# TESTABLE ARCHITECTURE WITH SPRING

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# TESTABLE ARCHITECTURE WITH SPRING

# TESTABLE?

# ISOLATE FAULTS

# GOOD ARCHITECTURE?


RECARO

# WITH

# EXERCISES

https://github.com/pilloPL/testable-arch.git

1. Cohesion and coupling
2. Legacy architecture
3. Spring tooling

# Question 1

## what is the responsibility of LeaveService class?

https://bit.ly/2WX0087

DECIDES

(Vacation or not?)

VALIDATES
INPUT DATA

LOADS/
INSTANTIATES DATA
FOR DECISION

# DECIDES

(Vacation or not?)

VALIDATES
INPUT DATA

LOADS/
INSTANTIATES DATA
FOR DECISION

# DECIDES

(Vacation or not?)

REACTS TO
DECISION

(escalation?)
(e-mail?)
(event?)
(database?)

VALIDATES
INPUT DATA

VALIDATES INPUT DATA

DECIDES

LOADS/ INSTANTIATES DATA FOR DECISION

DECIDES

REACTS TO DECISION

DECIDES

REACTS TO DECISION

DECIDES

VALIDATES INPUT DATA

DECIDES

LOADS/ INSTANTIATES DATA FOR DECISION

DECIDES

REACTS TO DECISION

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REACTS TO DECISION

DECIDES

VALIDATES INPUT DATA

DECIDES

LOADS/ INSTANTIATES DATA FOR DECISION

DECIDES

REACTS TO DECISION

DECIDES

REACTS TO DECISION

DECIDES

# WTF IS SRP

LOADS/
INSTANTIATES DATA
FOR DECISION

# DECIDES

(Vacation or not?)

REACTS TO
DECISION

(escalation?)
(e-mail?)
(event?)
(database?)

