

SAADA Overview

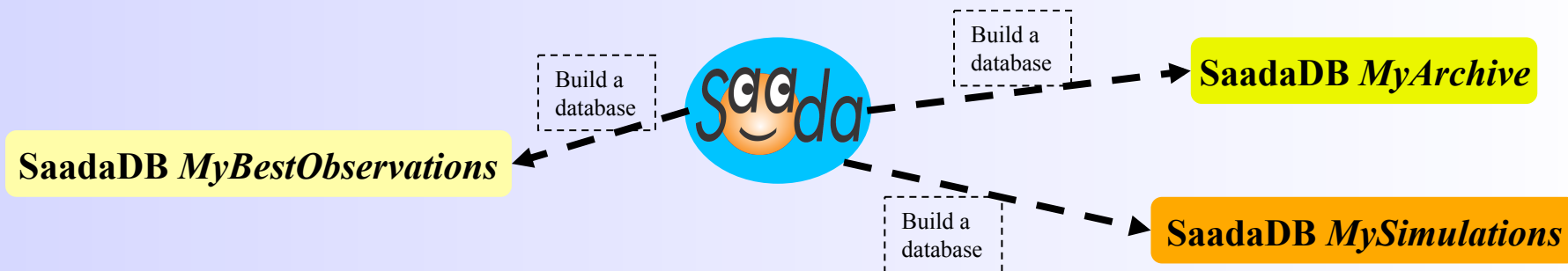
Supported by

XMM-Newton
SURVEY SCIENCE CENTRE

AND THE CDS

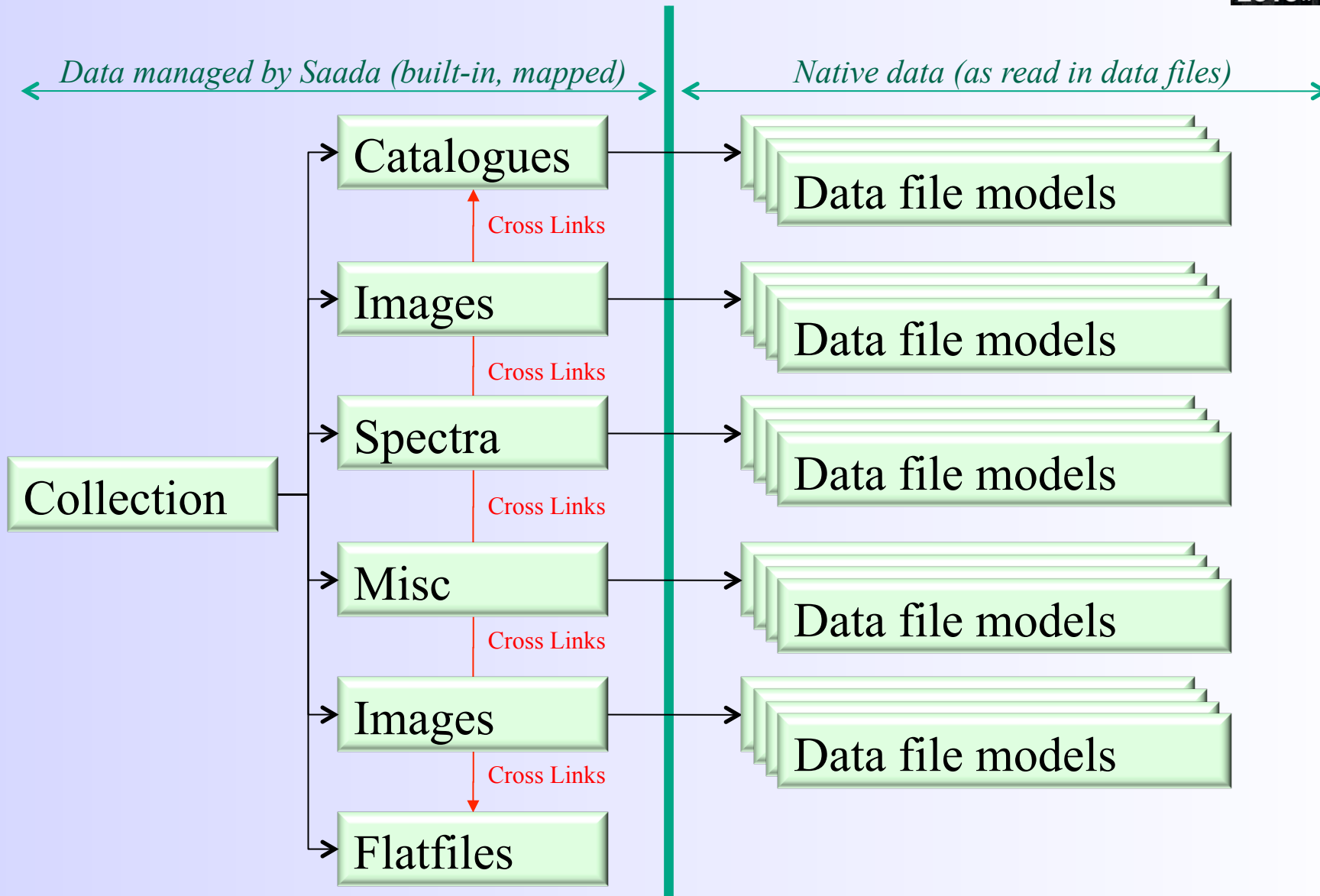
- **The origin of the project: XMM-Newton use case**
 - Build an archive hosting images, spectra, source lists.....
 - Storing persistent links computed by the X-match task of the pipeline
 - File format can change during the lifetime of the mission
 - Keywords added/modified/removed
 - VO publishing (late requirement, XMM launched at the end of the last century)
- **Saada aims at making these features available for non DB expert**
 - Build a complete archive without writing any line of code (SQL or Java)
 - Storing all data categories: **images, table, spectra**.... in one archive
 - Accepting various input files **VOTables, FITS** or **flat-files**
 - Storing data with different inner formats in one collection
 - Handling persistent relationships between data collections

