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CloudNativeCon

Europe 2022

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The Power of Cloud Native in Financial Institutions

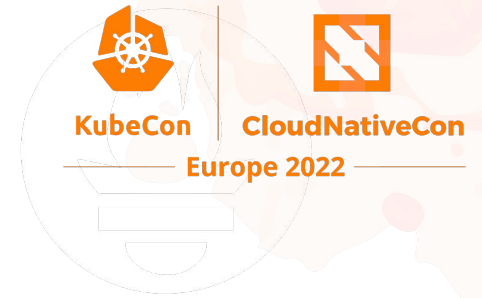
Mateusz Pruchniak



About me



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PromCon
North America 2021

Agenda

- Introduction
 - Cloud Native
 - Cloud Agnostic
 - Cloud Native vs Cloud Agnostic
 - European Union Authorities
 - Recommendations & Guidelines
- Use Case of Cloud Native in Financial Institutions

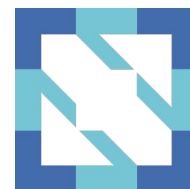
CNCF Cloud Native Definition v1.0

Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as **public**, **private**, and **hybrid** clouds. Containers, service meshes, microservices, immutable infrastructure, and declarative APIs exemplify this approach.

These techniques enable **loosely coupled** systems that are **resilient**, manageable, and observable. Combined with robust automation, they allow engineers to make high-impact changes frequently and predictably with minimal toil.

The Cloud Native Computing Foundation seeks to drive adoption of this paradigm by fostering and sustaining an ecosystem of **open source**, **vendor-neutral projects**. We democratize state-of-the-art patterns to make these innovations accessible for everyone.

<https://github.com/cncf/toc/blob/main/DEFINITION.md>



CLOUD NATIVE
COMPUTING FOUNDATION

Cloud Agnostic - Definition

Agnostic in IT world means interoperability.

Cloud Agnostic applications, tools and services are characterized by:

- Independence from the type of cloud: private, hybrid, public.
- Independence from the cloud provider (Azure, AWS, GCP, IBM, Oracle, ...).
- The possibility of using more than one cloud provider at the same time.
- Can be easily moved between clouds.
- Easy exit plan.



