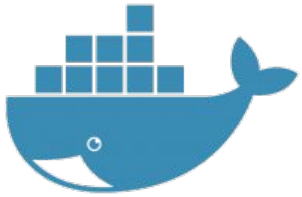
Faster, More Secure Application Modernization and Replatforming with PKS

Paul Czarkowski

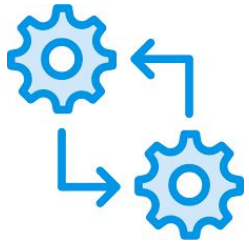
Developer Advocate

May 2018

Companies Have Many Ways to Package and Run their Workloads in the Cloud



Containers



Batches

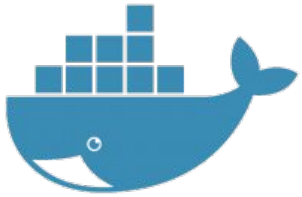
Event-Driven Functions

Microservices

Data Services

Monolithic Applications

Their Goal: Pick the Right Runtime for Each Workload



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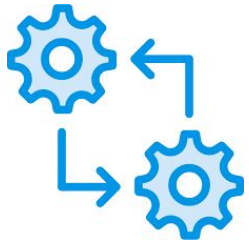

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Container Orchestrator (CaaS)

Application Platform (PaaS)

Serverless Functions (FaaS)

IaaS

Choose the Right Tool for the Job

	Container Orchestrator	Application Platform	Serverless Function
Developer Provides	**Container**	**Application**	**Function**
Tool Provides	Container Scheduling Primitives for Network, Routing, Logs & Metrics	**Container Orchestrator** + Container Image & Build L7 Network & Routing Logs, Metrics, Monitoring Services Marketplace Team, Quotas & Usage	**Application Platform** + Function Scheduling Function Exec Services

IaaS

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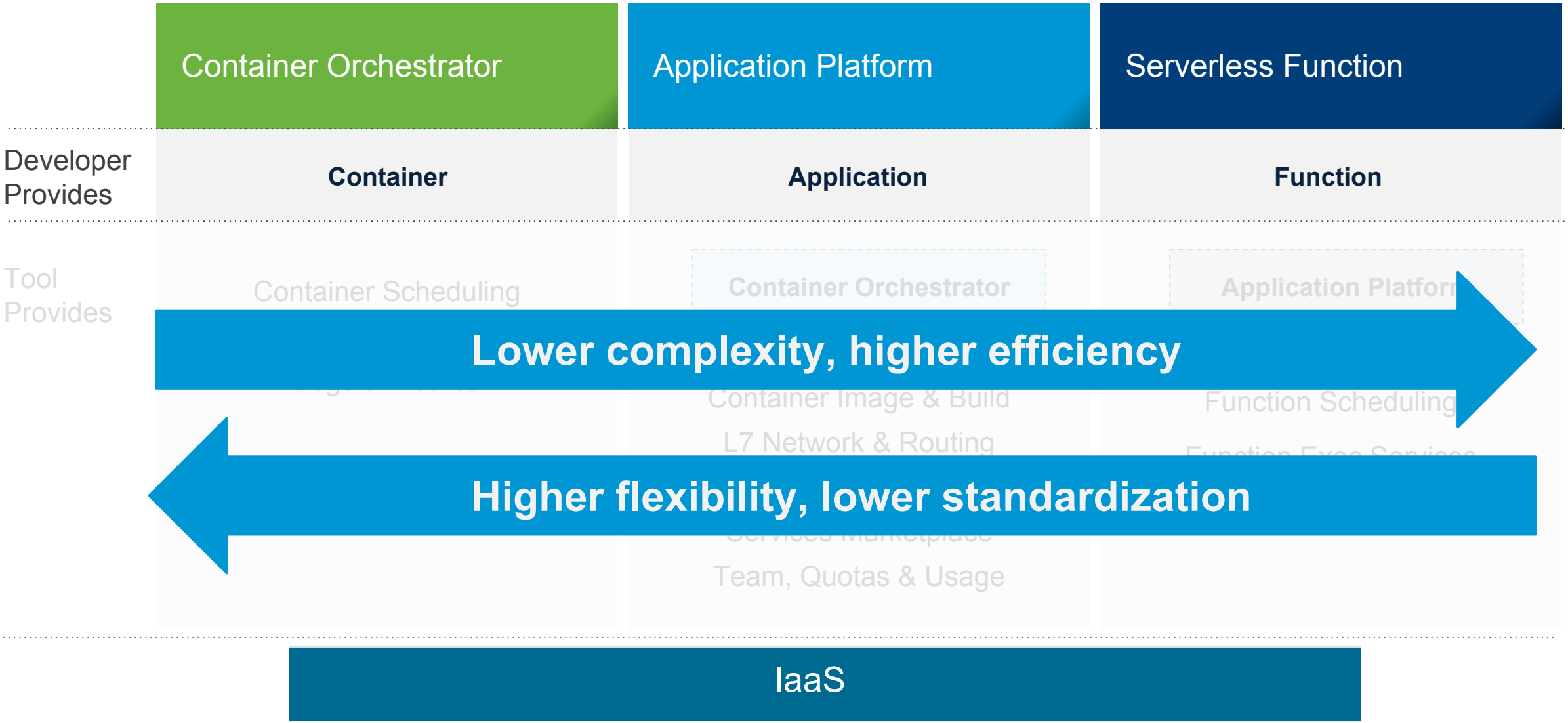

