Introduction to Microservices

Architectural style

This is not new!

The old new thing...

SOA

service oriented architecture

- Modernized version of SOA

New world:

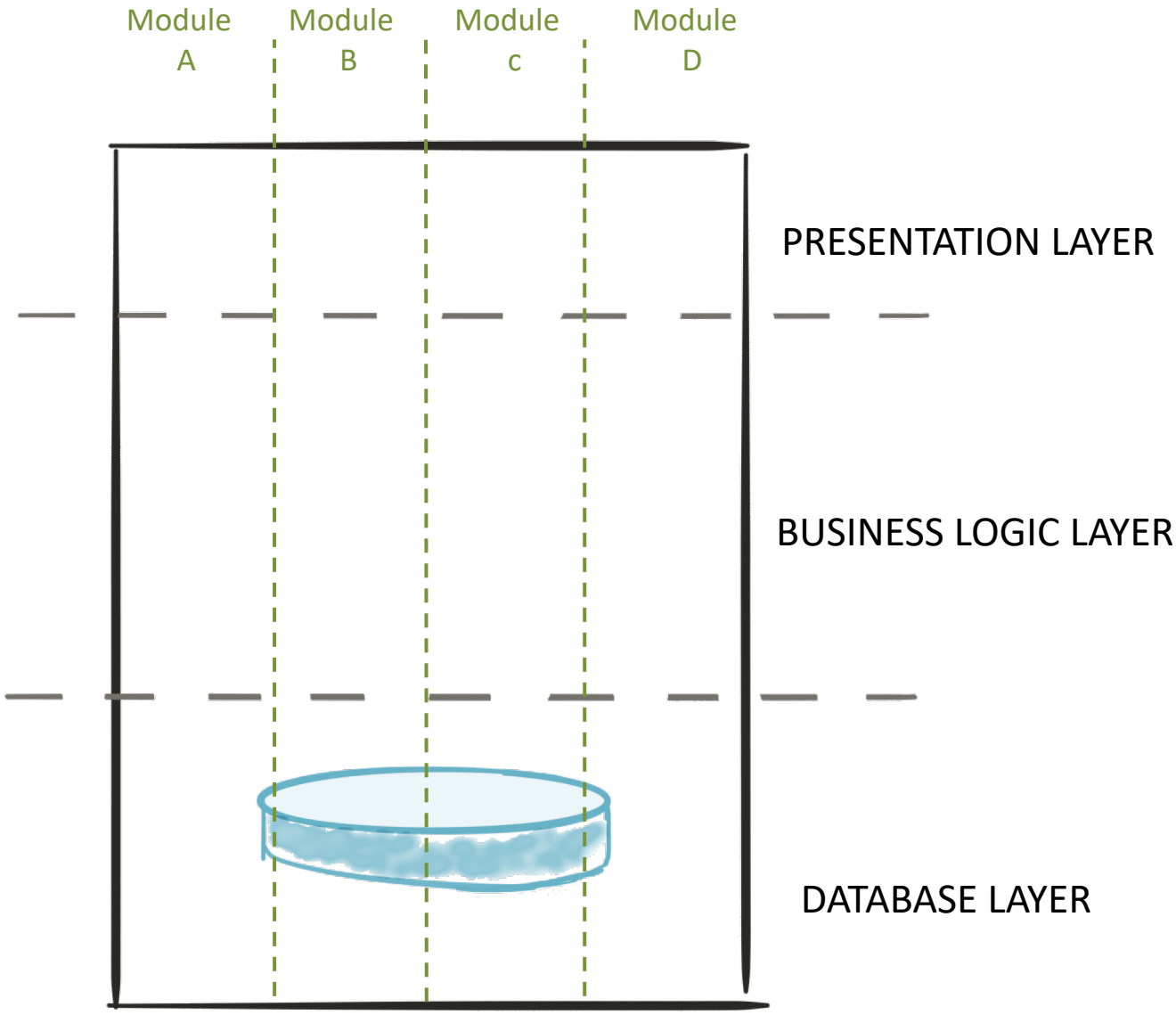
- Speed of delivery
- Scalability
- Innovation / experimentation
- Cloud / devops

VS

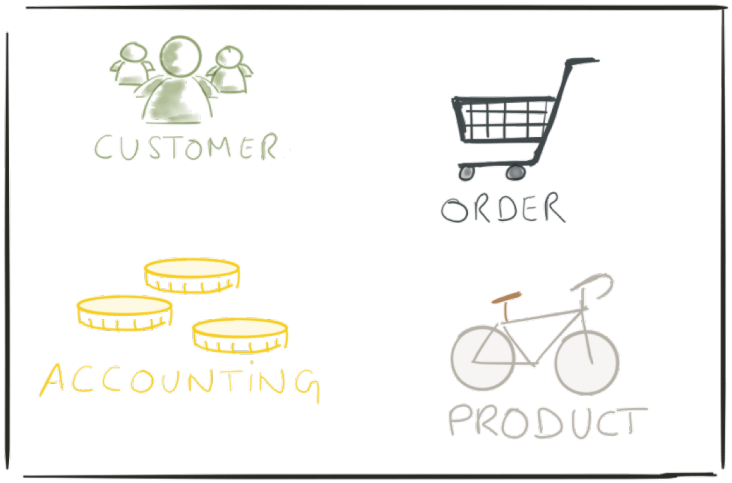
monolith

microservices

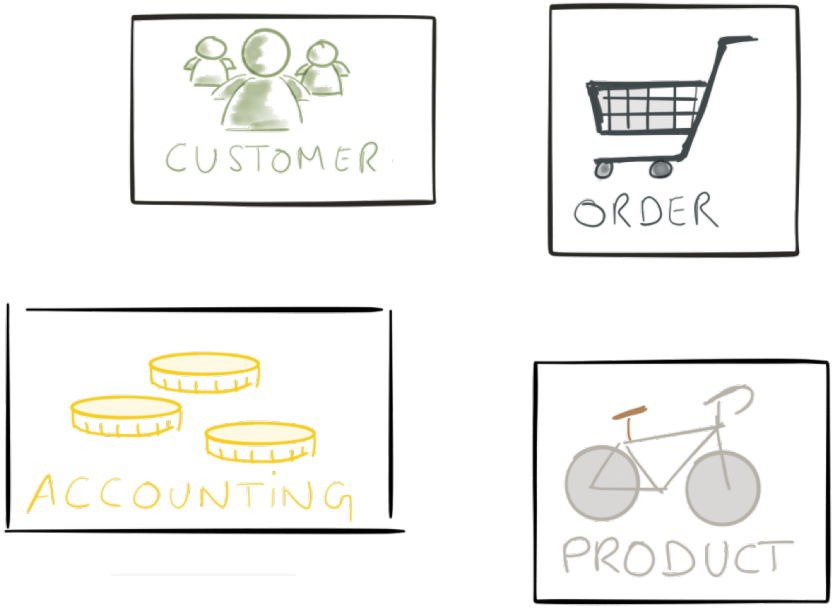
A monolith


Module A
Module B
Module c
Module D
PRESENTATION LAYER
BUSINESS LOGIC LAYER
DATABASE LAYER

