DOMAIN-CENTRIC?

WHY HEXAGONAL AND ONION ARCHITECTURE ARE ANSWERS TO THE WRONG QUESTION — AND WHAT TO ASK INSTEAD

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Frameworks & Architecture in the Spring engineering team, OpenSource enthusiast, all things Java, DDD, REST, software architecture, drums & music

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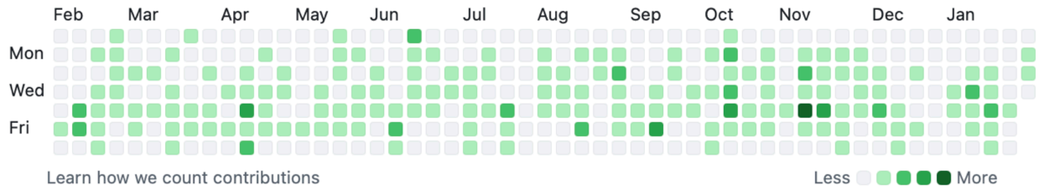
1,717 contributions in the last year



Learn how we count contributions

Less More

2026 2025 2024 2023 2022 2021 2020

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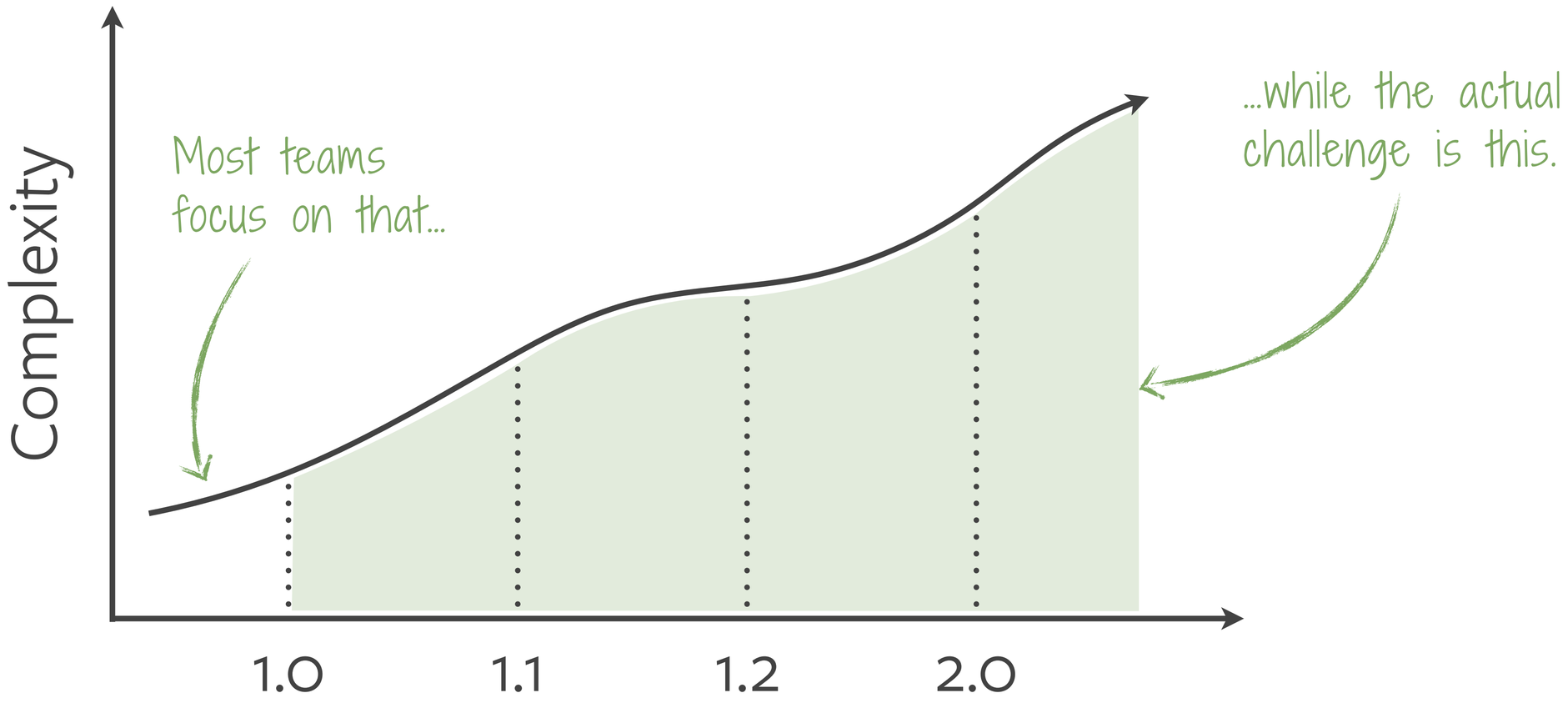
Activity overview

Code review

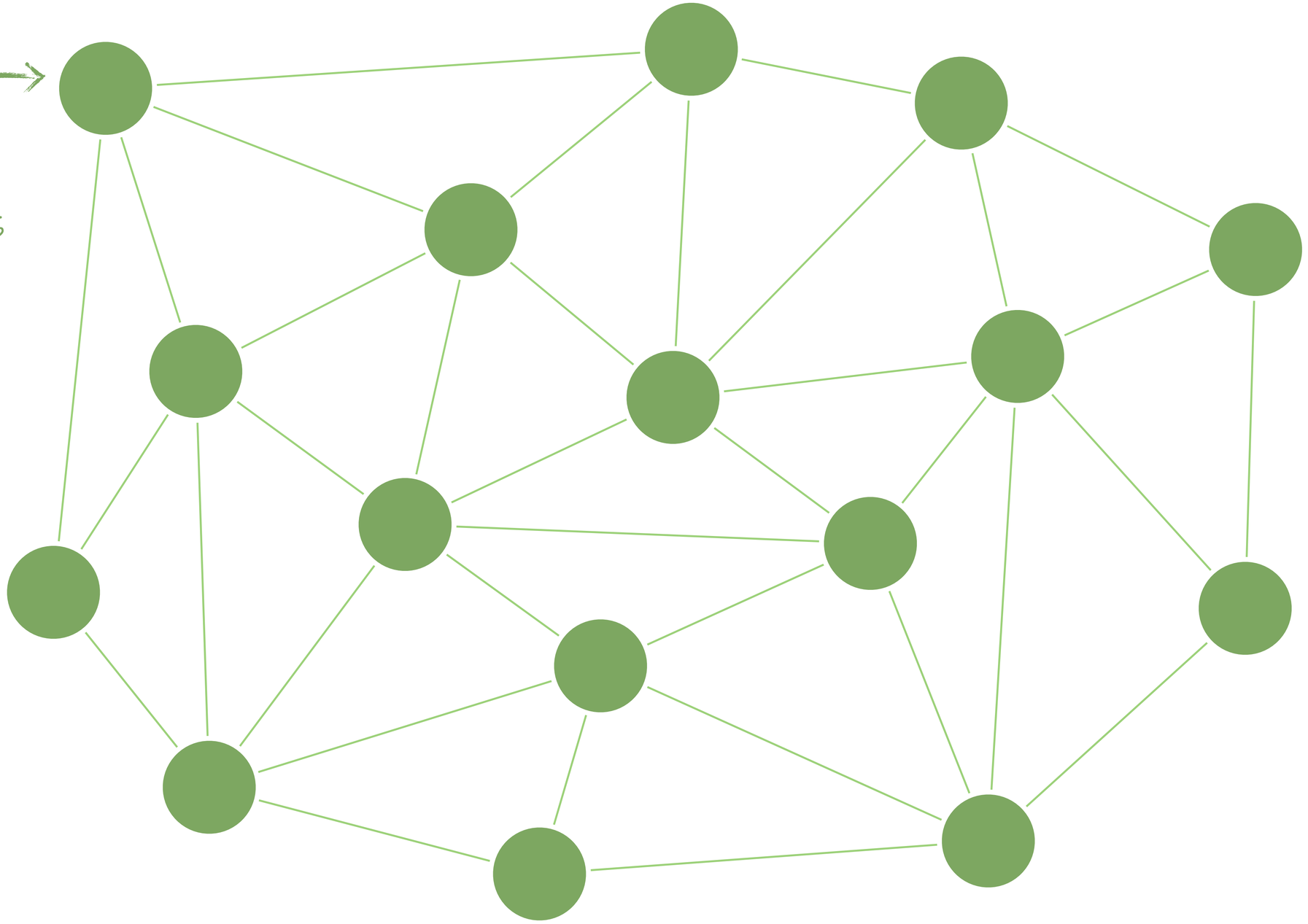

Complexity
Most teams
focus on that...
...while the actual
challenge is this.
1.0
1.1
1.2
2.0

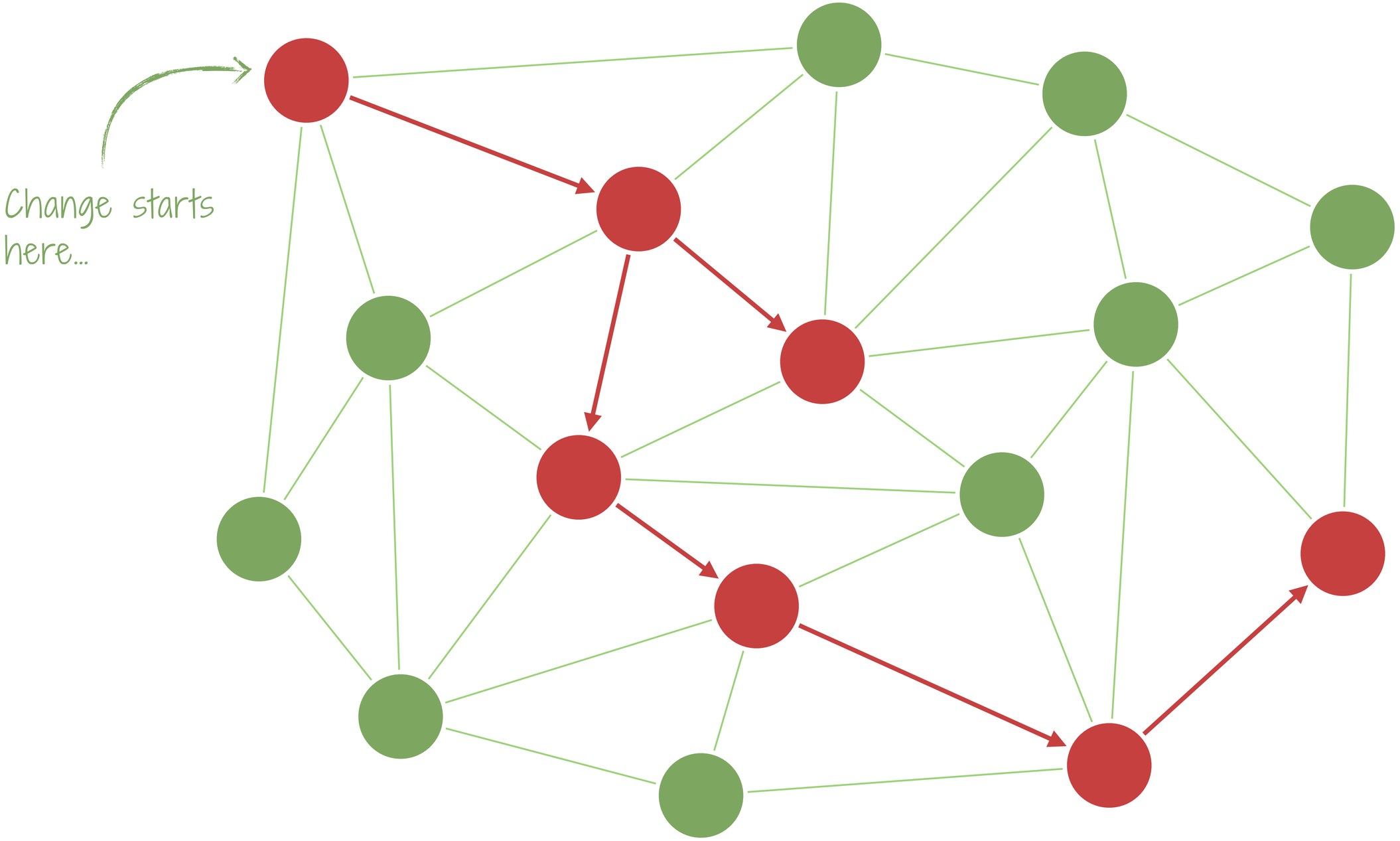
Cost of Software
≈
Cost of Change

Beck - A Daily Practice of Empirical Software Design — https://www.youtube.com/watch?v=yBEcq23OgB4 (2023)
Yourdon, Constantine - Structured Design — Fundamentals of a Discipline of Computer Program and Systems Design (1979)

Cost of Change
≈
Coupling

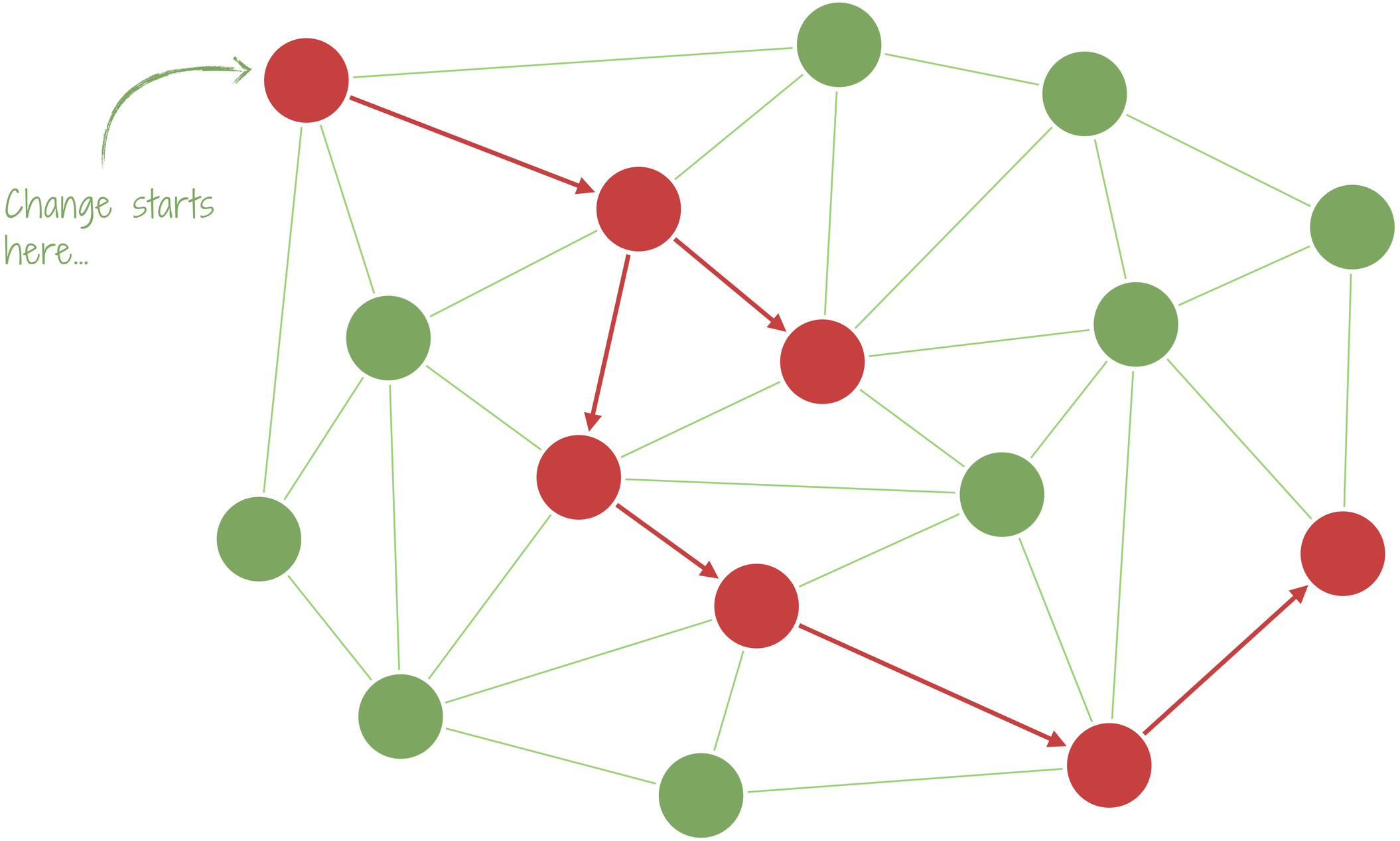
Change starts here...




Change starts here...

