Microsoft

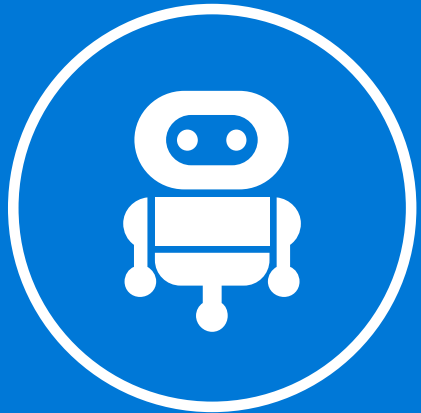# Microsoft GovTech 2019 H1

Microsoft

App Modernisation

Future-proof the applications
that power your business today.

Adam Stephensen
adam.stephensen@Microsoft.com
http://bit.ly/adams-slides

My History

Windows	VB 6
The Web	HTML with VB6 CGI
	(Classic) ASP
Object Orientation	ASP.NET & VB.NET
Javascript (rich web)	C#, Jquery, knockout
Mobile	Xamarin
Cloud & 'modern' web	Azure, MVC & AngularJS
	Angular & Ionic
	.NET Core & Vue
AI, IOT and conversational agents	Bots, IOT & AI

Microsoft

Introduction + Challenge

Azure

Business is powered by applications

External-facing Applications

Line of Business Applications

DATA

Internal Applications

Azure
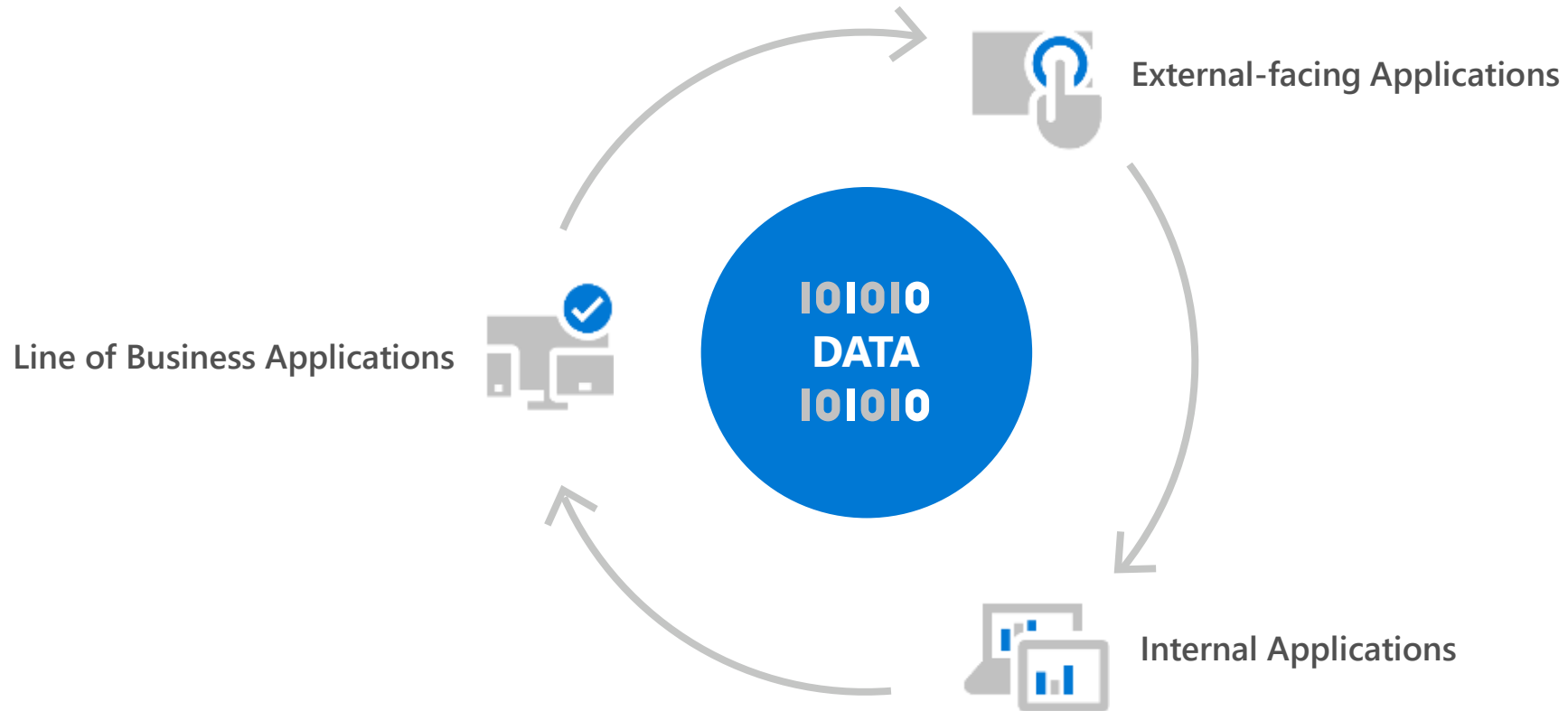
Today's organizations need to be even more agile to respond to the business needs for growth and innovation

More engagement

Customers and employees experience

Customers have access to more information on you and your competitors and expect a good experience

More devices

Virtually anywhere, anytime access to information

multi-device, or multi-device and omni-channel and multi-sense

More data

Analytics insight

Support informed decision making for the future

But IT budgets and cost still present an enormous challenge
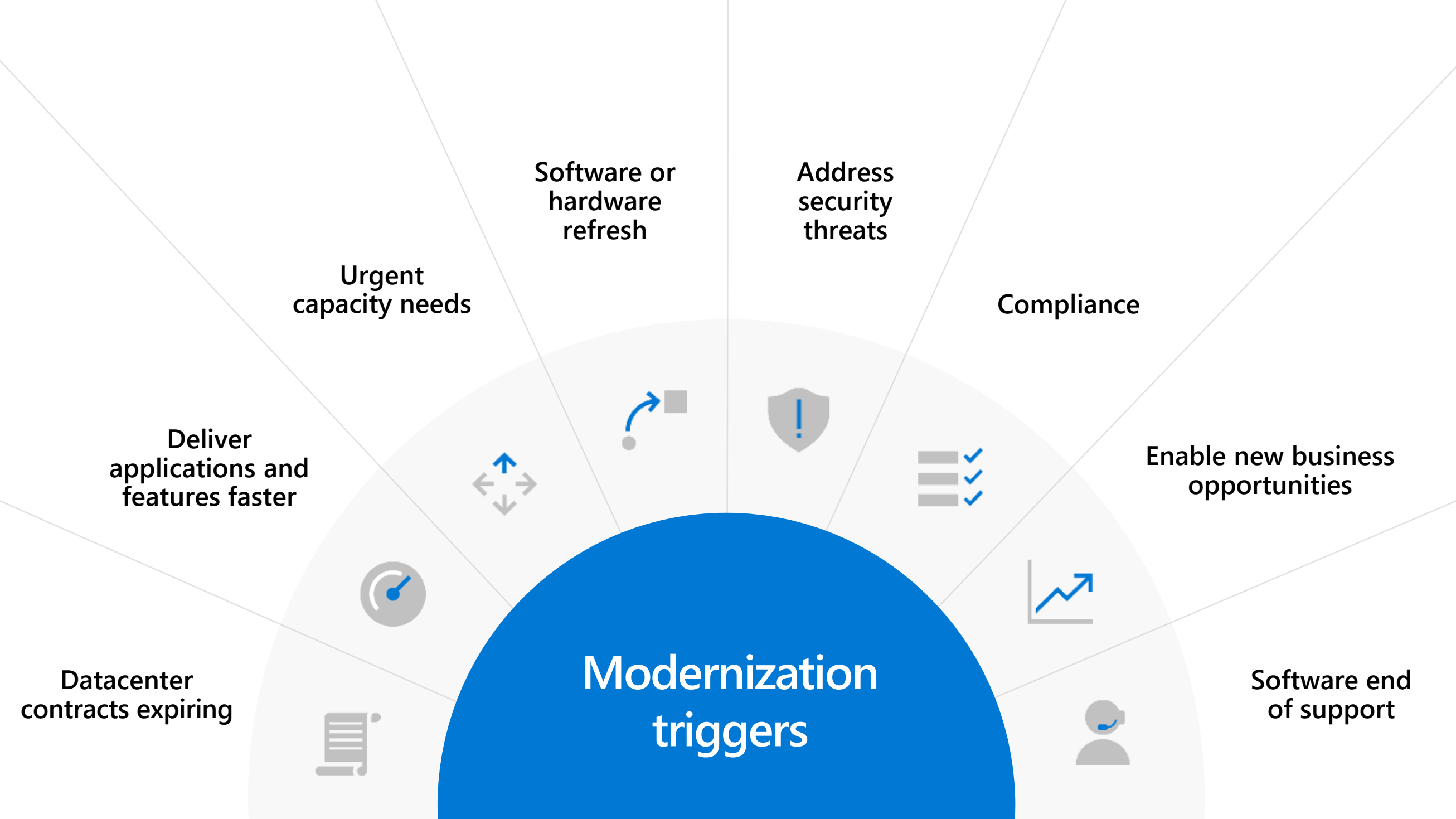
INNOVATION BLOCKERS