VS

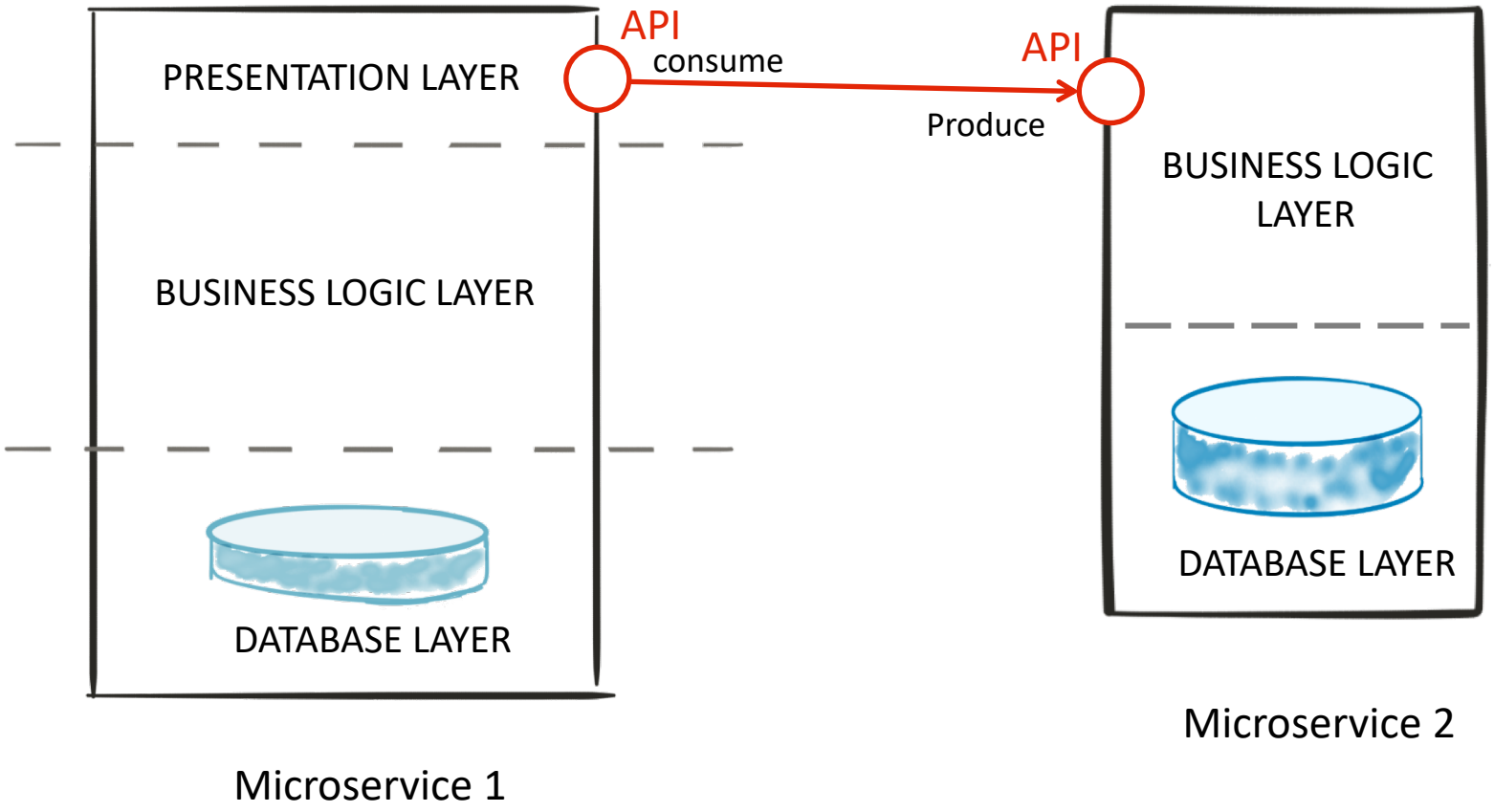


monolith



microservices

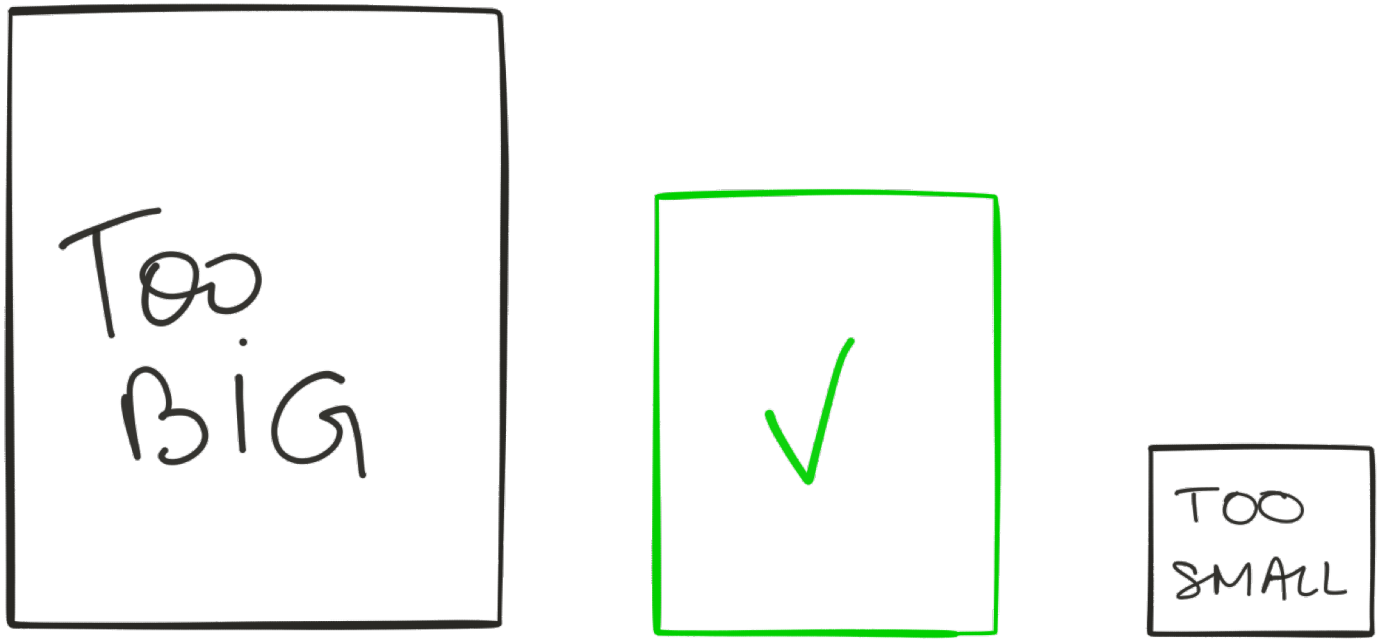
microservices



principles

- ☐ Modularity
- ☐ Autonomous
- ☐ hide implementation details
- ☐ automation
- ☐ Stateless
- ☐ highly observable

modularity



modularity

- ✓ ModeLled around business capability
  - Single responsibility
  - Single data domain
- ✓ Separation of concerns
- ✓ Low coupling
- ✓ Understandable by a person

Modularity (TEAM)