Cloud Native vs Cloud Agnostic

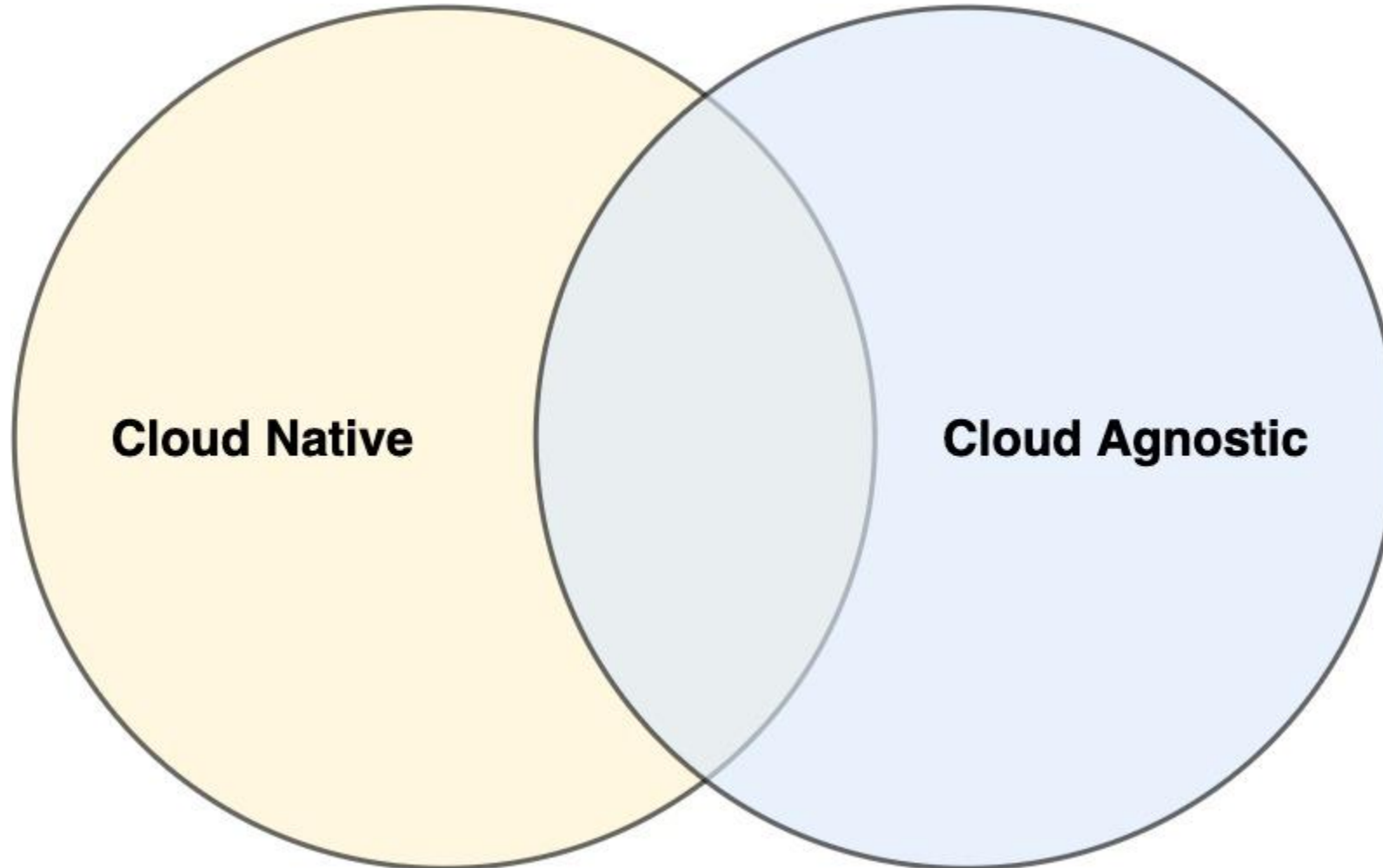


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European Union Authorities

Recommendations on outsourcing to cloud service providers:

- **EBA** - The European Banking Authority is an independent authority that works to ensure effective and consistent prudential regulation and supervision across the EU banking sector.

<https://eba.europa.eu/documents/10180/2170121/Final+draft+Recommendations+on+Cloud+Outsourcing+%28EBA-Rec-2017-03%29.pdf>

- **EIOPA** - The European Insurance and Occupational Pensions Authority is a European Union financial regulatory institution.

https://www.eiopa.europa.eu/sites/default/files/publications/eiopa_guidelines/guidelines_on_outsourcing_to_cloud_service_providers_en.pdf

- **ESMA** - The European Securities and Markets Authority works in the field of securities legislation and regulation to improve the functioning of financial markets in Europe, strengthening investor protection and cooperation between national competent authorities.

https://www.esma.europa.eu/sites/default/files/library/esma_cloud_guidelines.pdf

Recommendations & Guidelines

Five key areas:

- Data security and systems.
- Location of data and data processing.
- Risk assessment.
- Access and audit rights.
- Exit strategies.

Guideline 5. Exit strategies

31. In case of outsourcing of critical or important functions, a firm should ensure that it is able to exit the cloud outsourcing arrangement without undue disruption to its business activities and services to its clients, and without any detriment to its compliance with its obligations under the applicable legislation, as well as the confidentiality, integrity and availability of its data. For that purpose, a firm should:
- a) develop exit plans that are comprehensive, documented and sufficiently tested. These plans should be updated as needed, including in case of changes in the outsourced function;



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Use Case of Cloud Native in Financial Institutions



Organization & Governance

- Cloud Center of Excellence - cross-discipline team.
- Drive cultural change to open source adoption and build cloud native skills.
- Provides the best practice, patterns of cloud usage and standards.
- Ensure the goal and strategy are defined.
- Create standards and governance.
- Keep building culture by delivering training and evangelism.
- Automate first strategy.

