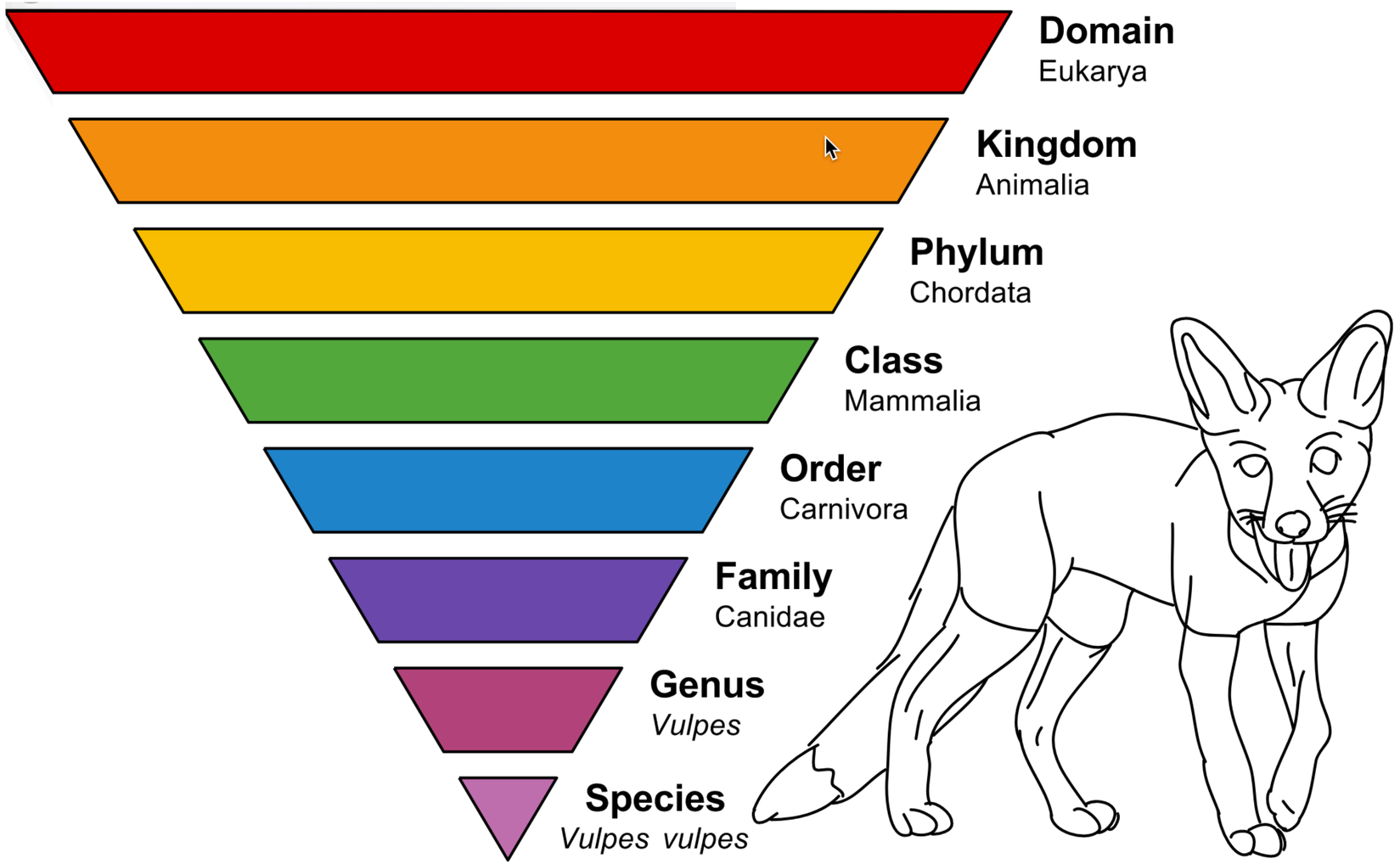
Microservices: A Taxonomy



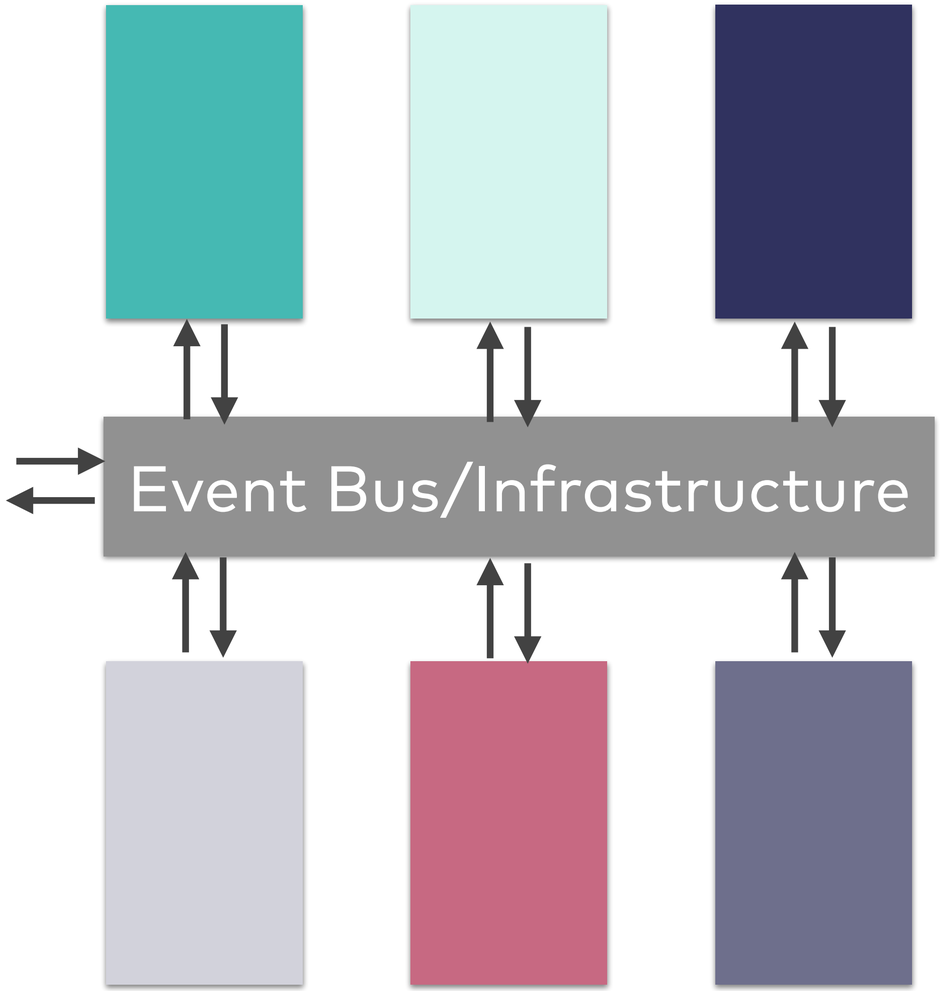
Red fox (*Vulpes vulpes*)

Microservices – Common Traits

- Focused on “one thing”
- Autonomous operation
- Isolated development
- Independent deployment
- Localized decisions

Example: Device Event Handling

- Incoming event validation
- Format transformation
- Fan-out event generation
- Aggregation
- Storage



→FaaS

Pattern: FaaS (Function as a Service)

Description:

- As small as possible
- A few hundred lines of code or less
- Triggered by events
- Communicating asynchronously

As seen on:

