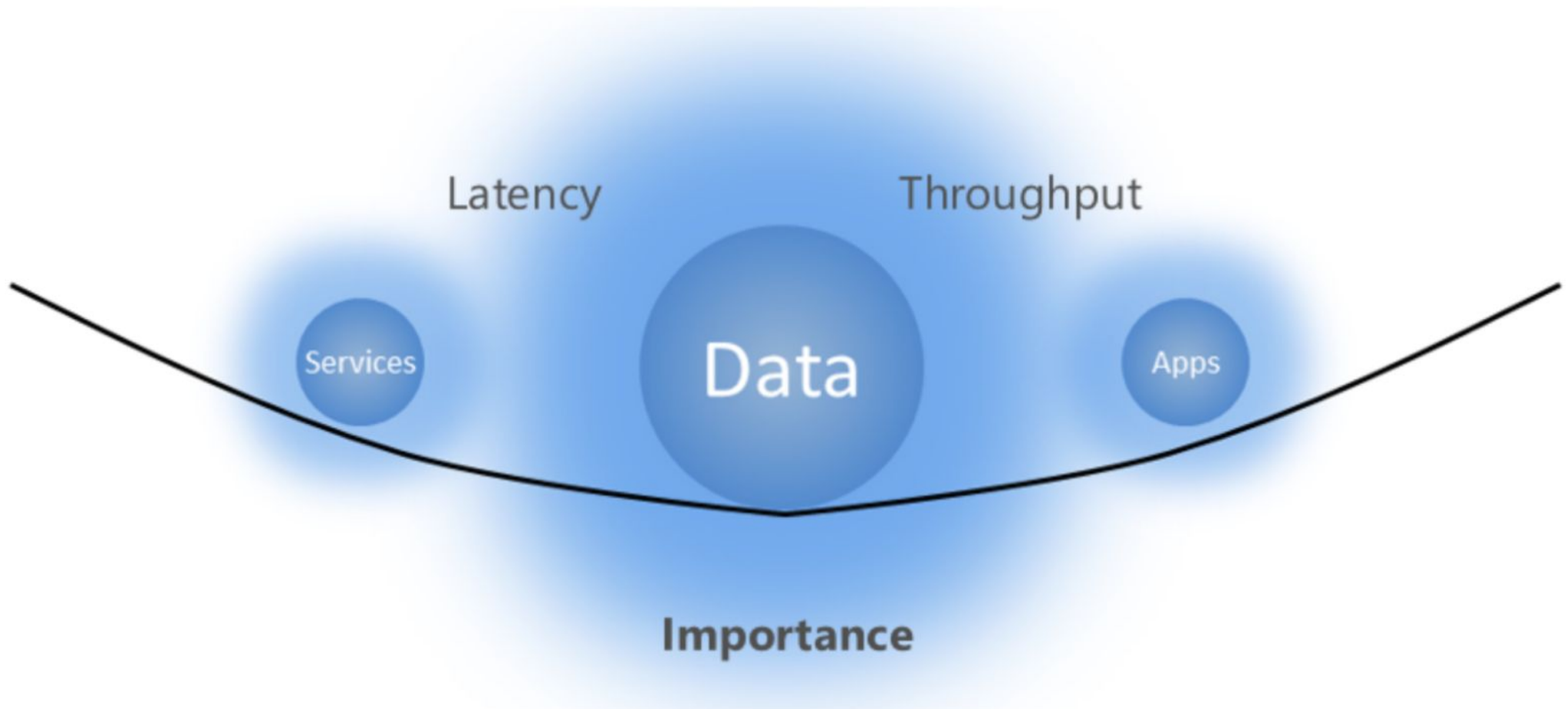# Chapter 9. Programming Models

Bilkent University | CS443 | 2020, Spring | Dr. Orçun Dayıbaş

Introduction