Not all coupling is born equal

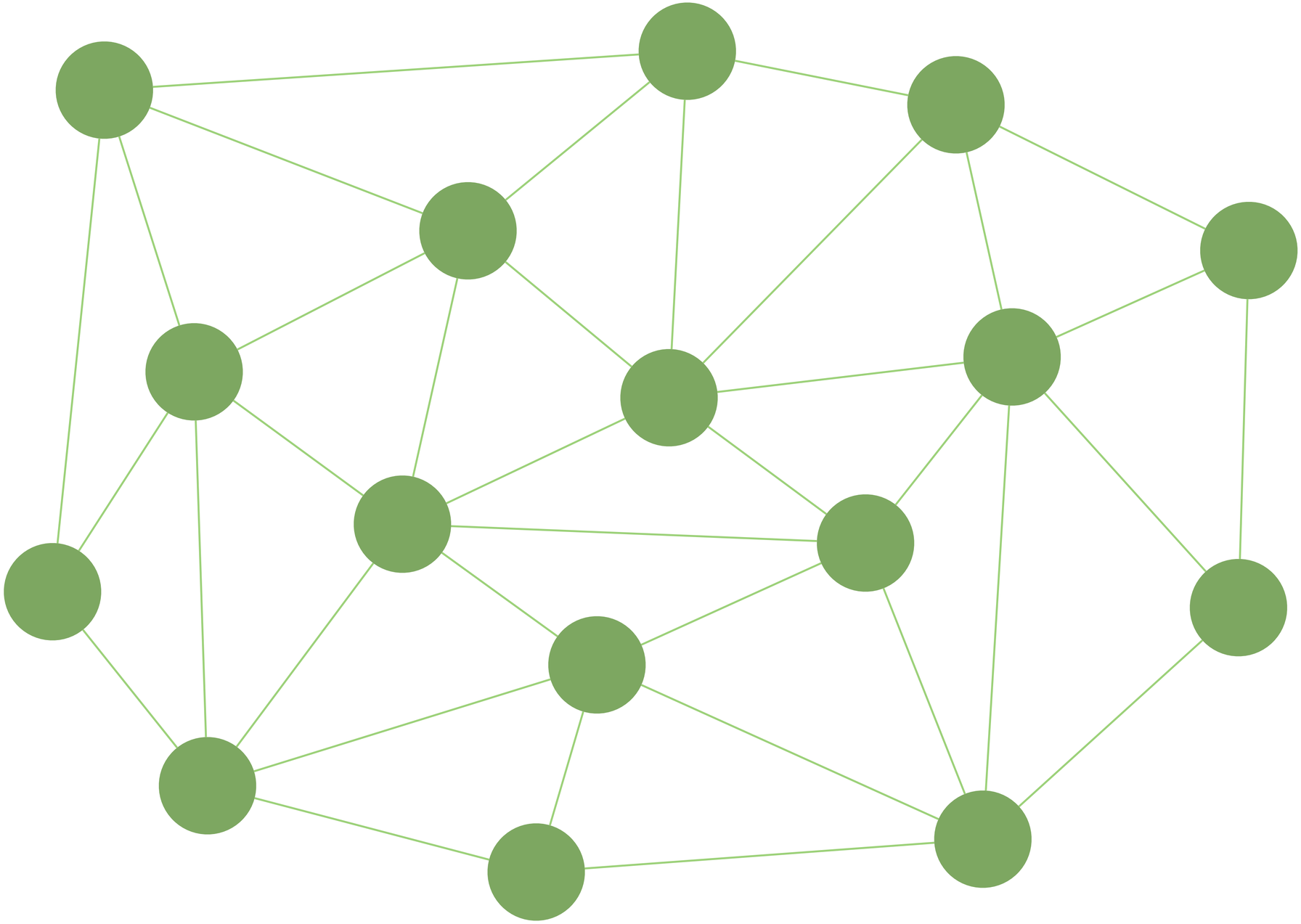
Decoupling has its cost, too

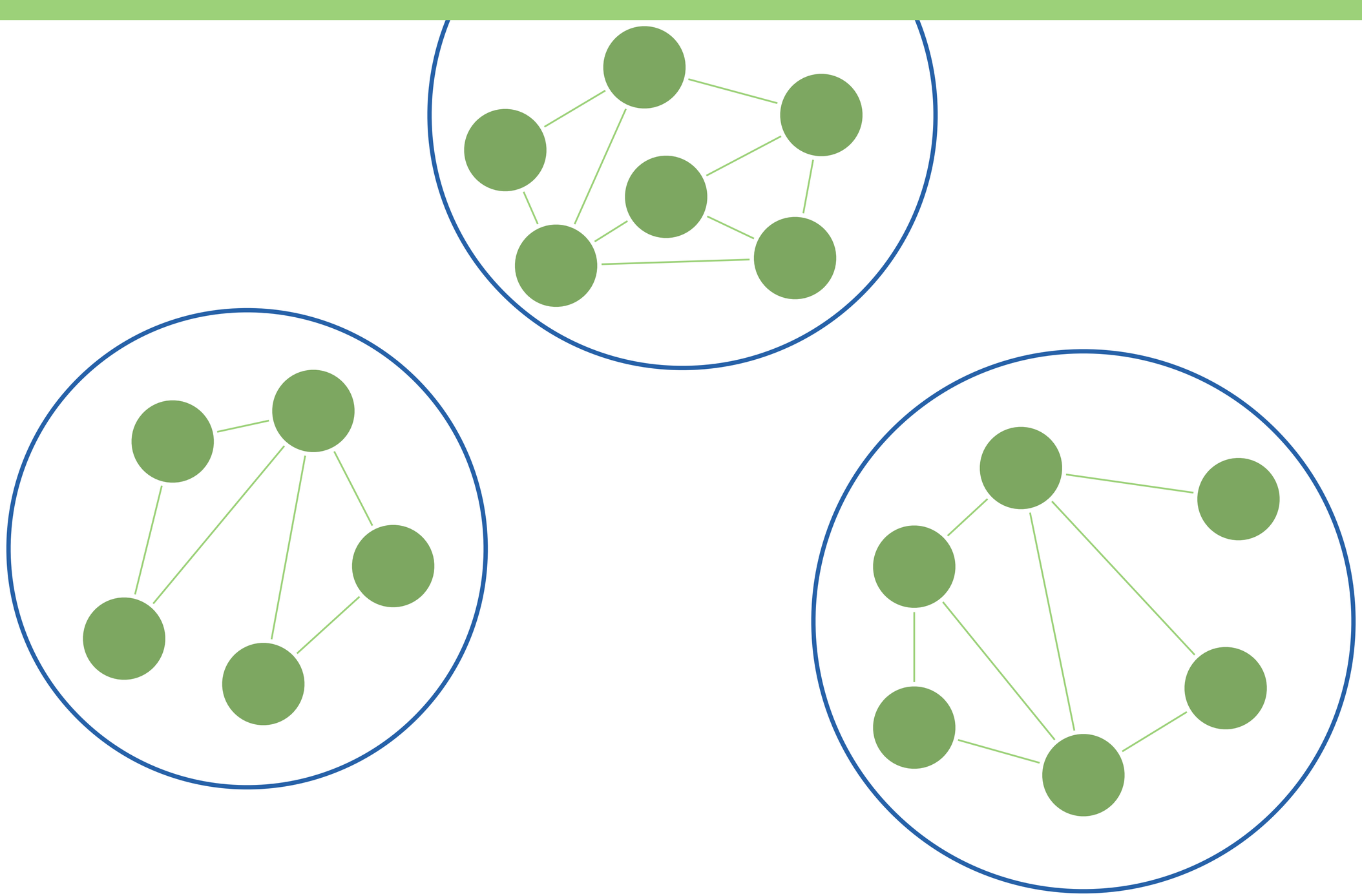

Change starts here...

Cohesion

Cohesion is coupling in the right™ places

Software design is the act of modeling units of strong cohesion, loosely coupled to each other.





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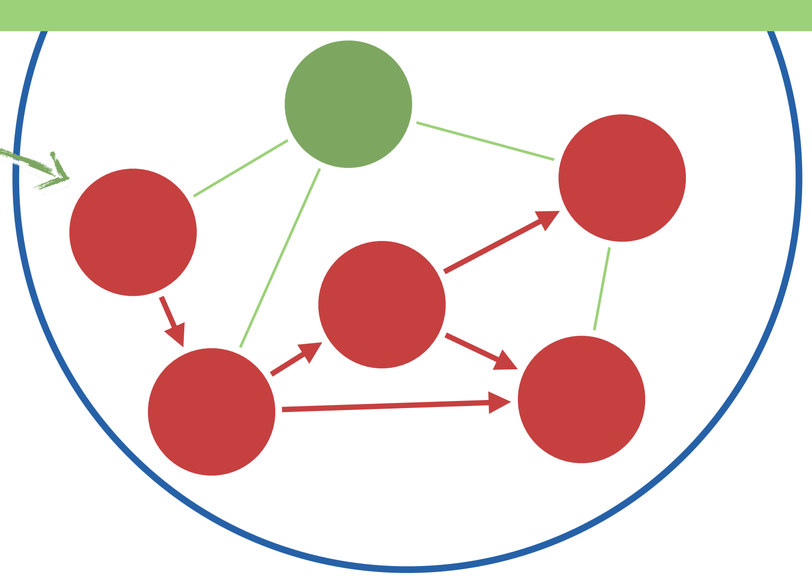

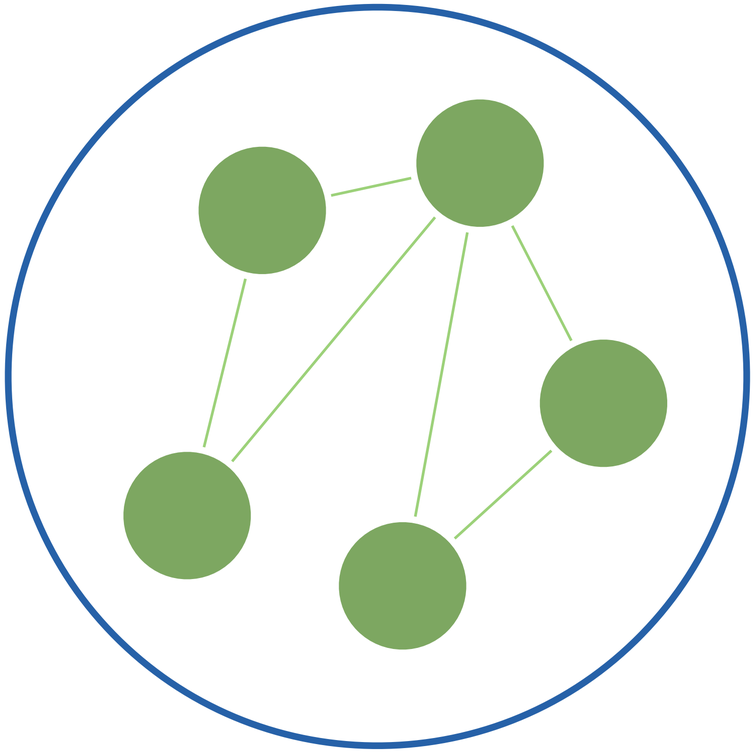

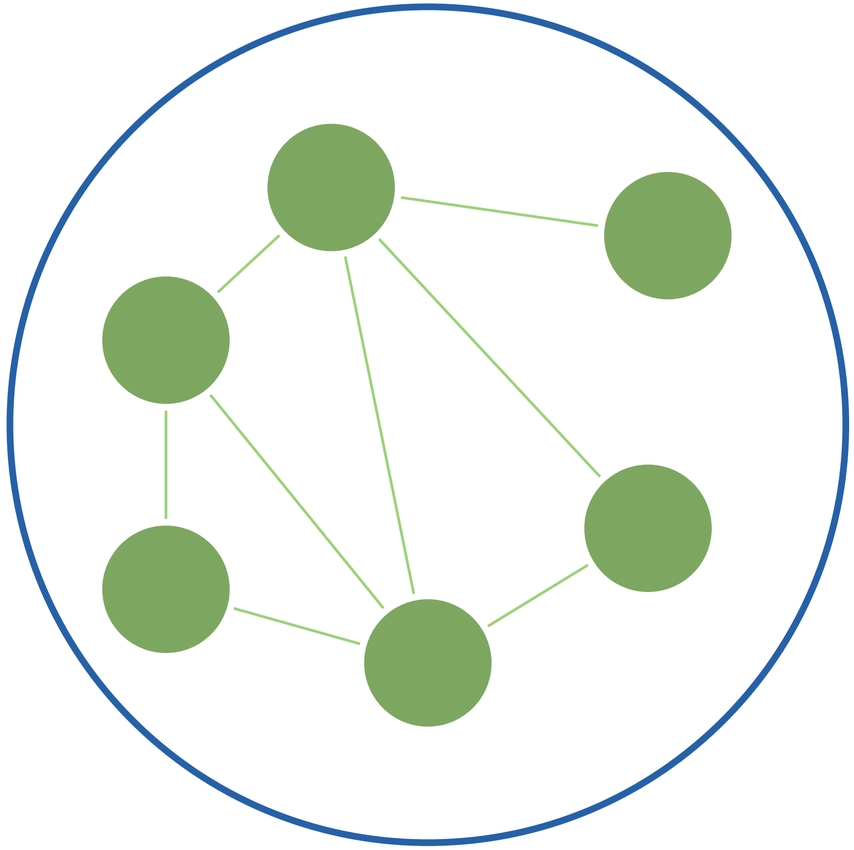

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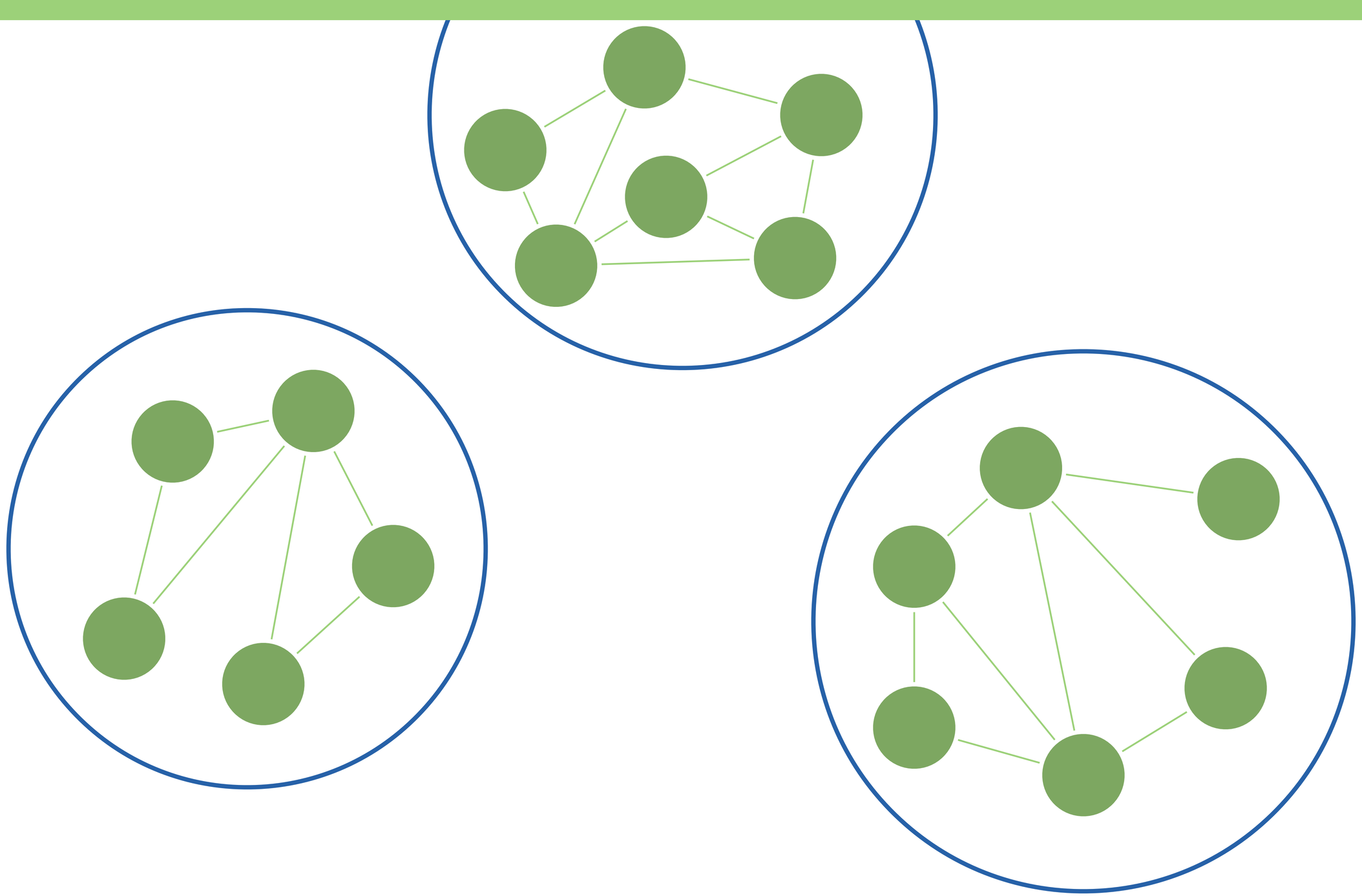
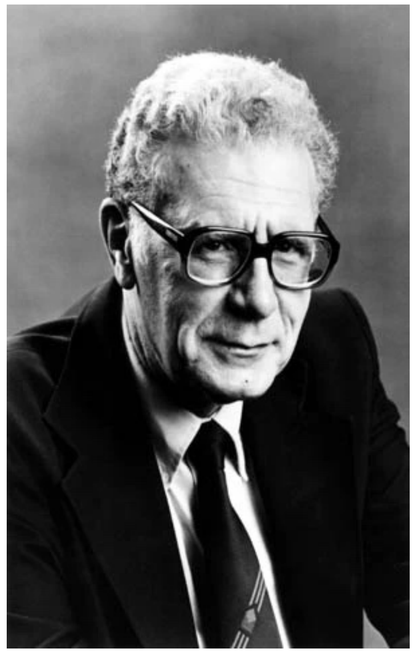
A software system's structure is essentially a formalized bet on change patterns you anticipate having to deal with in the future.

