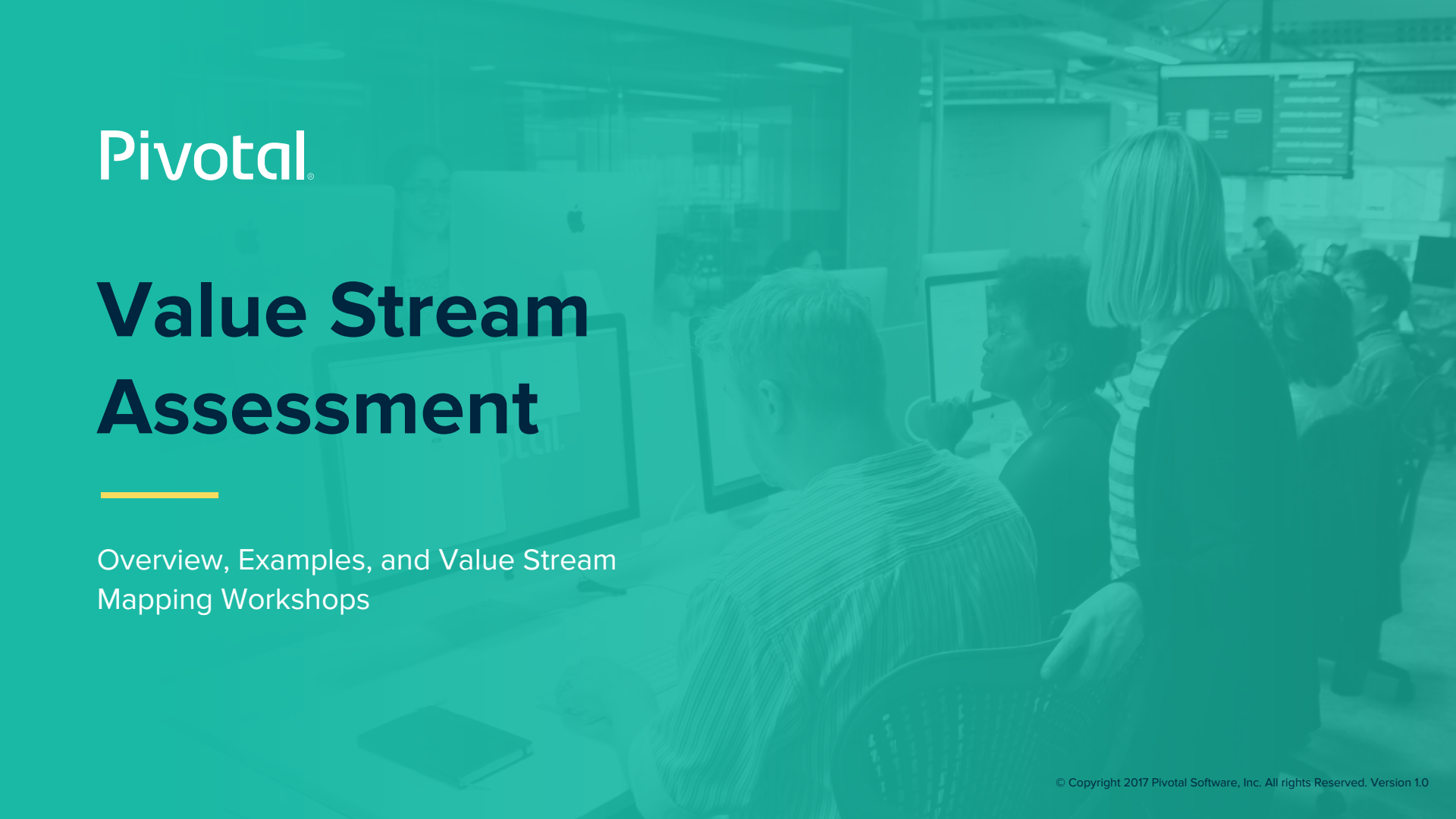
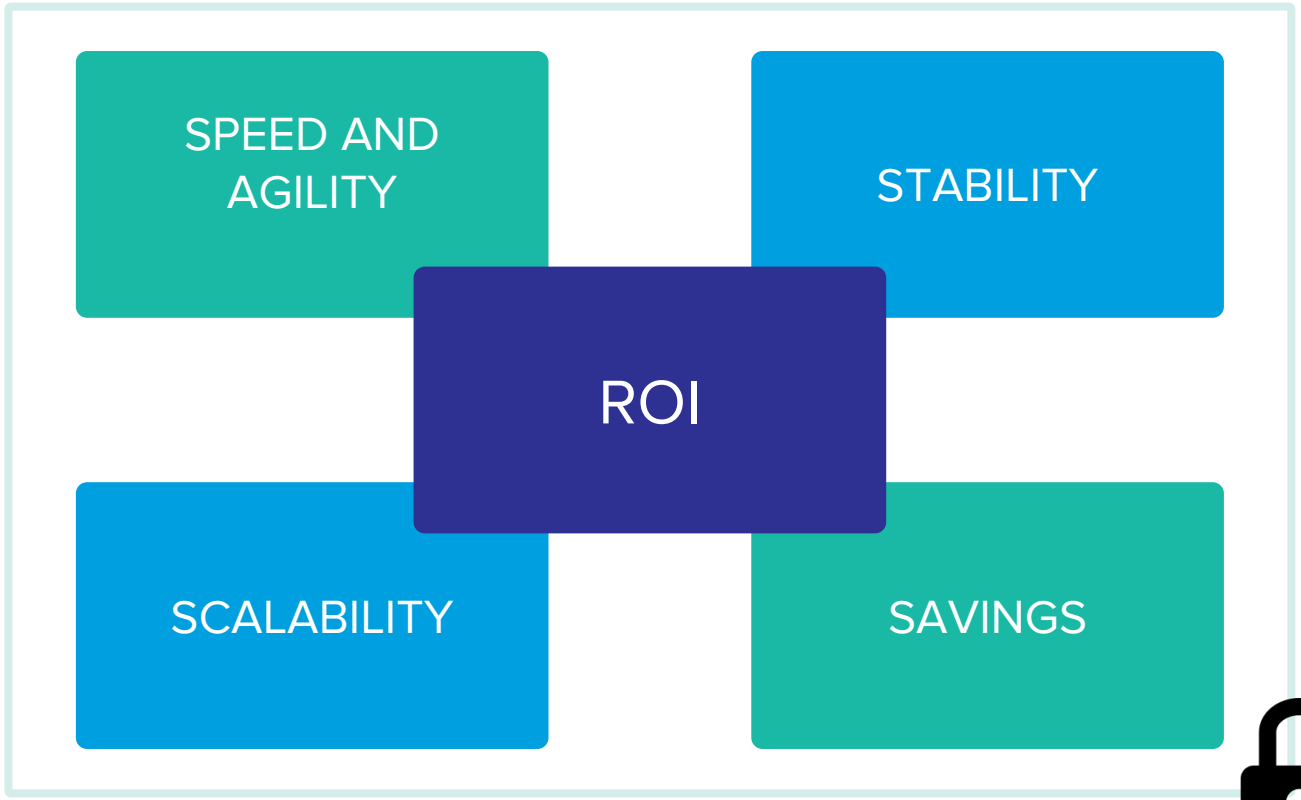
Pivotal

Value Stream Assessment

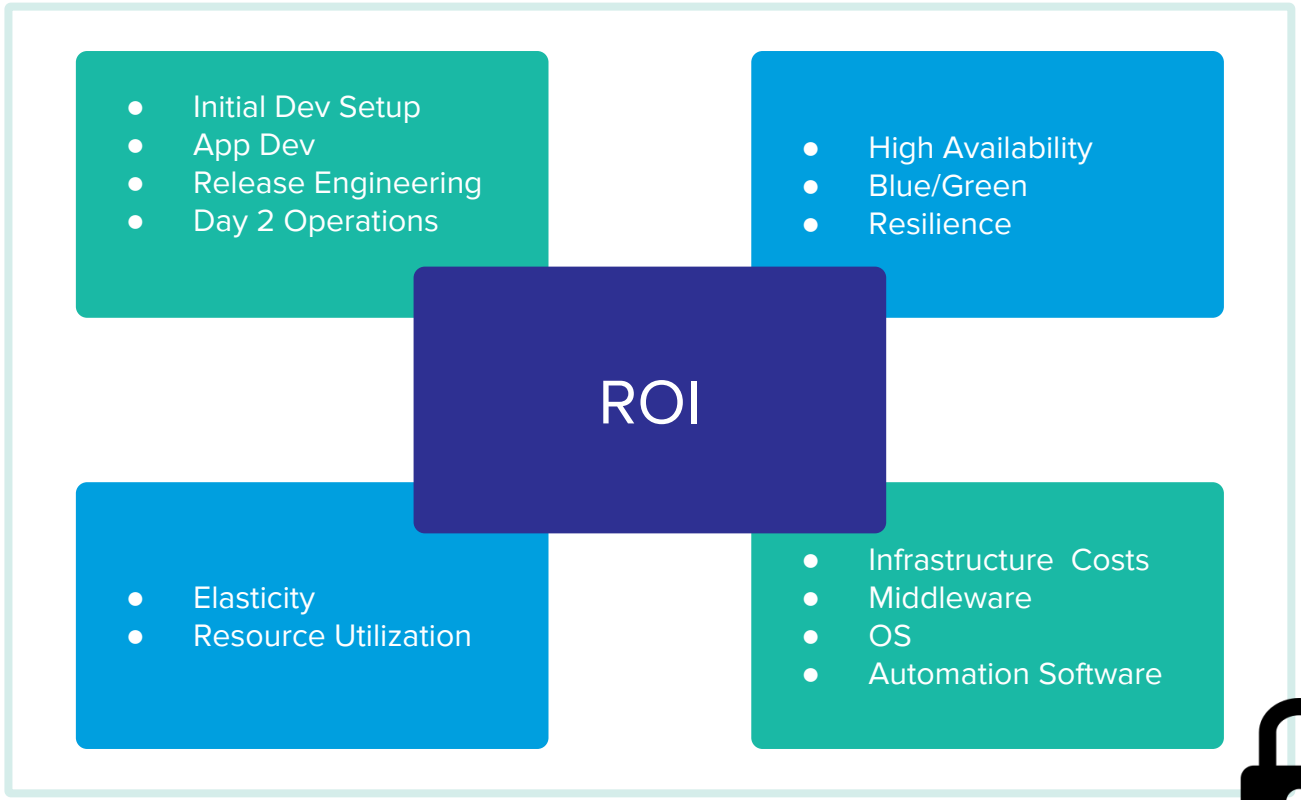
Overview, Examples, and Value Stream Mapping Workshops



Pivotal Cloud Foundry Business Case Categories



Pivotal Cloud Foundry Business Case Categories



Digital Transformation Drivers

PEOPLE

PROCESS

TECHNOLOGY

- Microservices
- Data Services
- CI/CD
- Spring by Pivotal
- Pivotal Container Service (PKS)
- Pivotal Cloud Foundry (PCF)

