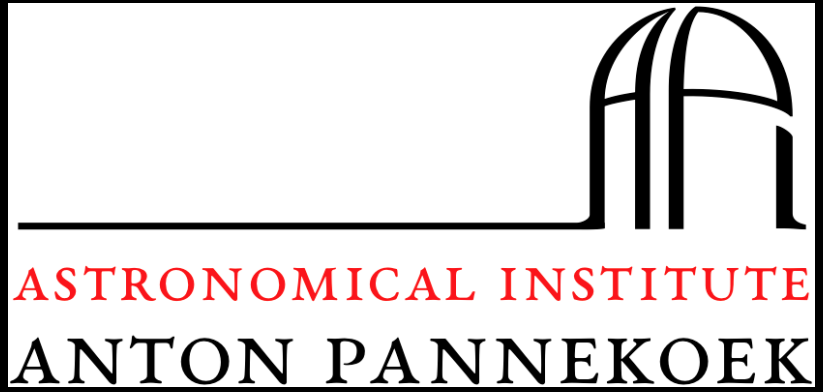

Improving the astronomy software landscape

TKP meeting - 9 September 2014

Gijs Molenaar - http://pythonic.nl

Announcement

TRAP & banana 2.0 beta

Vagrant TRAP

https://github.com/transientskp/vagrant_trap

Installation

Download Virtualbox and Vagrant and install them. On Ubuntu 14.04 you can simply do:

```
$ sudo apt-get install virtualbox vagrant
```

Quickstart

to get up and running quickly:

```
$ git clone https://github.com/transientskp/vagrant_trap
$ cd vagrant_trap
$ <copy your data to vagrant_trap/data>
$ ./run_trap.sh
$ open http://localhost:9096
```

About me

- Scientific Software Engineer
- UvA, AARTFAAC

- South Africa, SKA
- Remote unpaid PhD student

- MSc Artifical Intelligence

- Basic part
- Advanced part
- Deployment

The problem

- (Radio) astronomy is complex
- Requires advanced software
- Making this requires domain knowledge
- Astronomer makes software
- Often learns making software while making software

Part 1 - preventing problems

Prevent the problems

Educate the future scientists

http://software-carpentry.org/

Most important

- Keep it simple
- Keep collaboration in mind
- Also with future self
- Reuse existing solutions
- Open source it!
- Learn to adapt
- One can only minimise bug count
- Documentation
- version control

Part 2 - advanced techniques - Extreme Programming (XP)

- Documentation
- (automated) testing
- Code reviews
- Release management
- Obtaining requirements
- Communication / community

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Enter search terms or a module, class or function name.

