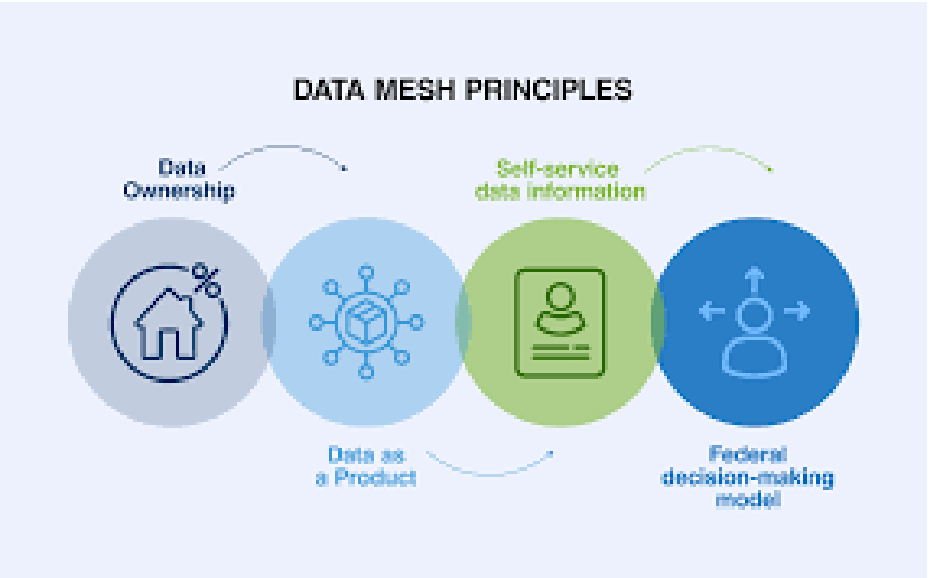
DATA SATURDAYS #64 PARMA 2024

Data Mesh

DDD in the Data World

Alberto Acerbis – Software Architect @Intré



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DATA SKILLS
UNDERSTANDING THE WORLD

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DATA KNOWLEDGE ADVISOR

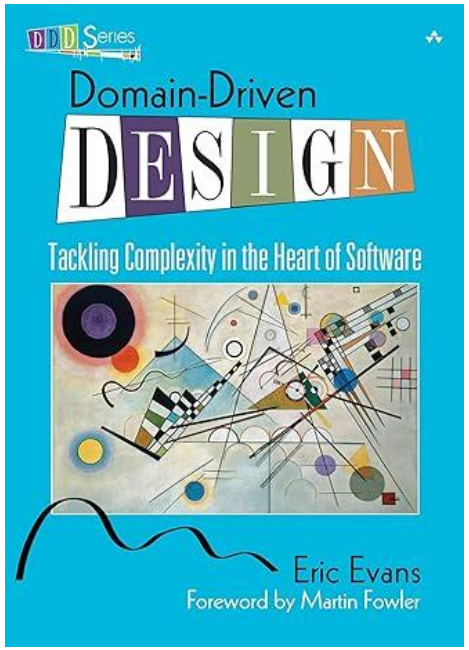
Disclaimer

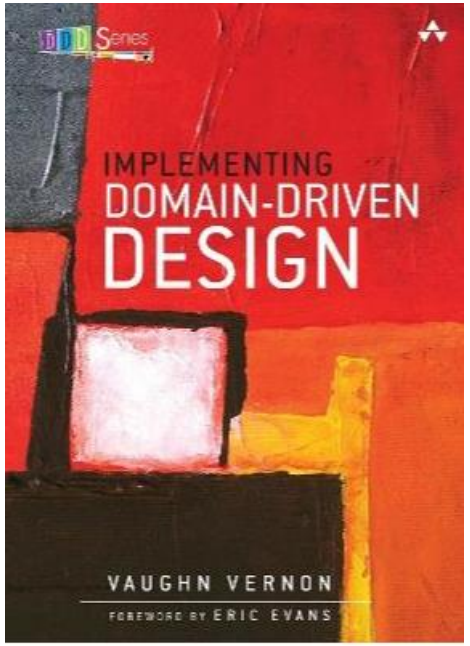
If I see you closing your eyes during the talk, I know it is only because you are 'thinking hard' about what I am saying. Don't worry, it happens to me too!

Sleeping during my talk is allowed... but be warned: there will be a practice test at the end!

What is Domain-Driven Design?

- Domain-Driven Design is an ***approach to the development for*** **complex *software.***
- It is not an architecture or a methodology. **It's an all-around approach.**
- Practices and tools have evolved over the years. The ***core concepts*** still stand!





The foundation of DDD

Eric Evans

A Ubiquitous Language in an explicitly **Bounded Context**
where the **Language** is expressed as a **Domain Model**,
where the Model is a system of **abstractions**.

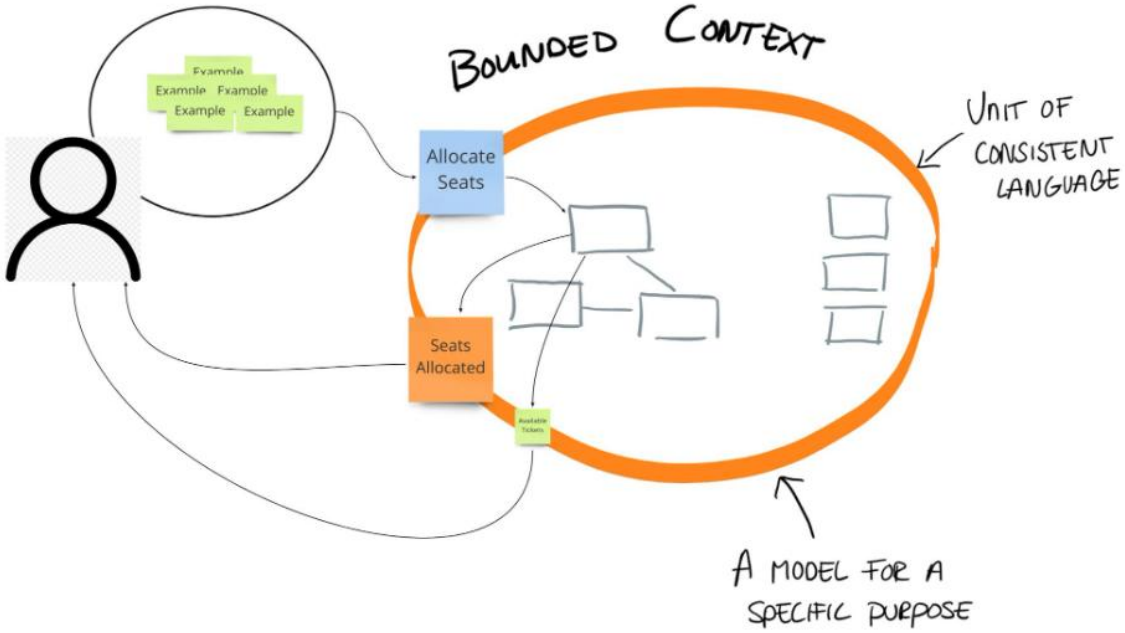
I Have to Manage Data …

Ubiquitous Language

- Language as first citizen.
- Language as a tool.
- Make the Implicit Explicit
- Specific Language for each Context.

