



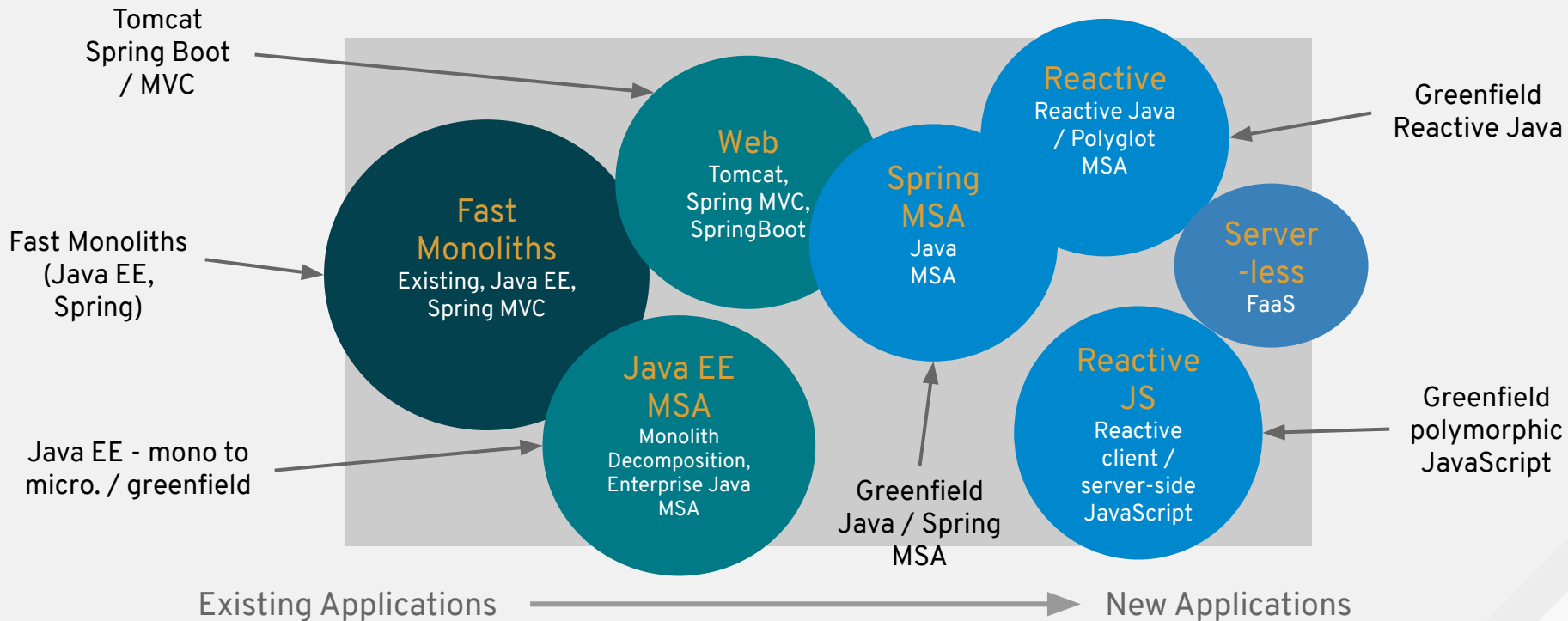
MONOLITHS TO MICROSERVICES: APP TRANSFORMATION

Hands-on Technical Workshop

Anurag Saran
Principal Solutions Architect
Red Hat

MOVING EXISTING APPS TO THE CLOUD

THE SPECTRUM OF ENTERPRISE APPS



MIGRATION AND MODERNIZATION APPROACHES

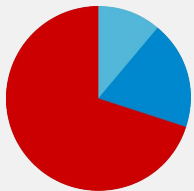
MODERNIZING EXISTING APPS

- Reuse existing functionality and data as much as possible
- Move existing workloads to a modern deployment platform
- Apply new processes, products, and technology to existing apps

