The First 50 Clouds

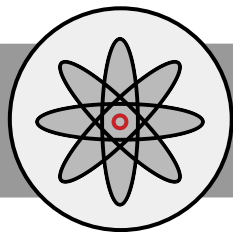## A Journey to Innovation & Modernization

Part 1 - Technology Selection & the Impact on People, Process, and Culture

Paul Turnbull
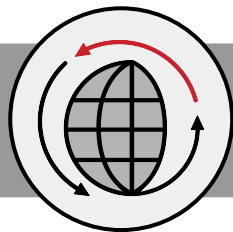Senior Solutions Architect- Public Sector
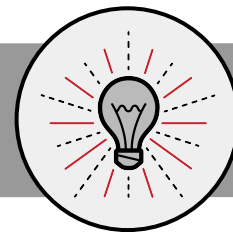Red Hat (Canada)

January 30th, 2020

Red Hat

Our Clients are at a Different Stage of their Transformational Journey

Emerging
by adopting
new technology and
processes

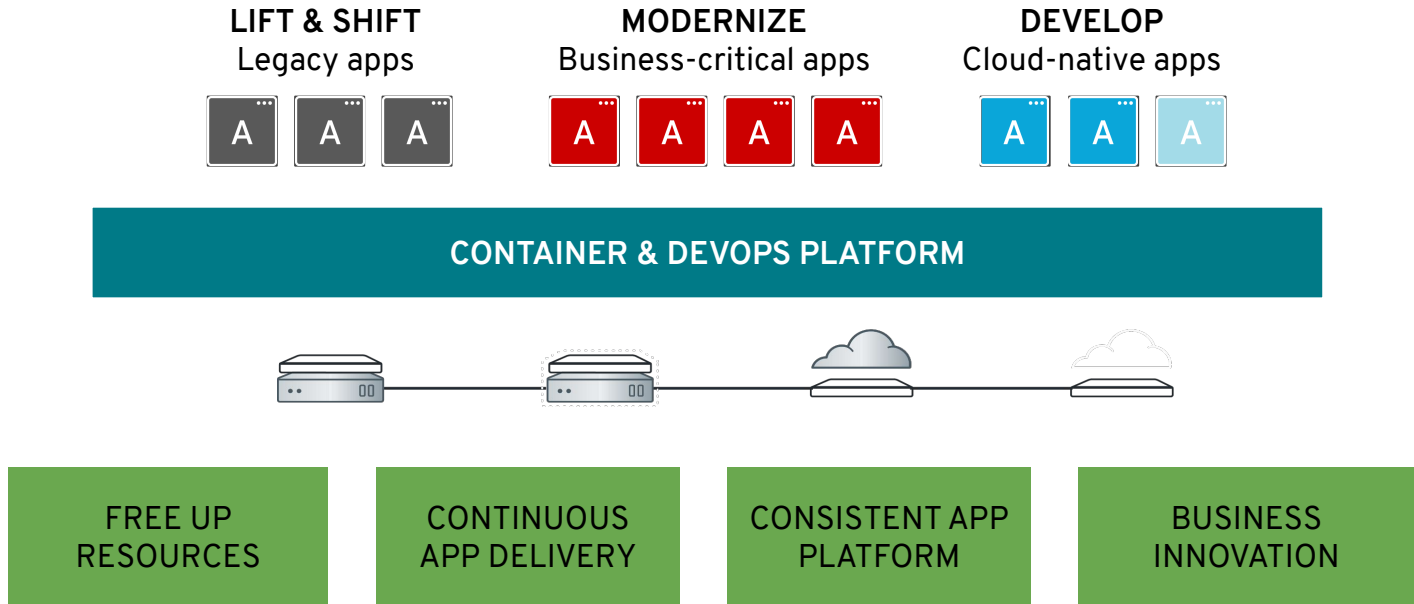### Transforming
to move faster,
and overtake
your competition

Leading
through continuous
and consistent
innovation

Red Hat

The First 50 Clouds is a Canadian Story

- Automation, cloud adoption, & DevOps are key ingredients of the Digital Transformation Journey
- This first wave of OpenShift adopters were the enthusiasts and the visionaries
  - Hard to believe - it has been 7 years!
  - OpenShift 4 brings the best of the CoreOS technology to OpenShift
- The next wave of clients are looking for a more prescriptive approach & guidance
- We've learned a lot from our clients:
  - Today - 50+ clouds deployed, across Canada, running on the Red Hat Openshift Container Platform
  - Red Hat published, as of May 2019, 1000 clients globally
- This story is a collection of wisdom gathered from <u>customers</u> and <u>partners</u> across the country as they adopted OpenShift

