IDEs and Beyond: Tools for Continuous Delivery

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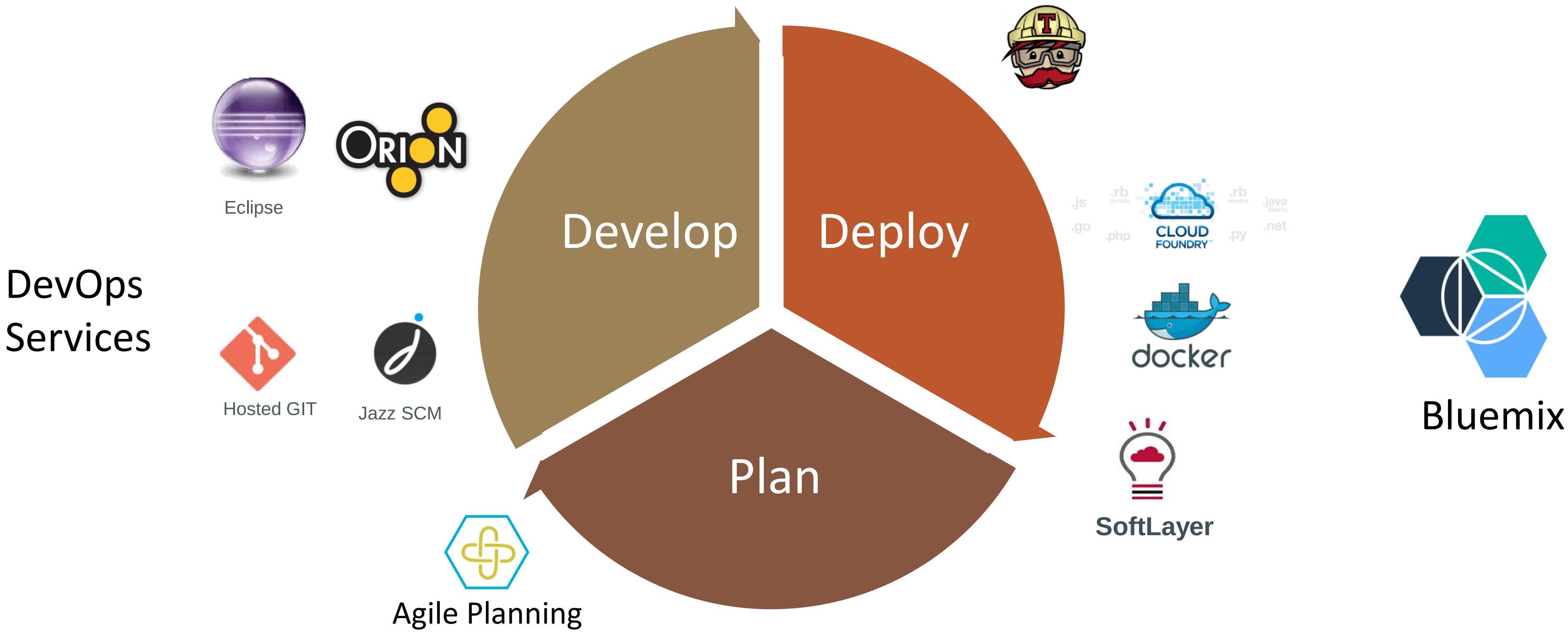
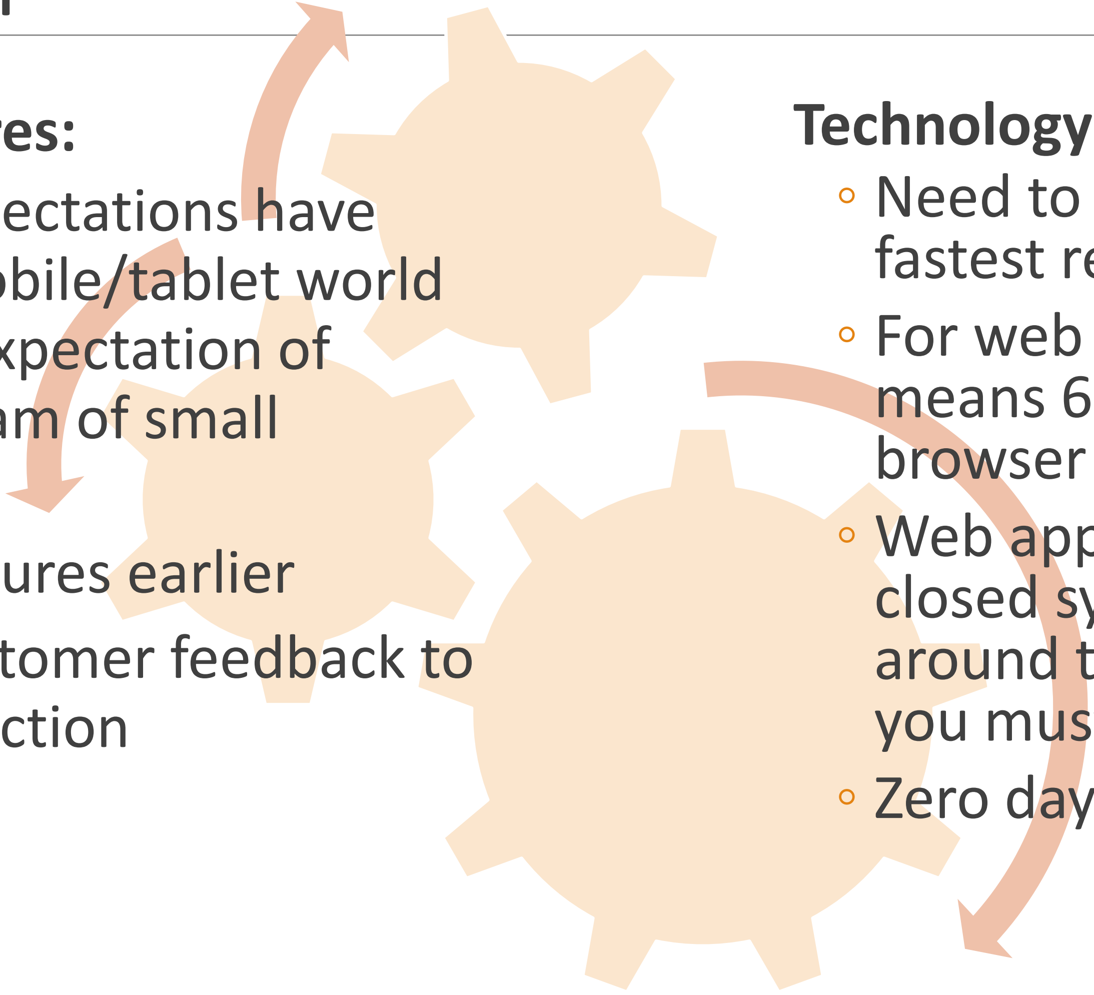
Overview

1. **Continuous Delivery**
2. New Tools Landscape
3. Tooling Challenges
4. Composable Tool Chains

