



redhat.



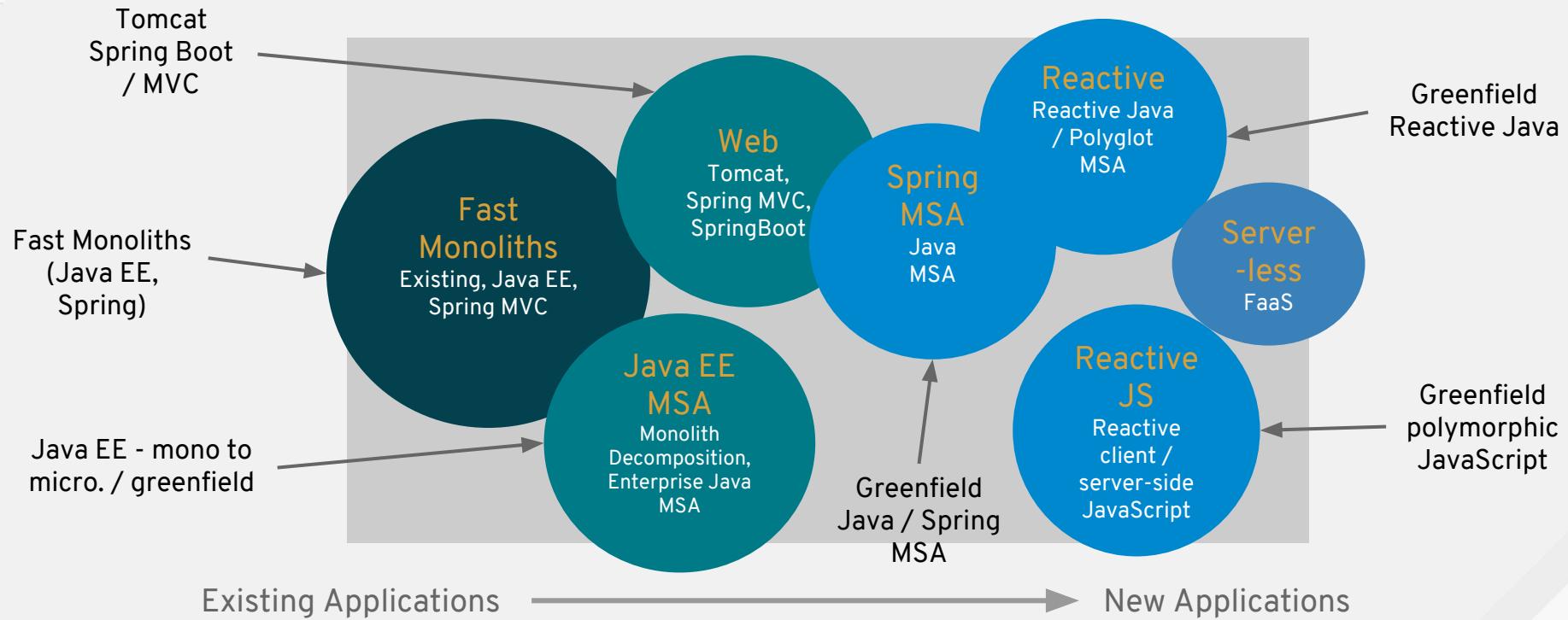
Microsoft Azure

MONOLITHS TO MICROSERVICES: APP TRANSFORMATION

Hands-on Technical Workshop

MOVING EXISTING APPS TO THE CLOUD

THE SPECTRUM OF ENTERPRISE APPS



MIGRATION AND MODERNIZATION APPROACHES

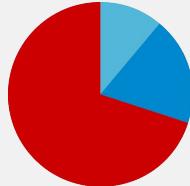
MODERNIZING EXISTING APPS

- 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

How much work required to rewrite?