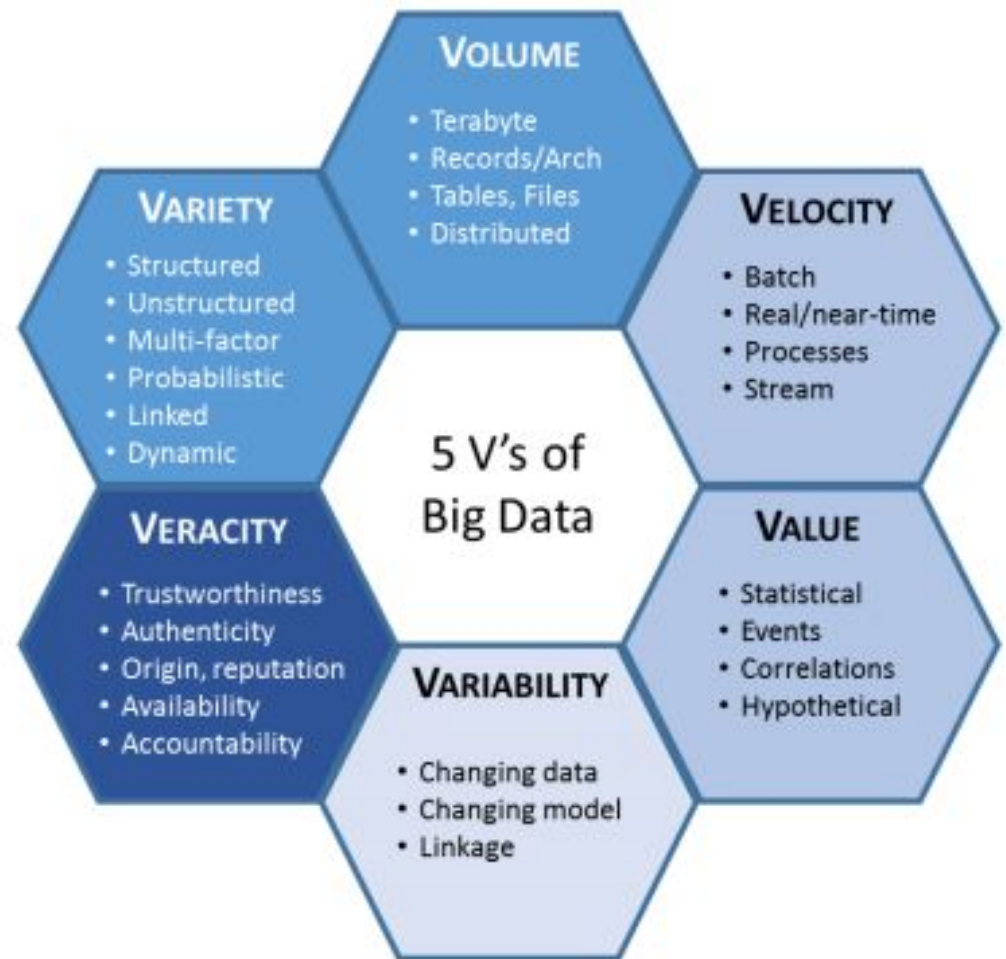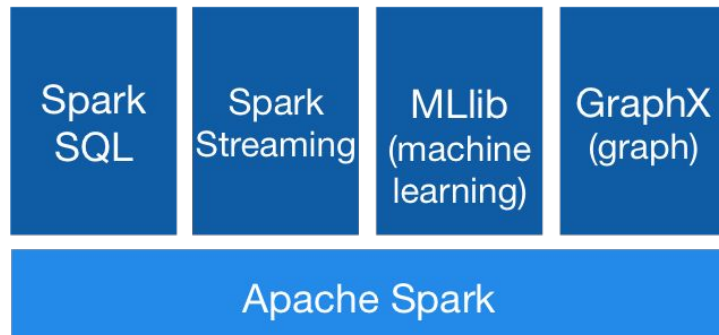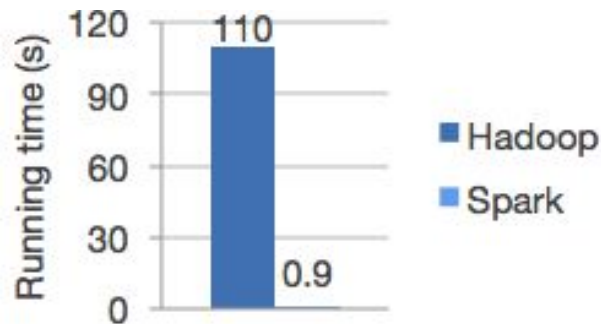
- **Programming Models**