- **Saada is a database generator (Step #1)**
 - Just used to build database instances (*SaadaDBs*)

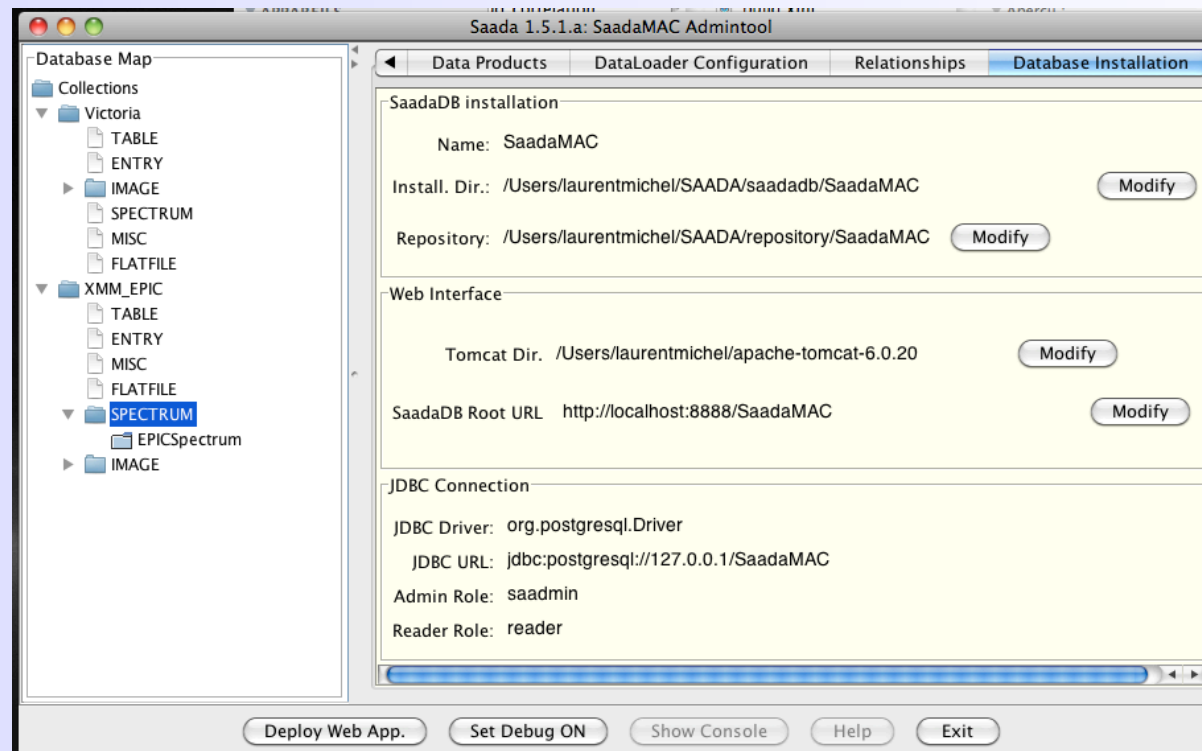


- **A SaadaDB is a Java layer on the top of [Postgres/My]SQL**
 - Take in charge all database operations
 - Table creation/insertions/deletion/indexing
 - Complex query building and processing
 - Provides a view compliant with actual data (Web interface)
 - Provides a graphical interface for all management operations
 - Completely scriptable