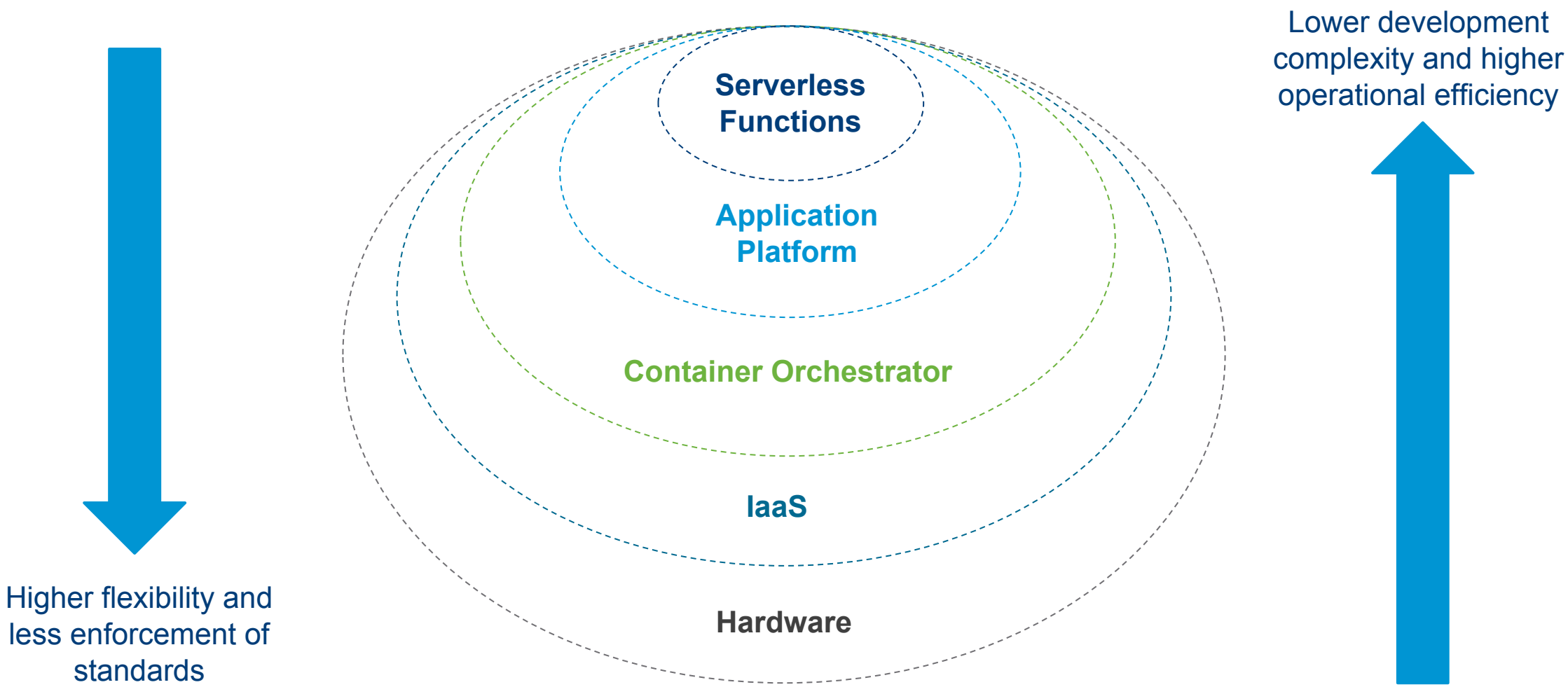

Strategic goal: Push as many workloads as technically feasible to the top of the platform hierarchy

Challenges with Any App

Day 1 – Build (Greenfield)

Development: The team can make progress in developing the core application

CI/CD: CI/CD pipelines drive the testing and promotion of artifacts

Consistency: Provide a consistent setup experience, across different environment configurations.

Setup time: How long does it take to setup a real world working environment? Think hours, not weeks.

Day 2 - Operate & Enhance (Brownfield)

Patches: Patching App and System components as CVEs occur

Scaling: Seamlessly scale of App components to accommodate changing demand.

Upgrades: How do you roll out new versions of the App with the lights on?

Operating Effort: Operating the app should require very few resources and minimum manual intervention. Otherwise, you will be spending lots on operational support!

Containerization is a starting point

Where to Get Started With Moving Workloads to PKS?

Replatforming vs. Modernization for PKS

Lift & Shift / Replatforming

Lift and Shift with "just enough modernization"

You may not have access to the code

Revisit decisions made in Greenfield time
- Around CI/CD process

Get some quick wins through platform capabilities
- Reduced operating and infrastructure cost
- Improved speed to scale
- Faster patching of kernel level vulnerabilities

Modernization

Leverage features in modern cloud platforms by changing existing code
- Blue/Green deploys
- Auto-healing
- Auto-scaling
- Advanced routing/networking automation

Design and build based on known Cloud Native patterns

Longer term investment in the application

Likely you have access to the code

Plus everything mentioned in "replatforming"

