Line identification and SAMP implementation in Specview

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Interoperability in Specview

- Search and download spectra by querying Simple Spectra Access services found in VO registries

- Specview already implemented a line identification function :
  - with common stellar lines stored in local files
  - by using the VO Simple Line Access protocol to find lines in a range of wavelengths

- However there are few SLAP services and they are quite limited

- The line identification functionnality has been extended to handle VAMDC services

VAMDC Project

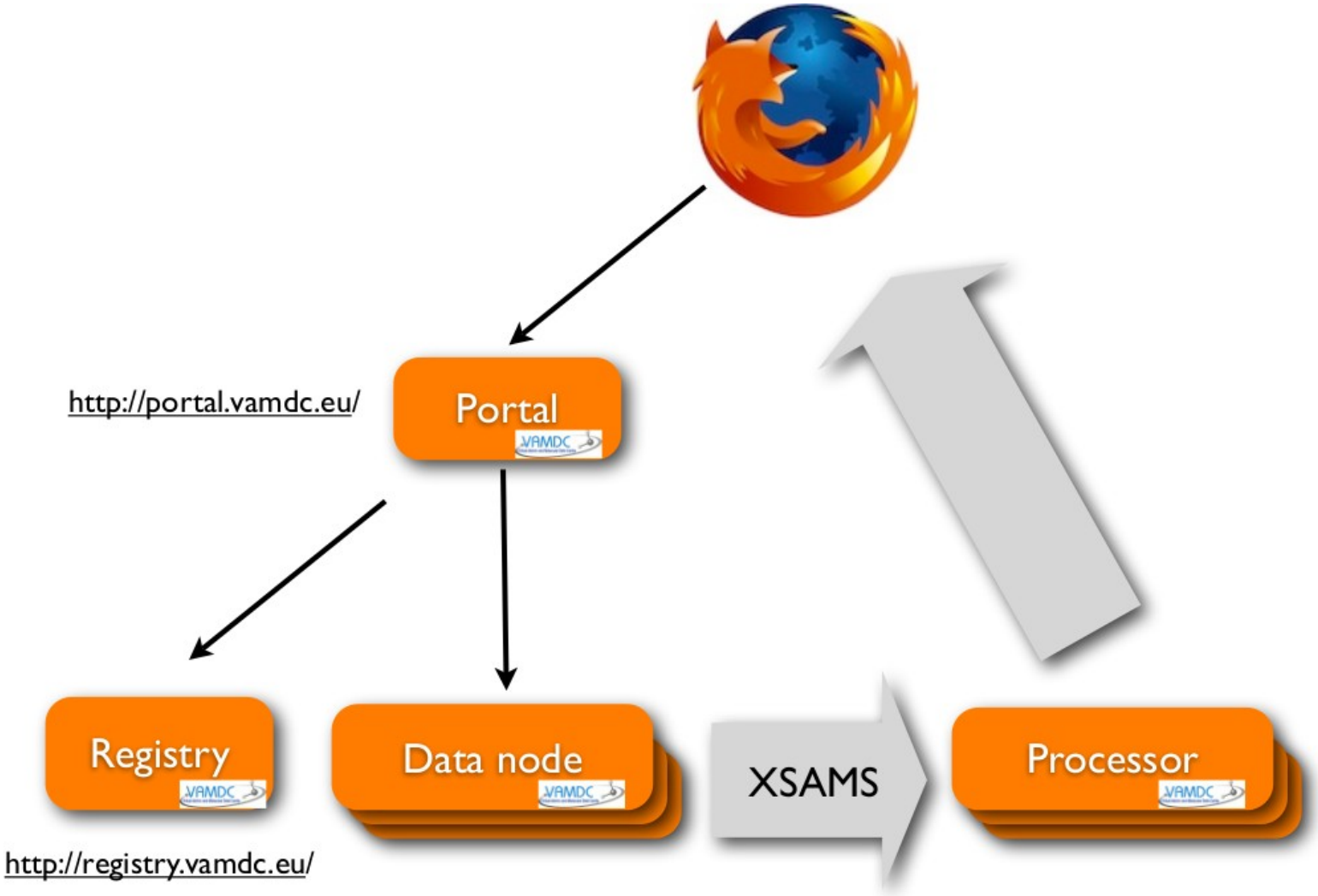
- Provides a unified infrastructure to access atomic and molecular data

- 20 databases developped and maintained at partners institutes :
  - 7 Atomic Dbs
  - 11 Molecular Dbs
  - 2 Solid Spectroscopy Dbs

