

## Chapter 9. Programming Models

Bilkent University | CS443 | 2021, Spring | Dr. Orçun Dayıbaş

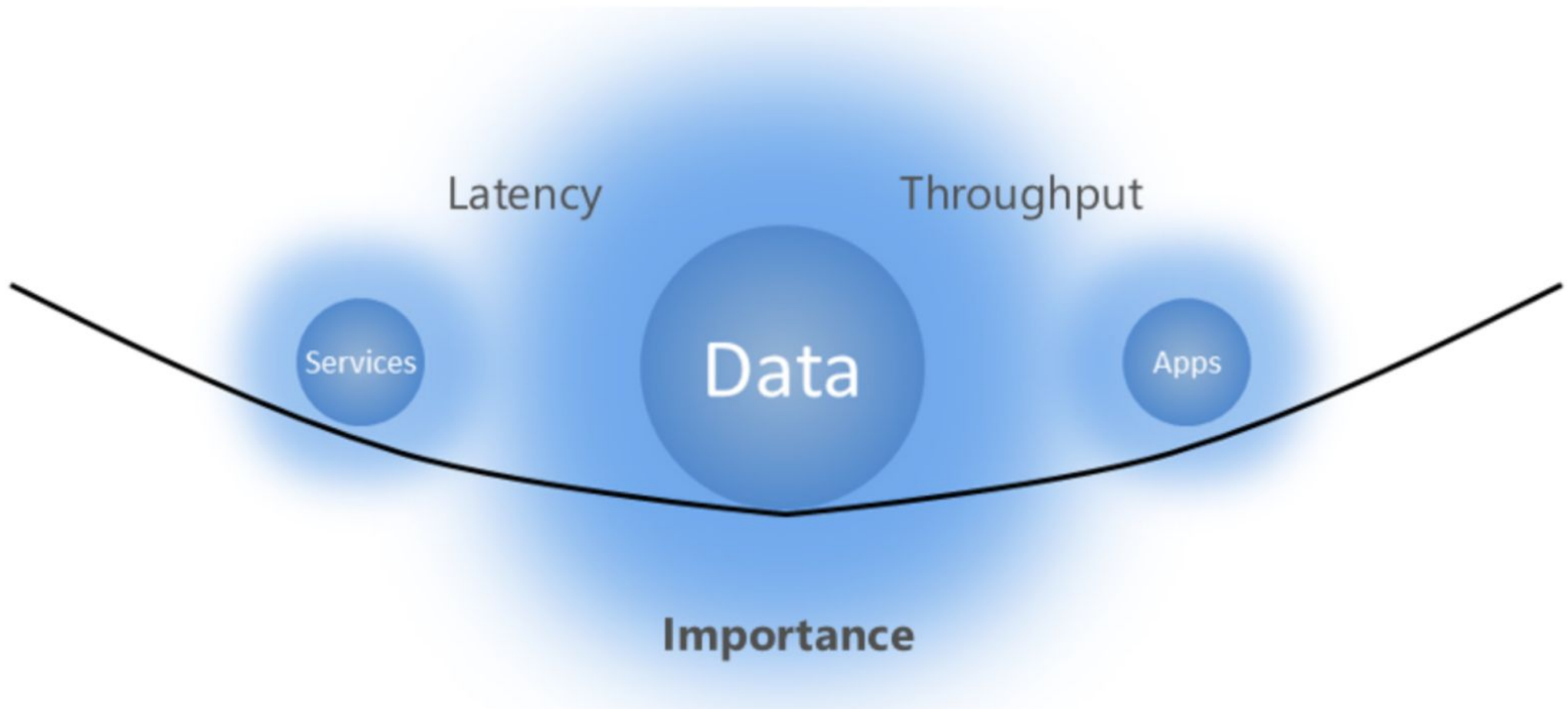
# Introduction

- **Application landscape is changing**

Then	Now
One datasource	Multiple datasources
Entire business logic embedded	Various BL sources
Purpose built	Mash-up services/apps
Single programming language	Polyglot programming
Single channel consumption	Multi-channel experience
Single DC deployment	Parts can exist anywhere
Planned update/release cycles	CI/CD
Failing is not an option	Fail fast

