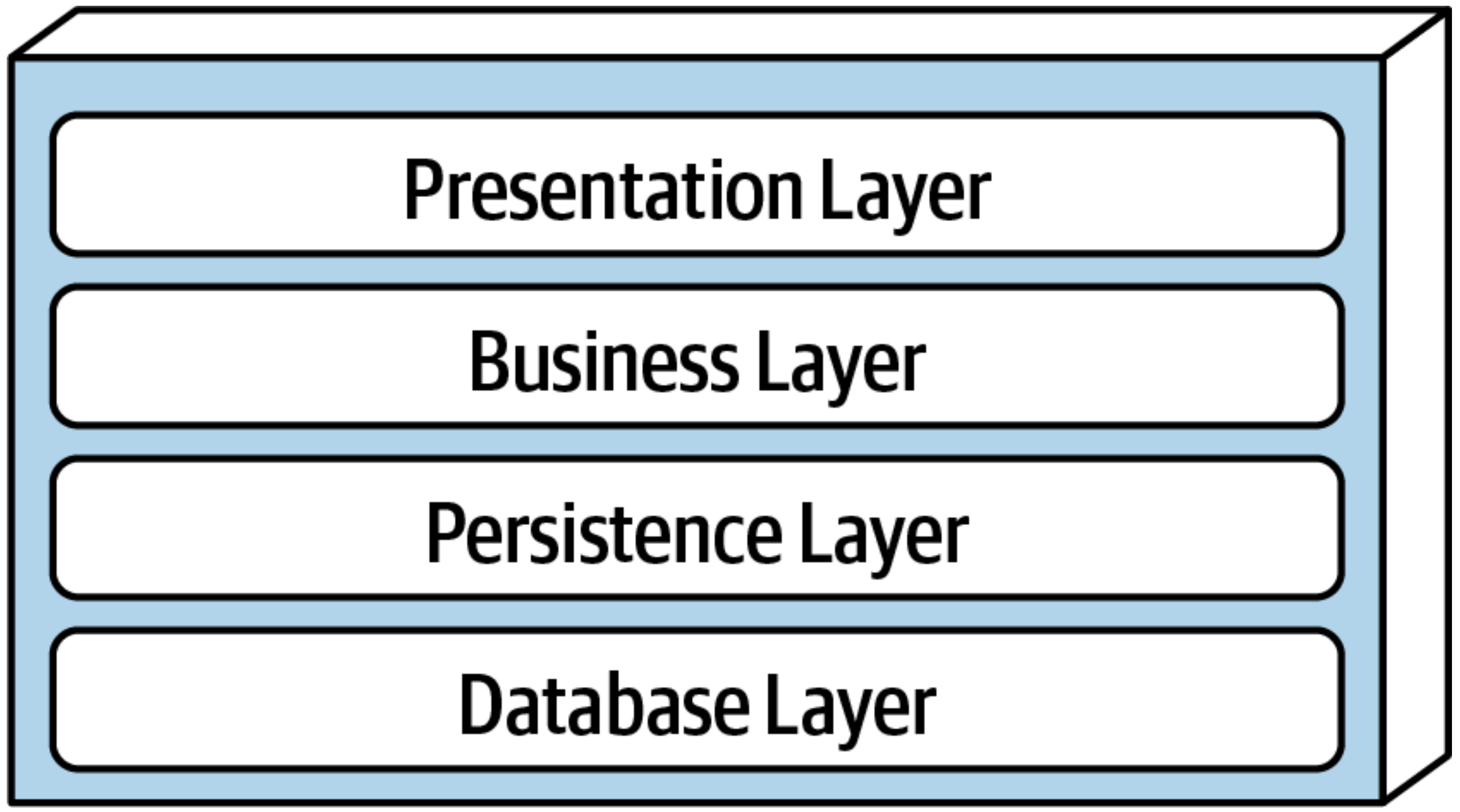
// layered

—topology

Each layer of the layered architecture style has a specific role and responsibility within the architecture

