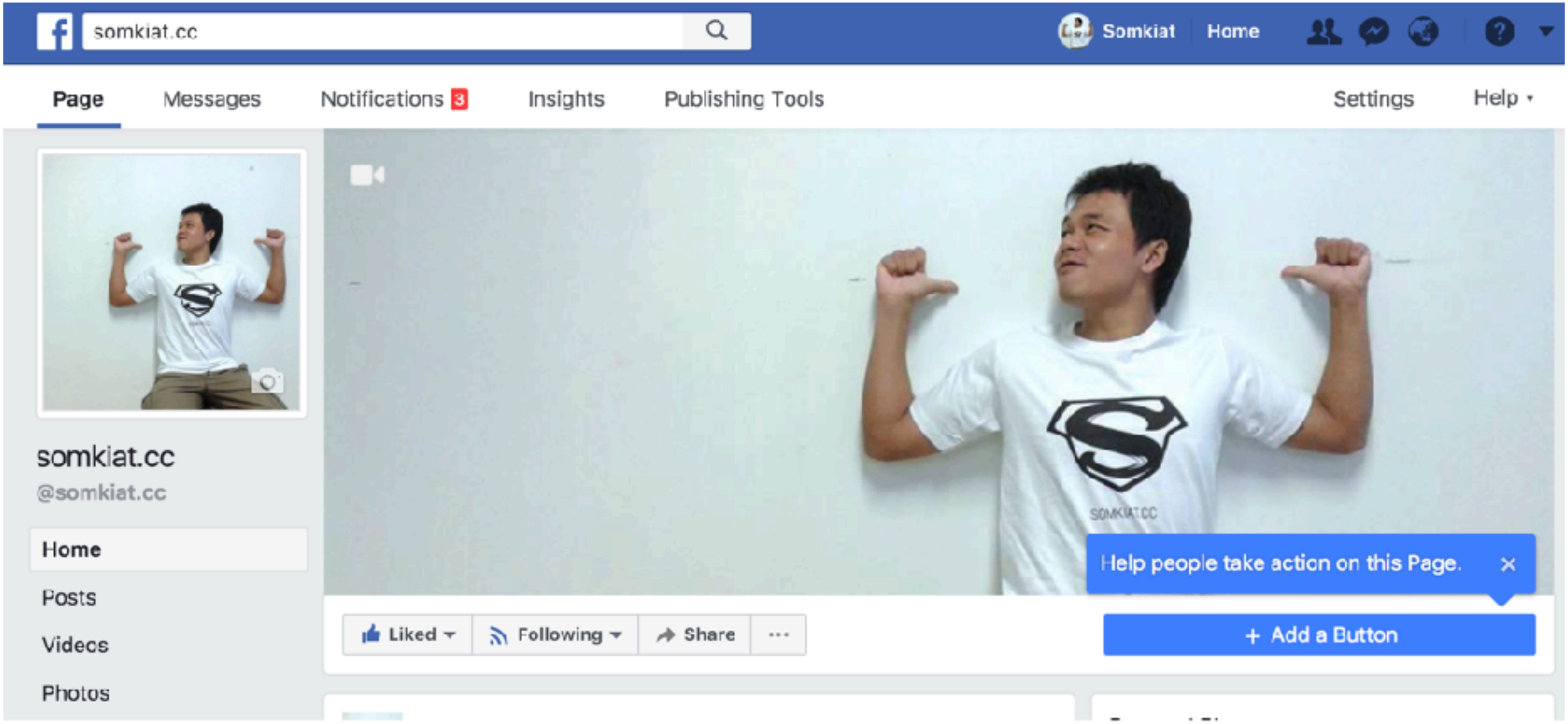
สยามชำนาญกิจ
SIAM CHAMNAN KIT

Cloud Technology Associate



Cloud Technology Associate (CTA)

Service manager

Solution Architect

Administrator

Developer

Professional Level

Cloud Technology Associate (CTA)

Topics

Cloud fundamental and core concepts

Introduction to Cloud

Cloud Service Deployment model

Virtualization

Technical challenges and mitigation

Cloud adoption and management

Cloud security, risk and governance

Prepare for adoption

Cloud and digital transformation trends

Module 1

Introduction to Cloud computing

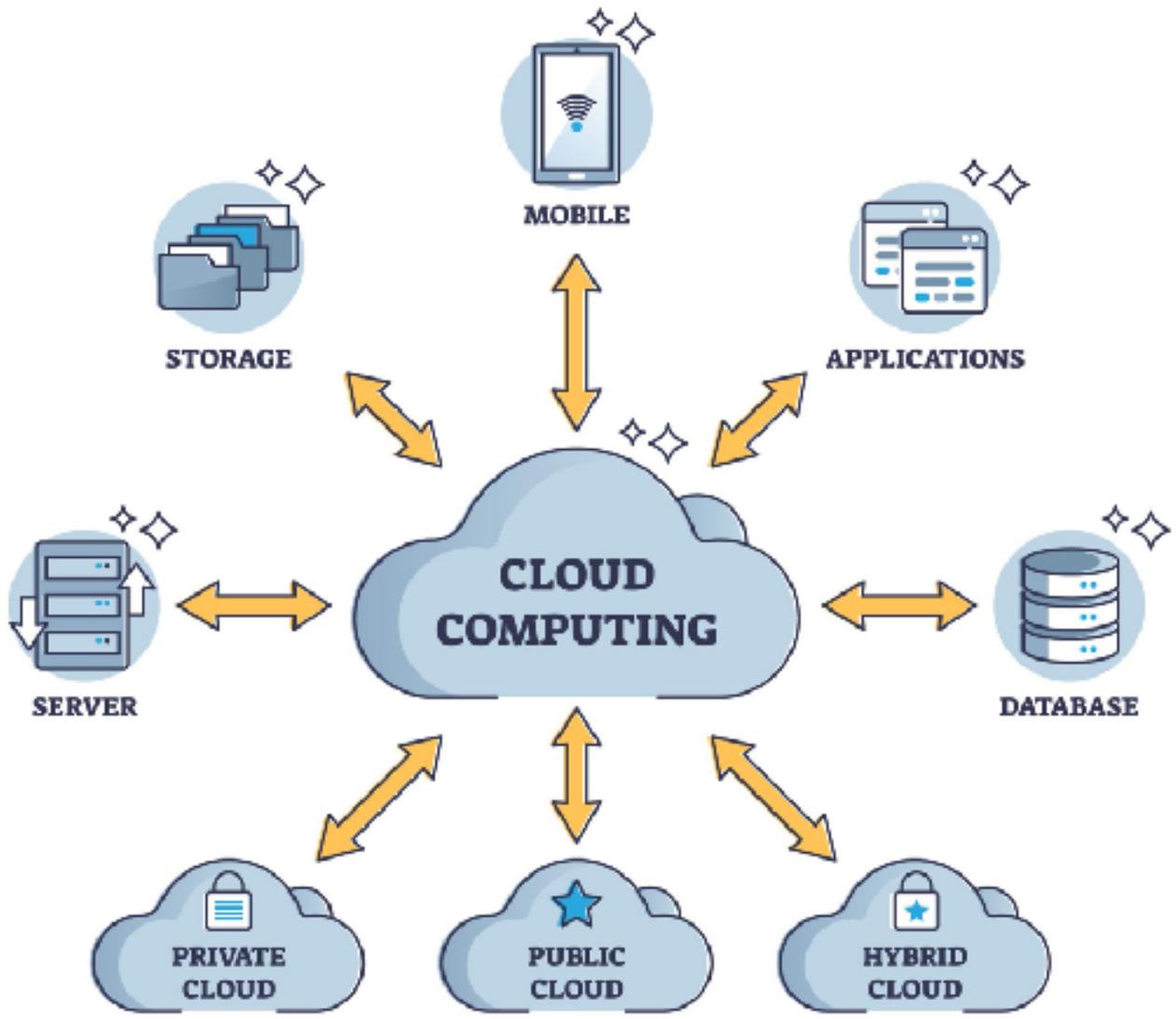
Cloud Computing ?

Cloud Computing is

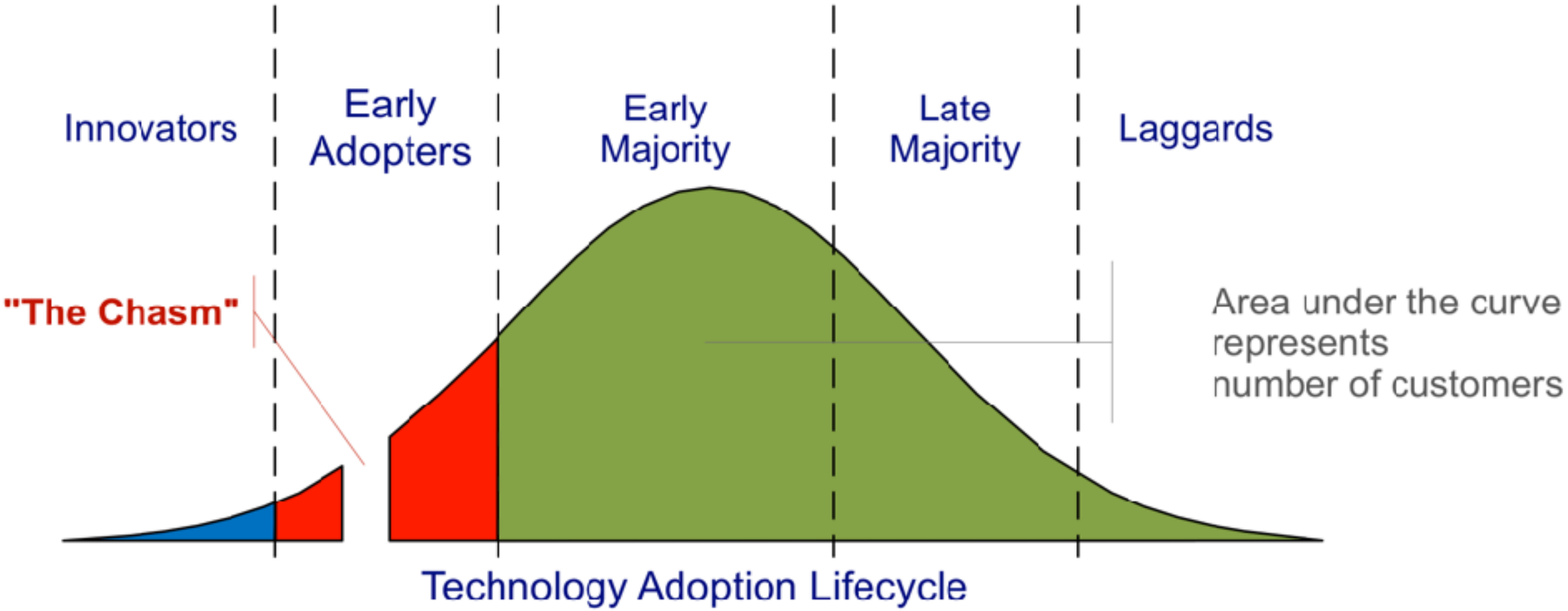
a model for enabling ubiquitous, convenient,
on-demand network **access** to a shared pool of configurable computing **resources**

https://csrc.nist.gov/pubs/sp/800/145/final

Cloud Computing ?



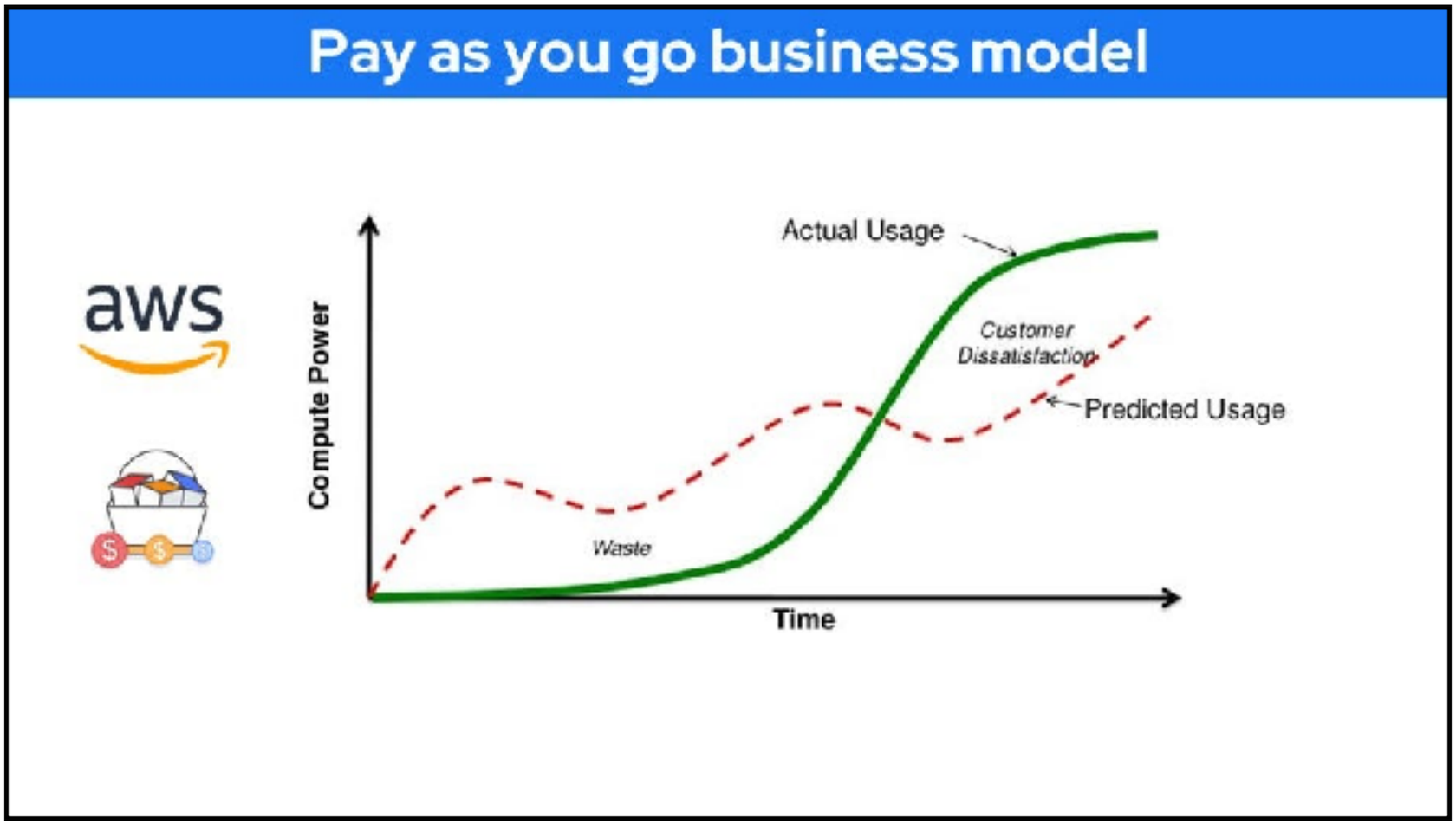
Technology Adoption Lifecycle



https://aws.amazon.com/blogs/enterprise-strategy/drive-change-but-avoid-the-chasms/

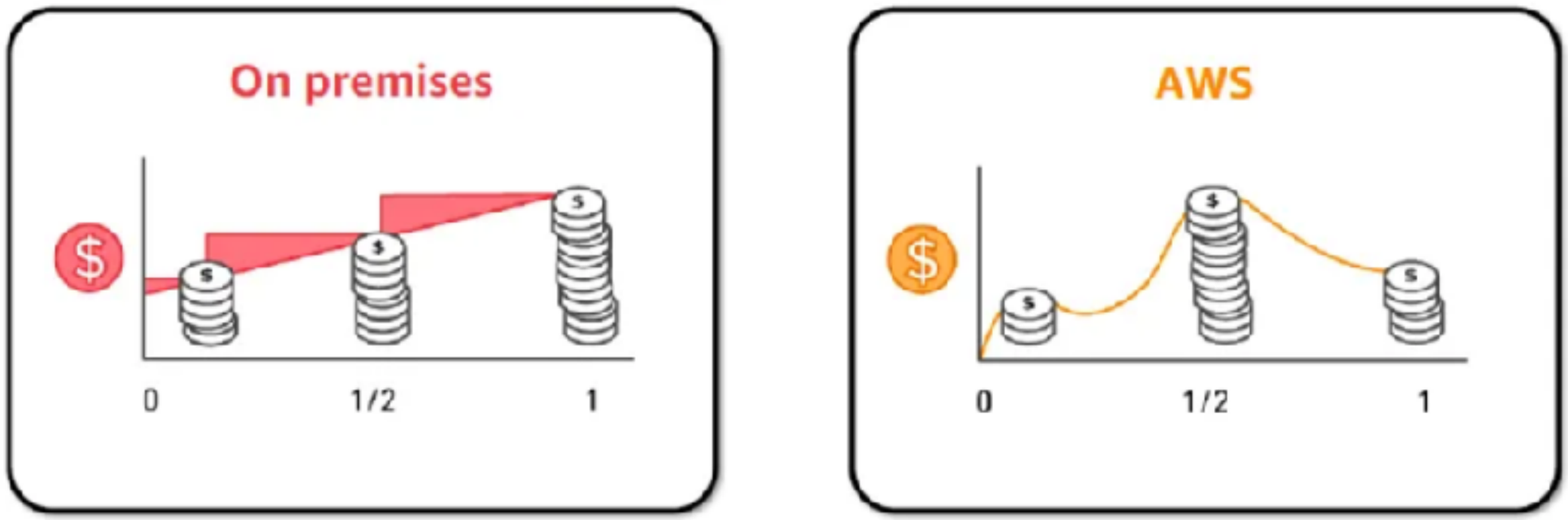
Cloud Computing ?

On-demand delivery of IT resources and applications via the internet



Pay what you use !!

Pay only for the services that you consume,
with no large upfront expenses



History of Cloud computing

History of Cloud

1950s	1969	1970
Mainframe	ARPANET Internet	Virtualization Software

History of Cloud

1950s	1969	1970
Mainframe	ARPANET Internet	Virtualization Software

On-premise infrastructure

History of Cloud

1950s	1969	1970	1997
Mainframe	ARPANET Internet	Virtualization Software	Cloud computing

On-premise infrastructure

History of Cloud

1950s	1969	1970	1997	Current
Mainframe	ARPANET Internet	Virtualization Software	Cloud computing	Public Private Hybrid

On-premise infrastructure

Adoption and migration

History of Cloud

1950s	1969	1970	1997	Current
Mainframe	ARPANET Internet	Virtualization Software	Cloud computing	Public Private Hybrid

On-premise infrastructure

Adoption and migration

Increase internet bandwidth
Business needs (time-to-market and scalability)

Characteristics of Cloud

On-demand self-service

Broad network access

Resource pooling

Rapid elasticity

Measured service

Characteristics of Cloud

On-demand self-service

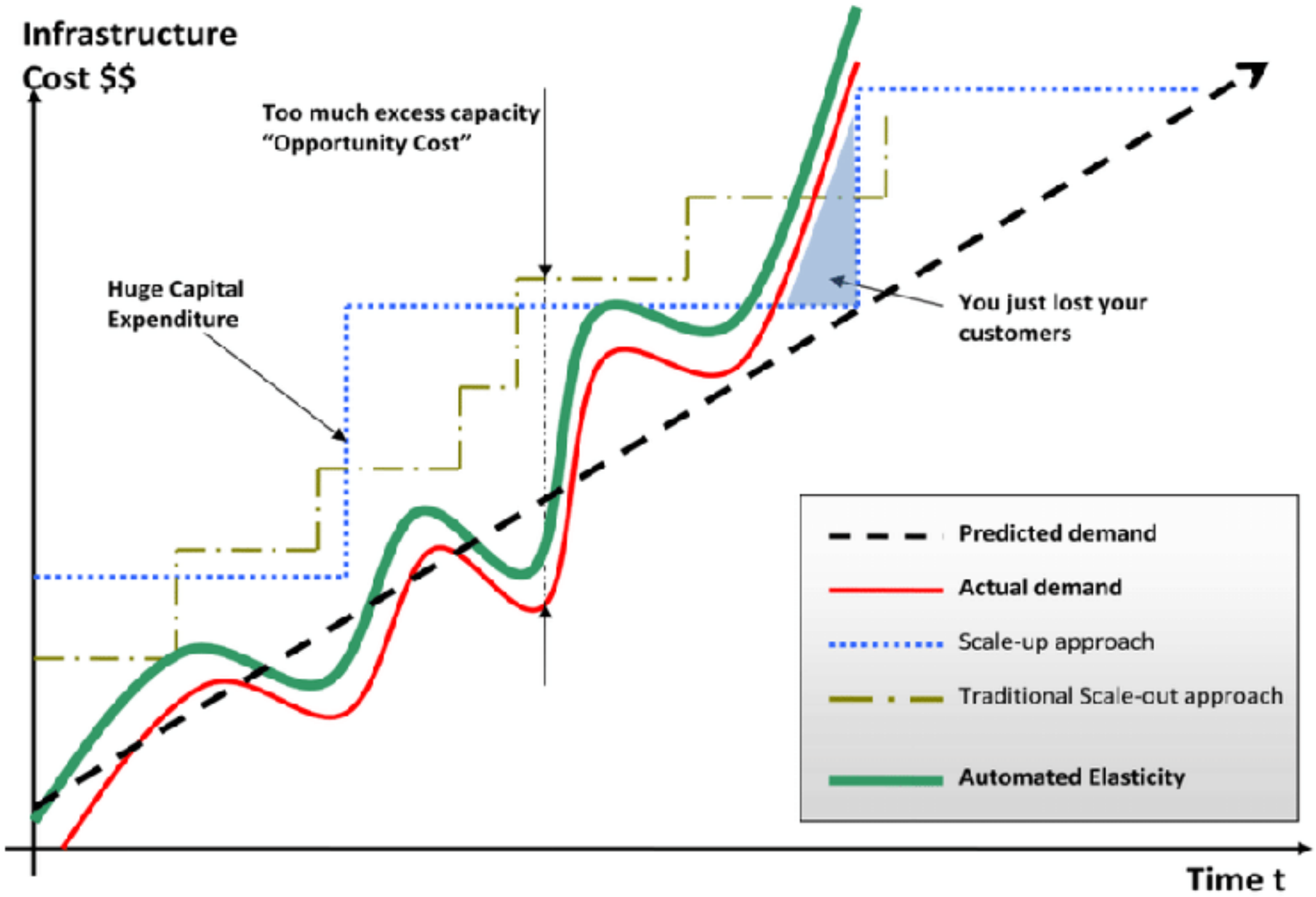
Broad network access

Resource pooling

Rapid elasticity

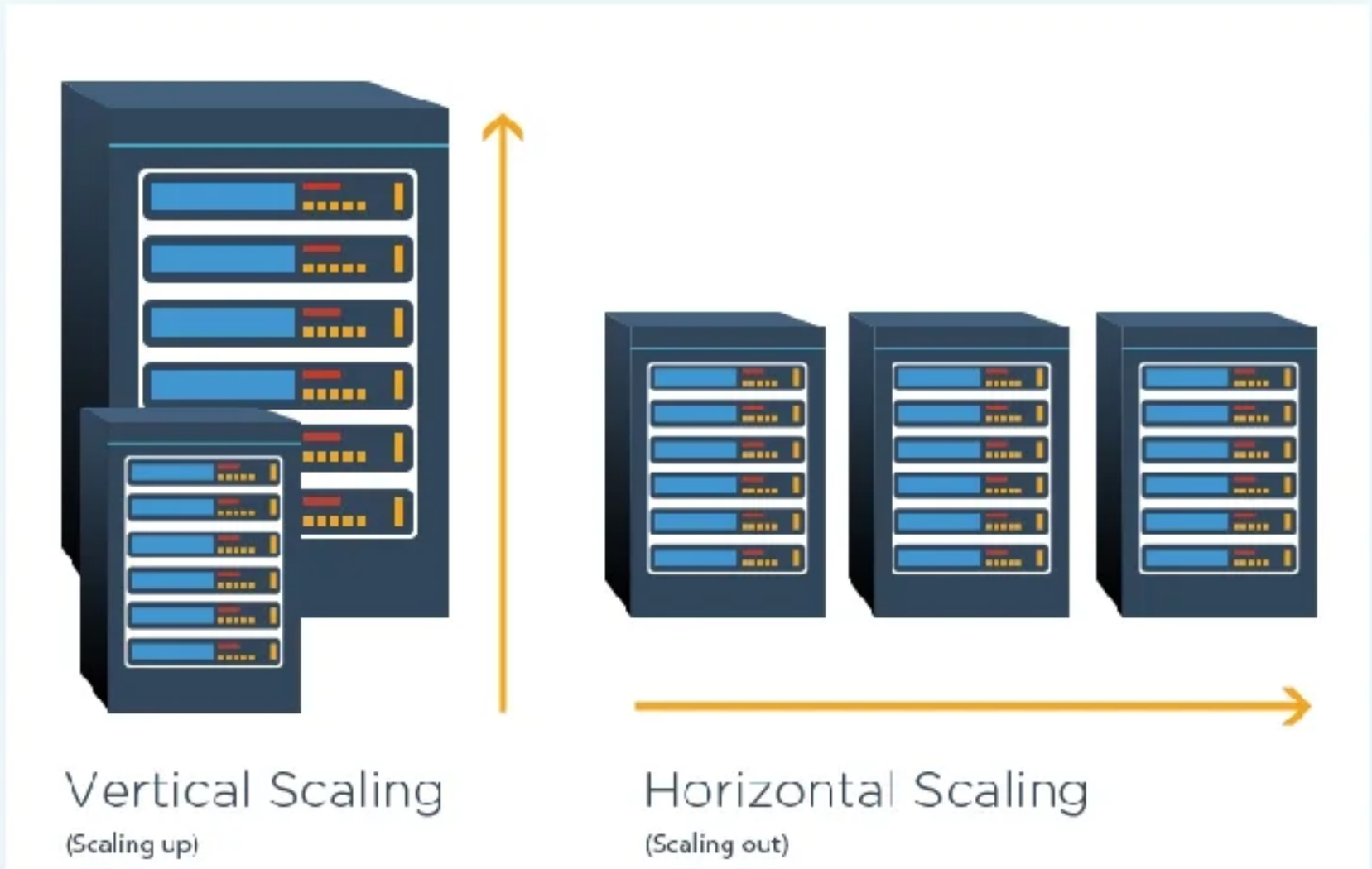
Measured service

Scalability vs Elasticity

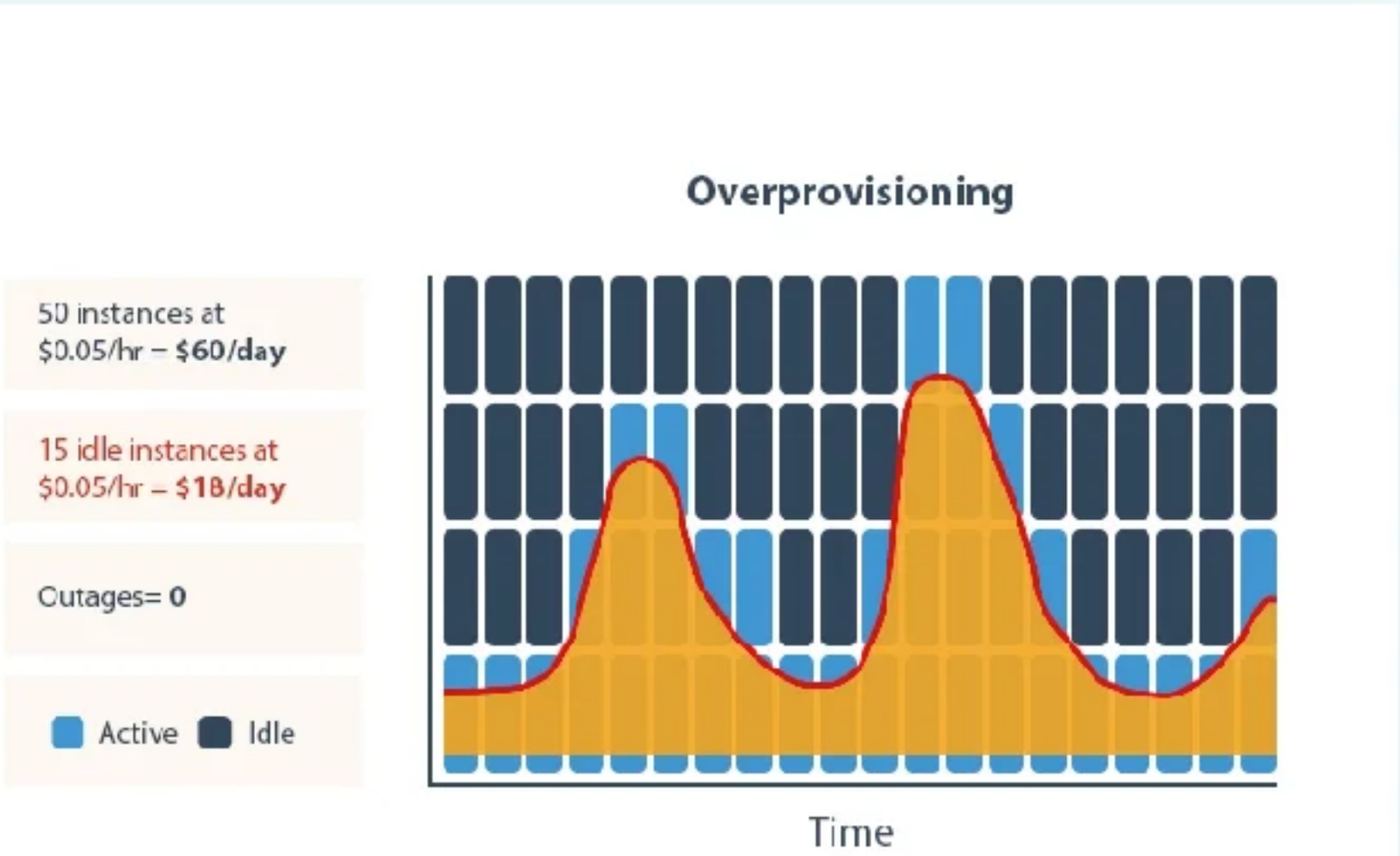


https://www.researchgate.net/publication/293799134_On_Monitoring_and_Analyzing_Elastic_Cloud_Systems