# Introduction

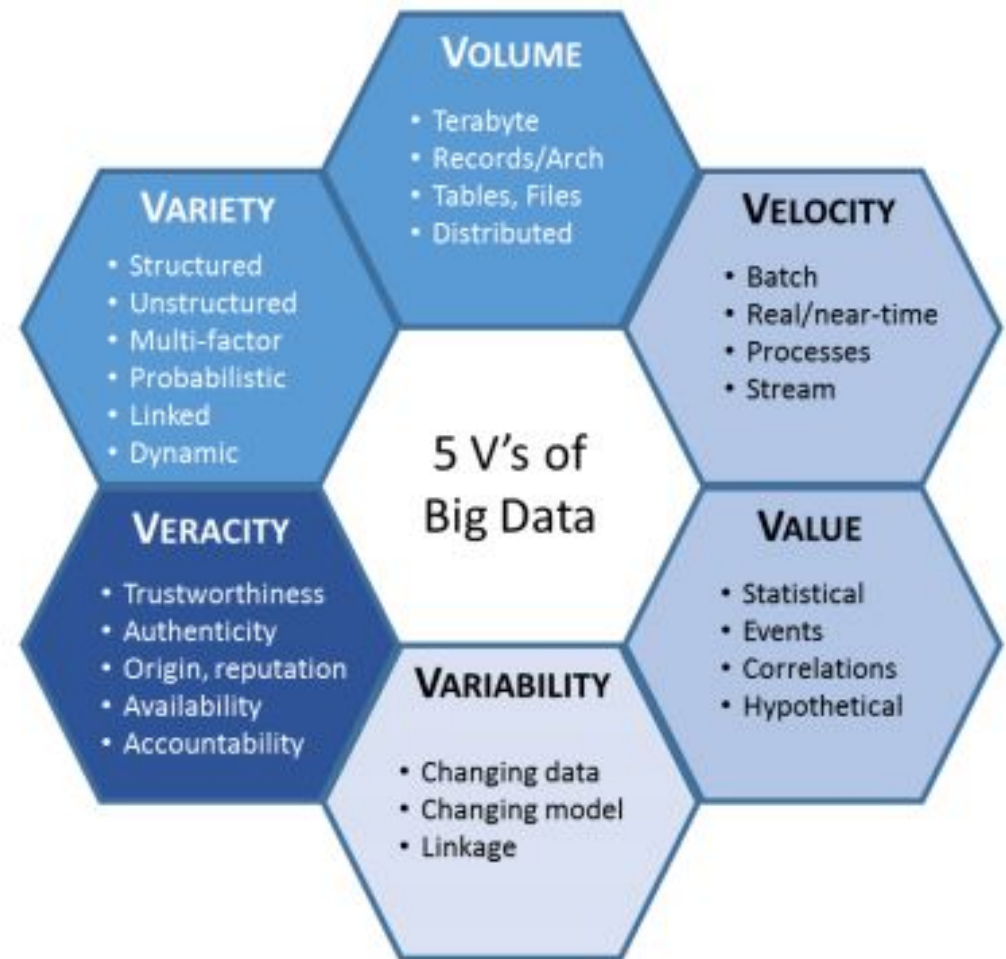
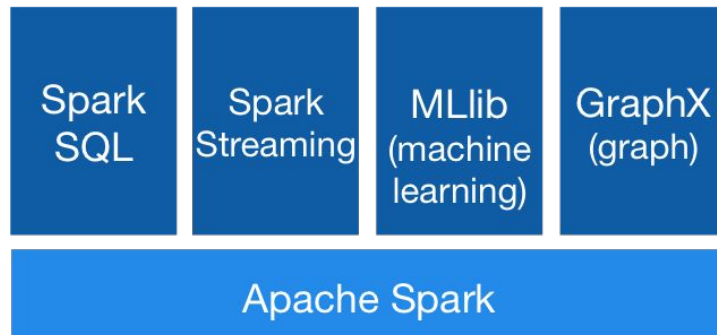
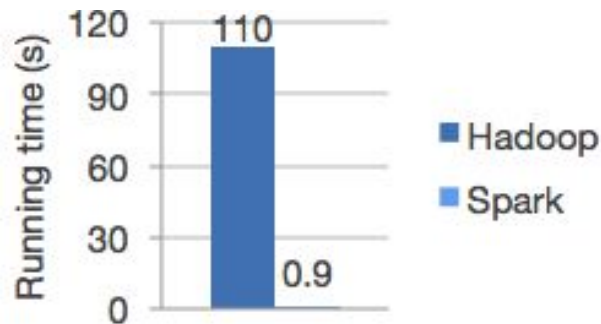
- The rising value of data



