HOLY JS /...

Alexey Bogachuk
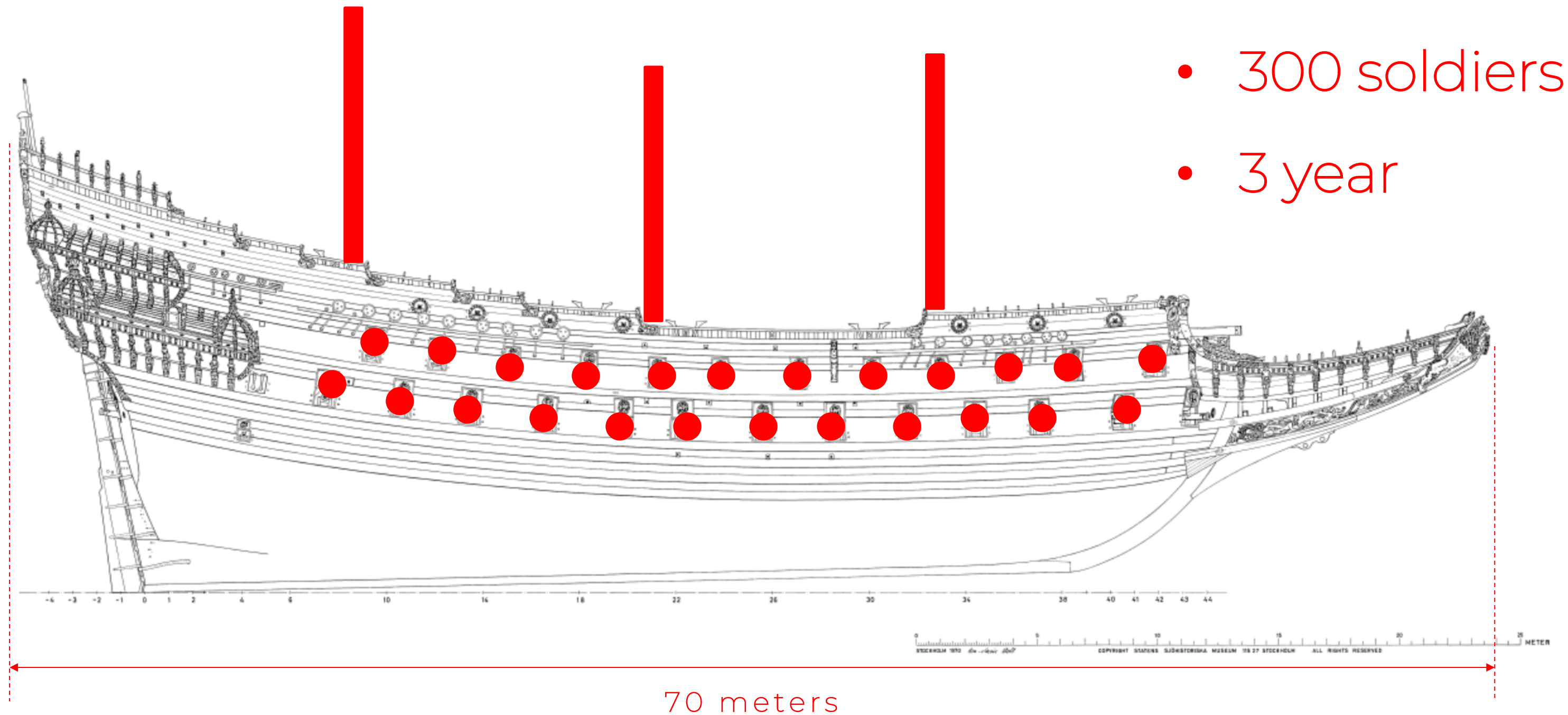Epam Systems

Solution Architecture and JavaScript

The Swedish Ship Vasa

The Swedish Ship Vasa

The Swedish Ship Vasa

- 300 soldiers
- 3 year

70 meters

The Swedish Ship Vasa

The Swedish Ship Vasa

Who is guilty?