Cloud Native Reference Architecture

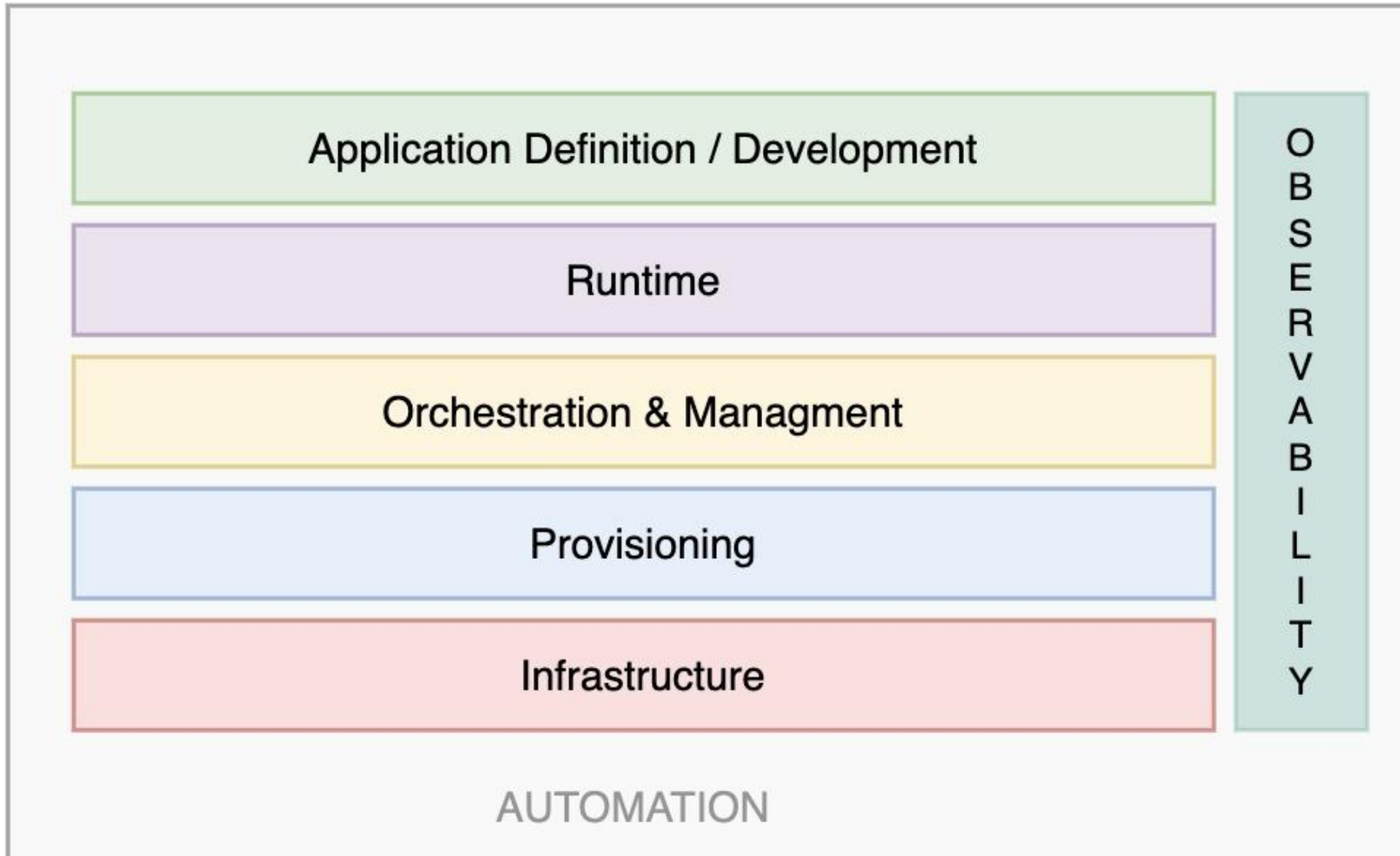


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Cloud Native App Architecture