# Data-oriented Models

- **Big Data Analytics**

- Hadoop
  - HDFS, MapReduce, YARN
- Apache Spark



# App/Service-oriented Models

- **Microservices**

- It's just an architectural style → lots of different approach
- Not complete

- **Cloud-native Application Dev.**

- Couple of principles, still too loose to draw a boundary

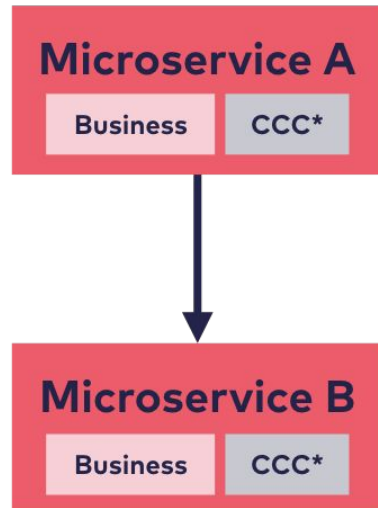
- **Service Mesh**

- A way to control how different parts of an application share data with one another
- Unlike other systems for managing this communication, a service mesh is a dedicated infrastructure layer built right into an app
- This visible infrastructure layer can document how well (or not) different parts of an app interact, so it becomes easier to optimize communication and avoid downtime as an app grows