14. Jan. 2025, 11:55 · · Ivory for Mac

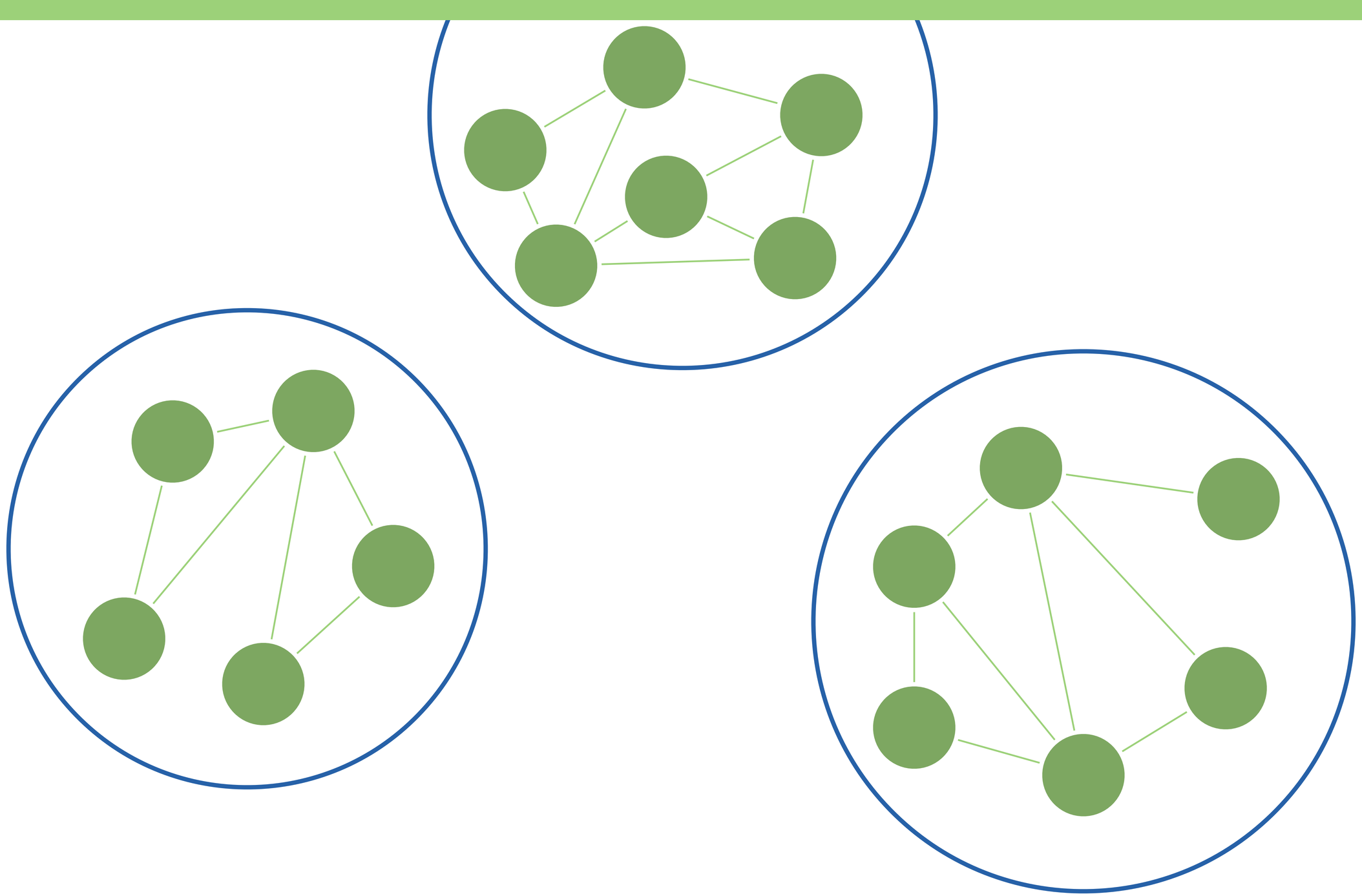
https://chaos.social/@odrotbohm/113826340530554922

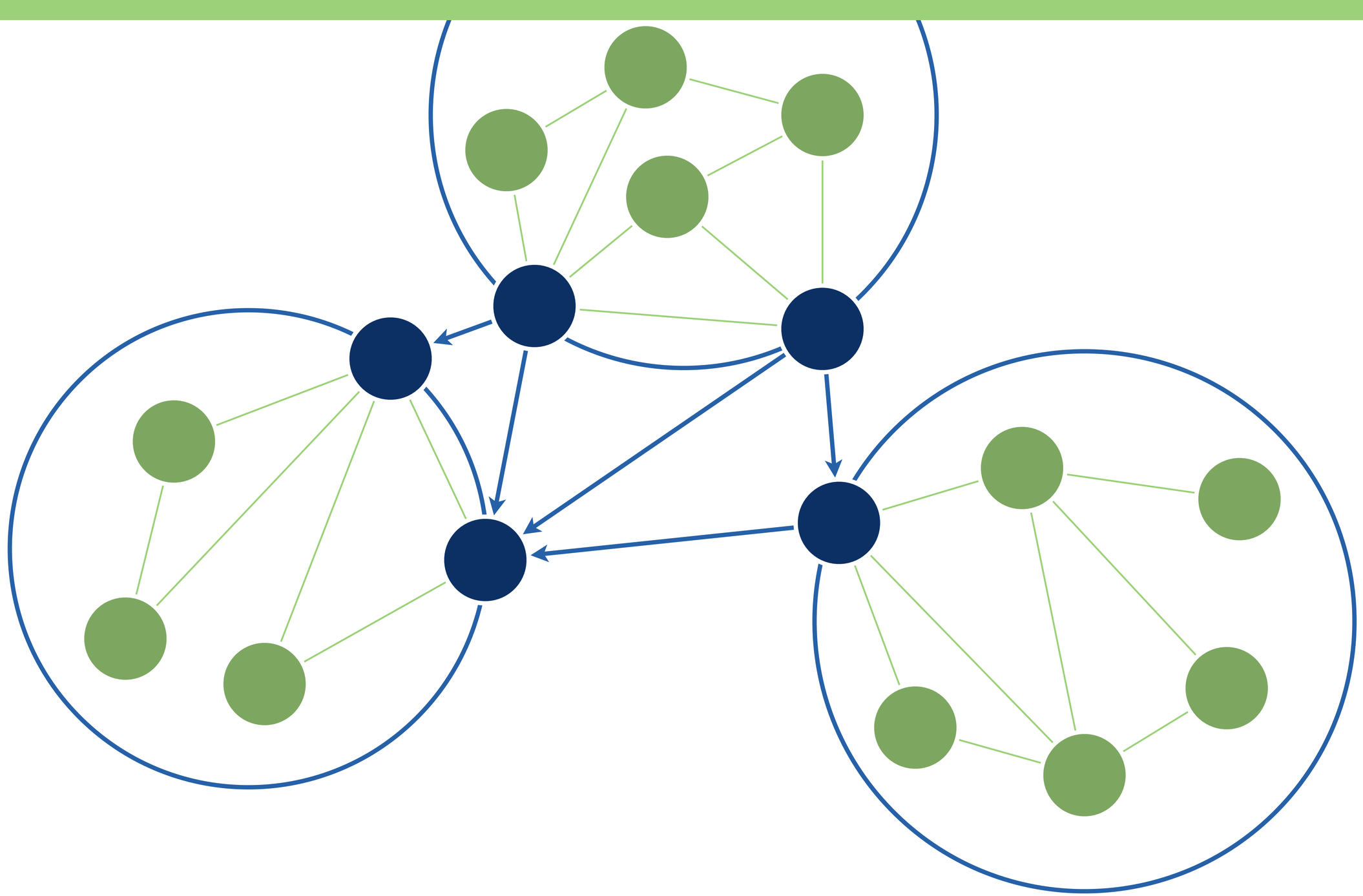




”A system is never the sum of its *parts*, it’s the product of their *interactions*.”

— Russel L. Ackoff

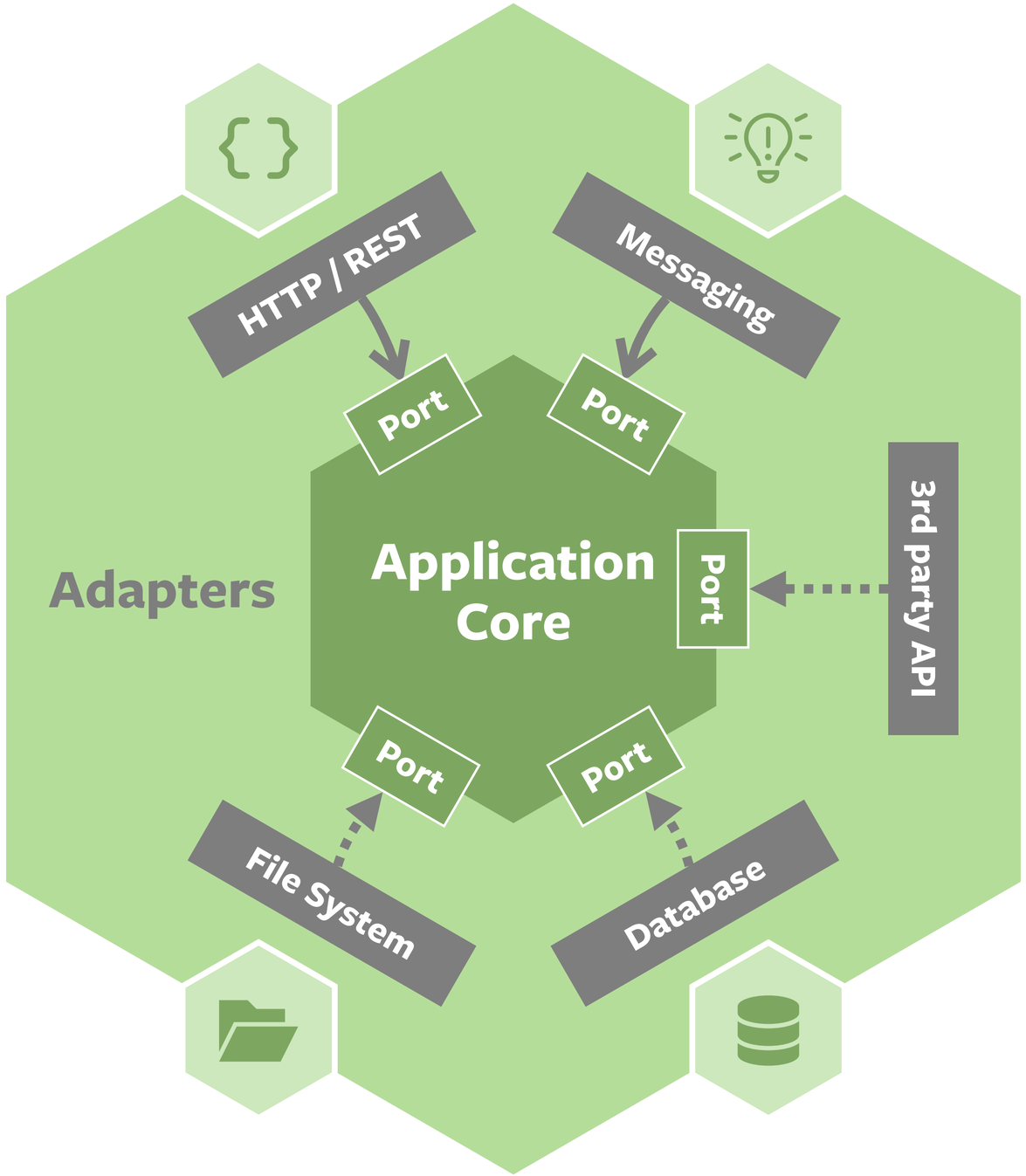




Separation of Concerns Architectures

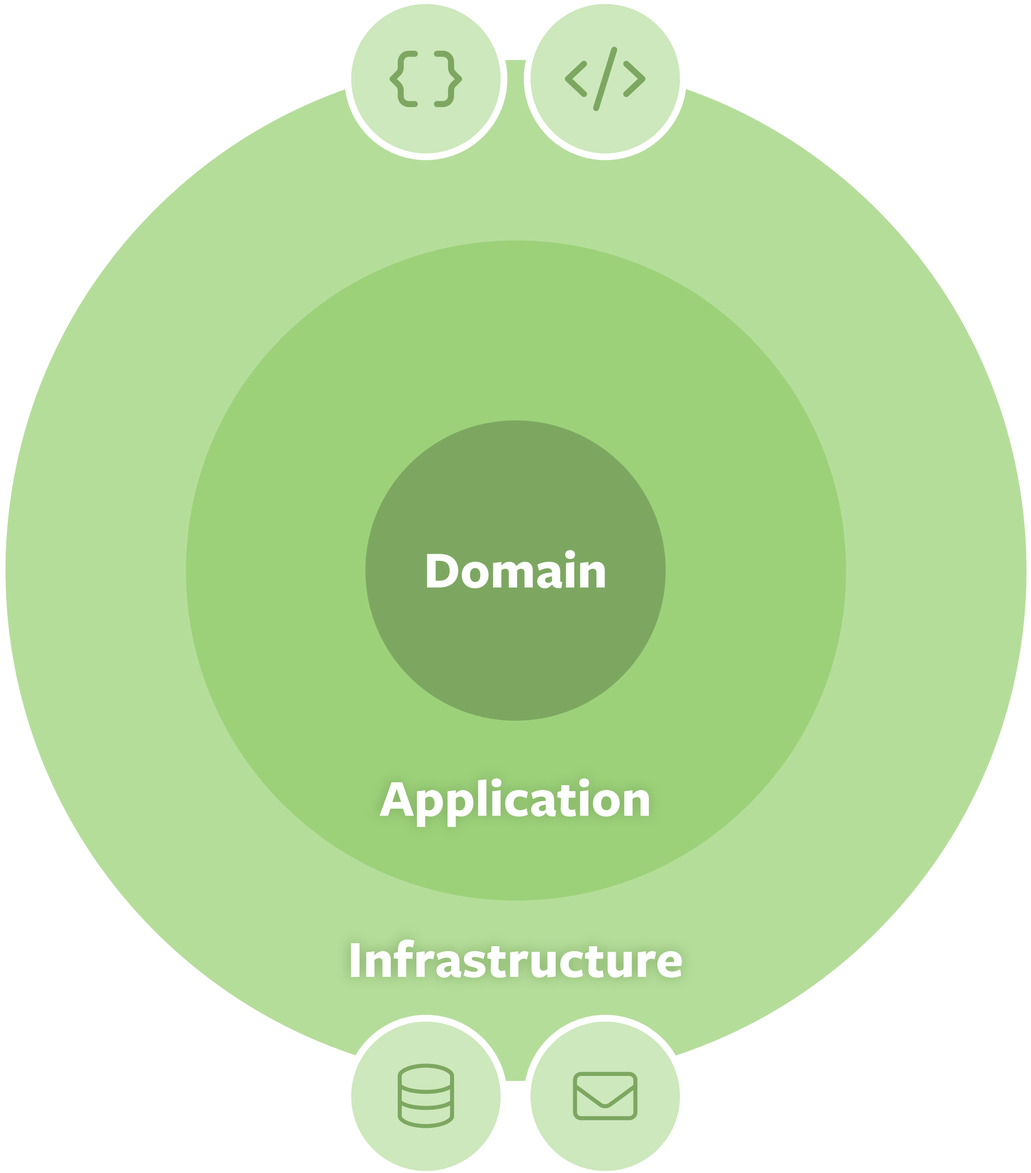
Hexagonal Architecture

2005


HTTP / REST
Messaging
Port
Port
Adapters
Application Core
Port
3rd party API
Port
Port
File System
Database

