



CONTINUOUS DEPLOYMENT for webapps based on Django



Wojciech Lichota - STX Next

July 2015

1. Intro

2. Workflow

3. Tools

4. Challenges



1. Intro

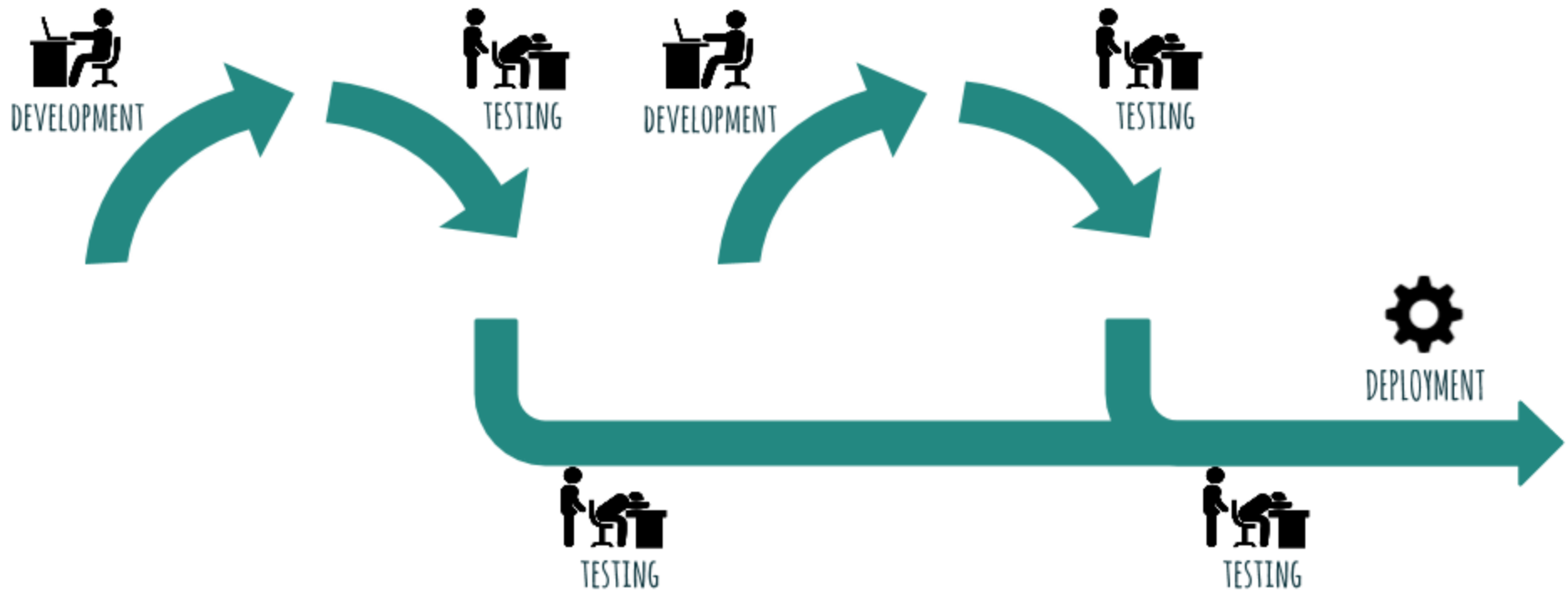
2. Workflow

3. Tools

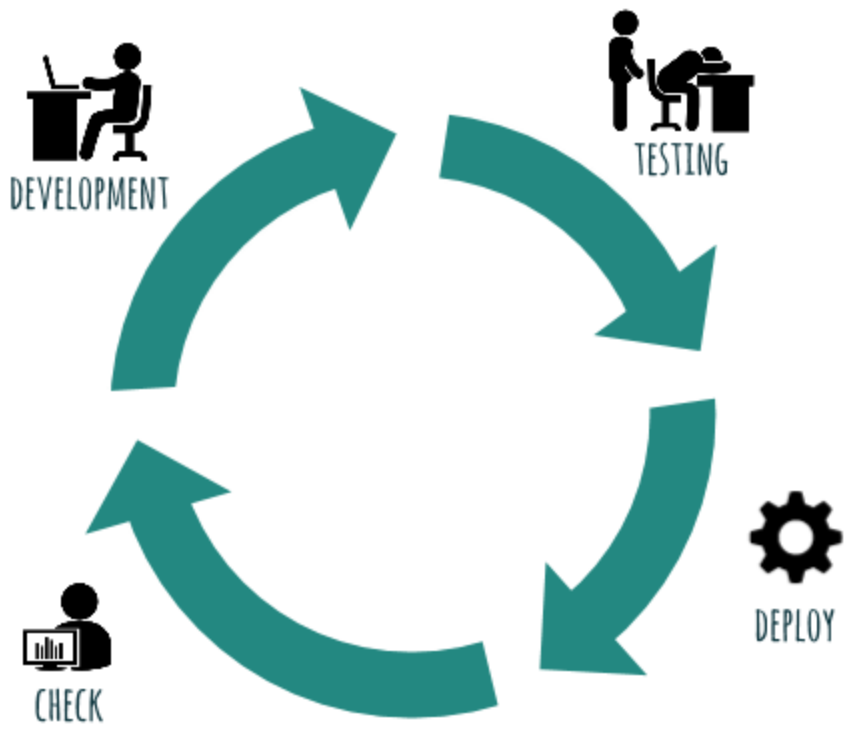
4. Challenges



Iterative Deployment



Continuous Deployment



Tags Applicant status All vacancies All cities Age All experiences Current work
 Latest activity date Applicant source clear create report

Results: 81

1 2 3 4 5 »

All (507)

Application (81)

Confirmation (7)

Verification (103)

Interview (95)

Decision (109)

Employment (103)

#	Name	E-Mail / Phone Number	City	Position (Status)	Source	Age	Experience	Creation Date	Latest Activity Date	
1.	Van Hernandez Former Employee django css	test480@stxnext.com 123 880 789	Łódź	Senior Python Developer APPLICATION	Recommendation	39	7	2014-09-30	2014-09-30	2
2.	Nadia Shupe php Employee angular	test478@stxnext.com 123 862 789	Poznań	Front End Developer APPLICATION	Recommendation	25	0	2014-09-30	2014-09-30	1
3.	Marion Bunker php html	test476@stxnext.com 123 179 789	Poznań	QA APPLICATION	Direct search	36	2	2014-09-30	2014-09-30	5
4.	Penny Perze	test465@stxnext.com 123 242 789	Piła	Front End Developer APPLICATION	CV database	39	5	2014-09-30	2014-09-30	1
5.	Patricia Padilla python php html InBox django	test444@stxnext.com 123 433 789	Łódź	Front End Developer APPLICATION	Job fair	21	3	2014-09-30	2014-09-30	2