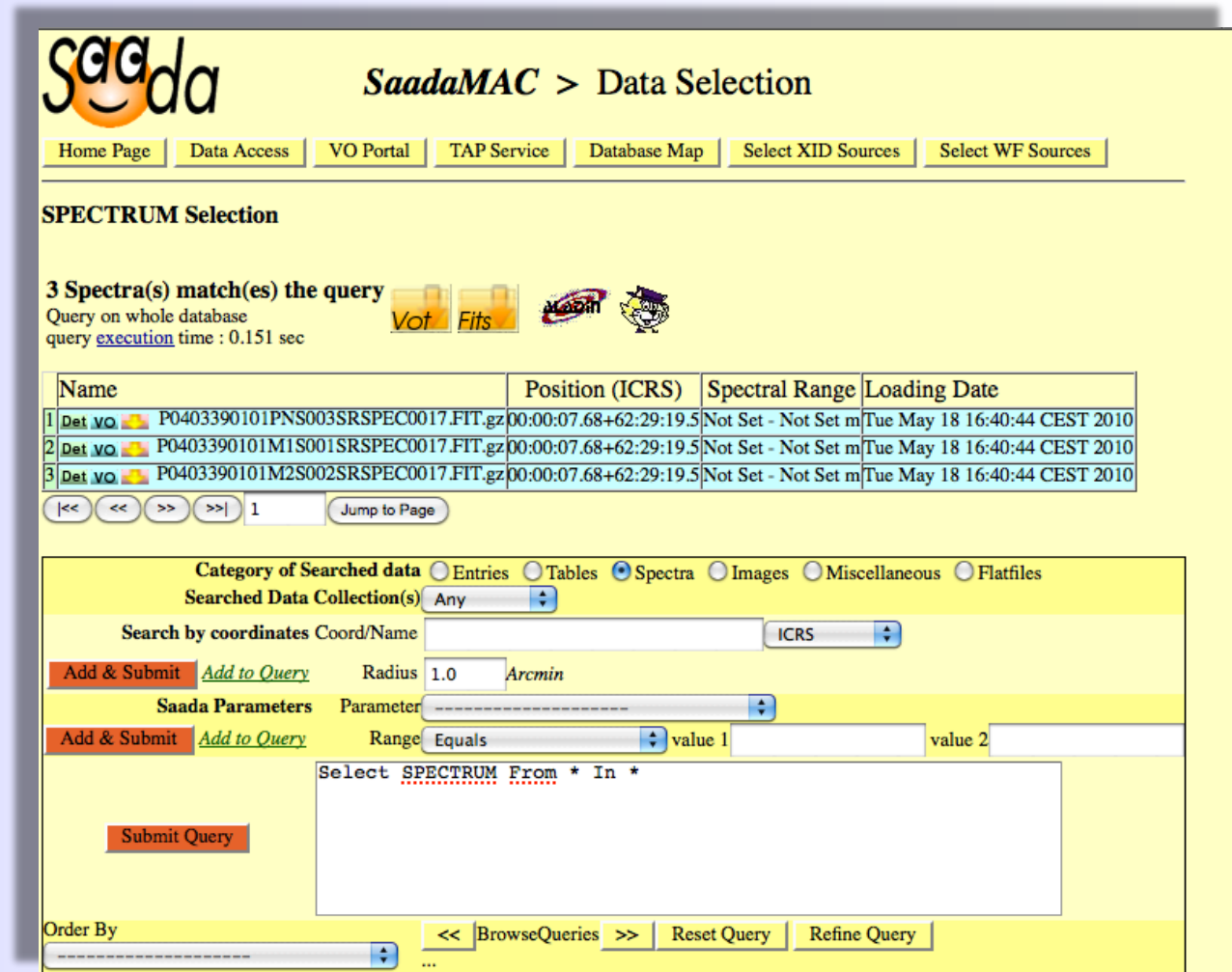




- **Graphical administration tool**
 - Load/remove data.
 - Data-loader configuration.
 - Relationship management
 - Meta data tagging (ucd, unit....)
 - ...







- **The WEB interface comes automatically with then DB**
 - Data browsing
 - Data Selection
 - VO portal
 - Download









SaadaMAC > Data Selection

Home Page | Data Access | VO Portal | TAP Service | Database Map | Select XID Sources | Select WF Sources

SPECTRUM Selection

3 Spectra(s) match(es) the query    
 Query on whole database
 query [execution](#) time : 0.151 sec

	Name	Position (ICRS)	Spectral Range	Loading Date
1	  P0403390101PNS003SRSPEC0017.FIT.gz	00:00:07.68+62:29:19.5	Not Set - Not Set m	Tue May 18 16:40:44 CEST 2010
2	  P0403390101M1S001SRSPEC0017.FIT.gz	00:00:07.68+62:29:19.5	Not Set - Not Set m	Tue May 18 16:40:44 CEST 2010
3	  P0403390101M2S002SRSPEC0017.FIT.gz	00:00:07.68+62:29:19.5	Not Set - Not Set m	Tue May 18 16:40:44 CEST 2010