Bluemix DevOps Services



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

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
- Zero day security fixes

"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

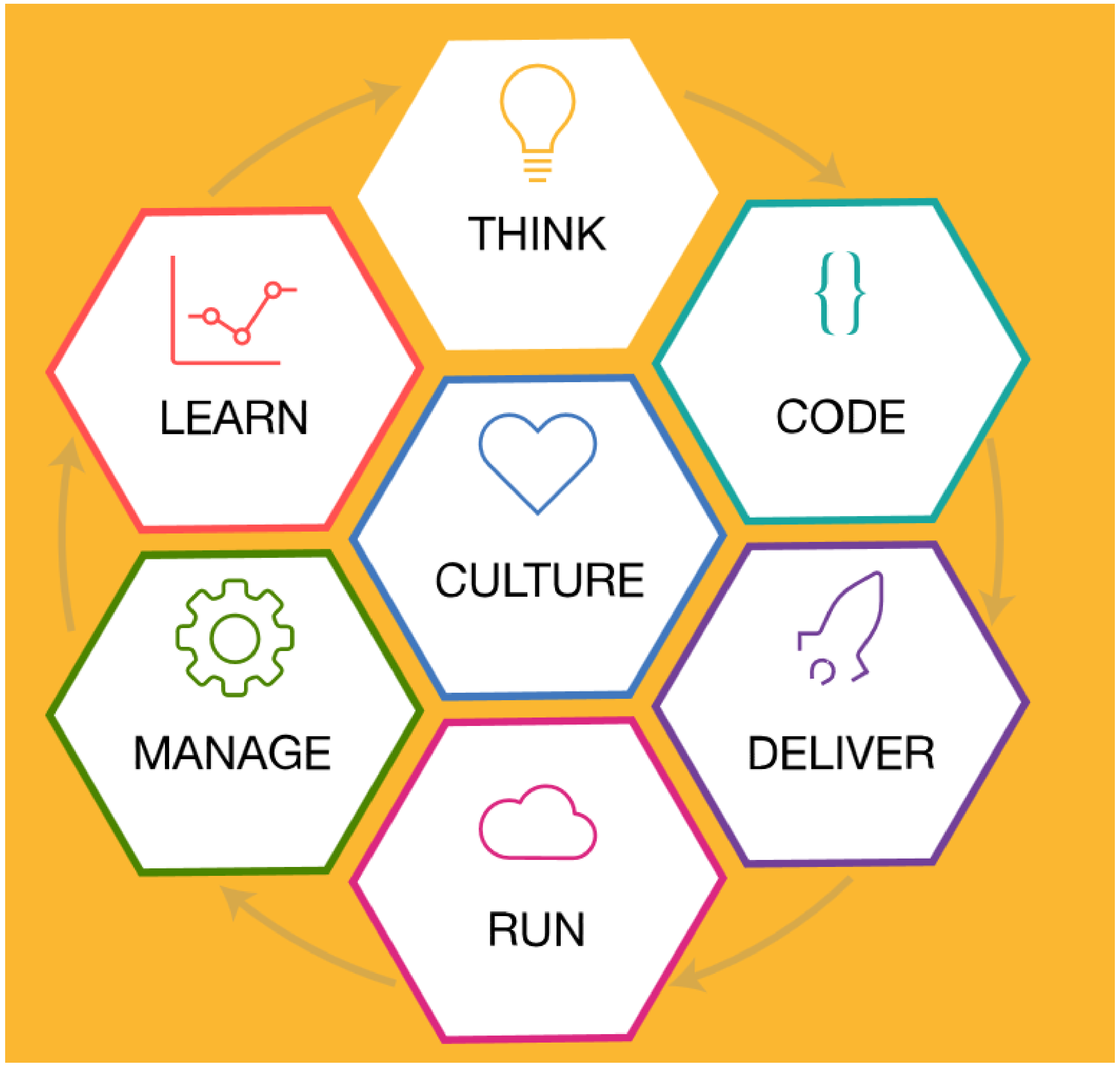
Continuous Delivery goes beyond:

- 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**

Bluemix Garage Method

A resource for information about DevOps and Continuous Delivery

https://ibm.com/devops/method



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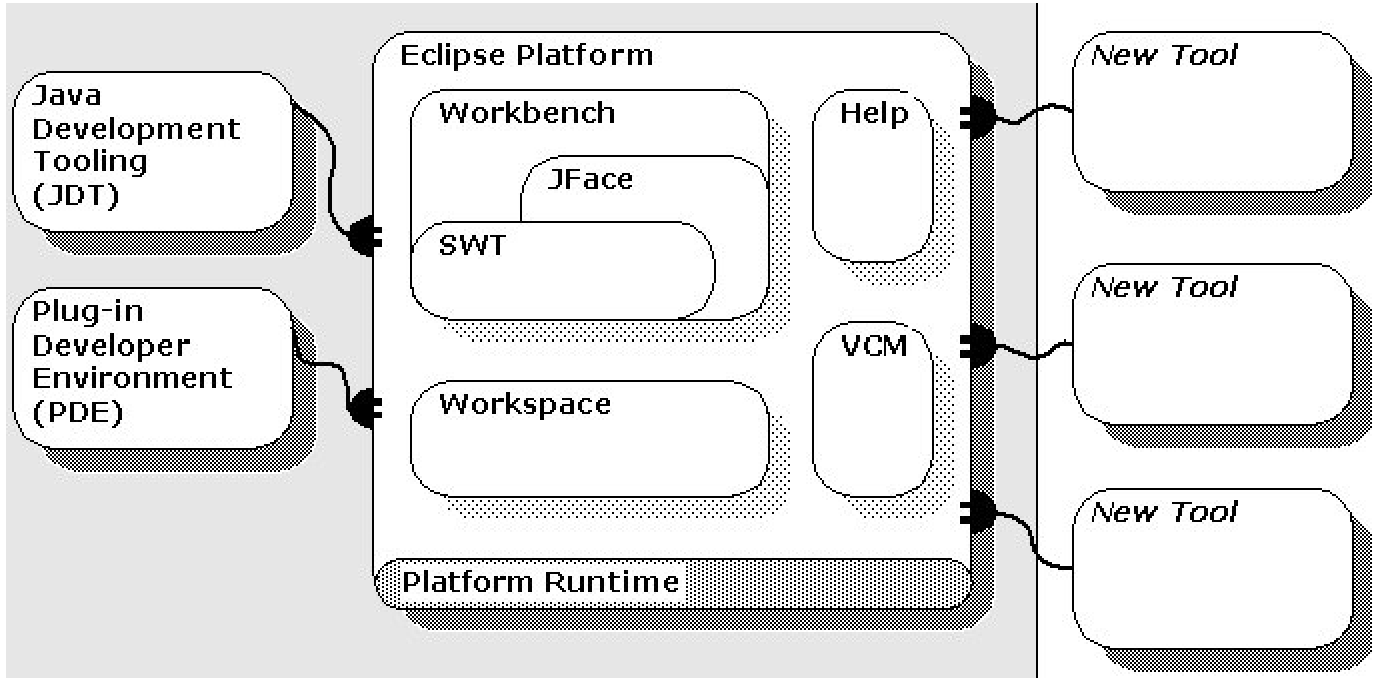
The Closed World Dev Model