STX Next RMS

typeahead.js

Django

CKEditor factory-boy

South Django REST Framework

Bootstrap python-linkedin
bleach Selectize.js


python-social-auth PostgreSQL
Django-REST-Swagger

nose AngularJS

Underscore.js


RMS Team


 **jakubjanuzik** #1
470 commits / 18,397 ++ / 9,593 --


 **marek-leszczynski** #2
188 commits / 5,841 ++ / 2,327 --


 **mnowakowska** #3
157 commits / 6,905 ++ / 2,324 --


 **romanlevin** #4
117 commits / 4,480 ++ / 2,291 --

 **dpolcyn** #5
116 commits / 3,950 ++ / 3,667 --

 **KKrisu** #6
113 commits / 20,790 ++ / 20,382 --

 **alubeck** #7
107 commits / 21,785 ++ / 11,395 --

 **ArGroc** #8
95 commits / 6,961 ++ / 4,232 --

 **mrpear** #9
88 commits / 3,340 ++ / 2,390 --

 **ImEagle** #10
82 commits / 3,782 ++ / 1,175 --

 **pkucmus** #11
74 commits / 8,411 ++ / 21,515 --

 **add00** #12
70 commits / 2,593 ++ / 1,341 --

 **mjelonek92** #13
55 commits / 1,789 ++ / 1,068 --

 **lukaszjagodzinzi** #14
55 commits / 43,288 ++ / 22,084 --

 **bitrut** #15
42 commits / 1,810 ++ / 947 --

 **avalanchy** #16
38 commits / 11,246 ++ / 1,941 --

 **nihilifer** #17
30 commits / 538 ++ / 136 --

 **Exorades** #18
22 commits / 718 ++ / 835 --

 **romankierzkowski** #19
19 commits / 2,086 ++ / 1,215 --

 **sargo** #20
14 commits / 217 ++ / 129 --

 **Alkemic** #21
10 commits / 339 ++ / 106 --

 **AcidWeb** #22
7 commits / 162 ++ / 407 --

 **Gruszks** #23
7 commits / 348 ++ / 125 --

 **msopocko** #24
1 commit / 16 ++ / 5 --

 **dasm** #25
1 commit / 88 ++ / 84 --

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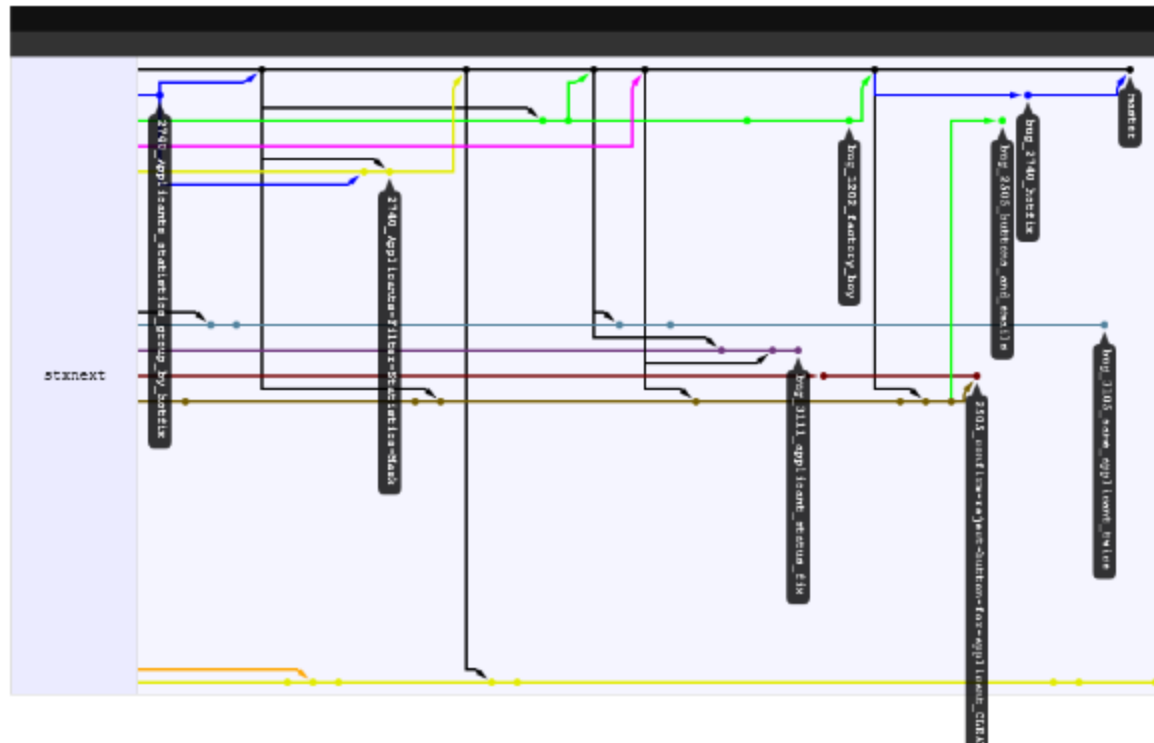
GIT Workflow