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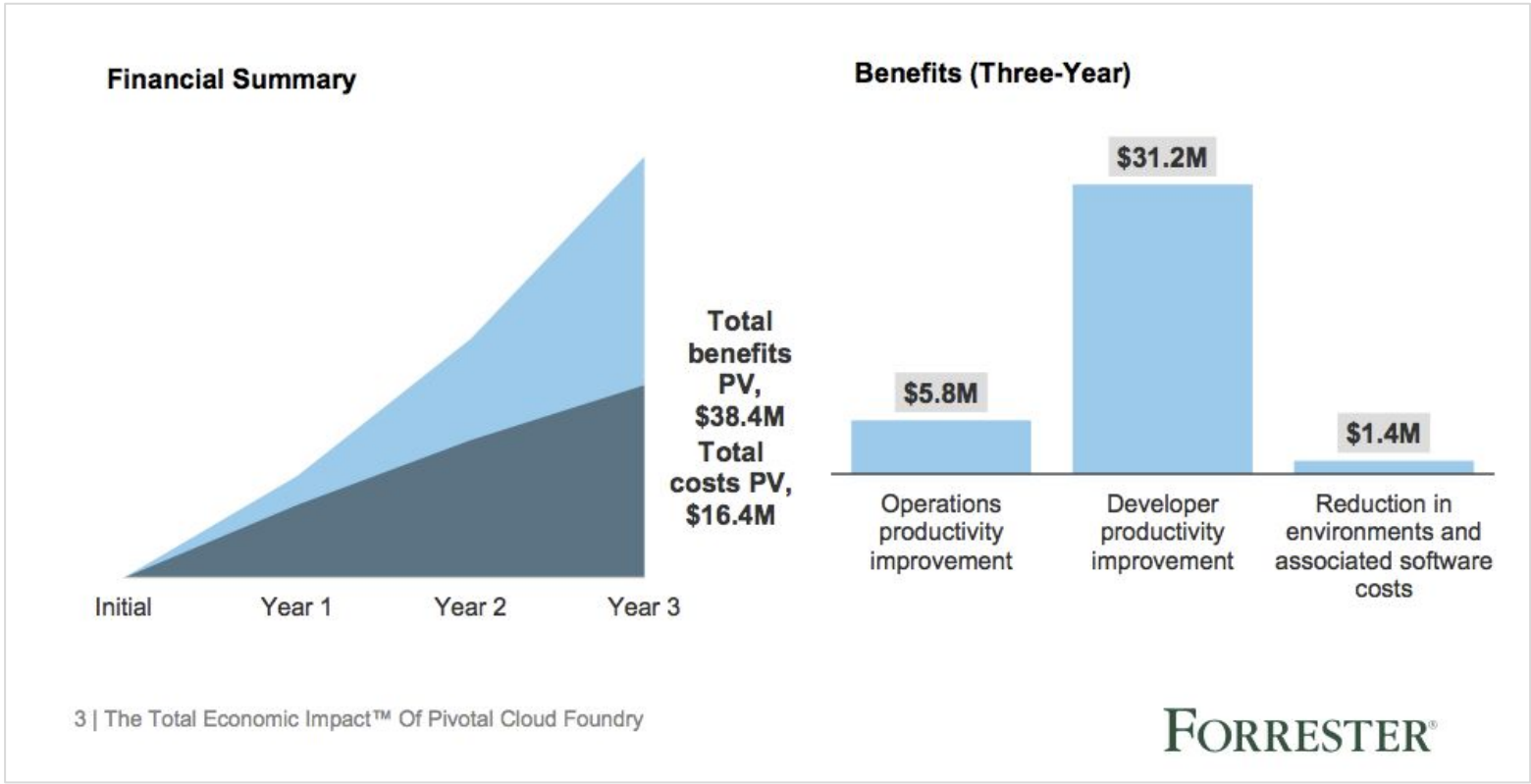
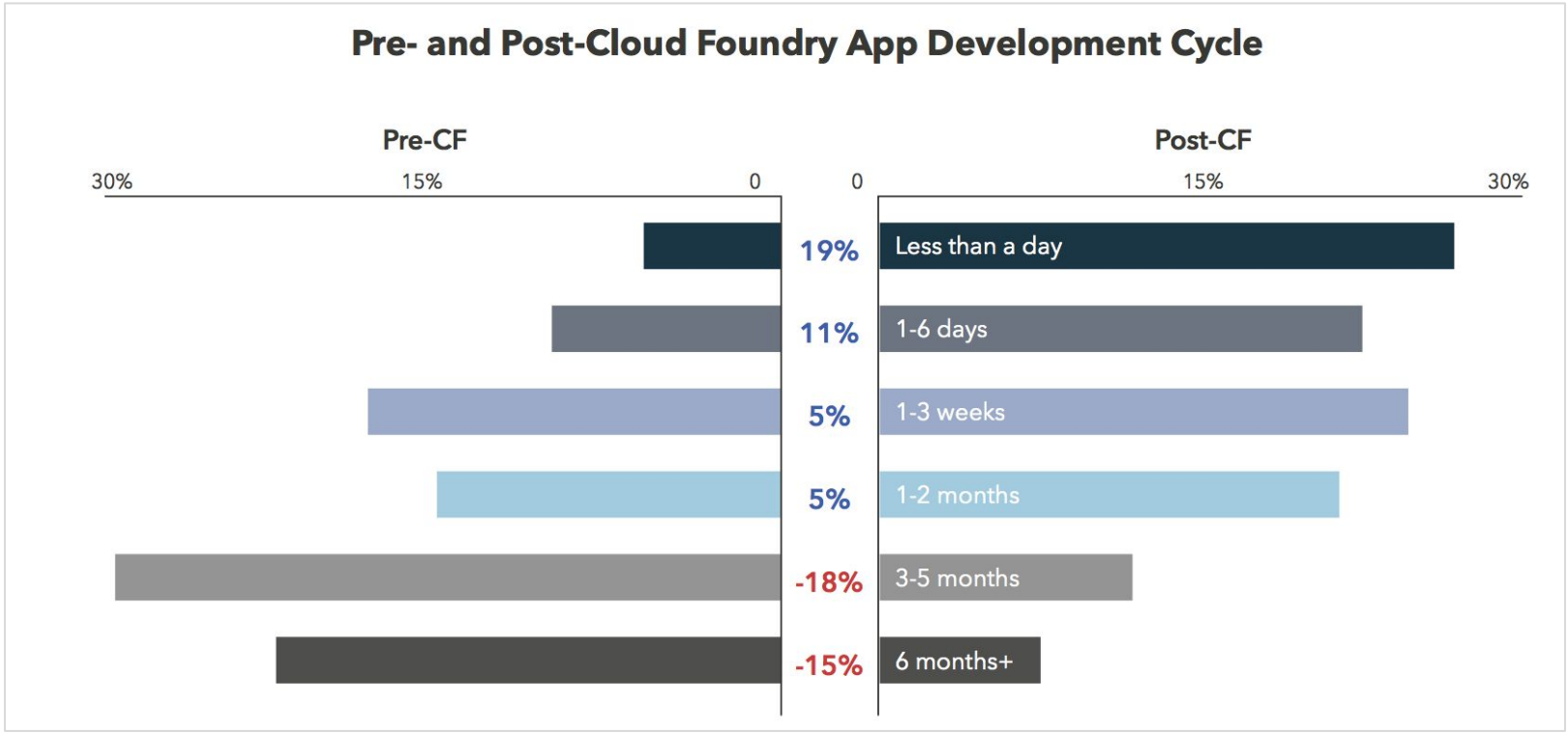
135% ROI in 3 years using Pivotal Cloud Foundry



Pivotal

Source: Forrester Total Economic Impact of Pivotal Cloud Foundry, October 2017

46% of Cloud Foundry users deploy apps in under a week



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Source: Cloud Foundry Application Runtime User Survey, 2017

How does Pivotal help you get there?

Speed

- Self-Service AppDev
- “Just Push” apps
- Microservices
- Self Healing Apps
- Unified apps Metrics & Logs
- CD Pipelines
- Blue/Green

Stability

- Self-Services Ops
- Self Healing Platform
- Multi-cloud
- Root cause
- Multi-tenancy
- Unified Platform/Services Insights
- HA/DR

Scalability

- Zero Downtime App and Platform upgrades
- Elastic and auto scale up/down
- Resource Utilization
- Battle-Tested

Security

- R – Repair
- R – Repave
- R – Rotate
- Public Cloud Ready
- Data Encryption (Rest / in-flight)
- Certifications

Savings

- Operational Efficiency
- Developer Productivity
- Infrastructure Consolidation
- Middleware Takeout
- OS Takeout

Time to Value in Days/Hours instead of Weeks/Months

Pivotal

Ss One Level Down - Metrics by Persona

CIO/CTO

- **Lead Time** across Portfolios
- **Velocity** across Portfolios
- **Num of Releases (S/F) per month** per *active* app
- **% of Apps on a CD pipeline**
- **Average response time** for key apps
- **MTTR** across Portfolios
- **% of systems patched** to latest CVEs

VP of App Dev

- **Lead Time** across a Portfolio
- **Velocity** across a Portfolio
- **Num of Releases (S/F) per month** per *active* app
- **% of Apps on a CD pipeline**
- **% of test coverage**
- **% of auto tests failed**
- **Average response time** for key apps
- **MTTR** across Portfolio

VP of Infra

- **Average response time** for key apps
- **MTTR** across Portfolios
- **% of systems patched** to latest CVEs
- **Lead Time** across Portfolios
- **Key PCF** Platform Metrics

Sample CIO Dashboard

Speed

60 Days
Avg Lead Time

10%
Apps on a CD Pipeline to Prod

500
Stories per week

20
Releases in last month

Stability & Security

15ms
Avg Response Time YTD

60 Mins
MTTR YTD

20%
% of Systems Patched YTD

125 Mins
Total Impacted User Minutes YTD

Liberty Mutual's Rapid & Successful Jump into New Market

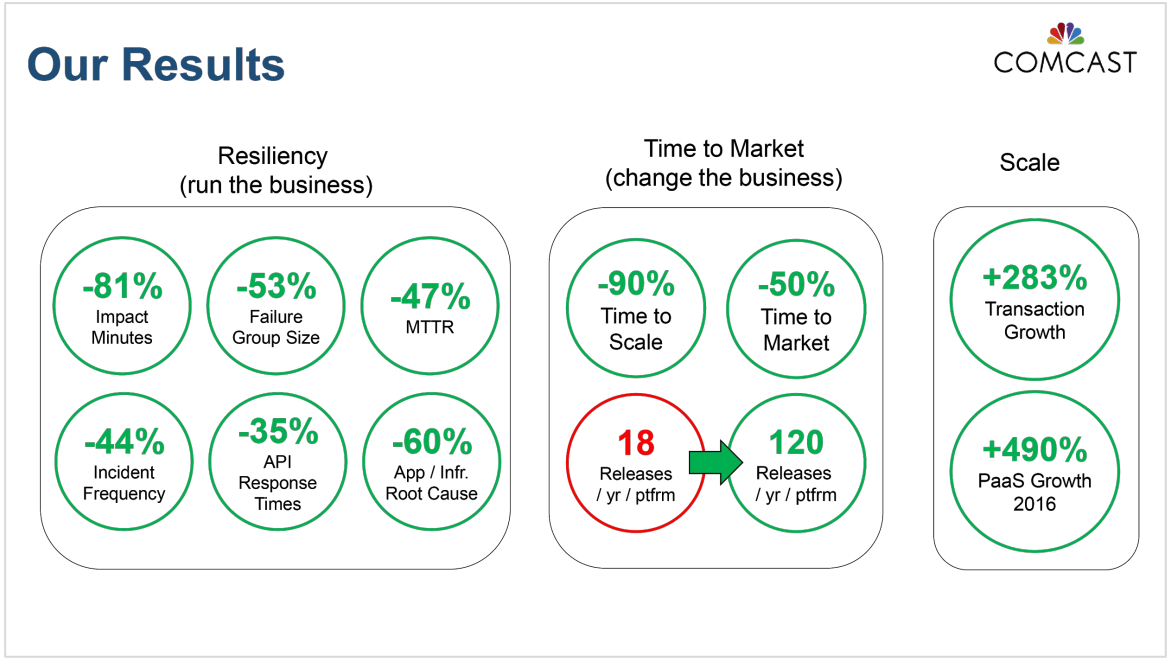
"Every member of our development team has improved their skills in the last six months..."