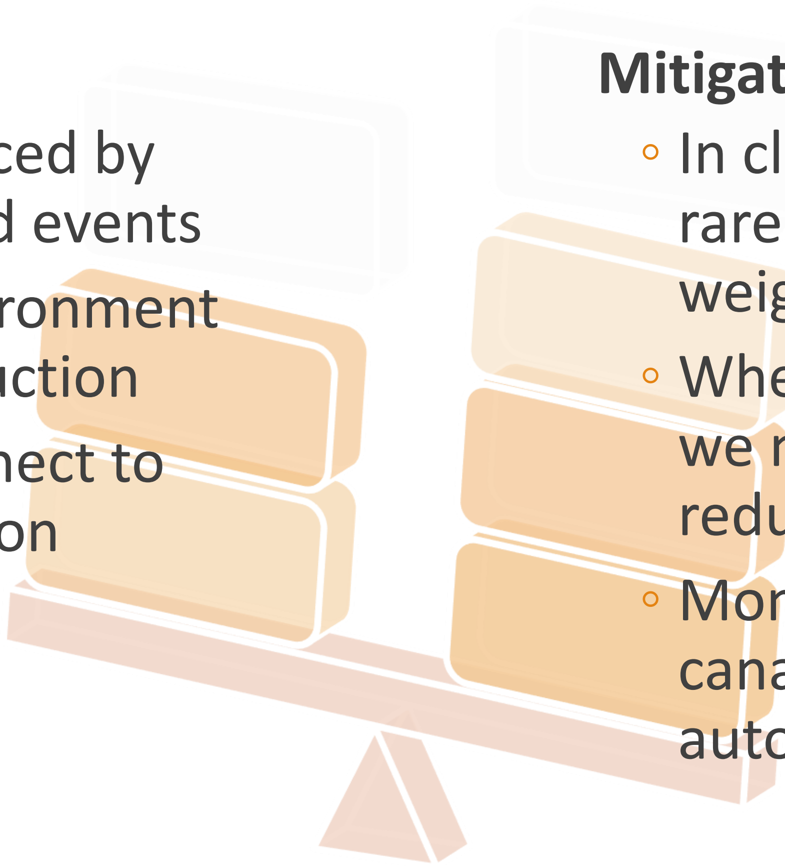
All tools running on your desktop

IDE integrating and directly running those tools

Runtime environment also typically on desktop

App can go straight from dev to customer

Gaps in the closed dev model



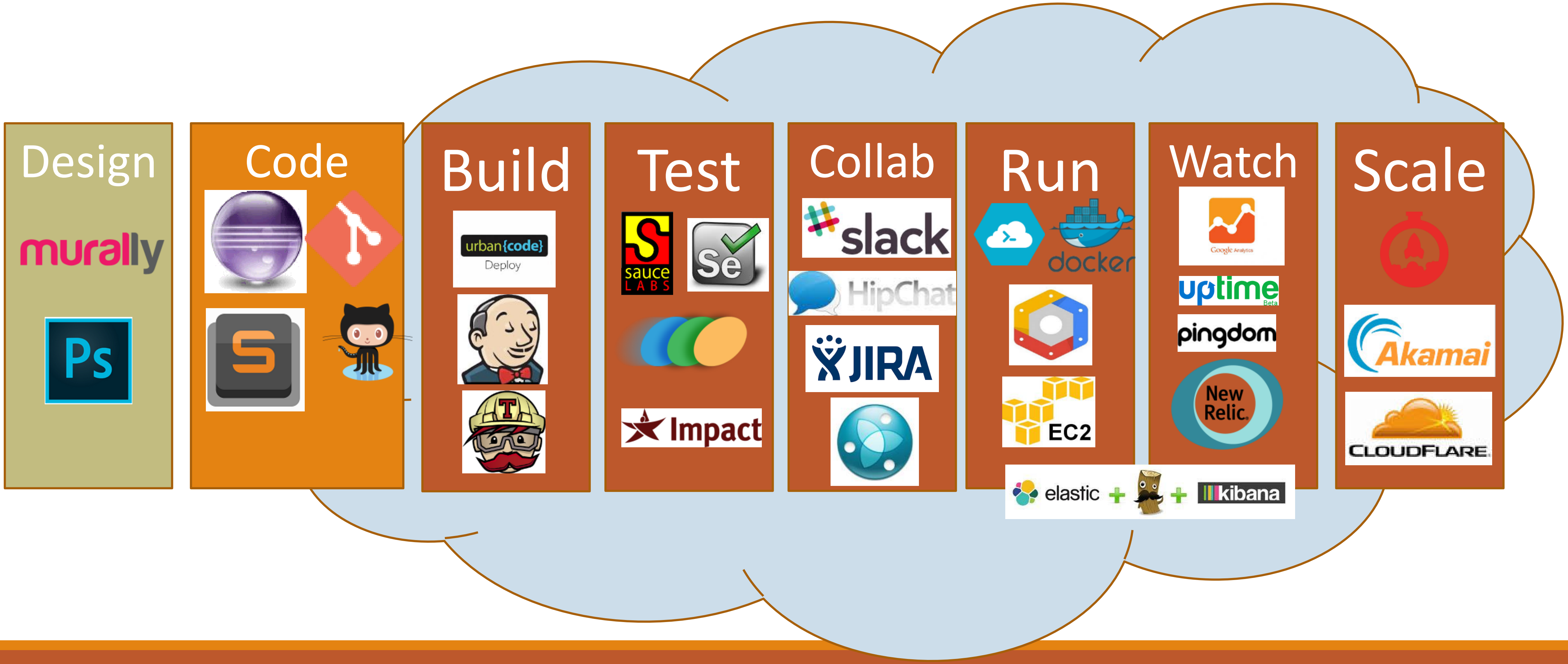
The Internet is chaotic

- Bugs can be introduced by external systems and events
- There is no test environment that simulates production
- Need tools that connect to production application

Mitigating the risk of delivery

- In closed dev world we release rarely, and can afford heavy-weight release process
- When forced to release often, we need new techniques to reduce delivery risk
- Monitoring, test after release, canary release, feature toggles, automated rollback

The Cloud development world



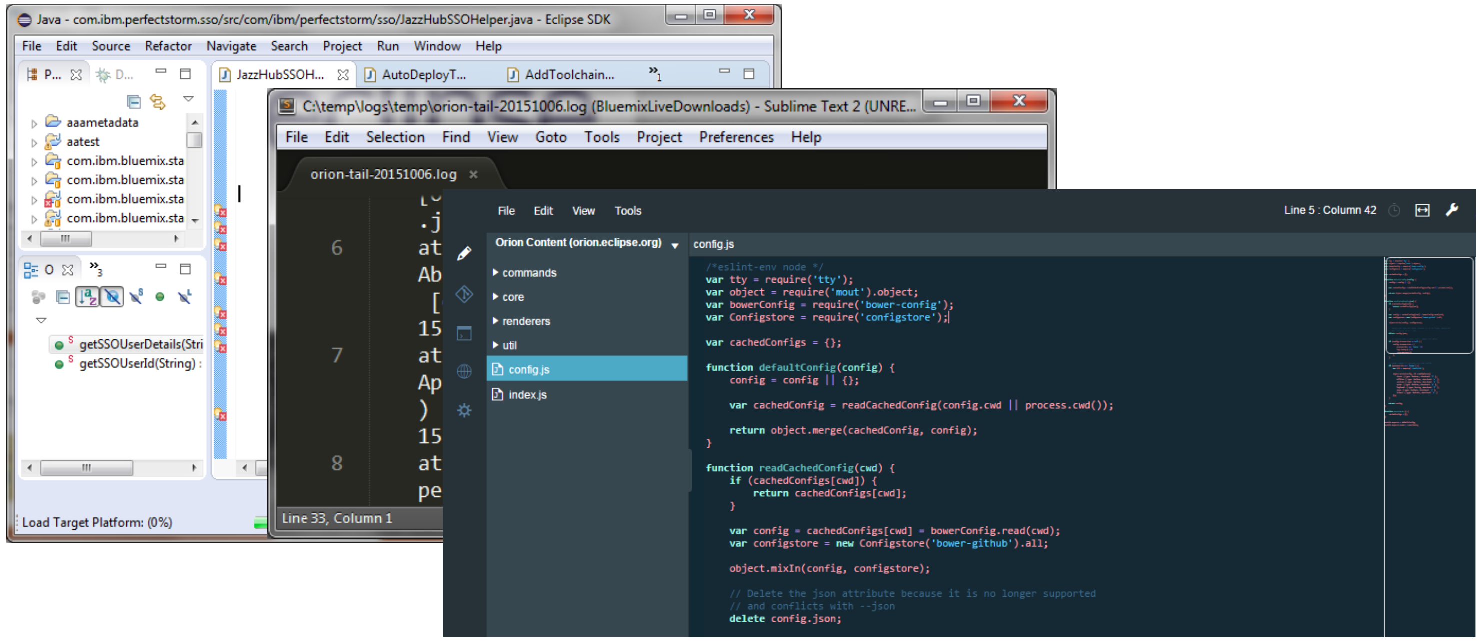
Sidebar: Where does this leave the IDE?

