VISPA

Direct Access and Execution of Data Analyses for Collaborations

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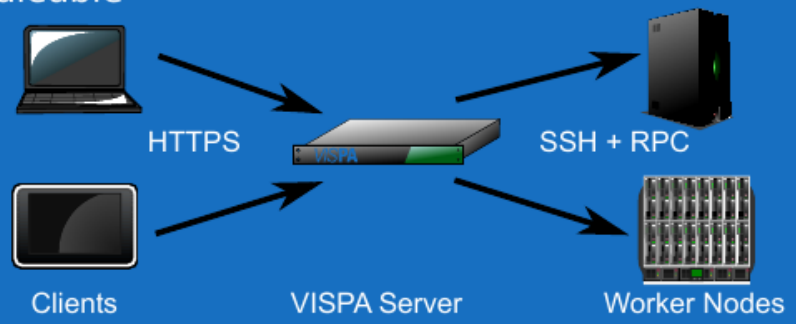
Data Analysis in a Web Browser

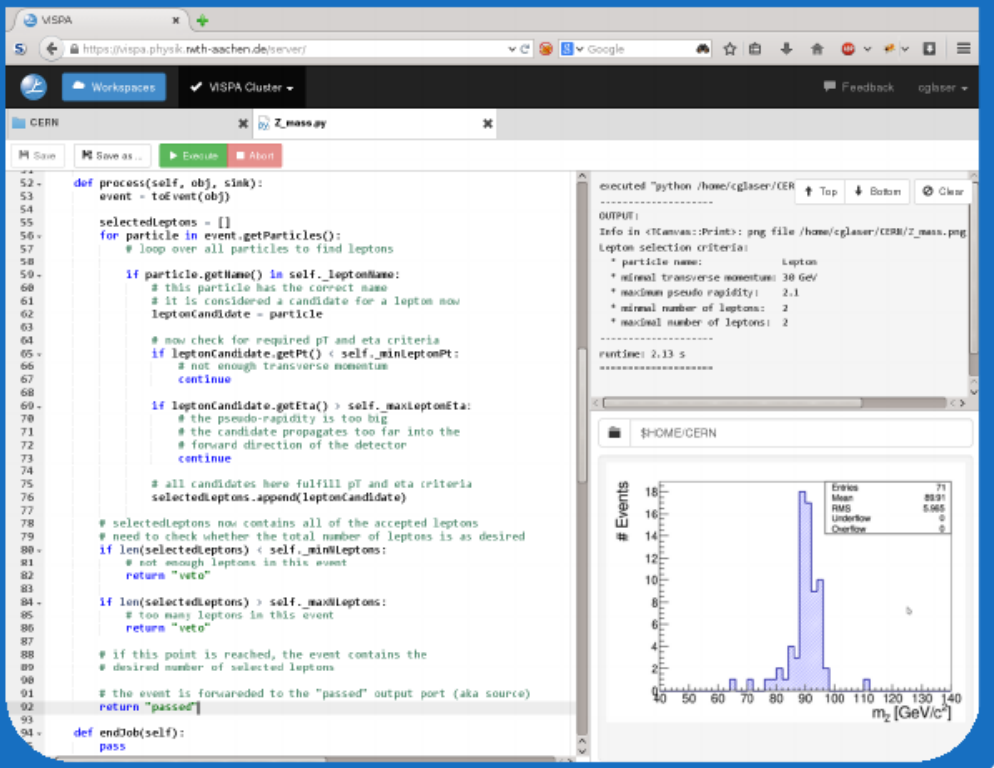
- Graphical front-end to your infrastructure
  - → Makes your software, data and computing resources available through the web
  - → Usable from any system
- Base functionality provided
  - → User management
  - → Apps: file browser, terminal, code editor
- System is extendable with own apps using most common web technologies
  - → HTML5, CSS3, jQuery, bootstrap, template rendering
- Scaleable



  - → Every computer supporting SSH + Python can be used as worker
    - → Bootstrap method: worker is configured automatically

What's new?