Gustav II Adolf
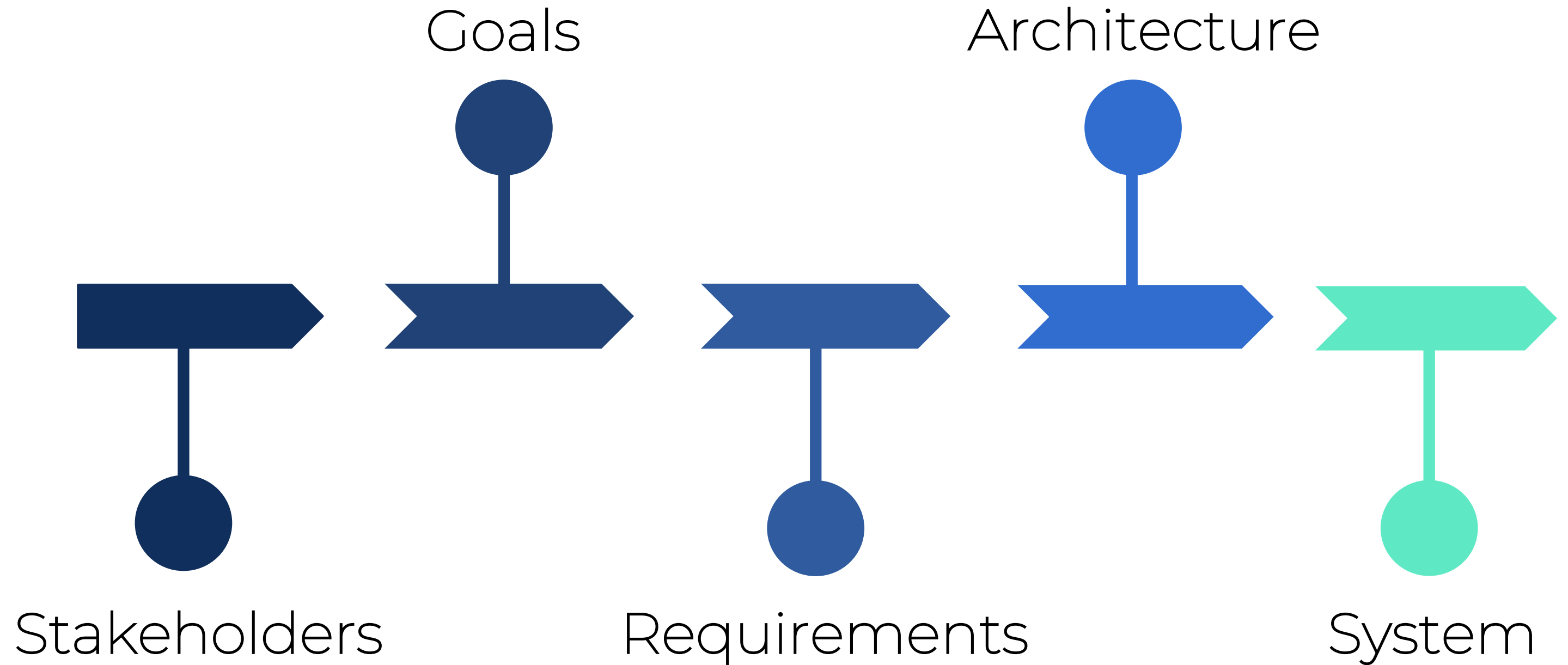
VS

Henrik Hybertsson

Inquest

- Balancing all of the conflicting constraints

- Risk management

- Customer management

- Wrong technologies

- Impossible requirements
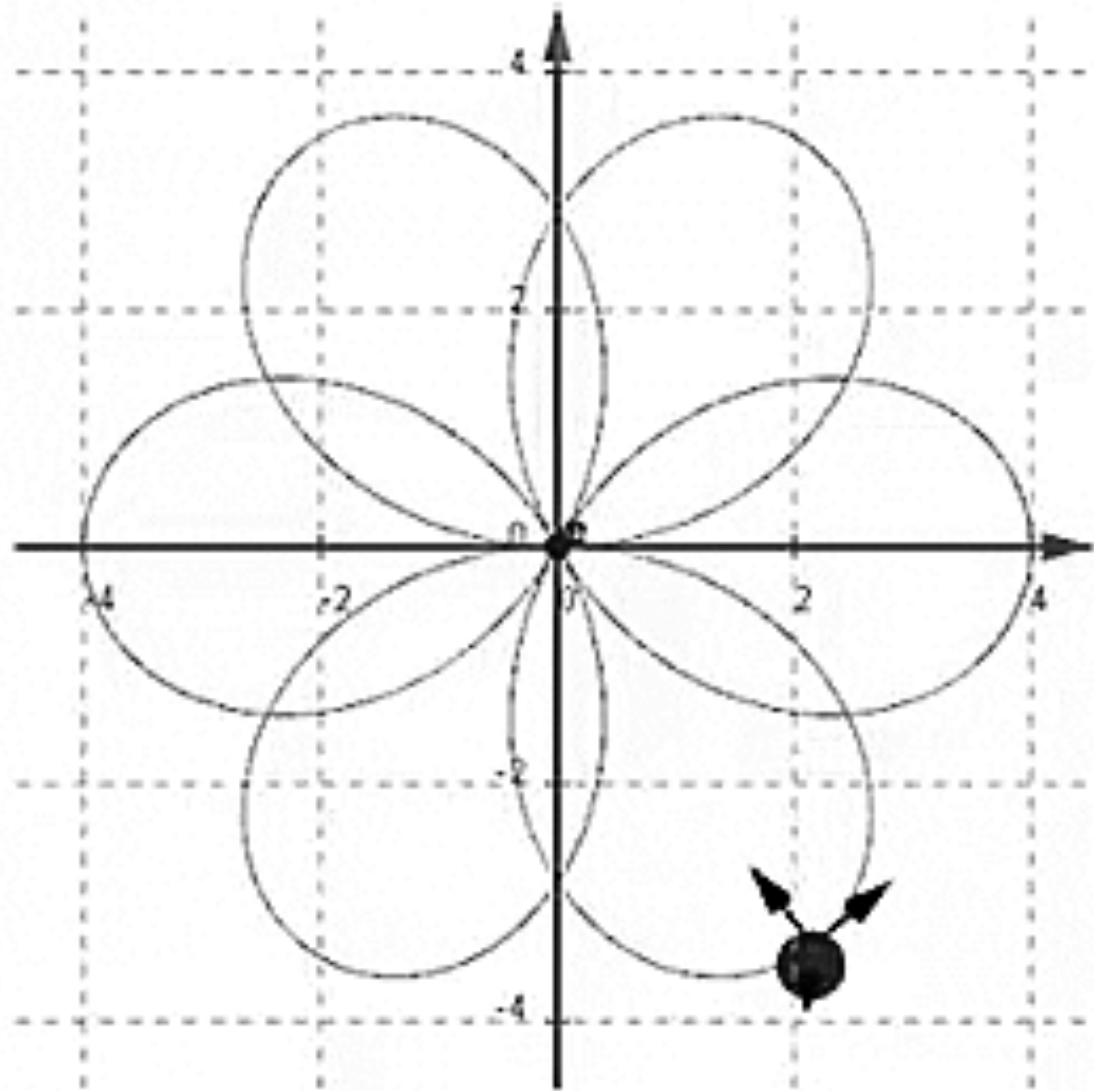
Dead before the first tree

