



Cloud Technology Associate



Facebook somkiat.cc

Page Messages Notifications 3 Insights Publishing Tools Settings Help ▾

somkiat.cc
@somkiat.cc

Home Posts Videos Photos

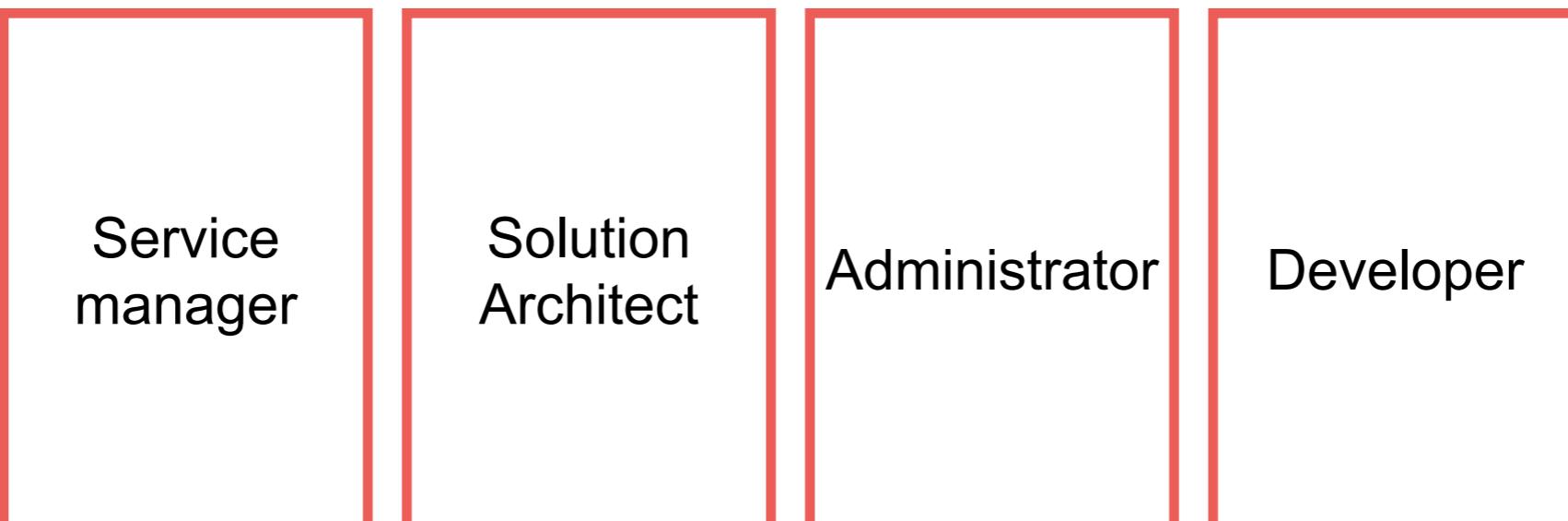
Liked Following Share ... + Add a Button

Help people take action on this Page. X



Cloud Technology Associate (CTA)





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 ?



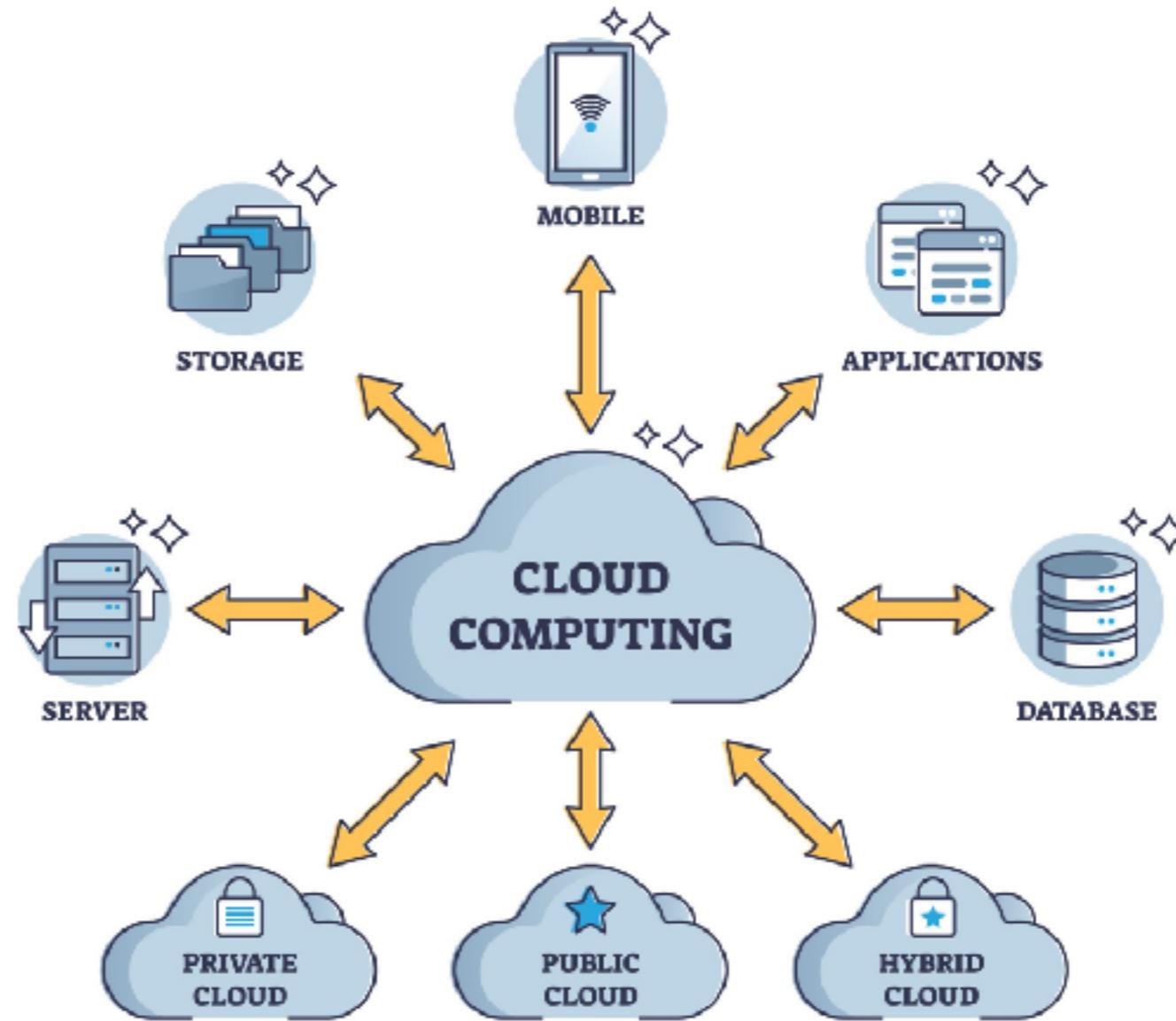
Cloud Computing is

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

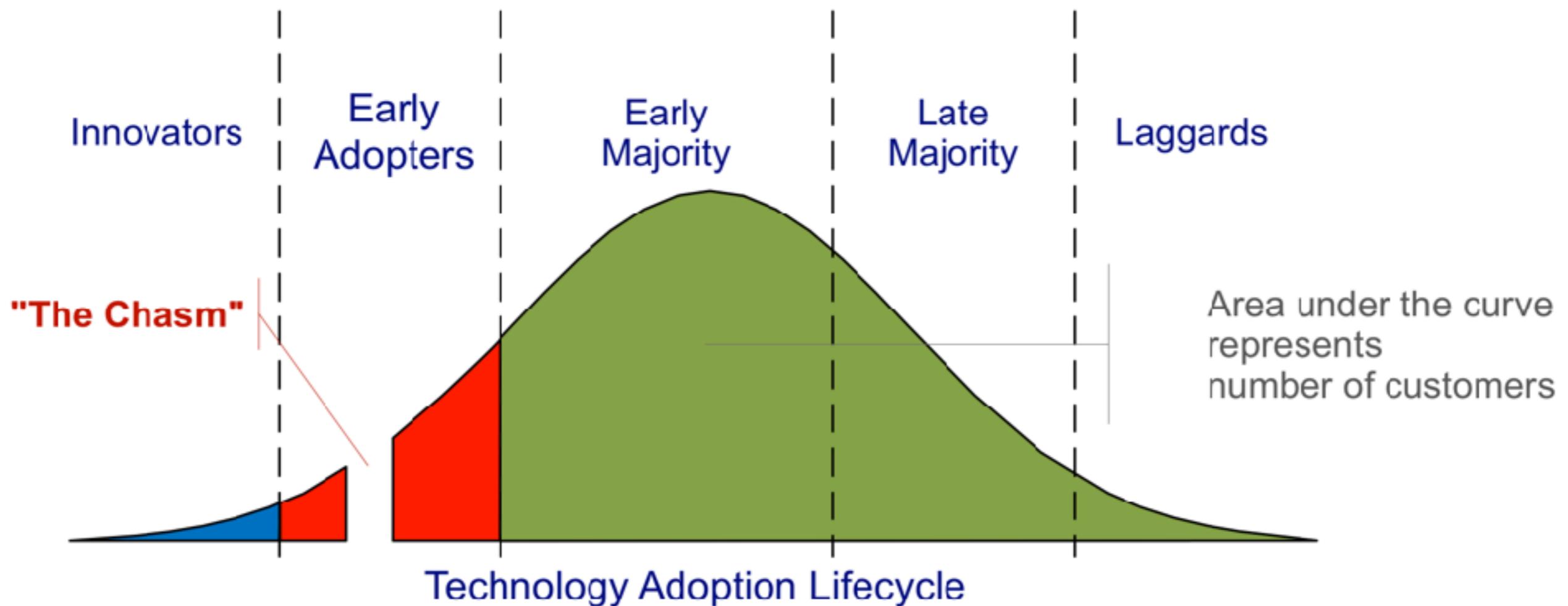
<https://csrc.nist.gov/pubs/sp/800/145/final>



Cloud Computing ?



Technology Adoption Lifecycle

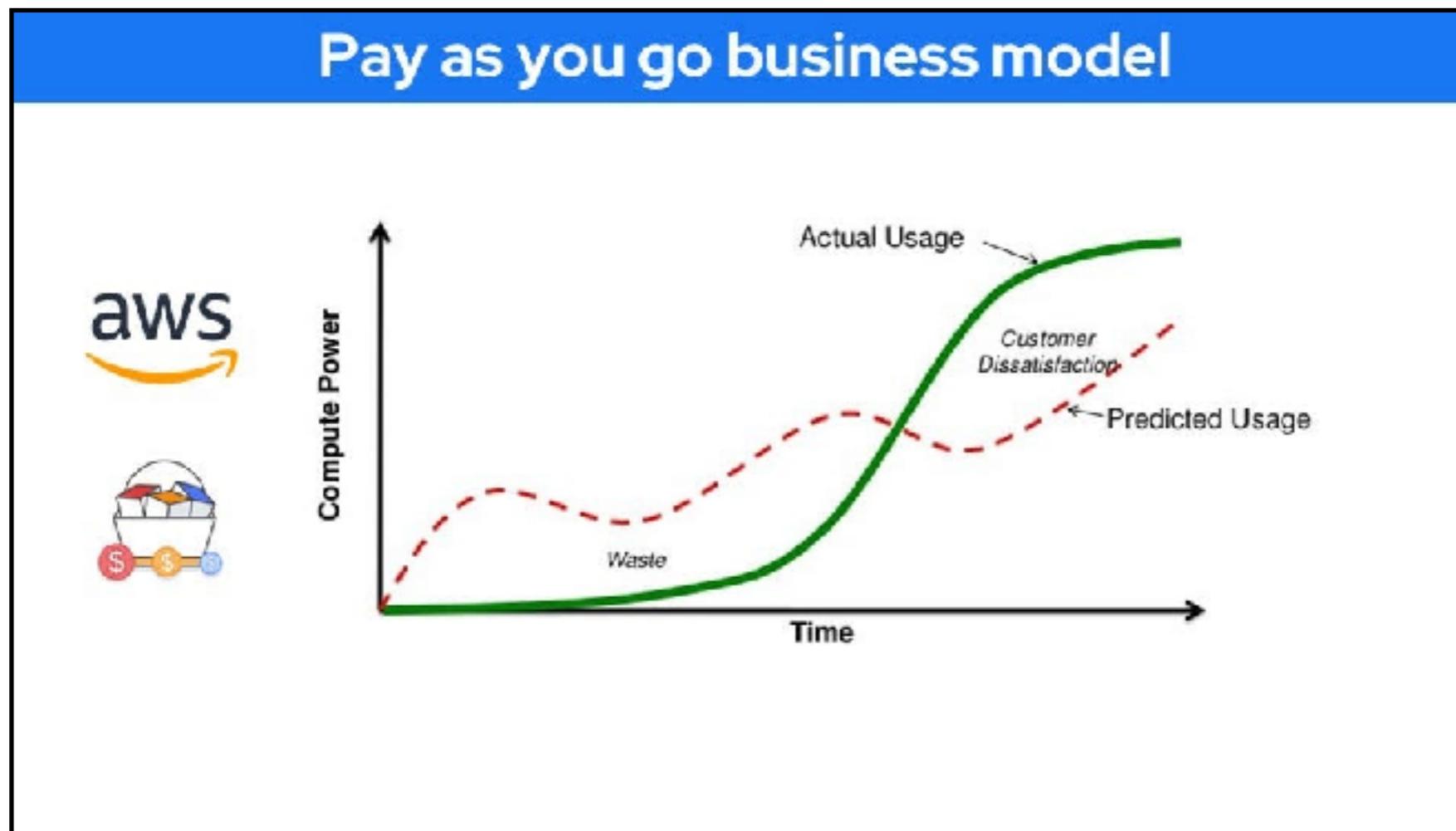


<https://aws.amazon.com/blogs/enterprise-strategy/drive-change-but-avoid-the-chasms/>



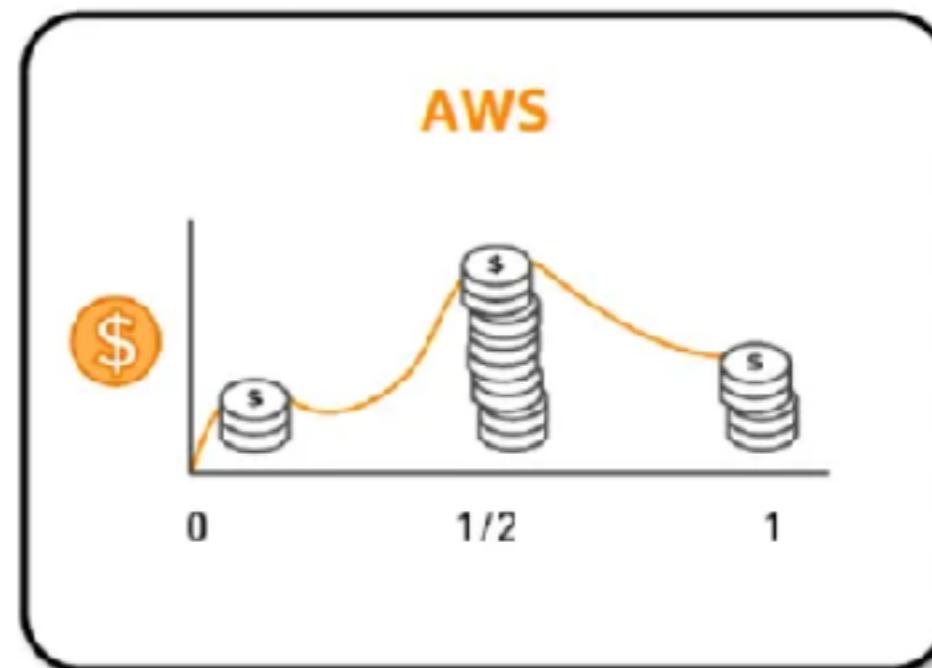
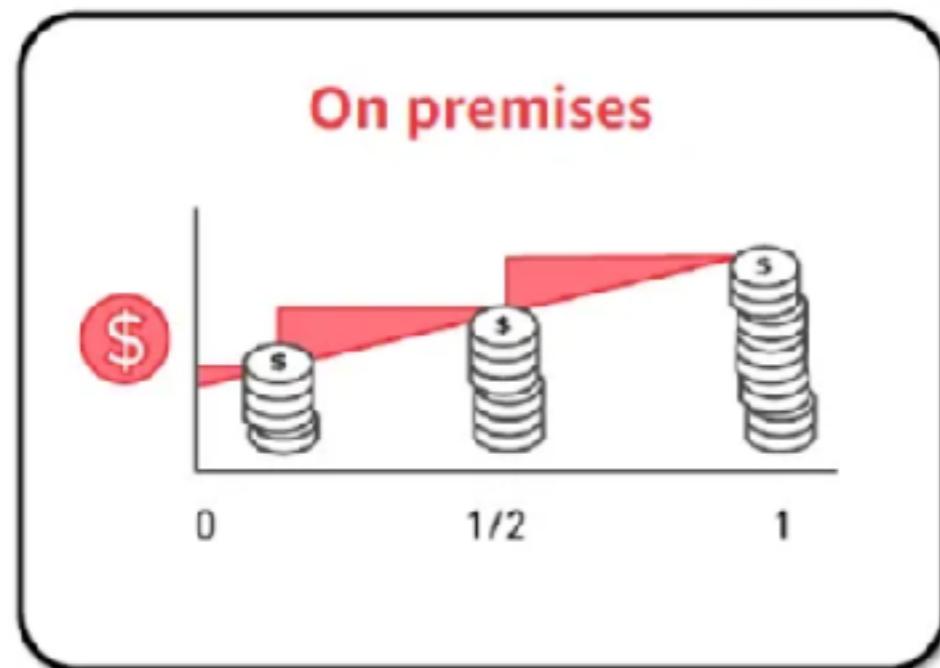
Cloud Computing ?

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

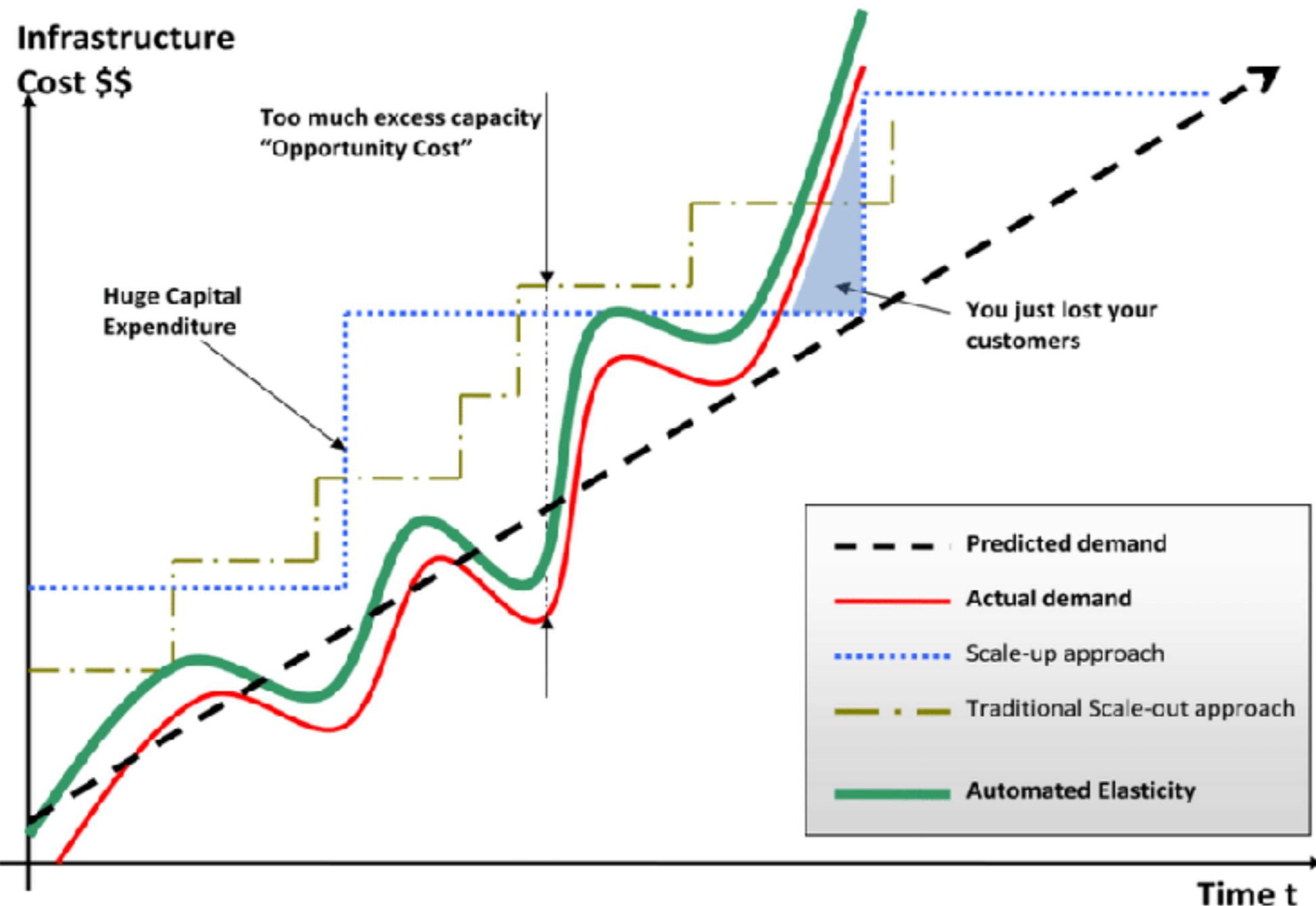
Resource pooling

Rapid elasticity

Measured service



Scalability vs Elasticity



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



Scaling

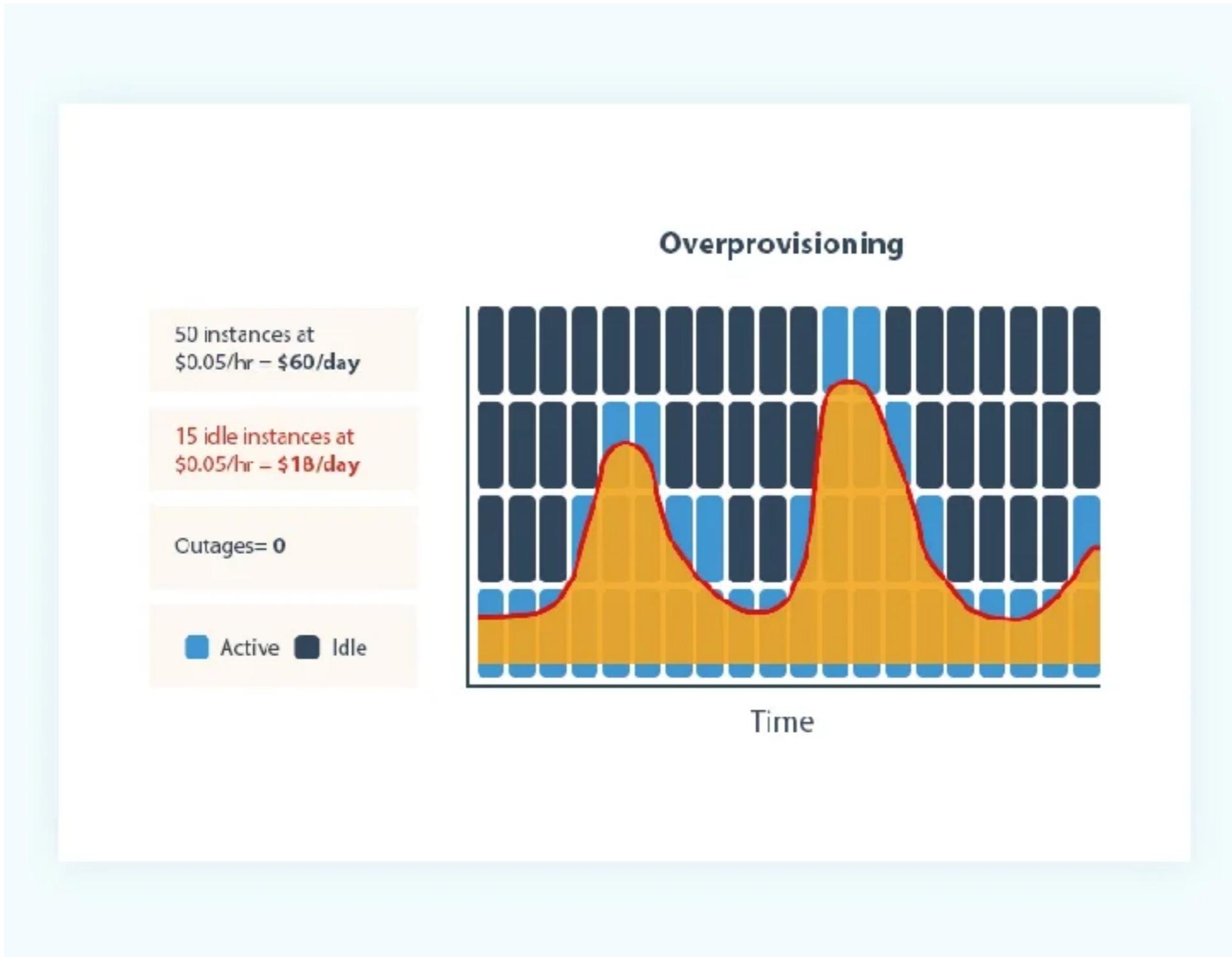


Vertical Scaling
(Scaling up)

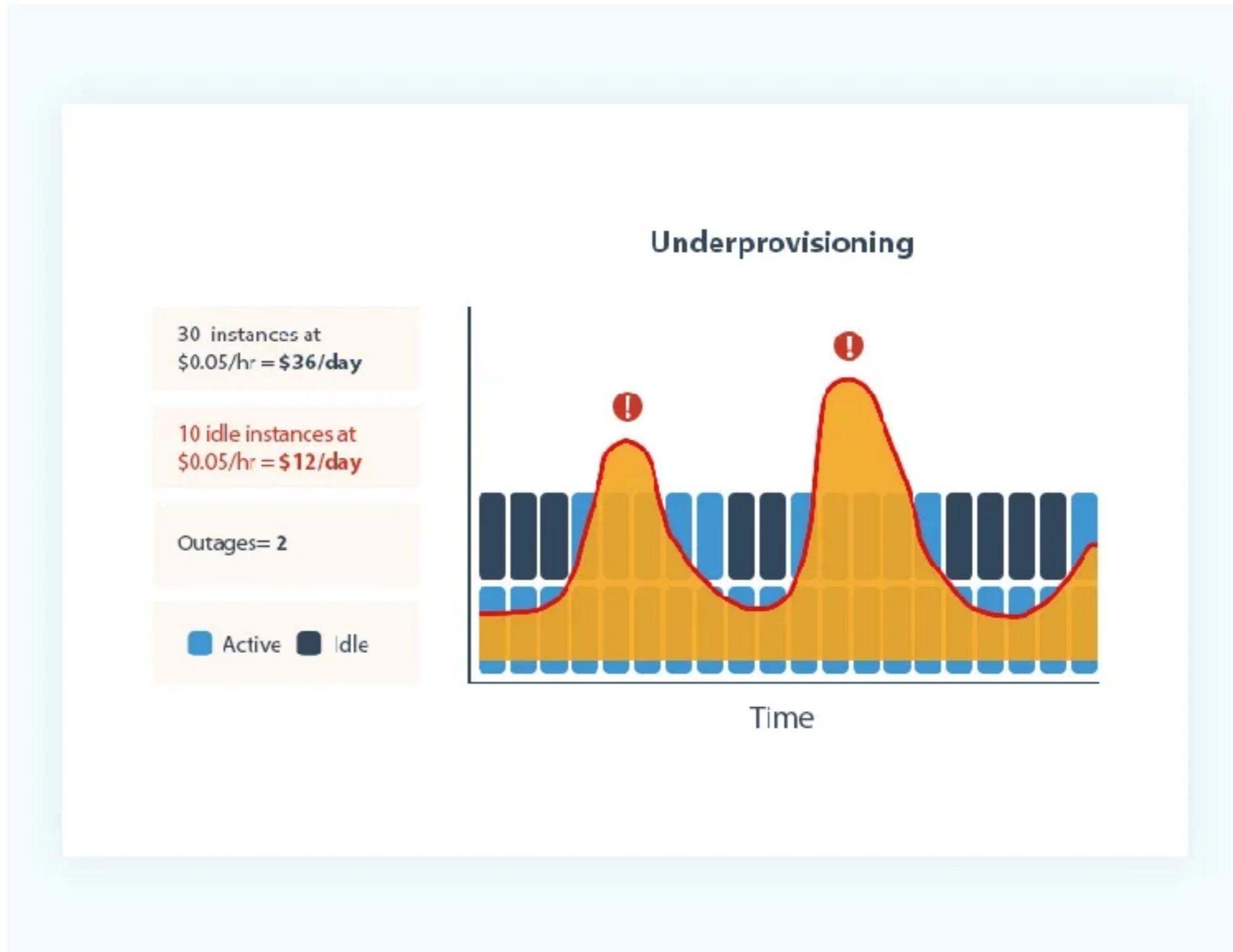
Horizontal Scaling
(Scaling out)