- Complete GUI redesign
  - → Look and feel of a desktop software
  - → Frequently used operations are accessible with a single mouse click or a shortkey
- Preference system for individual taste
- Code editor with direct Python script execution



Code-Editor with direct Python Script Execution

VISPA

https://vispa.physik.rwth-aachen.de/server/

Workspaces | VISPA Cluster | Feedback | cglaser

CERN | Z_mass.py

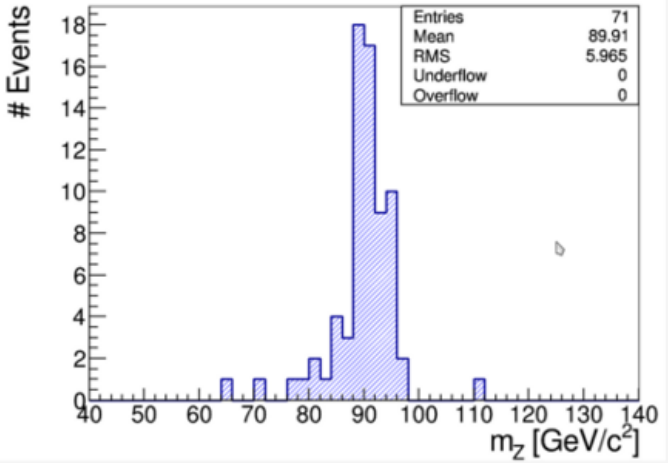
Save | Save as ... | Execute | Abort

```
52  def process(self, obj, sink):
53      event = toEvent(obj)
54
55      selectedLeptons = []
56      for particle in event.getParticles():
57          # loop over all particles to find leptons
58
59          if particle.getName() in self._leptonName:
60              # this particle has the correct name
61              # it is considered a candidate for a lepton now
62              leptonCandidate = particle
63
64              # now check for required pT and eta criteria
65              if leptonCandidate.getPt() < self._minLeptonPt:
66                  # not enough transverse momentum
67                  continue
68
69              if leptonCandidate.getEta() > self._maxLeptonEta:
70                  # the pseudo-rapidity is too big
71                  # the candidate propagates too far into the
72                  # forward direction of the detector
73                  continue
74
75              # all candidates here fulfill pT and eta criteria
76              selectedLeptons.append(leptonCandidate)
77
78      # selectedLeptons now contains all of the accepted leptons
79      # need to check whether the total number of leptons is as desired
80      if len(selectedLeptons) < self._minNLeptons:
81          # not enough leptons in this event
82          return "veto"
83
84      if len(selectedLeptons) > self._maxNLeptons:
85          # too many leptons in this event
86          return "veto"
87
88      # if this point is reached, the event contains the
89      # desired number of selected leptons
90
91      # the event is forwareded to the "passed" output port (aka source)
92      return "passed"
93
94  def endJob(self):
95      pass
96
```