Bounded Definition

- **Context**: The settings in which a word or statement appears that determines its meaning.
- **Bounded Context** is a semantic contextual boundary.
- This means that within the boundary **each component** of the software model **has a specific meaning**.
- And **does specific things**.



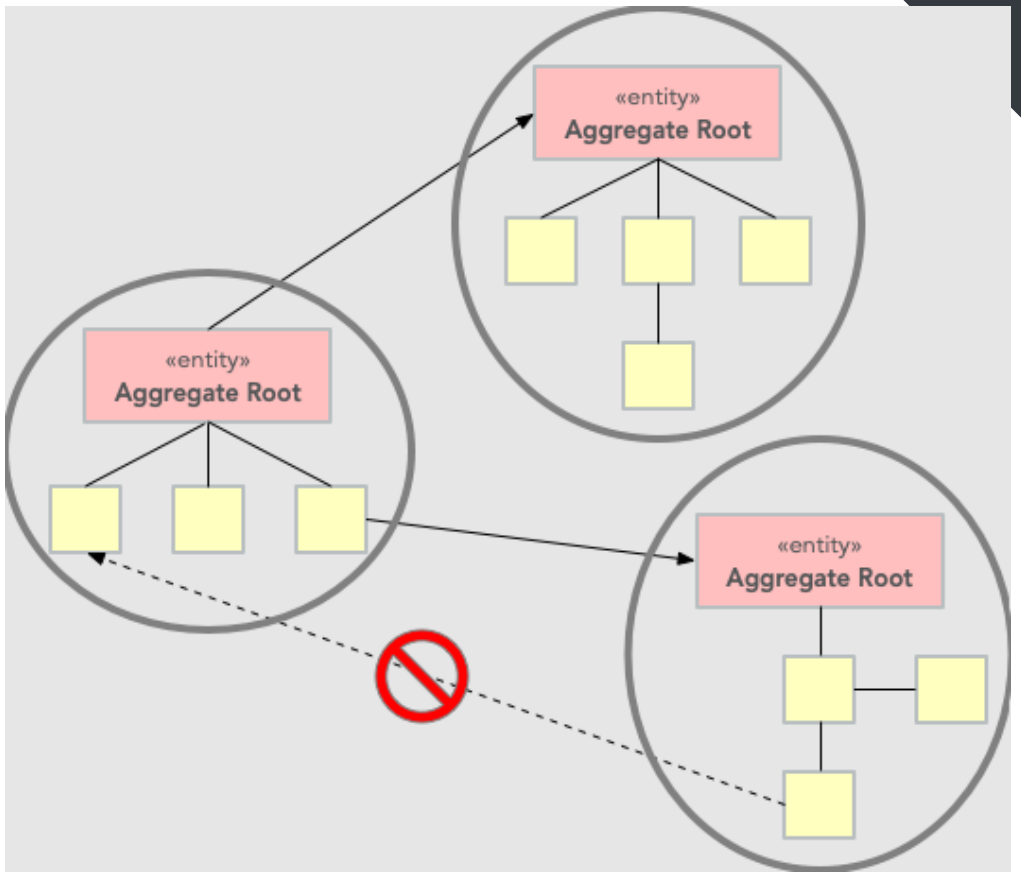
What is a Model?

- A model is a ***simplified representation*** of a thing or phenomenon that intentionally emphasizes certain aspects while ignoring others.
- Abstraction with a ***specific use in mind***.
- An abstraction can be only as precise as **the context is fixed** and **understand** by all involved in communication.

Rebecca Wirfs-Brock

Aggregate

- ~~Just a graph of entities.~~
- ~~An object that you can dump into your database.~~
- A cluster of domain objects that can be treated as a **single unit**.
- Aggregates are **domain concepts**.
- **Isolate** complex business rules.
- Allow **flexibility**.