- Outdated hardware
- Legacy software
- Old models of doing business

DAY-TO-DAY COSTS

- Maintenance and purchasing
- Hardware/Virtual Machine and application management
- Operating the Datacenter
- Outsourcing

Modernization triggers

- Software or hardware refresh
- Address security threats
- Urgent capacity needs
- Compliance
- Deliver applications and features faster
- Enable new business opportunities
- Datacenter contracts expiring
- Software end of support

Applications have shifted to the cloud

Past	Today
Long application cycles	Rapid innovation
Monolithic apps	Loosely-coupled apps, microservices, and containers
Servers and VMs	Serverless
Less data	Big Data
Desktop	Mobile
Distinct infrastructure and operations teams	Service-focused DevOps teams

On-Premises
Infrastructure Platform

IaaS
Infrastructure Platform
"lift & shift"

CaaS
Container Platform

PaaS
Application Platform

FaaS
Serverless Platform
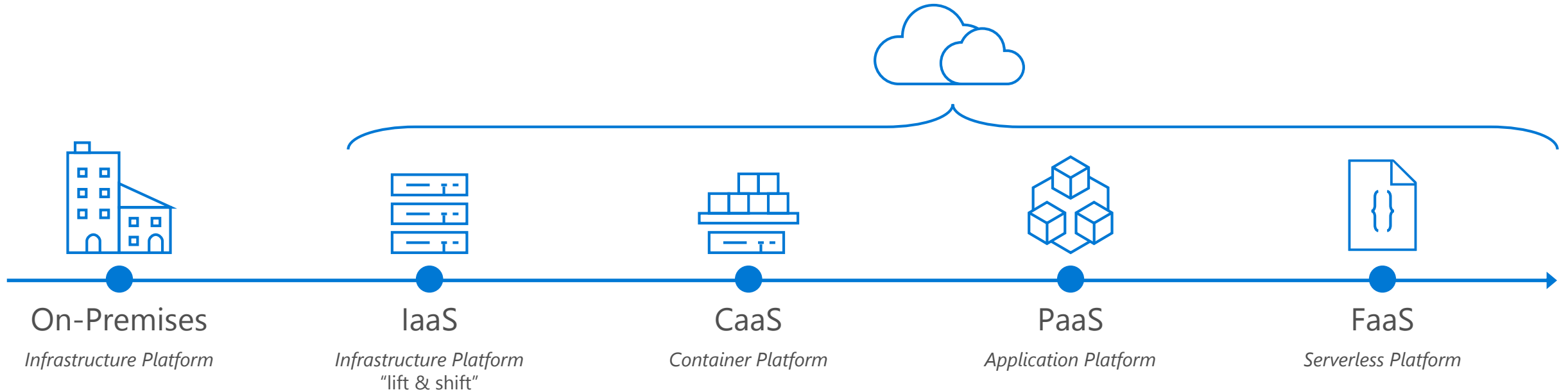
Application layers