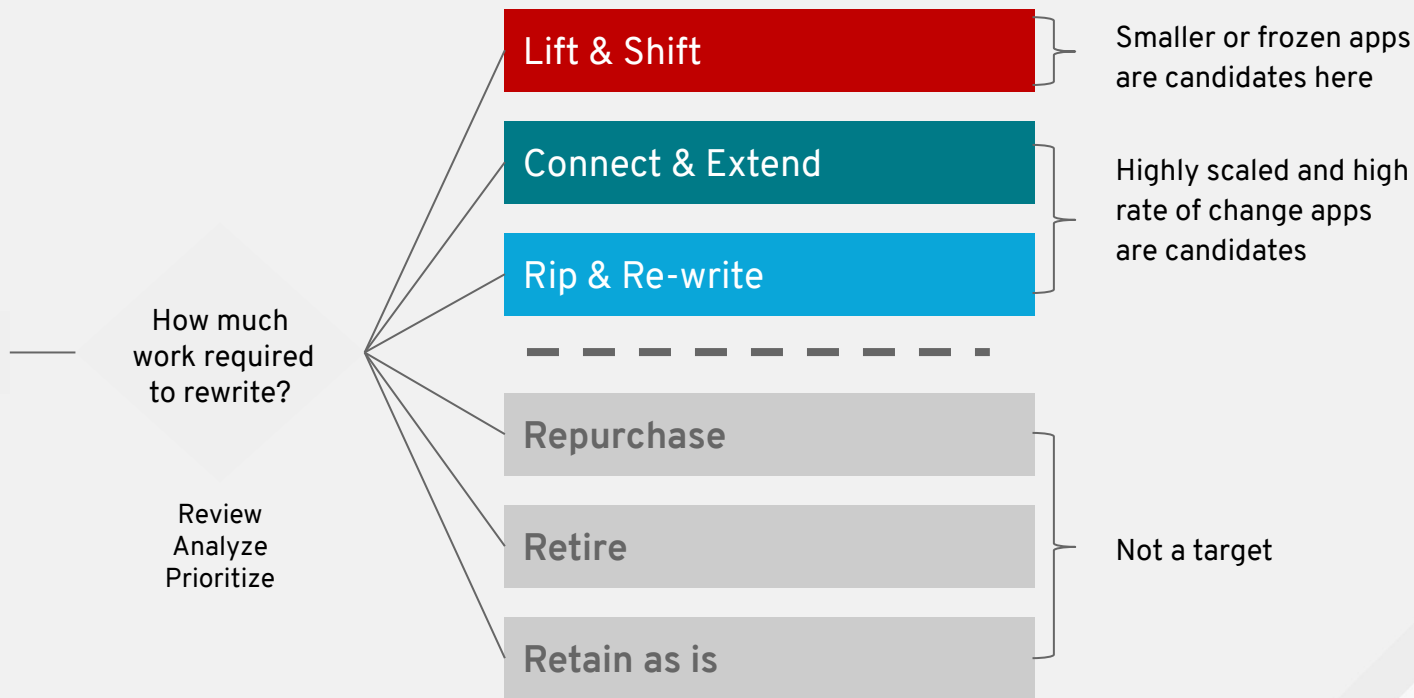
DEVELOPING NEW APPLICATIONS

- API-centric polyglot microservices architecture
- Autonomous development teams
- Agile development, continuous deployment, DevOps culture
- Containerized & orchestrated cloud deployments

APPLICATION MODERNIZATION



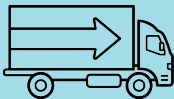
Existing Apps



PATTERNS IN MODERNIZING WORKLOADS

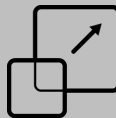
LIFT & SHIFT

- Containerize existing workloads
- Deploy them on a PaaS
- Keep external integrations and data on legacy
- Legacy applications have to be well written and suited



CONNECT & EXTEND

- Legacy remains intact
- New layer - new capabilities
- Deploy on PaaS
- New integration points between legacy and new layers (Need for Agile Integration)



RIP & RE-WRITE

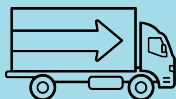
- Legacy is totally replaced
- New interfaces and data
- Use PaaS to run
- Some data and features can be re-wrapped, but mostly are retired.



PATTERNS IN MODERNIZING WORKLOADS

LIFT & SHIFT

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FOCUS FOR THIS SECTION

CONNECT & EXTEND

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- Deploy on PaaS
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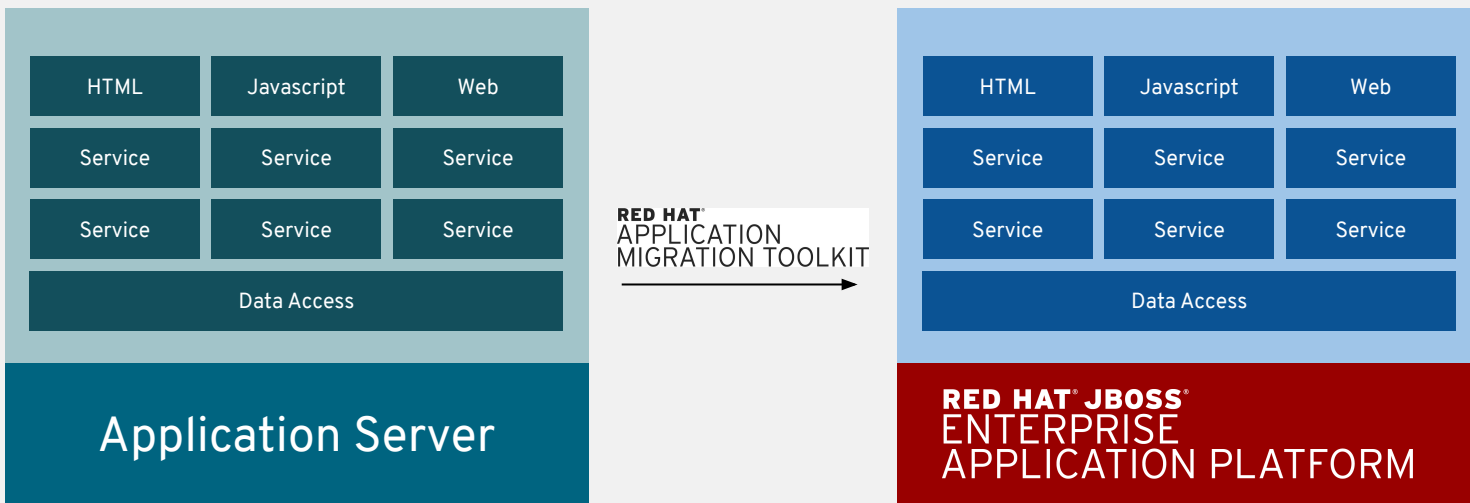