—usage

Good for small and simple website



// pipeline

—topology

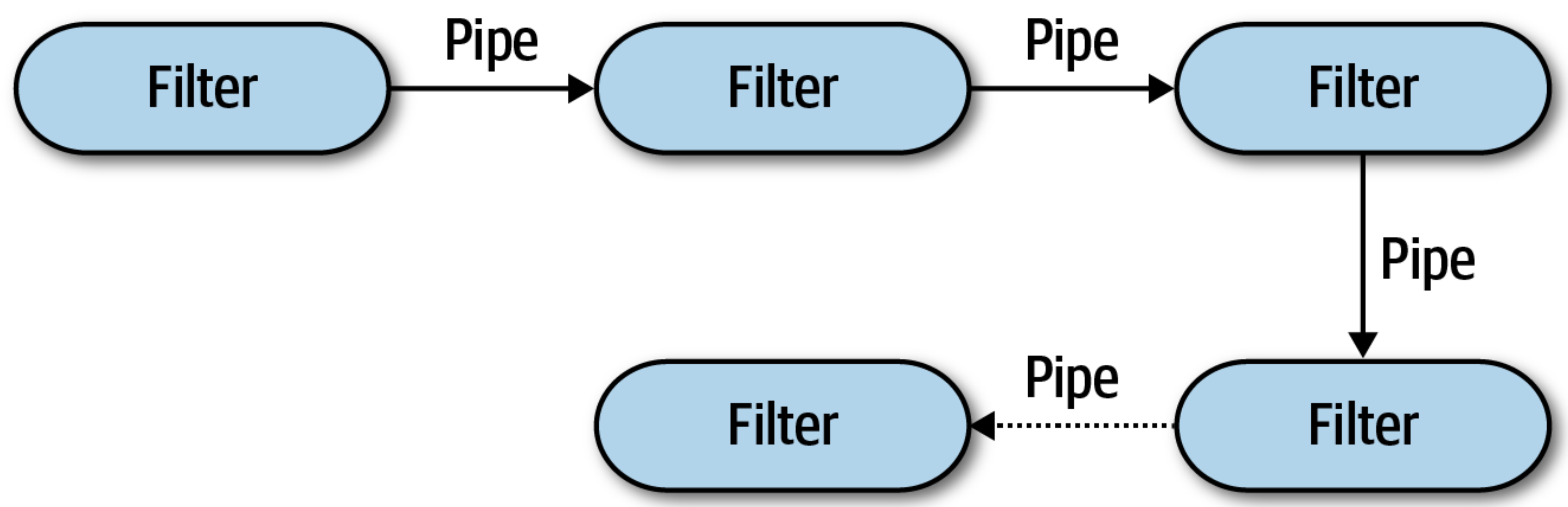
The pipes and filters coordinate in a specific fashion, with pipes forming one-way communication between filters, usually in a point-to-point fashion

—usage

specially tasks that facilitate simple, one-way processing

—use cases

bash, zsh, apache camel etc



// microkernel

—topology

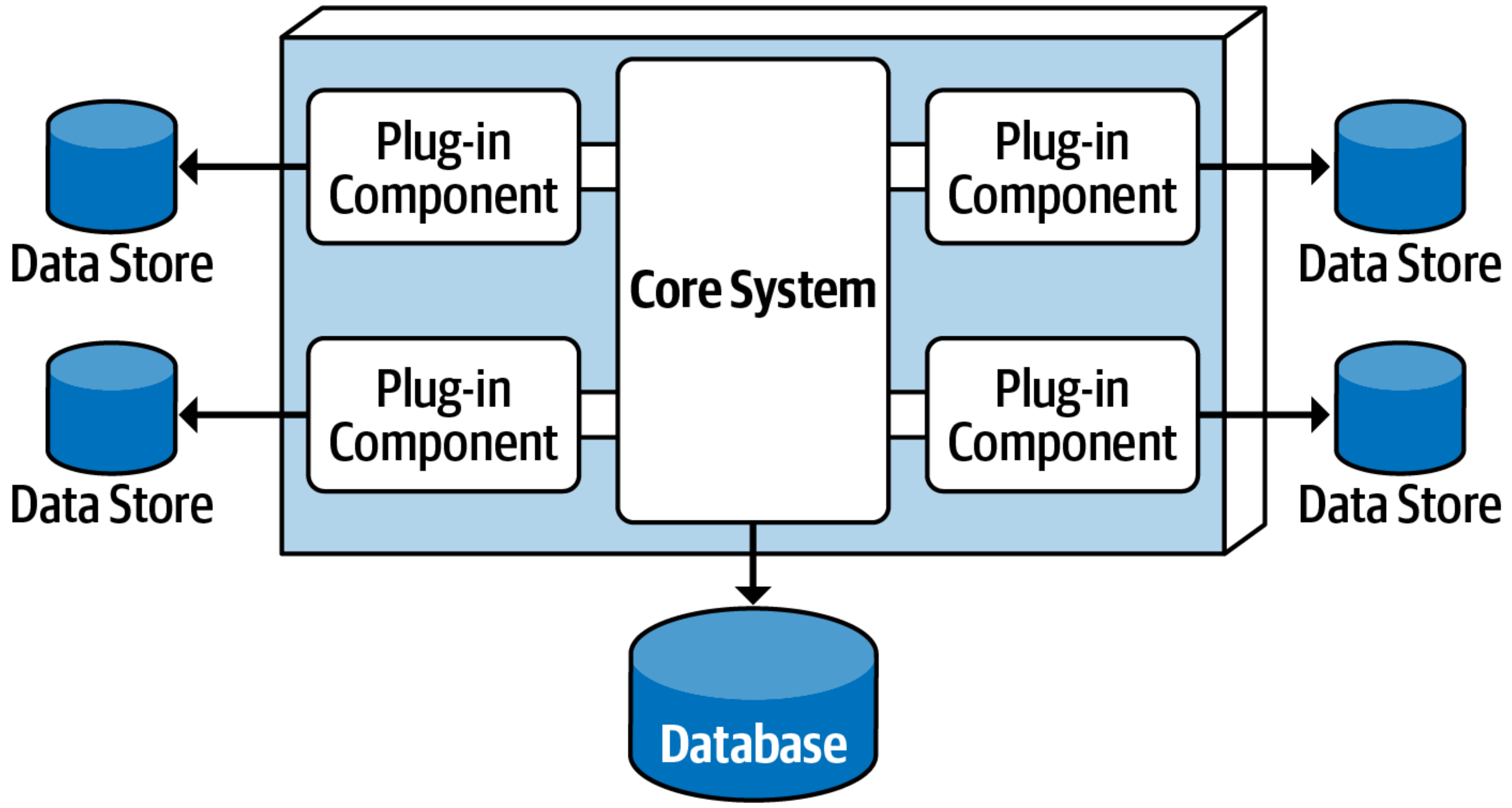
Simple monolithic architecture consisting of two architecture components: a core system and plug-in components