VALIDATES
INPUT DATA

NO. OF SHARED DEPENDENCIES

COMPLEXITY

X

NO. OF SHARED DEPENDENCIES

LeaveService ←

COMPLEXITY

NO. OF SHARED DEPENDENCIES

LeaveService

Employee

COMPLEXITY

NO. OF SHARED DEPENDENCIES

LeaveService

DTOs

Employee

COMPLEXITY

NO. OF SHARED DEPENDENCIES

Happy path:
integration test

Some unit tests too if needed

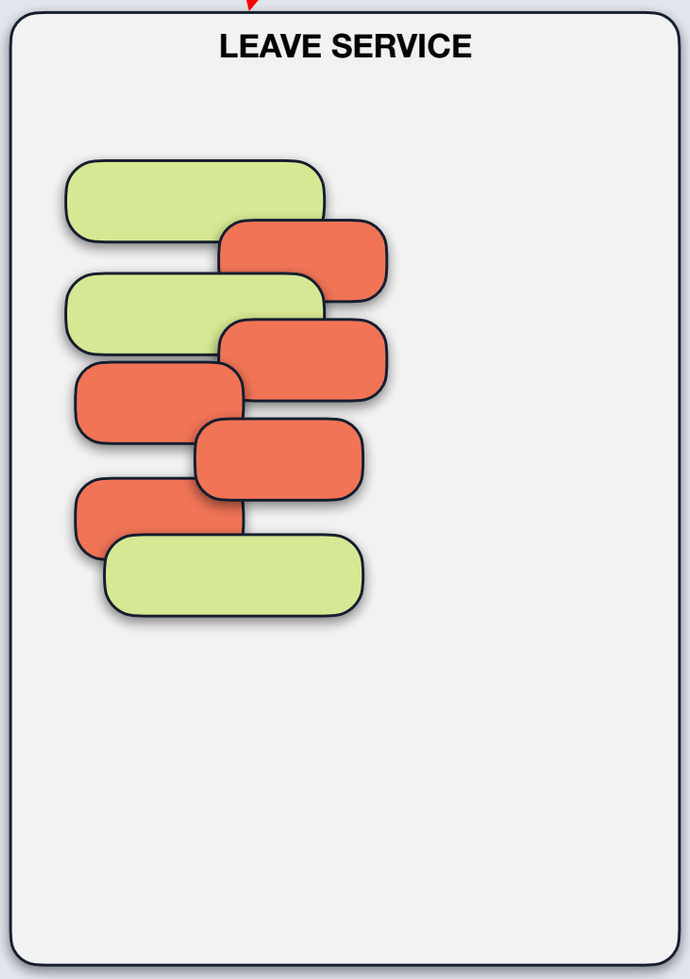
DTOs

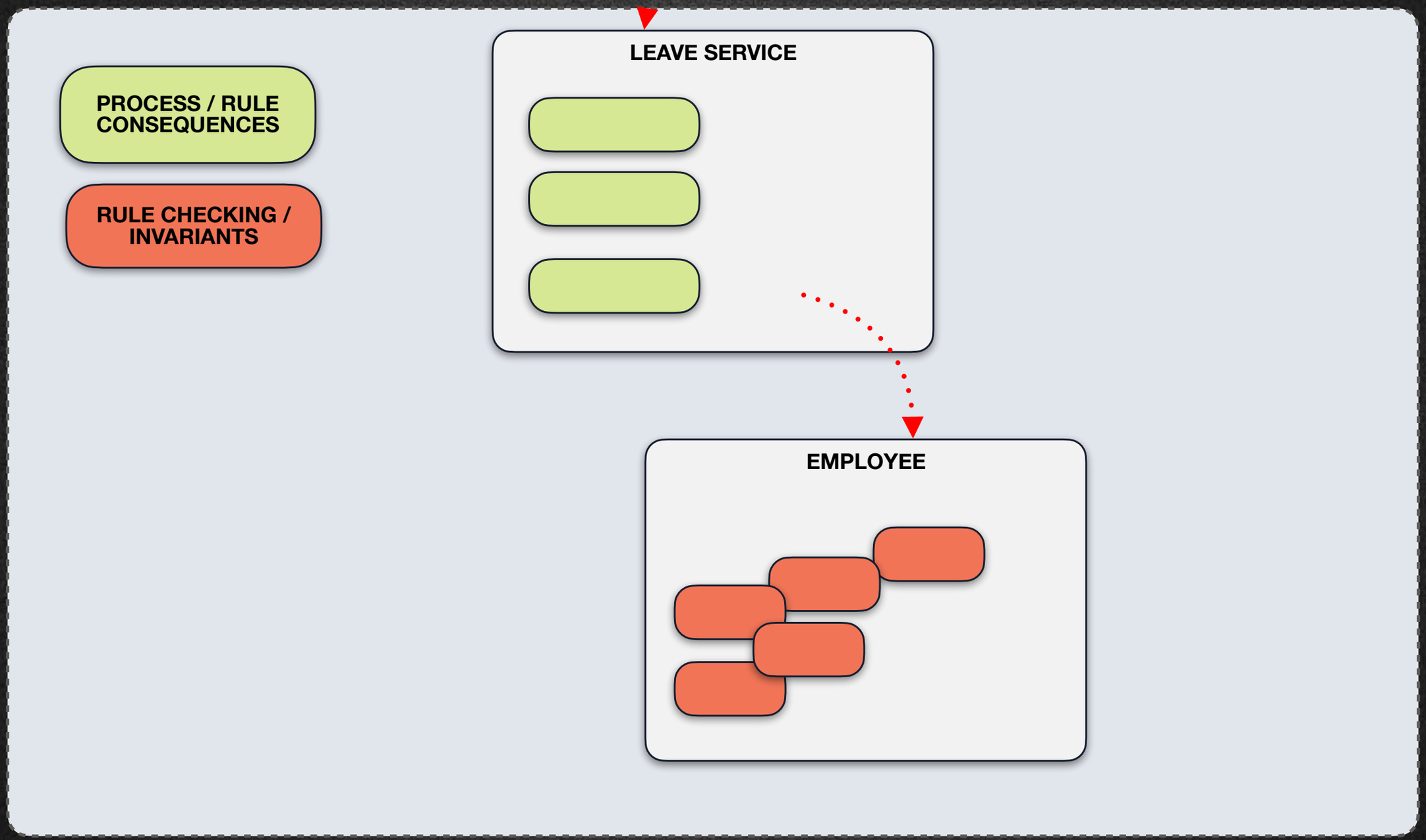
Unit tests

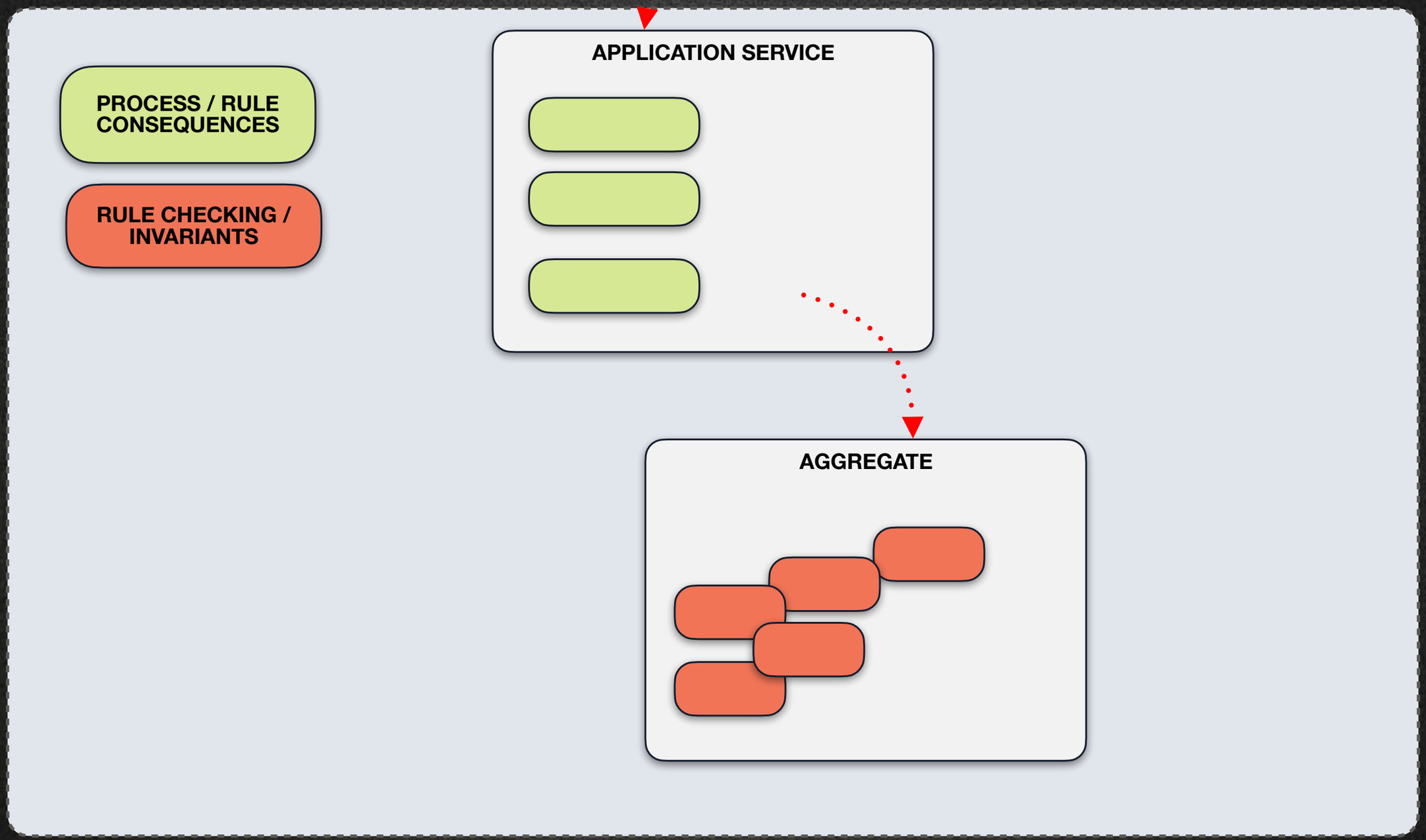
COMPLEXITY

PROCESS / RULE CONSEQUENCES

RULE CHECKING / INVARIANTS




PROCESS / RULE CONSEQUENCES
RULE CHECKING / INVARIANTS
LEAVE SERVICE
EMPLOYEE


PROCESS / RULE CONSEQUENCES
RULE CHECKING / INVARIANTS