Over-provisioning



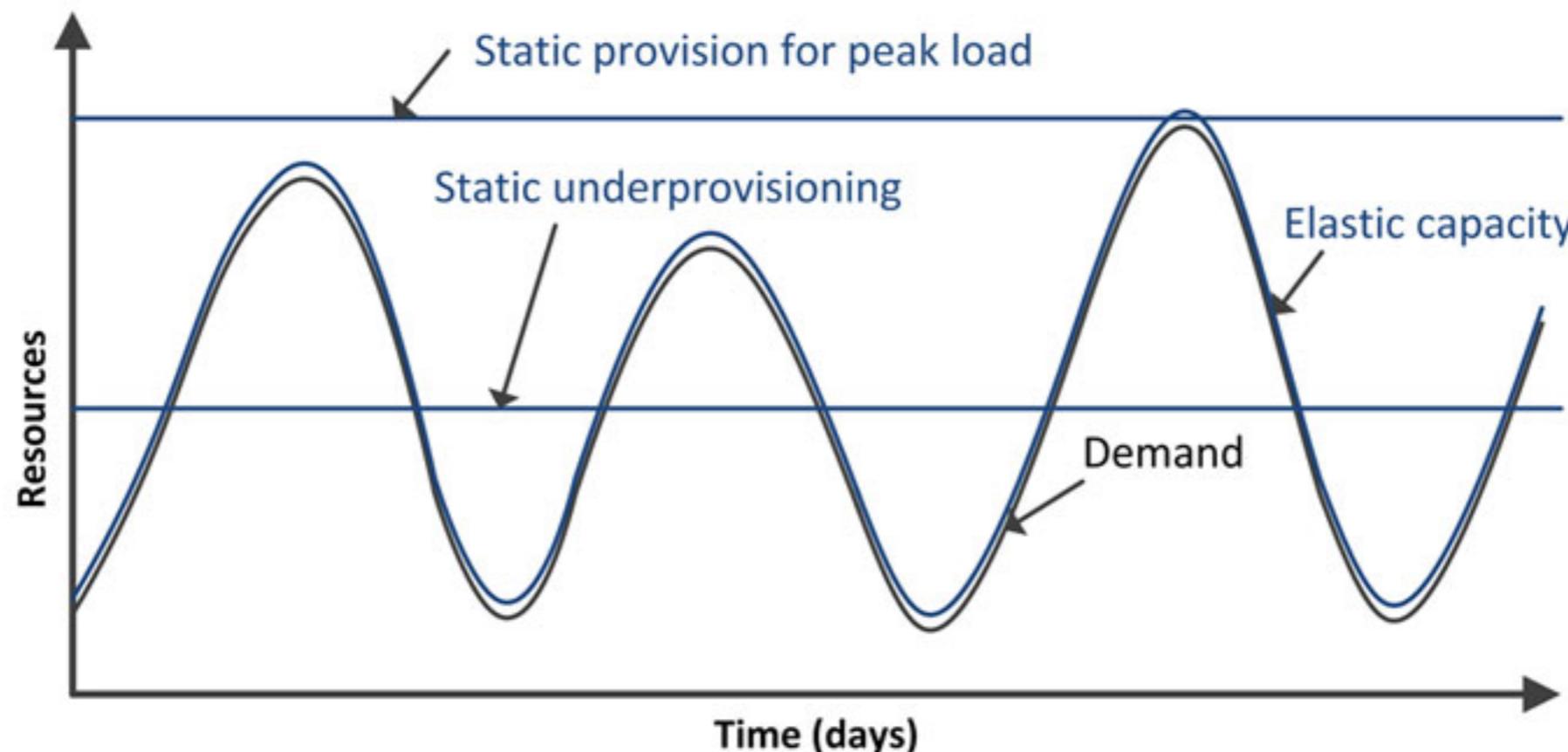
Under-provisioning



Elastic scaling

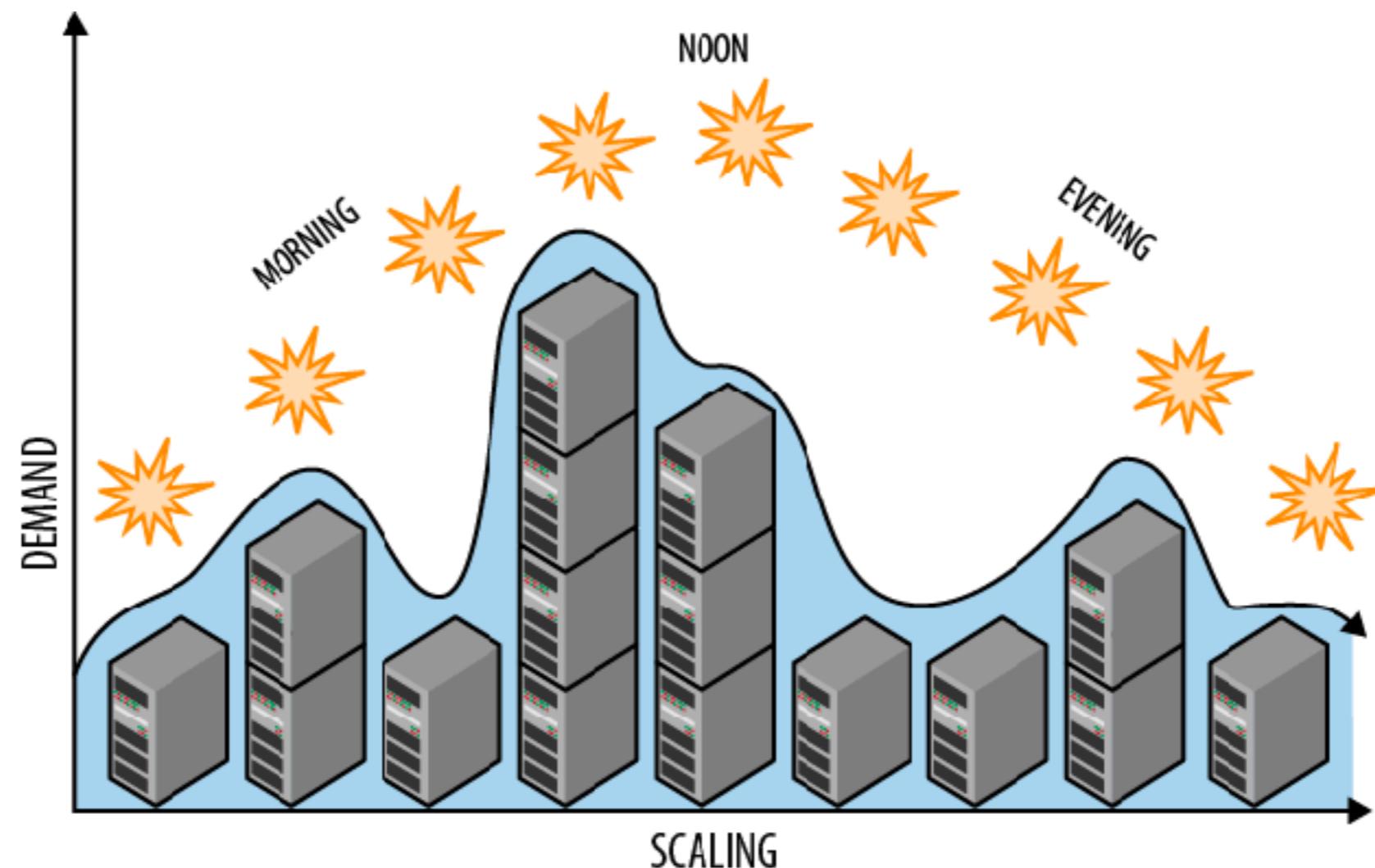


Elasticity Scaling



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)	Mult-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					
<input type="text"/> Find an AWS service or Region		Locales	Asia Pacific	▼	2025/08/19		<	1	2	3	4	5	6	7	...	59	>
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>



Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

On-premise infrastructure



On-premise infrastructure

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

Physical server

Virtualization

Network hardware

Storage

Managed by IT team (maintenance, upgrade, monitoring)



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)

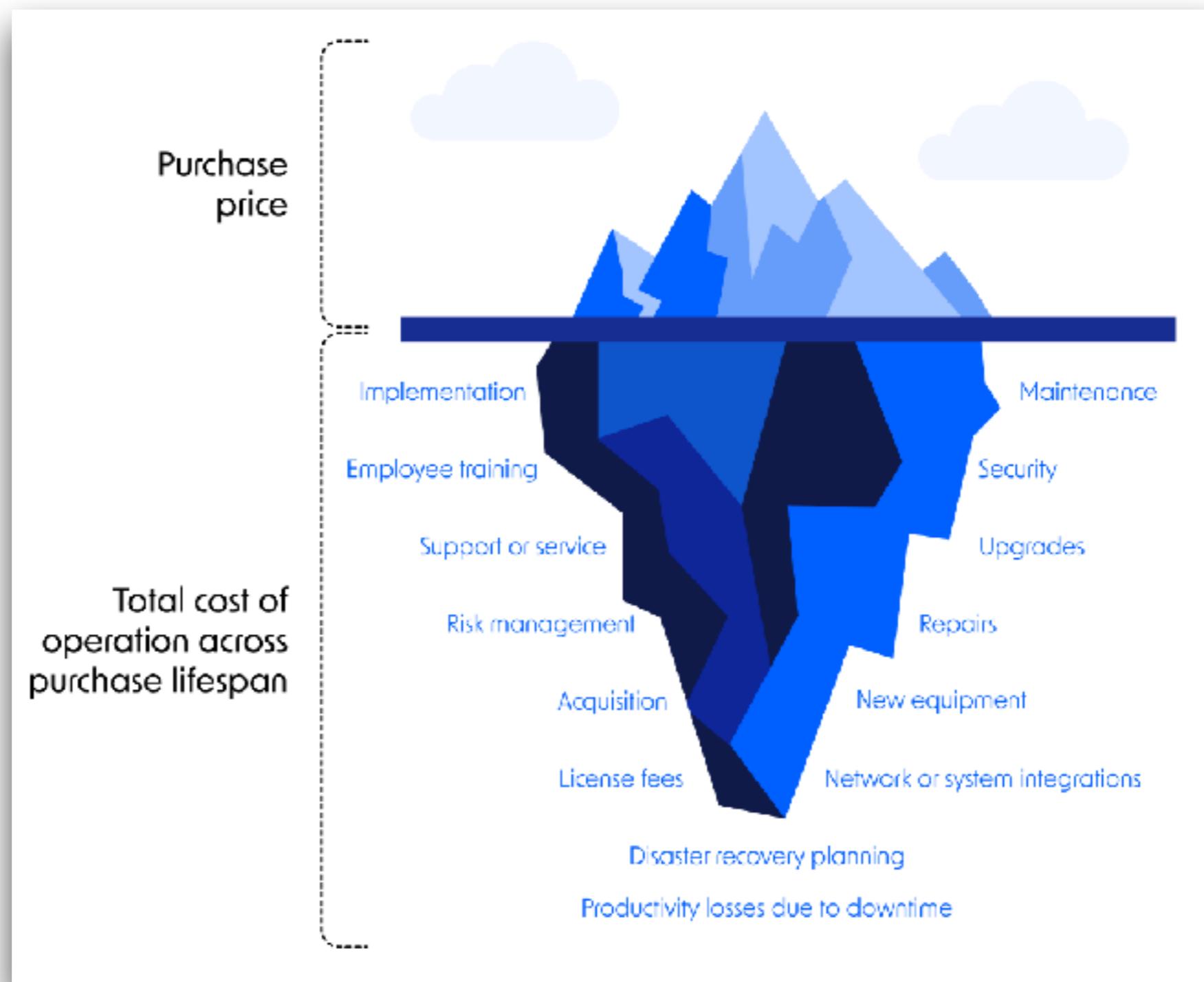
Maintenance responsibility

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

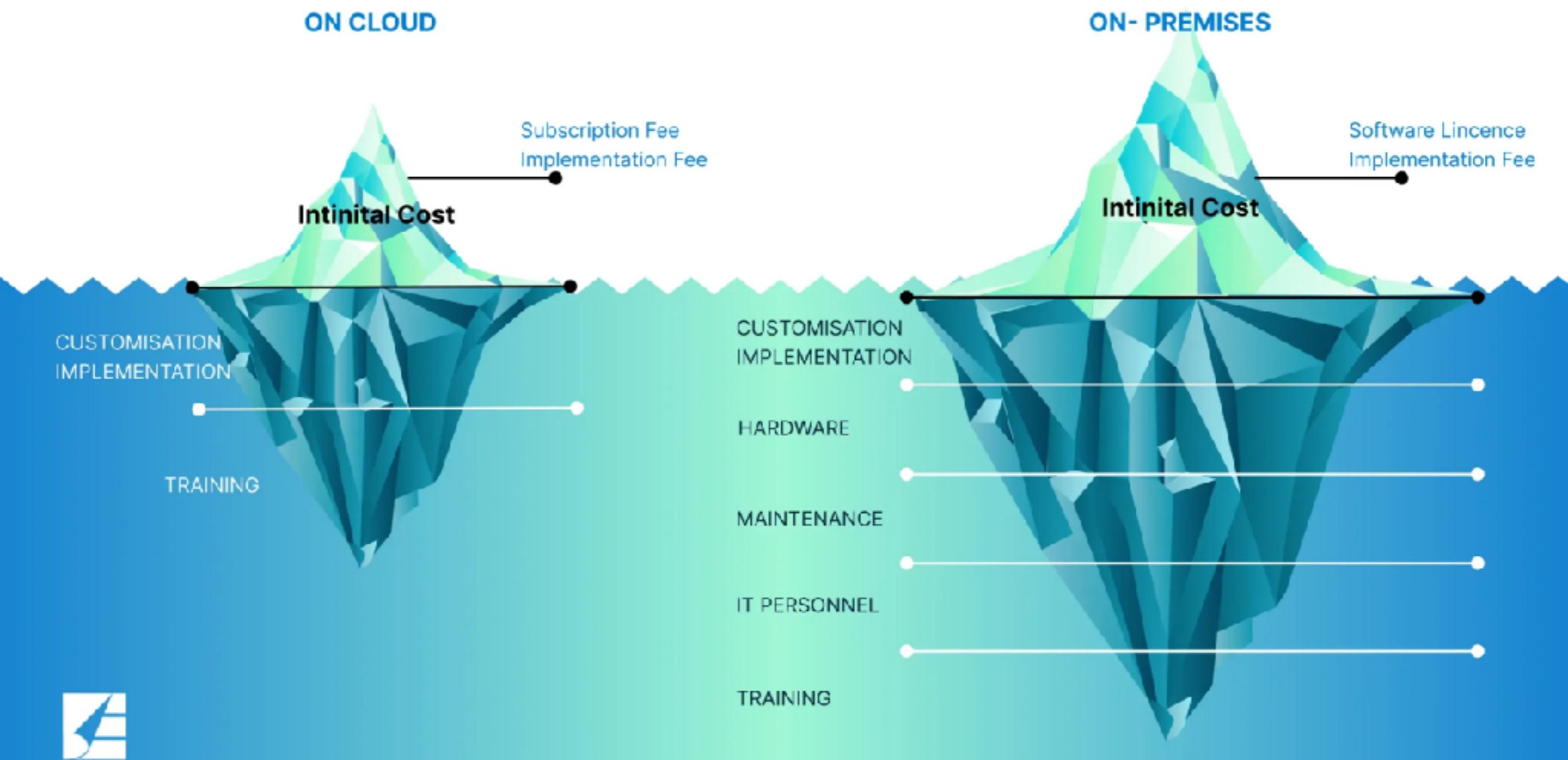
Reduce
maintenance

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



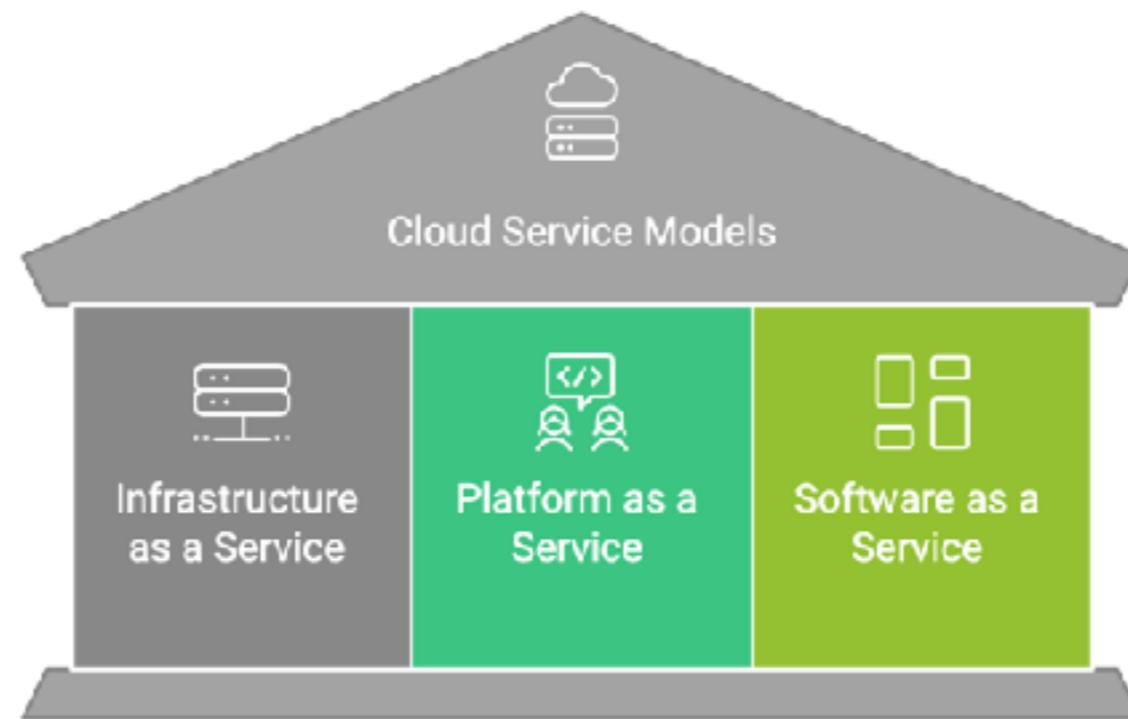
Service models of Cloud

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

Virtual
machine

Storage

Networking

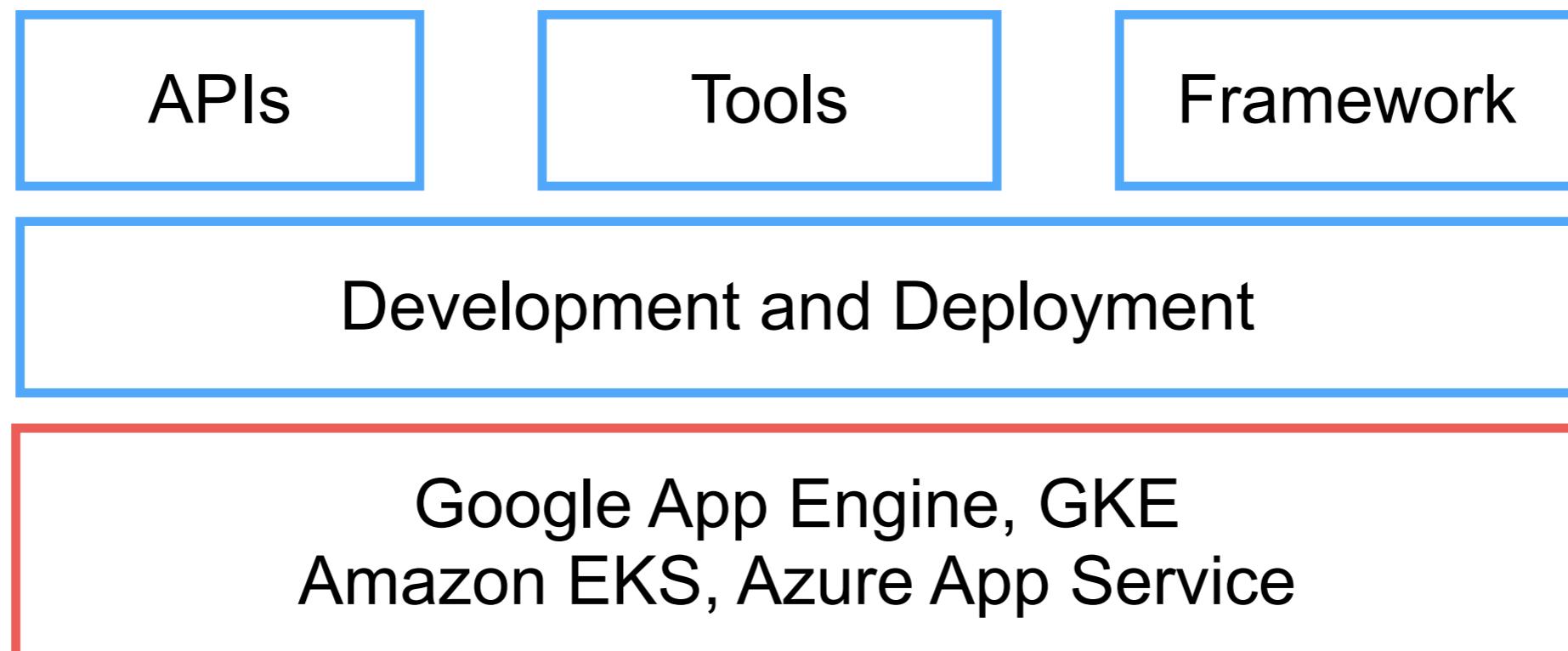
OS

AWS, GCP, Azure



PaaS

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



SaaS

Provide access software app from internet

User can access via web browser without managing infrastructure or platform

Softwares

Google workspace, Microsoft 365, Salesforce



More services models !!

Function as a Service
(FaaS)