Architecture Cycle

Goals

Architecture

Stakeholders

Requirements

System

Failed before the first line of code was written

Solution Architecture

Different Perspective

Different Perspective

BUSINESS →

BUSINESS ARCHITECTURE

TECHNOLOGY

INFRASTRUCTURE

DATA

DATA ARCHITECTURE

INFRASTRUCTURE ARCHITECTURE

TECHNOLOGY ARCHITECTURE

SOLUTION ARCHITECTURE
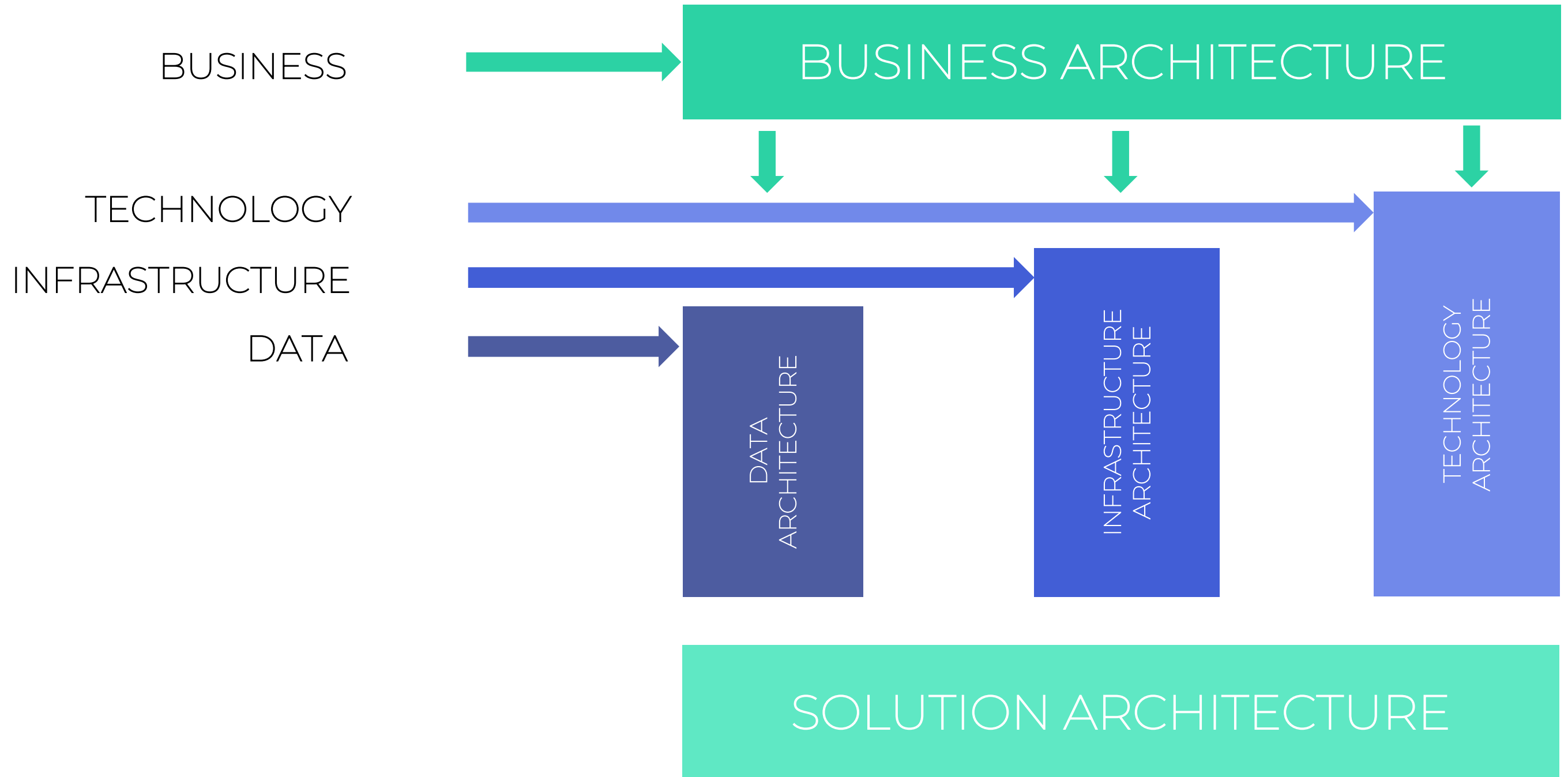
EPAM CC

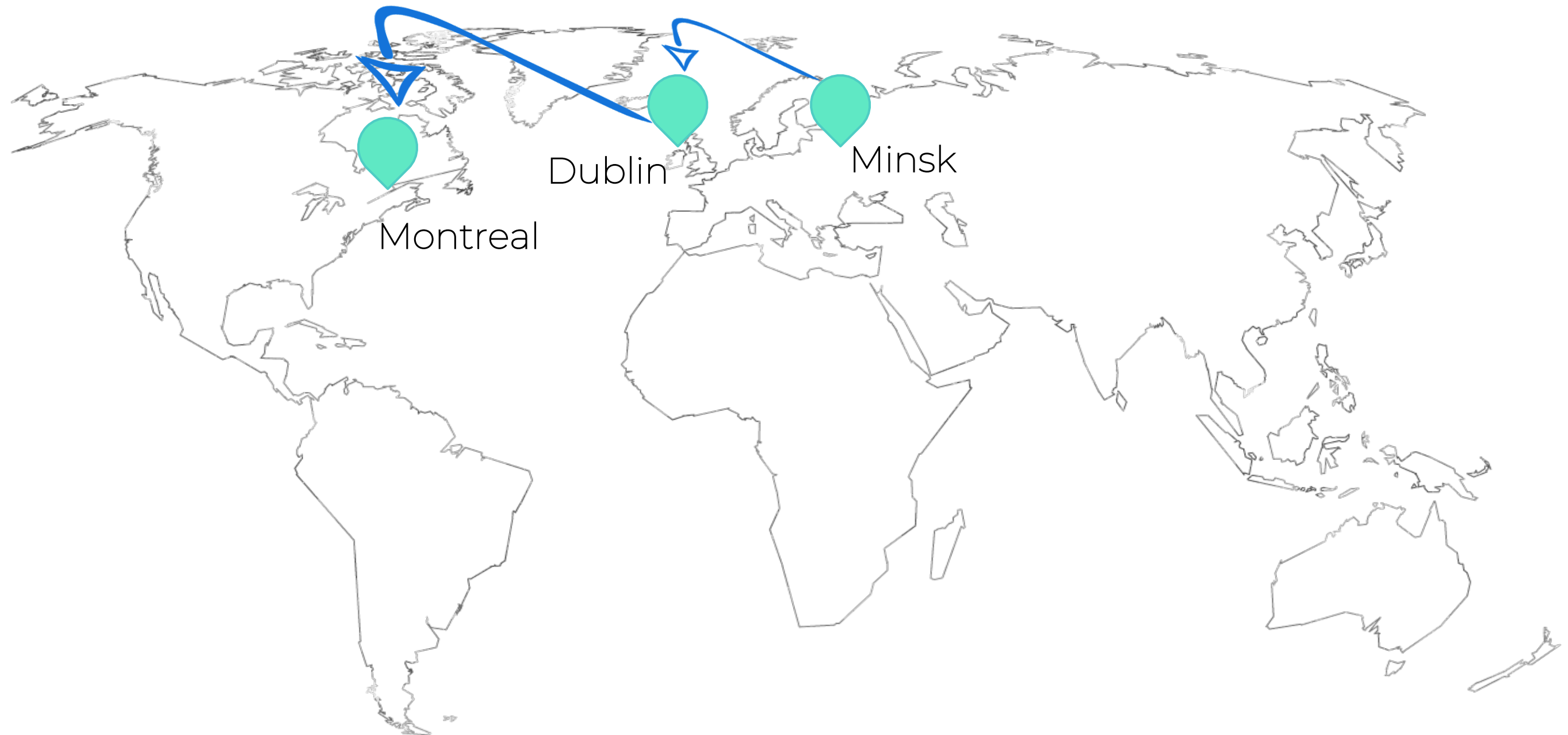# Solution Architecture Book
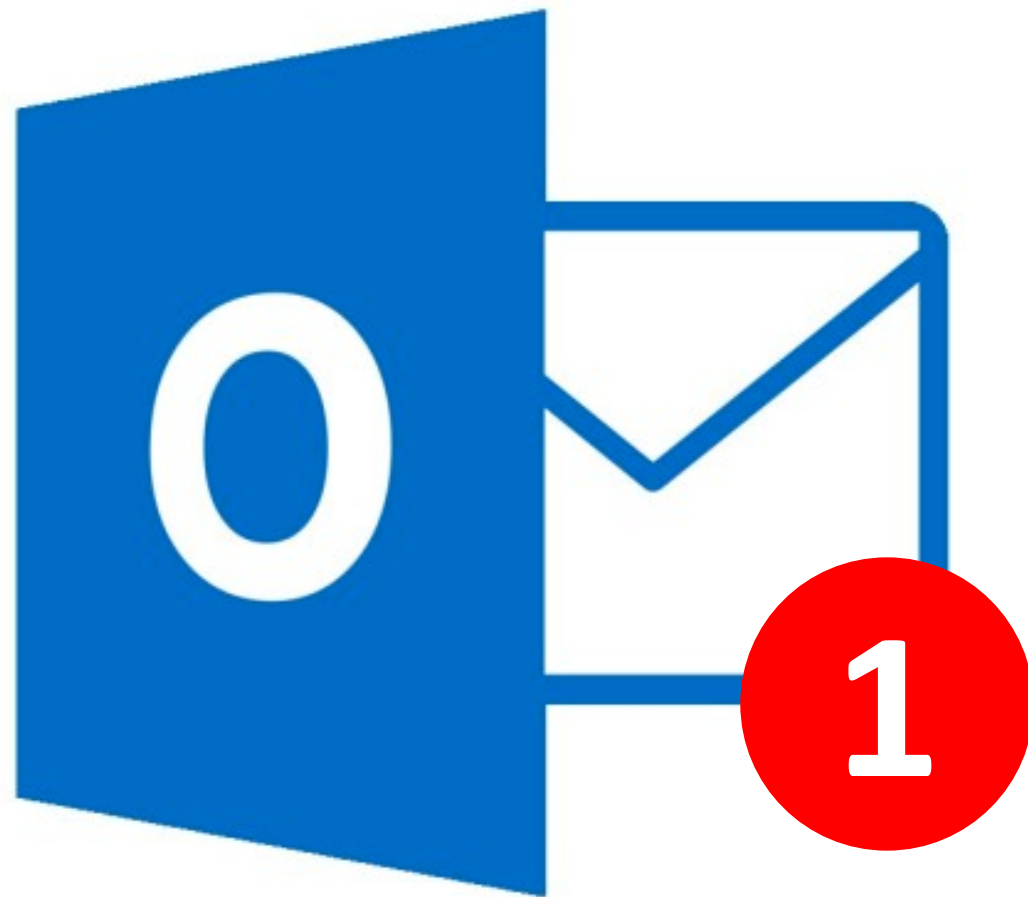
History: Clockwork Jimmy