A product not a project

UI - team

SERVER - team

Dba - team

monolith

UI

dba

SERVER

UI

dba

SERVER

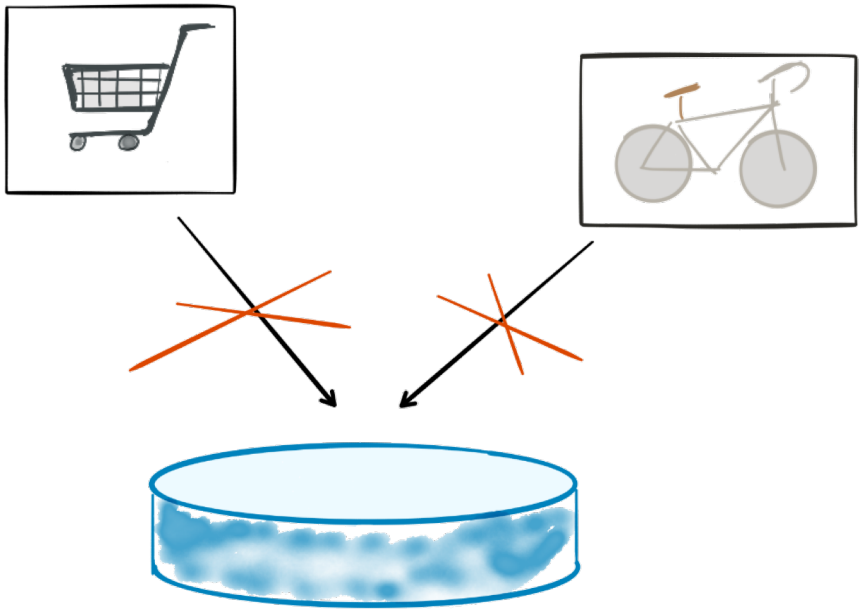
UI

dba

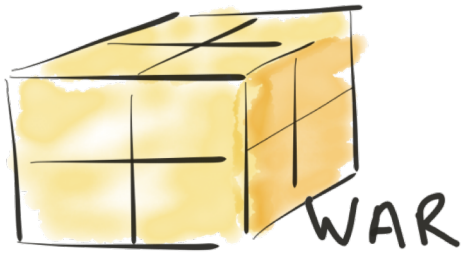
SERVER

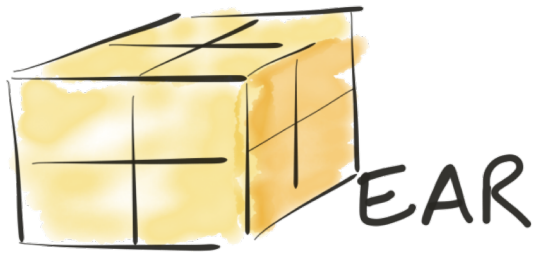
microservices

modularity



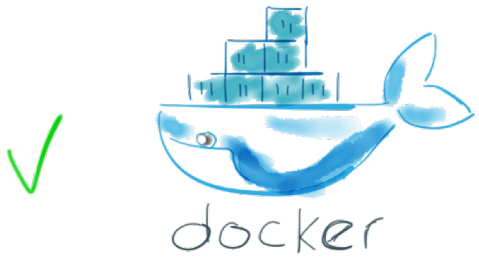
autonomous





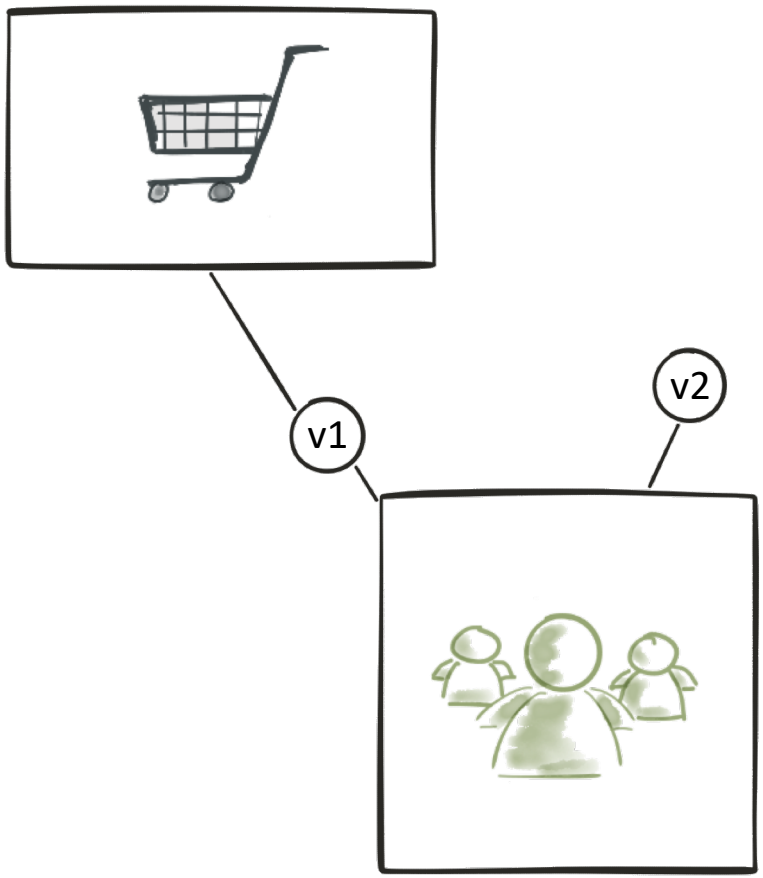
monolith

- Libraries
- http listener

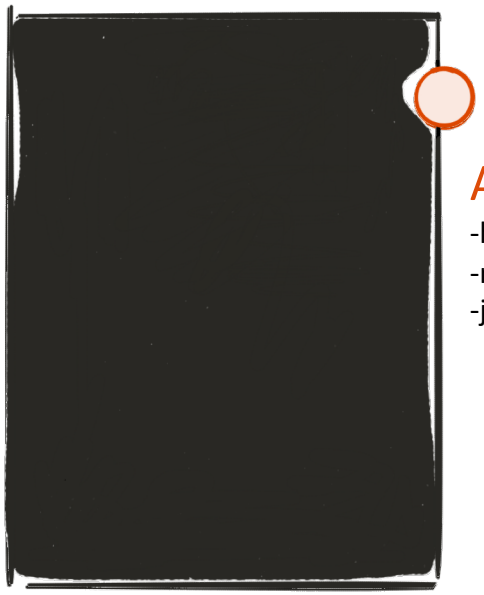


microservices