APPLICATION SERVICE
AGGREGATE

PROCESS / RULE CONSEQUENCES

RULE CHECKING / INVARIANTS

APPLICATION SERVICE

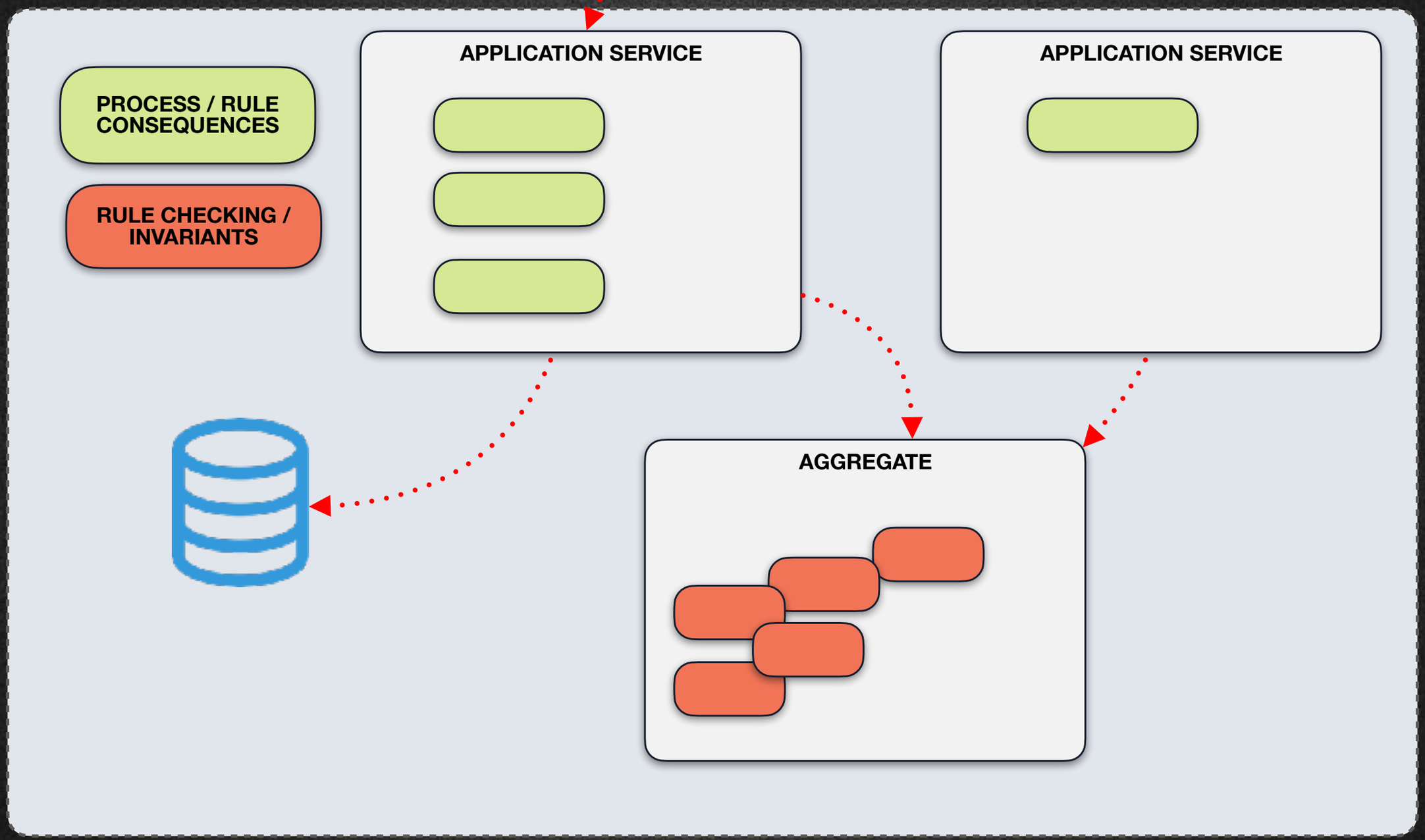
EXTERNAL SYSTEM

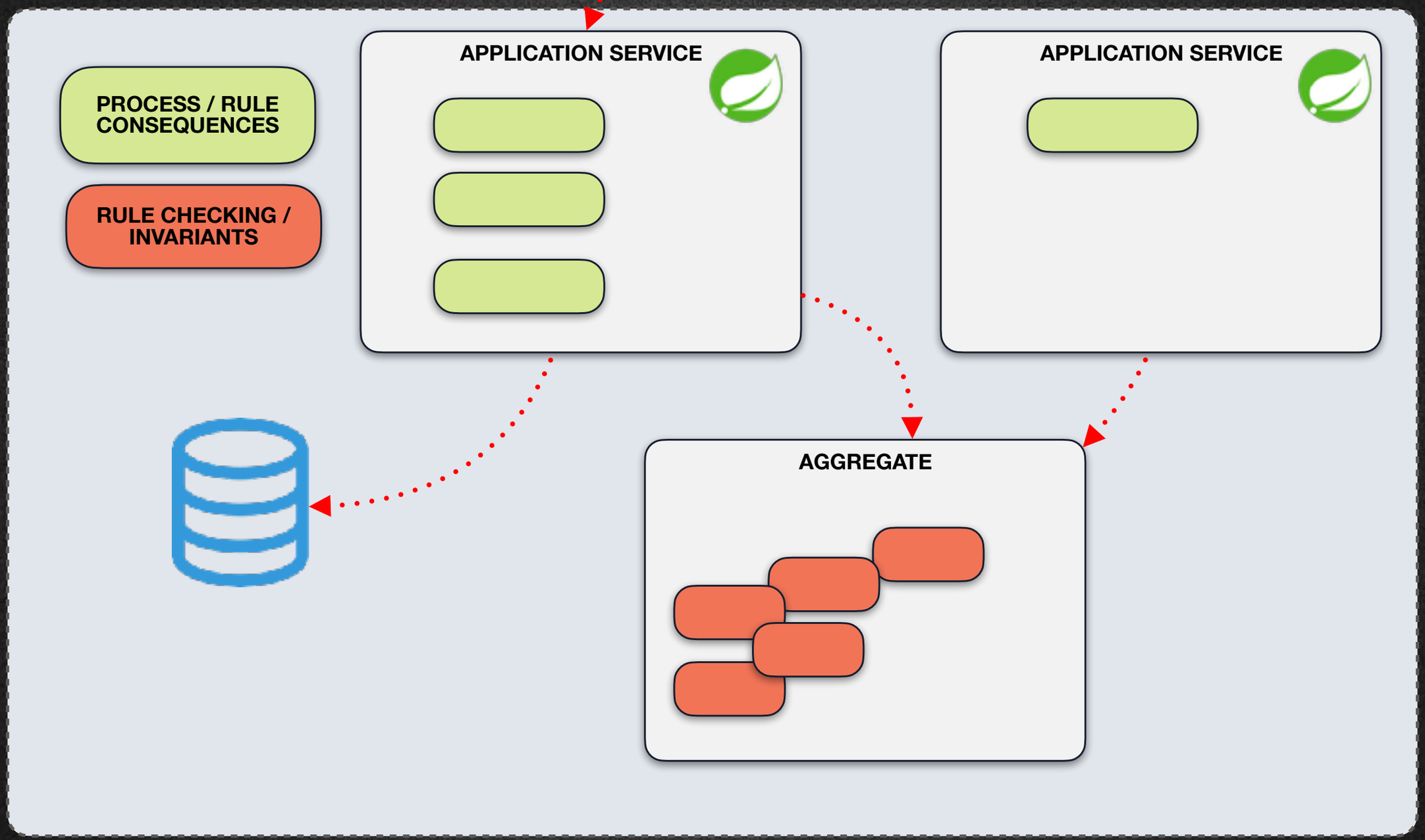
(SOAP, REST, RPC …)

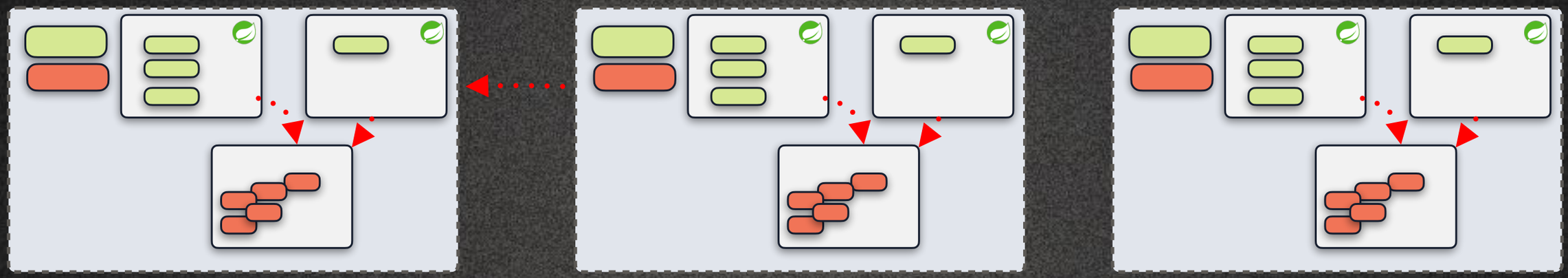
QUEUE

(RABBITMQ, JMS, HAZELCAST… )

AGGREGATE


PROCESS / RULE CONSEQUENCES
RULE CHECKING / INVARIANTS
APPLICATION SERVICE
APPLICATION SERVICE
AGGREGATE

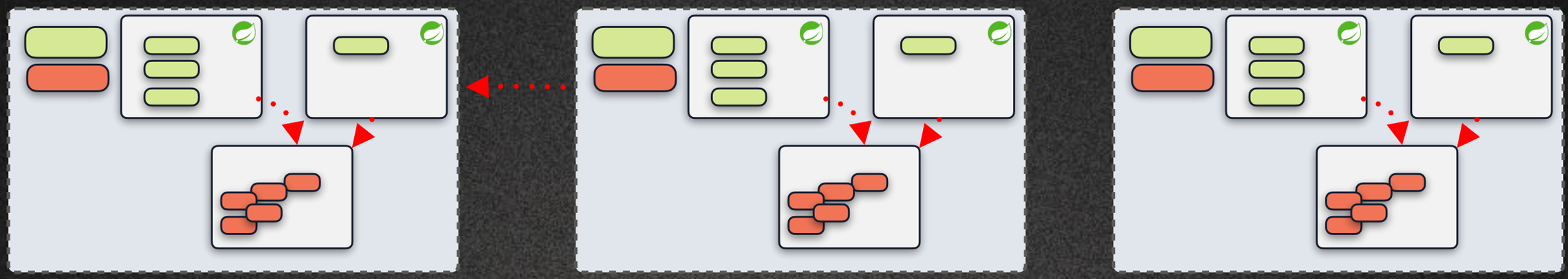

PROCESS / RULE CONSEQUENCES
RULE CHECKING / INVARIANTS
APPLICATION SERVICE
APPLICATION SERVICE
AGGREGATE



# Question 2

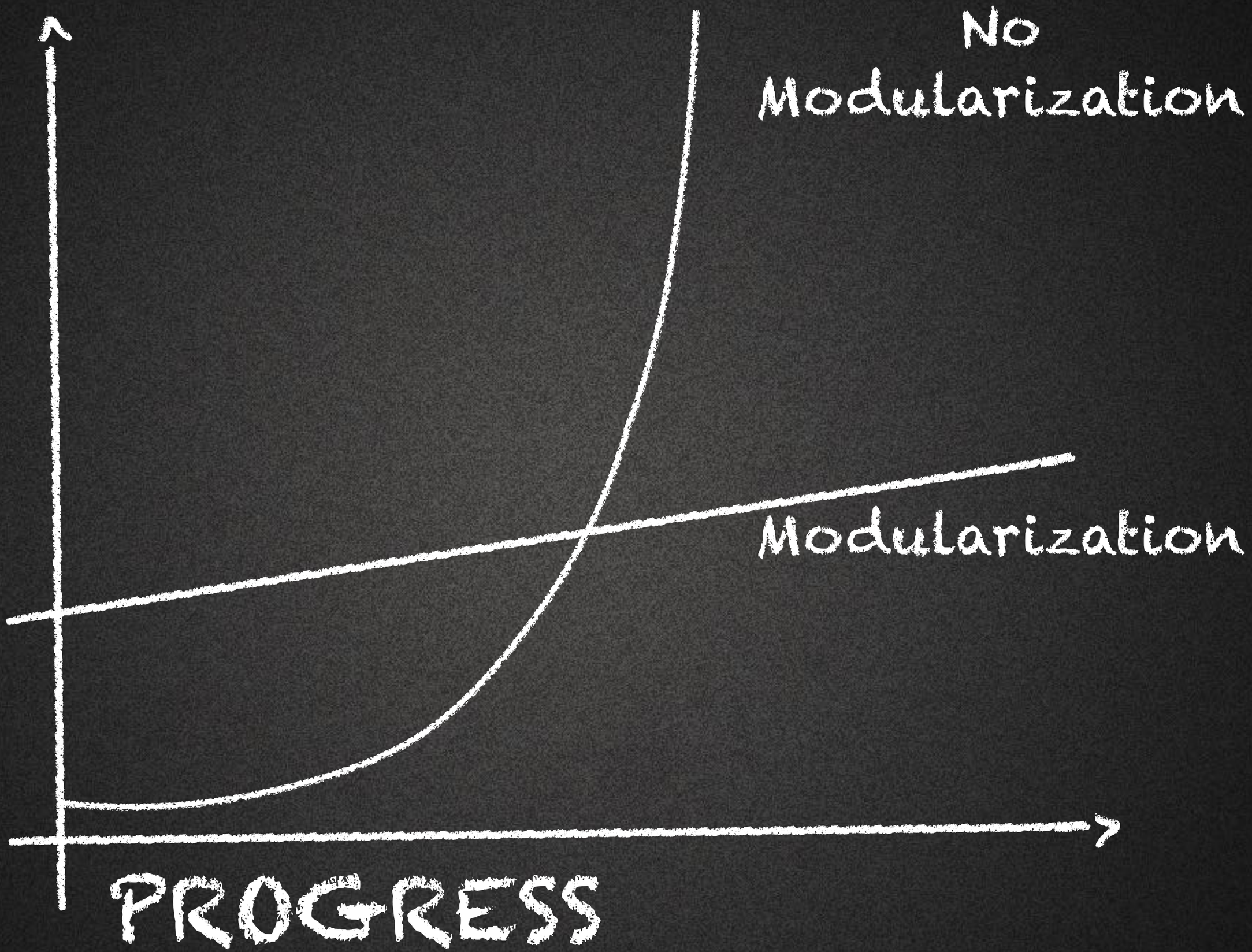
## Do I always need modularization?