Architectural Kata is …

- Replace the current UI solution

- Provide a new approach for D&D

- Provide better User Experience
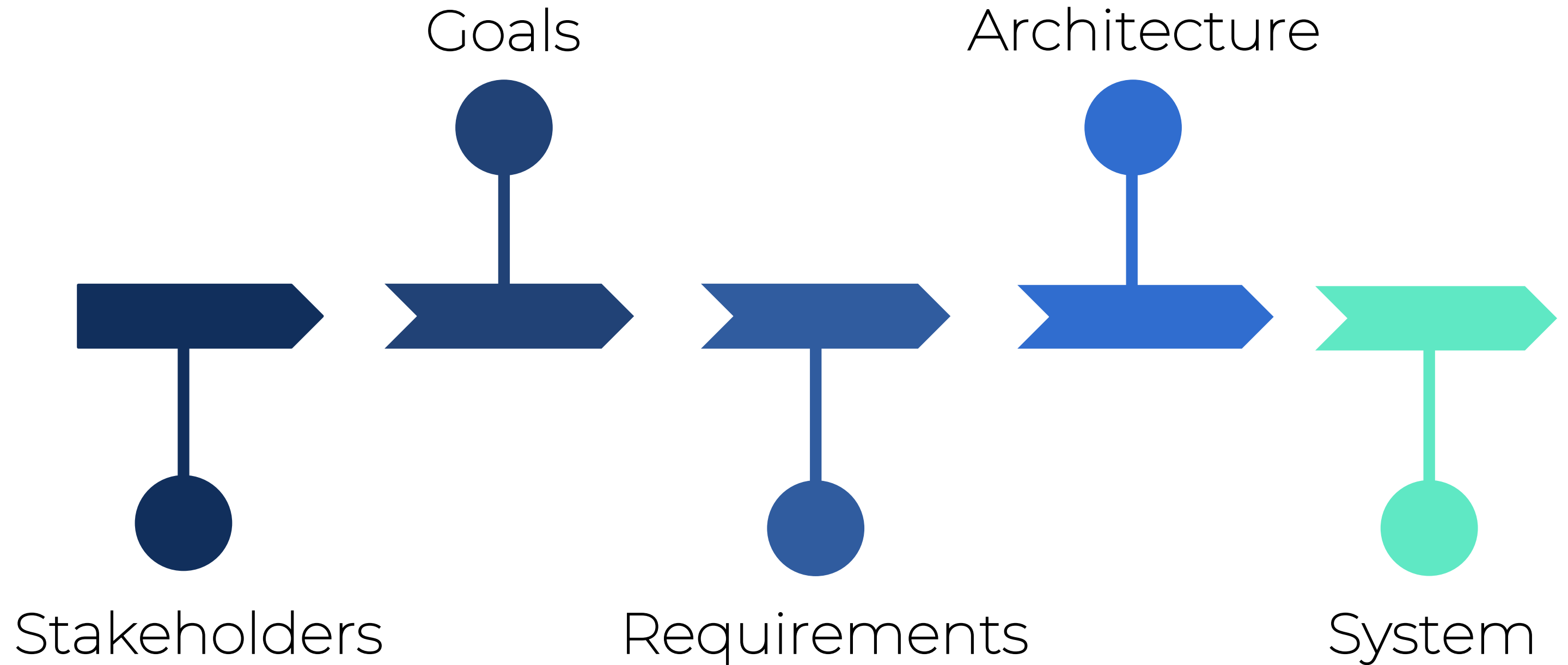
- Different Platforms

Clockwork Jimmy

Clockwork Jimmy

Presentation Time

Architecture Cycle

Stakeholders → Goals → Requirements → Architecture → System

RACI

- Responsible (R)
- Accountable (A)
- Consulted (C)
- Informed (I)

RACI

Tasks \ Roles	Project Manager	Architect	Designer
SAD	A	R	I
Design	C	I	R
Resource Plan	R	A	I