autonomous

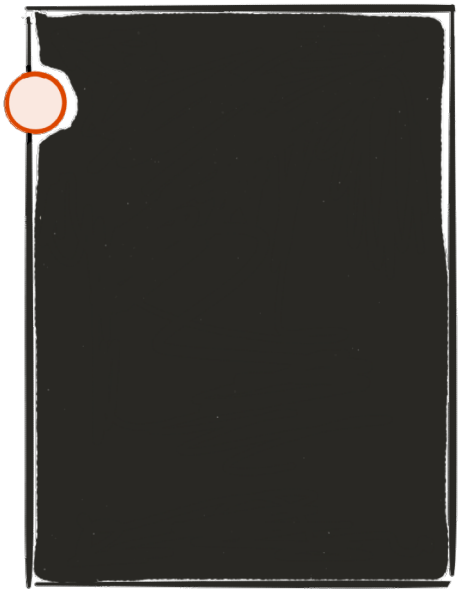


hide implementation details

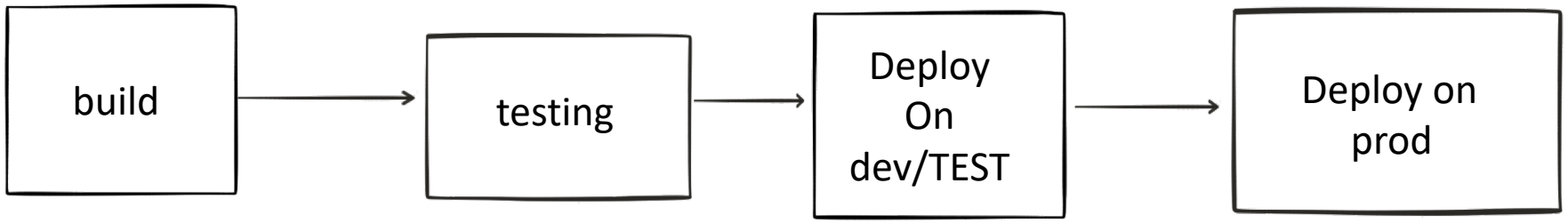


API
-http
-rest
-json

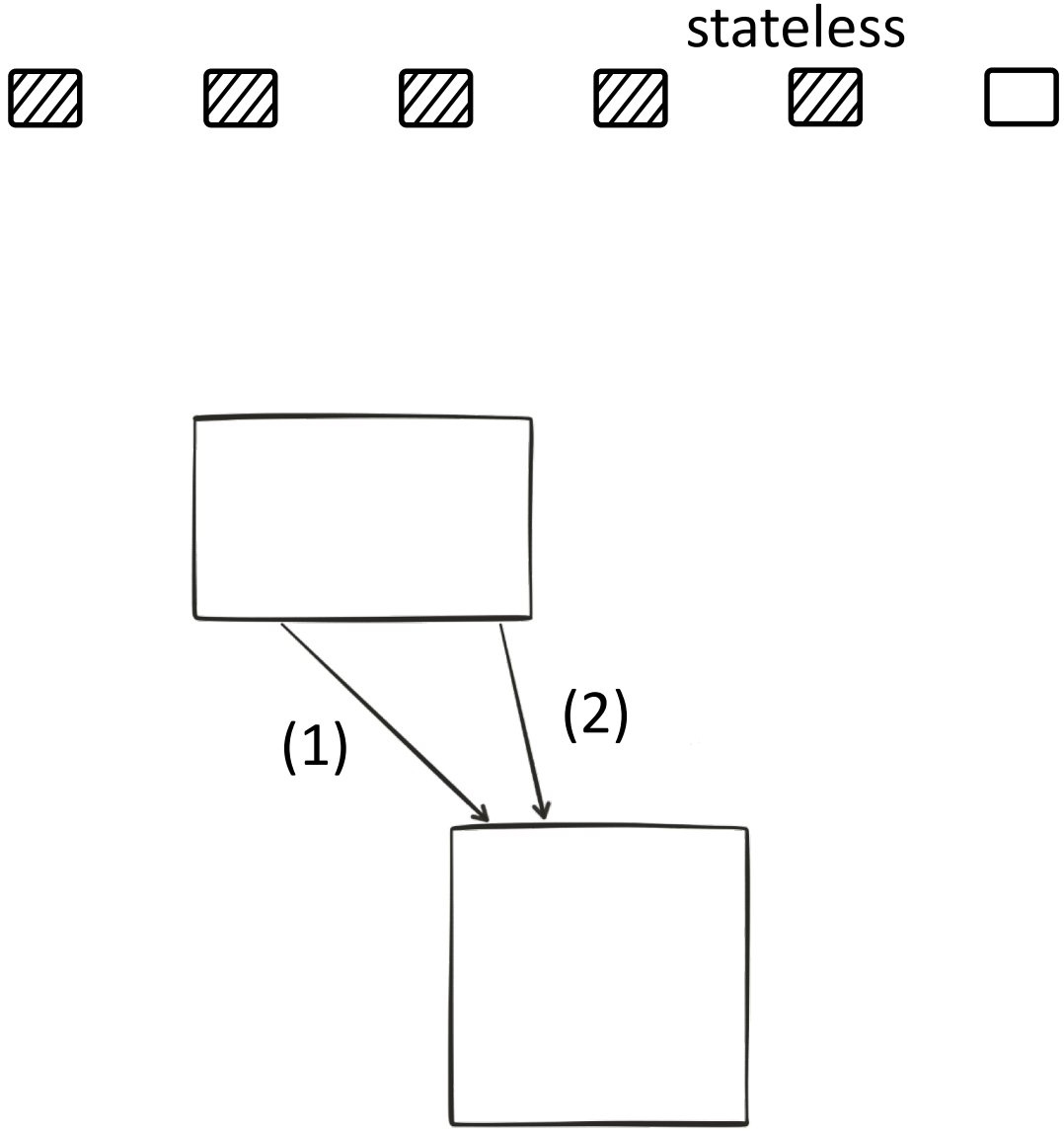
API
http-
Rest-
Json-



automation

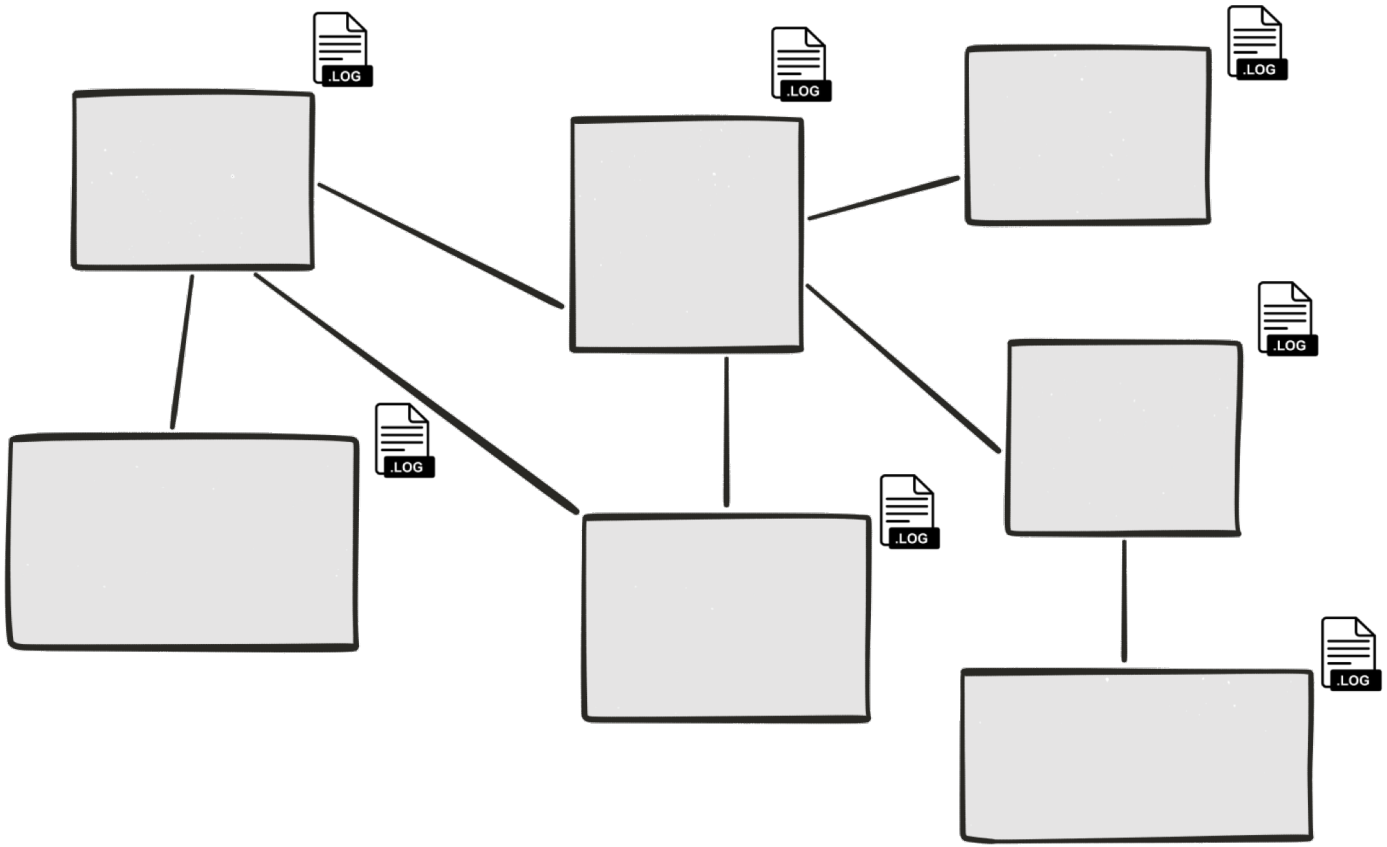


- Continuous integration
- Continuous deployment


stateless
(1)
(2)

Highly observable

Logs



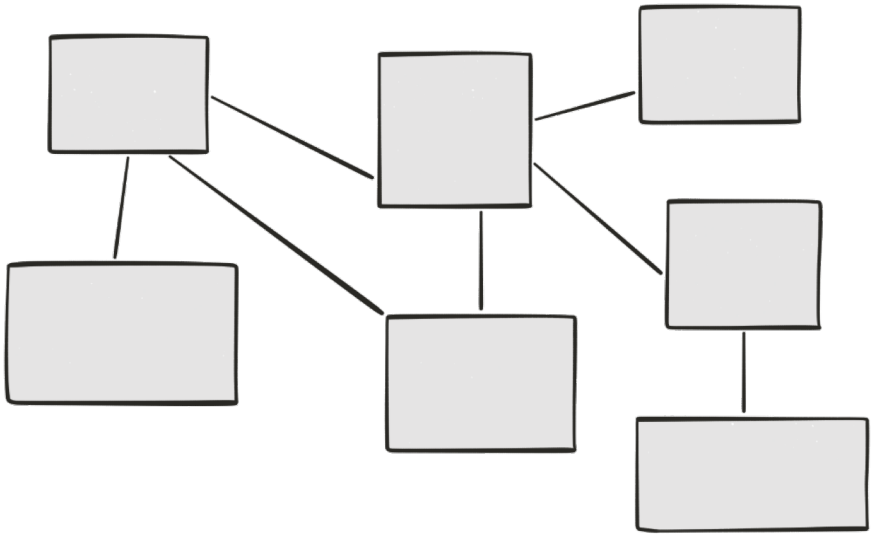
Highly observable

Centralized logging

elasticsearch.