Onion Architecture

2008


Domain
Application
Infrastructure

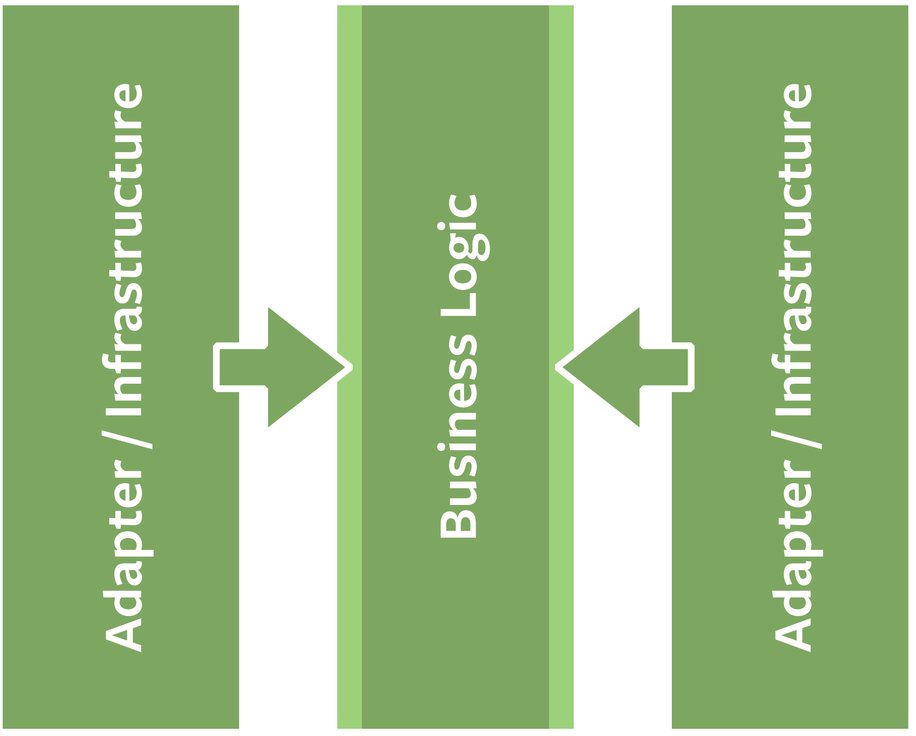
Layered Architecture

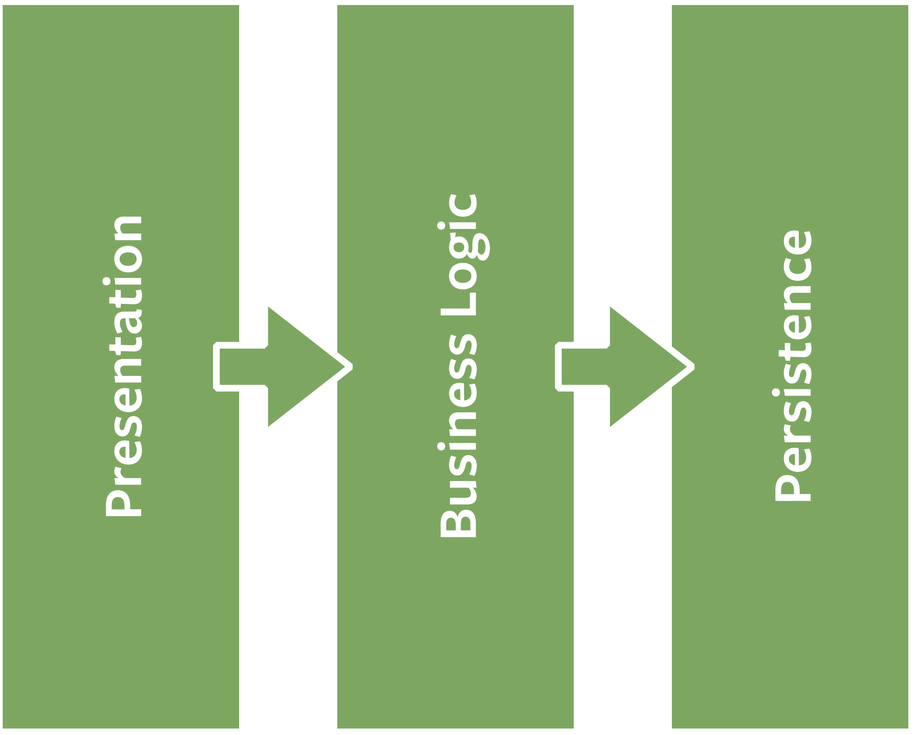
Hexagonal- / Onion-Architecture

Layered Architecture

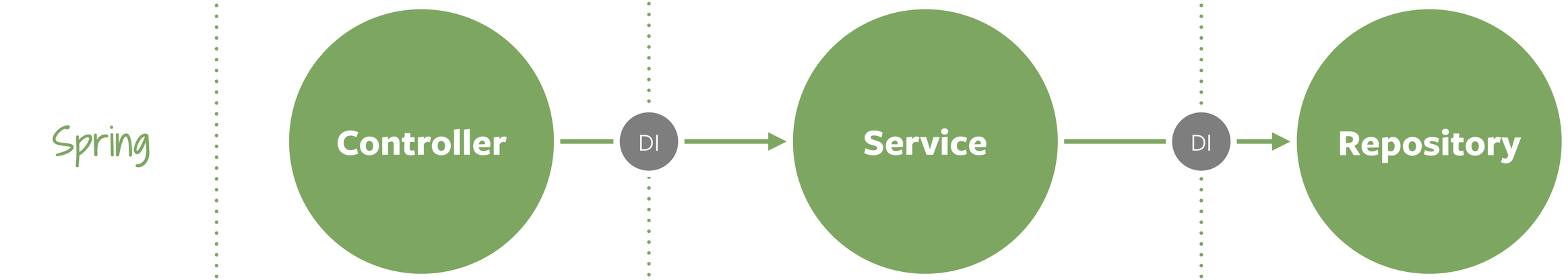
Hexagonal- / Onion-Architecture

Hexagonal- / Onion-Architecture





Layered Architecture



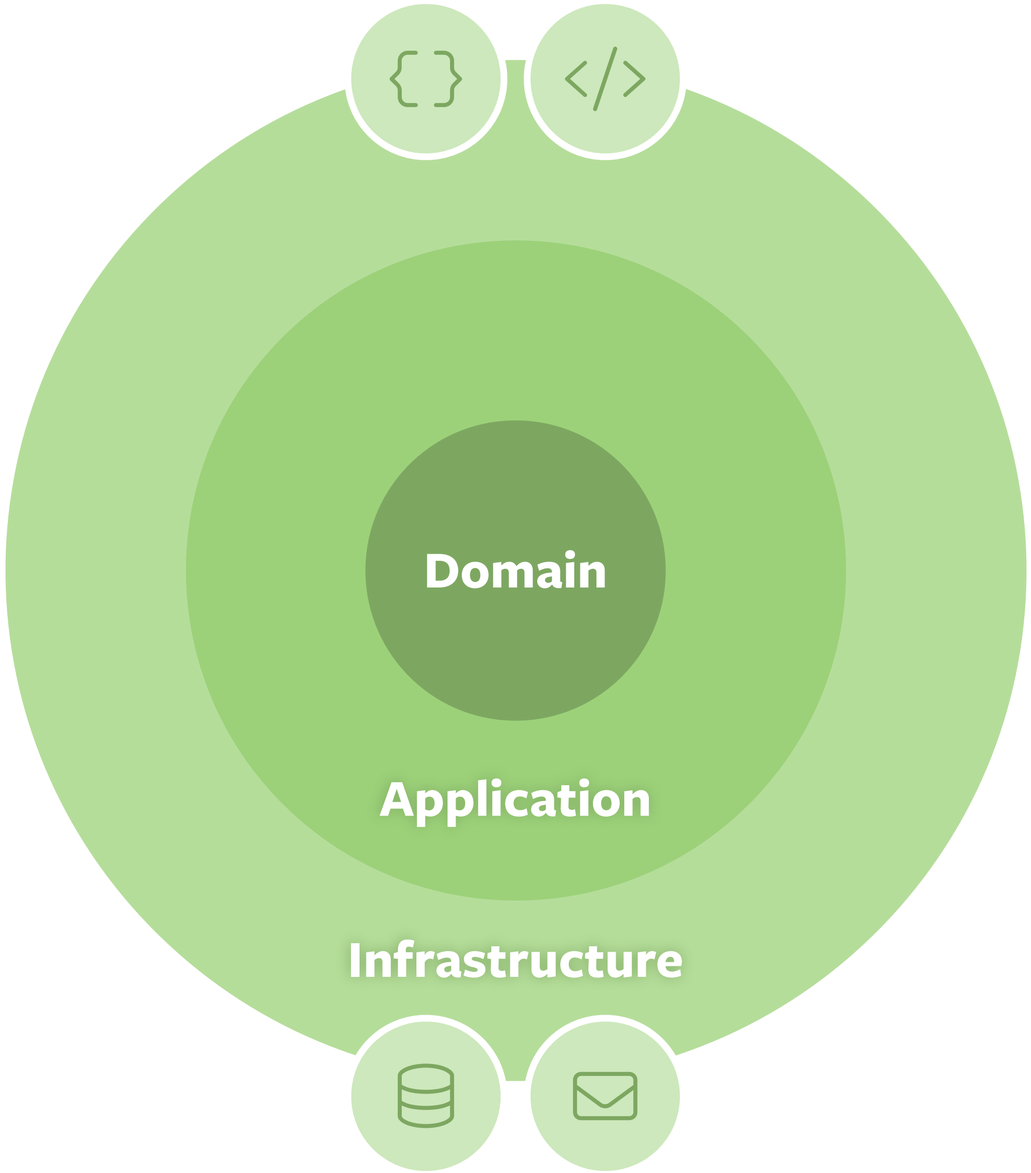
Layered	Presentation →	Business →	Persistence
Hexagonal	Driving Adapter →	Port ← Application → Port	← Driven Adapter
Onion	Infrastructure →	Application / Domain	← Infrastructure

Goals & Effects

Testability

Technology-Free Domain

Domain-Centric?


Domain
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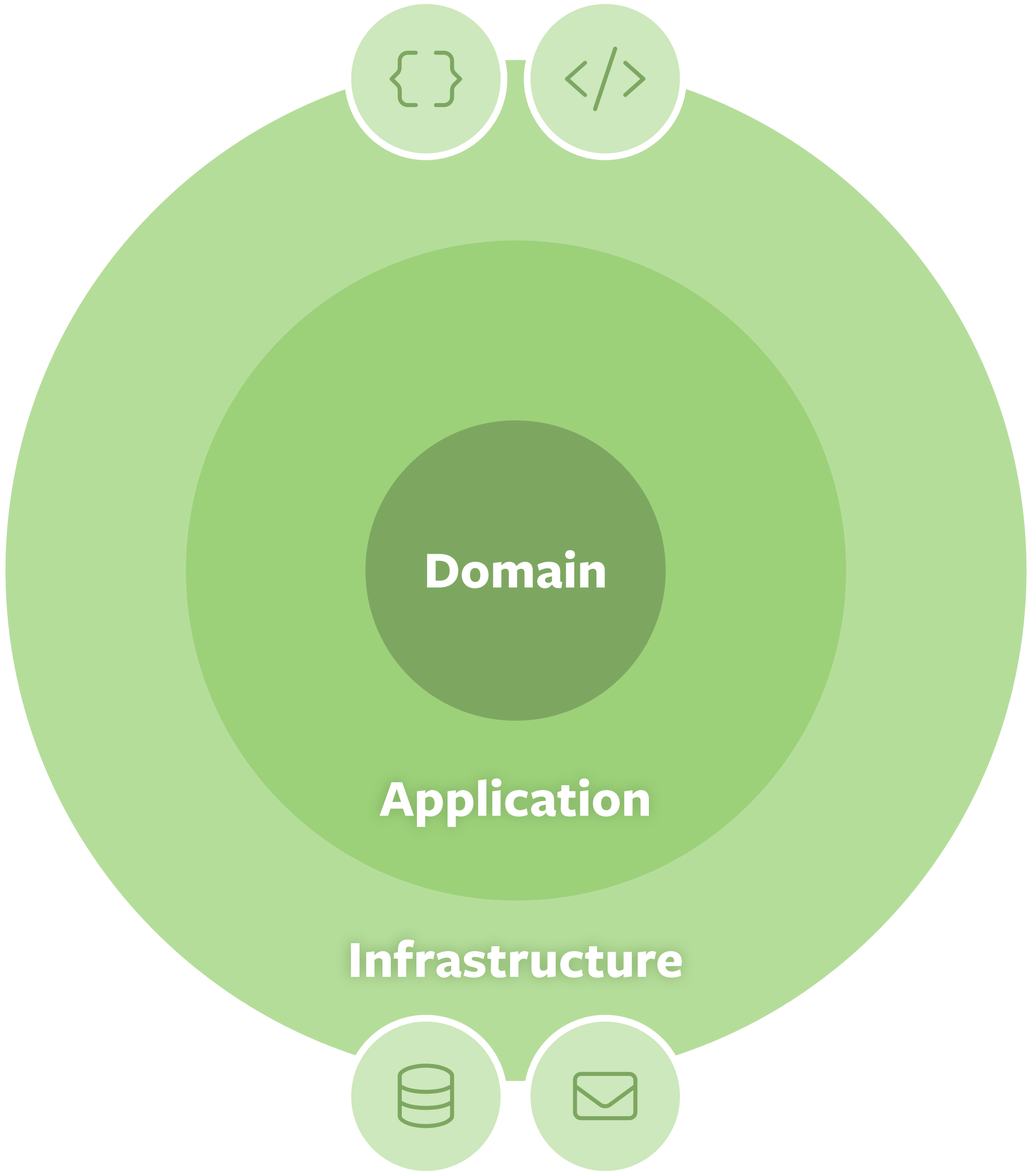
Infrastructure


Domain
Application
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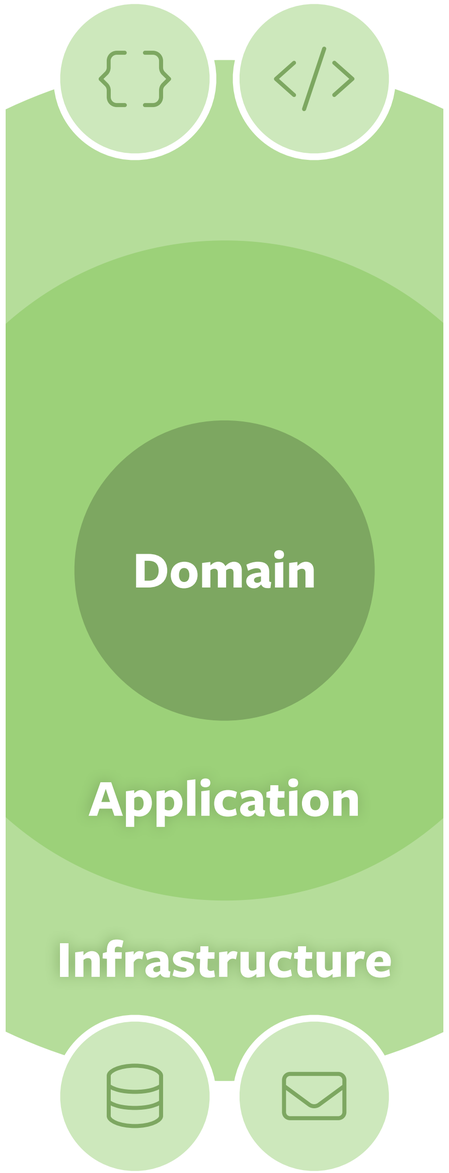
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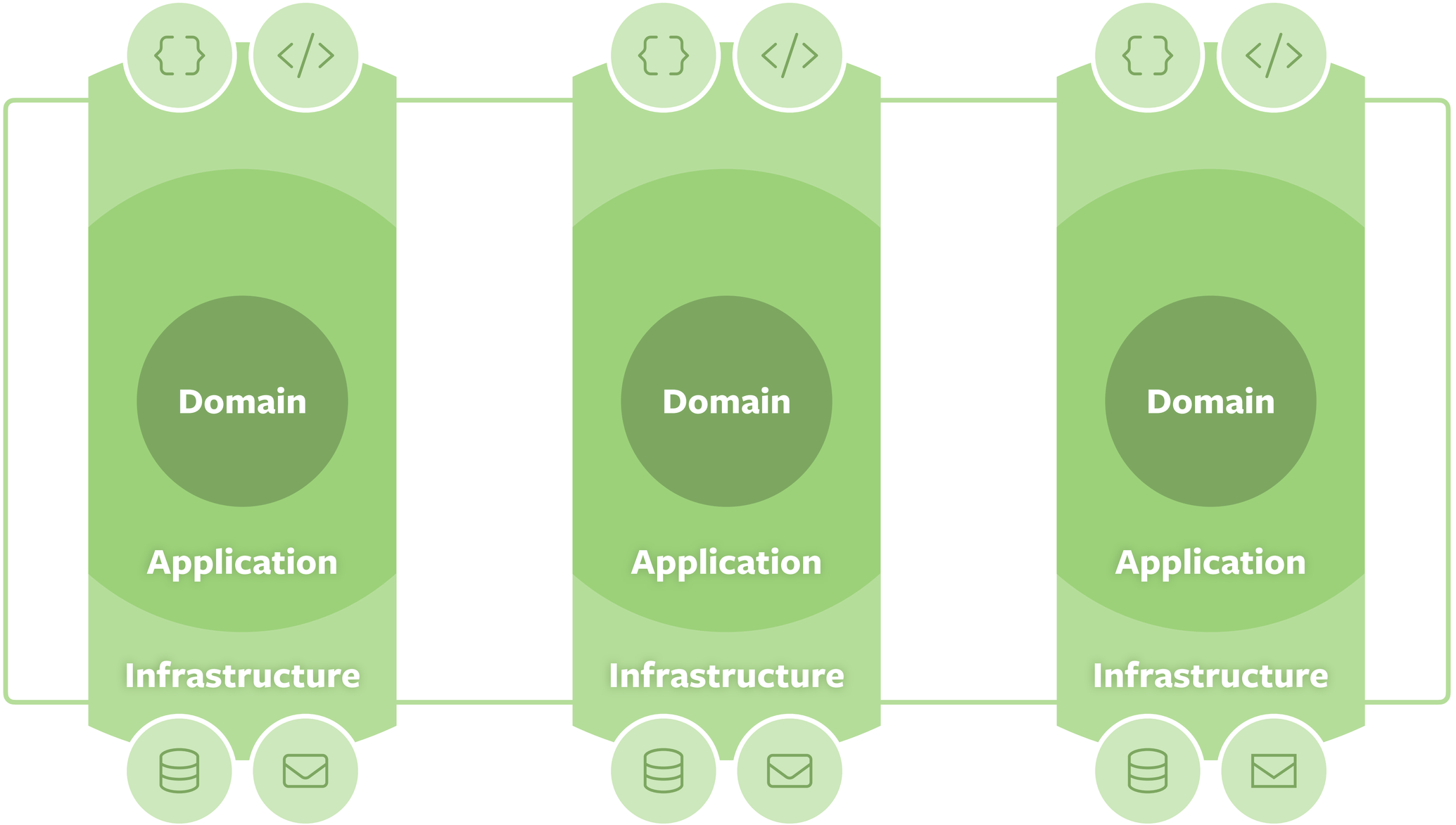
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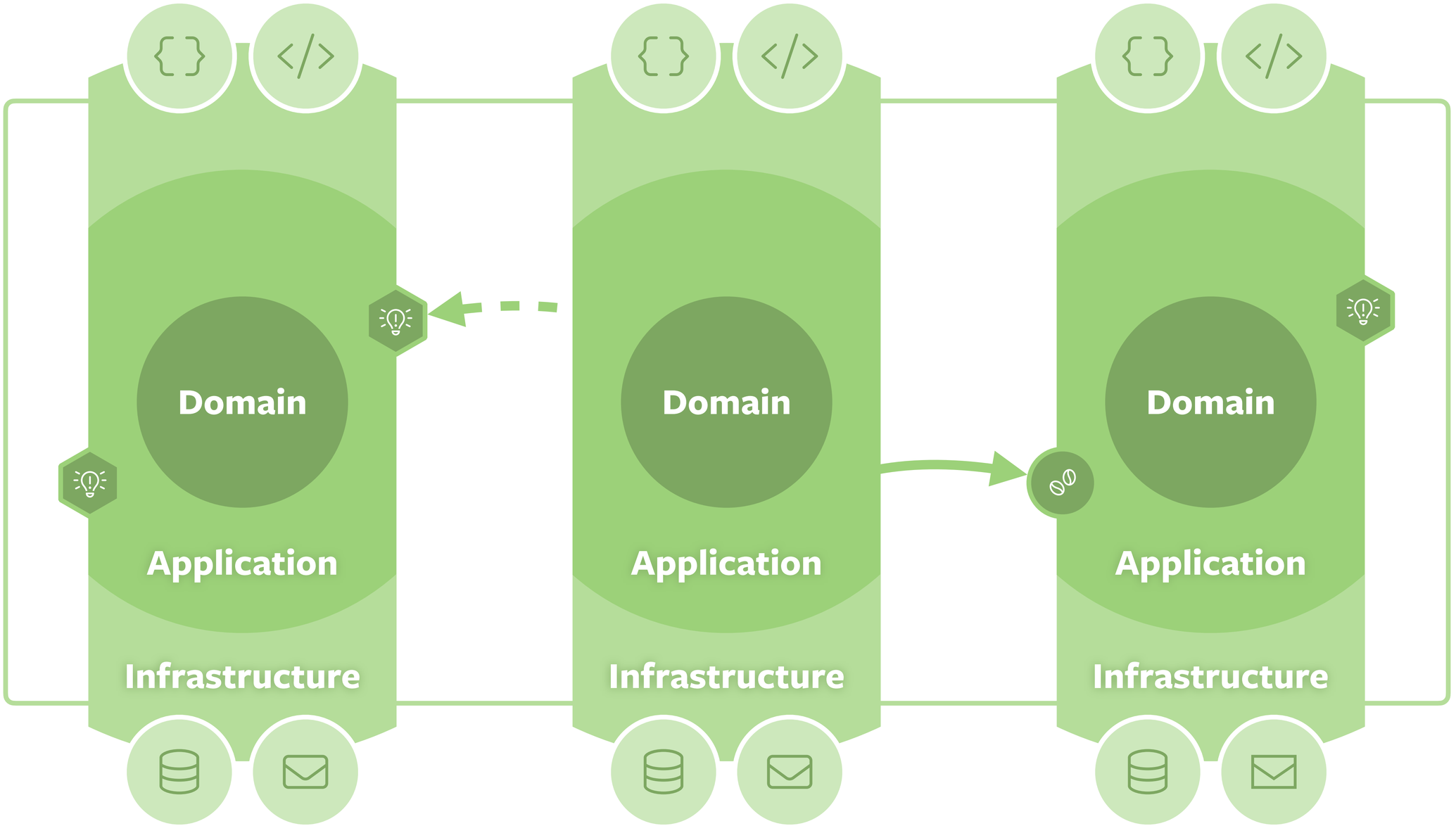
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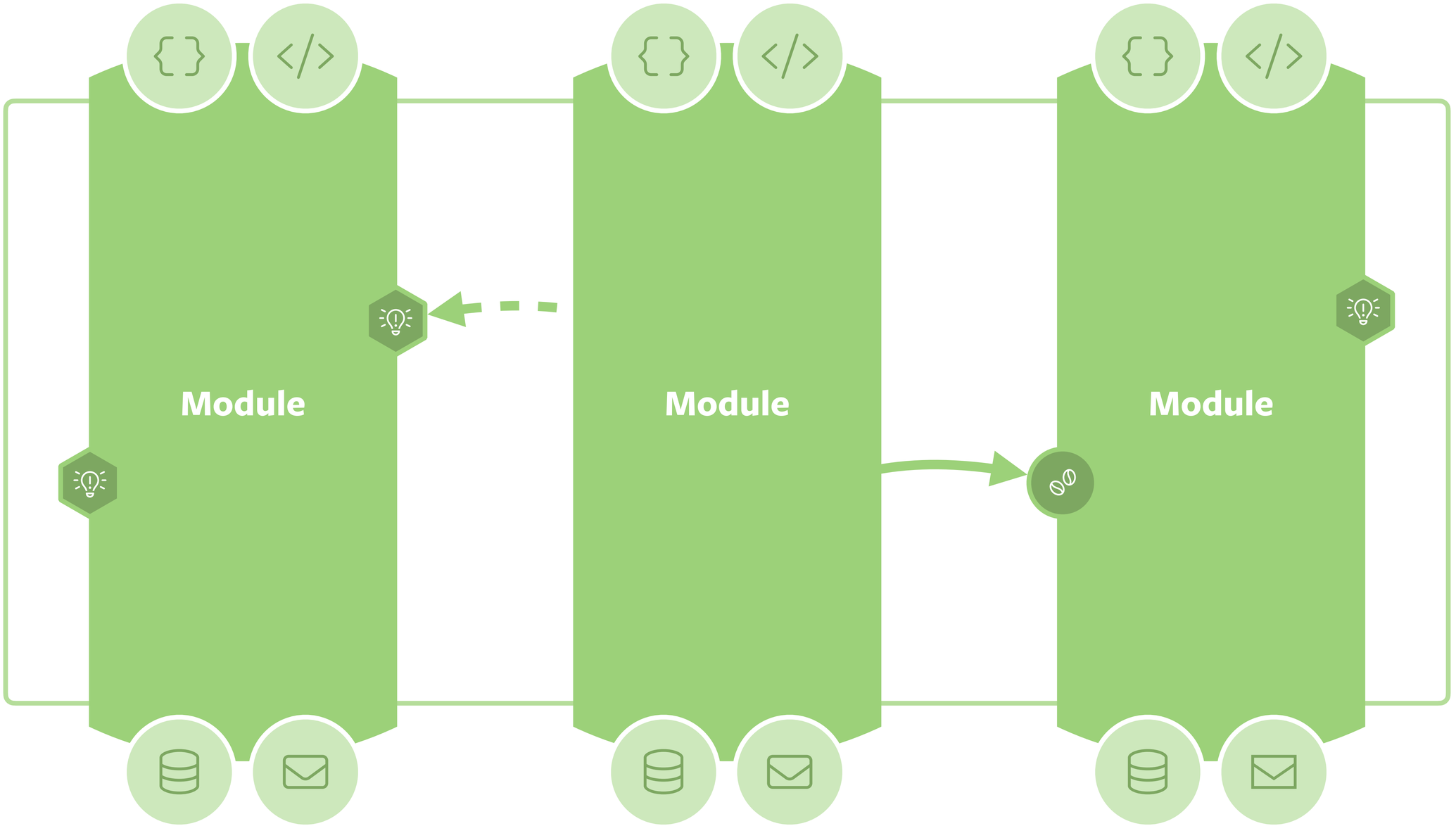