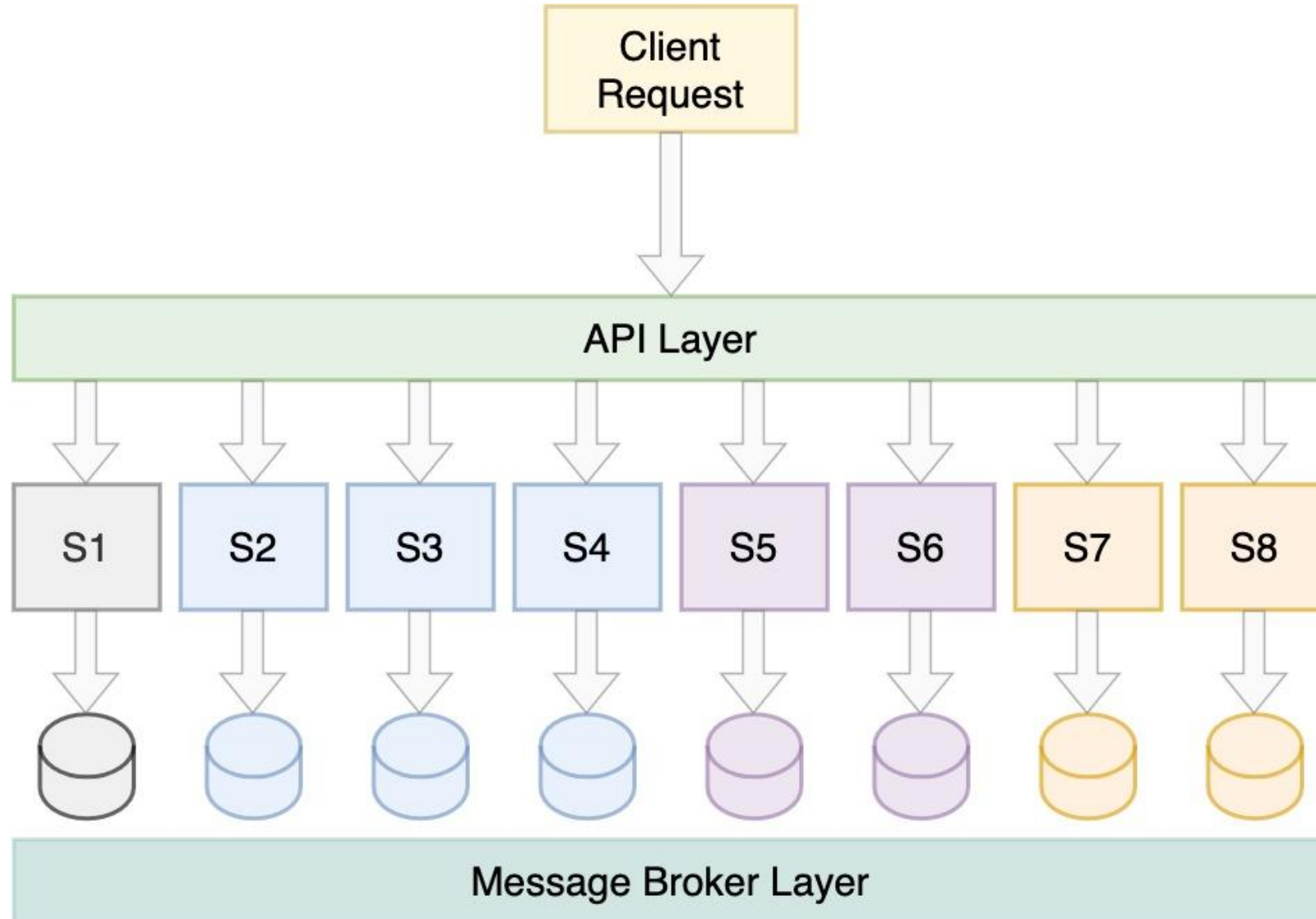


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Cloud Native Architecture Trade Offs