Can no longer offer a 100% integrated development experience

Still powerful tools for core development tasks

Balance shifting towards lighter weight, focused on core coding experience

Browser development environments are a viable alternative, are able to integrate more easily with runtimes


Java - com.ibm.perfectstorm.sso/src/com/ibm/perfectstorm/sso/JazzHubSSOHelper.java - Eclipse SDK
File Edit Source Refactor Navigate Search Project Run Window Help
JazzHubSSOH... AutoDeployT... AddToolchain...
aametadata
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getSSOUserDetails(Stri
getSSOUserId(String) :
Load Target Platform: (0%)
C:\temp\logs\temp\orion-tail-20151006.log (BluemixLiveDownloads) - Sublime Text 2 (UNRE...
File Edit Selection Find View Goto Tools Project Preferences Help
orion-tail-20151006.log
Line 33, Column 1
File Edit View Tools
Line 5 : Column 42
Orion Content (orion.eclipse.org)
commands
core
renderers
util
config.js
index.js

```
/*eslint-env node */
var tty = require('tty');
var object = require('mout').object;
var bowerConfig = require('bower-config');
var Configstore = require('configstore');

var cachedConfigs = {};

function defaultConfig(config) {
    config = config || {};

    var cachedConfig = readCachedConfig(config.cwd || process.cwd());

    return object.merge(cachedConfig, config);
}

function readCachedConfig(cwd) {
    if (cachedConfigs[cwd]) {
        return cachedConfigs[cwd];
    }

    var config = cachedConfigs[cwd] = bowerConfig.read(cwd);
    var configstore = new Configstore('bower-github').all;

    object.mixIn(config, configstore);

    // Delete the json attribute because it is no longer supported
    // and conflicts with --json
    delete config.json;
```

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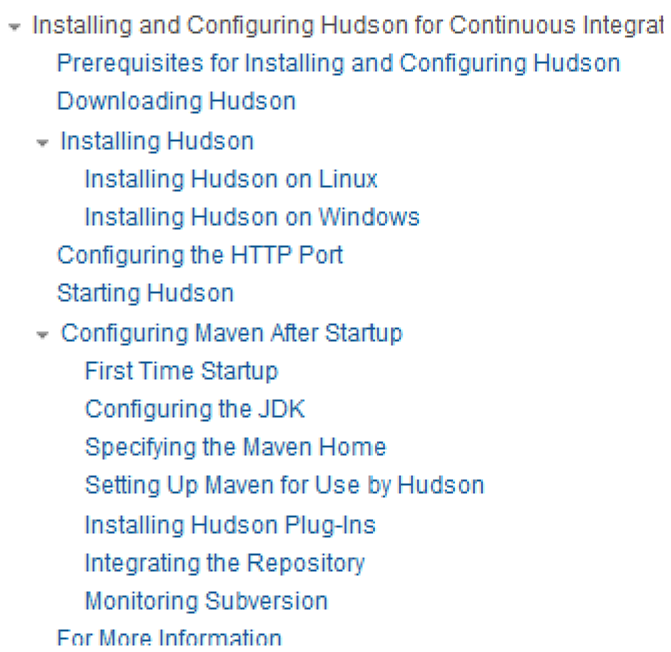
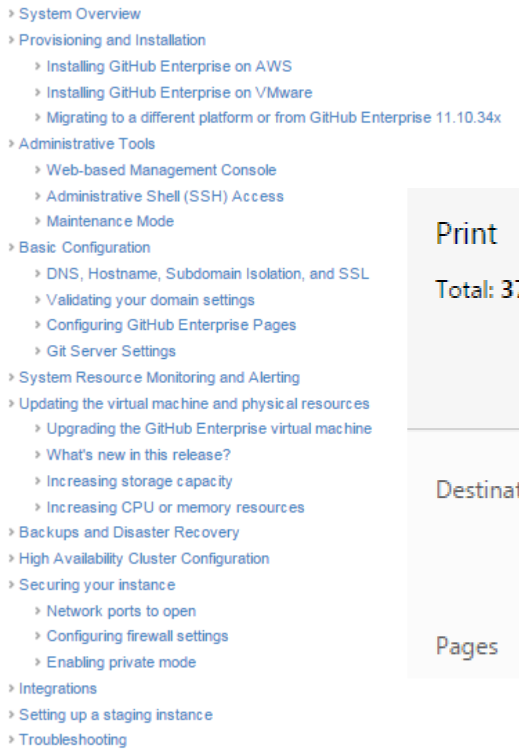
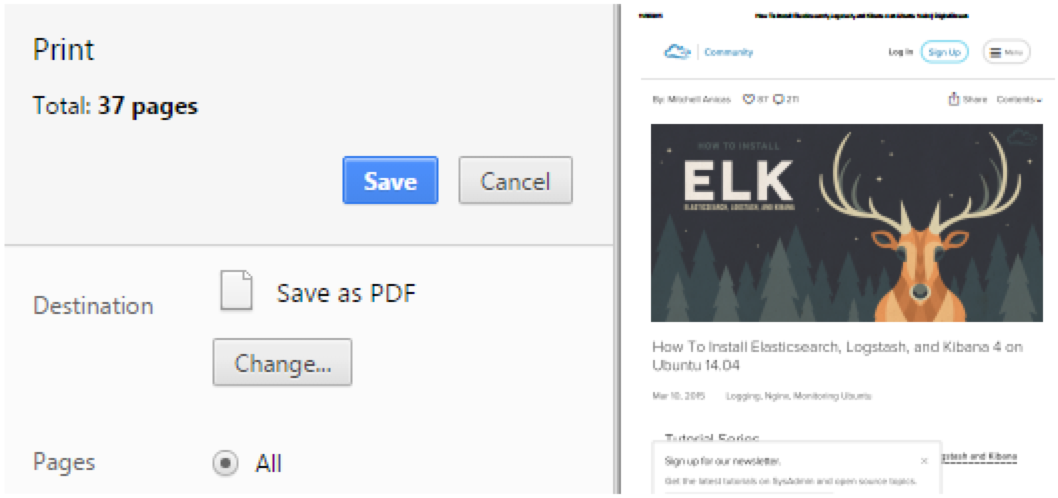
Setup Cost



- Installing and Configuring Hudson for Continuous Integrat
  - Prerequisites for Installing and Configuring Hudson
  - Downloading Hudson
  - Installing Hudson
    - Installing Hudson on Linux
    - Installing Hudson on Windows
  - Configuring the HTTP Port
  - Starting Hudson
  - Configuring Maven After Startup
    - First Time Startup
    - Configuring the JDK
    - Specifying the Maven Home
    - Setting Up Maven for Use by Hudson
    - Installing Hudson Plug-Ins
    - Integrating the Repository
    - Monitoring Subversion
  - For More Information