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Category of Searched data Entries Tables Spectra Images Miscellaneous Flatfiles

Searched Data Collection(s) Any

Search by coordinates Coord/Name _____ ICRS

Add & Submit [Add to Query](#) Radius 1.0 Arcmin

Saada Parameters Parameter _____

Add & Submit [Add to Query](#) Range Equals value 1 _____ value 2 _____

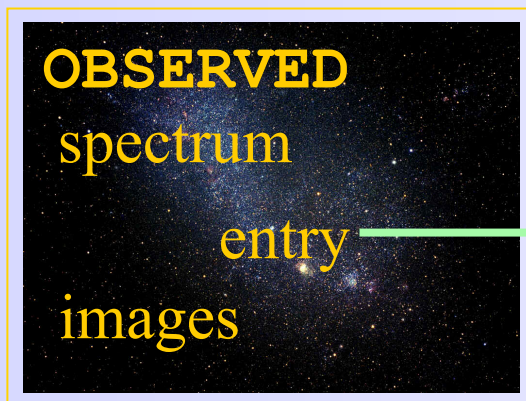
Select SPECTRUM From * In *

Submit Query

Order By _____

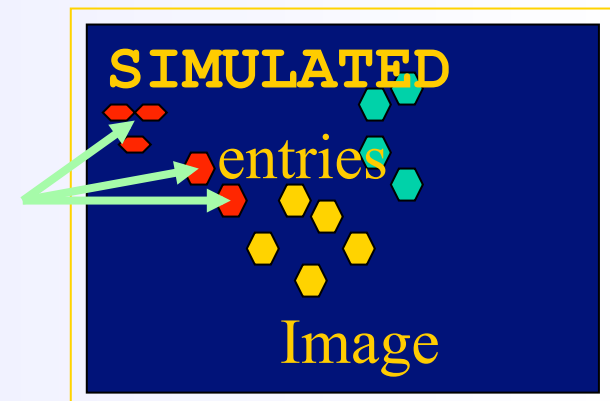
<< BrowseQueries >> Reset Query Refine Query

- **Saada relationships links data of two categories in two collections**
 - Collections and categories can be the same.
- **A Saada relationship is a set of links**
 - Links can be qualified by individual values
 - Qualifiers are parts of the relationship definition
- **Relationship links are persistent**
 - Stored in SQL join tables
 - Query engine optimized to process them