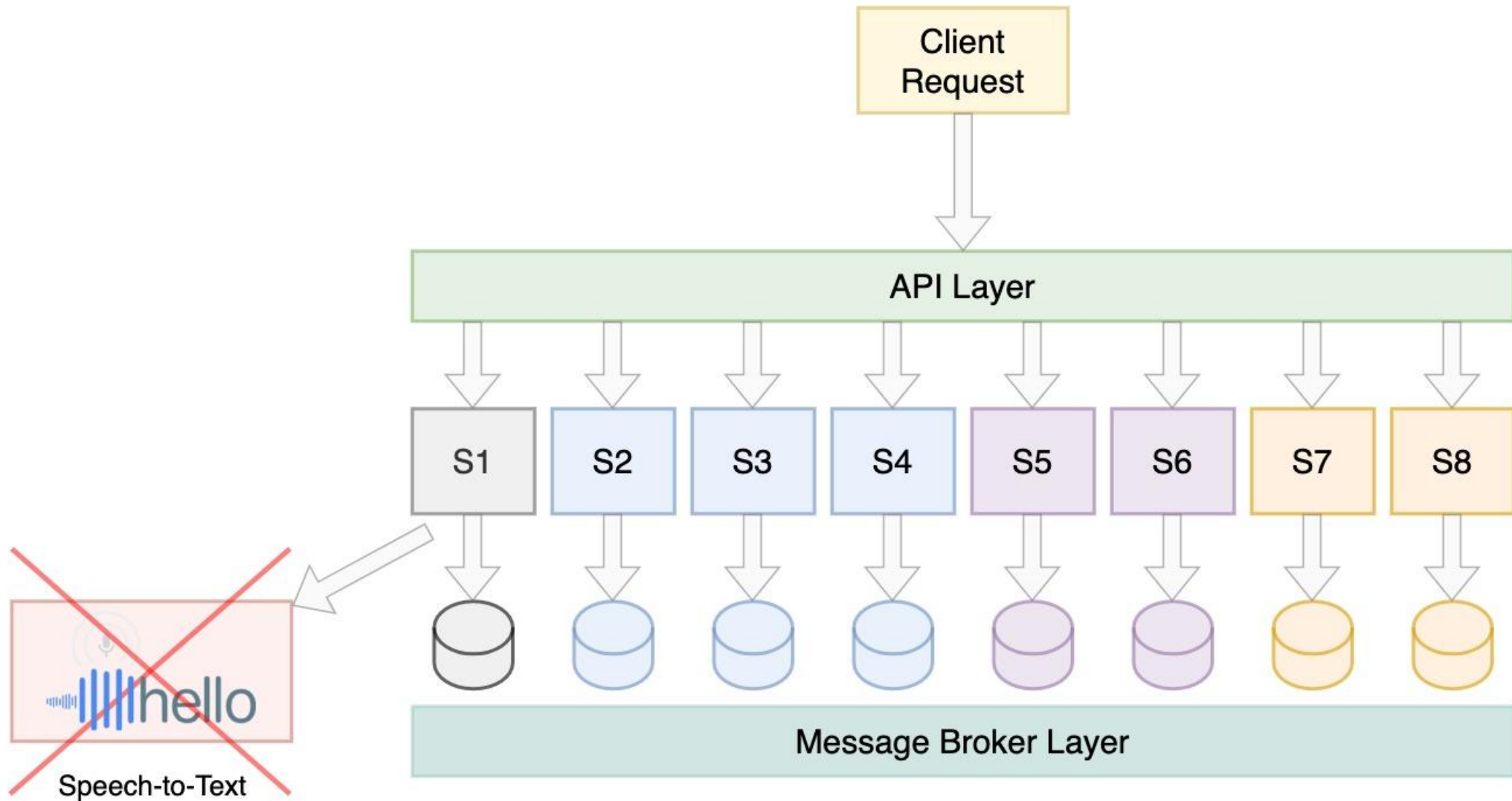
Non-Functional Requirements:

- Risk analysis outputs.
- Exit Strategy and Exit Plan.