Code

Data + Intelligence

Infrastructure

Challenges

Keeping up with the speed of business

Code

More resilient and scalable applications

Adding new features and functionality without taking applications down

Future-proof applications

Infrastructure

Heterogeneous workloads

Hybrid deployments

Security and management

Continuous monitoring

Cost management

Data

Data growth and data silos

Incongruent data types

Performance constraints

Complexity of solutions

Rising data maintenance costs

Security issues and data breaches

Application Delivery

Shorter release cycles

Improved software quality

Responding faster to bugs and security incidents

Learning from real usage to continuously improve applications

The journey to the cloud

We meet you where you are

On-premises

Applications
Data + Intelligence
Infrastructure

Migration & Modernization　　　　**Cloud-Native**　　　　**SaaS**

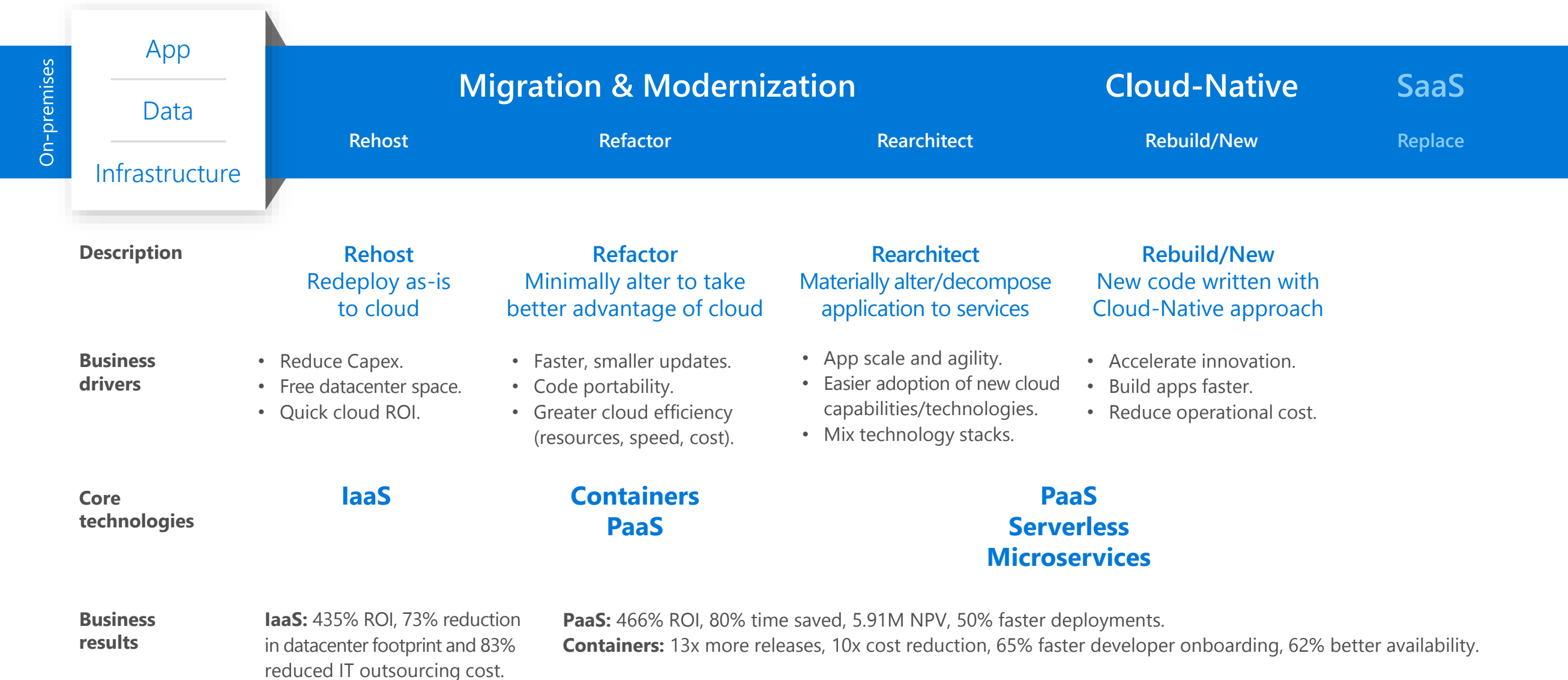Rehost　　　　Refactor　　　　Rearchitect　　　　Rebuild/New　　　　Replace
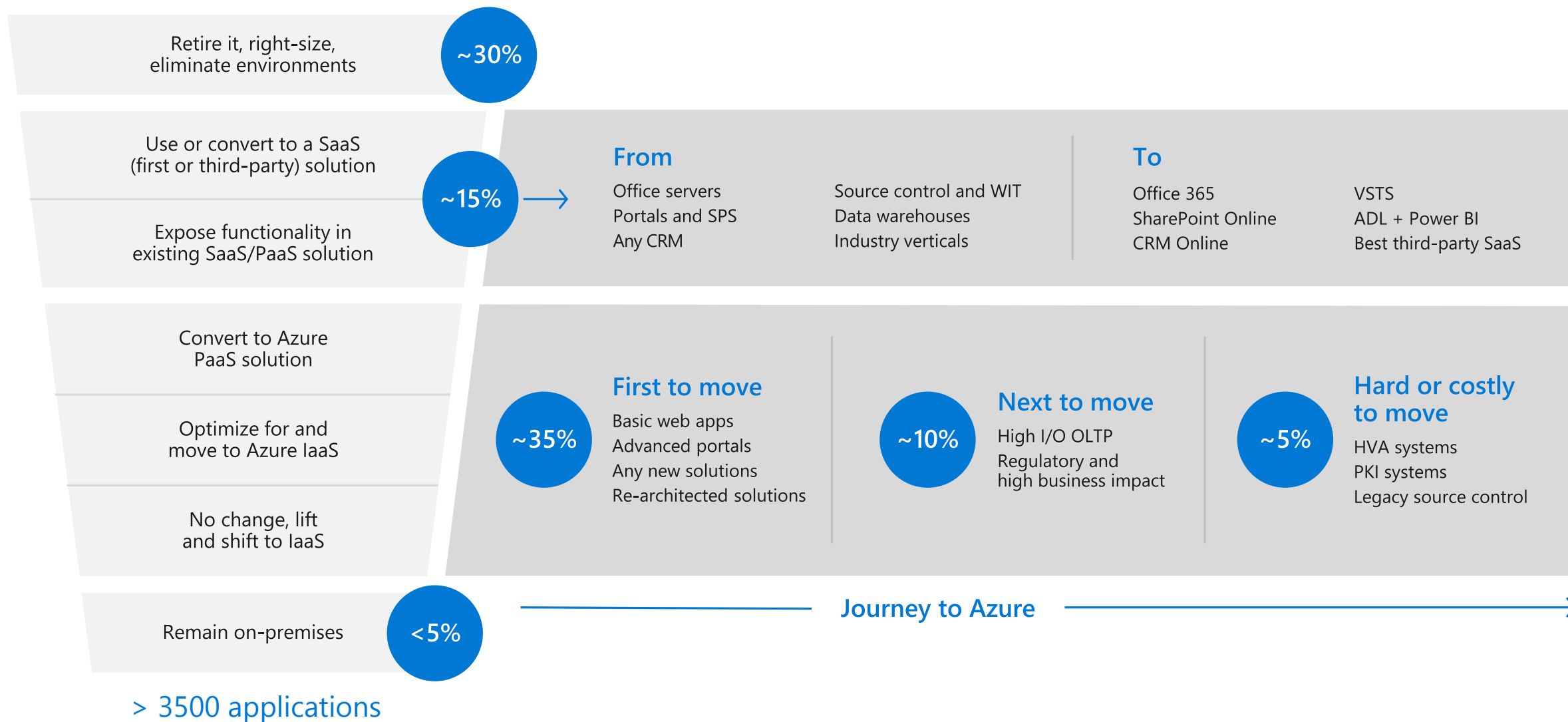

Virtual Machines　　　　Containers　　　　App, Data, & AI Services

Security, Management & DevOps

Different paths - one journey to the cloud

On-premises

App
Data
Infrastructure

	Migration & Modernization			Cloud-Native	SaaS
	Rehost	Refactor	Rearchitect	Rebuild/New	Replace
Description	**Rehost** Redeploy as-is to cloud	**Refactor** Minimally alter to take better advantage of cloud	**Rearchitect** Materially alter/decompose application to services	**Rebuild/New** New code written with Cloud-Native approach	
Business drivers	• Reduce Capex. • Free datacenter space. • Quick cloud ROI.	• Faster, smaller updates. • Code portability. • Greater cloud efficiency (resources, speed, cost).	• App scale and agility. • Easier adoption of new cloud capabilities/technologies. • Mix technology stacks.	• Accelerate innovation. • Build apps faster. • Reduce operational cost.	
Core technologies	**IaaS**	**Containers PaaS**		**PaaS Serverless Microservices**	
Business results	**IaaS:** 435% ROI, 73% reduction in datacenter footprint and 83% reduced IT outsourcing cost.	**PaaS:** 466% ROI, 80% time saved, 5.91M NPV, 50% faster deployments. **Containers:** 13x more releases, 10x cost reduction, 65% faster developer onboarding, 62% better availability.			