https://odrotbohm.de/2023/07/sliced-onion-architecture

Code structure

Severely inspired by Simon Brown's https://static.simonbrown.je/modular-monoliths.pdf

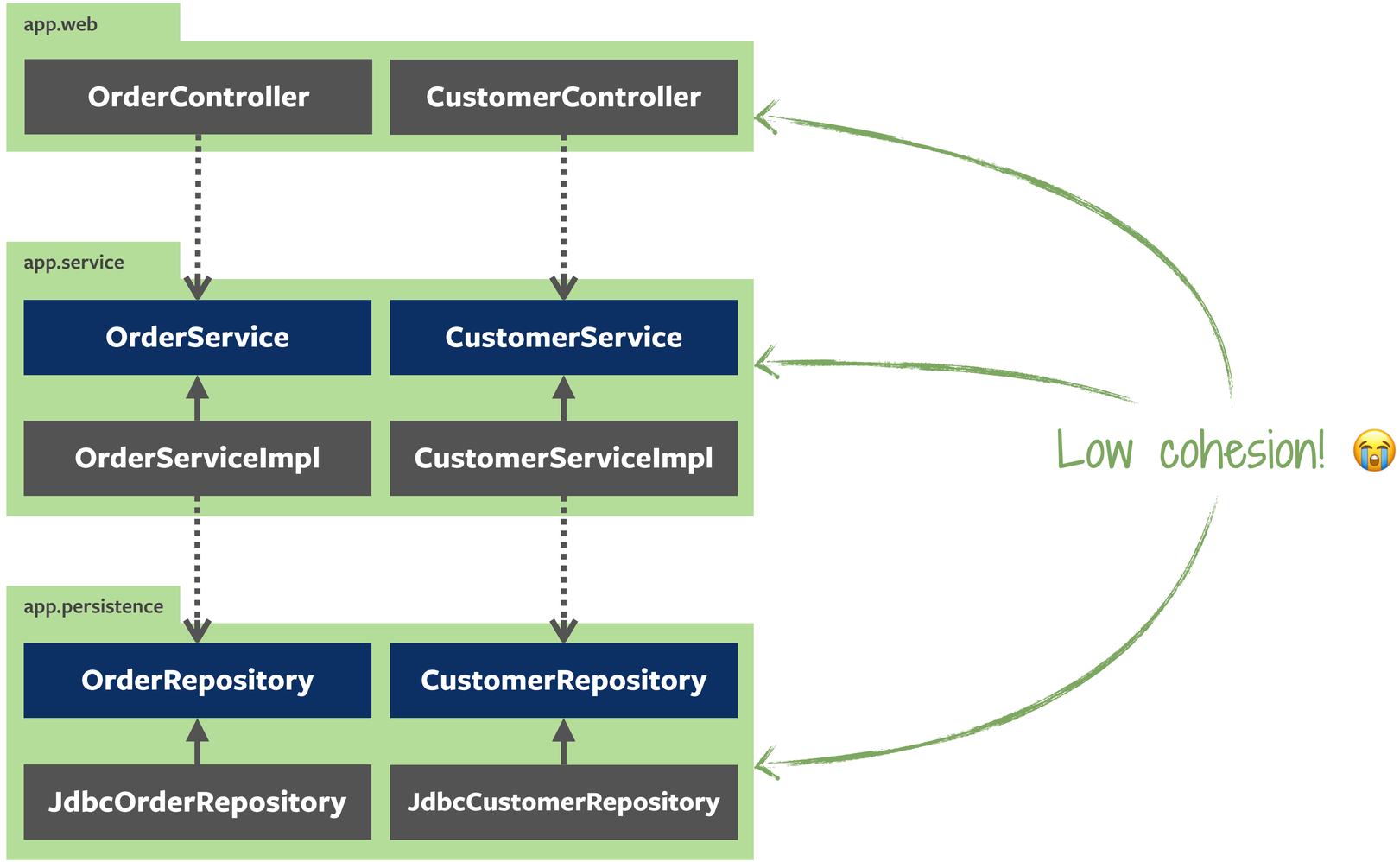
Oliver Drotbohm 🥁 & 👨‍💻
@odrotbohm

Coined Drotbohm's law yesterday: from the structure of a software system you can derive the book the architect read most recently...