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  - Concepts
  - Tutorial Overview
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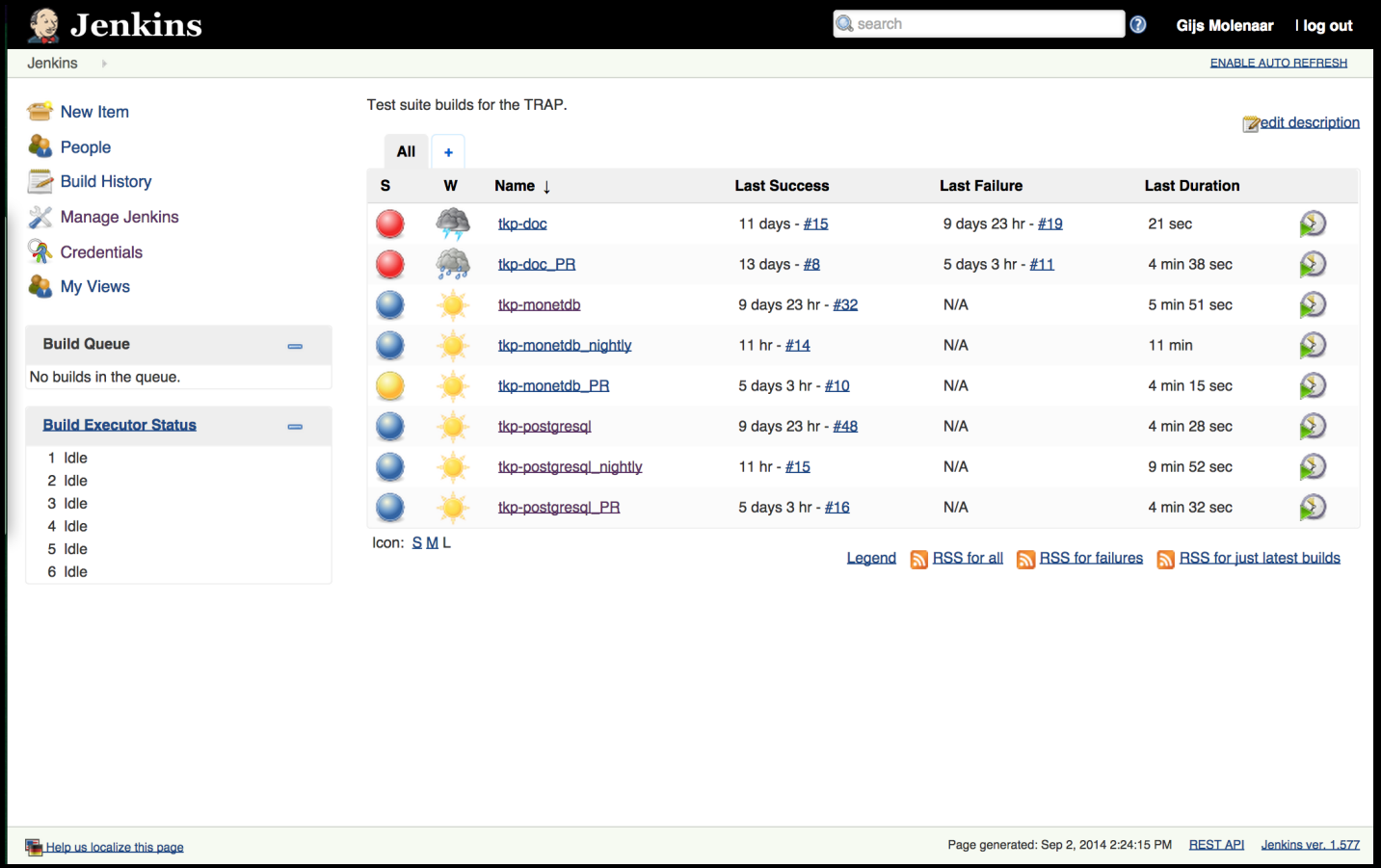
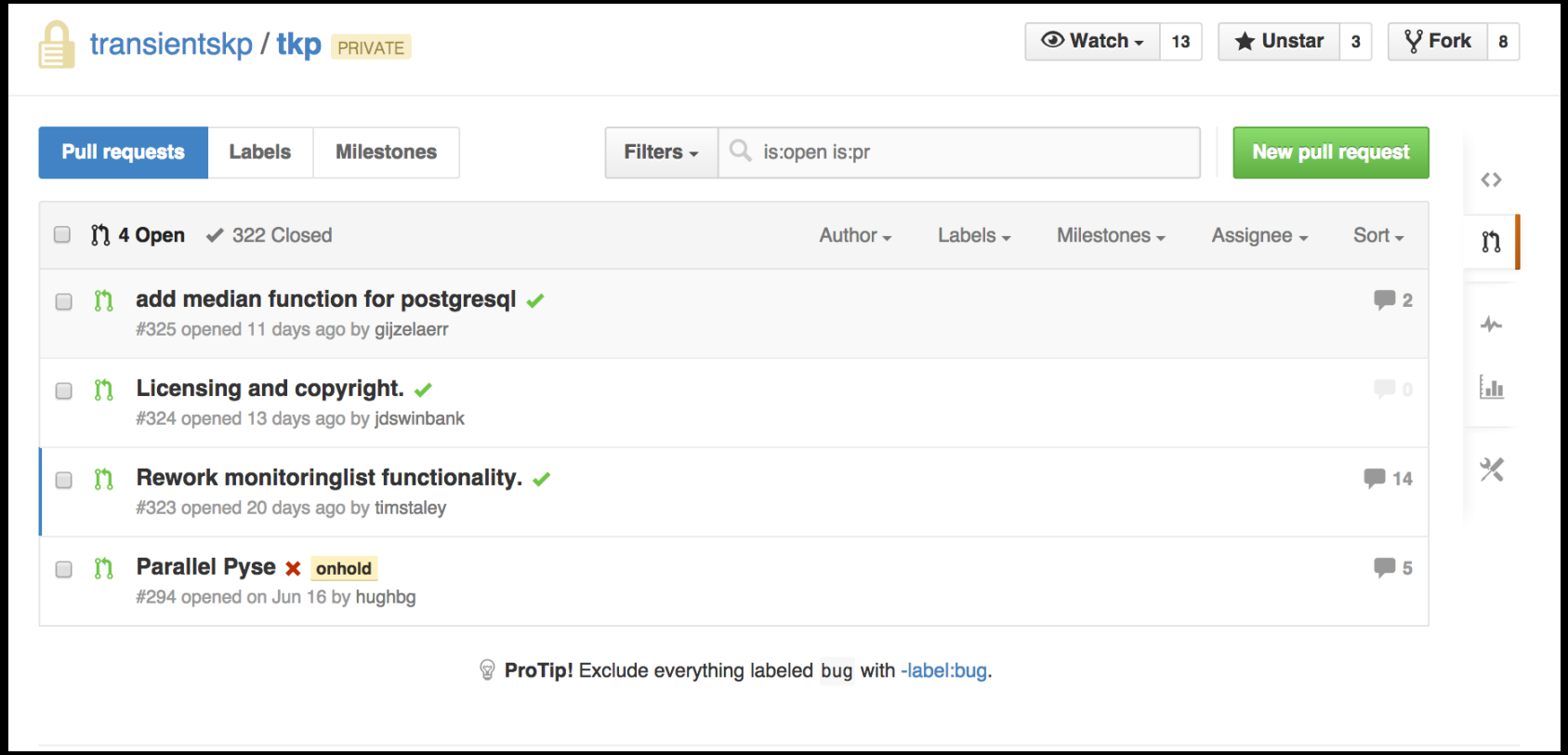