Link qualified with δv

$$\delta v = \sqrt{(\delta v_x^2 + \delta v_y^2 + \delta v_z^2)}$$



3 Image(s) match(es) the query

Query on any class of collection XMMData
 query execution time : 0.639 sec



Image (ICRS)	Loading Date	Countparts of relation XRaySpectra Det	Countparts of relation USNODetections Det	Countparts of relation GalaxyDetections Det
 Det VO ngc4472 12:29:46.62+07:58:01.1 0.720 x 0.720 deg	Tue Jun 16 13:29:13 CEST 2009	Det VO 0200130101 1.874448330000000E+02 7.999972200000000E+00 Det VO (truncated) 0200130101 1.874448330000000E+02 7.999972200000000E+00		Det ZwickyGalaxyCatalog_fit_#36 Det ZwickyGalaxyCatalog_fit_#44 (truncated)
 Det VO NGC 4472 12:29:45.29+08:01:39.1 0.720 x 0.720 deg	Tue Jun 16 13:29:13 CEST 2009	Det VO 0200130101 1.874448330000000E+02 7.999972200000000E+00 Det VO (truncated) 0200130101 1.874448330000000E+02 7.999972200000000E+00		Det ZwickyGalaxyCatalog_fit_#66 Det ZwickyGalaxyCatalog_fit_#56 (truncated)
 Det VO NGC4526 12:34:03.59+07:40:12.2 0.720 x 0.720 deg	Tue Jun 16 13:29:13 CEST 2009	Det VO 0205010201 1.885125000000000E+02 7.699138900000000E+00 Det VO (truncated) 0205010201 1.885125000000000E+02 7.699138900000000E+00		Det ZwickyGalaxyCatalog_fit_#96 Det ZwickyGalaxyCatalog_fit_#87 (truncated)

<< << >> >> | 1 Jump to Page

- Images linked with spectra and catalogue sources
- Images selected by using constraints on these links

```

Submit Query
Select IMAGE From * In XMMData
WhereRelation {
  matchPattern (USNODetections, Cardinality = 0)
  matchPattern (GalaxyDetections)
  matchPattern (XRaySpectra)
}
  
```

Order By << BrowseQueries >> Reset Query Refine Query

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Name	Position (ICRS)	Table	phys.veloc;pos.heliocentric	Countparts of relation XRaySpectCounterpart Det
1 DetPGC40566	12:28:15.68+06:56:24.8	Det VII_Vaucouleurs.xml	1204.0 (cz=1204km/s)	
2 DetPGC40375	12:27:00.82+07:02:30.1	Det VII_Vaucouleurs.xml	1227.0 (cz=1227km/s)	
3 DetPGC40317	12:26:38.76+06:45:56.9	Det VII_Vaucouleurs.xml	2148.0 (cz=2148km/s)	
4 DetPGC40273	12:26:22.26+06:54:44.8	Det VII_Vaucouleurs.xml	1593.0 (cz=1593km/s)	
5 DetPGC40851	12:29:59.46+05:59:12.7	Det VII_Vaucouleurs.xml	1478.0 (cz=1478km/s)	
6 DetPGC40875	12:30:05.96+05:57:19.7	Det VII_Vaucouleurs.xml	6403.0 (cz=6403km/s)	
7 DetPGC40218	12:25:57.13+07:11:50.6	Det VII_Vaucouleurs.xml	4395.0 (cz=4395km/s)	
8 DetPGC41189	12:32:10.55+07:32:48.9	Det VII_Vaucouleurs.xml	2358.0 (cz=2358km/s)	
9 DetPGC41169	12:32:03.02+07:43:05.8	Det VII_Vaucouleurs.xml	1474.0 (cz=1474km/s)	
10 DetPGC41148	12:31:53.30+07:52:56.7	Det VII_Vaucouleurs.xml	1255.0 (cz=1255km/s)	
11 DetPGC40240	12:26:07.51+05:48:18.7	Det VII_Vaucouleurs.xml	1281.0 (cz=1281km/s)	
12 DetPGC40217	12:25:55.52+05:45:51.6	Det VII_Vaucouleurs.xml	7002.0 (cz=7002km/s)	
13 DetPGC40192	12:25:44.72+05:47:46.5	Det VII_Vaucouleurs.xml	7128.0 (cz=7128km/s)	
14 DetPGC39943	12:24:01.30+06:22:37.7	Det VII_Vaucouleurs.xml	4227.0 (cz=4227km/s)	
15 DetPGC41383	12:33:32.45+07:48:06.7	Det VII_Vaucouleurs.xml	1772.0 (cz=1772km/s)	
16 DetPGC40122	12:25:16.37+07:55:18.3	Det VII_Vaucouleurs.xml	1221.0 (cz=1221km/s)	
17 DetPGC39765	12:22:40.73+07:24:53.2	Det VII_Vaucouleurs.xml	2628.0 (cz=2628km/s)	
18 DetPGC40695	12:29:01.32+08:35:50.2	Det VII_Vaucouleurs.xml	1272.0 (cz=1272km/s)	
19 DetPGC40745	12:29:19.90+08:36:27.3	Det VII_Vaucouleurs.xml	1250.0 (cz=1250km/s)	
20 DetPGC41811	12:36:52.11+06:11:41.9	Det VII_Vaucouleurs.xml	2154.0 (cz=2154km/s)	