RIP & RE-WRITE

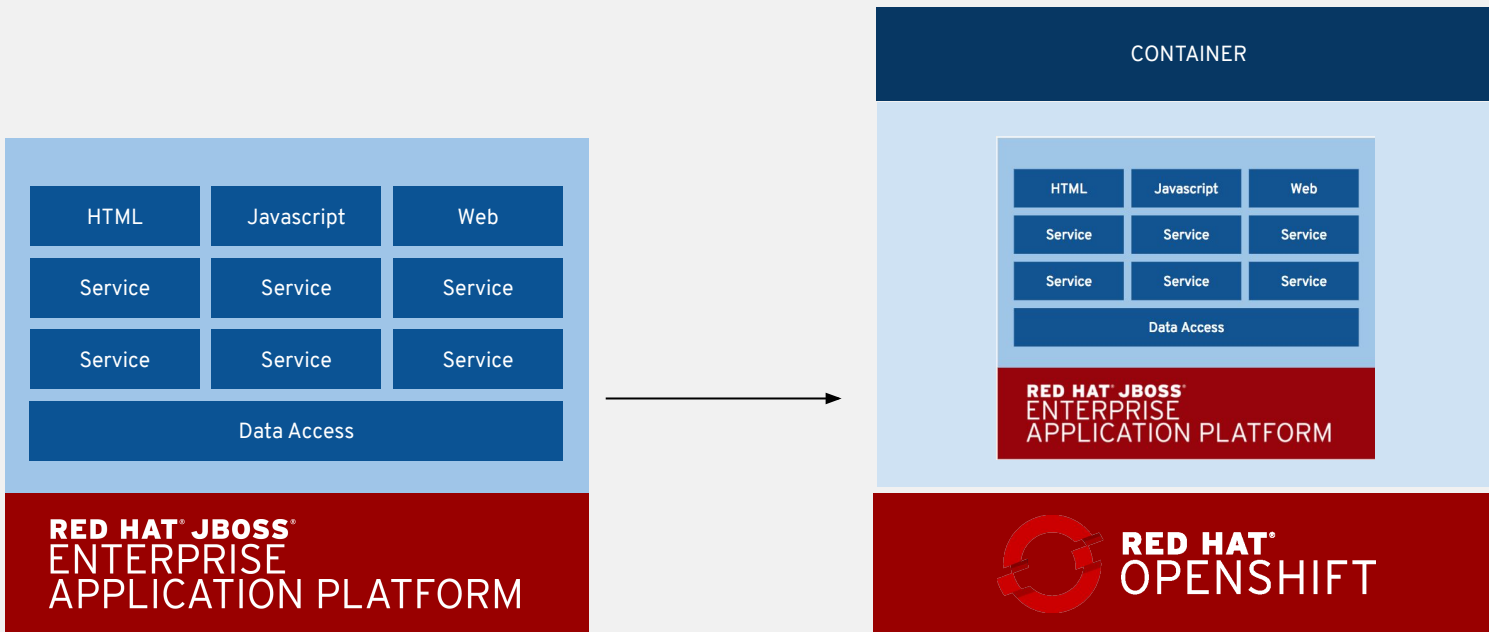
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LIFT-AND-SHIFT MONOLITH TO CLOUD



LIFT-AND-SHIFT MONOLITH TO CLOUD





Majestic Monolith

MAJESTIC (FAST-MOVING) MONOLITH

- Large organizations have a tremendous amount of resources **invested in existing** monolith applications
- Looking for a **sane way** to capture the benefits of containers and orchestration **without having to complete rewrite**
- **OpenShift** provides the platform for their existing investment with the benefit of a **path forward** for microservice based apps in the future

Why migrate to JBoss EAP?