—usage

Most of the tools used for developing and releasing software are implemented using the microkernel architecture

—use cases

Some examples include the Eclipse IDE, PMD, Jira, and Jenkins, to name a few).



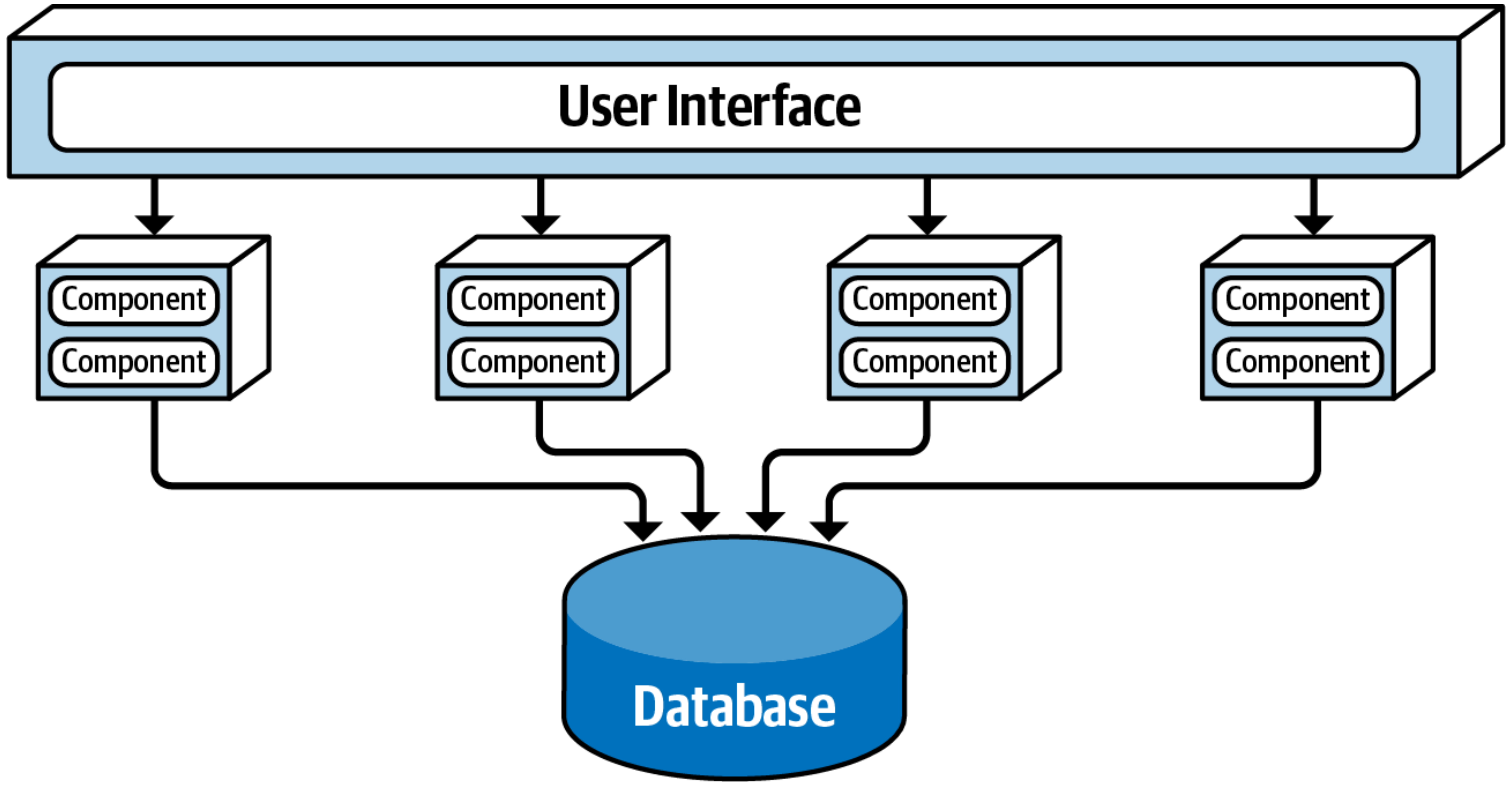
// service based

— topology

Fine Grained Services with Single Database - distributed macro layered structure consisting of a separately deployed user interface, separately deployed remote coarse-grained services, and a monolithic database.

— usage

A good choice for achieving a good level of architectural modularity without having to get tangled up in the complexities and pitfalls of granularity business transaction.



…. *hybrid version of micro services architecture*

// event driven

—topology

Request-based model -
There are two primary topologies within this architecture: the <u>mediator</u> topology and the <u>broker</u> topology.