Jenkins
search
Gijs Molenaar
log out
Jenkins
ENABLE AUTO REFRESH
New Item
People
Build History
Manage Jenkins
Credentials
My Views
Build Queue
No builds in the queue.
Build Executor Status
1 Idle
2 Idle
3 Idle
4 Idle
5 Idle
6 Idle
Test suite builds for the TRAP.
edit description
All
+
S
W
Name ↓
Last Success
Last Failure
Last Duration
tkp-doc
11 days - #15
9 days 23 hr - #19
21 sec
tkp-doc_PR
13 days - #8
5 days 3 hr - #11
4 min 38 sec
tkp-monetdb
9 days 23 hr - #32
N/A
5 min 51 sec
tkp-monetdb_nightly
11 hr - #14
N/A
11 min
tkp-monetdb_PR
5 days 3 hr - #10
N/A
4 min 15 sec
tkp-postgresql
9 days 23 hr - #48
N/A
4 min 28 sec
tkp-postgresql_nightly
11 hr - #15
N/A
9 min 52 sec
tkp-postgresql_PR
5 days 3 hr - #16
N/A
4 min 32 sec
Icon: S M L
Legend
RSS for all
RSS for failures
RSS for just latest builds
Help us localize this page
Page generated: Sep 2, 2014 2:24:15 PM
REST API
Jenkins ver. 1.577


transientskp / tkp PRIVATE
Watch 13
Unstar 3
Fork 8
Pull requests
Labels
Milestones
Filters
is:open is:pr
New pull request
4 Open
322 Closed
Author
Labels
Milestones
Assignee
Sort
add median function for postgresql
#325 opened 11 days ago by gijzelaerr
2
Licensing and copyright.
#324 opened 13 days ago by jdswinbank
0
Rework monitoringlist functionality.
#323 opened 20 days ago by timstaley
14
Parallel Pyse
onhold
#294 opened on Jun 16 by hughbg
5
ProTip! Exclude everything labeled bug with -label:bug.