Runtime ^{[1][2]} (framework)	Boot time server only	Boot time including app deployment	Memory usage without load	Memory usage under load	Measured ^[3] throughput
JBoss EAP (Java EE)	2 - 3 sec	3 sec	40 MB	200 - 400 MB	23K req/sec
JBoss EAP (Spring)	2 - 3 sec	7 sec	40 MB	500 - 700 MB	9K req/sec
JBoss WS/Tomcat (Spring)	0 - 1 sec	8 sec	40 MB	0.5 - 1.5 GB	8K req/sec
Fat JAR (Spring Boot)	N/A	3 sec	30 MB	0.5 - 2.0 GB	11K req/sec

Don't believe it? Try it out yourself <http://bit.ly/modern-java-runtimes>

[1] The microservice is a simple REST application.

[2] All runtimes are using their default settings

[3] The performance test was conducted with ApacheBench using 500K request with 50 users and keep-alive enabled.


LAB: MOVING EXISTING APPS TO THE CLOUD

GOAL FOR LAB






In this lab you will learn:

- How to use lab environment for today
- How to migrate an existing legacy Java EE application (CoolStore) from Weblogic to **JBoss EAP** using **Red Hat Application Migration Toolkit**
- How to deploy the result to **OpenShift container platform** to create a *Fast Moving Monolith*
- Different alternatives to building and deploying an application