- System Overview
- Provisioning and Installation
  - Installing GitHub Enterprise on AWS
  - Installing GitHub Enterprise on VMware
  - Migrating to a different platform or from GitHub Enterprise 11.10.34x
- Administrative Tools
  - Web-based Management Console
  - Administrative Shell (SSH) Access
  - Maintenance Mode
- Basic Configuration
  - DNS, Hostname, Subdomain Isolation, and SSL
  - Validating your domain settings
  - Configuring GitHub Enterprise Pages
  - Git Server Settings
- System Resource Monitoring and Alerting
- Updating the virtual machine and physical resources
  - Upgrading the GitHub Enterprise virtual machine
  - What's new in this release?
  - Increasing storage capacity
  - Increasing CPU or memory resources
- Backups and Disaster Recovery
- High Availability Cluster Configuration
- Securing your instance
  - Network ports to open
  - Configuring firewall settings
  - Enabling private mode
- Integrations
- Setting up a staging instance
- Troubleshooting



Print

Total: **37 pages**

Save Cancel

Destination: Save as PDF

Change...

Pages: (●) All

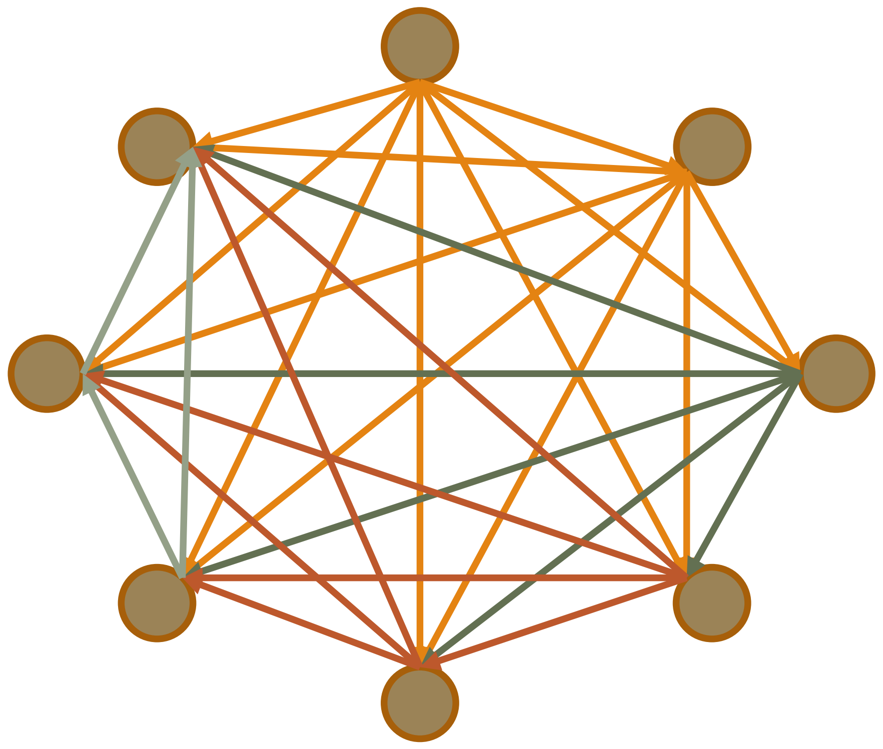
How To Install Elasticsearch, Logstash, and Kibana 4 on Ubuntu 14.04

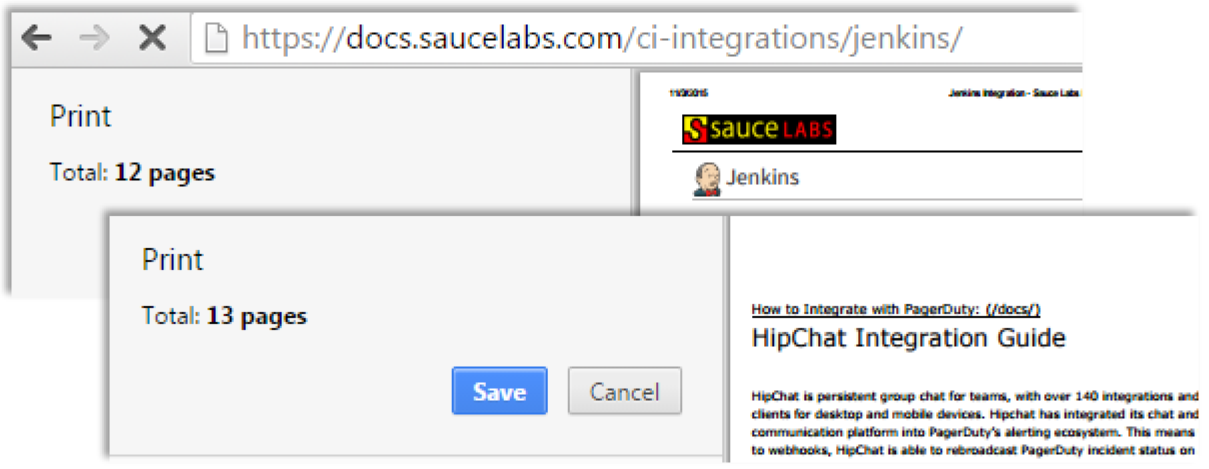
Integration Cost

Need tight integration to deliver with speed and scale

Cost grows exponentially as you add tools

Replacing a tool requires a lot of touchpoints to be revisited





https://docs.saucelabs.com/ci-integrations/jenkins/

Print

Total: **12 pages**

11/3/2015 Jenkins Integration - Sauce Labs

Jenkins

Print

Total: **13 pages**

Save Cancel

How to Integrate with PagerDuty: (/docs/)

HipChat Integration Guide

HipChat is persistent group chat for teams, with over 140 integrations and clients for desktop and mobile devices. Hipchat has integrated its chat and communication platform into PagerDuty's alerting ecosystem. This means to webhooks, HipChat is able to rebroadcast PagerDuty incident status on

Abundance of Choice Cost

This is not a consolidated tool market. There is vast variety and choice

Figuring out what is the best tool to use for a given app and team is complex

Problem Summary

We cannot package and deliver tools to developers easily

Significant setup and integration pain with putting tools together

Developers who are new to cloud development don’t know what tools to use

Hard to repeatedly and consistently instantiate toolchains at scale

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Tool Chain Demo

Start from an interesting app on GitHub: https://github.com/oneibmcloud/devops-tutorial-2

