

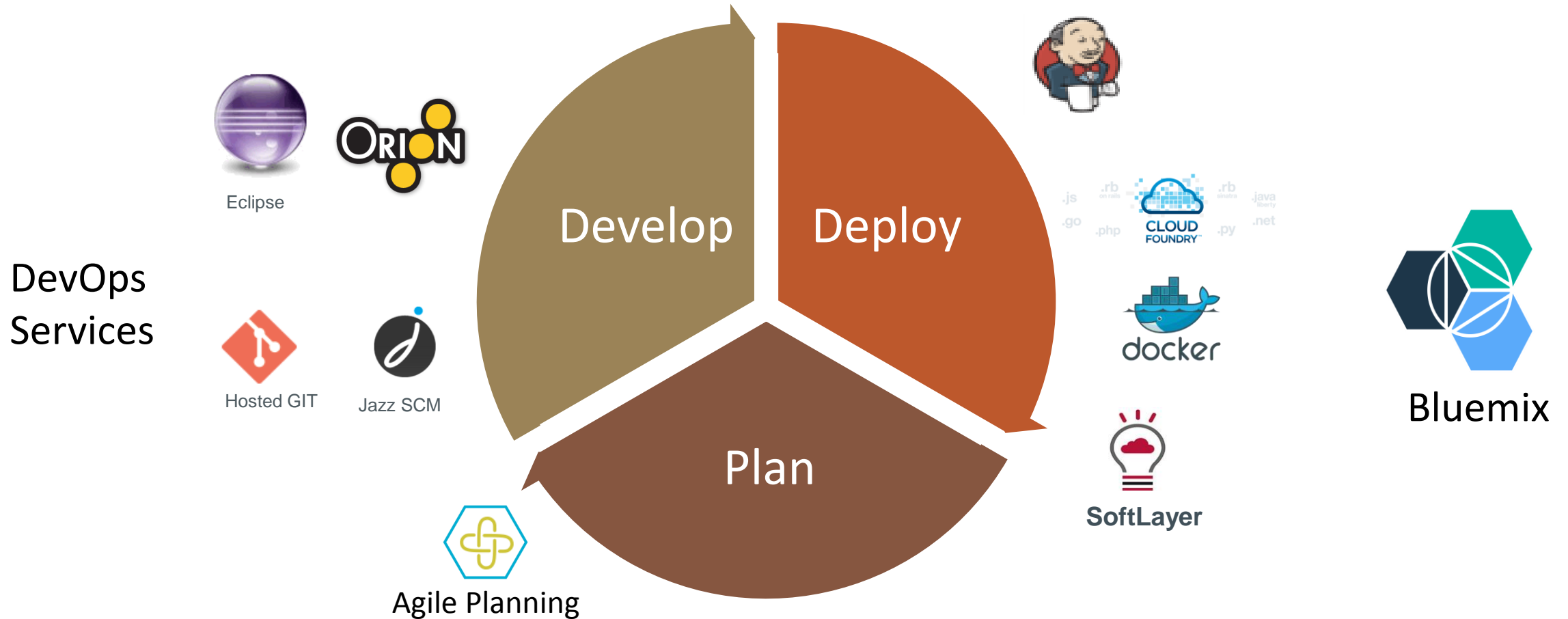
Orion on the Road to Continuous Delivery

ECLIPSECON FRANCE 2015

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IBM Cloud Unit / IBM Canada

The Big Picture



The way things were...

Initially four monolithic pieces, planning around 3-4 month releases

Aiming for weekly deploys, achieving monthly deploys

Deploys very painful, an hour or more of downtime, half dozen people manually invoking scripts



Doing some things right:

- Identical Dev, QA, and PROD environments
- Automating deploy steps where possible
- Using dark launches to incrementally phase in new features