- Any recent Fred George talk
- Serverless Architecture
- AWS Lambda

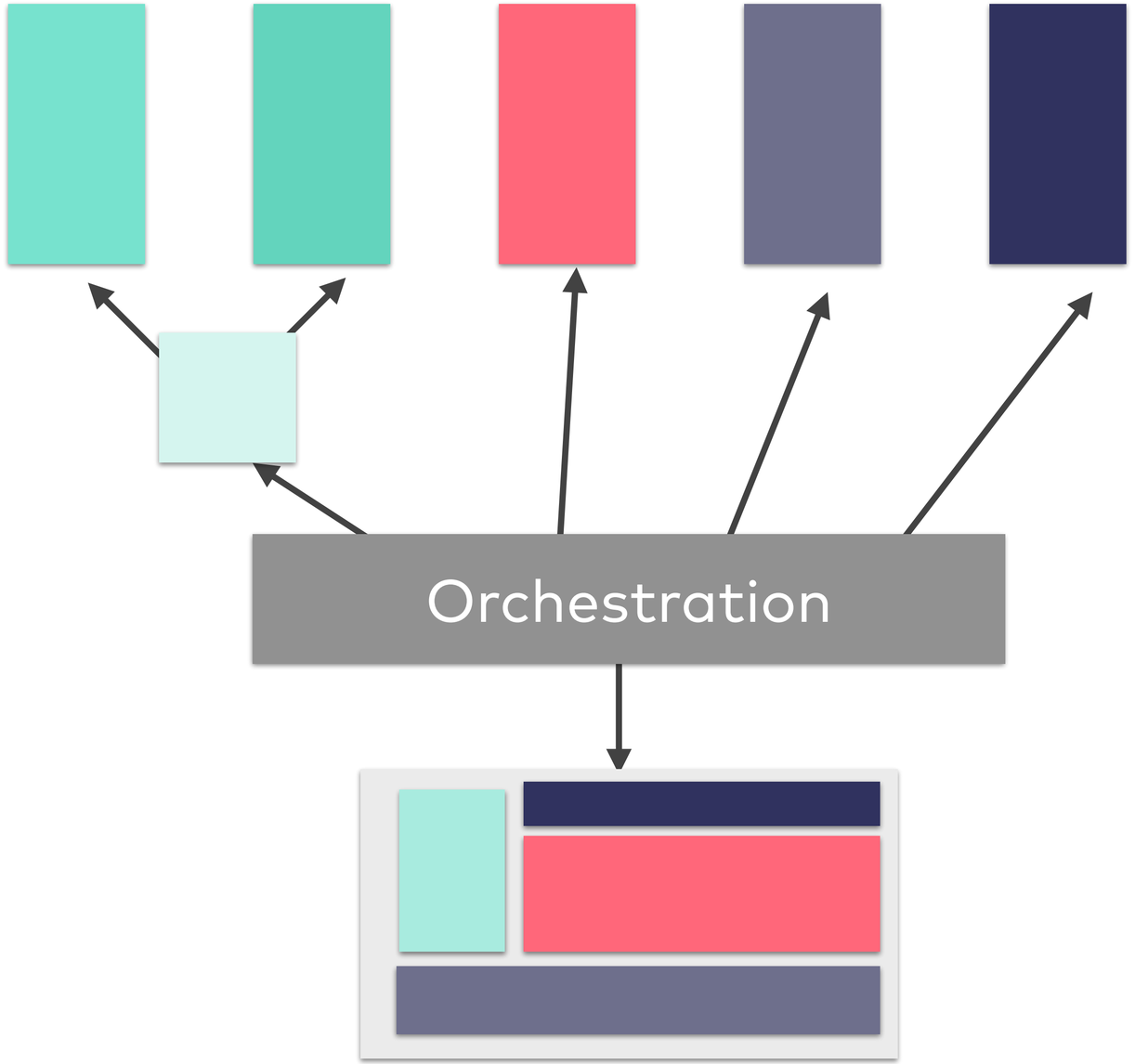
Pattern: FaaS (Function as a Service)

Consequences:

- Shared strong infrastructure dependency
- Common interfaces, multiple invocations
- Application logic in event handler configuration
- Emerging behavior (a.k.a. “what the hell just happened?”)
- (Possibly) billed per request
- (Possibly) unpredictable response times

Example: Product Detail Page

- Core product data
- Prose description
- Images
- Reviews
- Related content



→µSOA

Pattern: μSOA (Microservice-SOA)

Description:

- Small, self-hosted
- Communicating synchronously
- Cascaded/streaming
- Containerized

As seen on:

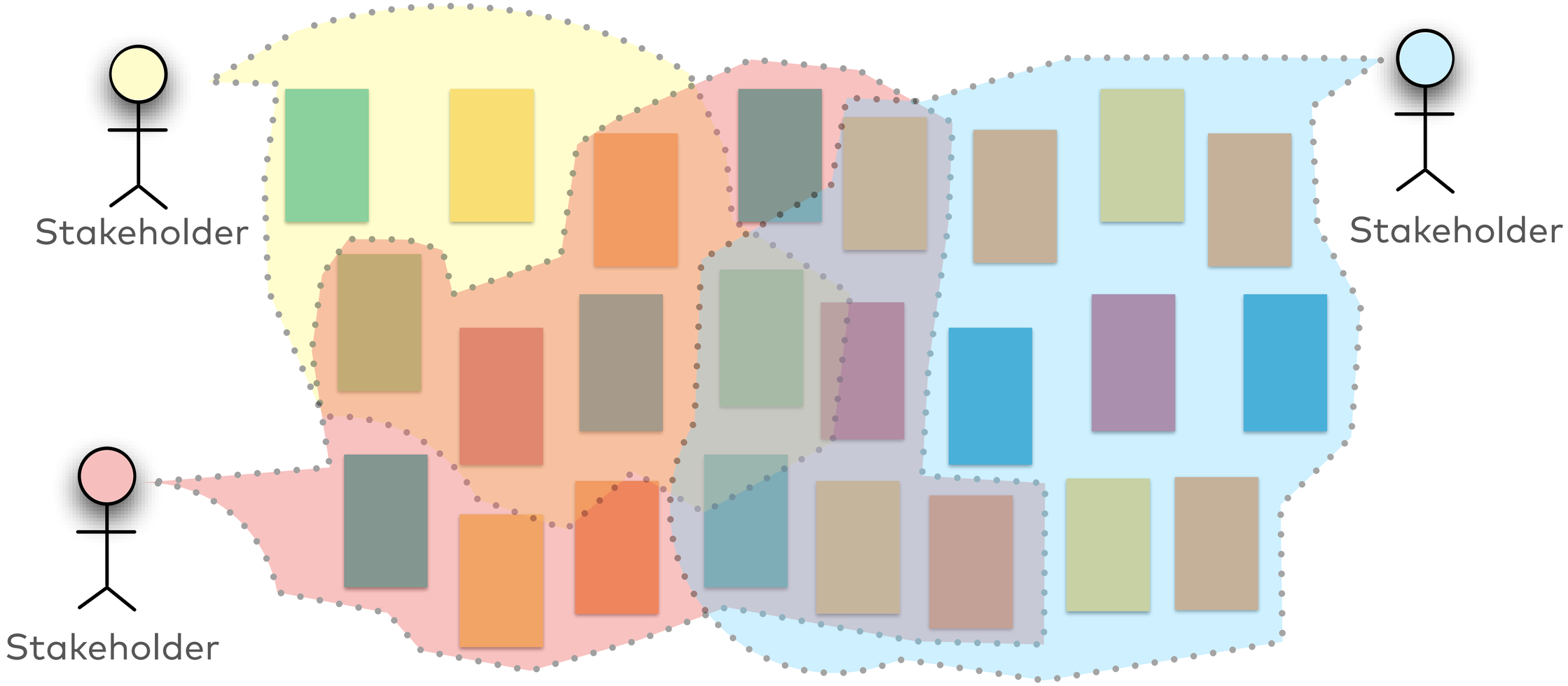
- Netflix
- Twitter
- Gilt

Pattern: µSOA (Microservice-SOA)