- Built end-to-end underwriting portal for brokers in 4 weeks (MVP)
- 16 releases in 5 months
- In production in 6 months
- 40% strike rate compared to 20% industry average
- 3 minutes vs. 10 minutes to complete referral
- 199 quotes with 60 bound policies within 3 months in production

Pivotal

Source: Mojgan Lefebvre, CIO, Global Speciality at Liberty Mutual Insurance, CF Summit June 2017

Comcast: Stability, Speed, Scalability with PCF



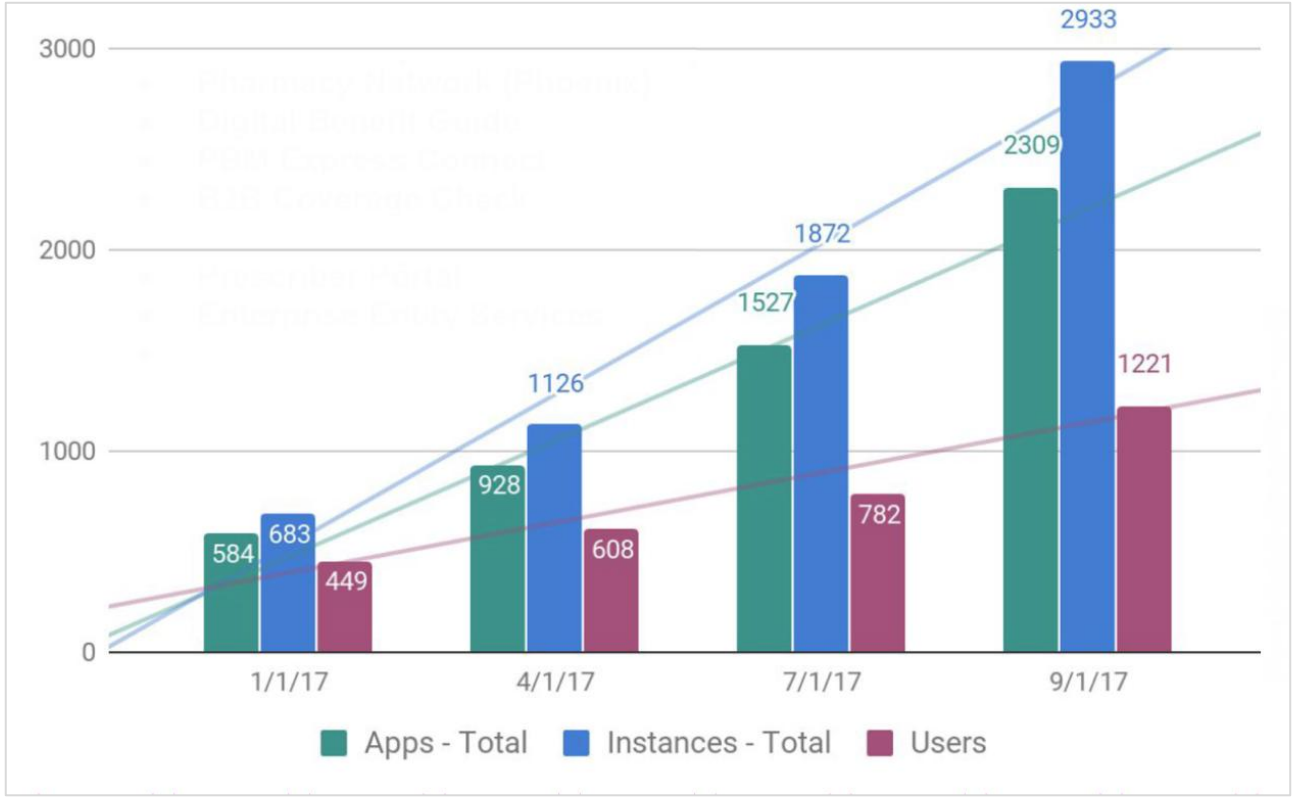
- 1,500+ Developers
- 5,000+ Applications
- 4-6 Operators
- 210M Daily Transactions
- 2X Faster Time to Market
- 80% Better Resiliency
- 10X Faster to Scale
- 25% ‘Oxygen’ increase

Pivotal

Source: Greg Otto, Executive Director, Cloud Services at Comcast, CF Summit June 2017

Apps Delivering Key Outcomes

Fortune 100 Customer in Healthcare Industry



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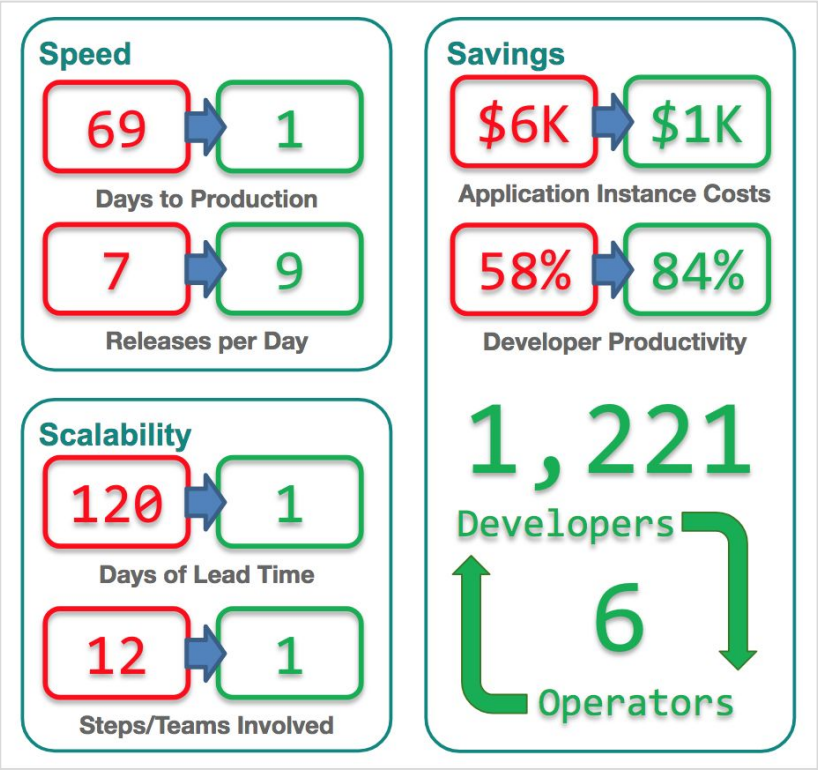
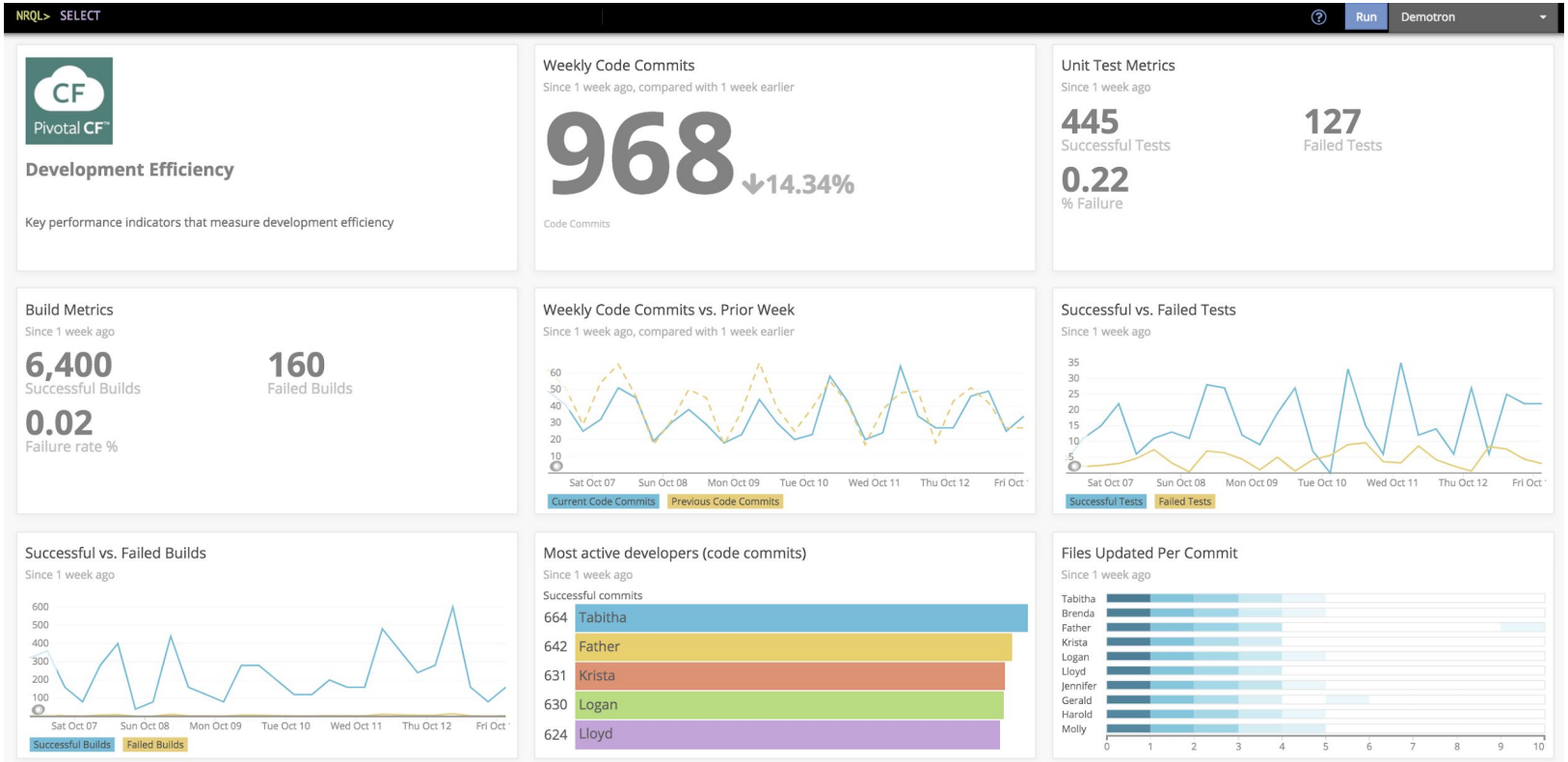
Value Stream Report Card

