Microservices With FastAPI

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Stuff to Google

seequent

Outline

- Some more basics
  - Declarative code
  - Decorators
  - Async
- Microservices
- FastAPI

Some more basics
Declarative code
Decorators
Async
Microservices
FastAPI

declarative programming

Declarative Code: What, not how.

Motivation:

- Easier to read and write
- Exposes clearer *Interface*

Some more basics
Declarative code
Decorators
Async
Microservices
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dataclasses

pydantic

Declarative Python

Not really the default

In the standard library: **`dataclasses`**

Gold standard: **`pydantic`**

- Some more basics
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  - ***Decorators***
  - Async
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python decorators

@decorators

These feel like magic.

They operate on a function/class to give it some new behavior.

The @ syntax is nicely declarative.

Some more basics
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- ***Async***

Microservices

FastAPI

concurrency vs parallelism

Concurrency and Parallelism

Doing lots of stuff at the same time

Some more basics
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Microservices

FastAPI

I/O Bound

CPU Bound

Concurrency and Parallelism

Slow Operations

Responsive User Interfaces

Intensive Computation

Repetitive Tasks

GIL

dask

Some more basics
- Declarative code
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Microservices

FastAPI

asyncio

Concurrency in Python

In the standard library: **`asyncio`**

Easy: Adding **`async`** / **`await`**

Less easy: Resolving coroutines

Some more basics
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Microservices

FastAPI

microservices architecture

Microservices Architecture

Loosely coupled services
Single responsibility
Independent:

- Development
- Deployment
- Maintenance
- Scaling

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Microservices

FastAPI

microservices architecture

Microservices Architecture

In opposition to Monolithic Architecture
- One big, centralized thing
- Does everything

