



Development & Operations: a journey, not an event

José Bonnet, AlticeLabs, 7th Feb, 2017

Chronicle of a Death Foretold -- Gabriel Garcia Marquez (1984)

On the day they were going to kill him, Santiago Nasar got up at five-thirty in the morning to wait for the boat the bishop was coming on. He'd dreamed he was going through a grove of timber trees where a gentle drizzle was falling, and for an instant he was happy in his dream...(*)

http://articles.chicagotribune.com/2002-06-30/entertainment/0206290227_1_opening-lines-gabriel-garcia-marquez-2nd-floor

(*) No dia em que iam matá-lo, Santiago Nasar levantou-se às 5 e 30 da manhã para esperar o barco em que chegava o bispo. Tinha sonhado que atravessava uma mata de figueiras-bravas, onde caía uma chuva miúda e branda, e por instantes foi feliz no sono...

Let's start at the end

...The End

<https://www.google.pt/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0aHUKewjgg9D9zvHRAhUDCBokKHdoEDFYQjRwIBw&url=http%3A%2F%2Fstoryhousecreative.com%2Fblog%2F2013%2F10%2Fthe-beauty-of-starting-with-the-end-in-mind&psig=AFQjCNFNiUXB19C2FqgKX3cm3warawMTCg&ust=148631892155145>

Our success depends on innovative services...



Vision
Creativity

Support

Solution

..and on how fast we can deliver them!





..and on how fast we can deliver them

So, looking aside...

“[...] Amazon did changes to production every 11.6 seconds on average in May 2011 [...]”

Jez Humble, <https://www.thoughtworks.com/insights/blog/case-continuous-delivery>
and also this <https://www.youtube.com/watch?v=dxk8b9rSKOo>



...there's something going on for some years...

NETFLIX

The Netflix Tech Blog

Monday, November 16, 2015

Global Continuous Delivery with Spinnaker

After over a year of development and production use at Netflix, we're excited to announce that our Continuous Delivery platform, Spinnaker, is available on [GitHub](#). Spinnaker is an open source multi-cloud Continuous Delivery platform for releasing software changes with high velocity and confidence. Spinnaker is designed with pluggability in mind; the platform aims to make it easy to extend and enhance cloud deployment models. To create a truly extensible multi-cloud platform, the Spinnaker team [partnered with Google](#), Microsoft and Pivotal to deliver out-of-the-box cluster management and deployment. As of today, Spinnaker can deploy to and manage clusters simultaneously across both AWS and Google Cloud Platform with full feature compatibility across both cloud providers. Spinnaker also features deploys to [Cloud Foundry](#); support for its newest addition, Microsoft Azure, is actively underway.



If you're familiar with Netflix's [Asgard](#), you'll be in good hands. Spinnaker is the replacement for Asgard and builds upon many of its concepts. There is no need for a migration from Asgard to Spinnaker as changes to AWS assets via Asgard are completely compatible with changes to those same assets via Spinnaker and vice versa.

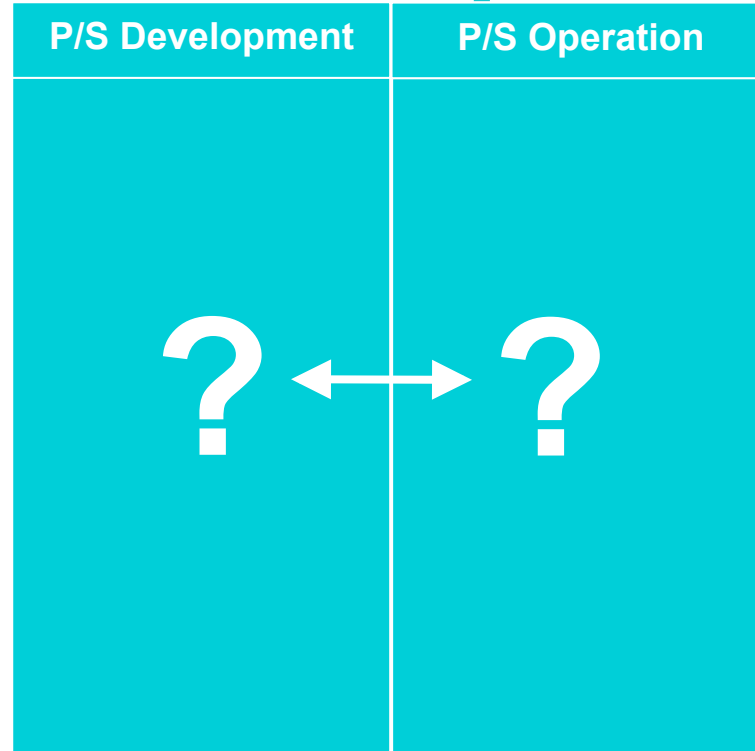
Links

- [Netflix US & Canada Blog](#)
- [Netflix America Latina Blog](#)
- [Netflix Brasil Blog](#)
- [Netflix Benelux Blog](#)
- [Netflix DACH Blog](#)
- [Netflix France Blog](#)
- [Netflix Nordics Blog](#)
- [Netflix UK & Ireland Blog](#)
- [Netflix ISP Speed Index](#)
- [Open positions at Netflix](#)
- [Netflix Website](#)
- [Facebook Netflix Page](#)
- [Netflix UI Engineering](#)
- [RSS Feed](#)



...that has been called...

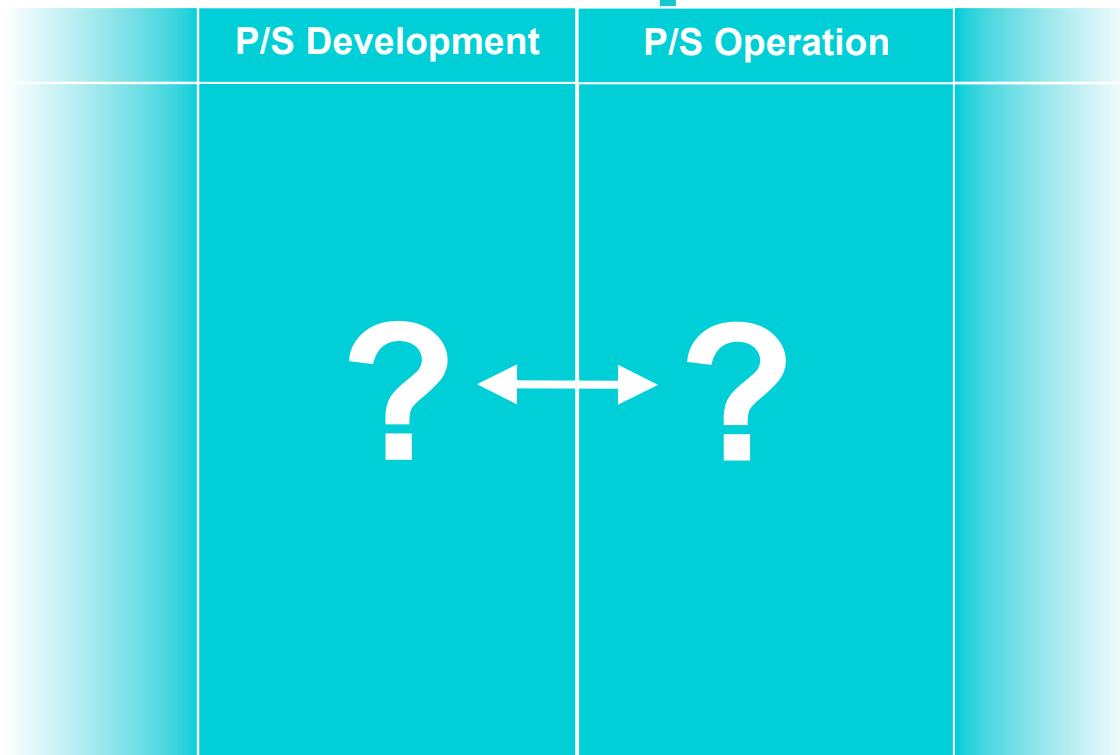
DevOps



P/S = Product/Service

Where are the limits?