https://bit.ly/304vSK6



# Testable architecture

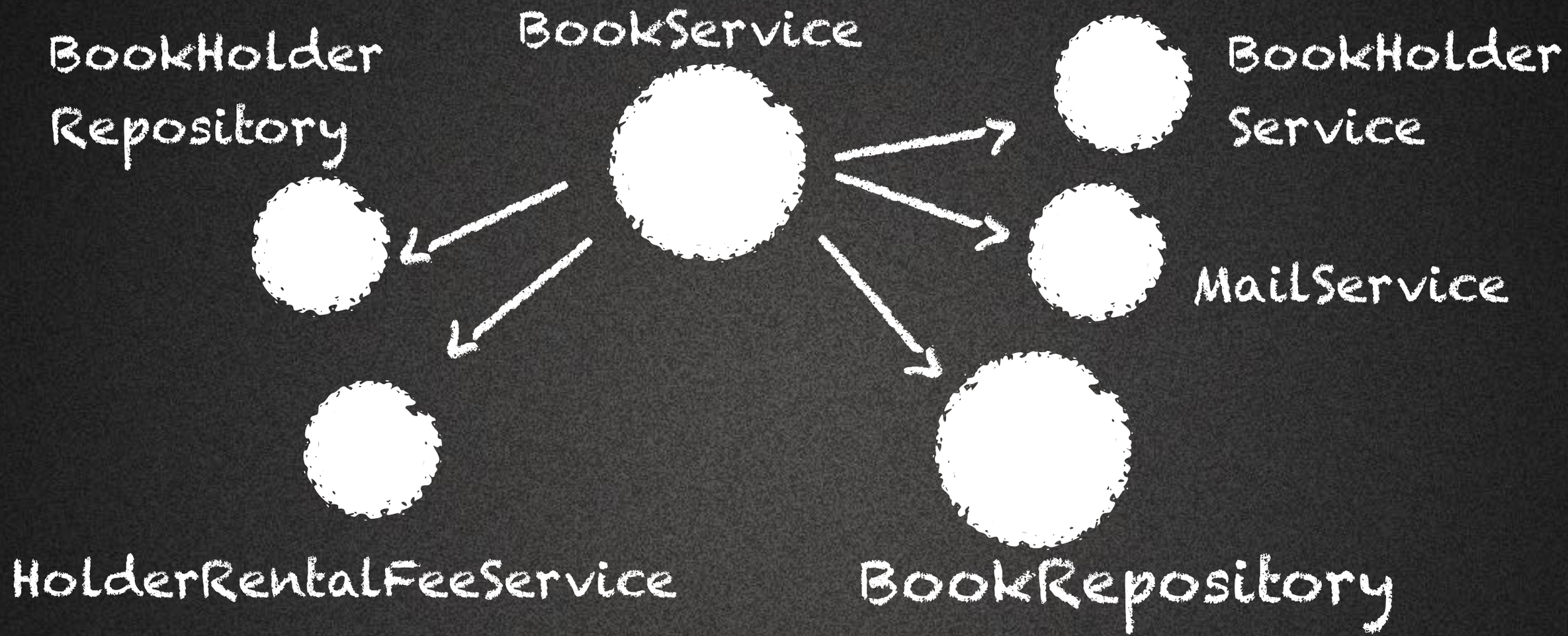
requires: modularization, high cohesion, low coupling


No
Modularization
Modularization
NETWORK
PROGRESS

# EXERCISE 1

| | IMPLEMENTATION EFFORT | MISTAKE POSSIBILITY | SEVERITY OF MISTAKE |
|---|---|---|---|
| APPLICATION (PROCESS) | HIGH | LOW | LOW |
| DOMAIN (BUSINESS RULES) | LOW | HIGH | HIGH |

# Q & A


BookHolder
Repository
BookService
BookHolder
Service
MailService
HolderRentalFeeService
BookRepository