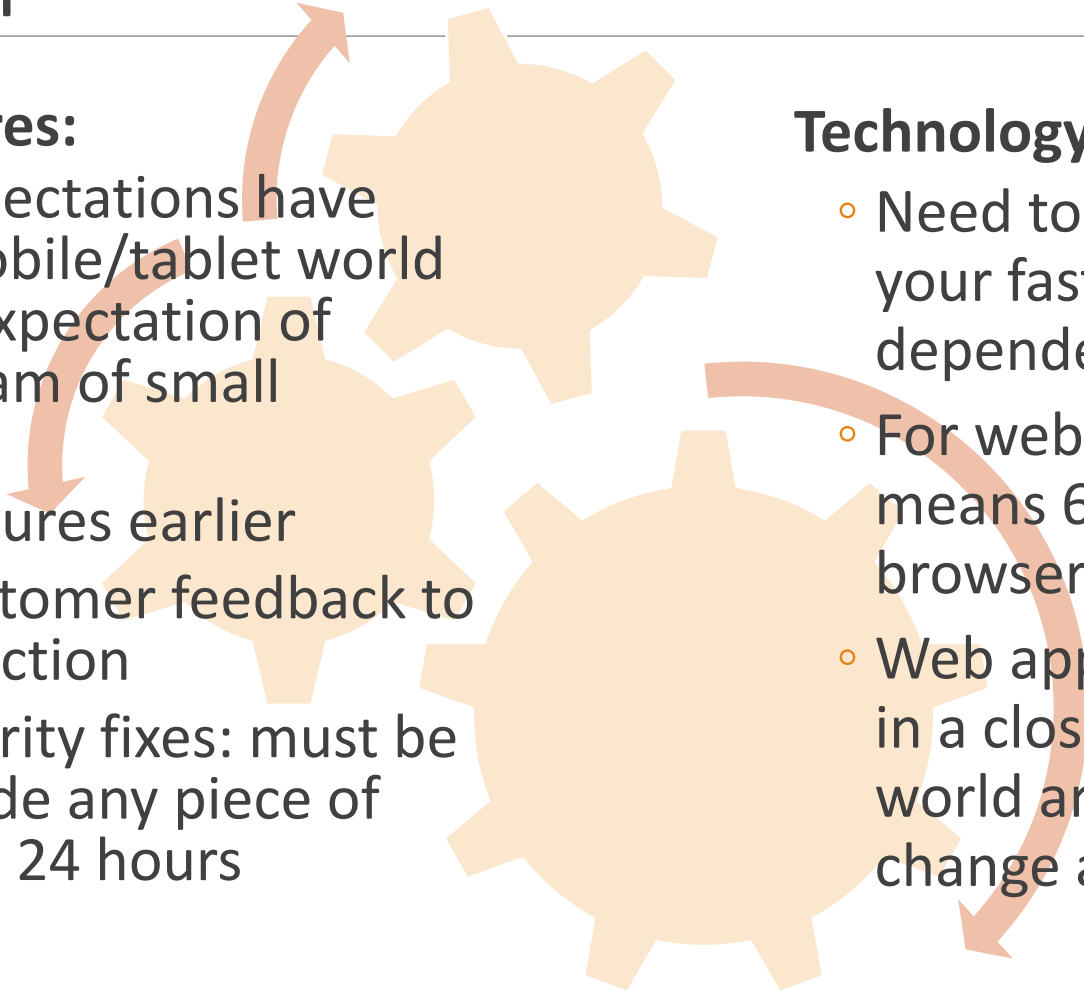
Under pressure to move faster

Business Pressures:

- Customer expectations have changed – mobile/tablet world has created expectation of constant stream of small updates
- Access to features earlier
- Ability for customer feedback to influence direction
- Zero day security fixes: must be able to upgrade any piece of system within 24 hours

Technology Pressures:

- Need to move as fast as your fastest releasing dependency
- For web applications this means 6 weeks to match browser releases
- Web applications don't live in a closed system, the world around them can change and you must react





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“If you want to increase your success rate, double your failure rate” – Thomas J Watson, Sr.

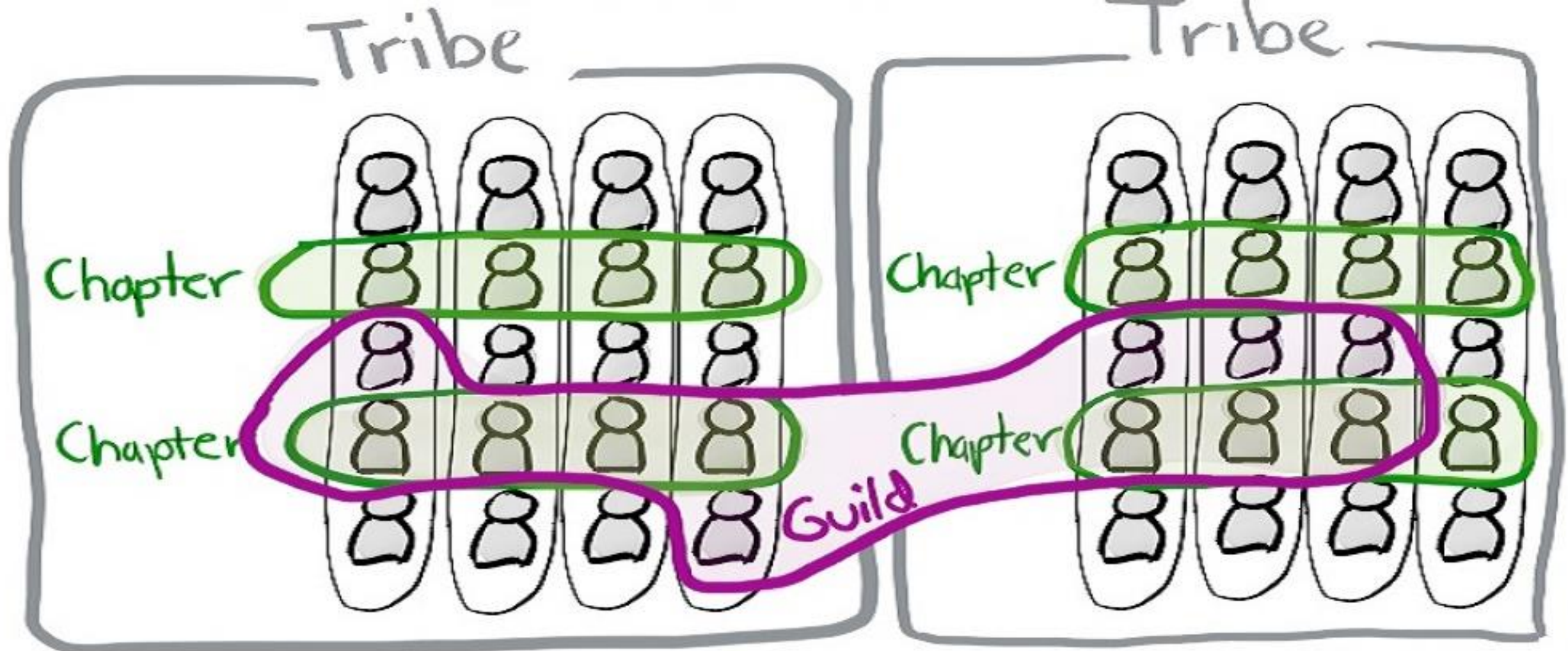
What is Continuous Delivery?