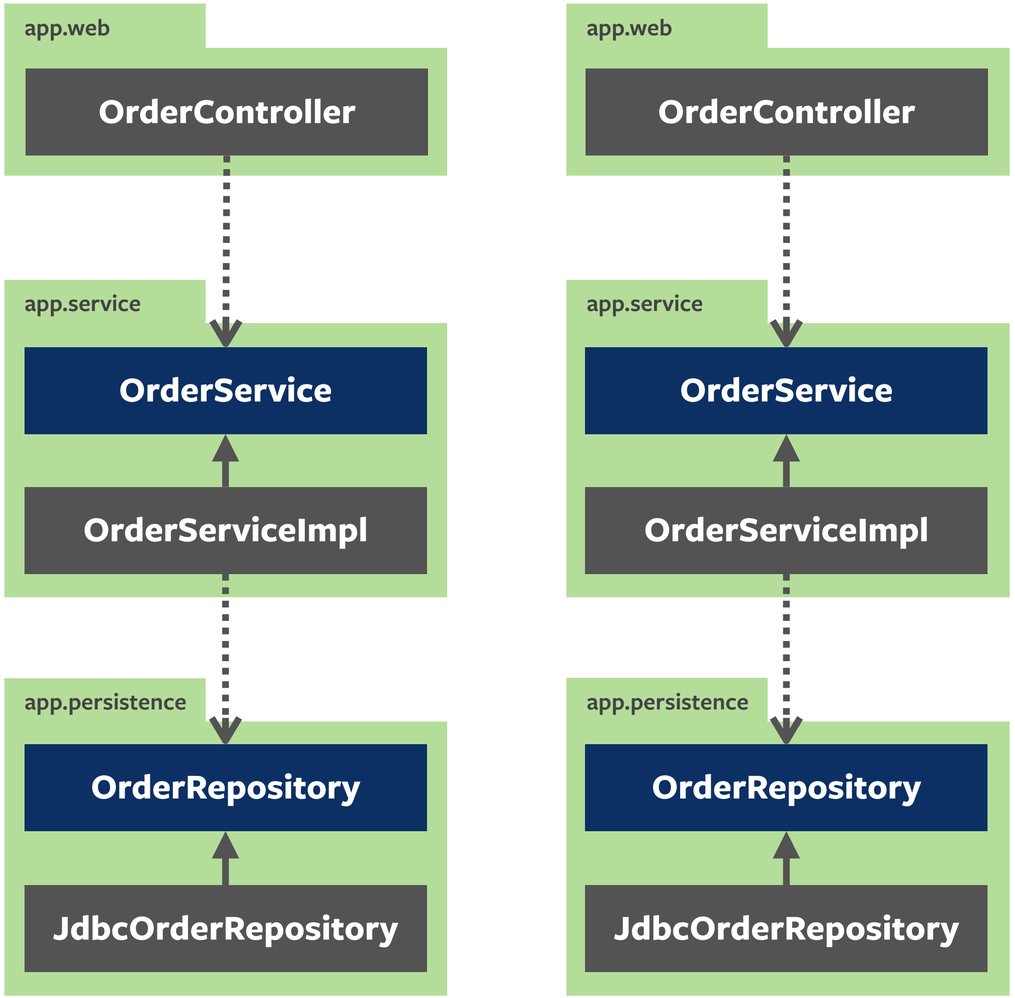
Post übersetzen

8:11 vorm. · 7. Juli 2016 aus Stuttgart, Deutschland

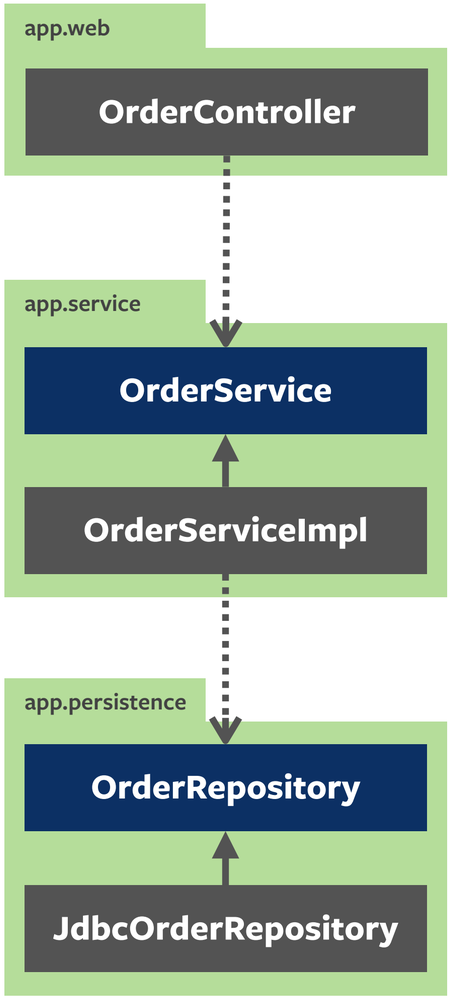
Classic Layers



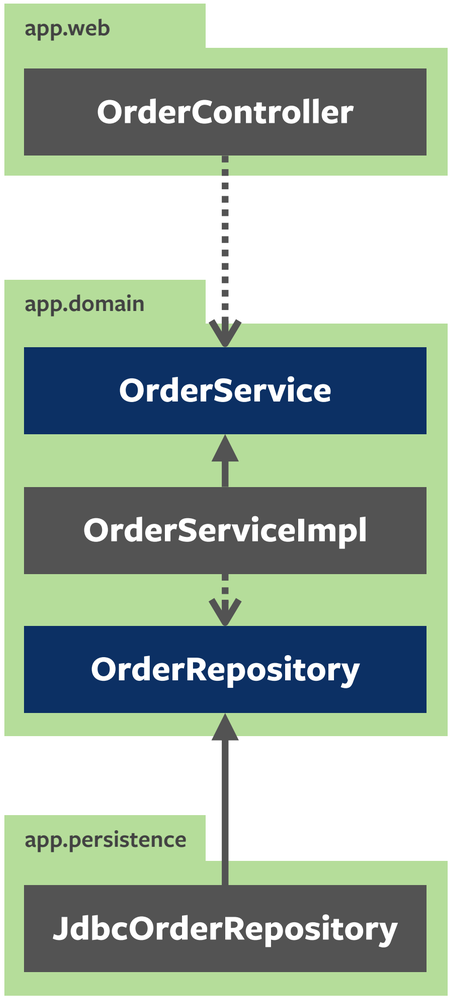
Classic Layers



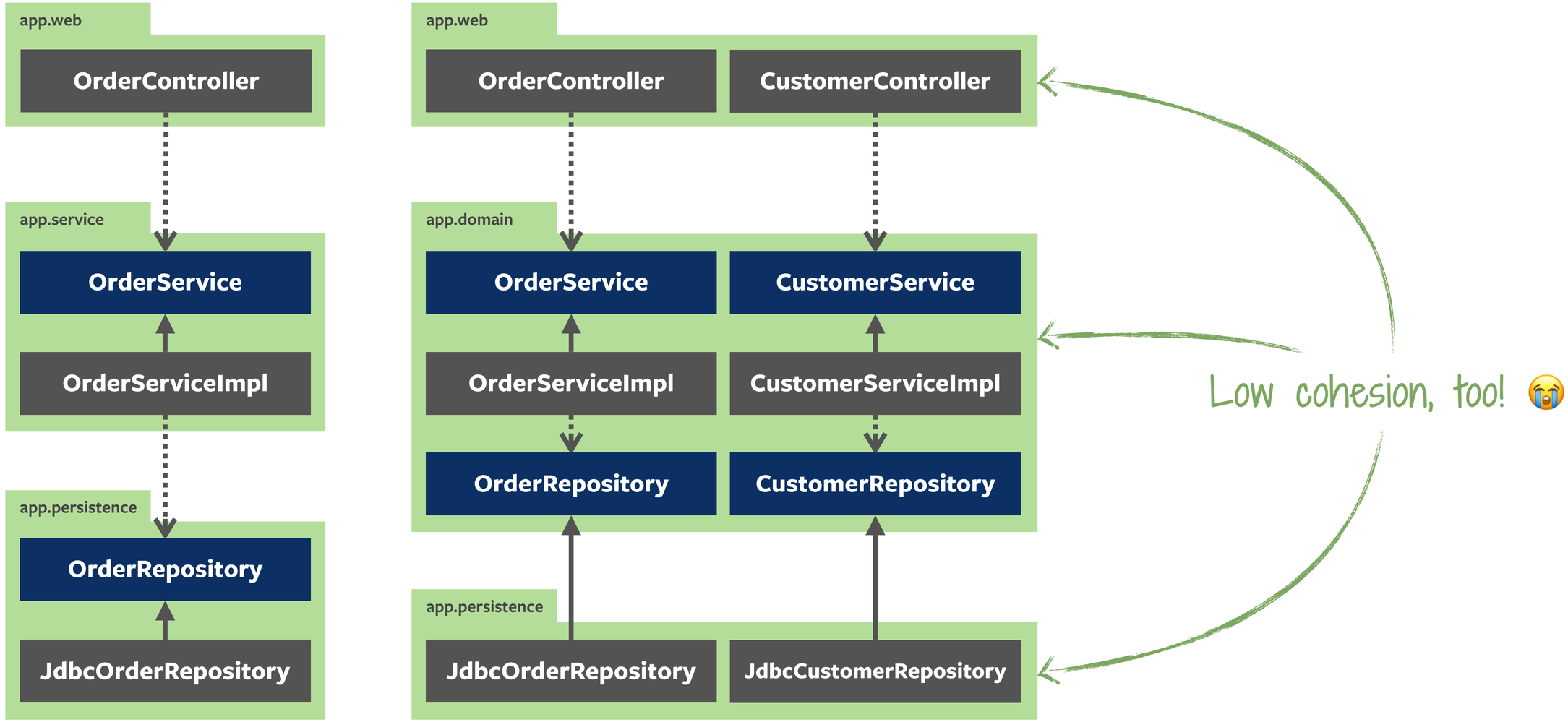
Classic Layers

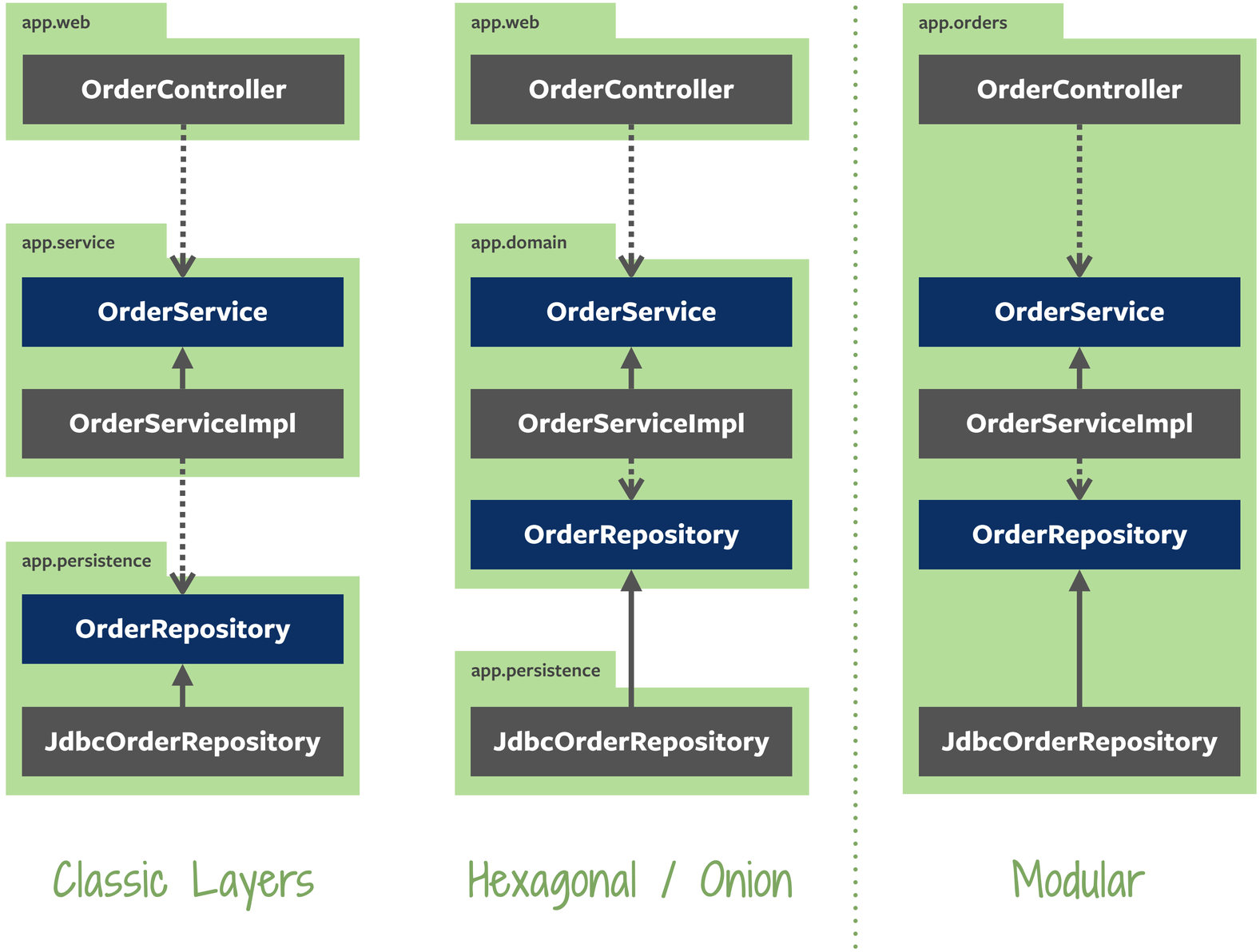


Classic Layers



Hexagonal / Onion


app.web
OrderController
app.service
OrderService
OrderServiceImpl
app.persistence
OrderRepository
JdbcOrderRepository
app.web
OrderController
CustomerController
app.domain
OrderService
CustomerService
OrderServiceImpl
CustomerServiceImpl
OrderRepository
CustomerRepository
app.persistence
JdbcOrderRepository
JdbcCustomerRepository
Low cohesion, too! 😭
Classic Layers
Hexagonal / Onion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JdbcOrderRepository
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OrderController
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OrderServiceImpl
OrderRepository
app.persistence
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app.orders
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OrderRepository
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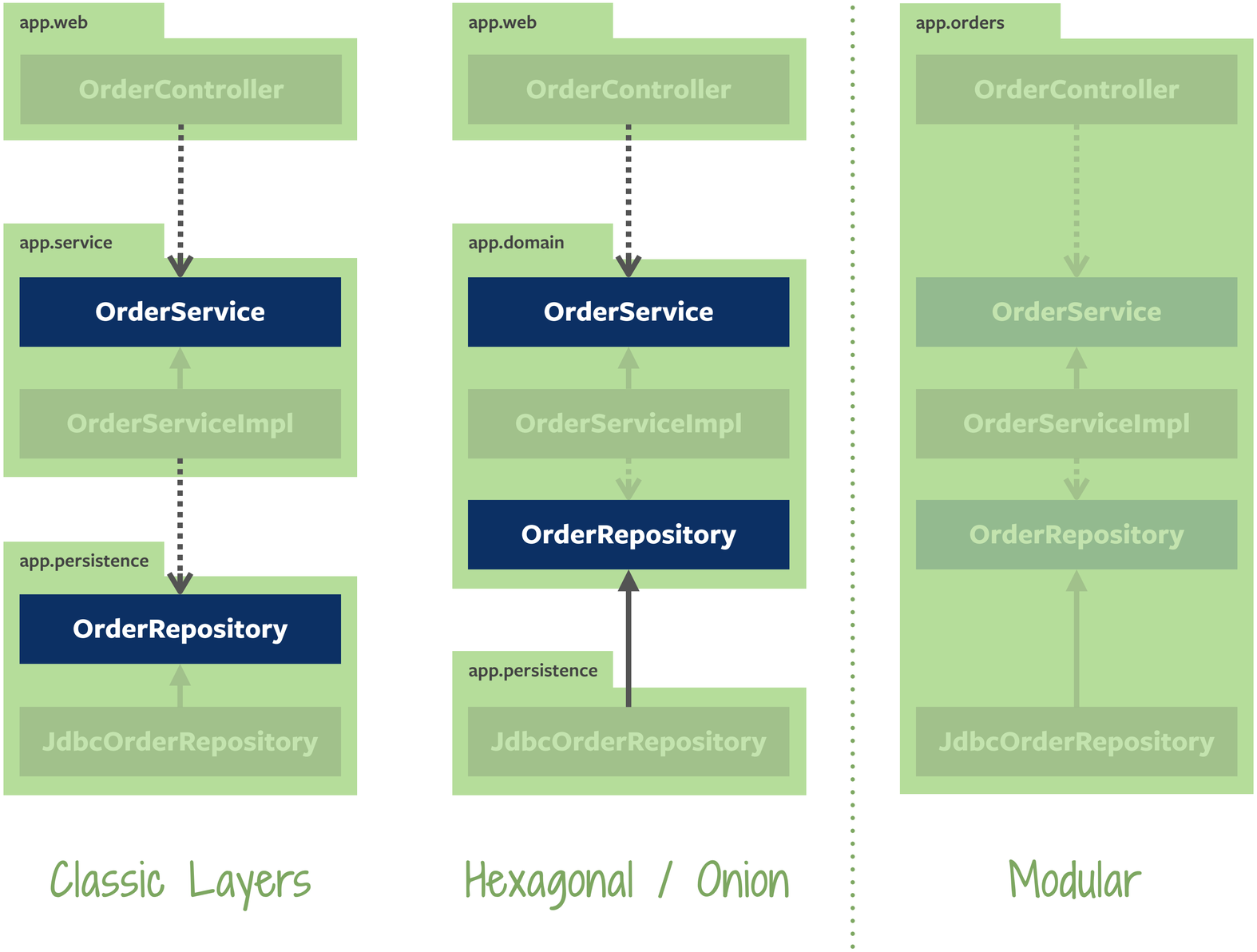
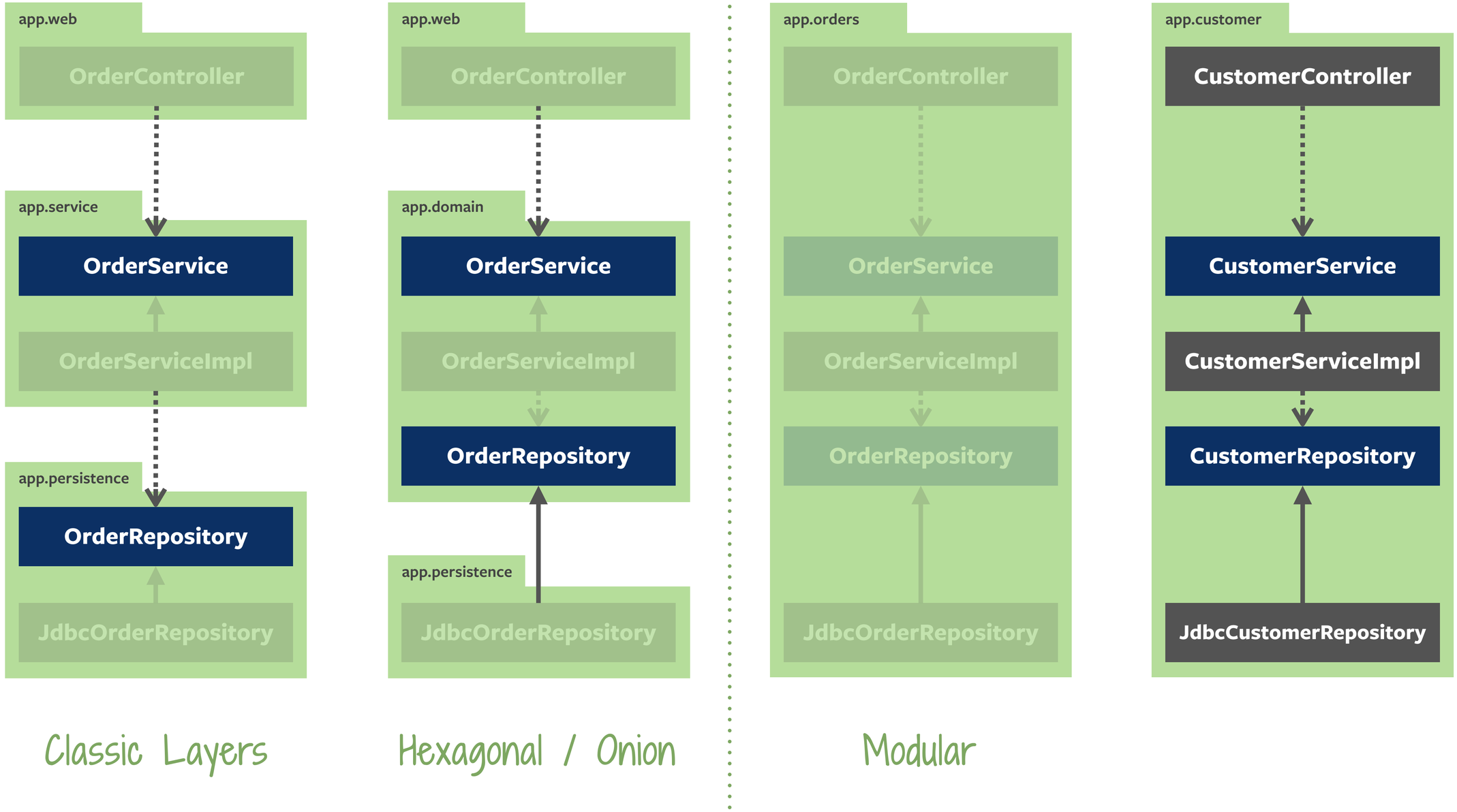
Classic Layers
Hexagonal / Onion
Modular



Classic Layers

Hexagonal / Onion

Modular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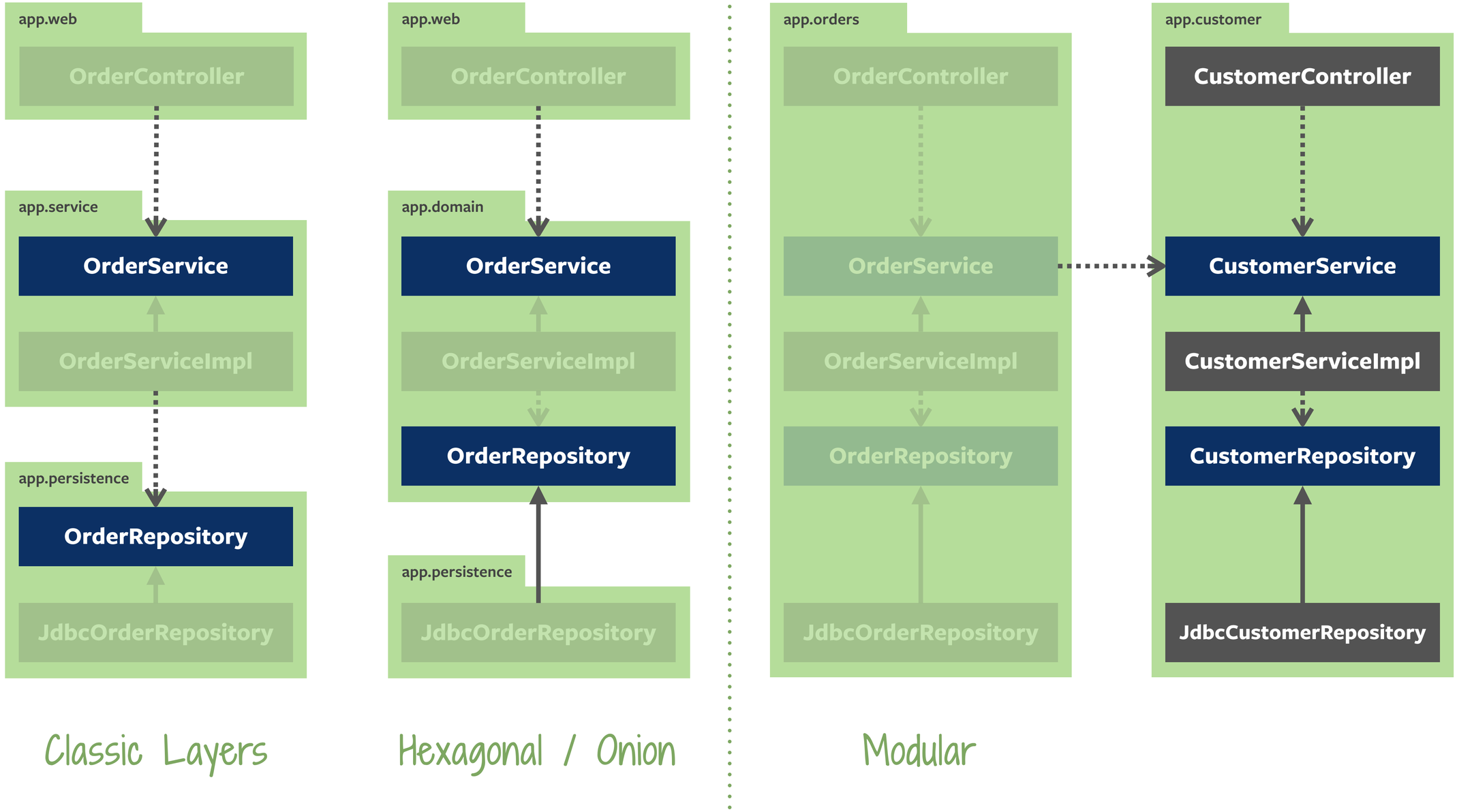
Classic Layers
Hexagonal / Onion
Modular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Classic Layers
Hexagonal / Onion
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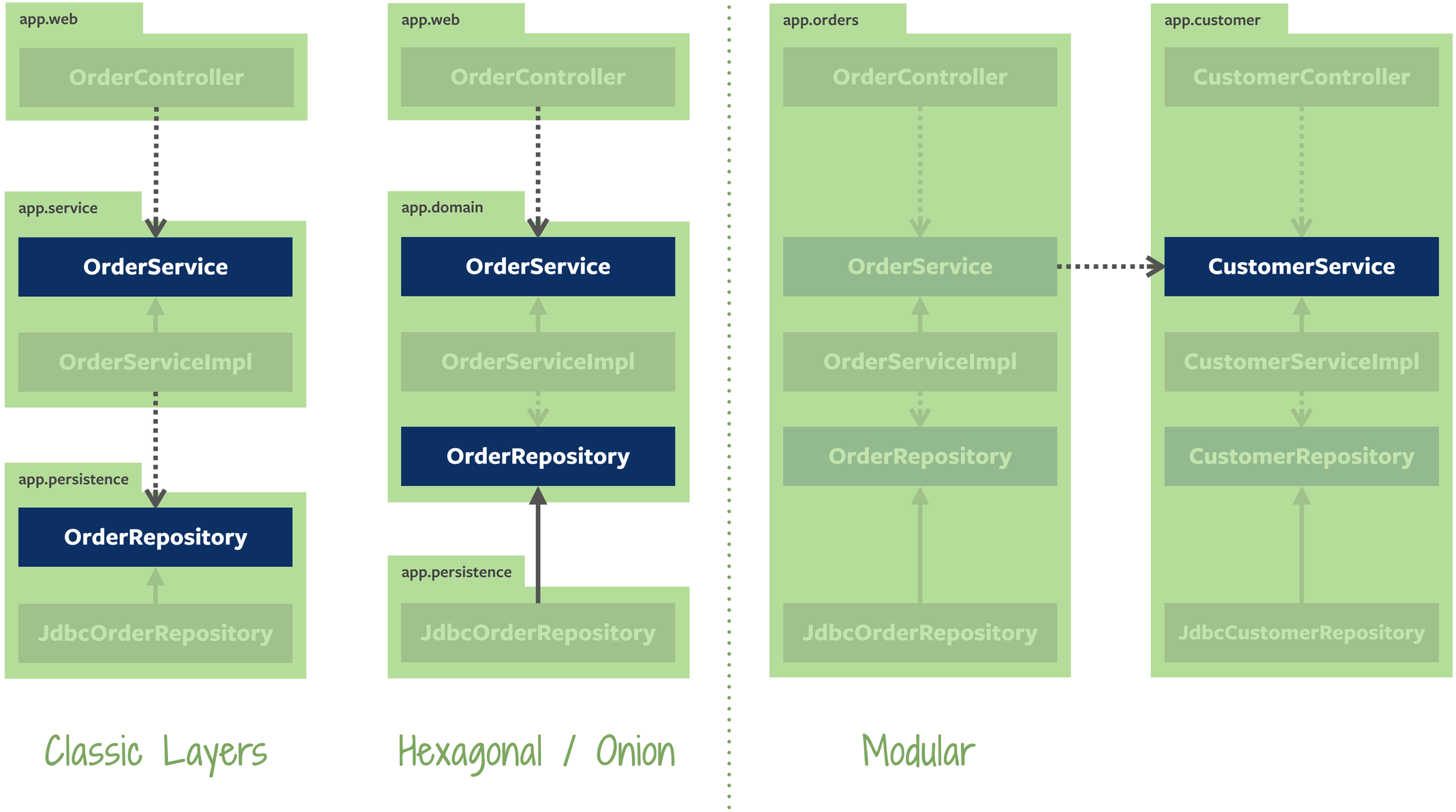
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app.orders
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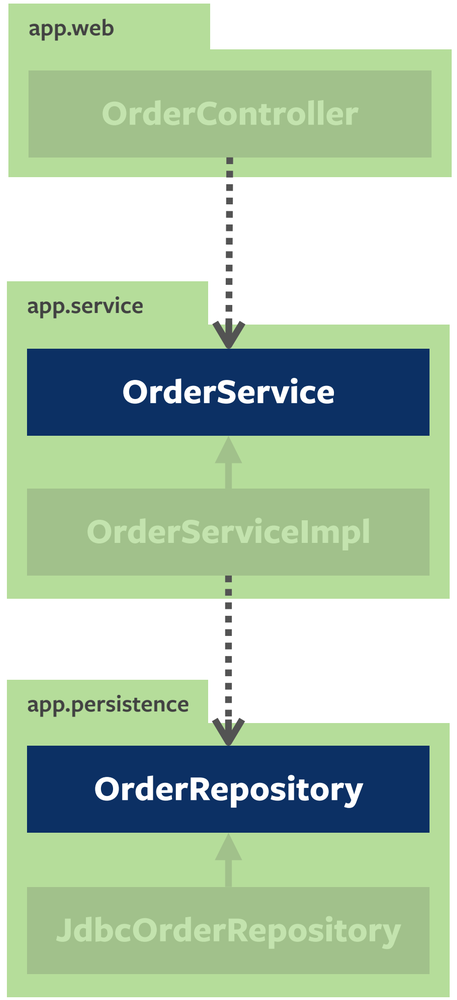
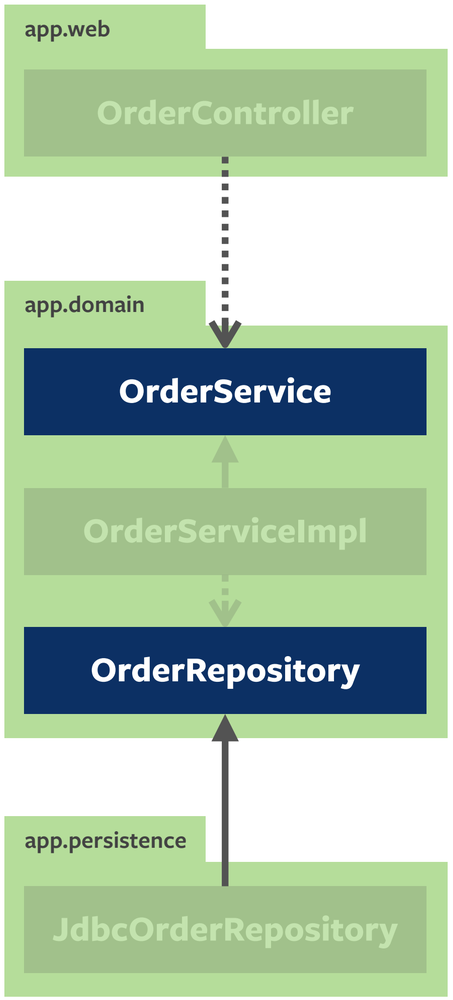
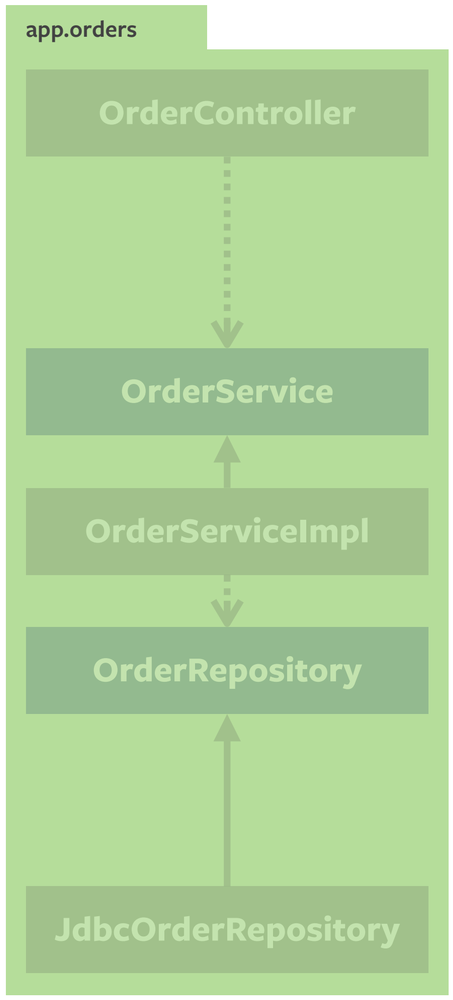
Classic Layers
Hexagonal / Onion
Modular