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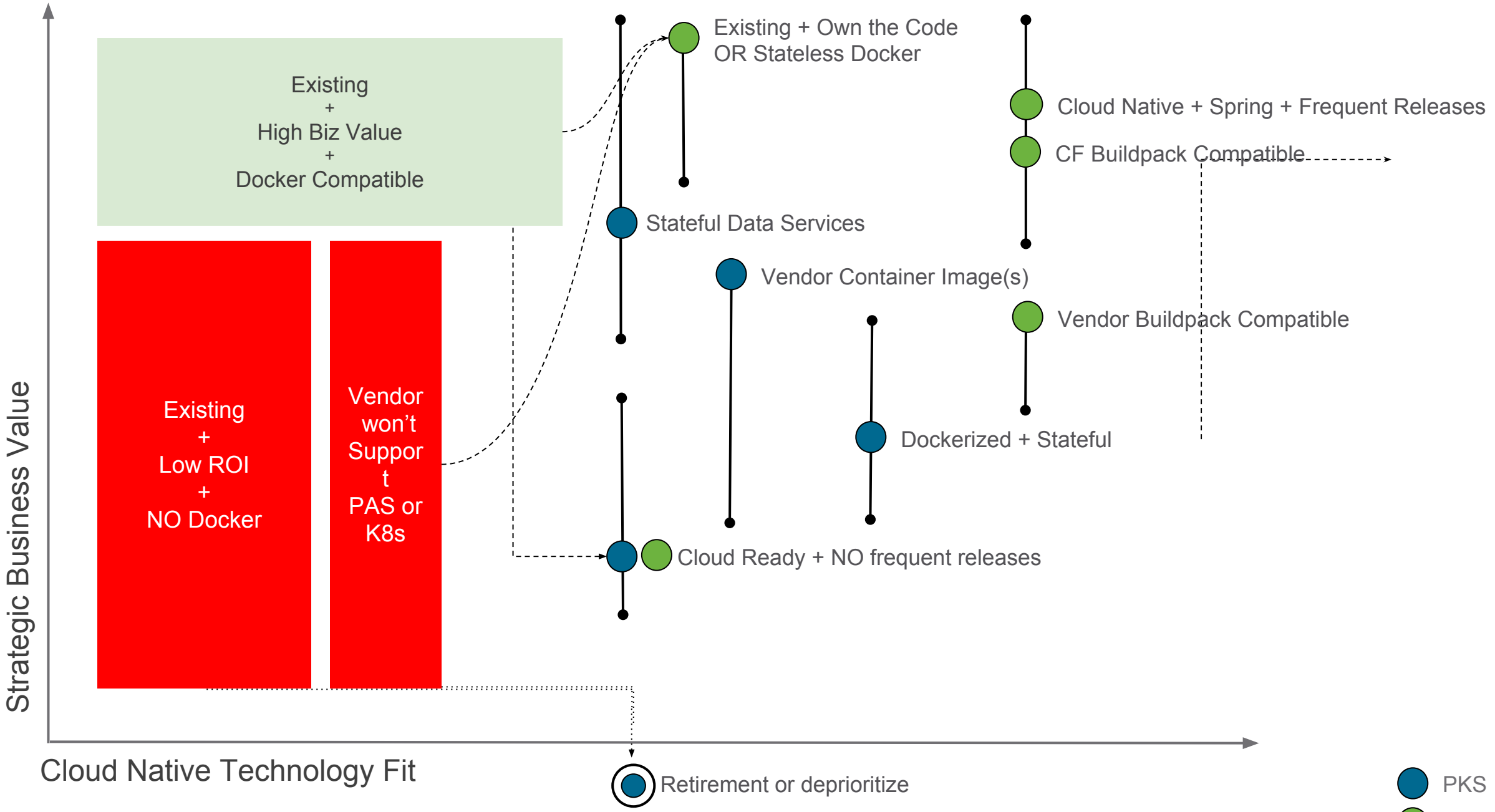
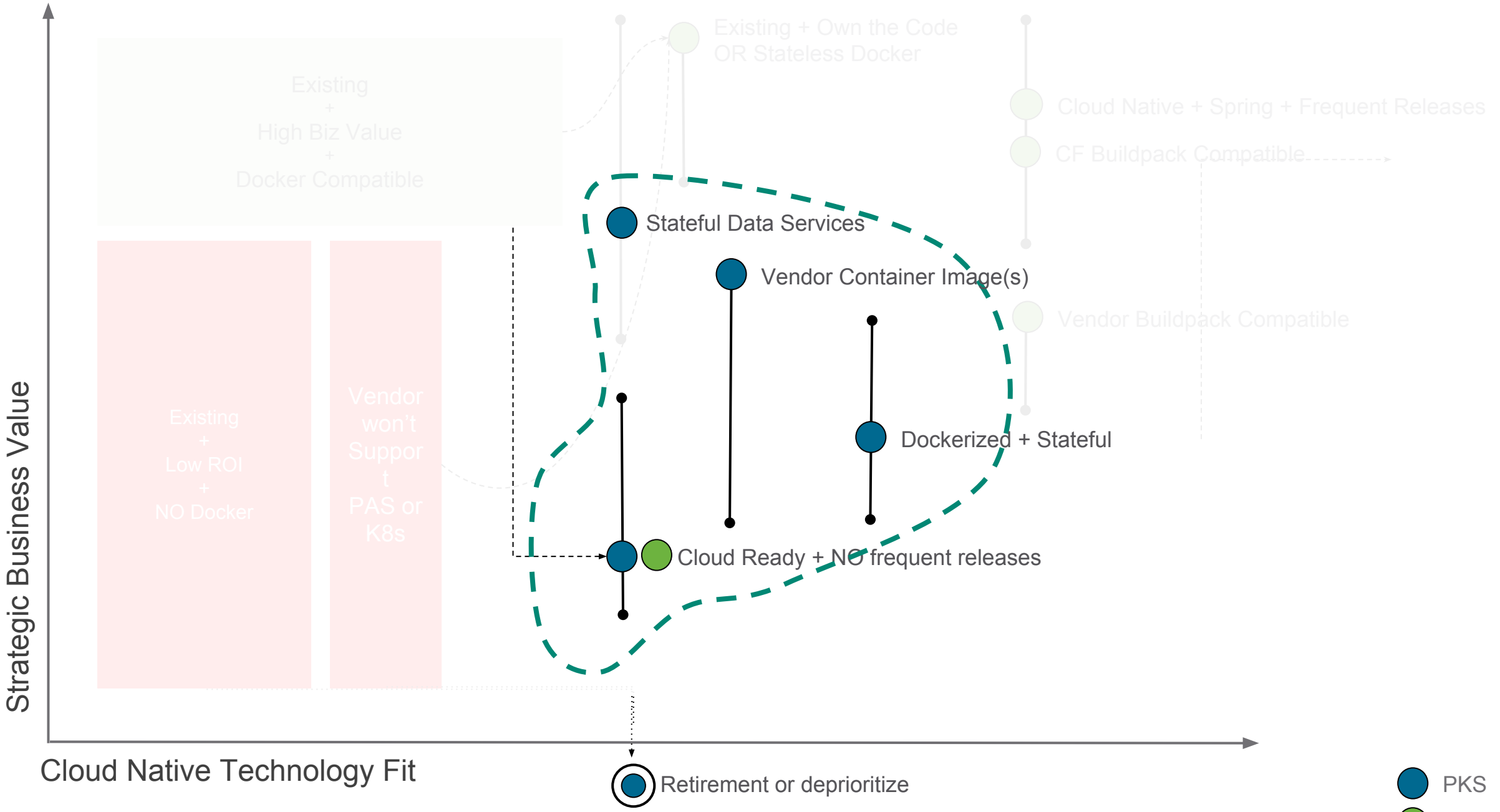
Identify Candidates for PKS