- Query constraint expressed with UCD/unit
- Column queried shown

Category: Searched

Search by coordinate

Add & Submit Add to Query

Saada Parameters Parameter

Add & Submit Add to Query

Range Equals value 1 value 2

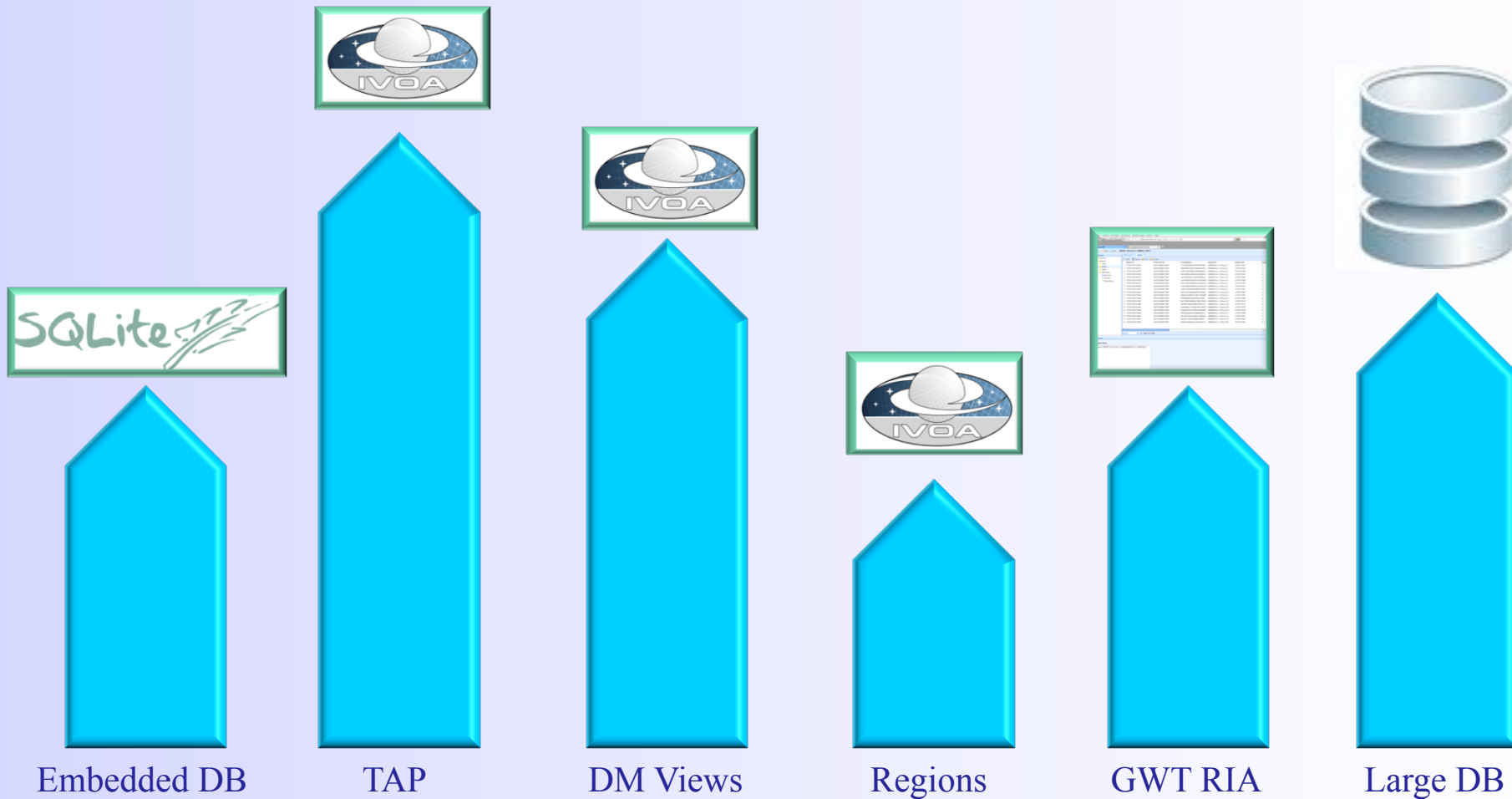
```

Select ENTRY From * In Galaxy
WhereUCD {
[phys.veloc;pos.heliocentric] > 1200 [km/s]
}
    
```

