

Using SAADA to Publish Data in the VO

Supported by

XMM-Newton
SURVEY SCIENCE CENTRE

AND THE CDS

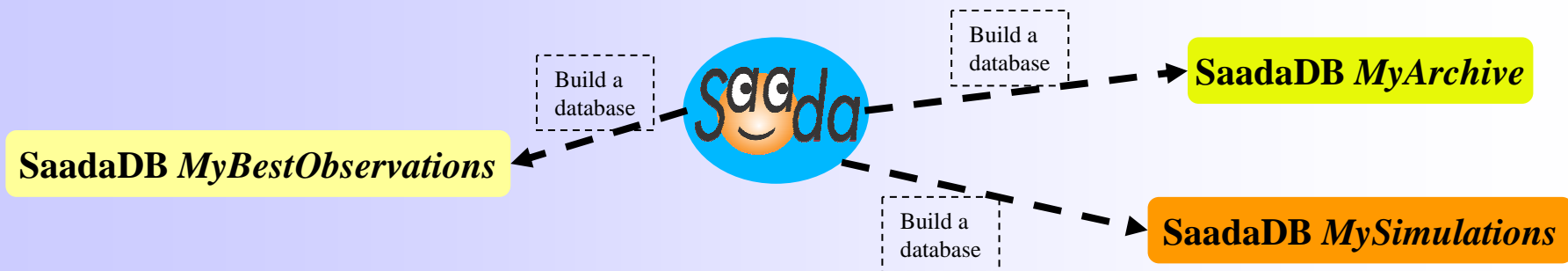
Laurent MICHEL

Thomas BOCH

Sebastien DERRIERE

- **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

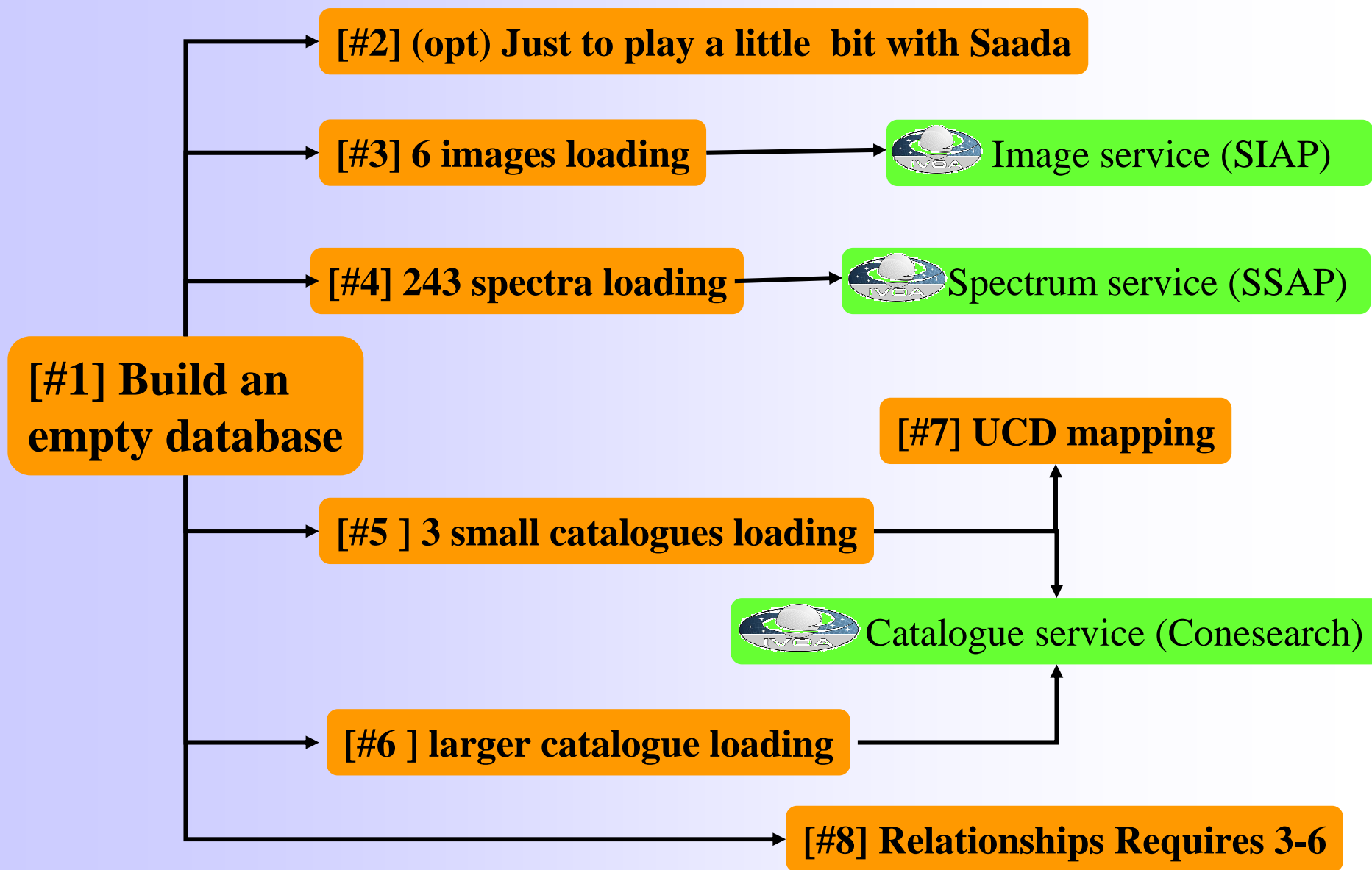
- ***Saada* is a database generator (Step #1)**
 - Just used to build database instances (*SaadaDBs*)