Most software teams practice some form of Continuous Integration:

- Merging changes into a common stream daily
- Automated build and testing on all merges
- Catch problems early while code is easy to change

Continuous Delivery goes beyond:

- Be capable of delivering to customers with a button click
- Replace monolithic “big bang” releases with frequent “little bang” releases
- Relentless focus on **automation** and **measurement**



<https://labs.spotify.com/2014/03/27/spotify-engineering-culture-part-1/>

Continuous Development Culture

Continuous Focus

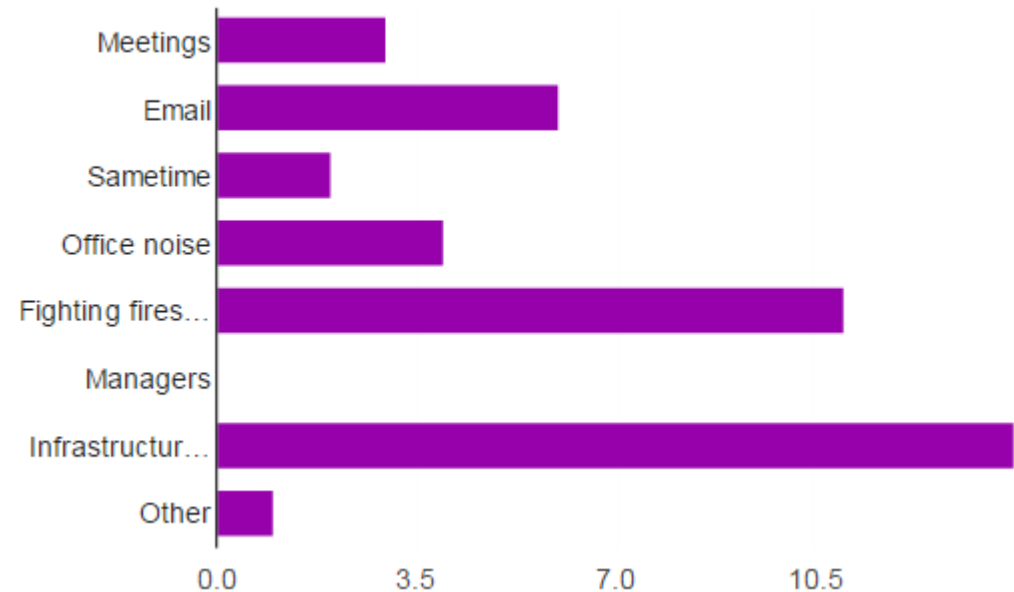
Developers can get distracted from productive work by the latest emergency

Created a dedicated “first responder” squad to handle first line response

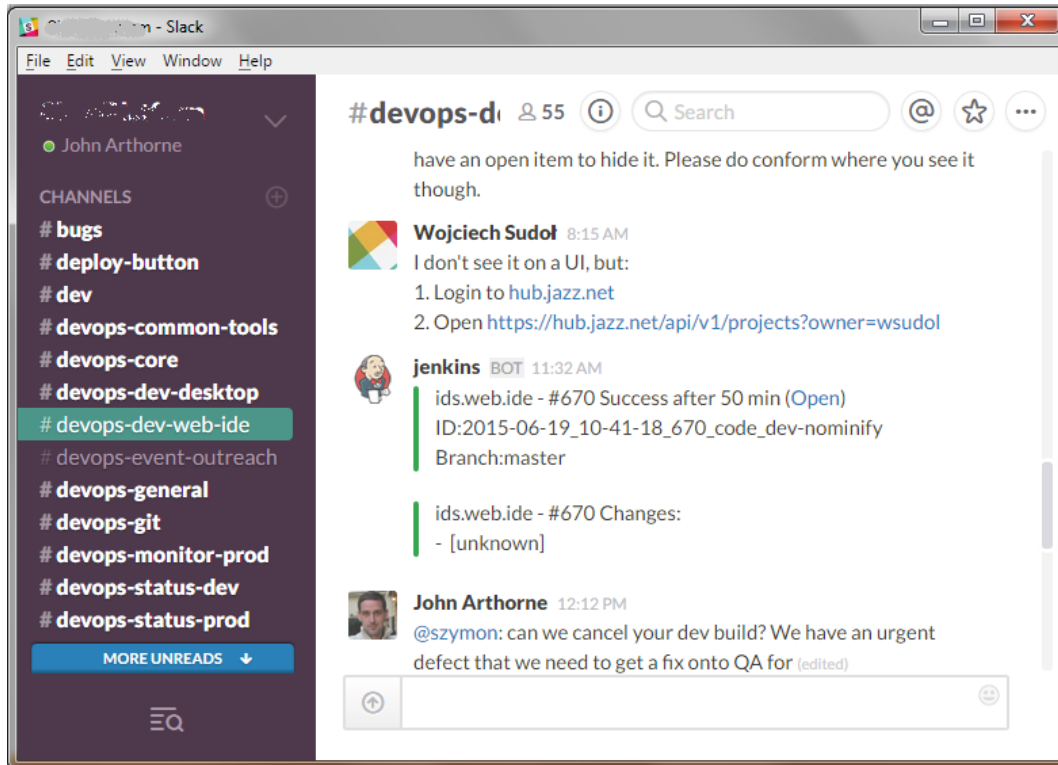
Growing infrastructure squad to provide robust infrastructure for build, monitoring, deployment

Lesson: Survey your developers to find out what their distractions are!