Containers



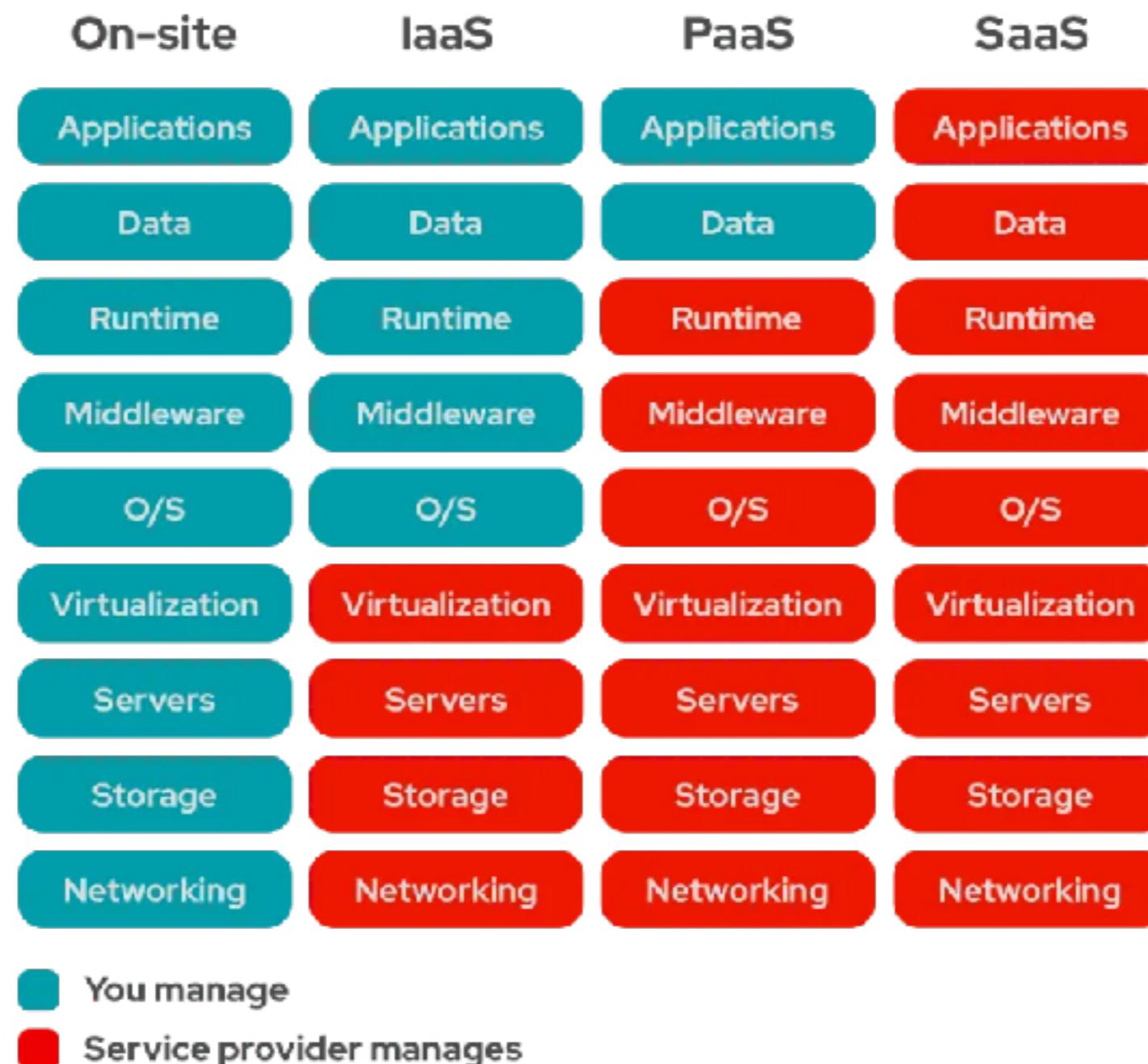
AWS Lambda



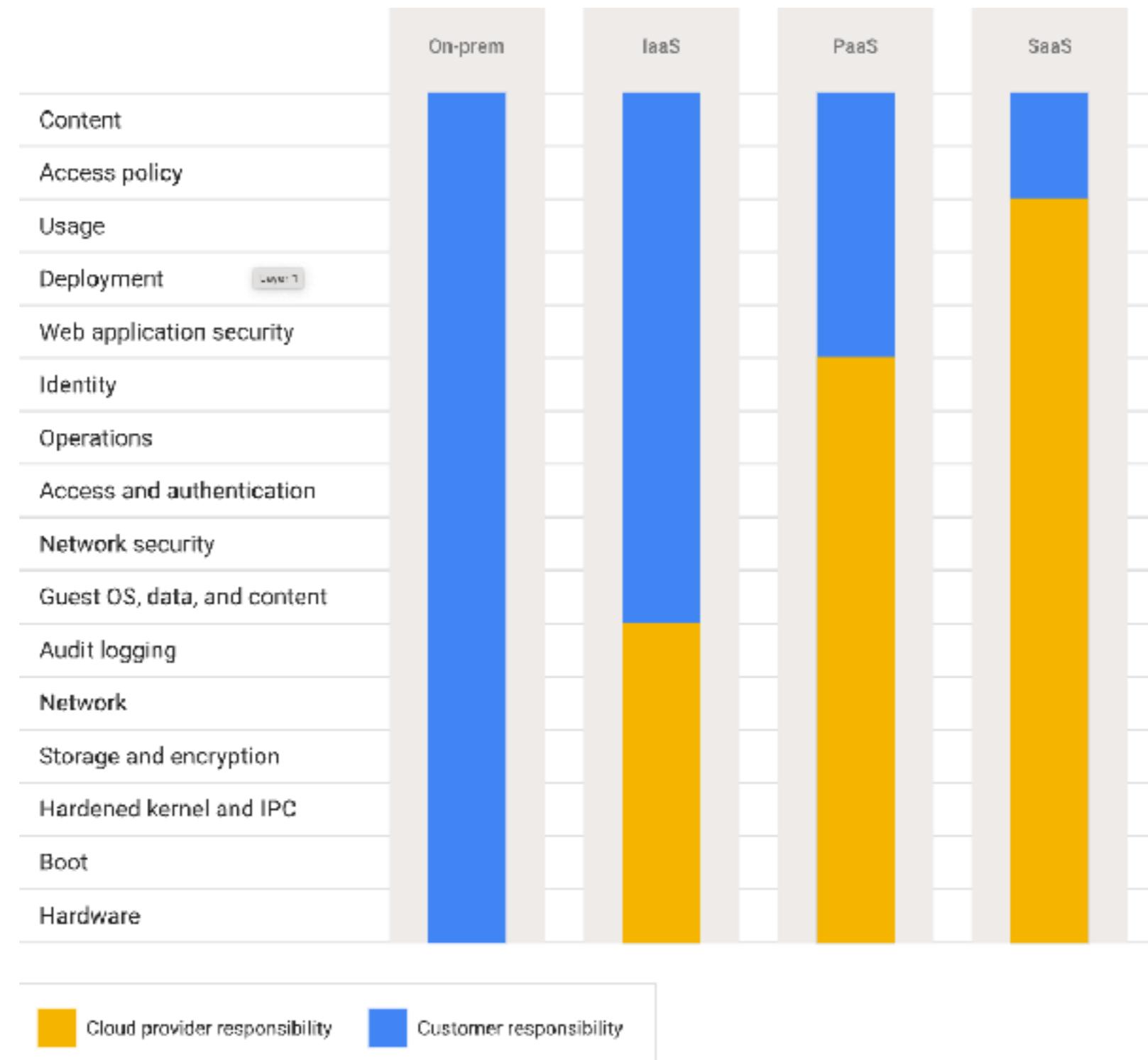
CLOUD FUNCTIONS



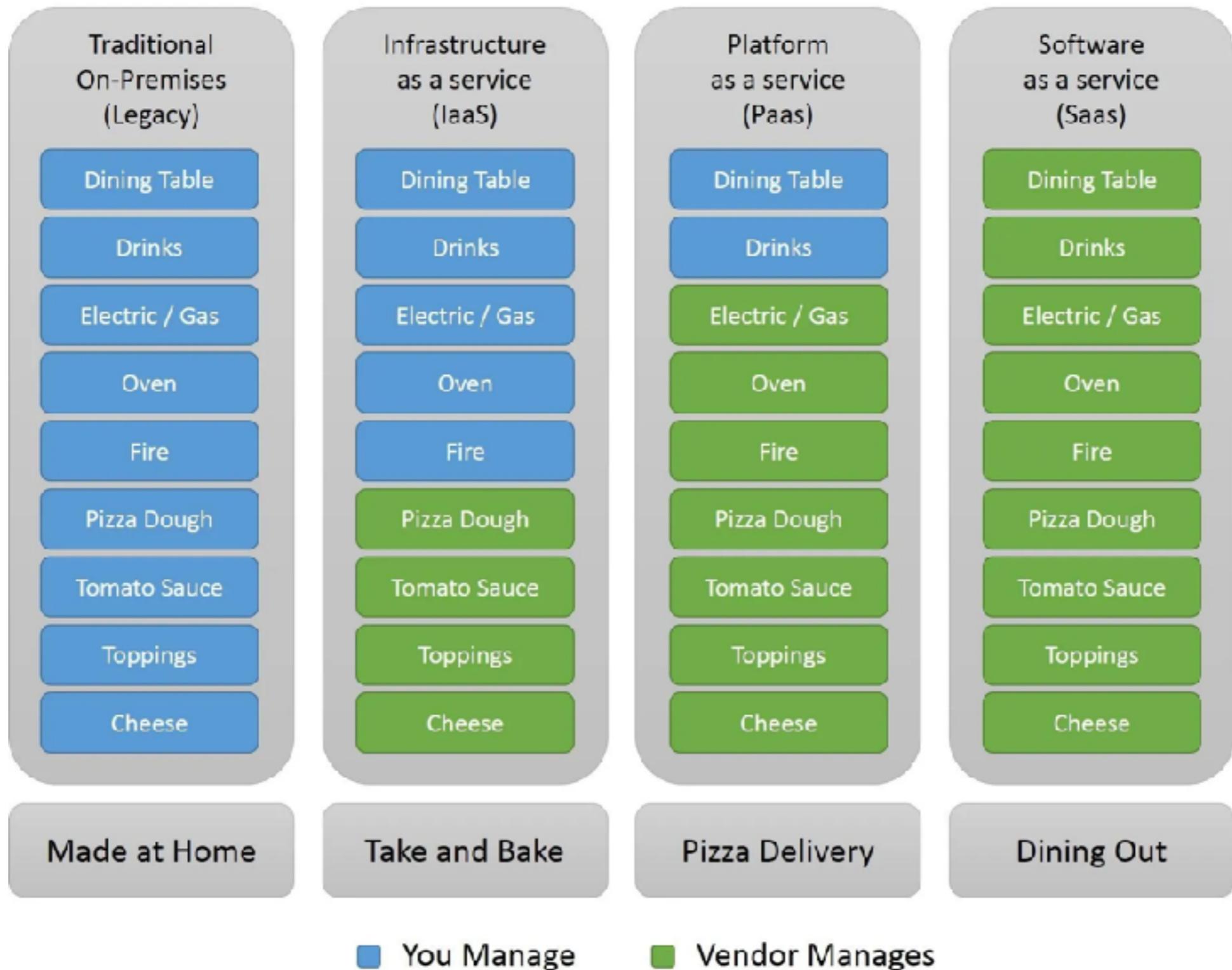
Service models of Cloud



Service models of Cloud



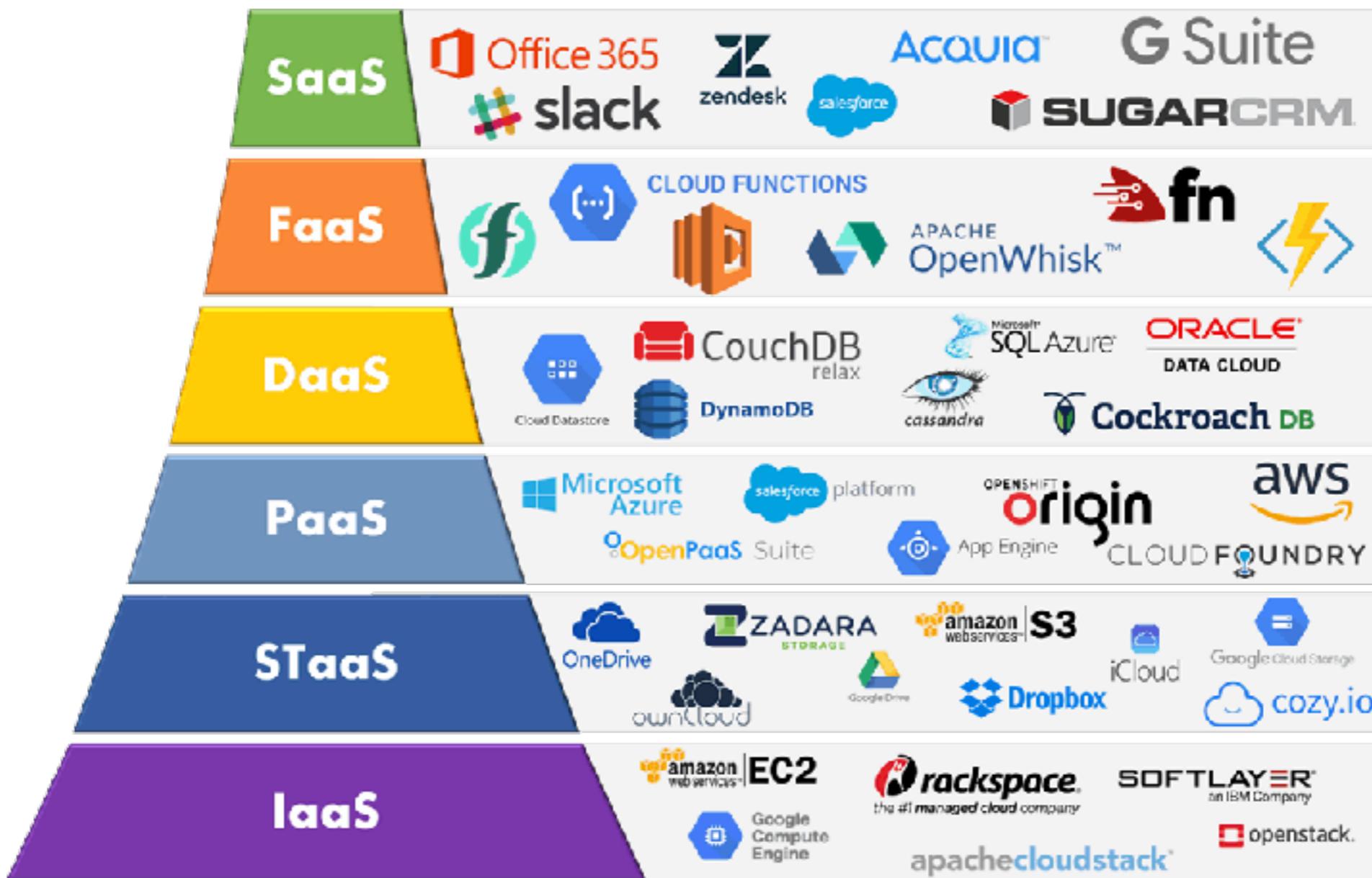
Pizza as a Service



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



Service models !!!



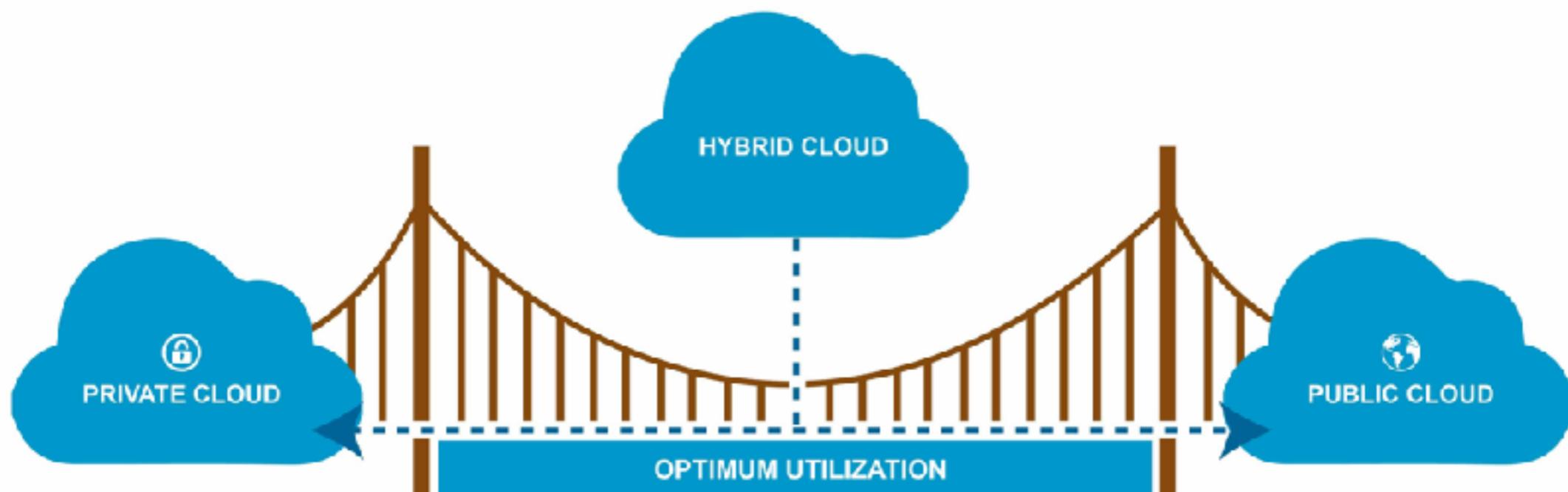
Deployment models

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

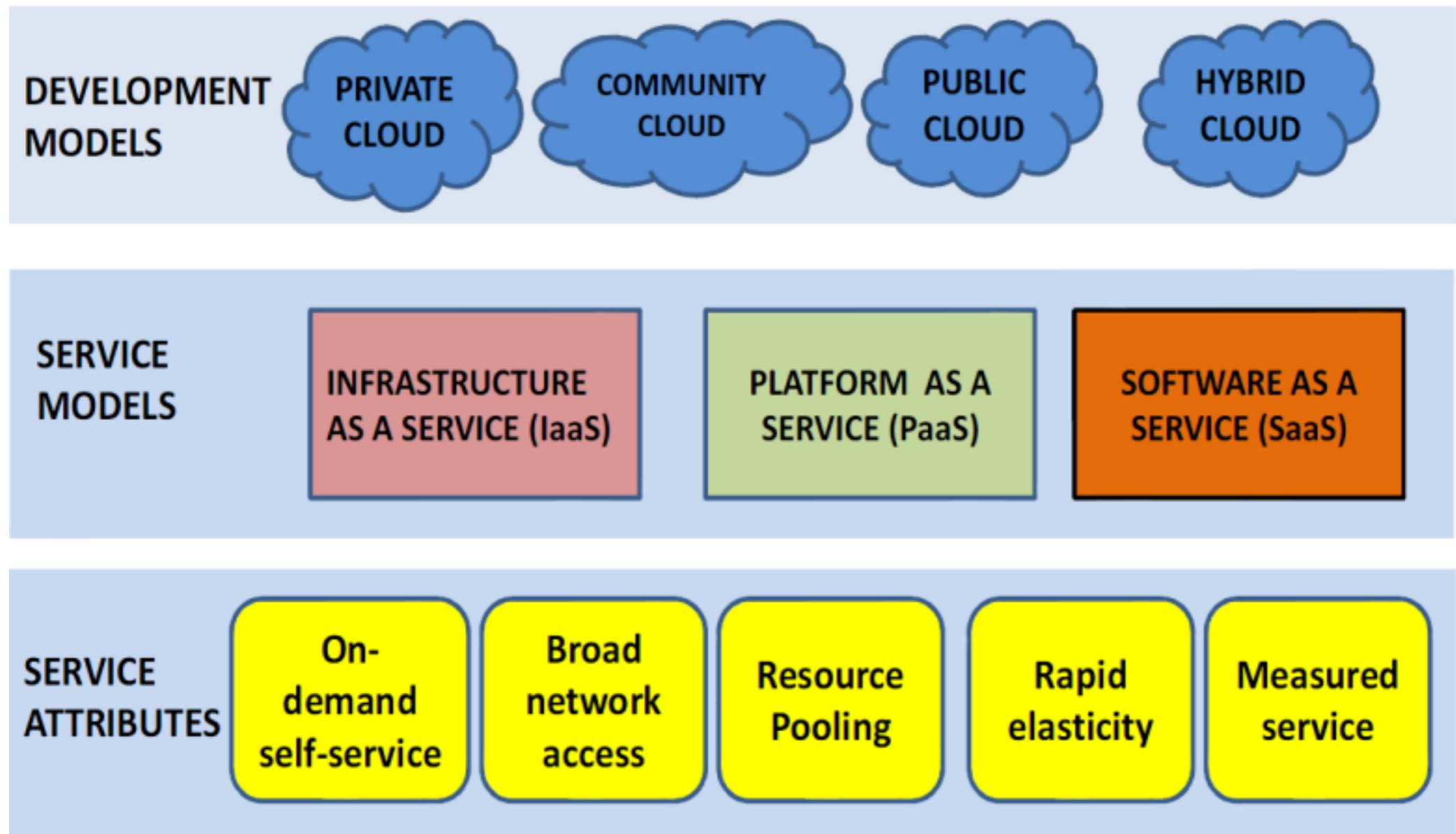


Use cases

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

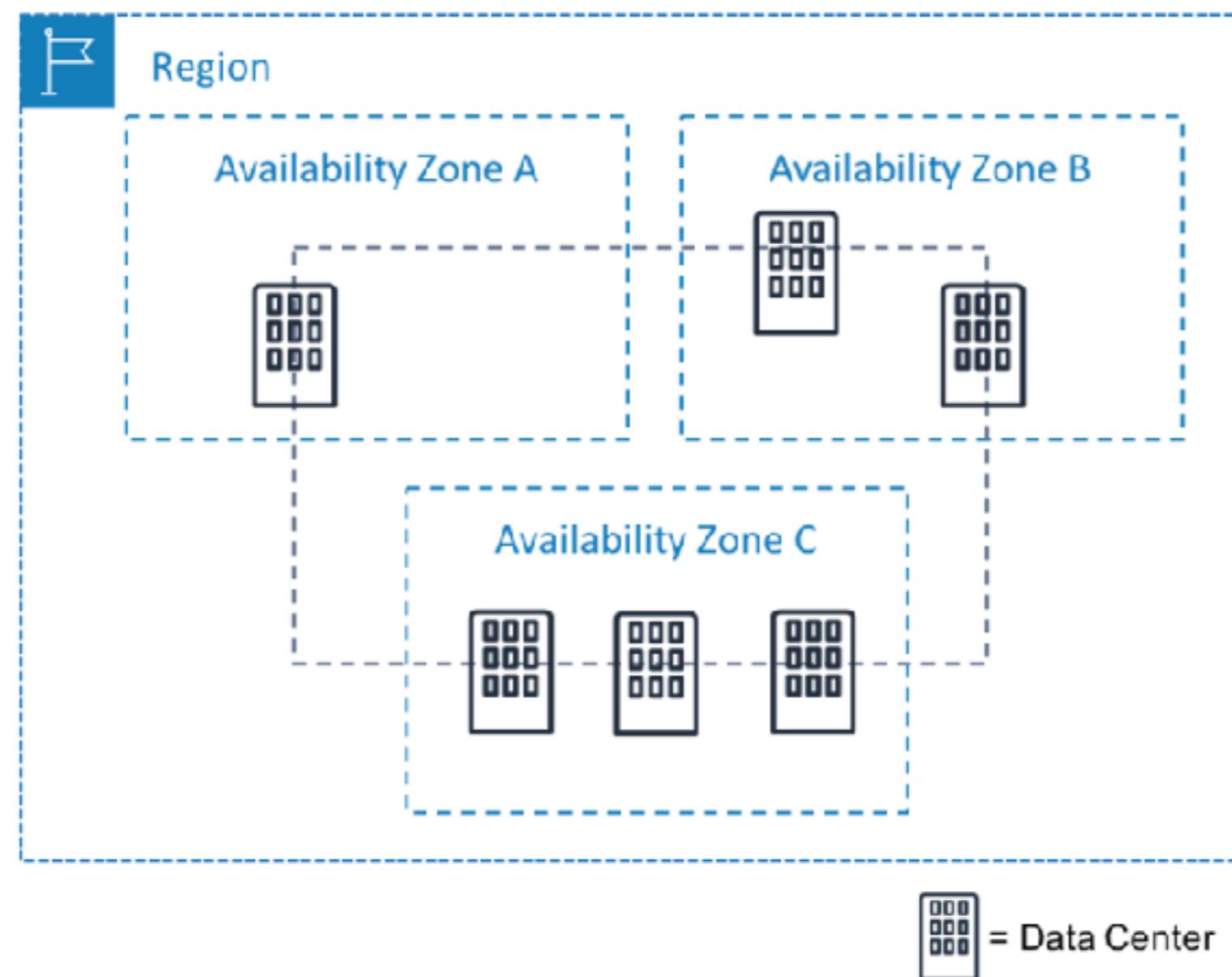


https://www.researchgate.net/publication/369909054_Using_integrated_library_management_systems_for_the_improvement_of_information_services_based_on_cloud_computing



High Availability

Build-in disaster recovery, auto backup into services



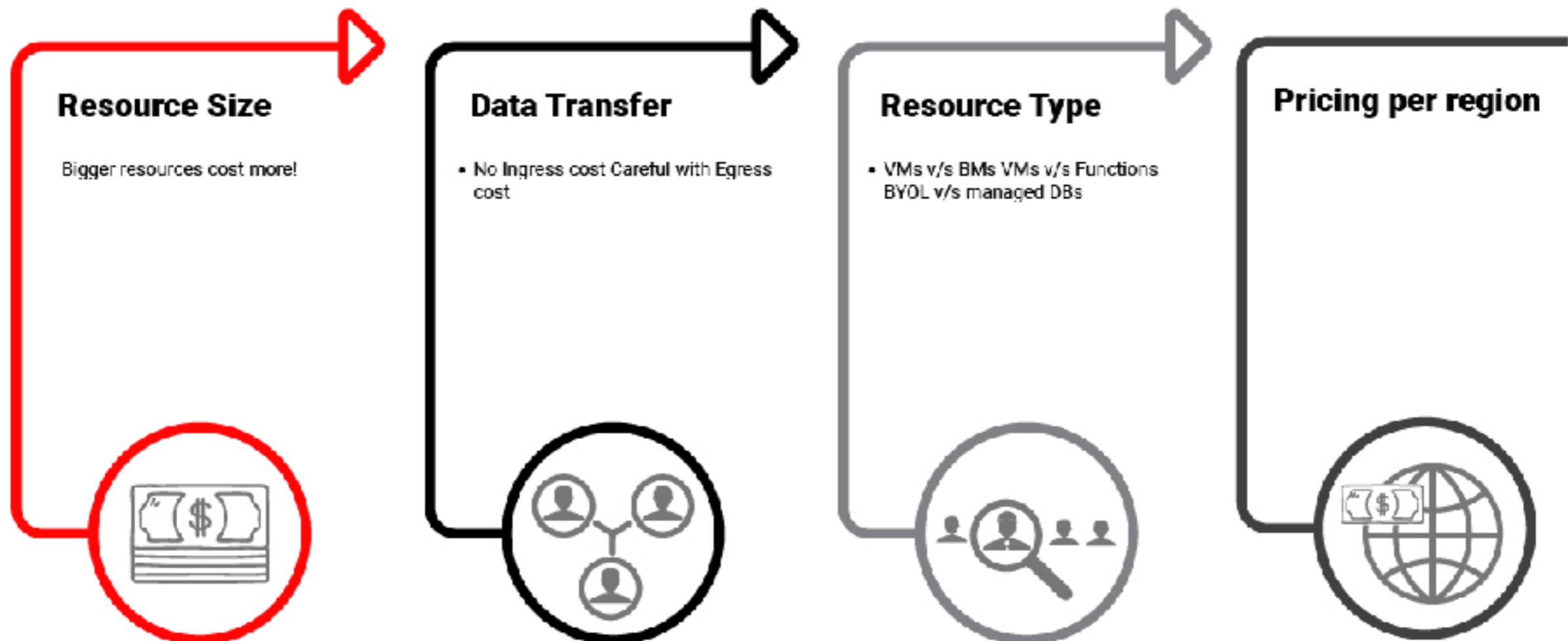
Cons

- Provider dependency
- Internet dependency
- Regulatory compliance
- Limited control (less custom, vendor lock-in)
- Data privacy concern
- Latency concern

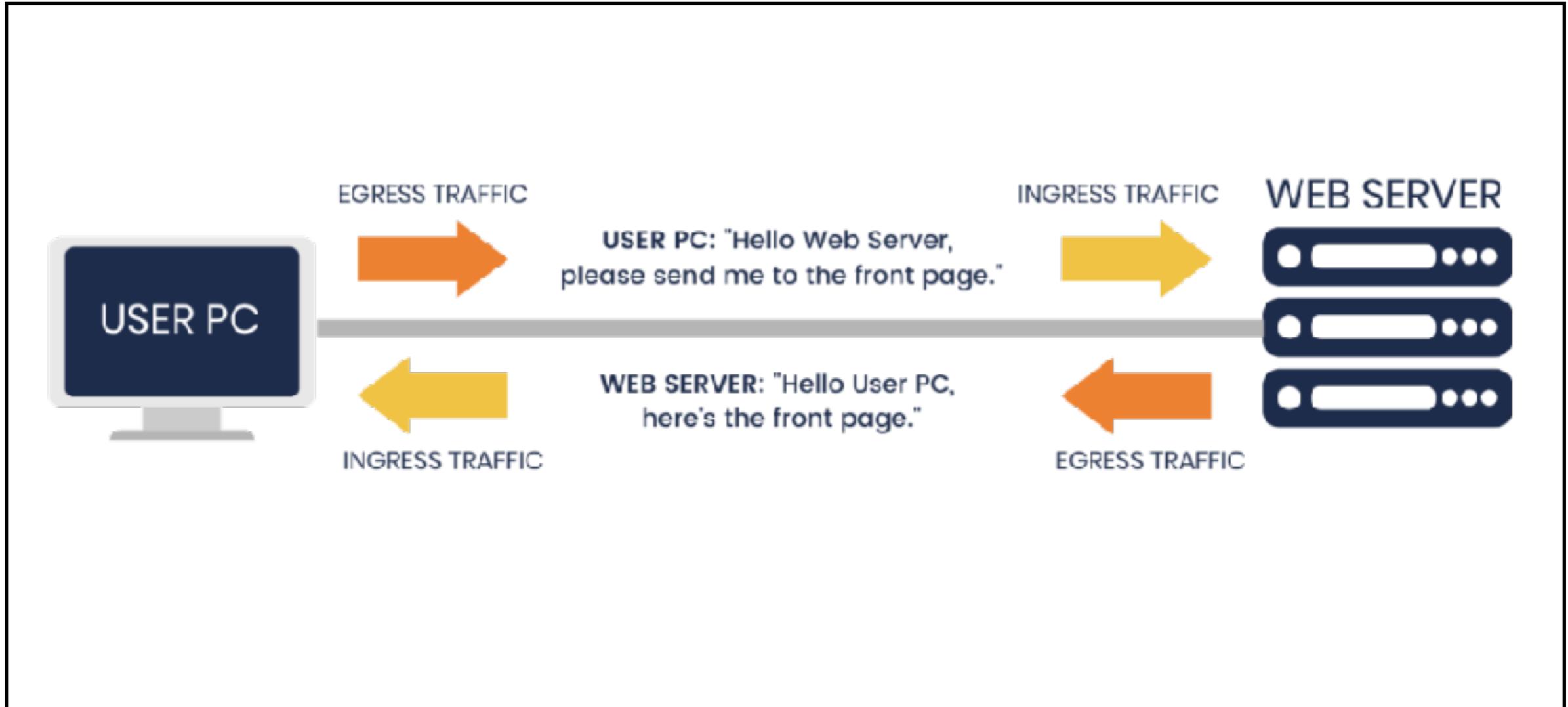
Subscription-based pricing, it good for initial but in long term usage may become expensive for heavy workload