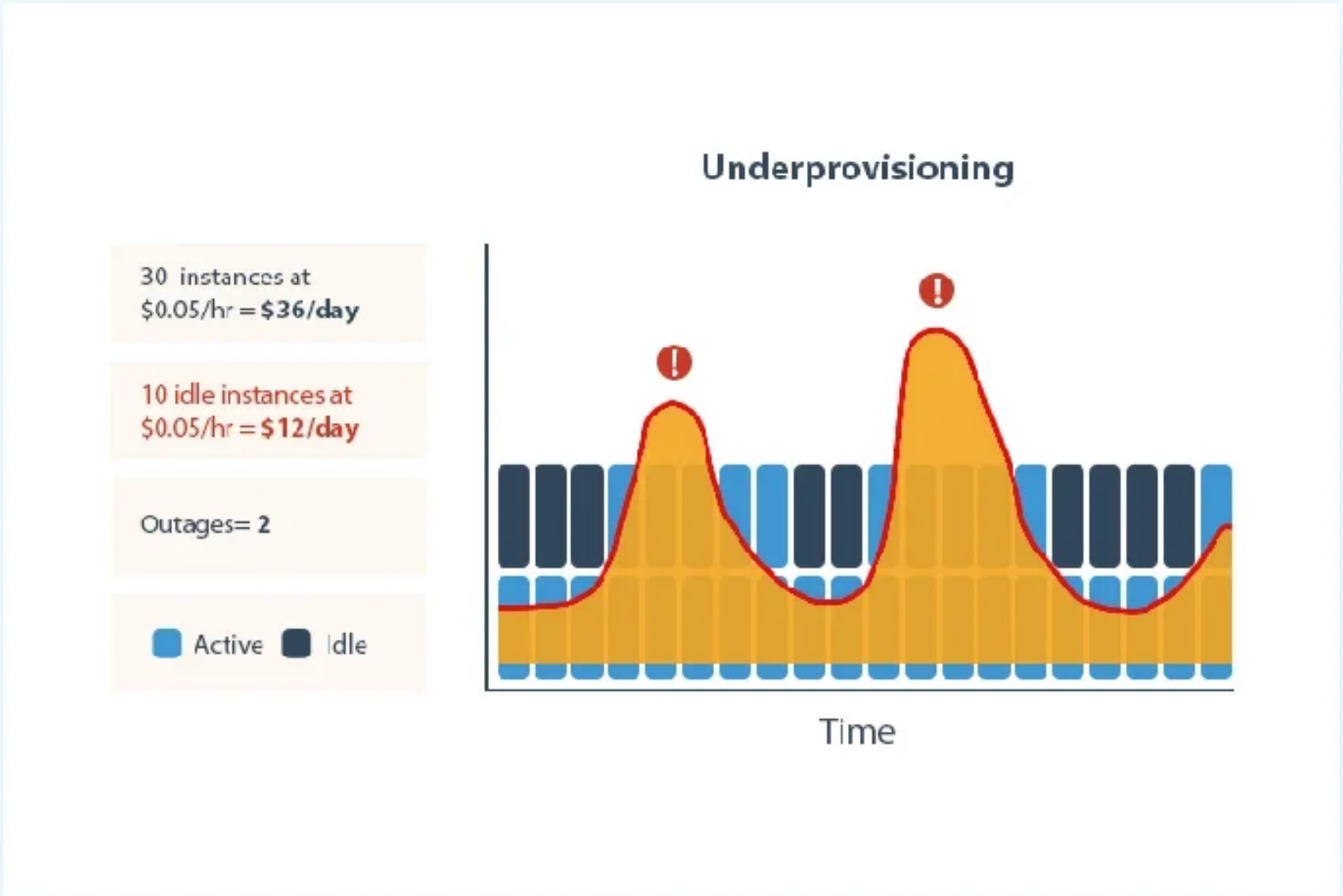
Scaling



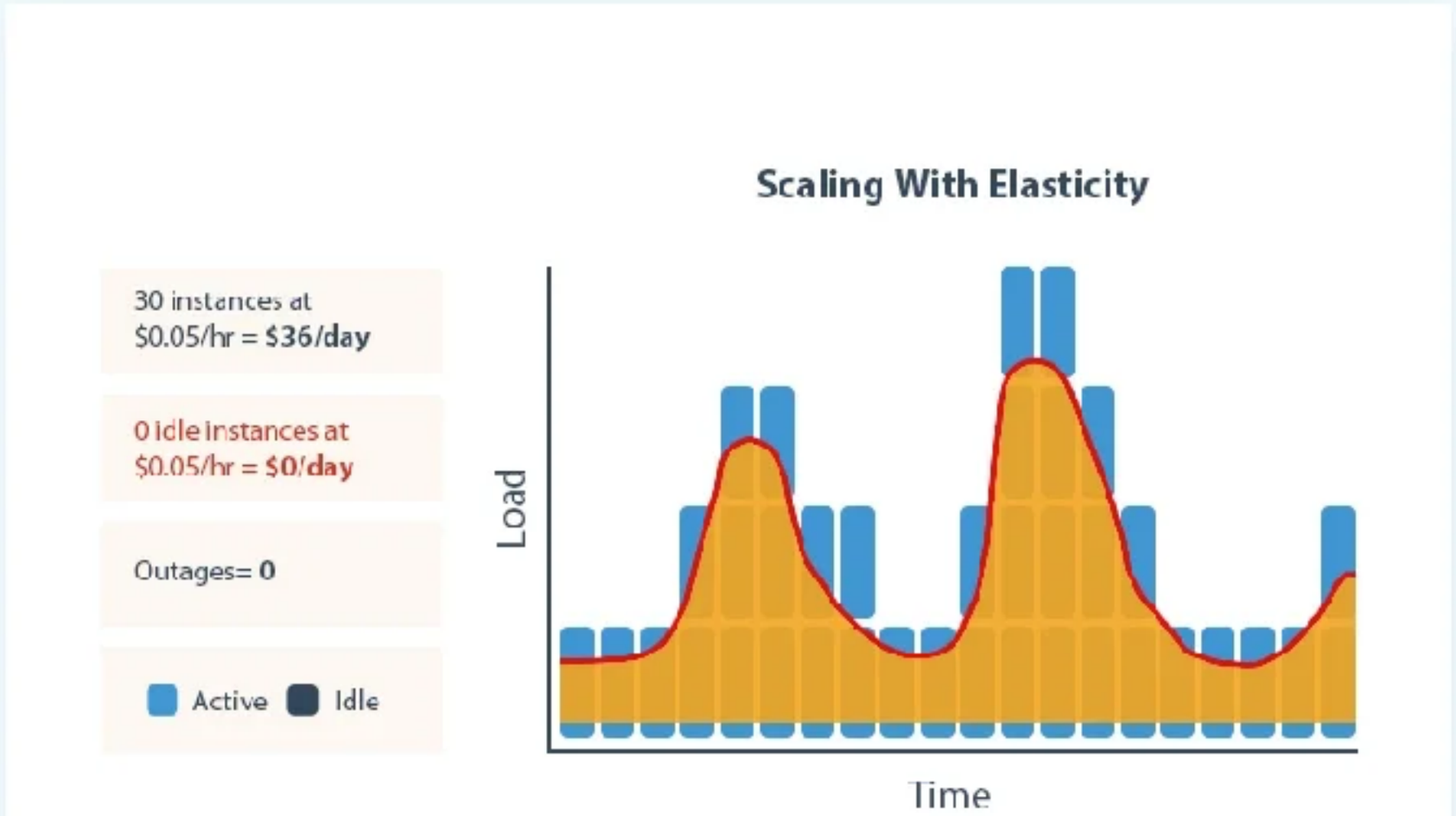
Over-provisioning



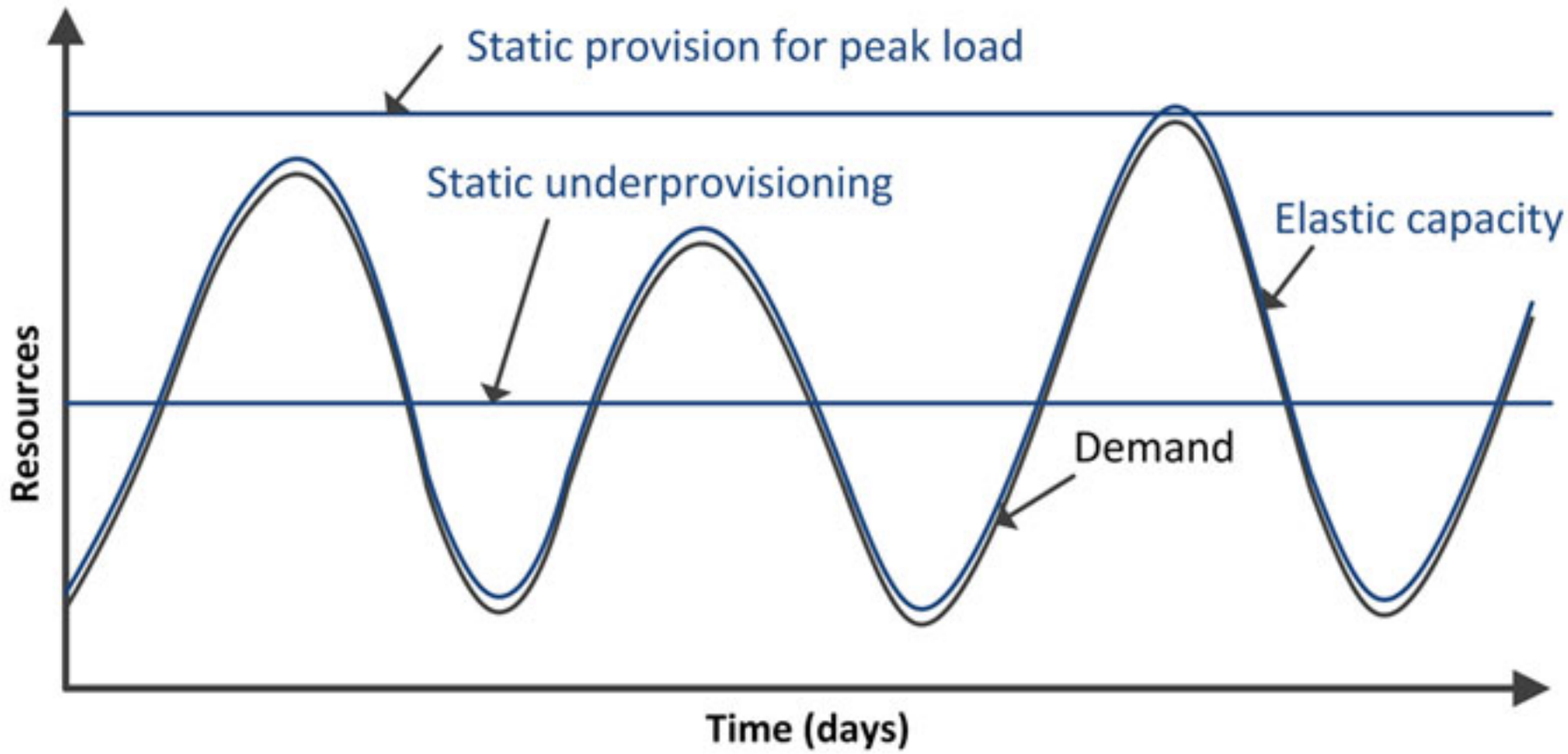
Under-provisioning



Elastic scaling

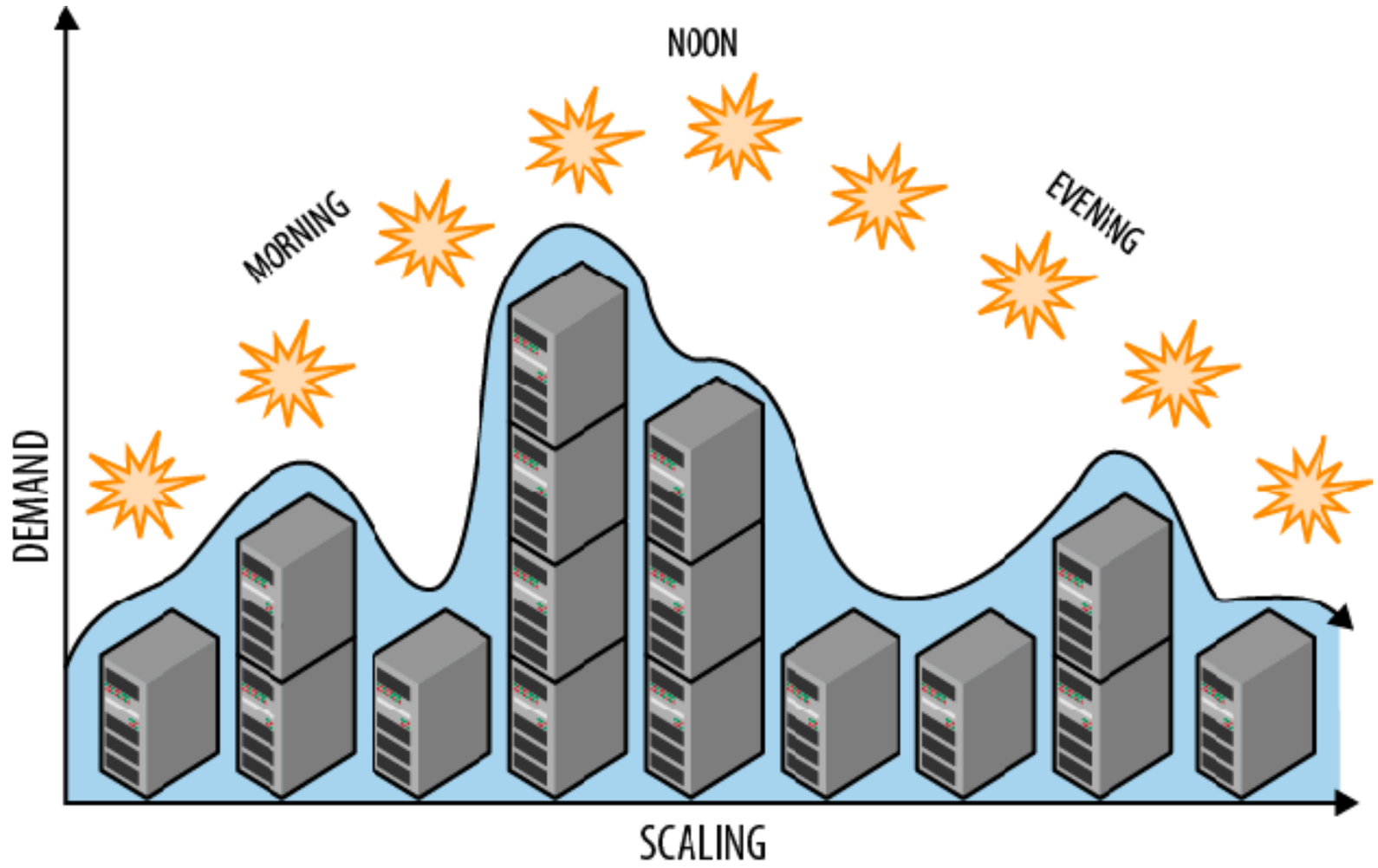


Elasticity Scaling



Elasticity Scaling

Reduce cost and improve performance by scaling automatically !!



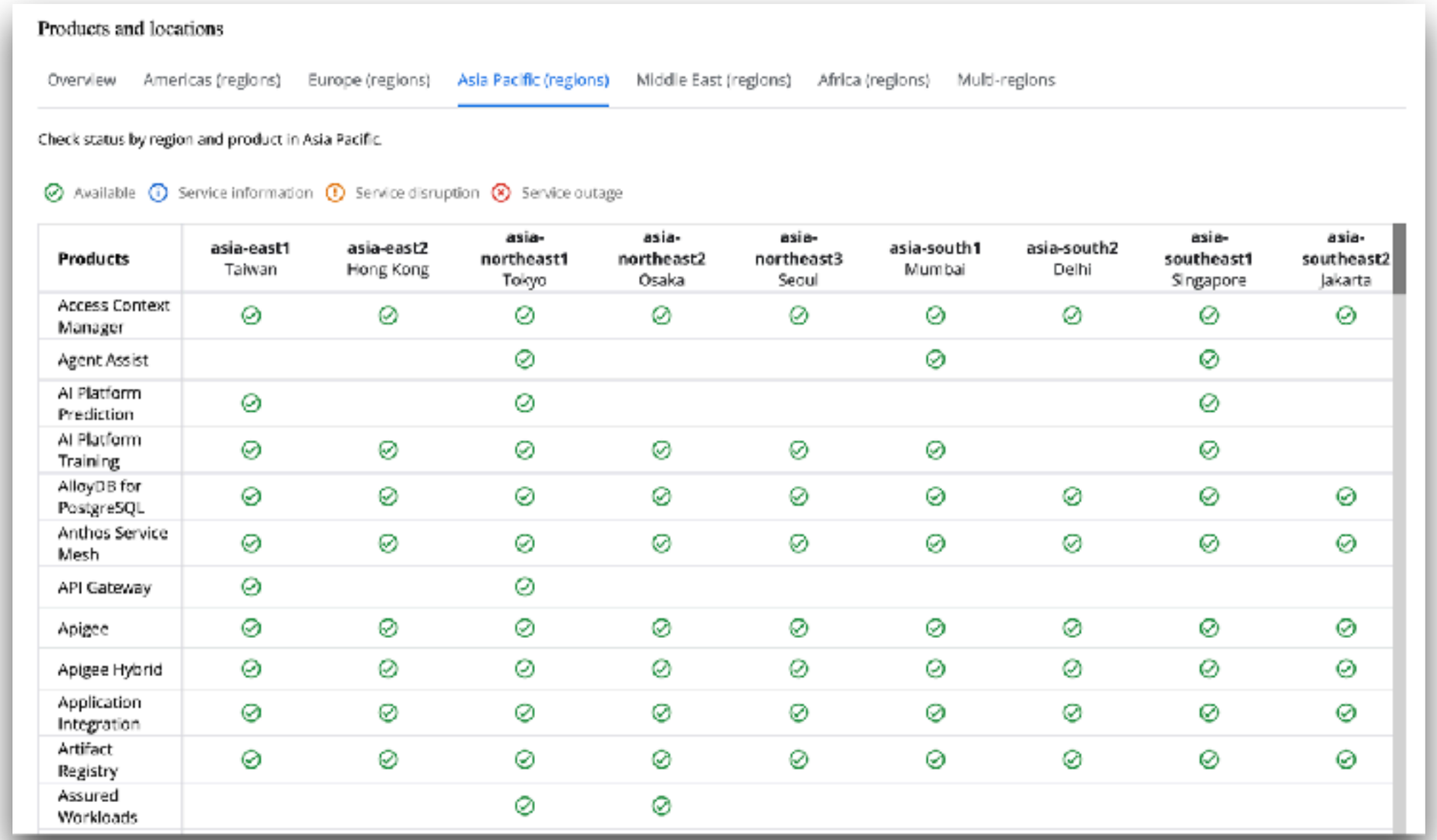
Elasticity Scaling on Cloud

Balance performance and cost-effectiveness

Provide system monitoring tools to track resources utilization

Automatic analyze utilization vs. resource allocation

Status page of Google



Products and locations

Overview | Americas (regions) | Europe (regions) | Asia Pacific (regions) | Middle East (regions) | Africa (regions) | Multi-regions

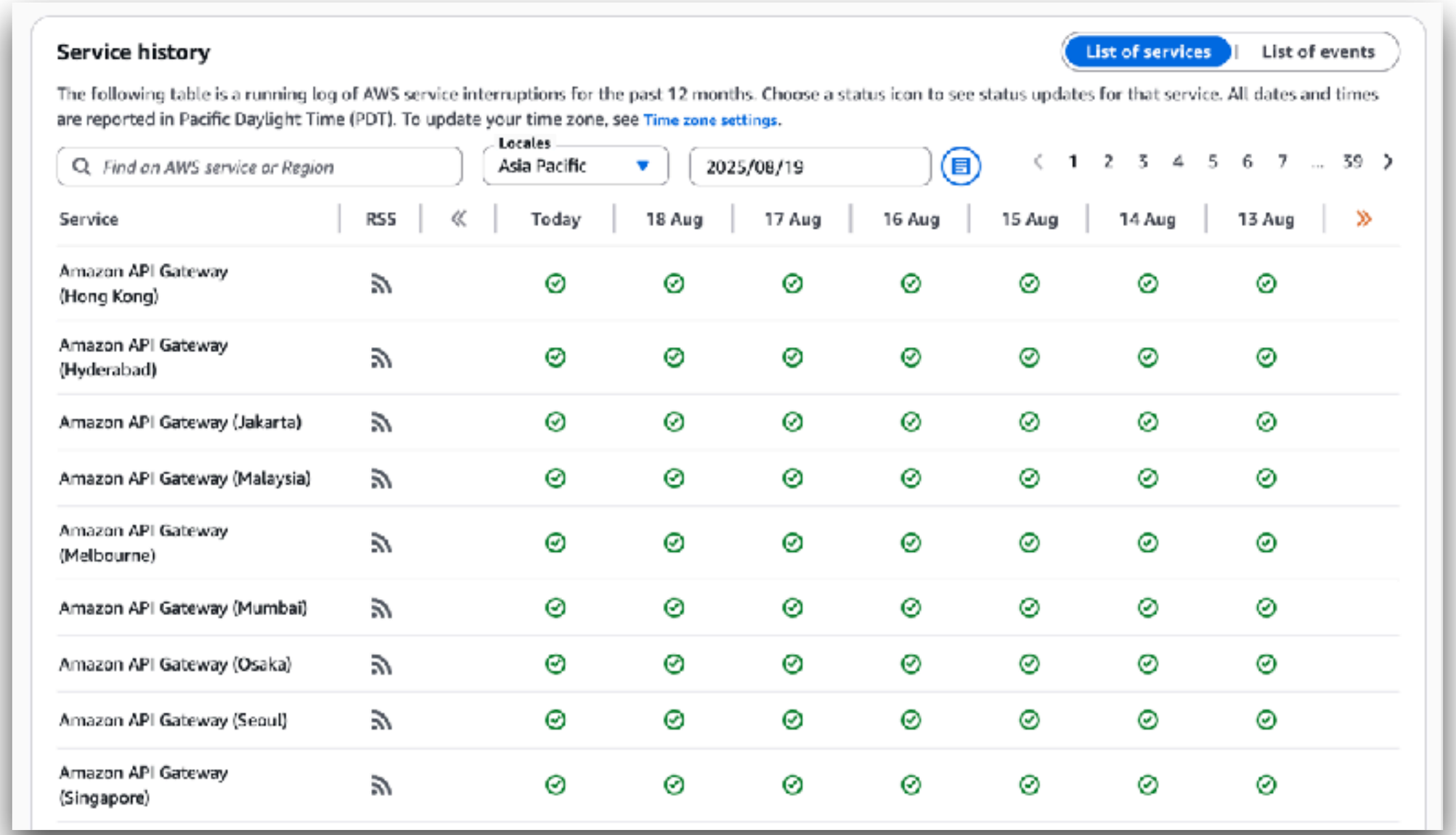
Check status by region and product in Asia Pacific

Available | Service information | Service disruption | Service outage

Products	asia-east1 Taiwan	asia-east2 Hong Kong	asia-northeast1 Tokyo	asia-northeast2 Osaka	asia-northeast3 Seoul	asia-south1 Mumbai	asia-south2 Delhi	asia-southeast1 Singapore	asia-southeast2 Jakarta
Access Context Manager	✓	✓	✓	✓	✓	✓	✓	✓	✓
Agent Assist			✓			✓		✓	
AI Platform Prediction	✓		✓					✓	
AI Platform Training	✓	✓	✓	✓	✓	✓		✓	
AlloyDB for PostgreSQL	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anthos Service Mesh	✓	✓	✓	✓	✓	✓	✓	✓	✓
API Gateway	✓		✓						
Apigee	✓	✓	✓	✓	✓	✓	✓	✓	✓
Apigee Hybrid	✓	✓	✓	✓	✓	✓	✓	✓	✓
Application Integration	✓	✓	✓	✓	✓	✓	✓	✓	✓
Artifact Registry	✓	✓	✓	✓	✓	✓	✓	✓	✓
Assured Workloads			✓	✓					

https://status.cloud.google.com/

Status page of AWS



Service history

List of services | List of events

The following table is a running log of AWS service interruptions for the past 12 months. Choose a status icon to see status updates for that service. All dates and times are reported in Pacific Daylight Time (PDT). To update your time zone, see Time zone settings.

Find an AWS service or Region | Locales: Asia Pacific | 2025/08/19 | 1 2 3 4 5 6 7 ... 39

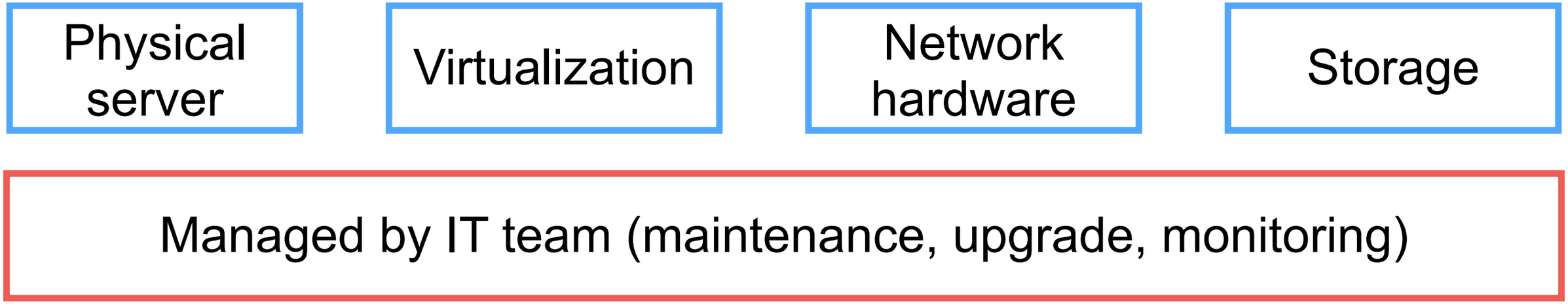
Service	RSS	Today	18 Aug	17 Aug	16 Aug	15 Aug	14 Aug	13 Aug
Amazon API Gateway (Hong Kong)								
Amazon API Gateway (Hyderabad)								
Amazon API Gateway (Jakarta)								
Amazon API Gateway (Malaysia)								
Amazon API Gateway (Melbourne)								
Amazon API Gateway (Mumbai)								
Amazon API Gateway (Osaka)								
Amazon API Gateway (Seoul)								
Amazon API Gateway (Singapore)								

https://health.aws.amazon.com/health/status

On-premise infrastructure

On-premise infrastructure

Computing resources that hosted in-house
Managed by and org's internal IT team



Pros

Full control (complete ownership and customization)
On-time cost (upfront investment)
Compliance and regulation control
Security (physical and data privacy)
No-internet dependency for internal system

Cons

High initial cost

Requires continuous investment in hardware upgrades and maintenance

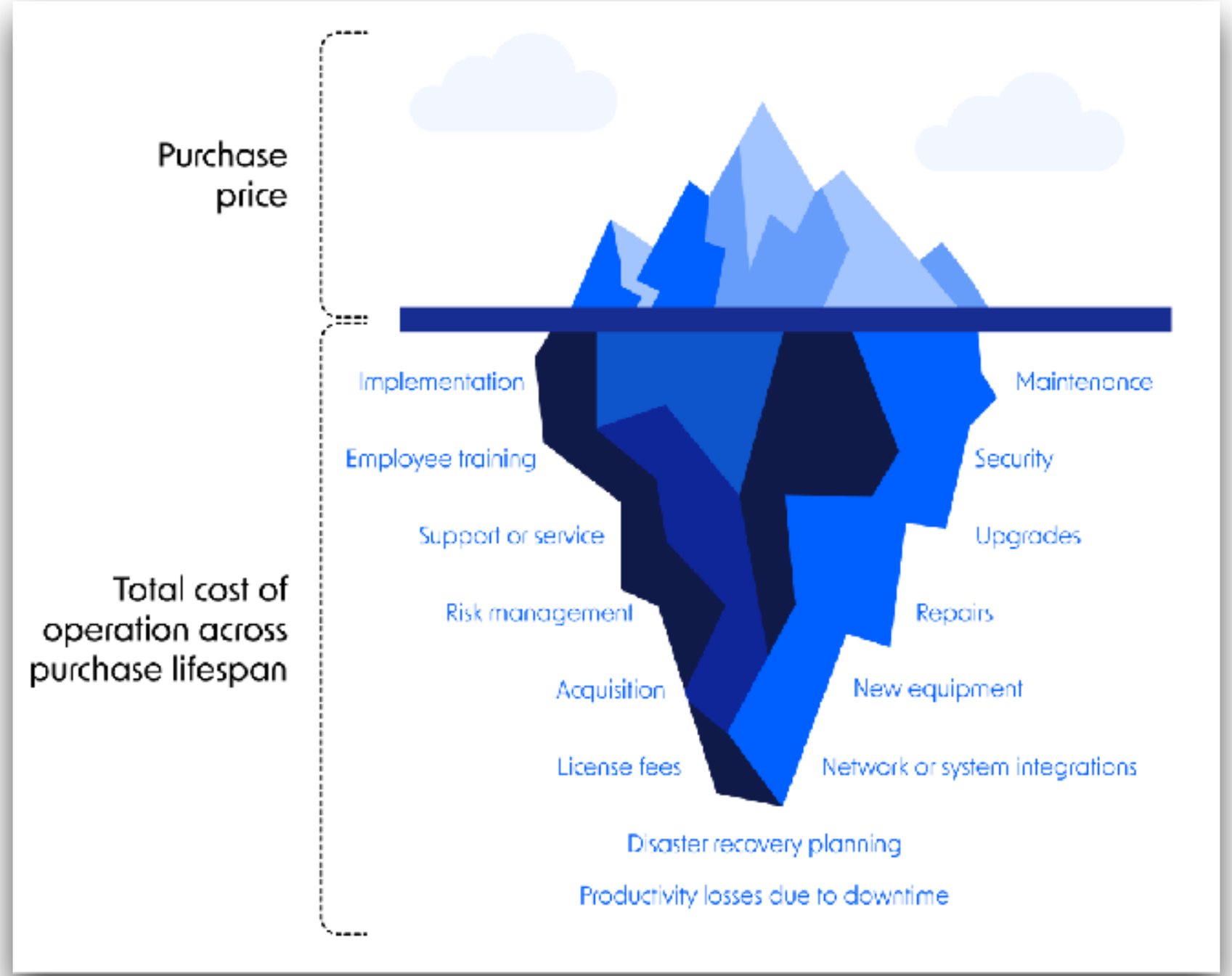
Limited scalability (physical and space constraints)