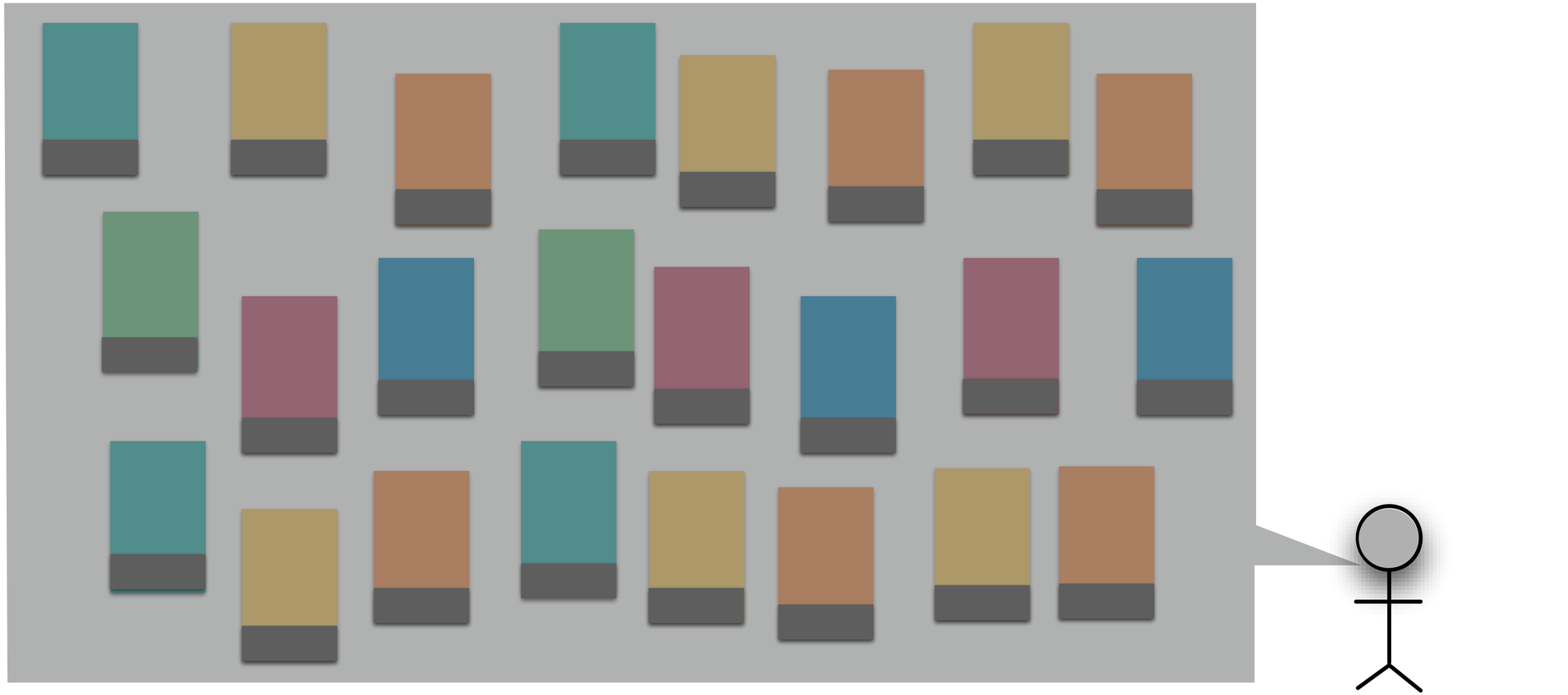
Consequences:

- Close collaboration – common goal
- Need for resilience/stability patterns for invocations
- High cost of coordination (versioning, compatibility, ...)
- High infrastructure demand
- Often combined with parallel/streaming approach
- Well suited to environments with extreme scalability requirements