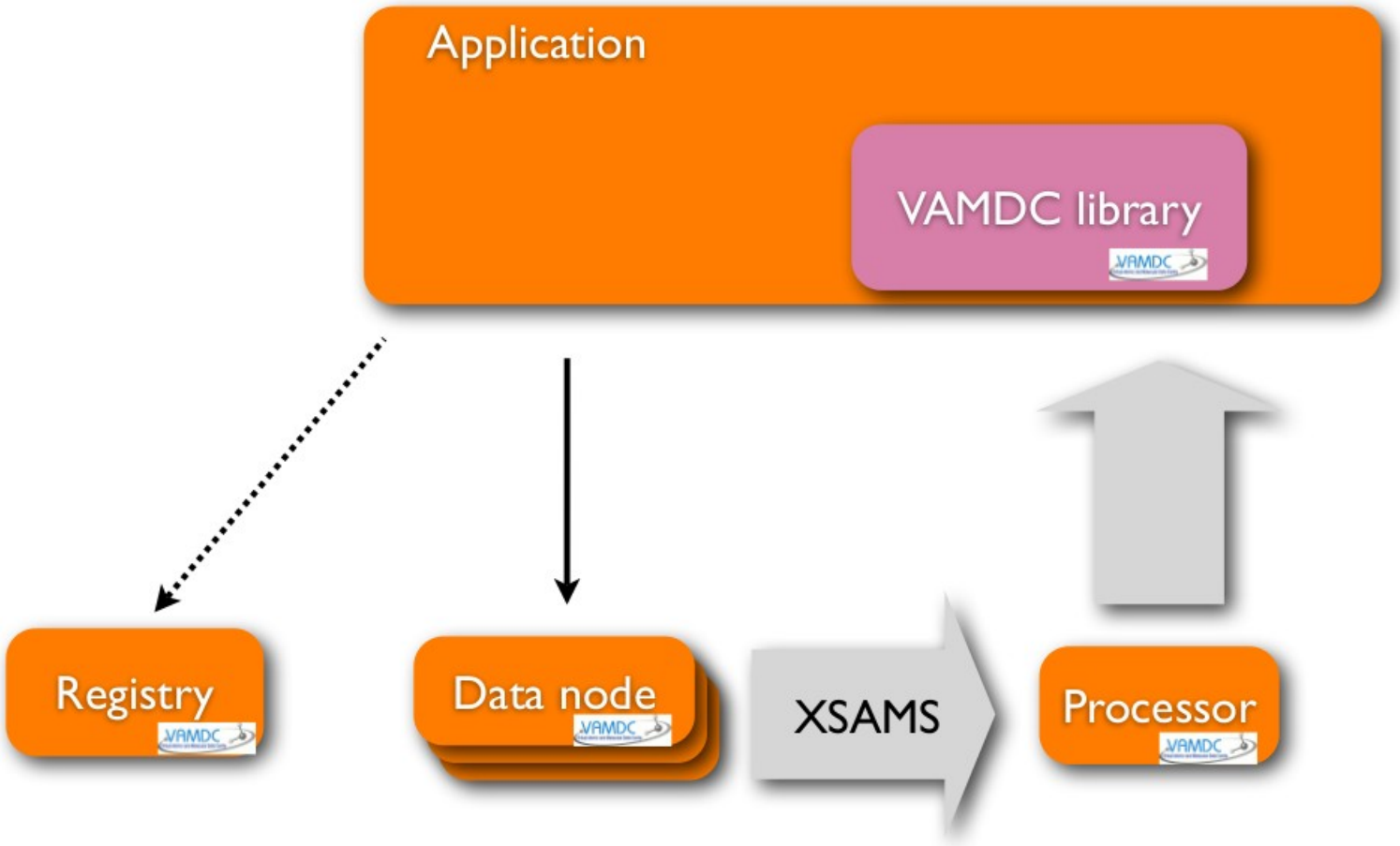
- They are called nodes and offer their data using the standards and protocols defined by the VAMDC

- Softwares are provided to make a DB available as a VAMDC node (java or python)

VAMDC Infrastructure



Access from an application



VAMDC Infrastructure

- Queries are done with SQL-like language called VSS (VAMDC SQL Subset)

- Databases are seen as only one table (no join, standardized vocabulary for the column names)

Ex : SELECT ALL WHERE AtomNuclearCharge = 25 AND AtomIonCharge < 2

VAMDC Infrastructure

- Result is an XML file using XSAMS schema

- XSAMS provides rules for presentation of :
  - states of atoms, molecules, solids (surfaces) and some elementary particles
  - characteristics of interaction between physical objects
  - sources of the data.

- Thanks to dedicated web services called XSAMS Processors, files can be converted to other formats :
  - ascii table
  - VOTable
  - ...