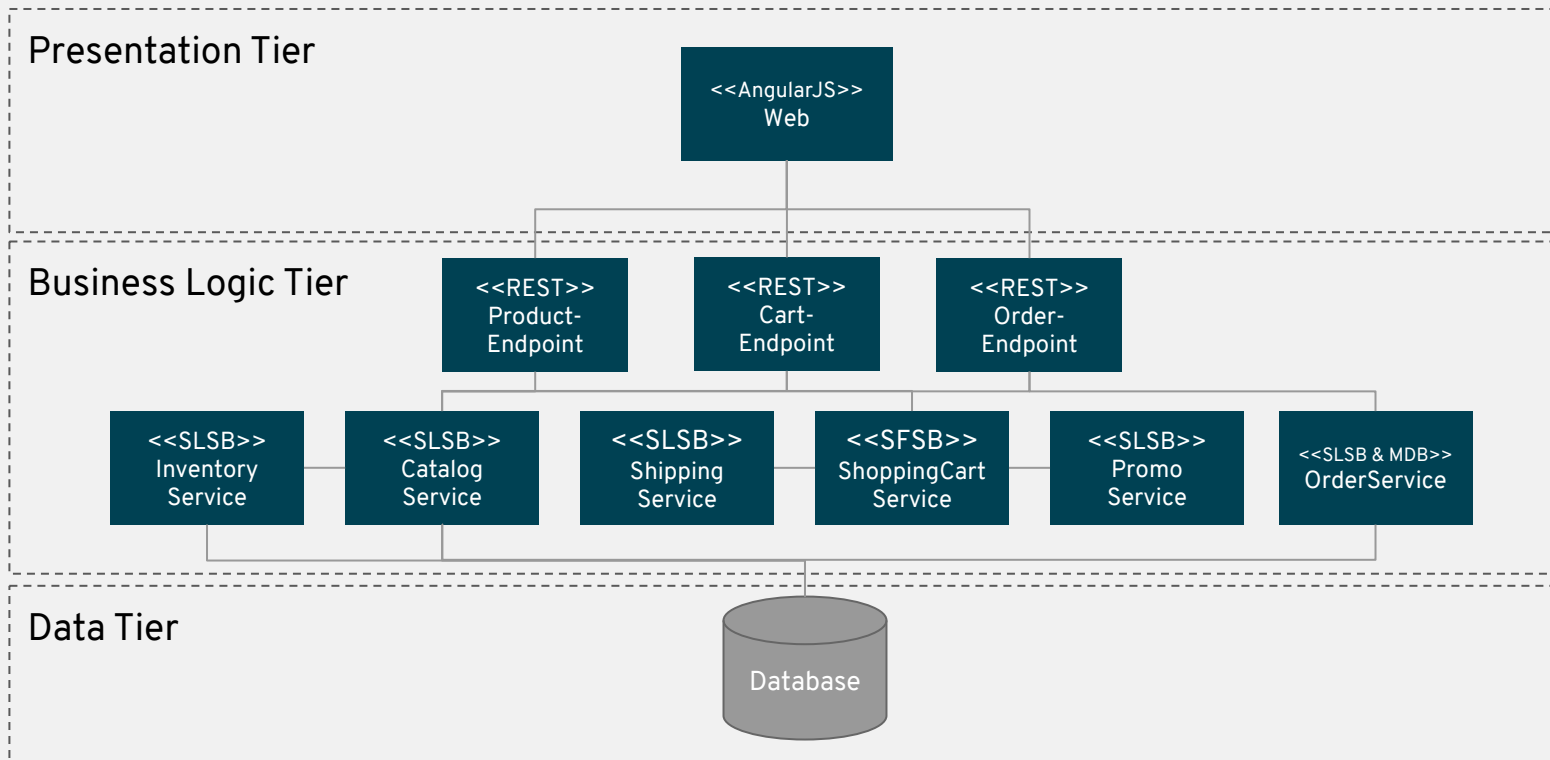
COOLSTORE APPLICATION

Shopping Cart \$0.00 (0 item(s))Sign In UnavailableSSO has not been confi

Red Hat Cool StoreYour Shopping Cart

Red Fedora	Forge Laptop Sticker	Solid Performance Polo
Official Red Hat Fedora	JBoss Community Forge Project Sticker	Moisture-wicking, antimicrobial 100% polyester design wicks for life of garment. No-curl, rib-knit collar; special collar band maintains crisp fold; three-button placket with dyed-to-match buttons; hemmed sleeves; even bottom with side vents; Import. Embroidery. Red Pepper.
		
\$34.99	\$8.50	
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736 left! 	512 left! 	

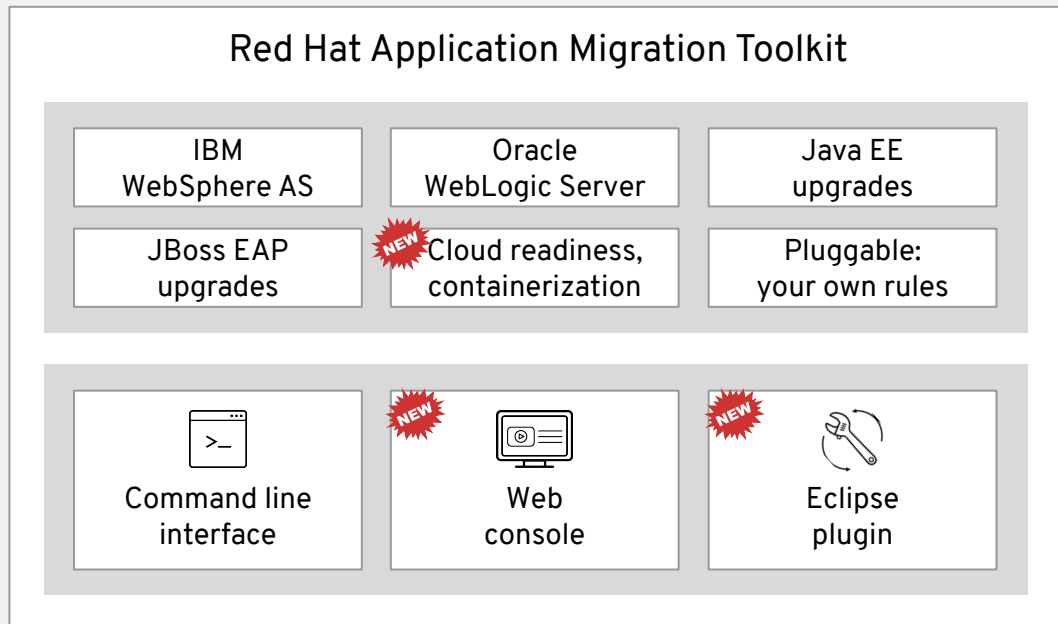
COOLSTORE APPLICATION



RED HAT[®] APPLICATION MIGRATION TOOLKIT

Catalyze large scale application modernizations and migrations

- Automate analysis
- Support effort estimation
- Accelerate code migration
- Free & Open Source



