openQA and Automated Desktop Testing

GNOME™.ASIA Summit 2014
Beijing China • May 24-25

Why Testing ?

Murphy's Law

“Anything that can go wrong,
will go wrong. ”

So we test

Why Automated Testing ?

“Giving machine's matters back to machine makes testing work more humanized. ”

Find bug before users.
Most of users don't want to be a guinea pig !!!

Automated testing for desktop is difficult ! ?

INPUT

...

Hard to simulate

OUTPUT

PONY

•••

Hard to measure

INPUT + OUTPUT

Button
on Screen

<=>

Mouse
Move & Click

Button:

“My location changed, I'm here!”

Mouse:

“Where?”

Mouse:

“I find you.

Click …”

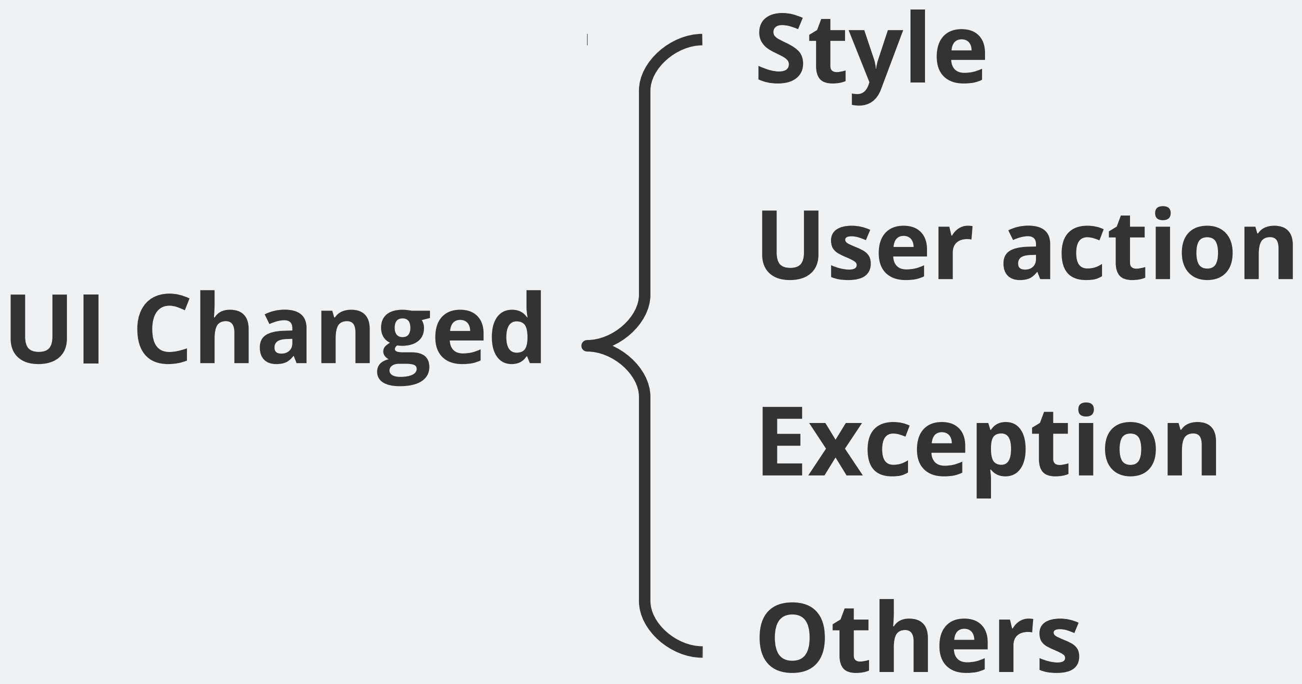
Button:

“My location changed again!”

Other Changes

Different Resolution

XGA 1024x768
SXGA 1280x1024
WXGA 1280x800
WXGA 1280x768
HD1080 1920x1080
⋮



UI Changed

- Style
- User action
- Exception
- Others

Hard to simulate interactivity

But …
There does have many good choices !

StrongWind

Sikuli

openQA

Mozmill, Selenium…

Why openQA ?

Active development

Installation testing available

Why?

