Projet Informatique

2019

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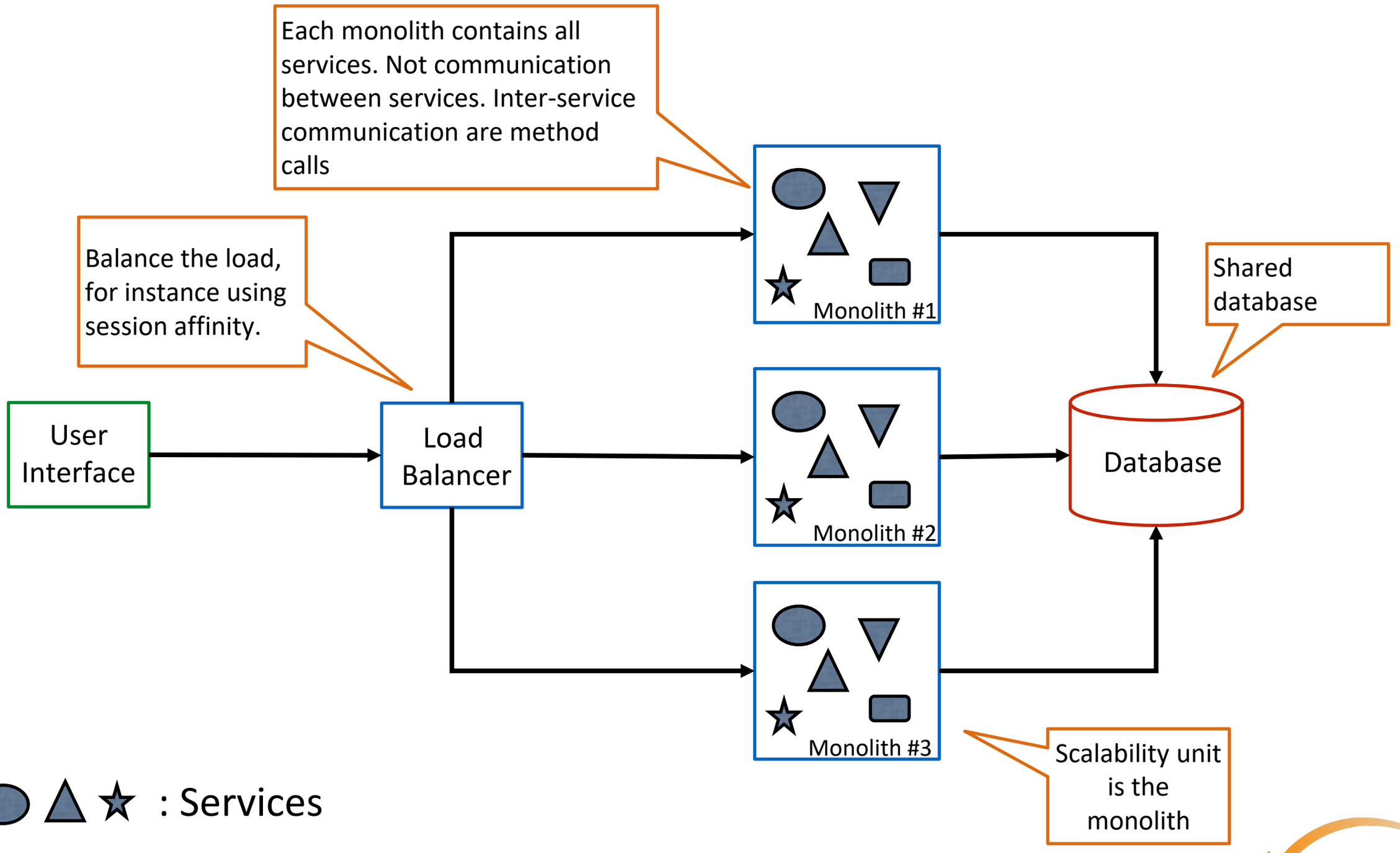
Architecture :