Red Hat

Red Hat OpenShift: Deliver & Host Your Apps In a Whole New Way

LIFT & SHIFT
Legacy apps

MODERNIZE
Business-critical apps

DEVELOP
Cloud-native apps

CONTAINER & DEVOPS PLATFORM

| FREE UP RESOURCES | CONTINUOUS APP DELIVERY | CONSISTENT APP PLATFORM | BUSINESS INNOVATION |

Red Hat

Red Hat OpenShift Clients Across Canada

EVERY MAJOR TELCO

TELUS

Bell

GOVERNMENT & CROWN CORPORATIONS

Canada

BRITISH COLUMBIA

Ontario

NOVA SCOTIA

CBC

6 OF 7 MAJOR BANKS

BMO
BMO Financial Group

RBC

HIGHER EDUCATION

UNIVERSITÉ LAVAL

AND 30+ ADDITIONAL CLIENTS

*Named Clients have presented at Red Hat Events, been a public reference, and/or are public record (Youtube, LinkedIn, or other - Type Red Hat and Customer Name)
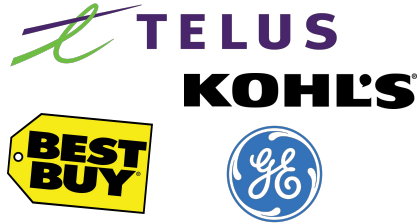
Over 1000 Clients Globally:
https://www.redhat.com/en/about/press-releases/more-1000-enterprises-across-globe-adopt-red-hat-openshift-container-platform-power-business-applications

Red Hat

OpenShift Supports a Wide Variety of **Use Cases**

MODERNIZE APPS	WEB APPS	CLOUD NATIVE DEV	MULTI-CLOUD
MOBILE	BIG DATA | ANALYTICS	AI | ML	IOT

A Different Journey for Everyone
(A Consultative Journey with our Clients)

Automation & devops processes

Containers for everything

Consolidate & standardize

Dev

Test
private cloud

Production/managed
private cloud

Traditional physical
environment

Strategic virtualization

Dev

Test public cloud
sandbox (IaaS & PaaS)

Tactical
public cloud

Strategic hybrid cloud

F16625-190725

Red Hat
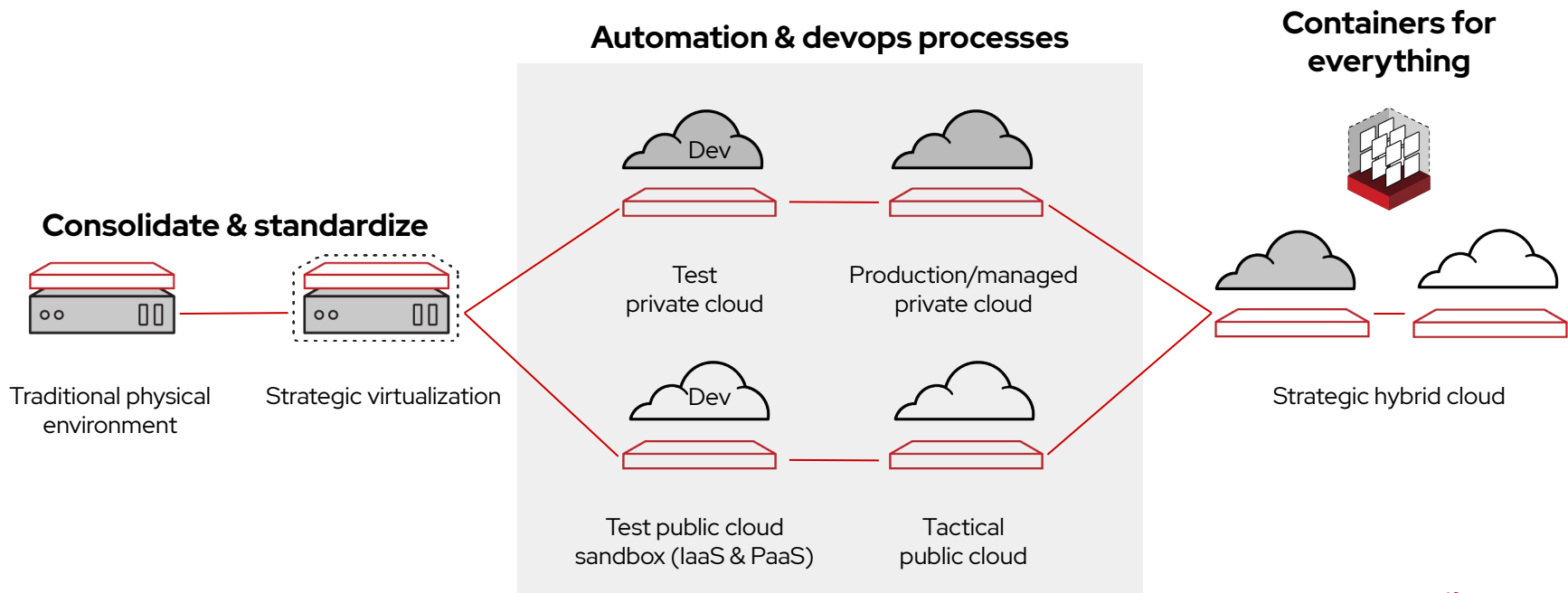
How long Did the Journey Take?

(First 50 Clouds)

HOW LONG DID IT TAKE YOU TO BUY THE PLATFORM?