External System Client

BookService

BookHolder Service

EmailSender

BookHolder Repository

BookRepository

BookController

BookService

External System Client

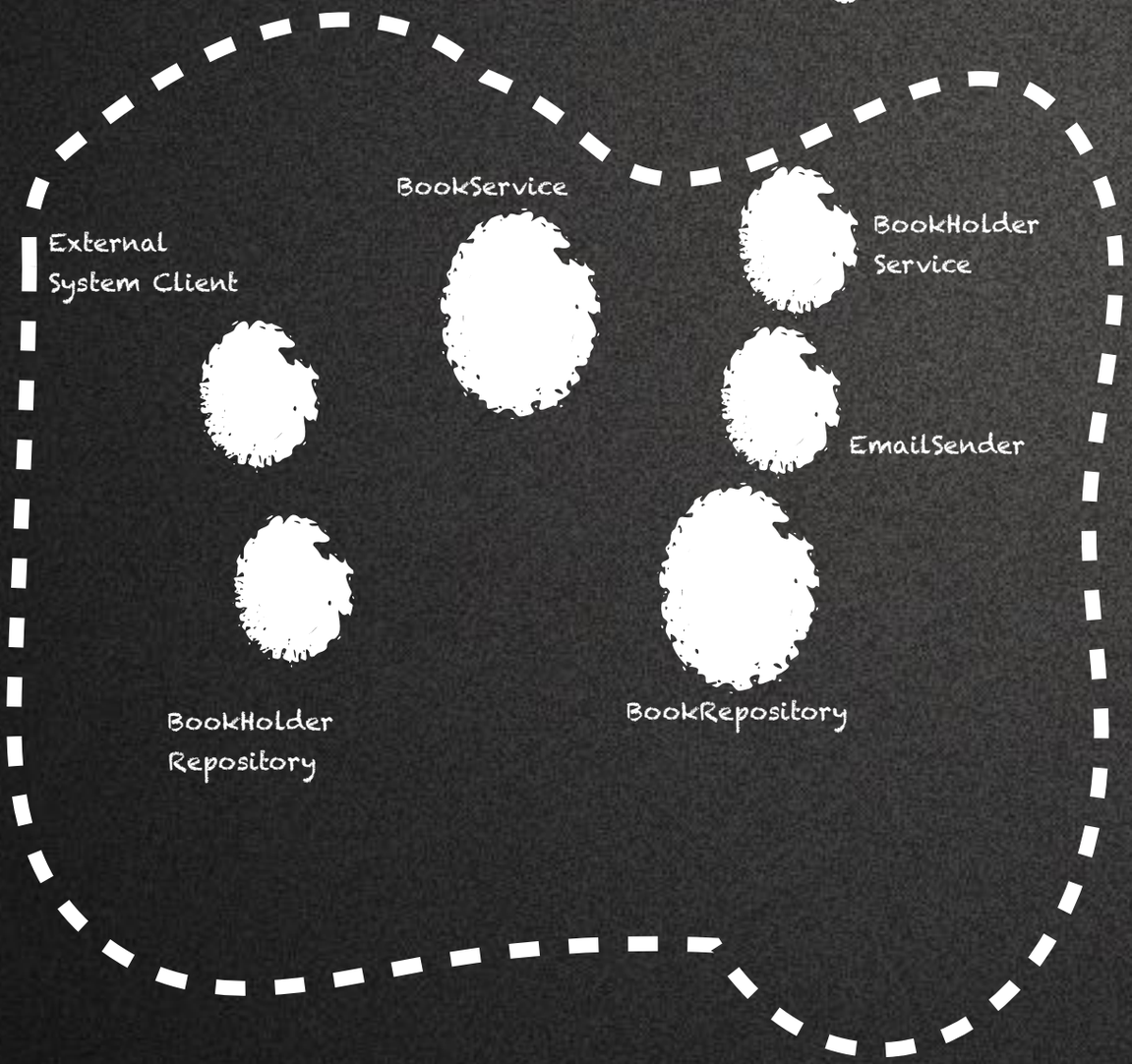
BookHolder Service

EmailSender

BookHolder Repository

BookRepository

BookController



BookController

Integration tests

BookService

BookHolder Service

External System Client

EmailSender

BookHolder Repository

BookRepository

BookController

Integration tests

BookService

BookHolder Service

External System Client

EmailSender

BookHolder Repository

BookRepository

Old model

Brand new model

BookController

Integration tests

BookService

BookHolder Service

External System Client

EmailSender

BookHolder Repository

BookRepository

Old model

Brand new model

BookController

Integration tests

Old model

External System Client

BookService

BookHolder Service

EmailSender

BookRepository

BookHolder Repository

Brand new model

BookController

Integration tests

Old model

External System Client

BookService

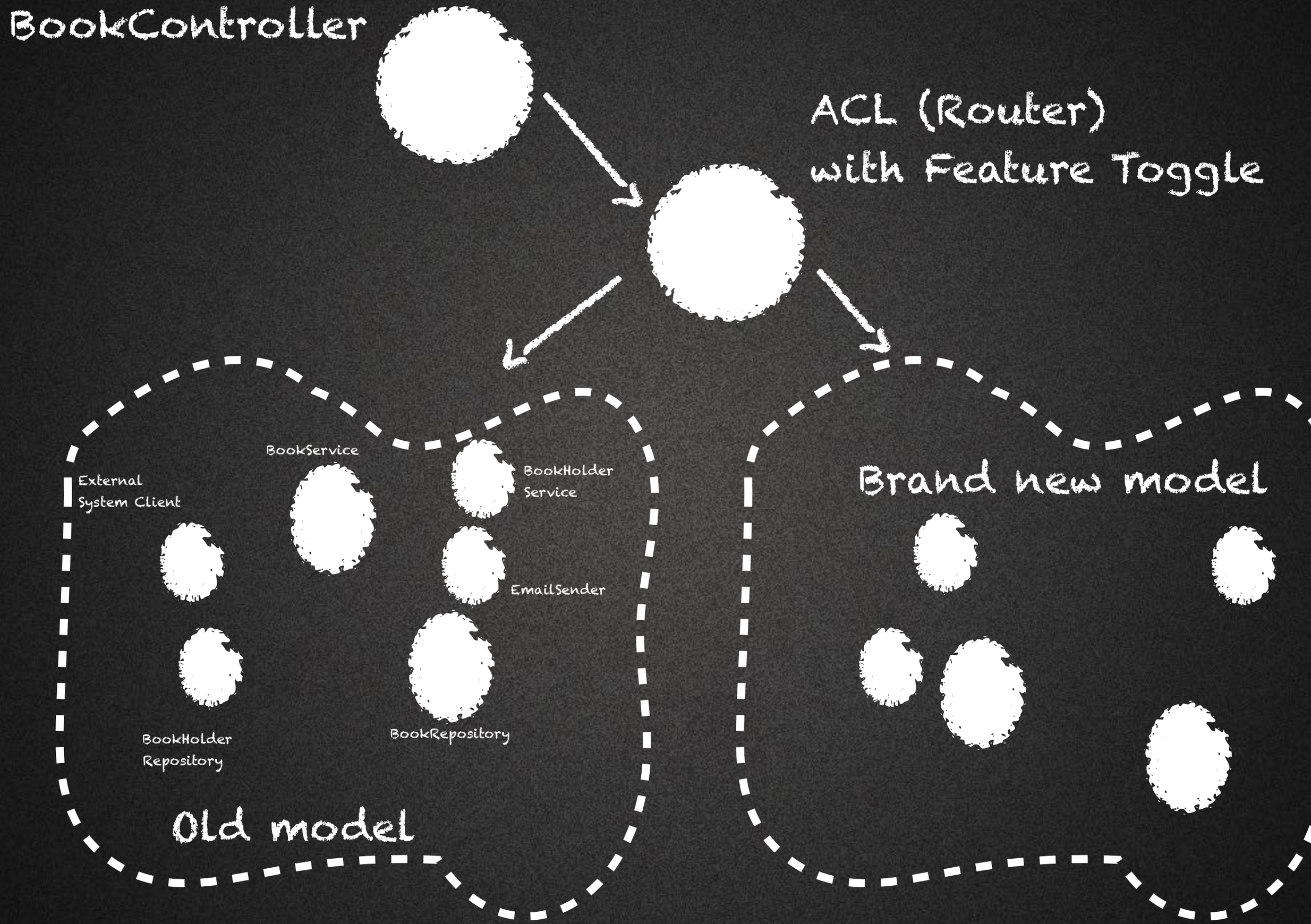
BookHolder Service

EmailSender

BookRepository

BookHolder Repository

Brand new model


BookController
ACL (Router)
with Feature Toggle
BookService
External
System Client
BookHolder
Service
EmailSender
BookHolder
Repository
BookRepository
Old model
Brand new model