Maintenance responsibility

Disaster recovery (complex to setup)

Accessibility from outside (can’t work without VPN)

Total Cost of Ownership



Cloud Computing

Try to solves On-premise Limitations

Scalability

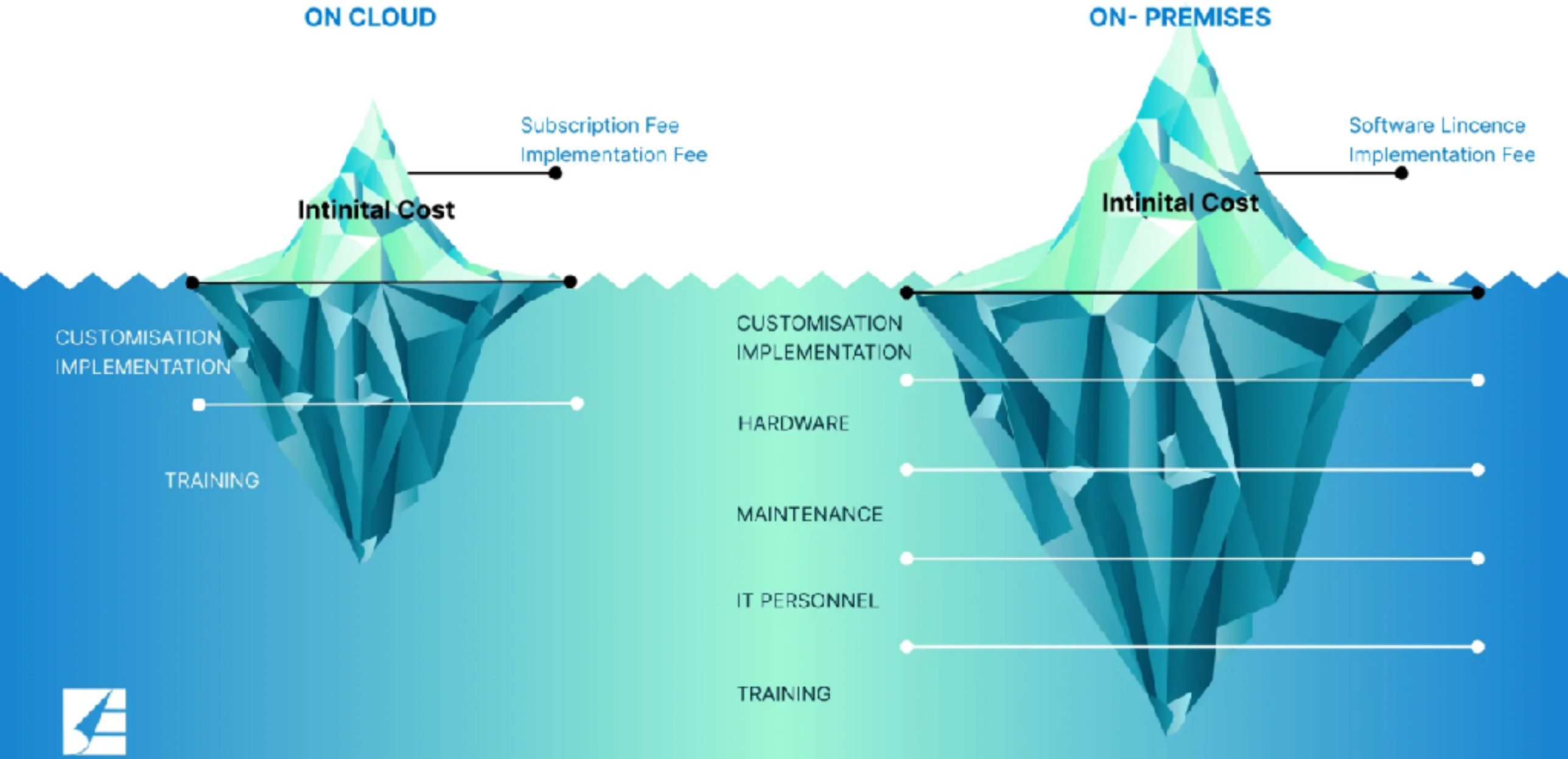
Cost saving

Reduce maintenance

Flexibility

Build-in disaster recovery

Total Cost of Ownership



Cloud Computing

Allow organization to access IT resources over internet

Pay-as-you-go in basis

Computing	Storage	Database	Network

Cloud providers manage the underlying **hardware** and perform maintenance, software patches, and updates

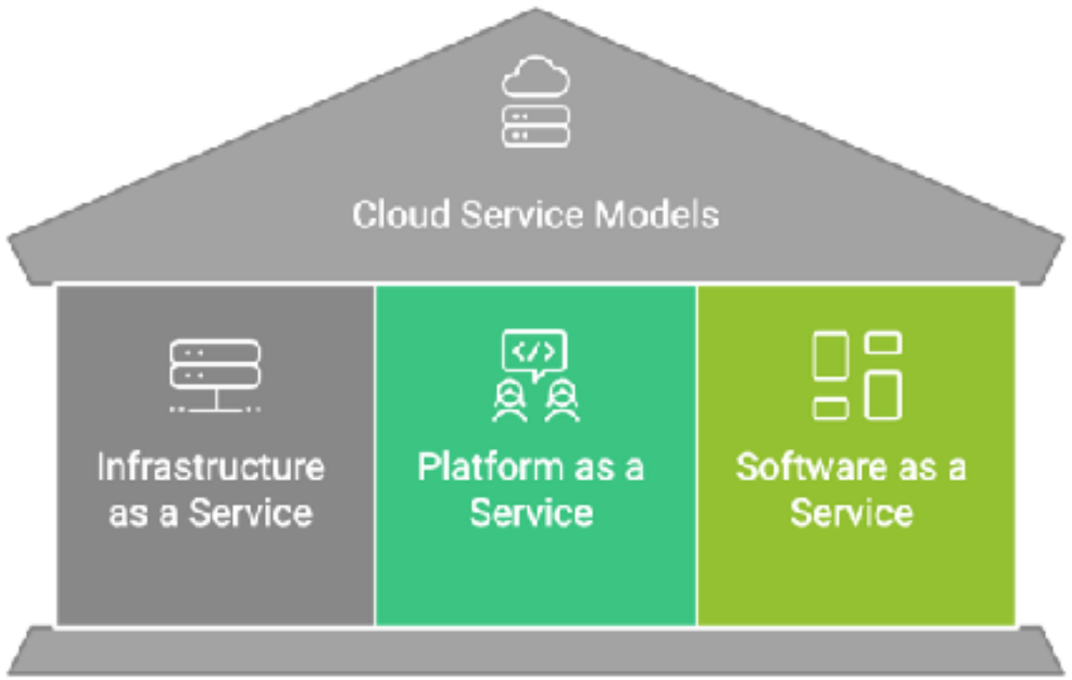
Module 2

Cloud service and deployment models

Service models of Cloud

Define the level of control a user to use cloud

Infrastructure as a Service (IaaS)
Platform as a Service (PaaS)
Software as a Service (SaaS)



IaaS

Basic level of cloud computing
Rent IT infrastructure

PaaS

Platform allow customer to develop, run, manage app without worry about infrastructure

APIs | Tools | Framework

Development and Deployment

Google App Engine, GKE
Amazon EKS, Azure App Service

SaaS

Provide access software app from internet

User can access via web browser without managing infrastructure or platform

Softwares

Google workspace, Microsoft 365, Saleforce

More services models !!

Function as a Service (FaaS)

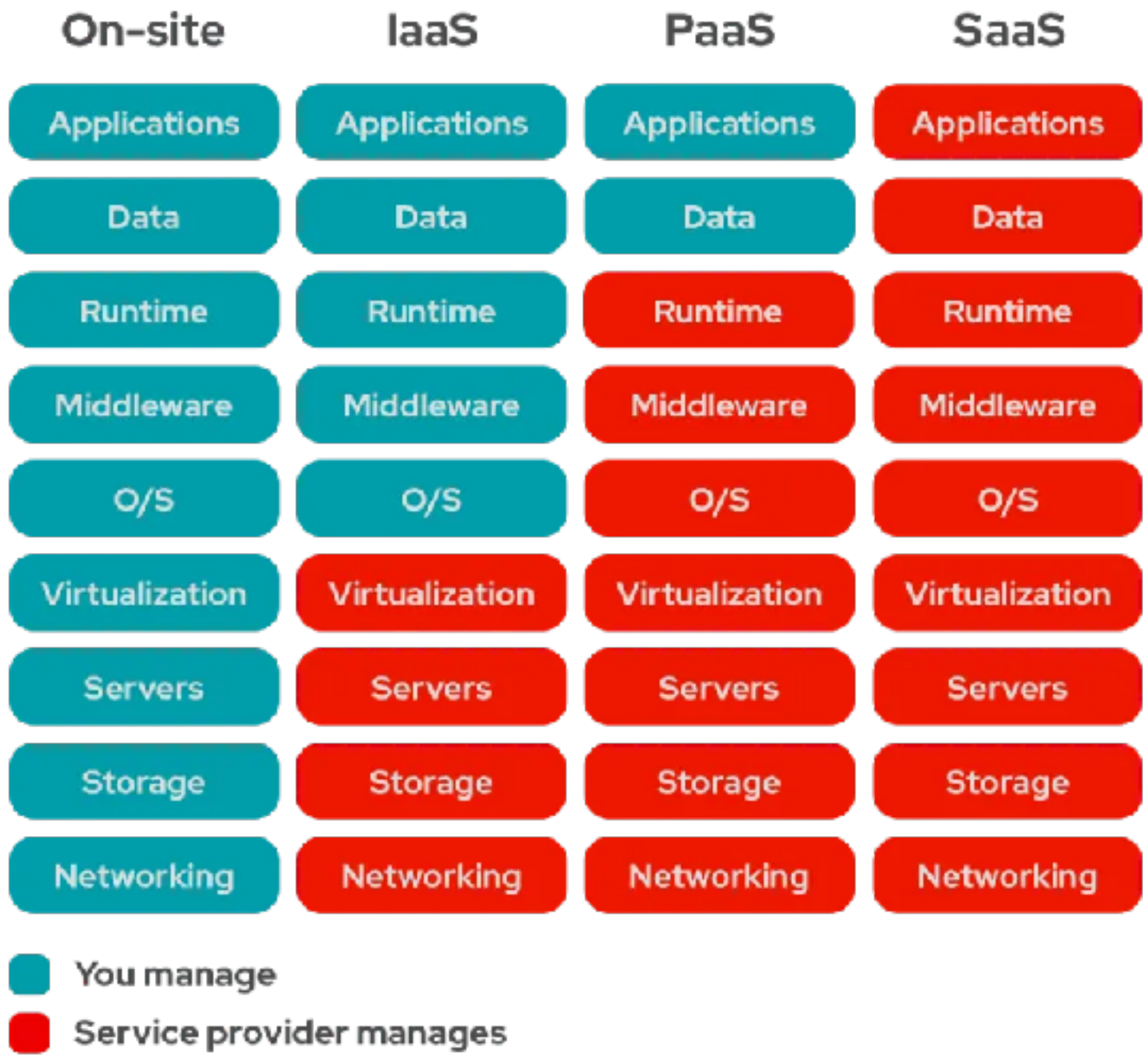
Containers

AWS Lambda

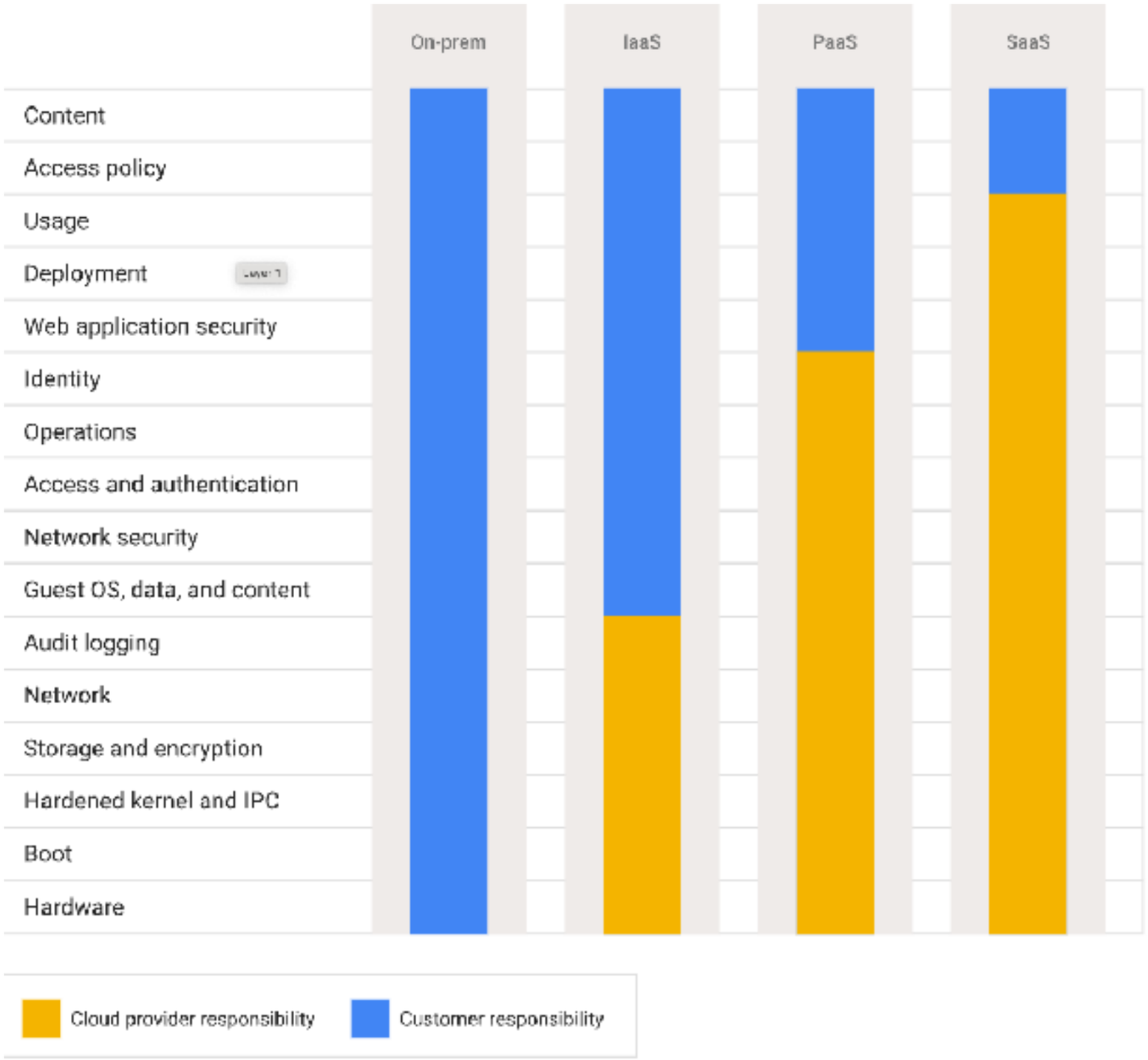
CLOUD FUNCTIONS

Azure Functions

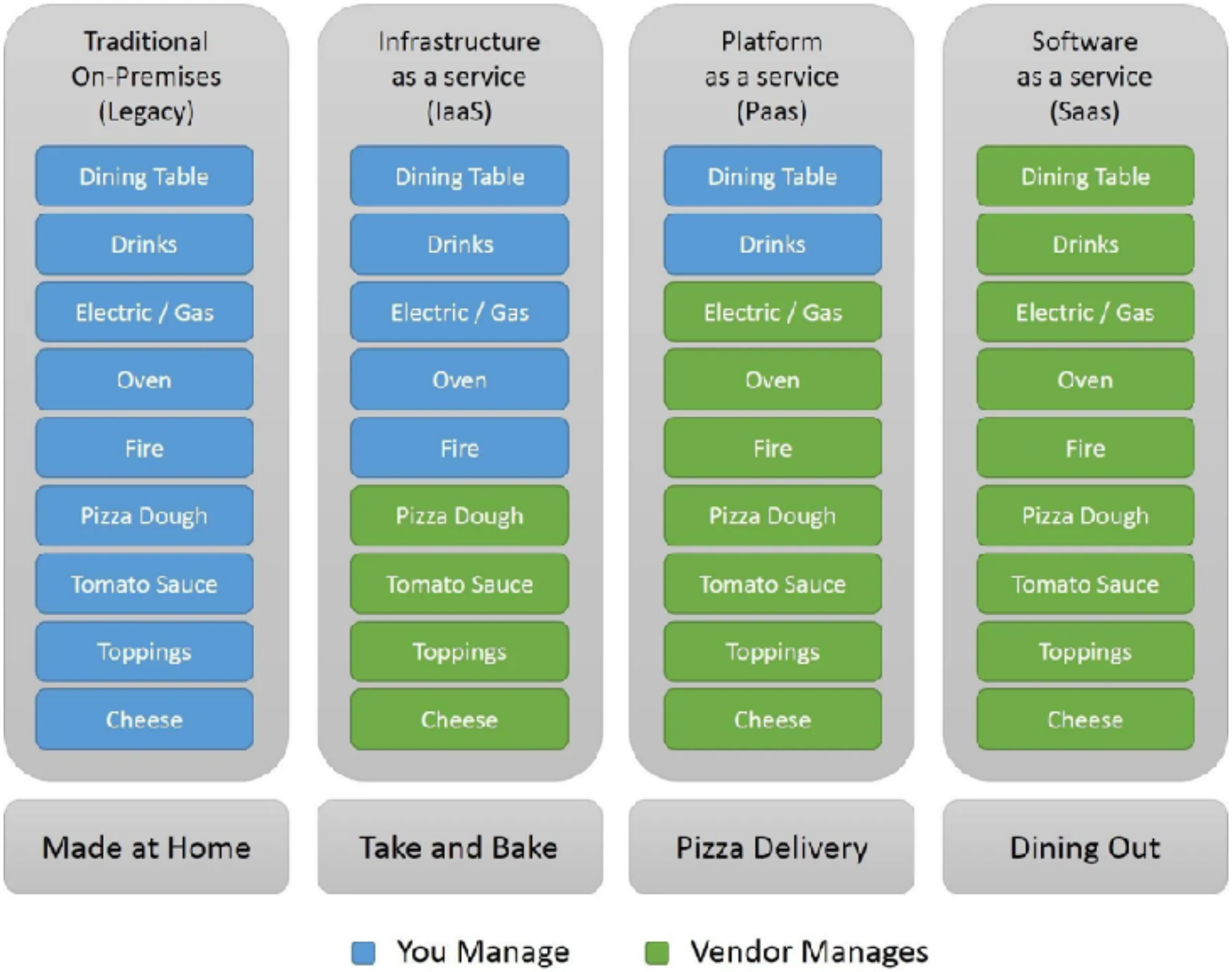
Service models of Cloud



Service models of Cloud

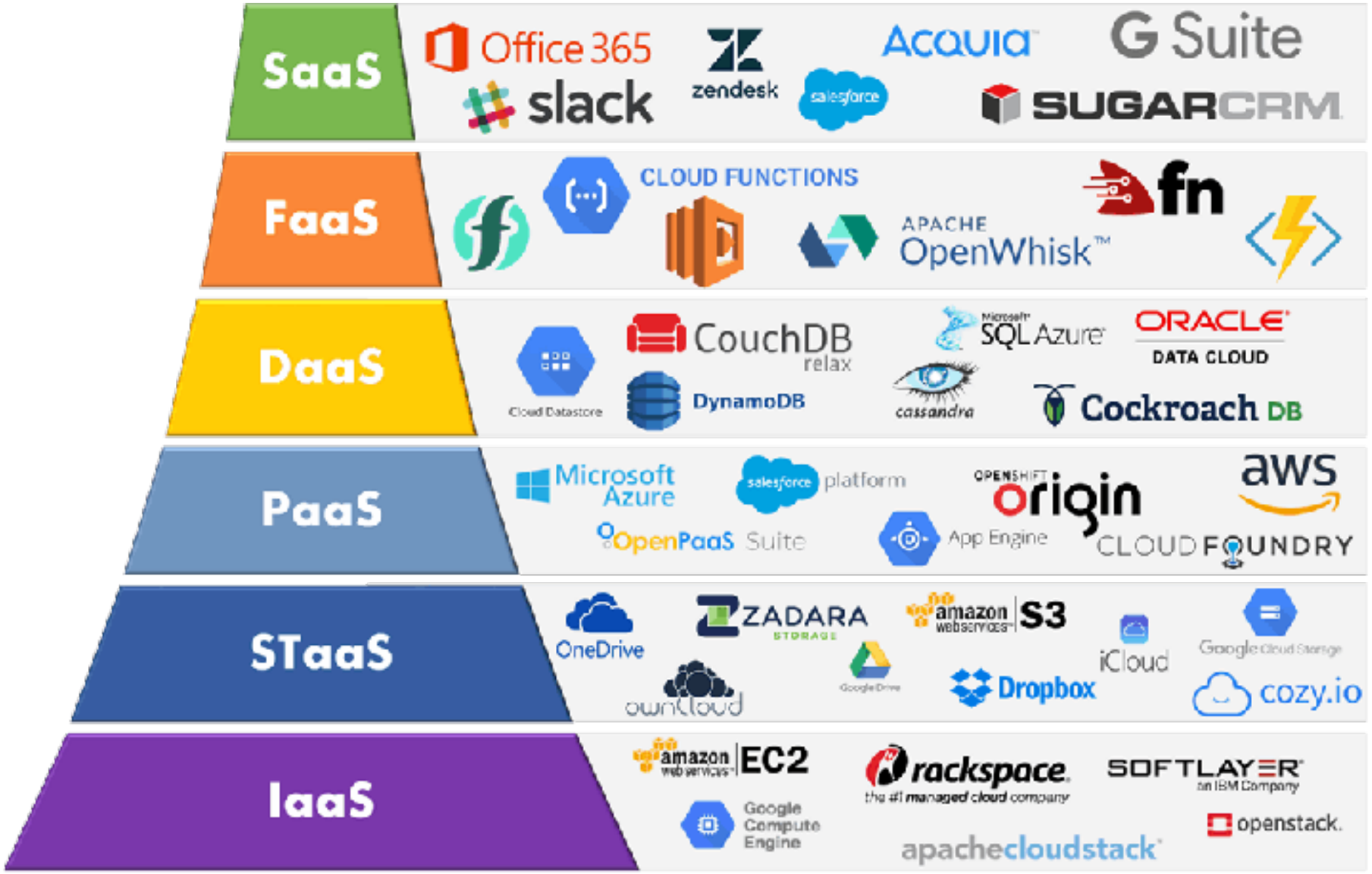


Pizza as a Service



https://m.oursky.com/saas-paas-and-iaas-explained-in-one-graphic-d56c3e6f4606

Service models !!!

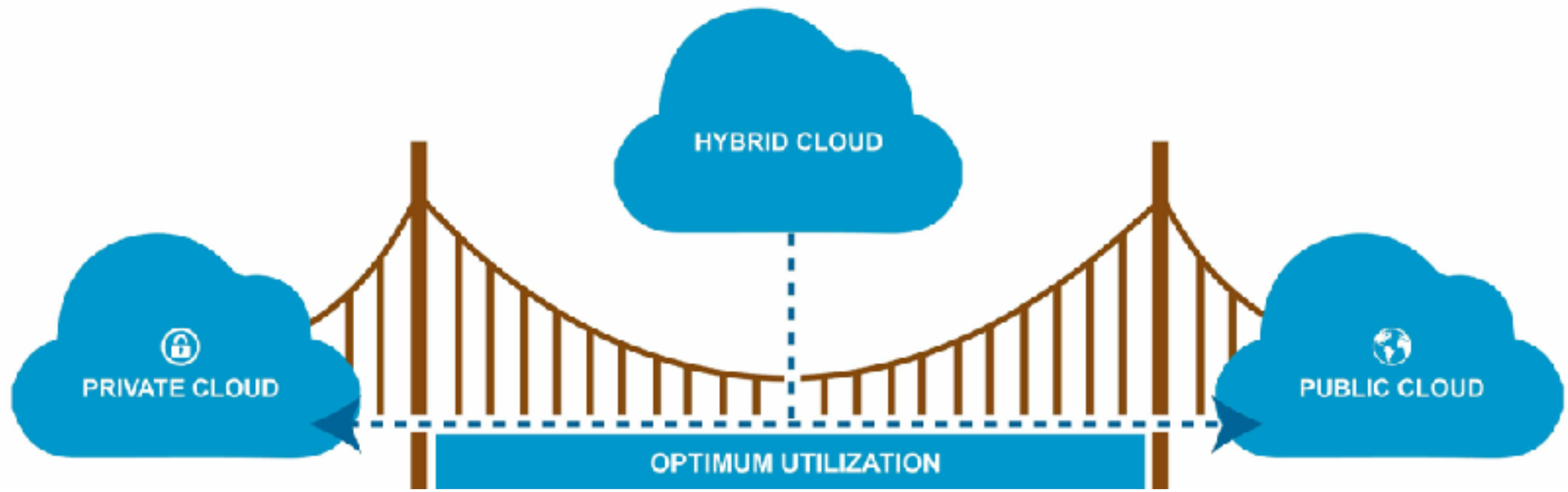


Deployment models

Define **where** the cloud is physically located and **owns** it

Deployment models of Cloud

Public cloud
Private cloud
Hybrid cloud
Community cloud



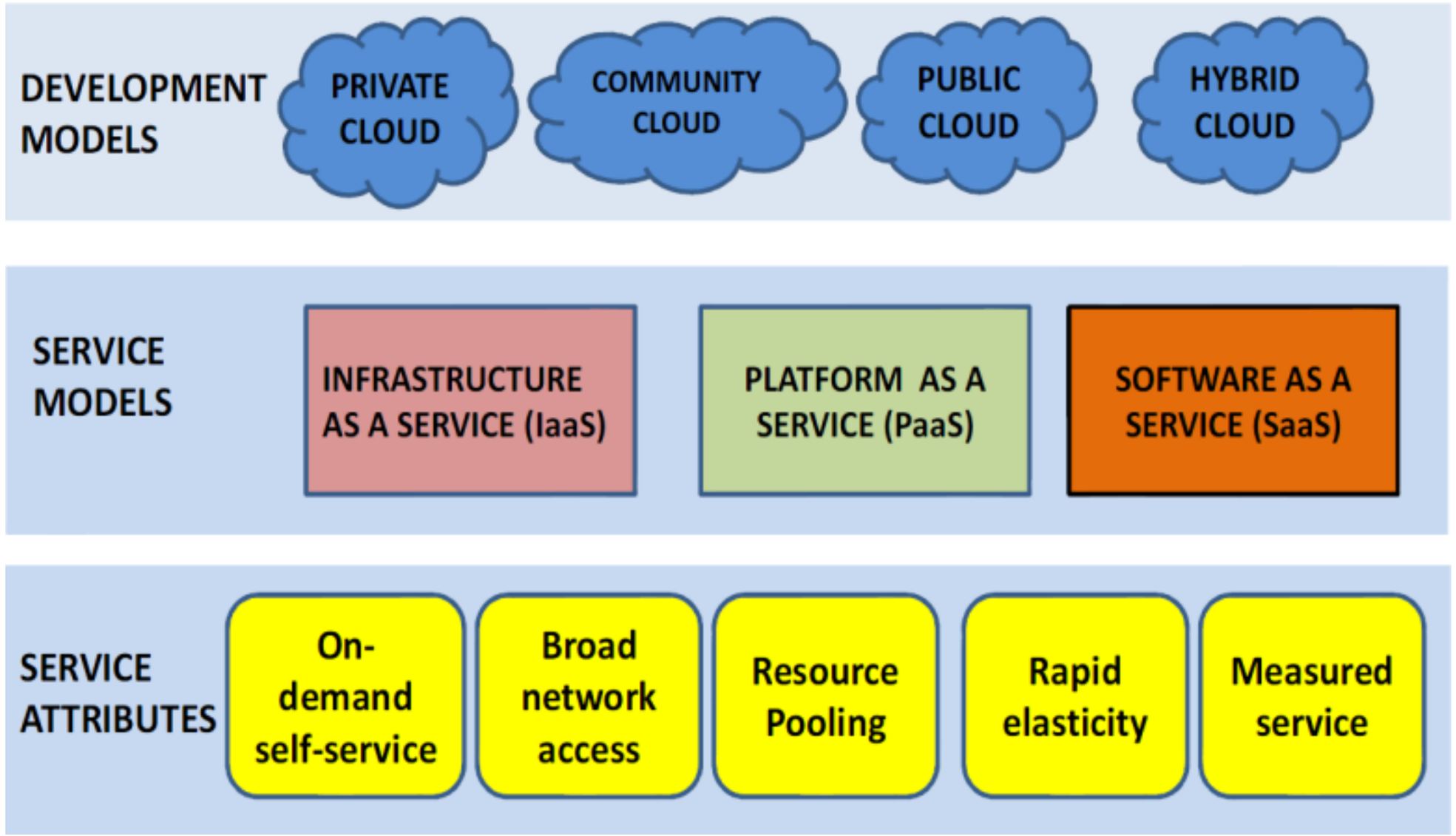
Comparison

Factors	Public	Private	Hybrid
Security	Low but depend on provider	Most secure	Moderately
Scalability	Highly	Unlimited	Highly
Shared resources	Shared servers	Private servers	Mixed
Cost	Effective	Expensive	Moderately
Owner	Service provider	Enterprise	Enterprise
Target users	Small, medium organization, individual	Enterprise	Enterprise
Example	AWS, GCP	VMware Cloud, OpenStack	AWS outpost, Google anthos, Azure hybrid

Use cases

Industry	Use cases
Insurance	Customer renew auto policies at the same time annually
E-commerce	11-10 Black Friday Limited-time products
Streaming service	When the stream service released all 15 episodes