Classic Layers



Hexagonal / Onion



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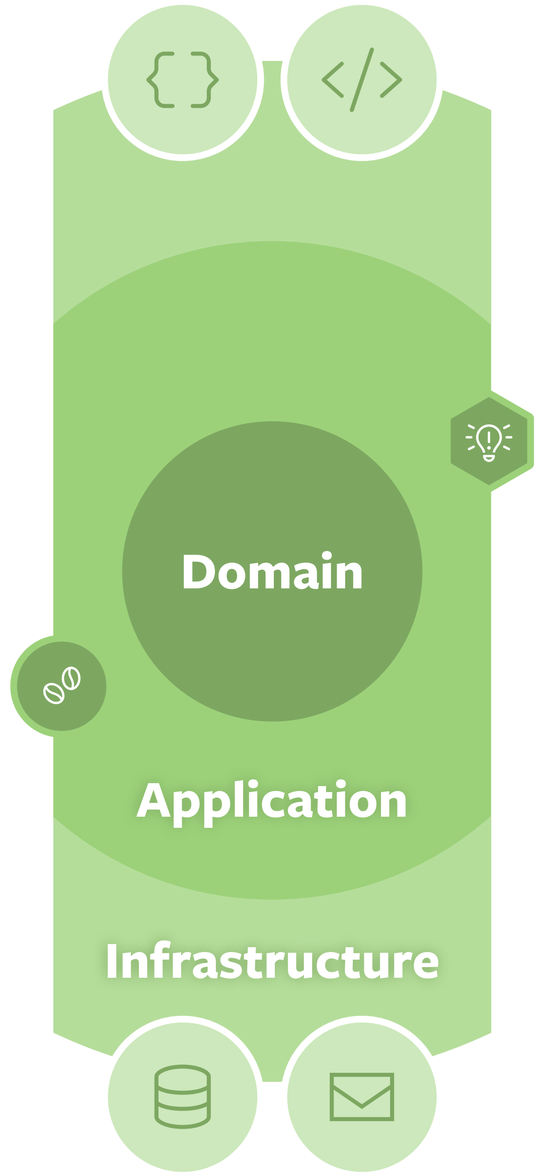
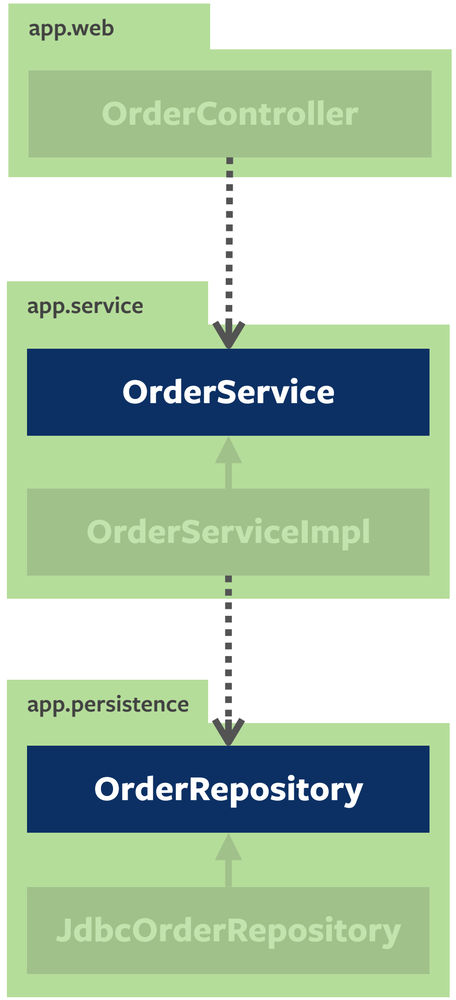
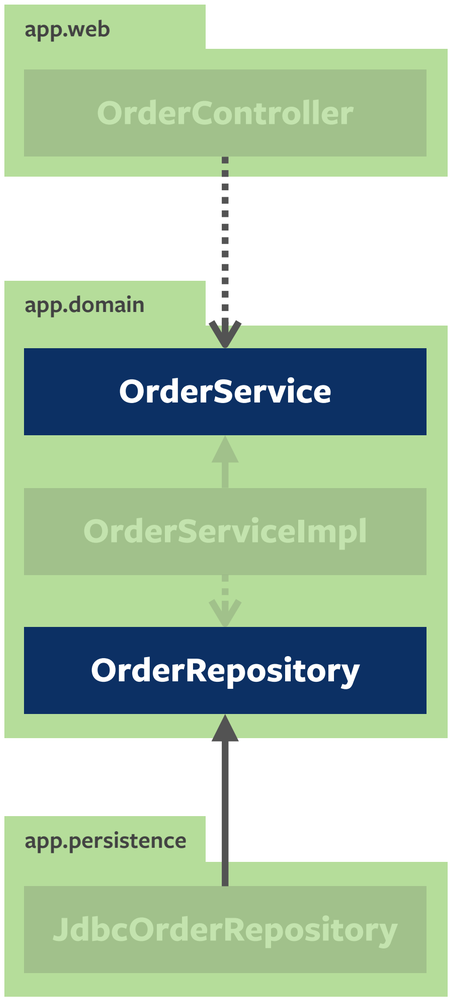
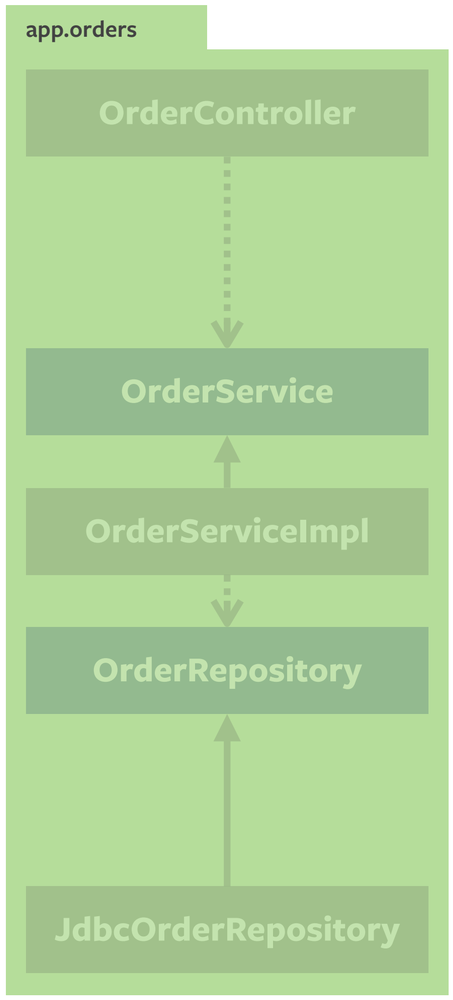




Classic Layers



Hexagonal / Onion



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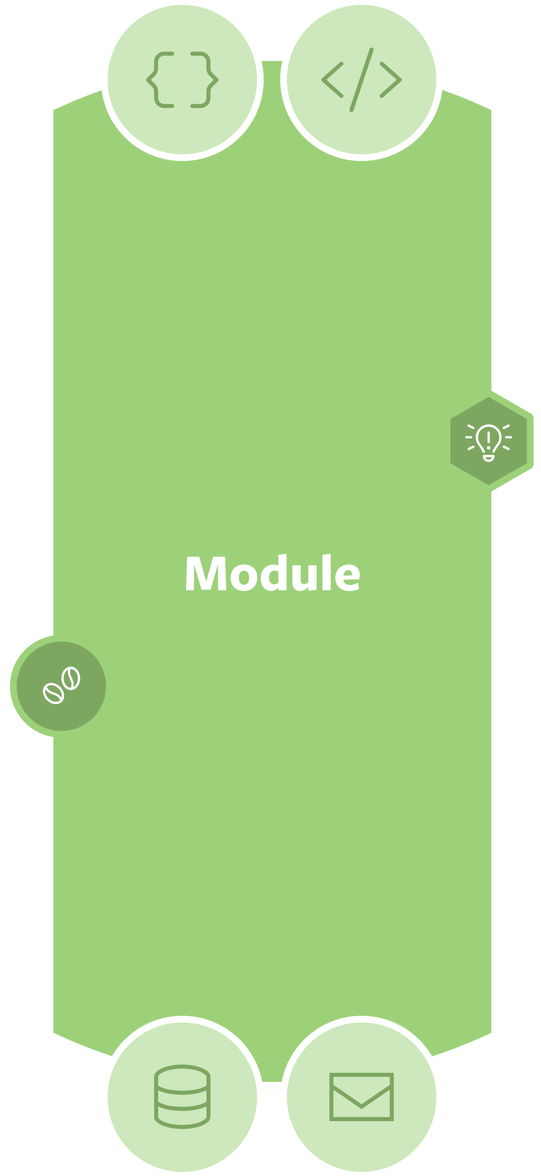

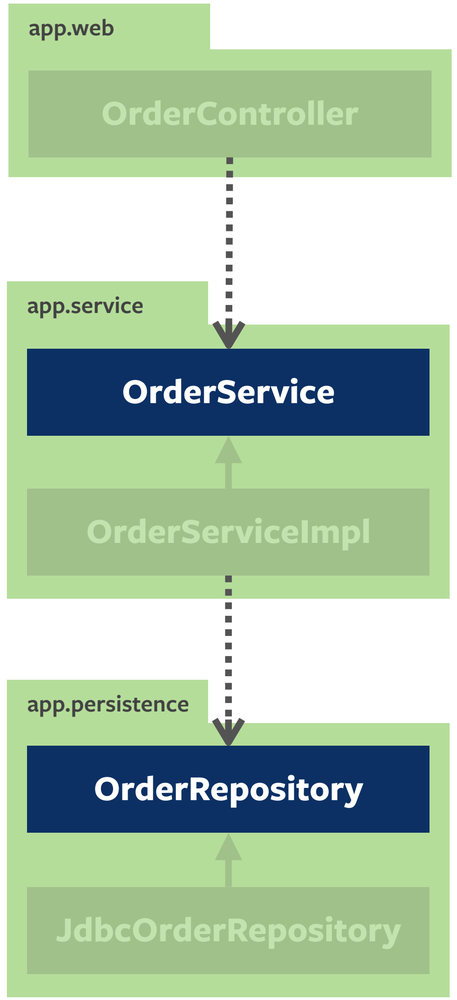

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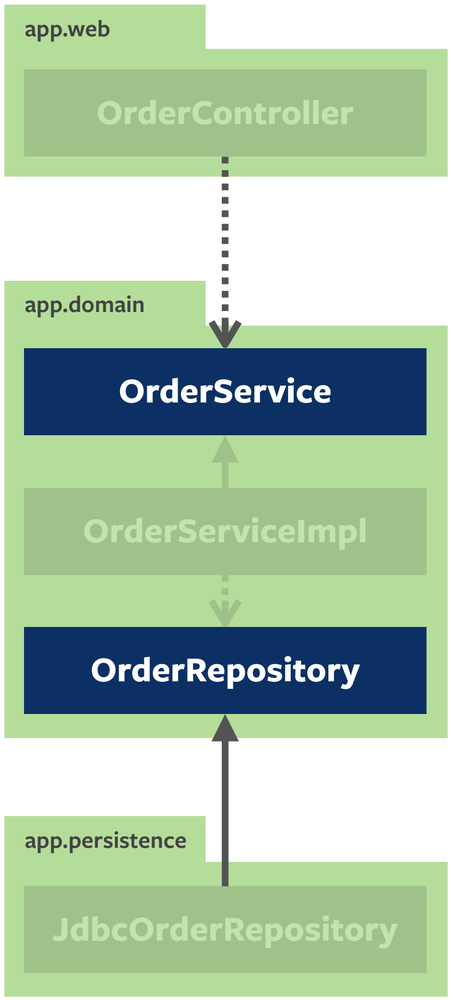
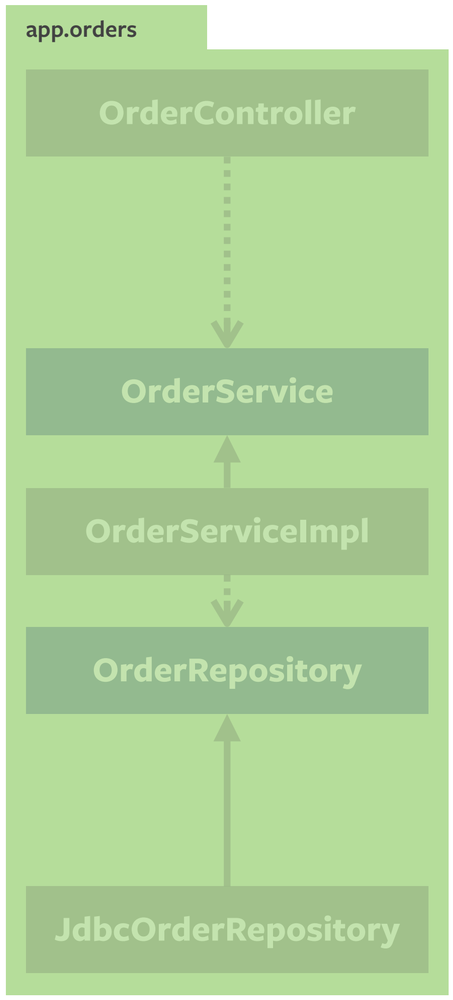
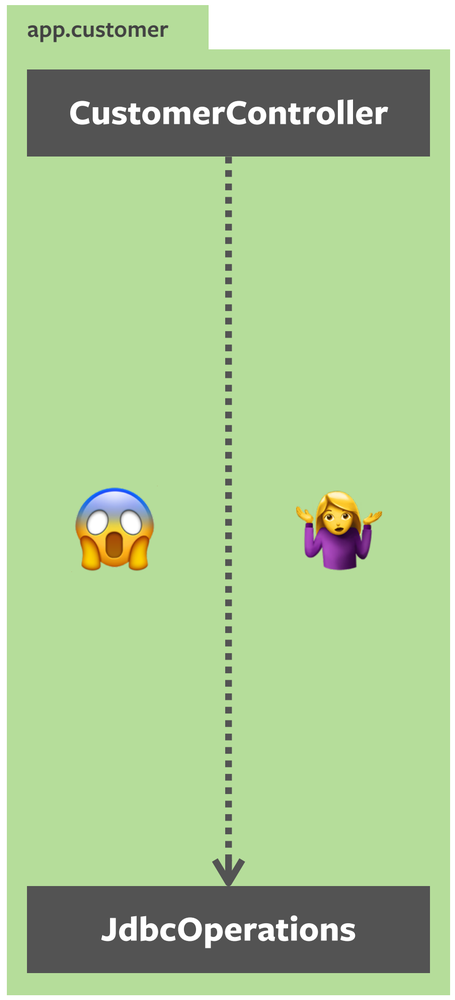