Top sources of distraction:



Continuous Communication



Too much communication hurts focus and productivity

Not enough communication leads to misalignment, mistrust, and missed opportunity

Different communication tools and patterns needed within squads vs across squads

Squad communication: Slack, standups, Kanban boards, pair programming

Leadership communication: Meetings, plans, email, playbacks (demos)

Experiment with what works for your team

Continuous Planning



Detailed advance plans fail:

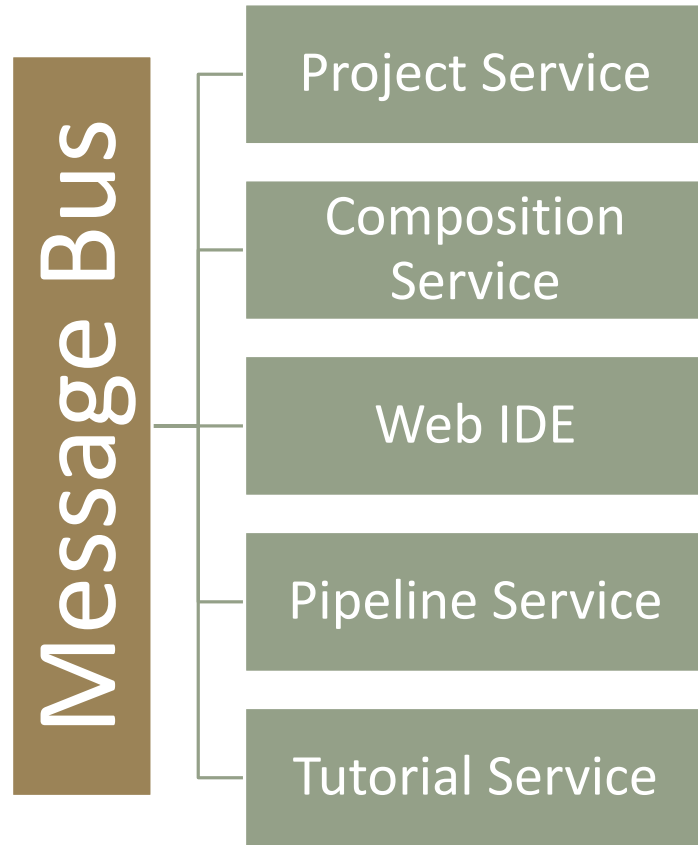
- Unexpected technology changes
- Changing business priorities
- It means you aren't reacting to what you are learning
- “Panic Driven Development”

Instead:

- Work rooted in themes and long term goals
- Communicate current work using Kanban
- Rank order plan instead of priorities

Quality	As a user I would like faster page load times, especially on first landing in the editor
Quality	As a developer, I'd like to easily get my code from Git into Bluemix (aka "the "Git Experiment")
Quality	As a Web IDE user, I don't want to be prompted for a password when pushing to GitHub
Quality	Landing in Web IDE sometimes shows whitescreen or undefined UI error
EPIC?	As a user I would like access to a keyboard shortcut list (current location in Help menu going away)
Dedicated	As a user I would like to see no impact during server upgrades
Dedicated	[Auth] Prototype "bluemix first" navigation into DevOps Services from dedicated
Quality	As a Web IDE user, I'd like "Live Edit" to be turned on by default to improve the edit/run/debug cycle
Dedicated	[Web IDE] Use MCCP for accessing Bluemix endpoints from the server (in support of syndication)
	***** JUNE 2015 (end of list) *****
	Make sure Orion responds to application stop events