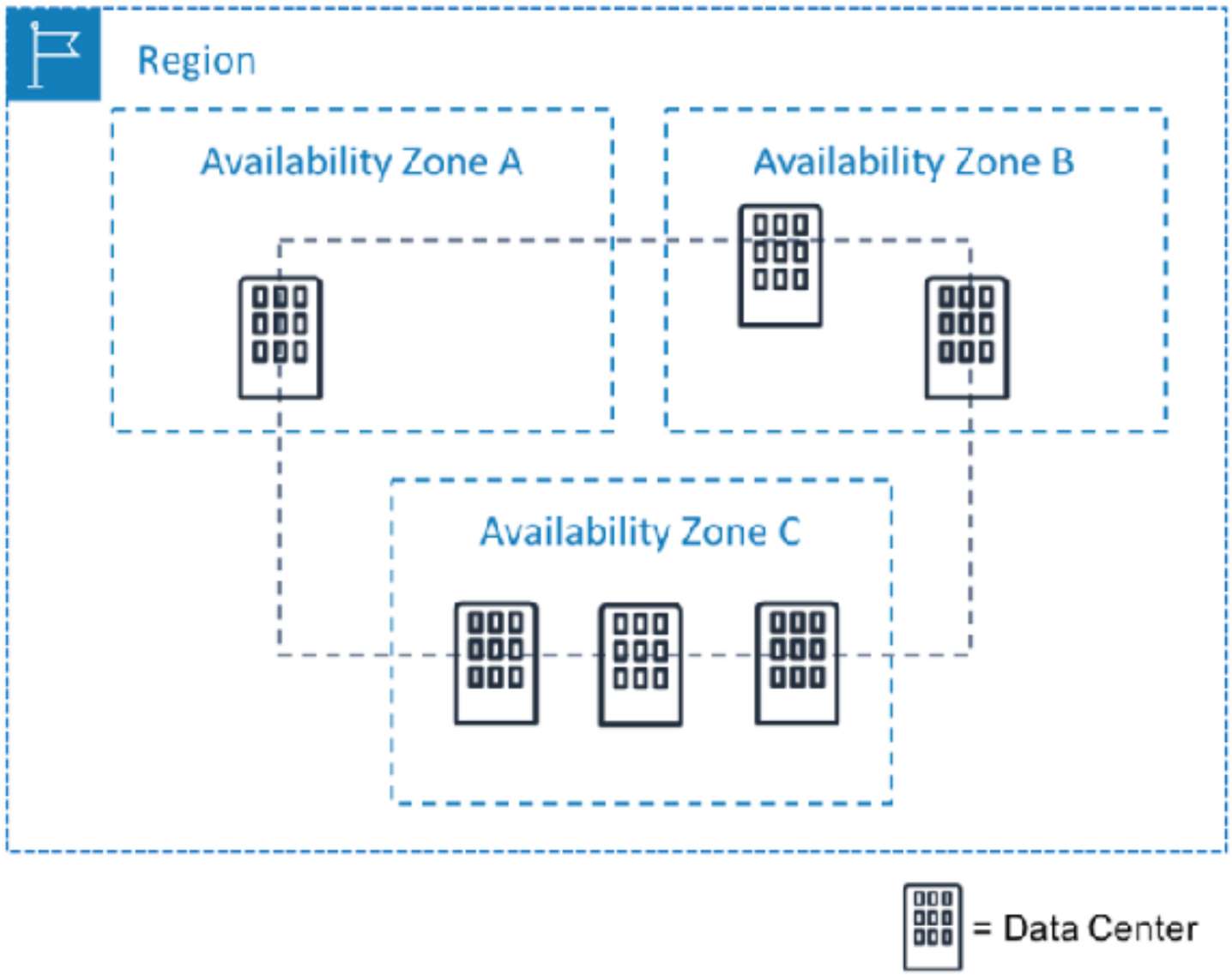
Summary



https://www.researchgate.net/publication/369909054_Using_integrated_library_management_systems_for_the_improvement_of_information_services_based_on_cloud_computing

High Availability

Build-in disaster recovery, auto backup into services



Cons

Provider dependency

Internet dependency

Regulatory compliance

Limited control (less custom, vendor lock-in)

Data privacy concern

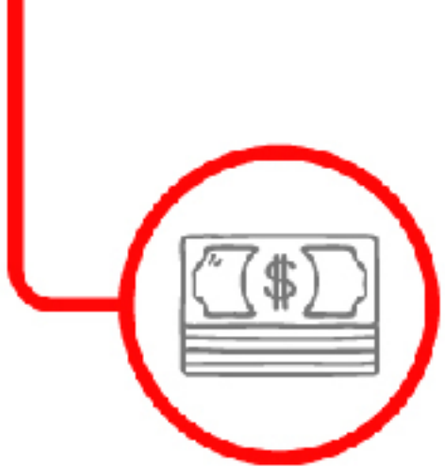
Latency concern

Subscription-based pricing, it good for initial but in long term usage may become expensive for heavy workload

Pricing on Cloud Infrastructure

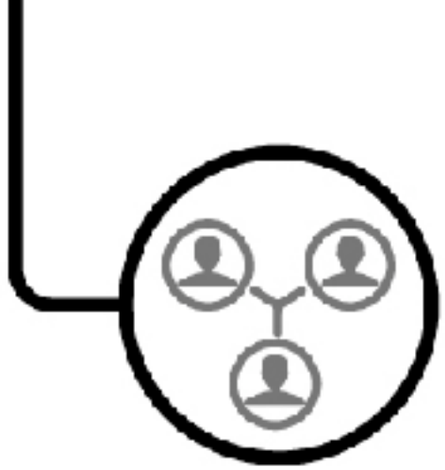
Resource Size

Bigger resources cost more!



Data Transfer

- No Ingress cost Careful with Egress cost

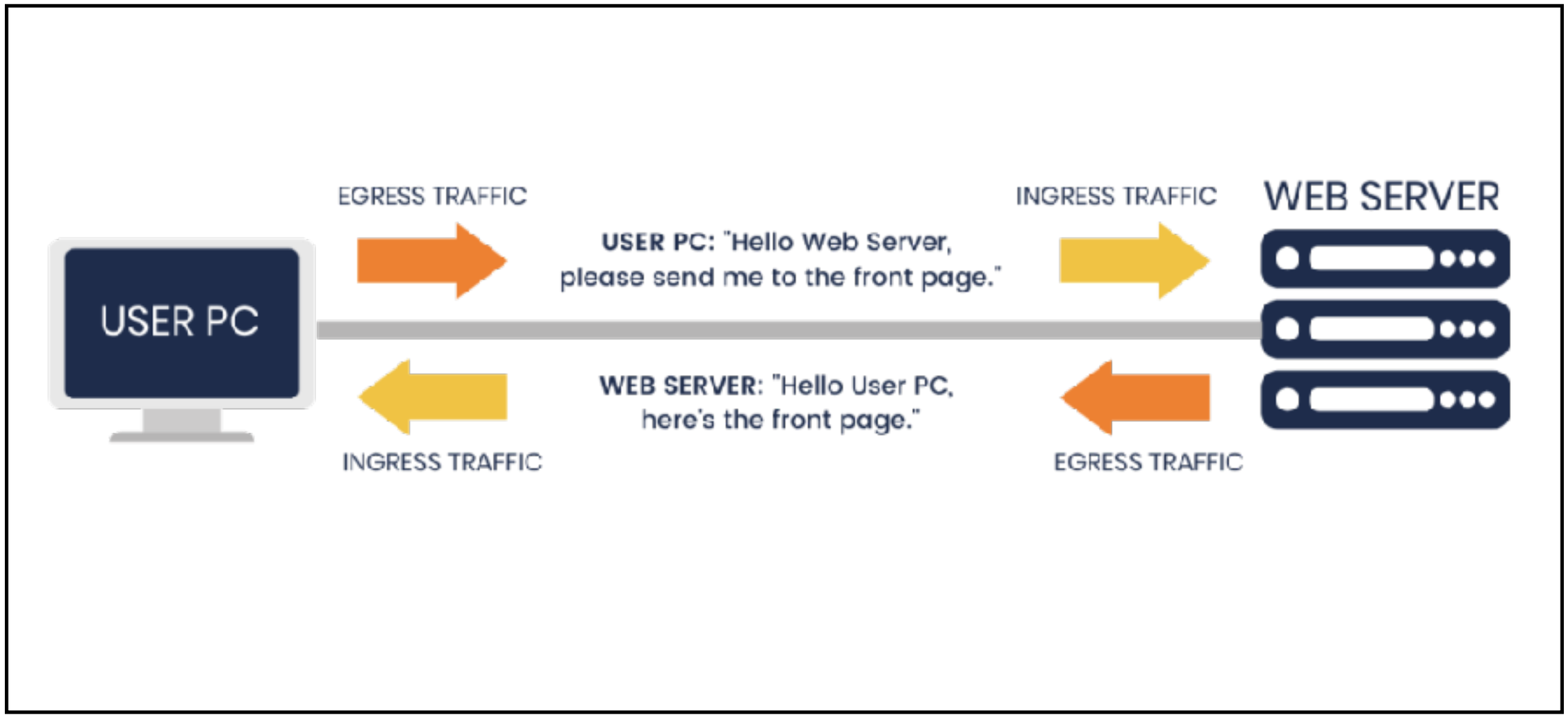


Resource Type

- VMs v/s BMs VMs v/s Functions BYOL v/s managed DBs

Pricing per region

Ingress vs Egress



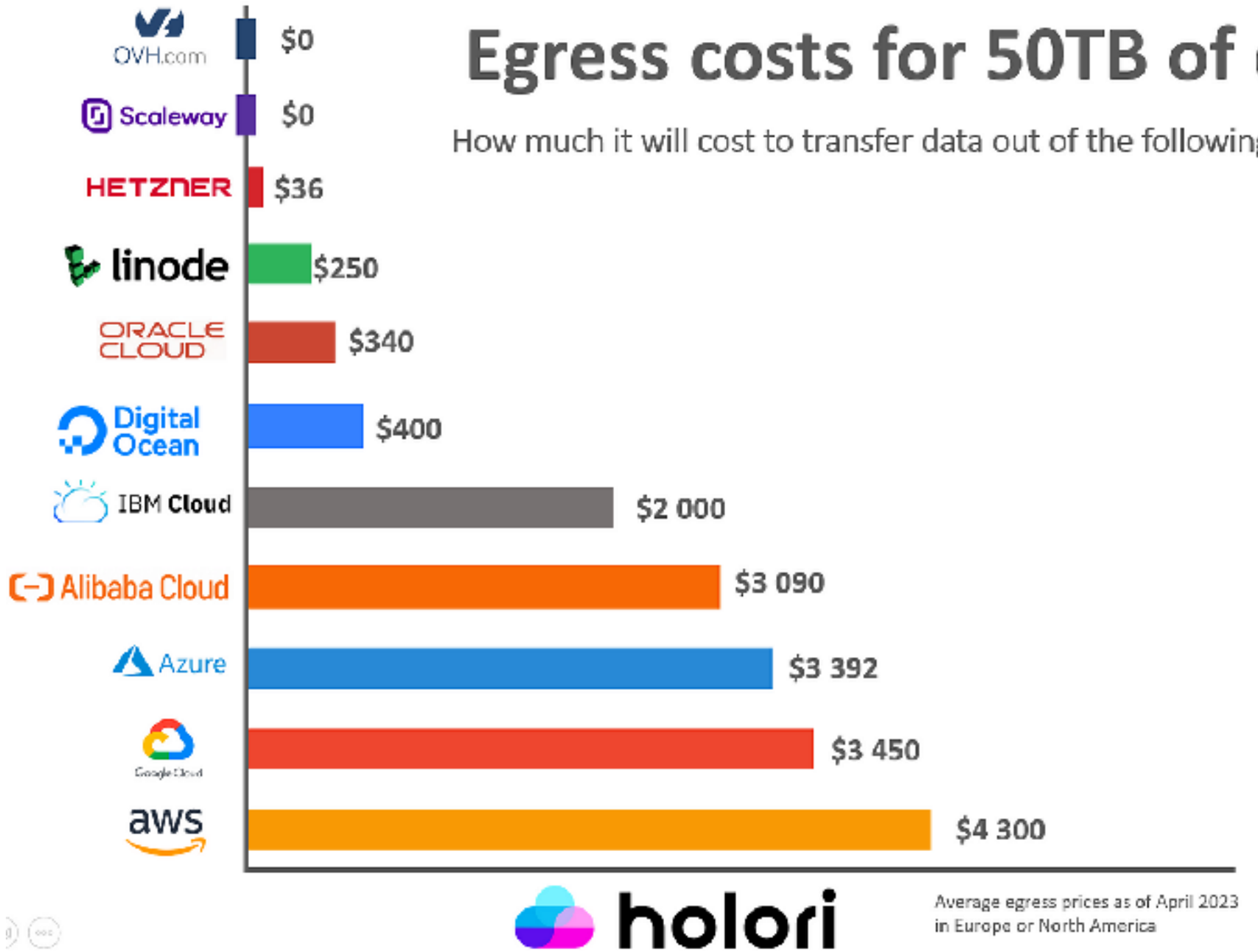
Ingress vs Egress

Egress Costs by Public Cloud

Public Cloud	Egress Pricing (per GB)	Total Cost for 500 TB
aws	• 1 Gb-10 TB: $0.09 • 10-50 TB: $0.085 • 50-150 TB: $0.07 • 150-500 TB: $0.05 • 500+ TB: Contact Amazon	$28,800
Azure	• 5 GB-10 TB: $0.087 • 10-50 TB: $0.083 • 50-150 TB: $0.07 • 150-500 TB: $0.05 • 500+ TB: Contact Azure	$28,770
Google Cloud Platform	• 0-1 TB: $0.12 • 1-10 TB: $0.11 • 10+ TB: $0.08	$40,310

Source: William Blair Equity Research

Egress Cost !!



https://cast.ai/blog/data-egress-cost-how-to-take-back-control-and-reduce-egress-charges

How to reduce cost of Egress ?

Reduce inter-region data transfer

Avoid unnecessary data transfer

Use data compression

Redesign data-intensive app (download only diff data)

Use CDN (Content Delivery Network)

Egress optimizer

Monitoring your data flow !!

5 Steps to Manage Cloud Data Egress Costs

Tag cloud resources with cost centers

Identify business units that use cloud services and automatically tag resources using a standard format

Optimize

Think data compression, data deduplication, and delta encoding

Think outside the transfer box

For moving large datasets, shipping physical storage devices can be more cost-effective and faster

Understand your data use and design appropriately

Analyze your data transfer patterns, including volume, frequency, and destinations

Set budgets—and stay within them

Once resources are tagged, have departments start monitoring spend. Set alerts for unexpected spikes

https://www.oracle.com/asean/cloud/data-egress-costs/

Cloud Computing

Scalability

Cost

Flexibility

Maintenance

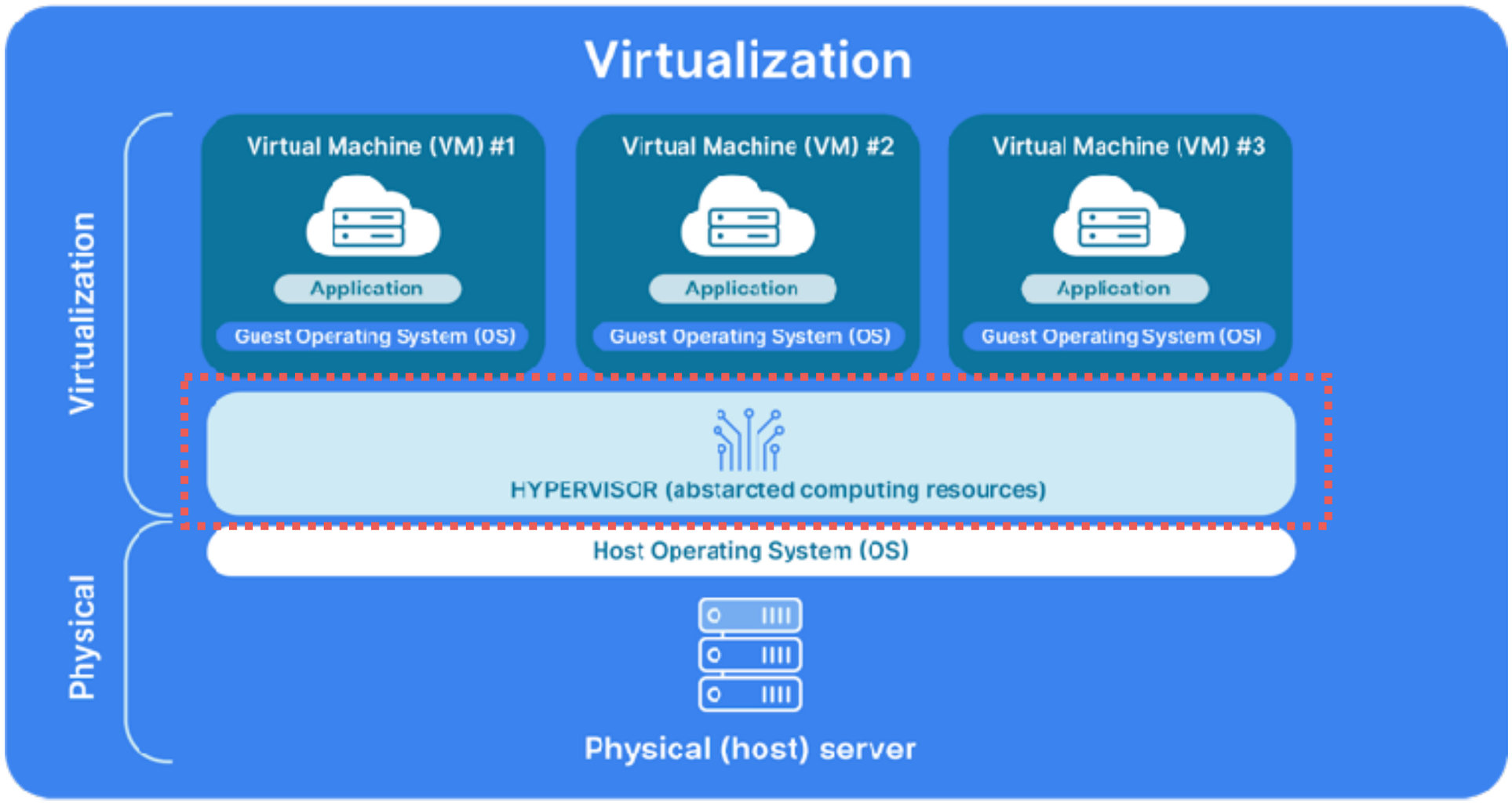
Enabling business to innovate and grow more efficiency

Module 3

Virtualization: The backbone of the cloud

Virtualization

Allow a single physical manchineel to be divided into multiple virtual machines (VMs)



Types of Virtualization

Server

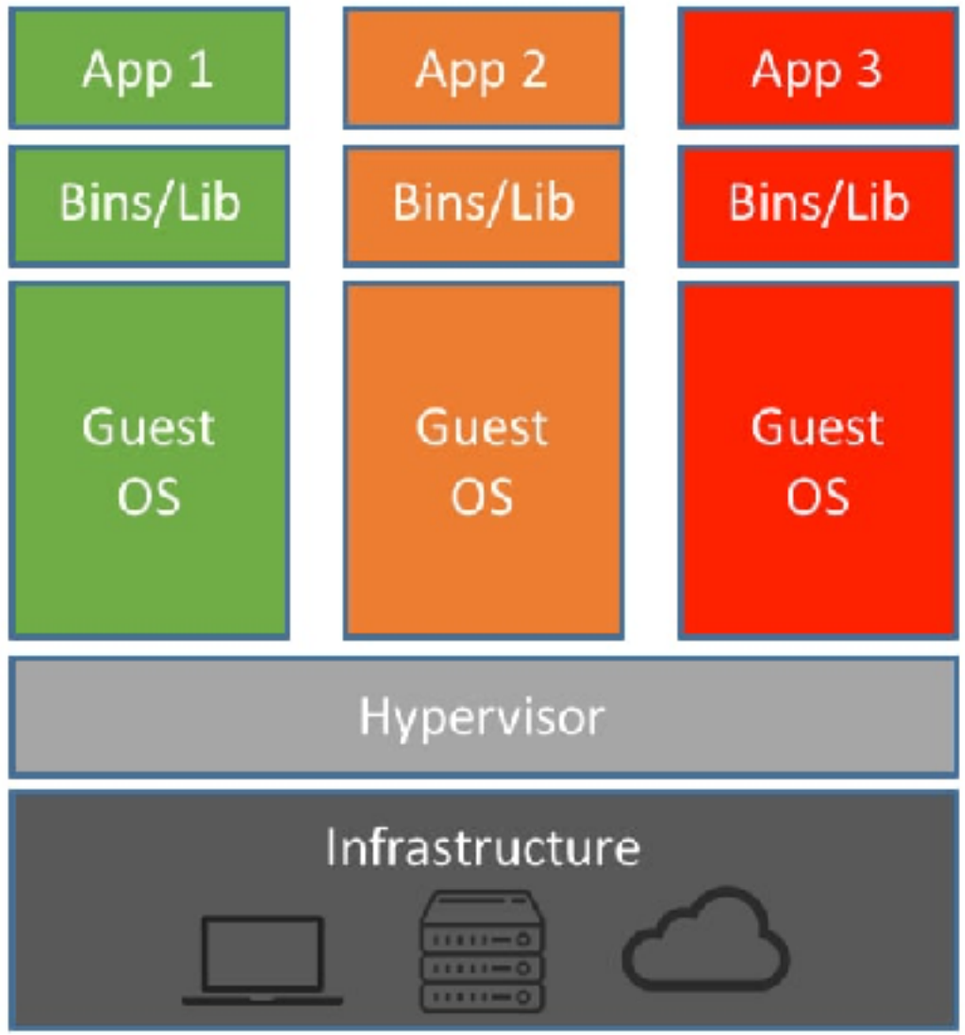
Network

Storage

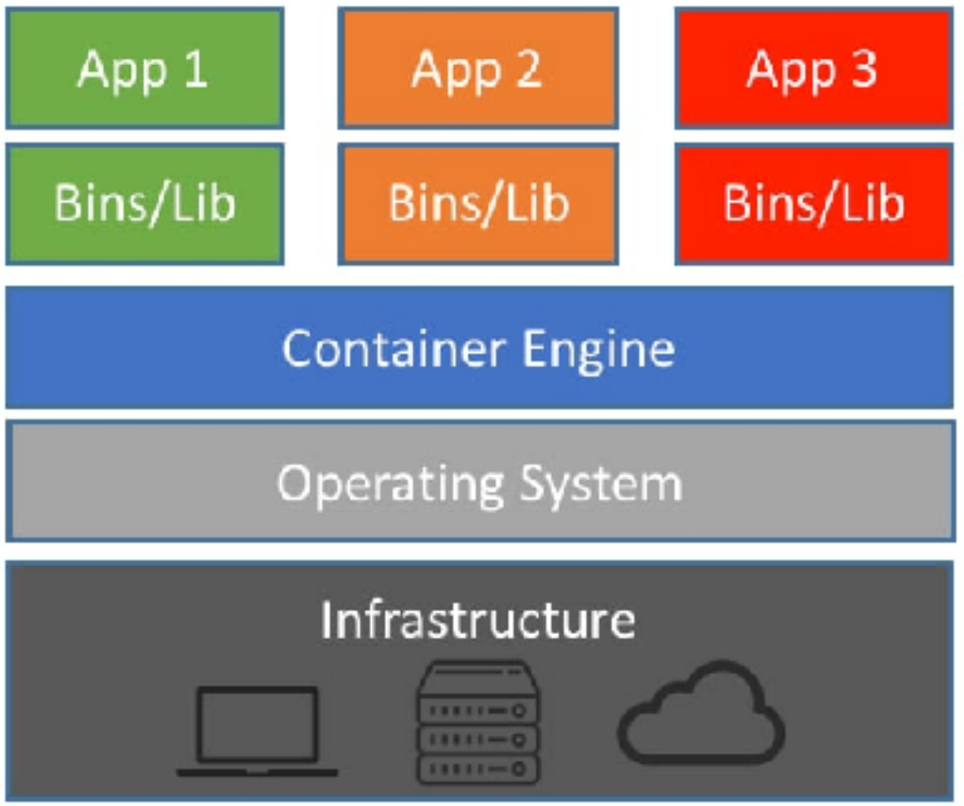
Application

Desktop (VDI)

Virtualization vs Container



Machine Virtualization



Containers

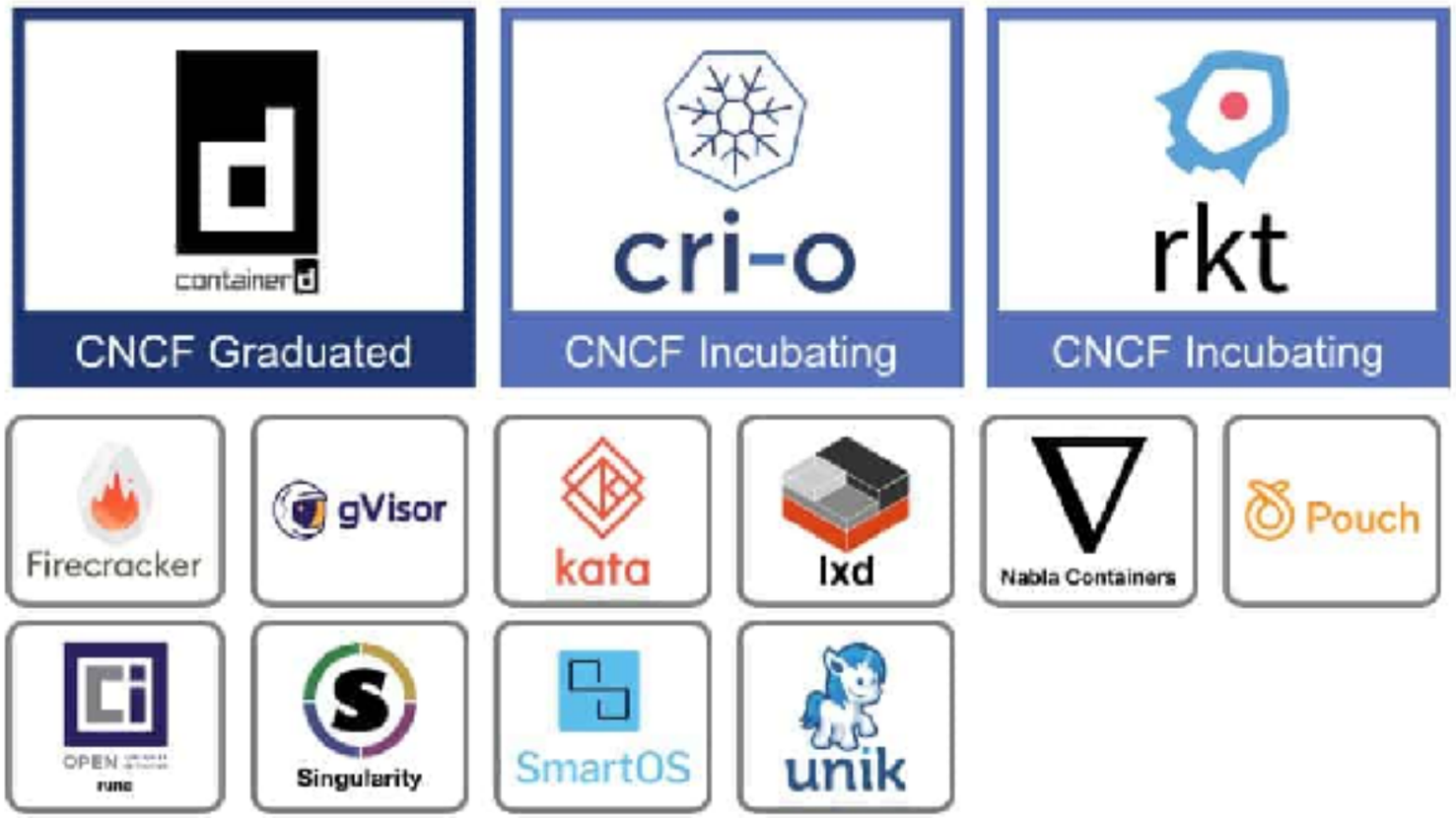
Technologies

Virtualization	Containerization
Xen Project, KVM, Hyper-V, vmware	containerd, rkt, podman

Container runtimes

Docker

ContainerD



https://landscape.cncf.io/

Container orchestrations

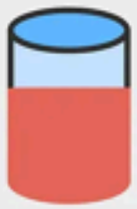
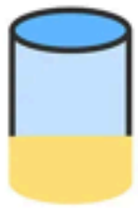
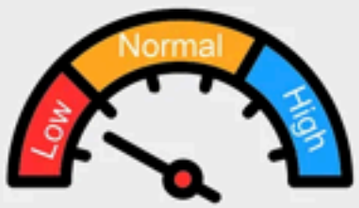
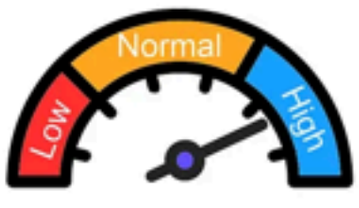
Docker swarm

Kubernetes

OpenShift

Amazon ECS

Virtualization vs Container

	Virtualization	Containerization
Startup time	 minutes	 seconds
Disk space		
Portability	Less Portable	
Efficiency		
Operating system/kernel	Dedicated	Shared

https://blog.bytebytego.com/p/virtualization-and-containerization

Module 4

Technical challenges and mitigation

Concerns and Myths of Cloud computing

Security

Compliance

Cost management

Cost Management

Cost Management

The cloud will be more expensive in the long run ?