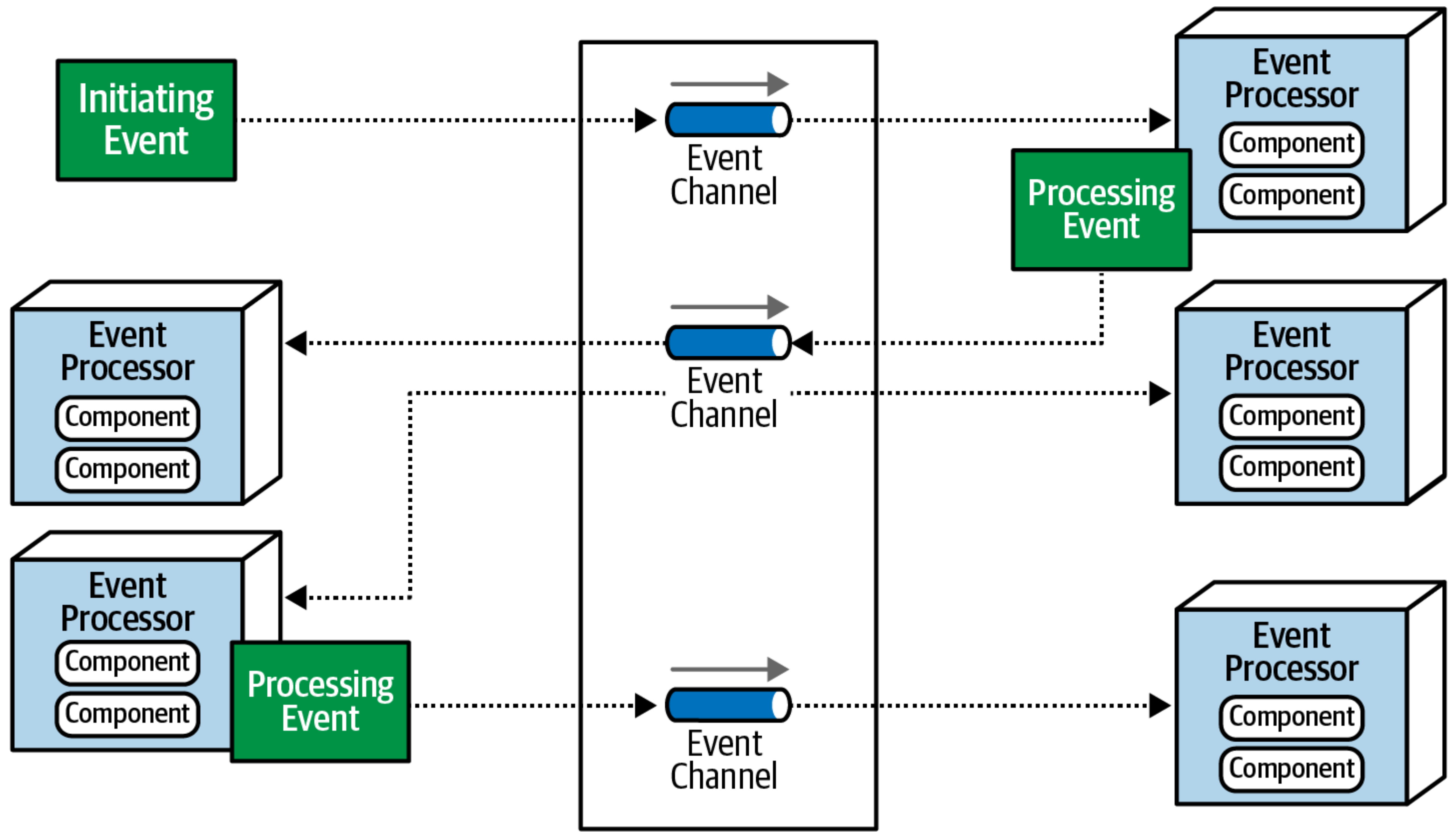
—usage

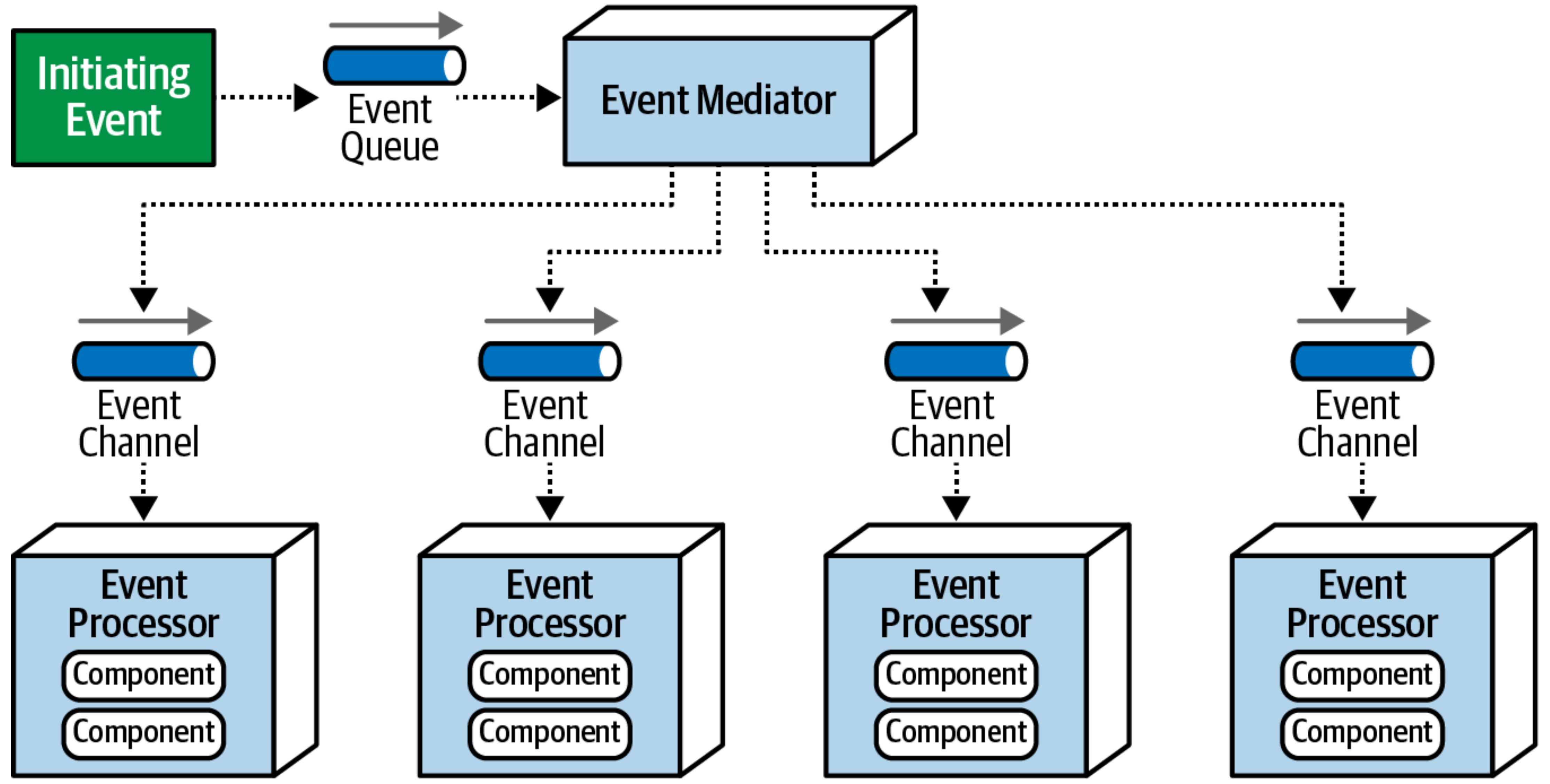
asynchronous communication for both fire-and-forget processing (no response required) as well as request/reply processing.

—use cases

Posting comments, Retrieving order history information, preparing and downloading bank statement etc

<u>broker</u> topology.