Review
Analyze
Prioritize

Lift & Shift

Connect & Extend

Rip & Re-write

Repurchase

Retire

Retain as is

Smaller or frozen apps are candidates here

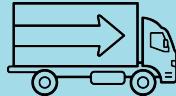
Highly scaled and high rate of change apps are candidates

Not a target

PATTERNS IN MODERNIZING WORKLOADS

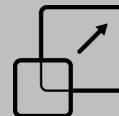
LIFT & SHIFT

- 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

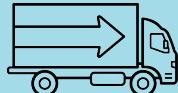
- Legacy is totally replaced
- New interfaces and data
- Use **PaaS** to run
- Some data and features can be re-wrapped, but mostly are retired.



PATTERNS IN MODERNIZING WORKLOADS

LIFT & SHIFT

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



FOCUS FOR THIS SECTION

CONNECT & EXTEND

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

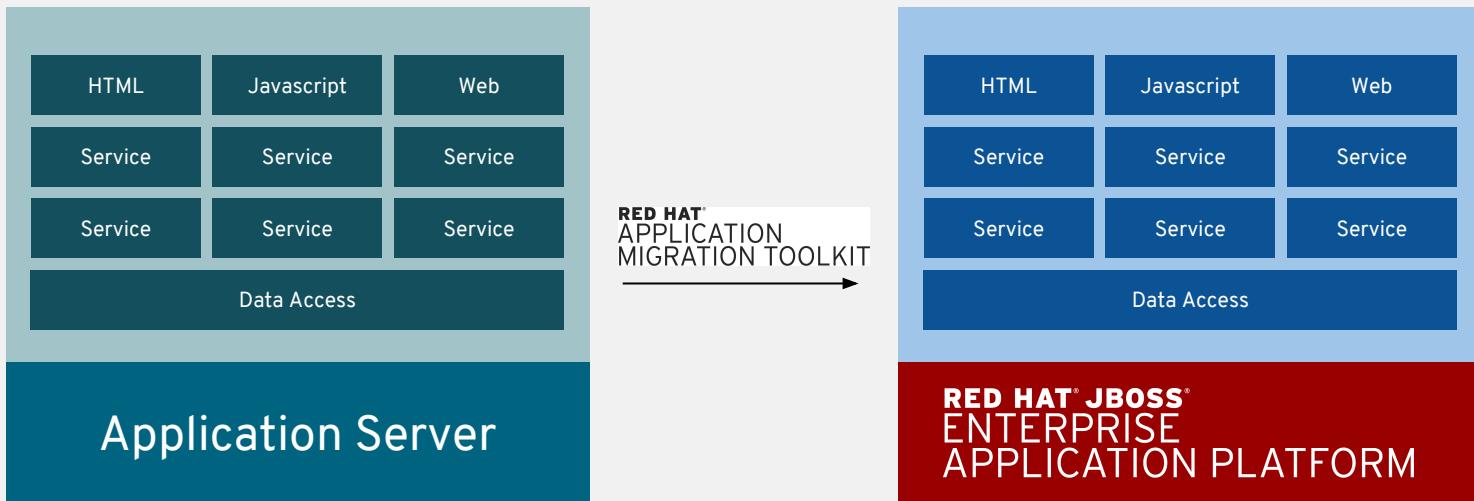


RIP & RE-WRITE

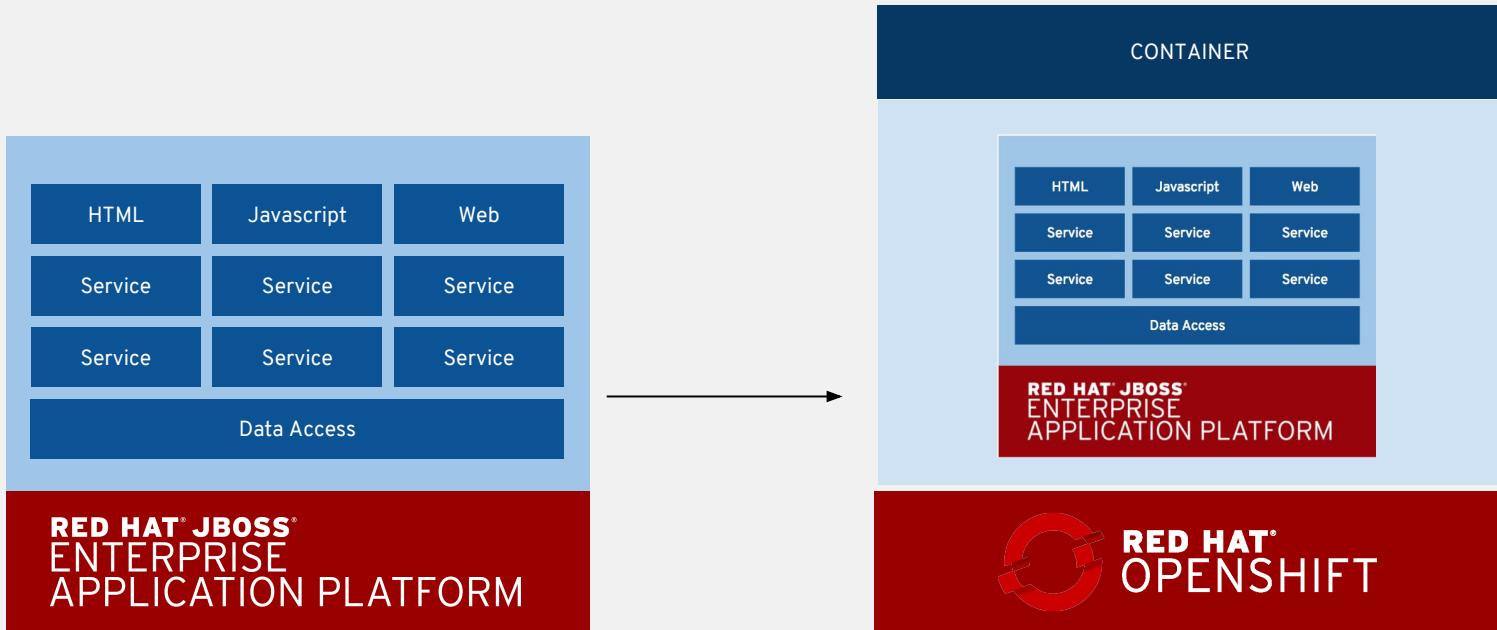
- Legacy is totally replaced
- New interfaces and data
- Use **PaaS** to run
- Some data and features can be re-wrapped, but mostly are retired.