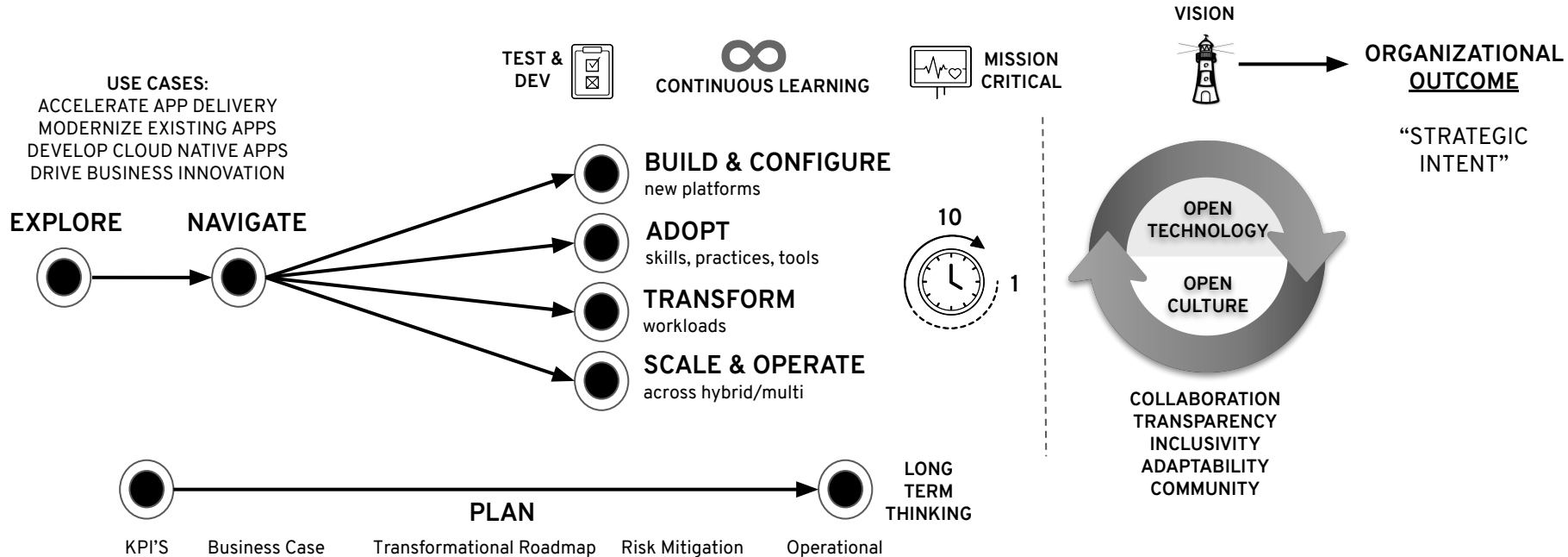**HOW LONG DID IT TAKE TO ADOPT & TRANSFORM ON THE PLATFORM AFTER YOU ACQUIRED IT?**

HOW LONG DID IT TAKE TO MANAGE THE PLATFORM AT SCALE AND TRANSFORM EVEN FASTER?

12-18 Months

12-18 Months

3-4 Years+

How long can you wait?
We can get you to success - much faster

Red Hat

The Journey to Innovation & Modernization

VISION

TEST & DEV

CONTINUOUS LEARNING

MISSION CRITICAL

ORGANIZATIONAL OUTCOME

"STRATEGIC INTENT"

USE CASES:
ACCELERATE APP DELIVERY
MODERNIZE EXISTING APPS
DEVELOP CLOUD NATIVE APPS
DRIVE BUSINESS INNOVATION

EXPLORE

NAVIGATE

BUILD & CONFIGURE
new platforms

ADOPT
skills, practices, tools

TRANSFORM
workloads

SCALE & OPERATE
across hybrid/multi

10

1

OPEN TECHNOLOGY

OPEN CULTURE

COLLABORATION
TRANSPARENCY
INCLUSIVITY
ADAPTABILITY
COMMUNITY

LONG TERM THINKING

PLAN

KPI'S   Business Case   Transformational Roadmap   Risk Mitigation   Operational

Red Hat

The Journey to Innovation & Modernization

VISION

ORGANIZATIONAL **OUTCOME**

"STRATEGIC INTENT"

WHERE SHOULD IT START

?

EXPLORE

OPEN
TECHNOLOGY

OPEN
CULTURE

COLLABORATION
TRANSPARENCY
INCLUSIVITY
ADAPTABILITY
COMMUNITY

Red Hat

The Impact of the Journey

On Technology Decision Making, People, Process & Culture

"Digital transformation is not just about new technologies.

It also means **realizing a wider vision** of relationships and business models that will redesign how public services (organizations) function.

Only then will governments (organizations) capture the wider benefits that digital transformation can bring to people and society."