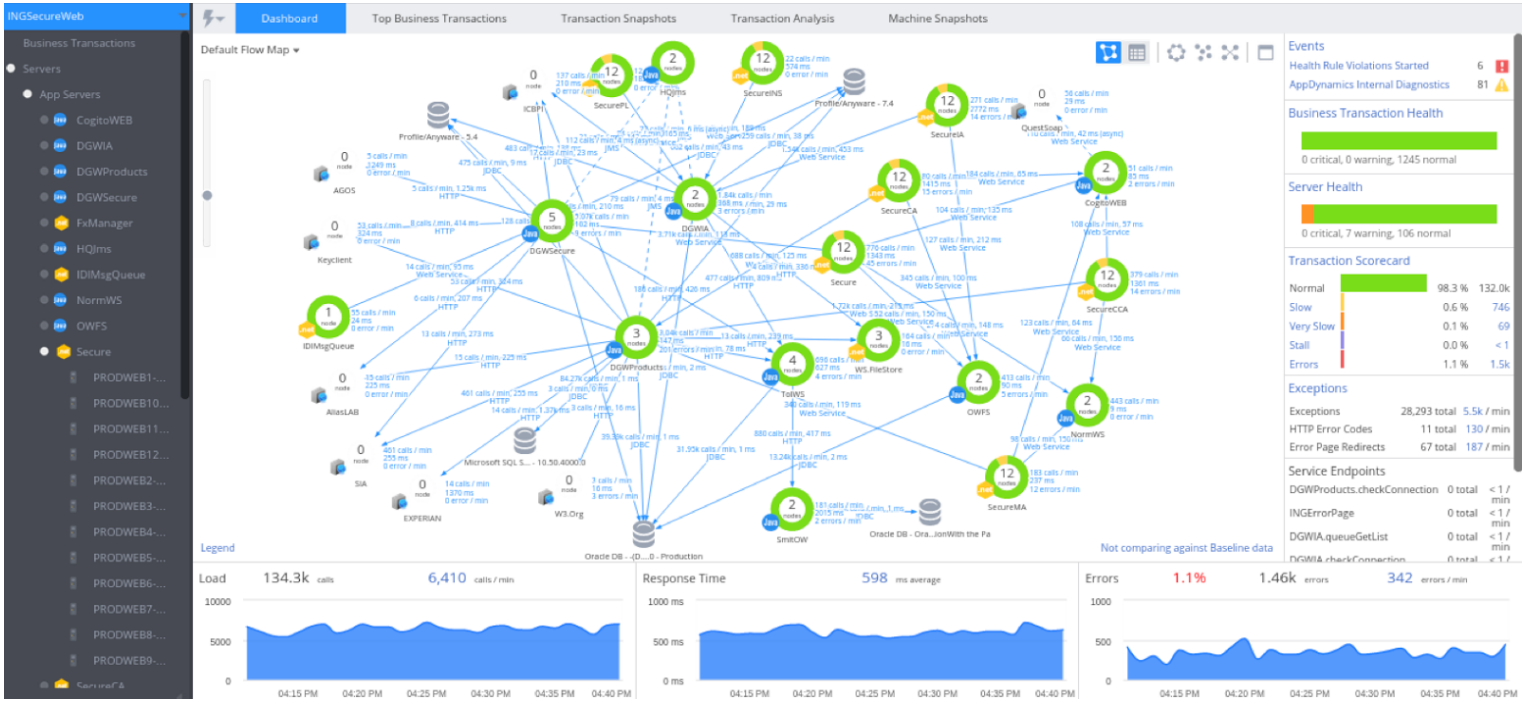
logstash

Kibana



Highly observable

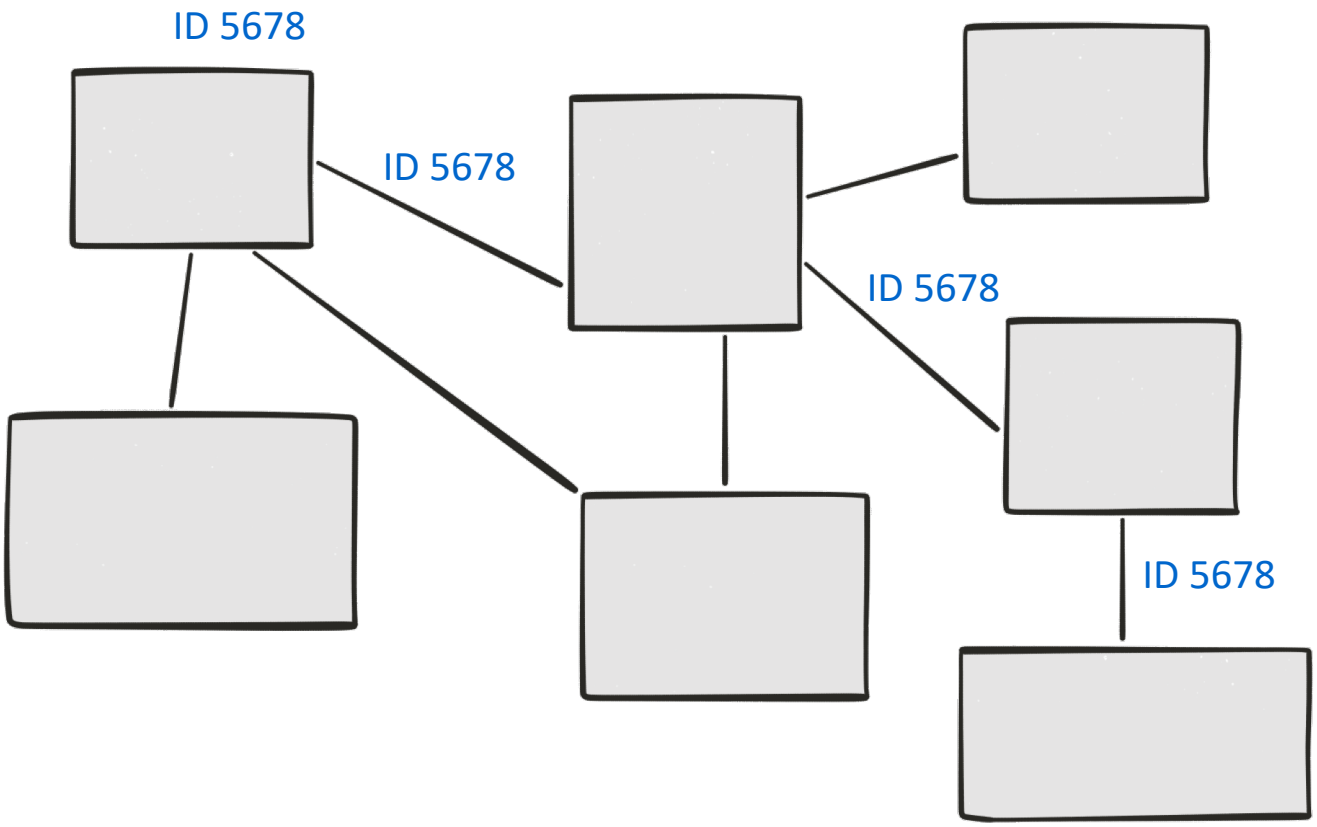
monitoring



AppDynamics

Highly observable

Correlation ids



principles

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- Automation
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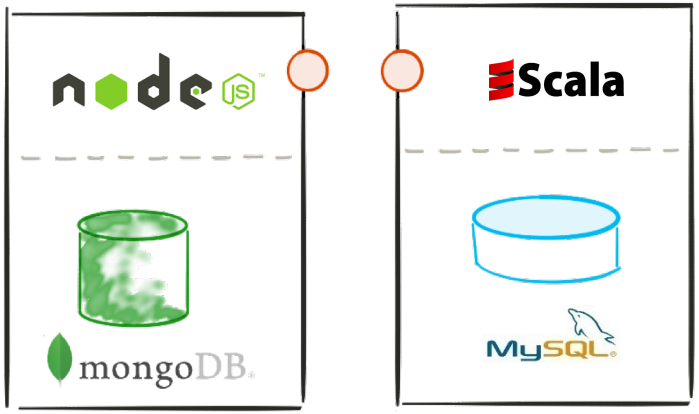
- Highly observable