Fortune 100 Customer in Healthcare Industry



Development Efficiency Dashboard



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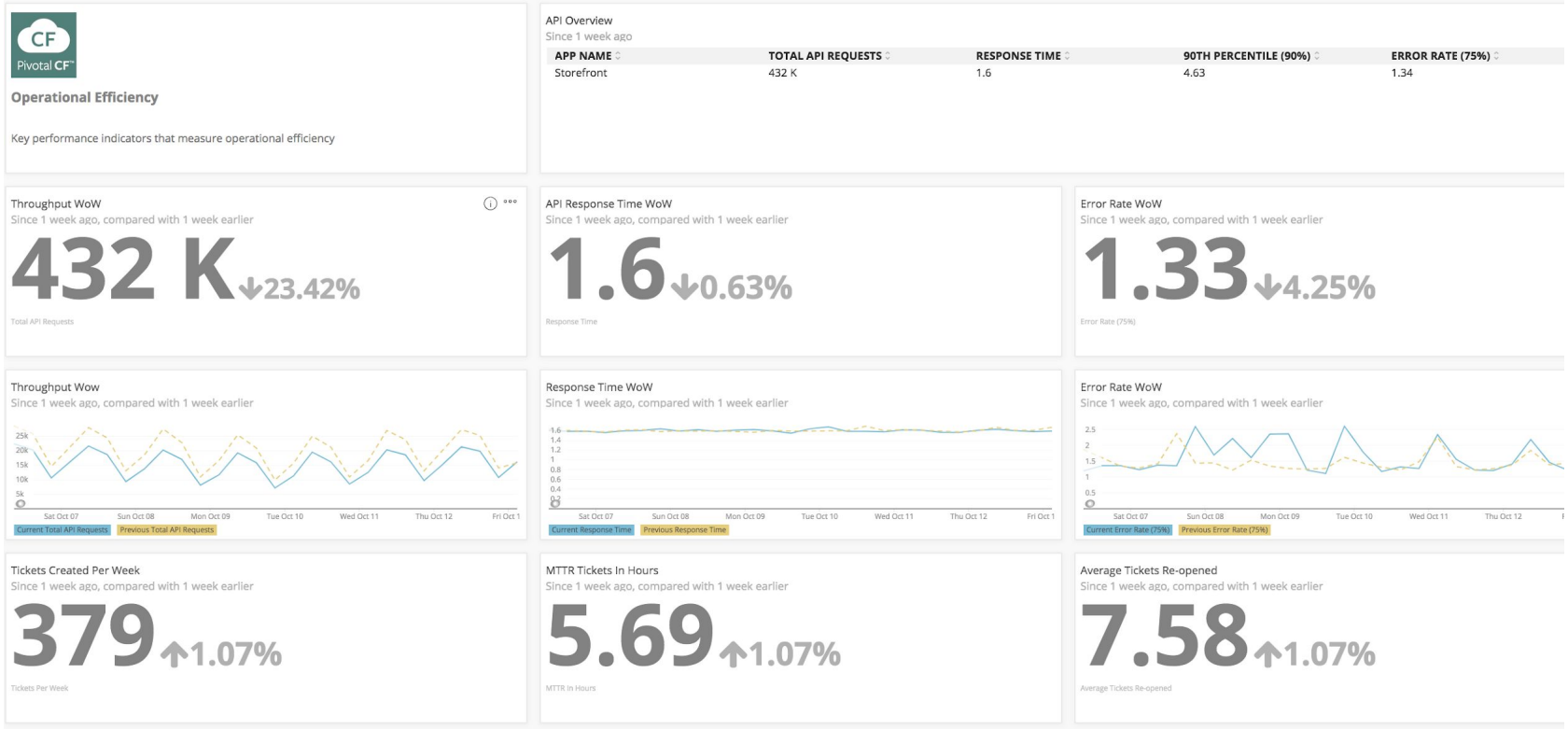
Operational Efficiency Dashboard



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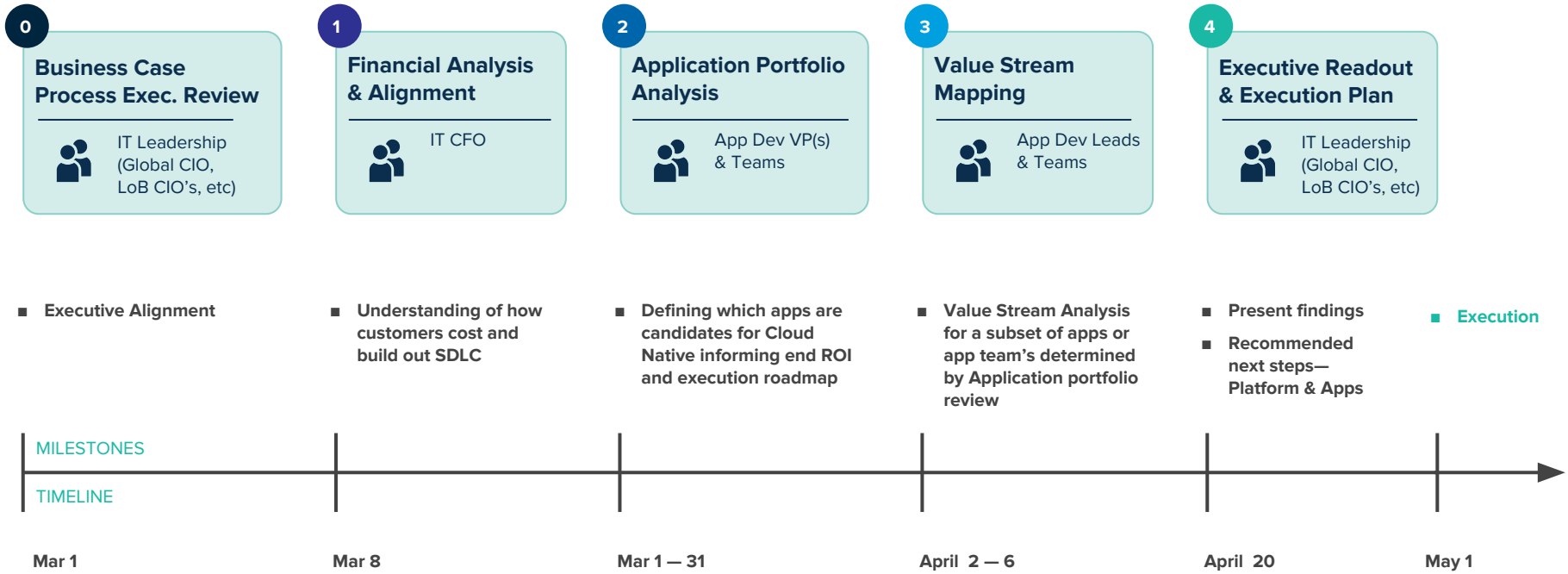
VALUE STREAM ANALYSIS

Process

Process, Required Resources and Timeline



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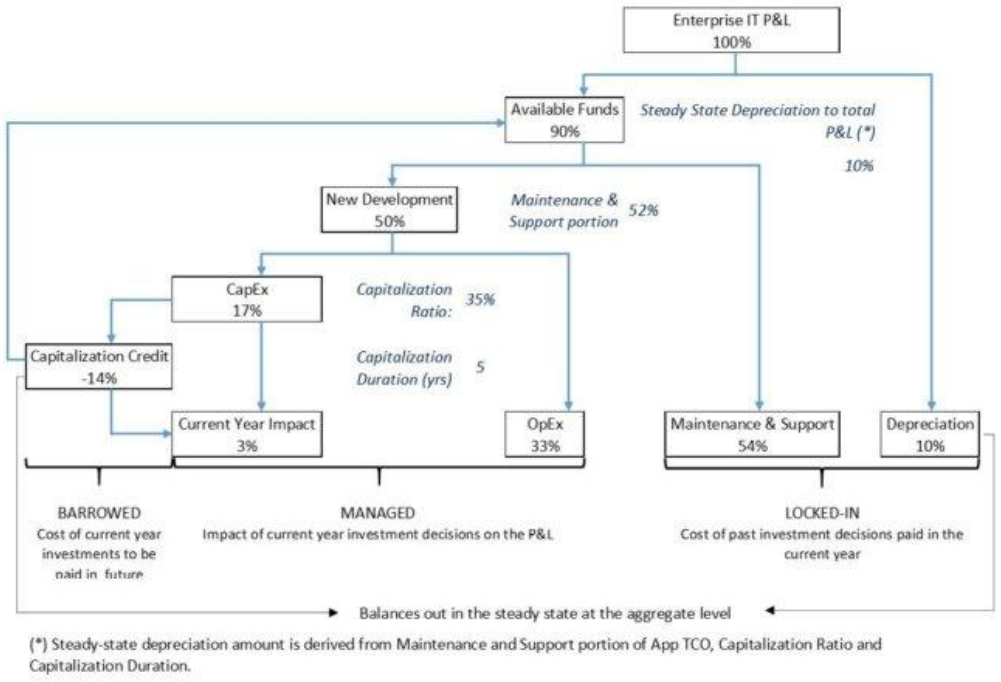
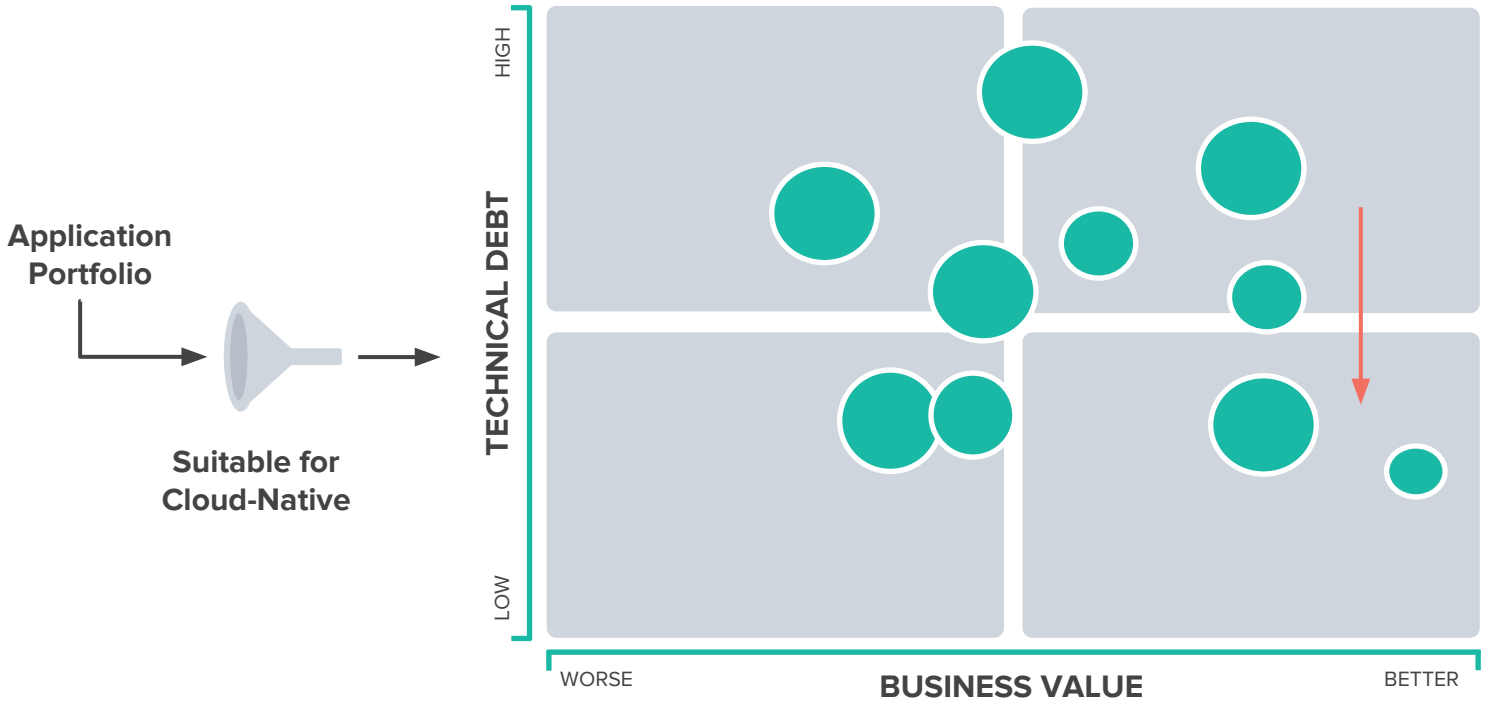
Financial Analysis & Alignment



(*) Steady-state depreciation amount is derived from Maintenance and Support portion of App TCO, Capitalization Ratio and Capitalization Duration.