Azure

Different paths - one journey to the cloud

Objective	Rehost	Refactor	Rearch.	Rebuild	Technology
Deliver new and breakthrough capabilities faster Optimize for developer productivity, build apps faster				✔	PaaS *Serverless*
Enable multichannel access, including mobile and IoT Enable secure access to apps and data, on a wide range of devices				✔	PaaS *Serverless*
More easily integrate with other web and cloud apps Leverage PaaS, increase productivity with Serverless			✔	✔	PaaS *Serverless*
Enable business agility with continuous innovation Increase agility across teams and deliver better software, faster		✔	✔	✔	PaaS *Containers*
Meet scalability requirements of existing apps cost effectively Optimize application architecture for cloud scale		✔	✔		PaaS *Containers*
Leverage existing investments Across dev/ops, developer tooling, infrastructure and deployed apps	✔	✔	✔		PaaS *Containers*
Free up data center space quickly Free up/consolidate resources for apps that must reside on-premises	✔				IaaS
Reduce capital expenditure of existing applications Switch to pay-as-you-go model, realize better budget forecasting	✔				IaaS
Achieve rapid time to cloud Allow migration with minimal architectural impact	✔				IaaS

Retire it, right-size, eliminate environments ~30%

Use or convert to a SaaS (first or third-party) solution

Expose functionality in existing SaaS/PaaS solution ~15%

From
Office servers
Portals and SPS
Any CRM

Source control and WIT
Data warehouses
Industry verticals

To
Office 365
SharePoint Online
CRM Online

VSTS
ADL + Power BI
Best third-party SaaS

Convert to Azure PaaS solution

Optimize for and move to Azure IaaS ~35%

No change, lift and shift to IaaS

First to move
Basic web apps
Advanced portals
Any new solutions
Re-architected solutions

Next to move ~10%
High I/O OLTP
Regulatory and high business impact

Hard or costly to move ~5%
HVA systems
PKI systems
Legacy source control

Remain on-premises <5%

Journey to Azure →

> 3500 applications

© Microsoft Corporation

Azure

Are your applications ready?

Today

Application silos, built in isolation

Limited set of platforms and form factors

Overabundance of data

Servers and infrastructure to manage

Upfront capacity planning, fixed scale

Future

Multi-channel applications, covering all touchpoints

Many platforms, devices and form factors

Data-driven intelligence in applications

Focus on application functionality, not infrastructure

Elastic, unlimited scale

Microsoft

The application journey to the cloud

Azure

The journey to the cloud

IaaS/VM/Compute

Own your home

Platform as a Service

Bed and breakfast

Serverless

Hotel

Migration +
Modernization

Azure

The journey to the cloud

Infrastructure

"What your application runs on"

Data

"What your application works with"

Code

"What your application does"

Migrate • Innovate

←——— **Unified Management • Security • Governance • Tools • DevOps** ———→

Azure

A turn-key platform for Application Modernization

Orchestration (Kubernetes)

Microservices

Web Apps

Event-driven Functions

Infrastructure abstraction

< Control

Productivity >

Azure

Modernizing with managed services

Challenges

Infrastructure management slows down business processes

Inefficient resource management

Lock-in to a limited (legacy) stack. Lack of portability across clouds

Deployment not automated, slow, wasted time due to manual tasks

Production infrastructure can not be replicated on developer machines

Azure Benefits

Managed services let you focus on apps, not admin and speed up deployments

Smaller instances increase packing density and improve resource utilization

Managed services support all stacks. Containers run on any cloud

Fast and agile app deployment with built-in DevOps and instant startup

Environments are consistent across development, test and production

The Absolut Company

Faster time to market

Improved website capabilities

Elimination of physical servers

Increased time for IT staff to focus on new digital initiatives instead

"In a marketing-centric organization, you cannot wait days for a new server. We go into the portal, interface directly with Azure, and launch our websites and have them running in minutes".

ABSOLUT.®

Country: Sweden | **Industry:** Retail | **Employees:** 500

Modernization

Azure

A turn-key platform for Application Modernization

Orchestration (Kubernetes)

Microservices

Web Apps

Event-driven Functions

Infrastructure abstraction

< Control

Productivity >

Azure

Modernizing with managed services

Challenges

Infrastructure management slows down business processes

Inefficient resource management

Lock-in to a limited (legacy) stack. Lack of portability across clouds

Deployment not automated, slow, wasted time due to manual tasks

Production infrastructure can not be replicated on developer machines

Azure Benefits

Managed services let you focus on apps, not admin and speed up deployments

Smaller instances increase packing density and improve resource utilization

Managed services support all stacks. Containers run on any cloud

Fast and agile app deployment with built-in DevOps and instant startup

Environments are consistent across development, test and production

Containers

Refactoring with container technology

Faster application deployment with integrated CD/CD tools and orchestration

- Containers support all frameworks and technology stacks across clouds and on-premises
- No OS overhead means improved packing density and more resource efficiency
- Faster application deployment with integrated CD/CD tools and orchestration
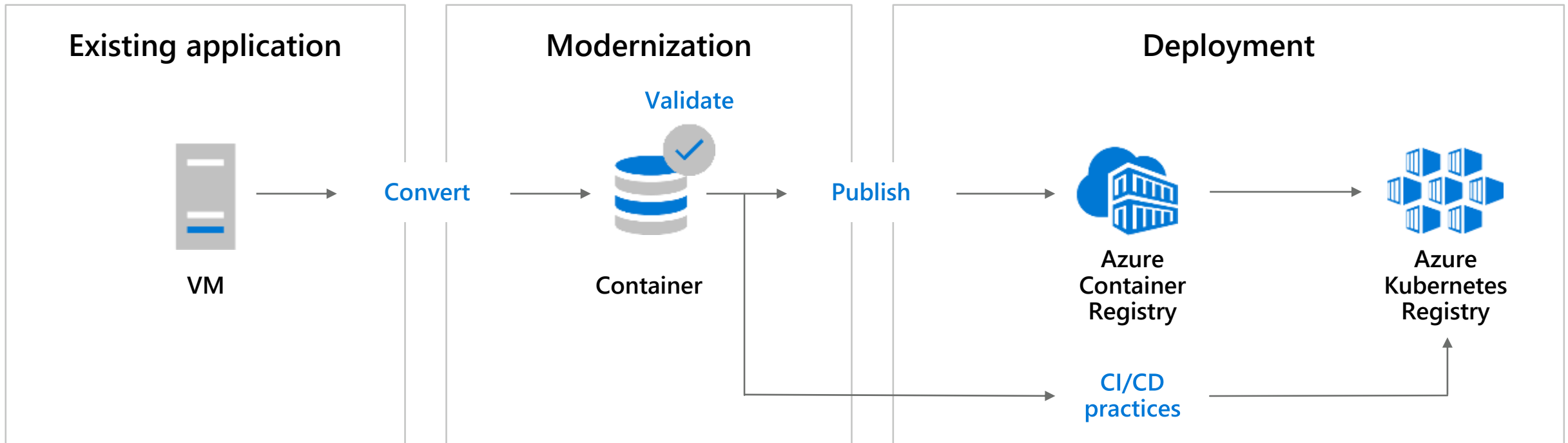
Xerox DocuShare

Onboard customers faster

Enable self-service environments

Reduce administrative overhead

No code modification required

"Thanks to Azure Kubernetes Service, we can now spin up customer environments in 10 minutes instead of 24 hours. Moving DocuShare Flex from virtual machines to containers in Azure allows us to provision environments faster, empowering our sales and partner network".

xerox

Country: United States | **Industry:** Manufacturing | **Employees:** 35.300

Microservices

Azure

Rearchitecting with microservices

More agile, scalable and resilient applications

Individual services can be upgraded, changed or taken down without impacting the application

Developers work on individual services, which are smaller, easier to manage and understand

If individual services should fail, the application will continue to work without interruption