Leaving the cloud will save us ~$10 million over five years.

https://basecamp.com/cloud-exit

Pay-as-you-go
Pay-as-you-use

Cloud Cost Control Mechanisms

Pay-as-you-go

Elastic/Auto scaling

Reserved instance
(Long term
commitment)

Cost management tools
AWS cost explorer
Azure cost mgt

AWS Finance Management

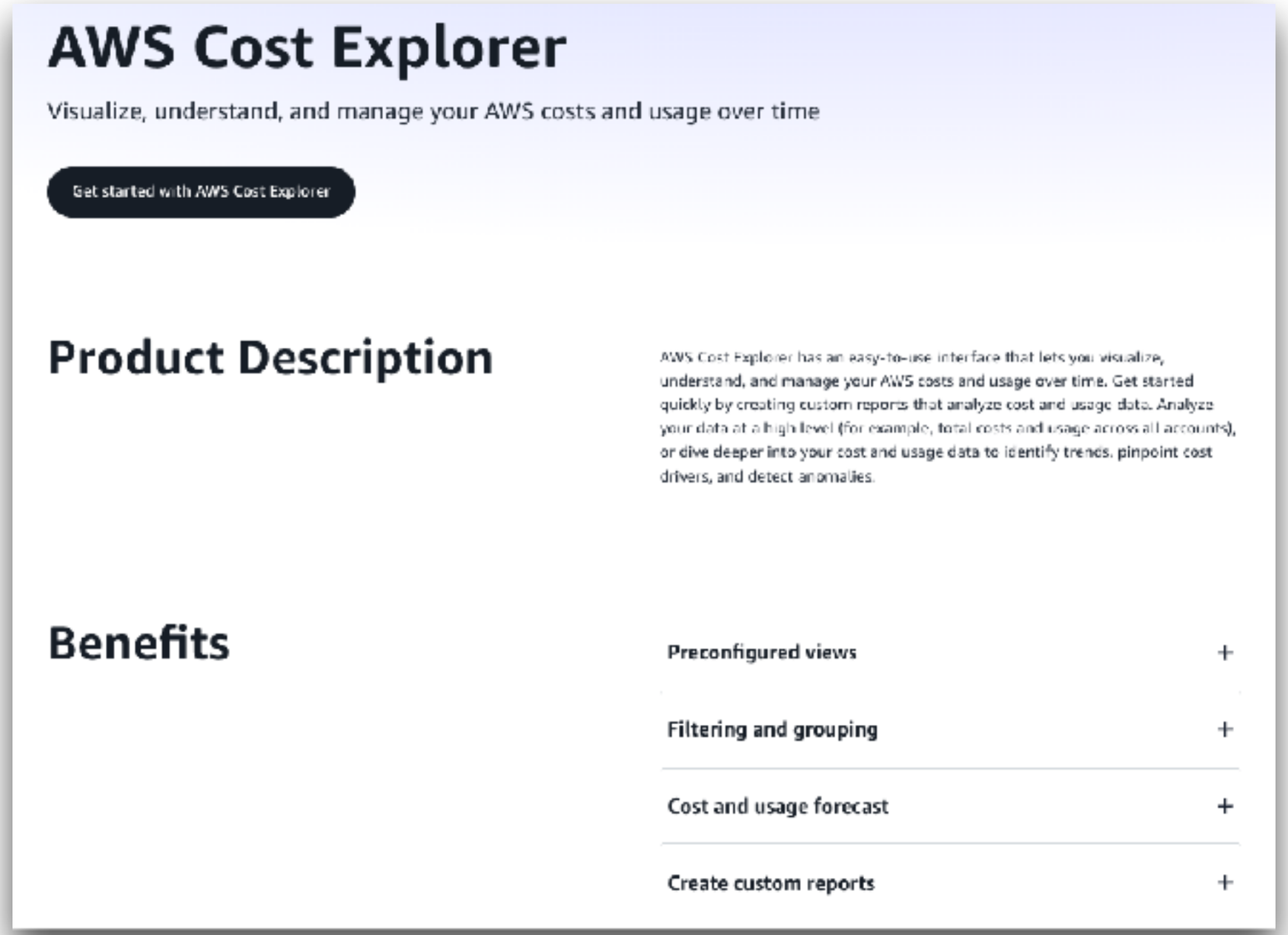
AWS Cloud Financial Management Services

Whether you want to organize and track your cost and usage, enhance control through consolidated billing and access permission, enable better planning through budgeting and forecasting, or further lower cost with resources and pricing optimizations, you can leverage our services, tools, and resources to help reduce your AWS bill.

Use Cases	Capabilities	AWS Resources
Organize	Construct your cost allocation strategy that aligns with your business logic	AWS Billing Conductor | AWS Cost Allocation Tags | AWS Cost Categories
Report	Raise awareness and accountability of your cloud spend with the detailed, allocable cost data	AWS Cost Explorer | AWS Cost and Usage Report | AWS Application Cost Profiler
Access	Track billing information across the organization in a consolidated view	AWS Consolidated Billing | AWS Purchase Order Management | AWS Credits
Control	Establish effective governance mechanisms with the right guardrails in place	AWS Cost Anomaly Detection | AWS Identity and Access Management | AWS Organizations | AWS Control Tower | AWS Service Catalog
Forecast	Estimate your resource utilization and spend with forecast dashboards that you create	AWS Cost Explorer (Self-Service) | AWS Budgets (Event-Driven)
Budget	Keep your spend in check with custom budget threshold and auto alert notification	AWS Budgets | AWS Budget Actions | AWS Service Catalog
Purchase	Leverage free trials and programmatic discounts based on your workload pattern and needs	AWS Free Tier | AWS Reserved Instances | AWS Savings Plans | AWS Spot Instances | Amazon DynamoDB On-demand
Elasticity	Scale and schedule your services based on your expected utilization pattern and needs	AWS Instance Scheduler | Amazon Redshift pause and resume | EC2 Auto Scaling | AWS Trusted Advisor
Rightsize	Align your service allocation size to your actual workload demand	AWS Cost Explorer Right Sizing Recommendations | AWS Compute Optimizer | Amazon Redshift resize | Amazon S3 Intelligent Tiering
Inspect	Stay up-to-date with your resource deployment and cost optimization opportunities	AWS Cost Explorer

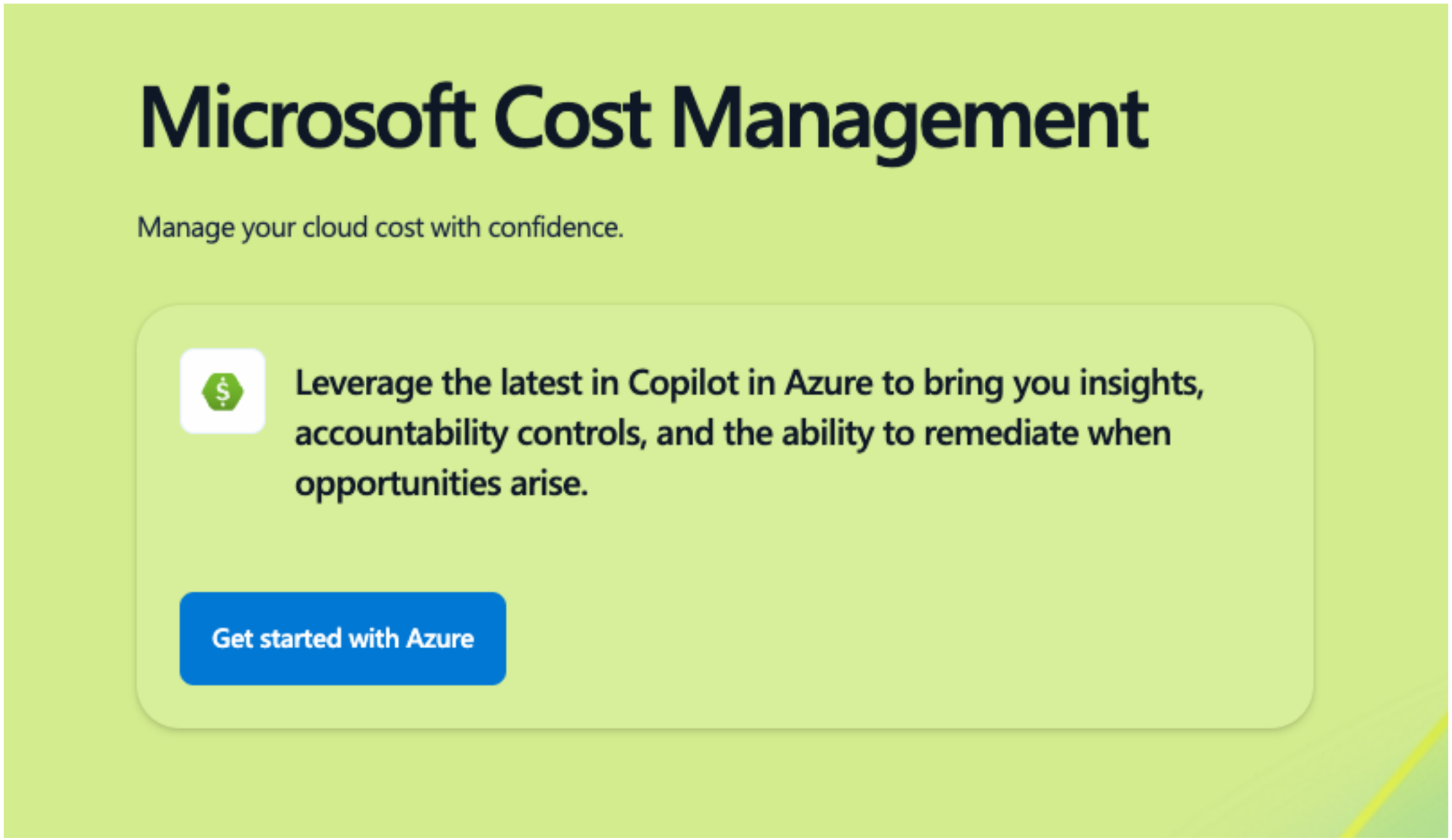
https://aws.amazon.com/aws-cost-management/

AWS Cost Explorer



https://aws.amazon.com/aws-cost-management/aws-cost-explorer/

Azure Cost Management

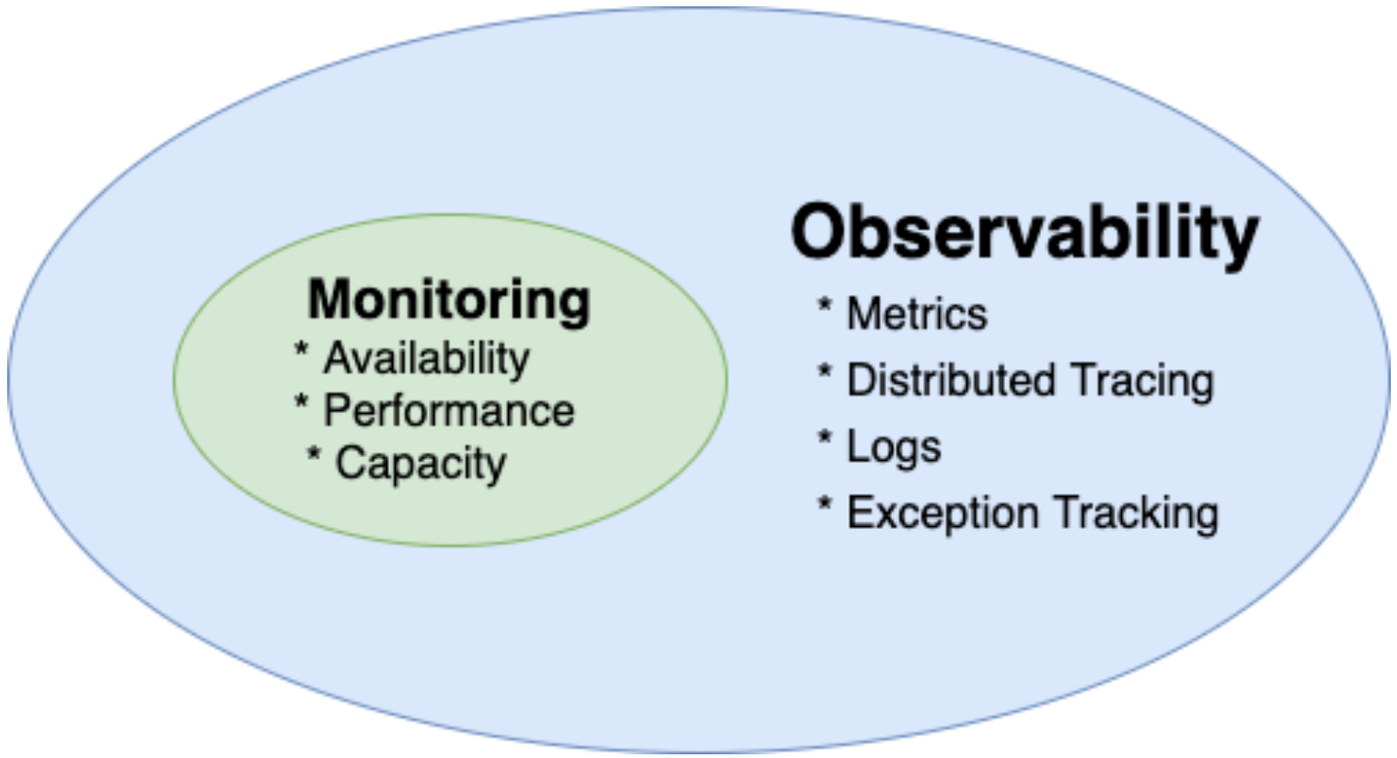


https://azure.microsoft.com/en-us/products/cost-management

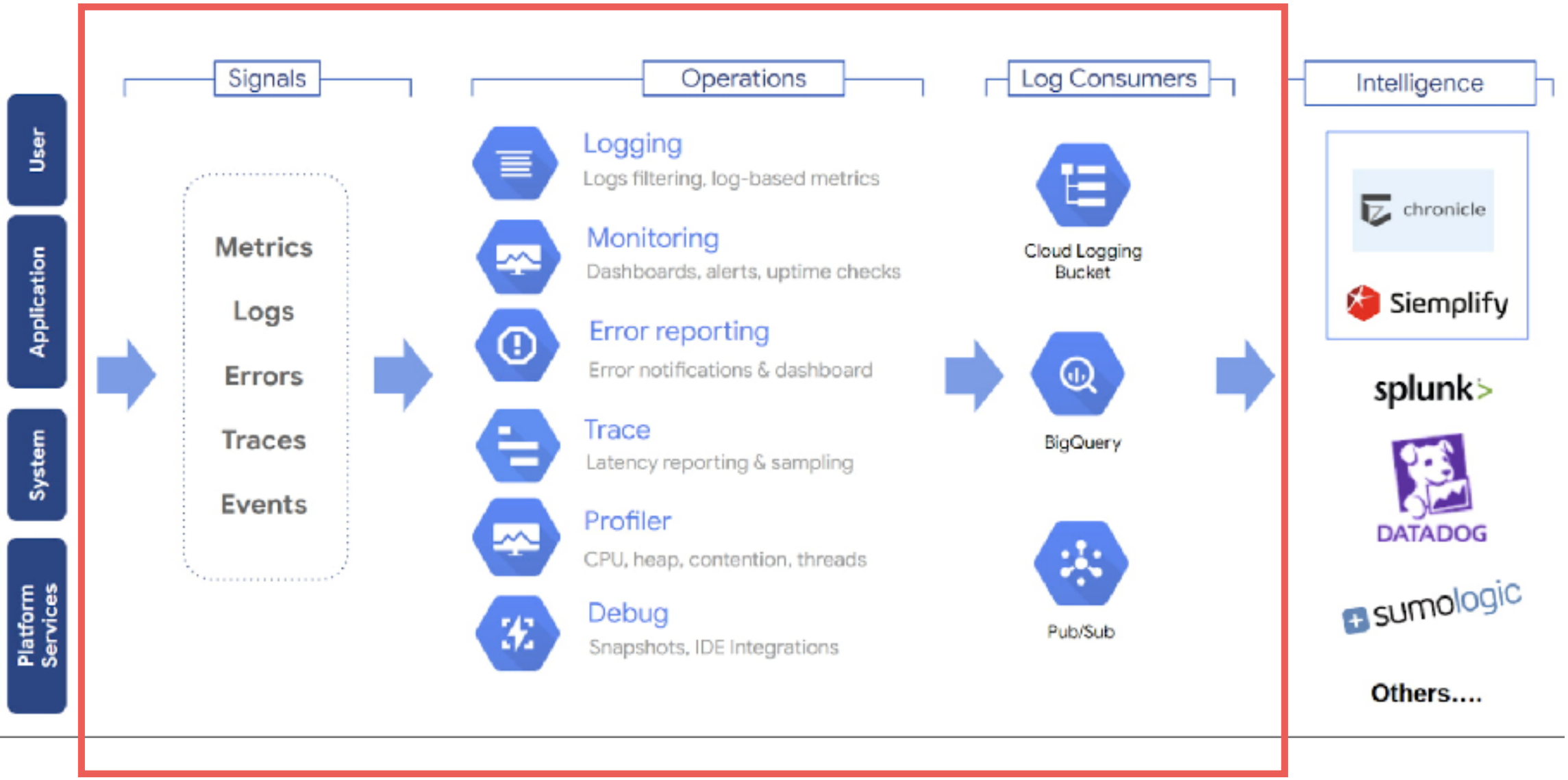
Sample case
Cost estimation

Monitoring and Observability

Monitoring and Observability

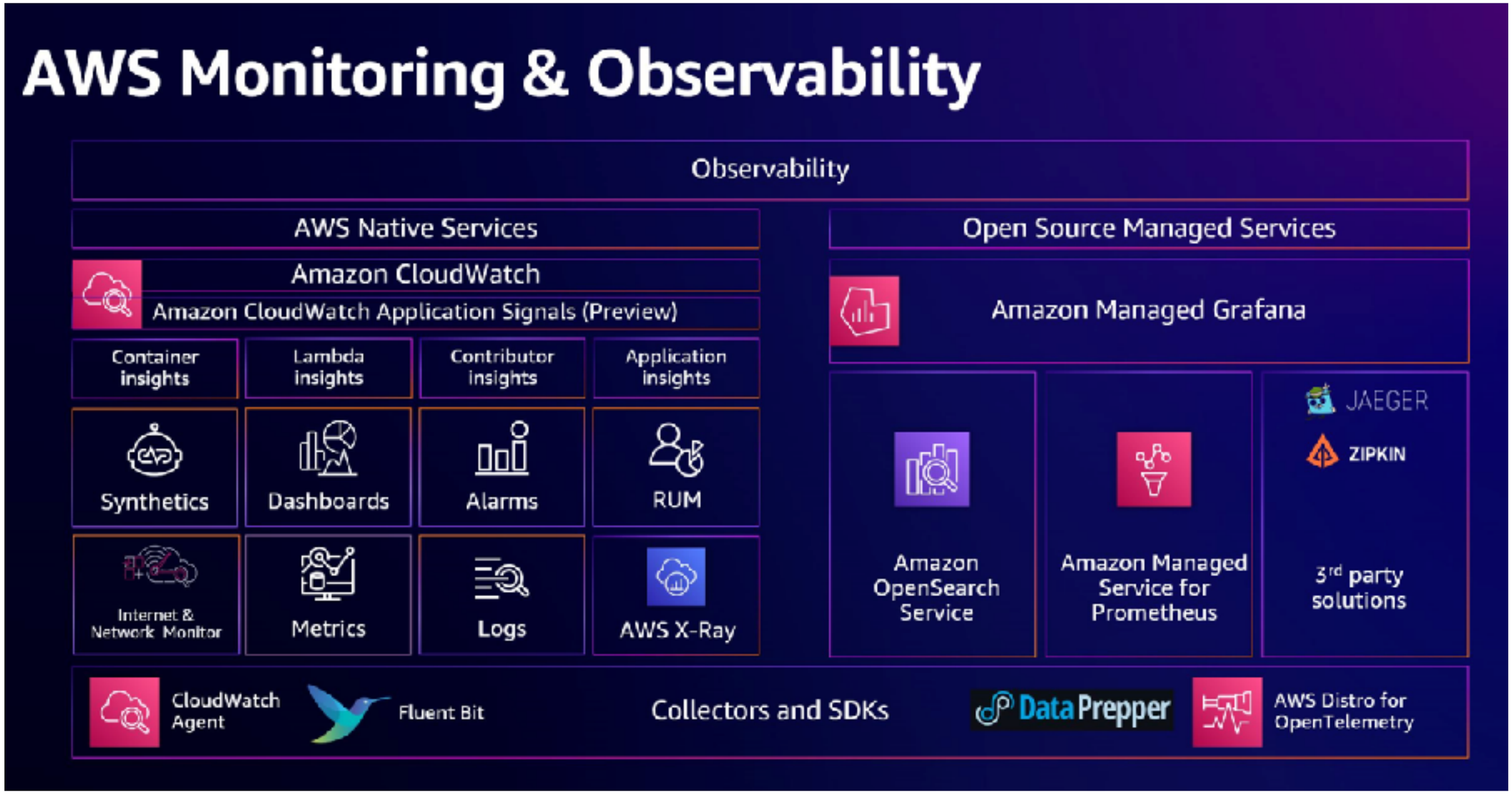


Monitoring and Observability



https://cloud.google.com/blog/products/management-tools/observability-on-google-cloud

Monitoring and Observability



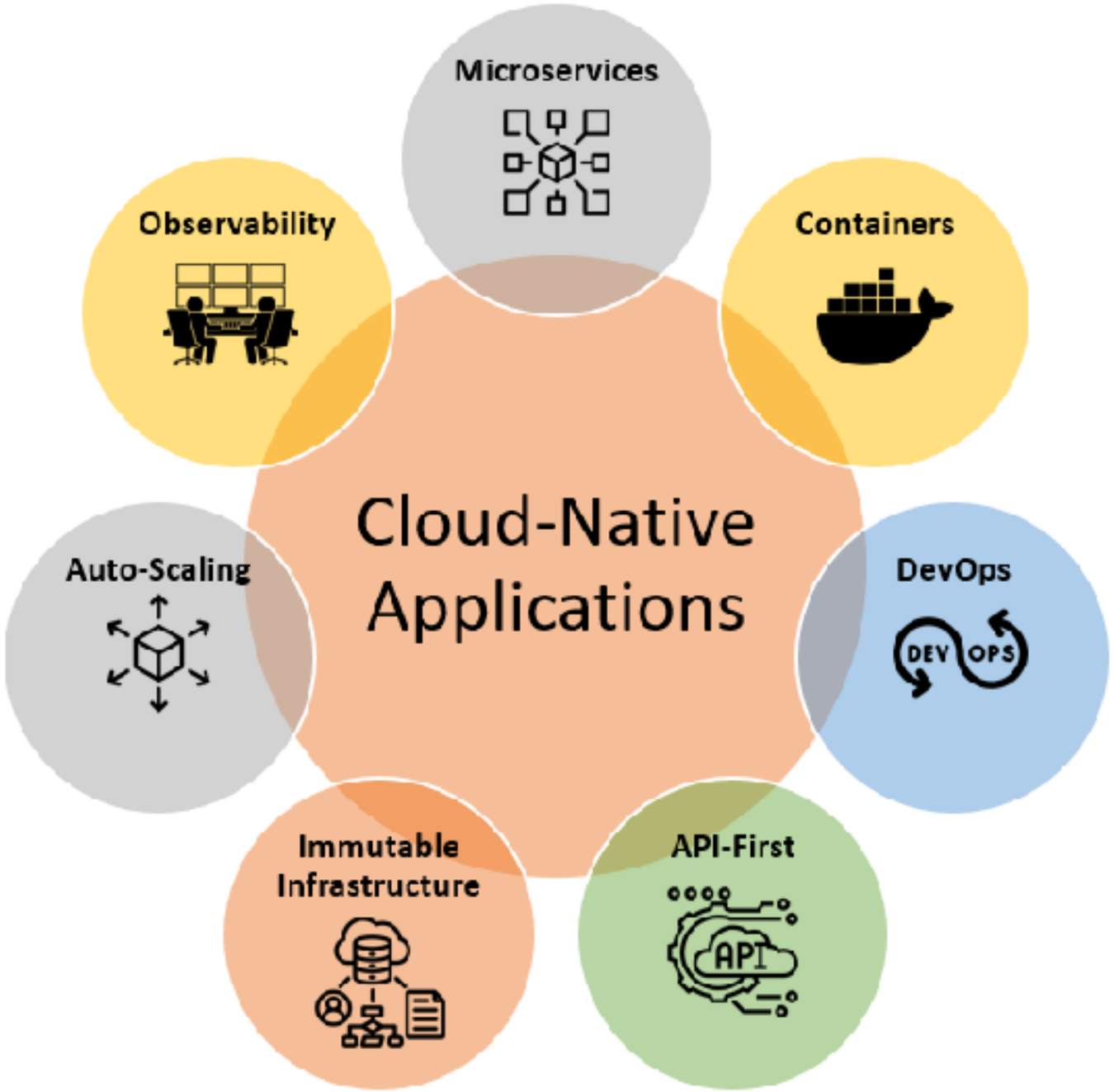
https://docs.aws.amazon.com/decision-guides/latest/monitoring-on-aws-how-to-choose/monitoring-on-aws-how-to-choose.html

Cloud Native Application

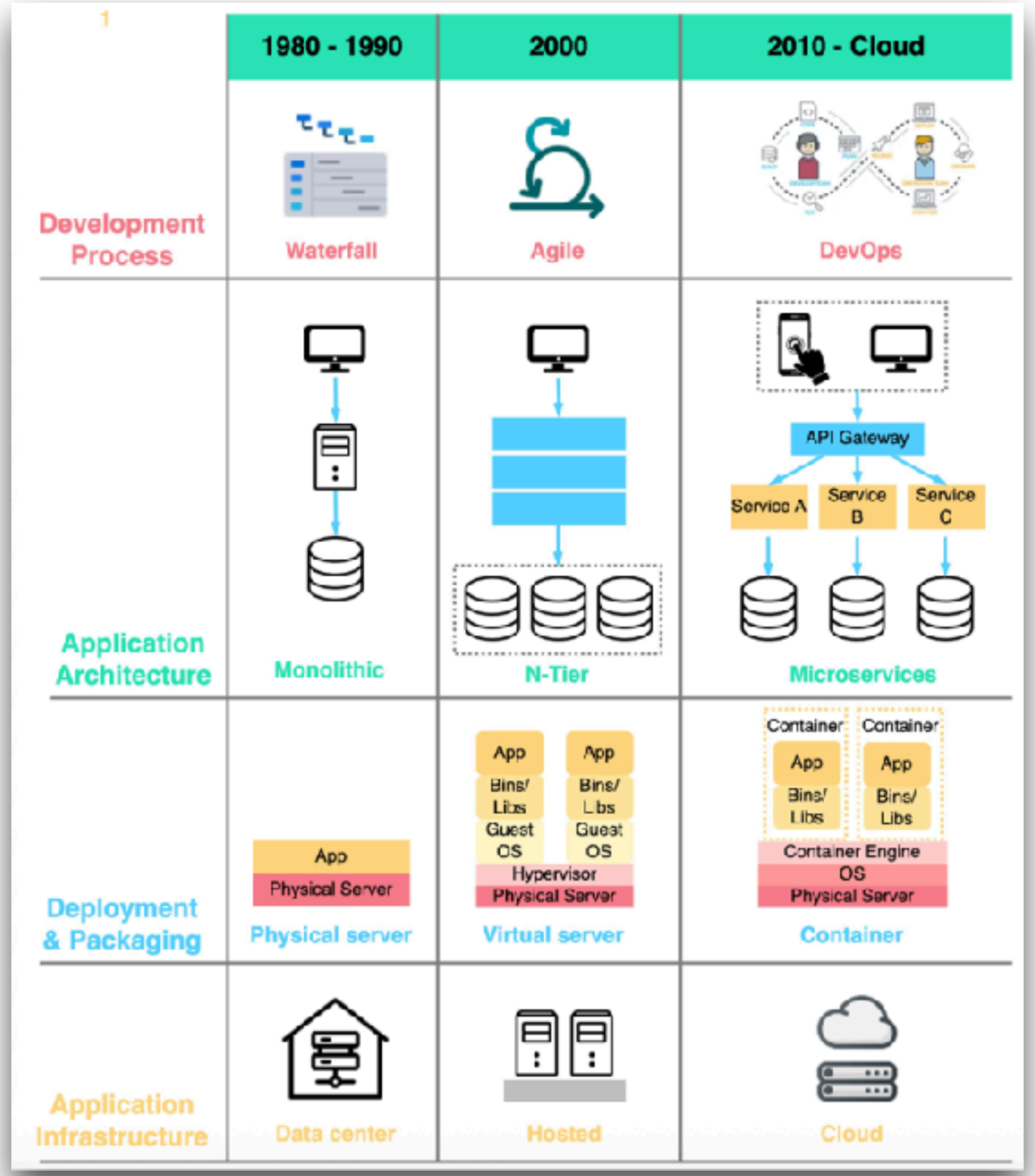
Scalable

Portable

Flexible



https://www.linkedin.com/pulse/design-principles-building-powerful-cloud-native-sandesh-segu/



https://bytebytego.com/guides/what-is-cloud-native/

Big Data and Analytic

The FOUR V's of Big Data

From traffic patterns and music downloads to web history and medical records, data is recorded, stored, and analyzed to enable the technology and services that the world relies on every day. But what exactly is big data, and how can these massive amounts of data be used?

As a leader in the sector, IBM data scientists break big data into four dimensions: **Volume, Velocity, Variety and Veracity**

Depending on the industry and organization, big data encompasses information from multiple internal and external sources such as transactions, social media, enterprise content, sensors and mobile devices. Companies can leverage data to adapt their products and services to better meet customer needs, optimize operations and infrastructure, and find new sources of revenue.