Top | Bottom | Clear

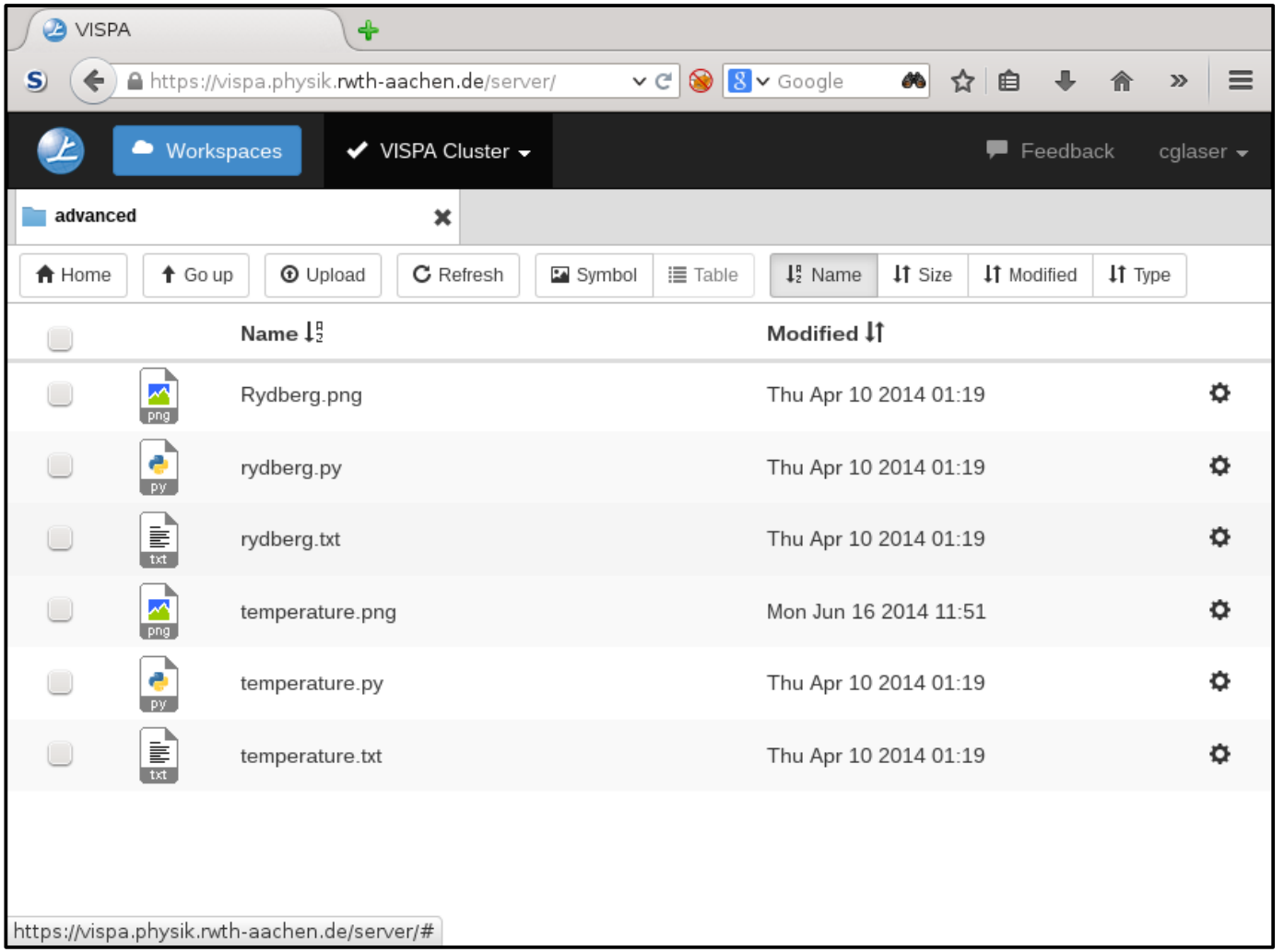
```
executed "python /home/cglaser/CER
--------------------
OUTPUT:
Info in <TCanvas::Print>: png file /home/cglaser/CERN/Z_mass.png
Lepton selection criteria:
  * particle name:              Lepton
  * minmal transverse momentum: 30 GeV
  * maximum pseudo rapidity:    2.1
  * minmal number of leptons:   2
  * maximal number of leptons:  2
--------------------
runtime: 2.13 s
====================
```

