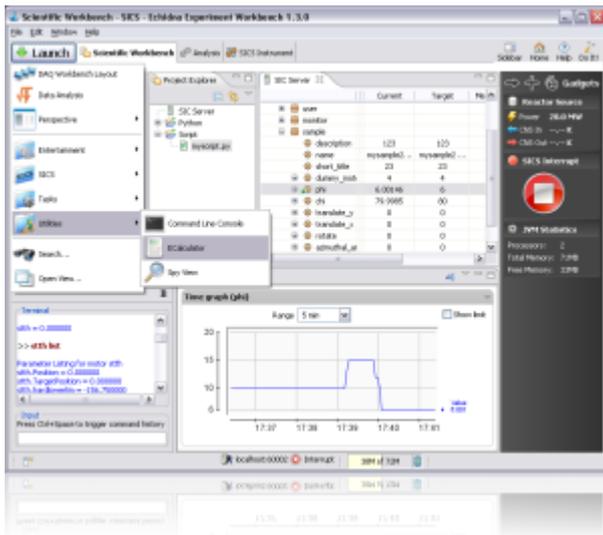


# Project Information

## GumTree is

- a cross-platform **scientific workbench**
- a front-end for **instrument control** and **data analysis**
- an **open source** Eclipse Rich Client Platform project
- an **OGSi enabled middleware server** to provide centralised access to the instrument system

GumTree lowers the barrier between users and complex instrument hardware. It aims to provide a single entry point to all supporting infrastructures that are required for performing scientific experiment.

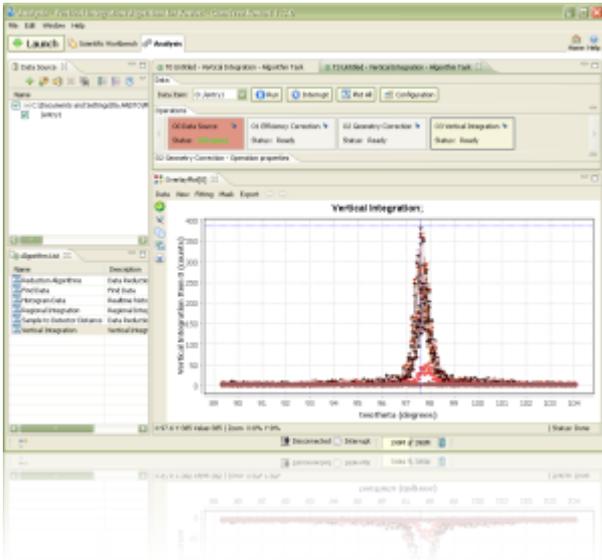


## Instrument Control Frontend

GumTree provides user friendly graphical interference to communicate and monitor the hardware via the instrument control system. The current supported control system is the [SINQ Instrument Control Software](#) from PSI. Support for other popular control system such as [TANGO](#) and [EPICS](#) are under construction.

## Data Analysis Suite

GumTree integrates instrument control as well as data analysis feature into a single application. The data analysis suite can be used as a standalone tool, or embedded into the experiment logic. This enable users to perform live data processing, as an important tool evaluate data quality during an experiment. GumTree provides data analysis API such as common data model, error propagation, 1D/2D visualisation, and XML based processor framework to chain up analysis code blocks into a reduction algorithm.



```

from time import sleep
result = ExperimentResult()

for i in xrange(1, 11):
    sample = SampleResult()
    result.getSampleResults().add(sample)

config = ExperimentConfig()
sample.getConfig().add(config)

trans = TransmissionMeasurement()
    
```

```

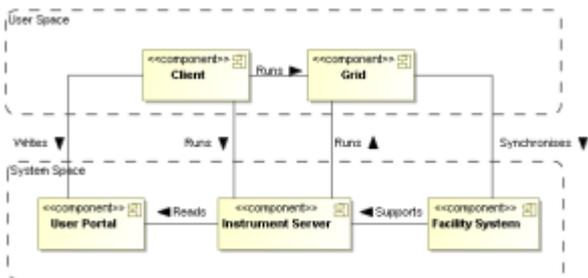
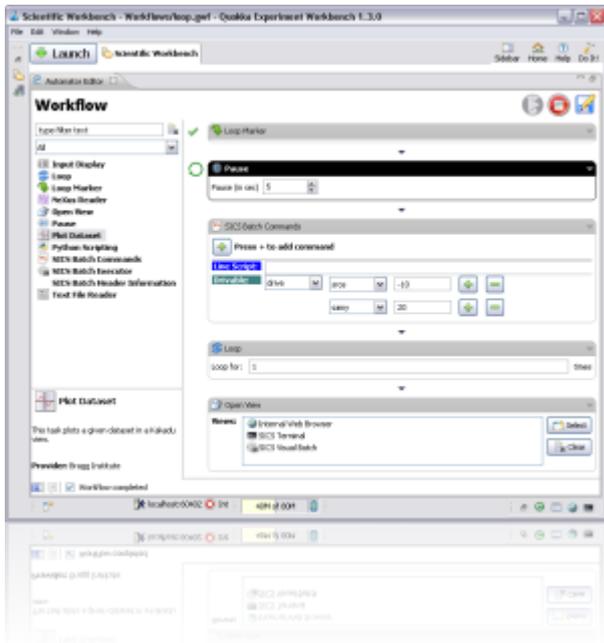
ta\quopy\quokka\
>> sys.version
2.5.4 (r254:679
[MSC v.1310 32 b
Command > quokka
    
```