Multiprocess testing

Easy deployed testing environment

How does openQA working ?

qemu-kvm

+

opencv

1. **Send key to vm**
2. **Get screenshot**
3. **Graph matching**

Language: Perl

openQA framework = os-autoinst + openQA

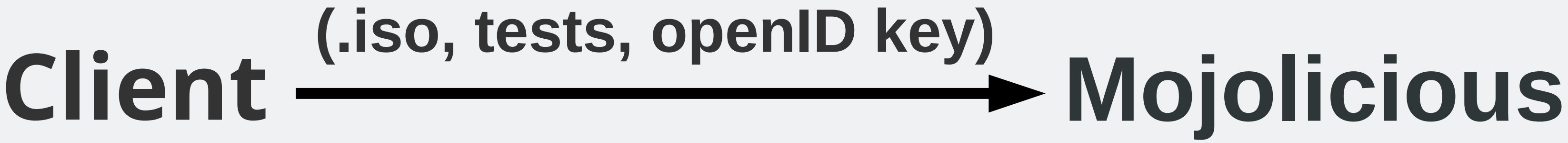
os-autoinst → do the works

openQA → generate the works

But how exactly ???

Mojolicious

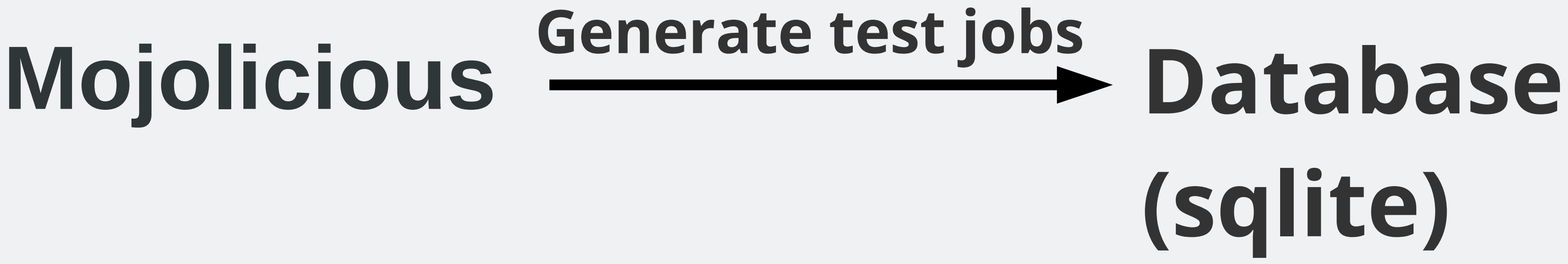
Perl real-time web framwork



Client

(.iso, tests, openID key)

Mojolicious



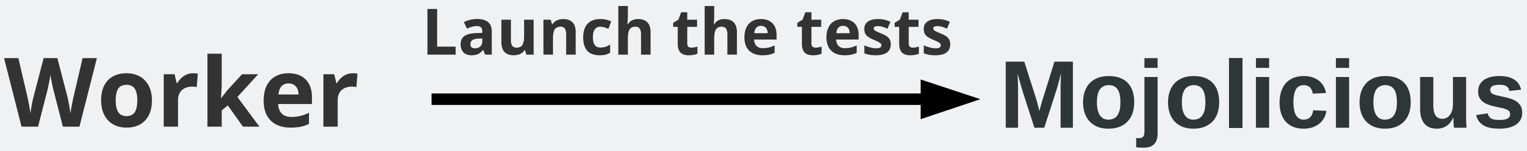
Mojolicious

Generate test jobs

Database (sqlite)

A job

```
 jobs => [
  {
    clone_id => undef,
    id => 7,
    machine => "",
    name => "openSUSE-Factory-NET-Build0117-default",
    priority => 45,
    result => "failed",
    retry_avbl => 3,
    state => "done",
    t_finished => "2014-05-20T03:08:58",
    t_started => "2014-05-20T01:49:26",
    test => "default",
    test_branch => undef,
    worker_id => 0,
  },
],
```