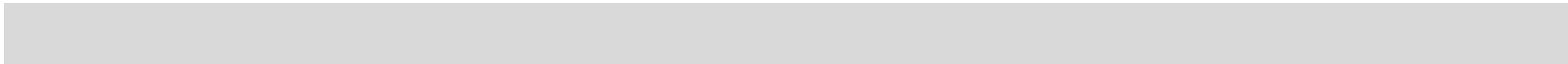# Negative Stakeholders

Onion

System

Solution Architecture Book

- Stakeholders
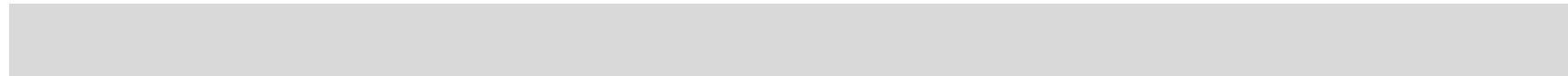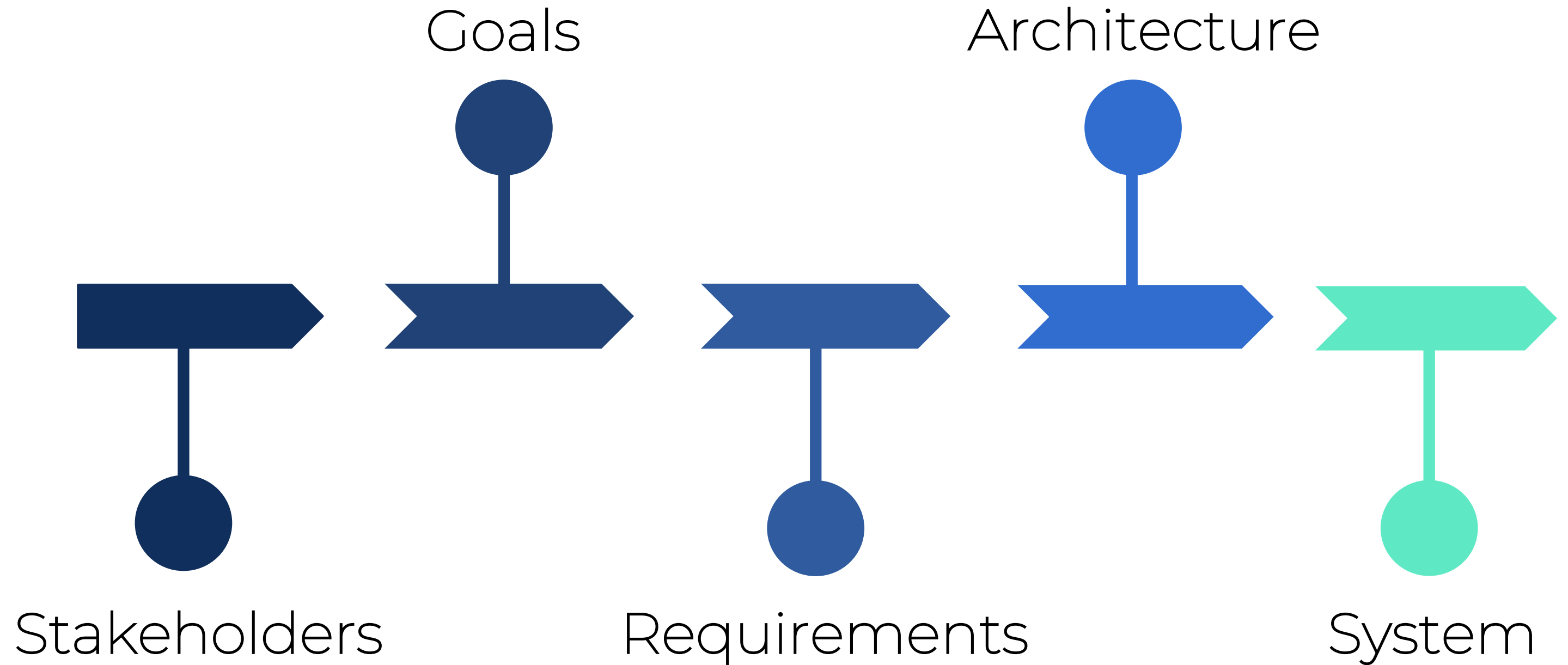
History: Not Enough Fast

Architectural Kata is ...

- Trading system
- Complete transactions in 0.5 sec
- The project was failed. Why?