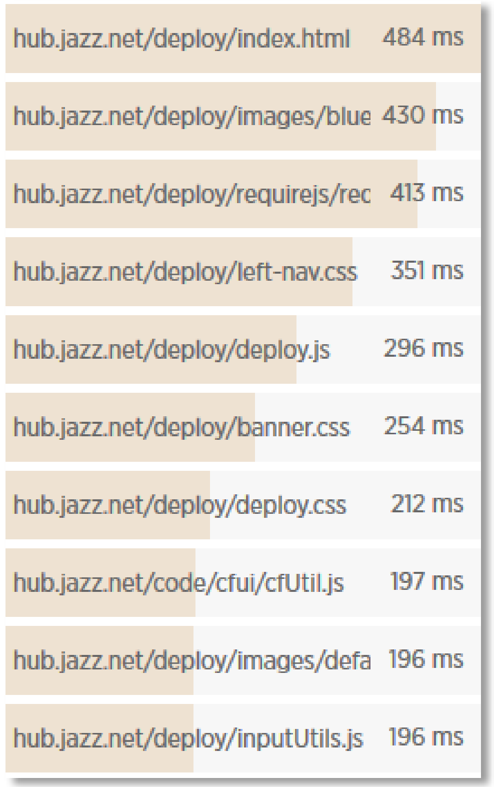
Click button to create the app

Prompted for essential configuration parameters for Slack and Sauce Labs

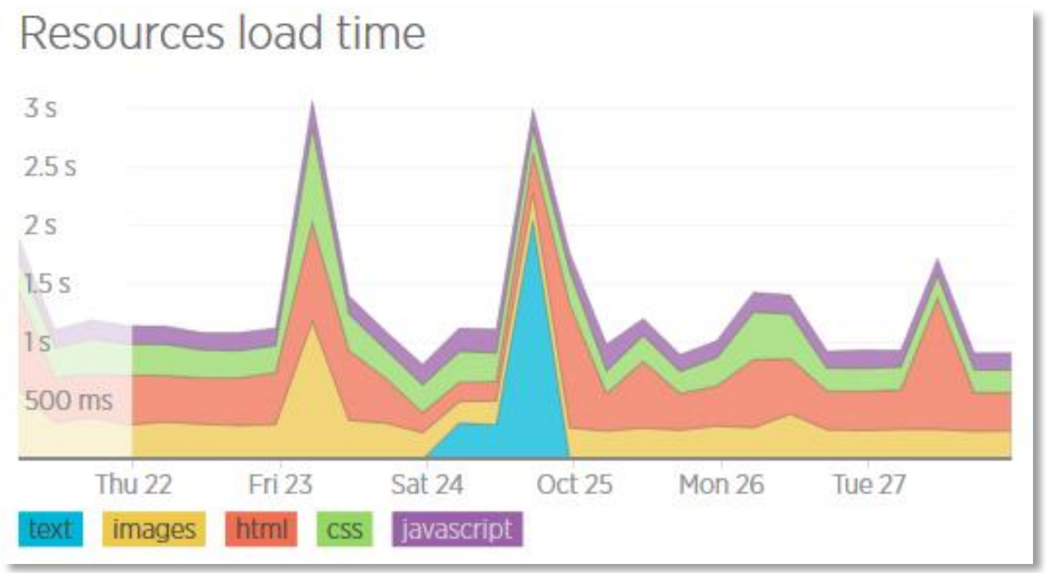
Entire tool chain is instantiated and integrations performed

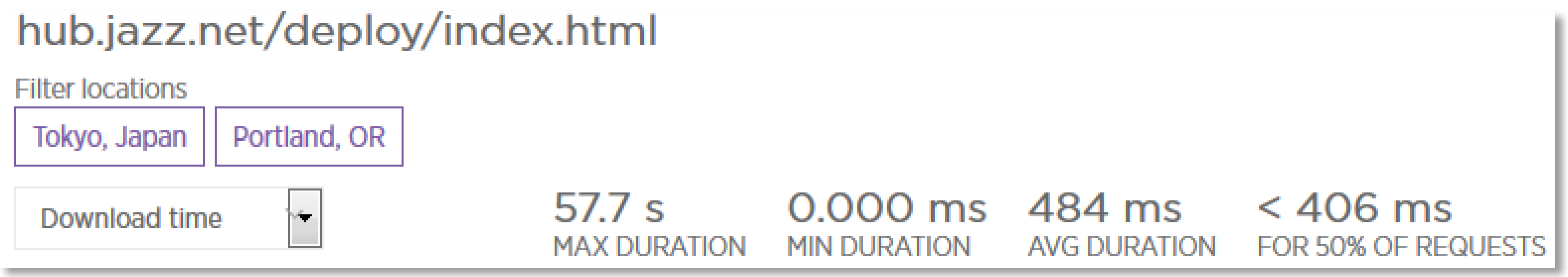
Bonus Material: Favorite New Tools

Performance Analysis: New Relic



hub.jazz.net/deploy/index.html	484 ms
hub.jazz.net/deploy/images/blue	430 ms
hub.jazz.net/deploy/requirejs/rec	413 ms
hub.jazz.net/deploy/left-nav.css	351 ms
hub.jazz.net/deploy/deploy.js	296 ms
hub.jazz.net/deploy/banner.css	254 ms
hub.jazz.net/deploy/deploy.css	212 ms
hub.jazz.net/code/cfui/cfUtil.js	197 ms
hub.jazz.net/deploy/images/defa	196 ms
hub.jazz.net/deploy/inputUtils.js	196 ms





hub.jazz.net/deploy/index.html

Filter locations

Tokyo, Japan | Portland, OR

Download time

57.7 s	0.000 ms	484 ms	< 406 ms
MAX DURATION	MIN DURATION	AVG DURATION	FOR 50% OF REQUESTS

Team Communication: Slack

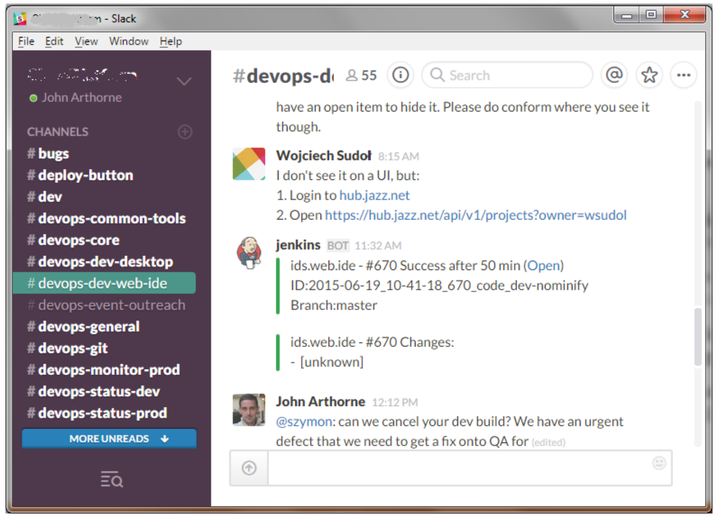
Like IRC with great user experience and integrations

Interrupty communication breaks developer flow

Slack gives you focused communication with ability for others to “pull” the information

Great client apps, slick and comprehensive integrations

Reasonable free account limits



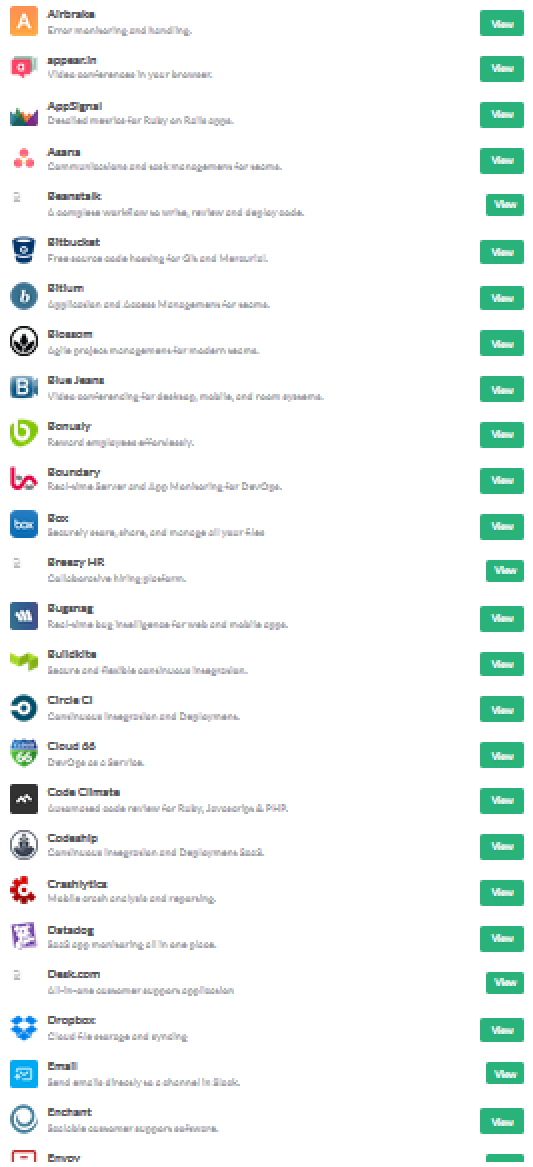
have an open item to hide it. Please do conform where you see it though.