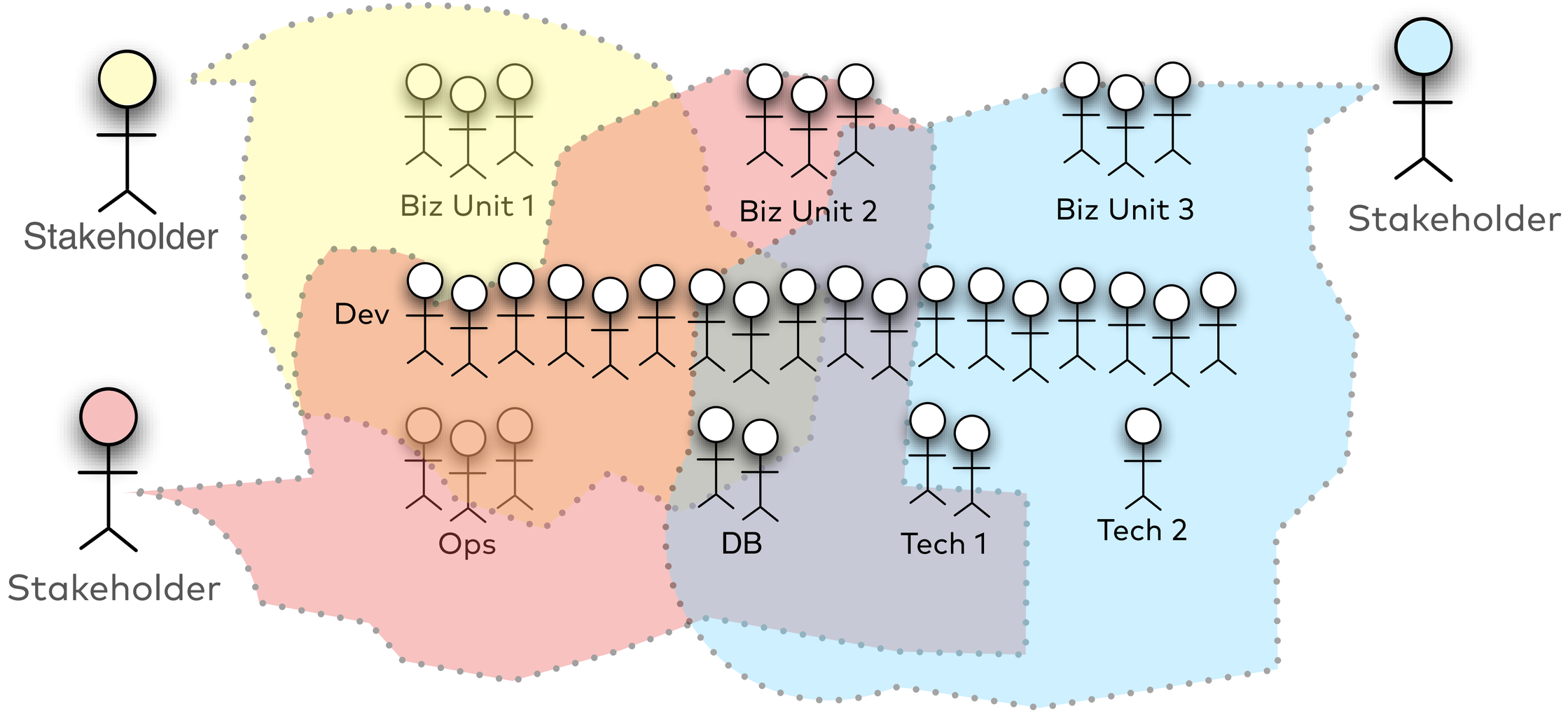
Antipattern: Decoupling Illusion



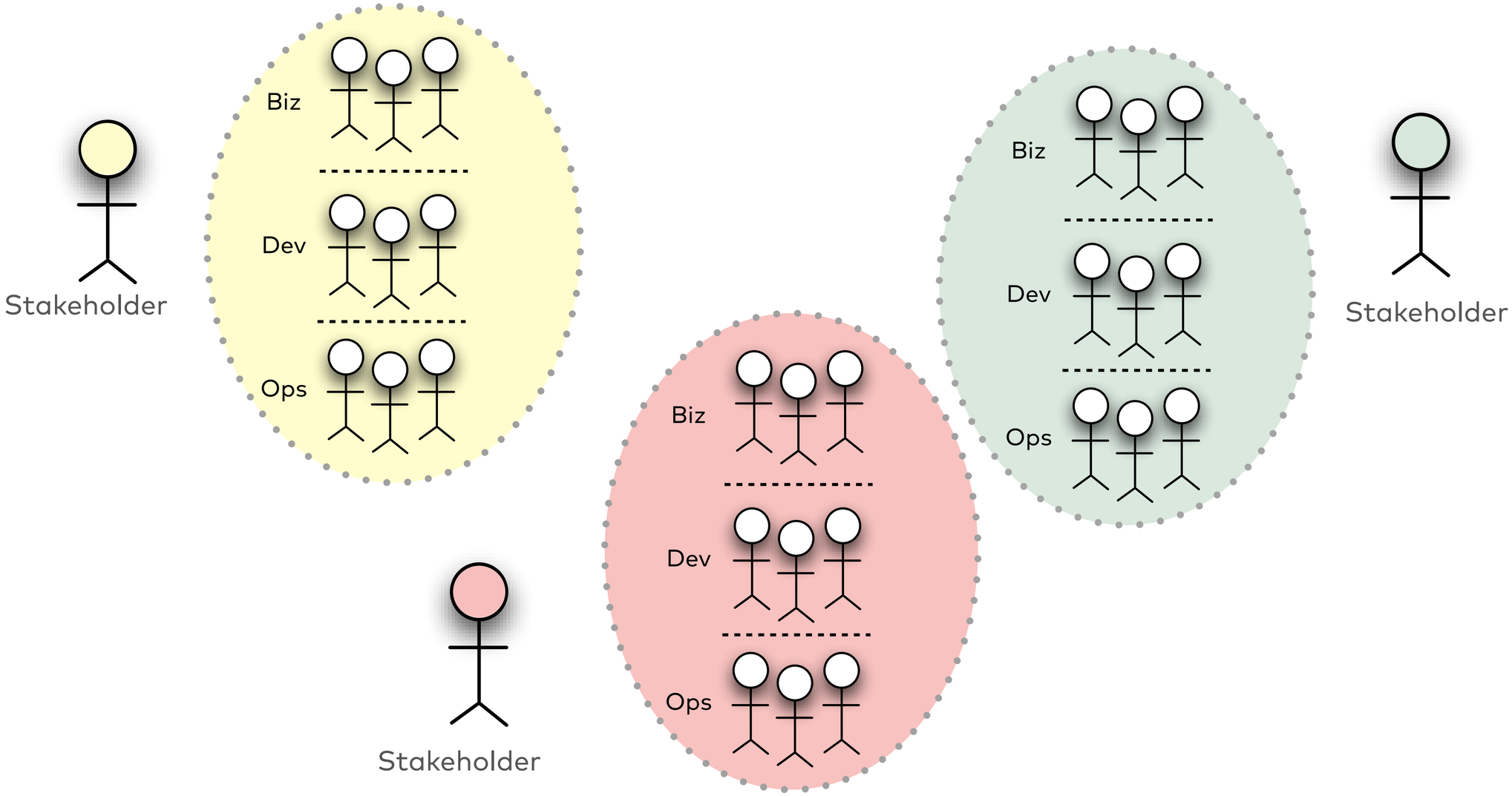
Antipattern: Micro Platform



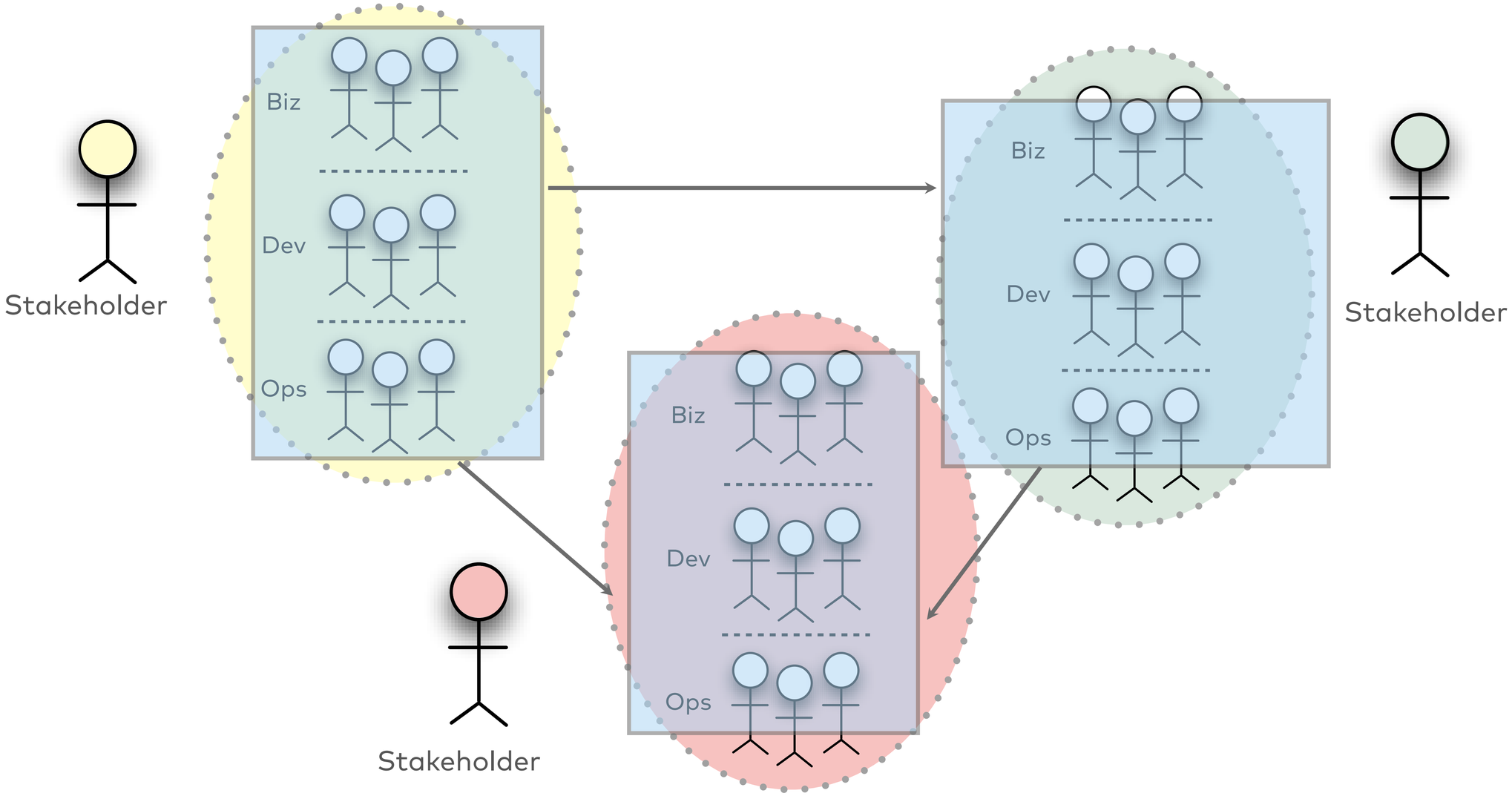
Antipattern: Domain-last Approach



Pattern: Autonomous Cells



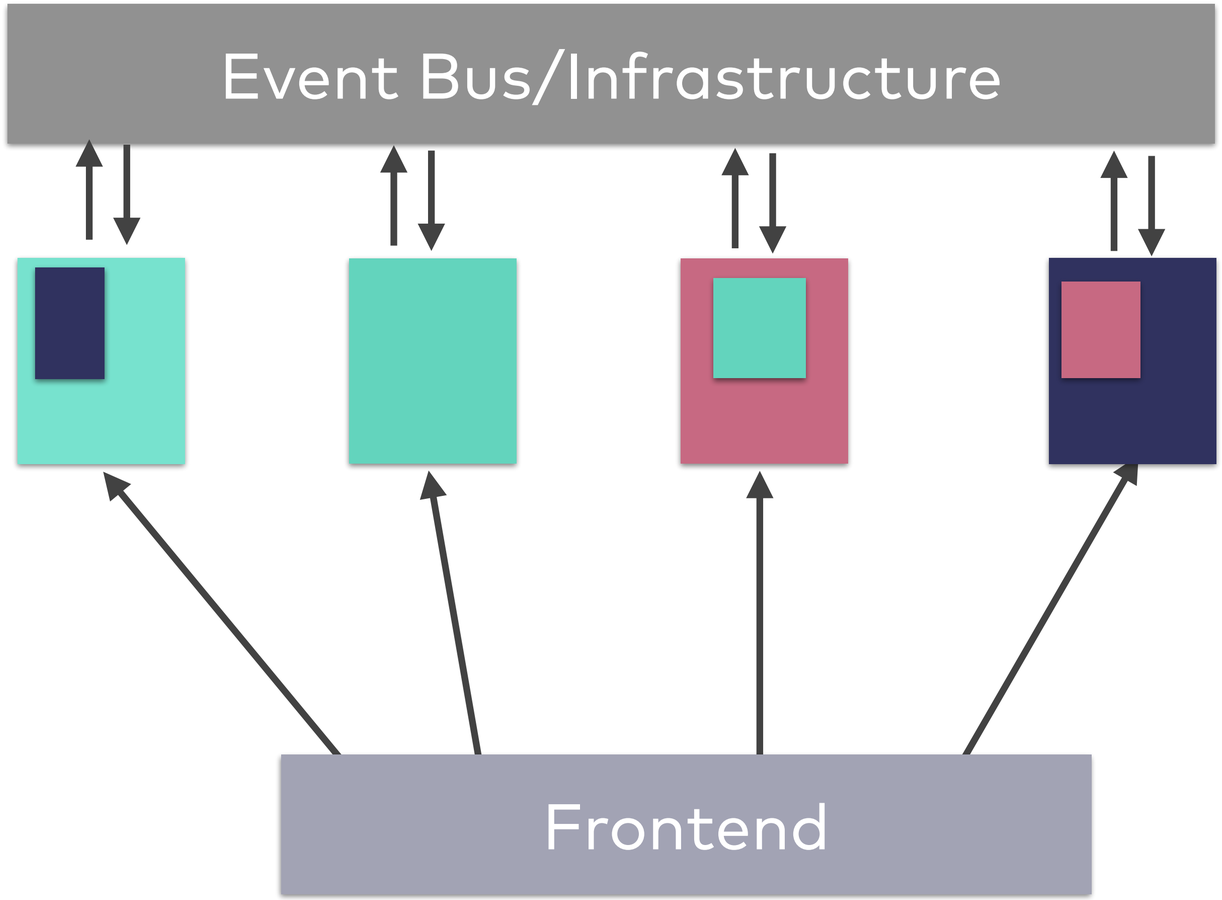
Pattern: Autonomous Cells



Example: Logistics Application