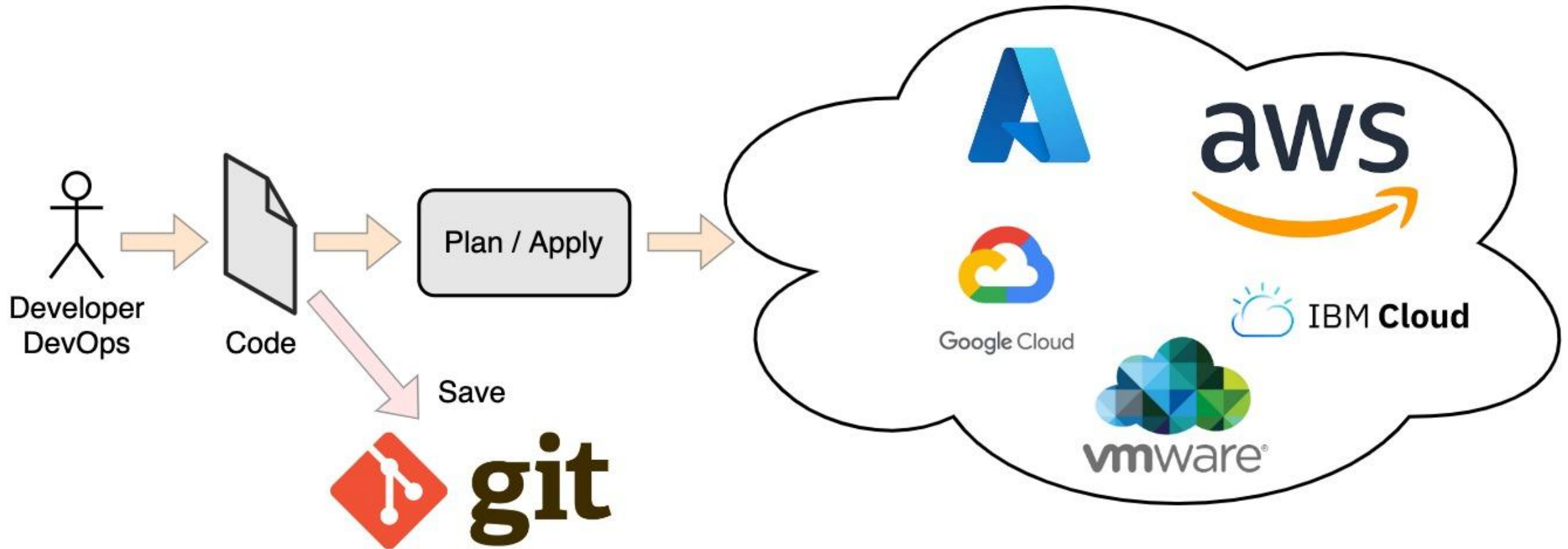
Cloud native architecture characteristics:

- Each microservice implements a specific business capability within a larger domain context.
- Each microservice is developed autonomously and can be deployed independently.
- Each microservice is self-contained encapsulating its own data storage technology, dependencies, and programming platform.
- Microservice compose together to form an application.
- Microservice owned by a small team.

Cloud Native Architecture Trade Offs



Infrastructure as code (IaC)