Arnauld Bertrand
EY Global Government & Public Sector Advisory Leader

F16625-190725

Red Hat

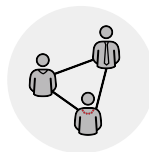# 6 Human Factors to Transformational Success

(to build trust and create a common purpose)
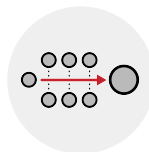
Establish a clear vision with shared goals
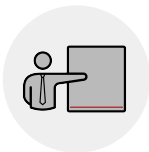
Develop your people

Evolve to a more open culture
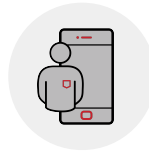
Focus on the user experience

Build cross-organizational teams & processes

Make it personal

Killer App in Digital Transformation is Human Connection

Red Hat

Random Acts of Digital

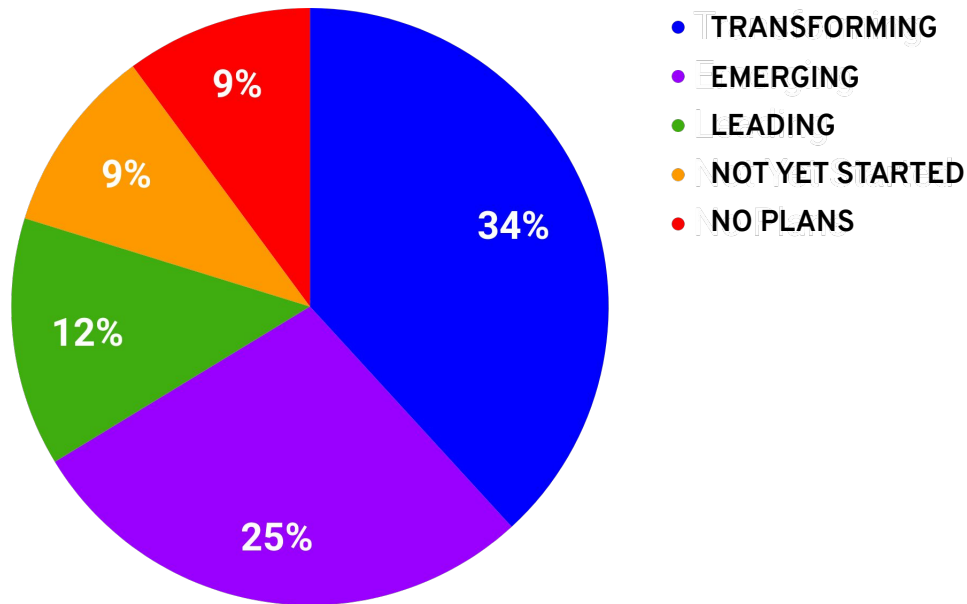*"Did somebody say containers or Kubernetes?"*

It's Still Early in Most Organizations

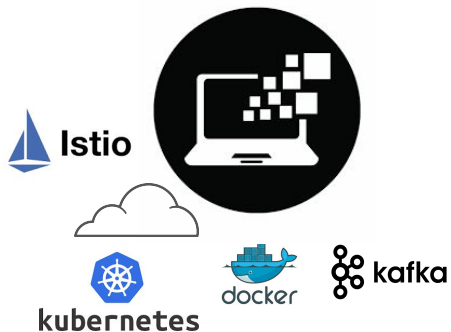*Where is your company in its digital transformation journey?*

Consider: You can be in more than one stage at the same time in different parts of the organization

GLOBAL ALL SECTORS

- ● TRANSFORMING
- ● EMERGING
- ● LEADING
- ● NOT YET STARTED
- ● NO PLANS

34%
25%
12%
9%
9%

F16625-190725

Red Hat

Observations During the Exploration Phase

(Random Acts of Digital?)

TECHNOLOGY FOCUSED

DIY

OPEN SOURCE ACCEPTANCE
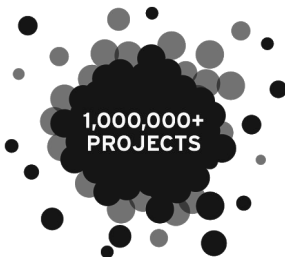
SILOS LEARN IN SILOS
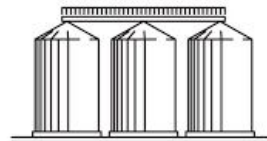
LEARNING OR DEPLOYING?

OR LEARNING WHILE DEPLOYING?

Istio

DO it YOURSELF

1,000,000+ PROJECTS

kubernetes

docker

kafka

Red Hat

A Journey of "Exploration" in the First 50 Clouds
(A typical example of a Ops Centric Journey over 12-18 mos)

We need to accelerate infrastructure delivery or reduce costs

Tools provided by the Public Cloud Providers haven't matured yet

I need to access multiple public cloud services and I may want to avoid public cloud lock-in

I need application services to be portable across clouds

What happens if one service dependency fails?

Some of the commercial CaaS solutions make this easy

Public Cloud

Management Tools

Multi-Cloud

Containers

Container Orchestration

CaaS

F16625-190725

Red Hat

A Journey of "Exploration" in the First 50 Clouds
(A typical example of a Dev Centric Journey over 12-18 mos)

I need to deliver new services to our business (in a Hybrid Cloud Architecture)

We need to accelerate the development process with the right tools & processes

Applications need to be integrated and secure in a hybrid or multi-cloud environments

New application architectures will make it easier to build new services faster

Containers make microservices easier!