Monolith vs Microservice

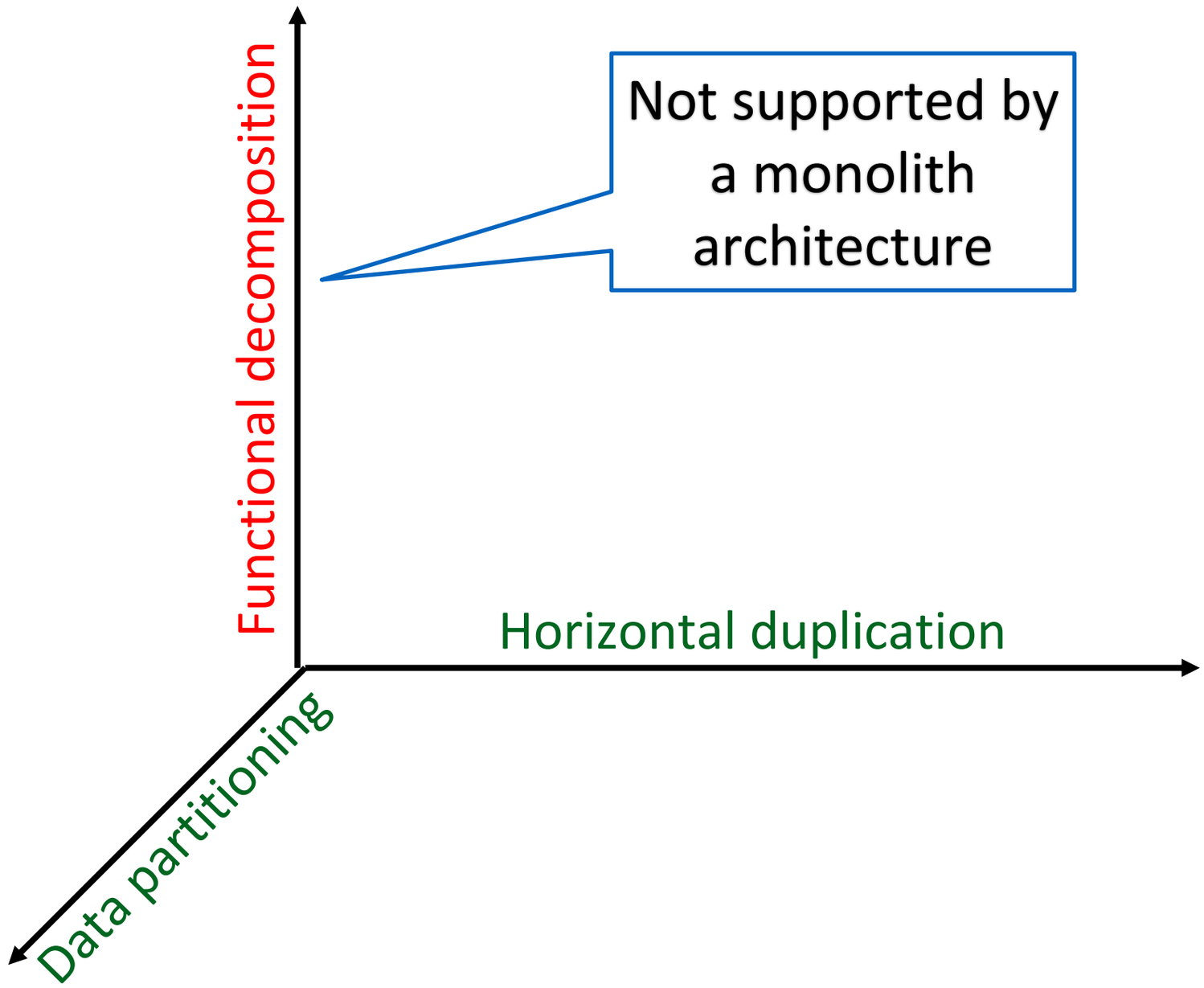
Monolithic Architecture



Monolithic Architecture

- Usually a 3 tiers architecture (UI, business, and DB)
- Monolithic DOES NOT mean “not modular” !
- Cross cutting concerns are shared by all services
- Inter-service communication are “method” calls
- The functional unit of scalability is the monolith
- Tends to favor API leaks

