

VAMDC

<http://www.vamdc.eu>

Data Access

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on behalf of The VAMDC Consortium



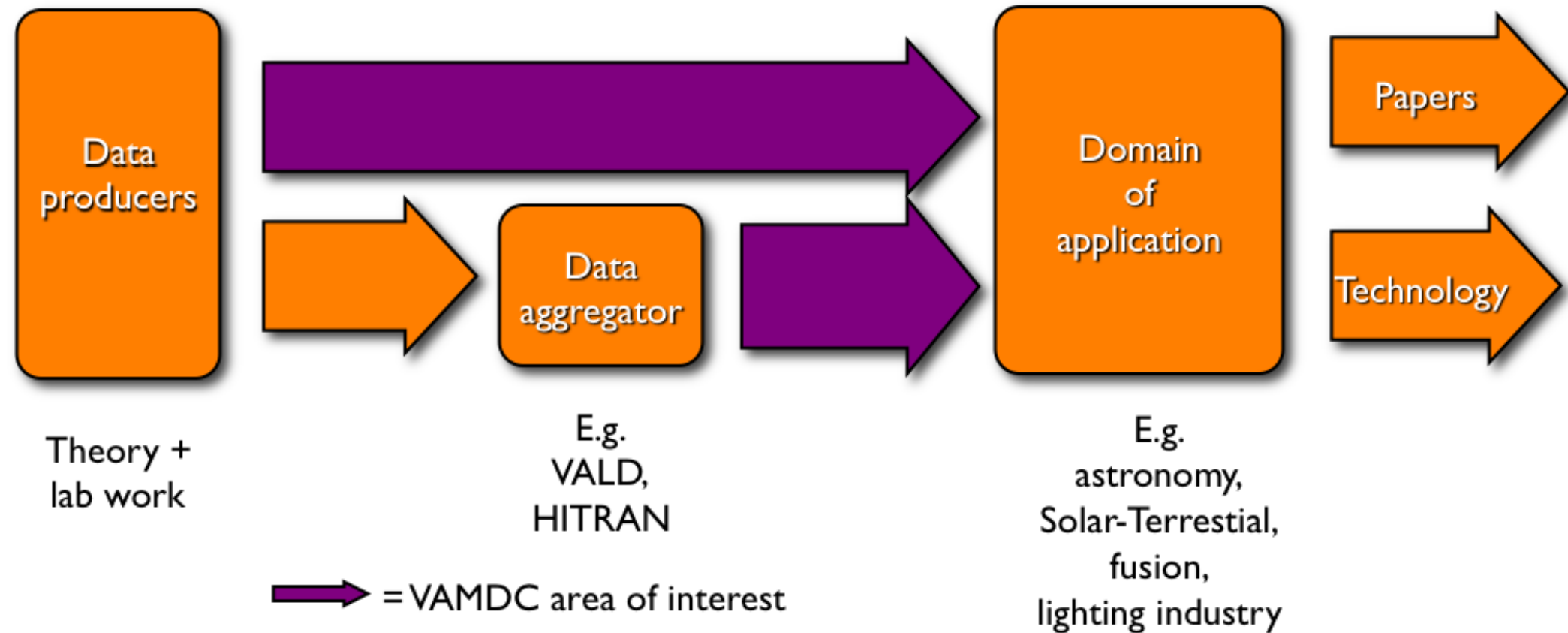
The VAMDC Service Challenge

- A&M data underpins many areas of research
 - Providing access to a wide range of users (astronomy, nuclear, climatology, biology) in academia and industry
- Data is complex and increasingly large
- Handling of data (often) involves use of applications
- Issues with ensuring data completeness & quality
- Coordination and standards – organising the A&M community

Challenge: provide data access to **all** A&M data to **all** end user communities

... translated ...