LAB: MOVING EXISTING APPS TO THE CLOUD

WEB: openshift-modernize-apps.katacoda.com
SLIDES (PDF): bit.ly/m2m-slides

SCENARIO 1 GETTING STARTED WITH THIS COURSE

+

SCENARIO 2 MOVING EXISTING APPS TO THE CLOUD

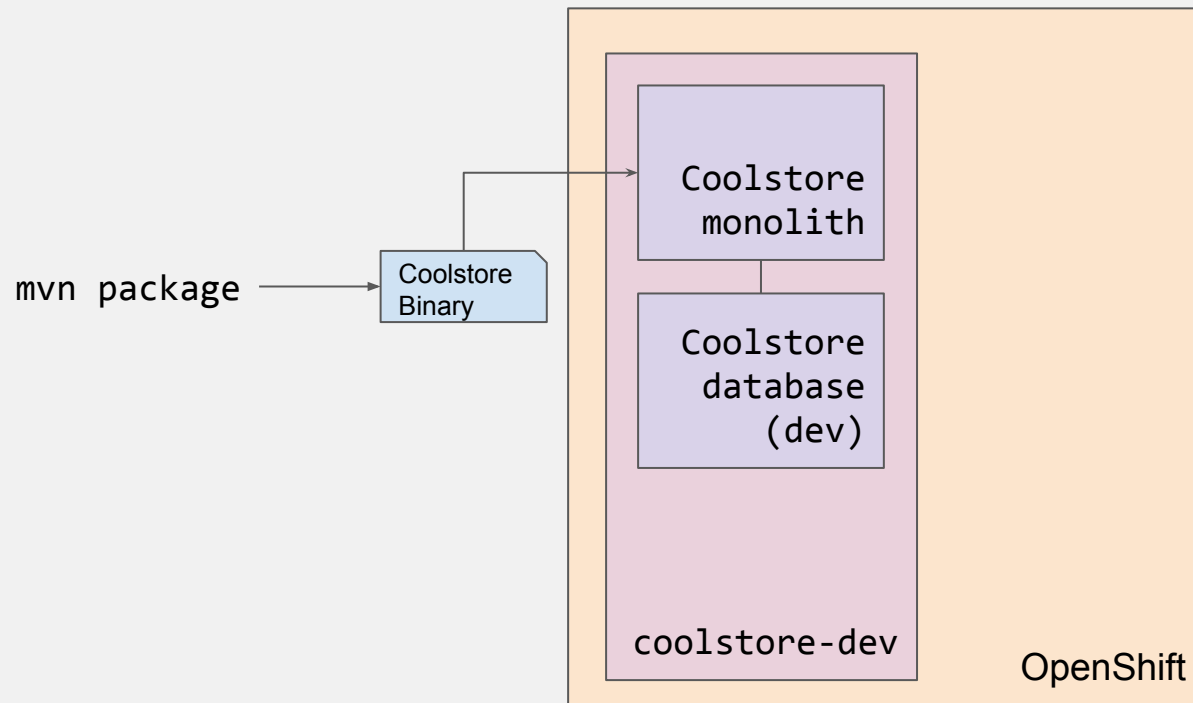
WRAP-UP AND DISCUSSION

RESULT OF LAB

In this lab you:

- Familiarized yourself with the Lab environment
- Migrated the CoolStore monolith from Weblogic to **JBoss EAP** using **Red Hat Application Migration Toolkit**
- Created a new development project on **OpenShift**
- Deployed the migrated app to OpenShift using a Template and a Binary Build
- In the next lab you will explore OpenShift deeper as a developer

RESULT OF LAB



BUSINESS OPPORTUNITY FOR APP MODERNIZATION

CONSULTING
SERVICES

APPLICATION MODERNIZATION & MIGRATION (AMM)

1\$ subscription = 5-10\$ services

3-9 MONTHS PROJECT DURATION **100-2000** DAYS OF CONSULTING

VALUE FOR
CUSTOMERS

WITH EAP

43% gains in DEV. PRODUCTIVITY
79% LESS EXPENSIVE
509% ROI over 3 years
10 months PAYBACK of investment

WITH OPENSIFT

40% infrastructure SAVINGS
66% FASTER app delivery
8 months PAYBACK

Sources:

Consulting services data: Red Hat

IDC "[The business value of JBoss EAP](#)", 2015

IDC - "[The business value of Red Hat OpenShift](#)", 2016

THE UMBRELLA

One customer conversation opening many opportunities

APPLICATION MODERNIZATION & MIGRATION

MODERNIZATION

MIGRATION

BETTER
SOFTWARE
ARCHITECTURE

AGILE
INTEGRATION

STREAMLINE
APPLICATION
LIFECYCLE

CONTINUOUS
INNOVATION

APPLICATION
SERVERS

INTEGRATION
PLATFORMS

BUSINESS
DECISION
MANAGEMENT

APPLICATION
INFRASTRUCTURE

Customer value beyond cost - Digital transformation



RE-BALANCE
MAINTENANCE
AND INNOVATION



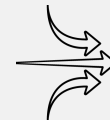
DECREASE COMPLEXITY,
INCREASE
EFFICIENCY