What happens if one service dependency fails?

Some of the commercial xPaaS solutions make it easy to automate all my requirements

Modernize

Cloud Native & SaaS

DevOps or DevSecOps Tools & Processes

Integration & API Management

Microservices

Containers

Container Orchestration

xPaaS

Mobile Apps

Process Driven Apps

RED HAT OPENSHIFT
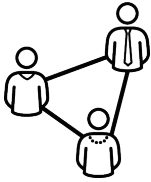
F16625-190725

Red Hat

Exploration Concerns

- "Random Acts of Digital" are slowing down the transformational journey
- Initial transformation efforts are failing
  - McKinsey Study: 80% of public sector transformation efforts fail to meet their objectives[1]
  - Other studies from Gartner and Standish Group show similar outcomes
  - 75% of executives say they're still waiting to reap tangible benefits from disruptive technologies[2]
- Standish identifies and ranks the factors behind IT project failures, with top 5 being[3]:
  - Executive sponsorship
  - Emotional maturity
  - User involvement
  - Skilled resources
  - Standardized architecture

[1] https://www.mckinsey.com/industries/public-sector/our-insights/putting-people-at-the-heart-of-public-sector-transformations
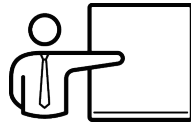[2] Forbes Insights (November 2018). The C-Suite Outlook: How Disruptive Technologies are Redefining the Role of Project Management.
[3] https://www.opendoorerp.com/the-standish-group-report-83-9-of-it-projects-partially-or-completely-fail/

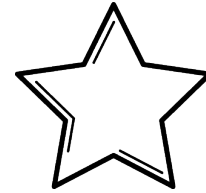# How is Red Hat Helping Clients

Explore Faster…

USER GROUPS MEETUPS

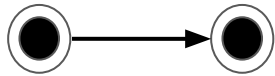**DEEP DIVES, DEMOS GENERAL EDUCATION**

WORKSHOPS

MARKETING EVENTS (ONLINE & IN-PERSON)

Most Importantly - learning needs to link to a <u>strategy</u>

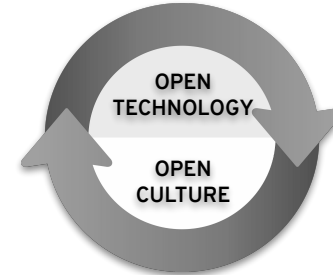Red Hat

The Journey to Innovation & Modernization

VISION

ORGANIZATIONAL OUTCOME

"STRATEGIC INTENT"

EXPLORE

NAVIGATE

OPEN TECHNOLOGY

OPEN CULTURE

PLAN

KPI'S   Business Case   Transformational Roadmap   Risk Mitigation   Operational

LONG TERM THINKING

COLLABORATION
TRANSPARENCY
INCLUSIVITY
ADAPTABILITY
COMMUNITY

F16625-190725

Red Hat

The Impact of Planning

PLAN

KPI'S   Business Case   Transformational Roadmap   Risk Mitigation   Operational
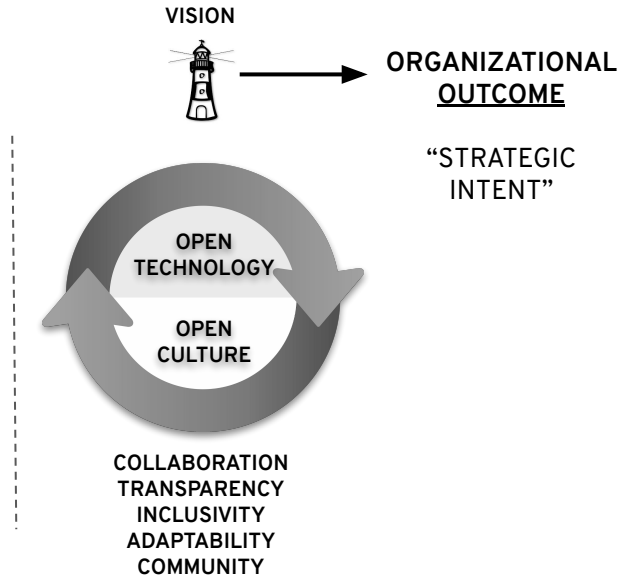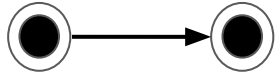
LONG TERM THINKING

- Can you compare the old way to the new way of doing work?