Operational vs Analytical

Operational

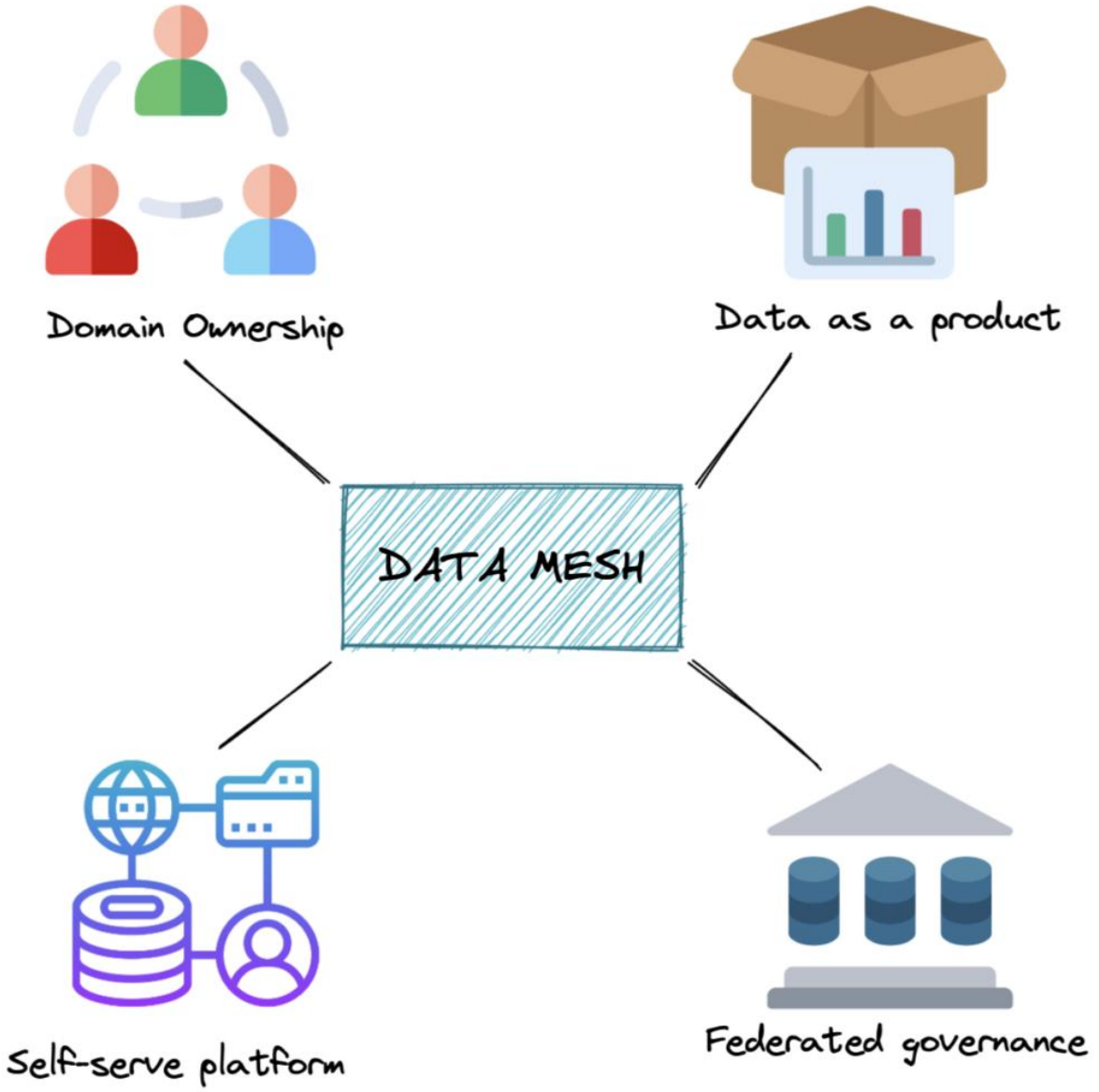
E T L

Analytical

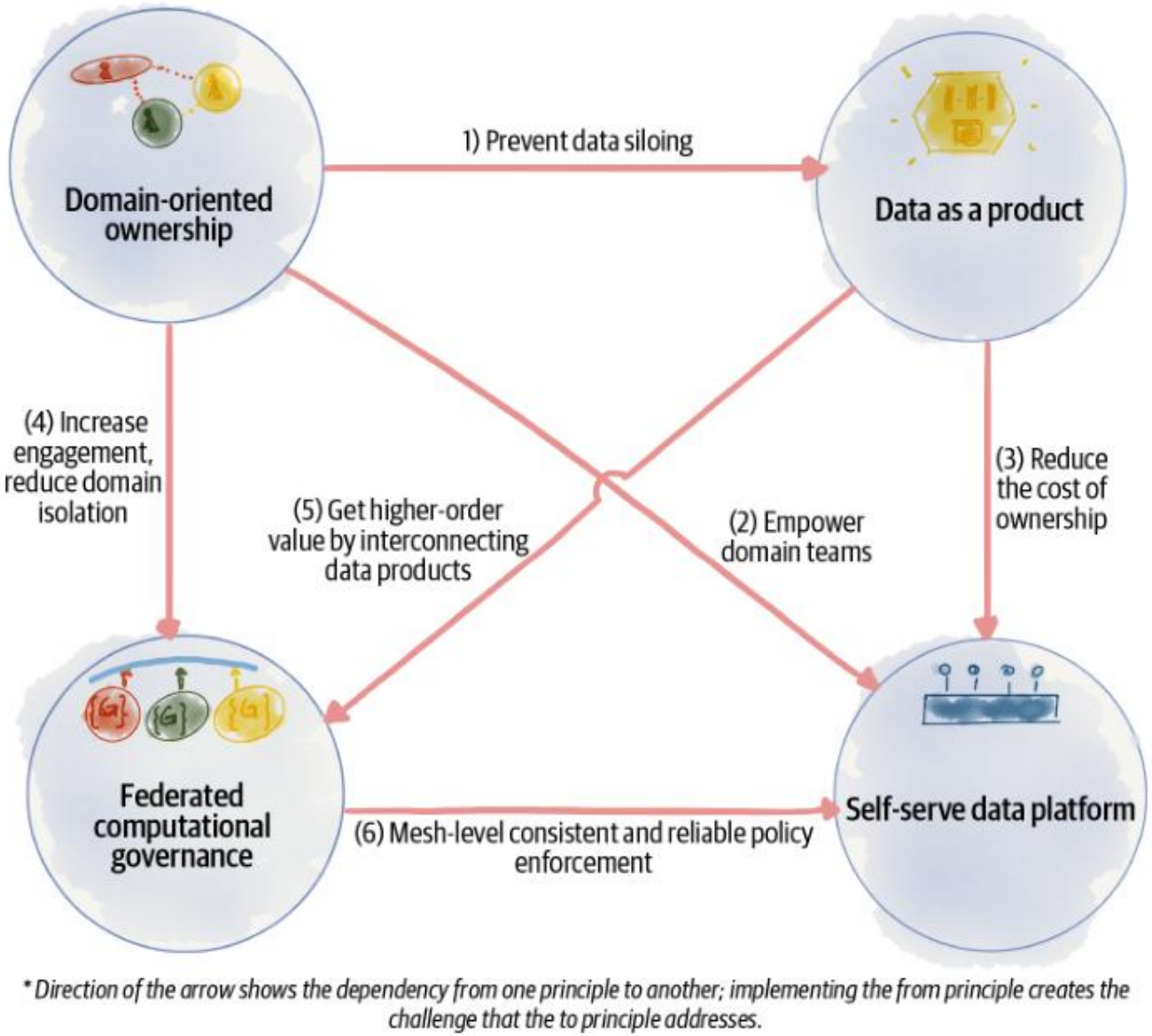
Centralized Monolithic

It Works! But …

Data Mesh
(Zhamak Dehghani)