Pricing on Cloud Infrastructure



Ingress vs Egress



Ingress vs Egress

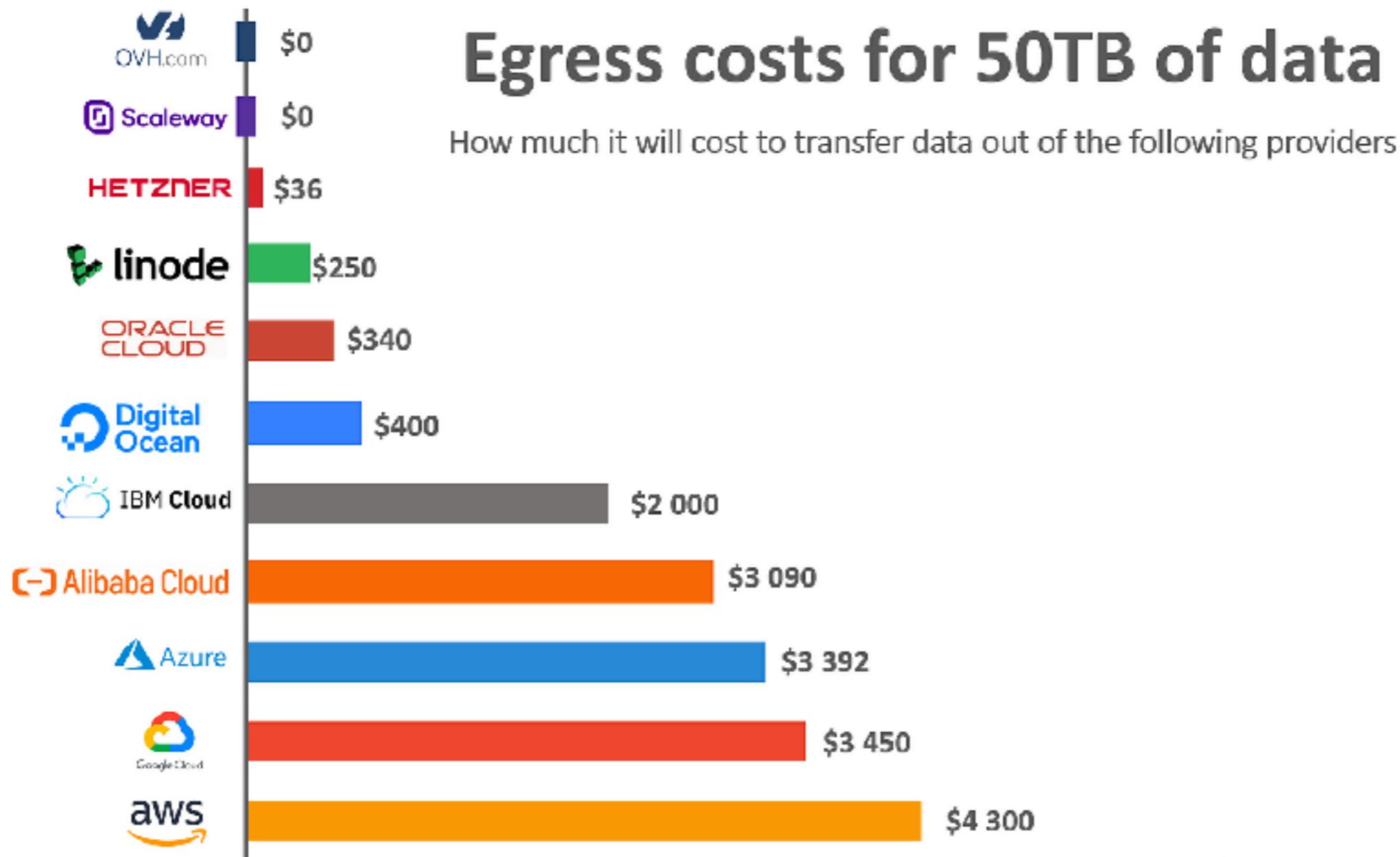
Egress Costs by Public Cloud

Public Cloud	Egress Pricing (per GB)	Total Cost for 500 TB
	<ul style="list-style-type: none">• 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
	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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

Optimize

Think data compression, data deduplication, and delta encoding

Understand your data use and design appropriately

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

Tag cloud resources with cost centers

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



Think outside the transfer box

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

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**



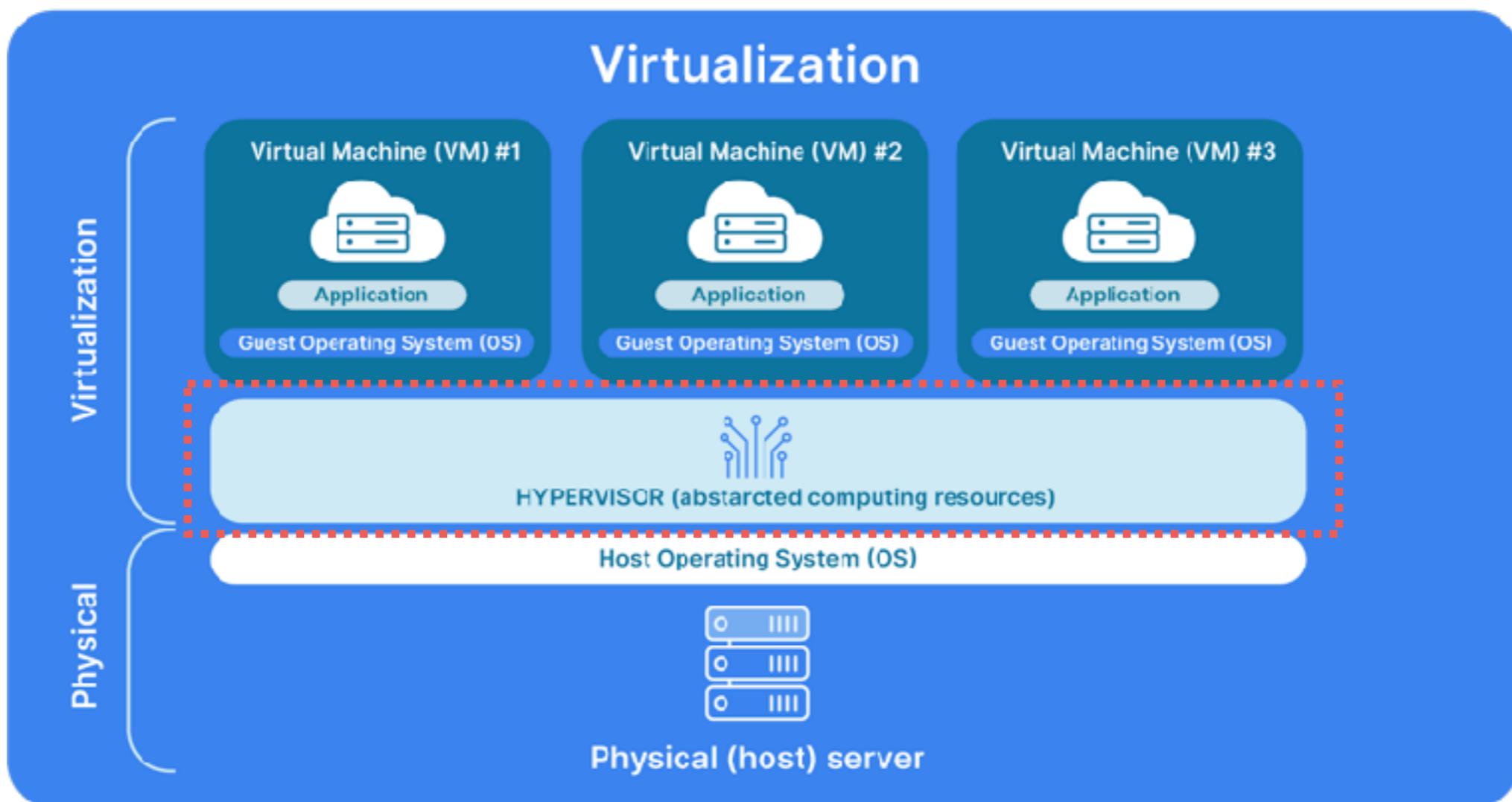
Module 3

Virtualization: The backbone of the cloud



Virtualization

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



Types of Virtualization

Server

Network

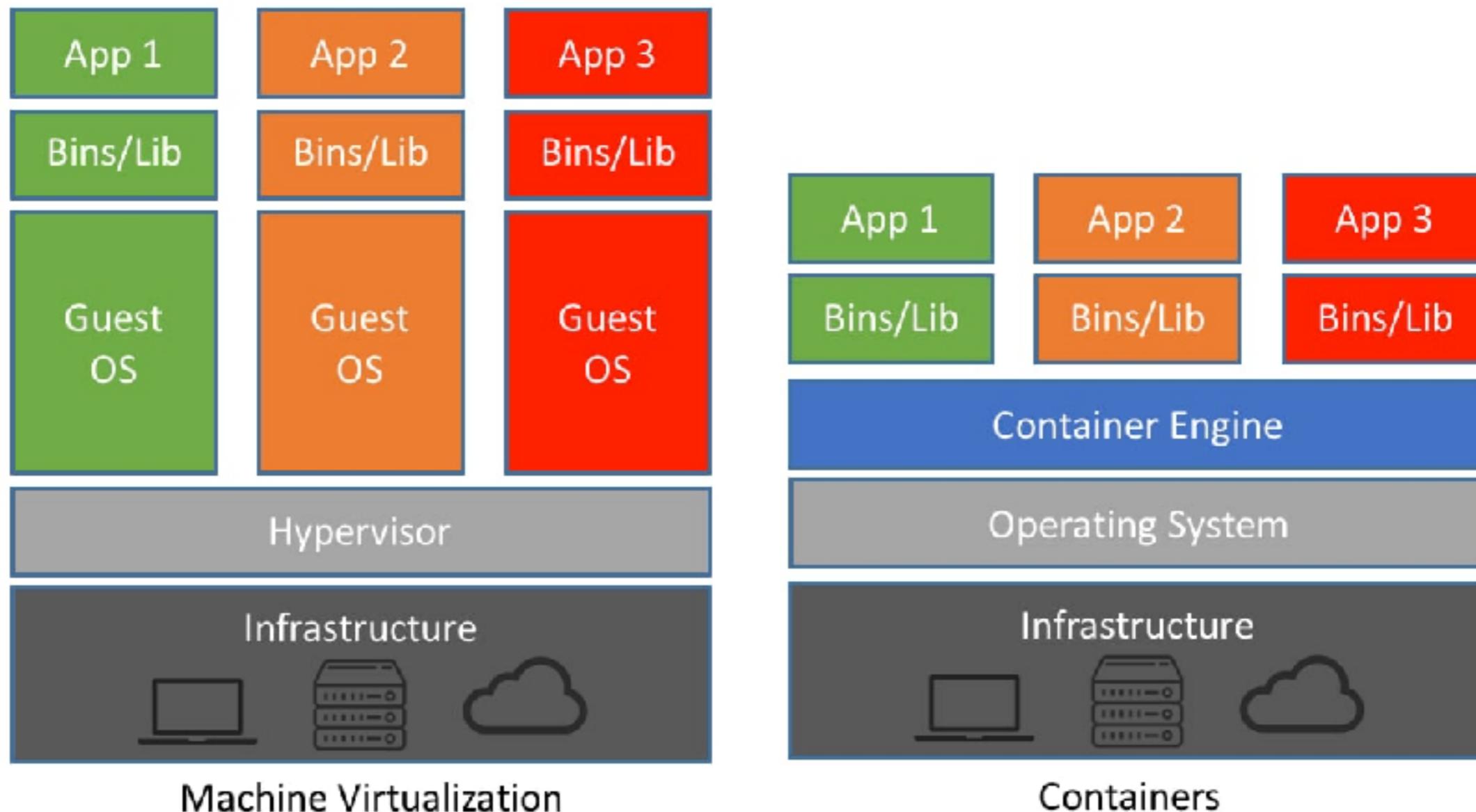
Storage

Application

Desktop (VDI)



Virtualization vs Container



Technologies

Virtualization	Containerization
   	  



Container runtimes

Docker

ContainerD



CNCF Graduated



CNCF Incubating



CNCF Incubating



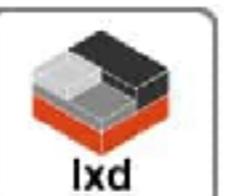
Firecracker



gVisor



kata



lxd



Nabla Containers



Pouch



OPEN
runne



Singularity



SmartOS



unik

<https://landscape.cncf.io/>



Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

Container orchestrations

Docker swarm

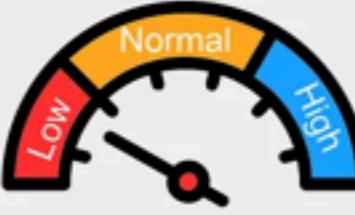
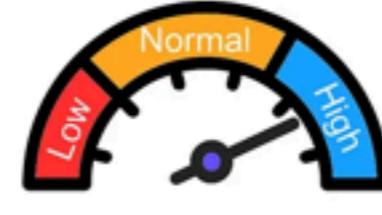
Kubernetes

OpenShift

Amazon ECS



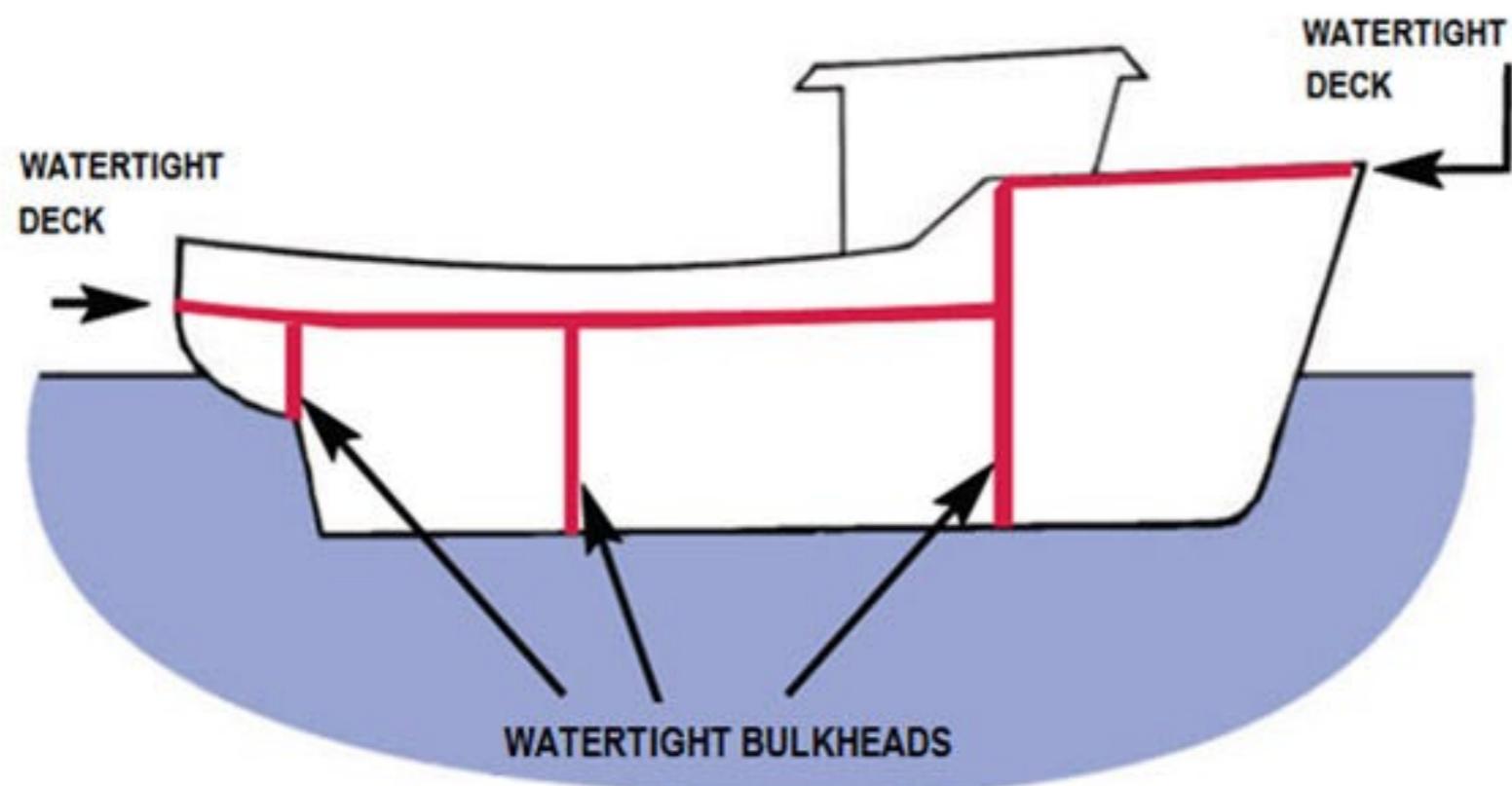
Virtualization vs Container

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

<https://blog.bytebytogo.com/p/virtualization-and-containerization>



Design for Failure !!



<https://learn.microsoft.com/en-us/azure/well-architected/reliability/design-patterns>



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/>



Cloud computing

© 2020 - 2025 Siam Chamnkit Company Limited. All rights reserved.

AWS Cost Explorer

AWS Cost Explorer

Visualize, understand, and manage your AWS costs and usage over time

Get started with AWS Cost Explorer

Product Description

AWS Cost Explorer has an easy-to-use interface that lets you visualize, understand, and manage your AWS costs and usage over time. Get started quickly by creating custom reports that analyze cost and usage data. Analyze your data at a high level (for example, total costs and usage across all accounts), or dive deeper into your cost and usage data to identify trends, pinpoint cost drivers, and detect anomalies.

Benefits

Preconfigured views +

Filtering and grouping +

Cost and usage forecast +

Create custom reports +

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



Cloud computing

© 2020 - 2025 Siam Chamnkit Company Limited. All rights reserved.

Azure Cost Management

Microsoft Cost Management

Manage your cloud cost with confidence.



Leverage the latest in Copilot in Azure to bring you insights, accountability controls, and the ability to remediate when opportunities arise.

Get started with Azure

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



Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

Sample case

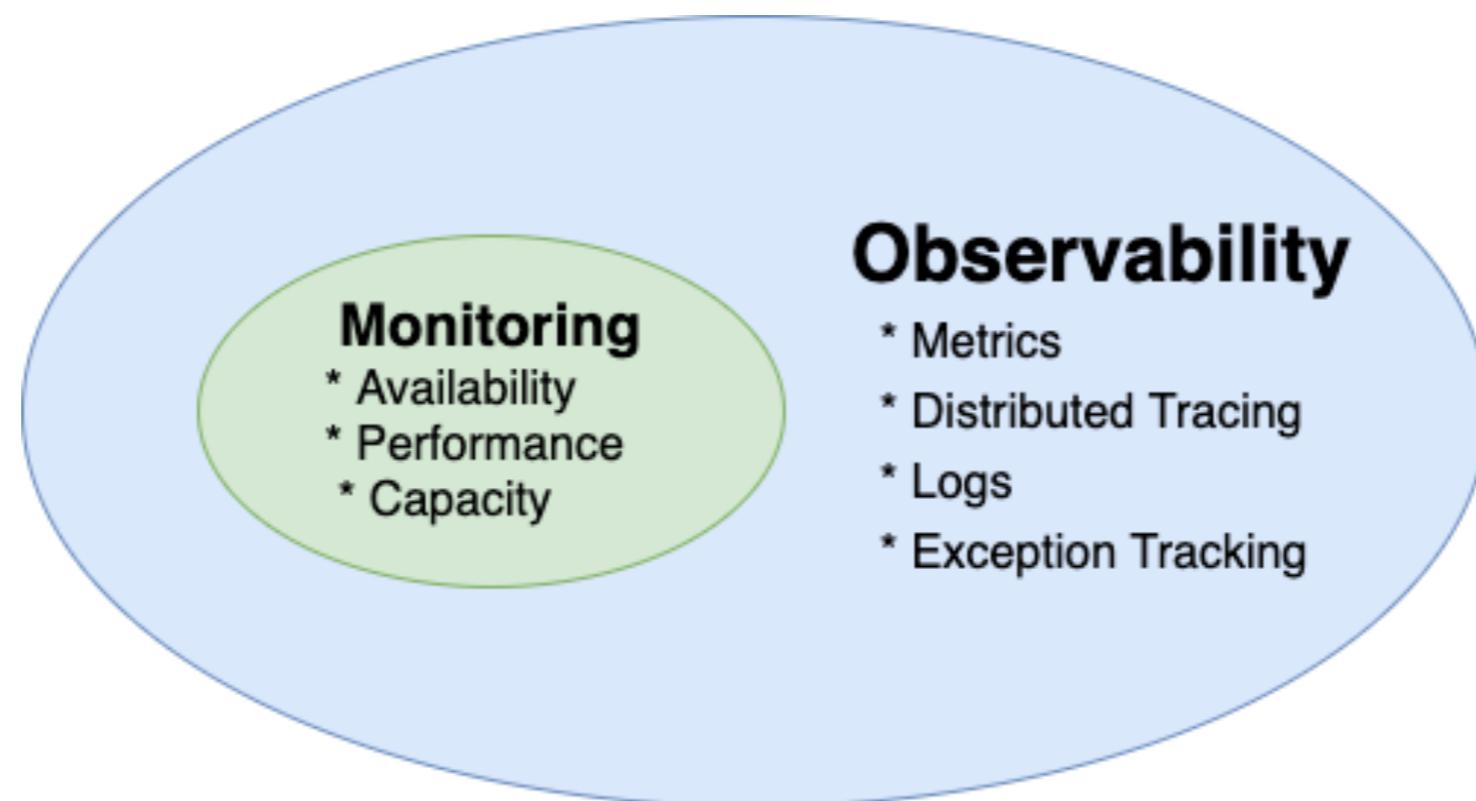
Cost estimation



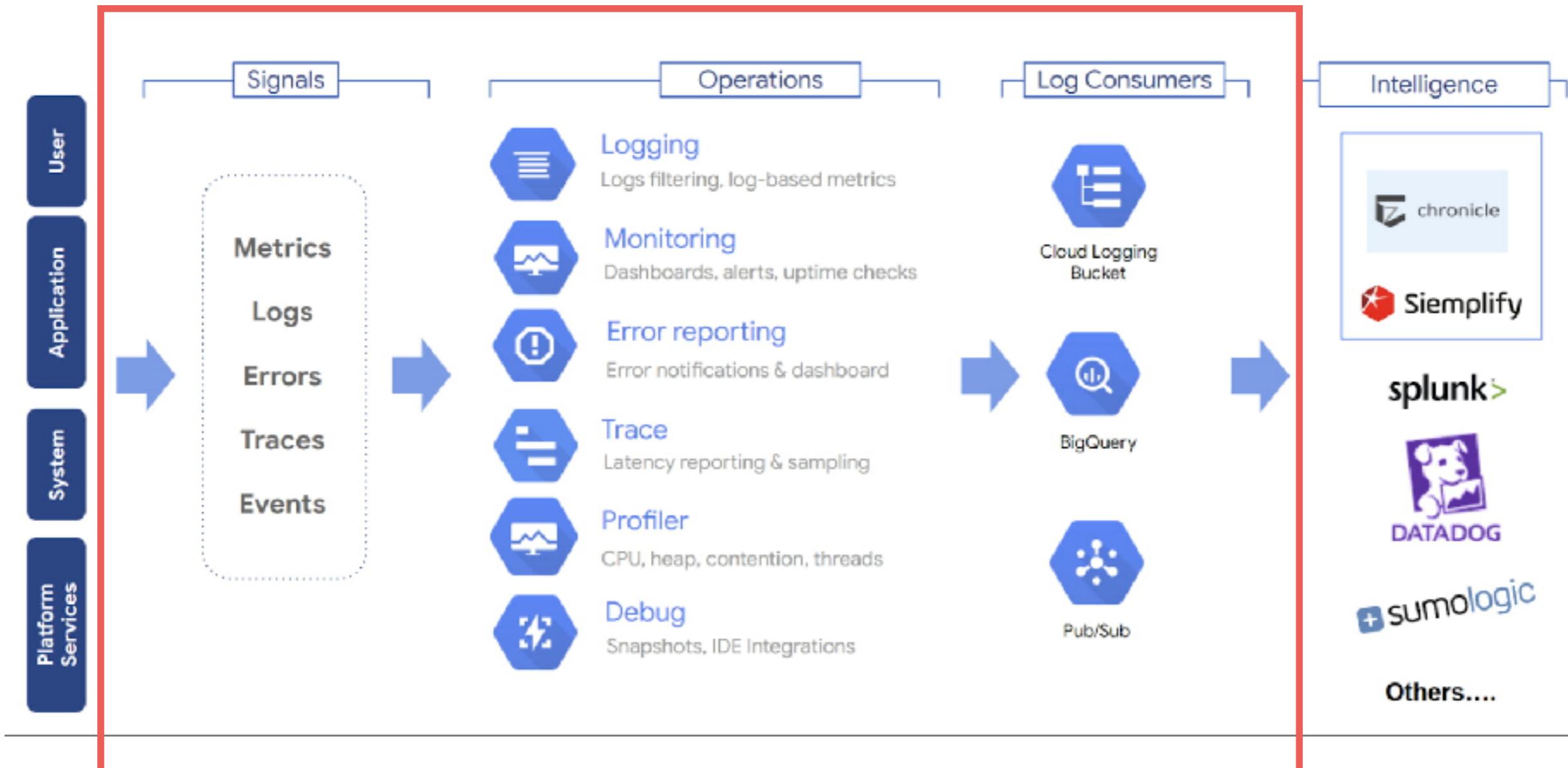
Monitoring and Observability



Monitoring and Observability



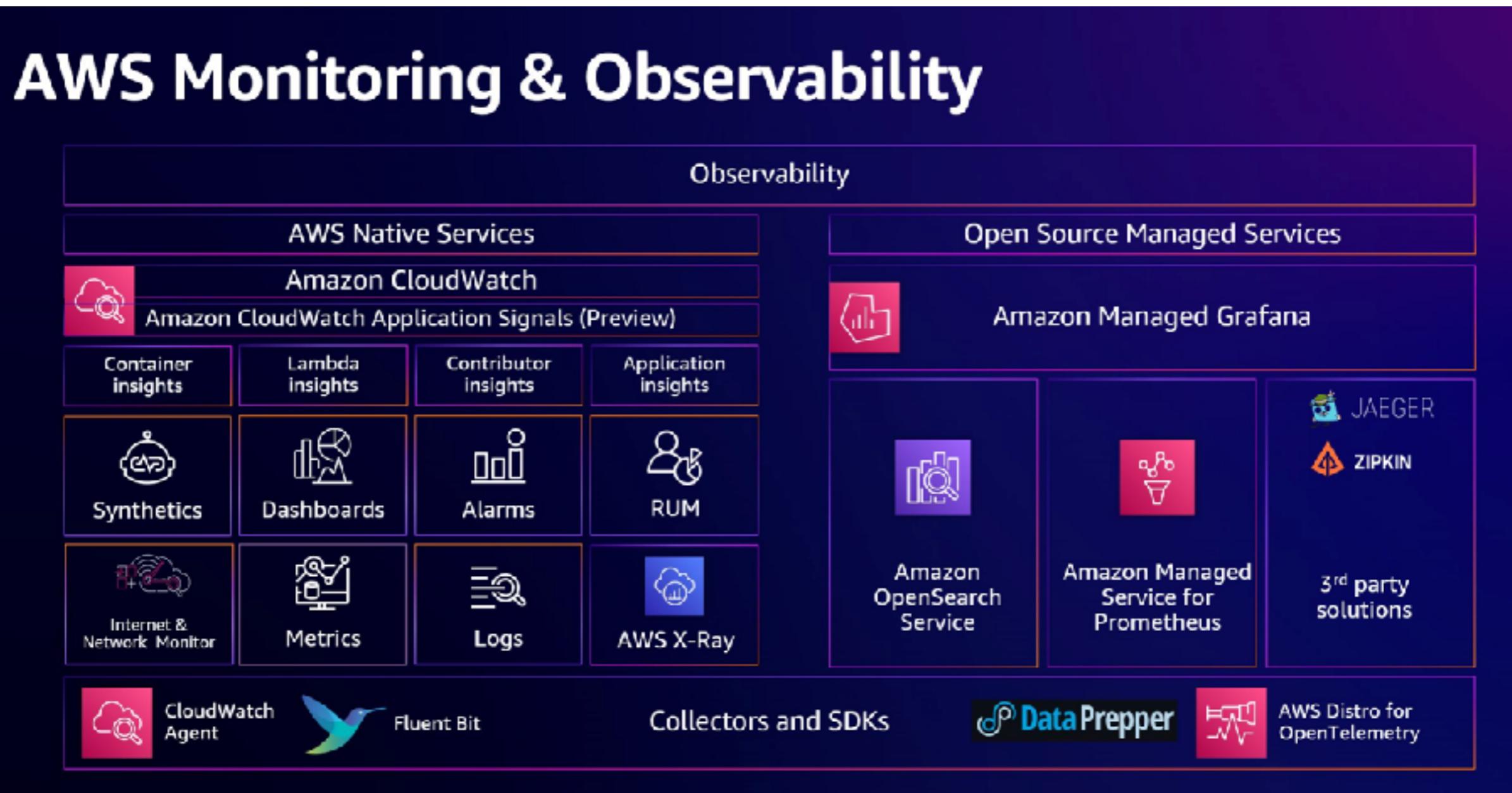
Monitoring and Observability



<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 computing

© 2020 - 2025 Siam Chamnkit Company Limited. All rights reserved.