The rms network graph

Keyboard shortcuts available

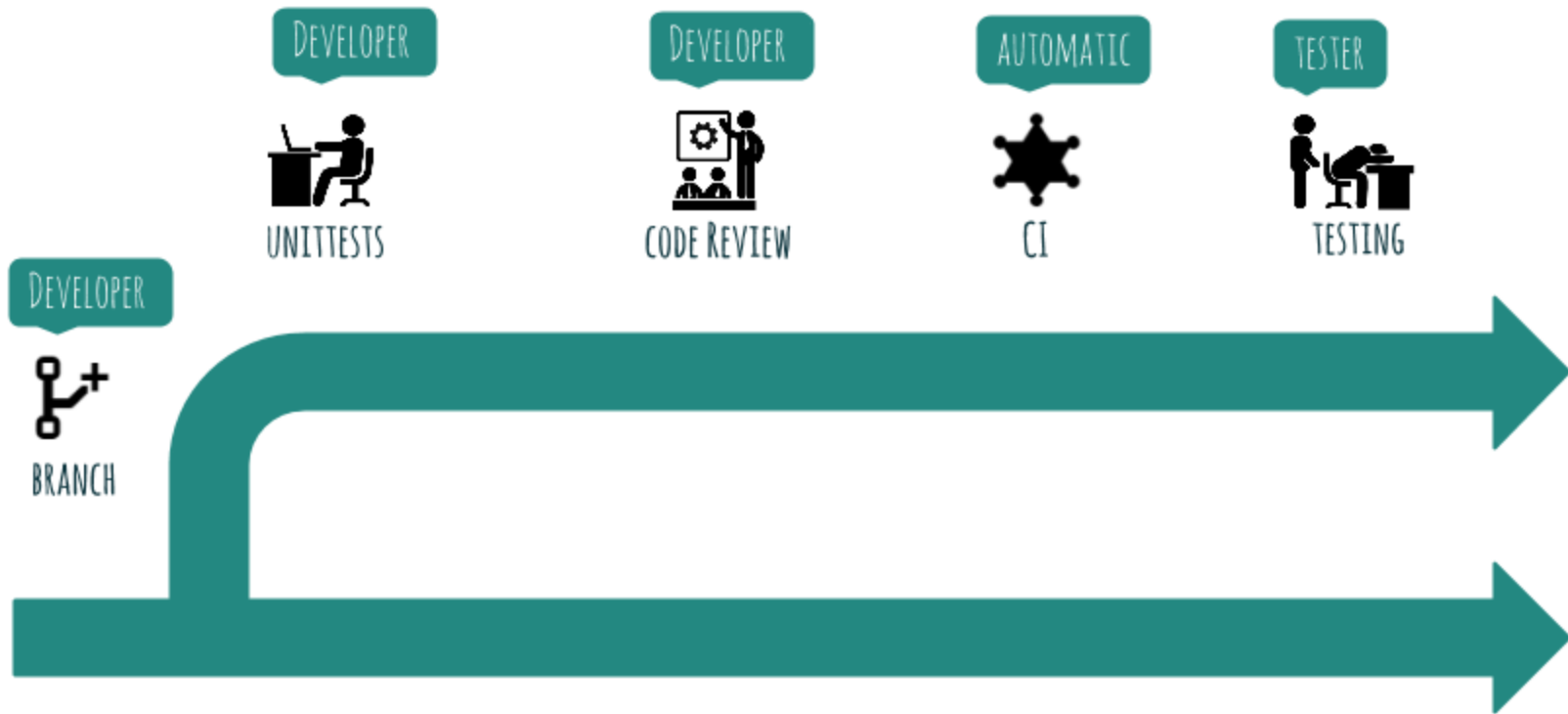
All branches in the network using stxnext/rms as the reference point. [Read our blog post about how it works.](#)