LIFT-AND-SHIFT MONOLITH TO CLOUD



LIFT-AND-SHIFT MONOLITH TO CLOUD



Majestic Monolith

<https://m.signalvnoise.com/the-majestic-monolith-29166d022228>

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

Red Hat Cool Store Your Shopping Cart

Shopping Cart \$0.00 (0 item(s)) ▲ Sign In Unavailable
SSO has not been config

Red Fedora

Official Red Hat Fedora



\$34.99

1 Add To Cart

736 left! ⌂

Forge Laptop Sticker

JBoss Community Forge Project Sticker



\$8.50

1 Add To Cart

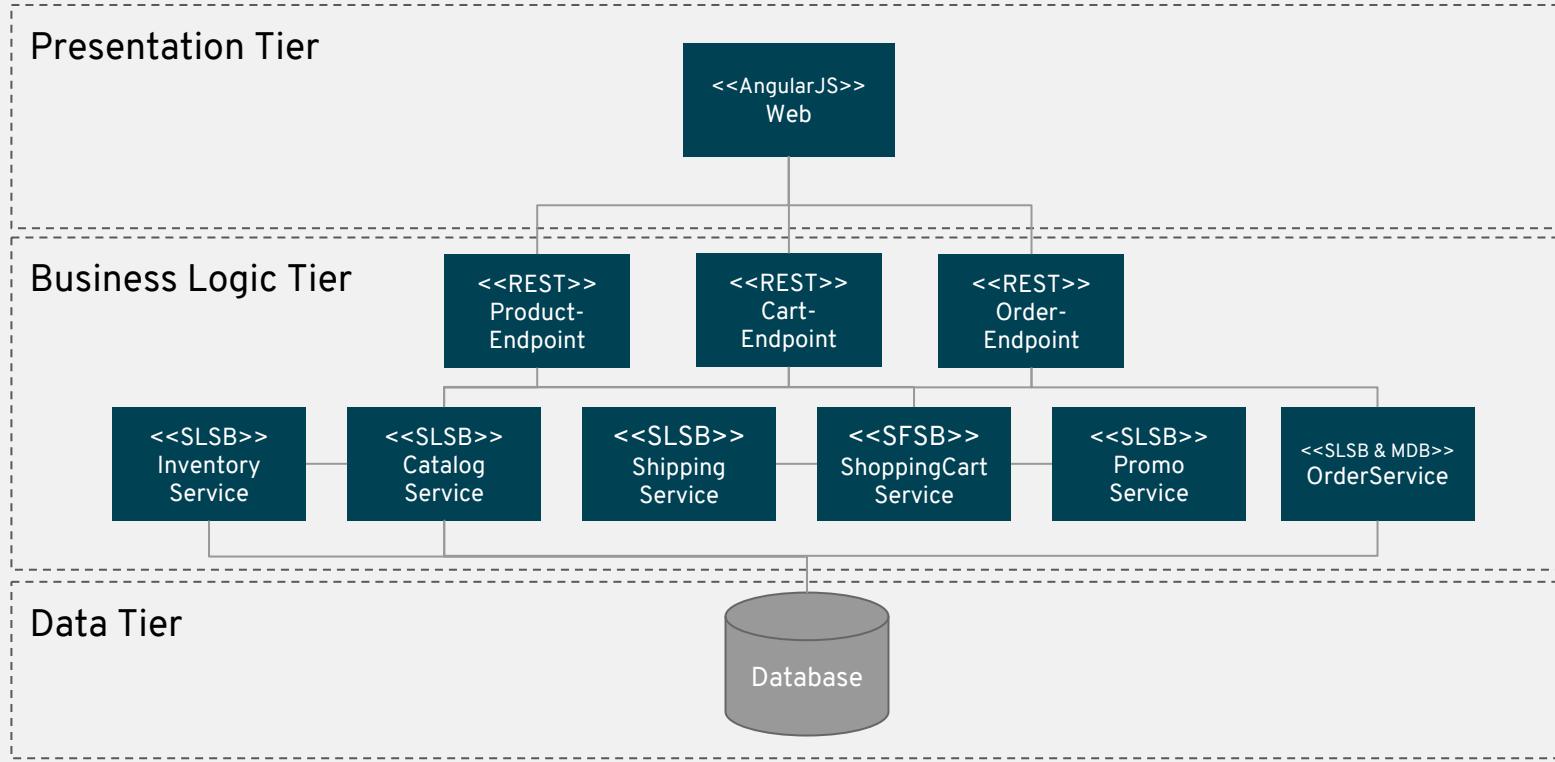
512 left! ⌂

Solid Performance Polo

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.



