Collaborators

- Anthony Scopatz (me)
- Zach Welch
- Matthew Gidden
- Paul Wilson

All from Prof. Wilson’s group in Engineering Physics at UW-Madison.
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Premise

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“If I can’t get my code to run everywhere now, what hope do I have 6 months from now?”
Rage Against the Machine

So, so very many things can go wrong.
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We are not a software developers;
We are scientists ignoring experiments.
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We are not a software developers;
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We need a tool to identify issues long before they cause problems.
So What Do...

... real software developers do to end this contiguous infuriation?
Continuous Integration

“Continuous Integration is a software development practice where members of a team integrate their work frequently, usually each person integrates at least daily - leading to multiple integrations per day. Each integration is verified by an automated build (including test) to detect integration errors as quickly as possible. Many teams find that this approach leads to significantly reduced integration problems and allows a team to develop cohesive software more rapidly.”

- Martin Fowler
Existing CI Tool Were Inadequate
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Existing CI Tool Were Inadequate
Desire
Enter: Polyphemus

Polyphemus is an open source (BSD)
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Polyphemus is an

- open source (BSD)
- CI service that
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Polyphemus is an
- open source (BSD)
- CI service that
- marries GitHub to BaTLaB.
Polyphemus is an open source (BSD) CI service that marries GitHub to BaTLaB. Remember to BYO Server.
Polyphemus Top-Level Architecture

**Github**
- Pull Request
- Issues
- Webhooks API

**Polyphemus**
- Rackspace server
- Apache
- Flask
- paramiko
- github3.py

**BaTLab**
- NMI Scripts
- Curl callbacks

---

Polyphemus Top-Level Architecture
server_name = server_url = 'cyclus-ci.fuelcycle.org'
port = 80
log_dir = '/root/polyphemusrc'

# GitHub setting
github_owner = 'cyclus'
github_repo = 'cyclus'
github_user = 'cyclus-ci'
github_credentials = '/root/polyphemusrc/gh.cred'

# BaTLab setting
batlab_user = 'cyclusci'
batlab_scripts_url = 'https://github.com/cyclus/ciclus/archive/master.zip'
batlab_fetch_file = 'fetch/cyclus.git'
batlab_run_spec = 'cyclus.fast.run-spec'
batlab_submit_cmd = './submit.sh'
batlab_jobs_cache = '/var/www/cyclus-ci.fuelcycle.org/jobs.cache'
The user has to provide a...

- BaTLab account
- NMI Scripts
- Github account
- Target Github repository
- Server for polyphemus
- polyphemusrc.py
The user gets in return...

- Message-based (non-polling) CI
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- a dashboard
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- Infinite run times
- Diversity of platforms; simulates the Wild
- No sandboxing, run as root
- Someone else to blame
- a *dashboard*
- Customizability & Extensibility
Users may write their own plugins and add them to the rc file.

```python
class Plugin(plugins.Plugin):
    requires = ()
defaultrc = {}
rcupdaters = {}
rcdocs = {}
route = None
request_methods = ('GET',)

def update_argparser(self, parser): pass
def setup(self, rc): pass
def response(self, rc):
    return "\n", None
def execute(self, rc): pass
def teardown(self, rc): pass
def report_debug(self, rc): pass
```

Polyphemus is Suite of Plugins
Users may write their own plugins and add them to the rc file. These can be either custom webpages or backend services.

```python
from polyphemus import plugins

class Plugin(plugins.Plugin):
    requires = ()
defaultrc = {}
rcupdaters = {}
rcdocs = {}
route = None
request_methods = ('GET',)

def update_argparser(self, parser): pass
def setup(self, rc): pass
def response(self, rc):
    return "\n", None
def execute(self, rc): pass
def teardown(self, rc): pass
def report_debug(self, rc): pass
```
Fun Facts (Since Oct. 2013)

- 4 projects now actively using polyphemus: Cyclus, Cycamore, DAGMC, & PyNE.
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Breakdown
- Success: 1006
- Failed: 351
- Removed: 134
- Other: 5
Electric Sheep

- Public Metronome Repository
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- More Ubuntu & Mac Machines
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- Ansible / Chef Deployment
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- More Ubuntu & Mac Machines
- Bitbucket Support
- Mercurial Support
- More Analytics
- More Users & Developers
- Ansible / Chef Deployment
- Packager for Scientific Computing
Special Thanks & β-testers

- Cameron Bates
- The yt community
- HTCondor
- BaTLaB
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~ ONE EYE MAKES FOR SHALLOW BUGS ~