Continuous Architecture



Micro-services: smaller, loosely couple services

Interaction between services via asynchronous messages

Allows individual services to go down without breaking entire system

Lower friction updates to individual services

Continuous Uptime

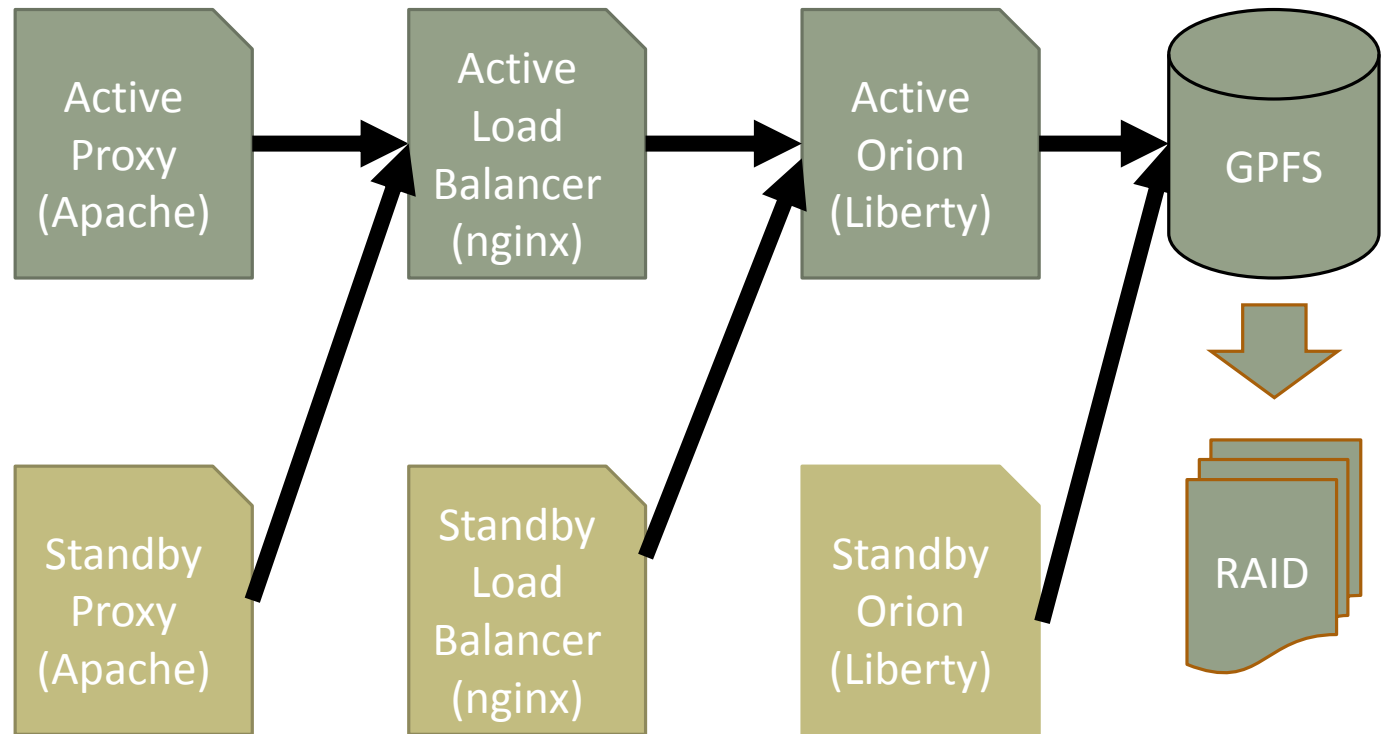
Redundancy at every level for each piece of the system

Active/Passive configuration

Blue/Green deployment

Fast fail-over when problems occur

Significant changes needed to software architecture to support this!



Continuous Design

“Design is not just what it looks like and feels like. Design is how it works.”

– Steve Jobs

Integrate design into planning and execution at every level

Design hills focus on real user pain points

Playbacks for all UX changes to validate changes



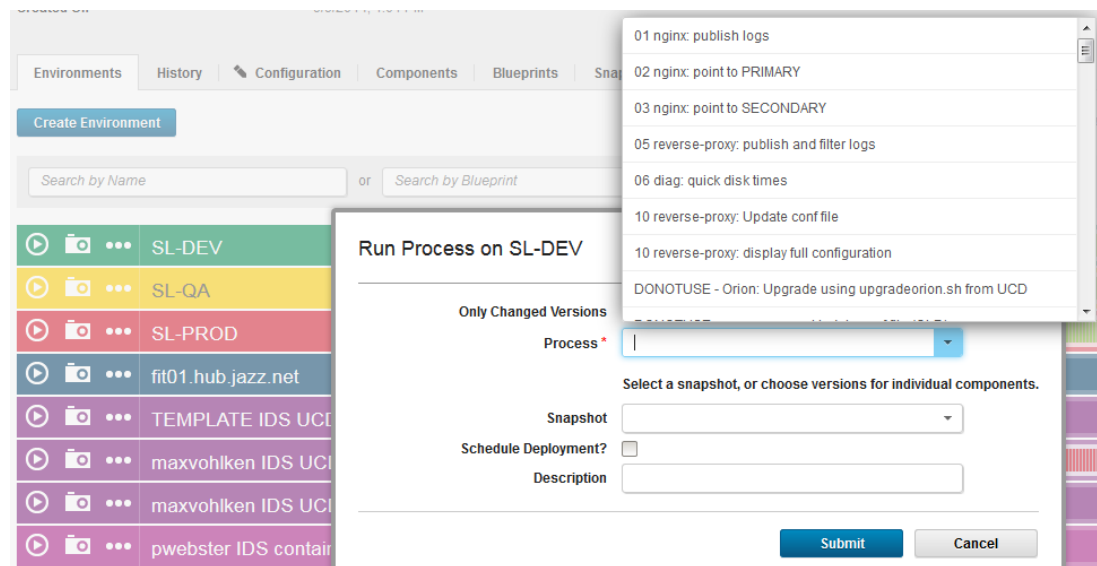
Continuous Automation

“If it hurts, do it more frequently”

- David Farley and Jez Humble

Pushing automation into every part of infrastructure: Build, Test, Deploy, Monitoring