“We make it easier to publish and to use A&M data”

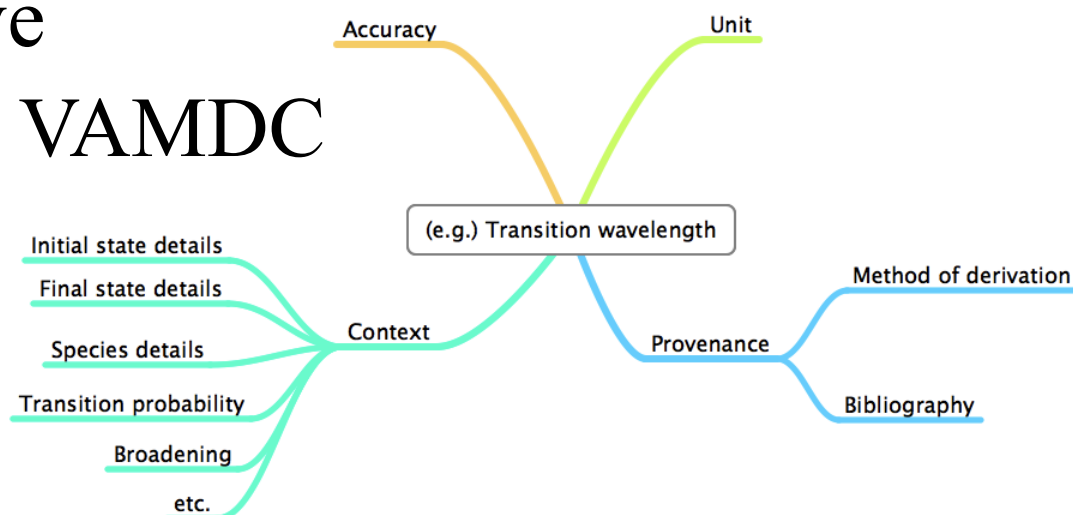


Baseline Service Capabilities

- Level Two Service Release described at:
 - <http://voparis-twiki.obspm.fr/twiki/bin/view/VAMDC/Na2T5>
- Complete range of VAMDC data sets accessible
 - BASECOL, CHIANTI, HITRAN, VALD
- Simple data service interface
 - XSAMS interface
 - Ability to convert output format at client
- Rich query interface – e.g. atoms, molecules, transitions, collisions, free form
- Demonstrates distributed data access as data held across a range of VAMDC data centres