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Microservices

FastAPI

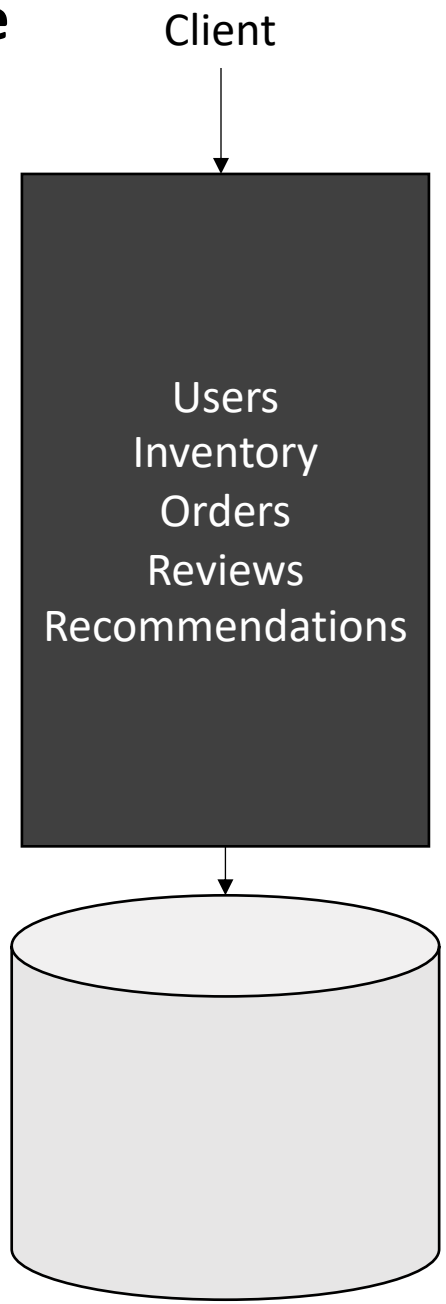
microservices architecture

Microservices Architecture

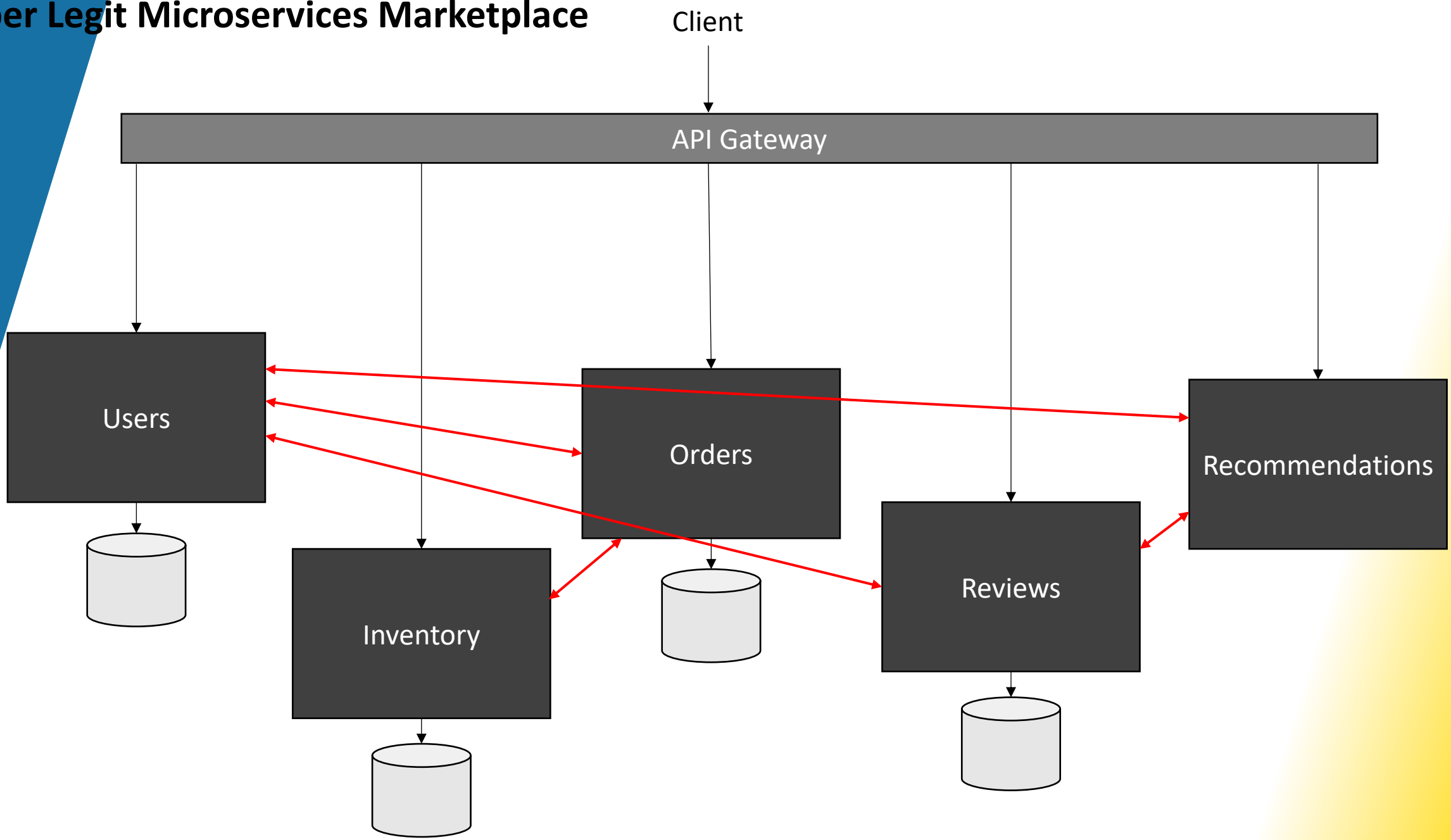
Challenges

- Orchestration and deployment
- Networking and resiliency
- Monitoring and log aggregation
- Must follow standards