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.**
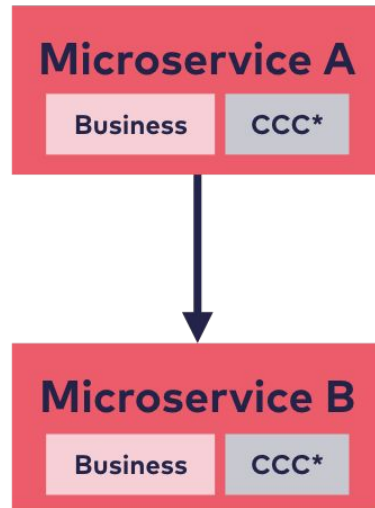 - Couple of principles, still too loose to draw a boundary
- **Service Mesh**
  - A way to control how different parts of an application share data with one another
  - Unlike other systems for managing this communication, a service mesh is a dedicated infrastructure layer built right into an app
  - 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
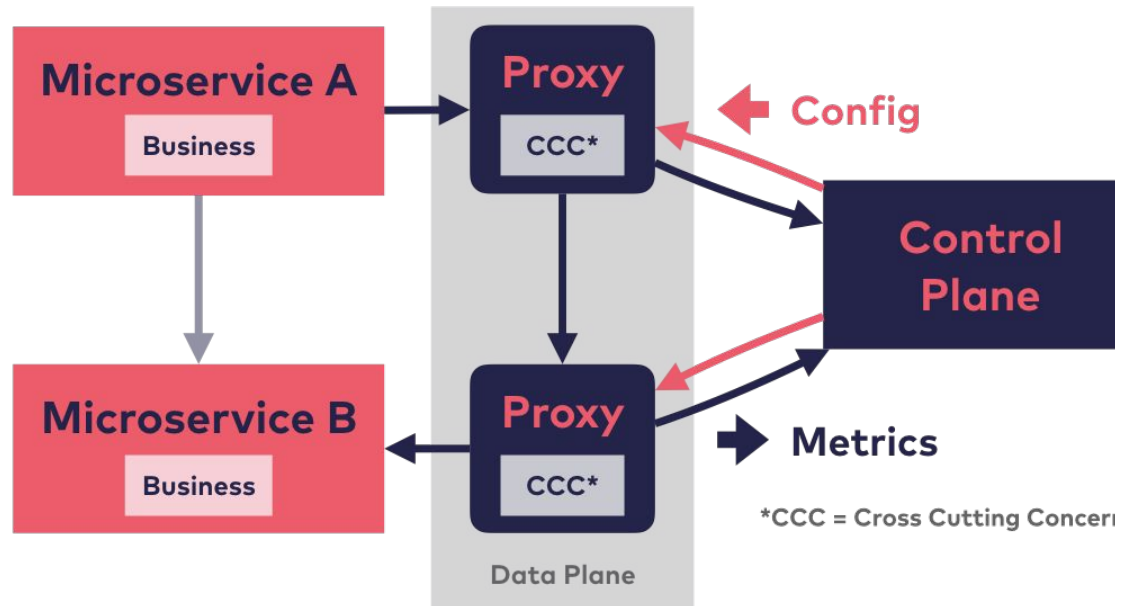
App/Service-oriented Models