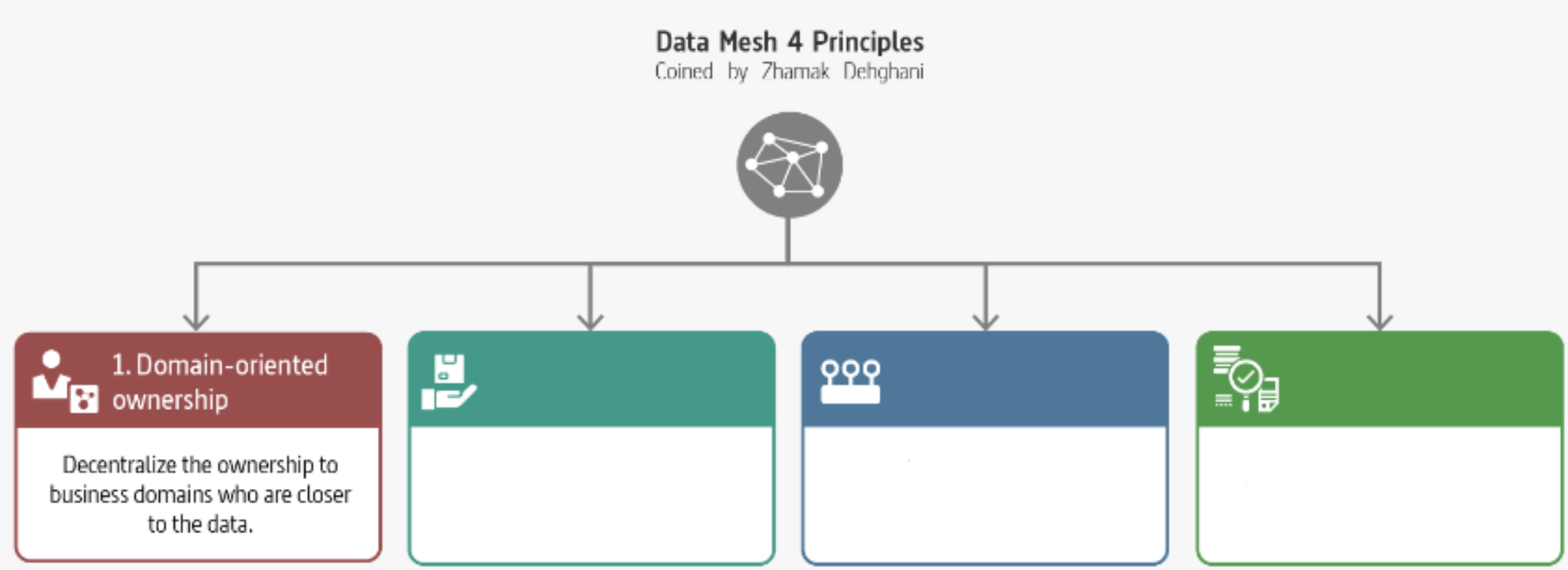


The Principles



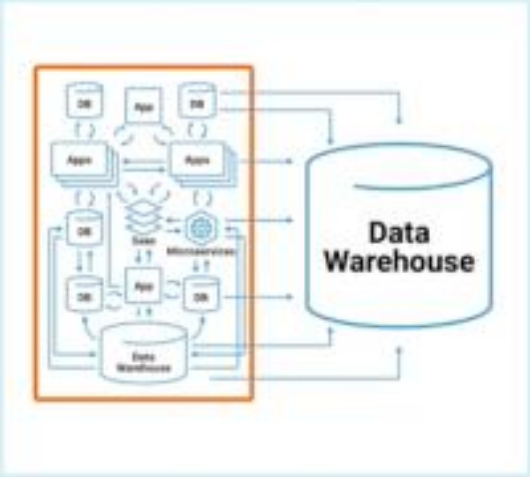
** Direction of the arrow shows the dependency from one principle to another; implementing the from principle creates the challenge that the to principle addresses.*

Domain-Oriented Ownership



Who is the Owner?

Anti-pattern: responsibility for data becomes the domain of the DWH team



Centralized
Data Ownership

Pattern: Ownership of a data asset given to the "local" team that is most familiar with it

Decentralized
Data Ownership

Motivations

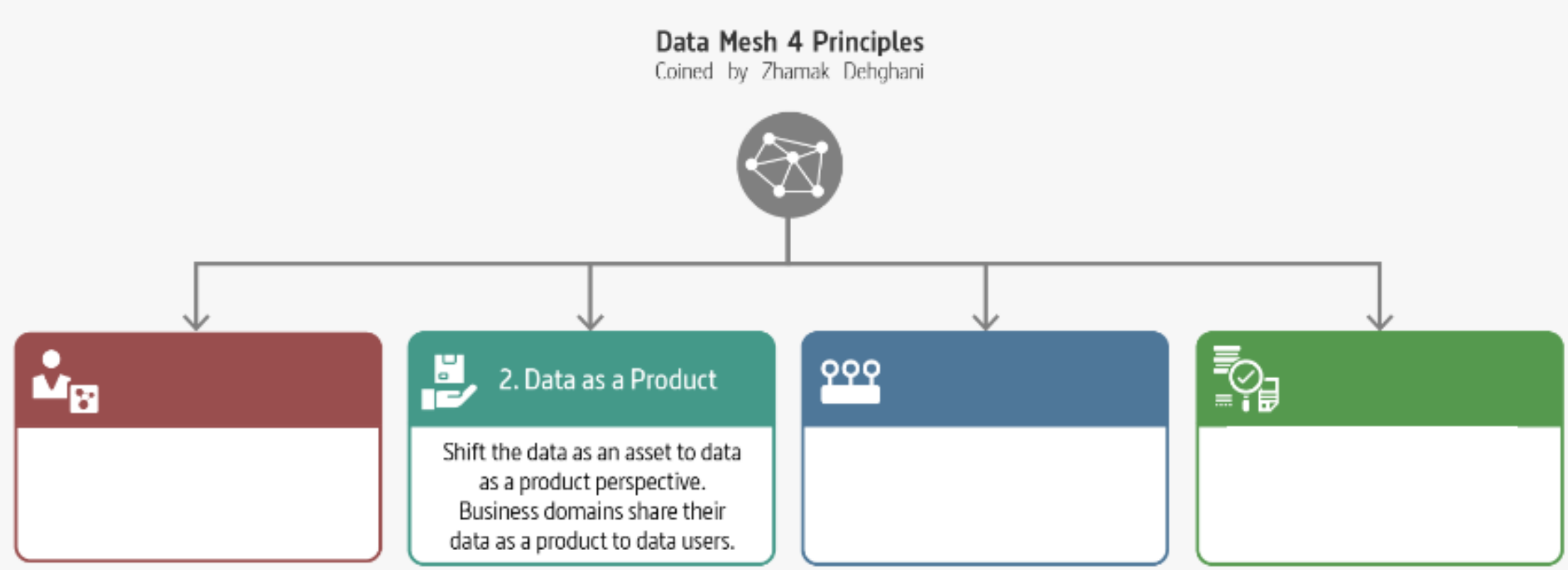
The ability to scale data sharing aligned with the axes of organisation growth