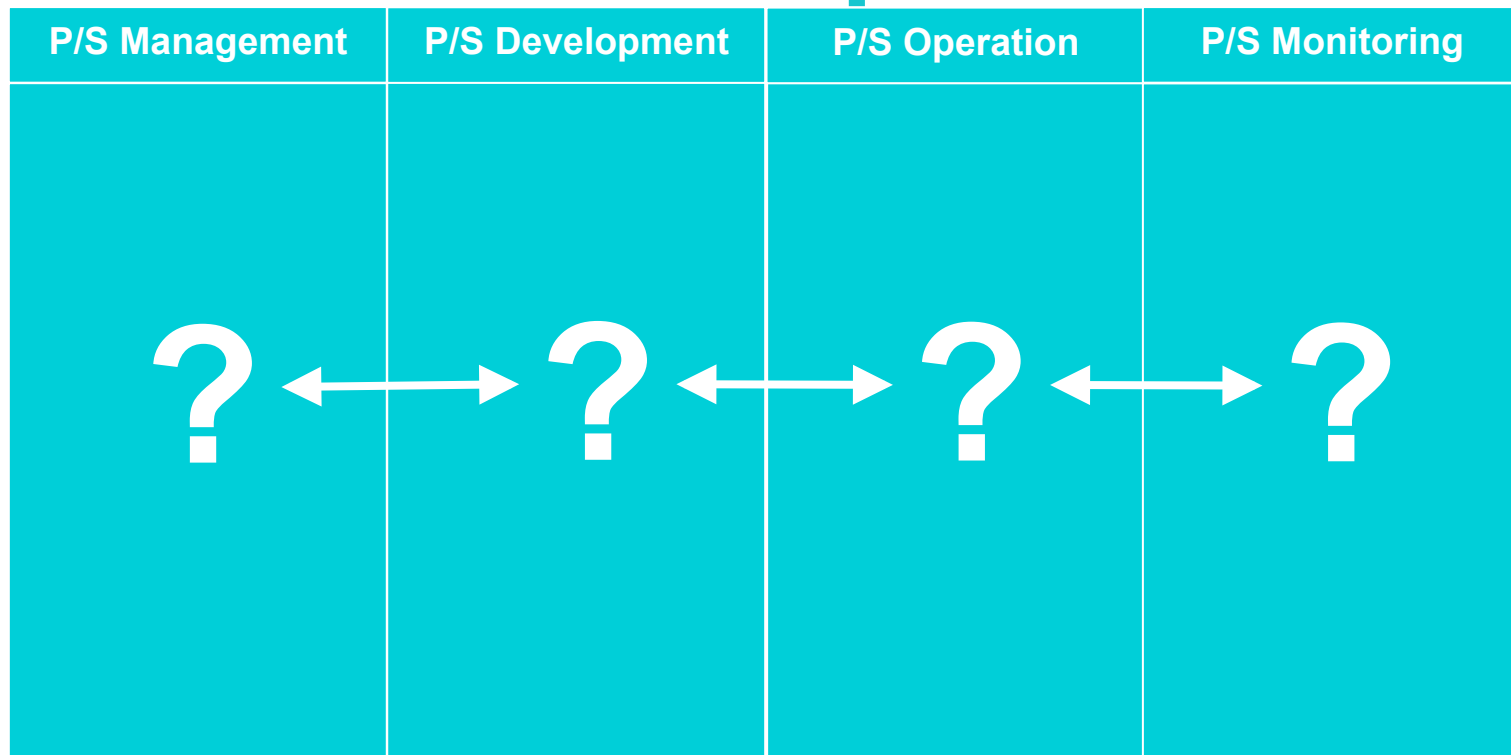
DevOps



P/S = Product/Service

Well... It's not only Dev + Ops!