● **Service Mesh**

Microservices

Microservice A
Business | CCC*

Microservice B
Business | CCC*

Microservices + Service Mesh

Microservice A
Business

Microservice B
Business

Proxy
CCC*

Proxy
CCC*

← Config

Control Plane
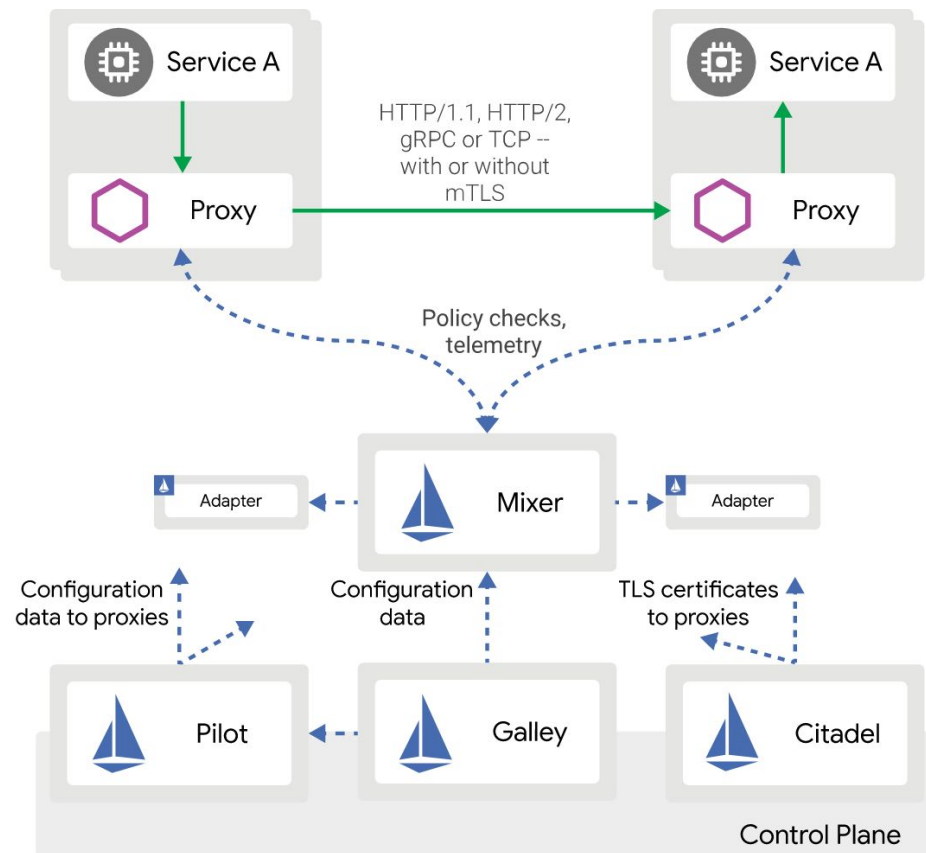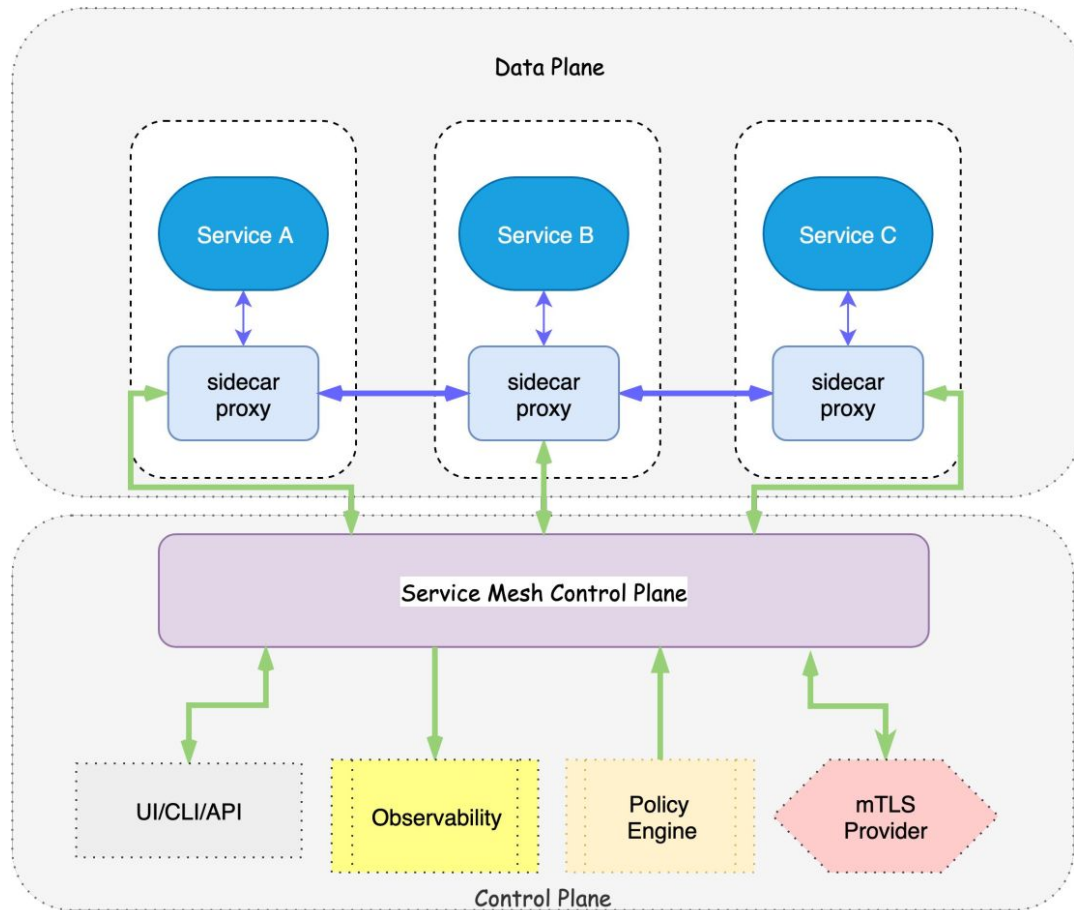
→ Metrics