Using Urban Code Deploy for deploy automation

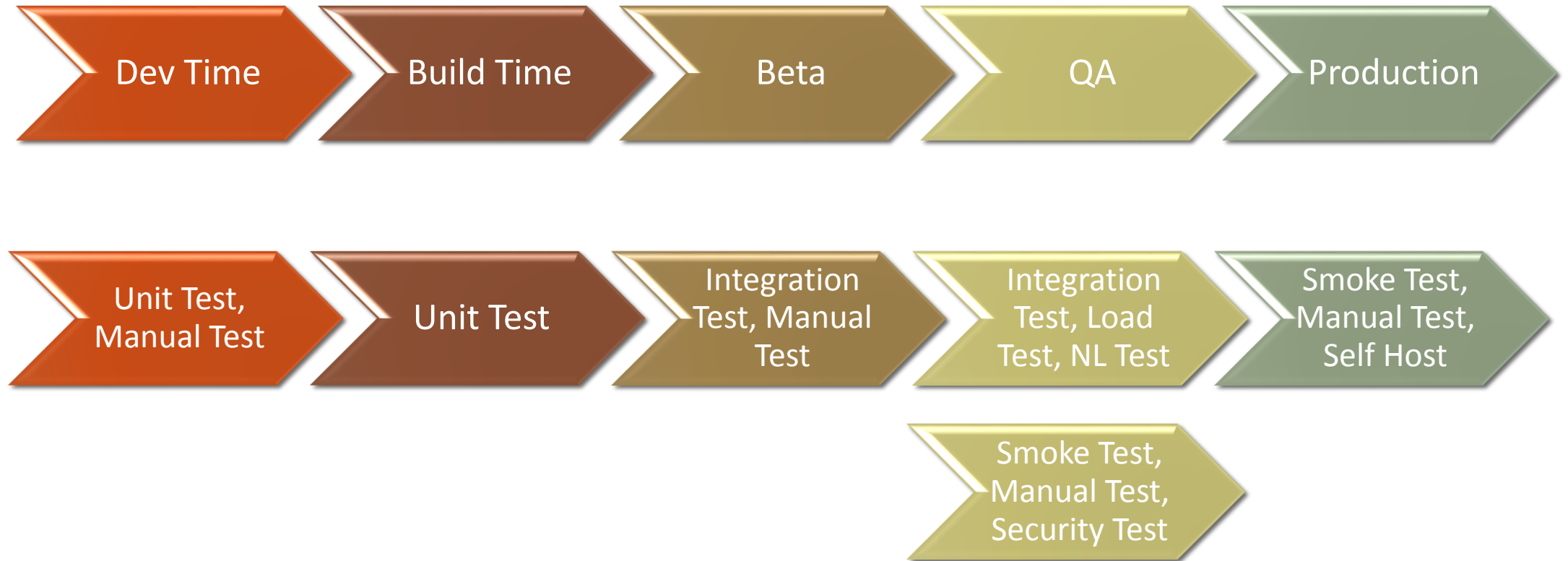


Environment: SL-PROD for Orion

Resources	History	Calendar	Configuration	Approval Process	Changes
Process	Snapshot	Scheduled For			
Orion: publish logs		6/23/2015, 2:00 AM			
Orion: publish logs		6/22/2015, 2:00 AM			
Orion: publish logs		6/21/2015, 2:00 AM			
Orion: publish logs		6/20/2015, 2:00 AM			
Orion HA: upgrade red/black servers		6/19/2015, 3:04 PM			



Continuous Testing





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“Measure what is measurable, and make measurable what is not so” – Galileo Galilei

Measuring Success

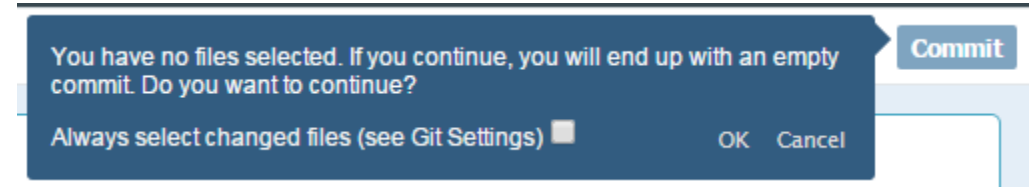
We no longer need to wait months or years to get feedback on a new feature

Instrument code from day one to test your assumptions

- Can users find the feature?
- Do they continue using it?
- Does it measurably decrease some poor behavior?

React and change based on concrete data rather than a hunch

Can iterate an idea in weeks that used to take years to resolve



27.	/window/favorites/recentFind/19	1,285 (0.52%)
28.	/editor/settings/editorSettings /zoomRuler	184 (0.07%)
29.	/git/config/userInfo/GitSelectAll	174 (0.07%)



1.	true	140 (80.46%)
2.	false	34 (19.54%)