- Start with "WHY"
- Hint: It needs to be more than technology

- Digital transformation is a cultural transformation. Break down the silos!
- A great plan should be built & executed on collaboratively
- Have a DevOps Mindset; Start small and learn incrementally

- Does your risk and operational plan address security risk and governance?
- Reduce your footprint to reduce risk
- Address single POV including staffing and support

- Address the lifecycle of the application (maintenance, security fixes, upgrades, end to end management)
- Avoid building snowflakes!
- Assess impact of technology selection to support the platform

F16625-190725

Red Hat

The Journey to Innovation & Modernization

USE CASES:
ACCELERATE APP DELIVERY
MODERNIZE EXISTING APPS
DEVELOP CLOUD NATIVE APPS
DRIVE BUSINESS INNOVATION

EXPLORE   **NAVIGATE**

VISION

ORGANIZATIONAL OUTCOME

"STRATEGIC INTENT"

OPEN TECHNOLOGY

OPEN CULTURE

COLLABORATION
TRANSPARENCY
INCLUSIVITY
ADAPTABILITY
COMMUNITY

LONG TERM THINKING

PLAN

KPI'S   Business Case   Transformational Roadmap   Risk Mitigation   Operational

F16625-190725

Red Hat

YOUR CUSTOMERS EXPECT

ON-DEMAND SERVICE

DELIGHTFUL INTERACTIONS

360 ACCESS

PERSONALIZED EXPERIENCE

Differentiation is in the App

INNOVATE FASTER	DEVELOP FASTER	DELIVER FASTER	ADAPT FASTER

Increase the speed of **innovation** across the organization to the pace that your business demands

Increase the speed of **developing new applications** to address business opportunities

Increase the speed of **app delivery** of existing and new applications to your customers

Increase the speed of change by **modernizing applications** to adapt to the markets and customers

Red Hat

Most Common Use Cases

EVOLUTION

··►

ACCELERATE APP DELIVERY	MODERNIZE EXISTING APPS	DEVELOP CLOUD-NATIVE APPS	DRIVE BUSINESS INNOVATION

◄··

REVOLUTION

Red Hat

OpenShift Dedicated with Telus Digital

Self Serve Digital Experience - Research & Learn Phase of Journey
"How can we improve the customer engagement with the breadth of products and services that TELUS can offer through digital channel?"

7 year TELUS Journey
"Our Digital platform is hosted on OpenShift...OpenShift allows us to focus on delivering value to our customers while the infrastructure that supports and enables hundreds of applications is managed by Red Hat"

FUN FACTS:
● At last check...1500 Changes/day in non-prod Sandbox
● 500 Commits a day in Production
● Approx 250 developers across 8 teams;
● In less than 10 Minutes…. team members have everything they need to produce code and push to production

Bank of Montreal

CHALLENGE & SOLUTION:
- Slow, waterfall based process burdened innovation to online banking business applications
- Instantiation of centralized container management platform, OpenShift, in conjunction with
- Agile/DevOps reorganization drove high velocity of innovation without compromising security and predictability

RESULT:
- Rapid promotion of change to production
- Consolidated VM's on 50 physical servers to 3 servers on OpenShift or 15X reduction ratio by utilizing containers (typical industry ratios)

"Prior, the velocity of innovation was too slow and now our online business banking and Harris online banking applications are fully containerized and supporting the speed of the business"

Application/Infrastructure Currency & Compliance Costs
(Large Canadian Hydro Provider)

BUSINESS PROBLEM

- New security mandate:
  one app per app server per vm
- Java container currency and out of support/compliance
- Costs explosion because of the above

SOLUTION SUMMARY

- Worked with security teams to certify containers
- Migrated to JWS and EAP in container to address currency
- Over 70 production applications now on OpenShift
- Impact to client:
  - Business Case to justify (10x savings)
  - $5M of savings, with additional features and capabilities
- Phase 2 - Application development for the "Electric Zone"
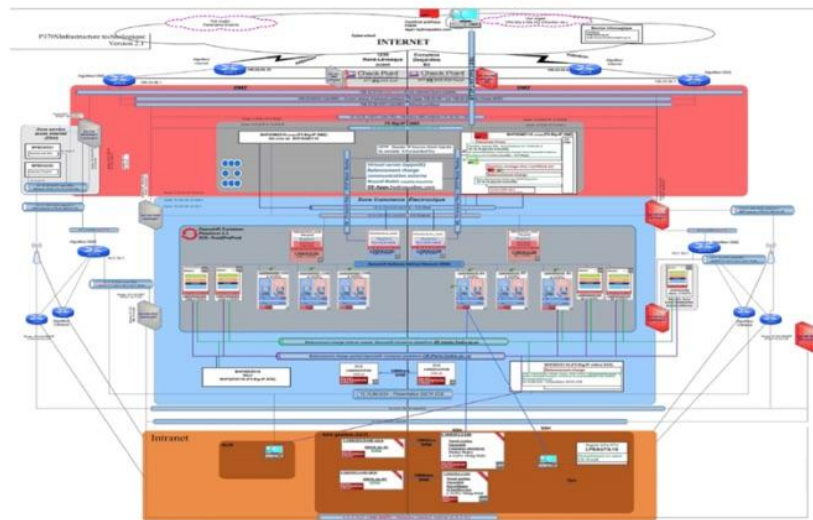
Innovation, Science, & Economic Development (ISED) Canada