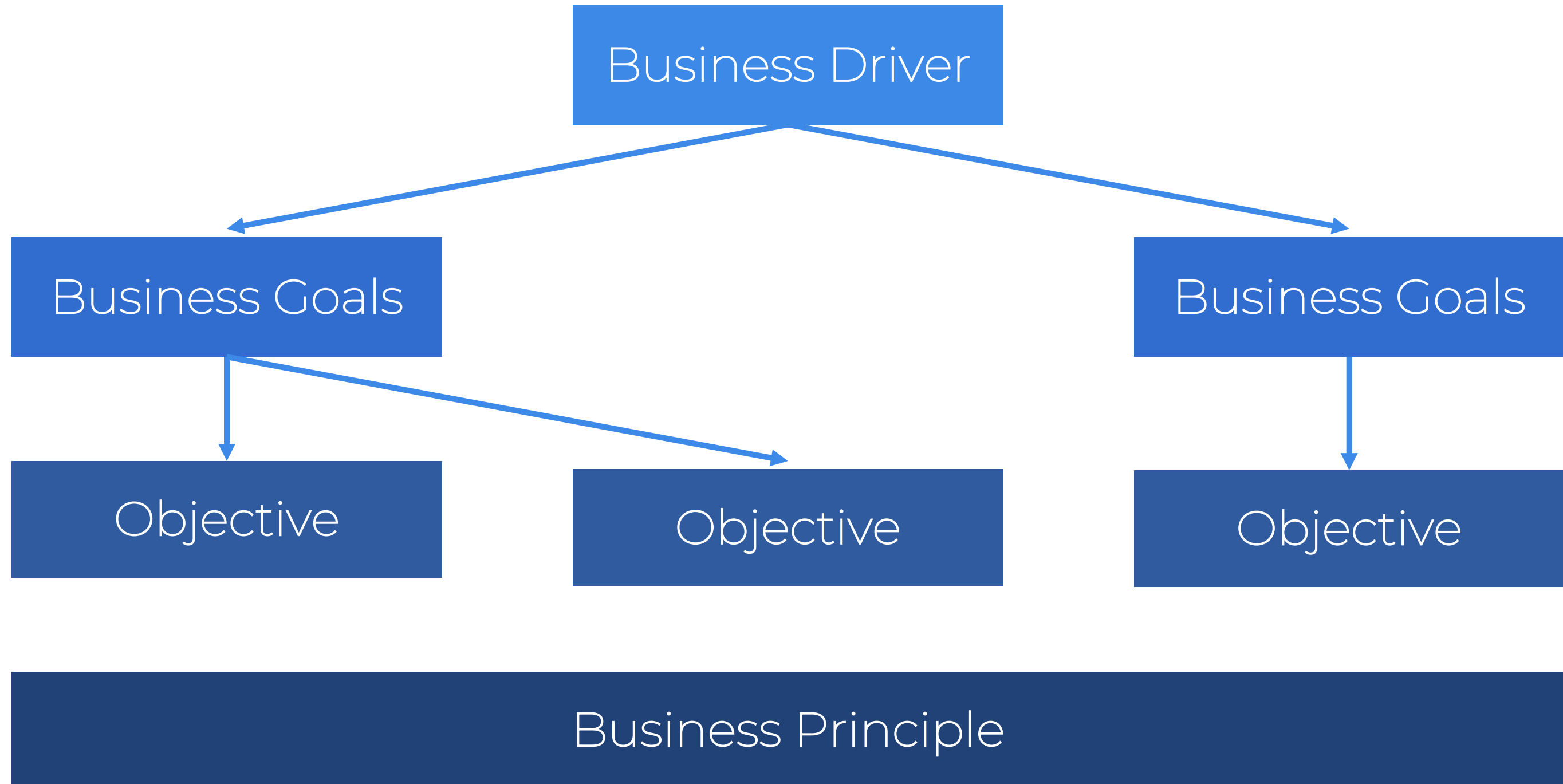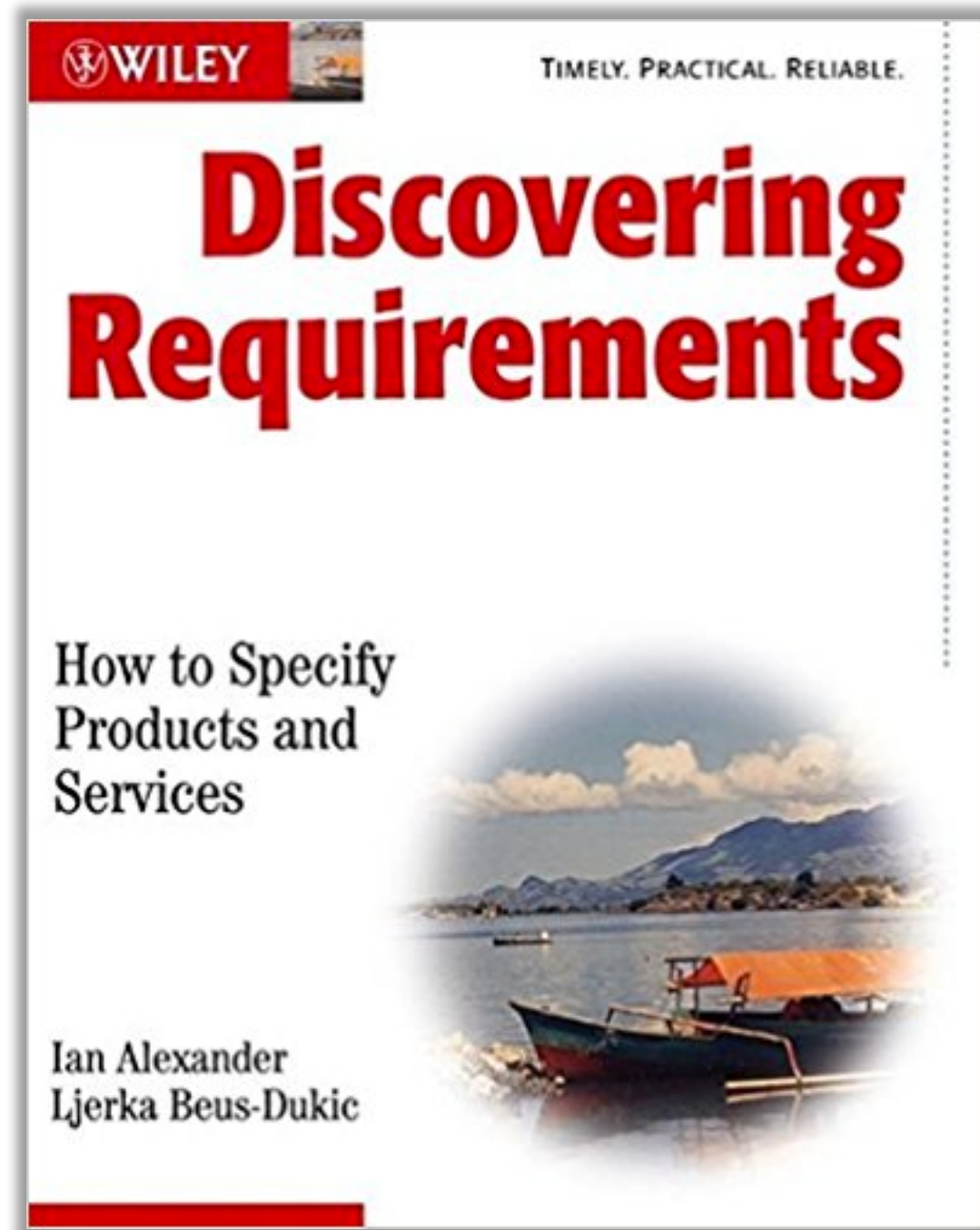# Dynamic Goal