Microservices

Large, all-inclusive app

App

Monolithic

Small, independent services

App   App

Azure
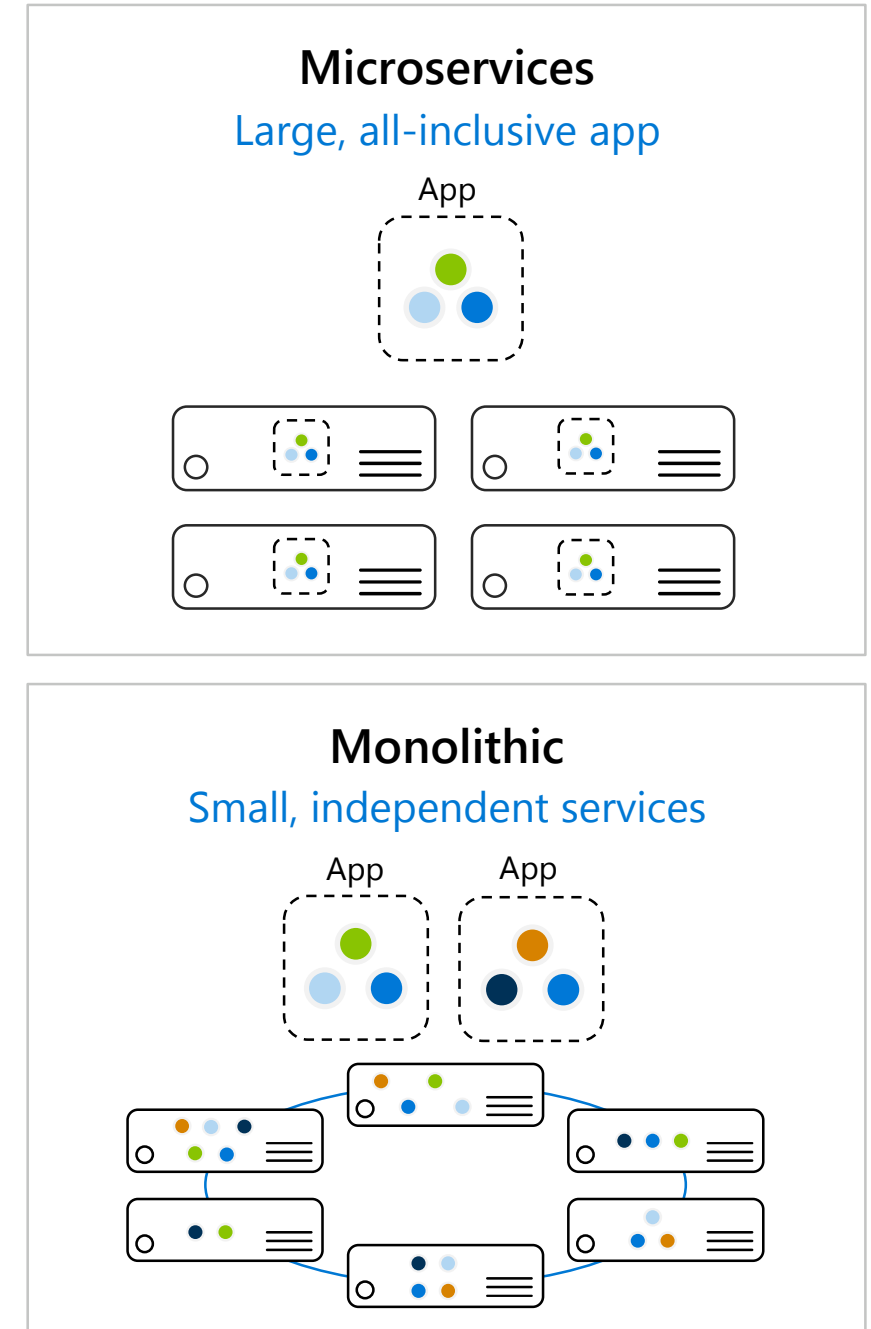
Alaska Airlines

Improved performance and reliability

Savings at scale

Greater control over infrastructure

Safe and consistent deployments

"We love the pristine and predictable environments provided by Windows Server Containers. Service Fabric brings us a safe and consistent deployment strategy that maximizes uptime. The marriage of the two in Microsoft Azure gives us unlimited potential".

Alaska AIRLINES

Country: United States | **Industry:** Travel and Transportation | **Employees:** 21.561

Serverless

Future-proofing applications with serverless

Adding new capabilities to existing applications

- Existing code and functionality is left as-is and moved to managed cloud services
- New capabilities are added incrementally using serverless functions triggered by events

Existing web application

ASP.NET Website

WCF Service

Updates per check-in and check-out.

SQL

Event trigger

New cloud-native capabilities

On DB modified, run Logic App

Check-In

Based on address, use text translator

Check-Out

Customer email sent
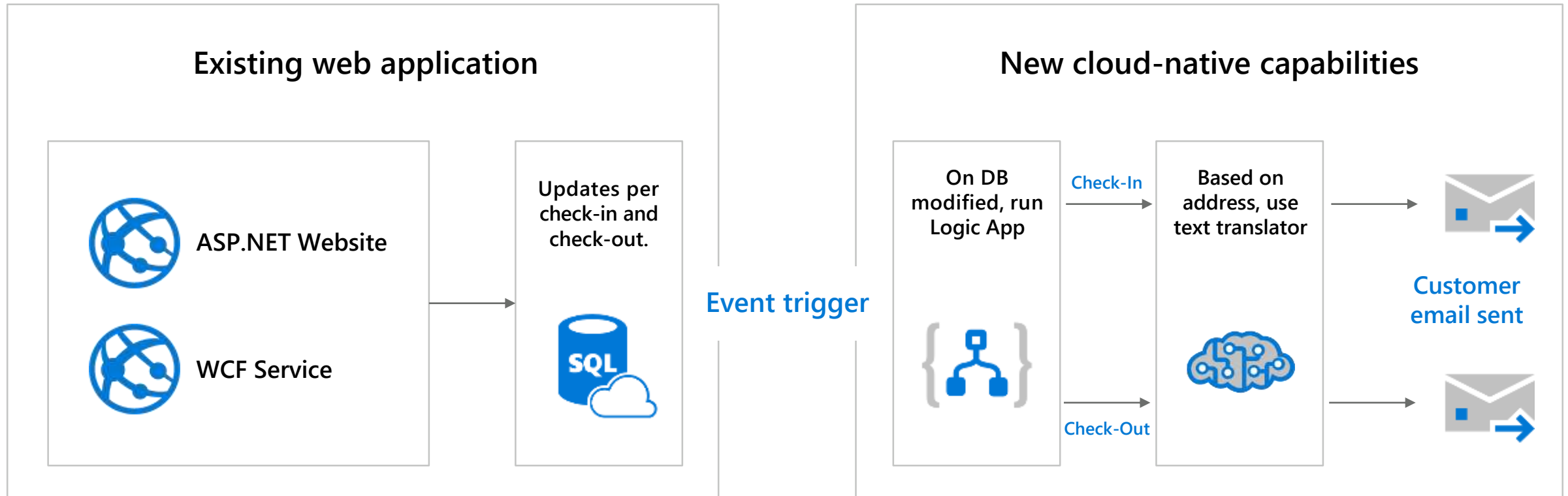
Challenge: Counting Fish in Darwin Harbour