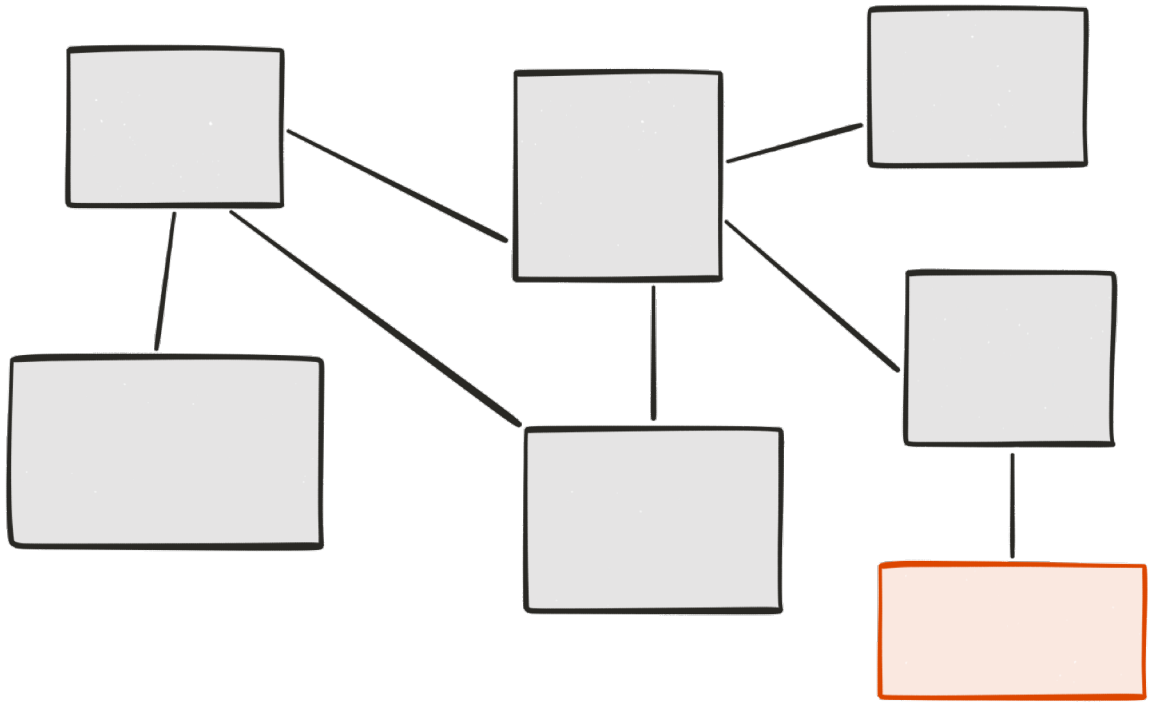
Advantages

Polyglot architecture



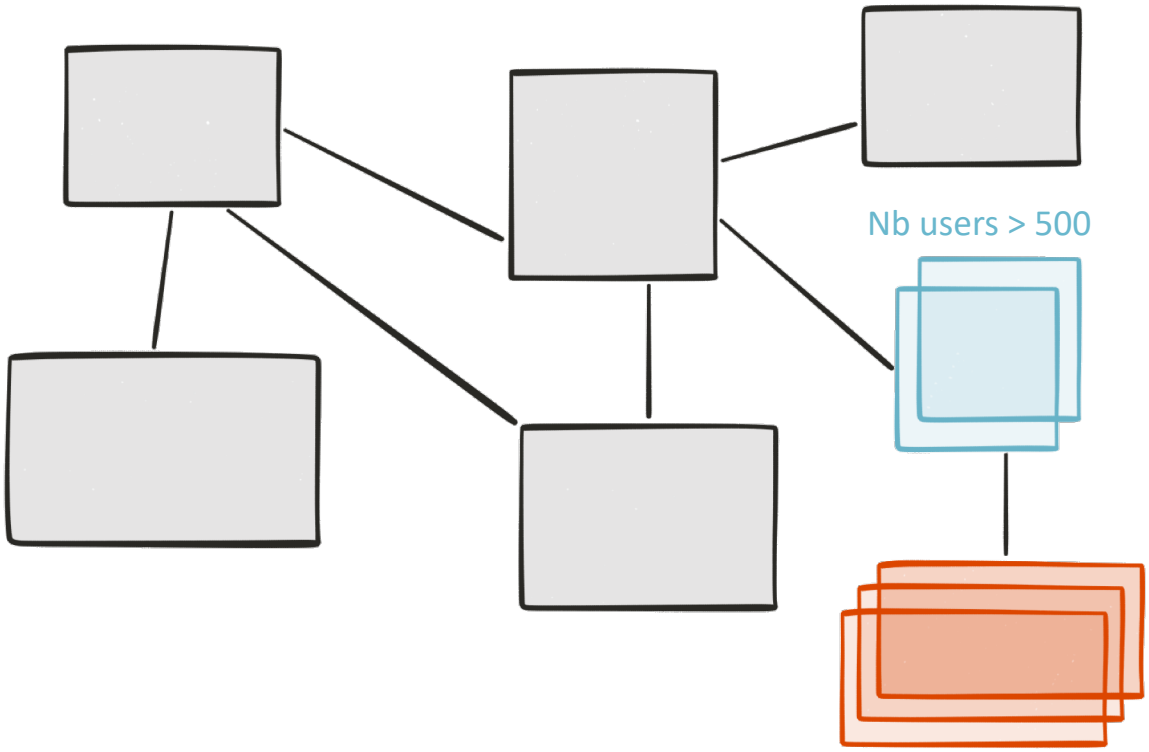
- The right technology for the job
- reduce technical debt

Evolutionary design



- Remove
- Add
- Replace
- Experimental microservice
- Grow at “no” cost

Selective scalability



Big vs small

- ✓ Smaller code base
- ✓ Simpler to develop / test / deploy / scale
- ✓ Start faster
- ✓ Easier for new developers

drawbacks

- Distributed system
  - Consistency
  - Transaction
  - Request travelling

- Slow (http)

- Requires an ecosystem

- Synchronous vs asynchronous

- Integration tests

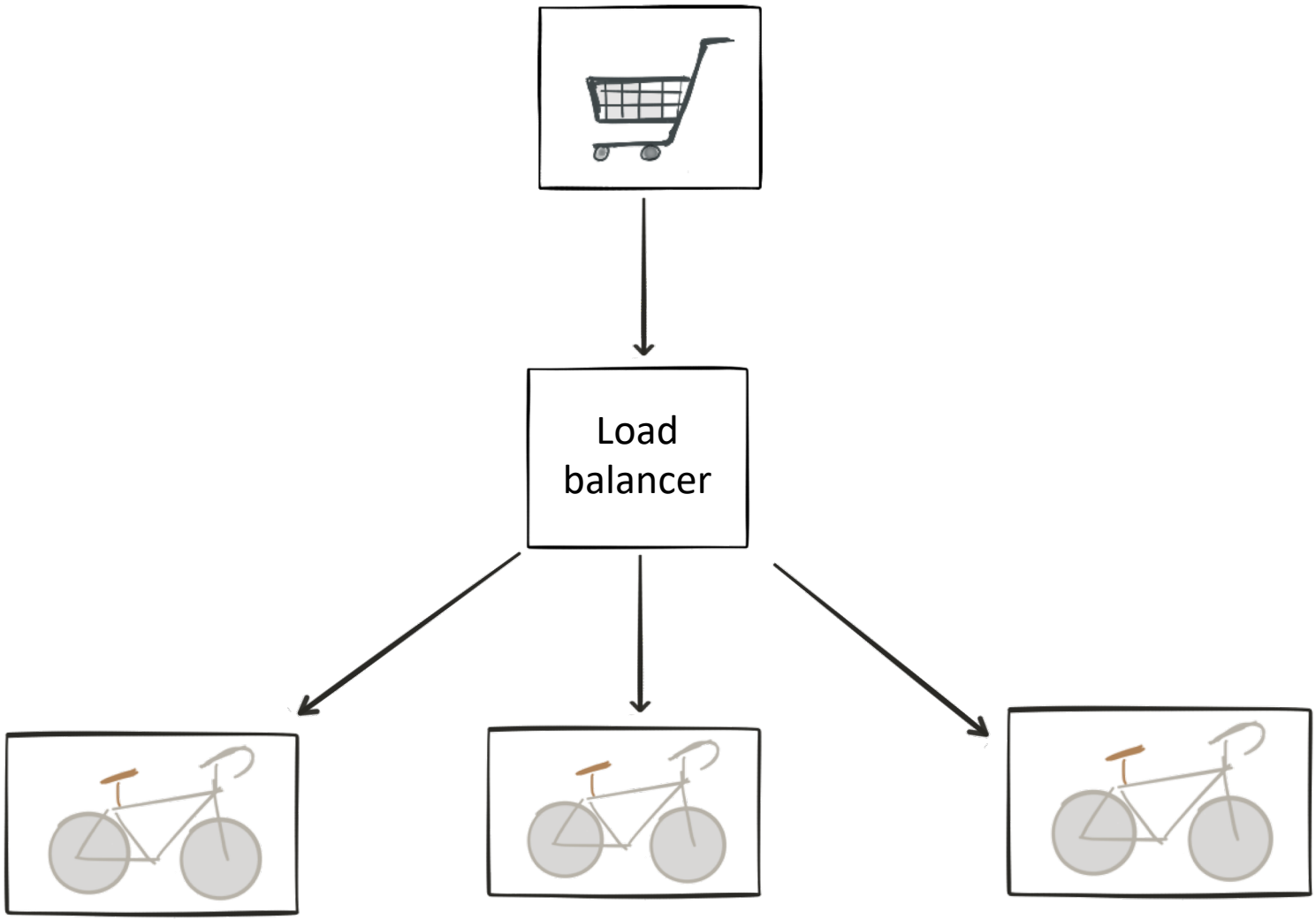
Conclusion:

- The Microservices architecture is more complex
Than a monolith.