- Order management
- Shipping
- Route planning
- Invoicing

→DDDD



Pattern: DDDD (Distributed Domain-driven Design)

Description:

- Small, self-hosted
- Bounded contexts
- Redundant data/CQRS
- Business events
- Containerized

As seen on:

- (undisclosed)

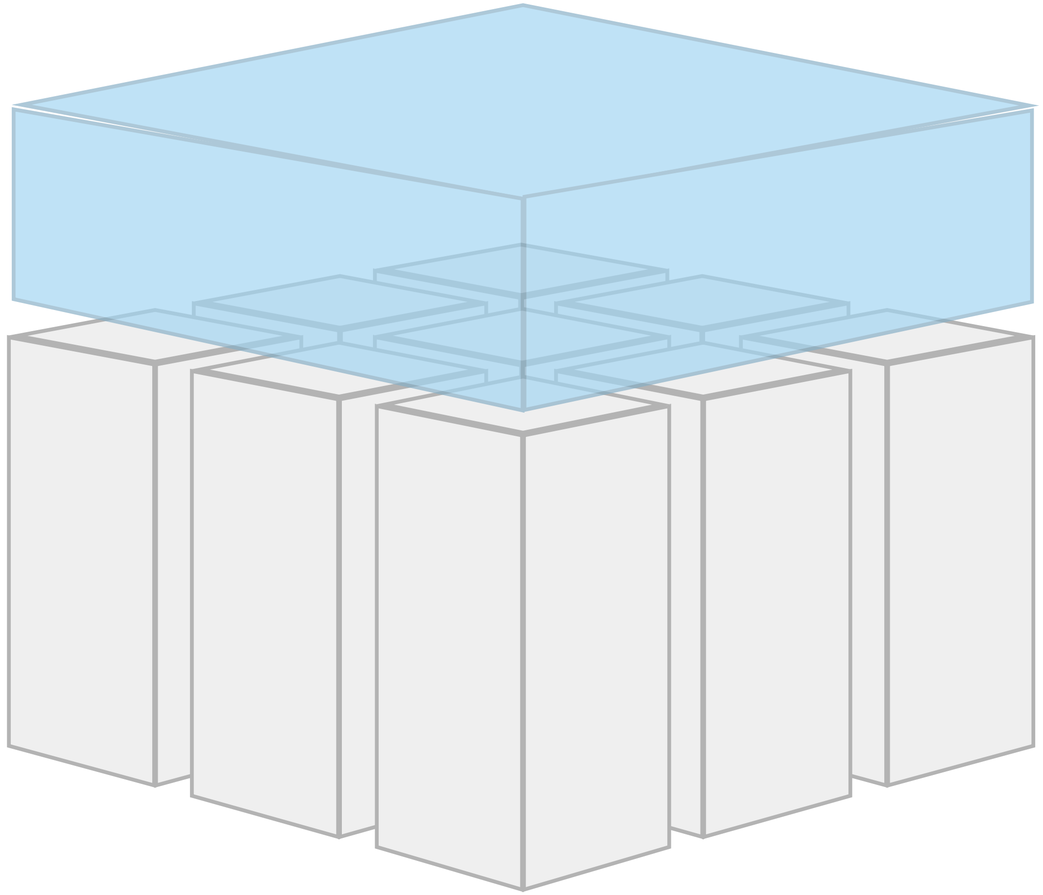
Pattern: DDDD (Distributed Domain-driven Design)

Consequences:

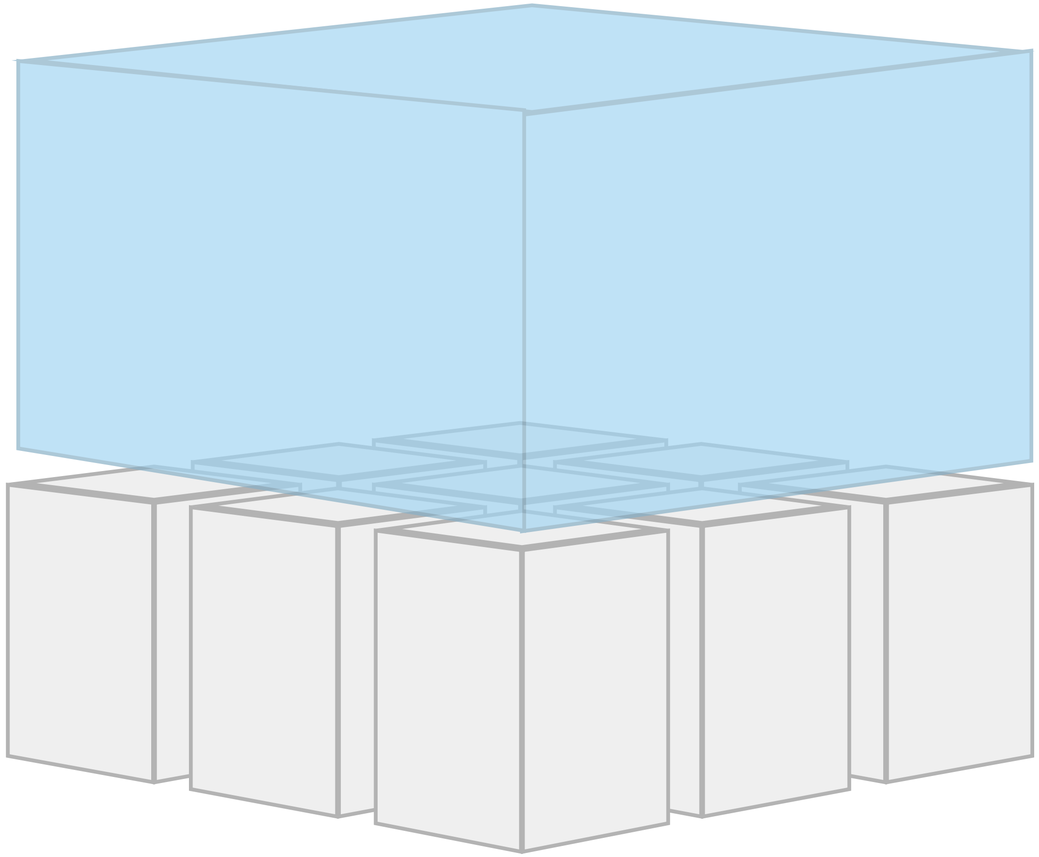
- Loose coupling between context
- Acknowledges separate evolution of contexts
- Asynchronicity increases stability
- Well-suited for to support parallel development

That UI thing? Easy!

Assumption



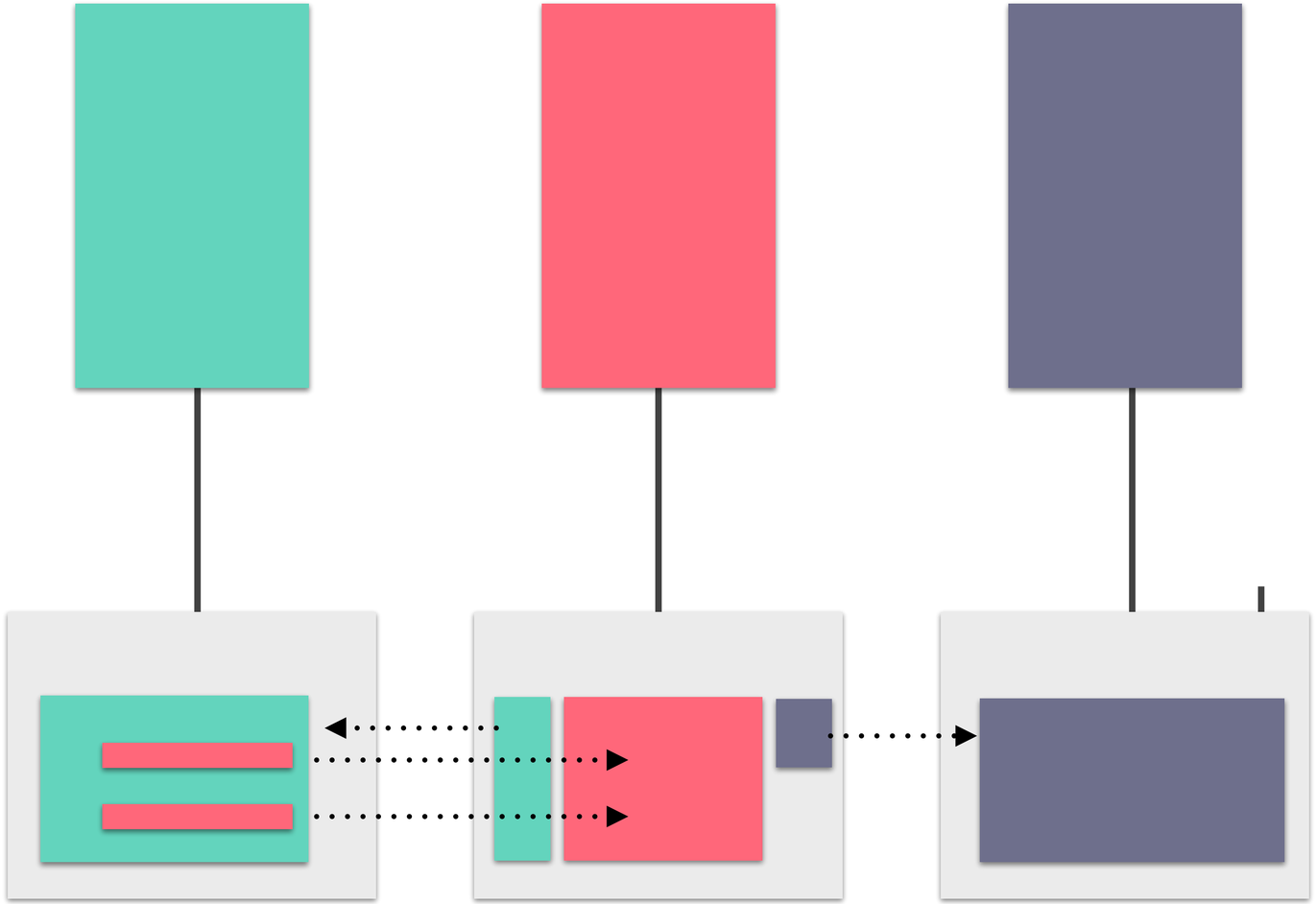
Reality – Antipattern: Frontend Monolith



Example: E-Commerce Site

- Register & maintain account
- Browse catalog
- See product details
- Checkout
- Track status

→SCS



Pattern: SCS (Self-contained Systems)

Description:

- Self-contained, autonomous
- Including UI + DB
- Possibly composed of smaller microservices

As seen on:

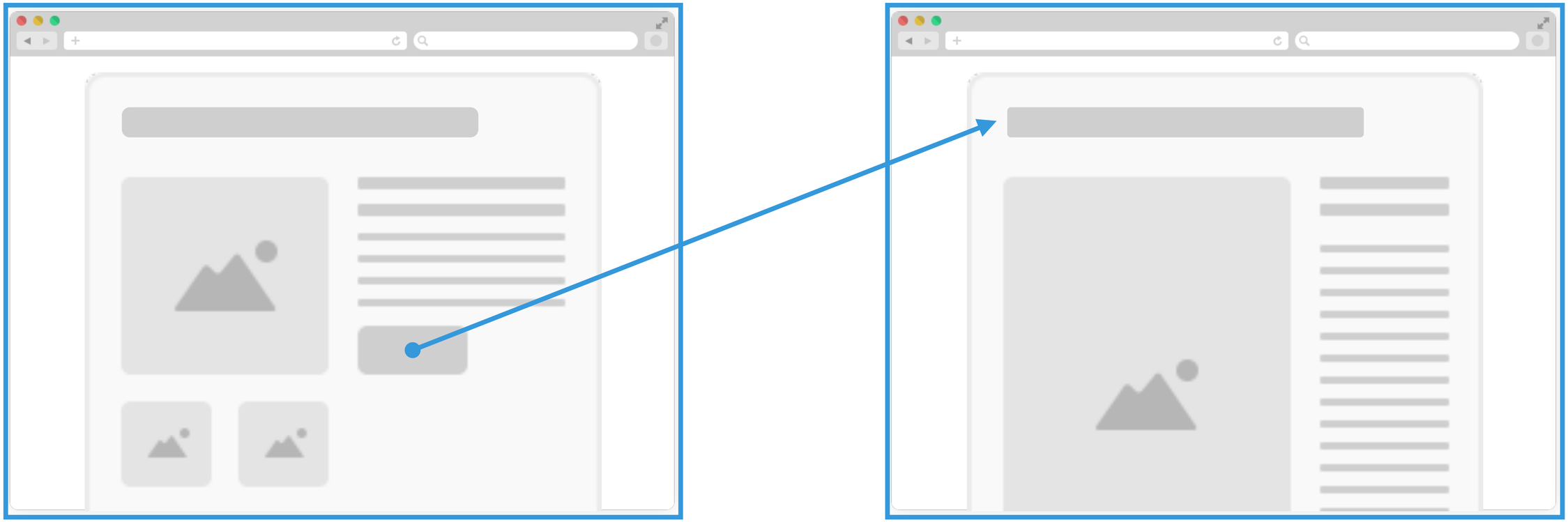
- Amazon
- Groupon
- Otto.de
- https://scs-architecture.org

Pattern: SCS (Self-contained Systems)

Consequences:

- Larger, independent systems,
  including data + UI (if present)
- Able to autonomously serve requests
- Light-weight integration, ideally via front-end
- No extra infrastructure needed
- Well suited if goal is decoupling of development teams