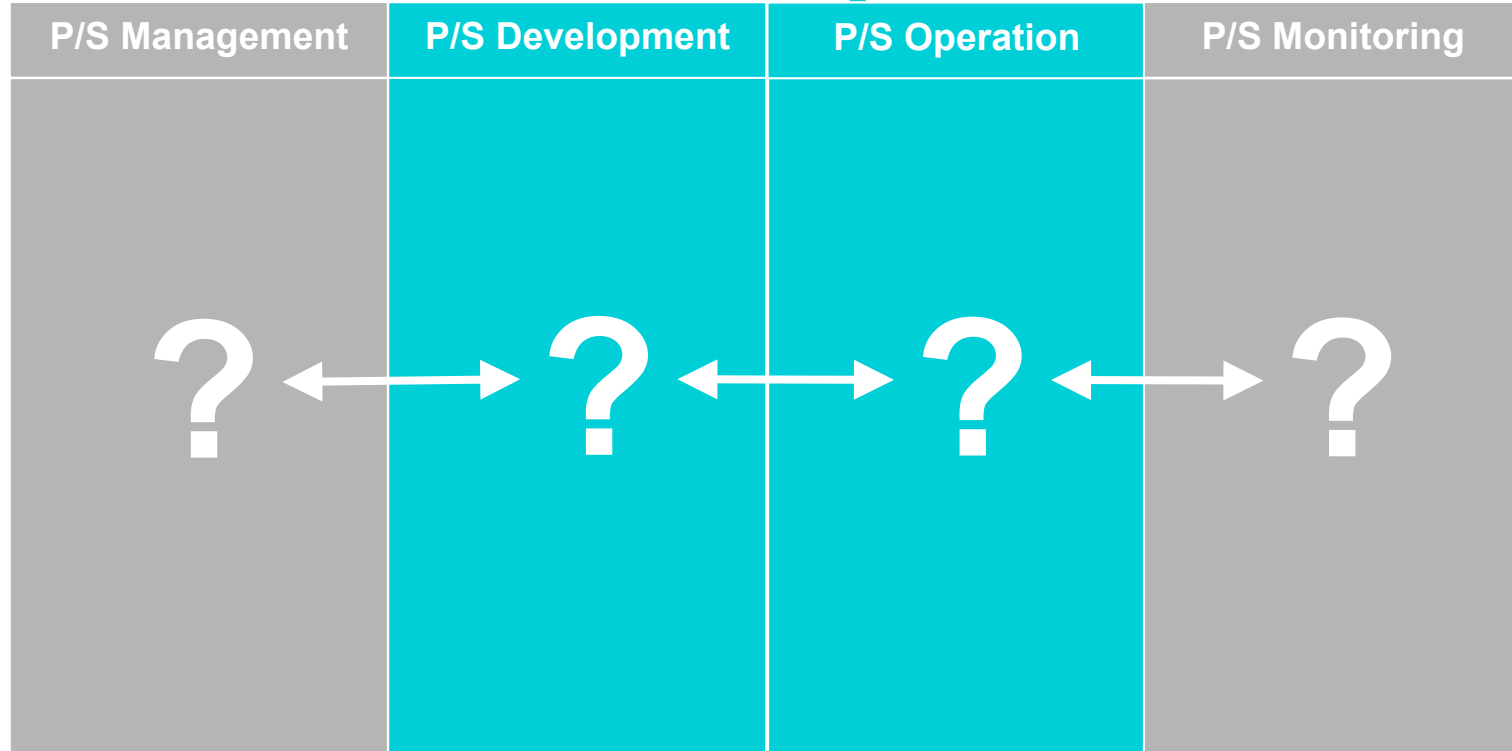
DevOps



P/S = Product/Service

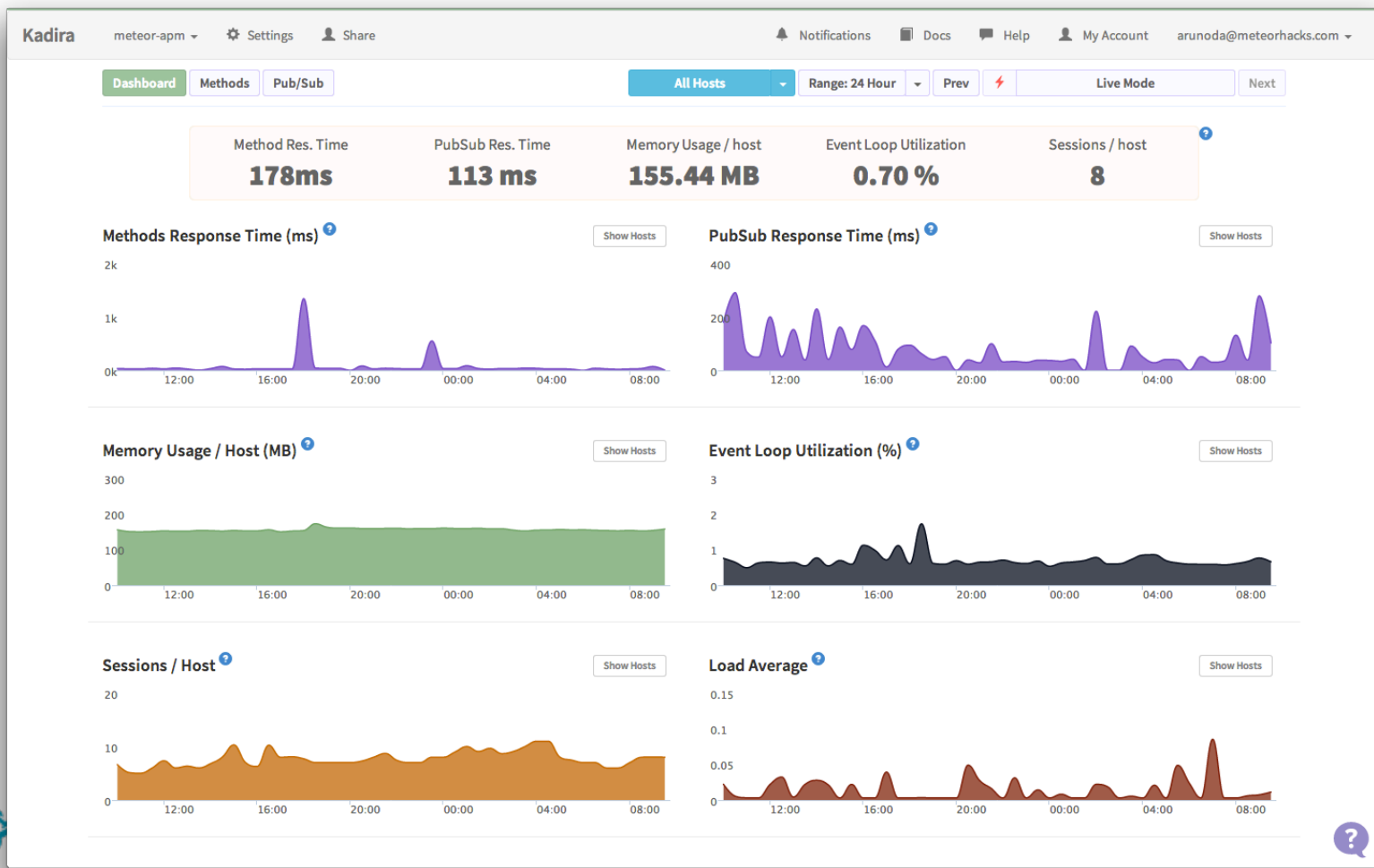
Let's focus...

DevOps



P/S = Product/Service

Monitoring a new product or service



Operating a new product or service



Why monitoring?



Because we need stability!



Why?

Because that usually means... money not stopping from flowing in!



http://www.makemoneythroughonline.com/uploads/images/2014_05/earn_residual_income_online.jpg

...and not angry customers!



<https://media.licdn.com/mpr/mpr/AAEAAQAAAAAAAAAJAAAAJDE1M210MDYwLTYSZWYtNDBhYy1hMjg1LWYyOTYxZmQzMjJINw.jpg>

But this stability is impossible to achieve for long periods of time...



Why?



Because we need to constantly
innovate in products and services

A man in a dark suit and white shirt is standing on the edge of a large, brown, rocky cliff. He is leaning forward, looking down into a deep gap between two cliffs. He is holding a black briefcase in his right hand. The background is a clear blue sky with some light clouds near the horizon. The overall scene suggests a metaphorical gap or challenge between two states or processes.

Dev....

...Ops

**So... there's a gap
between Dev(elopment)
and Op(eration)s**

How?

A gap made of...

knowledge

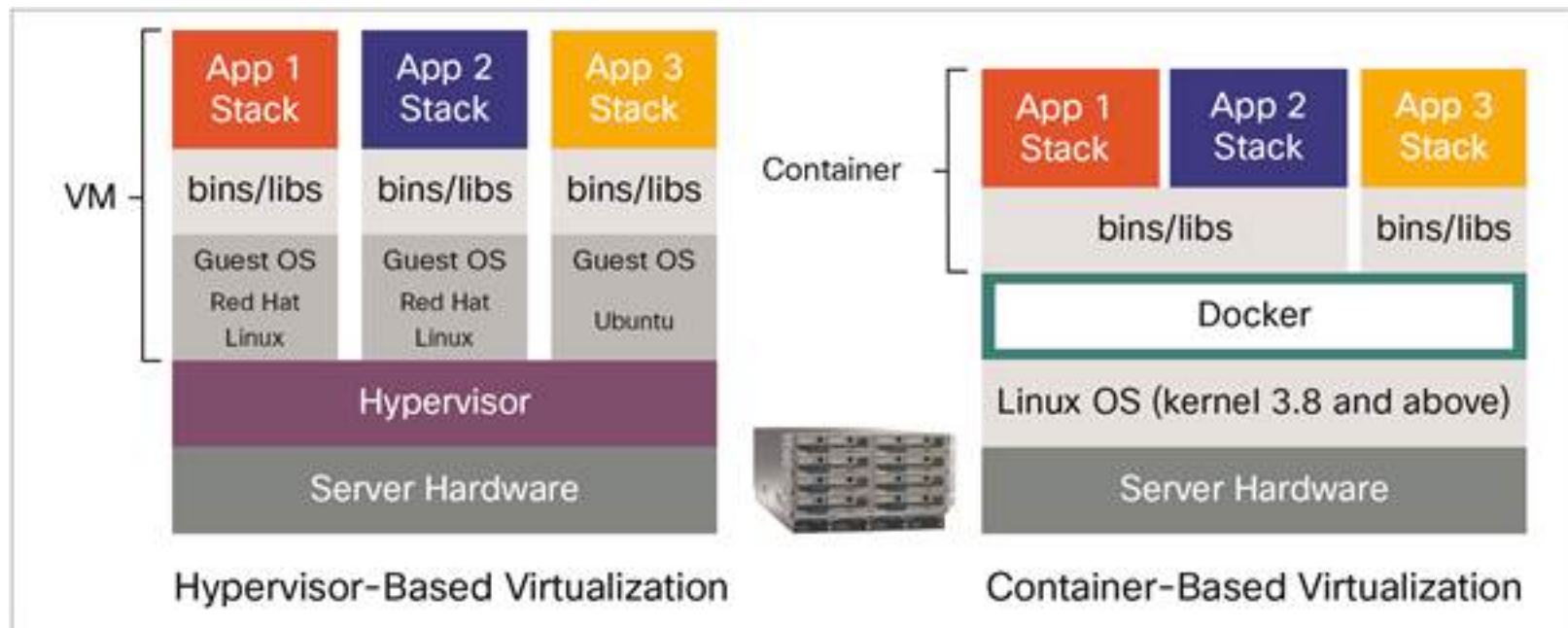


Let's blend both teams...



<http://ruhow.org/uploads/posts/2013-10/573d220e91a0a.jpg>

Infrastructure virtualization



Define your infrastructure with code

```
"MyInstance" : {  
  "Type" : "AWS::EC2::Instance",  
  "Properties" : {  
    "AvailabilityZone" : "us-east-1a",  
    "ImageId" : "ami-20b65349"  
  }  
}
```

Ansible



<https://www.ansible.com/>

Stop treating your infrastructure as pets...



...treat them as as cattle!