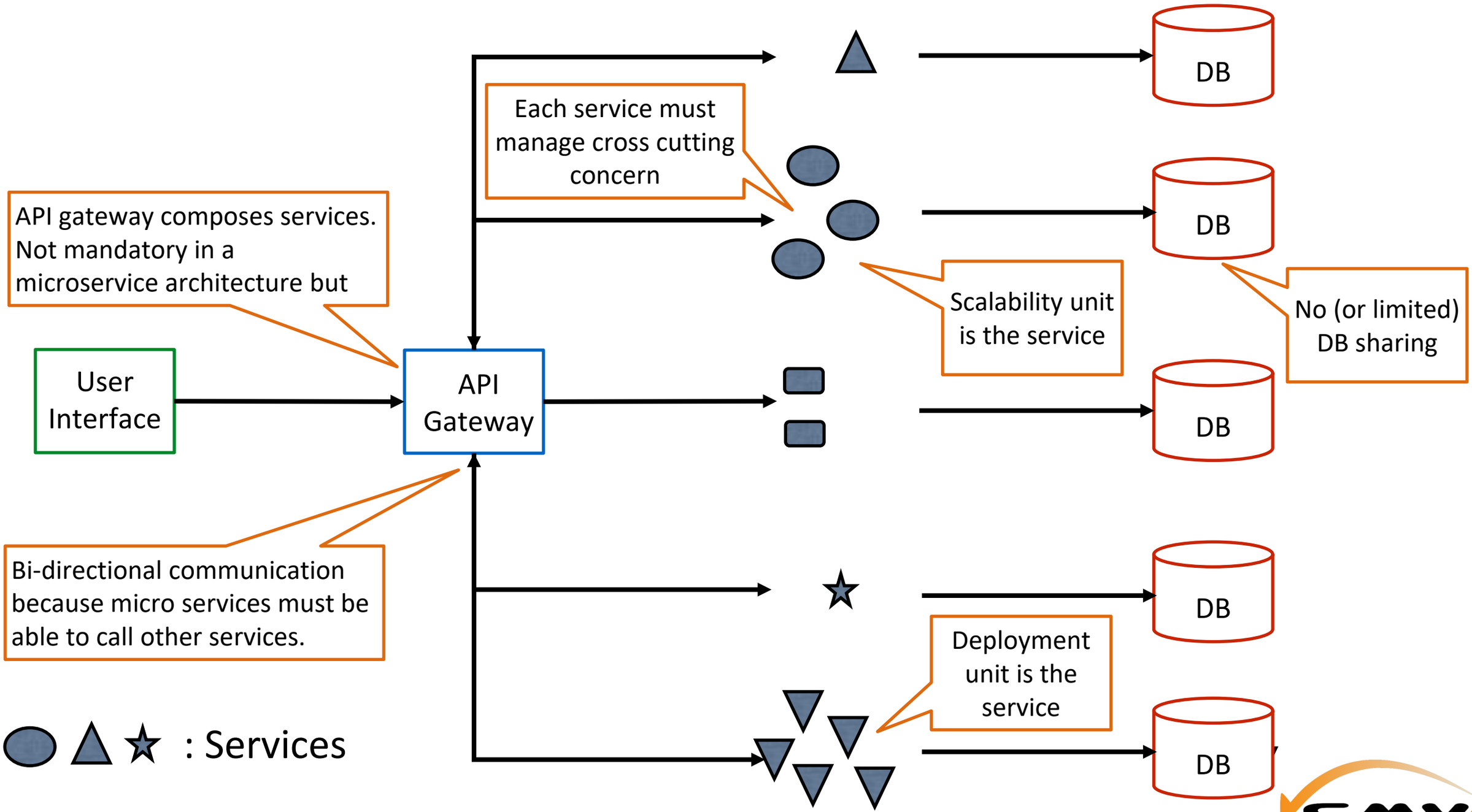
Scalability



Microservice Architecture

- Logically represents an activity with a specific outcome
- Self-contained
- Unit of deployment is the microservice
- Cross-cutting concerns addressed at the microservice level
- Unit of scalability is the microservice
- Must support elasticity and automation

Microservice Architecture



Technologies

- Cloud Native (e.g., Docker & Kubernetes)
- Message Broker (e.g., Kafka)