$HOME/CERN



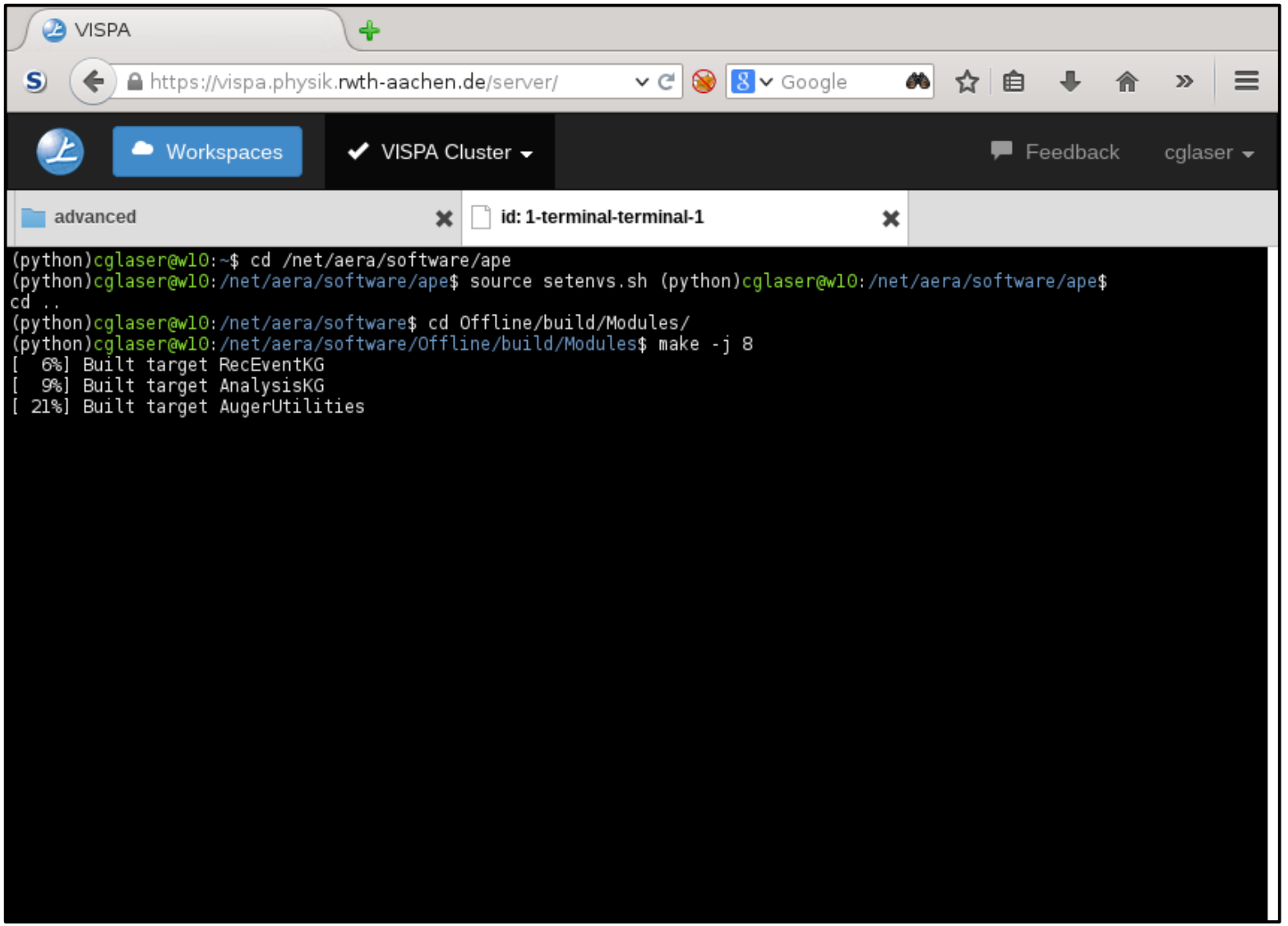
File-Browser

- Manage files on workspace
- Shortcuts supported
- Upload / Download
- View images



Terminal

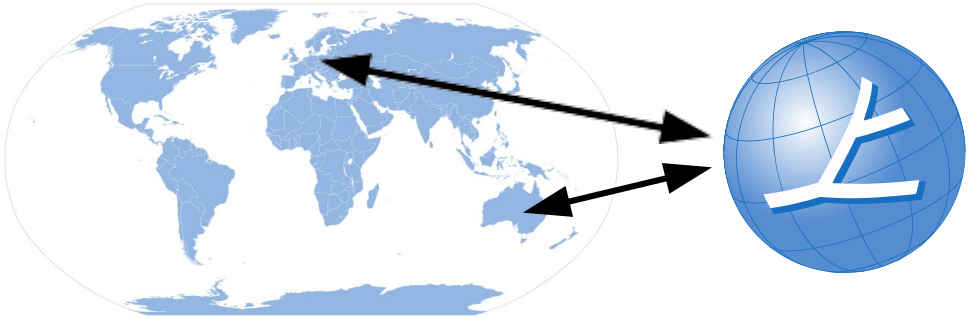
- Features without GUI implementation can be accessed via terminal



Use Cases

Collaborative Analysis

- Review and execute a colleague's analysis with just one click
- Joint analyses:
  - Directly on shared files or through a repository
  - No separate system setup necessary