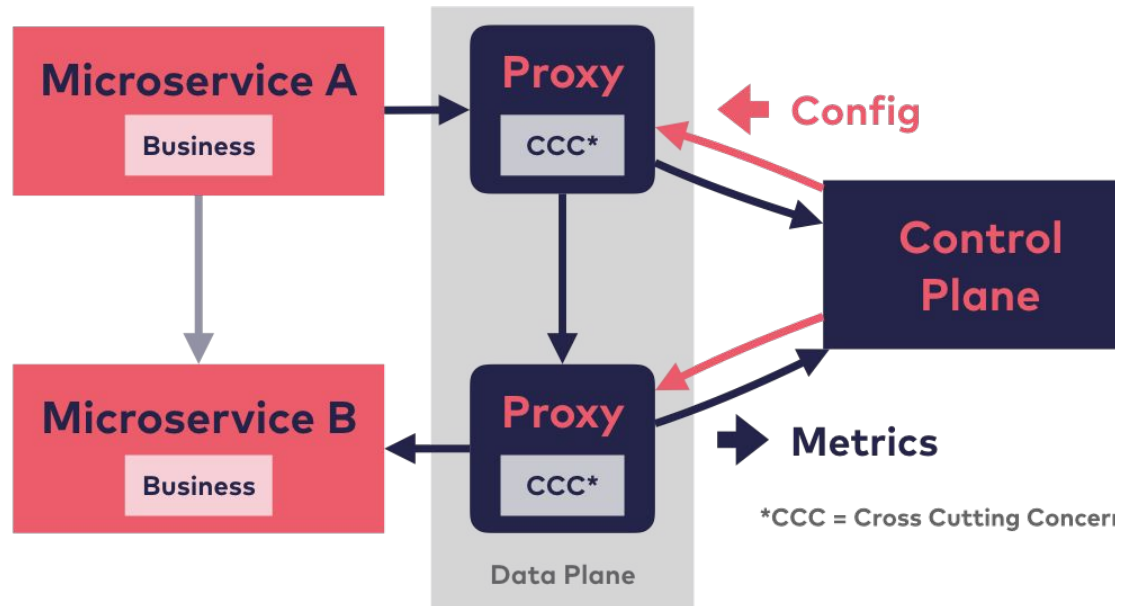
# App/Service-oriented Models

- **Service Mesh**

## Microservices



## Microservices + Service Mesh



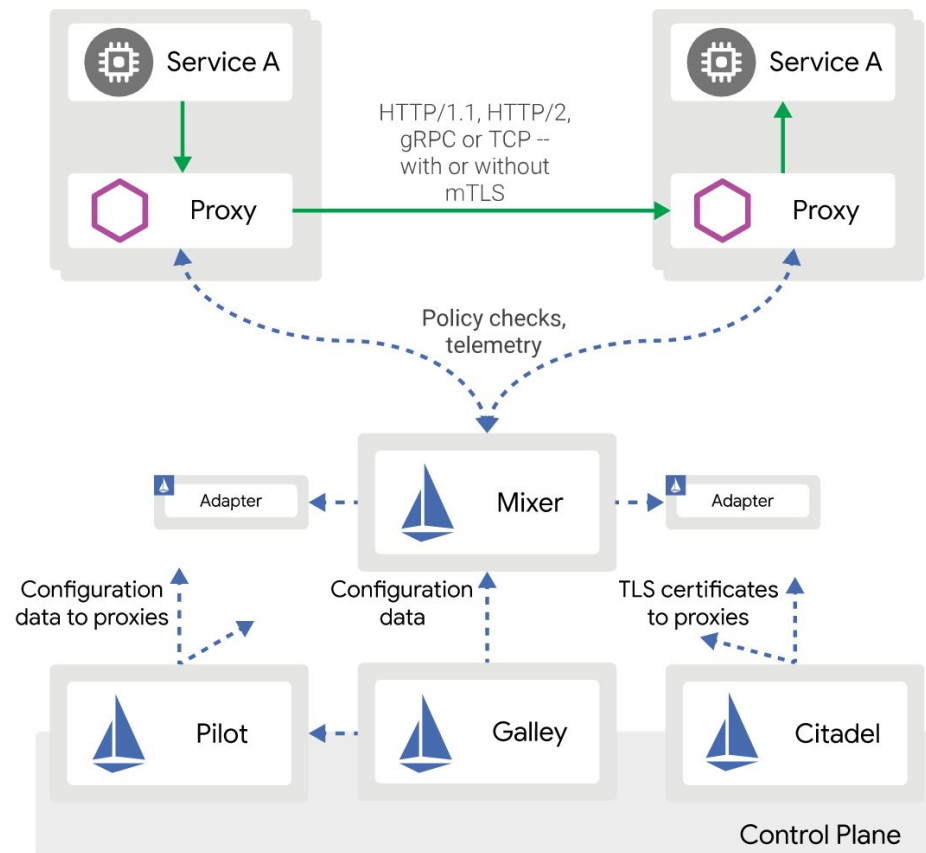
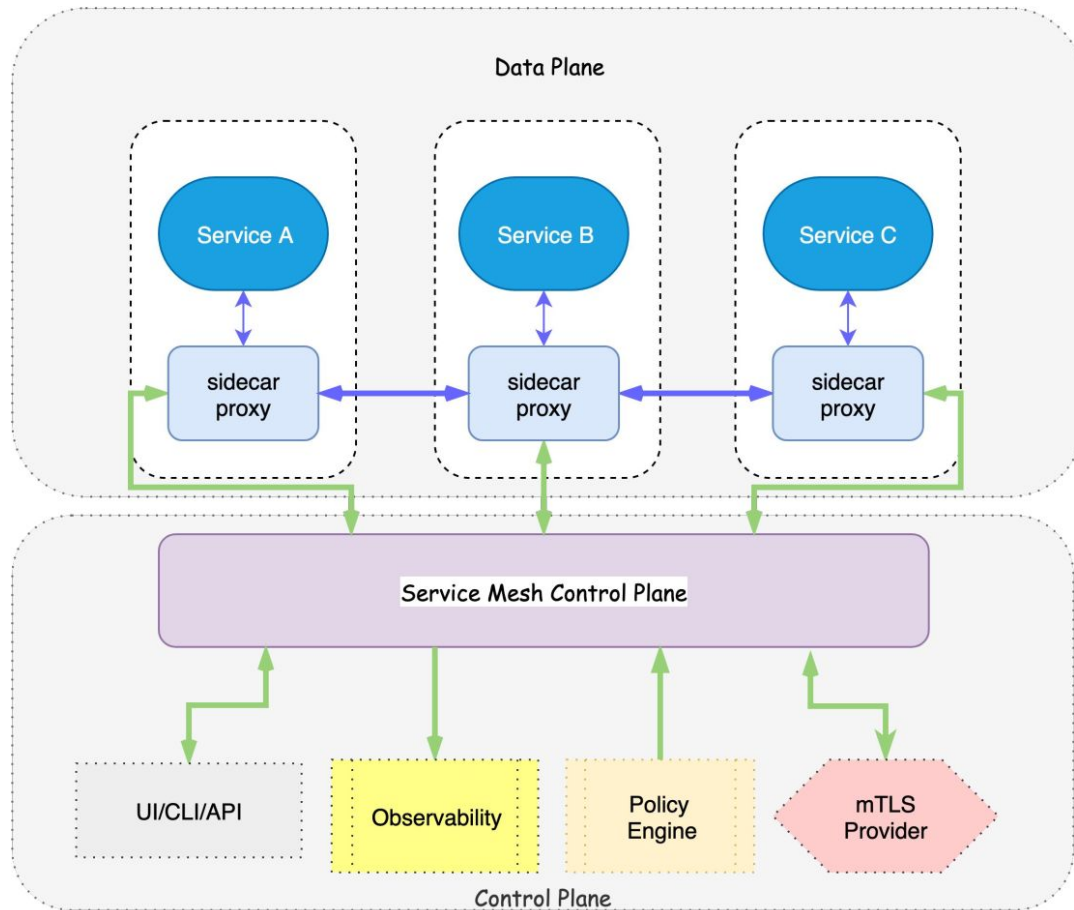
\*CCC = Cross Cutting Concerns