// space based

—topology

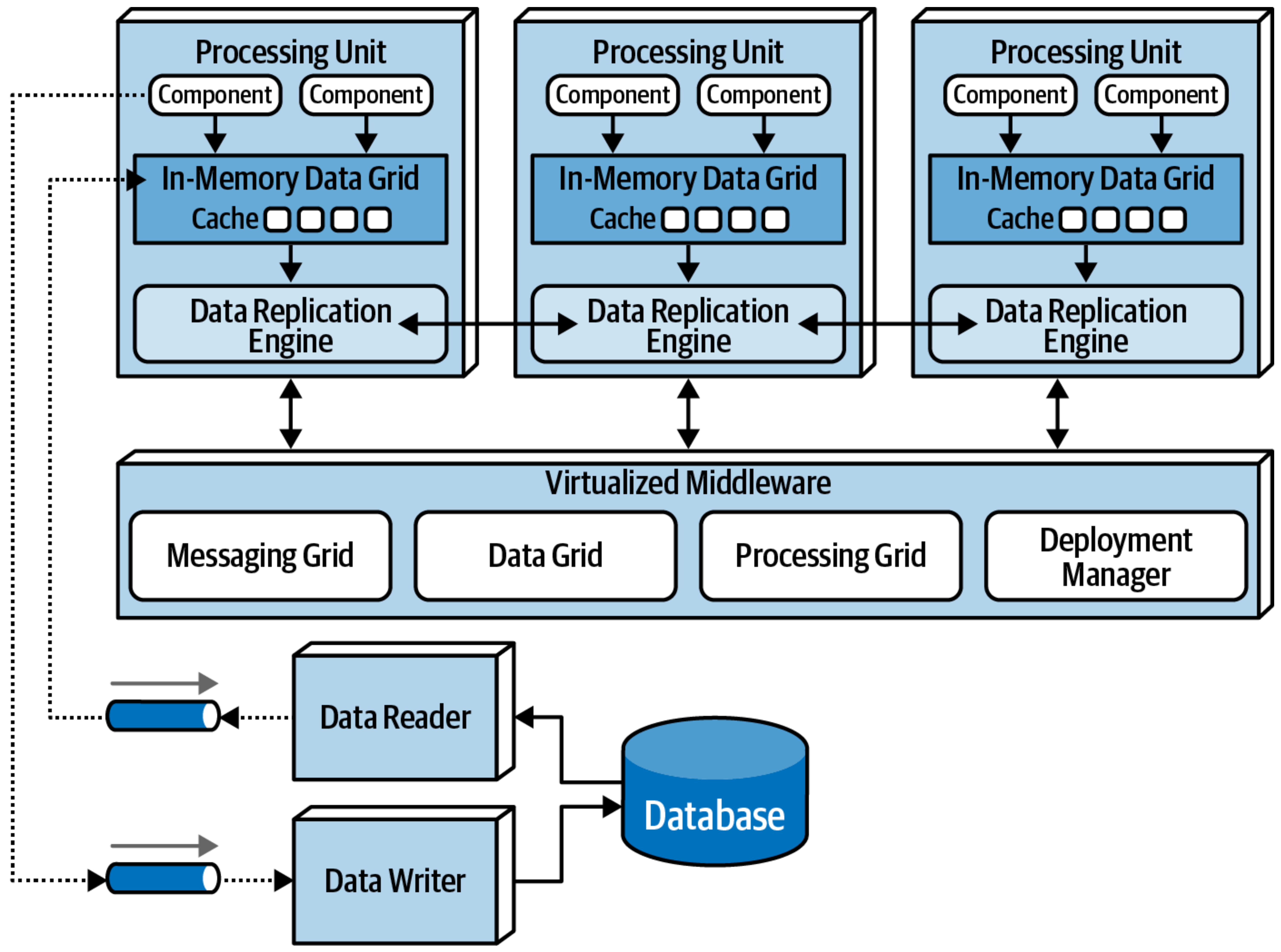
High scalability, *high elasticity*, and high performance are achieved by removing the central database as a synchronous constraint in the system and instead leveraging replicated in-memory data grids.