Show Help



- ★ one main branch (master)
- ★ feature branch (separated branch for every feature)
- ★ pull requests

QA Workflow



Deploy Workflow

TESTER



MERGE

AUTOMATIC



BACKUP

TESTER

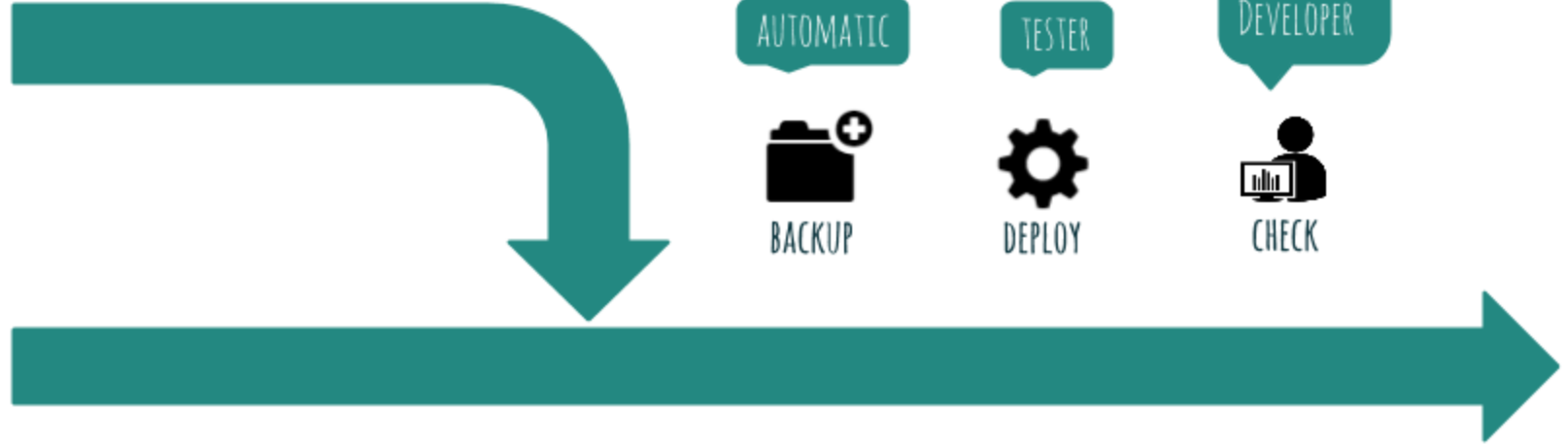


DEPLOY

AUTOMATIC
TESTER
DEVELOPER



CHECK



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JENKINS

continuous
integration

S	W	Name ↓	Ostatni Sukces	Ostatni Błąd	Ostatni Czas Trwania
		RMS-live	1 day 18 hr - #136	—	3 min 43 sec
		RMS-PR-testing	23 hr - #65	23 hr - #64	1 min 24 sec
		RMS-staging	1 day 18 hr - #725	—	2 min 21 sec
		RMS-testing	1 day 18 hr - #10829	—	1 min 58 sec

Instances

- ★ PR-testing - one for every tester, on feature branch
- ★ staging - with test (fake) data
- ★ testing - with test data (copy of staging db)
- ★ live - with production data



JENKINS

continuous
integration

Useful Jenkins' plugins

- ★ Violations Plugin - pep8, pylint
 - ★ Post build task Plugin - steps to run after success build (e.g. run Fabric)
 - ★ Matrix Authorization Strategy Plugin - more sophisticated access rules (e.g. Who can update live?)
 - ★ Github Plugin - automatically create tags
-