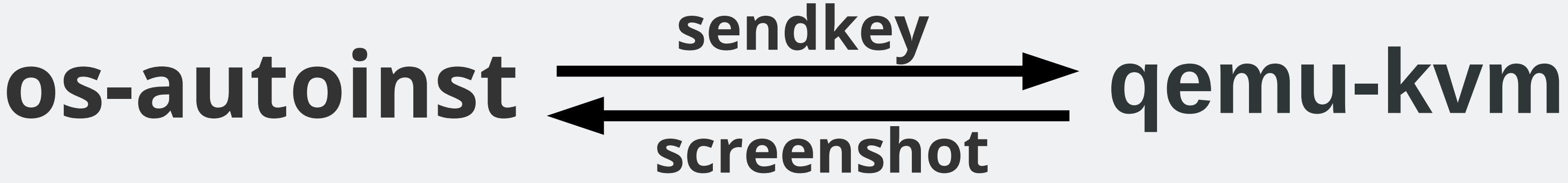


Worker

Launch the tests

Mojolicious

Mojolicious → os-autoinst

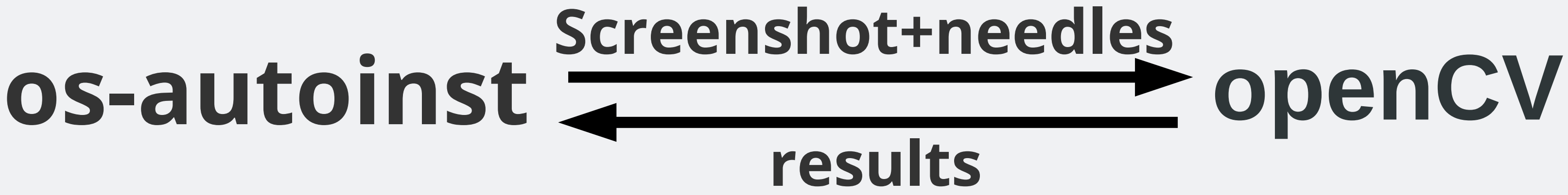


os-autoinst

sendkey

screenshot

qemu-kvm



os-autoinst

Screenshot+needles

results

openCV

Mojolicious → webUI

Needles is one of the

key concepts

of openQA/os-autoinst

What are needles ???

Needles = images(png) + data(json)

Os-autoinst scripts and needles

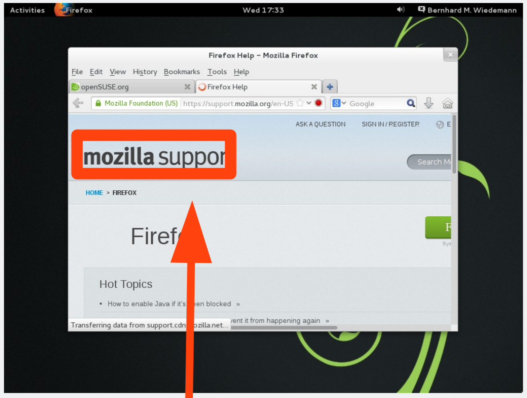
Scripts (perl)

```
⋮

sendkey "alt-h"; sleep 1;
sendkey "h"; sleep 6;
checkneedle("firefox_help-help",8);
sendkey "ctrl-w"; sleep 1;
#close the firefox help tab

sendkey "alt-h"; sleep 1;
sendkey "t"; sleep 1;
checkneedle("firefox_help-
trouble",3);
⋮
```