By 2015
4.4 MILLION IT JOBS
will be created globally to support big data, with 1.9 million in the United States

Volume
SCALE OF DATA

40 ZETTABYTES
[43 TRILLION GIGABYTES]
of data will be created by 2020, an increase of 300 times from 2005

2005
2020

It's estimated that
2.5 QUINTILLION BYTES
[2.3 BRILLION GIGABYTES]
of data are created each day

6 BILLION PEOPLE
have cell phones

WORLD POPULATION: 7 BILLION

Most companies in the U.S. have at least
100 TERABYTES
[100,000 GIGABYTES]
of data stored

Variety
DIFFERENT FORMS OF DATA

As of 2011, the global size of data in healthcare was estimated to be
150 EXABYTES
[161 BILLION GIGABYTES]

By 2014, it's anticipated there will be
420 MILLION WEARABLE, WIRELESS HEALTH MONITORS

4 BILLION+ HOURS OF VIDEO
are watched on YouTube each month

30 BILLION PIECES OF CONTENT
are shared on Facebook every month

400 MILLION TWEETS
are sent per day by about 200 million monthly active users

Velocity
ANALYSIS OF STREAMING DATA

The New York Stock Exchange captures
1 TB OF TRADE INFORMATION
during each trading session

Modern cars have close to
100 SENSORS
that monitor items such as fuel level and tire pressure

By 2016, it is projected there will be
18.9 BILLION NETWORK CONNECTIONS
– almost 2.5 connections per person on earth

Veracity
UNCERTAINTY OF DATA

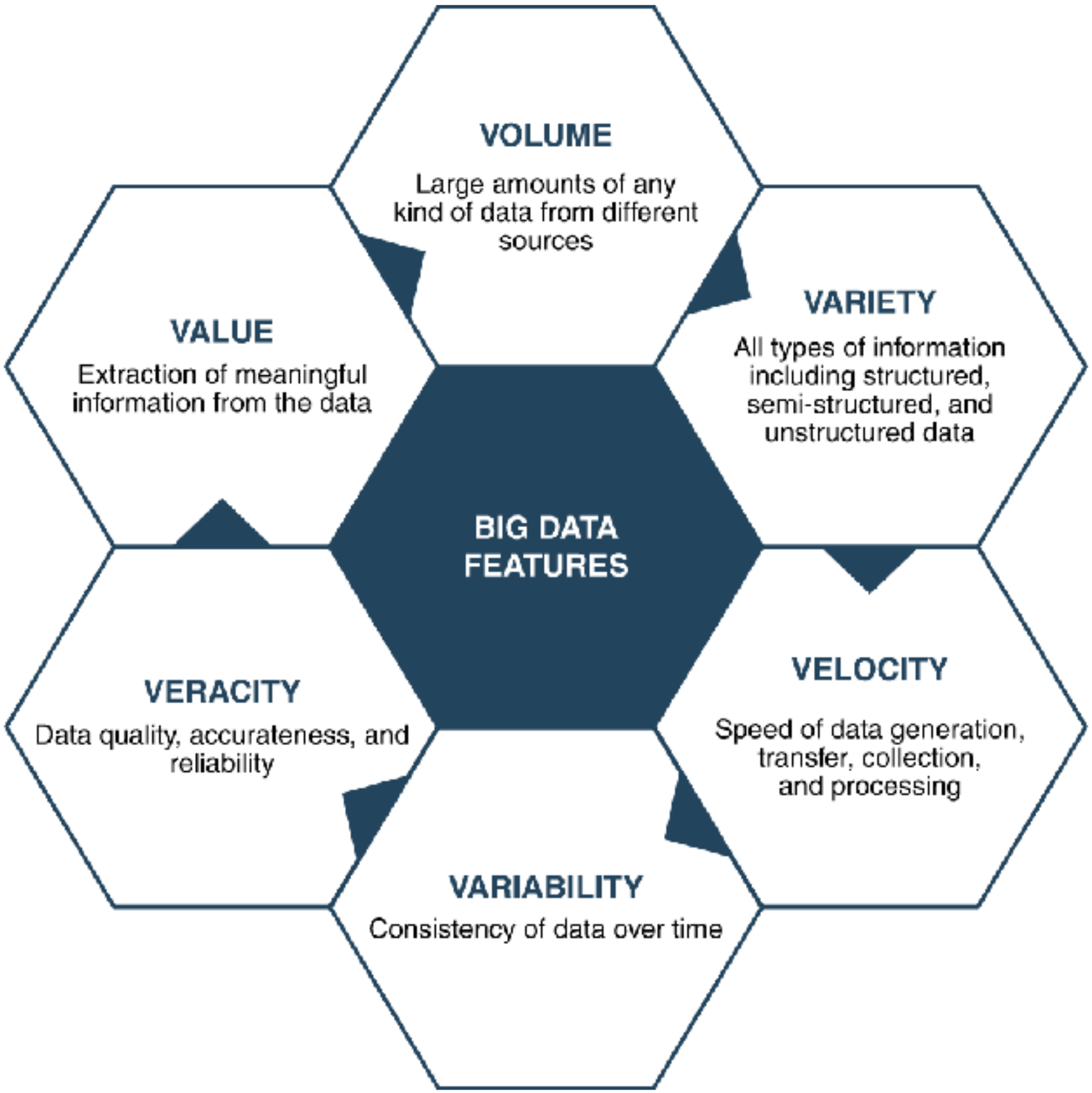
1 IN 3 BUSINESS LEADERS
don't trust the information they use to make decisions

27% OF RESPONDENTS
in one survey were unsure of how much of their data was inaccurate

Poor data quality costs the US economy around
$3.1 TRILLION A YEAR

Sources: McKinsey Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPTEC, QAS

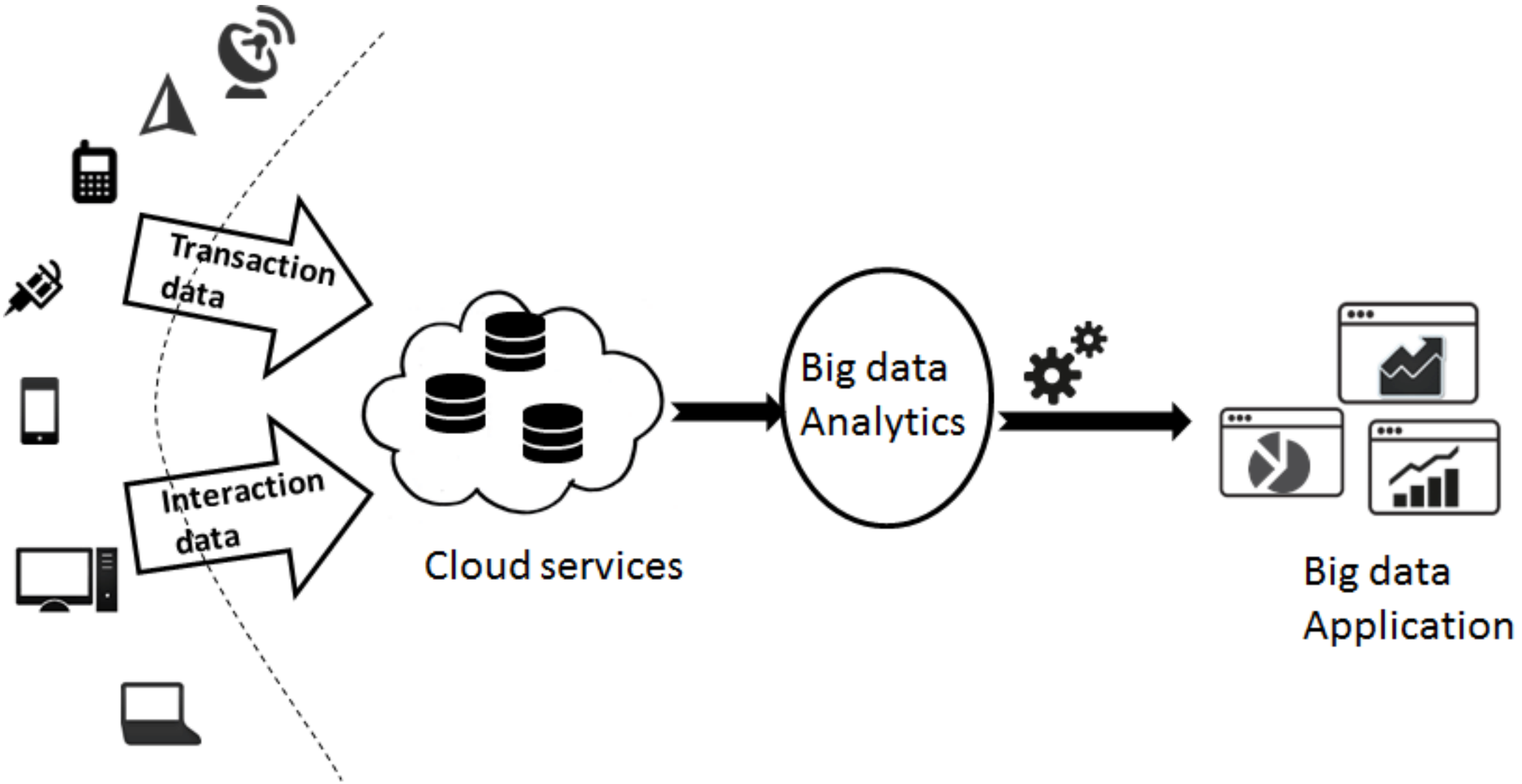
IBM.



TYPES OF DATA ANALYTICS

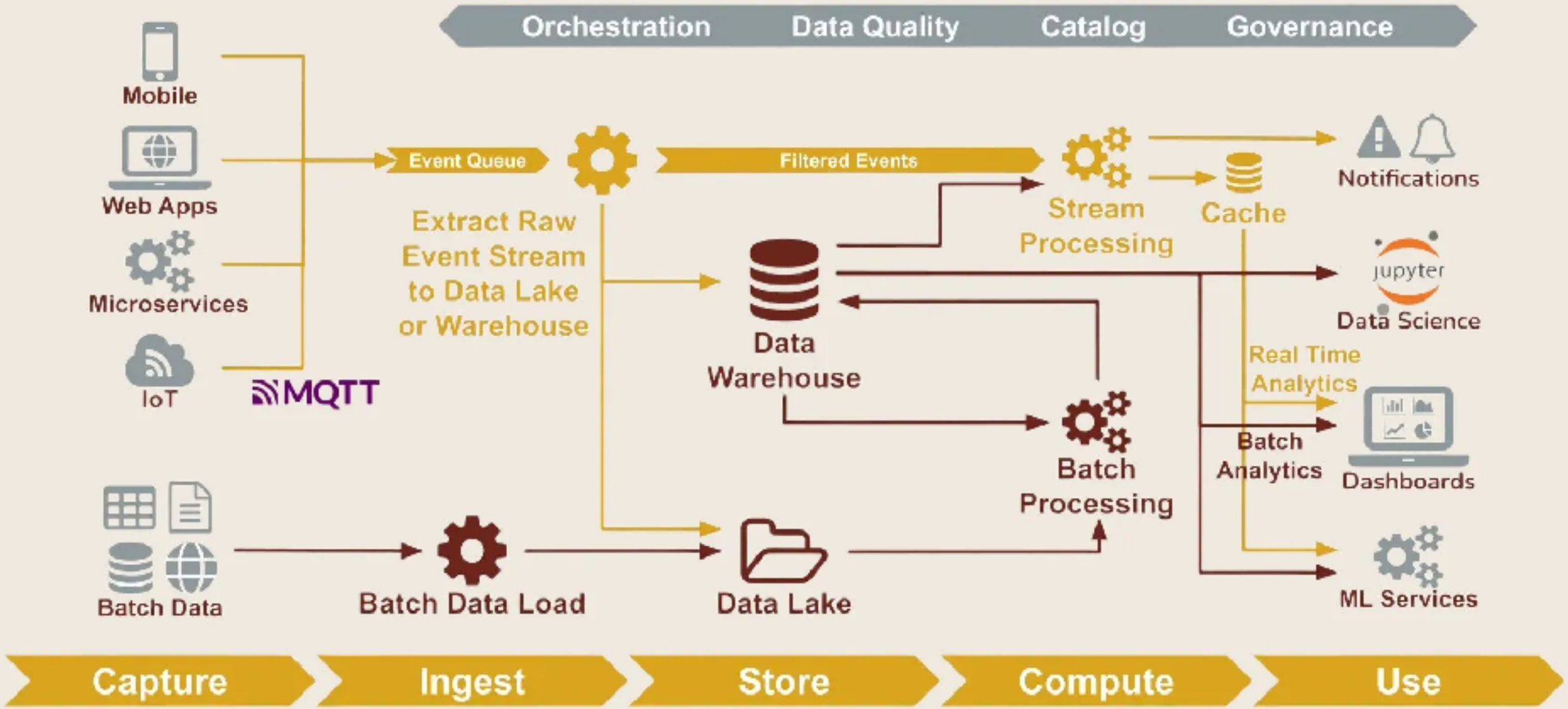
https://www.prohance.net/blog/predictive-analytics-how-it-works-benefits-and-tools/

Big Data Analytic in Cloud



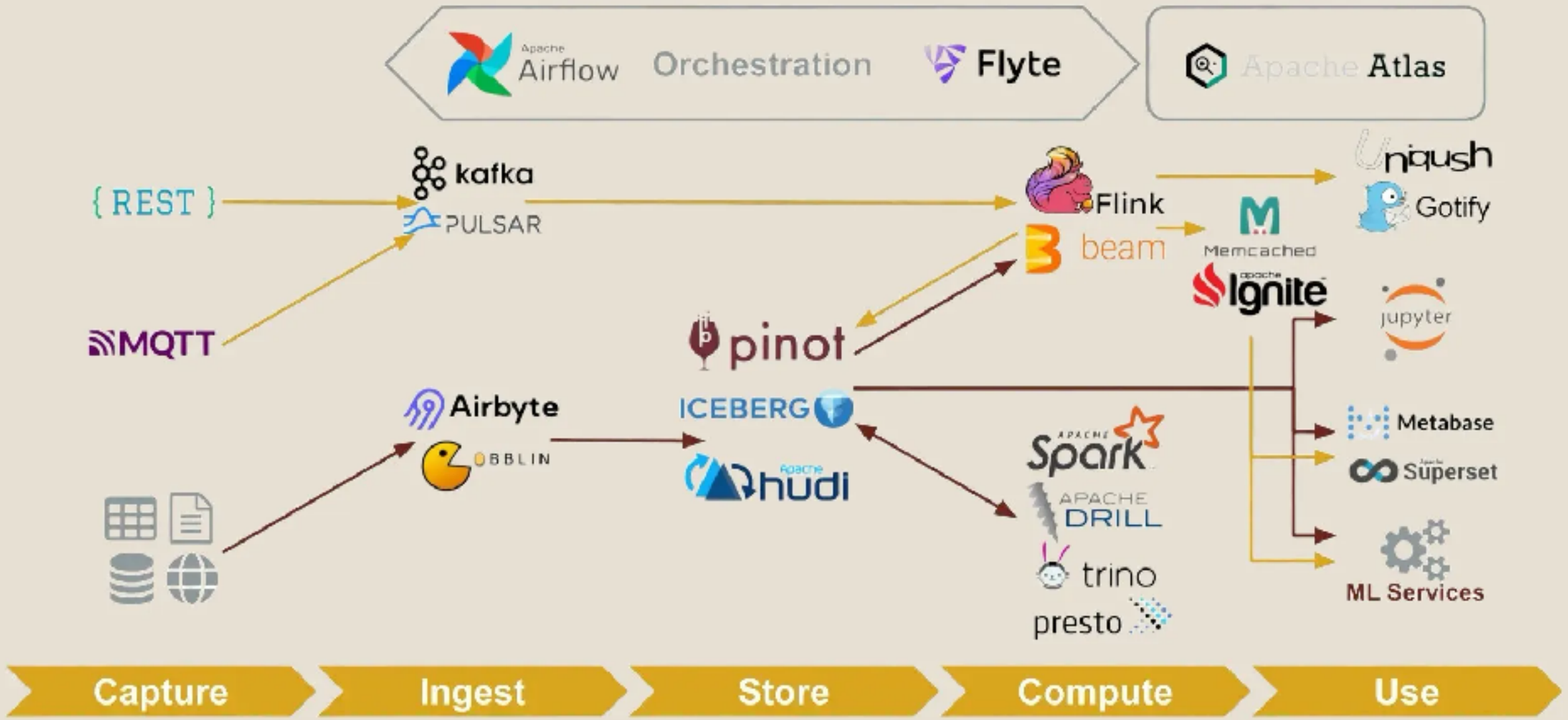
Data pipeline ?

Big Data Pipeline Architecture



https://medium.com/@dushaevsirojiddin/building-big-data-pipelines-with-open-source-stack-5e05149bb0ac

Data Pipeline – Open Source Stack

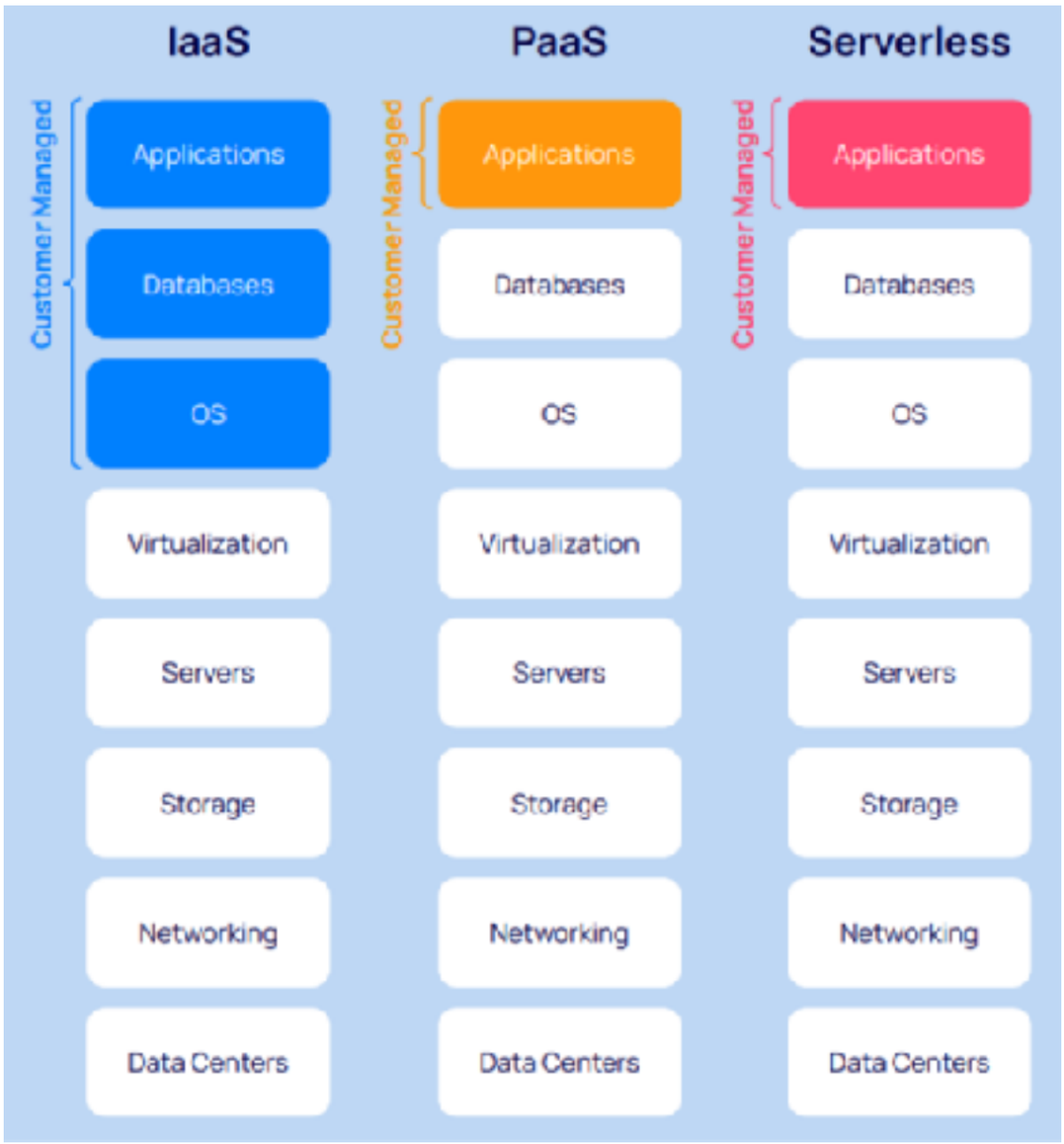


https://medium.com/@dushaevsirojiddin/building-big-data-pipelines-with-open-source-stack-5e05149bb0ac

Module 5
Cloud Security

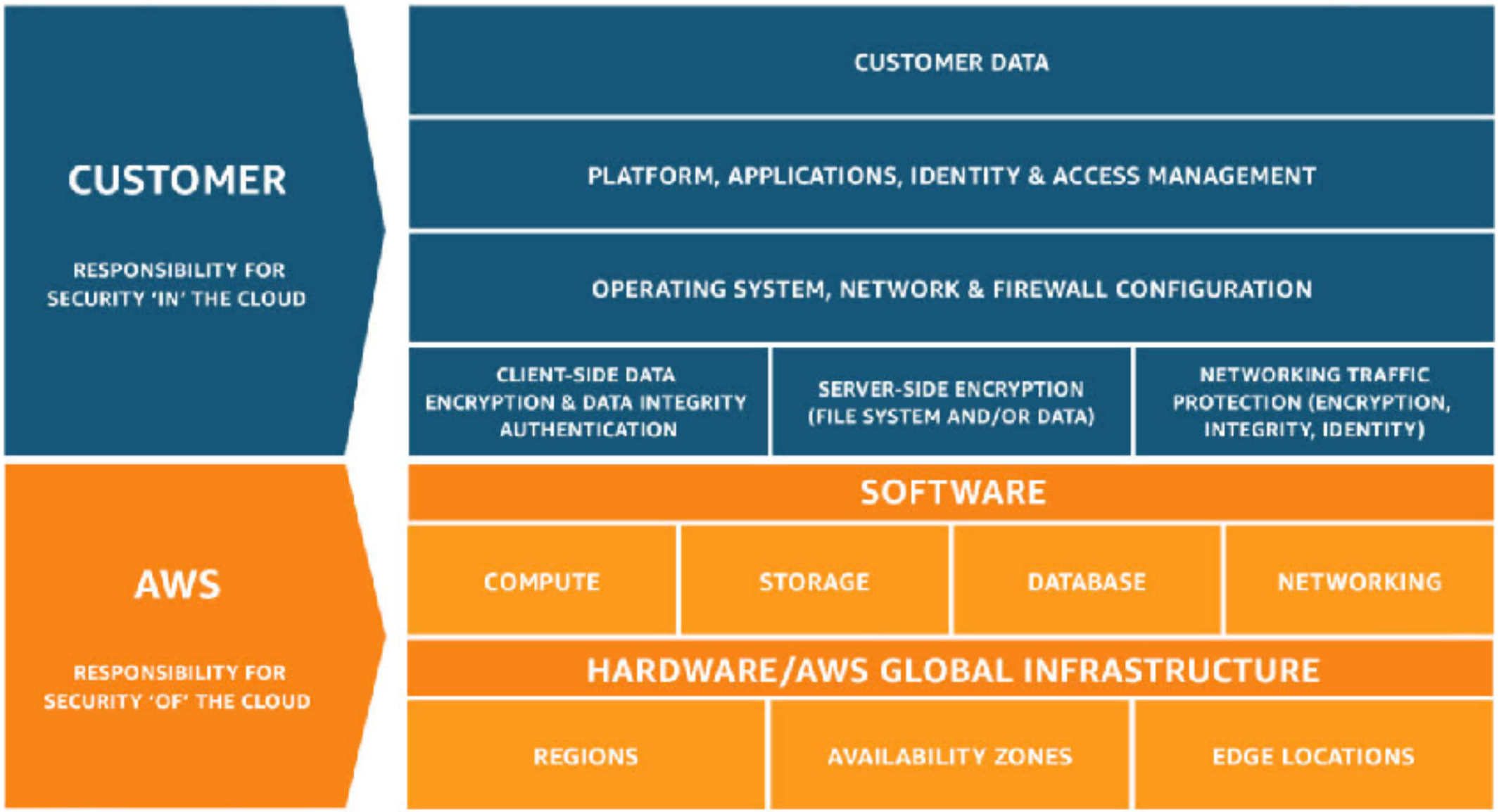
Shared Responsibility Model

Cloud provider and customer



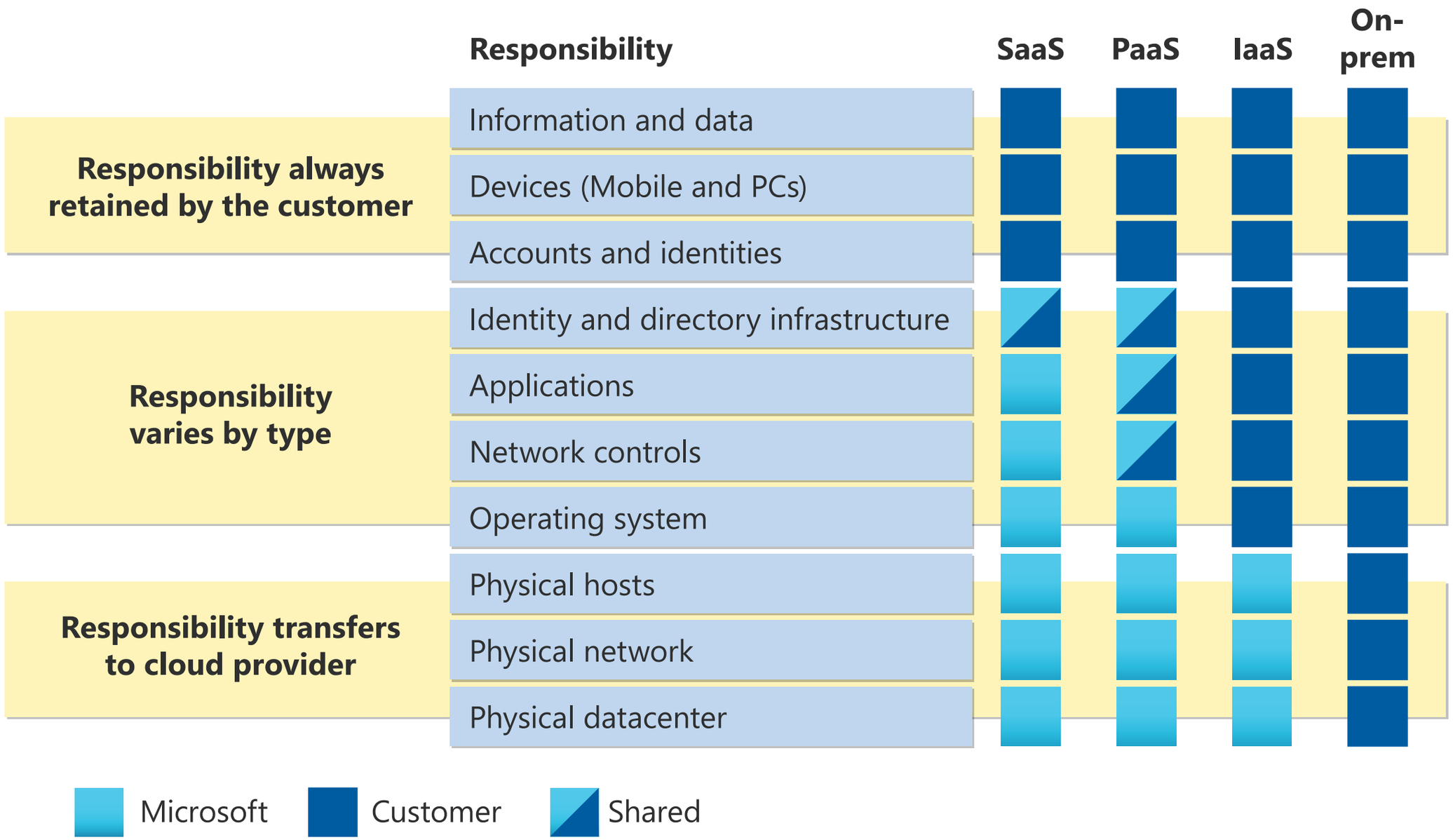
https://orca.security/resources/blog/what-is-the-shared-responsibility-model/

Shared Responsibility Model



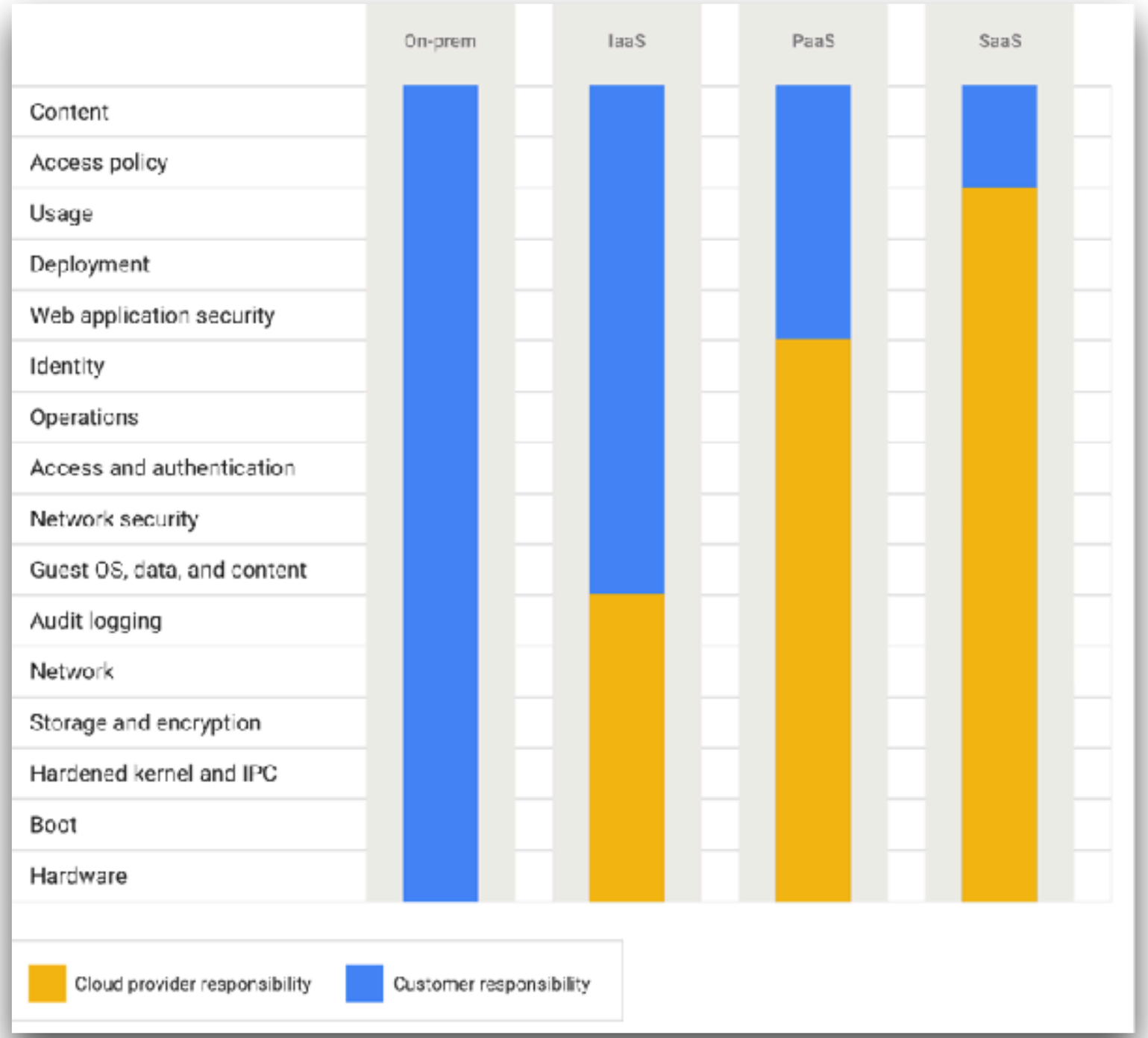
https://aws.amazon.com/compliance/shared-responsibility-model/#topic-0

