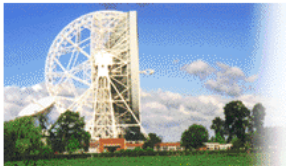


Taverna in the VO

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Jodrell Bank
Observatory



Talk Outline

Taverna

AstroRuntime

Demo

Taverna

The Taverna workbench is a free software tool for designing and executing workflows, created by the myGrid project.

Allows a biologist or bioinformatician with limited computing background and limited technical resources and support to construct highly complex analyses over public and private data and computational resources, all from a standard PC, UNIX box or Apple computer.

The myExperiment social web site supports finding and sharing of workflows.

But with a nice plug-in architecture that Taverna has plugins are being built to connect to the VO community. ESO uses a tool called Reflex in implementing data reduction pipelines via Taverna. AstroGrid have developed a plug-in adaptor for Taverna, thereby exposing the standard range of IVOA standard services, thus those for images (SIAP), spectra (SSAP), tables (TAP), and applications (CEA-Common Execution Architecture) to Taverna.

<http://taverna.sourceforge.net/>

<http://www.myexperiment.org/>

Taverna File Tools Workflows Advanced

Taverna Workbench v1.5.1.6

Design Results Discover

Search Watch loads

Local Services

- Notification Processor
- Local Java widgets
 - String Constant
 - BSF scripting host
 - AbstractProcessor - Processor for abstract taskdescriptions
 - RShell - Run R/S scripts through RServe
 - Beanshell scripting host
- WSO2 @ http://www.ebi.ac.uk/collab/mygrid/service1/goviz/GoViz.jws/wsdl
- WSO2 @ http://eutils.ncbi.nlm.nih.gov/entrez/eutils/soap/eutils.wsdl
- WSO2 @ http://soap.bind.ca/wsdl/bind.wsdl
- WSO2 @ http://www.ebi.ac.uk/ws/services/urn:Dbfetch/wsdl
- WSO2 @ http://soap-genome.jp/KEGG.wsdl
- WSO2 @ http://www.ebi.ac.uk/xembl/XEMBL.wsdl
- Biomart service @ http://www.biomart.org/biomart
- Biomoby @ http://mobycentral.licapture.ubc.ca/cgi-bin/MOBY05/mobycentral.pl
- SeqHound @ seqhound.blueprint.org
- Soaplab @ http://www.ebi.ac.uk/soaplab/emboss4/services/

Advanced model explorer

Workflow Object properties

Add Nested Workflow Offline

Workflow object	Retrie	Delay	Backoff	Thread	Critical
BiomartAndEMBOSSAnalysis					
Workflow inputs					
Workflow outputs					
outputPlot					
HSapiDs					
MMusIDs					
RNoriDs					
Processors					
FlattenImageList	0	0	1	1	
getMMsequence	0	0	1	1	
getRNsequence	0	0	1	1	
getHSsequence	0	0	1	1	
hsapiens_gene_ensembl	0	0	1	1	
GetUniqueHomolog	0	0	1	1	
CreateFasta	0	0	1	1	
seqret	0	0	1	5	
emma	0	0	1	5	
plot	0	0	1	5	
Data links					
CreateFasta.fasta--seqret:sequen					
GetUniqueHomolog.HSOut-getHS					
GetUniqueHomolog.MouseOut-gi					

Save diagram Refresh Configure diagram

```

graph TD
    Input[hsapiens_gene_ensembl] --> GetUniqueHomolog[GetUniqueHomolog]
    GetUniqueHomolog --> getMMsequence[getMMsequence]
    GetUniqueHomolog --> getRNsequence[getRNsequence]
    GetUniqueHomolog --> getHSsequence[getHSsequence]
    getMMsequence --> CreateFasta[CreateFasta]
    getRNsequence --> CreateFasta
    getHSsequence --> CreateFasta
    CreateFasta --> seqret[seqret]
    seqret --> emma[emma]
    emma --> plot[plot]
    plot --> FlattenImageList[FlattenImageList]
    FlattenImageList --> outputPlot[outputPlot]
    FlattenImageList --> HSapiDs[HSapiDs]
    FlattenImageList --> MMusIDs[MMusIDs]
    FlattenImageList --> RNoriDs[RNoriDs]
  
```

Rendering done.