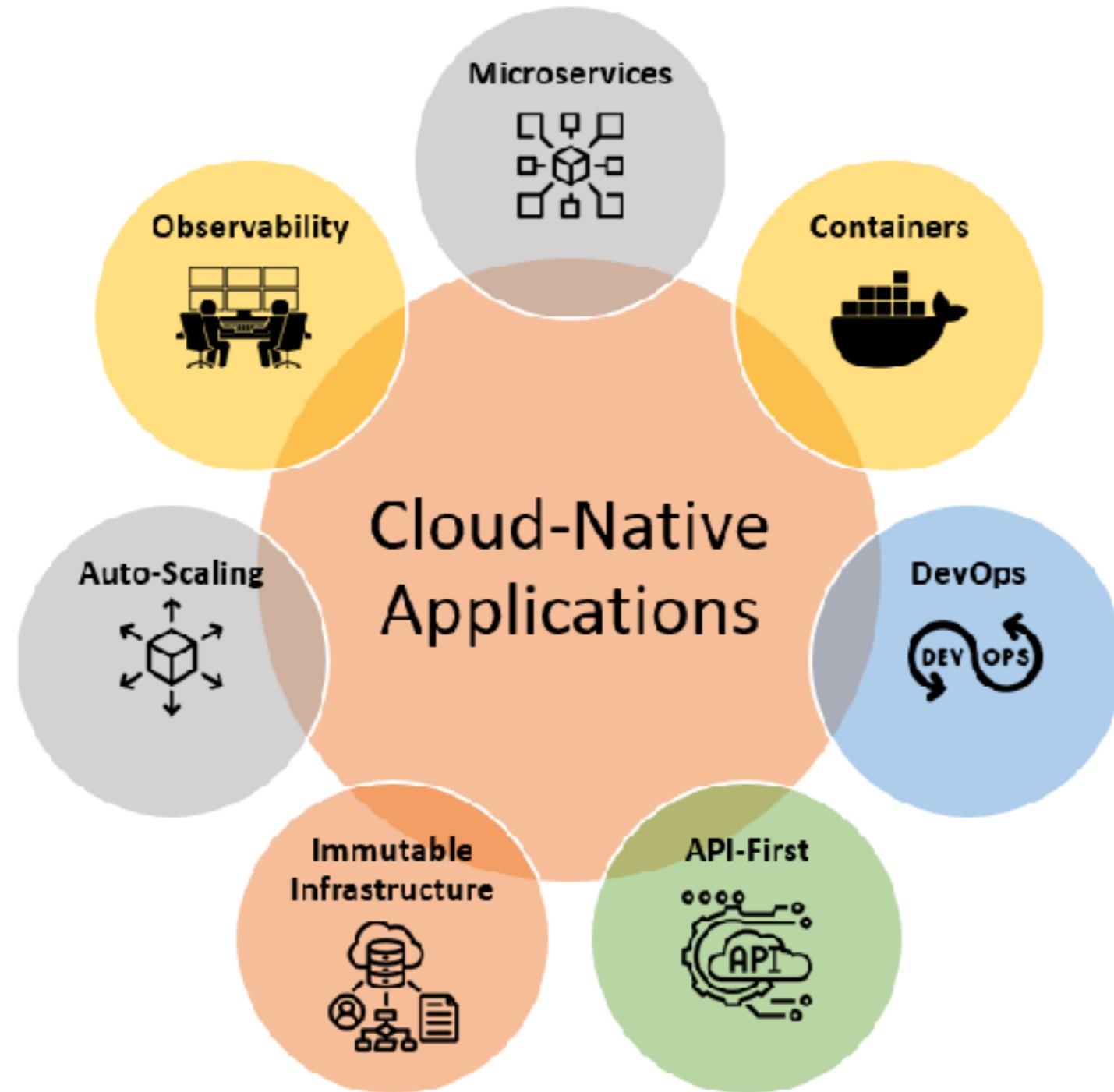
Cloud Native Application

Scalable

Portable

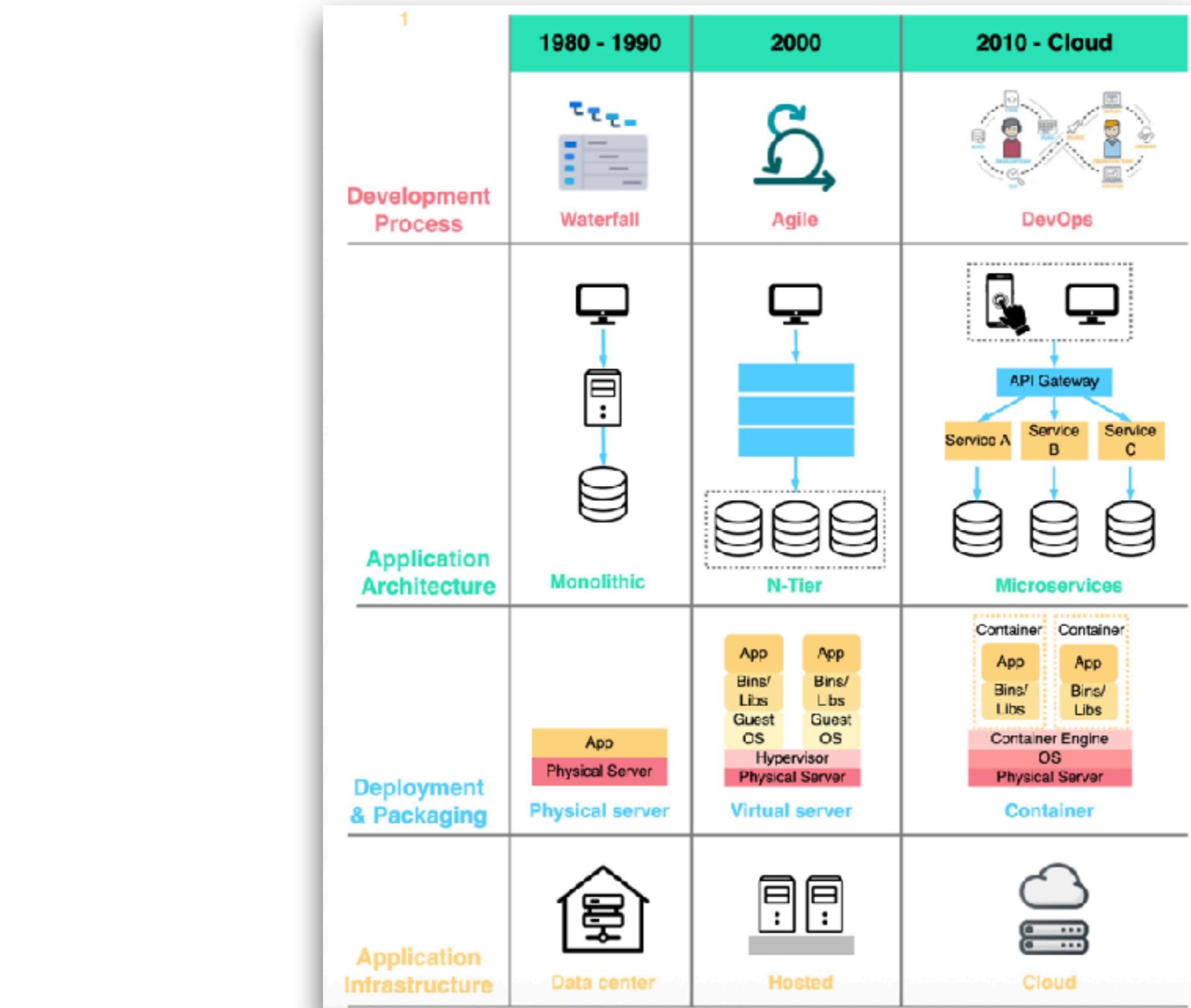
Flexible





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



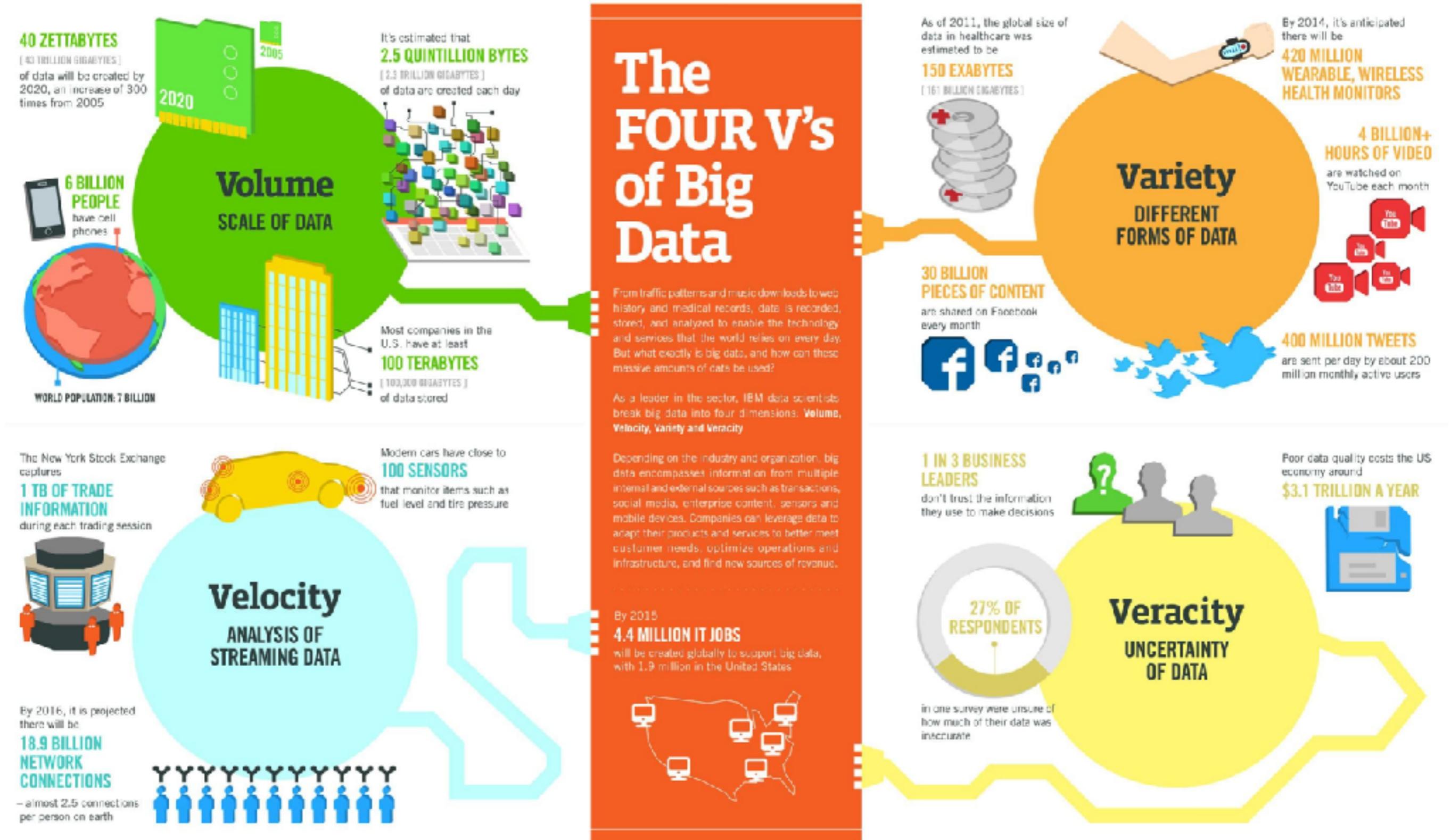


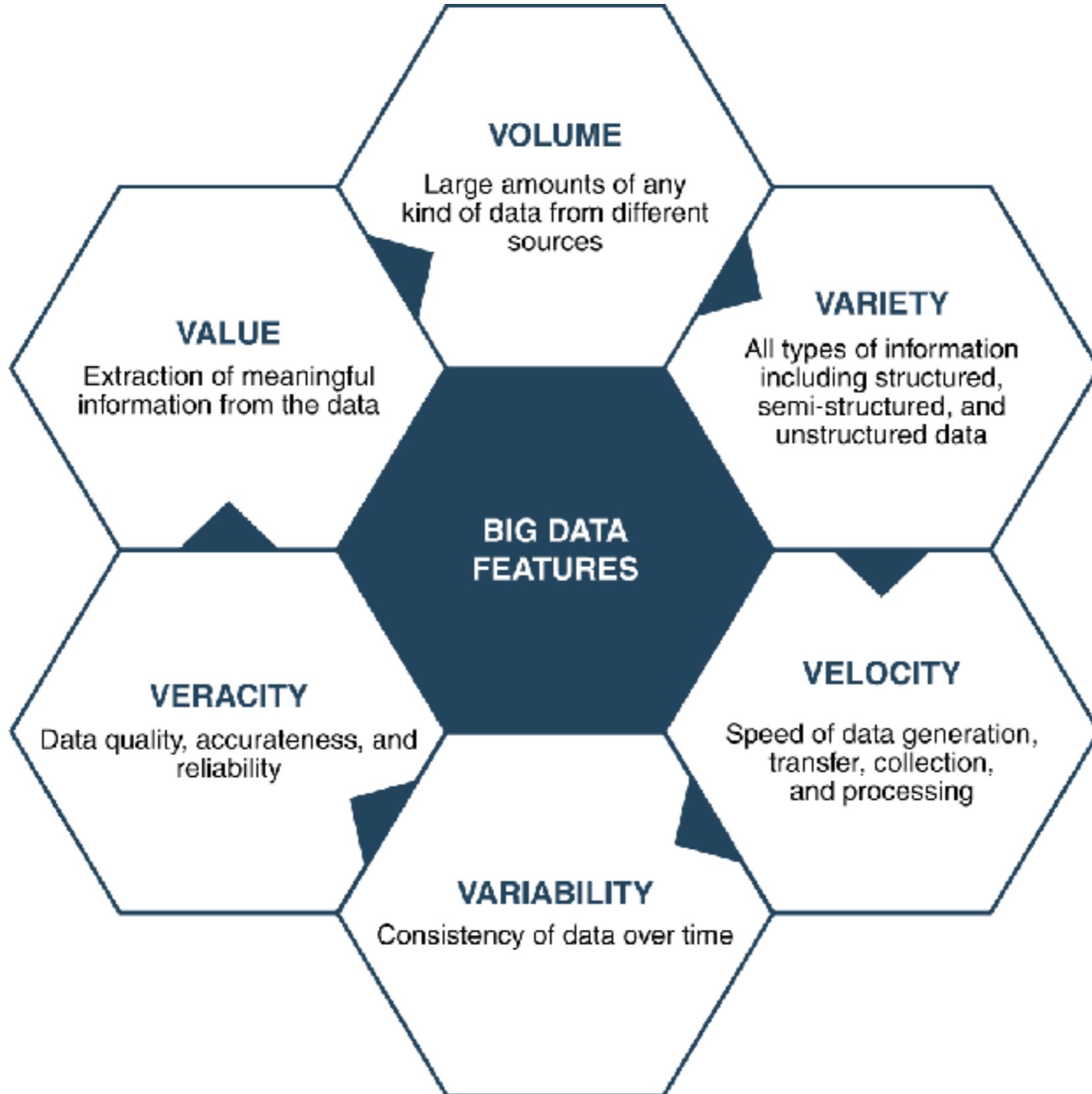
<https://bytebytogo.com/guides/what-is-cloud-native/>



Big Data and Analytic



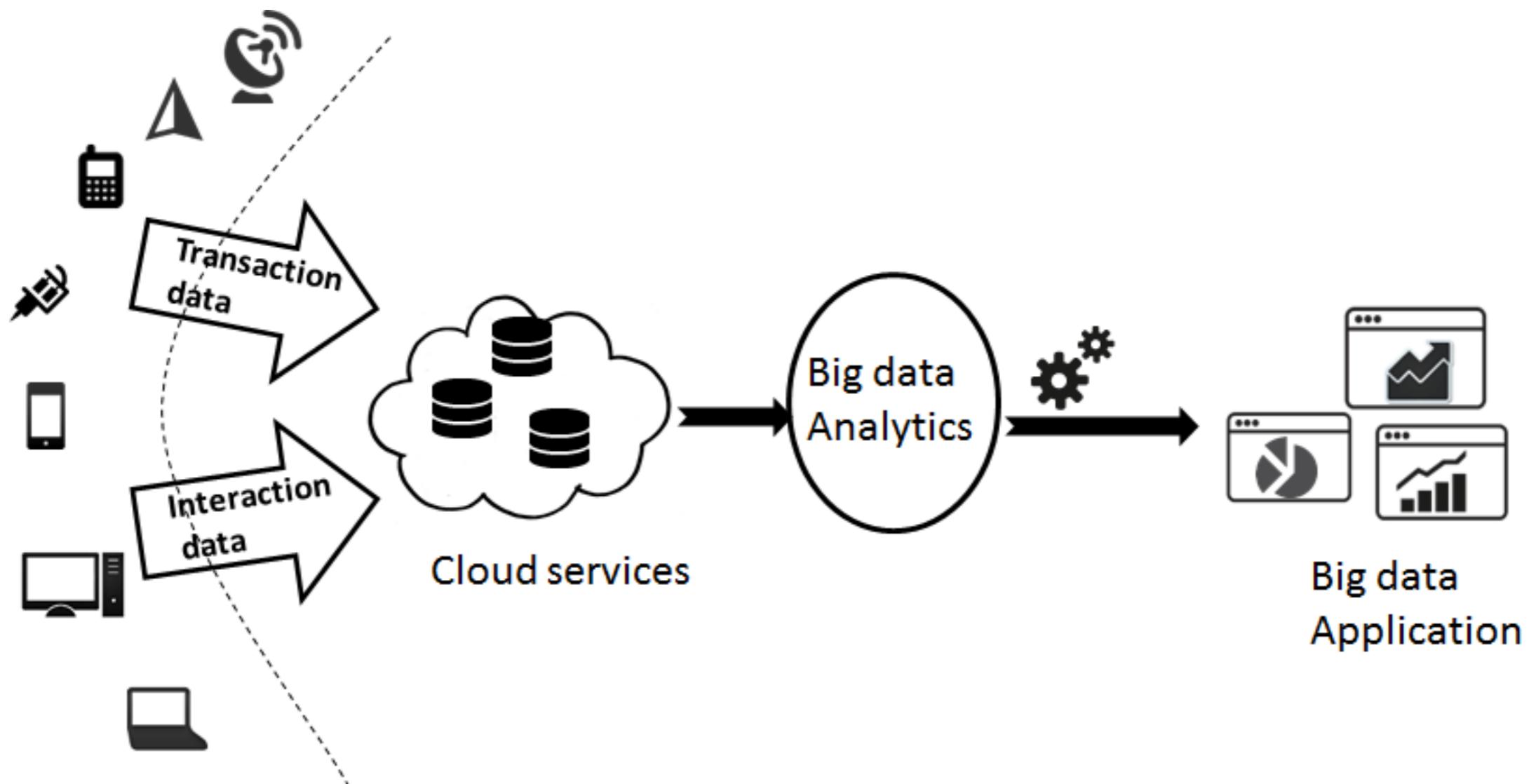




TYPES OF DATA ANALYTICS



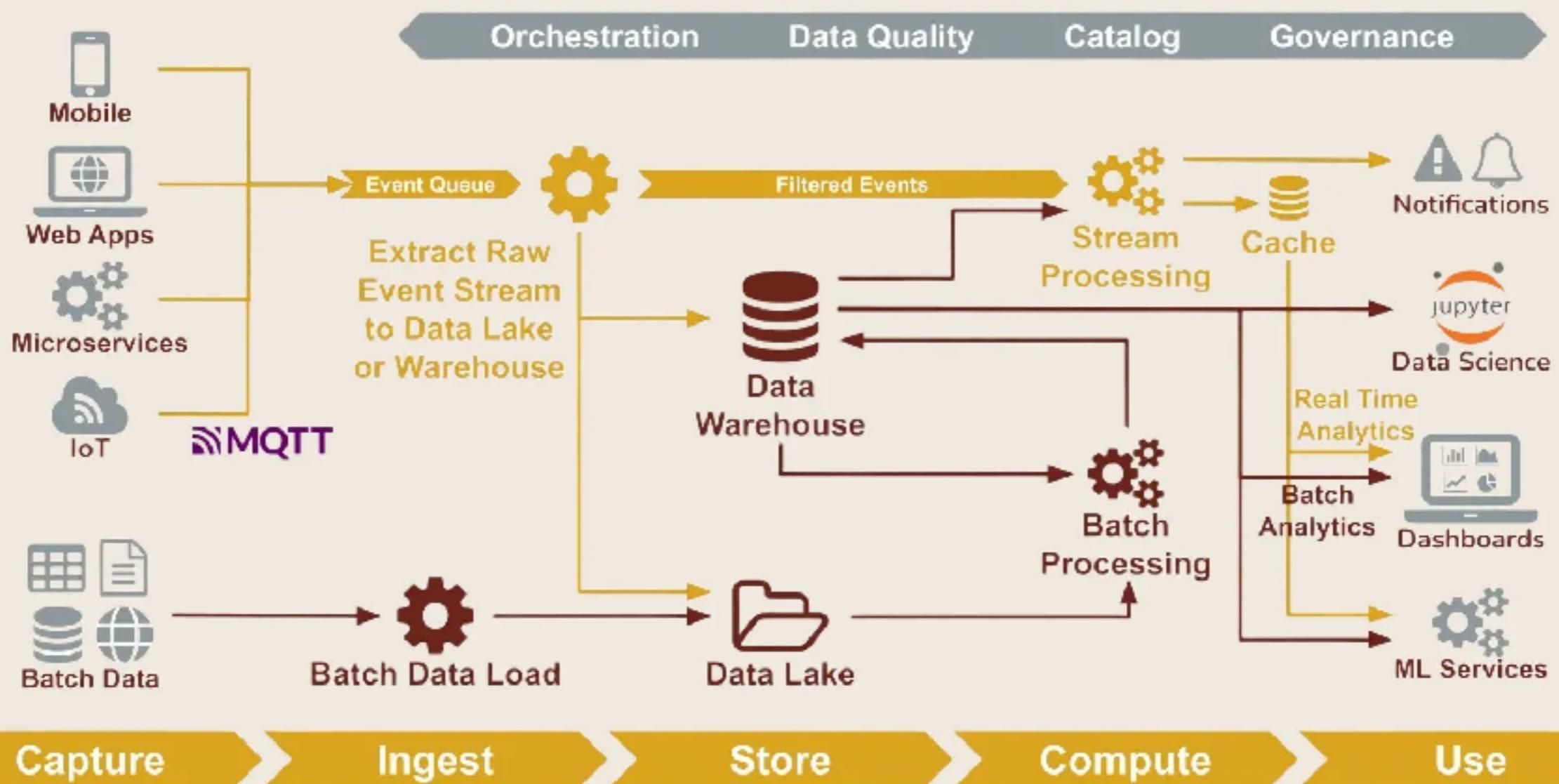
Big Data Analytic in Cloud



Data pipeline ?