Admiral! We have enemy ships in sector 47!

People | Files | Links

Gijs Molenaar
Antonia Rowlinson
5h 21m
Folkert Huizinga
1h 31m

	client and server side are sweating to process and visualise this 🙂 Or did you set the detection threshold very low	
John Swinbank	I think that particular image was a stress test. But... if you believe the TraP paper, it's not atypical for what we might expect someday. It says 18549 sources, which is ~25k that my back-of-the-envelope calculation suggested. Dunno what the pixel size is, but I was predicting 5k by 5k. I wouldn't put too much weight on my estimates, but it seems like the right sort of ballpark.	Aug-26 14:05
GitHub	bartscheers commented on pull request 323 of transientskp/tkp: Please, do not merge this, I am working on it.	Aug-26 16:18
GitHub	jdswinbank commented on pull request 323 of transientskp/tkp: Just to add that, following the discussion on the...	Aug-26 16:32
Wednesday August 27, 2014		
Antonia Rowlin...	@GijsMolenaar that image was deliberately with low source finder settings as I was testing a TraP issue. I don't think we will be producing real images of that intensity for a while but, as John says, there could very well be images like this in the future.	Aug-27 01:47
Jenkins	tkp-postgresql_nightly - #9 Started by timer (Open)	Aug-27 03:20
Jenkins	tkp-postgresql_nightly - #9 Success after 10 min (Open)	Aug-27 03:30
Jenkins	tkp-monetdb_nightly - #8 Started by timer (Open)	Aug-27 03:53
Jenkins	tkp-monetdb_nightly - #8 Success after 11 min (Open)	Aug-27 04:04
Thursday August 28, 2014		
Jenkins	tkp-postgresql_nightly - #10 Started by timer (Open)	Aug-28 03:20
Jenkins	tkp-postgresql_nightly - #10 Success after 10 min (Open)	Aug-28 03:30
Jenkins	tkp-monetdb_nightly - #9 Started by timer (Open)	Aug-28 03:53
Jenkins	tkp-monetdb_nightly - #9 Success after 11 min (Open)	Aug-28 04:05
GitHub	jdswinbank commented on pull request 326 of transientskp/tkp: This will be handled by Gijs as part of #6337.	Aug-28 10:30
GitHub	jdswinbank closed pull request 326 of transientskp/tkp: Setting back SQL functions	Aug-28 10:30
Jenkins	tkp-postgresql_PR - #16 GitHub pull request #326 of commit 50c8e58c7bac181edd3846256c39ba80c37e6c4b automatically merged. (Open)	Aug-28 10:30
Jenkins	tkp-doc_PR - #11 GitHub pull request #326 of commit 50c8e58c7bac181edd3846256c39ba80c37e6c4b automatically merged. (Open)	Aug-28 10:30
Jenkins	tkp-monetdb_PR - #10 Started by changes from Gijs Molenaar, bartscheers, tim.staley, John Swinbank (85 file(s) changed) (Open)	Aug-28 10:30

Send

Off Guest access

Changelog

Filter entries by content: Filter

Python 3.4.2

Release date: XXXX-XX-XX

Core and Builtins ¶

- Issue #22258: Fix the the internal function set_inheritable() on Illumos. This platform exposes the function `ioctl(FIOCLEX)`, but calling it fails with errno is ENOTTY: "Inappropriate ioctl for device". set_inheritable() now falls back to the slower `fcntl()` (`F_GETFD` and then `F_SETFD`).
- Issue #21669: With the aid of heuristics in SyntaxError.__init__, the parser now attempts to generate more meaningful (or at least more search engine friendly) error messages when "exec" and "print" are used as statements.
- Issue #21642: If the conditional if-else expression, allow an integer written with no space between itself and the `else` keyword (e.g. `True if 42else False`) to be valid syntax.
- Issue #21523: Fix over-pessimistic computation of the stack effect of some opcodes in the compiler. This also fixes a quadratic compilation time issue noticeable when compiling code with a large number of "and" and "or" operators.