Needles



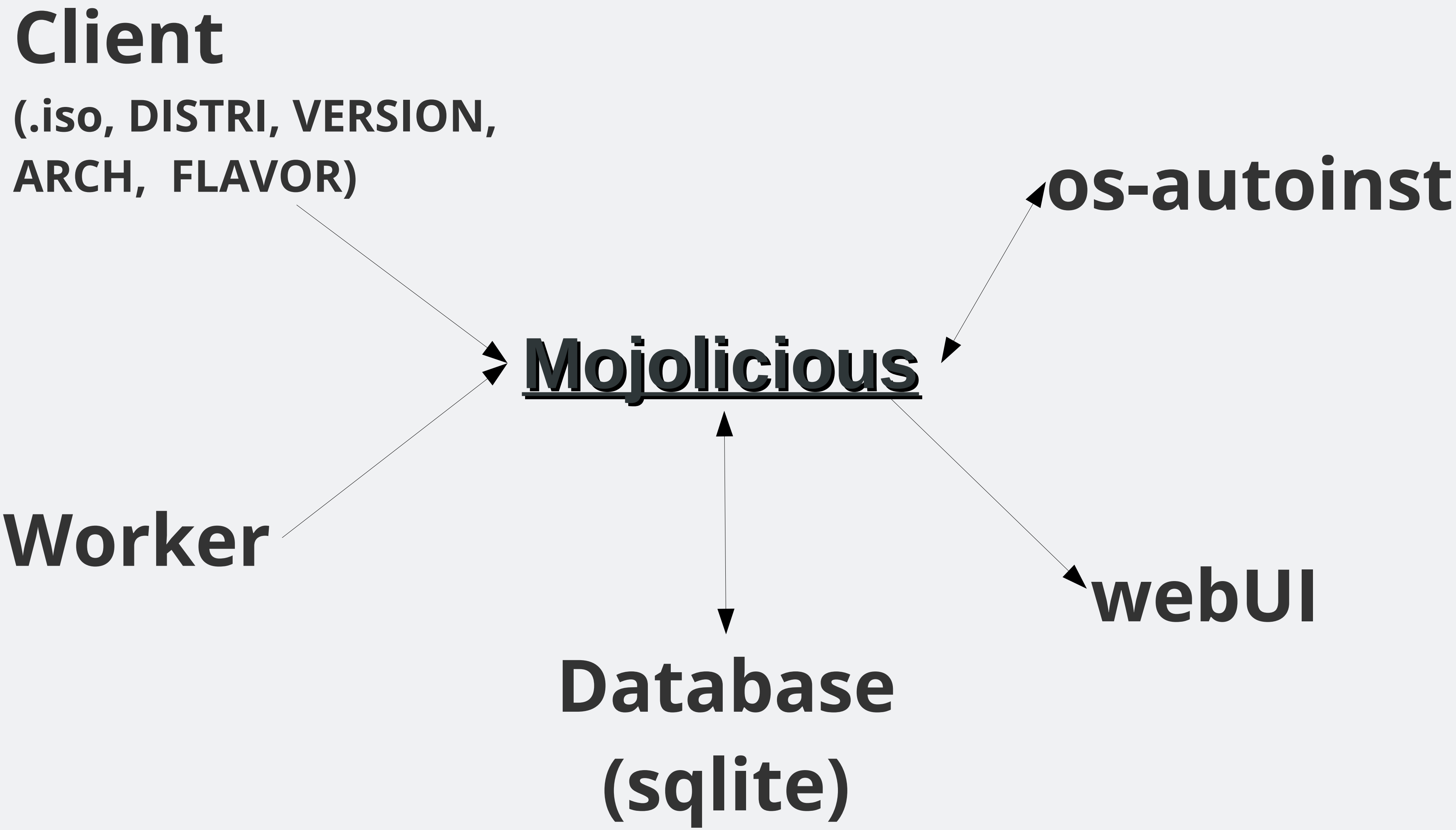
Activities
Firefox
Wed 17:33
Bernhard M. Wiedemann
Firefox Help – Mozilla Firefox
File Edit View History Bookmarks Tools Help
openSUSE.org
Firefox Help
Mozilla Foundation (US)
https://support.mozilla.org/en-US
Google
ASK A QUESTION
SIGN IN / REGISTER
mozilla suppor
Search M
HOME > FIREFOX
Firef
Hot Topics
How to enable Java if it's been blocked »
vent it from happening again »
Transferring data from support.cdn.mozilla.net...

.png

```
"area": [
  {
    "xpos": 163,
    "ypos": 287,
    "width": 290,
    "height": 37,
    "type": "match"
  }
],
"tags": [
  "firefox_help-help"
]
```

.json

We put everyting togethor



Client

(.iso, DISTRI, VERSION, ARCH, FLAVOR)

os-autoinst

Mojolicious

Worker

webUI

Database (sqlite)

Glance at what is it like ...

http://openqa.opensuse.org

Join us !!!

How ???