Conversion example

Show As Csv

Send with samp

Unselect all	Spec Ion X	Wavelength(A) X	Lower energy(Ry) X	Lower parity X	Lower mixing coeff X	Lower configuration X	Lower term X	Upper energy(Ry) X	Upper lifetime X	Upper parity X	Upper mixing coeff X	Upper configuration X	Upper term X
☑	He 2	0303.7973	00.0000	even	1.0	proton_1s	2Seven	03.0000	00.0000	odd	1.0	proton_2p	2Podd
☑	He 2	0256.3290	00.0000	even	1.0	proton_1s	2Seven	03.5556	00.0000	odd	1.0	proton_3p	2Podd
☑	He 2	0243.0379	00.0000	even	1.0	proton_1s	2Seven	03.7500	00.0000	odd	1.0	proton_4p	2Podd
☑	He 2	0237.3417	00.0000	even	1.0	proton_1s	2Seven	03.8400	00.0000	odd	1.0	proton_5p	2Podd
☑	He 2	0234.3579	00.0000	even	1.0	proton_1s	2Seven	03.8889	00.0000	odd	1.0	proton_6p	2Podd
☑	He 2	0232.5948	00.0000	even	1.0	proton_1s	2Seven	03.9184	00.0000	odd	1.0	proton_7p	2Podd
☑	He 2	0231.4646	00.0000	even	1.0	proton_1s	2Seven	03.9375	00.0000	odd	1.0	proton_8p	2Podd
☑	He 2	0230.6961	00.0000	even	1.0	proton_1s	2Seven	03.9506	00.0000	odd	1.0	proton_9p	2Podd
☑	He 2	0230.1495	00.0000	even	1.0	proton_1s	2Seven	03.9600	00.0000	odd	1.0	proton_10p	2Podd
☑	He 2	1640.5042	03.0000	even	1.0	proton_2s	2Seven	03.5556	00.0000	odd	1.0	proton_3p	2Podd
☑	He 2	1215.1893	03.0000	even	1.0	proton_2s	2Seven	03.7500	00.0000	odd	1.0	proton_4p	2Podd
☑	He 2	1084.9904	03.0000	even	1.0	proton_2s	2Seven	03.8400	00.0000	odd	1.0	proton_5p	2Podd
☑	He 2	1025.3158	03.0000	even	1.0	proton_2s	2Seven	03.8889	00.0000	odd	1.0	proton_6p	2Podd
☑	He 2	0992.4045	03.0000	even	1.0	proton_2s	2Seven	03.9184	00.0000	odd	1.0	proton_7p	2Podd
☑	He 2	0972.1514	03.0000	even	1.0	proton_2s	2Seven	03.9375	00.0000	odd	1.0	proton_8p	2Podd
☑	He 2	0958.7370	03.0000	even	1.0	proton_2s	2Seven	03.9506	00.0000	odd	1.0	proton_9p	2Podd
☑	He 2	0949.3666	03.0000	even	1.0	proton_2s	2Seven	03.9600	00.0000	odd	1.0	proton_10p	2Podd
☑	He 2	1640.5042	03.0000	odd	1.0	proton_2p	2Podd	03.5556	00.0000	even	1.0	proton_3s	2Seven
☑	He 2	4687.1693	03.5556	even	1.0	proton_3s	2Seven	03.7500	00.0000	odd	1.0	proton_4p	2Podd
☑	He 2	3204.1173	03.5556	even	1.0	proton_3s	2Seven	03.8400	00.0000	odd	1.0	proton_5p	2Podd
☑	He 2	2734.1786	03.5556	even	1.0	proton_3s	2Seven	03.8889	00.0000	odd	1.0	proton_6p	2Podd
☑	He 2	2512.0268	03.5556	even	1.0	proton_3s	2Seven	03.9184	00.0000	odd	1.0	proton_7p	2Podd
☑	He 2	2386.1926	03.5556	even	1.0	proton_3s	2Seven	03.9375	00.0000	odd	1.0	proton_8p	2Podd
☑	He 2	2306.9634	03.5556	even	1.0	proton_3s	2Seven	03.9506	00.0000	odd	1.0	proton_9p	2Podd
☑	He 2	2253.4441	03.5556	even	1.0	proton_3s	2Seven	03.9600	00.0000	odd	1.0	proton_10p	2Podd
☑	He 2	1215.1893	03.0000	odd	1.0	proton_2p	2Podd	03.7500	00.0000	even	1.0	proton_4s	2Seven

- Result is an HTML table
- Provide ASCII export or transfer as VOTable using SAMP

Interoperability in Specview

- Implementation has been done with Java APIs to read XSAMS files and query registry

- It has been integrated into the existing GUI

- For now the query is only done on a range of wavelength (similar to SLAP)

- This functionnality is available since the 2.16 version of Specview

- Since the last release (2.17.2) Specview can also open spectra sent via SAMP messages (using jsamp library)

VAMDC
Virtual Atomic and Molecular Data Centre

DEMO

SEVENTH FRAMEWORK PROGRAMME

e-infrastructure

Future evolution

- Displaying more detailed informations about each line
- New query interface for VAMDC nodes