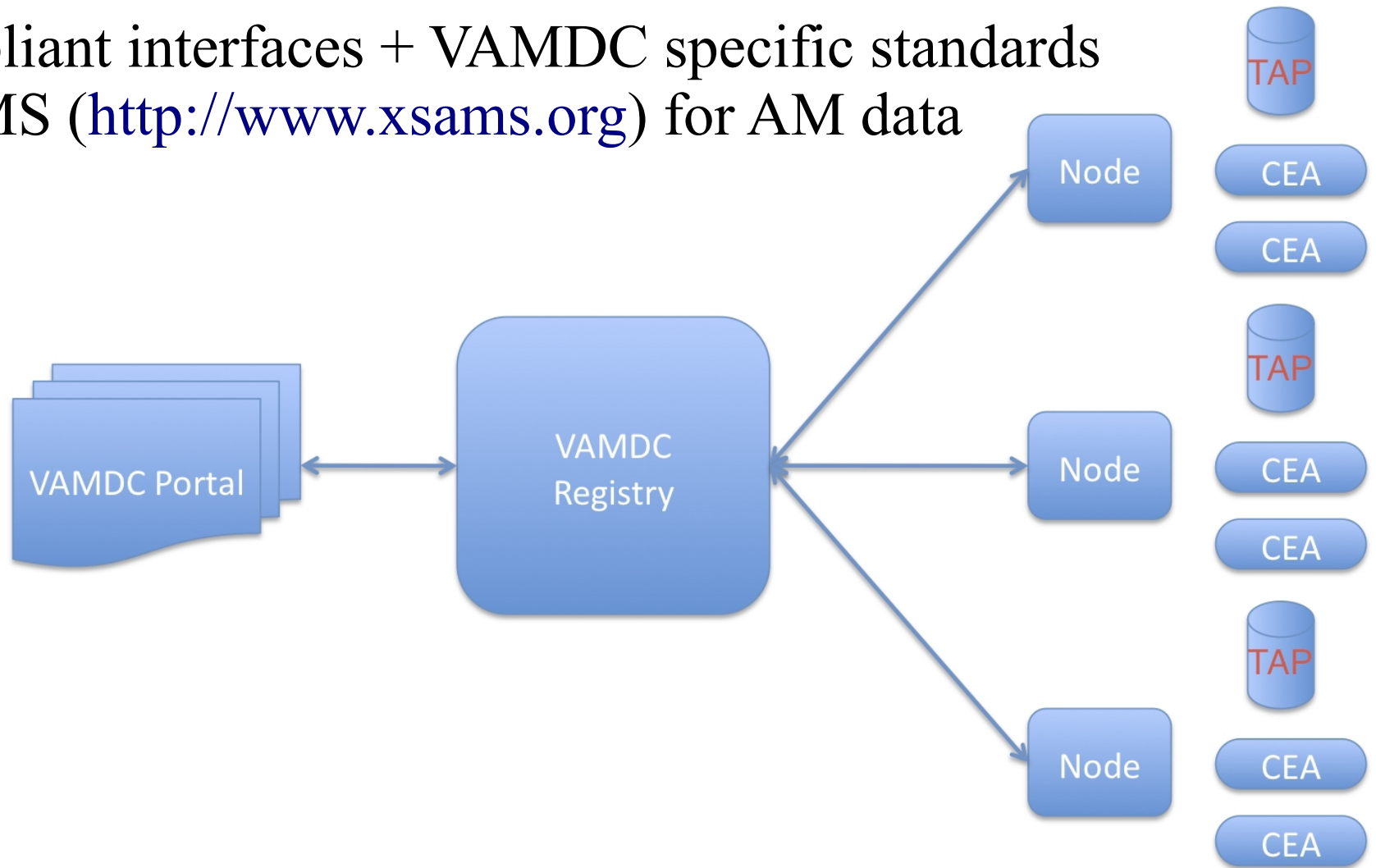
Interoperability

- Common data format – XSAMS
- XML Schema for Atoms Molecules and Solids
 - Quantum states, radiative transitions, collisional processes, etc.: broad range of A&M data
 - Easily transformed into other formats
- Original IAEA initiative
 - Development now at VAMDC