First Round: App Portfolio Identification by Bucket

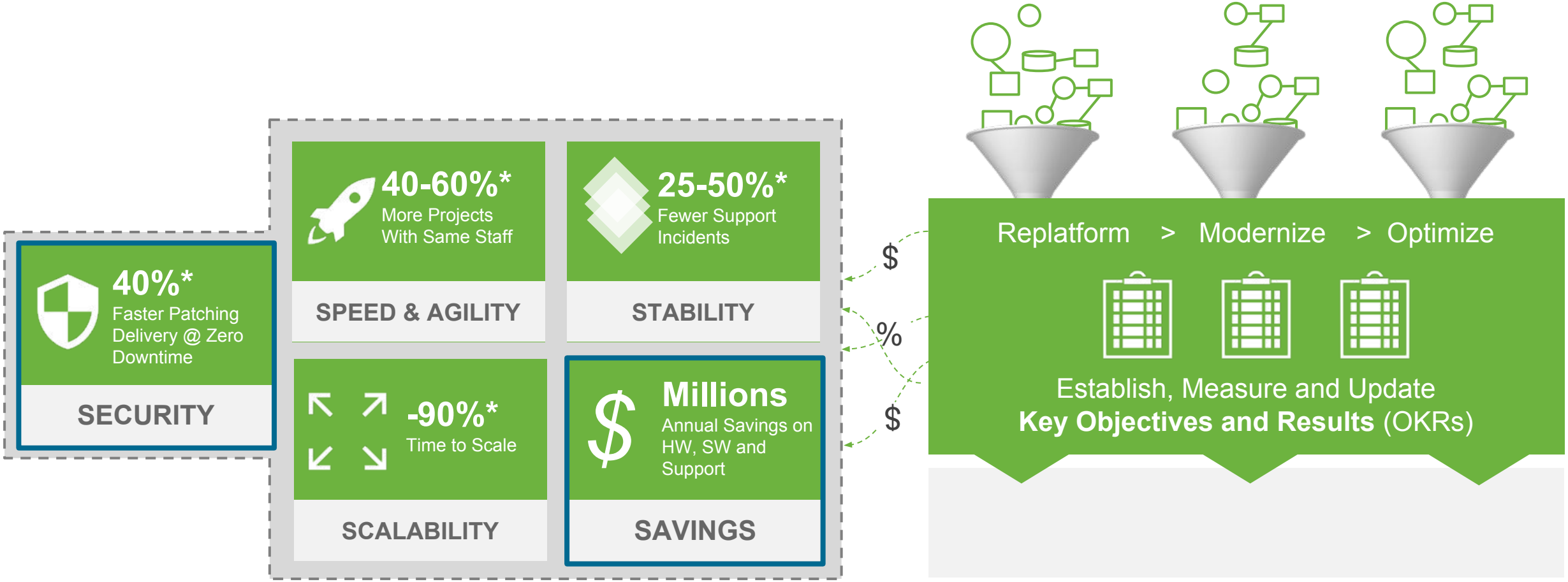
	Bucket 1 Independent Software Vendor (ISV) COTS	**Bucket 2** Middleware Vendor	**Bucket 3** .NET Core or .NET (Windows Server)	**Bucket 4** Legacy Java	**Bucket 5** Modern Java
Application Prioritization Criteria	Vendor provided software (ISV or COTS) or no access to source code	IBM Websphere, Weblogic, Mulesoft, TIBCO etc	3-5 years old	Java (under 7 years old)	Java (Spring / NO Application Server Specific libraries)
	Vendor provides PCF buildpack, docker images or kubernetes artifacts	Vendor provides PCF buildpack, docker images, kubernetes artifacts	Access to source code	Access to source code	Access to source code
	Vendor availability to support the migration	Vendor availability to support the migration	Limited or no Windows dependencies	Linux or Windows Server	Linux Server
	Limited or no access to the code				
Example	Example ISV product. Depends on MySQL DB and stores large files on disk.	Example app that is built on WebSphere. No dependency on WebSphere libraries.	Example app. 4 services built using .NET core and uses Microsoft SQL Server.	Example app uses Java EE, fronted by API gateway ISV product, uses OracleDB.	Example App uses Spring Boot, 6 Microservices, some legacy data sources but there are behind an API.
Application 1 ?					
Application 2 ?					
Application n…?					


