



A Browser Based Multi-User Working Environment for Physicists

The VISPA project provides graphical interfaces to existing software programs and access to multiple computing clusters through standard web browsers. It further allows users to program and run custom analyses and programs on remote resources.

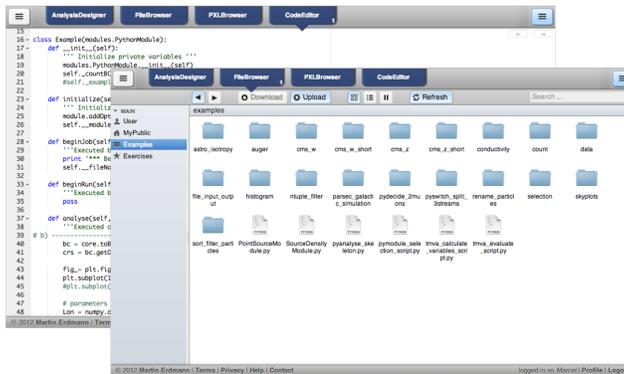
Ready to Go!

Users do not need to install extra software.

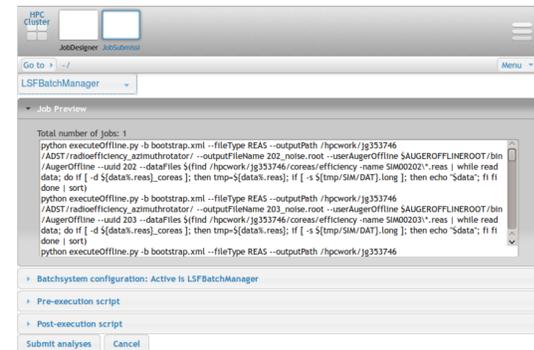
Extensions for common text based analysis out of the box:

- File management
- Public folders to share files
- Code editing
- Job creation and submission
- Image viewer

Can also be used as standalone desktop application.



Back: Code Editor. Edit any file on the worker with syntax highlighting and common shortcuts.
Front: File Manager. Browse and manage files on the worker. Provides common operations and image viewing capabilities.



Job Submission: Submit jobs, custom or from Job Designer, to different batch systems. Currently supported are local submission, Condor, LSF and Grid. The Job Designer helps in the creation of complex lists of batch jobs from parameter lists.

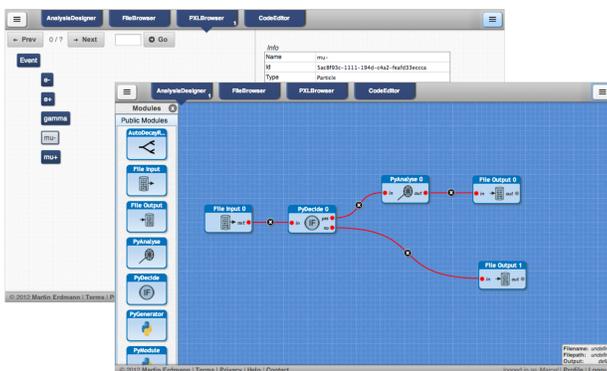
Specialized Extensions

Improve usability and productivity by specialized extension, e.g.:

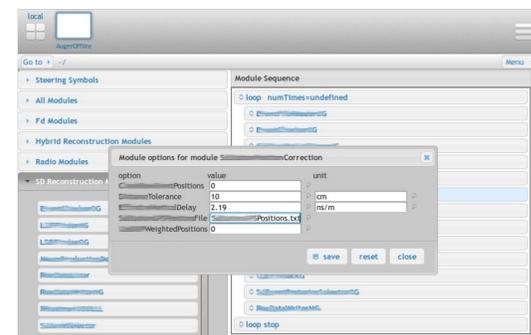
- Steering of the C++ library PXL for high level HEP and astro particle analyses. Including visual module configuration and data browsing.
- Graphical configuration of the Auger analysis and reconstruction framework OFFLINE.

Custom extensions are easy to implement and deploy:

- Client: HTML, CSS and JavaScript
- Server and worker: Python
- Use Python Packaging Index



Back: PXL File Browser. Inspect PXL data files, which are optimized for structured HEP events. Attributes and relations of all objects are accessible.
Front: PXL Analysis Designer. PXL features a graphically steered module system, which is the building block for advanced and complex analyses.



Auger OFFLINE Extension. Auger OFFLINE consists of many modules with a lot of options. This extension eases the configuration of analyses as all modules and their options, including descriptions, are available in one place.

Three-Tier System

Client:

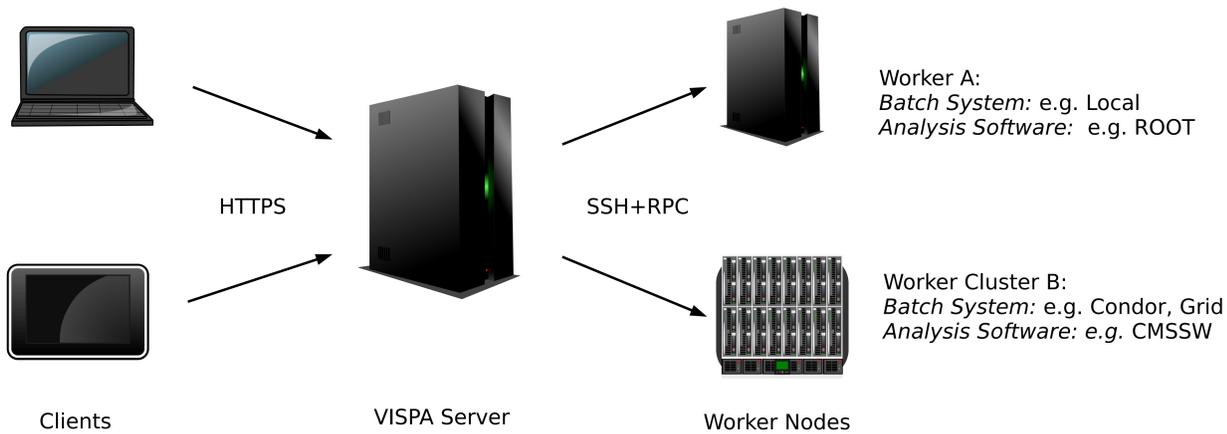
- Web browser as front end

Server:

- Delivers the front end and management infrastructure
- Passes all data and execution requests to the worker nodes
- Can access any number of workers for any number of users

Worker:

- Execute analysis tasks
- Provide access to attached storage
- Any SSH-accessible server running Python can be a worker node



Security

User code only runs on the worker nodes using user accounts.

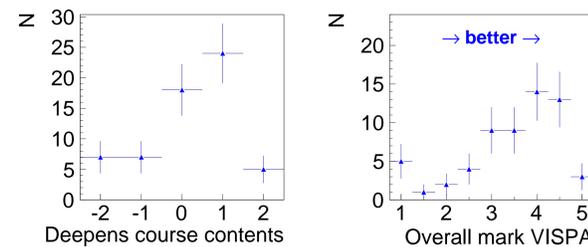
Security concept developed together with our IT department, including

- Access control
- Password protection
- Firewall setup
- Spam prevention
- Backup
- Logging

Application in Education

VISPA serves as a great tool in teaching:

- First test in the winter term 2012/13 with more than 100 3rd year physics students
- One assignment every other week: Solve data analysis exercises
- Positive feedback in course evaluation (two selected responses on the right)
- A paper describing the usage of VISPA in this blended learning initiative has been submitted
- Other institutions are currently evaluating VISPA for their own projects and outreach programs (CMS and Auger)



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