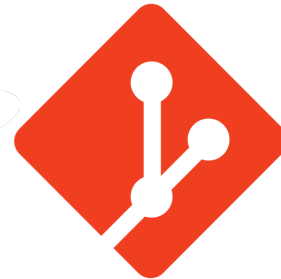


MICHAEL
SEEBECK
PHOTOGRAPHER

<http://michaelseebeck.com/wp-content/uploads/2013/11/tablelands-cattle-haqt0086.jpg>

Software Configuration Management

~~Seminar Symposium~~
International Conference on
~~Managing Change of~~
XML Vocabularies and ~~Documents~~ Systems
~~stet~~ X X X X
versioning



Continuous Delivery & Continuous Deployment

CONTINUOUS DELIVERY



CONTINUOUS DEPLOYMENT



Automated Testing

- Manual tests:
 - do not scale
 - Introduce time lags in making tested software available
- Tests done by a QA team:
 - Imply a gap between software developers and software testers
- There are many kinds of tests:
 - ...'shift-left', i.e., test as early as possible in the chain
 - Unit tests: make them to be ran often
 - Functional/Acceptance tests: less frequently ran
- Mind test scripts management:
 - Reuse
 - Update

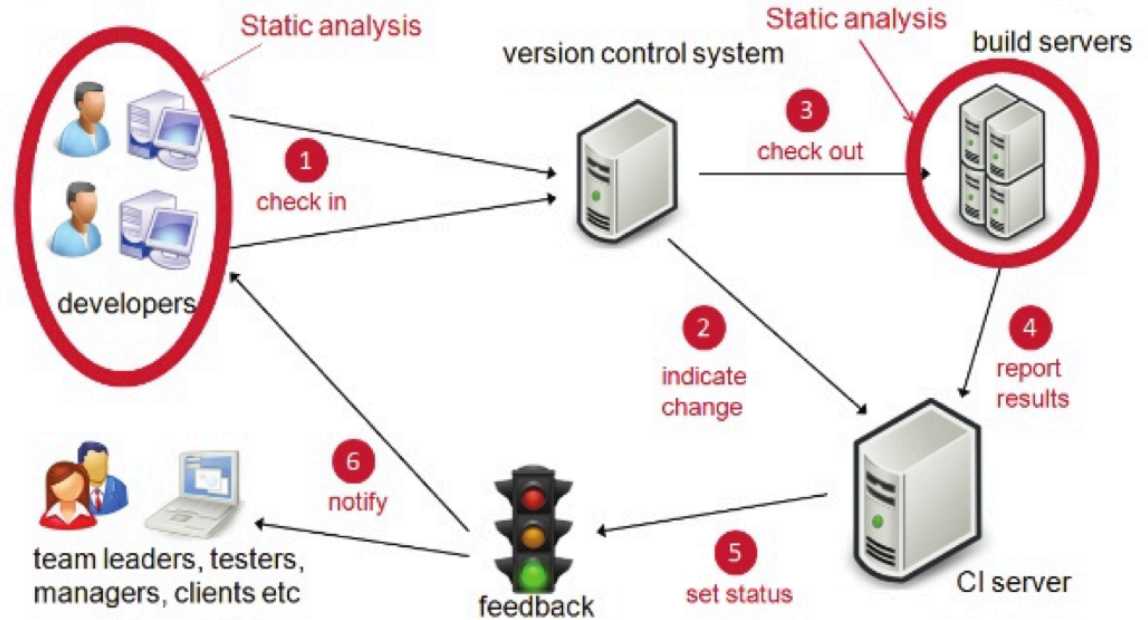


Continuous Integration



<https://jenkins.io>

CONTINUOUS INTEGRATION WORK FLOW



<http://image.slidesharecdn.com/jenkins2-150728163959-lva1-app6892/95/continuous-integration-with-jenkins-and-git-7-638.jpg?cb=1438101733>

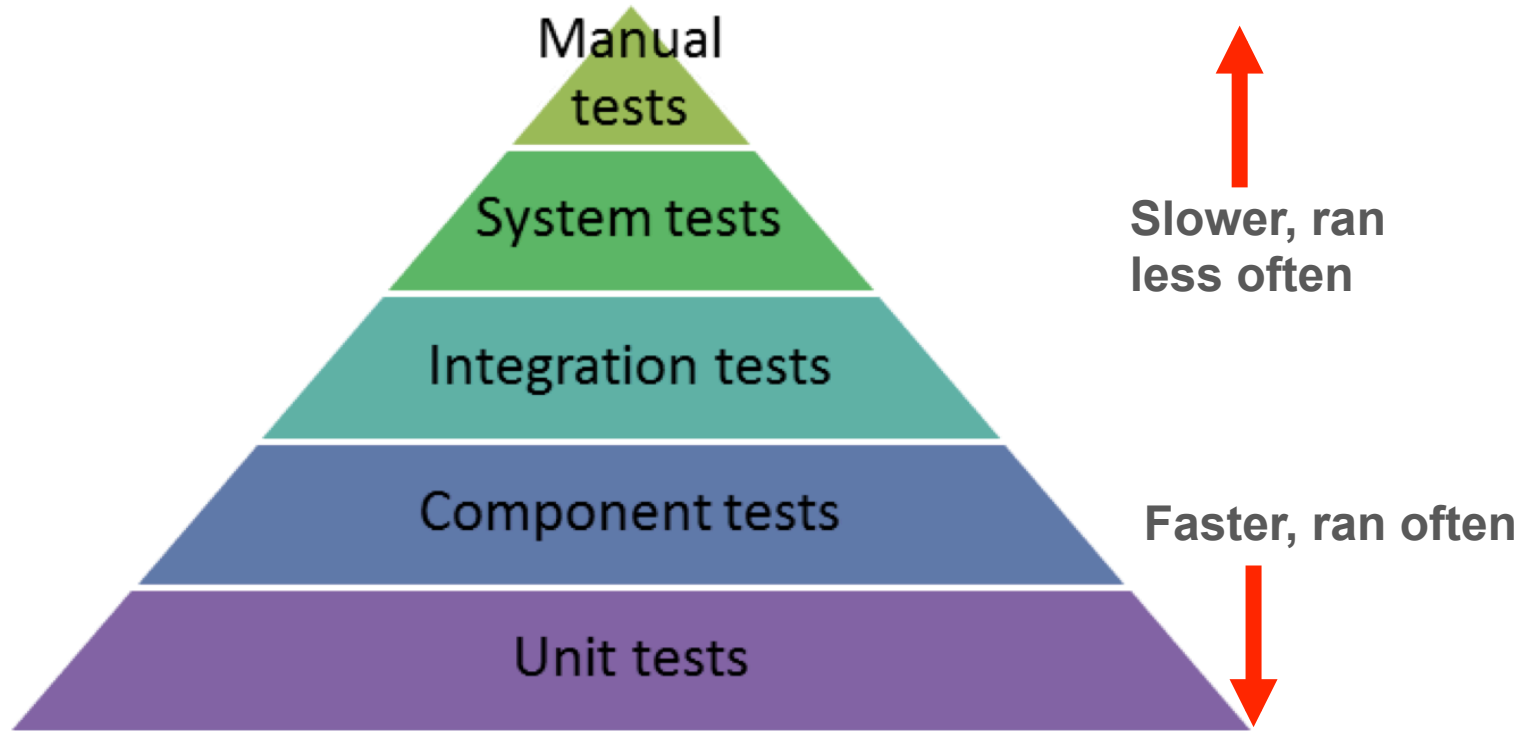
For Continuous Integration to work you need...

Tests!

Coding is not the only thing that needs to be done

No.	Activity	Effort		
1	Requirements	3.84%	13	Configuration Mgt. 0.41%
2	Prototyping	4.50%	14	Integration 2.71%
3	Architecture	2.25%	15	User Documentation 9.67%
4	Project Plans	1.33%	16	Unit Testing 4.50%
5	Initial Design	3.84%	17	Function Testing 4.50%
6	Detailed Design	4.50%	18	Integration Testing 3.84%
7	Design Reviews	3.02%	19	System Testing 3.38%
8	Coding	13.50%	20	Beta Testing 3.02%
9	Reuse acquisition	1.13%	21	Acceptance Testing 1.94%
10	Package Purchase	1.69%	22	Independent Testing 3.38%
11	Code Inspection	4.50%	23	Quality Assurance 4.50%
12	Independent V&V	5.42%	24	Installation and Training 1.94%
			25	Project Management 6.75%