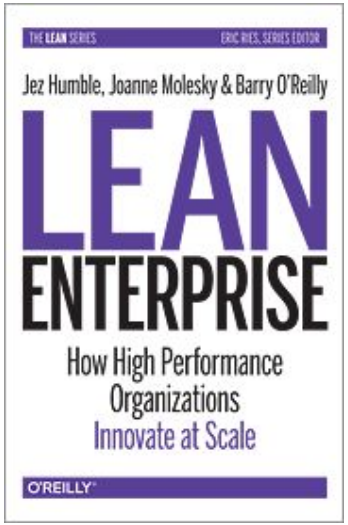
- How does Finance categorize application portfolios?
- Are there financial metrics ROI/NPV used to measure which apps/projects are funded or not?
- How is funding allocated to projects. What is the criteria for acceptance or rejection?
- How is a project's cost modeled and measured (Dev, Operations, Infrastructure, Software, Maintenance, PMO, what else?)?

Looking at an App Portfolio



Value Stream Mapping

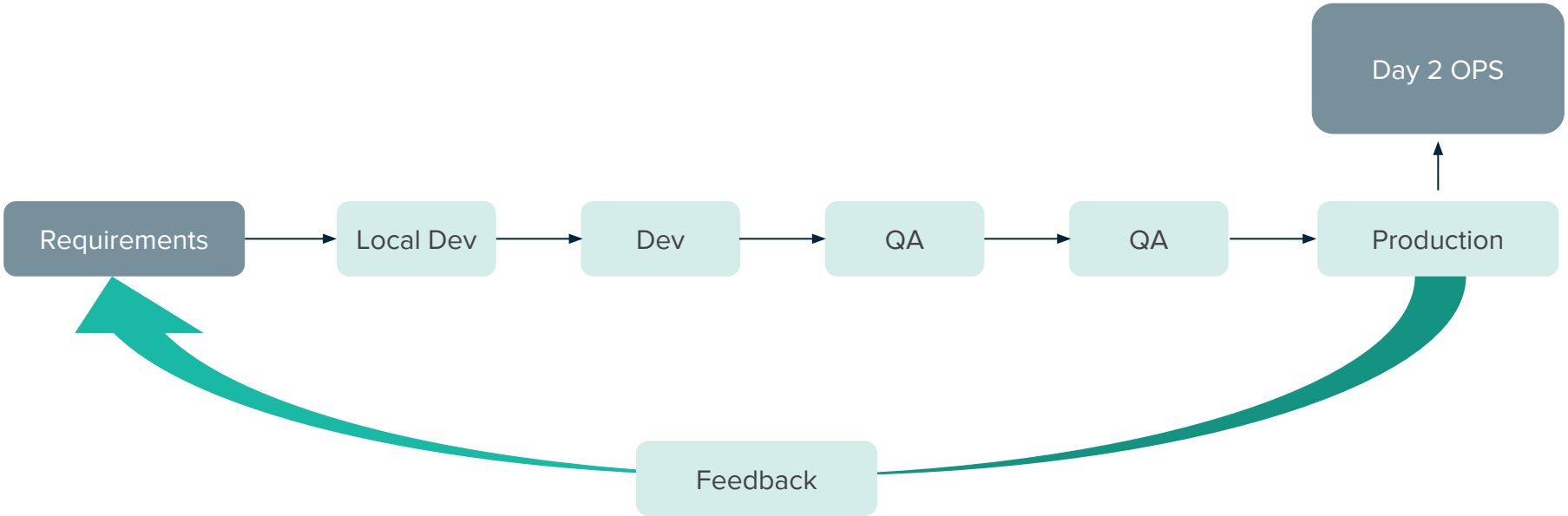
- The best way to understand where problems start is by performing an activity called value stream mapping.
- Every organization has many value streams, defined as the flow of work from a customer request to the fulfillment of that request.
- Each value stream will cross multiple functions within an organization



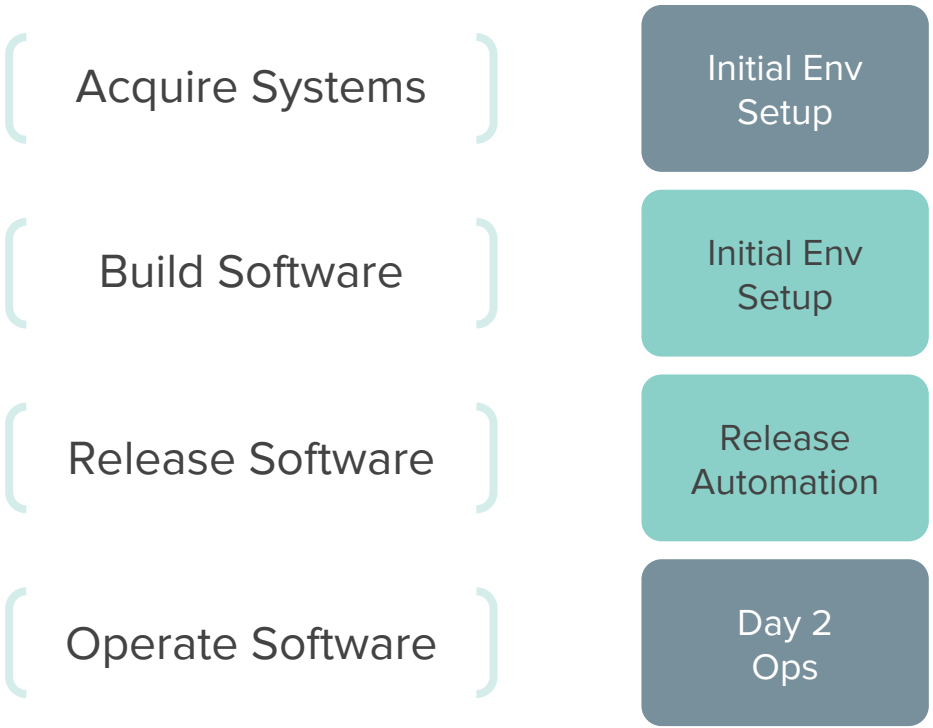
Map out the Development Life Cycle

3 **Value Stream Mapping**

App Dev
Leads & Teams



Break Down the Life Cycle into Four Discrete Areas



Collect Data to Build the ROI Model

3 **Value Stream Mapping**

App Dev
Leads & Teams

Initial Env Setup

- How many environments do you have?
- How long does it take to provision a VM?
- How long after you request a VM can a developer start using it?
- What are the VM sizes, configurations and costs?
- What type of middleware is used? How much does it cost?
- What type of OS is used? How much does it cost?
- Is there a chargeback model in place with Ops?
- How often do you go through the process of Initial Environment Setup?
- ...

Value Stream Mapping

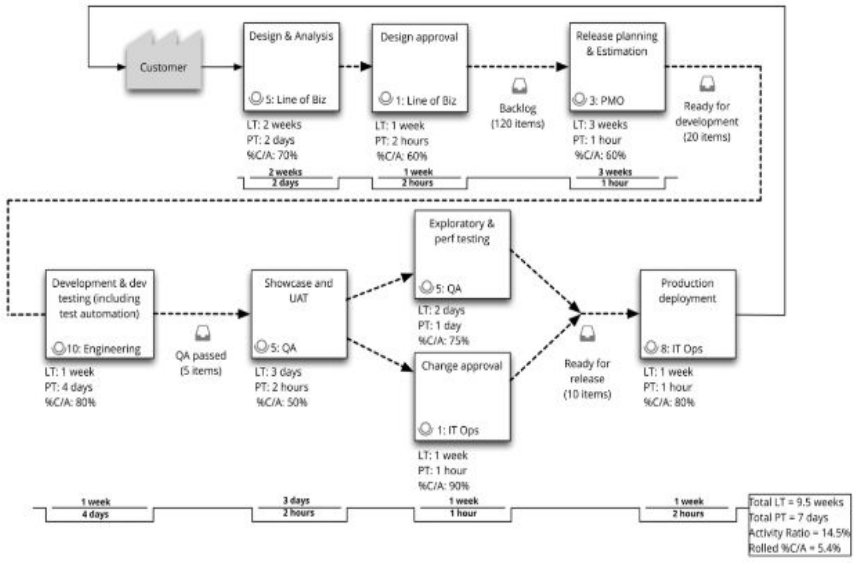
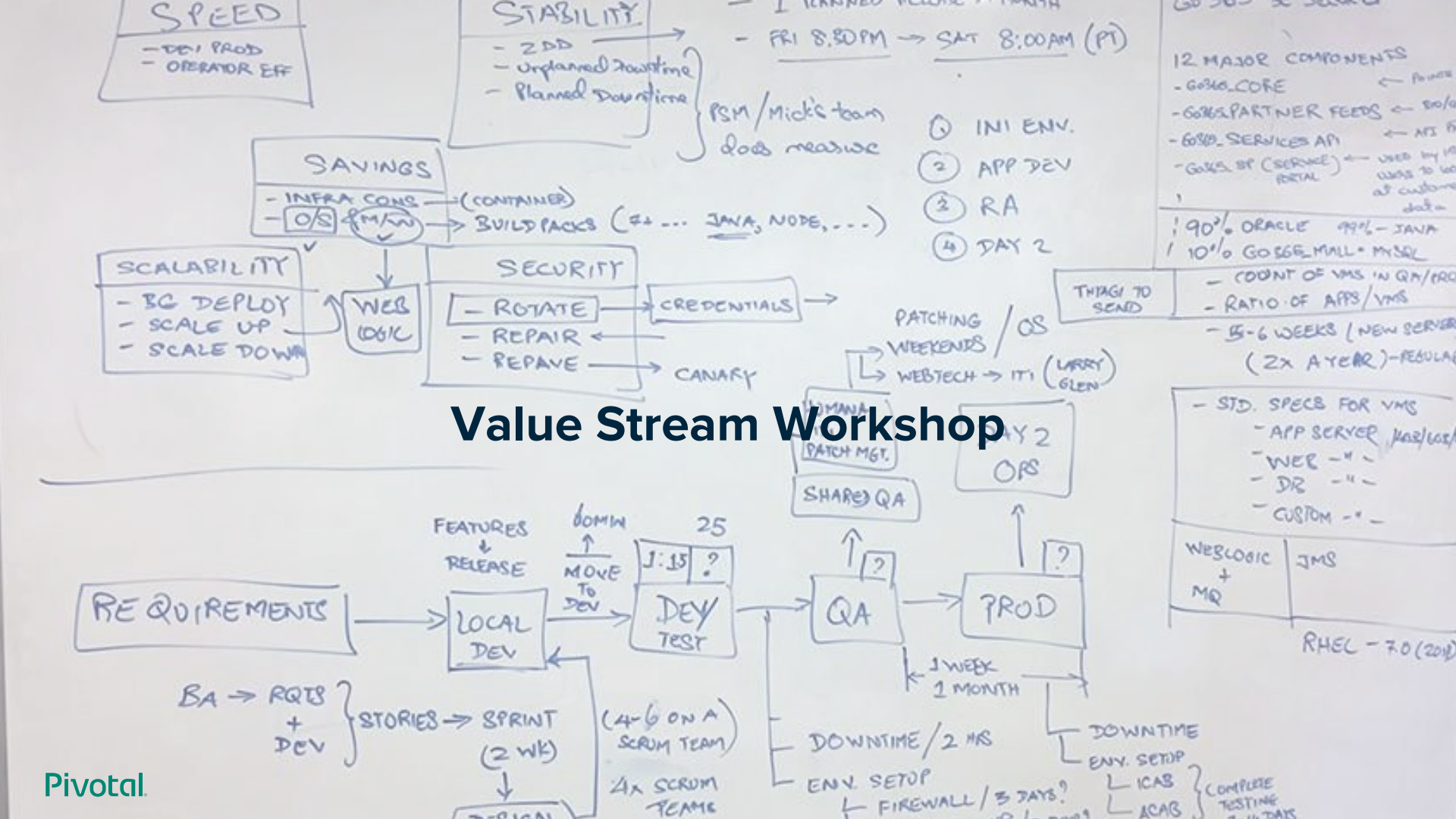