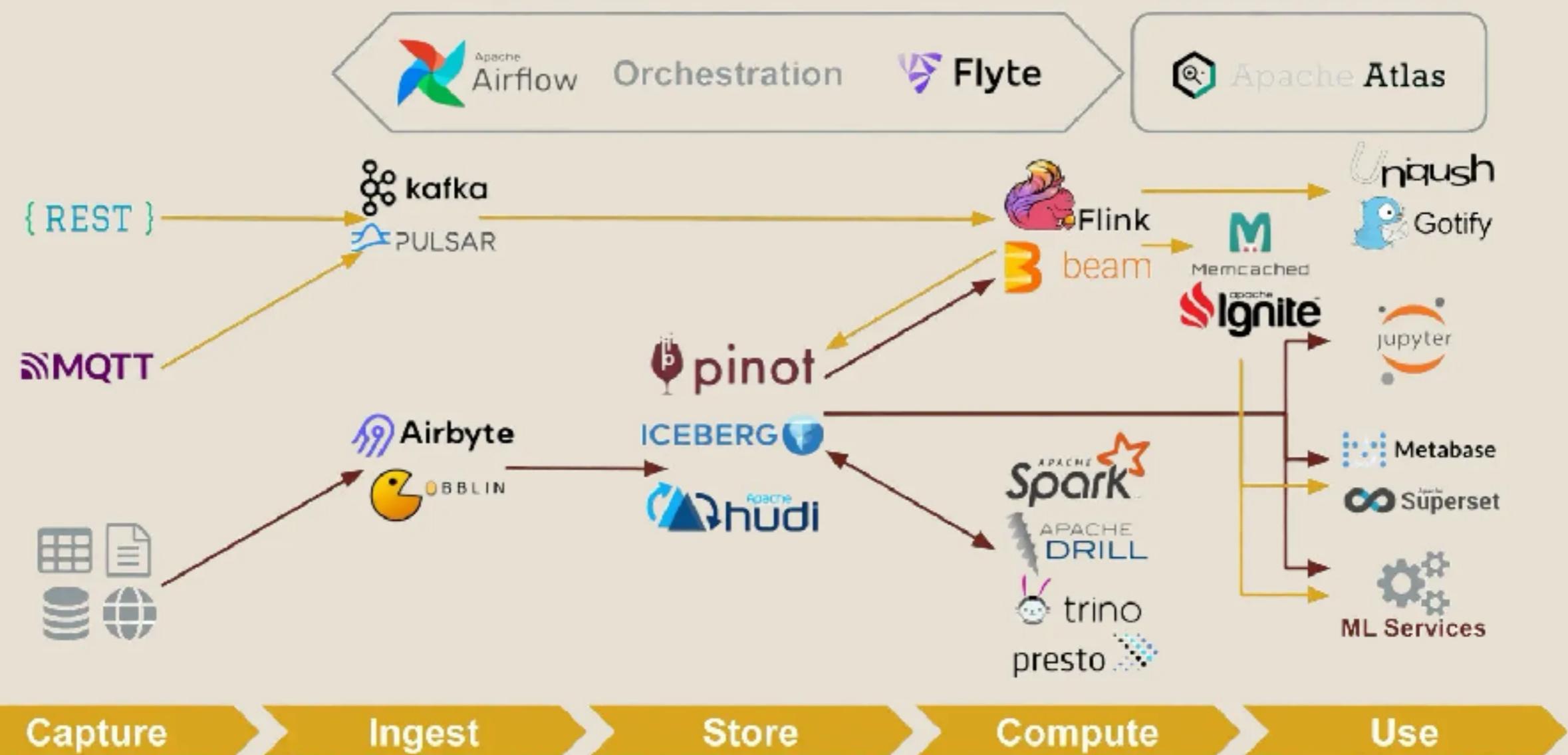
Big Data Pipeline Architecture



<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>



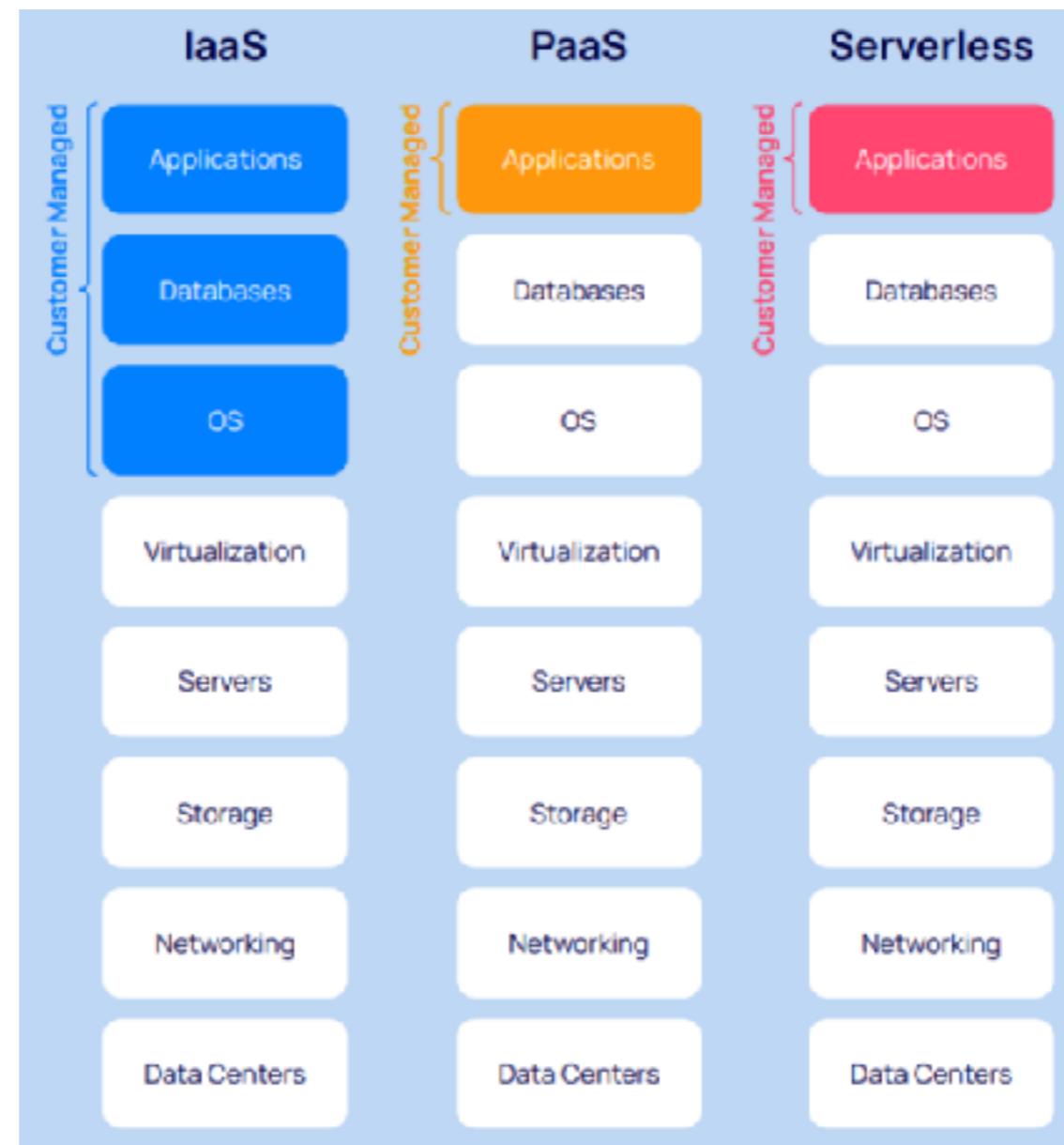
Module 5

Cloud Security



Shared Responsibility Model

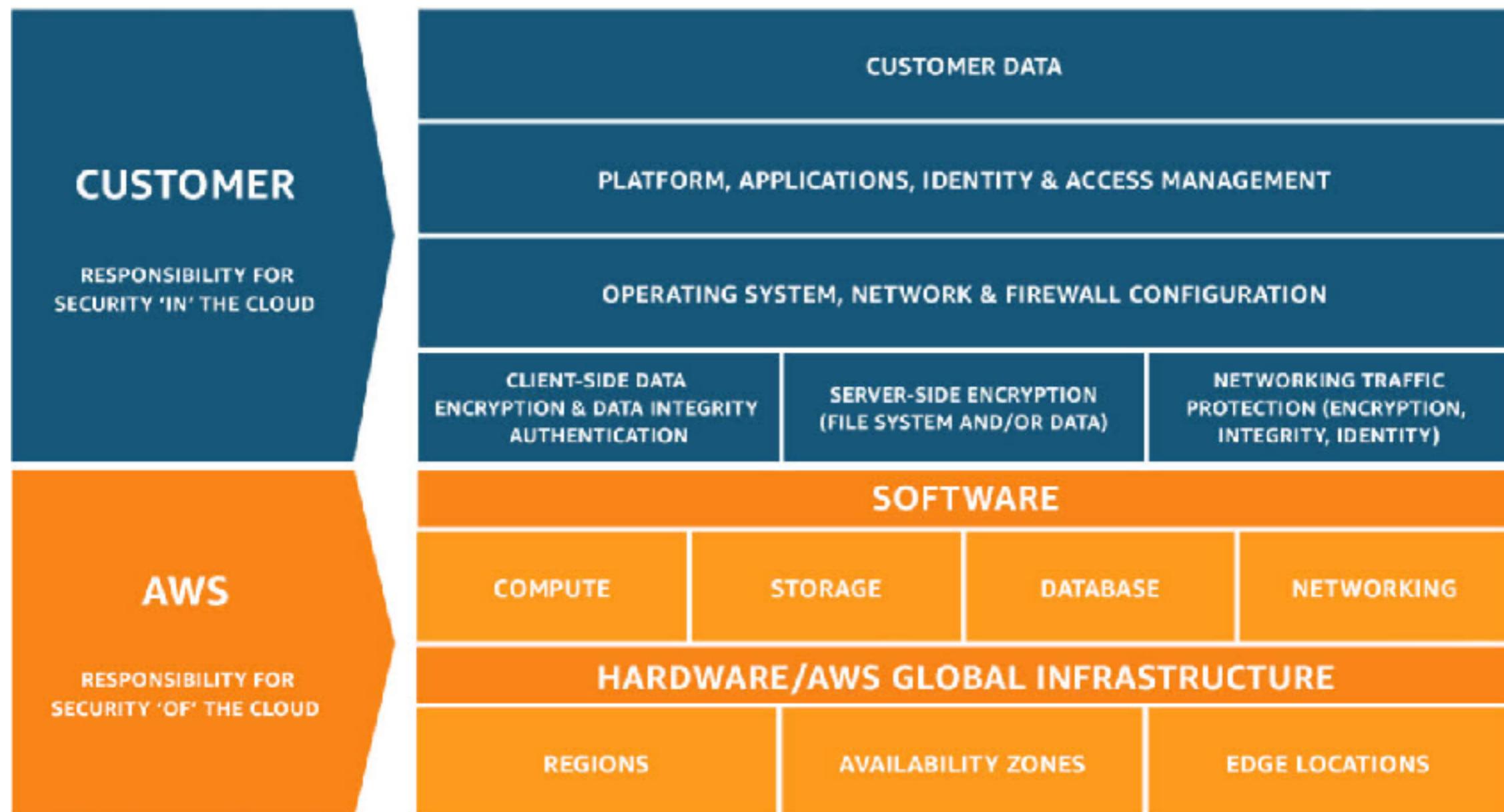
Cloud provider and customer



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



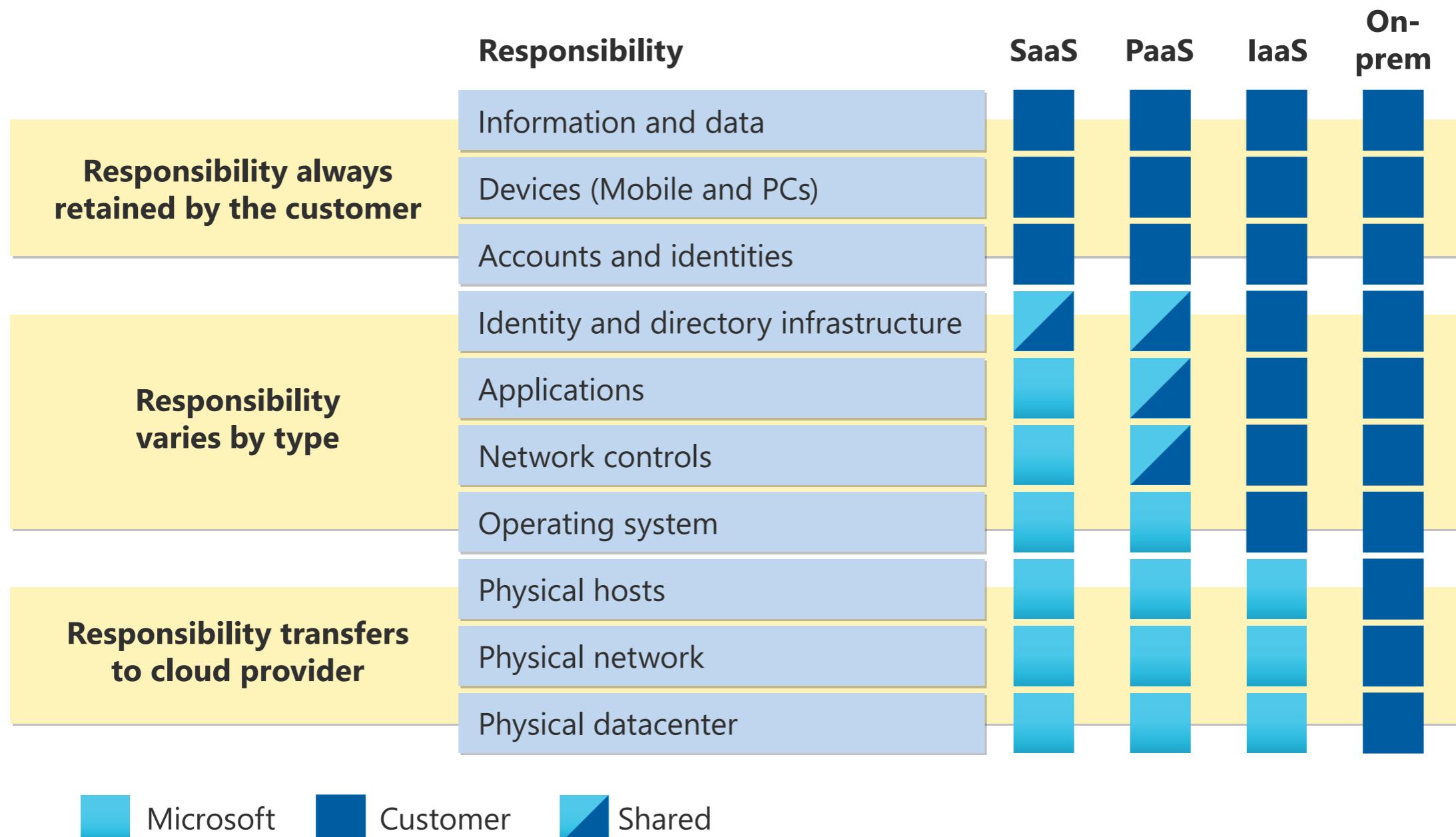
Shared Responsibility Model



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



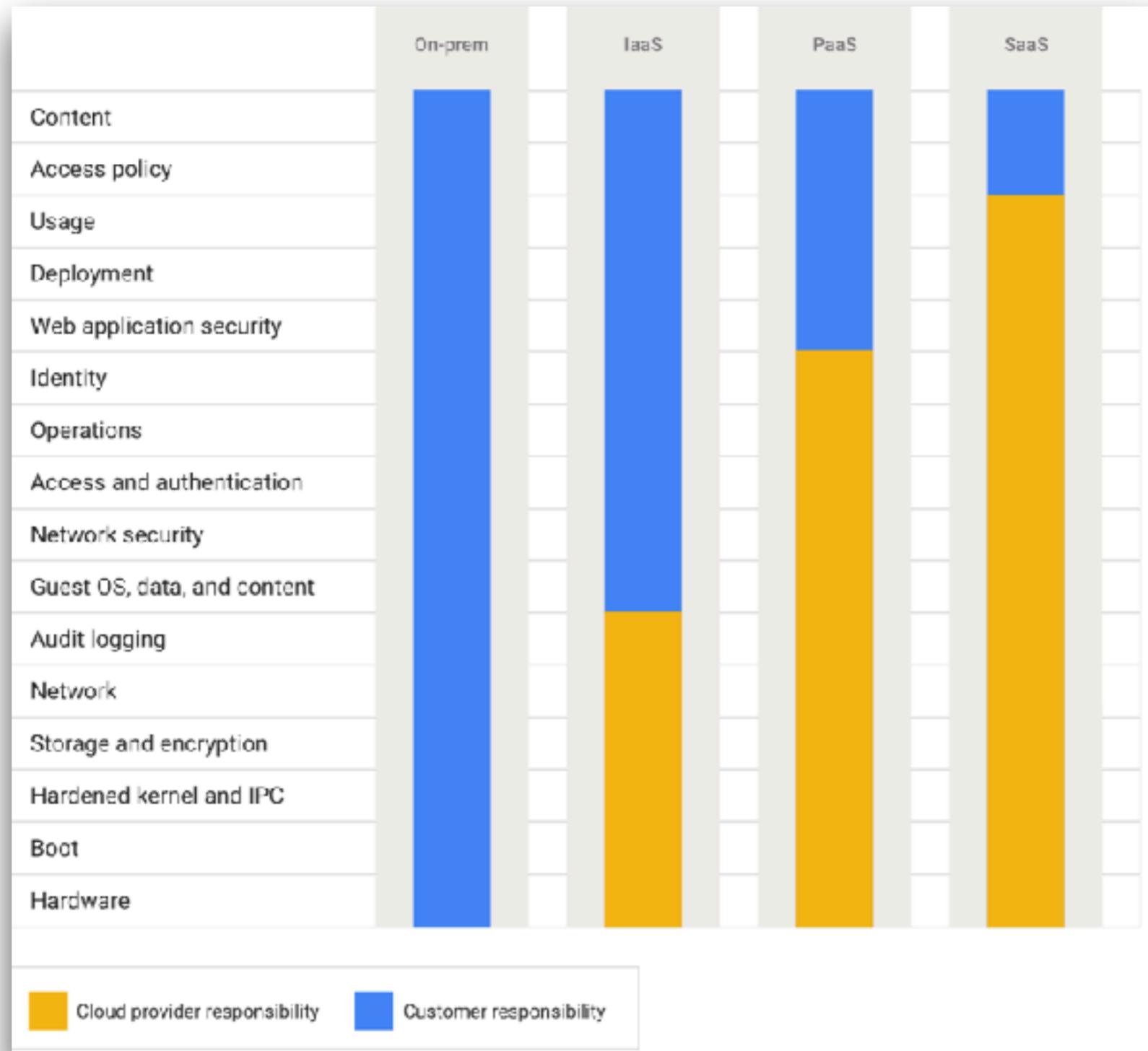
Shared Responsibility Model



<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>



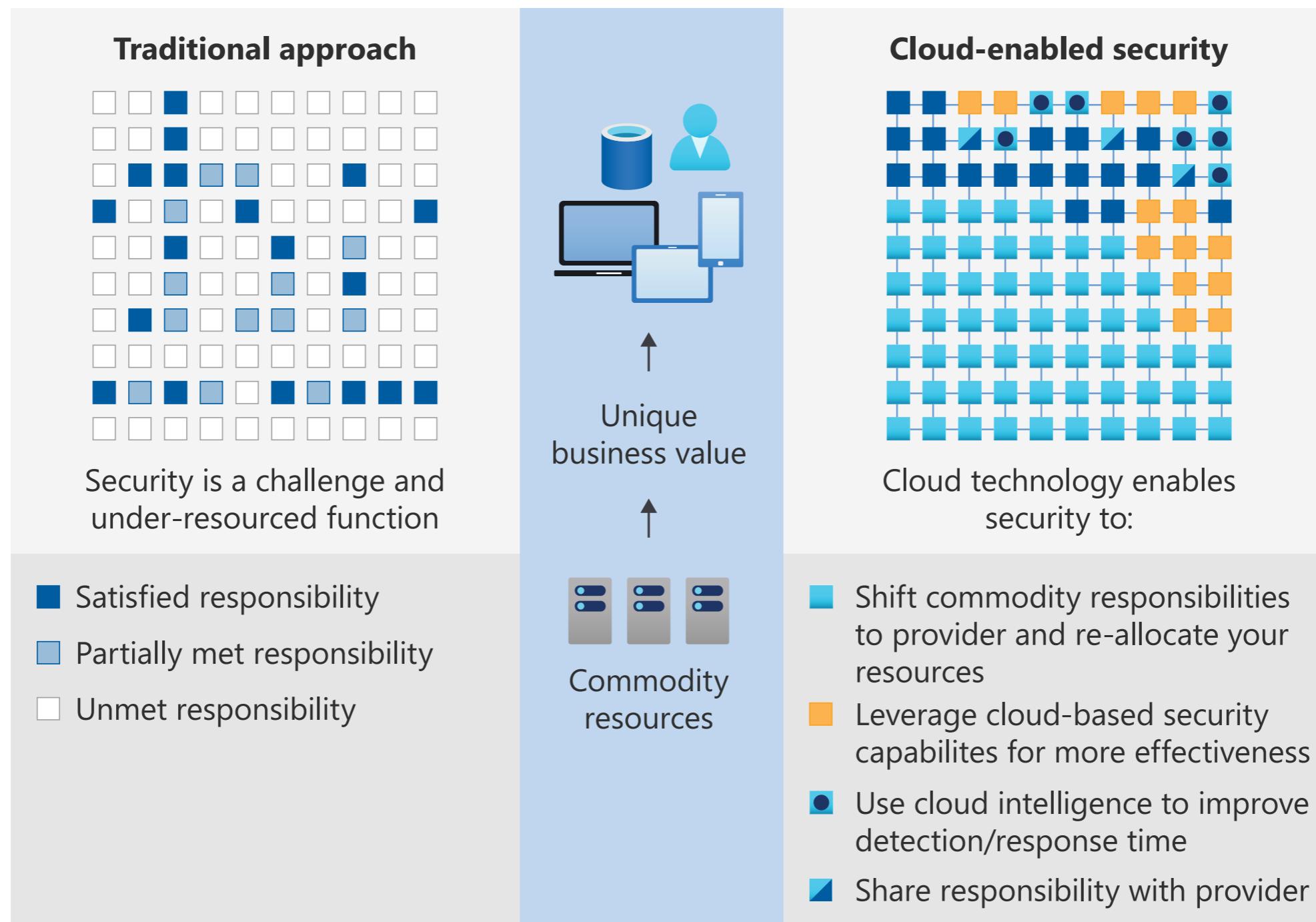
Shared Responsibility Model

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 Compliance	●●	●●	●●	●
	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

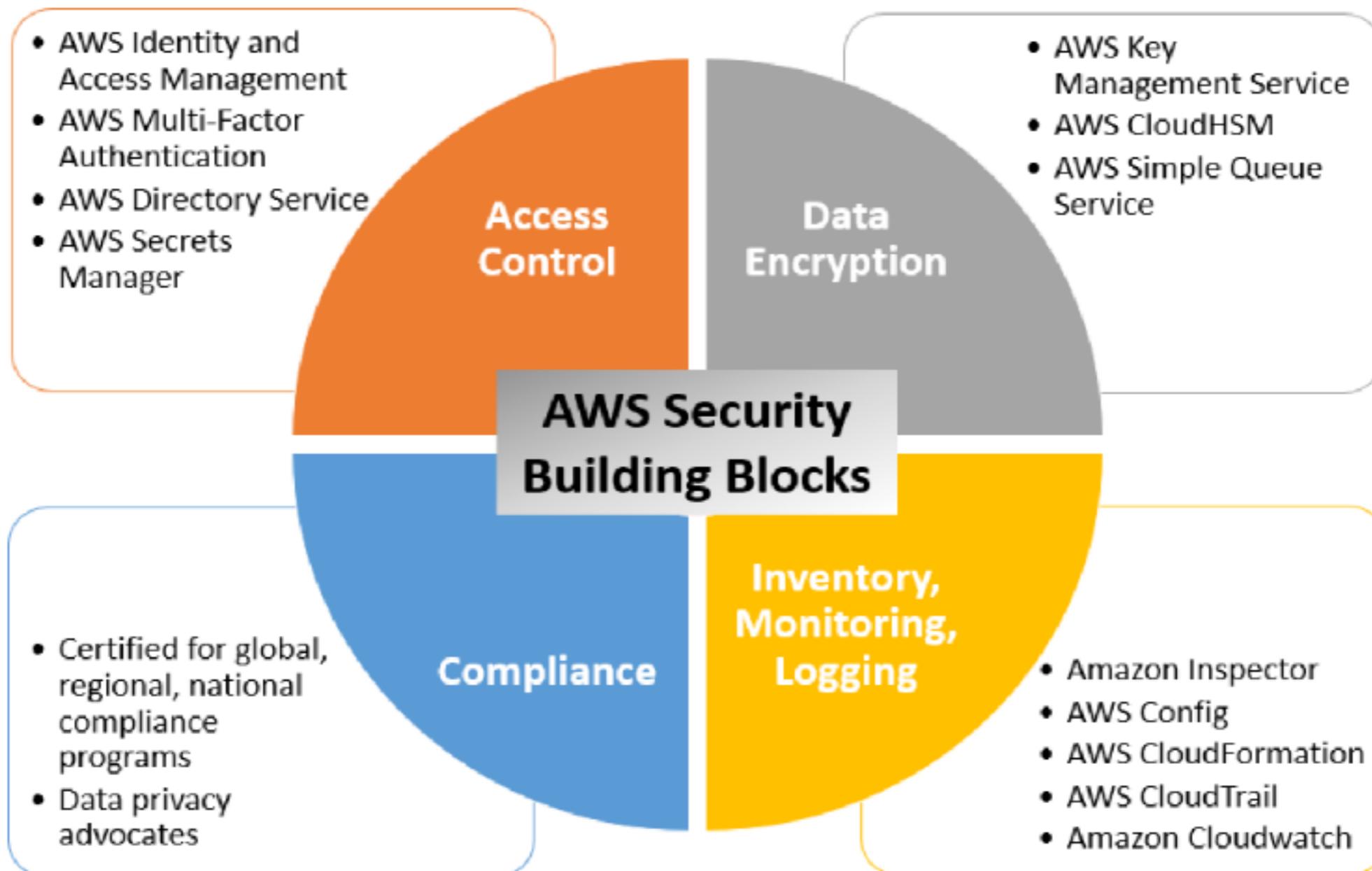
Visibility and Monitoring continuously

Understand share responsibility model

Provide employee training



Example for AWS



Example for Google Cloud

The Google Cloud Architecture Framework

A set of best practices to help users design, build, and operate workloads on Google Cloud that are secure, resilient, high-performing, and cost-effective.

The Six Pillars of the Architecture Framework

Operational Excellence

Efficiently deploy, monitor, and manage your cloud workloads.



Security, Privacy, Compliance

Maximize security, design for privacy, and align with regulatory requirements.



Reliability

Design and operate resilient and highly-available workloads in the cloud.



Cost Optimization

Maximize the business value of your investment in Google Cloud.



Performance Optimization

Design and tune your cloud resources for optimal performance and efficiency.



System Design

Define the architecture, components, and data you need to satisfy your business and system requirements.



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



Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

PCI DSS on Cloud

PCI DSS

การพัฒนา

 PCI Security Standards Council
PARTICIPATING ORGANIZATION

มาตรฐานการรักษาความปลอดภัยของข้อมูลบัตรเดบิตและบัตรเครดิต (PCI DSS) คือมาตรฐานการรักษาความปลอดภัยของข้อมูลที่เป็นกรรมสิทธิ์ของทุกๆ สถาบันการเงินทั่วโลก ซึ่งมีผู้ร่วมงานอย่างต่อเนื่อง เช่น American Express, Discover Financial Services, JCB International, MasterCard Worldwide และ Visa Inc.

PCI DSS ฝึกอบรมให้กับบุคลากร ประเมิน ประเมิน หรือส่งข้อมูลของผู้รับอนุมัติ (CHD) หรือข้อมูลการตรวจสอบสิทธิ์ที่มีความละเอียดสูง (SAD) สำหรับบุคคลที่ต้องการเข้าชม AWS ได้โดยไม่ต้องผ่านกระบวนการนี้ แต่ต้องผ่านการตรวจสอบสิทธิ์ของผู้ใช้งานแทน รวมถึงการตรวจสอบความปลอดภัยของข้อมูลที่ต้องการจัดเก็บใน AWS ตามที่กำหนด

ลูกค้าสามารถเข้าถึงห้องทดลองที่ออกแบบมาเพื่อทดสอบทักษะที่มีอยู่แล้ว (AOC) และสรุปผลการทดสอบ PCI DSS ให้กับ AWS Artifact ซึ่งเป็นแพลตฟอร์มที่ใช้ในการจัดการและจัดหางานที่มีประสิทธิภาพ สามารถเข้าชม AWS Artifact ใน AWS Management Console หรือเชื่อมต่อไปยัง AWS Artifact

AWS PCI DSS ได้รับการรับรองหรือไม่

บริการใดบ้างที่ AWS ที่เป็นไปตามข้อกำหนดของ PCI DSS

การรับรอง PCI DSS

การจัดการข้อมูลส่วนบุคคลใน AWS

การจัดการข้อมูลบัตรเดบิตและบัตรเครดิตใน AWS

การจัดการข้อมูลบัตรเดบิตและบัตรเครดิตใน AWS

การจัดการข้อมูลบัตรเดบิตและบัตรเครดิตใน AWS

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



PDPA on Cloud

ความเป็นส่วนตัวของข้อมูลในประเทศไทย

การรวม



พระราชบัญญัติว่าด้วยการคุ้มครองข้อมูลส่วนบุคคล พ.ศ. 2562 (2019) (PDPA) ในประเทศไทยได้ระบุข้อกำหนดสำคัญๆ ดังนี้ ข้อบังคับด้านความปลอดภัย การใช้งาน การป้องกัน และการจัดการในลักษณะอื่นๆ ของข้อมูลส่วนบุคคลภายใต้ PDPA ได้วางแผนกิจกรรมและมาตรการที่เกี่ยวข้องกับกฎหมายและผู้ประมวลผลข้อมูลเช่นเดียวกับสิ่งที่ผู้ควบคุมข้อมูลหรือผู้บุคคลภายนอกที่ดำเนินการ เก็บรวบรวม การใช้ และการเปลี่ยนแปลงข้อมูลส่วนบุคคล ผู้ประมวลผลข้อมูลหรือบุคคลภายนอกที่ดำเนินการ ประเมินผลข้อมูลในนามของตน สำหรับการจัดการข้อมูลส่วนบุคคล ให้เป็นไปตามที่กฎหมายกำหนด หน้าที่ความรับผิดชอบ หลักการและกระบวนการของผู้ควบคุมข้อมูล ได้แก่

- การเก็บรวบรวมข้อมูลส่วนบุคคลเพื่อความเป็นส่วนตัวจากเจ้าของข้อมูลได้รับ และเจ้าของข้อมูลทราบถึงการเก็บรวบรวมข้อมูลของตน (มีเงื่อนไขได้รับการยอมรับ)
- การเก็บรวบรวมข้อมูลเพื่อการจัดการและบริการที่เกี่ยวกับหน่วยงานที่ได้รับข้อมูลเพื่อประโยชน์ของผู้ควบคุมข้อมูล
- การใช้และ/or การเปลี่ยนแปลงข้อมูลส่วนบุคคลเฉพาะเจาะจง สำหรับวัตถุประสงค์ที่เจ้าของข้อมูลได้รับการอนุญาต
- การต่อvert ข้อมูลส่วนบุคคลของเจ้าของข้อมูล ได้แก่ การใช้ข้อมูลส่วนบุคคลเพื่อการวิเคราะห์และ/or การปรับปรุงข้อมูลส่วนบุคคลของตน
- การดำเนินการที่ไม่ได้รับข้อมูลส่วนบุคคลของตน
- การดำเนินการที่ไม่ได้รับข้อมูลส่วนบุคคลของตน สำหรับวัตถุประสงค์ที่เจ้าของข้อมูลได้รับการอนุญาต

AWS ได้ความระมัดระวังกับความเป็นส่วนตัวและกิจกรรมของข้อมูลของคุณ ความประอดกิจที่

แหล่งข้อมูลเกี่ยวกับความเป็นส่วนตัวของข้อมูลในประเทศไทย

การใช้ AWS ในระบบเกี่ยวกับข้อมูลขนาดใหญ่ การป้องกันความเป็นส่วนตัวและข้อมูลที่นำไปใช้

การขอข้อมูลของ Amazon

คำแนะนำเพื่อป้องกัน ISO 27018 ของ AWS

Amazon Web Services: การรวมของทรัพยากรักษาความปลอดภัย

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



Cloud computing

© 2020 - 2025 Siam Chamnkit Company Limited. All rights reserved.