Everthing on Github !!!

https://github.com/os-autoinst/openQA

https://github.com/os-autoinst/os-autoinst

https://github.com/os-autoinst/os-autoinst-distri-opensuse

https://github.com/os-autoinst/os-autoinst-needles-opensuse

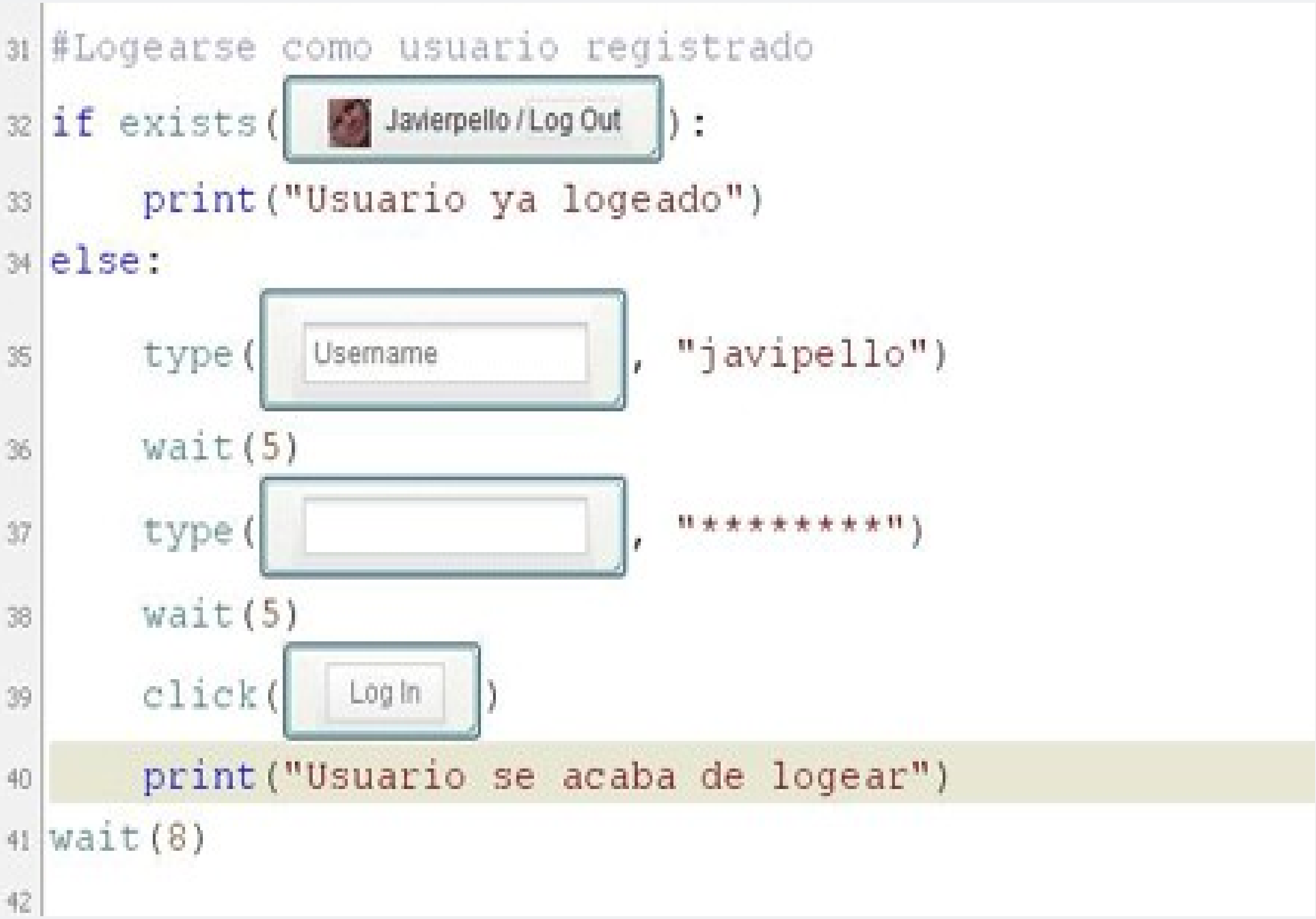
Not openSUSE only !

Debian, Fedora, Ubuntu, Arch linux

...

The future of automated desktop testing ?

Sikuli



```
#Logearse como usuario registrado
if exists(Javierpello / Log Out):
    print("Usuario ya logeado")
else:
    type(Username, "javipello")
    wait(5)
    type(, "********")
    wait(5)
    click(Log In)
    print("Usuario se acaba de logear")
wait(8)
```

To work as an auto test framwork,
Many things need to be done.

art [CC]by Juzo-kun
= juzo-kun.deviantart.com ::
Suse [TM] Novell Inc.

Thanks