**Business** = Business Logic, Business Metrics

**CCC\*** = Traffic Metrics, Routing, Retry, Timeout, Circuit Breaking, Encryption, Decryption, Authorization, ...

# App/Service-oriented Models

## • Service Mesh



# App/Service-oriented Models

- **Service Mesh**

- Manageability
- Observability
- Reliability
- Security
- Progressive Delivery

- **Which implementation to choose?**

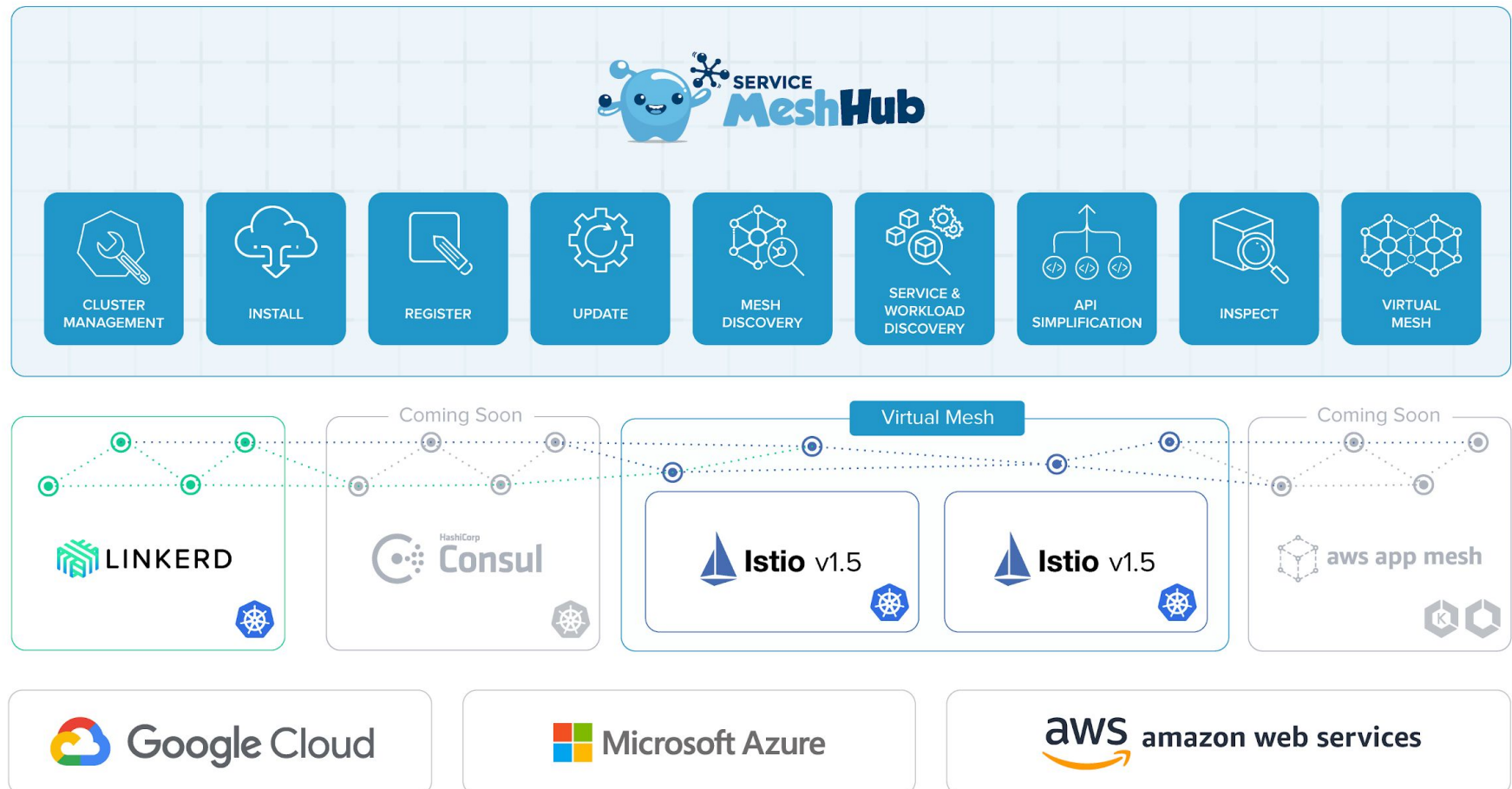
- Istio
- Linkerd
- Consul connect
- Maesh
- Kuma (Kong Mesh)
- etc.



# App/Service-oriented Models

- **Service Mesh**

- Landscape: <https://layer5.io/landscape>



<https://github.com/solo-io/service-mesh-hub>



**Q/A**