WHAT DOES AN AWARD-WINNING RESTAURANT AND OPEN INNOVATION LABS HAVE IN COMMON?
THE OPEN INNOVATION LABS
DEVOPS EXPERIENCE

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4 May 2017
THE TALK

The Open Innovation Labs DevOps Experience.

Steps in the Journey

The Business Case for Digital Transformation
Labs as Transformation of Red Hat
The Red Hat Open Innovation Labs Journey
Q & A
THE AGE OF DIGITAL TRANSFORMATION
The average life expectancy of a Fortune 500 company has declined from around 75 years half a century ago to less than 15 years today.

Deloitte Shift Index

* from “Teaching Elephants to Dance (and Fly!)“, Burr Sutter
By 2020, more than 75% of the S&P 500 will be companies that we have not heard of yet.

Professor Richard Foster, Yale University, in Lean Enterprise

*from “Teaching Elephants to Dance (and Fly!)”, Burr Sutter*
By 2020 every business will become a digital predator or digital prey.

Nigel Fenwick, Forrester Research, 2015

*from “Teaching Elephants to Dance (and Fly!)“*, Burr Sutter
87% of surveyed executives believe digital technologies will disrupt their industries ...


* from “Teaching Elephants to Dance (and Fly!)“, Burr Sutter
… yet only 44% indicated their organizations were taking appropriate measures to avert disruption.

* from “Teaching Elephants to Dance (and Fly!)“, Burr Sutter
DIGITAL TRANSFORMATION IS NOT JUST ABOUT DISRUPTION OF TECHNOLOGY

1https://www.i-scoop.eu/digital-transformation
RED HAT
OPEN INNOVATION LABS
EXPERIENCE DEVOPS IN OUR KITCHEN
LABS VALUE PROPOSITION

THE MICHELIN STAR RESTAURANT

THE KITCHEN

• Open, collaborative workspace
• The best ingredients and tools
• Built for speed & experimentation
• Boston, London, Singapore
LABS VALUE PROPOSITION

THE MICHELIN STAR RESTAURANT

THE CHEFS

• Variety of world-class skill sets
• Everyone is accountable
• Shared culture and passion

[Photo] Cook It Raw
LABS VALUE PROPOSITION

THE MICHELIN STAR RESTAURANT

THE METHOD

• Speed & control with pipelines
• Try, Learn, Modify
• Mentoring accelerates learning
LABS VALUE PROPOSITION

THE MICHELIN STAR RESTAURANT

THE MEAL

• Continuously invents new dishes
• Instant, honest feedback
• Memorable experiences create authentic enthusiasm
BUILD SOFTWARE THE RED HAT WAY IN OPEN INNOVATION LABS

EXPERIMENT
Rapidly build prototypes, do DevOps, and be agile.

IMMERSE YOUR TEAM
Work side-by-side with experts in a residency-style engagement.

CATALYZE INNOVATION
Bring modern application development back to your team.
DISRUPTION
RAPIDLY CO-CREATE AN INNOVATIVE OR DISRUPTIVE PRODUCT
TRANSFORMATION
CREATE THE CATALYST TO CHANGE
THE OIL TANKER’S COURSE
THE ROAD TRIP

EXPERIENCE STATE-OF-THE-ART APPLICATION DEVELOPMENT AND DEVOPS
Digital Darwinism
The Developer’s Journey

- Re-Org to DevOps
- Self-Service, On-Demand, Elastic Infrastructure
- Automation Puppet, Chef, Ansible, Kubernetes
- CI & CD Deployment Pipeline
- Advanced Deployment Techniques
- Microservices (and flying elephants!)

* from “Teaching Elephants to Dance (and Fly!)“, Burr Sutter
RE-ORG TO DEVOPS
BUILDING A CROSS FUNCTIONAL TEAM

Red Hat Open Innovation Labs

Start small

Prioritize who you need

Be selective

Cross train as much as possible

Diverge and converge as a team when making hard decisions

Constantly collect feedback and pivot
SELF-SERVICE, ELASTIC INFRASTRUCTURE
ENABLE INNOVATION AND ELIMINATE GRUMPY PEOPLE
"Two monologues do not make a dialogue." - Jeff Daly
THE OPEN INNOVATION LABS AND INFRASTRUCTURE

How to run “everywhere”

Focused on Container based deployments

Labs operate on private and public cloud
  OpenStack, AWS, Google Cloud, Azure, VMware, Bare Metal

Use Ansible and Ansible Tower for idempotent configurations

OpenShift Dedicated is a great fit
GET YOUR HANDS ON ALL CAPABILITIES OF THE TECHNOLOGY
Start innovating on day one with automated access to our push-button infrastructure.

DESIGN YOUR OWN OPEN INNOVATION LAB TECHNOLOGY STACK

- APPLICATION DEVELOPMENT
  - RED HAT ENTERPRISE OPEN SOURCE
  - BEST-IN-CLASS OPEN SOURCE
  - INFRASTRUCTURE
  - DATA STORE

- DEVSOPS TOOLS
  - Ansible
  - Jira
  - Source Control Management

- CONTAINER PLATFORM
  - OpenShift

- HOSTING INFRASTRUCTURE

Open Innovation Labs provides a set of services for managing and operating a variety of technologies, making application innovation easier. Select the services that meet your needs.