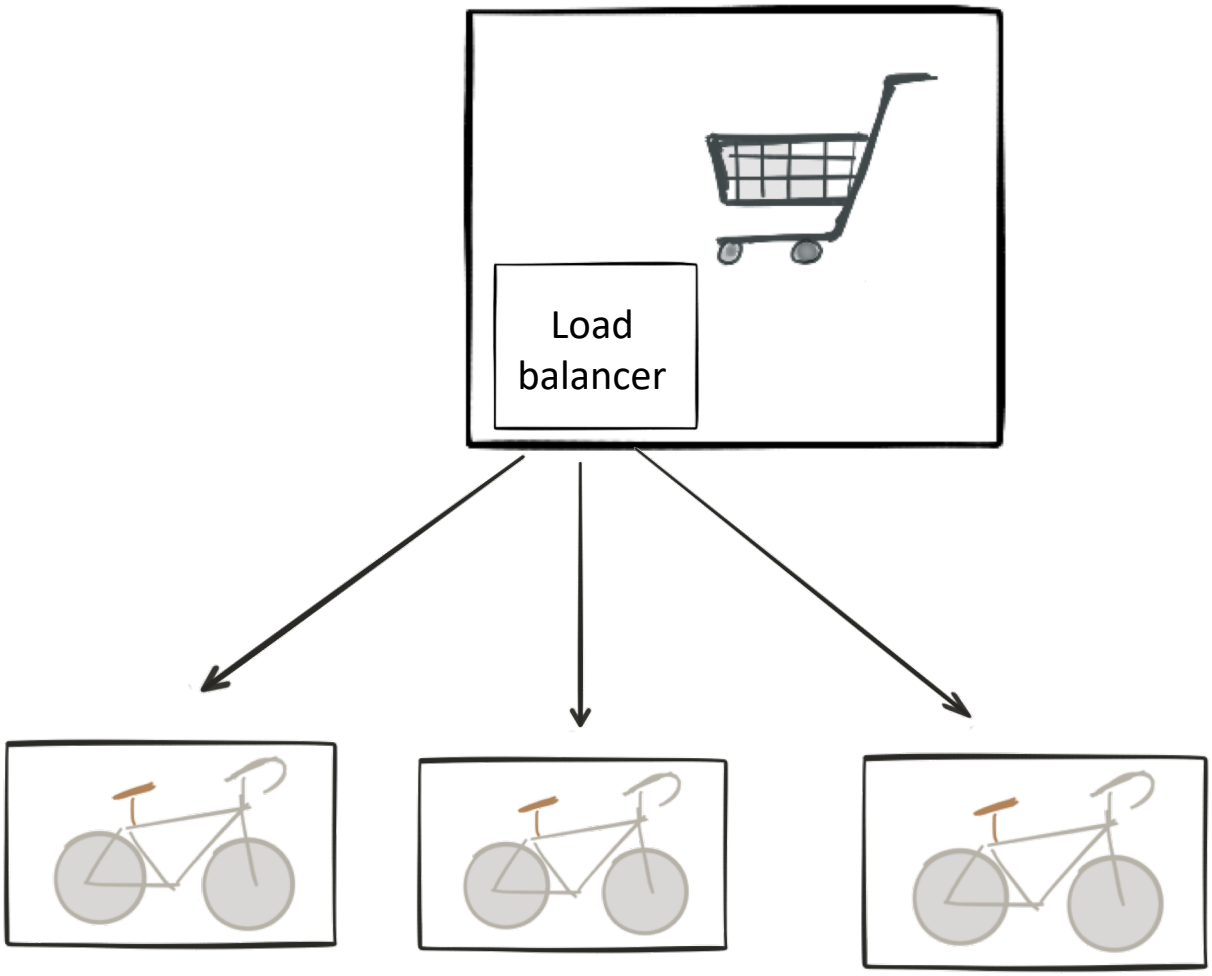
- This the cost of growing and scaling easily

Microservices ecosystem

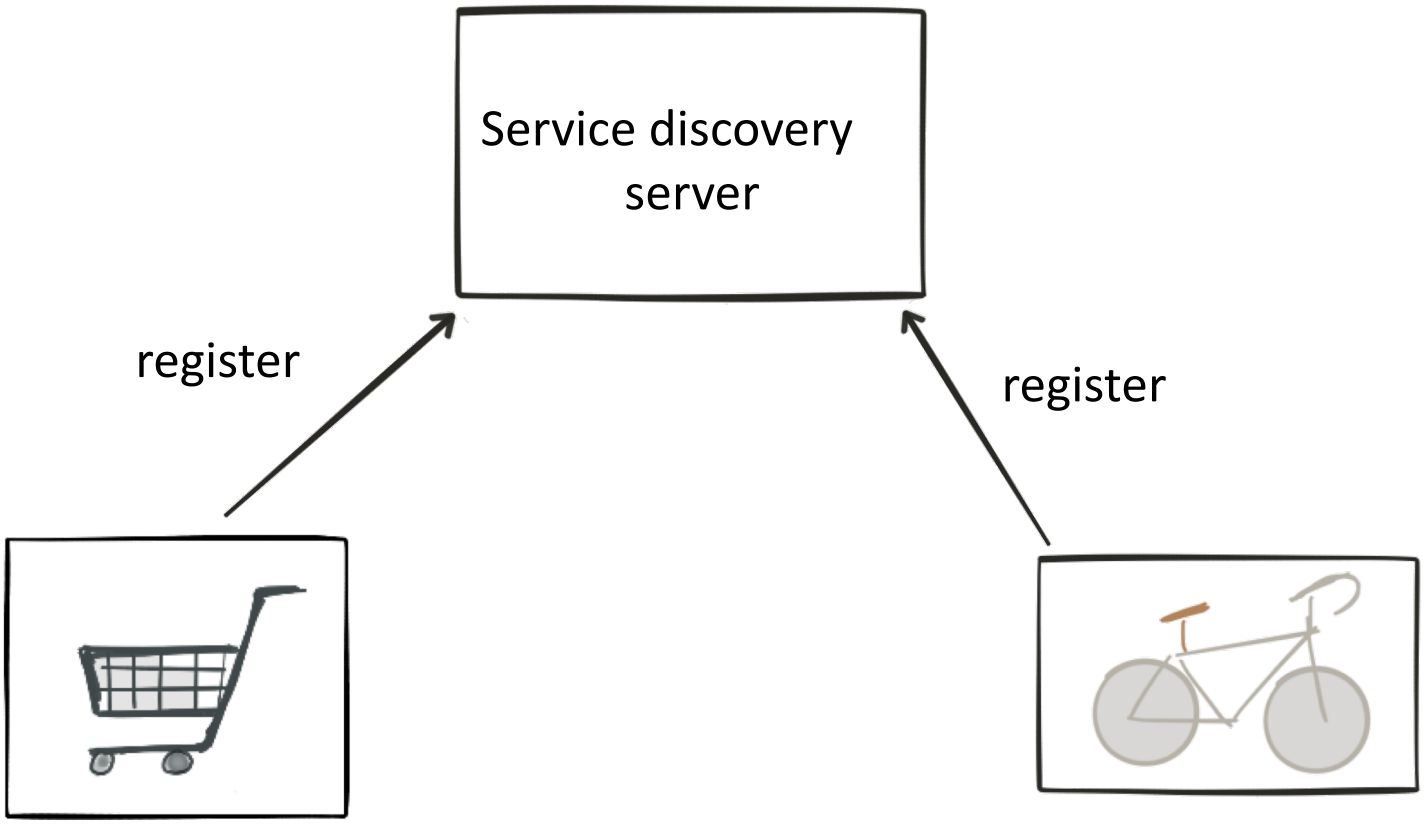
Load balancer



Load balancer (client side)