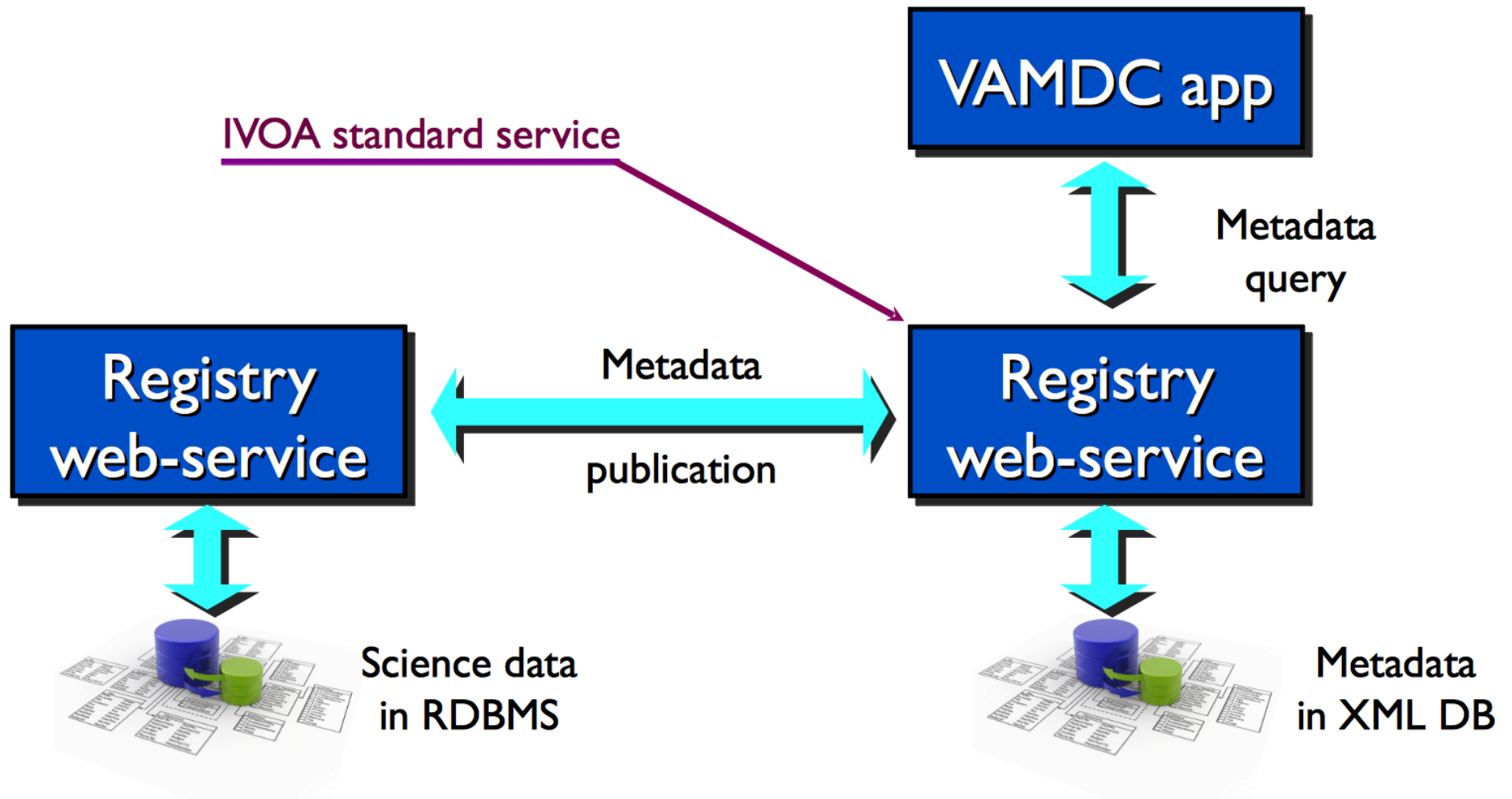
VAMDC: a working infrastructure

IVOA compliant interfaces + VAMDC specific standards
XSAMS (<http://www.xsams.org>) for AM data