Existing
+
High Biz Value
+
Docker Compatible
Existing
+
Low ROI
+
NO Docker
Vendor won't Support PAS or K8s
Existing + Own the Code OR Stateless Docker
Cloud Native + Spring + Frequent Releases
CF Buildpack Compatible
Stateful Data Services
Vendor Container Image(s)
Vendor Buildpack Compatible
Dockerized + Stateful
Cloud Ready + NO frequent releases
Retirement or deprioritize
Strategic Business Value
Cloud Native Technology Fit
PKS
PAS


Existing + Own the Code
OR Stateless Docker
Cloud Native + Spring + Frequent Releases
CF Buildpack Compatible
Existing
+
High Biz Value
+
Docker Compatible
Vendor Buildpack Compatible
Stateful Data Services
Vendor Container Image(s)
Existing
+
Low ROI
+
NO Docker
Vendor won't Support PAS or K8s
Dockerized + Stateful
Cloud Ready + NO frequent releases
Strategic Business Value
Cloud Native Technology Fit
Retirement or deprioritize
PKS
PAS

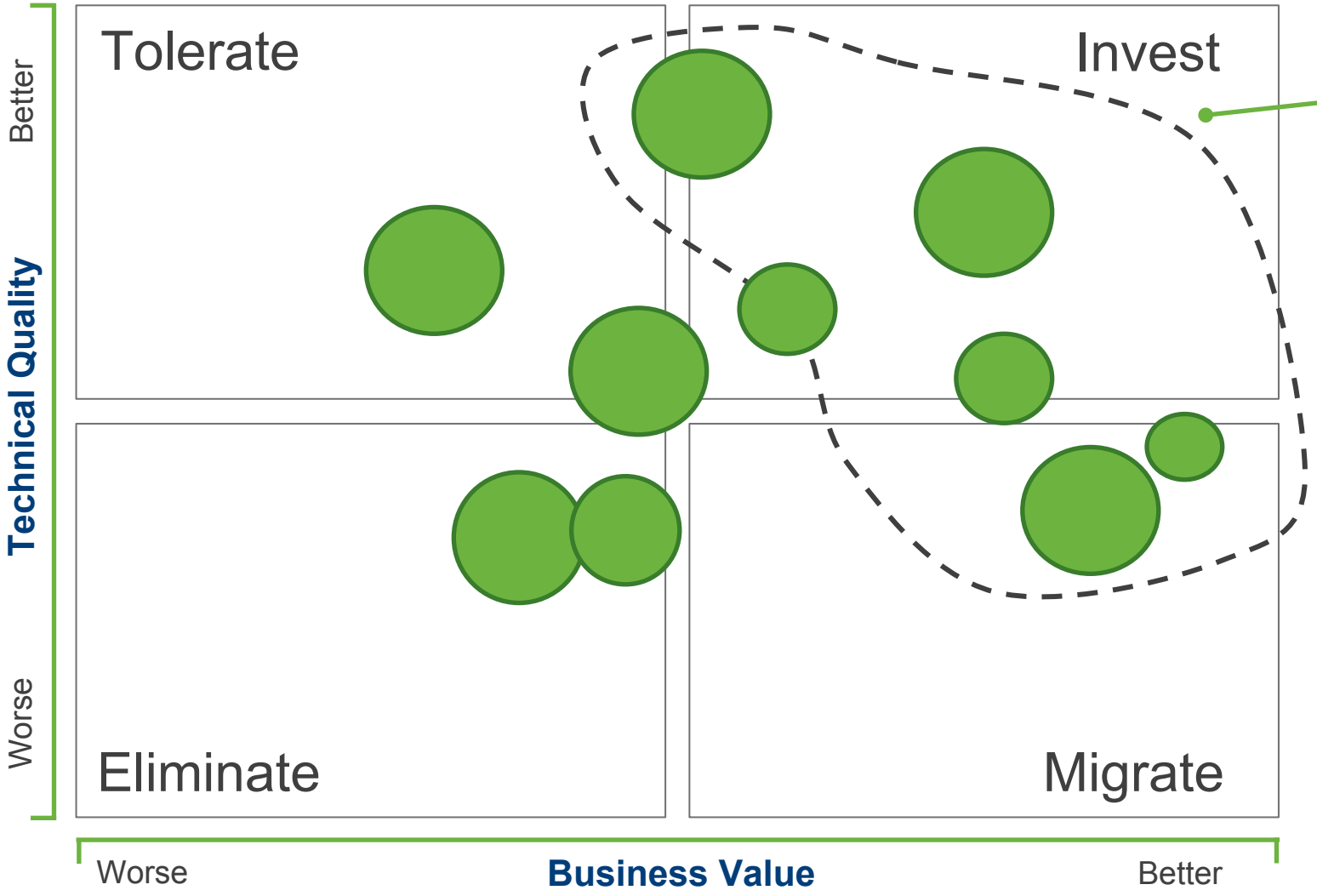
Assess the Value + ROI

How We Think About the Business Case



Platform Value Stream and Metrics

TIME Methodology



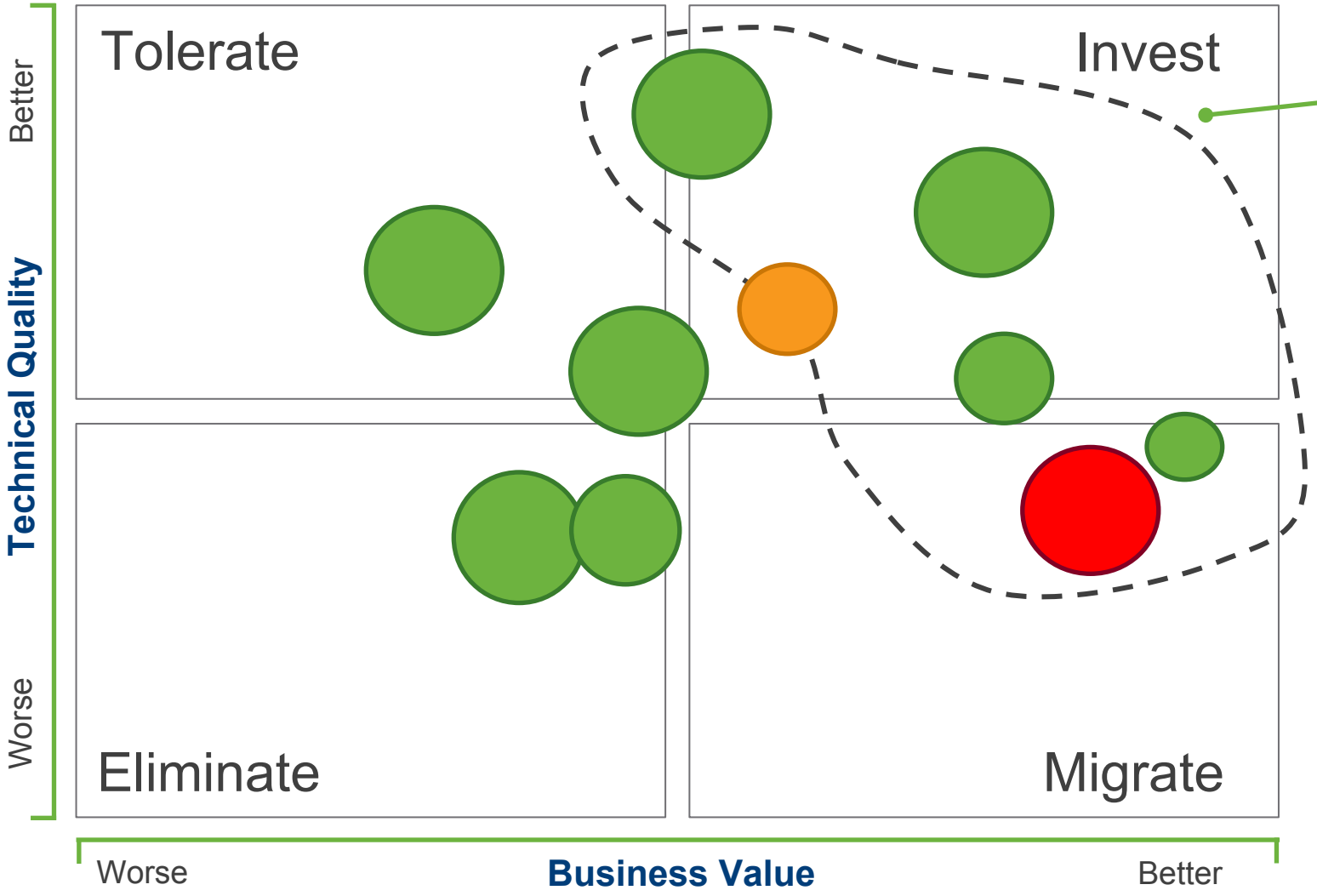
Identify Top 10s list

Technical Quality
Technical Debt Level

Business Value
Revenue / Cost Impact

* Gartner's TIME methodology for Application Portfolio Rationalization

TIME Methodology



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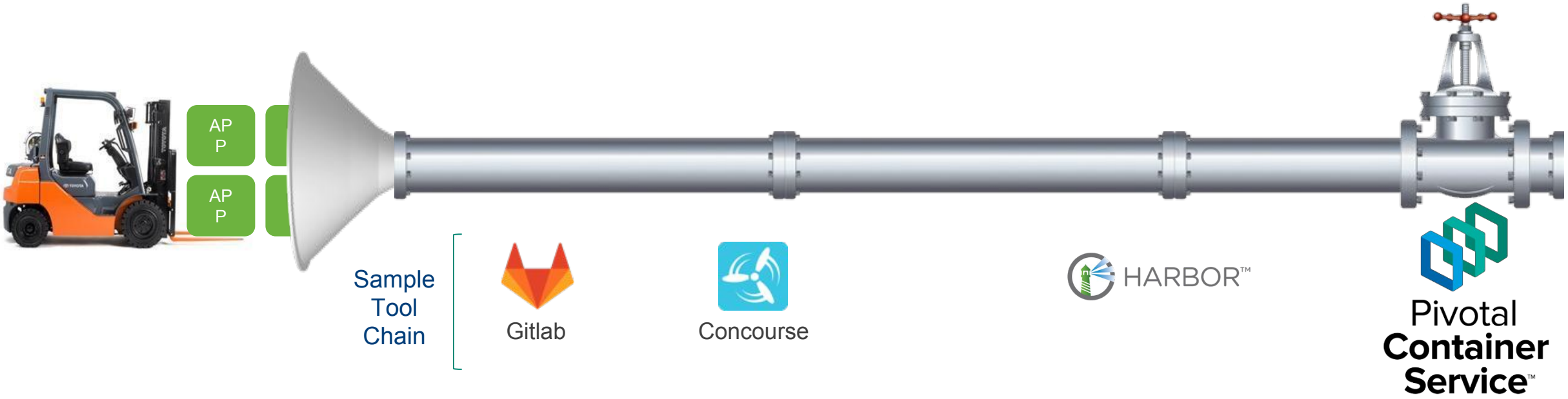
Get Started!