Service discovery



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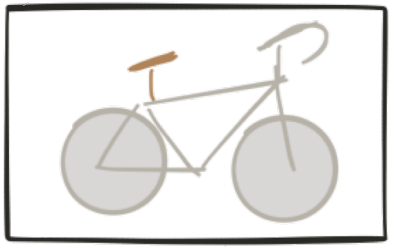
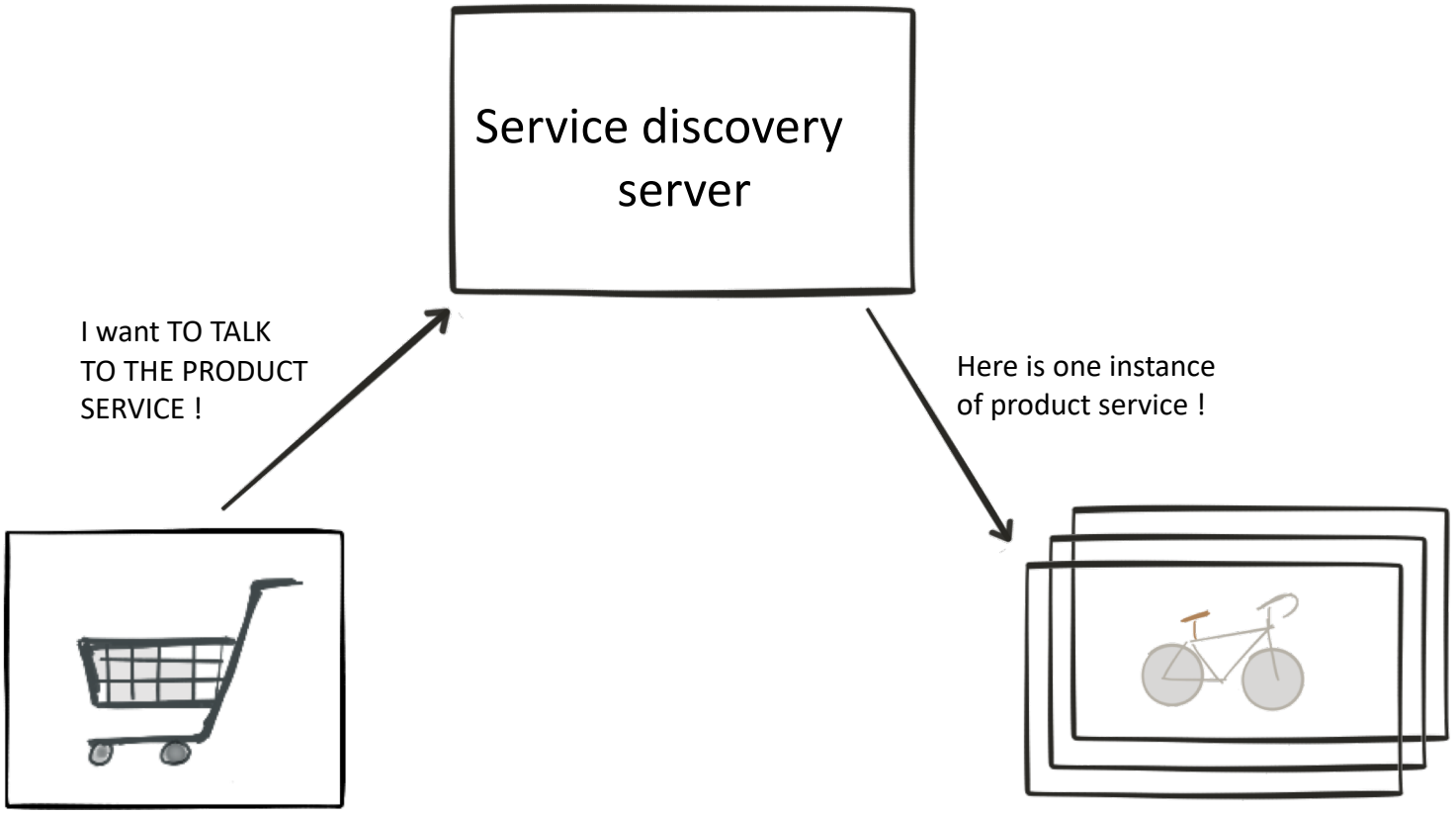
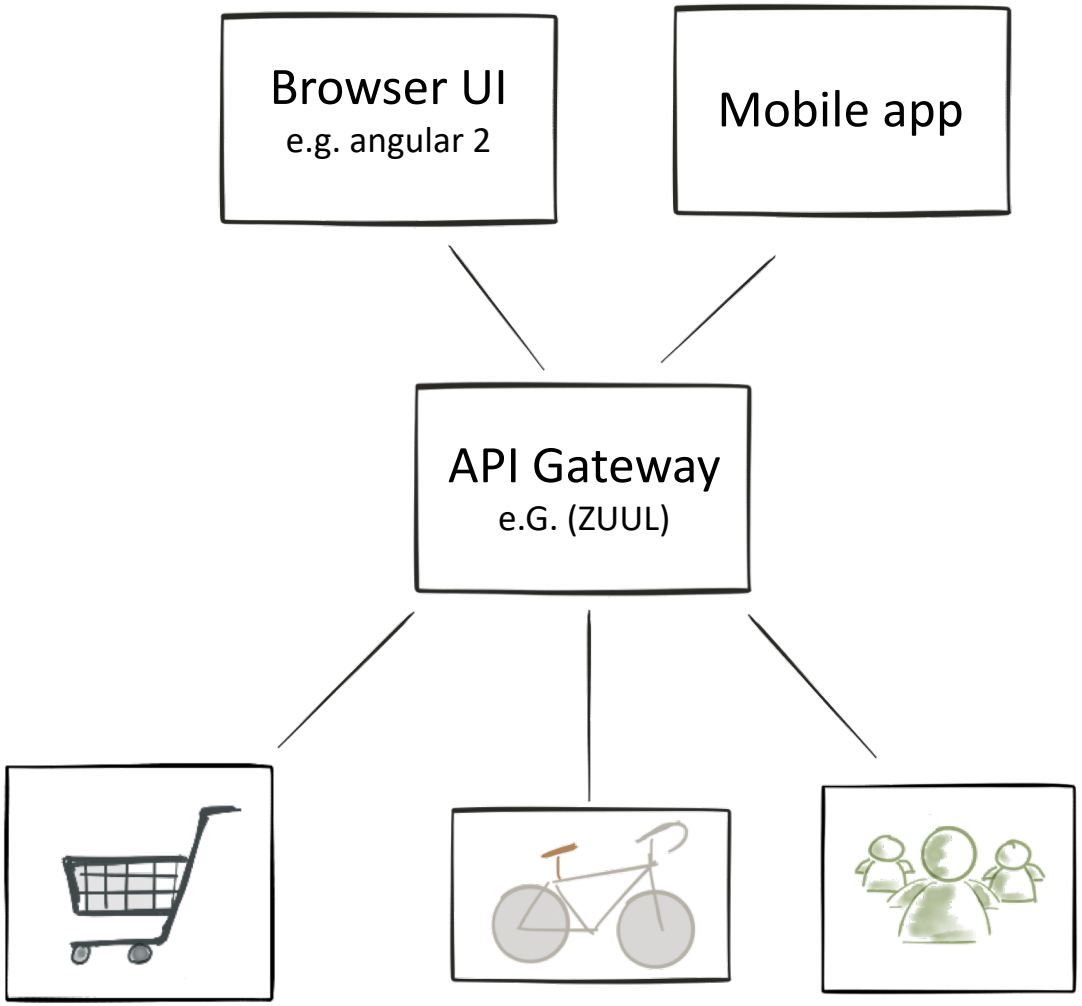


Service discovery (load balancing)



Api Gateway



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ecosystem

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THANKS !