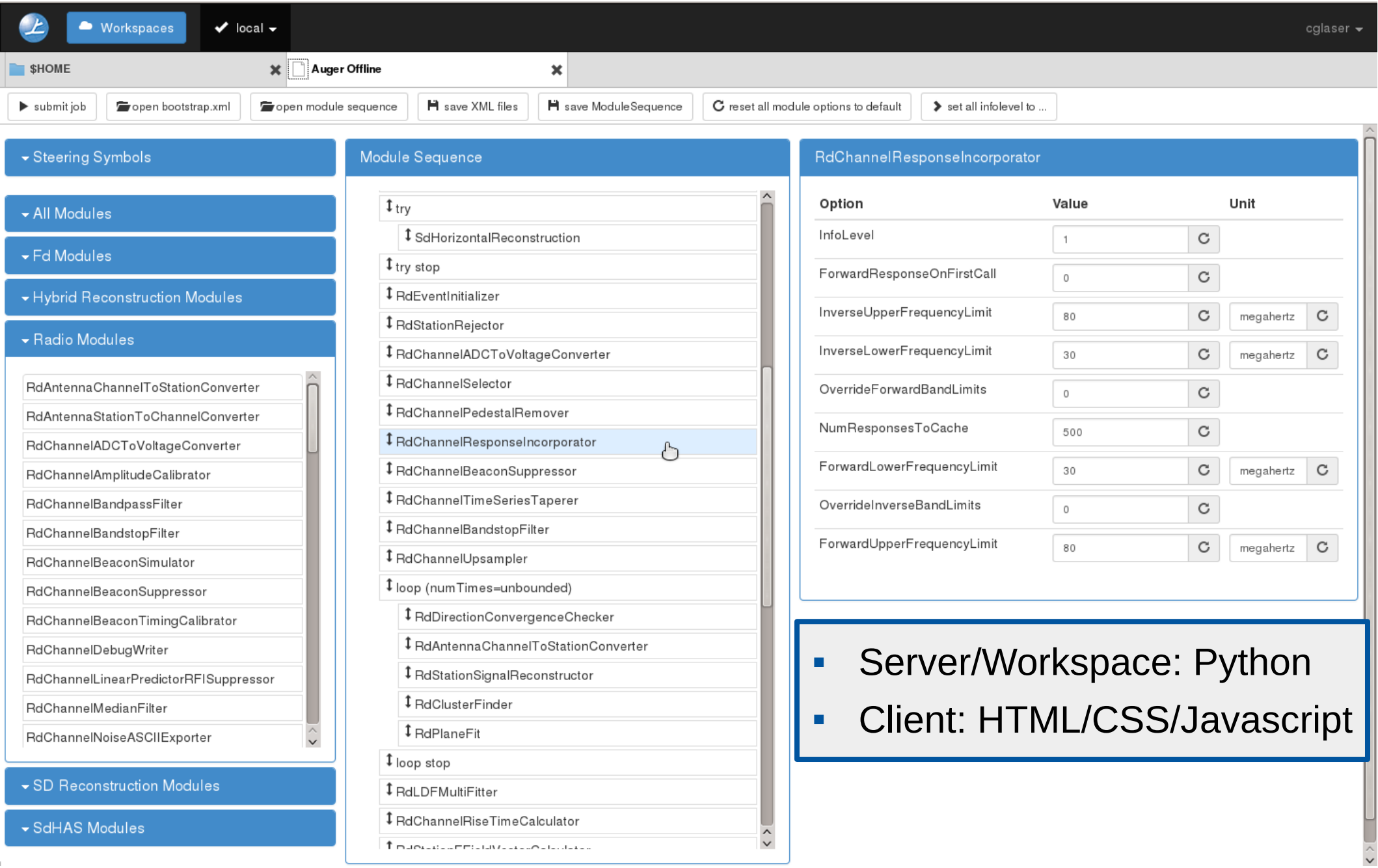
University Education

- Data analyses in experimental physics lectures [1]