1 Identify 5-10 apps confirmed as suitable to run on PKS

2 Work on a short project to push a few apps *all the way to* prod and measure the ROI metrics



HELM

DOCS

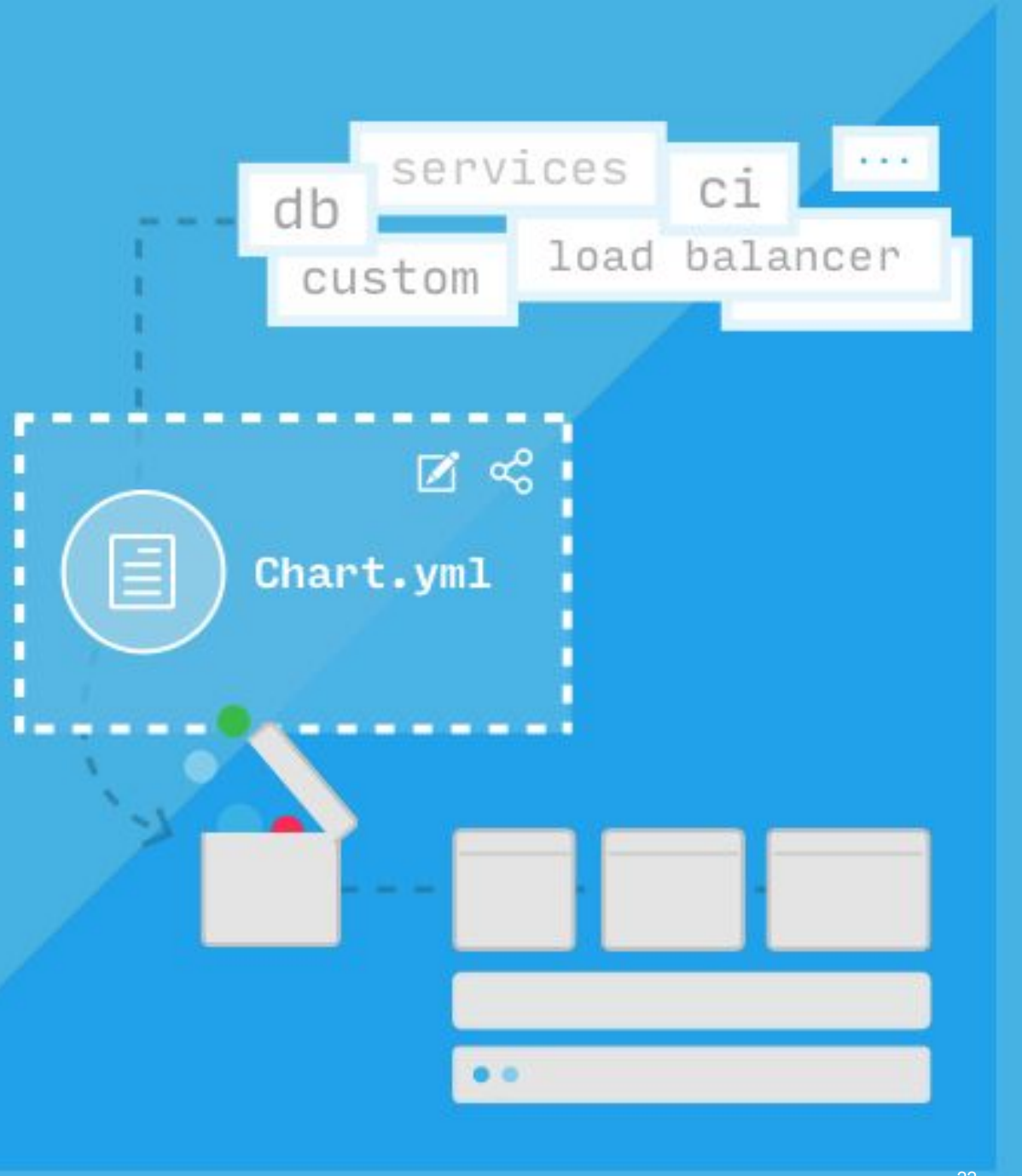
The package manager for Kubernetes

Helm is the best way to find, share, and use software built for Kubernetes.

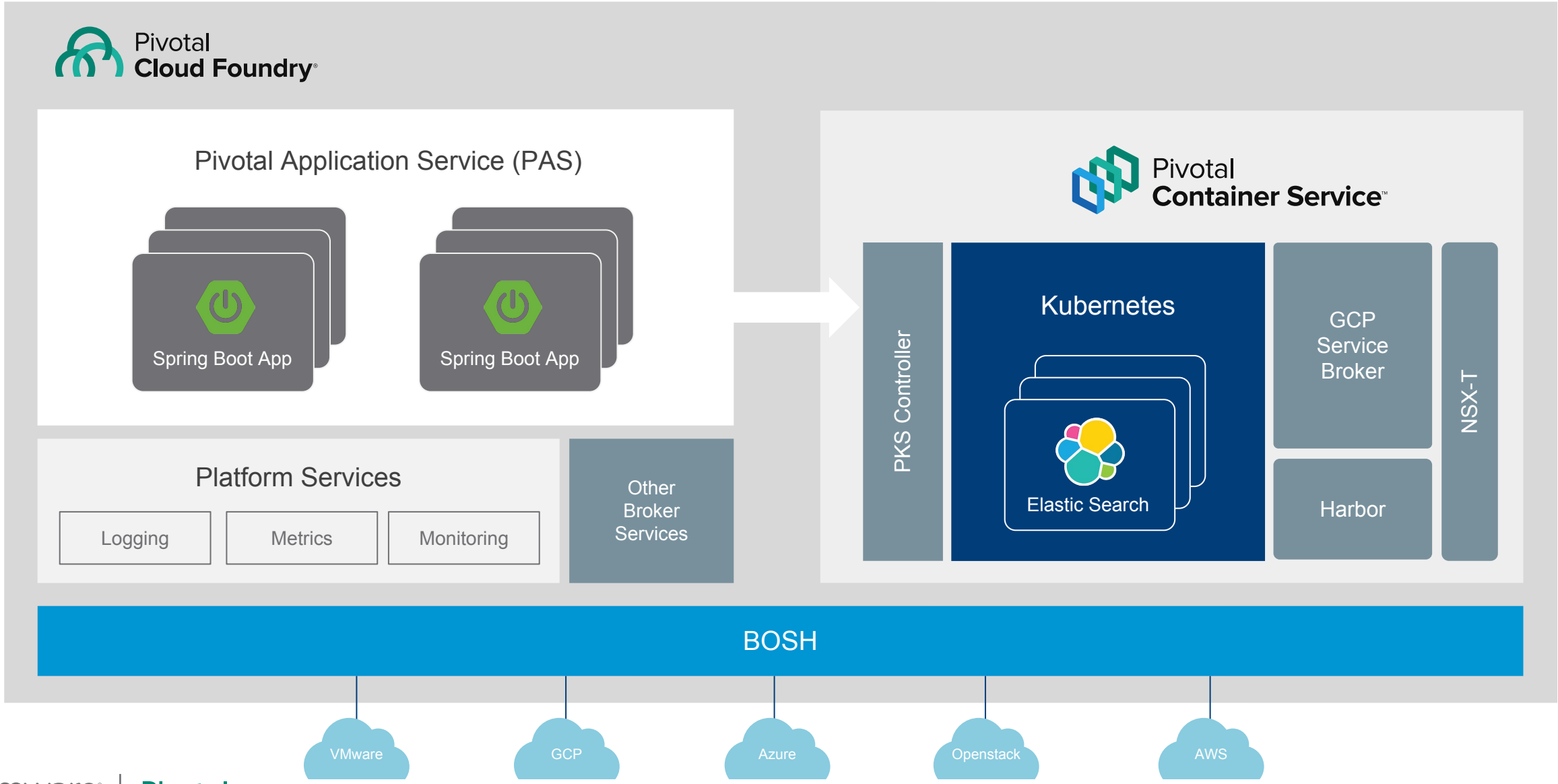
Helm helps you manage Kubernetes applications