USING OPENSHIFT & 3SCALE FOR GOVERNMENT-WIDE API MANAGEMENT: GC API STORE

- Started with OpenShift Dedicated. Moved to self-hosted OCP clusters on AWS before official launch.
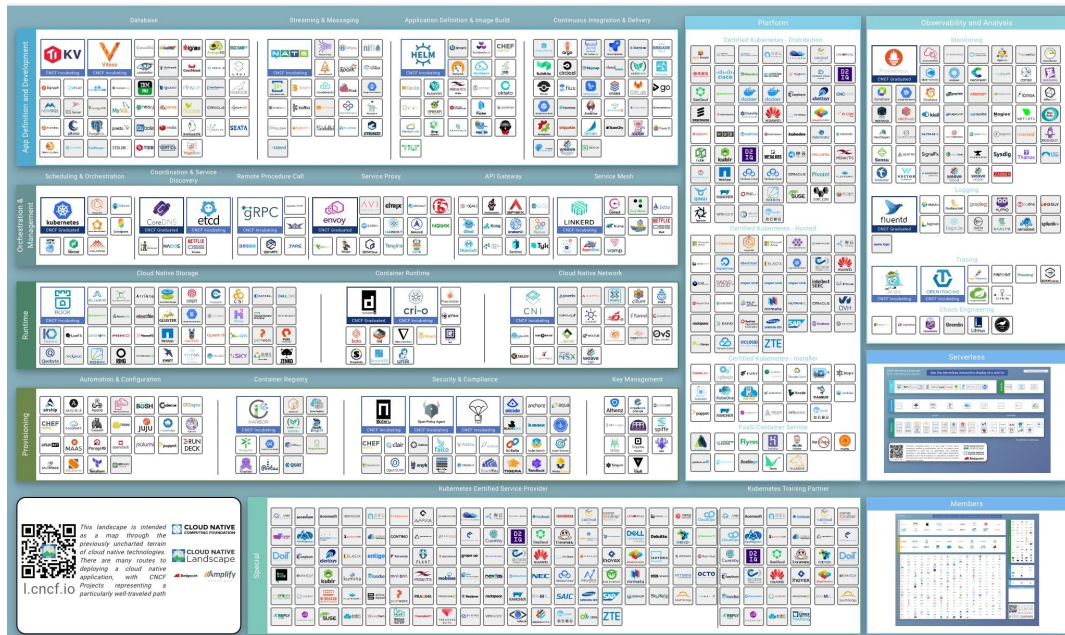- 3Scale API Management deployed in multi-tenant configuration to decentralize API management and empower departments.
- Red Hat SSO for single sign-on across tenants.
- Drupal landing page for unified search, also running on OpenShift.
- Red Hat Consulting engaged to augment ISED technical resources to help create central portal/search and cross-tenant registration.
- ISED moving more workloads to OpenShift on AWS.
- First workload other than API Store on OpenShift is Cluster Map: https://www.clustermap.ca
- Press release here

We Put Our Money First...in New Technology

In the next 12 months, how much is your organization investing in the following to advance its digital transformation? (% investing a lot)

F16625-190725

Red Hat
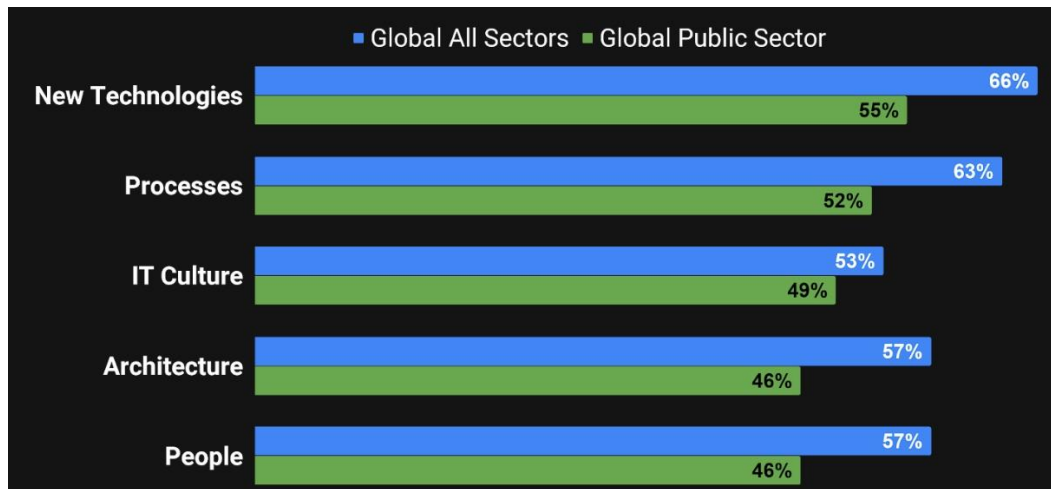
Where to Start?

(When there is so much noise!)