BY OPEN INNOVATION LABS

APPLICATION DEVELOPMENT

RED HAT ENTERPRISE OPEN SOURCE
BEST-IN-CLASS OPEN SOURCE
INFRASTRUCTURE
DATA STORE
DEVSOPS TOOLS
CONTAINER PLATFORM
HOSTING INFRASTRUCTURE

http://red.ht/labs
AUTOMATION; OPENSHIFT, ANSIBLE K8S, IaC
THE OLD FASHION WAY

What is wrong with this?
WE’VE GOT A BRIGHT IDEA!!

LET’S AUTOMATE ...
THE ULTIMATE SOLUTION

...let’s use bash♪

♪ there is absolutely nothing wrong with using bash
BUILDING A **CASL**, AND KEEP EXPANDING IT

**CONTAINER AUTOMATION SOLUTIONS LAB**

Grew quickly, but our scope expanded

**ansible** deployments of infrastructure components

OpenStack + public cloud

**Infrastructure-as-Code (IaC)**

Our Open Source repo
https://github.com/redhat-cop/casl-ansible

Team is an active contributor upstream
https://github.com/openshift/openshift-ansible-contrib
“The Third Way [of DevOps] is about creating a culture that fosters two things: continual experimentation, taking risks and learning from failure; and understanding that repetition and practice is the prerequisite to mastery.”
RED HAT COMMUNITIES OF PRACTICE

Forum for cross-silo collaboration

Internal, global communities

All of Red Hat is invited to contribute
The industry’s most secure and comprehensive enterprise-grade container platform based on industry standards, Docker and Kubernetes. ¹

A shift for all parties involved

For Dev team: Infrastructure responsibility is on the Ops team
For Ops team: Application responsibility is on the Dev team
... one happy DevOps family

¹ OpenShift Container Platform 3.5 (http://www.openshift.com)
OPENSHIFT, K8S AND CONTAINERS

Kubernetes and Containers allow developers to truly focus on the app

Kubernetes and Containers a consistent approach for Ops team to provide infra

Applications and Projects
What is the best deployment approach?
CI & CD
DEPLOYMENT
PIPELINE
IT COMES FULL CIRCLE - SORT OF
The story behind the Open Innovation Labs pipeline

Started out with the “Build Pipeline” and multiple projects for stages
  It includes parallel tracks for projects
  Does not look very modern or impressive

Explored the fabric8 community solution(s)
  Impressive work, but not necessary a fit for labs out-of-the-box
EXPLORATORY STEPS
The story behind the Labs pipeline - CONT’

“We need Jenkins 2.0”
Not included with OpenShift at the time
Moved on to the “Pipeline Plugin”
Using DSLs to drive pipeline generation
Developed Groovy and Java code to dynamically build pipelines

A lot of overhead and needs upkeep
THE CIRCLE IS (ALMOST) COMPLETE
The story behind the Labs pipeline - CONT'

Jenkins 2.x part of OpenShift

OpenShift pipelines “natively”
BLUE OCEAN

The story behind the Labs pipeline - CONT’

Jenkins Blue Ocean used with Customers

Parallel Tracks for Builds / Deployments

Modern and Appealing Layout
EVERYTHING MOVES AT LIGHTNING SPEED

Have you ever asked: Are we keeping up with the evolution of our tool chain?

Jenkins 1.x, 2.x, Pipeline Plugin, OpenShift Plugin, Blue Ocean
Lots of customization means consuming a lot of resources

Make smart decisions and stick with them, for example:
who/what is responsible for resource creation & configuration
who/what is responsible for app lifecycle
ADVANCED DEPLOYMENT TECHNIQUES
COMPLETE SETUP IN MINUTES

Labs has a need to quickly stand up new environments

We want to eliminate the complexity of the infrastructure

Enable quick re-deployments

Recall PBI - Push Button Infrastructure?
PBI Conceptual Architecture

User Interfaces
- Infographic: Web
- Infographic: Mobile
- Engagement Data Collection: Web
- System Designer

Integration
- Integration: Web
- Integration: Mobile
- Integration: Engagement Data
- Integration: System Designer

Automation
- Automation REST API: Frontend
- Automation API: Backend
- Datastore
- Data Model / (aka Descriptive format)
- Ansible
- Cloudforms
- Jenkins
- Lightweight Messaging

Automation Targets
- Hosting Infrastructure
- OpenShift Container Platform
- DevOps Tooling
- Application Development

#redhat #rhsummit
ANSIBLE STACKS

ansible-stacks\(^1\) built to consume the Automation API

Automation Api

does not automate anything itself
defined using swagger\(^2\)
application to store data, enables Labs to automate deployments\(^3\)

\(^1\) https://github.com/rht-labs/ansible-stacks
\(^2\) https://github.com/rht-labs/api-design
\(^3\) https://github.com/rht-labs/automation-api
ANSIBLE STACKS - THE ROAD TRIP

Many options have been considered and tossed
  Why build something that is not needed?
  Remember who your customer is

At times a bit bumpy

How to best model OpenShift and K8S objects?
  Why re-invent the wheel?
DEMO POWERED BY ALL THE ABOVE

Labs is hosting a powerful and very interactive demo powered by all the above mentioned tools: infographic, CASL, ansible-stacks, automation-api

Come see us after the talk if you want to check it out
NEXT STEPS
WRAP UP

Microservices

Lab Build Outs - London, Boston

Come visit: http://red.ht/labs
Q & A
THANK YOU

plus.google.com/+RedHat
linkedin.com/company/red-hat
youtube.com/user/RedHatVideos
facebook.com/redhatinc
twitter.com/RedHatNews
LEARN. NETWORK. EXPERIENCE OPEN SOURCE.