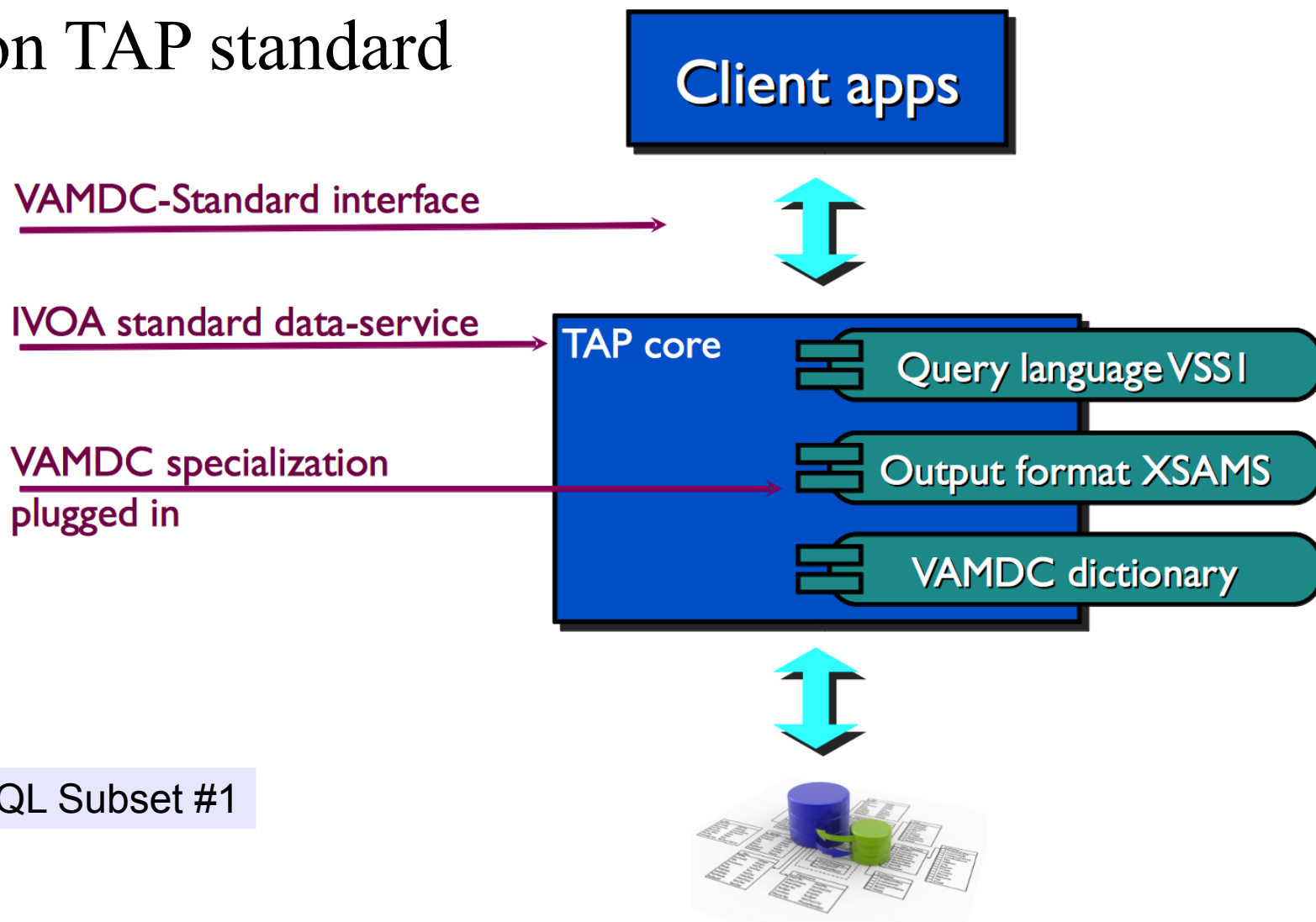
VAMDC Registry

based on IVOA Registry Std



Data Access: TAP-XSAMS

- Based on TAP standard



VSS1 = VAMDC SQL Subset #1

TAP-XSAMS

<http://www.vamdc.eu/documents/standards/dataAccessProtocol/vamdctap.html>



[VAMDC home](#) | [standards documentation](#) »

[previous](#) | [next](#) | [index](#)

[Data access protocol \[v 11.05\] \[r 11.05\]](#) »

The VAMDC variant of the Table Access Protocol (TAP)

Many data-sets in VAMDC include information that can be rendered in the VAMDC-XSAMS data model. Data in that common model could be transformed to and from a table model which uses the same columns for all data-sets. If all the data-sets had this table model as part of the schemata of their databases, then a SQL query to that model would work on all data-sets, and the results could be written in a common format.

VAMDC-TAP is a protocol for data-access services that provide the common table model matching VAMDC-XSAMS and which can return the results of queries in VAMDC-XSAMS. VAMDC-TAP services accept queries in a restricted form of SQL (VSS1: VAMDC SQL Sub-set #1) and return results in VAMDC-XSAMS or in certain tabular formats. Implementations of VAMDC-TAP map queries from the common table-model to the actual schemata of their databases.

Table Of Contents

The VAMDC variant of the Table Access Protocol (TAP)

- [Required features](#)
- [Query language](#)
- [Format of results](#)
- [Standard view of database](#)
- [Registration](#)
- [Making a synchronous query](#)
- [HTTP Header Information](#)
 - [Statistics](#)
 - [Volume limitation](#)
 - [Document size estimate](#)
 - [Volume limitation example](#)
- [HTTP result codes](#)

[Previous topic](#)



Data Interfaces: TAP-XSAMS outputs

- Common way of specifying a data extract

<http://some.where/web/service?LANG=VSSI&QUERY=...>

Identifies a database

Identifies a data extract

- Standard web-service parameters
- Common query language
- Common dictionary of terms