Pattern: Web-based UI Integration

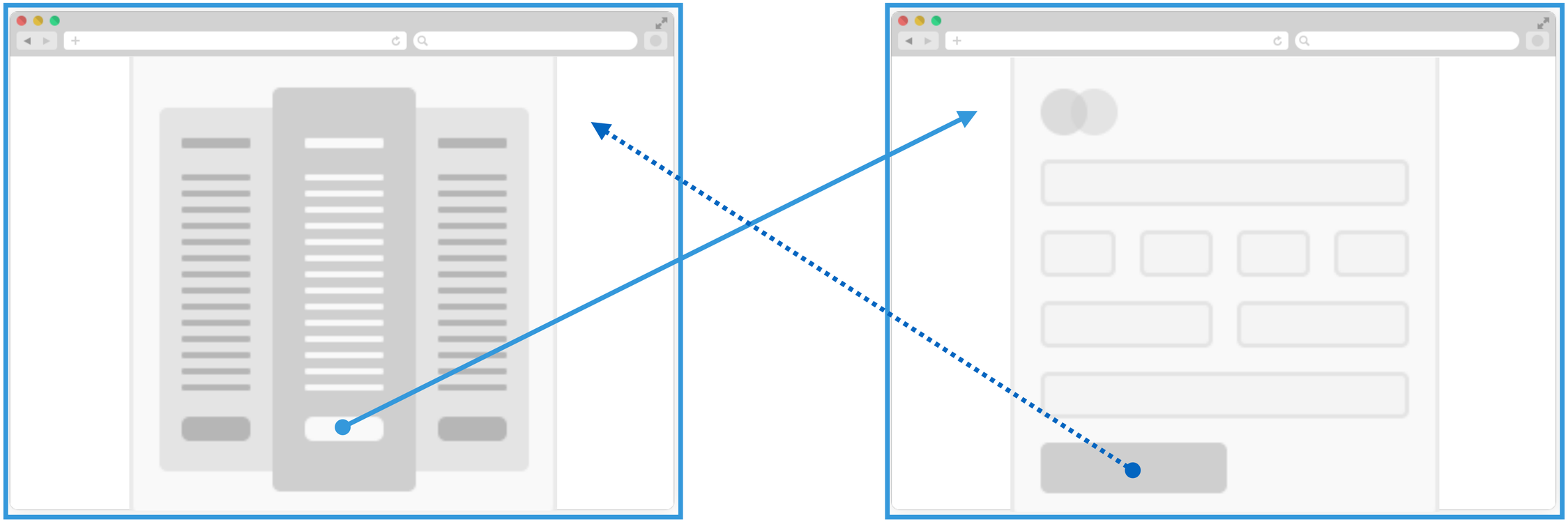


System 1

System 2

→Links

Pattern: Web-based UI Integration

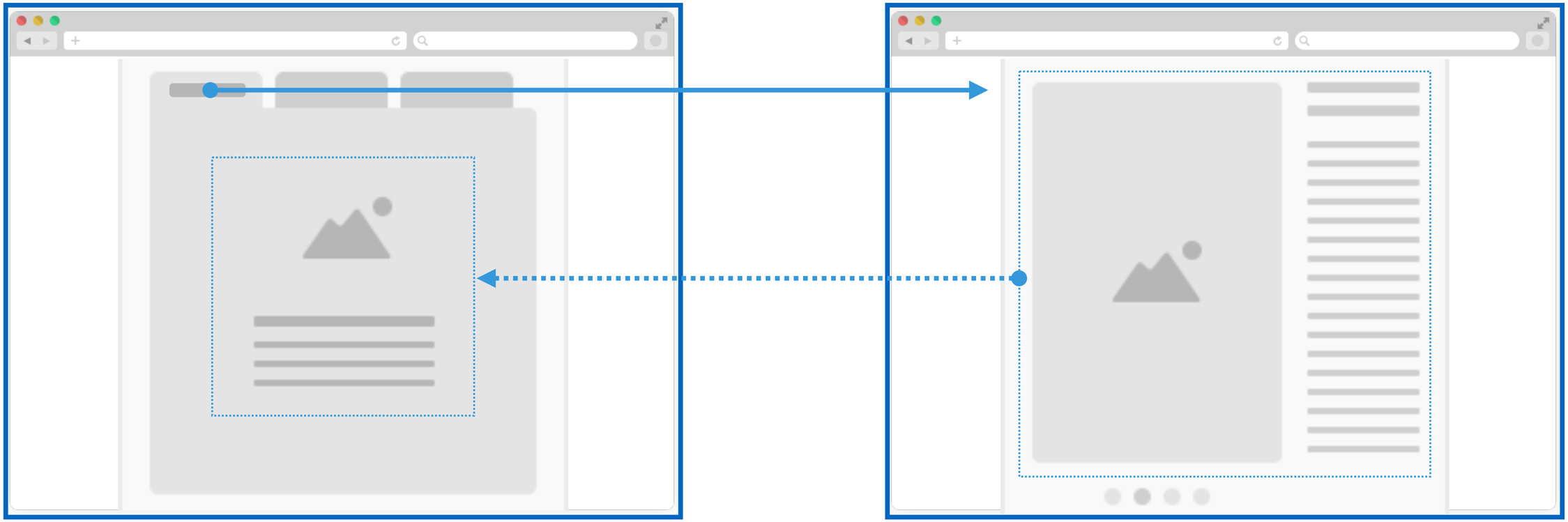


System 1

System 2

→Redirection

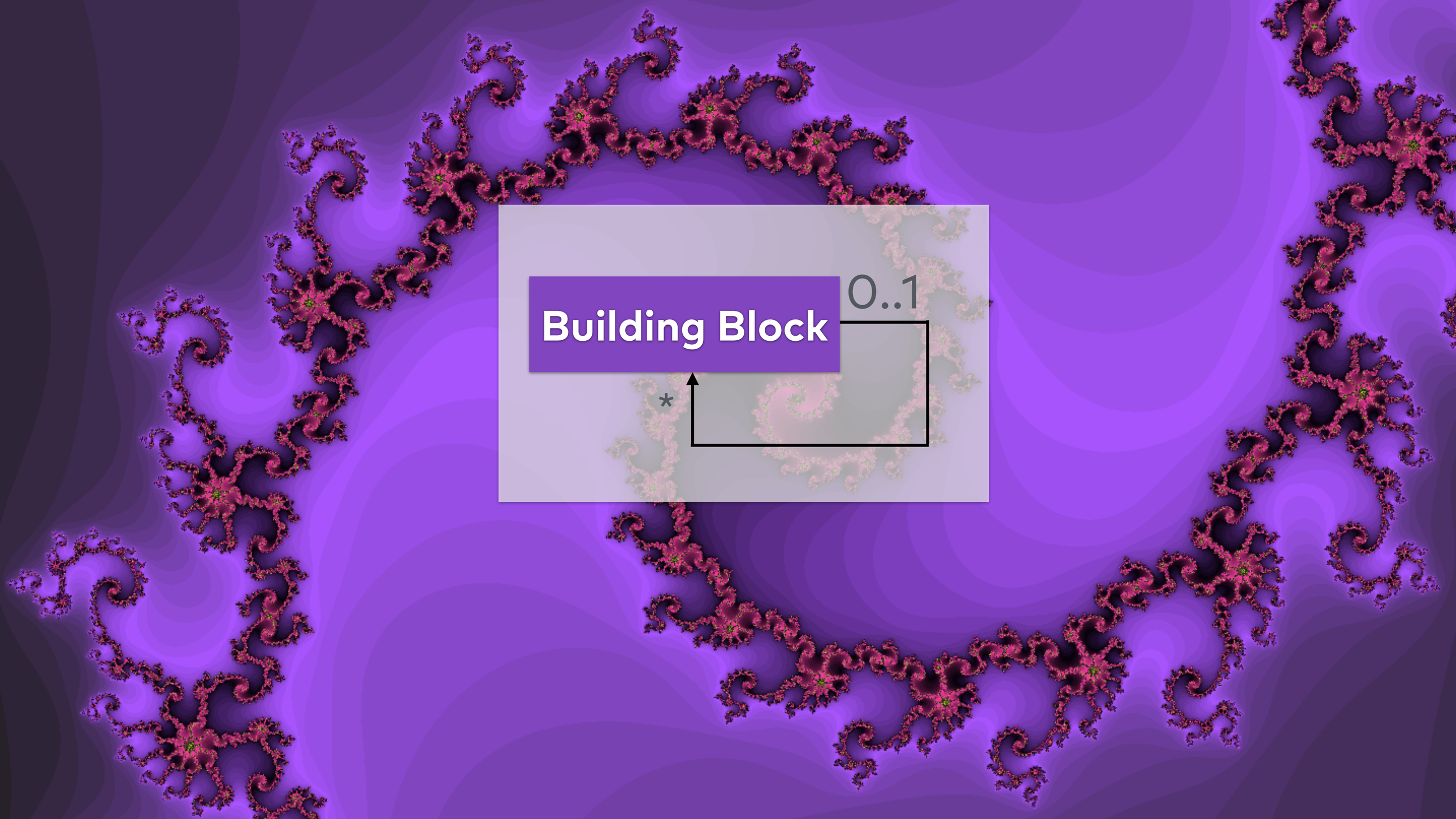
Pattern: Web-based UI Integration



System 1

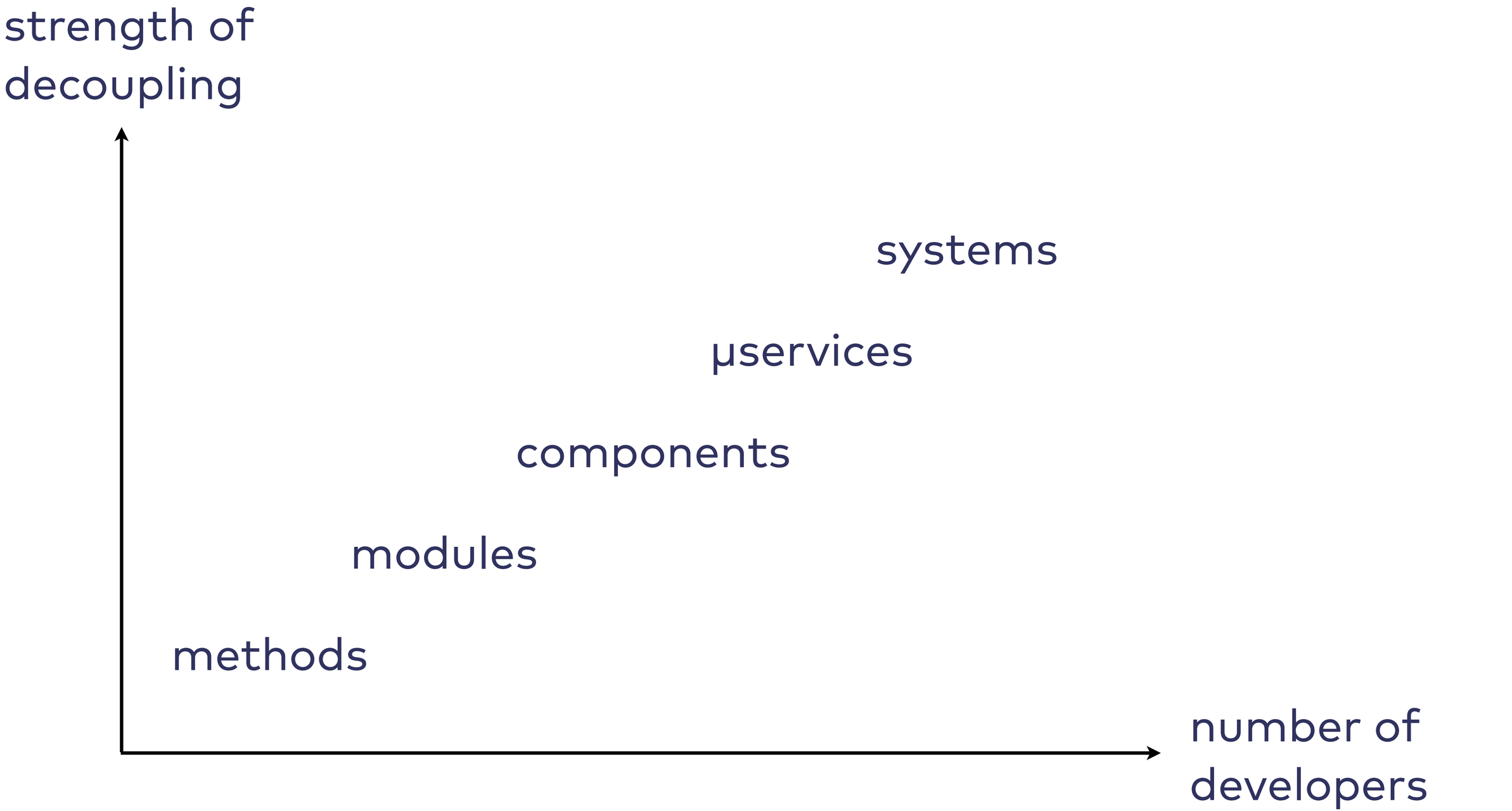
System 2

→Transclusion


Building Block
0..1
*

One more thing ...


We love monoliths –
so let's build a lot of them!


strength of
decoupling
systems
μservices
components
modules
methods
number of
developers

@stilkov

Separate separate things

Join things that belong together

Takeaways

1.
There is more than one way

2.
Prioritize intended benefits, choose matching solutions

3.
Balance autonomy and control

4.
Create evolvable structures

That's all I have.
Thanks for listening!

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