Cristina Knapic,
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Francesco Cepparo,
Marco de Marco,
Pietro Apollo,
Robert Butova
Laura Agrusti