Query Parameters

- Atoms
- Molecules
- Transitions
- Collisions
- Free Form

Atoms

Atomic (elemental) symbol:

Atom Inchi:

Atom Inchi Key:

Atom Mass Number: Range

Atom Ion Charge: Range

Atom Nuclear Charge: Range

Transitions

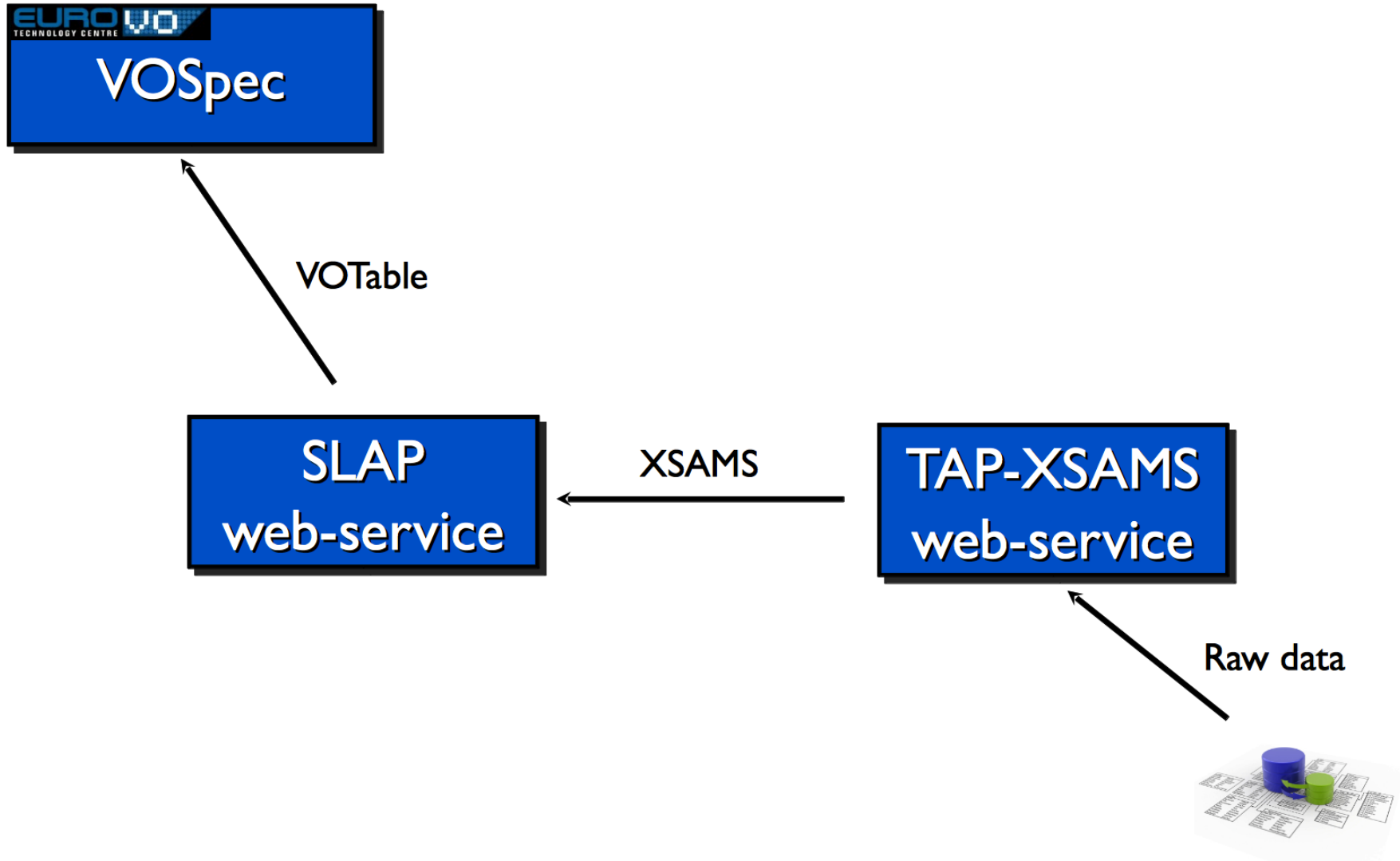
RadTransWavelength: From To

Units

XSAMS Query: SELECT ALL WHERE AtomSymbol = Ca AND AtomIonCharge >= 1 AND AtomIonCharge <= 1 AND RadTransWavelength >= 8400 AND RadTransWavelength <= 8600