Django - Jenkins integration

- ★ django-nose - test run results in Jenkins' format (use --with-xunit)
- ★ nosecover - coverage report (use --with-xcover)



BUILDOUT

— ★ —
build system

- ★ Creates reproducible environment
- ★ Isolated sandboxes without having to activate/deactivate
- ★ Simplifies commands
(commands options hidden in buildout configuration)

Useful recipes

- ★ `djangorecipe`
- ★ `collective.recipe.template`
- ★ `buildout.recipe.uwsgi`
- ★ `mr.developer`



BOWER
★
GRUNT

Bower - dependency manager for frontend

Grunt - build tool for frontend

Handy Grunt tasks

- ★ merge JS/CSS files
- ★ copy files (e.g. images from libs to the project)
- ★ compile LESS/SASS files
- ★ compress JS/CSS files
- ★ obfuscate JS files (only live)
- ★ run jshint, compass



FABRIC

★
remote
execution

- ★ Combines few commands into one (e.g. run buildout + run grunt + restart servers)
- ★ Execute commands on remote servers (via ssh)



GUNNERY

remote
execution

- ★ alternative for Jenkins + Fabric
- ★ web-based interface to manage different instances on remote servers

GUNNERY

VW UFO
development

wojciech lichota
Settings -
Help
Log Out

Environment *development*

Dashboard / VW UFO / development

Activity

View full history

- development / update_devel_WIOLETTA
Wioletta 18 minutes ago Success
- development / update_devel_KAROLINA
Karolina 36 minutes ago Success
- development / update_devel_PIOTR
Piotr 2 hours ago Success
- development / update_devel_WIOLETTA
Wioletta 3 hours ago Success

Servers +

stx_dev	10.83.1.30	app		
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Tasks +

- update_devel_WIOLETTA Execute
- update_devel_KAROLINA Execute
- update_devel_PIOTR Execute
- update_devel_MARTA Execute
- update_VWL_FO_CLIENT Execute

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Restarts

Problem

When few instances use one **Apache + mod_wsgi**, then restart of one instance affects others.

Solution

Separated **uWSGI** for every instance.

PROTIP

Use **Master FIFO** to manage **uWSGI** processes.

```
while lsof uwsgi_ctl; do
    echo Q > uwsgi_ctl
done
```

South

Problem

No conflict when two opened pull requests have **South** migrations with same number.

Solution

Store latest migration name in `migrations/version.txt`

PROTIP

```
# good for simple cases (e.g. changes in different models)
./manage.py migrate --merge
```

Production downtime

Problem

“If anything just cannot go wrong, it will anyway”

Solution

- ★ Create tags
- ★ Backup database
- ★ Prepare revert script
- ★ Upgrade only when admin is in the office

PROTIP

```
# backup db  
pg_dump -C rms > ~/rms_backup_$(date +%Y%m%d%H%M).psql
```

Use monitoring tool - e.g. New Relic, Nagios.

Summary

- ★ Easy (low cost) setup
- ★ Good for non-critical applications
- ★ New feature faster on production
- ★ More work for testers, less for developers
- ★ Remember Murphy's laws



QUESTIONS TIME



Wojciech Lichota



STX Next

wojciech@lichota.pl

[@wlichota](#)

<http://lichota.pl>

STX NEXT

OVER 100 TALENTED DEVELOPERS...

Employing over 100 Python programmers, STX Next is one of the largest software development houses in central Europe. We are goal-oriented, agile, and fast-paced.



Pila

Poznań

Wrocław

... IN 3 DIFFERENT LOCATIONS...

We currently have 3 locations in Poland. We know that we are as strong as the people working for us, so we try to maintain a work environment based around honesty, trust, and hard work instead of management and bureaucracy.

... CREATE AWESOME PRODUCTS.

We develop Web Applications in **Python** and **Javascript** and mobile apps for **Android** and **iOS**. We use **agile** methods and continuous delivery. We do projects for clients all over the world, and see how people use our software.