Wojciech Sudol 8:15 AM
I don't see it on a UI, but:
1. Login to hub.jazz.net
2. Open https://hub.jazz.net/api/v1/projects?owner=wsudol

jenkins BOT 11:32 AM
ids.web.ide - #670 Success after 50 min (Open)
ID:2015-06-19_10-41-18_670_code_dev-nominify
Branch:master

ids.web.ide - #670 Changes:
- [unknown]

John Arthorne 12:12 PM
@szymon: can we cancel your dev build? We have an urgent defect that we need to get a fix onto QA for (edited)



Airbrake	Error monitoring and handling.	View
appear.in	Video conferences in your browser.	View
AppSignal	Detailed metrics for Ruby on Rails apps.	View
Asana	Communications and task management for teams.	View
Beanstalk	A complete workflow to write, review and deploy code.	View
Bitbucket	Free source code hosting for Git and Mercurial.	View
Bitium	Application and Access Management for teams.	View
Blossom	Agile project management for modern teams.	View
Blue Jeans	Video conferencing for desktop, mobile, and room systems.	View
Bonusly	Reward employees effortlessly.	View
Boundary	Real-time Server and App Monitoring for DevOps.	View
Box	Securely store, share, and manage all your files	View
Breezy HR	Collaborative hiring platform.	View
Bugsnag	Real-time bug intelligence for web and mobile apps.	View
Buildkite	Secure and flexible continuous integration.	View
Circle CI	Continuous Integration and Deployment.	View
Cloud 66	DevOps as a Service.	View
Code Climate	Automated code review for Ruby, Javascript & PHP.	View
Codeship	Continuous Integration and Deployment SaaS.	View
Crashlytics	Mobile crash analysis and reporting.	View
Datadog	SaaS app monitoring all in one place.	View
Desk.com	All-in-one customer support application	View
Dropbox	Cloud file storage and syncing.	View
Email	Send emails directly to a channel in Slack.	View
Enchant	Scalable customer support software.	View
Envoy		

Log Monitoring

SPLUNK

Slick, easy to use UI

Quickly drill in to get results, statistical analysis

Great for deep root cause analysis

Con: Expensive

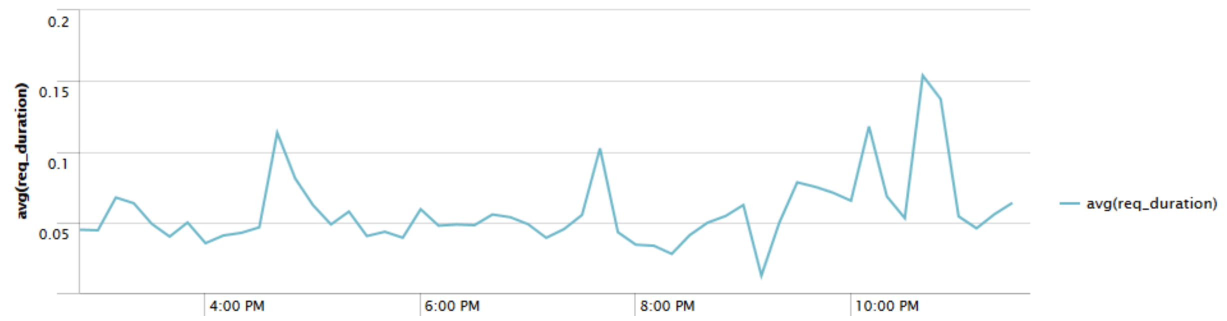
ELK

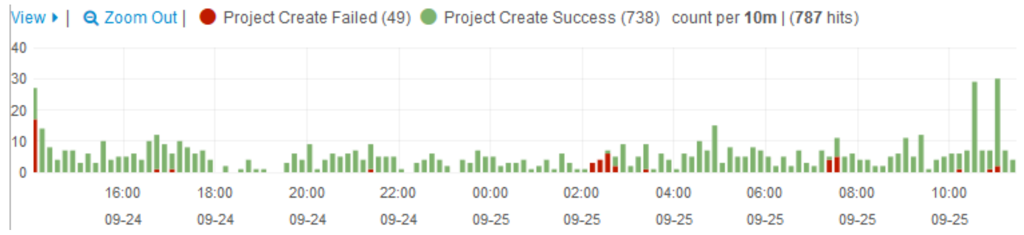
Highly configurable dashboards

Flexible and customizable architecture for DIY

Great for high level monitoring

Con: Cumbersome UI





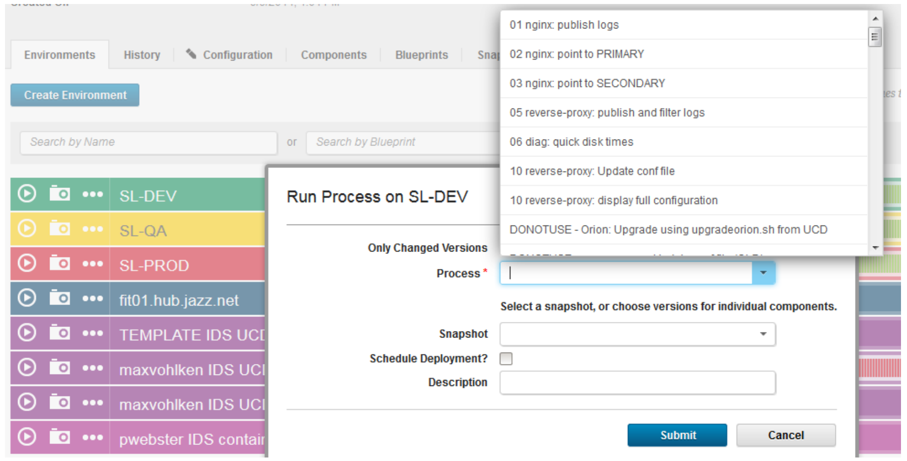
Automated Delivery: Urban Code

Deliver to staging environments in **exactly** the same way you deliver to production

Full traceability of what changed, when, and by whom

Predictable rollback: expect failure!