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

Red Hat Application Migration Toolkit

IBM
WebSphere AS

Oracle
WebLogic Server

Java EE
upgrades

JBoss EAP
upgrades

Cloud readiness,
containerization

Pluggable:
your own rules

Command line
interface



Web
console



Eclipse
plugin

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

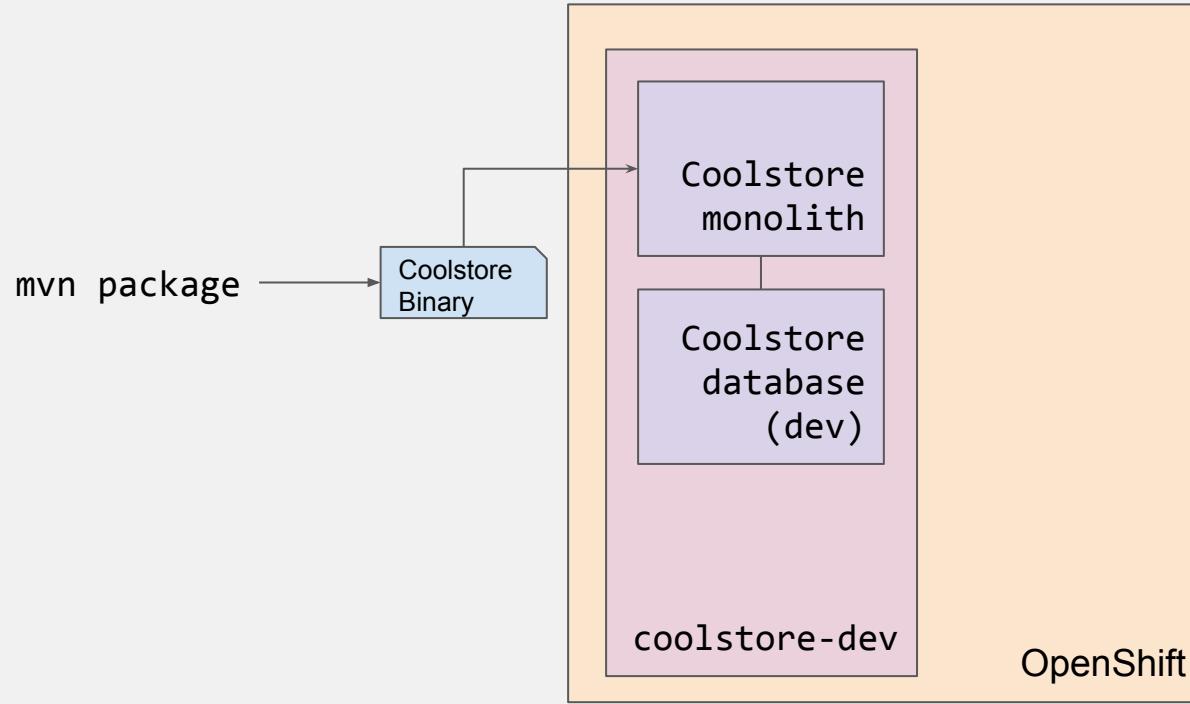
WRAP-UP AND DISCUSSION

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 OPENSHIFT

40% infrastructure SAVINGS

66% FASTER app delivery

8 months PAYBACK

Sources:

Consulting services data: Red Hat

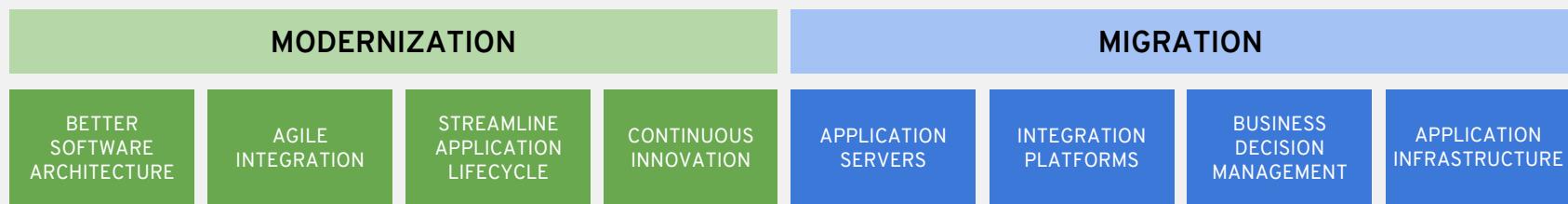
IDC "The business value of JBoss EAP", 2015

IDC - "The business value of Red Hat OpenShift", 2016

THE UMBRELLA

One customer conversation opening many opportunities

APPLICATION MODERNIZATION & MIGRATION



Customer value beyond cost - Digital transformation



RE-BALANCE
MAINTENANCE
AND INNOVATION



DECREASE COMPLEXITY,
INCREASE
EFFICIENCY



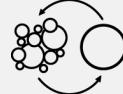
REDUCE / AVOID VENDOR
LOCK-IN, INFLEXIBLE
LICENSE MODELS