—usage

Mostly use in case high elastic system is required

—use cases

Online Auction, Concert Ticketing - Popular Star Movie Launch



// orchestrated SOA

—topology

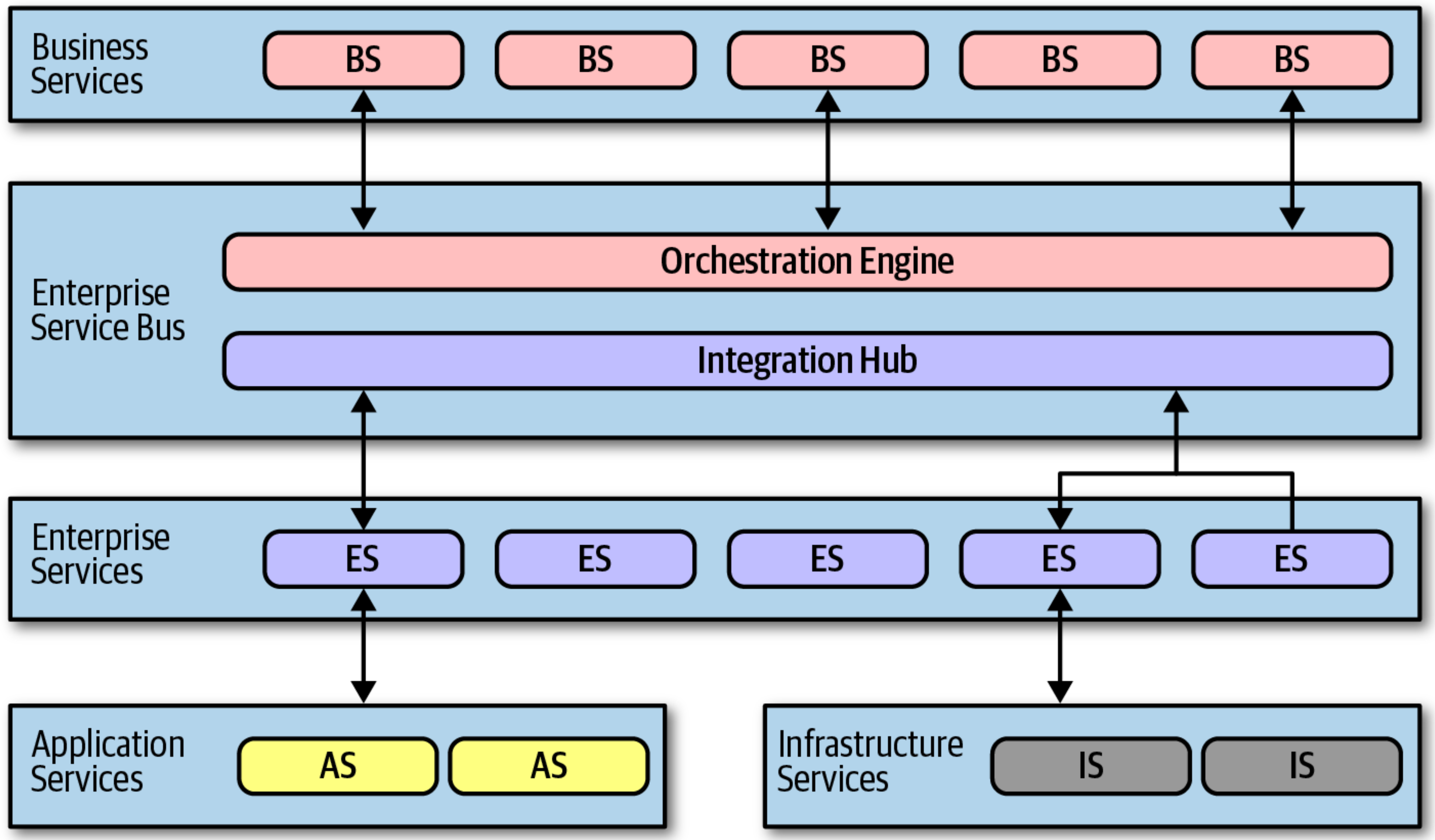
It establishes a taxonomy of services within the architecture, each layer with a specific responsibility.

—usage

This style of service-oriented architecture appeared just as companies were becoming enterprises in the late 1990s:

—use cases

Merging with smaller companies, growing at a break-neck pace, and requiring more sophisticated IT to accommodate this growth.