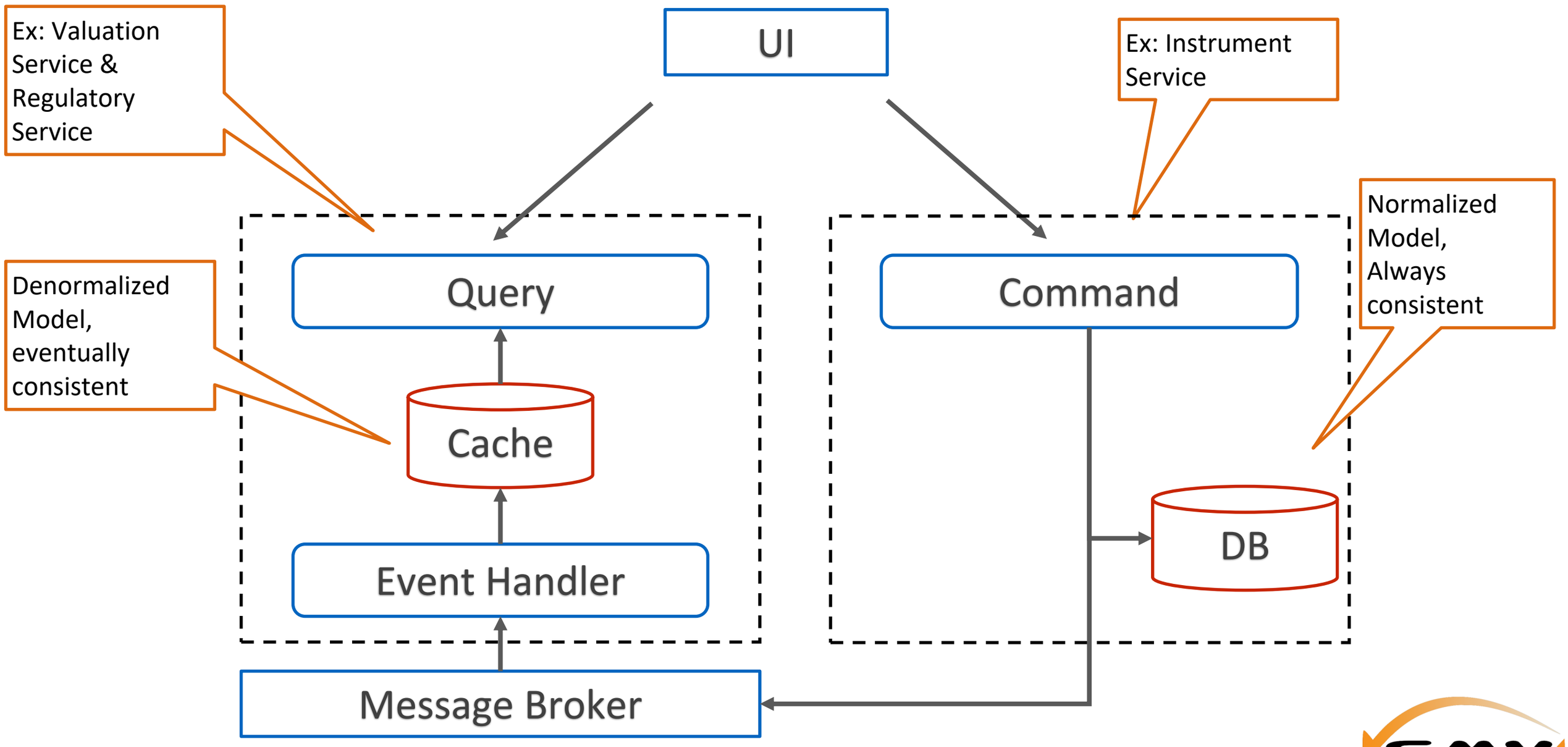
Additional Properties

- Single database per service
- Low reuse cross-service
- One domain per service
- Service granularity

