

(Thinking About) Introducing Agile Testing to the One Laptop Per Child Project

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“Solving Social Problems,
Technically”

Rough outline

Agility (agility?) and Software Development

Forensic code analysis

The OLPC and sugar-jhbuild

Agile methods hinge on... agility in software practices

Rapid iterations

Immediate feedback

Frequent releases

Test automation

Automated testing

A keystone of agile methods is automated testing.

Having good automated tests lets you refactor and re-engineer small parts of big code bases.

There are many other benefits, too.

Forensic code analysis

Large software projects are living, breathing, evolving organisms.

We lack tools to study them.

CPython has some nice hooks for this purpose.

Watching your code execute with trace hooks

CPython's `sys.settrace` lets you "bug" your code.

In particular, you can do simple things like code coverage analysis very easily.

Wouldn't it be nice to be able to retrieve that information from long-running processes?

Back to the OLPC...

The OSS community is intolerant of projects that do not have version control or automated build systems.

Would that the same were true of automated tests...

(Guess where I'm going with this.)

The OLPC graphical interface
has no automated tests.

Why am I being such a jerk?

The "Testing Death Spiral"

Write a bunch of code & manually test it.

(Good so far.)

Start adding features over here;

Watch code over there break.

Rinse, lather, repeat.

(where do you think this ends?)

Cascade of Attention-Deficit Teenagers

“I report bugs; they go unread for a year, sometimes two; and then (surprise!) that module is rewritten from scratch -- and the new maintainer can't be bothered to check whether his new version has actually solved any of the known problems that existed in the previous version.”

Actual quote

"It will always have bugs in it and it will never be perfect," Mr. Negroponte told them, adding that he has a "royal battle" with his Windows-based computer nearly every morning.

Continuous integration

'sugar-jhbuild' lets you build the Sugar graphical environment under Linux.

Depends on 51 distinct packages which are pulled in from various places on the 'net.

Breaks frequently.

Implementing continuous integration

Placing a buildbot on 'sugar-jhbuild' gives us a dashboard where we can look at build breakages.

Simple GUI automation

+

Watching Sugar run with
figleaf & figserve

Trivial twill extension for xmacro

```
extend_with twill_x
```

```
move 471 337
```

```
type_in titus
```

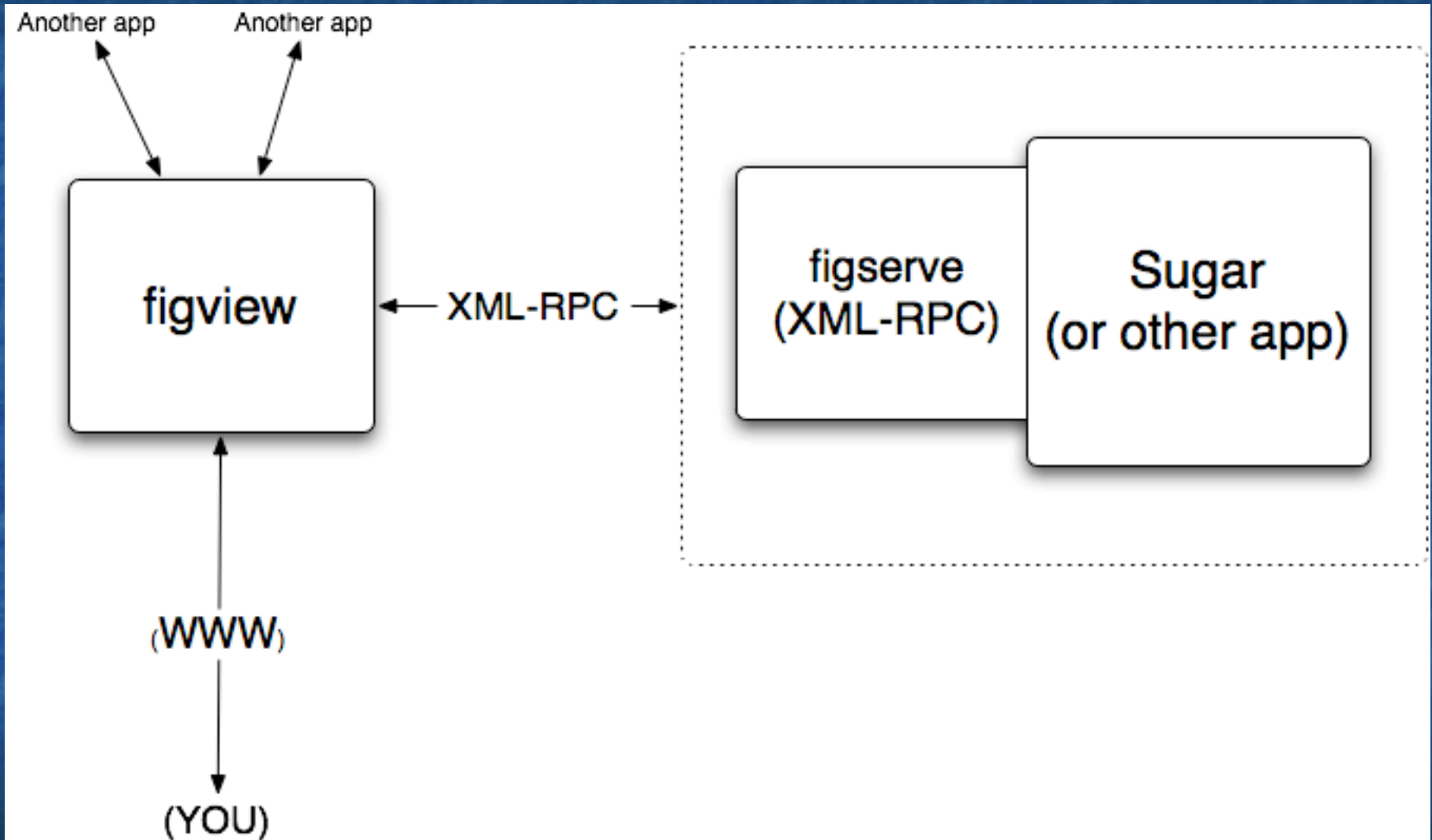
```
move 970 650
```

```
click
```

```
sleep 1
```

```
click
```

Watching Sugar (etc.) programs run with figserve



Concluding thoughts

- Watch the buildbot go!
- Runtime code tracing is just fun
- GUI test automation is annoying
 - GTK does not have good testing hooks
 - OLPC accessibility layer is not dogtail-compatible
 - Driving X is always going to work, but it doesn't work at the right level of abstraction...

Concluding thoughts

- Runtime code tracing can be applied to collaborative exploratory testing:
 - Group of people with OLPCs
 - Central server recording code execution
 - Code coverage analysis then guides exploratory testing
- Test automation is not a panacea, but it can really help stabilize a code base.

Future outlook

- More effort needs to be applied to testing, especially GUI automation.
- I am interested in helping (as a **mentor**).
- Some opportunities:
 - "Python testing tools" / OLPC GSoC student
 - Disney Animation intern
- Stop writing new stuff & make sure the old stuff works & stays working, eh?



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Thanks!

I will upload a screencast of the cool stuff
ASAP; bug me via e-mail.

If you're interested in testing summer stuff
(GSoC or Disney) please contact me:

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