## Scripting Ability

GumTree uses the Java scripting API (JSR-223) to allow a number of scripting languages interacting with the GumTree at runtime, for example, users can combine instrument control and data analysis features in a single script. Since GumTree is built on top of the Eclipse IDE platform, users can embed existing scripting IDE plug-ins to provide code editing and auto completion.

## Experiment Workflow

Workflow is a new way of automating a combination of tasks in a graphical manner. It is sometimes referred as visual scripting, or service mashup. Like scripting, a workflow can integrate different kinds of task like instrument control and data processing, and execute as automation.

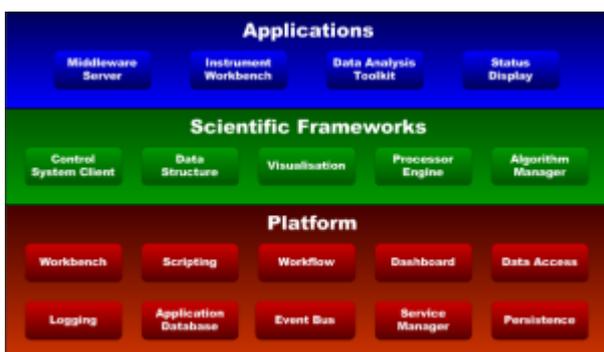


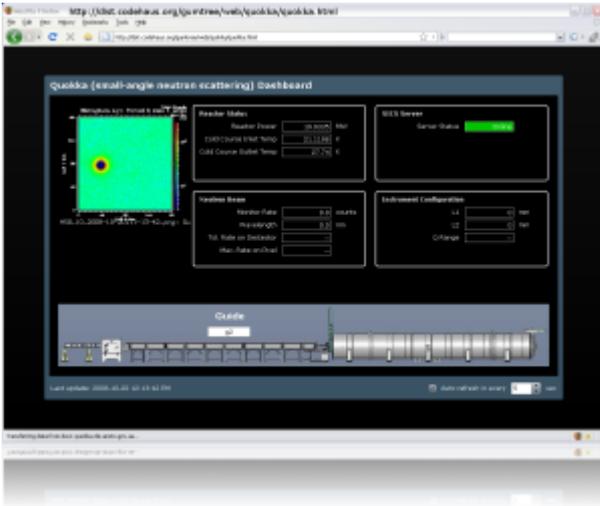
## Connectivity

The vision of GumTree is to provide a single entry point for users to interact with various services that are available in the instrument network. Usually a network provides access to instrument control system, database portal system, data archive system, or even grid/cloud infrastructure for high performance computing. Via the plug-in architecture, developers can easily provide their system connectors and those available as services to the rest of the GumTree system.

## Application Framework

GumTree is also a generic framework for building desktop applications. All features are designed to be highly reusable and packaged as individual components. Developers can take part of GumTree and embed to their own Eclipse Rich Client Platform or OSGi based application.





## Server Side

GumTree can be run as a server process to service external web clients. The GumTree is equipped with ReSTful web service which promotes better integration with other Web 2.0 internet applications.

## Open Source Technology

GumTree is open source and is backed by a number of powerful and popular open source technologies for cost effectiveness. This also means developers can modify and redistribute any part GumTree for their own use.