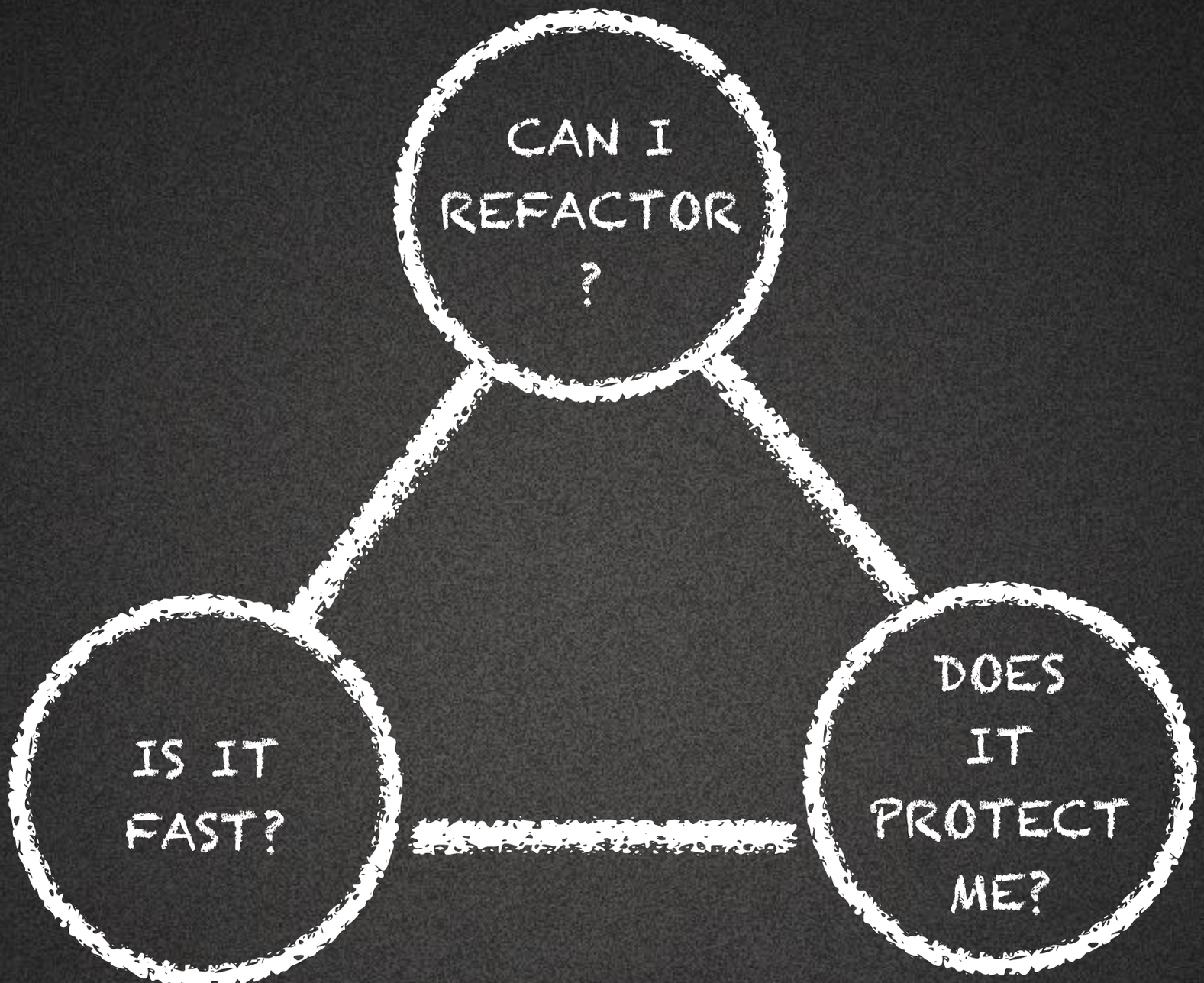
# EXERCISE 2

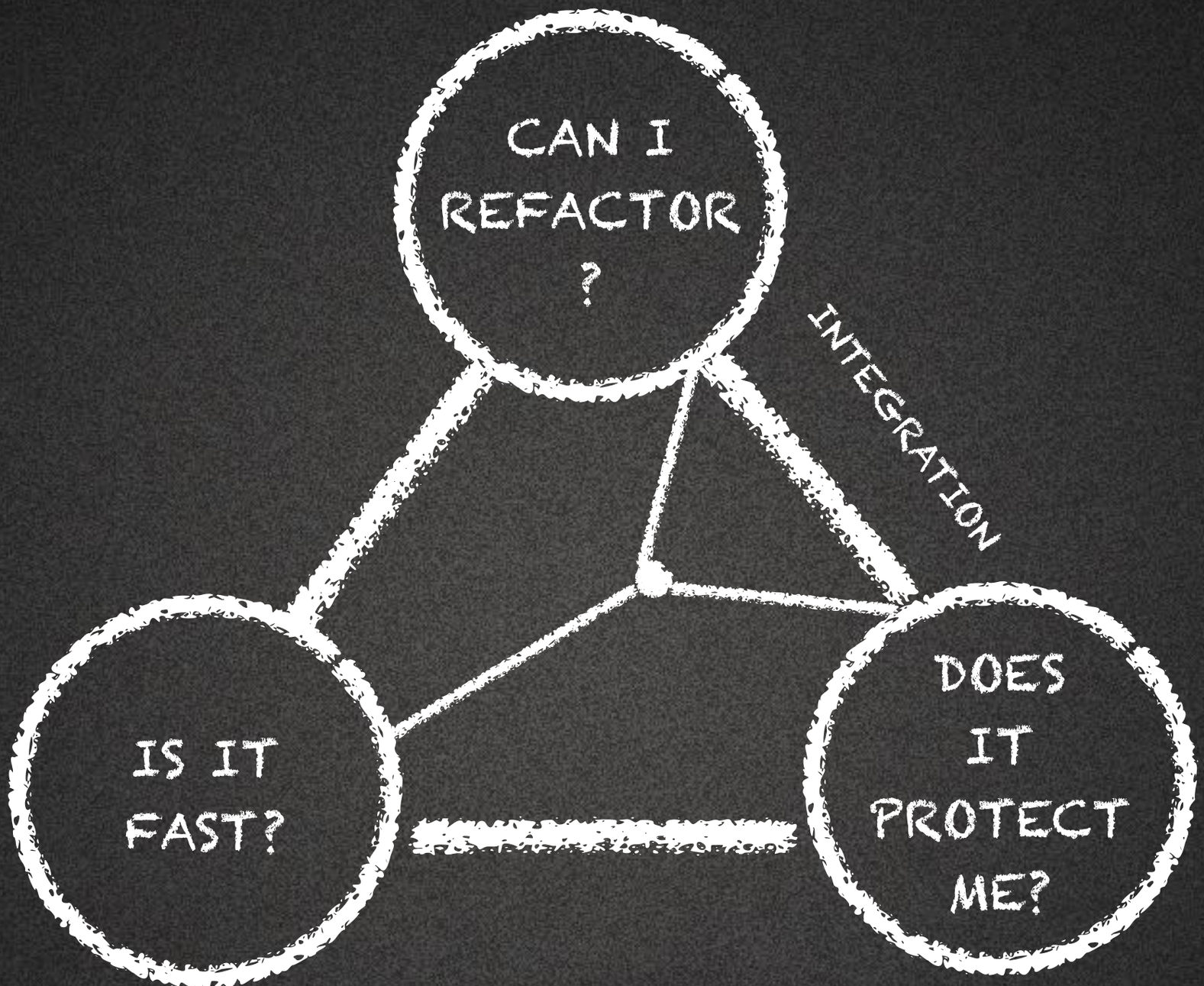
# Testability in legacy:

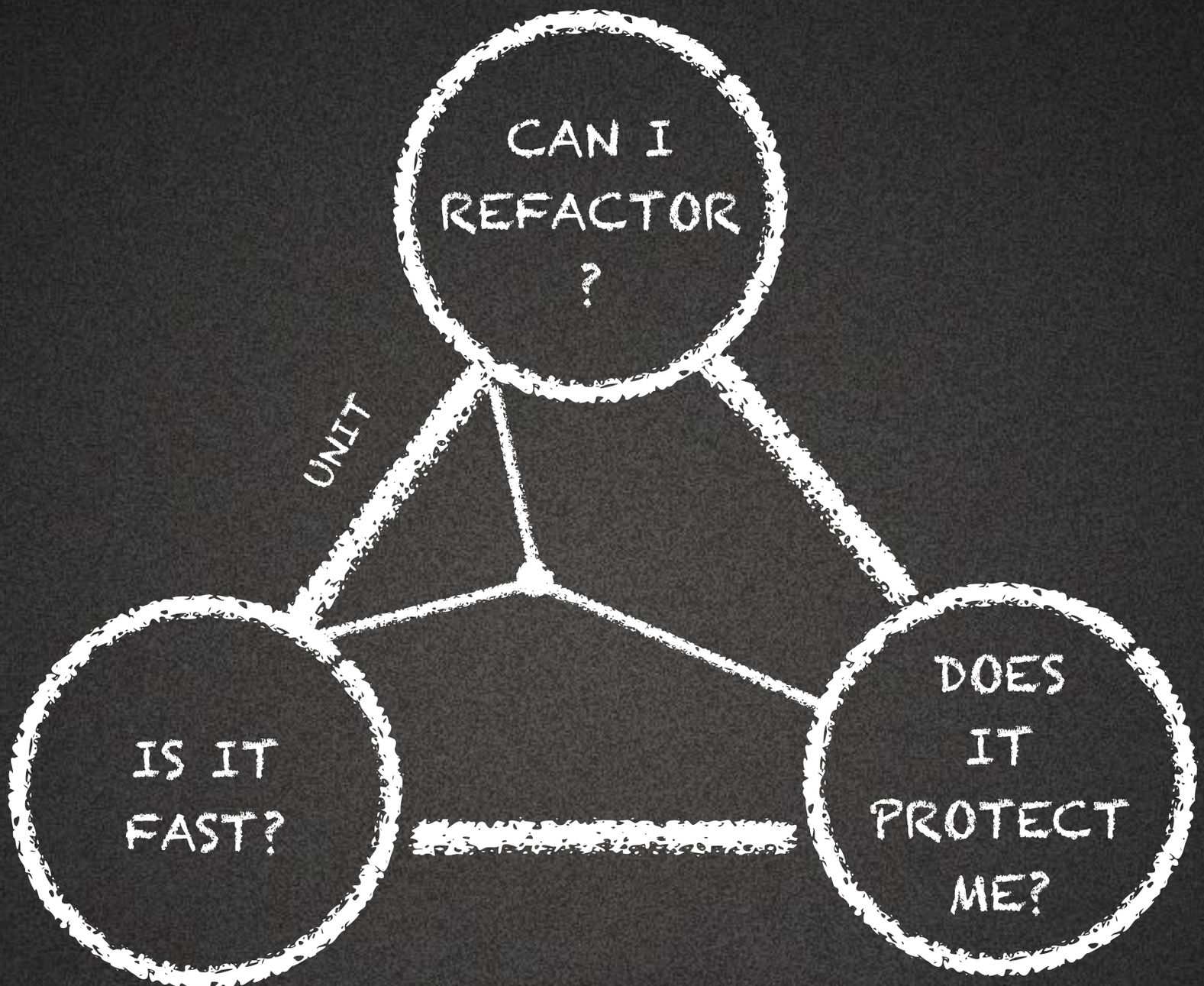
# Run 2 designs at the same time

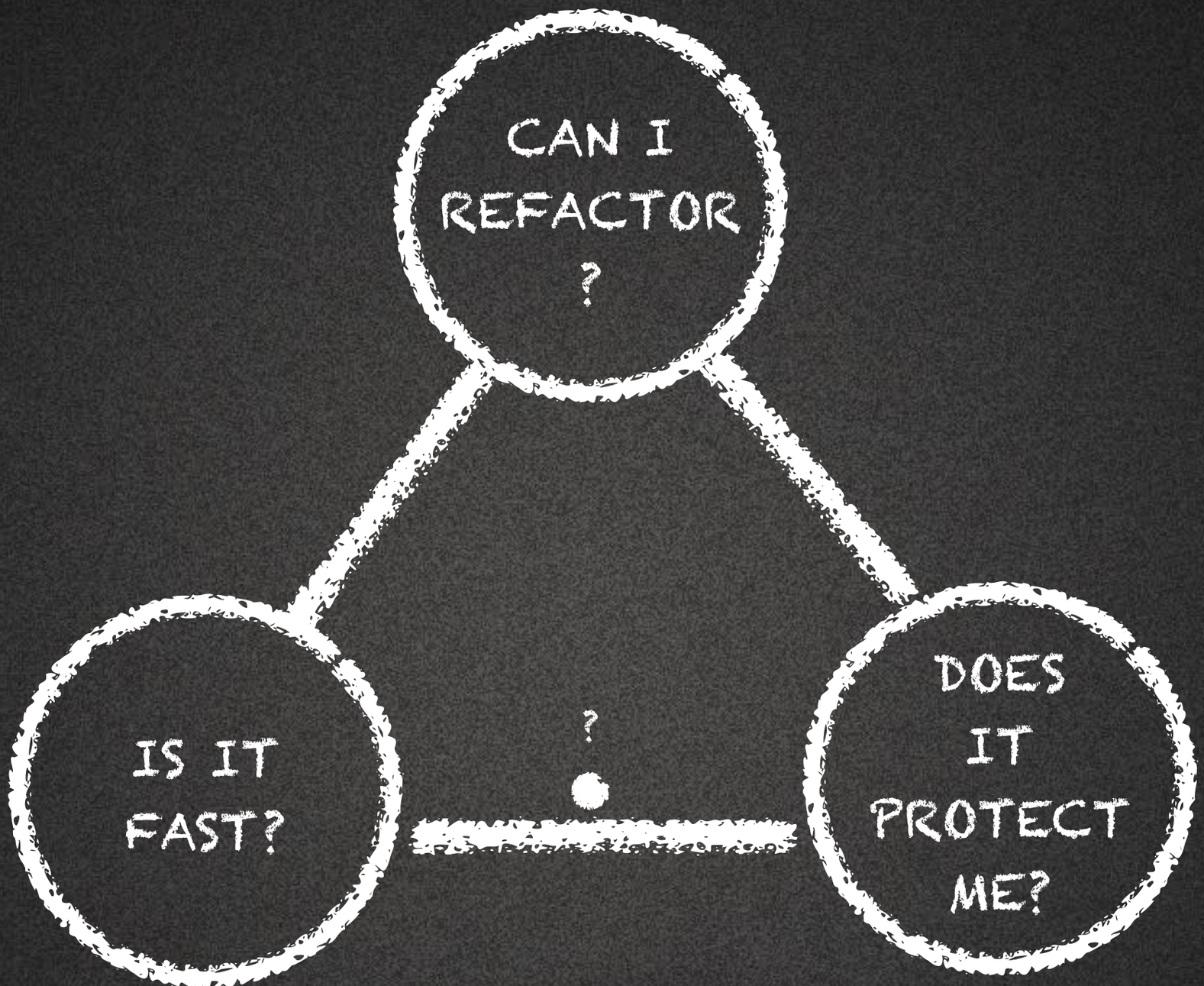
# Testability in legacy:

# Spring integration testing = friend


CAN I REFACTOR ?
IS IT FAST?
DOES IT PROTECT ME?


CAN I REFACTOR ?
INTEGRATION
IS IT FAST?
DOES IT PROTECT ME?


CAN I REFACTOR ?
UNIT
IS IT FAST?
DOES IT PROTECT ME?


CAN I REFACTOR ?
IS IT FAST?
?
DOES IT PROTECT ME?

# Q & A

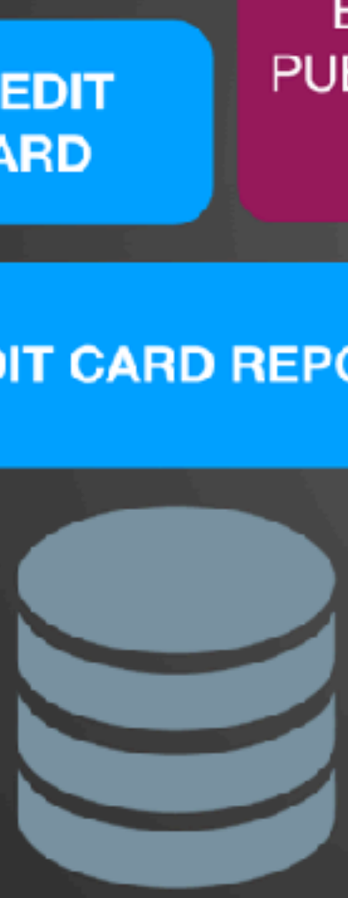
CREDIT CARD APPLICATION CONTROLLER

APPLY FOR CARD SERVICE

CREDIT CARD

DOMAIN EVENT PUBLISHER

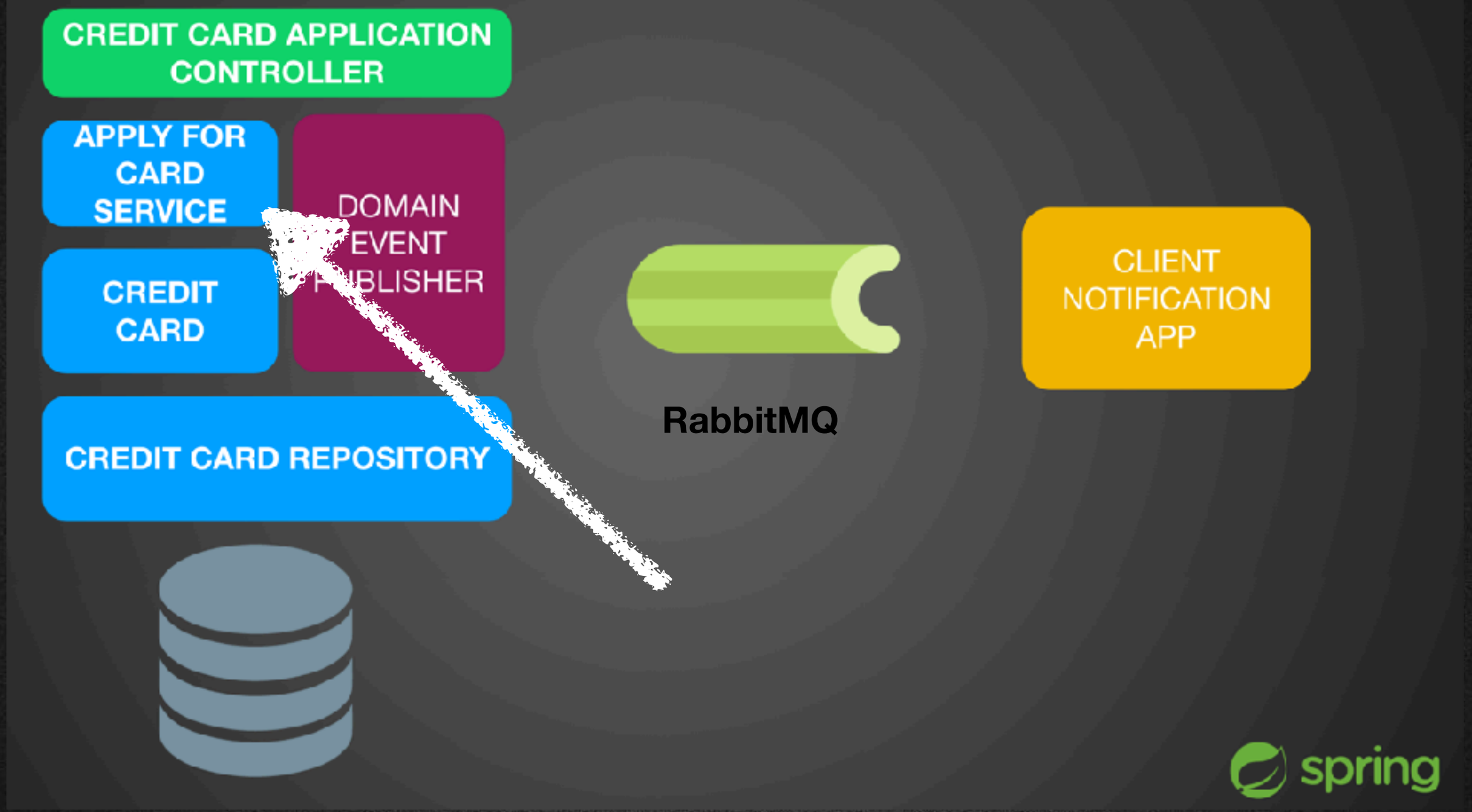
CREDIT CARD REPOSITORY



RabbitMQ

CLIENT NOTIFICATION APP

spring


CREDIT CARD APPLICATION CONTROLLER
APPLY FOR CARD SERVICE
CREDIT CARD
DOMAIN EVENT PUBLISHER
CREDIT CARD REPOSITORY
RabbitMQ
CLIENT NOTIFICATION APP
spring