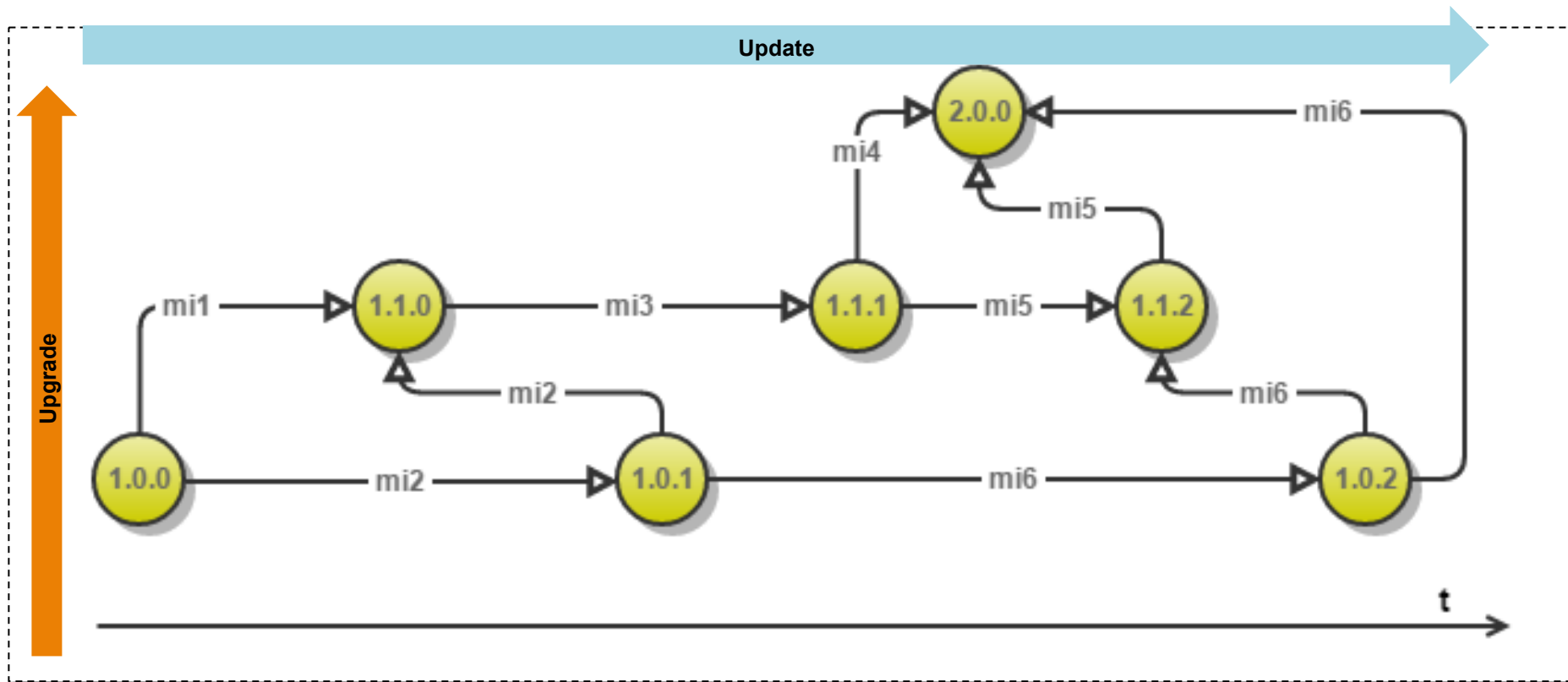
There are several kinds of tests



Integrate often, small changes at a time

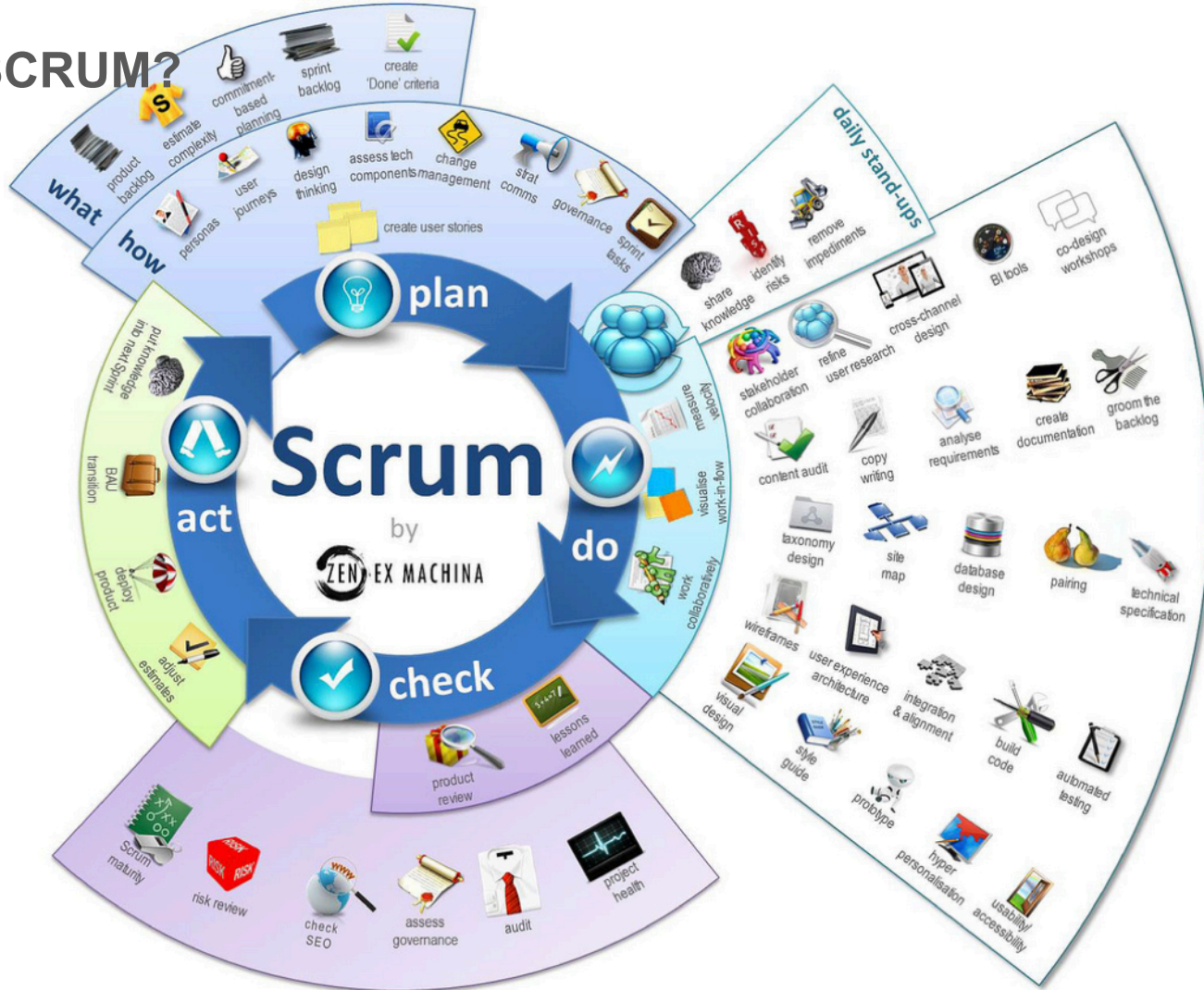


Database migrations



- Manifesto:
 - **Individuals and interactions** over **processes and tools**
 - **Working software** over **comprehensive documentation**
 - **Customer collaboration** over **contract negotiation**
 - **Responding to change** over **following a plan**
- Principles:
 - Highest priority is customer satisfaction
 - Welcome changing requirements
 - Frequent delivery of software
 - Business people & developers cooperating daily
 - Build projects around motivated people
 - Face-to-face conversation is best
 - Progress measured by working software
 - Sustainable development pace
 - Continuous attention to technical excellence
 - Simplicity
 - Self-organizing teams
 - Regular reflection & adaptation

What's SCRUM?