Shared Responsibility Model



https://learn.microsoft.com/en-us/azure/security/fundamentals/shared-responsibility

Shared Responsibility Model



https://cloud.google.com/architecture/framework/security/shared-responsibility-shared-fate

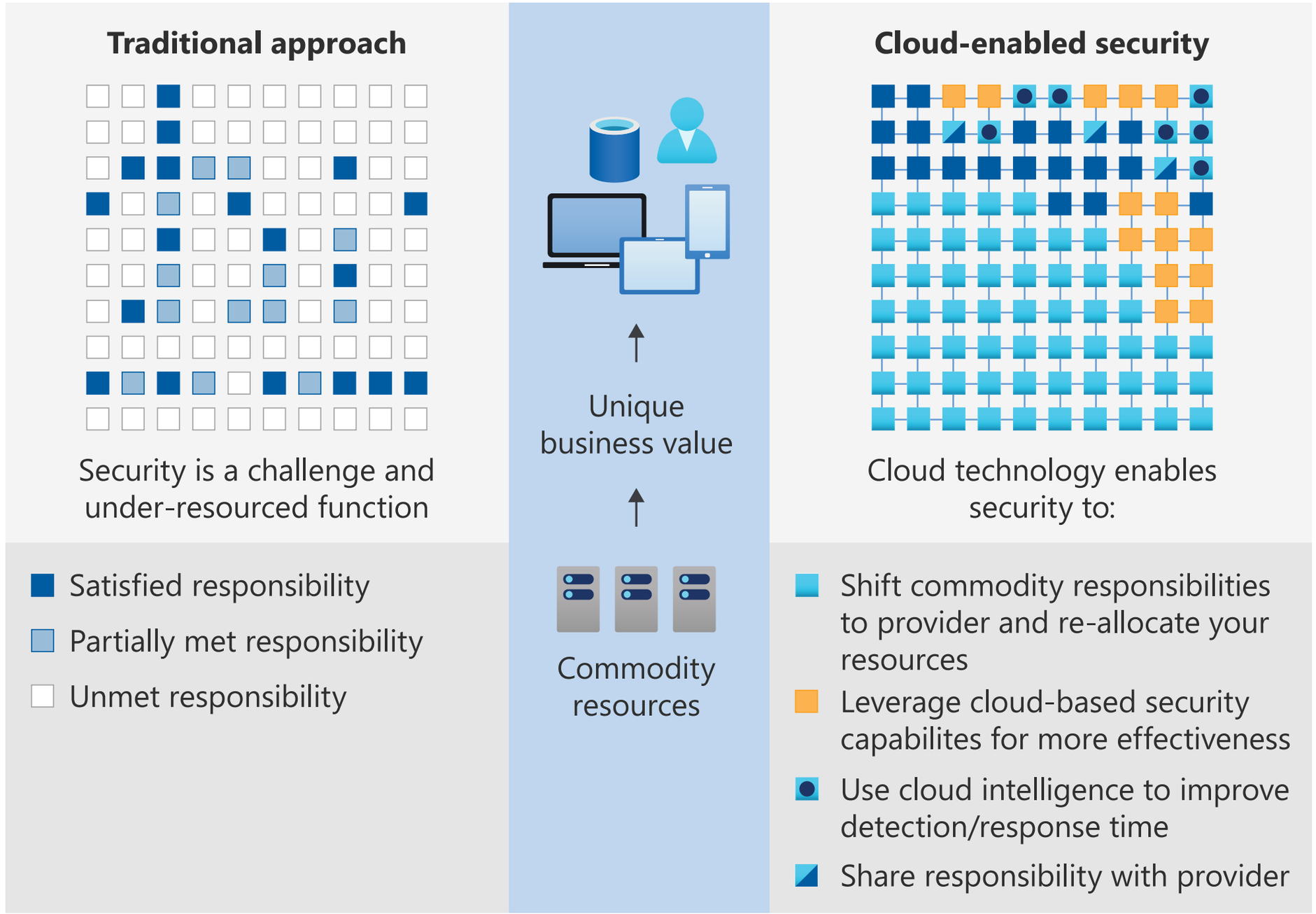
Shared Responsibility Model

Responsibility	Security Domain	SaaS	PaaS	IaaS	Data Centers
Customer Responsibility	Data and Content	●	●	●	●
	Accounts and Identity Verification Policy	●	●	●	●
Shared Responsibility of Different Services	On-cloud Security Policy	●●	●●	●	●
	On-cloud Application Security	●	●●	●	●
	Network Access Policy	●	●●	●	●
	VM Operating System	●	●	●	●
Cloud Service Provider Responsibility	Cloud Service Security	●	●	●	●
	Cloud Platform Security Compliarce	●	●	●	●
	Physical Server and Physical Network Security	●	●	●	●
	Data Center Physical Security	●	●	●	●

● Alibaba Cloud ● Customers ●● Shared Responsibility — Less ← Customer Responsibility → More

https://www.alibabacloud.com/help/en/well-architected/latest/security-responsibility-model

Cloud Security Advantage !!



https://learn.microsoft.com/en-us/azure/security/fundamentals/shared-responsibility

Concerns and Myths of Cloud computing

Security

Compliance

Cost management

Security Concerns

The cloud is not secure
compared to on-premise ?

Cloud Security Features

Data Encryption

Identification and Access Management (IAM)

Infrastructure and network security

Continuous Monitoring, Audit and updated

Threat detection and response

Compliance and Governance

Compliance and Data Privacy

Compliance and Data Privacy

We will lose control over our data and violate compliance **regulations** ?

Basic in Cloud provider

Cloud Compliance Features

Regulatory compliance

Data residency

Audit trails

Continuous Monitoring, Audit and build-in report

General security recommendations

Implement zero trust model

Enforce Principle of Least Privilege

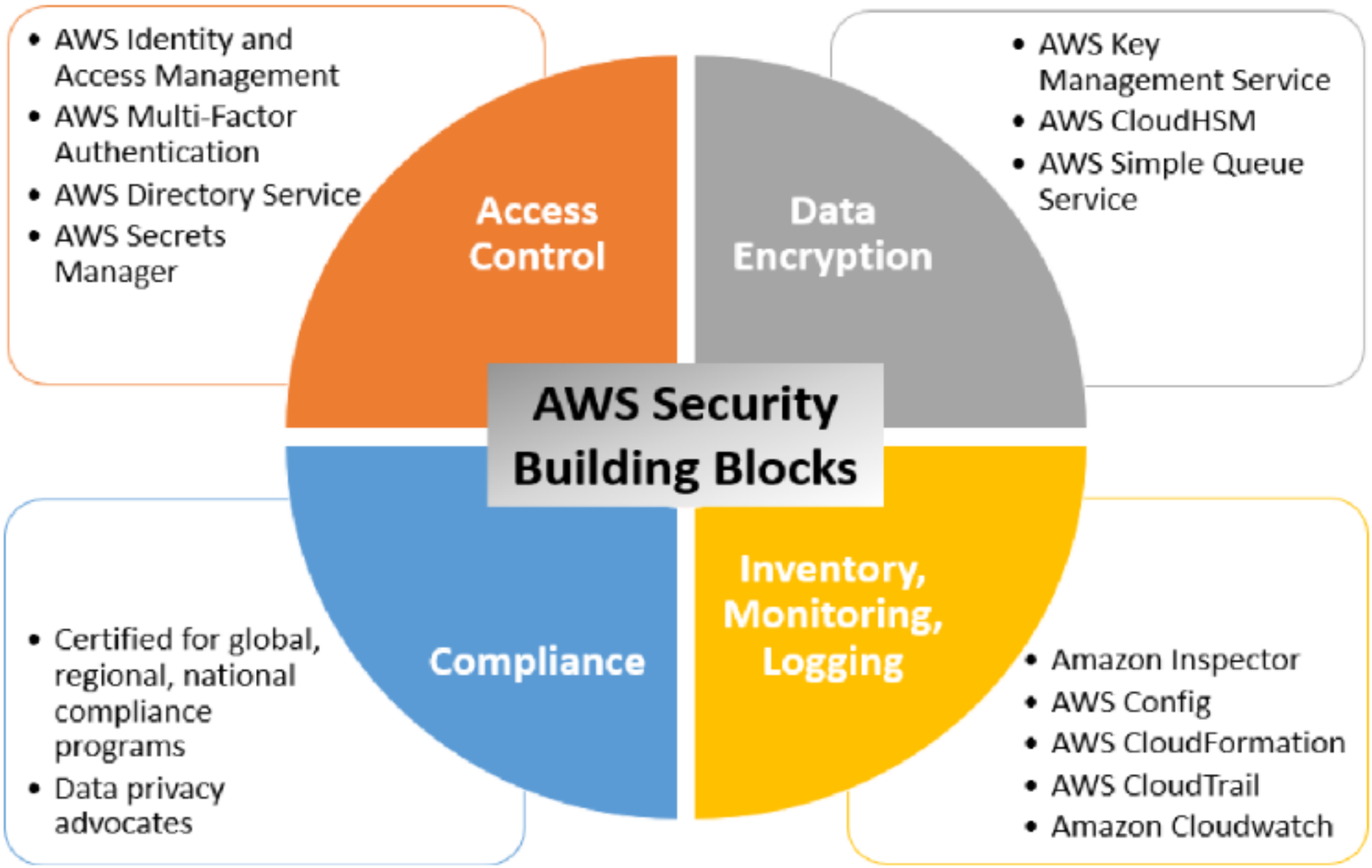
Encrypt data

Visibility and Monitoring continuously

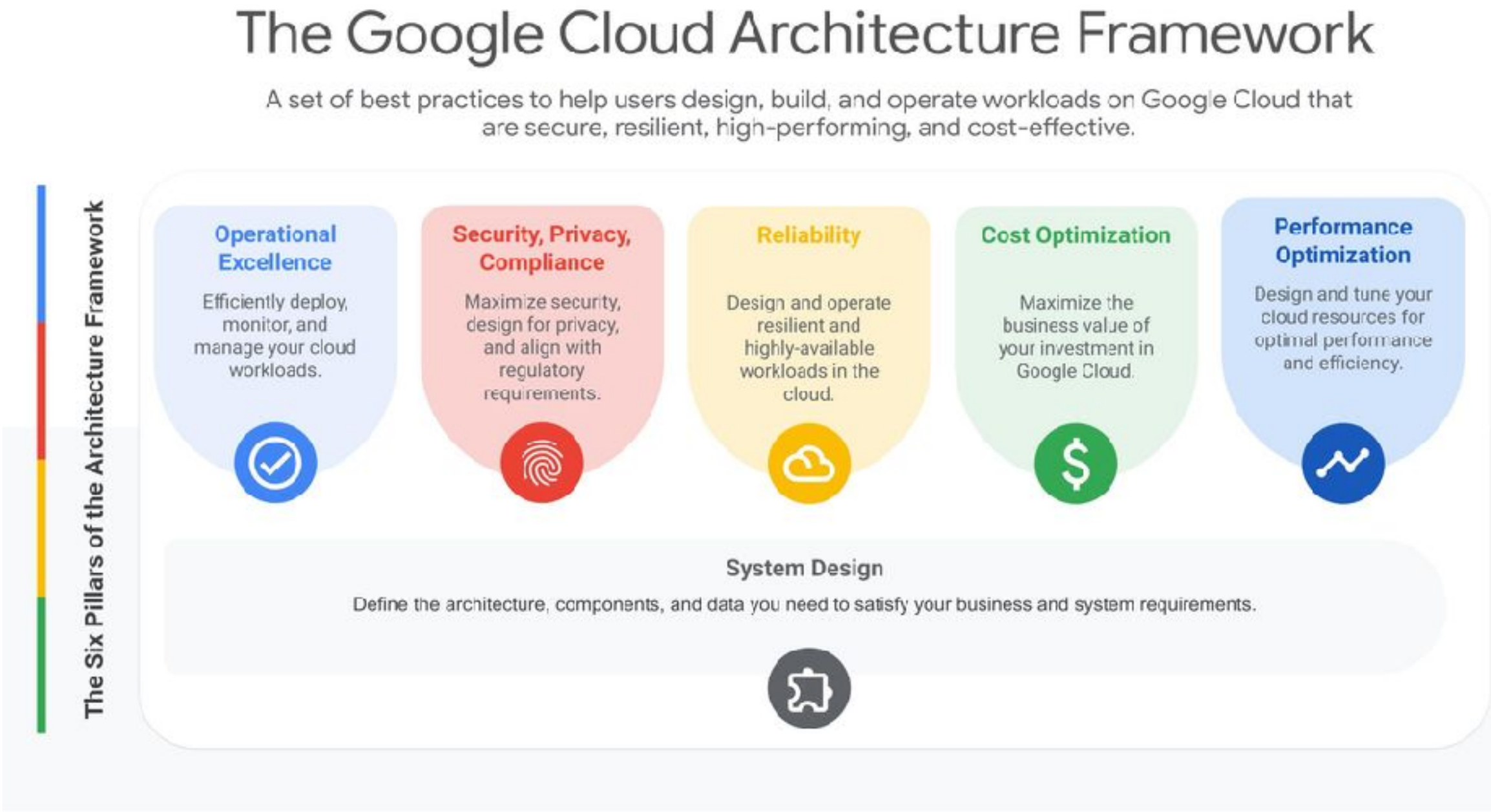
Understand share responsibility model

Provide employee training

Example for AWS

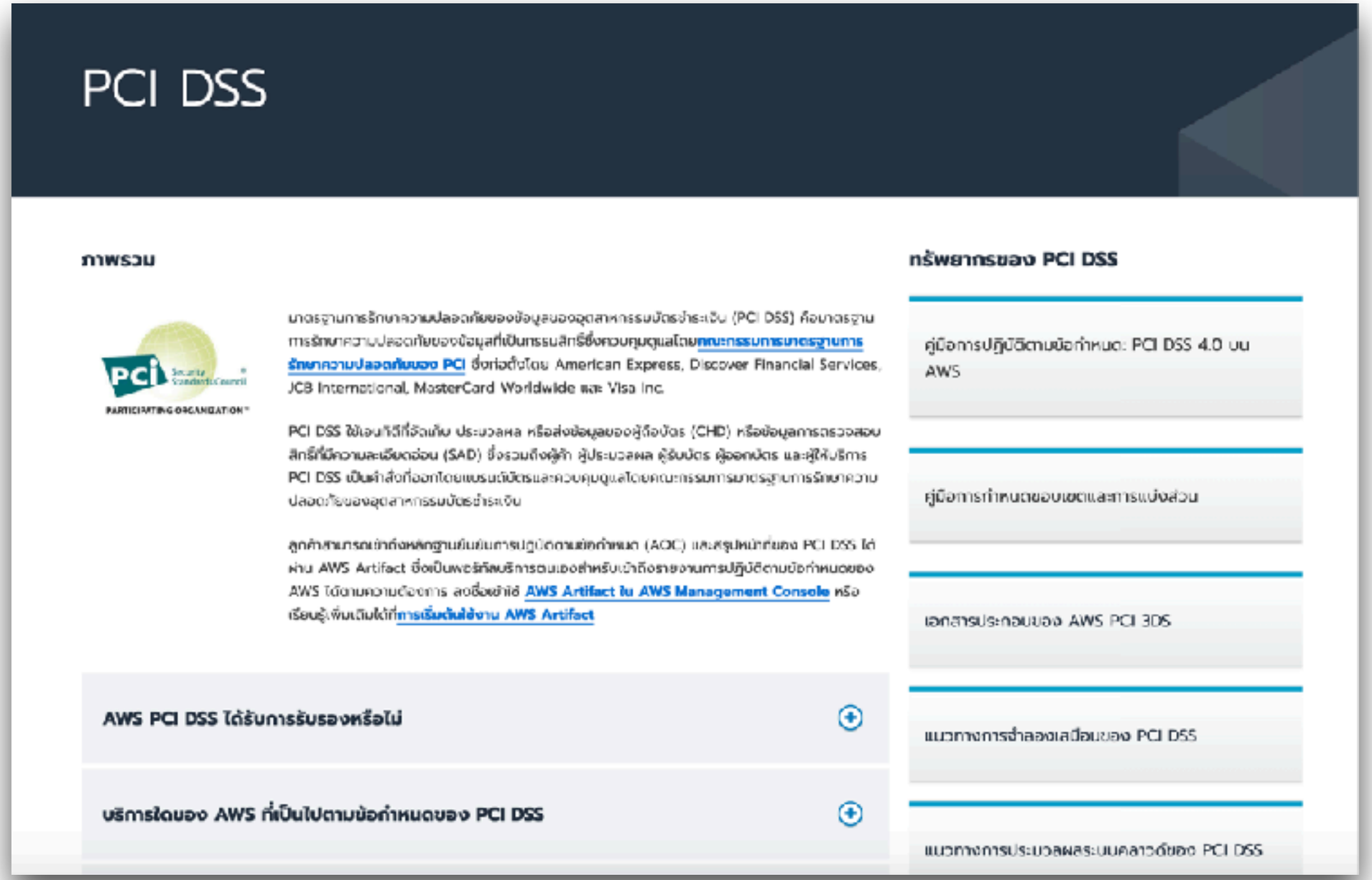


Example for Google Cloud



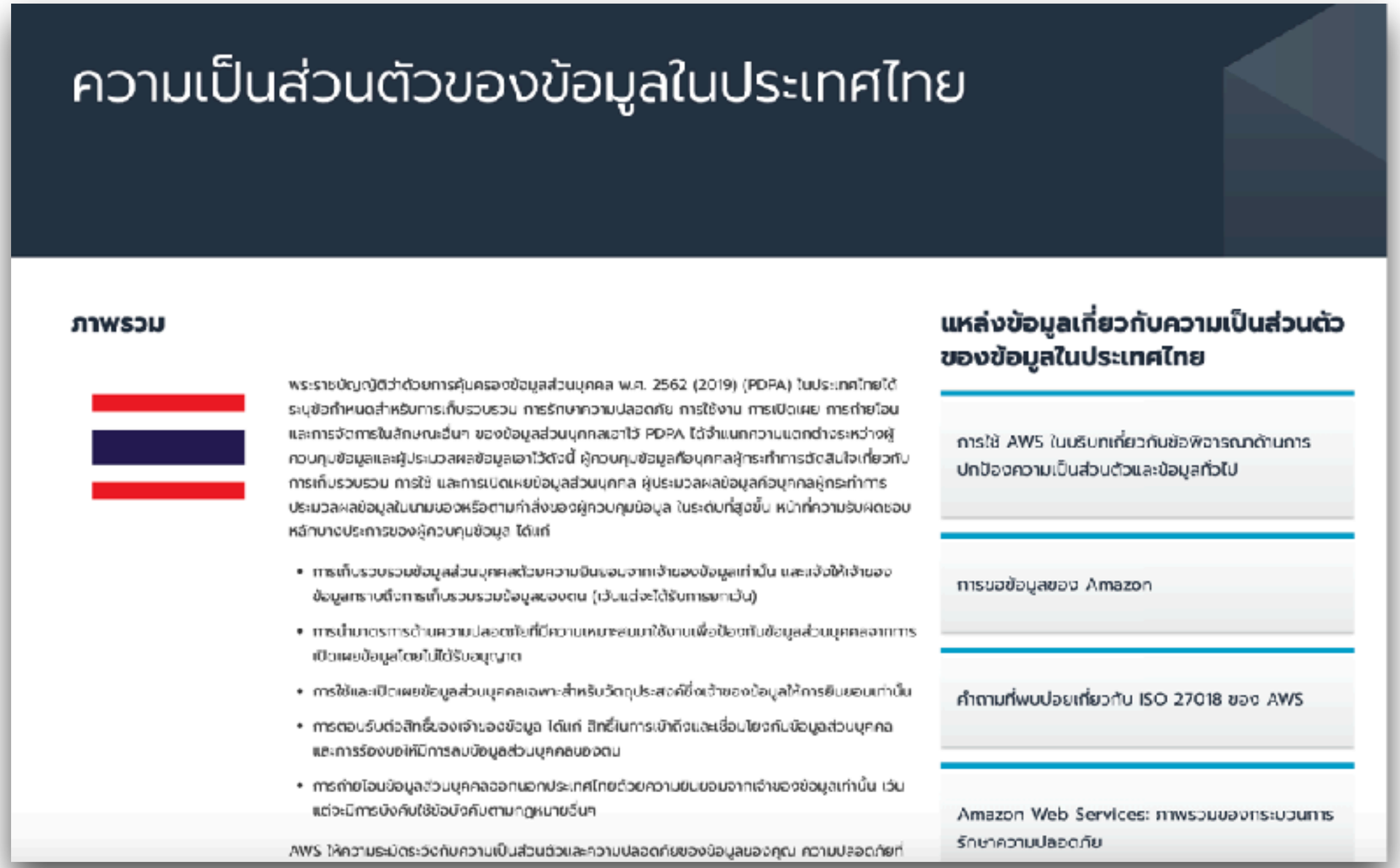
https://www.googlecloudcommunity.com/gc/Community-Blogs/The-Architecture-Framework-is-Now-Part-of-the-Google-Cloud/ba-p/176786

PCI DSS on Cloud



https://aws.amazon.com/th/compliance/pci-dss-level-1-faqs/

PDPA on Cloud



ความเป็นส่วนตัวของข้อมูลในประเทศไทย

ภาพรวม

พระราชบัญญัติว่าด้วยการคุ้มครองข้อมูลส่วนบุคคล พ.ศ. 2562 (2019) (PDPA) ในประเทศไทยได้ระบุข้อกำหนดสำหรับการเก็บรวบรวม การรักษาความปลอดภัย การใช้งาน การเปิดเผย การถ่ายโอน และการจัดการในลักษณะอื่นๆ ของข้อมูลส่วนบุคคลเอาไว้ PDPA ได้จำแนกความแตกต่างระหว่างผู้ควบคุมข้อมูลและผู้ประมวลผลข้อมูลเอาไว้ดังนี้ ผู้ควบคุมข้อมูลคือบุคคลผู้ทำการตัดสินใจเกี่ยวกับการเก็บรวบรวม การใช้ และการเปิดเผยข้อมูลส่วนบุคคล ผู้ประมวลผลข้อมูลคือบุคคลผู้กระทำการประมวลผลข้อมูลในนามของหรือตามคำสั่งของผู้ควบคุมข้อมูล ในระดับที่สูงขึ้น หน้าที่ความรับผิดชอบหลักบางประการของผู้ควบคุมข้อมูล ได้แก่

- การเก็บรวบรวมข้อมูลส่วนบุคคลด้วยความยินยอมจากเจ้าของข้อมูลเท่านั้น และแจ้งให้เจ้าของข้อมูลทราบถึงการเก็บรวบรวมข้อมูลของตน (เว้นแต่จะได้รับการยกเว้น)
- การนำมาตรการด้านความปลอดภัยที่มีความเหมาะสมมาใช้งานเพื่อป้องกันข้อมูลส่วนบุคคลจากการเปิดเผยข้อมูลโดยไม่ได้รับอนุญาต
- การใช้และเปิดเผยข้อมูลส่วนบุคคลเฉพาะสำหรับวัตถุประสงค์ที่เจ้าของข้อมูลให้การยินยอมเท่านั้น
- การตอบรับต่อสิทธิ์ของเจ้าของข้อมูล ได้แก่ สิทธิ์ในการเข้าถึงและเชื่อมโยงกับข้อมูลส่วนบุคคล และการร้องขอให้มีการลบข้อมูลส่วนบุคคลของตน
- การถ่ายโอนข้อมูลส่วนบุคคลออกนอกประเทศไทยด้วยความยินยอมจากเจ้าของข้อมูลเท่านั้น เว้นแต่จะมีการบังคับใช้ข้อบังคับตามกฎหมายอื่นๆ

AWS ให้ความระมัดระวังกับความเป็นส่วนตัวและความปลอดภัยของข้อมูลของคุณ ความปลอดภัยที่

แหล่งข้อมูลเกี่ยวกับความเป็นส่วนตัวของข้อมูลในประเทศไทย

การใช้ AWS ในบริบทเกี่ยวกับข้อพิจารณาด้านการปกป้องความเป็นส่วนตัวและข้อมูลทั่วไป

การขอข้อมูลของ Amazon

คำถามที่พบบ่อยเกี่ยวกับ ISO 27018 ของ AWS

Amazon Web Services: ภาพรวมของกระบวนการรักษาความปลอดภัย

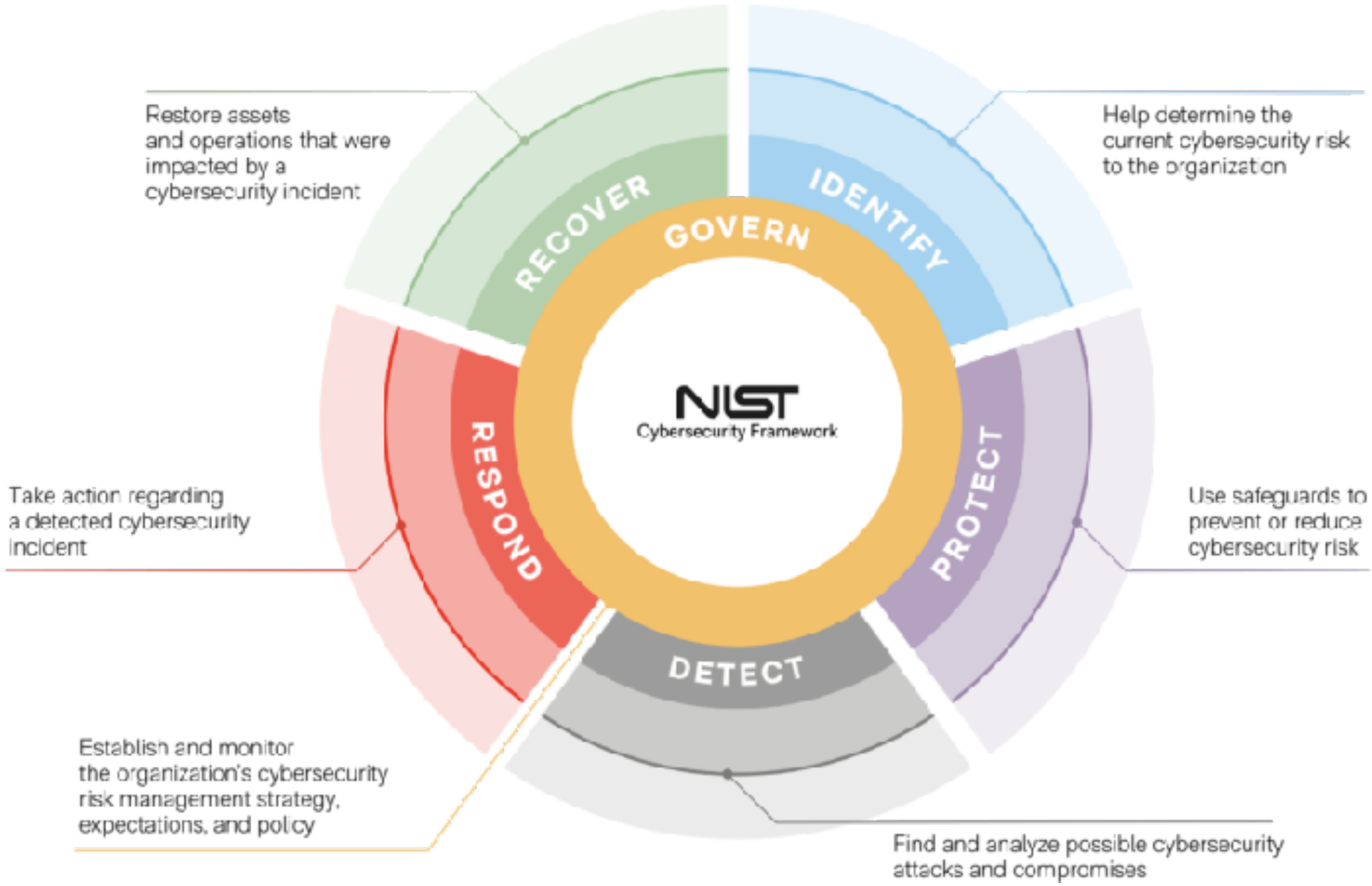
https://aws.amazon.com/th/compliance/thailand-data-privacy/

NIST Cybersecurity Framework

National Institute of Standards And Technology
Help organizations manage and **reduce risk**s

https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.29.pdf

NIST Framework 2.0



https://en.wikipedia.org/wiki/NIST_Cybersecurity_Framework

NIST Framework 2.0

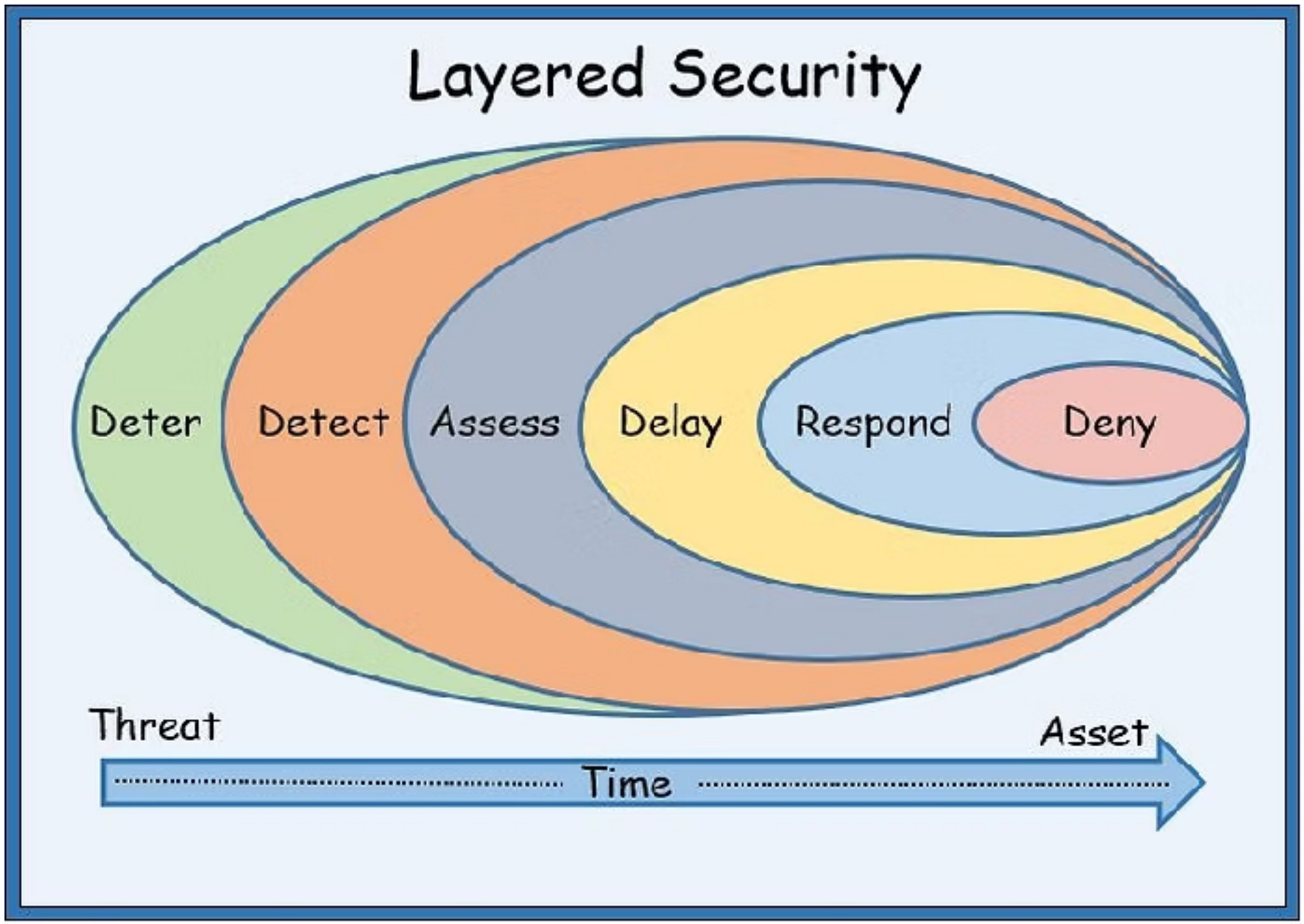
Function	Category	Category Identifier
Govern (GV)	Organizational Context	GV.OC
	Risk Management Strategy	GV.RM
	Cybersecurity Supply Chain Risk Management	GV.SC
	Roles, Responsibilities, and Authorities	GV.RR
	Policies, Processes, and Procedures	GV.PO
	Oversight	GV.OV
Identify (ID)	Asset Management	ID.AM
	Risk Assessment	ID.RA
	Improvement	ID.IM
Protect (PR)	Identity Management, Authentication, and Access Control	PR.AA
	Awareness and Training	PR.AT
	Data Security	PR.DS
	Platform Security	PR.PS
	Technology Infrastructure Resilience	PR.IR
Detect (DE)	Continuous Monitoring	DE.CM
	Adverse Event Analysis	DE.AE
Respond (RS)	Incident Management	RS.MA
	Incident Analysis	RS.AN
	Incident Response Reporting and Communication	RS.CO
	Incident Mitigation	RS.MI
Recover (RC)	Incident Recovery Plan Execution	RC.RP
	Incident Recovery Communication	RC.CO

https://www.linkedin.com/pulse/nist-cybersecurity-framework-20-whats-new-how-compares-lahiru-livera-b8wvc/

Risks !!

https://en.wikipedia.org/wiki/NIST_Cybersecurity_Framework

Layers of security !!



https://en.wikipedia.org/wiki/NIST_Cybersecurity_Framework

Start with questions !!