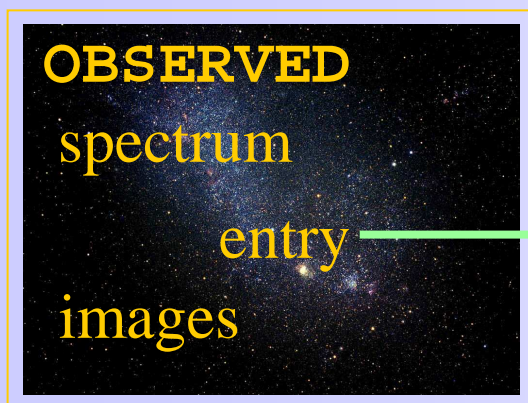
- ***A SaadaDB* is a Java layer on the top of [Postgres/My]SQL**
 - Take in charge all database operations
 - Table creation/insertions/deletion/indexing
 - Complex query building and processing
 - Provides a view compliant with the actual data (Web interface)
 - Provides a graphical interface for all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



- **Create an empty *SaadaDB* with Saada**
 - *Saada* no longer used after
- **Run the *saadmintool* of the new *SaadaDB***
 - Create empty collection(s)
 - Set up loader configuration if needed
 - Load data
 - Deploy the Web interface
- **Connect your *SaadaDB* with your browser**
- **Publish your services in some VO registry**

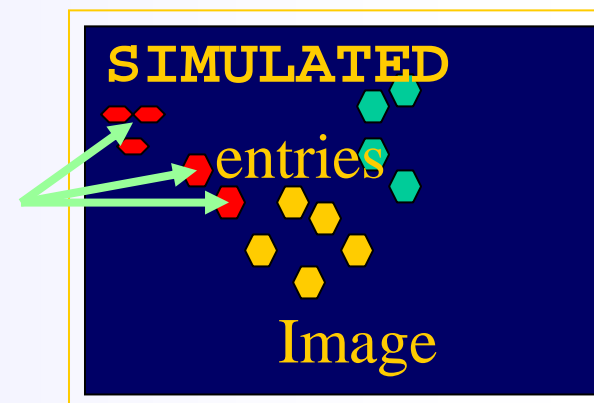


- **Saada relationships links data of two categories in two collections**
 - Collections and categories can be the same.
- **A Saada relationship is a set of links**
 - Links can be qualified by individual values
 - Qualifiers are parts of the relationship definition
- **Relationship links are persistent**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



Link qualified with δv

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



- **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 Core**
 - Support of embedded databases (e.g. SQL-Lite)
 - Support of ASCII files
 - *Admintool* improvement (e.g. preview before loading)
 - Coordinate frame support.
- **VO business**
 - Registry support
 - Data-model support (see IVOA 2009 demo)
 - Others protocols support (TAP, VOQL)
- **Web interface**
 - Smart query editor based on Ajax ??
 - Customizable Web interface ??