- Over 30 Kubernete Distributions*
- A crowded vendors space
- Many adjacent technologies that add value to the container and container orchestration models

https://containerjournal.com/topics/container-ecosystems/do-we-have-more-kubernetes-distributions-than-we-need
https://www.techradar.com/news/choosing-the-right-cloud-container-platform/
https://techbeacon.com/enterprise-it/30-essential-container-technology-tools-resources-0
https://landscape.cncf.io/fullscreen=yes&zoom=60

Key Considerations
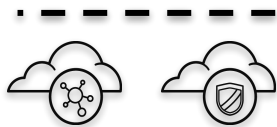
Hybrid or Multi-Cloud

- **Enterprises will leverage more than one cloud service**
  - **Many studies highlight 5 or more clouds per enterprise**
- **Larger clients have multiple deployments of the same cloud service (e.g. OpenShift)**
- **Individual processes for engagement across clouds create silos of learning/effort**

DO it YOURSELF

- **Continued "DIY" thinking and/or a lack of guiding principles may lead to challenges into production**
- **DIY has <u>always</u> led to unnecessary costs, increased risk, unrealized/delayed value, technical debt, and significant complexity**
- **Some clients started with community distributions and acquired subscriptions in production**

Red Hat

<u>Guiding Principles</u> for
Hybrid/Multi Cloud - PaaS/CaaS Platform Selection

Platform Experience & Support

- Abstraction of the underlying hybrid/multi-cloud complexity AND makes it easier for developers to access services regardless of which cloud they come from
- Broad support for cloud infrastructures. Think long term
- Supports a broad variety of use cases (CaaS, xPaaS)

Management & Security
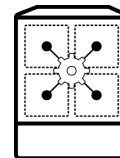
- Integration of the service "up and down" the stack.
- Integrated stacks reduce:
  - The threat surface
  - Duplication of people skills, processes, and tooling
  - The total cost of ownership

Red Hat

Guiding Principles for

# Hybrid/Multi Cloud - PaaS/CaaS Platform Selection

Broad Ecosystem Support

- Support from a large ecosystem of open source and certified ISV solutions for application and developer services
- Support from a large ecosystem of open source and certified ISV solutions for operational support

Vendor Experience/OSS influence

- Number of clients running on the platform?
- Number & types of workloads on the platform?
- Diversity in the number of successful use cases
- Programs/services to accelerate the transformational journey
- Influence across OSS communities for new features or capabilities

Red Hat

Why Customers Choose OpenShift
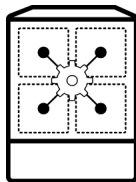
Trusted enterprise Kubernetes

Cloud-like experience everywhere

Empowering developers to innovate

Open source innovation

Successful Adoption Patterns
(Greatest Successes)

- The right <u>culture</u> exists - All stakeholders came to the table at the beginning or they recognized the need to change how they work
- Accelerated app development drove faster business or service value delivery on the platform
  - In general, App driven use cases accelerated faster adoption & time to value vs. infrastructure driven use cases
  - However - "Lift and shift" drove faster adoption of the platform than net new workloads
- Applied DevOps principles on the platform provided quick wins and incremental learning across all 4 streams
- Client recognized their strengths and weaknesses and did not go it alone (for Day 0, 1 and 2)

Unsuccessful Adoption Patterns

- A lack of teaming or a cohesive <u>culture</u>
  - Lack of a team oriented vision and/or siloed/departmental execution leading to a lack of alignment and independent thinking
  - Lack of investment in people & resources
  - At minimum, no program management to connect the organization together
- Poor adoption of <u>any</u> platform led to the selection of multiple platforms increasing costs & duplication of effort. For example:
  - IT Operations built it - but no workloads came to the platform
  - Developer bypassed the platform and went directly to a public cloud for services without addressing longer term management issues and security risks

Red Hat

BCDevExchange (BC Government)

Our goal is to eliminate the wall between the government with our data/resources and the create ideas and innovation from our citizens." - Peter Watkins, Executive Director, BCDevExchange

- Providing better experiences and services for BC citizens
- Provide opportunities for citizens to help improve Education, Transportation, Agriculture, Economy

Keynote: https://youtu.be/8MCbJmZQM9c?t=28m

Case Study:
https://www.redhat.com/cms/managed-files/rh-government-of-british-columbia-collaborates-with-private-sector-developers-innovation-awards-case-study-f6460kc-201704-en.pdf

BCDevExchange (BC Government)

KEY OUTCOMES:

- Changed the way they interacted with Developers to deliver citizen services faster at a lower cost
  - Exposed the backlog for projects
  - Self service for developers

- Created a more agile procurement process for developers to bid

- Evaluated and provide a standard set of resources (Developer languages, DevSecOps Tools, IT Management Tools) in an automated way for development, testing, and hosting of app services

- Continuously train and onboard government associates and 3rd party developers to use the platform

- All code developed on the platform is open sourced

- Live the DevOps lifestyle - nurturing a culture of innovation with Open Data, Open APIs, & an Open Platform to Citizen Devs

Parting Thoughts

- Think <u>collaboration</u>!

Transformation in the enterprise is too complex for any one organization or individual to do themselves

- We are here to help accelerate your transformational journey
  - We have the <u>experience</u> and programs to help you improve teaming (culture) and apply new processes
  - We have the right technology

Red Hat

Thank you

Red Hat is the world's leading provider of
enterprise open source software solutions.
Award-winning support, training, and consulting
services make Red Hat a trusted adviser to the
Fortune 500.

linkedin.com/company/red-hat

youtube.com/user/RedHatVideos

facebook.com/redhatinc

twitter.com/RedHat

Red Hat