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Observatoire Astronomique
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IVOA

FASE

FASE (1/7)
Future Astronomical Software Environments
OPTICON

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http://archive.eso.org/opticon/twiki/bin/view/Main/WebHome

OPTICON (Optical-Infrared Co-ordination Network for Astronomy) EU FP6. It contains a network (N3.6) for discussing requirements and specifications for a future environment for data analysis in astronomy.

FASE (2/7)
Future Astronomical Software Environments
OPTICON

The top level objectives for this OPTICON Network are:

- establish the high level requirements for a future astronomical software environment
- identify areas for which a common environment is desirable and feasible
- draft interface and design recommendations for these areas

temptative milestones

- Draft requirements: fall 2004
- Definition of subsystems or workpackages: winter 2004/2005
- Overview of interface specifications needed: spring 2005
- First demo/prototype: ADASS 2005
- Definition of second demo: fall 2005

FASE : Use cases (3/7)

Desktop data processing and analysis system

This is an astronomer's workbench for data analysis, providing both an integrated set of tools, as well as a scripting environment (e.g., Python, Java) for the user to develop their own software.

Pipeline processing system

Execution may take place either remotely, or locally on the user system, hence it is necessary to be able to export the pipeline software to the user.

Service framework for VO

Analysis services for the VO can be produced by wrapping application scripts and publishing them to the VO via a web portal. The resultant VO-enabled applications can be used in Grid workflow systems such as Astrogrid

A common architecture for all these cases is desirable to enhance familiarity and allow re-use of software in multiple contexts.

FASE: Goals (4/7)

Open architecture

The major elements of the system should be replaceable modules with well defined interfaces, often usable stand-alone separately from the rest of the system.

Multi-wavelength

The system framework should be general enough to support all branches of astronomy. System components or applications may come from many groups.

User programmable

It should be possible for a user with a scientific rather than computer science background to develop applications with minimal training.

Scalable

The system should be transparently scalable to run on anything from a laptop to a Beowulf cluster, or on the grid.

FASE : Architecture (5/7)

Presentation layer

Presents the functionality of the system

Applications layer

Used to implement top level applications. (Python, Java, a GUI…)

Execution framework

Provides the functionality needed to execute components, (component registration and management, distributed execution, and so forth)

Container

Interface between the execution framework and an individual component.

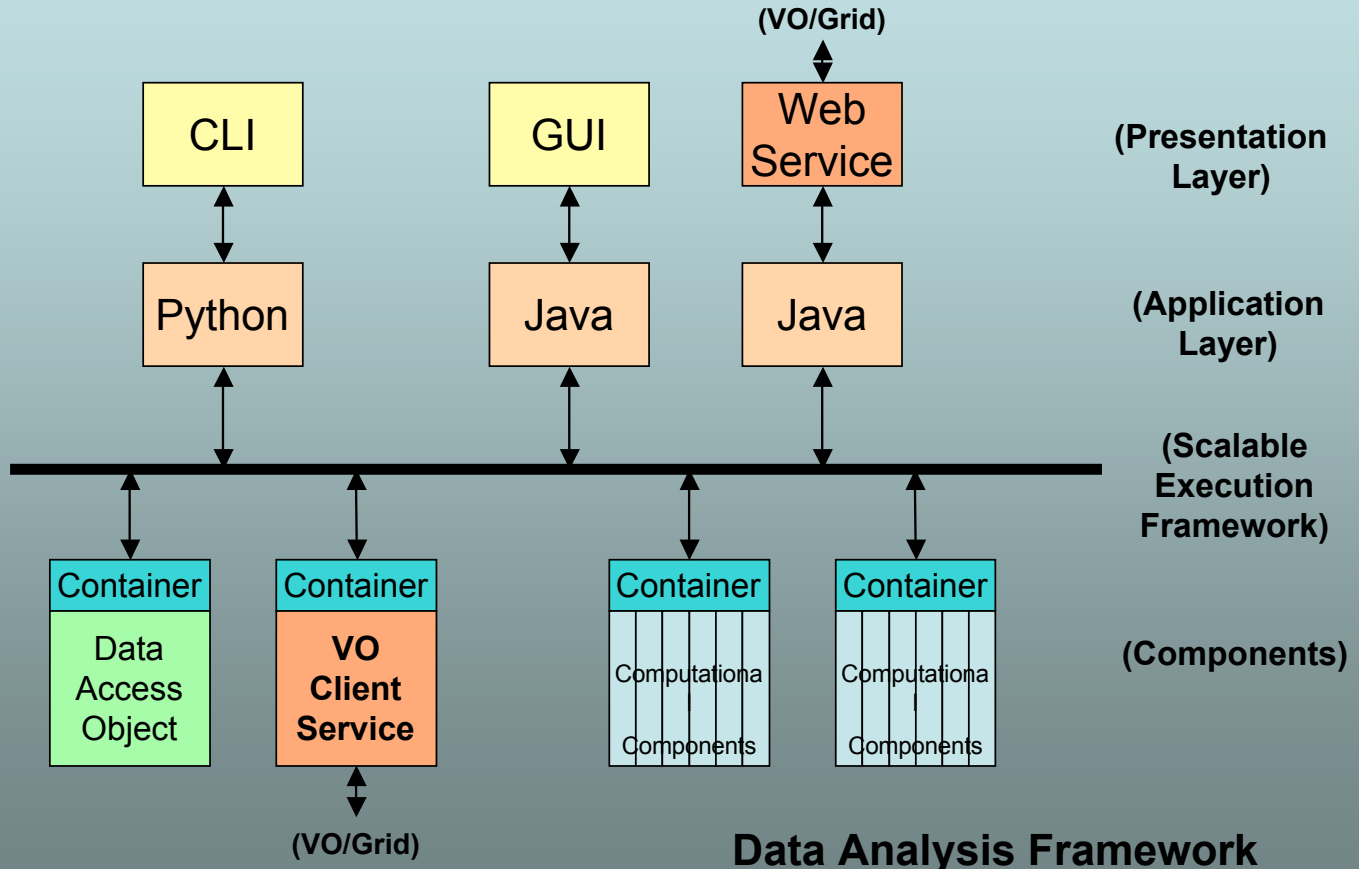
Components

Computational object, with one or more service methods, which can be plugged into the framework.

Task-Parameter Model

A special case of a component is a task, with a single service method, using a parameter set to drive the functioning of the task. Output from a task can also be returned as a parameter set, and passed on as input to another task.

FASE (6/7)



Data Analysis Framework
VO portal / Pipeline / VO Service Framework

FASE Status (7/7)

Specification of the requirements and high level architecture have been completed.

Most of the major elements of the system have been prototyped, either directly or in related systems..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