- More coral species than the great barrier reef

- Shark species that are threatened or critically endangered

- Goal: ID species accurately to manage species and stocks in the harbour
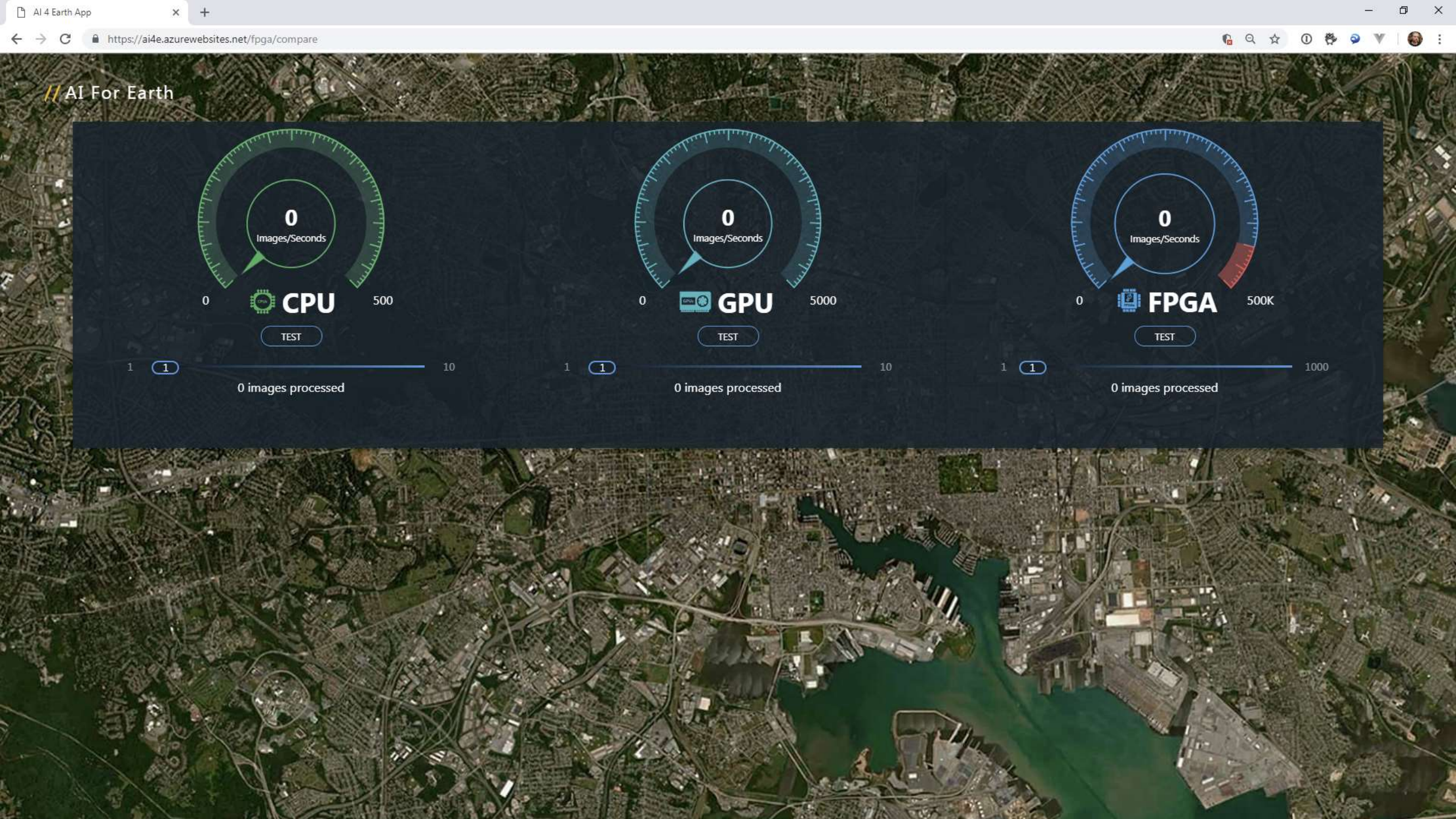
- Challenge: 5x more water than Sydney Harbour

- Challenge: 7m tides causes low visibility

- There is also a security issue.....
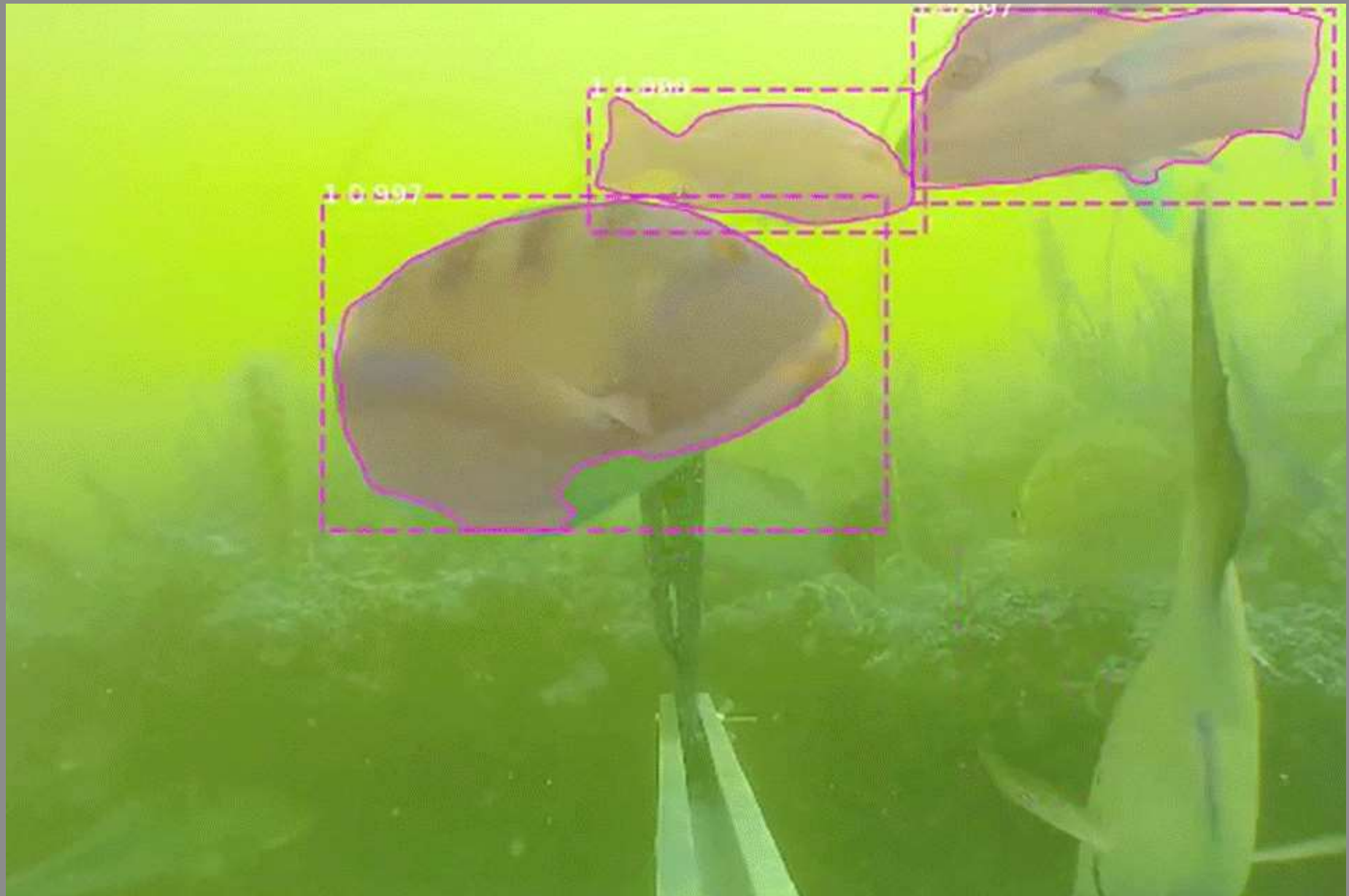
https://ai4e.azurewebsites.net/fpga/compare

// AI For Earth

0
Images/Seconds

0   CPU   500

TEST

1   1   10

0 images processed

0
Images/Seconds

0   GPU   5000

TEST

1   1   10

0 images processed

0
Images/Seconds

0   FPGA   500K

TEST

1   1   1000

0 images processed

Where to next ?