Figure 7-6. Example value stream map of a feature

Step name	Name of the discrete activity
Actor	Name of the team or function that performs the step
Lead time (LT)	Time from the point a process accepts a piece of work to the point it hands that work off to the next downstream process
Process time (PT)	Time it would take to complete a single item of work if the person performing it had all the necessary information and resources to complete it and could work uninterrupted
Optional: Percent complete and accurate (%C/A)	Proportion of times a process receives something from an upstream process that it can use without requiring rework
Optional: Throughput (TP)	The concurrency / queue depth between Steps


SPEED
- DEV PROD
- OPERATOR EFF
STABILITY
- 2DD
- Unplanned Downtime
- Planned Downtime
PSM / Mick's team does massive
- FRI 8:30PM → SAT 8:00AM (PT)
12 MAJOR COMPONENTS
- GO360_CORE
- GO365_PARTNER FEEDS
- GO360_SERVICES API
- GO365_BP (SERVICE RETAIL)
1 INI ENV.
2 APP DEV
3 RA
4 DAY 2
SAVINGS
- INFRA CONS (CONTAINER)
- O/S M/W → BUILD PACKS (JAVA, NODE, ...)
90% ORACLE 99% - JAVA
10% GO365_MALL - MYSQL
SCALABILITY
- BG DEPLOY
- SCALE UP
- SCALE DOWN
WEB LOGIC
SECURITY
- ROTATE → CREDENTIALS
- REPAIR
- REPAVE → CANARY
THYAGI TO SEND
- COUNT OF VMS IN QA/PRO
- RATIO OF APPS/VMS
- 5-6 WEEKS (NEW SERVER
(2x A YEAR) - REGULA
PATCHING / OS
WEEKENDS
WEBTECH → IT1 (LARRY GLEN)
- STD. SPECS FOR VMS
- APP SERVER
- WEB -"-
- DR -"-
- CUSTOM -"-
WEBLOGIC + MQ
JMS
RHEL - 7.0 (201
MANA PATCH MGT.
SHARED QA
DAY 2 OPS
Value Stream Workshop
REQUIREMENTS
FEATURES RELEASE
DOMIN MOVE TO DEV
25
1:15 ?
LOCAL DEV
DEV TEST
QA
PROD
1 WEEK 1 MONTH
BA → RQTS + DEV
STORIES → SPRINT (2 WK)
(4-6 ON A SCRUM TEAM)
4x SCRUM TEAMS
DOWNTIME / 2 HRS
ENV. SETUP
FIREWALL / 3 DAYS?
DOWNTIME
ENV. SETUP
ICAB
ACAB
COMPLETE TESTING

Pivotal

Data Capture for ROI

3 **Value Stream Mapping**

App Dev
Leads & Teams

Current State

Step	Actor	LT (weeks)	PT (hours)	%C/A	Throughput
Requirements	LoB				
Request Resources	Dev	12	2	70%	
Provision VMs	Ops	1	1	60%	
Install OS	Ops	1	1	60%	100
Install/Config Middleware	Dev	0.2	2	50%	5
Configure Network	Networking	1	1	75%	
Configure Storage	Ops				
Configure Load Balancing	Networking	1	1	80%	10
Configure Monitoring	Ops	2	2	90%	
Readiness/DR Testing	Ops				
Build and Provision Env	Dev	0.2	2	80%	
Throughput	5				
Total LT	16.2	weeks			
Total PT	6.25	days	$0		
Activity Ratio	7.72%				
Rolling %C/A	7.56%				

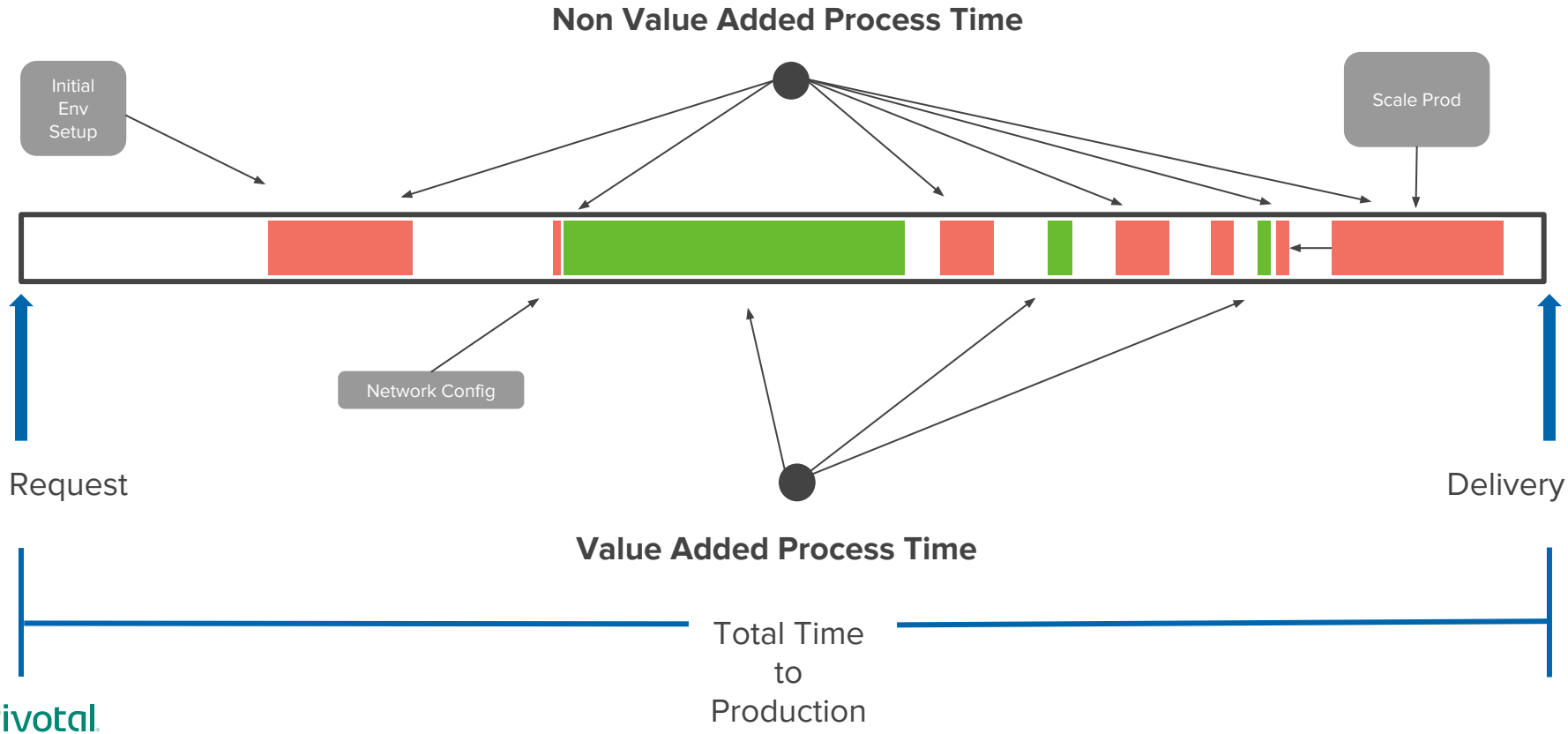
PCF Enabled

Step	Actor	LT (weeks)	PT (hours)	%C/A	Throughput
Requirements	LoB				
Request Resources	Dev	0.2	2	70%	
Provision VMs	Ops	0.2	1	95%	
Install OS	Ops	0.02	0.08	100%	100
Install/Config Middleware	Dev	0.02	0.08	100%	5
Configure Network	Networking	0.02	0.08	100%	
Configure Storage					
Configure Load Balancing	Networking	0.02	0.08	100%	10
Configure Monitoring	Ops	0.02	0.08	100%	
Build Environment	Dev	0.02	0.08	100%	
Throughput	5		Improvement		
			%	improvement factor	
Total LT	0.466666666	weeks	3371%	34.71428571	
Total PT	2.14	days	193%	2.9	
Activity Ratio	91.52%		92%		
Rolling %C/A	66.50%				

Visual Representation of Current State

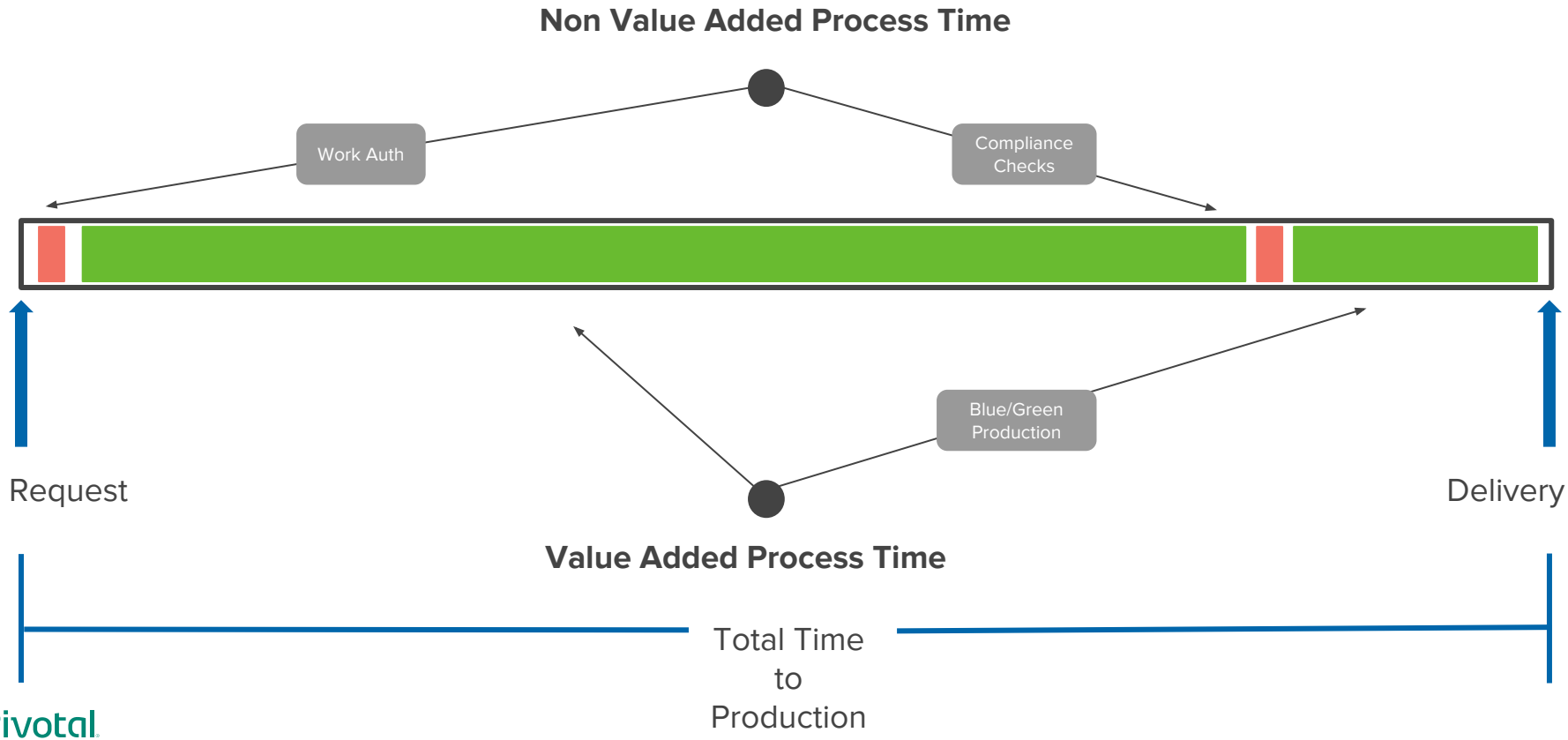
3 **Executive Readout & Execution Plan**