| Resource Title | Status | Species | States | Radiative | Collisions | Non Radiative | Sources |
|----------------------------------------------------------------------------|--------|---------|--------|-----------|------------|---------------|---------|
| <input checked="" type="checkbox"/> Lund laboratory spectroscopy database | OK | 0 | 0 | 0 | 0 | 0 | 0 |
| <input checked="" type="checkbox"/> VAMDC-TAP service for Chianti database | OK | 0 | 0 | 0 | 0 | 0 | 0 |
| <input checked="" type="checkbox"/> Vienna Atomic Line Database (VALD) | OK | 1 | 7 | 5 | 0 | 0 | 0 |

Use of IVOA SLAP



Taverna and VAMDC

Workflow Entry: XStar with Topcat (version 1)

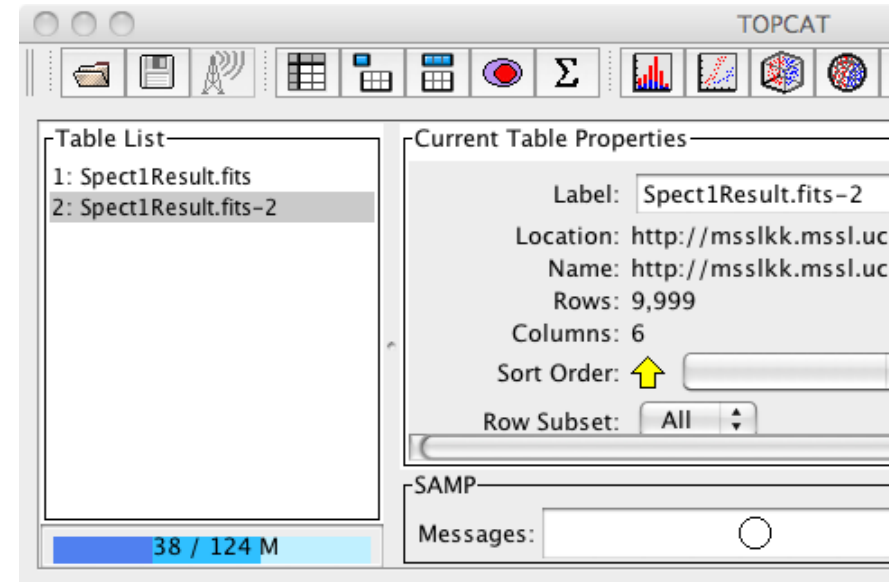
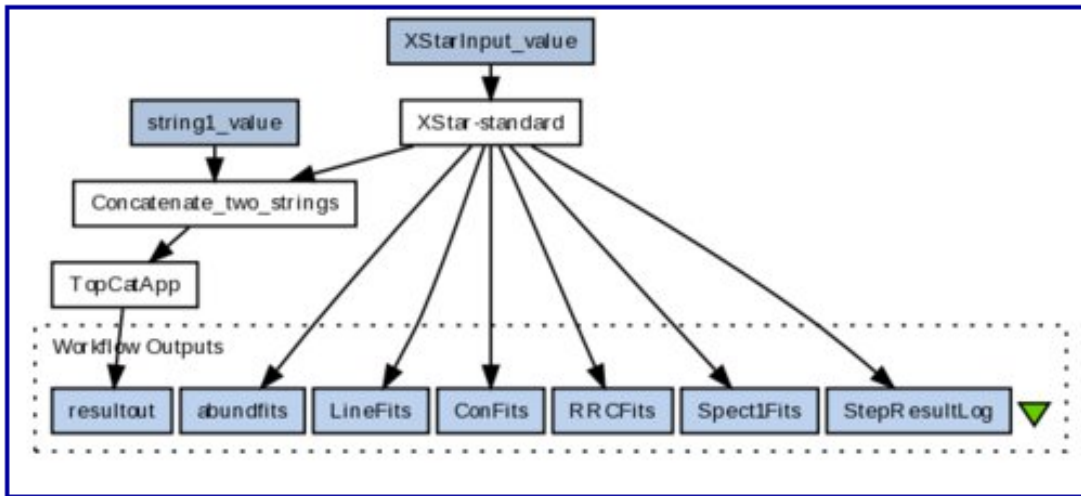
Type: Taverna 2