Azure

Lower your TCO by moving to Azure

Azure offers many ways to save money

78% savings by migrating datacenters to Azure instead of staying on-premises

68% savings by rehosting applications on Azure PaaS

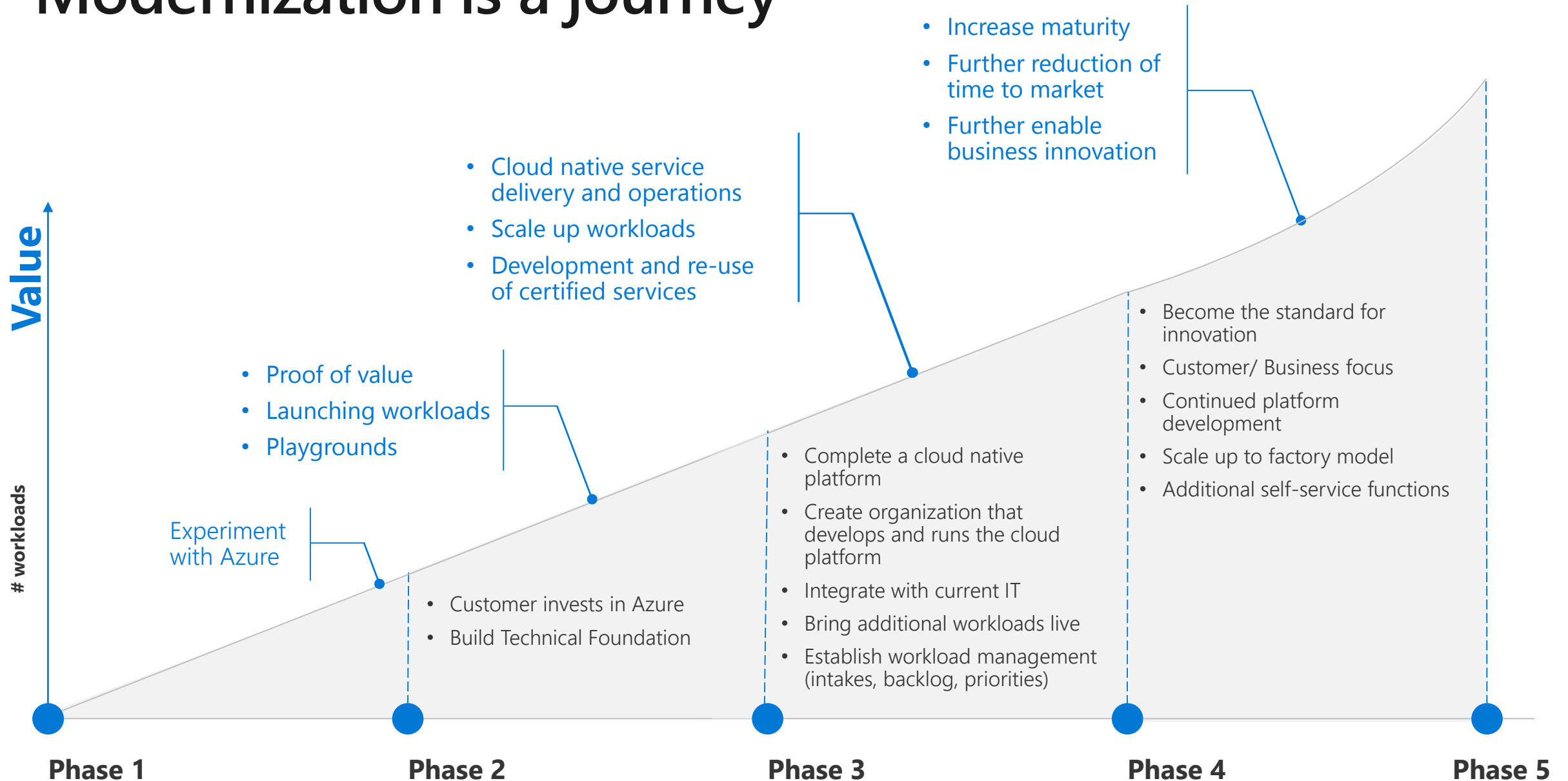**63%** savings by rearchitecting applications for Azure

5x lower cost for Microsoft workloads compared to AWS

Source
Azure TCO Calculator at www.azure.com/tco

Modernization is a journey

Value

workloads

- Increase maturity
- Further reduction of time to market
- Further enable business innovation

- Cloud native service delivery and operations
- Scale up workloads
- Development and re-use of certified services

- Proof of value
- Launching workloads
- Playgrounds

Experiment with Azure

- Become the standard for innovation
- Customer/ Business focus
- Continued platform development
- Scale up to factory model
- Additional self-service functions

- Complete a cloud native platform
- Create organization that develops and runs the cloud platform
- Integrate with current IT
- Bring additional workloads live
- Establish workload management (intakes, backlog, priorities)

- Customer invests in Azure
- Build Technical Foundation

Phase 1   **Phase 2**   **Phase 3**   **Phase 4**   **Phase 5**

How Microsoft can help

Let's have a deeper discussion about **your** journey to Azure.

Datacenter Migration

Windows Server on Azure

Linux on Azure

SAP on Azure

Azure Stack

Security and Management

Business Continuity Disaster Recovery

High-performance Computing

Application Modernization

DevOps

Microsoft Azure

Cloud application development

The best cloud for developers

Microsoft Azure is a flexible foundation for all applications – our full-stack cloud application platform covers user experience, backend, data, intelligence and DevOps

**Multi-channel
user experiences**

**Open and hybrid
cloud backends**

**Data-driven
intelligence**

**DevOps
built-in**

Leader

Mobile Application
Development Platforms

*Gartner Magic Quadrant
for Mobile Application
Development Platforms.*

Leader

Enterprise Application
Platform-as-a-Service

*Gartner Magic Quadrant
for Enterprise Application
Platform-as-a-Service.*

Leader

Operational Database
Management Systems

*Gartner Magic Quadrant
for Operational Database
Management Systems.*

Leader

Enterprise Agile
Planning Tools

*Gartner Magic Quadrant for
Enterprise Agile Planning Tools.*

"Azure has the best developer experience, a dramatic reversal of fortunes for the vendor in just under two years".

Forrester Wave
Full-Stack Public Cloud Development Platforms, North America, Q2 2018

Microsoft

Thank you

The best cloud for developers

Microsoft Azure is a flexible foundation for all applications – our full-stack cloud application platform covers user experience, backend, data, intelligence and DevOps.