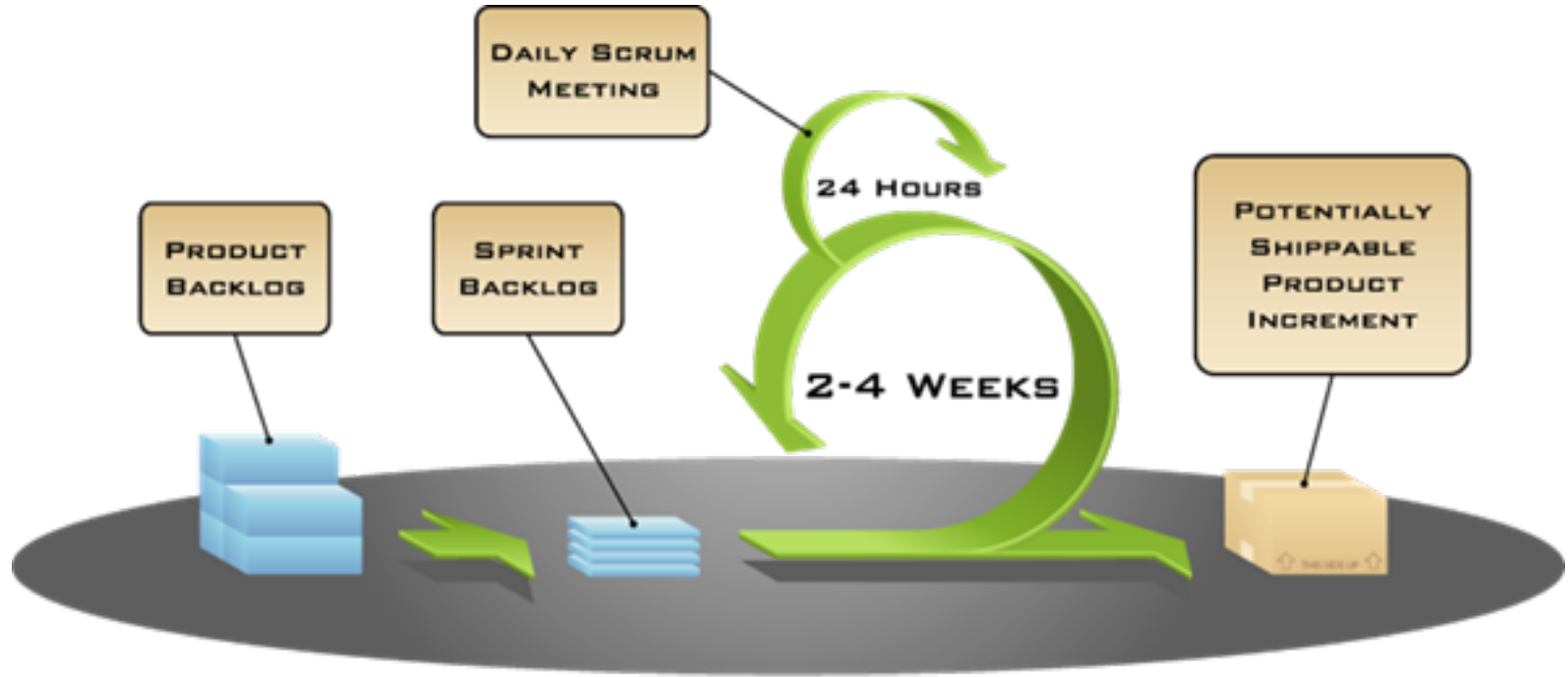




Roles & Assets

- **Product Owner:** user story writer and 'prioritizer'
- **SCRUM Master:** process owner/facilitator
- **Development Team:** process executors
- **Product Backlog:** (priority sorted) list of user stories (requirements);
- **Sprint Backlog:** (priority sorted) list of user stories (requirements) that are supposed to be implemented in the current sprint;
- **Sprint Burn Down Chart:** graphic of the team's velocity minus the number of implemented story points;

Agile methodologies: SCRUM

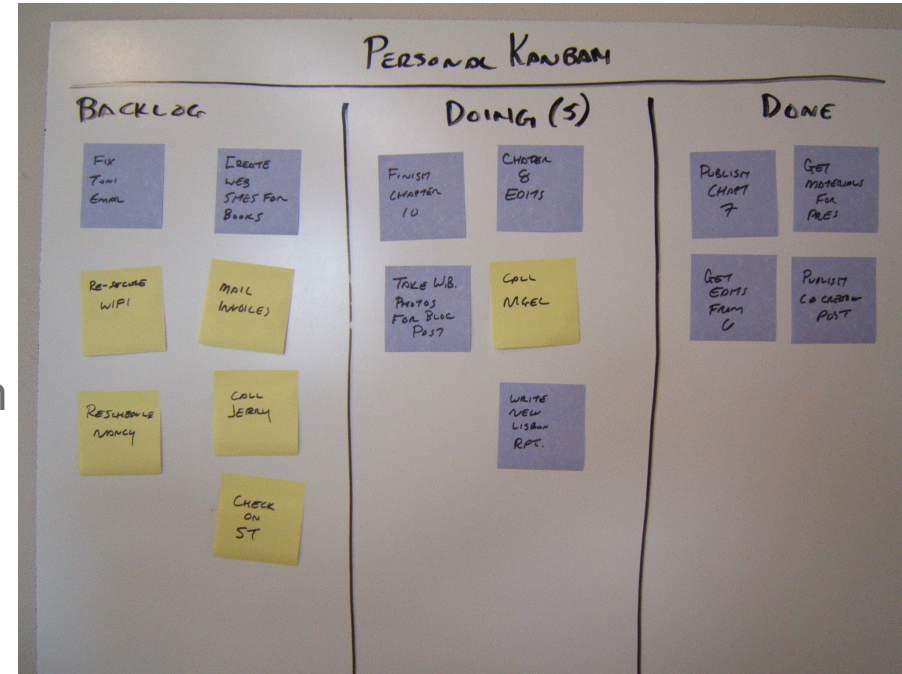


COPYRIGHT © 2005, MOUNTAIN GOAT SOFTWARE

Another agile methodology: Lean/Kanban

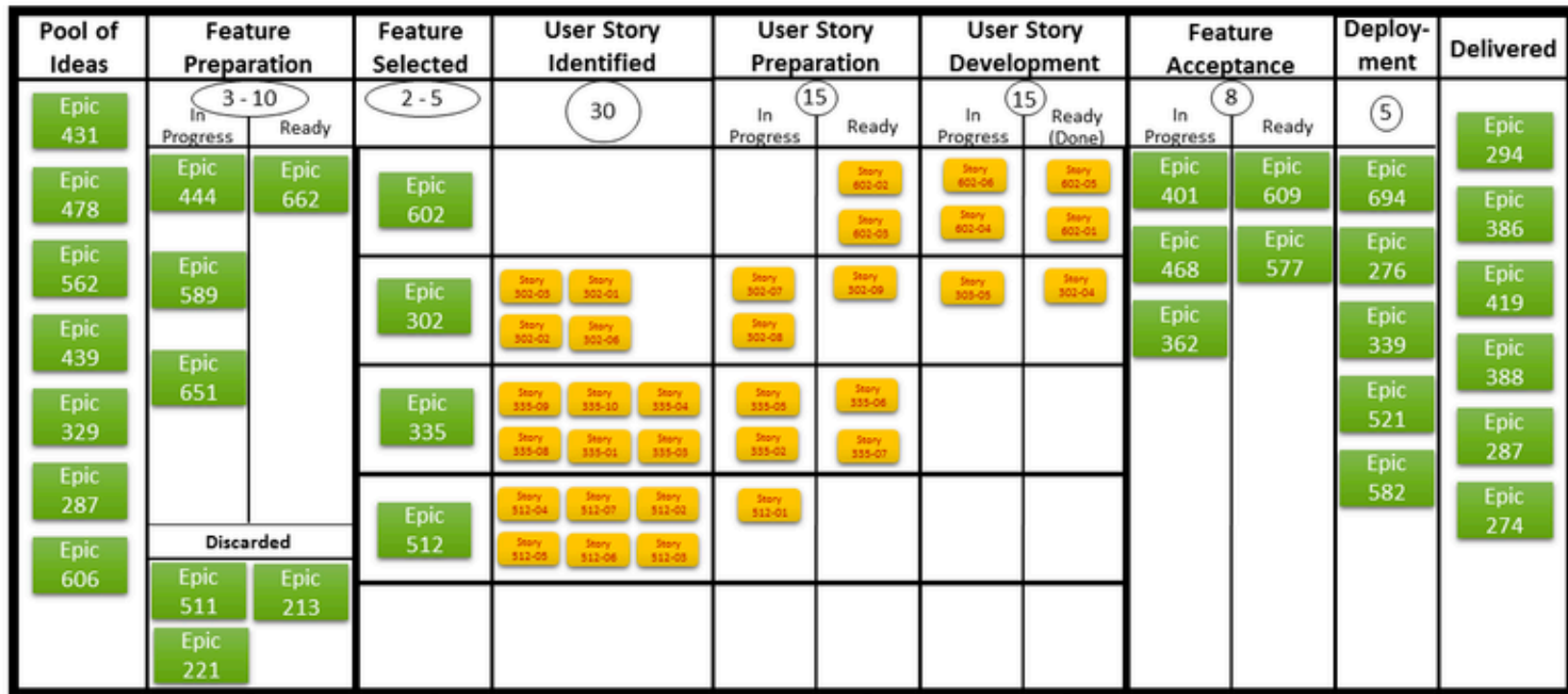
General practices:

- visualization
- limiting work in progress
- flow management
- making policies explicit
- using feedback loops
- collaborative or experimental evolution



<http://personalkanban.com/wp-content/uploads/2009/08/whiteboards-050.jpg>

Another agile methodology: Lean/Kanban



Policy

Business case showing value, cost of delay, size estimate and design outline.

Policy

Selection at Replenishment meeting chaired by Product Director.