Optimize continuous change by localize change in business domains

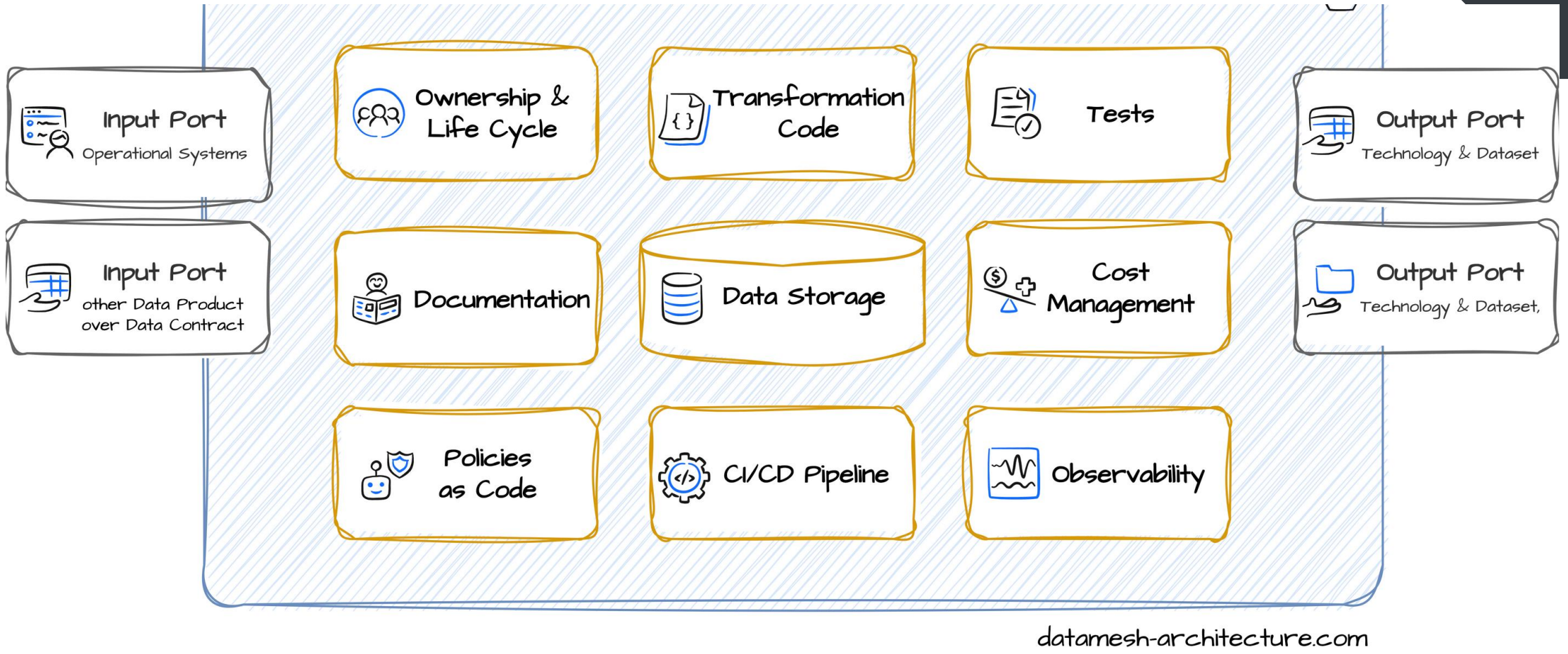
Support agility by reducing the need for synchronize between teams

Increase the resilience of ML solutions by removing complex intermediate data collection pipelines

Data as a Product



Data as a Product



Motivations

- Usable
- Valuable
- Feasible

Marty Cagan «Inspired»

- Discoverability
- Understanding

Don Norman «The design of every day things»

- Trusthful (trustworthy)

«A confident relationship with the unknown» Rachel Botsman

- Interoperable
- Natively Accessible

Building a Data Product

Facts are read-only	Only the data product owner can add new facts to the data product.
Facts are immutable	Data product owners can append new facts as an addendum to previous facts, but cannot modify, overwrite, or delete them
Facts are timestamped	Each fact contains a timestamp representing when it occurred, such that time-based ordering is made possible

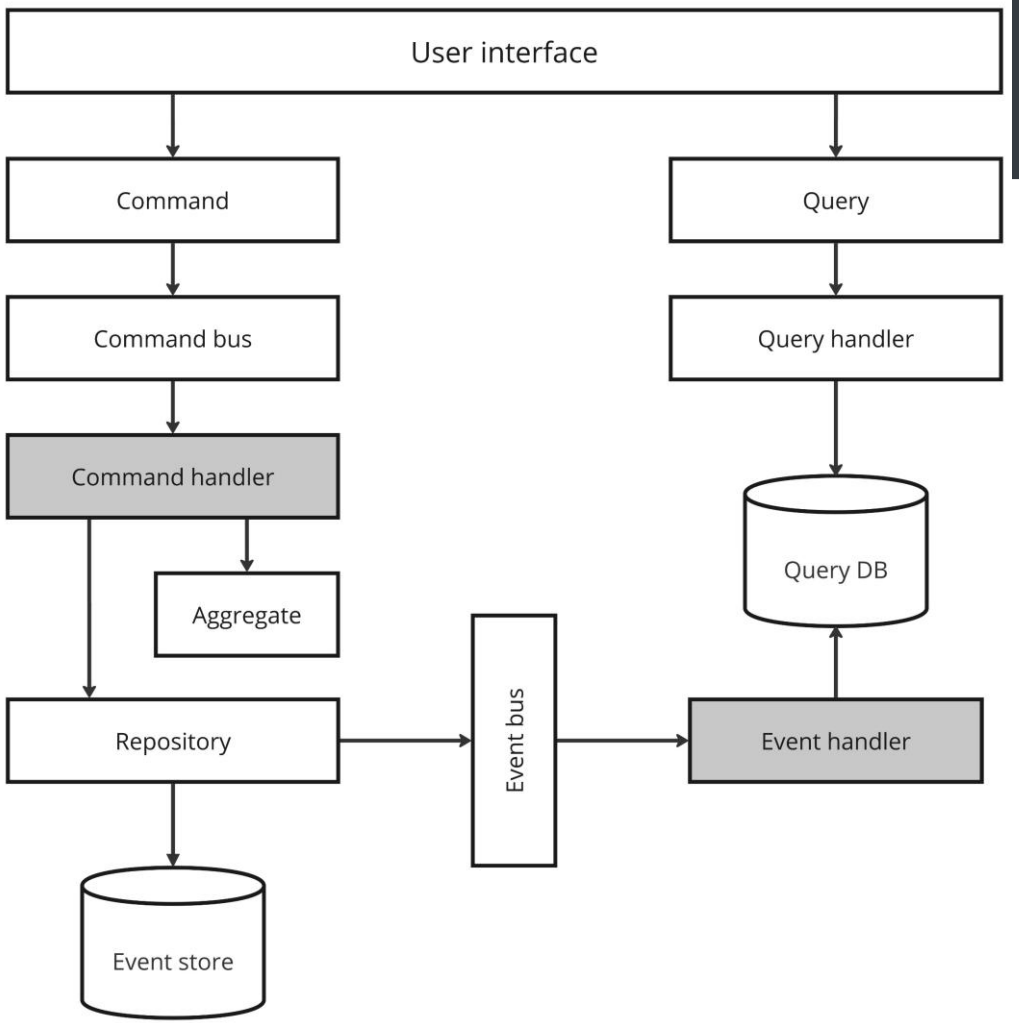
The Missing Pattern

… when Eric Evans wrote the blue book, he missed an essential building block that only came up later: the domain event …