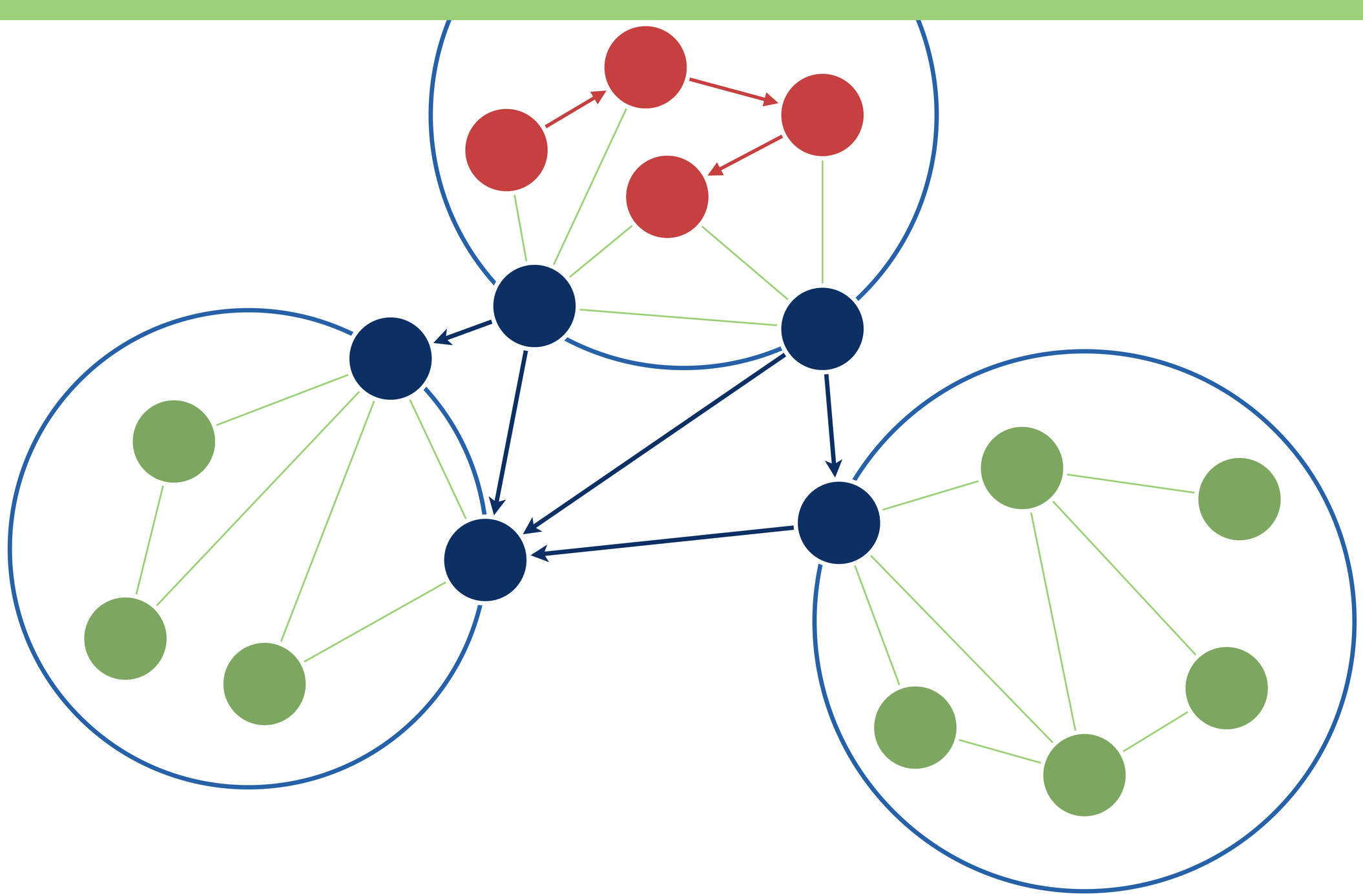
Hexagonal / Onion



Modular



Avoid internal complexity
if domain permits



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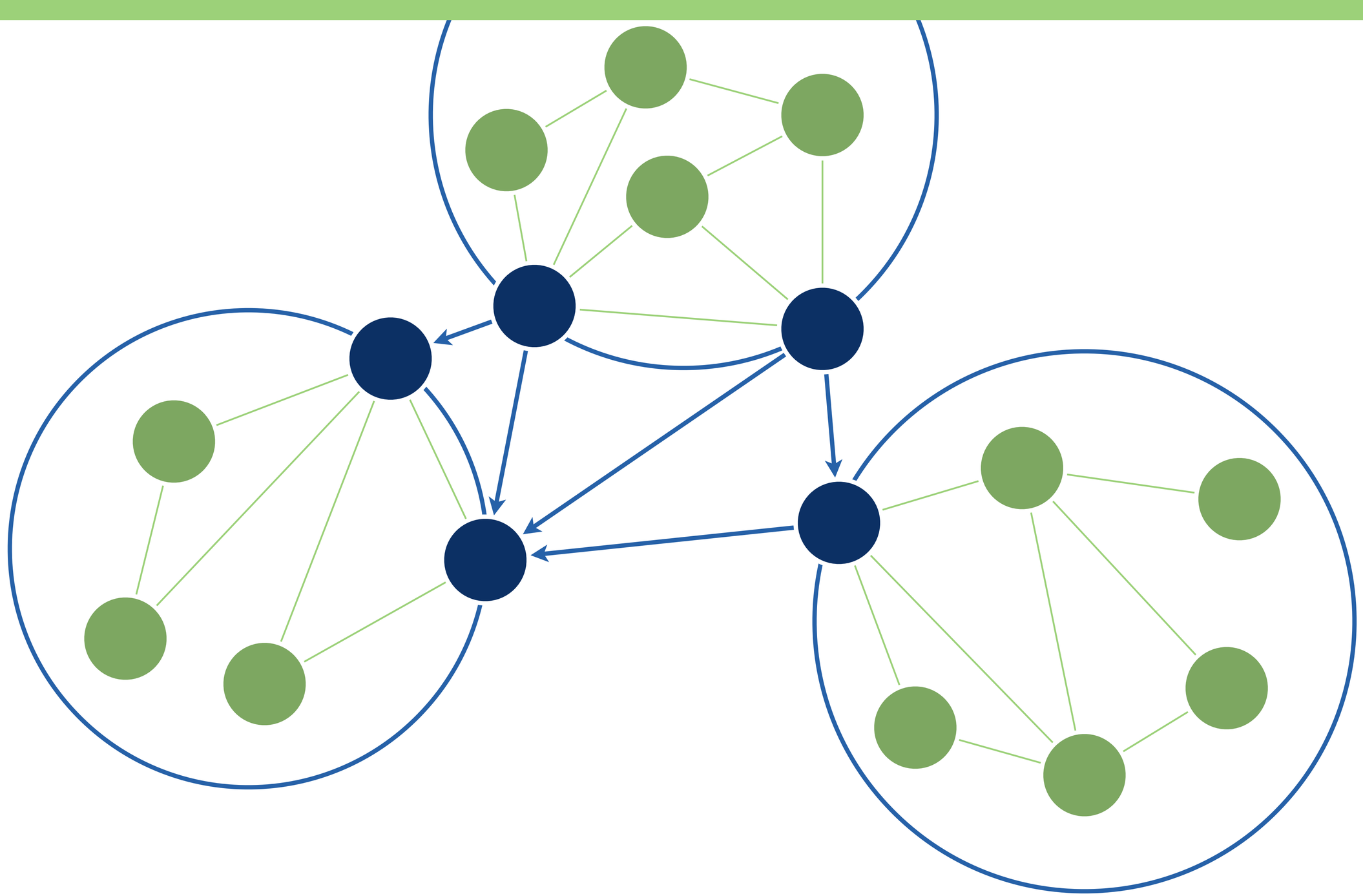
The primary objective of system decomposition is to support change. To contain the effects of a change to as few as possible elements. If your decomposition strategy does not align with that, it's distracting at best and harmful at worst.

24. Sept. 2024, 19:16 · · Ivory for iOS

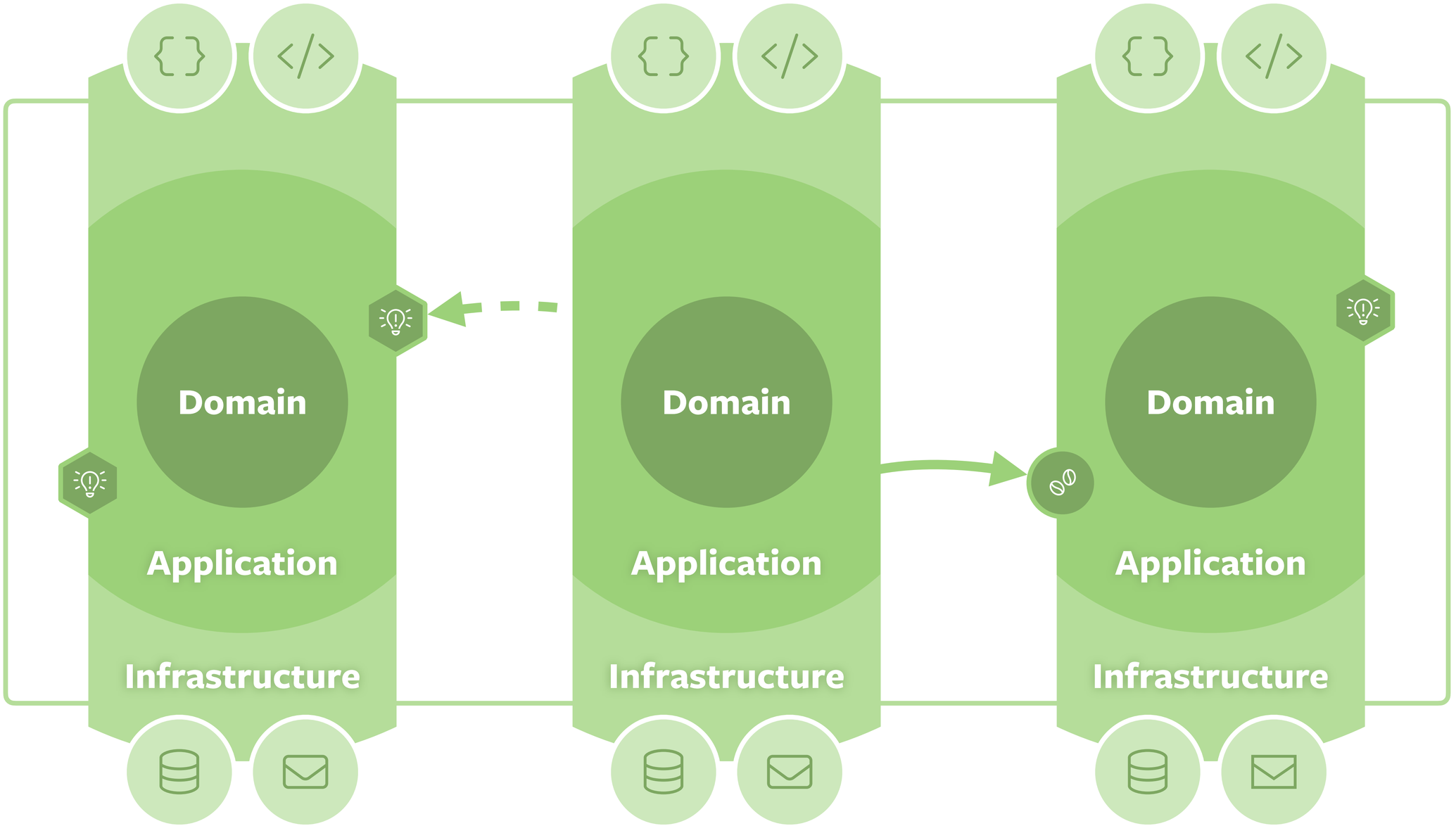
https://chaos.social/@odrotbohm/113193662068876374

Strategic considerations

Designing for cohesion leads to decoupling, but not vice versa.



Functional Decomposition over Technical Decomposition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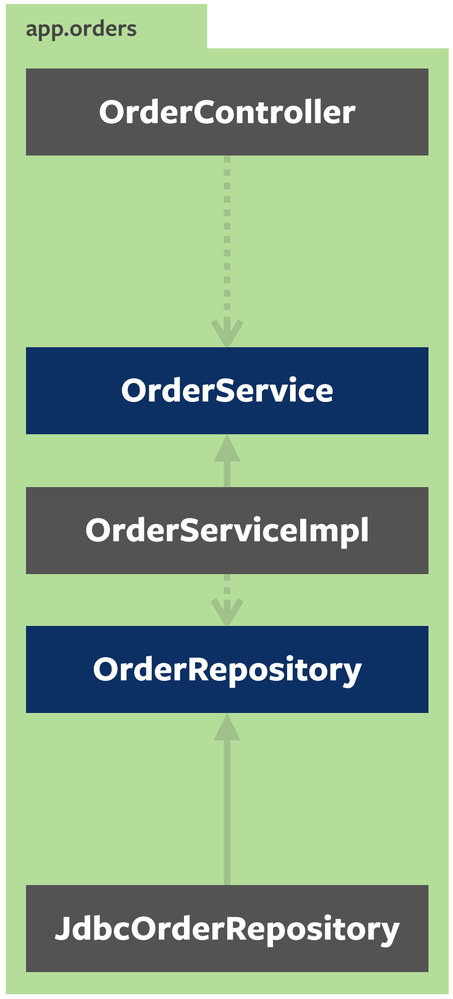
Intrinsic Complexity determines Accidental Complexity

Classic Layers

Hexagonal / Onion



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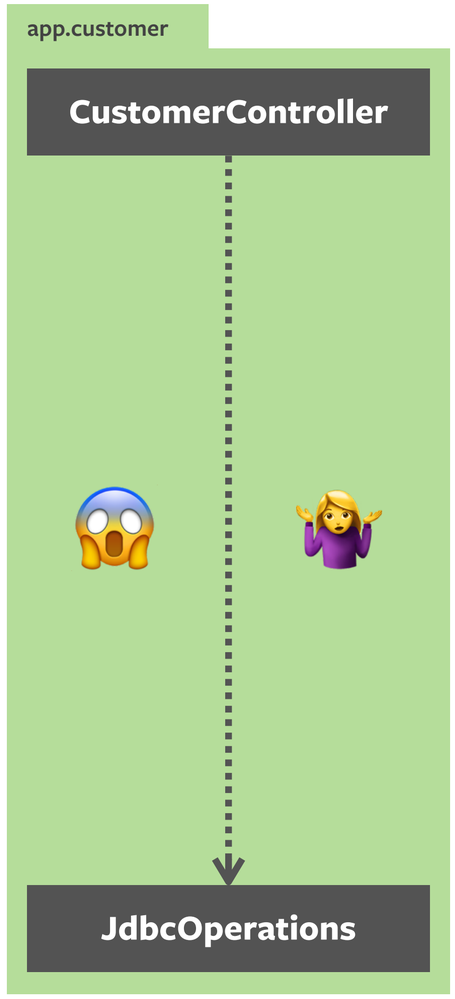
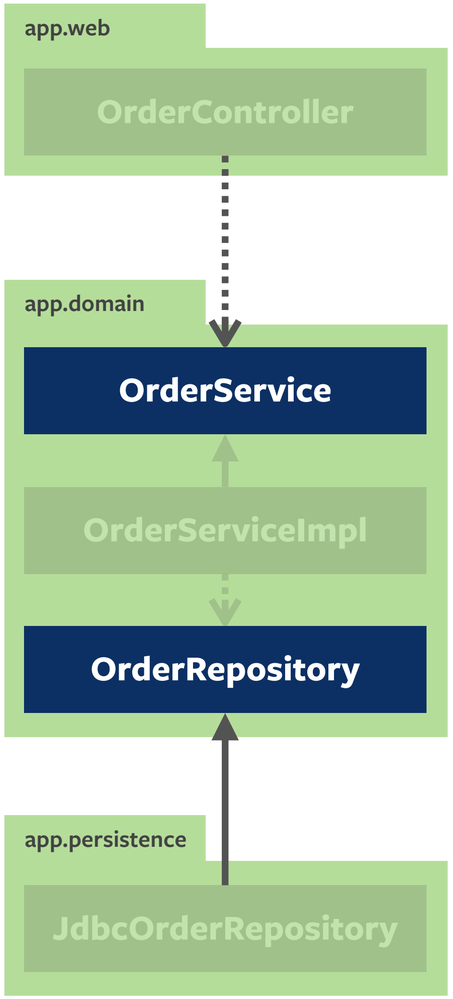
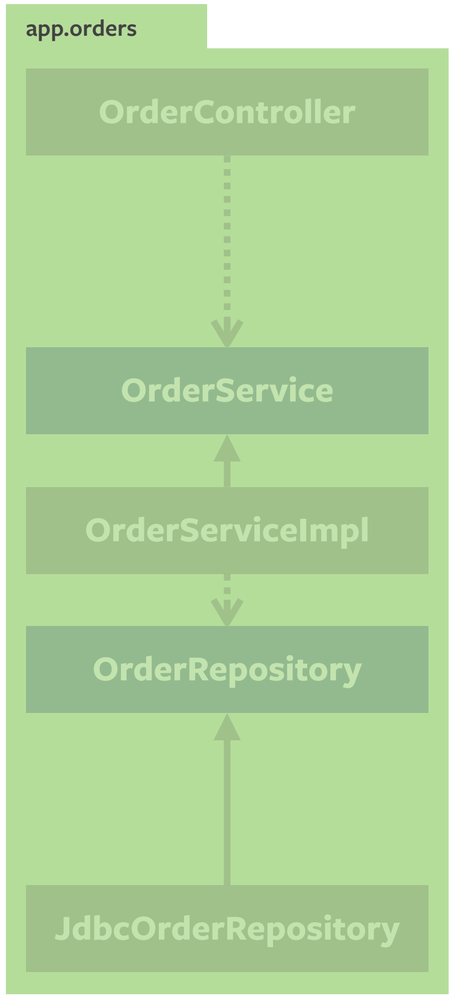


Avoid internal complexity
if domain permits

Encapsulation over Organisation



Hexagonal / Onion



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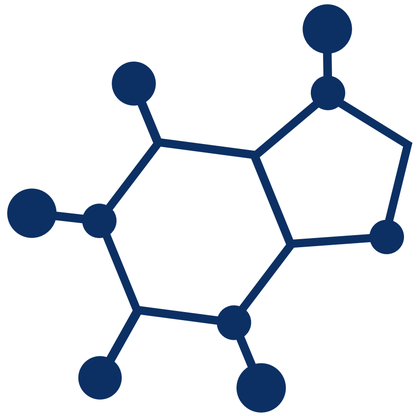
One more thing…

VSCode



jMolecules

Thank you!

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