Policy

Small, well-understood, testable, agreed with PD & Team

Policy

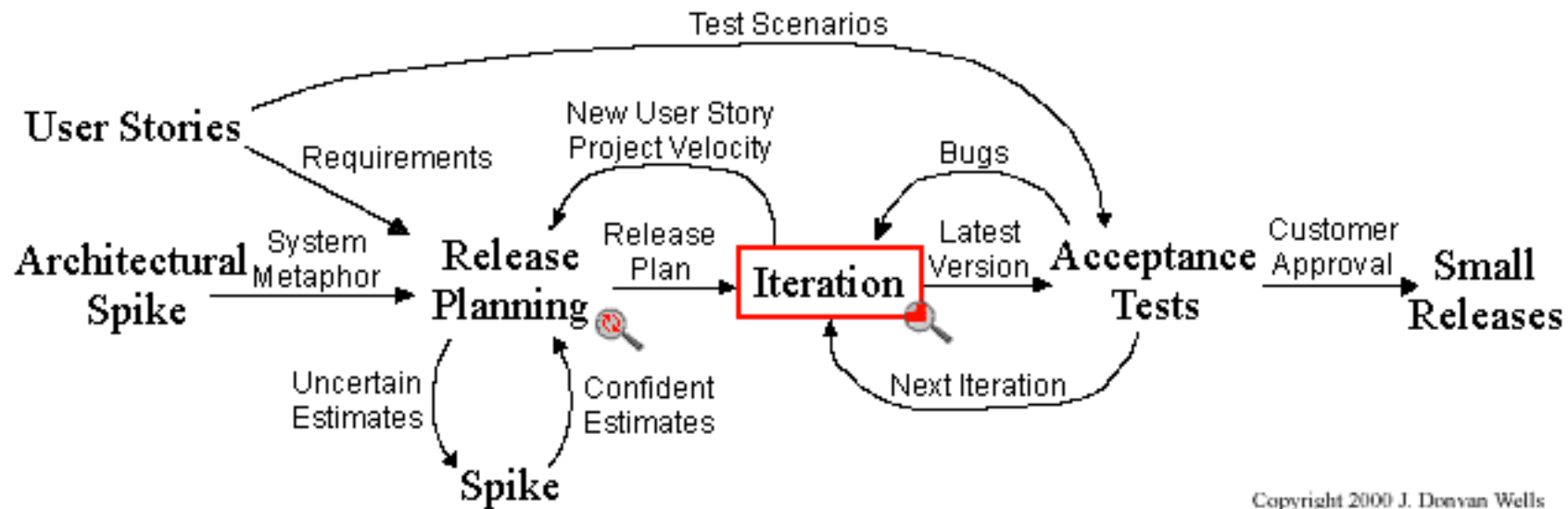
As per "Definition of Done" (see...)

Policy

Risk assessed per Continuous Deployment policy (see...)

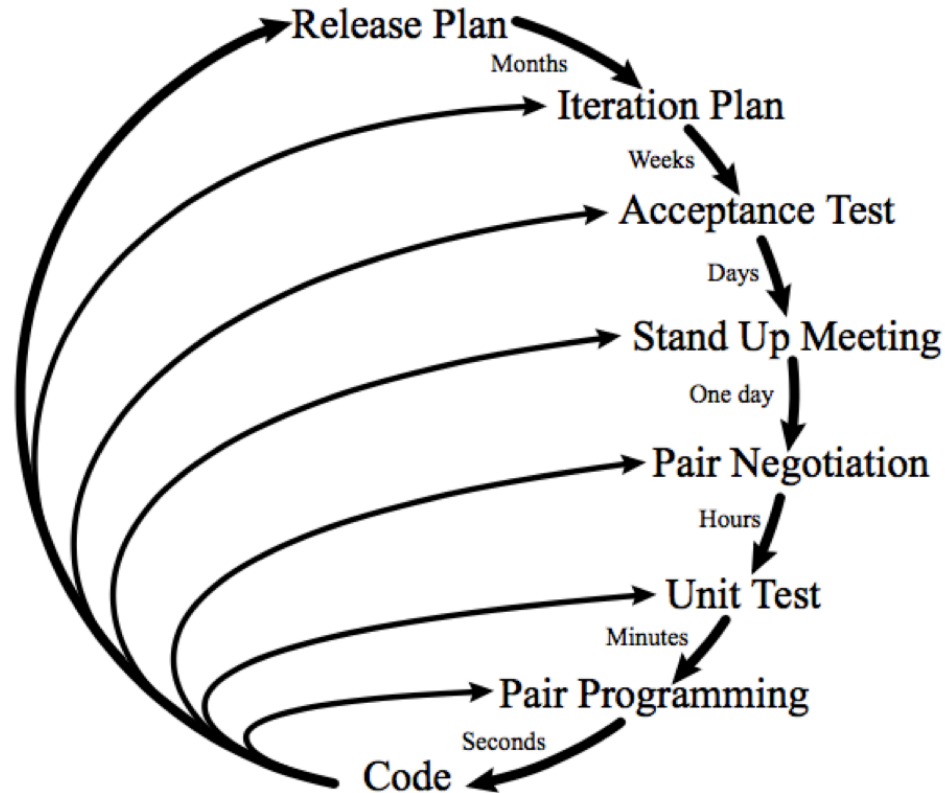


eXtreme Programming (XP)

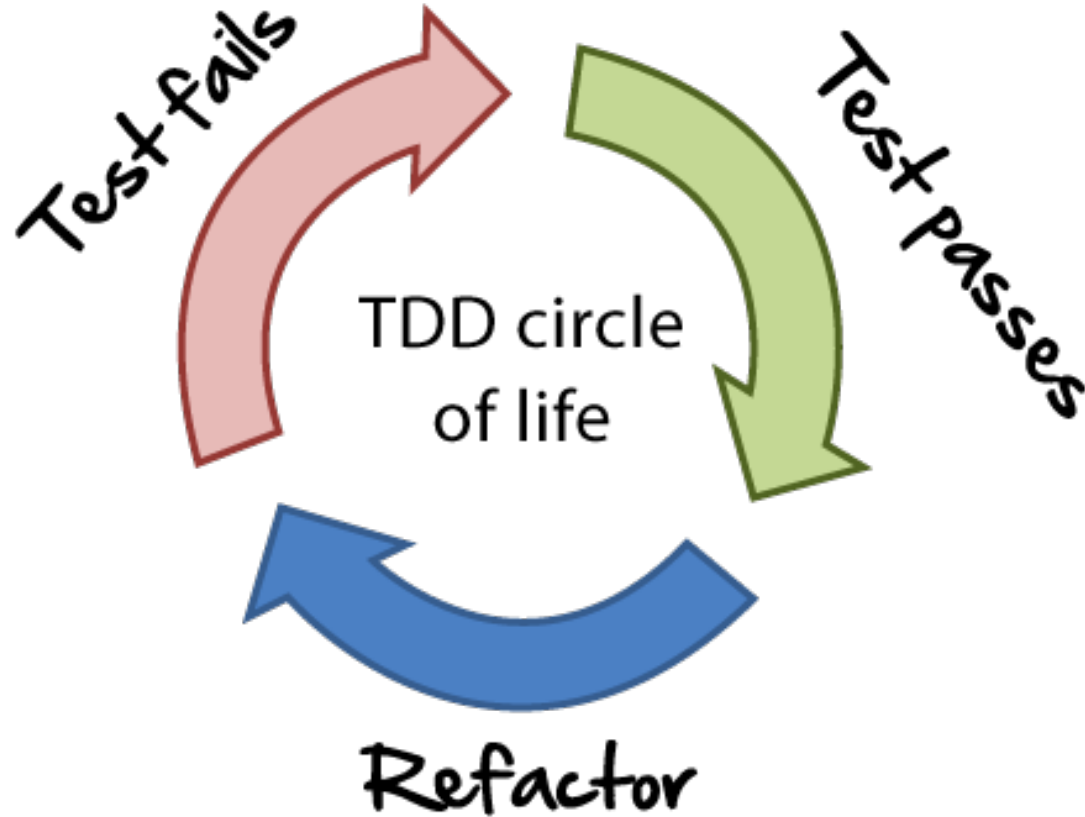


<http://www.extremeprogramming.org/>

XP: quick feedback



Test-Driven Development



What's DevOps (1)?