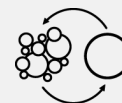
REDUCE / AVOID VENDOR
LOCK-IN, INFLEXIBLE
LICENSE MODELS



INCREASE SPEED &
BECOME MORE
PRODUCTIVE



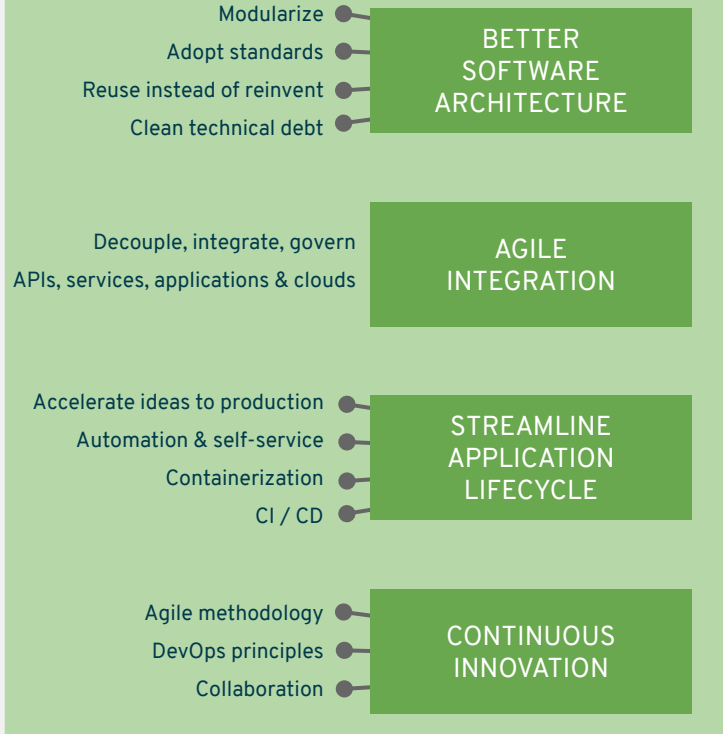
REMOVE
TECHNICAL
DEBT & RISK



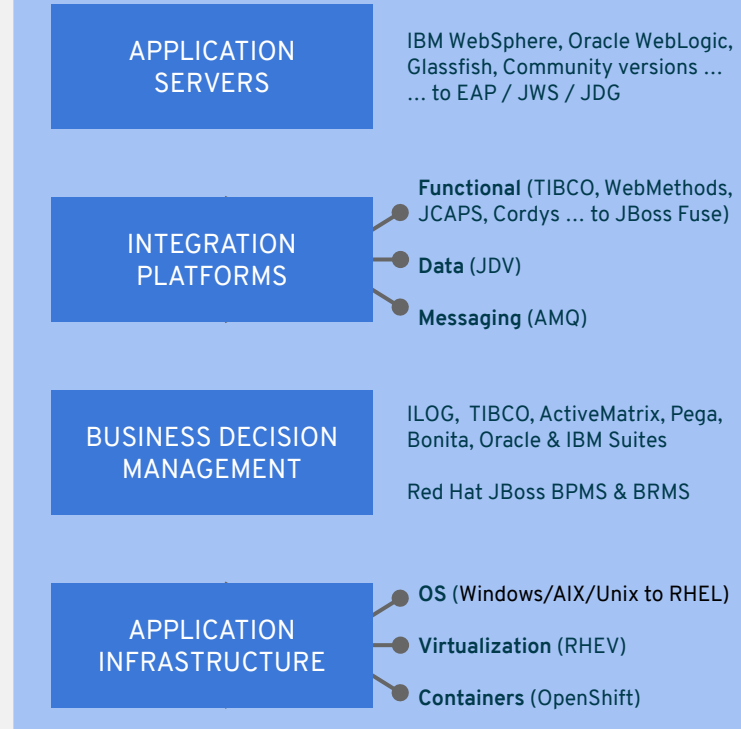
ADOPT
AGILE METHODOLOGIES,
DEVOPS

APPLICATION MODERNIZATION & MIGRATION

MODERNIZATION



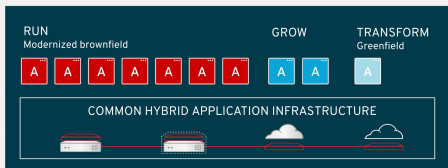
MIGRATION



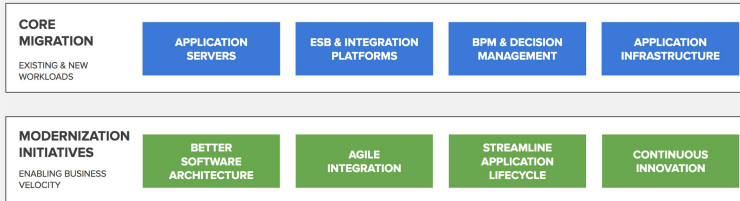
RED HAT APPLICATION MIGRATION & MODERNIZATION PROGRAM

Red Hat provides the most comprehensive technologies, tools and services to support you

TODAY and TOMORROW



COMBINE TRANSFORMATION



Migration Modernization

Making old apps new again Modern app development

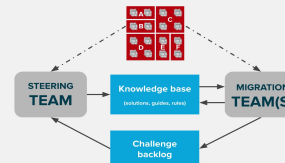
BENEFITS



APPROACH



FACTORY

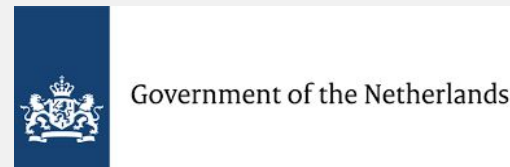
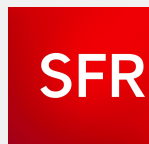