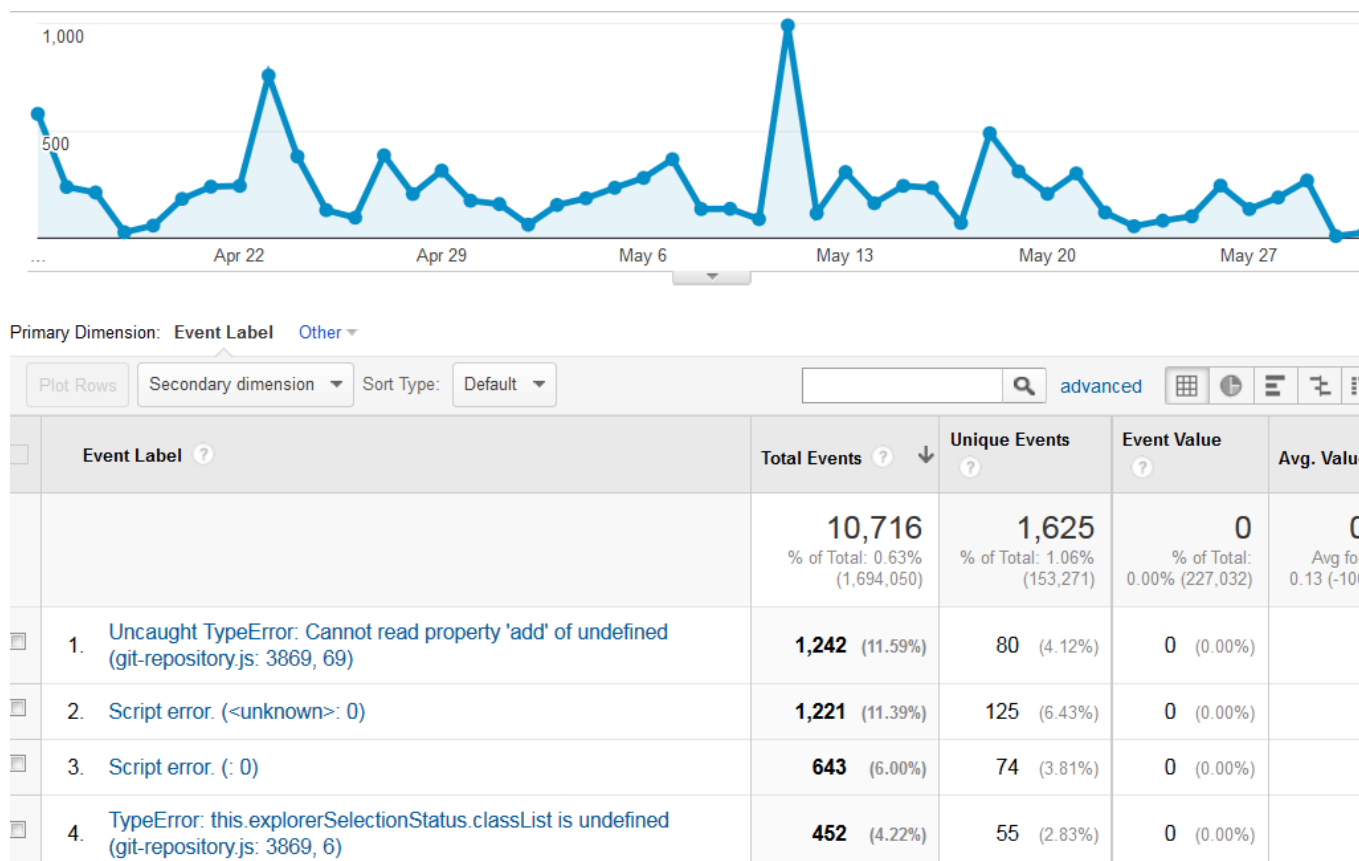
Measuring Failure

“The only real failure is the one we learn nothing from”

- Henry Ford

A major fear with continuous delivery is releasing poor quality code because you haven't had enough soak time

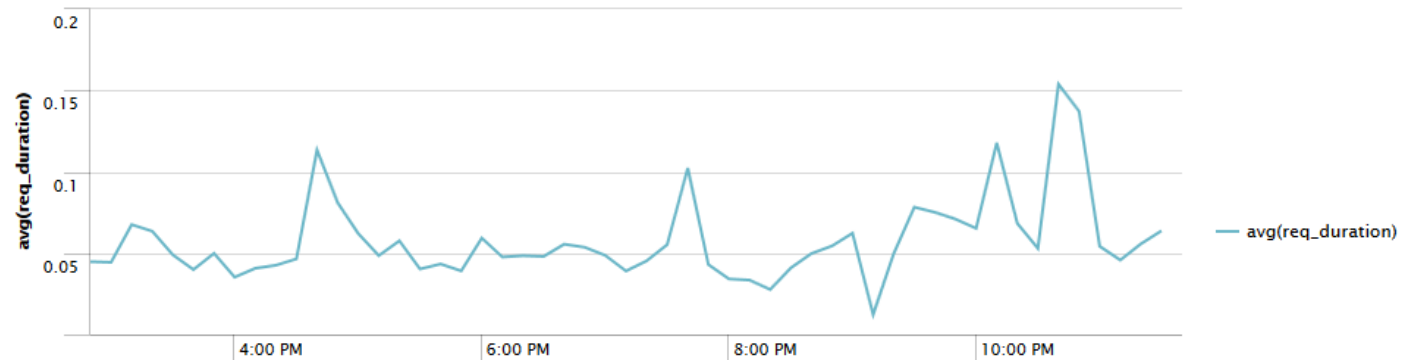
This is mitigated by closely measuring failure and reacting quickly with fixes. The result is higher quality, not lower.