// microservices

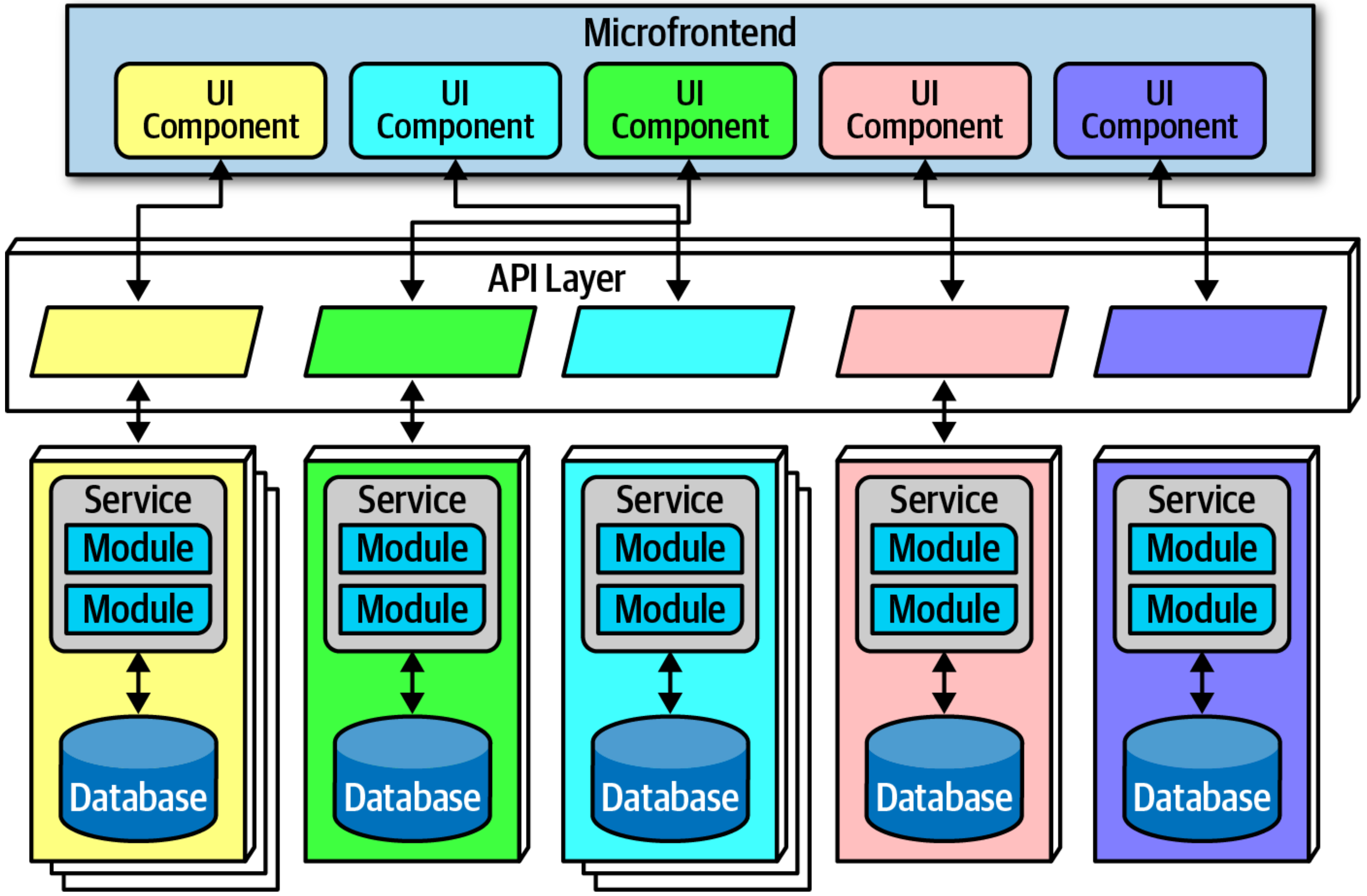
—topology

Distributed and loosely coupled.

It is heavily inspired by the ideas in domain-driven design (DDD), a logical design process for software projects. Treat each function as an independent service that can be changed, updated, or deleted without disrupting the rest of the application.

—usage

- When you want your monolithic application to accommodate scalability, agility, manageability and delivery speed
- If the goal requires high degrees of decoupling and separation of concerns for service owners.



—style rating against architectural characteristics

architects must deal with the extraordinarily wide variety of architecture characteristics across all different aspects of software projects

Architectural Characteristics	**Microkernal**	**Pipeline**	**Layered**	**Service Based**	**Event Driven**	**Space Based**	**Orchestration Driven SOA**	**Microservices**
Number of Quanta	1	1	1	1 to Many	1 to Many	1 to Many	1	1 to Many
Deployability	★★★	★★	★	★★★★	★★★	★★★	★	★★★★
Elasticity	★	★	★	★★	★★★	★★★★★	★★★	★★★★★
Evolutionary	★★★	★★★	★	★★★	★★★★★	★★★	★	★★★★★
Fault Tolerance	★	★	★	★★★★	★★★★★	★★★	★★★	★★★★
Modularity	★★★	★★★	★	★★★★	★★★★	★★★	★★★	★★★★★
Overall Cost	★★★★★	★★★★★	★★★★★	★★★★	★★★	★★	★	★
Performance	★★★	★★	★★	★★★	★★★★★	★★★★★	★★	★★
Reliability	★★★	★★★	★★★	★★★★	★★★	★★★★	★★	★★★★
Scalability	★	★	★	★★★	★★★★★	★★★★★	★★★★	★★★★★
Simplicity	★★★★	★★★★★	★★★★★	★★★	★	★	★	★
Testability	★★★	★★★	★★	★★★★	★★	★	★	★★★★