CREDIT CARD APPLICATION CONTROLLER

APPLY FOR CARD SERVICE

CREDIT CARD

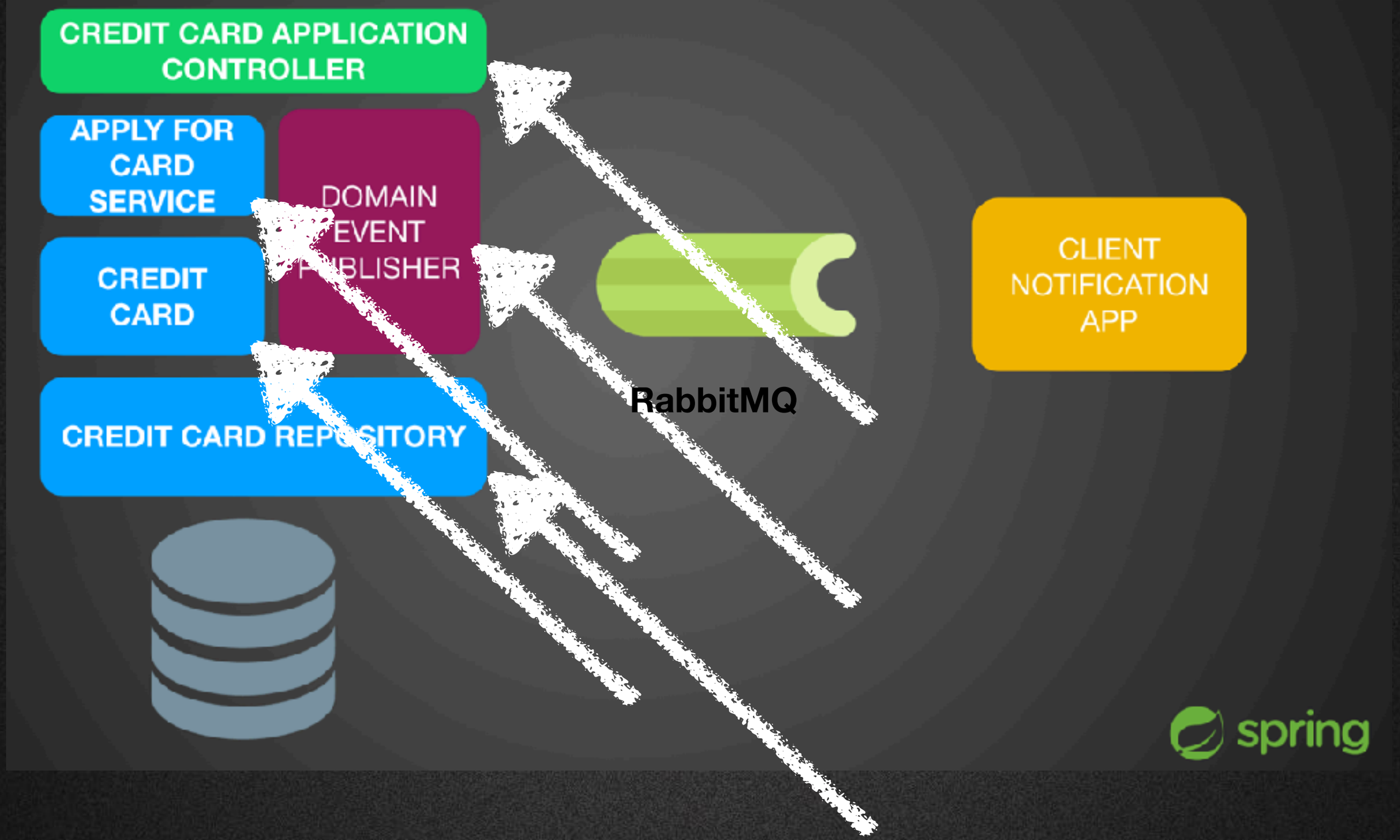
DOMAIN EVENT PUBLISHER

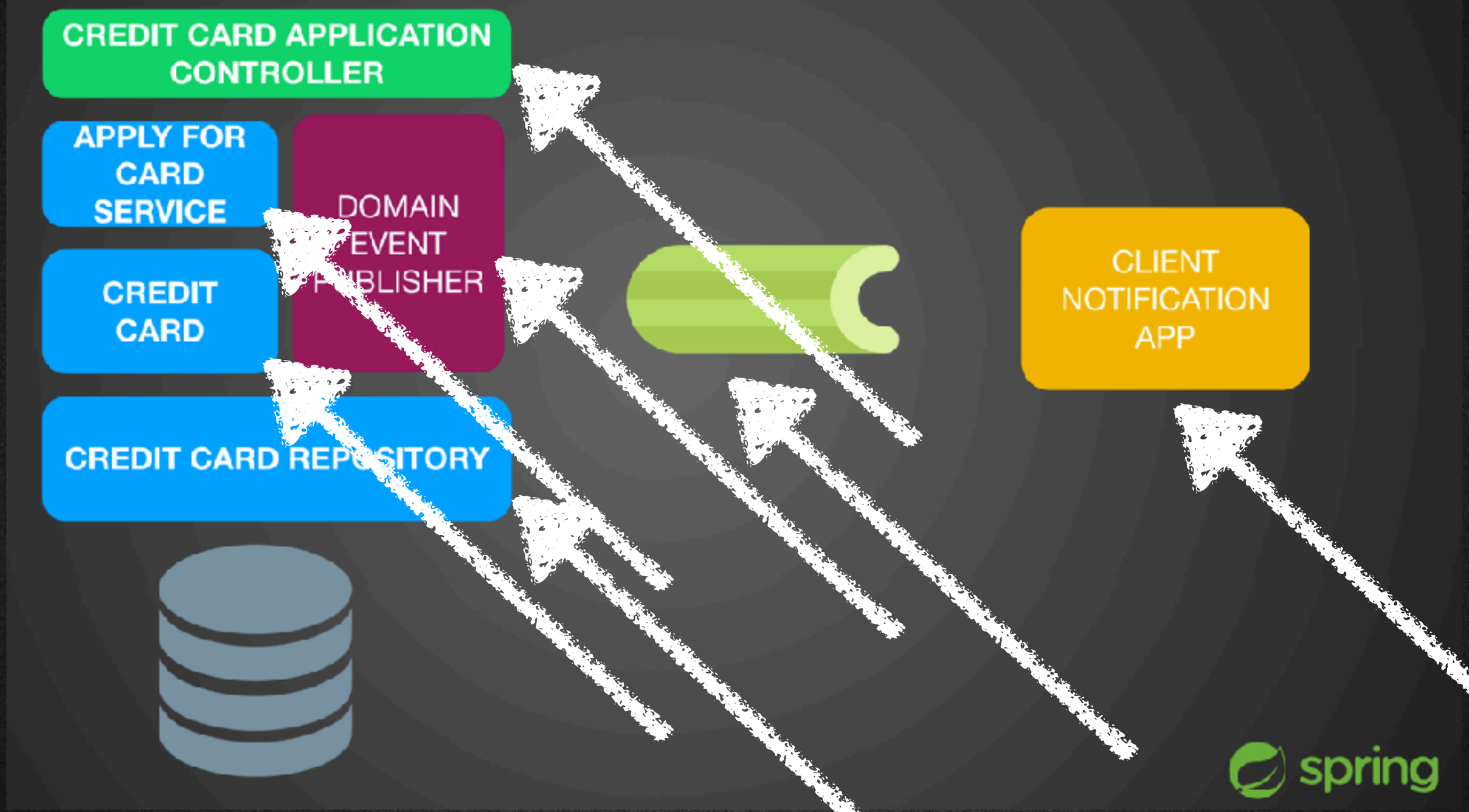
CREDIT CARD REPOSITORY

RabbitMQ

CLIENT NOTIFICATION APP

spring


CREDIT CARD APPLICATION CONTROLLER
APPLY FOR CARD SERVICE
CREDIT CARD
DOMAIN EVENT PUBLISHER
CREDIT CARD REPOSITORY
RabbitMQ
CLIENT NOTIFICATION APP
spring


CREDIT CARD APPLICATION CONTROLLER
APPLY FOR CARD SERVICE
CREDIT CARD
DOMAIN EVENT PUBLISHER
CLIENT NOTIFICATION APP
CREDIT CARD REPOSITORY
spring

## Question 3

# How to solve the problem with inconsistent state of the database and the message bus?

https://bit.ly/2P28C9q

# Q & A