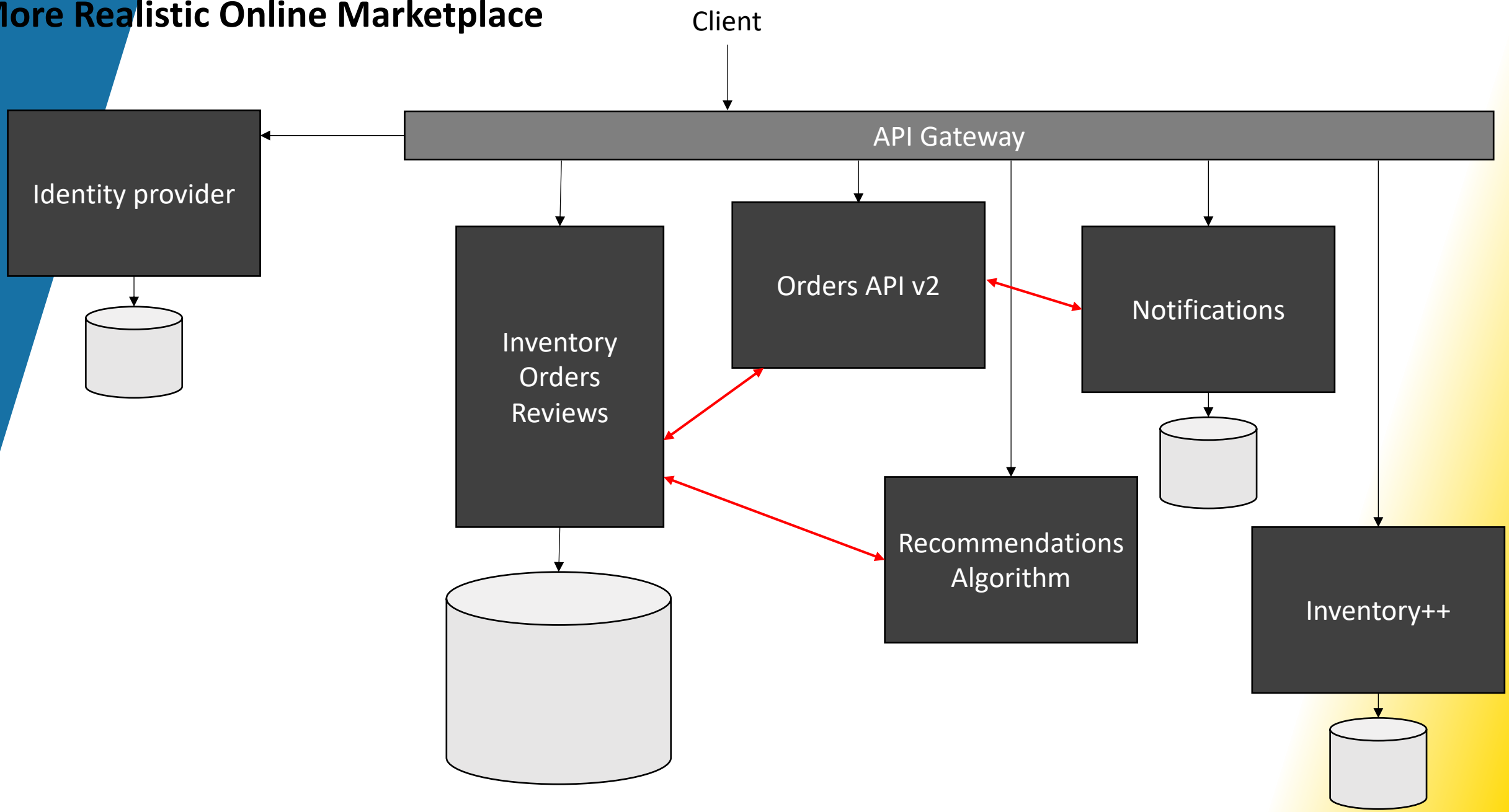
Totally Sketchy Monolith Marketplace



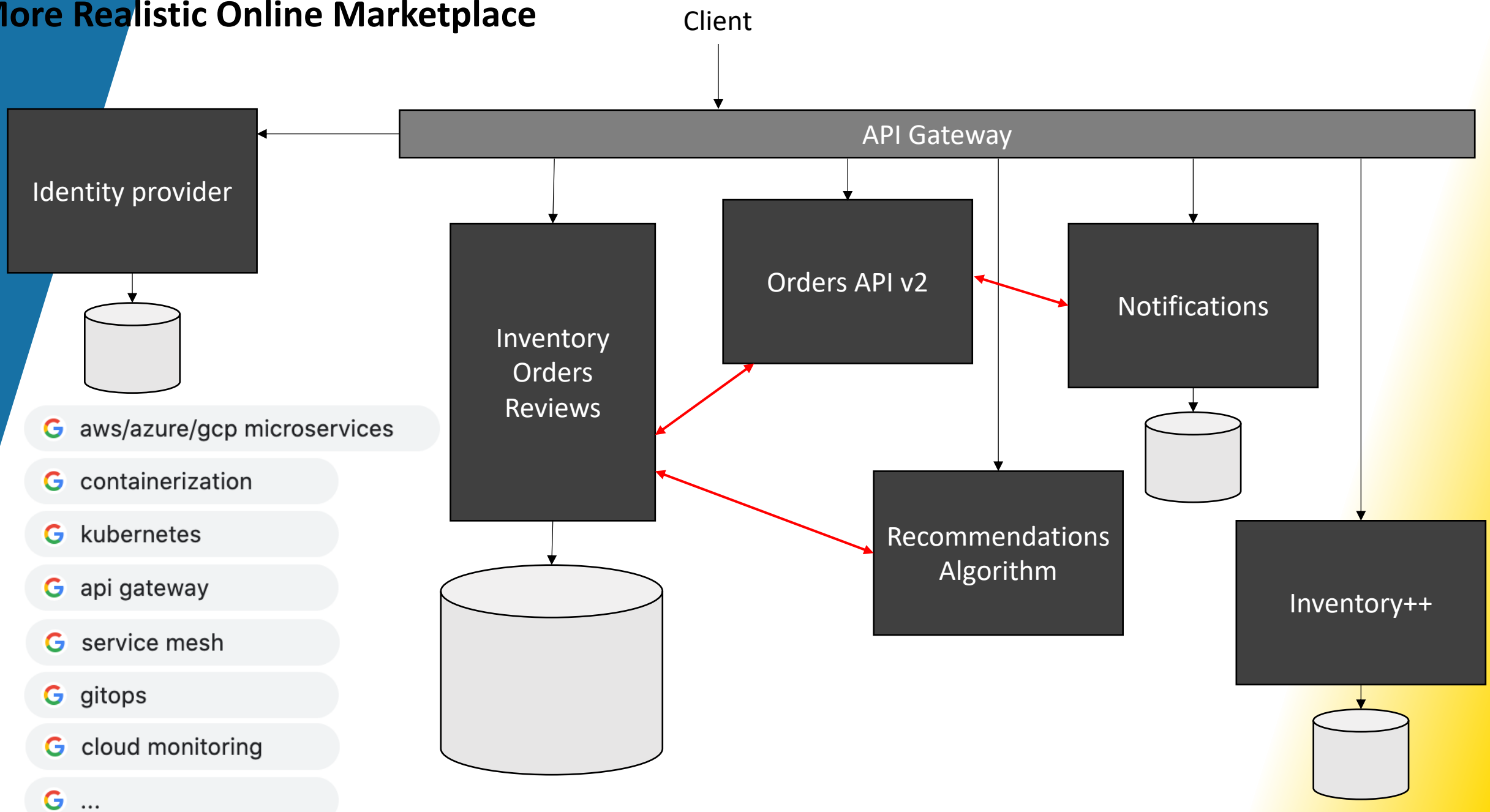
Super Legit Microservices Marketplace



More Realistic Online Marketplace



More Realistic Online Marketplace



- aws/azure/gcp microservices
- containerization
- kubernetes
- api gateway
- service mesh
- gitops
- cloud monitoring
- ...

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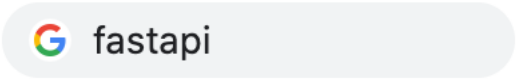

FastAPI

Modern Python web framework for microservices

- Declarative
- Data validation
- Documentation
- Async
- Follows modern Python