<http://www.jedi.be/presentations/agile-infrastructure-agile-2008.pdf>

Patrick Debois



<http://media.tivi.fi/incoming/ixbvzc-Debois-1000V/binary/Debois-1000V>

Andrew Clay Shafer



<https://blog.pivotal.io/wp-content/uploads/2014/06/Andrew-Clay-Shafer.jpg>
















PERIODIC TABLE OF DEVOPS TOOLS (V2)																		EMBED		DOWNLOAD		ADD	
1 Fm Gh Github		3 Os		4 En		5 En		6 En		7 Os		8 En		9 Os		10 Pd							
Gt Git		Dm DBmaestro				Ch Chef		Pu Puppet		An Ansible		Sl Salt		Dk Docker		Az Azure							
11 Fm Bb Bitbucket		12 Os				13 Os		14 En		15 Os		16 Fr		17 Os		18 En							
Lb Liquibase						Ot Otto		Bl BladeLogic		Va Vagrant		Tf Terraform		Rk rkt		Gc Google Cloud Platform							
19 Os		20 En		21 Os		22 Os		23 Os		24 Os		25 Fr		26 Os		27 Fr							
Gl GitLab		Rg Redgate		Mv Maven		Gr Gradle		At ANT		Fn FitNesse		Se Selenium		Ga Gatling		Dh Docker Hub							
37 Os		38 En		39 Os		40 Os		41 Os		42 Fr		43 Os		44 Fr		45 Os							
Sv Subversion		Dt Datical		Gt GrunT		Gp Gulp		Br Broccoli		Cu Cucumber		Cj Cucumberjs		Qu Qunit		Npm npm							
55 Os		56 En		57 Fr		58 Os		59 Os		60 Fr		61 Fr		62 Fr		63 Os							
Hg Mercurial		Dp Delphix		Sb sbt		Mk Make		Ck CMake		Jt JUnit		Jm JMeter		Tn TestNG		Ay Artifactory							
73 En		74 En		75 Os		76 Os		77 Fr		78 Os		79 En		80 Os		81 Os							
Cw ISPW		Id Idera		Msb MSBuild		Rk Rake		Pk Packer		Mc Mocha		Xltv XL TestView		Jm Jasmine		Nx Nexus							

XebiaLabs
Deliver Faster

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91 En Xlr XL Release	92 En Ur UrbanCode Release	93 En Bm BMC Release Process	94 En Hp HP Codar	95 En Au Automic	96 En Pl Plutora Release	97 En Sr Serena Release	98 Pd Tfs Team Foundation	99 Fm Tr Trello	100 Pd Jr Jira	101 Fm Rf HipChat	102 Fm Sl Slack	103 Fm Fd Flowdock	104 Pd Pv Pivotal Tracker	105 En Sn ServiceNow
106 Os Ki Kibana	107 Fm Nr New Relic	108 Os Ni Nagios	109 Os Zb Zabbix	110 En Dd Datadog	111 Os El Elasticsearch	112 En St StackState	113 En Sp Splunk	114 Fm Le Logentries	115 Fm Sl Sumo Logic	116 Os Ls Logstash	117 Os Gr Graylog	118 Os Sn Snort	119 Os Tr Tripwire	120 En Ff Fortify

DevOps processes

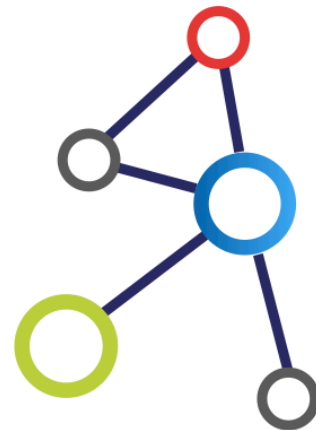
	SCM		Database Mgmt		Build
	CI		Repo Mgmt		Testing
	Deployment		Config / Provisioning		Containerization
	Cloud / IaaS / PaaS		Release Mgmt		Collaboration
	BI / Monitoring		Logging		Security

<https://xebialabs.com/periodic-table-of-devops-tools/>



SONATA: a EU Horizon2020 project

sonata



<http://sonata-nfv.eu>

<https://github.com/sonata-nfv>



ENABLING DIGITAL SOCIETY

www.alticelabs.com



WHO WE ARE

Altice Labs, an Altice Group company, lives by innovation and works every day for the development of new solutions, technologies and trends for the telecommunications area.

We lead the development of new ICT solutions and technologies.

WHAT WE DO

We promote the process of innovation, turning knowledge into competitive advantage in the market.

We transform knowledge into advanced solutions with an innovation approach supported on an ecosystem built around R&D entities, startups and industrial partners.

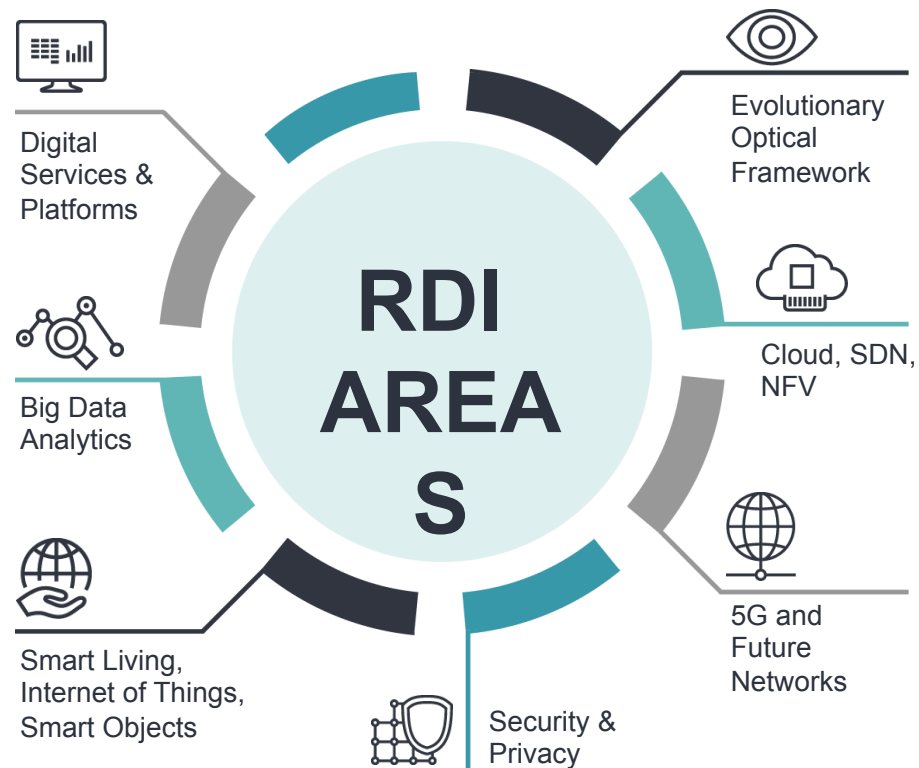
Altice Labs' commitment is to offer all its customers and partners best-of-breed products and technologies with cutting edge innovation.

WHERE WE ARE

With 1000 engineers worldwide, Altice Labs is headquartered in Aveiro, Portugal with subsidiaries in Brazil and is expanding its presence to France, Israel, Dominican Republic and the United States.

OUR RDI AREAS

We play an active role in the Innovation Ecosystem, working in partnership with world class universities, R&D Institutions, suppliers and clients in several projects, based on a risk sharing model, resorting to external funding from the major national and international research and innovation support programs.



Funding Instruments

- European FP7 Programme
- European H2020 Programme
- Portuguese P2020 Programme
- Universities
- Startups, Manufacturers and SMEs

Challenges in ALTICE LABS

Mobile networks: seamless mobility from legacy technologies (2G and 3G) to LTE

Real Time Business Intelligence enriched by patterns detection

BigData made easy: best tools and their integration with Altice Labs' BI components

MEO HTML5 apps experimentation and prototyping based on Enyo framework

Prefetch model for MEO STBs: speeding up automatic recordings based on catch-up TV data

INNOVATION PROJECTS



Challenges in ALTICE LABS

Smartwatch app for MEO STB remote control and beyond

MEO Go multiplatform prototyping based on Xamarin: same codebase for Android, iOS and Windows

Privacy & Security applied to data processing and events detection: state of the art reviewing, prototyping and assessment


INNOVATION PROJECTS

For more information about these and other innovation projects, access our website:
<http://www.alticelabs.com/en/challenges.html>



... challenges





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Inovaria Genius Program advocates Scholarships for Scientific Research regulated by the FCT - Foundation for Science and Technology.

Altice Labs provides in this context, Innovation projects that rely on your talent and capabilities.

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