Multi-channel
user experiences

Open and hybrid
cloud backends
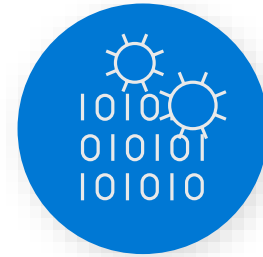
Data-driven
intelligence

DevOps
built-in

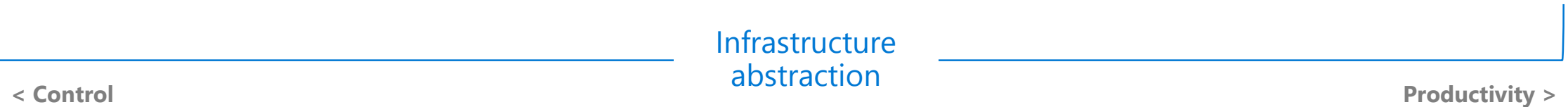# A turn-key platform for Application Modernization
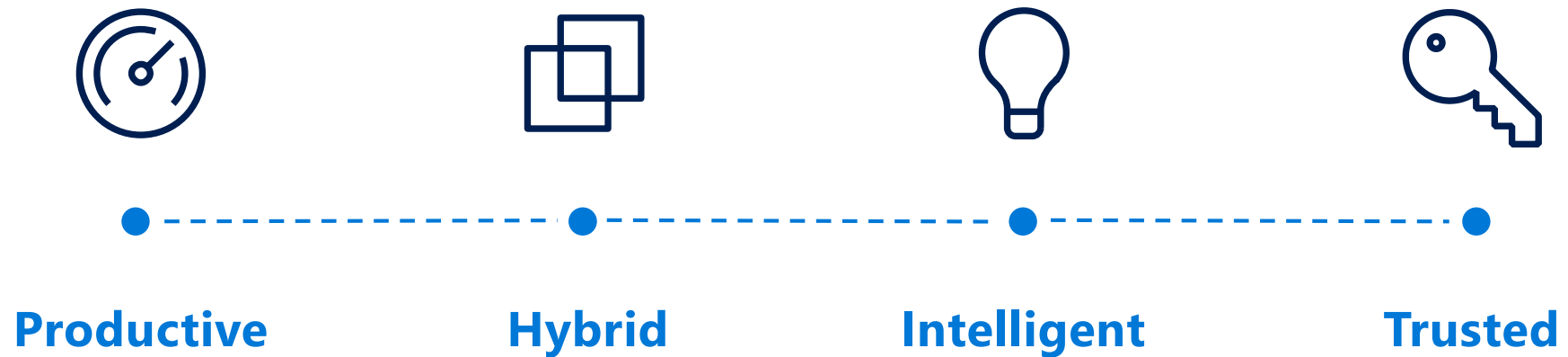
Orchestration (Kubernetes)

Microservices

Web Apps

Event-driven Functions

Infrastructure abstraction

< Control

Productivity >

Azure. Cloud for all.

Productive **Hybrid** **Intelligent** **Trusted**
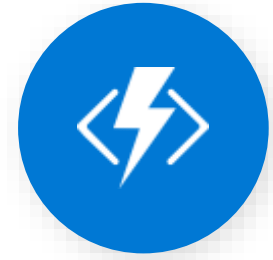
Azure

Objective	Rehost	Refactor	Rearchitect	Rebuild	Cloud model
Deliver new and breakthrough capabilities faster Optimize for developer productivity, build apps faster				✓	PaaS
Enable multichannel access, including mobile and IoT Enable secure access to apps and data, on a wide range of devices				✓	PaaS
More easily integrate with other web and cloud apps Leverage PaaS, increase productivity with serverless			✓	✓	PaaS
Enable business agility with continuous innovation Increase agility across teams and deliver better software, faster		✓	✓	✓	PaaS
Meet scalability requirements of existing apps cost effectively Optimize application architecture for cloud scale		✓	✓		PaaS
Leverage existing investments Across DevOps, developer tooling, management, infrastructure and app services	✓	✓	✓		PaaS
Free up data center space quickly Free up/consolidate resources for apps that must reside on-premises	✓				IaaS
Reduce capital expenditure of existing applications Switch to pay-as-you-go model, realize better budget forecasting	✓				IaaS
Achieve rapid time to cloud Allow migration with minimal architectural impact	✓				IaaS

How Microsoft can help

Let's have a deeper discussion about **your** journey to Azure.

Datacenter Migration

Windows Server on Azure

Linux on Azure

SAP on Azure
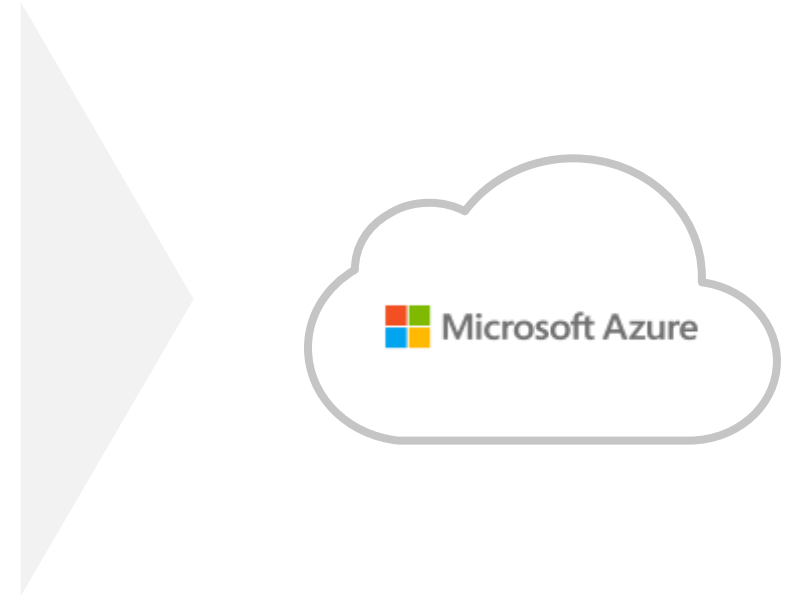
Azure Stack

Transactional Apps

Security and Management

Business Continuity Disaster Recovery

High-performance Computing

Application Modernization

DevOps

AI Apps and Agents

Microsoft Azure

Summary

1. App Modernisation is a great opportunity to 'clean house' - retire applications that are no longer used or consolidate and transition functionality to off-the-shelf solutions where possible.
2. No cloud hosting model (IaaS, PaaS, SaaS) should be taken off the table too early.
3. Move custom applications in stages:
   - Move simple workloads directly to PaaS: web sites, static portals, standard three-tier applications
   - Migrate complex solutions to IaaS first and gradually modernize later to unlock immediate benefits
   - Keep legacy/undocumented code as-is and surround it with serverless functions to add features

Thank You

Slides available @
http://bit.ly/adams-slides

Download the eBook
https://azure.microsoft.com/resources
/inside-microsoft-cloud-migration-
journey/

Adam Stephensen
@adamstephensen
adam.stephensen@microsoft.com

1. App Modernisation is a great opportunity to 'clean house' - retire applications that are no longer used or consolidate and transition functionality to off-the-shelf solutions where possible.

2. No cloud hosting model (IaaS, PaaS, SaaS) should be taken off the table too early.

3. Move custom applications in stages:

   • Move simple workloads directly to PaaS: web sites, static portals, standard three-tier applications

   • Migrate complex solutions to IaaS first and gradually modernize later to unlock immediate benefits

   • Keep legacy/undocumented code as-is and surround it with serverless functions to add features

Thank You

Slides available @
http://bit.ly/adams-slides

Download the eBook

https://azure.microsoft.com/resources
/inside-microsoft-cloud-migration-
journey/

Adam Stephensen
@adamstephensen
adam.stephensen@microsoft.com