Architecture Patterns

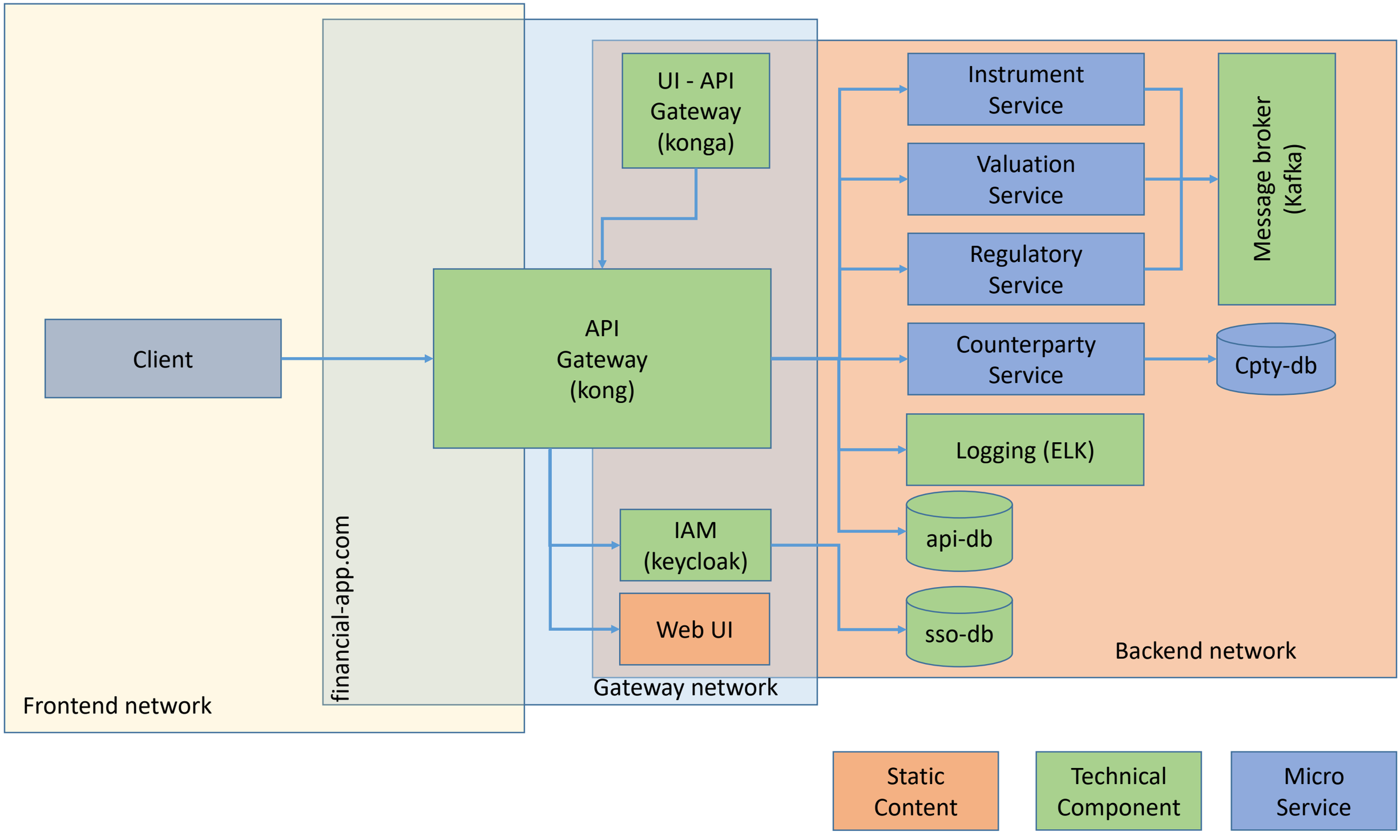
- CQRS : Segregate command and query
- Event Sourcing + Message Bus
- API Composition / API Gateway

CQRS & Event Sourcing



μ Service vs Monolith

Property	µService	Monolith
Scalability	+	-
Release/Updatability (time 2 market)	+	-
Fail-over	+	-
Team independence	+	-
Technology adaptability	+	-
Reusability	+	-
Operational Overhead	-	+
Cross-Cutting Concerns	-	+
Architecture complexity (Data Consistency, Governance, Integration testing)	-	+
Resources Consumption (like for like for a given throuput/volume)	-	+


Frontend network
financial-app.com
Gateway network
Backend network
Client
API Gateway (kong)
UI - API Gateway (konga)
IAM (keycloak)
Web UI
Instrument Service
Valuation Service
Regulatory Service
Counterparty Service
Logging (ELK)
api-db
sso-db
Message broker (Kafka)
Cpty-db
Static Content
Technical Component
Micro Service