Helm Charts helps you define, install, and upgrade even the most complex Kubernetes application.

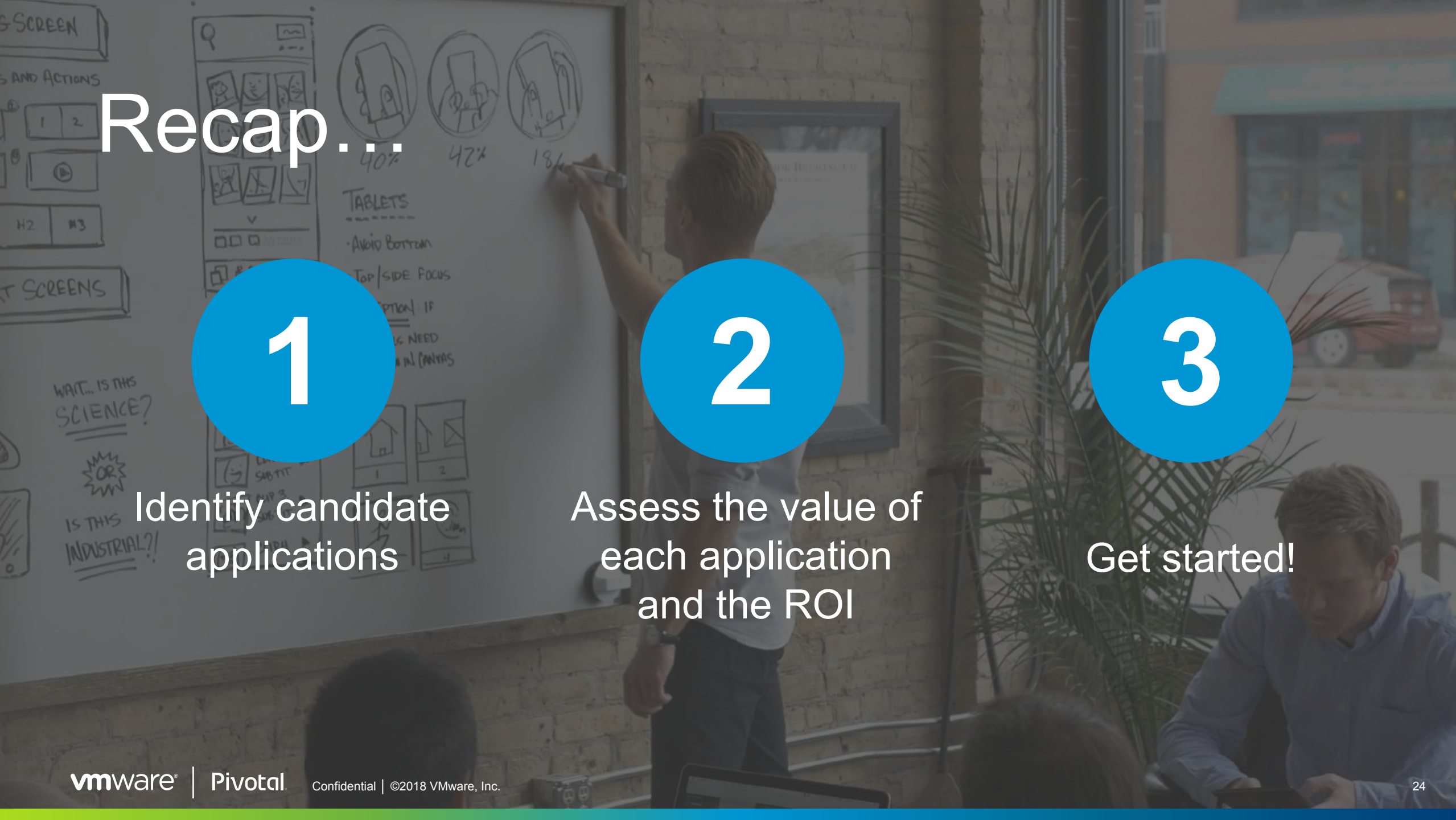
The latest version of Helm is maintained by the **CNCF** - in collaboration with **Microsoft**, **Google**, **Bitnami** and the **Helm contributor community**.



Sample Use Case of PAS + PKS



Recap…



1. Identify candidate applications
2. Assess the value of each application and the ROI
3. Get started!


Thank You