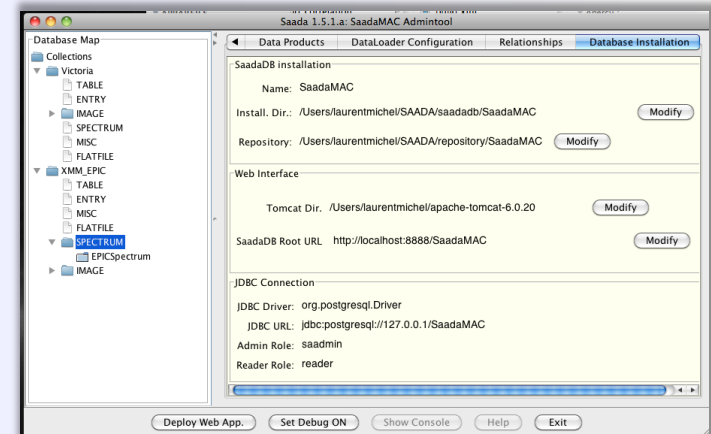
Submit Query

- **Saada can select data by filtering linked data**
 - SaadaQL operator *matchPattern*
- **The query below selects *images* from the collection *XMMDATA***
 - Having more than one counterpart in the relationship *DetectedGalaxies* with a radial velocity greater than 1200 km/s

```
Select IMAGE From * In XMMDATA
WhereRelation{
  matchPattern{
    DetectedGalaxies,
    Cardinality > 1,
    AssUCD ([phys.veloc;pos.heliocentric] > 1200 [km/s])
  }
}
```



- **Saada is an archive builder.**
 - No dependencies with some remote services
 - No code to write.
 - Full featured databases
- **It houses heterogeneous dataset in multiples collections**
 - Images, spectra, catalogues, flatfiles,...
 - Can ingest FITS files, VOTables or flatfiles
- **It handles persistent links between data records**
 - Used for both data browsing and selection
- **It allows meta-data tagging**
 - Set UCDS, Utypes, units and comments on ingested data.
 - Data models builder and mapper.
- **It can handle complex queries**
 - Constraints expressed with UCD/Utype/units
 - Constraints on associated data
- **Provided services**
 - Web interface
 - VO interfaces: SIA/SSA/CS/TAP(soon) on any data collection



- **For who Is Saada?**
 - Any people who wants to build an archive and/or to publish data in the VO.
- **Supported VO Standards**
 - SIA/SSA/CS services comes with the Web interface
 - TAP/ObsTAP (next release) shown on yesterday by G. Mantelet (DM group)
 - Any data model mapping as shown at Interop Strasbourg 2010 (next release)
 - Meta data tagging (UCD, Utypes, units)
- **Current Status**
 - Release 1.5.1 available (1.6 for autumn 2010)
 - Development continued
- **Download/Contact/Support.**
 - <http://saada/u-strasbg.fr>
 - laurent.michel@unistra.fr