SOME CUSTOMERS

Application Modernization customers



Miles & More



Read more at <https://www.redhat.com/en/success-stories>

JUMPSTART YOUR MODERNIZATION WITH RED HAT OPEN INNOVATIONS LABS

MODERNIZE TRADITIONAL APPS

- Extend applications
- Optimize applications
- Scale applications
- Expose to orchestration

INNOVATION ACCELERATED

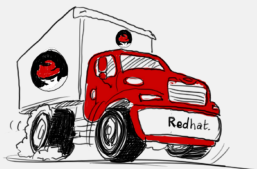
DEVELOP CONTEMPORARY APPS

- Develop on PaaS environment
- Transform how you design and develop apps
- Adopt lean and agile principles
- Master DevOps practices



COLLABORATION

Space to work,
innovate, and discuss



RESIDENCY

An eight-week accelerated
teaming engagement



COMMUNITY INCUBATION

Communities
supporting innovation

INNOVATION LABS PROCESS

PRE-WORK

Discovery session

RESIDENCY

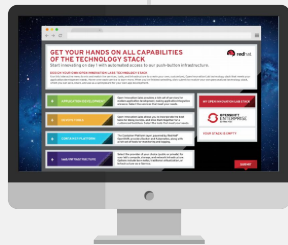
Agile, Lean, DevOps

CONTINUOUS LEARNING

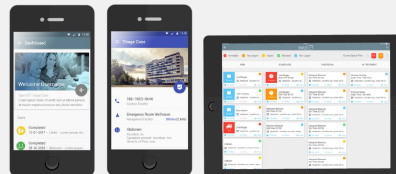
RETROSPECTIVE

Backlog and roadmap

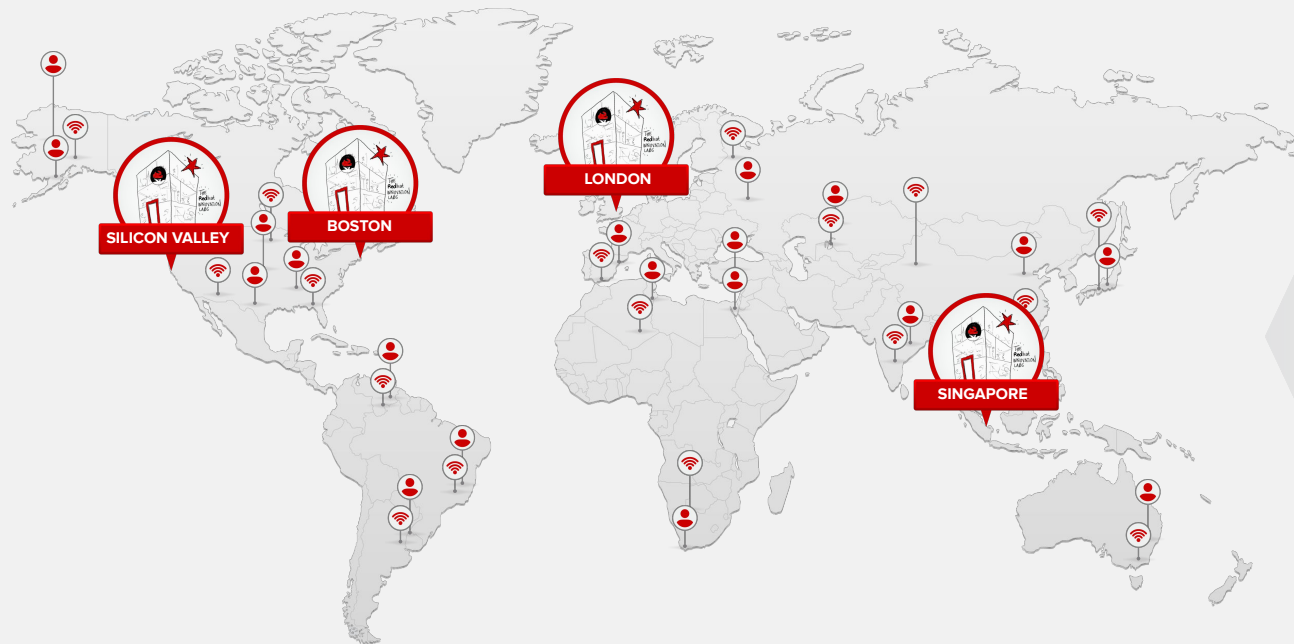
PUSH-BUTTON
INFRASTRUCTURE



DEMO DAY



DRIVE A CULTURE OF INNOVATION THROUGH A SPACE THAT FOSTERS COLLABORATION



INNOVATE ANYWHERE

- Purpose-driven
- Collaborate and make
- Network and share
- Flex and adapt
- Rejuvenate and connect



THANK YOU



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