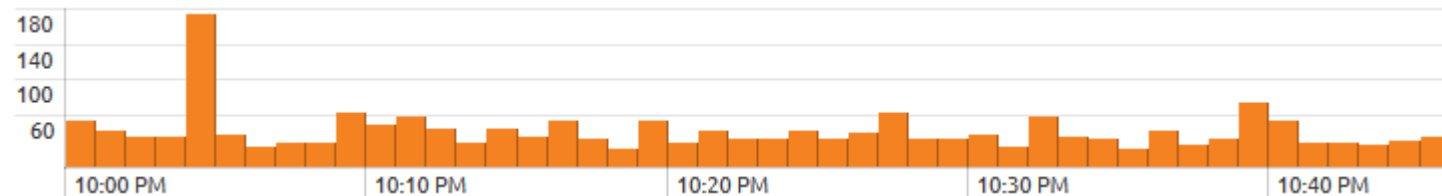
Measuring Logs

Your app logs are a treasure trove of data. You can measure and monitor failure rates, traffic volumes, request times, and much more

Average request duration over time:

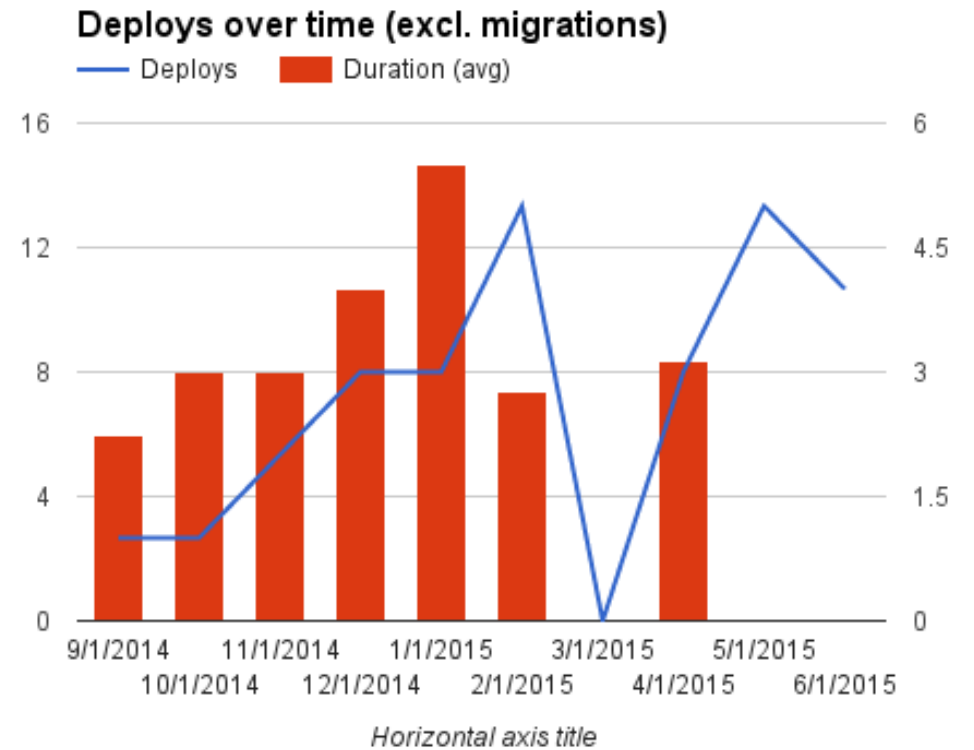


Failure response over time (4xx, 5xx):



Measuring your automation

Component Deployment Statistics					
Component	Deployments	Avg. Deployment Time (m)	Avg. Variance (m)	Avg. Rating	Details
User Home	7	2	0	5	Details
Gerrit Plugin	10	2	0	5	Details
Composition	4	2	0	5	Details
RES	17	8	-1	5	Details
eCommerce	3	1	0	5	Details
Project Service	6	2	0	5	Details
Core Services	26	8	-2	4	Details
CCM	8	19	-3	5	Details
Tutorials	7	1	0	5	Details
Web IDE	20	15	-5	4	Details
PSLogin	1	1	0	5	Details
Pipeline	16	7	0	5	Details



Continuous Marketing

Monolithic releases are a natural point for marketing

When you are releasing every week, it is very hard to get attention

- Audience fatigue of release announcements
- Less major features in a given release to draw attention to

Instead need to do small outreach for each new feature

Level of outreach depends on feature: social media, blog, video, talk, etc.



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Continuous
Translation

Traduction en
continu

kontinuierliche
Übersetzung

连续翻译

Orion and related tools are translated into dozens of natural languages

We changed Orion string bundling to optimize page load experience. Eclipse Babel has new string format

Typically translations are contracted out in batches because it is impractical to have translators on hand for every language

Made our translation batches as small as possible, only translating changed strings

In between batches, we are early adopters for an IBM Watson beta machine translation service, which performs contextually sensitive translation

Continuous Hiring

Our team is hiring in Raleigh, Ottawa,
Toronto, and Bangalore

Contact us at idsorg@us.ibm.com

We're Hiring!!

software developers

skilled with:
HTML, CSS3, LESS, J2EE, JS/Node



to create cloud development
tools for the world's ideas

junior



band 6-7

<https://ibm.biz/BdXHKA>

intermediate



band 8

<https://ibm.biz/BdXHKV>

senior



band 8-9

<https://ibm.biz/BdXHkP>



IBM Bluemix DevOps Services

plan, code, build and deploy in the cloud

IBM

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