Uploader: Stormshadow

Created at: Wed Sep 14 22:34:17 BST 2011

License: Creative Commons Attribution-NoDerivs 3.0 License

Available at myexperiment.org



Requires VAMDC plugin, Prototype plugin to be released to everyone with a target to the VAMDC beta testers by end of September 2011. This XStar app uses a UWS pattern developed by the IVOA to execute the application. Currently executes TopCat on the users machine 'if available', this will be integrated as part of the taverna plugin at a later release. This is a simple workflow designed to run XSTAR with an user selected input file given as a URL reference. XSTAR is a computer program for calculating the physical conditions and emission spectra of photoionized gases. More information can be found here: - XSTAR home page: <http://heasarc.nasa.gov/heasoftware/xstar/xstar.html> - XSTAR on the Spinet client (Soaplab2): <http://caoba.ivic.vt.edu:8180/soaplab2-axis/>

VAMDC Level 2 Portal



VAMDC Portal [Home](#) [XSAMS Query Builder](#) [Query Log](#)

| Query | Resource | Status | View |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------|
| SELECT ALL WHERE AtomSymbol = 'Co' | http://ag02.ast.cam.ac.uk/chianti/tap/sync?REQUEST=doQuery&LANG=VSS1&FORMAT=XSAMS&QUERY=SELECT+ALL+WHERE++AtomSymbol+%3D+%27Co%27+ | Executing | |
| | http://batz.lpma.jussieu.fr:8080/tap/service/TAP/sync?REQUEST=doQuery&LANG=VSS1&FORMAT=XSAMS&QUERY=SELECT+ALL+WHERE++AtomSymbol+%3D+%27Co%27+ | Executing | |
| | http://ghosst-prod.obs.ujf-grenoble.fr/vamdc/tap/sync?REQUEST=doQuery&LANG=VSS1&FORMAT=XSAMS&QUERY=SELECT+ALL+WHERE++AtomSymbol+%3D+%27Co%27+ | Executing | |
| | http://topbase.obspm.fr/vamdc/tap/sync?REQUEST=doQuery&LANG=VSS1&FORMAT=XSAMS&QUERY=SELECT+ALL+WHERE++AtomSymbol+%3D+%27Co%27+ | Finished | View |

Query Parameters

Atoms

Atomic (elemental) symbol:

Atom Inchi:

Atom Inchi Key:

Atom Mass Number: Range

Atom Ion Charge: Range

Atom Nuclear Charge: Range

Refine the Submitted Query

XSAMS Query: SELECT ALL WHERE AtomSymbol = 'Co'

| Resource Title | Status | Species | States | Radiative | Collisions | Non Radiative | Sources |
|----------------------------------------------------------------------------|--------|---------|--------|-----------|------------|---------------|---------|
| <input checked="" type="checkbox"/> TOPbase : VAMDC-TAP interface | OK | | | | | | |
| <input checked="" type="checkbox"/> TAP-XSAMS for GhoSST database | OK | 0 | | | | | 1 |
| <input checked="" type="checkbox"/> BASECOL: VAMDC-TAP interface | OK | 6 | 0 | 0 | 11 | 0 | 0 |
| <input type="checkbox"/> Lund laboratory spectroscopy database | | | | | | | |
| <input checked="" type="checkbox"/> VAMDC-TAP service for Chianti database | OK | | 112 | 602 | | | |
| <input type="checkbox"/> Vienna Atomic Line Database (VALD) | | | | | | | |

Cancel
Get data

Developed in IoA, University of Cambridge by Asif Akram.