NIST Cybersecurity Framework

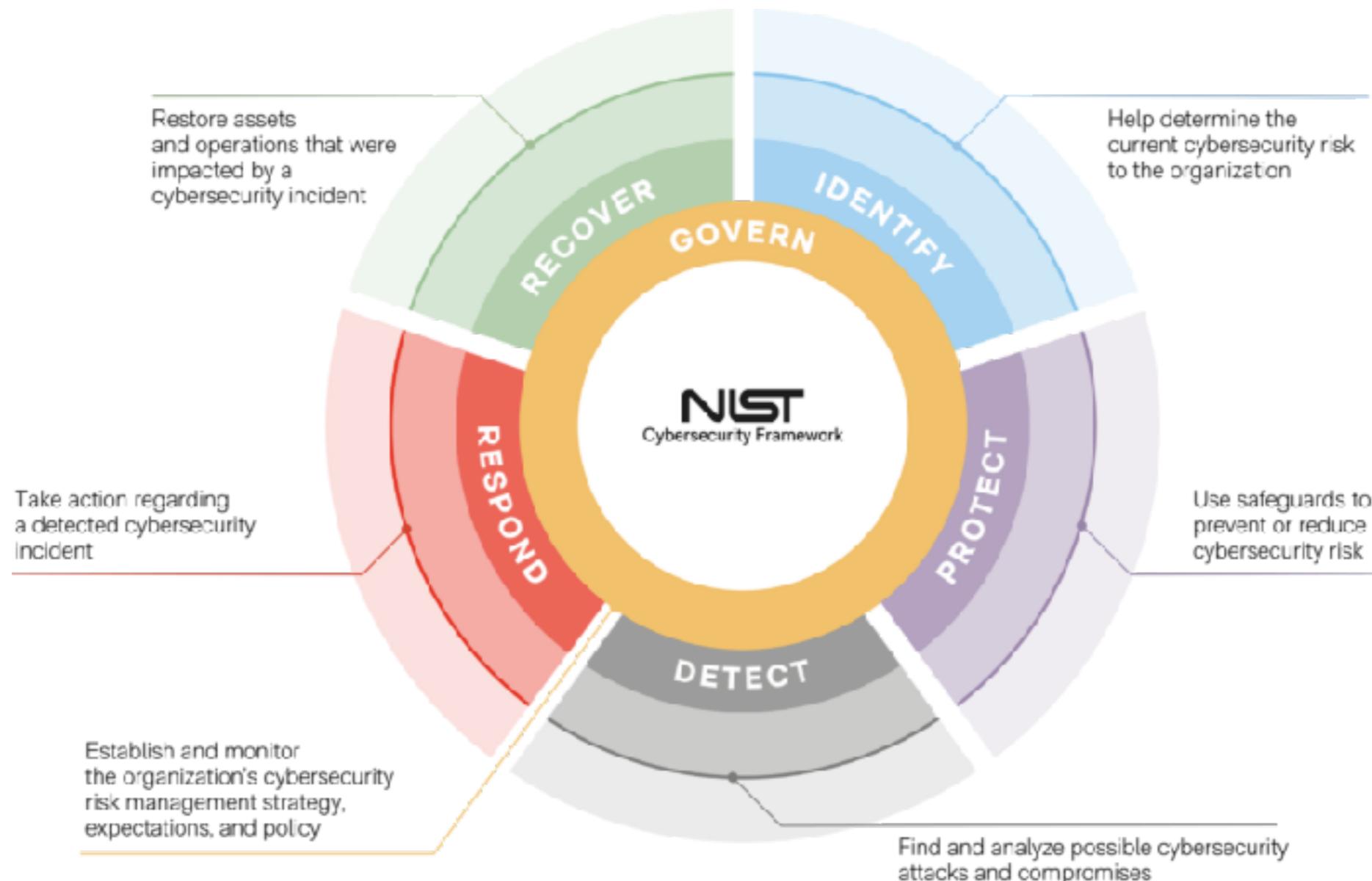
National Institute of Standards And Technology
Help organizations manage and **reduce risks**



<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/>



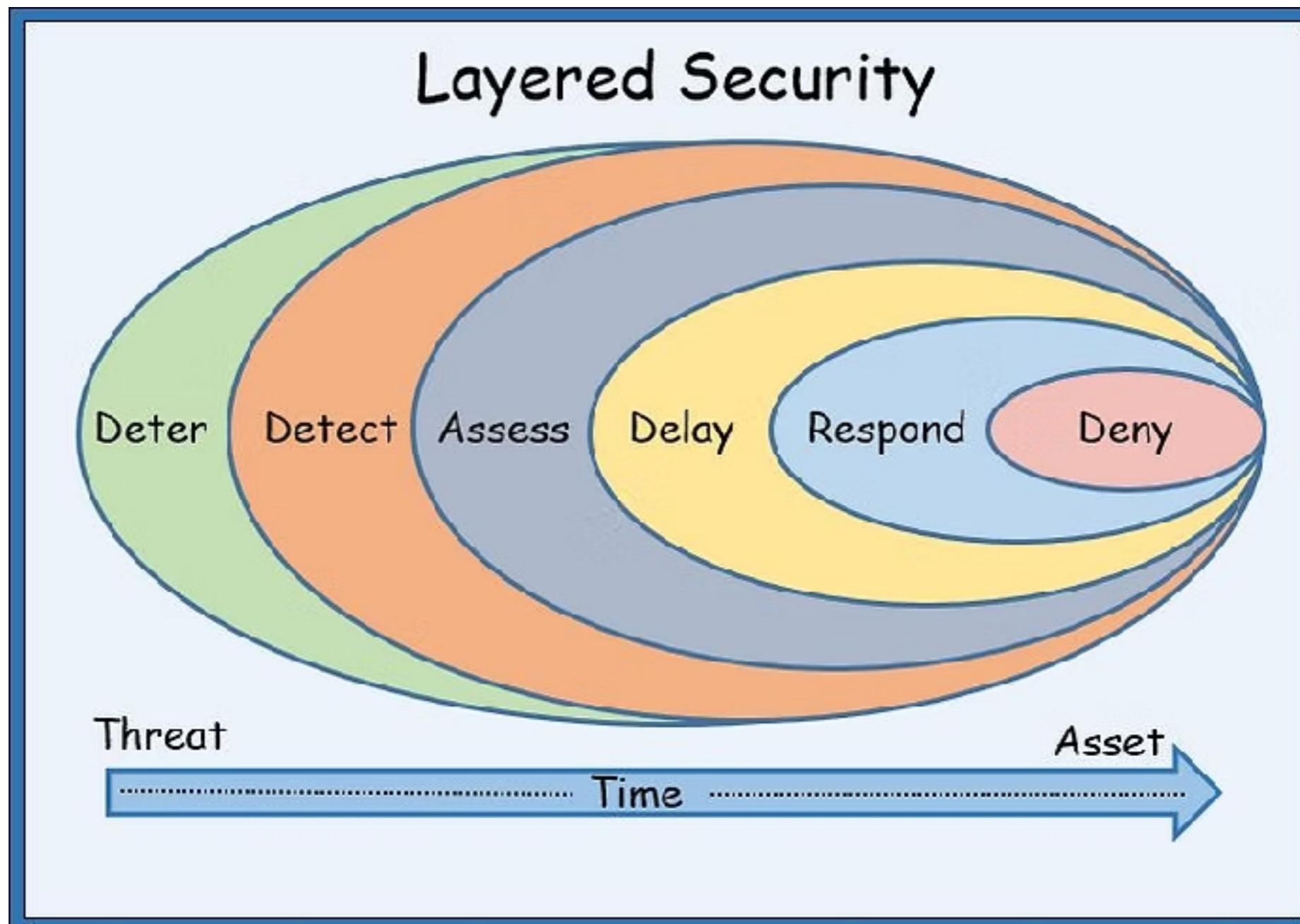
Risks !!



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



Layers of security !!



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



Start with questions !!

- 1** What processes and assets need protection?
- 2** What safeguards or countermeasures are available?
- 3** What techniques can identify security incidents?
- 4** What activities can help contain the impacts of incidents?
- 5** What activities are required to restore capabilities?

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



CSF to improve risk mgt

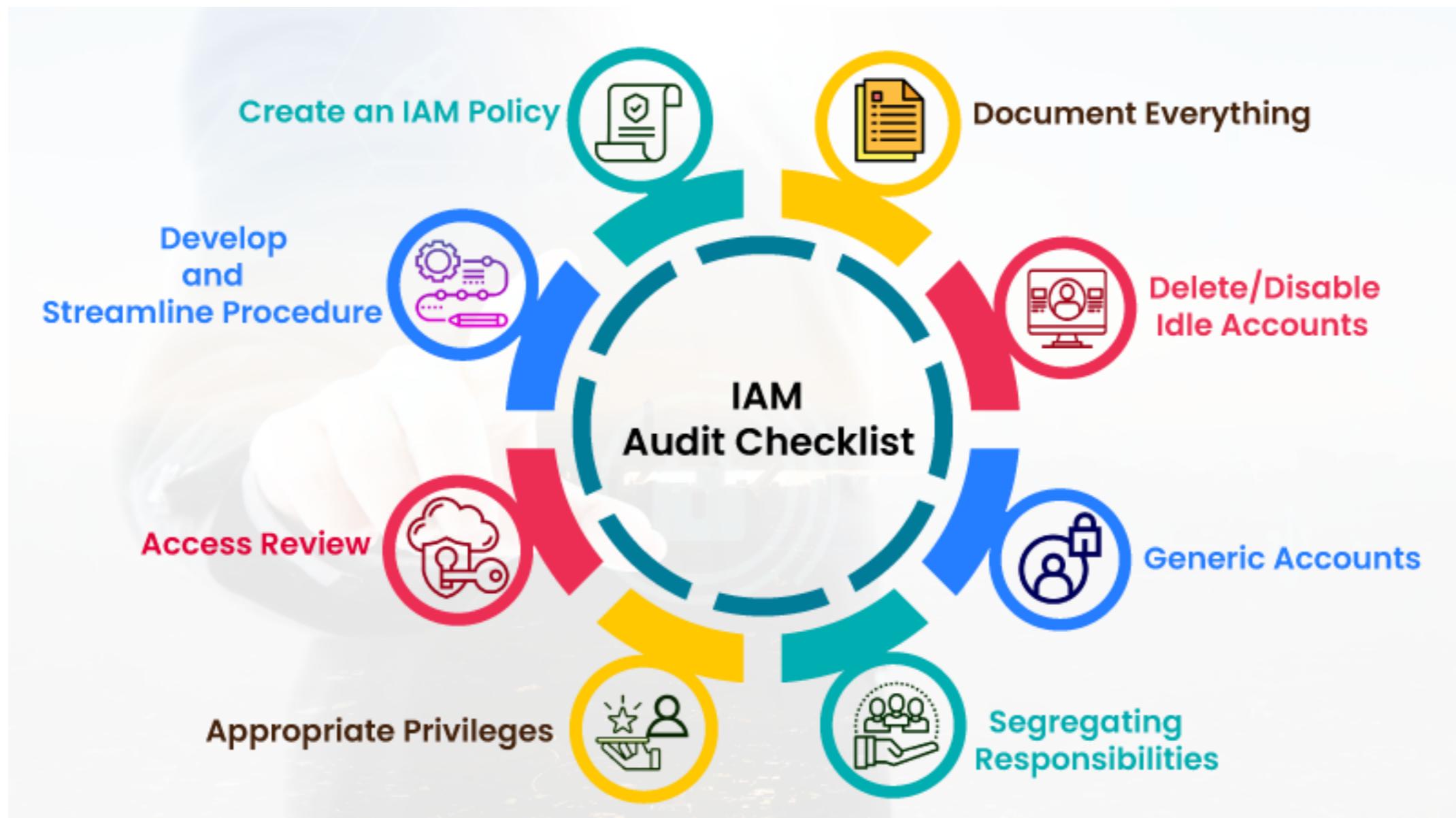


Fig. 5. Using the CSF to improve risk management communication

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



IAM Audit Checklist



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



Application Security !!



OWASP
Open Web Application
Security Project

<https://owasp.org/>



OWASP Top 10

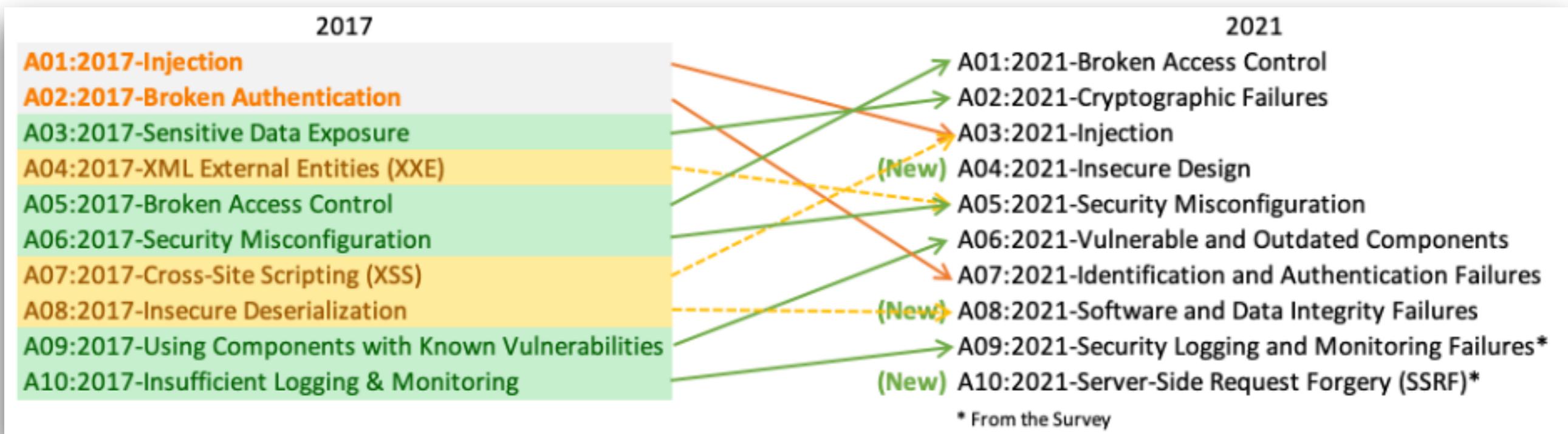
Web Security

API Security

Mobile
Security



OWASP Top 10 Web



<https://owasp.org/www-project-top-ten/>



OWASP Top 10 API

2019

- 1 Broken Object Level Authorization
- 2 Broken User Authentication
- 3 Excessive Data Exposure
- 4 Lack of Resources & Rate Limiting
- 5 Broken Function Level Authorization
- 6 Mass Assignment
- 7 Security Misconfiguration
- 8 Injection
- 9 Improper Assets Management
- 10 Insufficient Logging & Monitoring

2023

- 1 Broken Object Level Authorization
- 2 Broken Authentication
- 3 Broken Object Property Level Authorization
- 4 Unrestricted Resource Consumption
- 5 Broken Function Level Authorization
- 6 Server Side Request Forgery
- 7 Security Misconfiguration
- 8 Lack of Protection from Automated Threats
- 9 Improper Inventory Management
- 10 Unsafe Consumption of APIs

<https://owasp.org/API-Security/editions/2023/en/0x11-t10/>



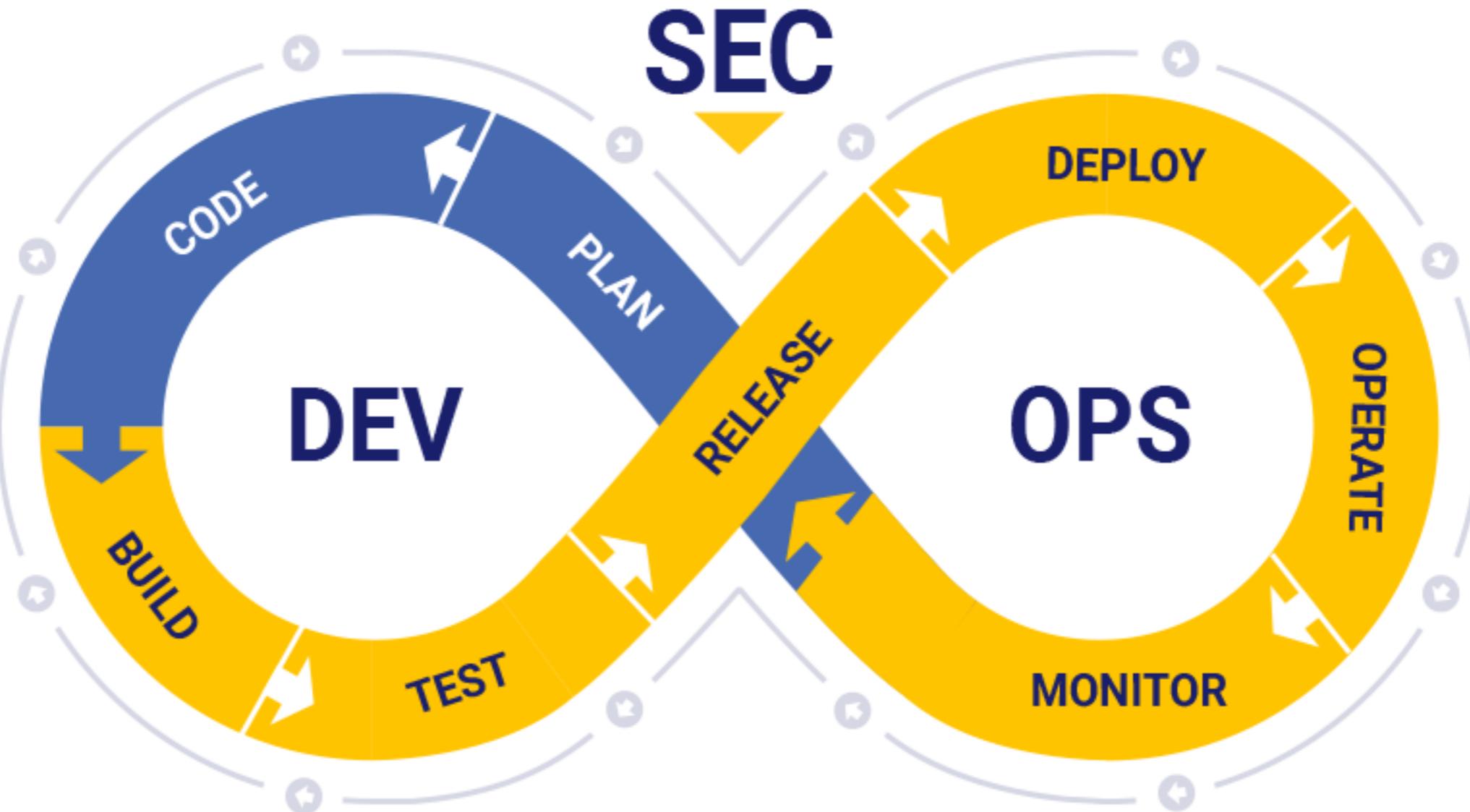
OWASP Top 10 Mobile



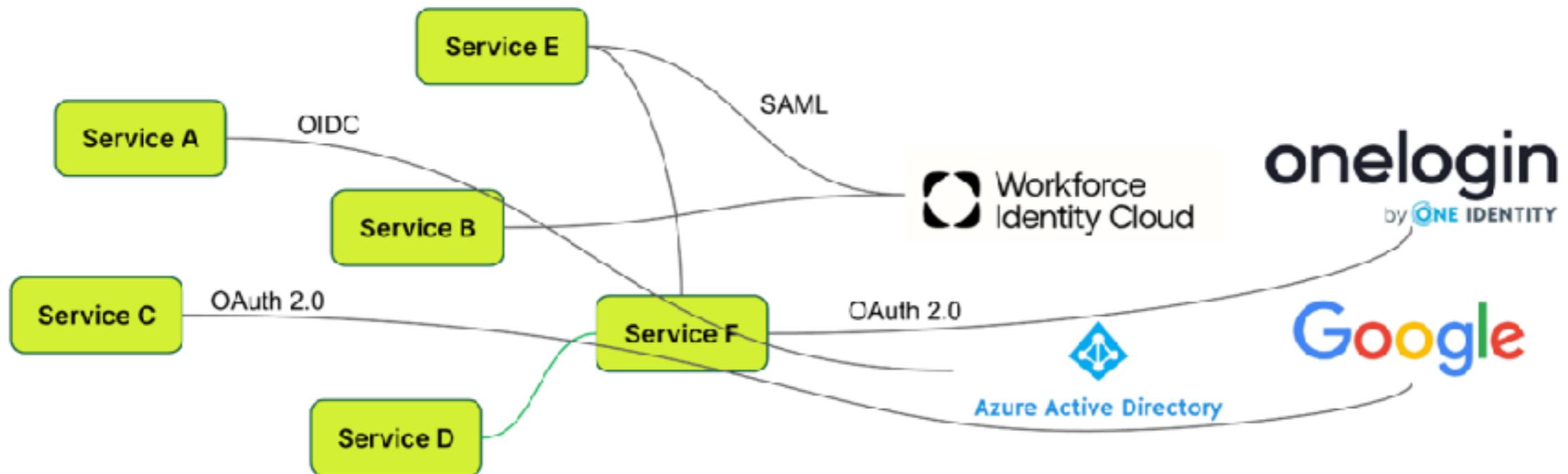
<https://owasp.org/www-project-mobile-top-10/>



DevSecOps



Service Security ?

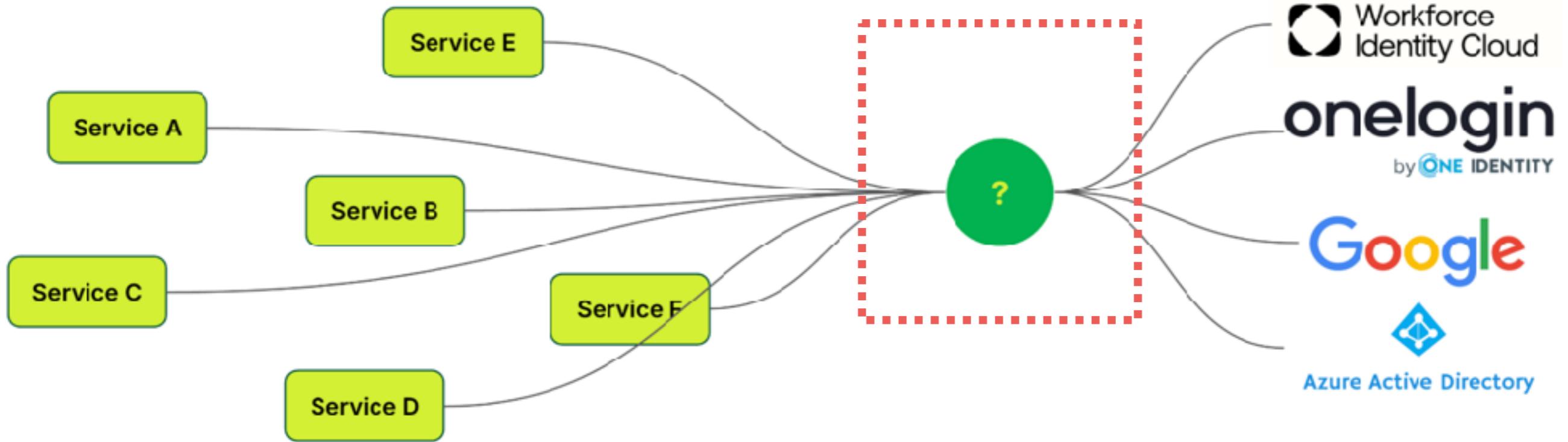


We have more than 1,000 services...

<https://engineering.grab.com/dex-in-action>



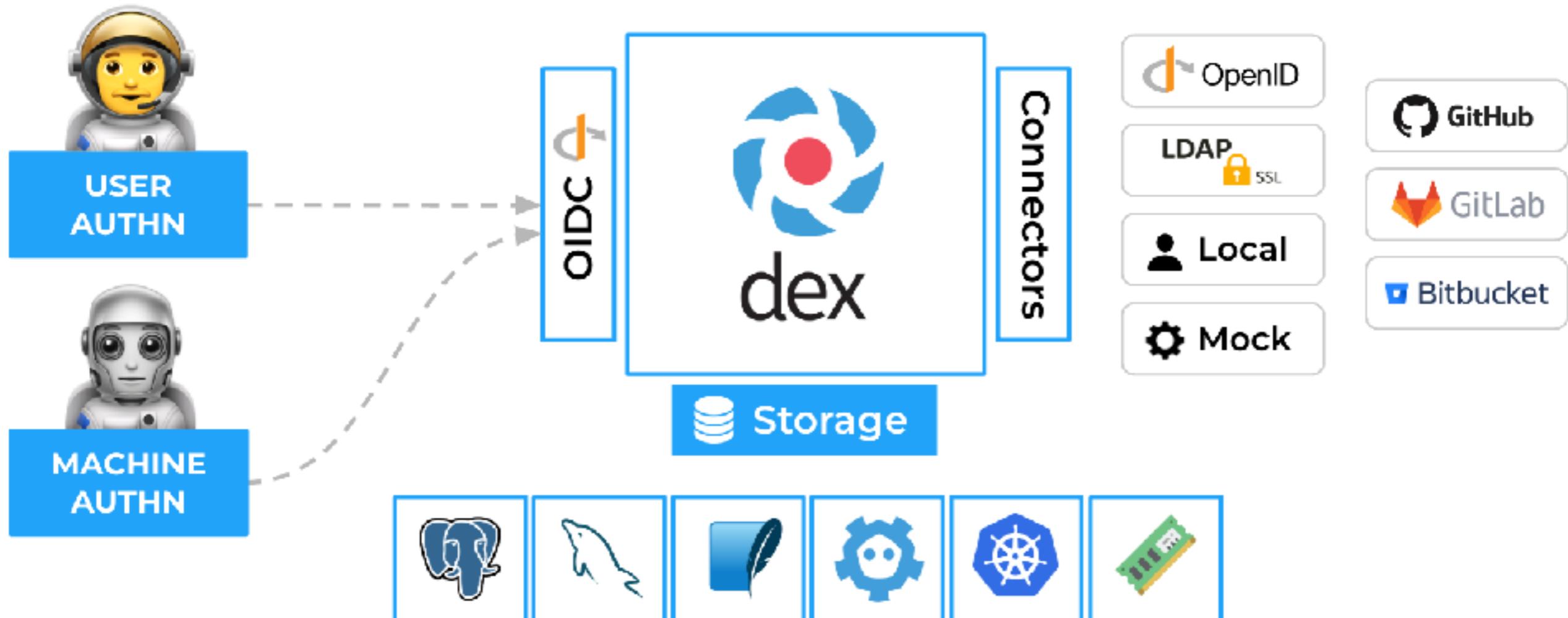
Service Security ?



<https://engineering.grab.com/dex-in-action>



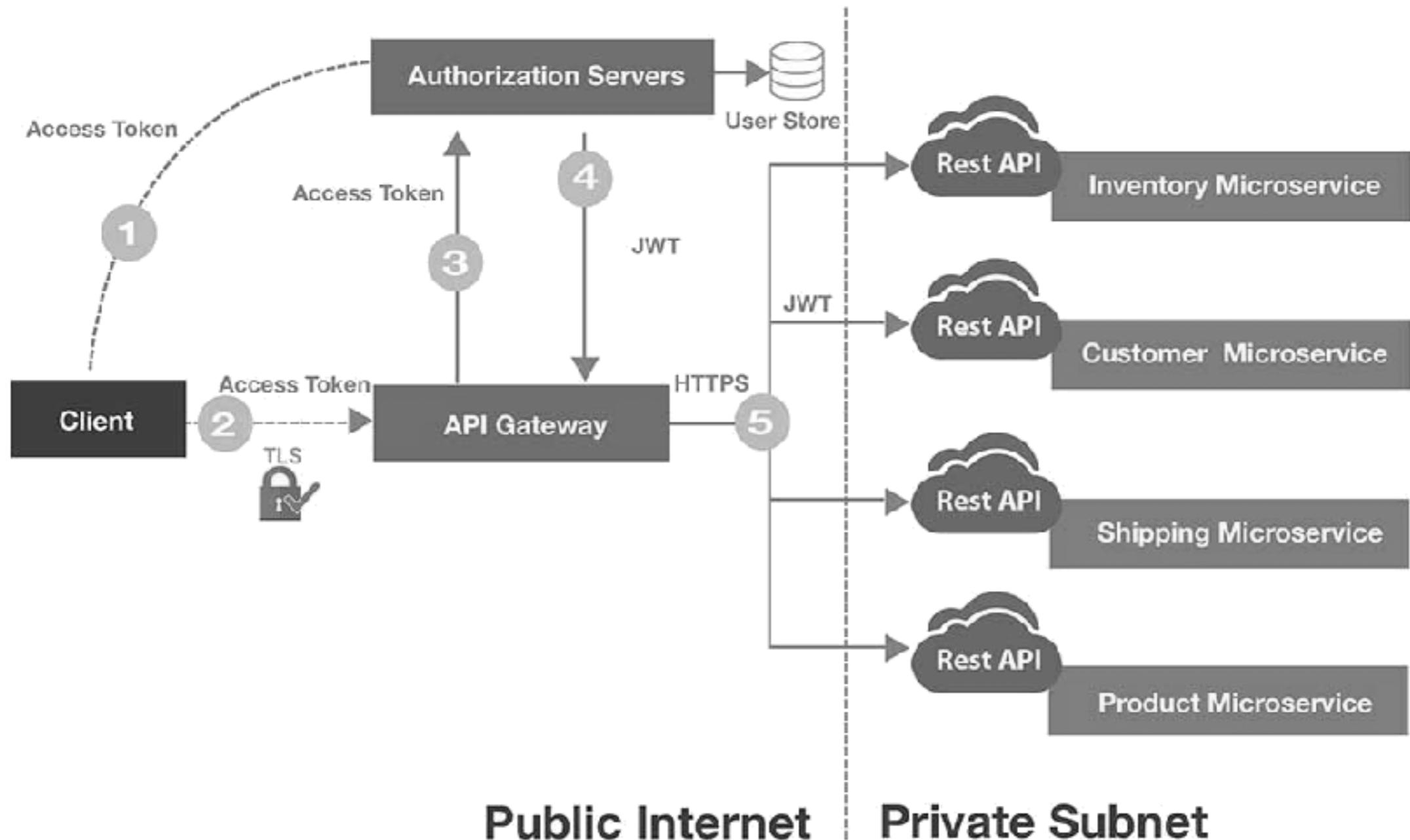
Service Security ?