Astro Runtime

A client-side library of functions to access VO

scope: integrate all VO standards, popular ad-hoc services, suitable helper functions

Library is exposed as a desktop service

accessible from almost all programming languages

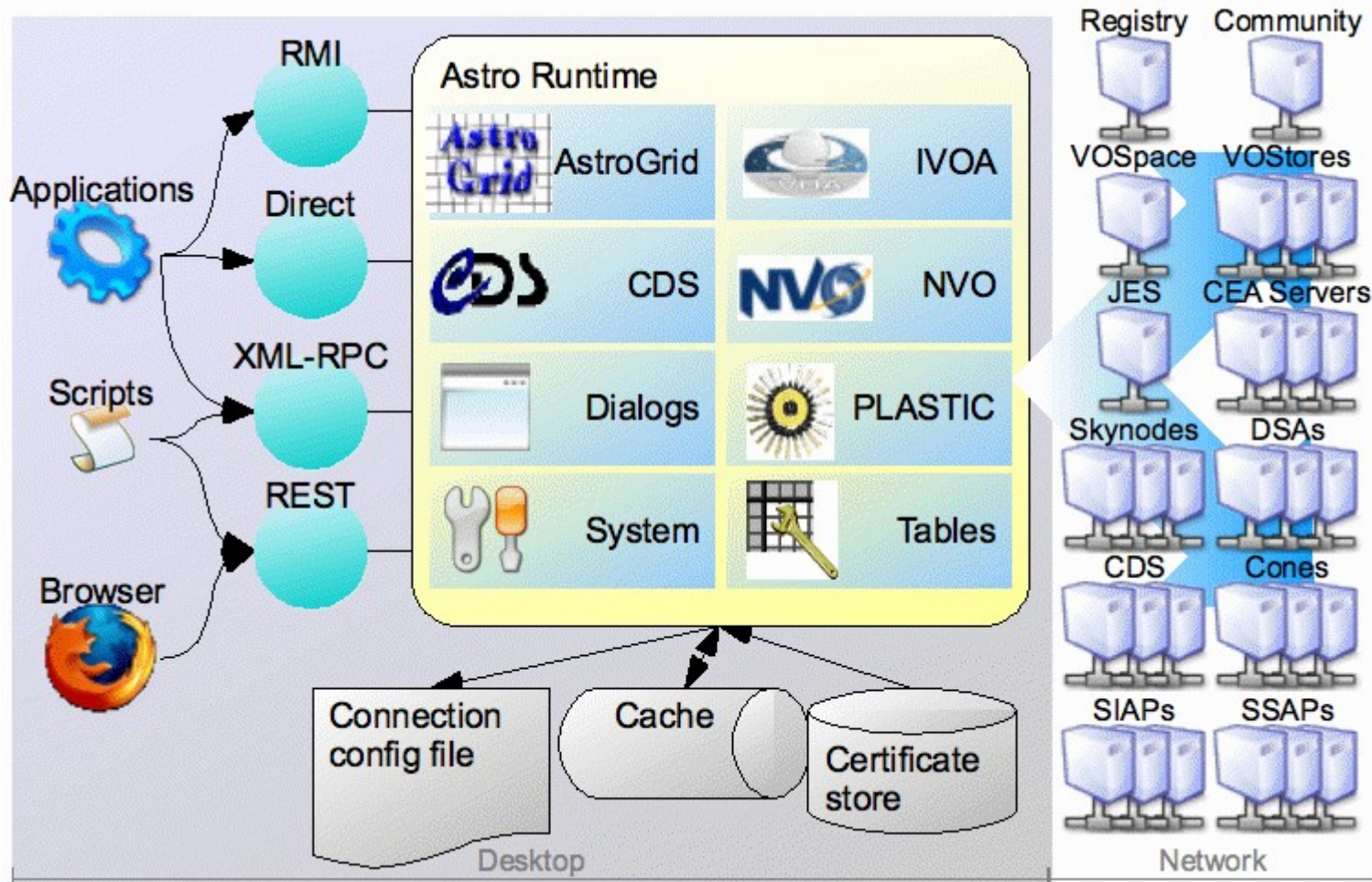
XMLRPC, HTTP, RMI, C-binding

API designed to use consistent abstractions and types

shallow learning curve

Insulates from change.