IT Leadership
(Global CIO. LoB CIO's. Etc)



Pivotal

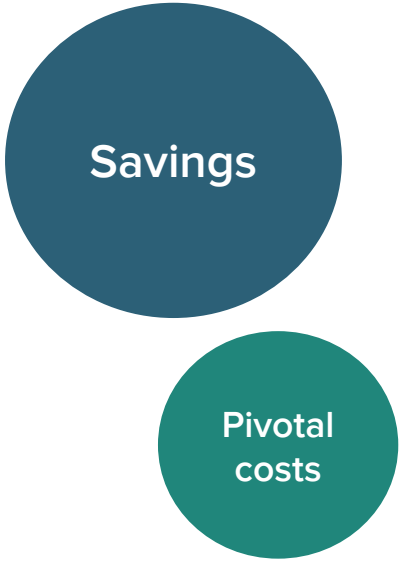
Visual Representation of Future State



ROI and Future State Readout

3 Year Savings & Investment

Accelerating the adoption of the Pivotal Cloud Foundry platform

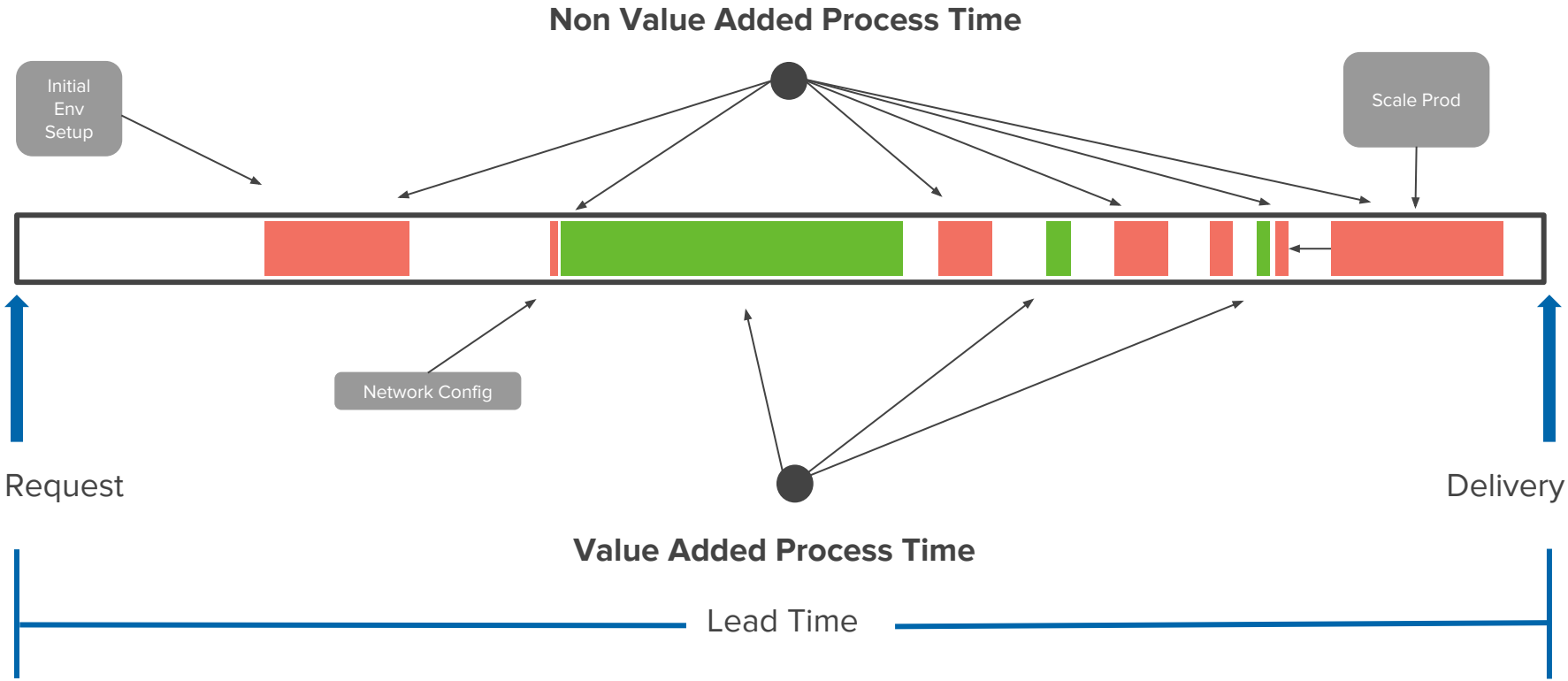


Factors	Savings
Developer Productvity	#
Operations Productivity	#
Legacy Infrastructure & Middleware / OS Takeout	#
Total	**#**
Offering	**Investment**
PCF (ERT, Foundations, Svcs Suite)	#
PCFS	#
Total	**#**

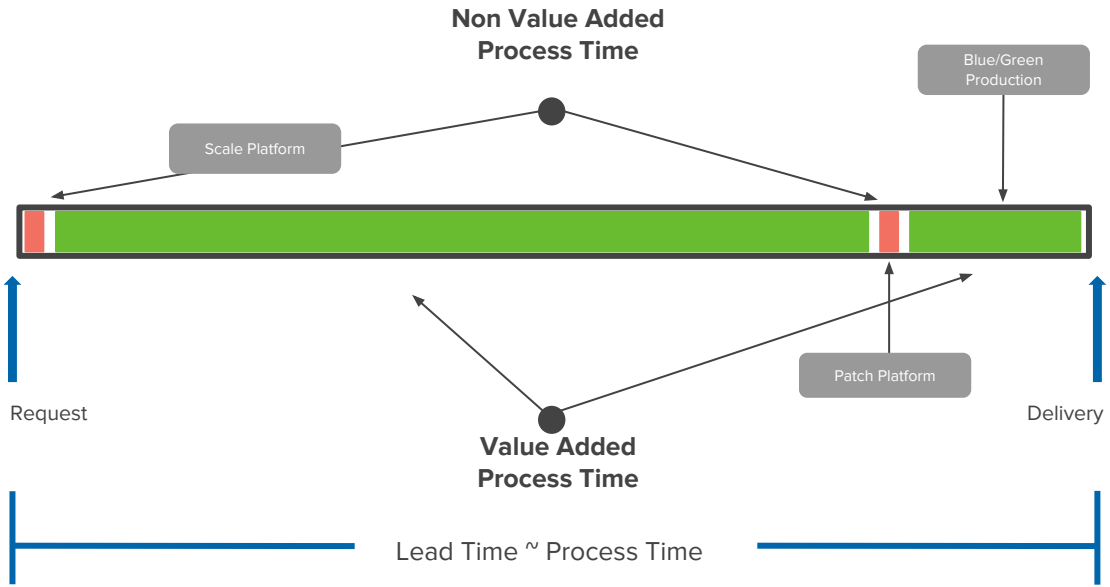
VALUE STREAM ANALYSIS

Examples

Value Stream Mapping



Value Stream Potential

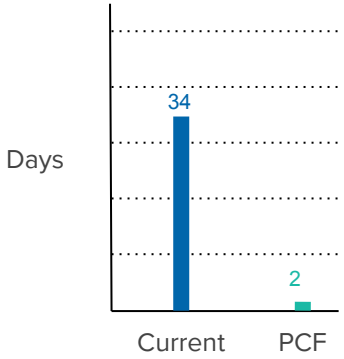


Major US-Based Airline: **Can deliver twice as much custom app development with the help of PCF**

- 54.5% Reduction in Release Time
- 21.2% Increase in Dev Productivity
- 89.4% Increase in Non-Dev Efficiency

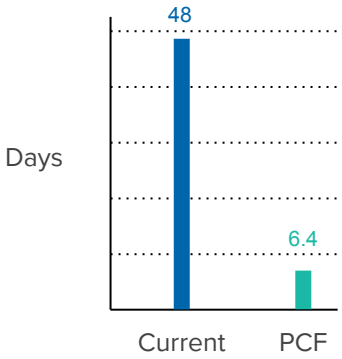
Speed Leads to Higher Productivity

Initial Env Setup



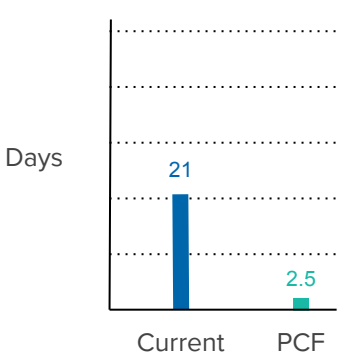
94% Faster

Release Engineering Effort



87% Faster

Manual QA Effort



83% Faster

Other Notable Improvement Metrics

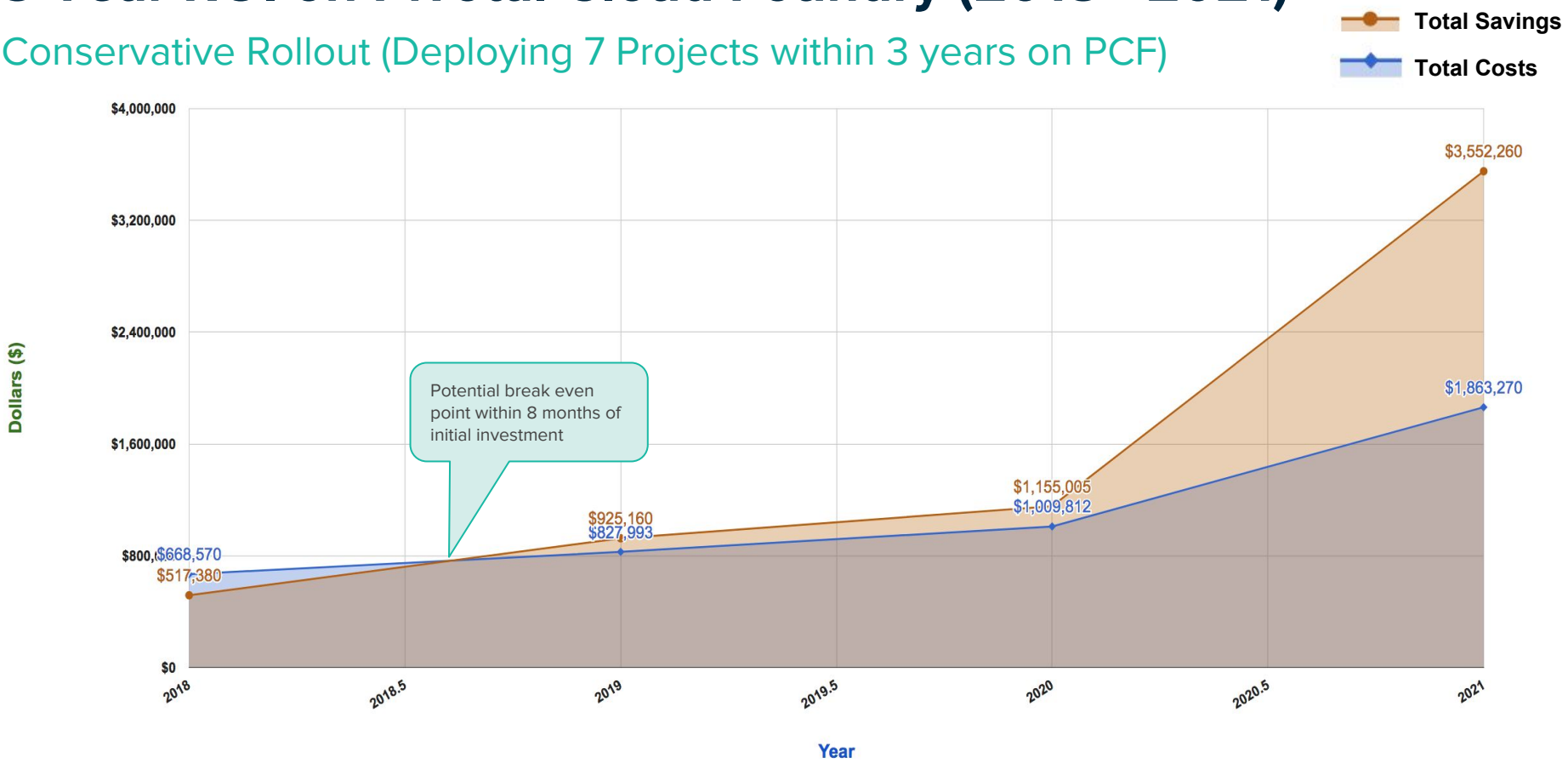
More time coding by Developers **21%**

Reduction in Weekly Day 2 Ops effort per server **91%**

Of patching done with reduced effort **90%+**

3 Year ROI on Pivotal Cloud Foundry (2018 - 2021)

Conservative Rollout (Deploying 7 Projects within 3 years on PCF)