<https://engineering.grab.com/dex-in-action>



API Gateway



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://wwwtierpoint.com/blog/cloud-readiness-assessments-help-reduce-cloud-migration-risks/>



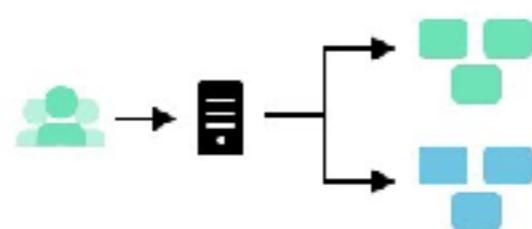
Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

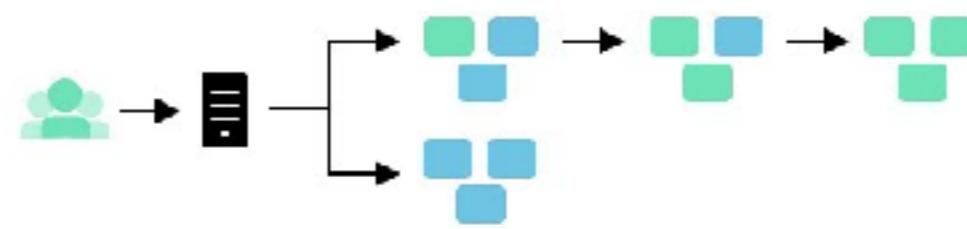
Deployment strategies

| Top 5 Most-Used Deployment Strategies

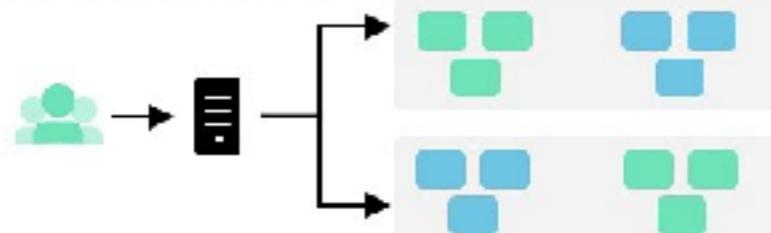
Big Bang Deployment



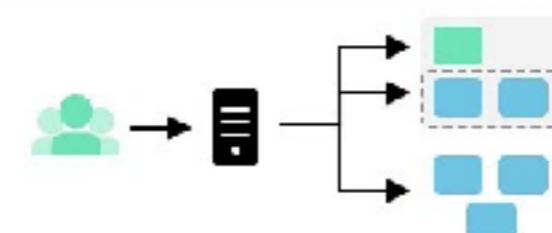
Rolling Deployment



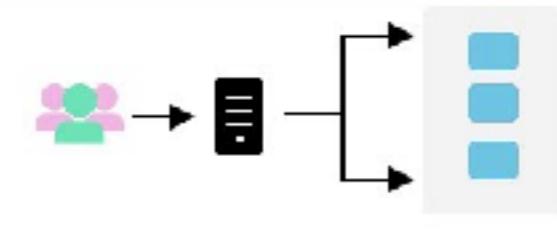
Blue-Green Deployment



Canary Deployment



Feature Deployment



<https://bytebytego.com/guides/top-5-most-used-deployment-strategies/>



Cloud computing

© 2020 - 2025 Siam Chamnankit Company Limited. All rights reserved.

Strangler Pattern



FIG 1.

Tree

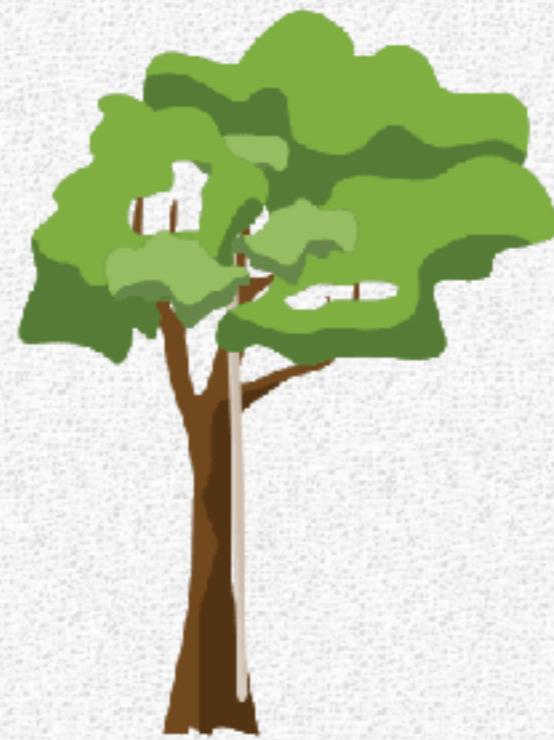


FIG 2.

Strangler Branch



FIG 3.

Strangled Tree



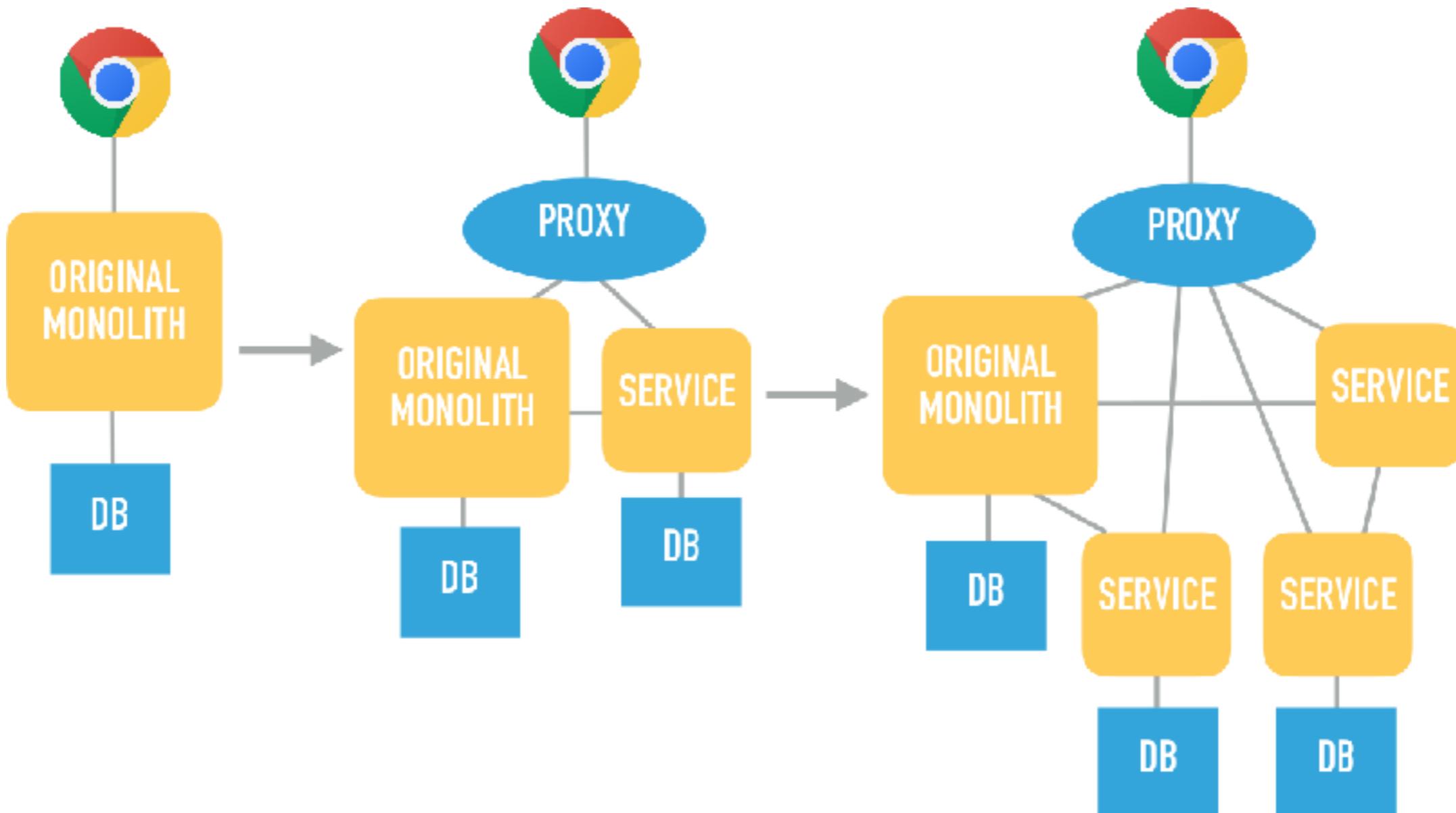
FIG 4.

Strangler Fig

<https://martinfowler.com/bliki/StranglerFigApplication.html>



Strangler Pattern



<https://martinfowler.com/bliki/StranglerFigApplication.html>



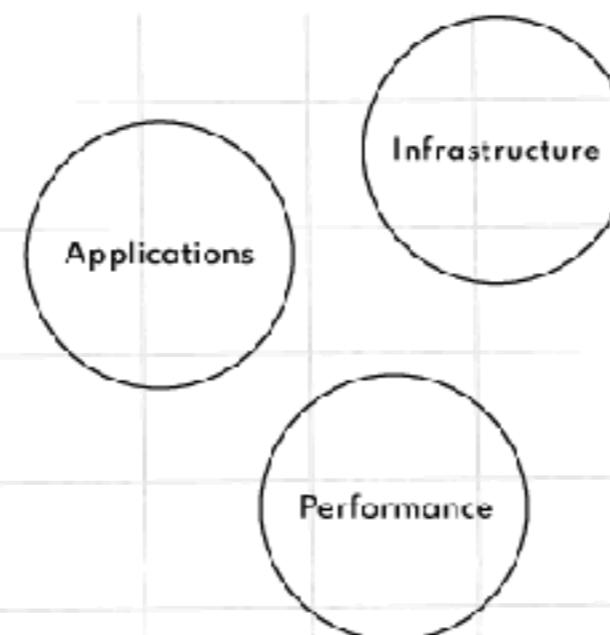
Cloud Transformation

Current IT snapshot



- Asset inventories
- App configuration data
- Performance Information
- CMDB
- SLA/OLA
- Architecture
- SME knowledge

Discover & organize data



Migration strategies for each workload (7 Rs)

- Refactor
- Replatform
- Repurchase
- Rehost
- Relocate
- Retain
- Retire

Level
of
effort

Migration strategy decision criteria
should be based on both business
and technical needs

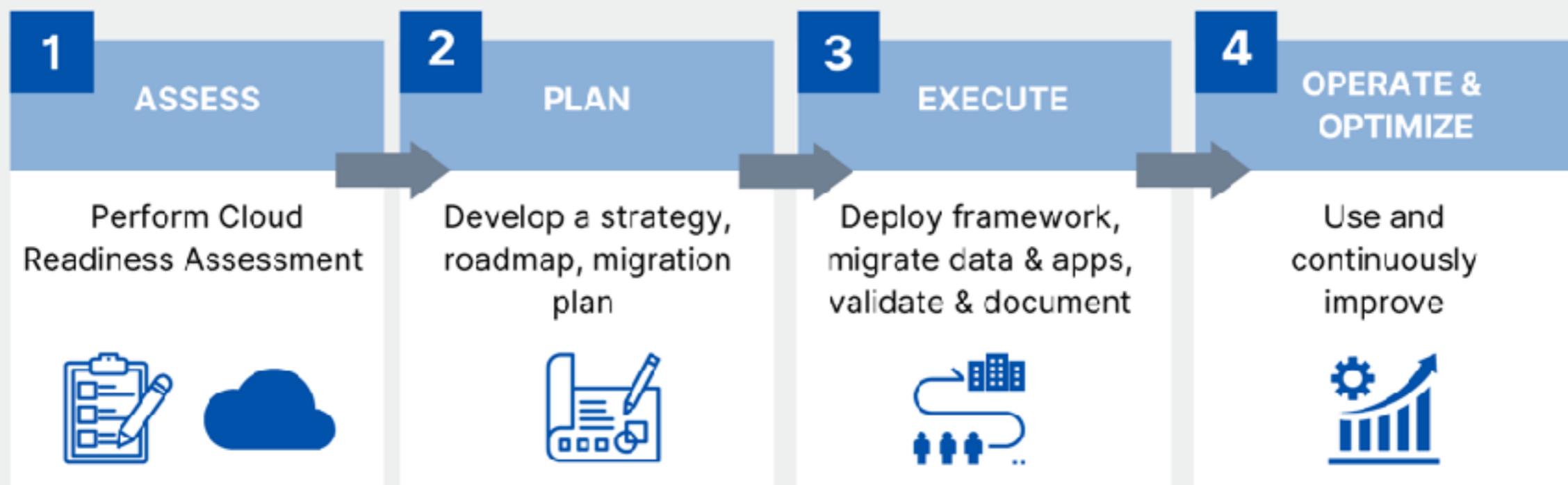


<https://medium.com/@rogernem/understanding-the-7-rs-57db362d74d9>



Migration Strategies

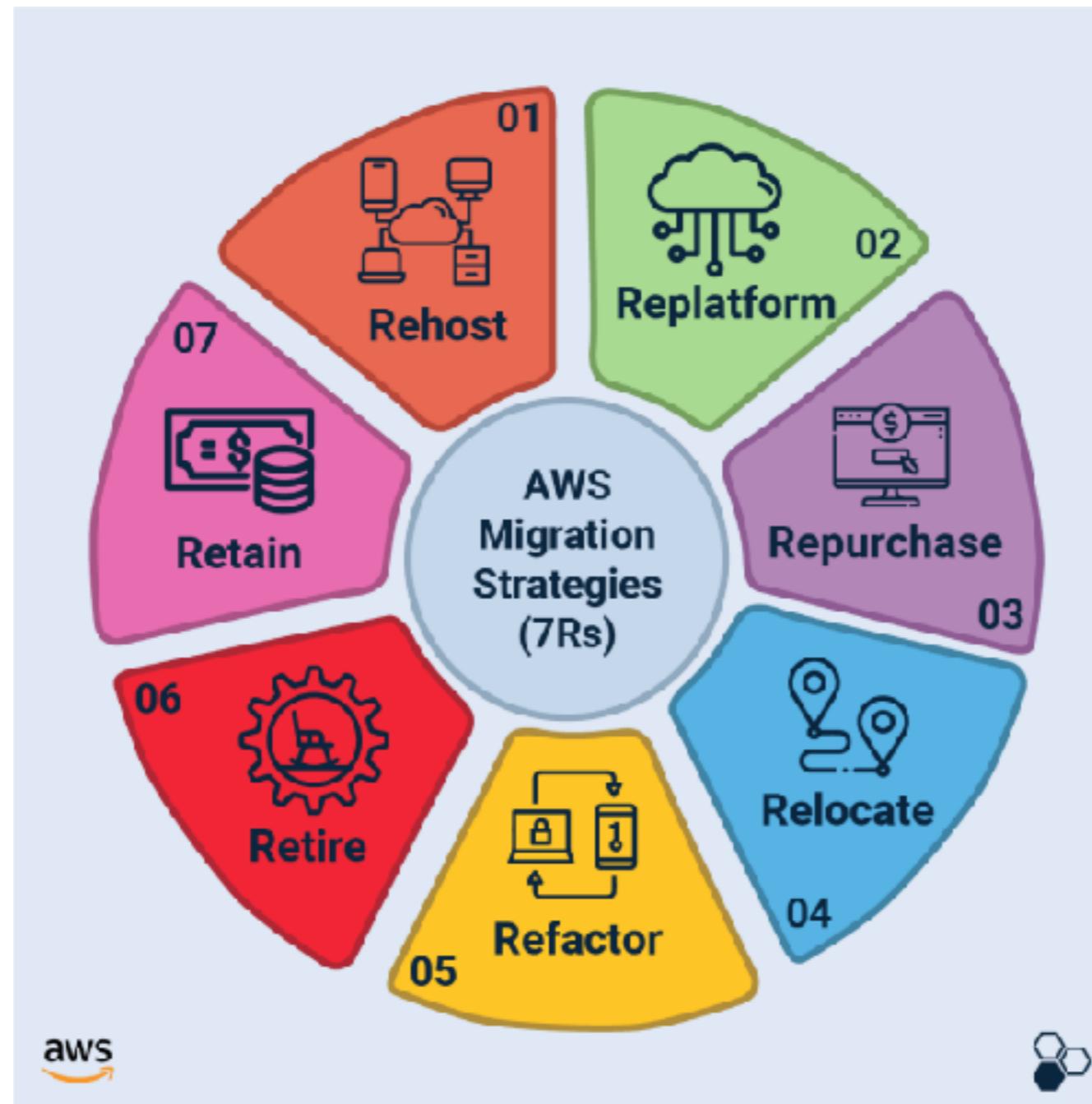
4 Steps to A Successful Cloud Migration



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



Migration Strategies

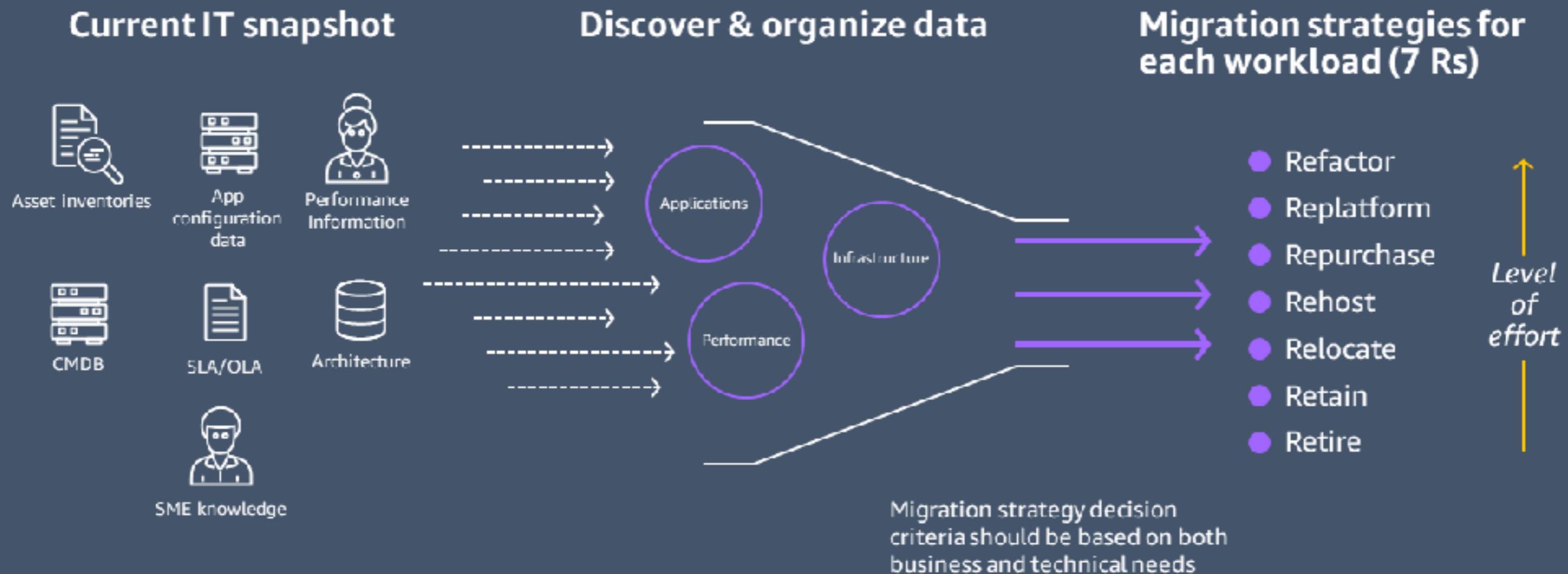


<https://docs.aws.amazon.com/prescriptive-guidance/latest/migration-retiring-applications/overview.html>



Migration Strategies

Migration Readiness



© 2020, Amazon Web Services, Inc. or its Affiliates.



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
Relocate	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



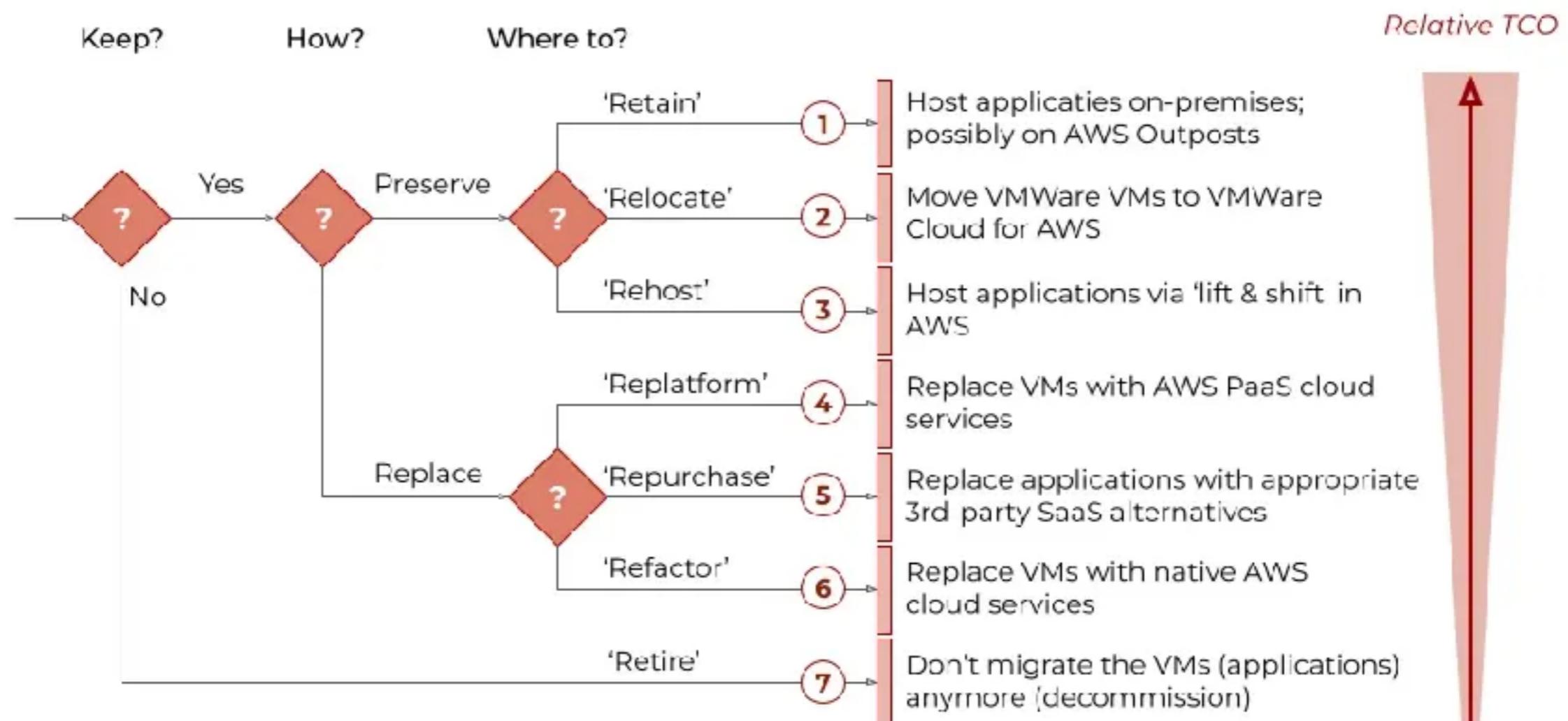
Summary of 7R

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>



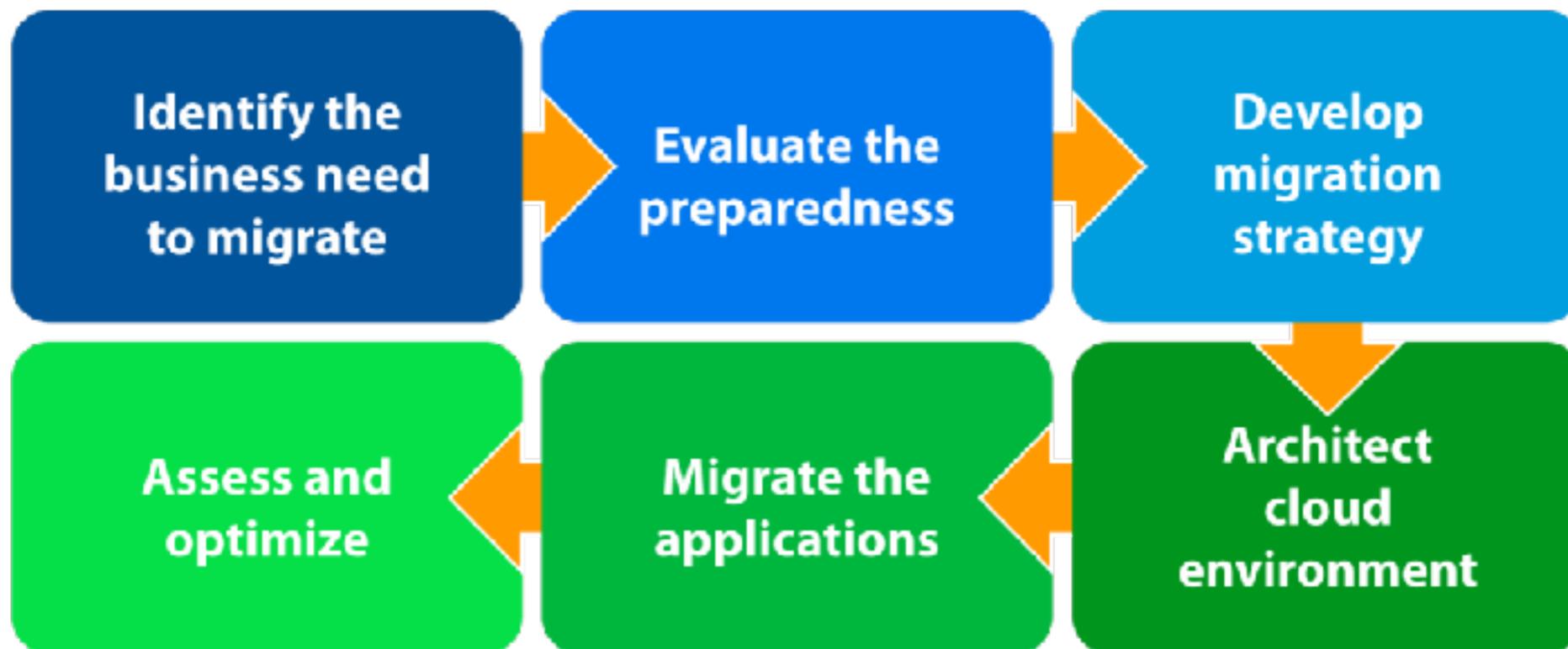
Details in 7Rs



<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