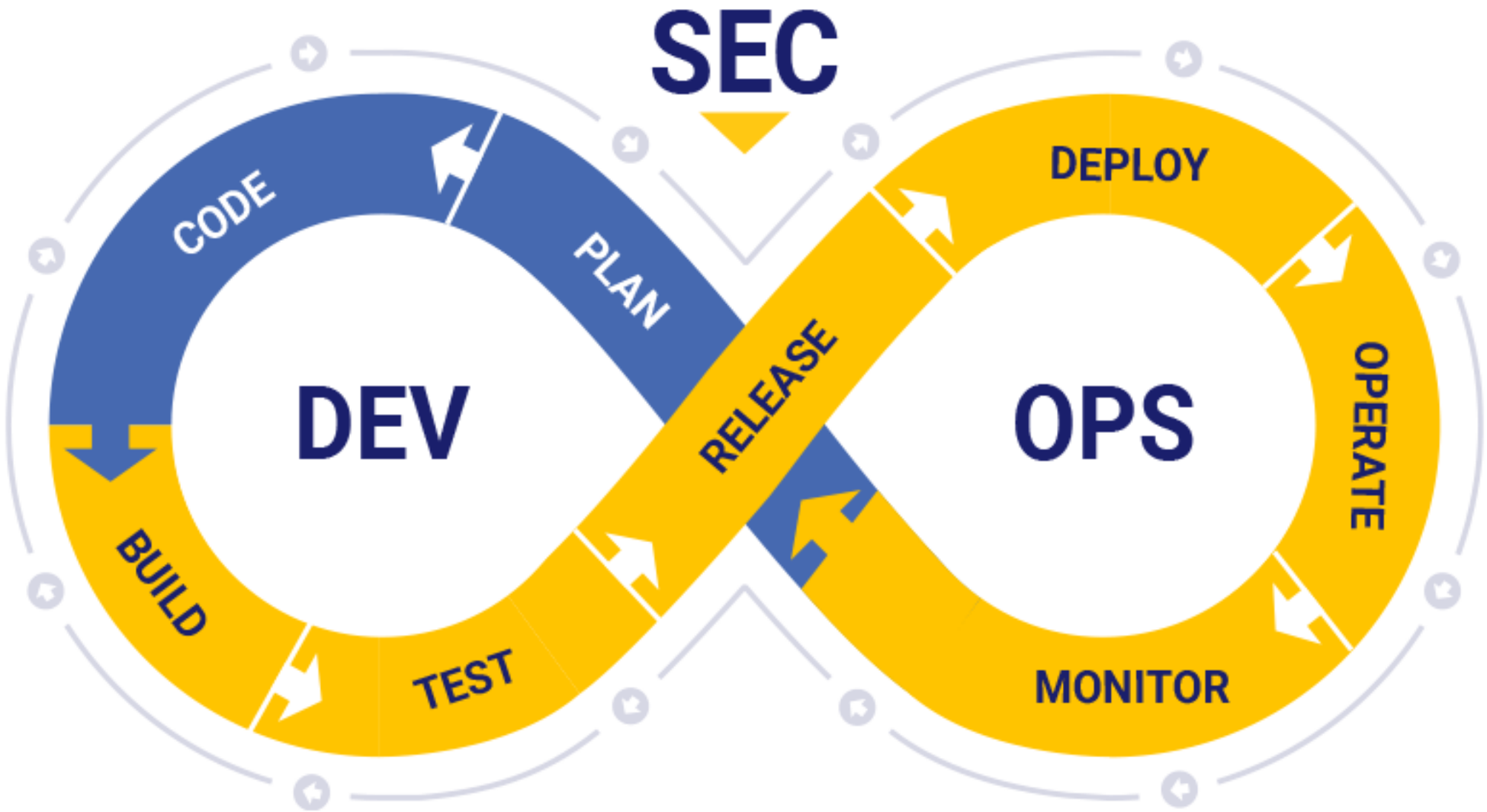
https://en.wikipedia.org/wiki/NIST_Cybersecurity_Framework

CSF to improve risk mgt

Fig. 5. Using the CSF to improve risk management communication

https://en.wikipedia.org/wiki/NIST_Cybersecurity_Framework

DevSecOps



IAM Audit Checklist

https://www.veritis.com/blog/robust-identity-management-with-8-point-iam-audit-checklist-and-iam-strategy/

Module 6
Preparing for cloud adoption

Migration system to Cloud is more challenge !!

https://learn.microsoft.com/en-us/azure/cloud-adoption-framework/strategy/

Why Cloud adoption ?

Realize value

Ensure business-driven decisions

Drive alignment cross-functional teams

Mitigate modernization risks

Enable continuous strategy improvement

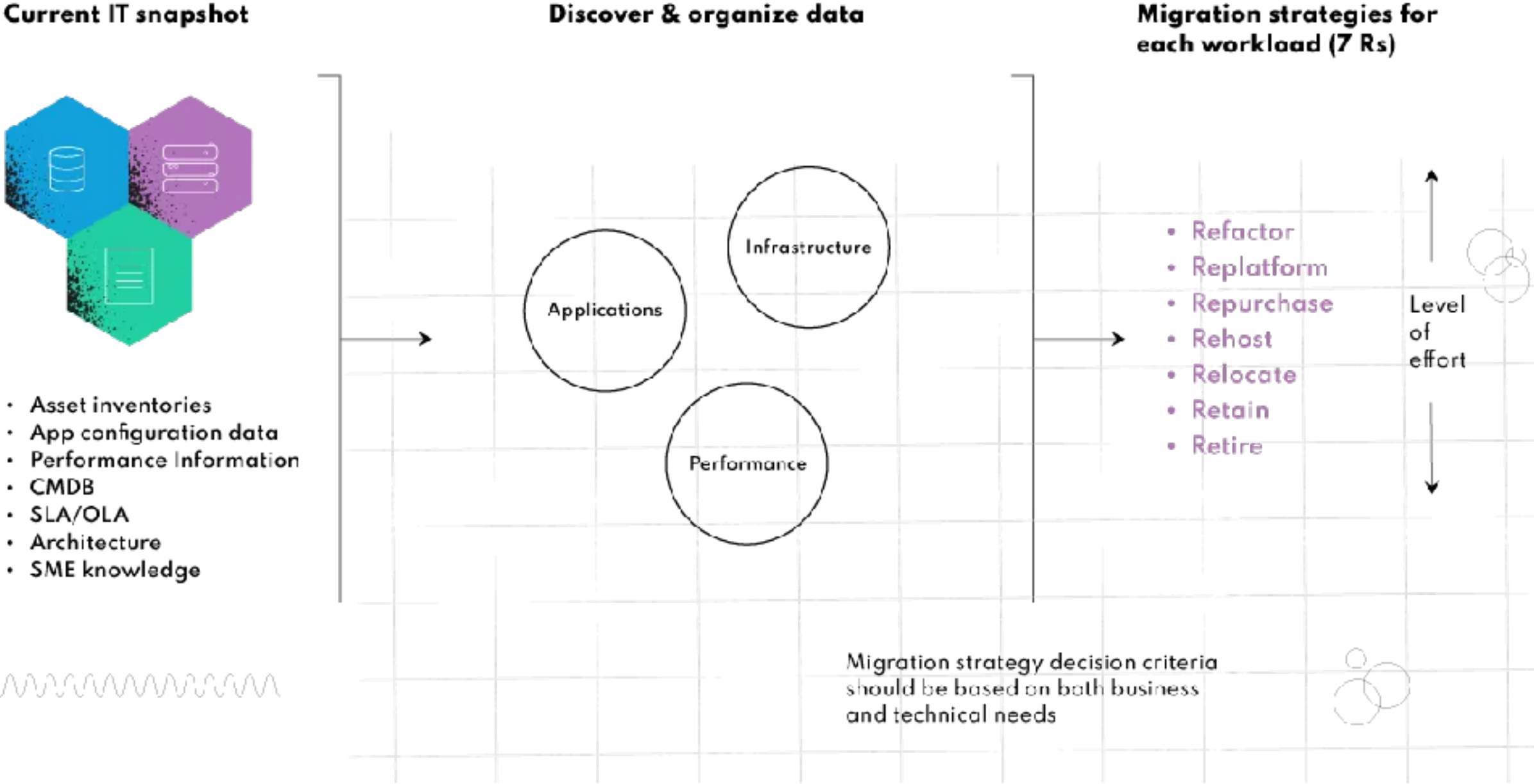
https://learn.microsoft.com/en-us/azure/cloud-adoption-framework/strategy/

Cloud Readiness Assessment

Help businesses determine, prepare to move to cloud
Provide checklists
Make a plan with minimal business interruption !!

https://www.tierpoint.com/blog/cloud-readiness-assessments-help-reduce-cloud-migration-risks/

Cloud Transformation

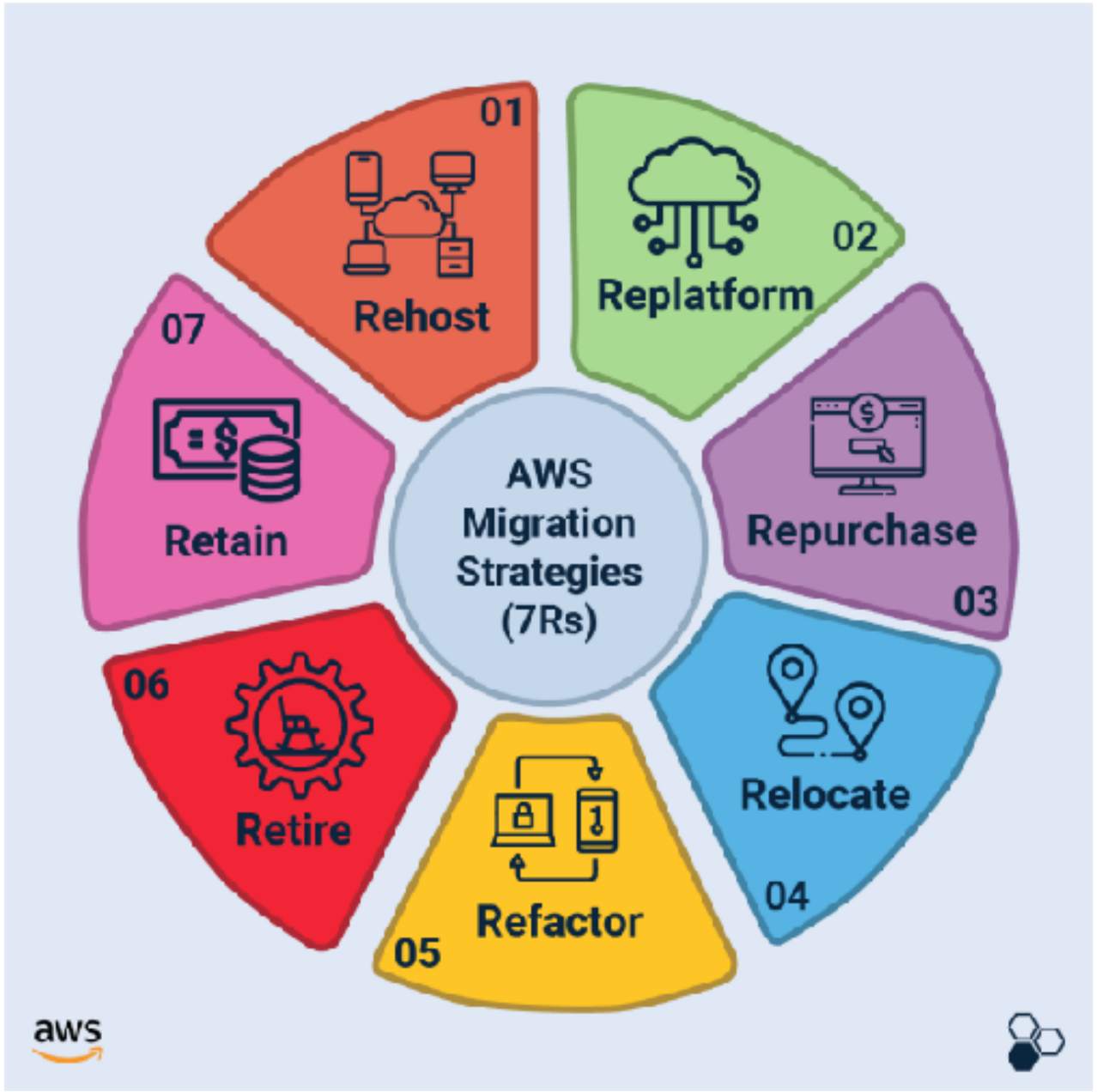


https://medium.com/@rogernem/understanding-the-7-rs-57db362d74d9

Migration Strategies

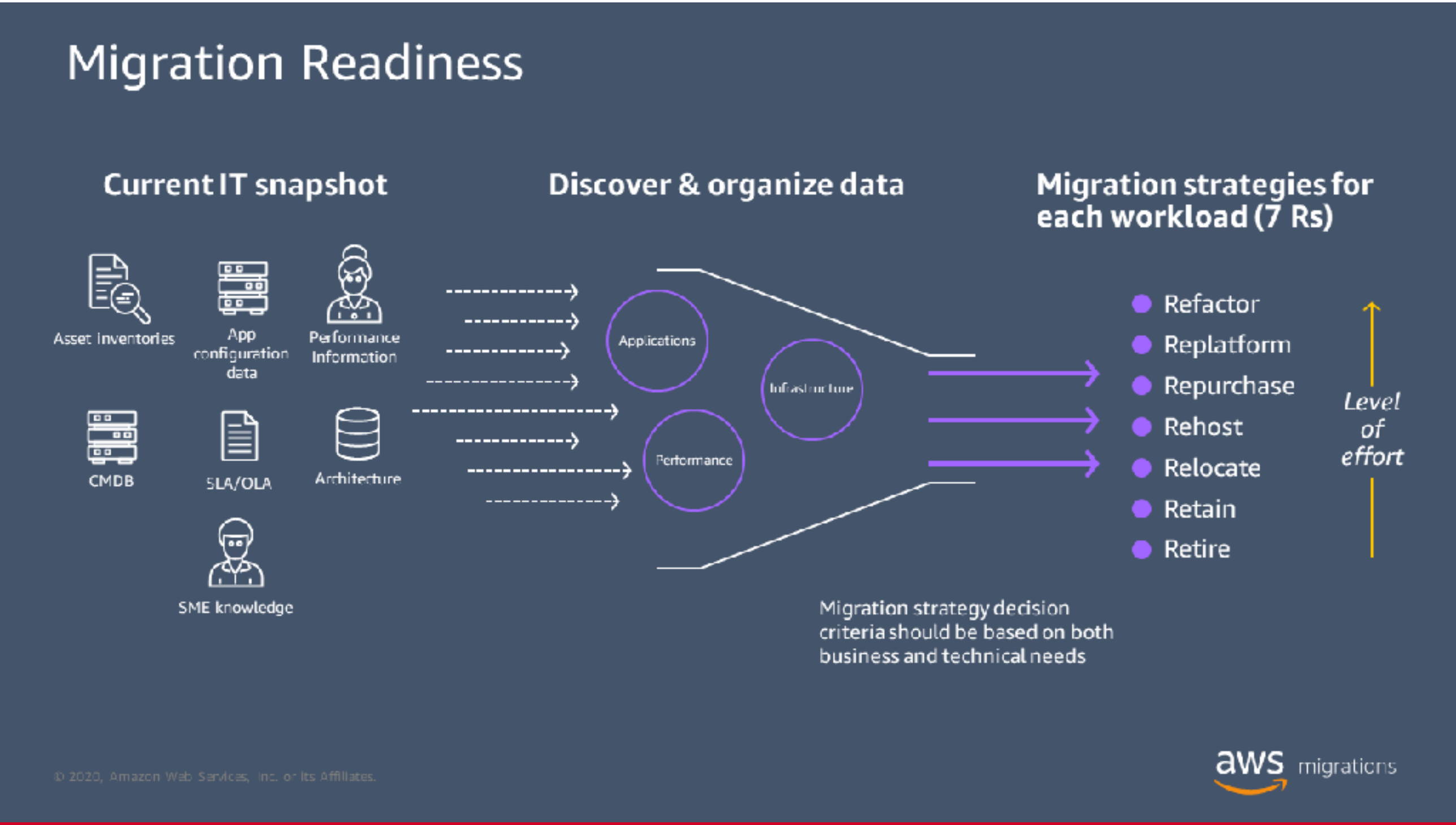
https://www.analytics8.com/blog/cloud-migration-strategy-guide/

Migration Strategies



https://docs.aws.amazon.com/prescriptive-guidance/latest/migration-retiring-applications/overview.html

Migration Strategies



Migration Strategies

Strategies	Detail
Retire	Stop using
Retain	Do not thing now and revisit it later
Rehost	Lift and shift, redeploy on cloud without rewrite
Realocate	Deploy on cloud with rewrite code
Repurchase	Drop and shop
Replatform	Lift, thinker, shift and reshape
Refactor	Re-architect

1. Retire

Decommission applications or workloads that are no longer useful or relevant to the business

No business value

Out-of-date technology

2. Retain of Revisit

Keep certain applications on-premises or in their current environment because they are either not ready for migration or don't justify the effort

Regulatory/Compliance

Latency-sensitive workload

No immediate business case for migration

3. Rehost (lift and shift)

Move applications to the cloud
with minimal changes, essentially replicating the existing environment

Quick migration

Cost and time are critical

Minimal operation and planning

4. Replatform

Modify applications slightly to take advantage of cloud capabilities without a complete overhaul

Enhance some performance and cost

Move to container and managed db

5. Refactor (rearchitect)

Rewriting or redesigning applications
to be cloud-native by utilizing microservices,
serverless computing, and modern architecture
patterns

Unlock full cloud benefit

6. Repurchase

Move to a different product or solution, often replacing a traditional application with a Software-as-a-Service (SaaS) offering

7. Relocate

Shift an entire data center
or set of virtual machines (VMs) to the cloud without changing their architecture or operation

Quick migration

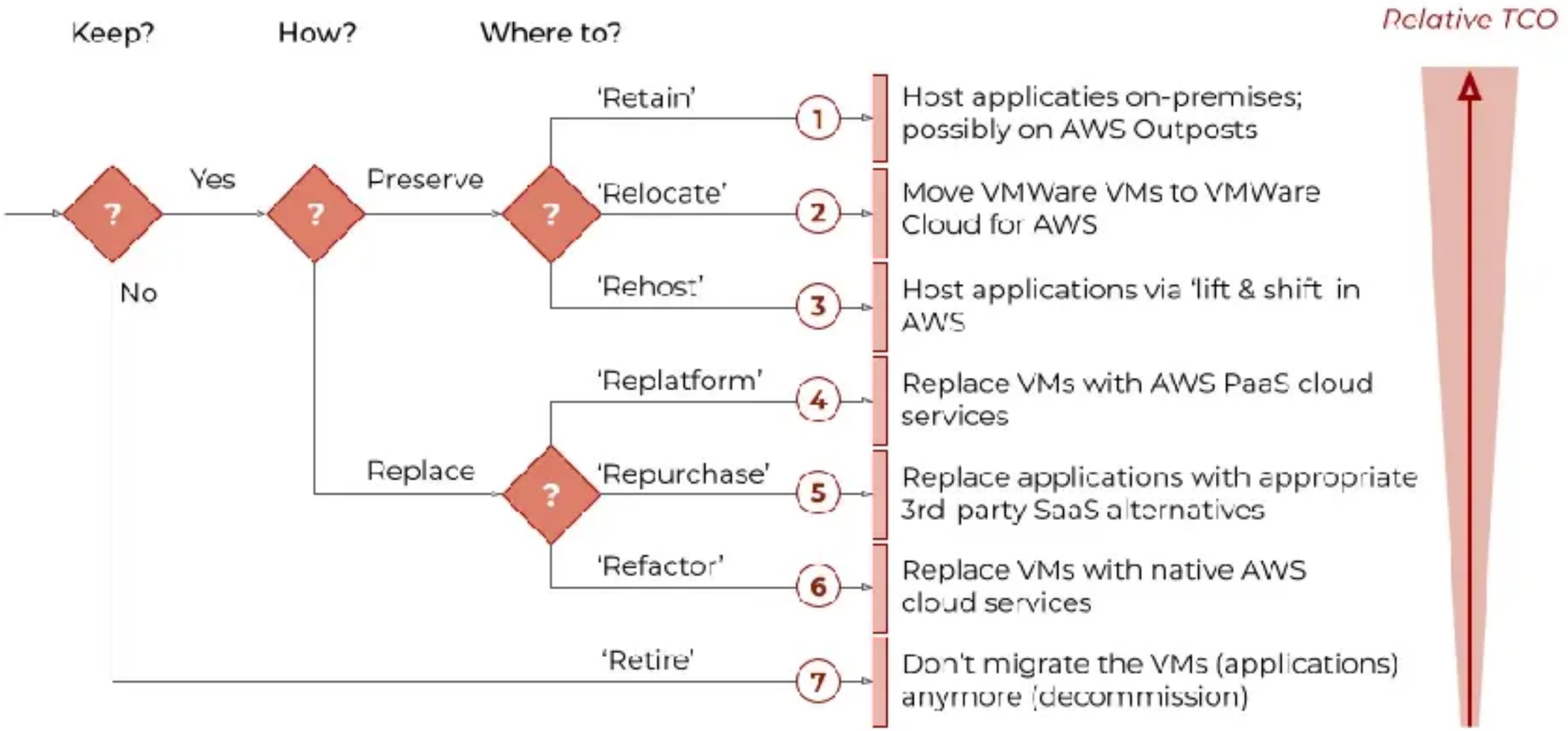
Higher initial cost

Summary of 7R

R	Action	When to Use	Primary Benefit
Retire	Decommission	No longer useful or has a replacement	Cost savings, simplified IT
Retain	Keep as-is	Regulatory constraints or no immediate value in migration	Stability, phased approach
Rehost	Lift and shift	Time-sensitive migrations or legacy systems	Fast migration, minimal disruption
Replatform	Lift, tinker, and shift	Optimize for the cloud with minor changes	Improved performance, cost savings
Refactor	Redesign for the cloud	To fully leverage cloud-native features	Scalability, future-proofing
Repurchase	Replace with SaaS	Legacy apps that can be replaced with modern solutions	Reduced maintenance, modern tools
Relocate	Migrate as-is to the cloud	Incremental large-scale migrations	Operational continuity, speed

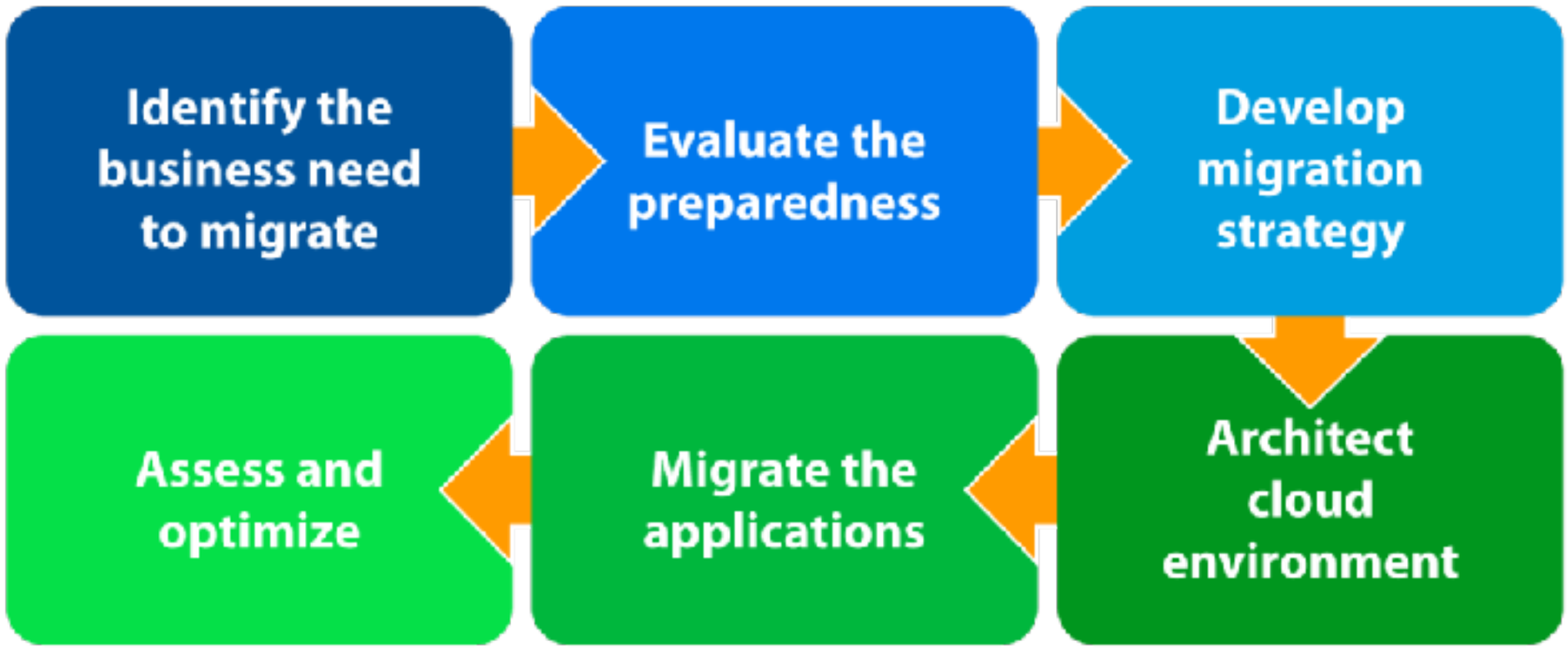
https://learn.microsoft.com/en-us/azure/cloud-adoption-framework/plan/select-cloud-migration-strategy

Details in 7Rs



https://builder.aws.com/content/2cKbgI3WsAYTiDM0J48uEMVqOVW/understanding-the-7-rs-cloud-migration-strategies

Cloud adoption journey (e2e)



https://www.corestack.io/blog/cloud-adoption-journey/

Q/A