Library

- Issue #22216: smtplib now resets its state more completely after a quit. The most obvious consequence of the previous behavior was a STARTTLS failure during a connect/starttls/quit/connect/starttls sequence.
- Issue #22185: Fix an occasional RuntimeError in threading.Condition.wait() caused by mutation of the waiters queue without holding the lock. Patch by Doug Zongker.
- Issue #22182: Use e.args to unpack exceptions correctly in distutils.file_util.move_file. Patch by Claudiu Popa.
- The webbrowser module now uses subprocess's start_new_session=True rather than a potentially risky preexec_fn=os.setsid call.
- Issue #22236: Fixed Tkinter images copying operations in NoDefaultRoot mode.

Part 3 - deployment

Scientist **A** wants software **B** on computer **C**

Not trivial

Software often specific per

Operating system

Operating system version

Used Libraries

Library version

Compiler settings

Environment settings

User preferences

Sys admin preferences

Package it up!


ubuntu

Installing meqtrees or casacore or LUS

```
$ sudo apt-get install python-software-properties

$ sudo add-apt-repository ppa:ska-sa/main

$ sudo apt-get update

$ sudo apt-get install meqtrees
```

but but but...

What if a new Ubuntu is released?

Virtual Machines

Download ISO?

Install?

wait?

No!

VAGRANT

Papino

https://github.com/ska-sa/papino

- Install vagrant & virtualbox

$ git clone https://github.com/ska-sa/papino
$ cd papino
$ vagrant up

- wait

- open http://localhost:8888

IP[y]: Notebook papino Last Checkpoint: Jul 03 14:44 (unsaved changes)

File Edit View Insert Cell Kernel Help

Code Cell Toolbar: None

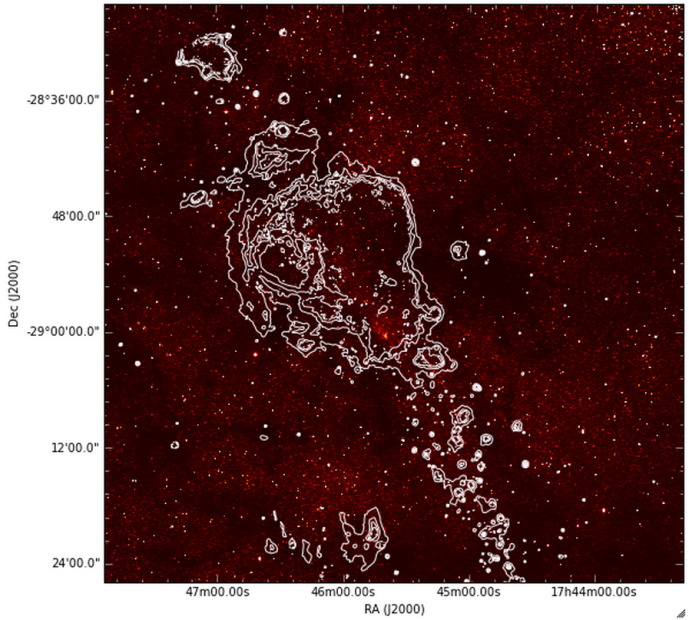
In [7]:
```
import aplpy
```

In [8]:
```
ls /data/example
```

```
2MASS_h.fits  2MASS_j.fits  2MASS_k.fits  mips_24micron.fits
```

In [9]:
```
gc = aplpy.FITSFigure('/data/example/2MASS_h.fits')
gc.show_colorscale(cmap='gist_heat')
_ = gc.show_contour('/data/example/mips_24micron.fits', colors='white')
```

```
INFO:astropy:Auto-setting vmin to  4.195e+02
INFO:astropy:Auto-setting vmax to  1.165e+03
INFO: Auto-setting vmin to  4.195e+02 [aplpy.aplpy]
INFO: Auto-setting vmax to  1.165e+03 [aplpy.aplpy]
```




docker

Conclusions

VM / containers have huge potential

Especially in science

Takes expertise to set up

But only once!