*CCC = Cross Cutting Concern

Data Plane

Business = Business Logic, Business Metrics

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

https://servicemesh.es/

5

App/Service-oriented Models

- ## Service Mesh

App/Service-oriented Models

- **Service Mesh**
  - Manageability
  - Observability
  - Reliability
  - Security
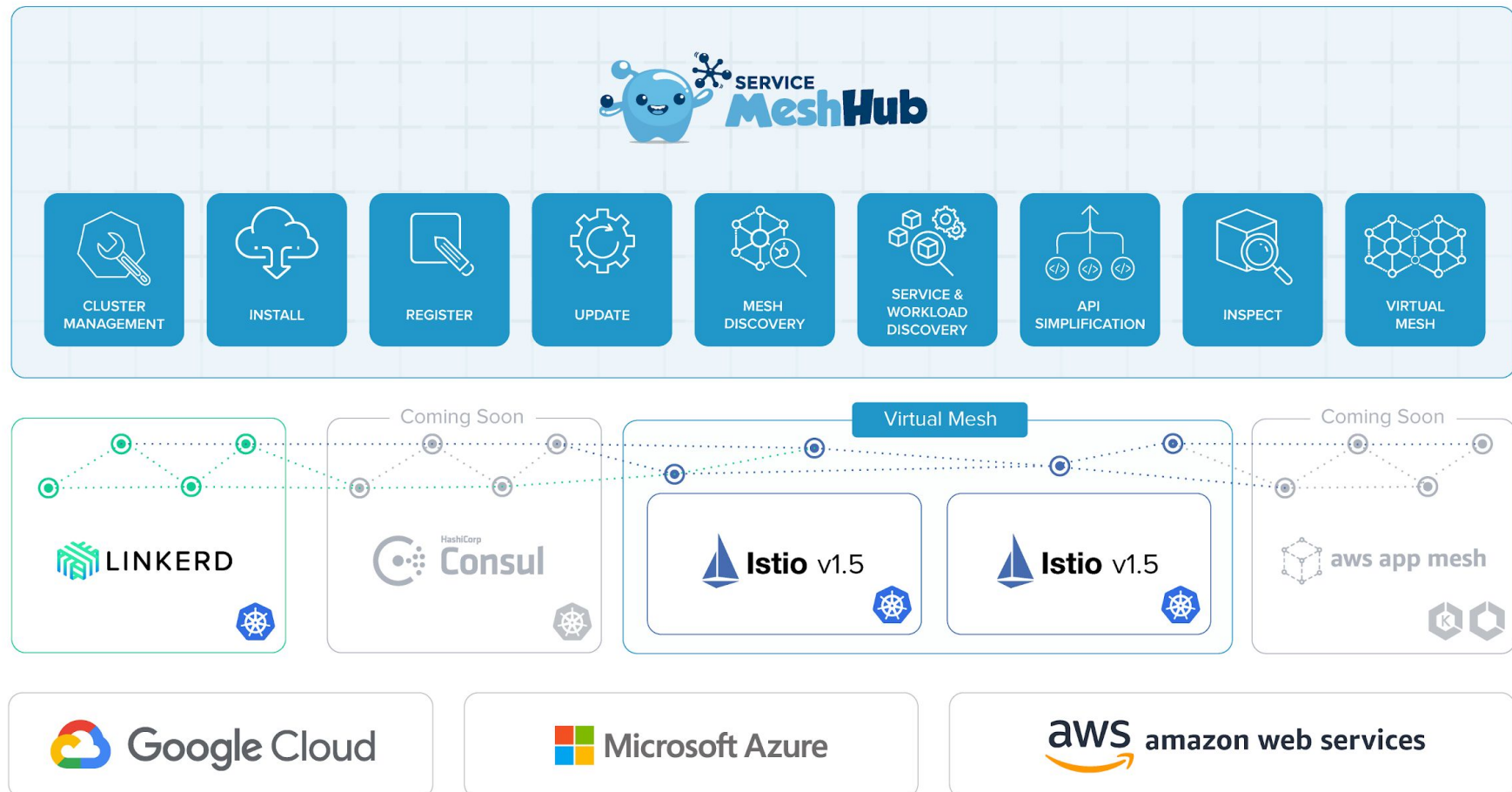 - Progressive Delivery
- **Which implementation to choose?**
  - Istio
  - Linkerd
  - Consul connect
  - Maesh
  - Kuma (Kong Mesh)
  - etc.

App/Service-oriented Models

- **Service Mesh**
  - Landscape: https://layer5.io/landscape

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

Q/A