INCREASE SPEED &
BECOME MORE
PRODUCTIVE

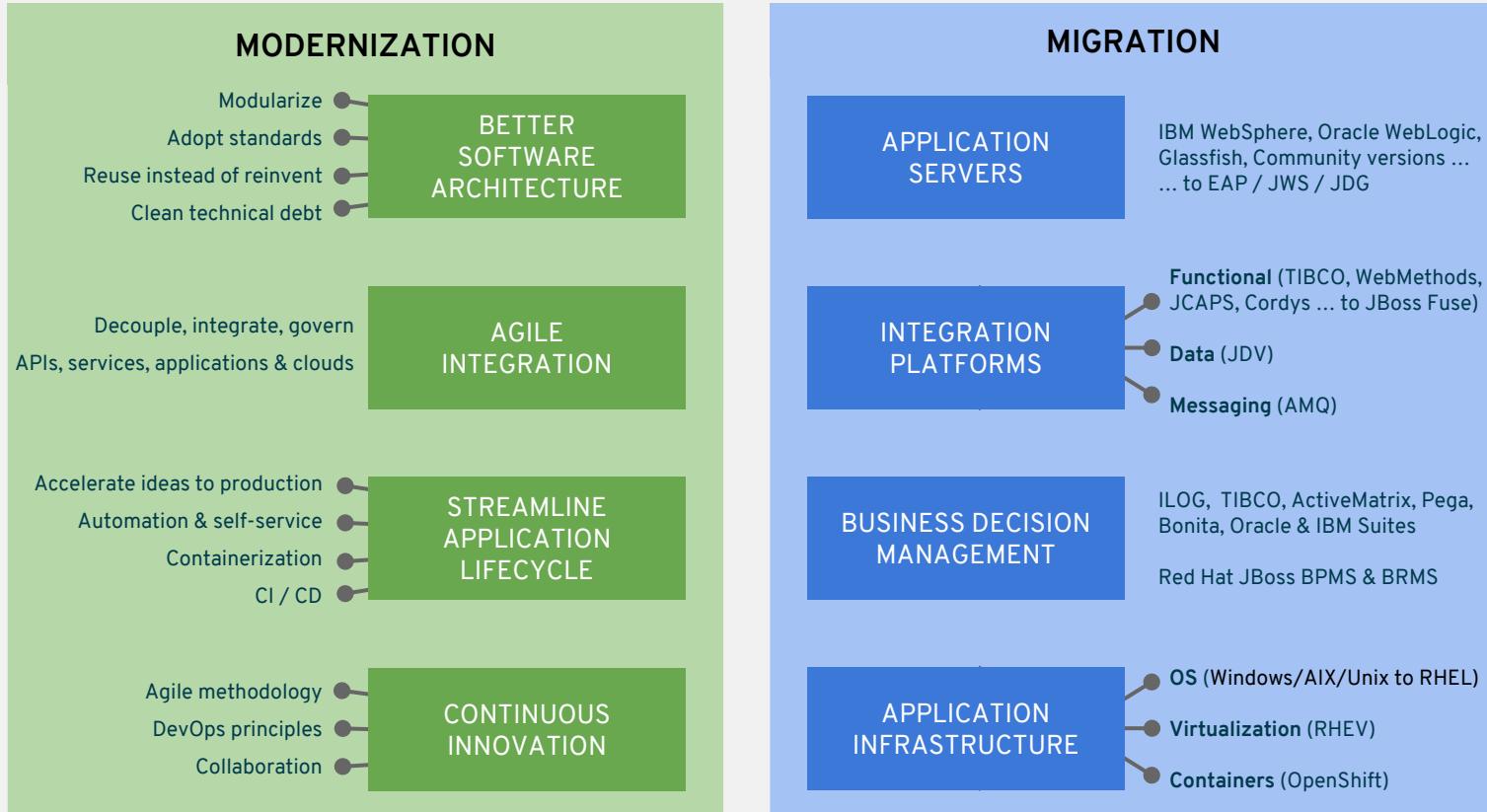


REMOVE
TECHNICAL
DEBT & RISK



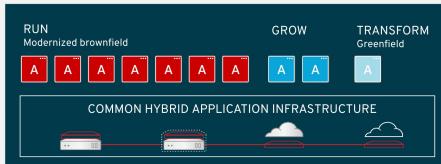
ADOPT
AGILE METHODOLOGIES,
DEVOPS

APPLICATION MODERNIZATION & MIGRATION



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

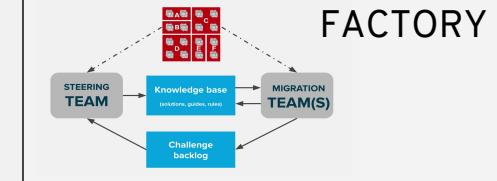
BENEFITS



APPROACH



FACTORY



SOME CUSTOMERS

Application Modernization customers



Government of the Netherlands