Eric Evans

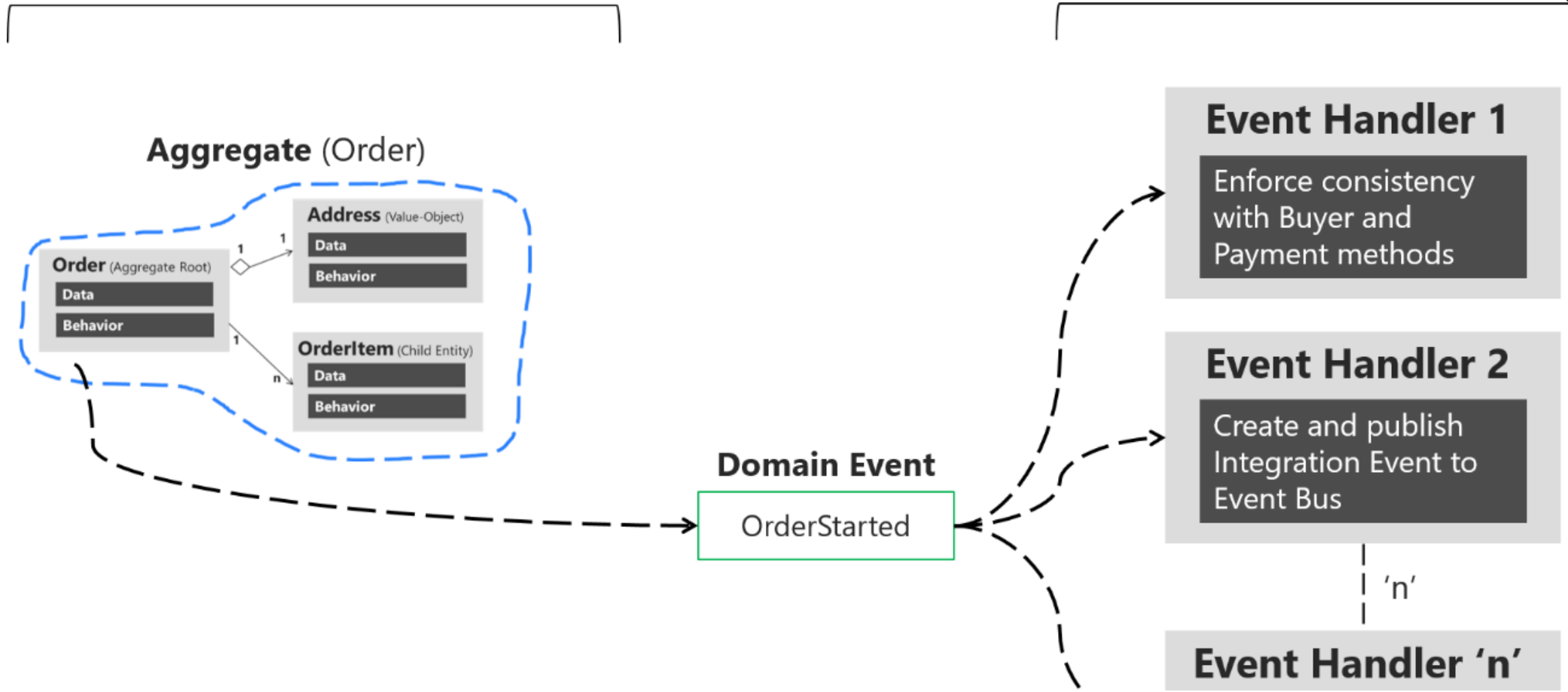
CQRS-ES

- We need another building block, and we just call this **domain event**.
- A domain event is **something important that happened** in the domain.
- A domain event is immutable!

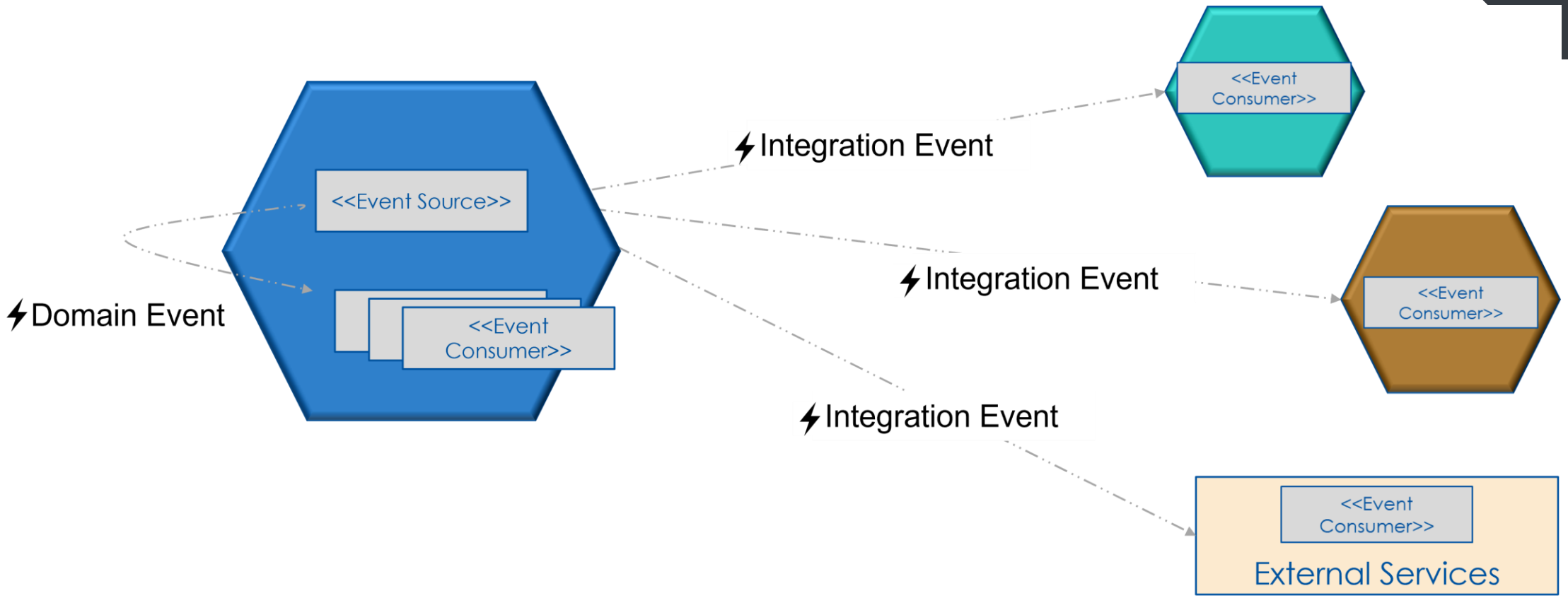


[Eric Evans: What I've learned about DDD since the book]