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Cost Avoidance

Developing/Modernizing **200+ APIs, 313 Web Applications** and **500 Developers**

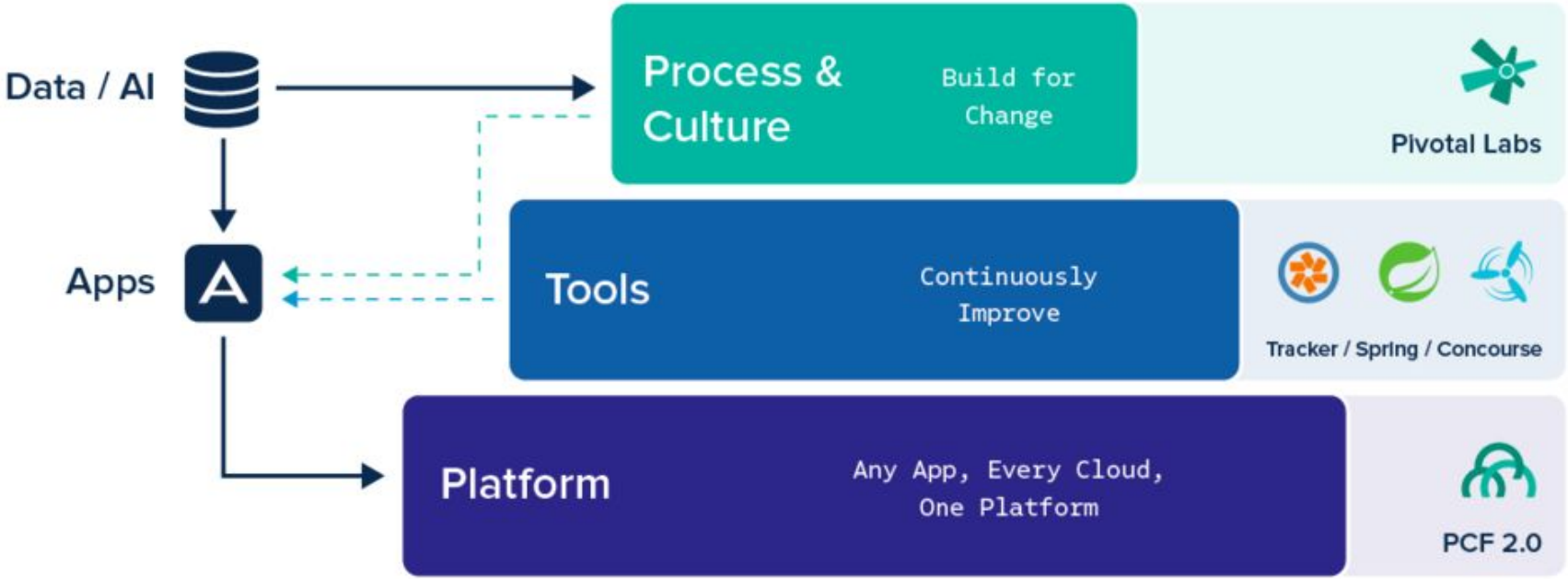
	Annual Savings	3 Year Savings
Developer/Operations Productivity	$89,111,100	$267,333,300
Retire Technical Debt Legacy SW + HW	$21,800,000*	$65,400,000*
Grand Total	$110,911,100	$332,733,300

Developer productivity for **500** developers with **16.67%** improvement

Non-Dev efficiency based on migrating **313** applications and **88.44%**

Opportunity: Combine operations activities of **APIs, 313 Web Applications**

Everything you need to transform.



Transforming How The World Builds Software

Appendix

GARTNER

75% of application development supporting digital business will be built not bought by 2020

Pivotal

Orange: Delivering a new business app in ⅓ time

Challenges/Goals:

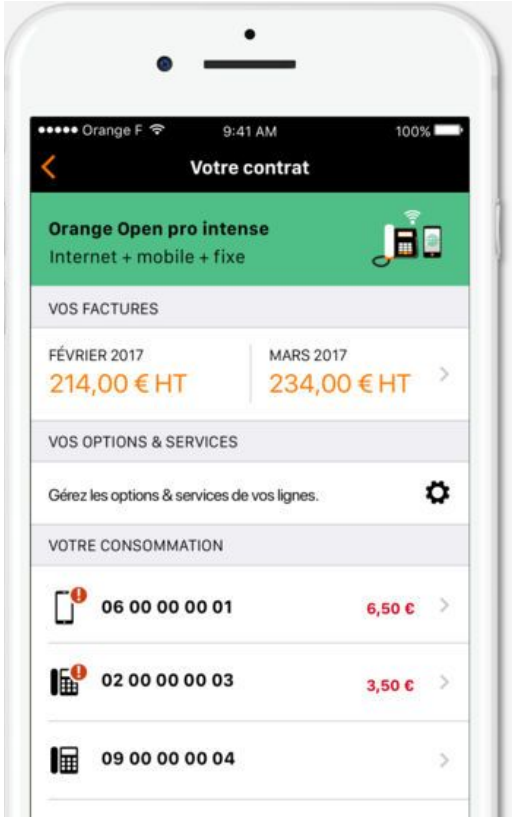
- Improve customer satisfaction
- Reduce cost by reducing customer call center volume
- Increase revenue

Solutions:

- Engaged with Pivotal Labs
- Built/deployed app backend on Pivotal Cloud Foundry

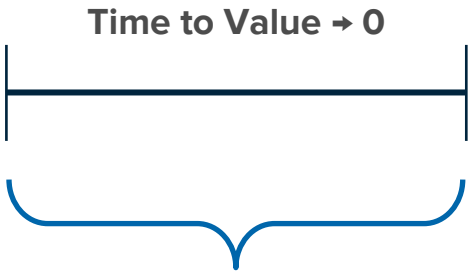
Outcomes:

- Direct collaboration between developers, marketing, and users for feedback-driven iteration
- Launched MVP product in 6 months versus 18 months
- 50% of B2B customers using app after 9 months



Pivotal

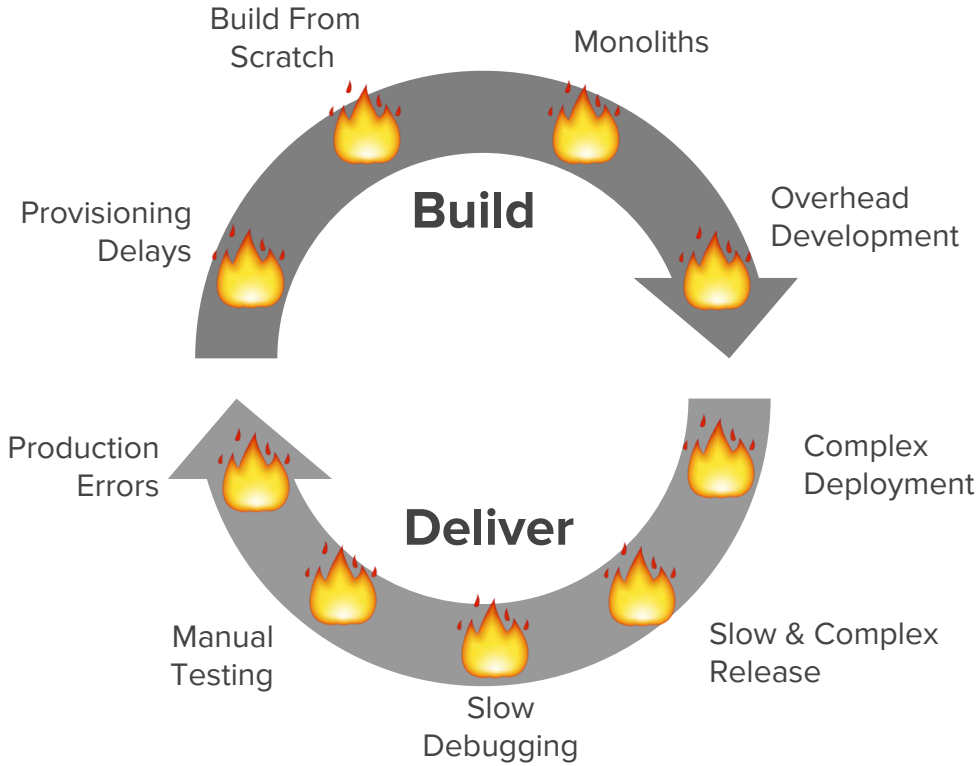
Delays in Enterprise Software Cycles



How do you Develop?

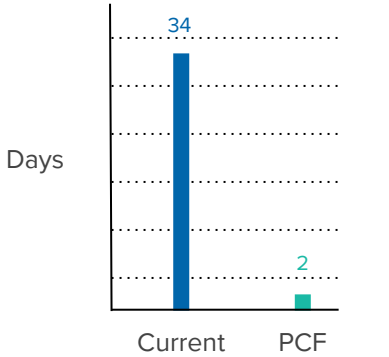
How do you Test?

How do you Deploy?



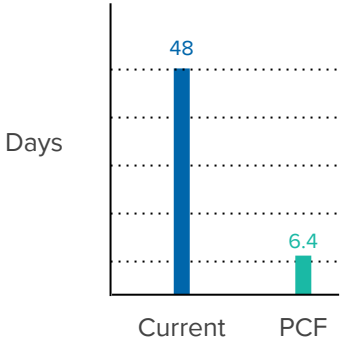
Speed Leads to Higher Productivity

Initial Env Setup



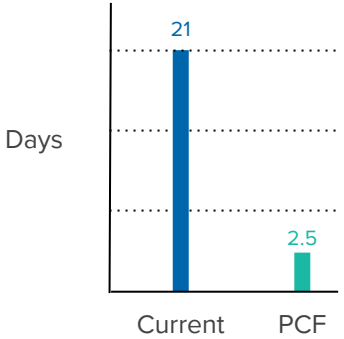
94% Faster

Release Engineering Effort



87% Faster

Manual QA Effort



83% Faster