CERN Outreach

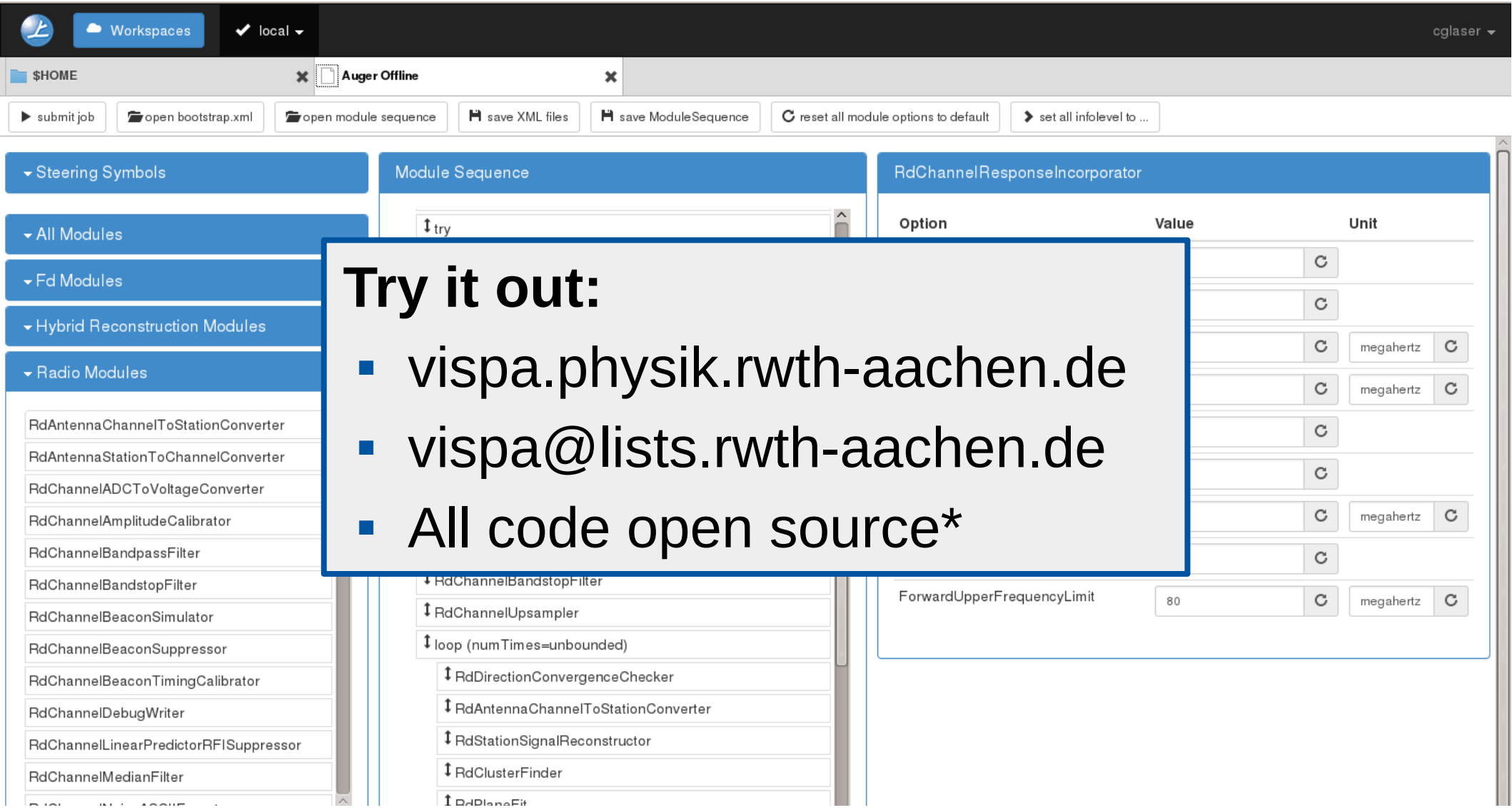
- Public data and example analyses available through web platform

Extend VISPA to your Own Needs



- Server/Workspace: Python
- Client: HTML/CSS/Javascript

Extend VISPA to your Own Needs



Try it out:

- vispa.physik.rwth-aachen.de
- vispa@lists.rwth-aachen.de
- All code open source*

*https://forge.physik.rwth-aachen.de/projects/vispa-web/repository/v1-0

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