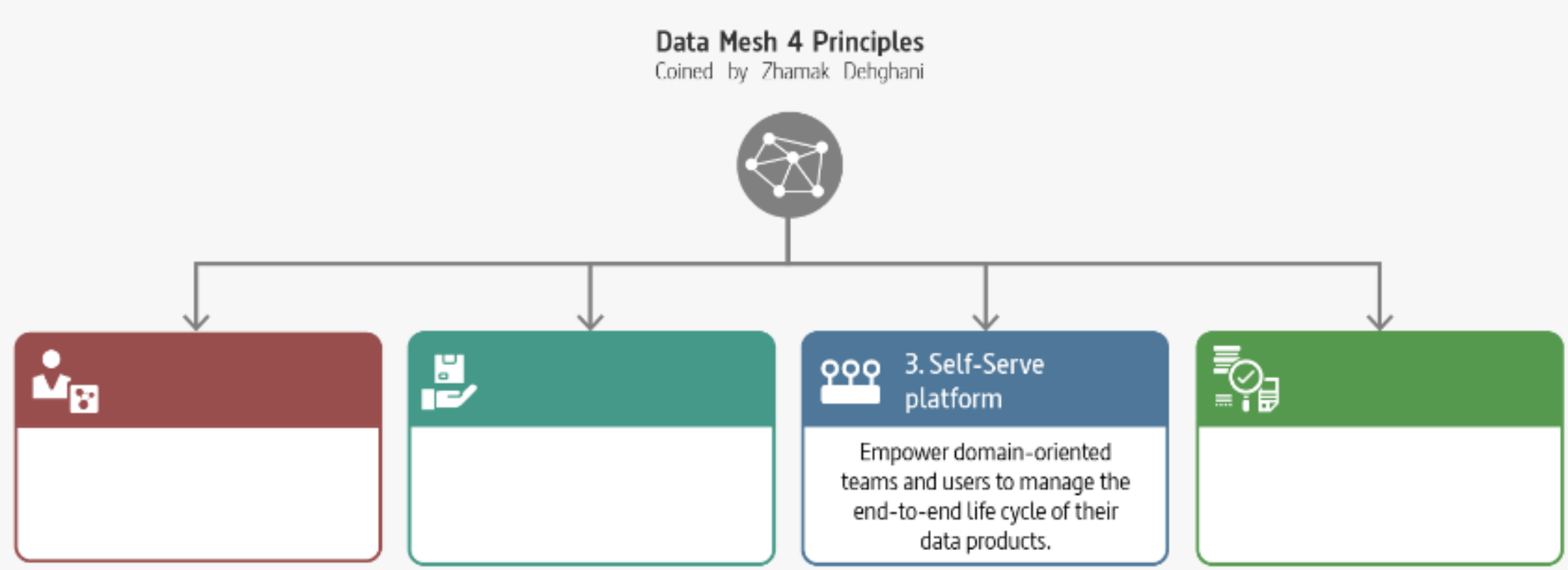
Domain Event



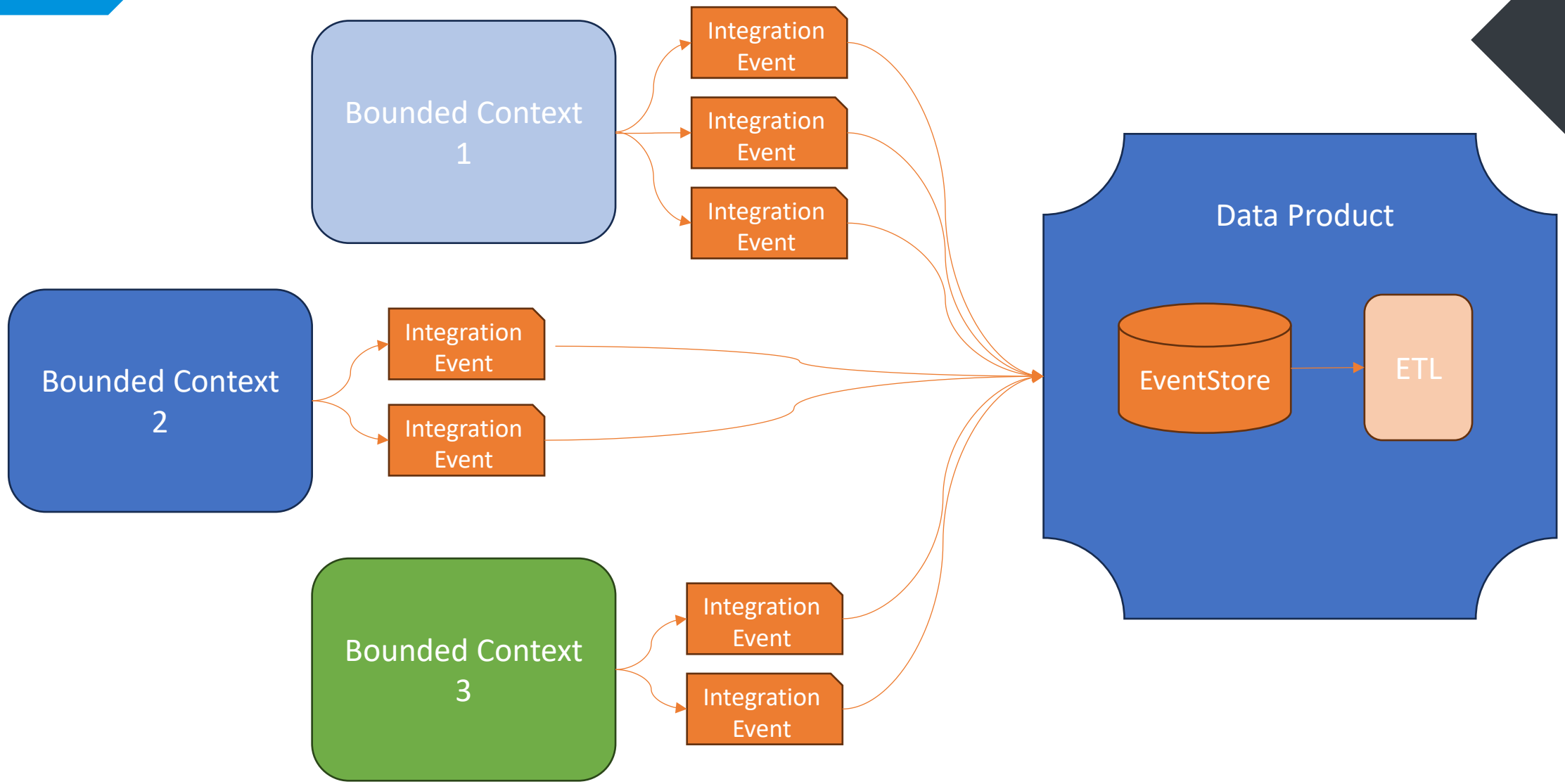
Integration Event



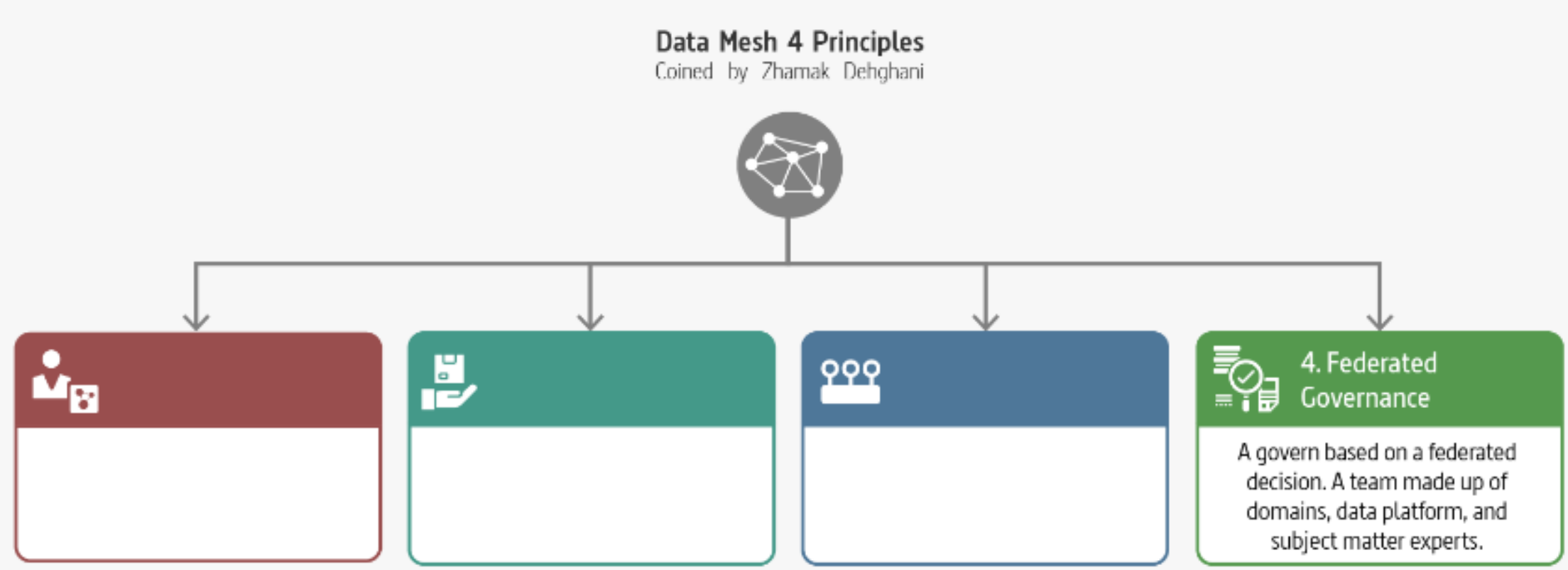
Self-serve Data Platform



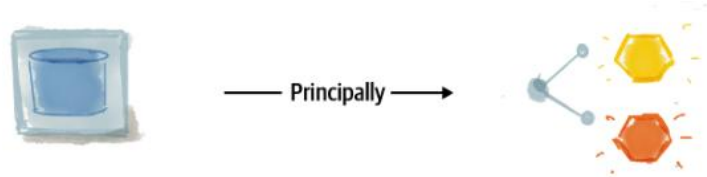
Self-serve Data Platform



Federated Computational Governance

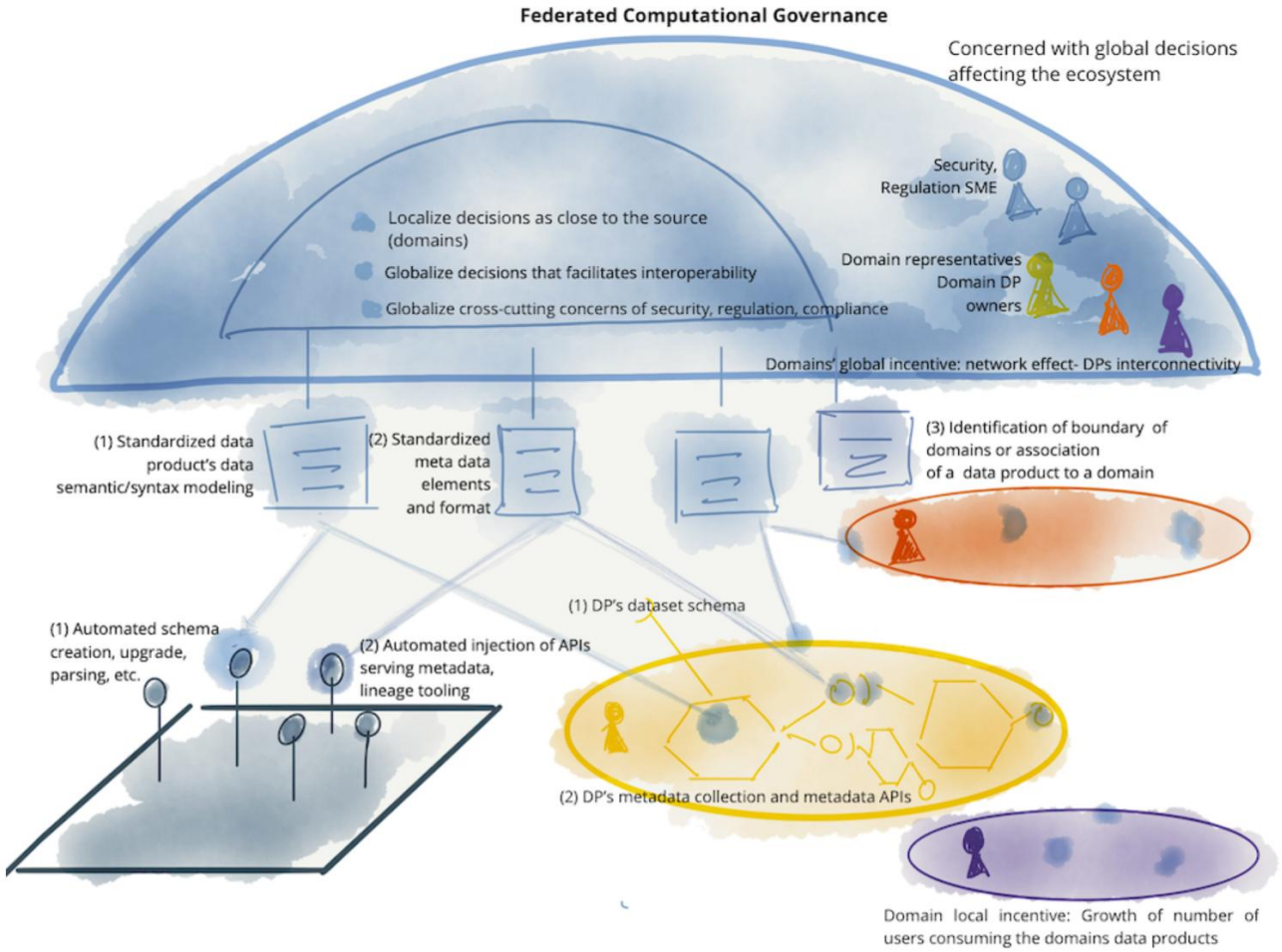


A socio-technical approach



Data Product Owner

Federated Computational Governance



Federated Computational Governance

Decentralization and domain self-sovereignty

Interoperability through global standardization across data products

A dynamic topology

Automatic exection of decisions and policies by the platform

Maintains equilibrium between centralization and decentralization

Tutti a Verona!

https://www.eventbrite.it/e/biglietti-ddd-open-space-2025-verona-875895776847

INTR3

DATA SATURDAYS #64 PARMA 2024

Grazie!!!

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Alberto Acerbis

MVP Microsoft Most Valuable Professional

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