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

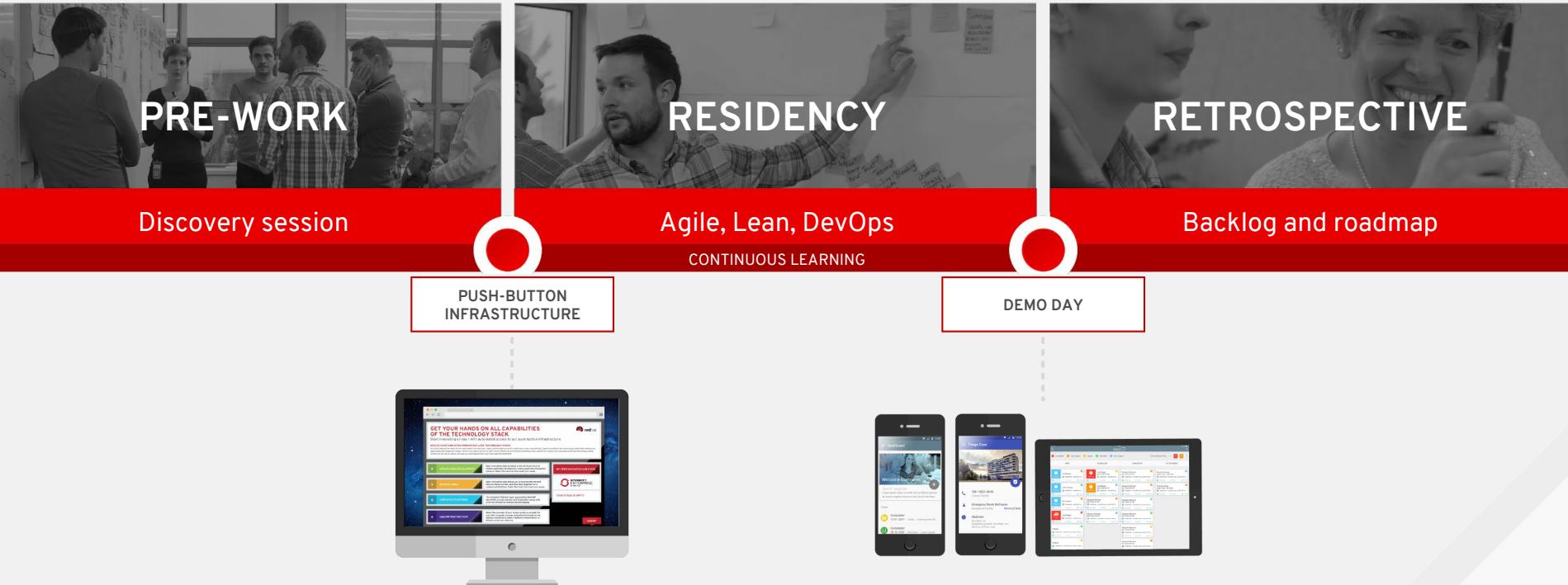
An eight-week accelerated
teaming engagement



COMMUNITY INCUBATION

Communities
supporting innovation

INNOVATION LABS PROCESS



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



redhat.

THANK YOU



plus.google.com/+RedHat



facebook.com/redhatinc



linkedin.com/company/red-hat



twitter.com/RedHatNews



youtube.com/user/RedHatVideos