Astro Runtime - Schematic



<http://www2.astrogrid.org/desktop/astro-runtime>
<http://www.astrogrid.org>

Client-side Science Scripting

Command-line access to VO

through Python scripts (or perl, or other language)
calling AstroRuntime routines.

astronomer can integrate VO services with their
existing toolset.

Power of the for loop.

remote app. execution

sextractor script, montage mosaic tool

image search at multiple positions

cone search over multiple archives

Client-side Workflow

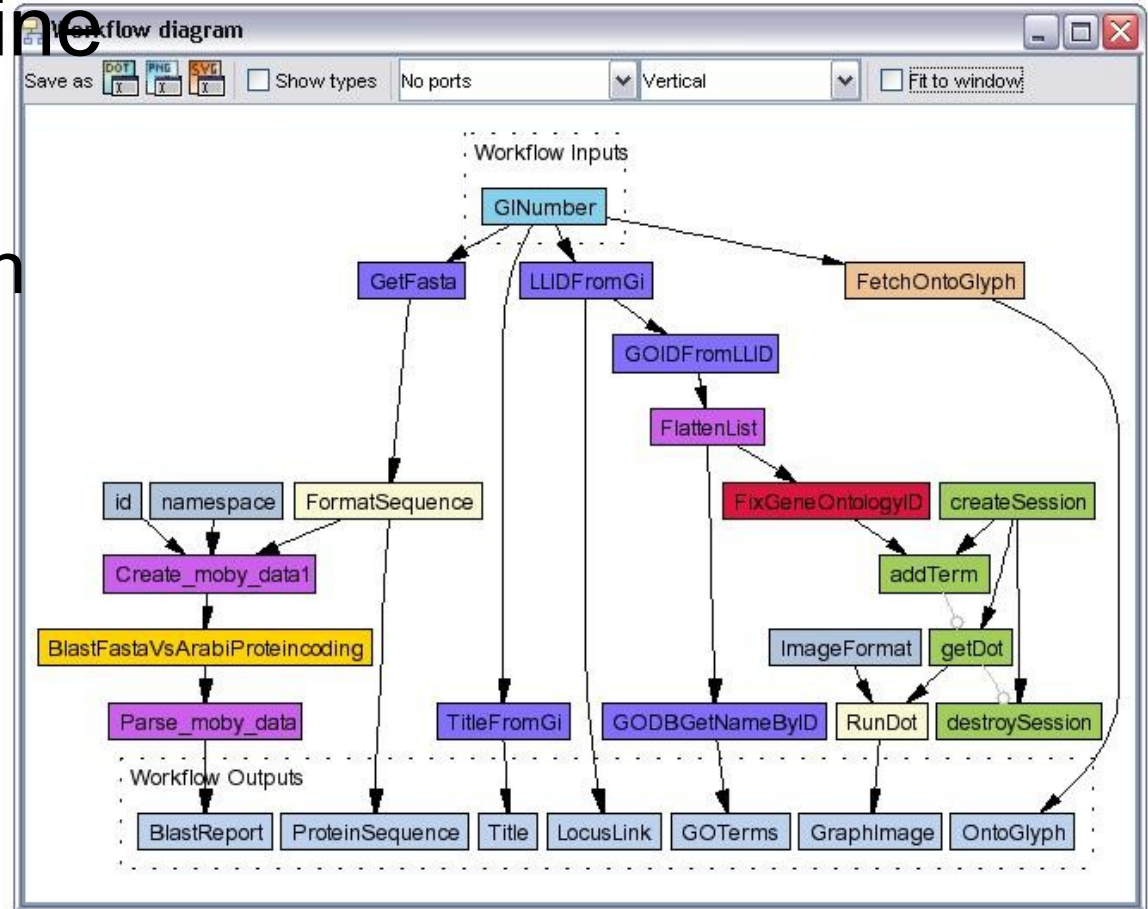
Taverna workflow engine

Graphical interface

Step-through execution

Connects to Astro

Runtime to call VO services.



Demo and Links

<http://www.myexperiment.org/><http://www.astrogrid.org>

<http://www2.astrogrid.org/desktop/astro-runtime>

<http://taverna.sourceforge.net>

<http://www.myexperiment.org/>