Runtime



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App1

App2

App3

App4

App5

containerd

Runtime



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Orchestration & Managment



HashiCorp

Terraform Infrastructure

Orchestration and management



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App1

App2

App3

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containerd

Runtime



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Google



Orchestration & Management

Amazon EKS



HashiCorp

Terraform

Infrastructure

Orchestration and management

Certified Kubernetes Conformance Program

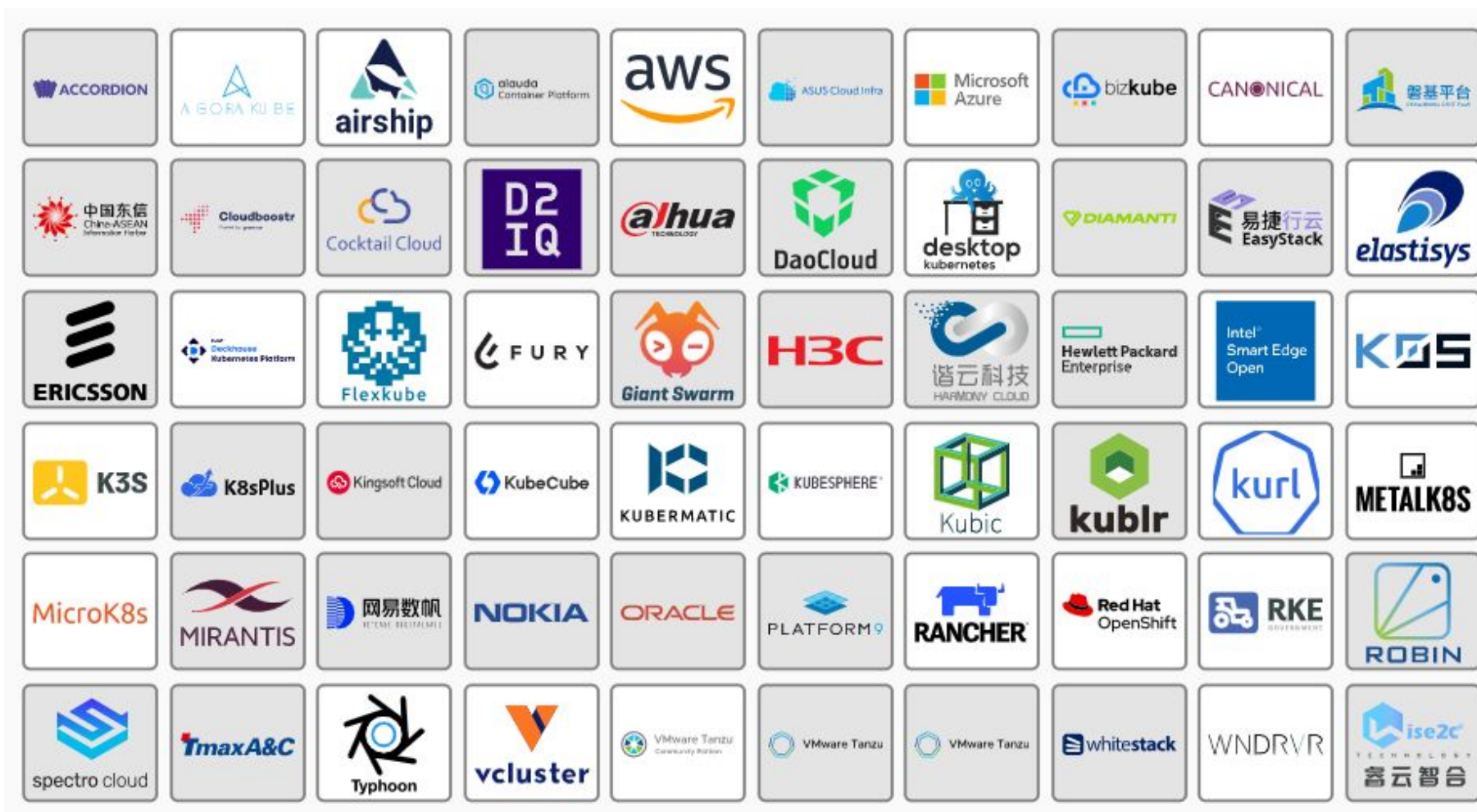


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Observability



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Provisioning



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App1

App2

App3

App4

App5

containerd

Runtime



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Google



Orchestration & Management

Amazon EKS



flux

Provisioning



OpenGitOps



HashiCorp

Terraform

Infrastructure

O
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VICTORIA
METRICS



Prometheus



fluentd



elasticsearch



OPEN METRICS



Grafana



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Thank you!

Questions?