Blue/green deployment to avoid downtime



Environments | History | Configuration | Components | Blueprints | Snap

Create Environment

Search by Name or Search by Blueprint

- SL-DEV
- SL-QA
- SL-PROD
- fit01.hub.jazz.net
- TEMPLATE IDS UCD
- maxvohlken IDS UCI
- maxvohlken IDS UCI
- pwebster IDS contai

Run Process on SL-DEV

Only Changed Versions

Process *

- 01 nginx: publish logs
- 02 nginx: point to PRIMARY
- 03 nginx: point to SECONDARY
- 05 reverse-proxy: publish and filter logs
- 06 diag: quick disk times
- 10 reverse-proxy: Update conf file
- 10 reverse-proxy: display full configuration
- DONOTUSE - Orion: Upgrade using upgradeorion.sh from UCD

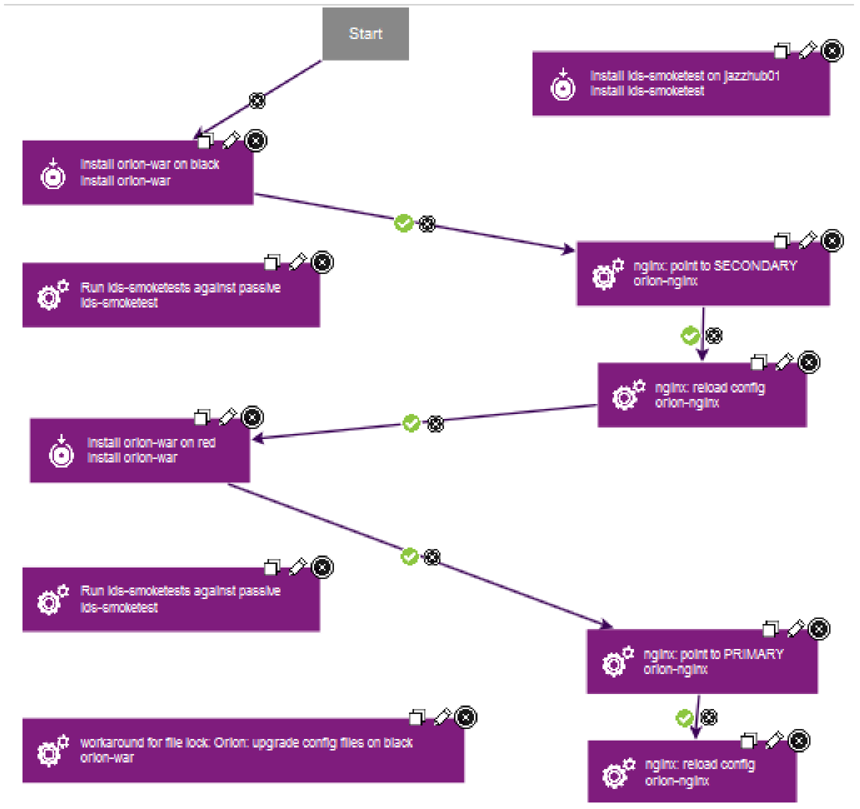
Select a snapshot, or choose versions for individual components.

Snapshot

Schedule Deployment?

Description

Submit | Cancel



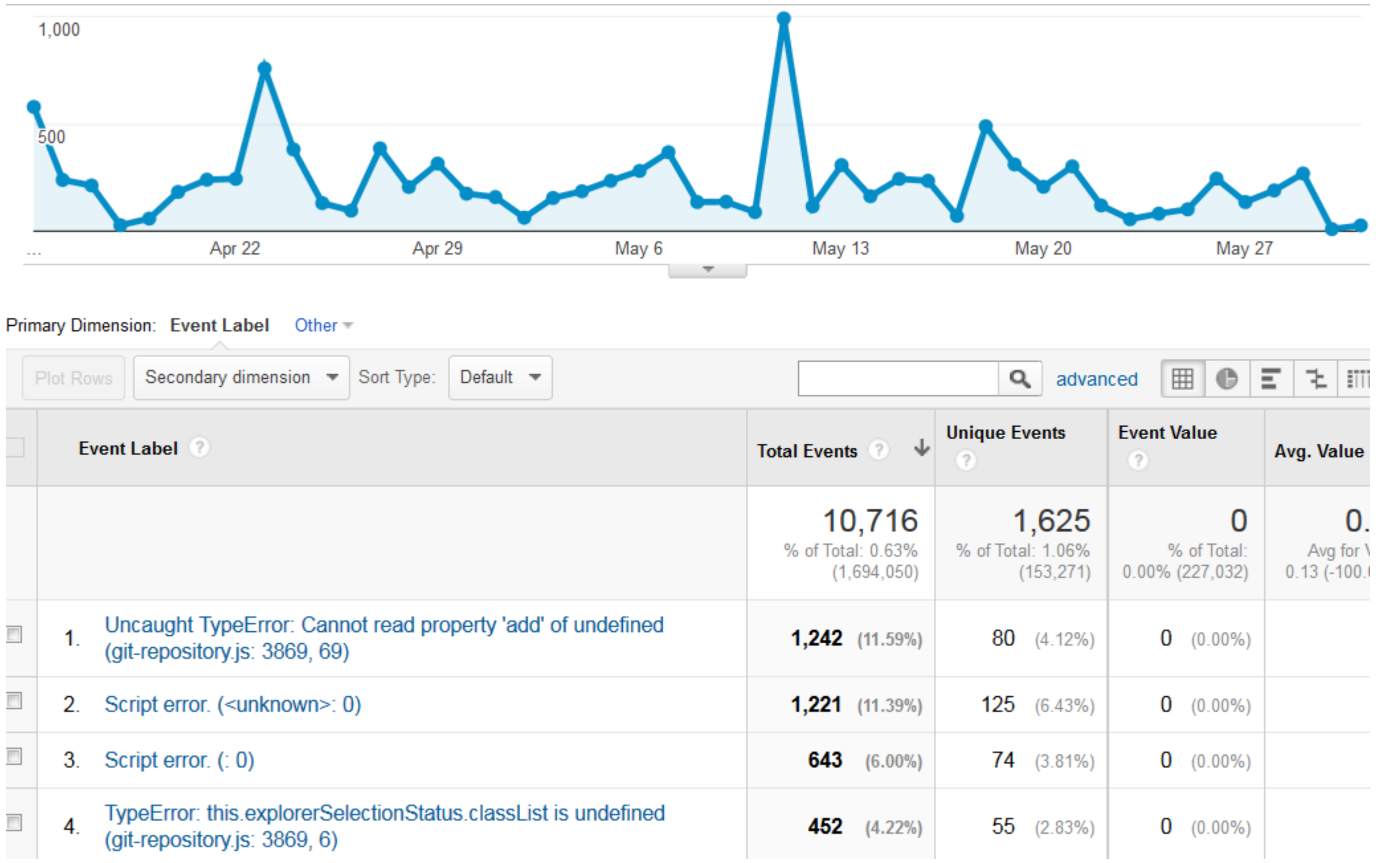
Metrics: Google Analytics

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

- Henry Ford

Not just for page views! Custom events allow you to instrument a rich web application

Tracking every command use, every client exception



Primary Dimension: Event Label Other

Sort Type: Default

	Event Label	Total Events	Unique Events	Event Value	Avg. Value
		10,716 % of Total: 0.63% (1,694,050)	1,625 % of Total: 1.06% (153,271)	0 % of Total: 0.00% (227,032)	0. Avg for V 0.13 (-100.
1.	Uncaught TypeError: Cannot read property 'add' of undefined (git-repository.js: 3869, 69)	1,242 (11.59%)	80 (4.12%)	0 (0.00%)	
2.	Script error. (<unknown>: 0)	1,221 (11.39%)	125 (6.43%)	0 (0.00%)	
3.	Script error. (: 0)	643 (6.00%)	74 (3.81%)	0 (0.00%)	
4.	TypeError: this.explorerSelectionStatus.classList is undefined (git-repository.js: 3869, 6)	452 (4.22%)	55 (2.83%)	0 (0.00%)	

Thanks for listening!

John Arthorne / @jarthorne

IBM Cloud Unit / IBM Canada