0.6 > 0.5 > 0.4

Architecture Cycle

Goals

Architecture

Stakeholders

Requirements

System

Business Requirements

Projects without Goals

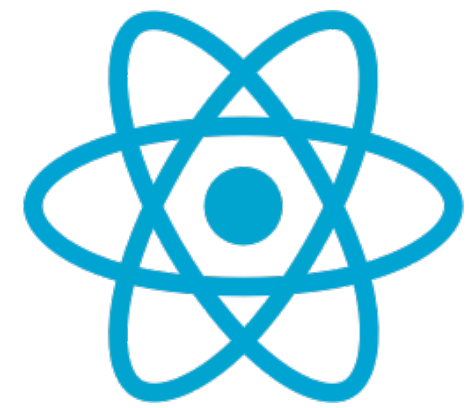# Book about discovery Phase

Solution Architecture Book

- Stakeholders

- Business Goals

How Pioneers a Horse Milked

Architectural Kata is …

- Existing website
- Open and work on the phone of employees
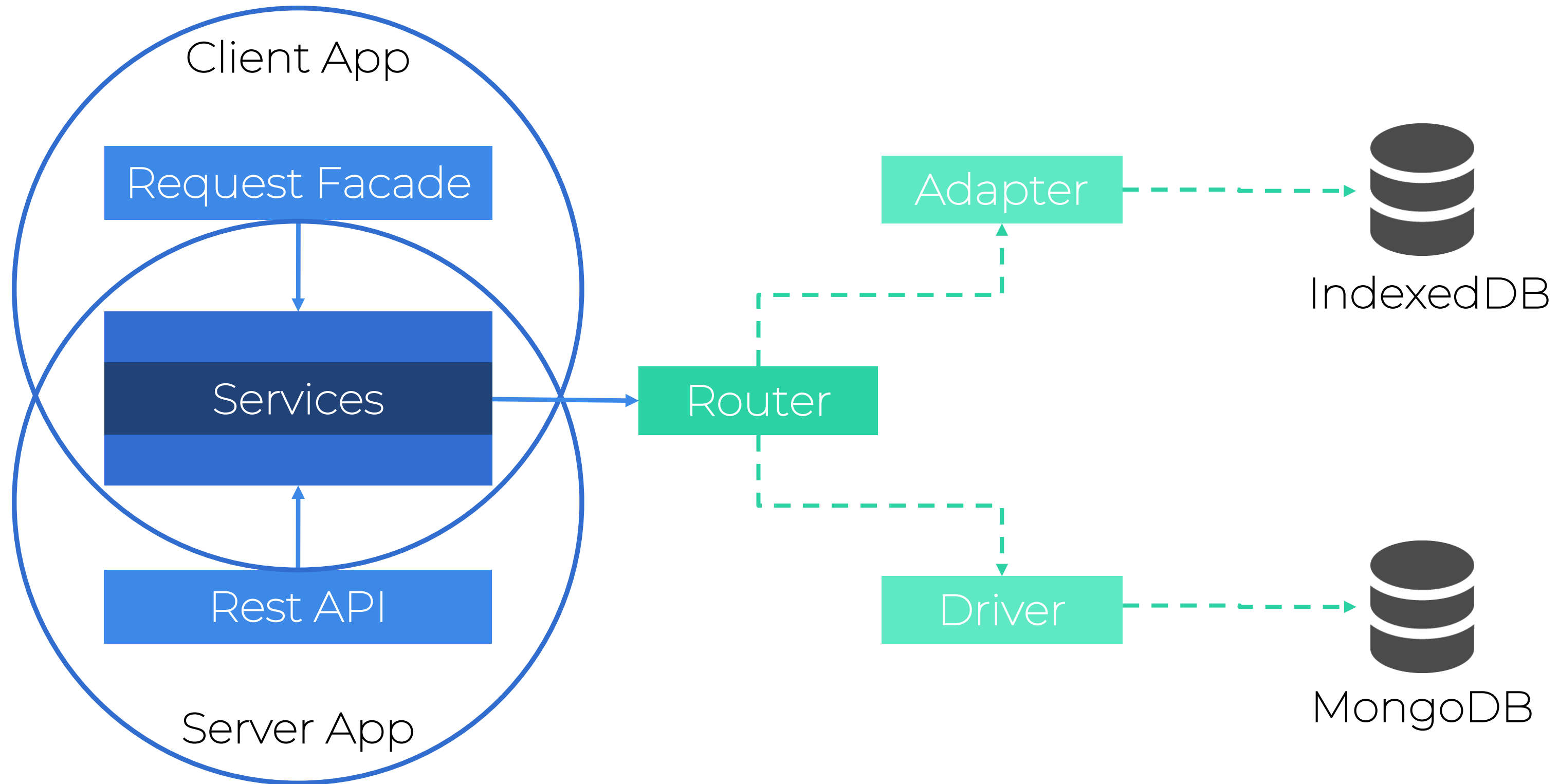- Offline mode

Pioneers

React Native

New Details

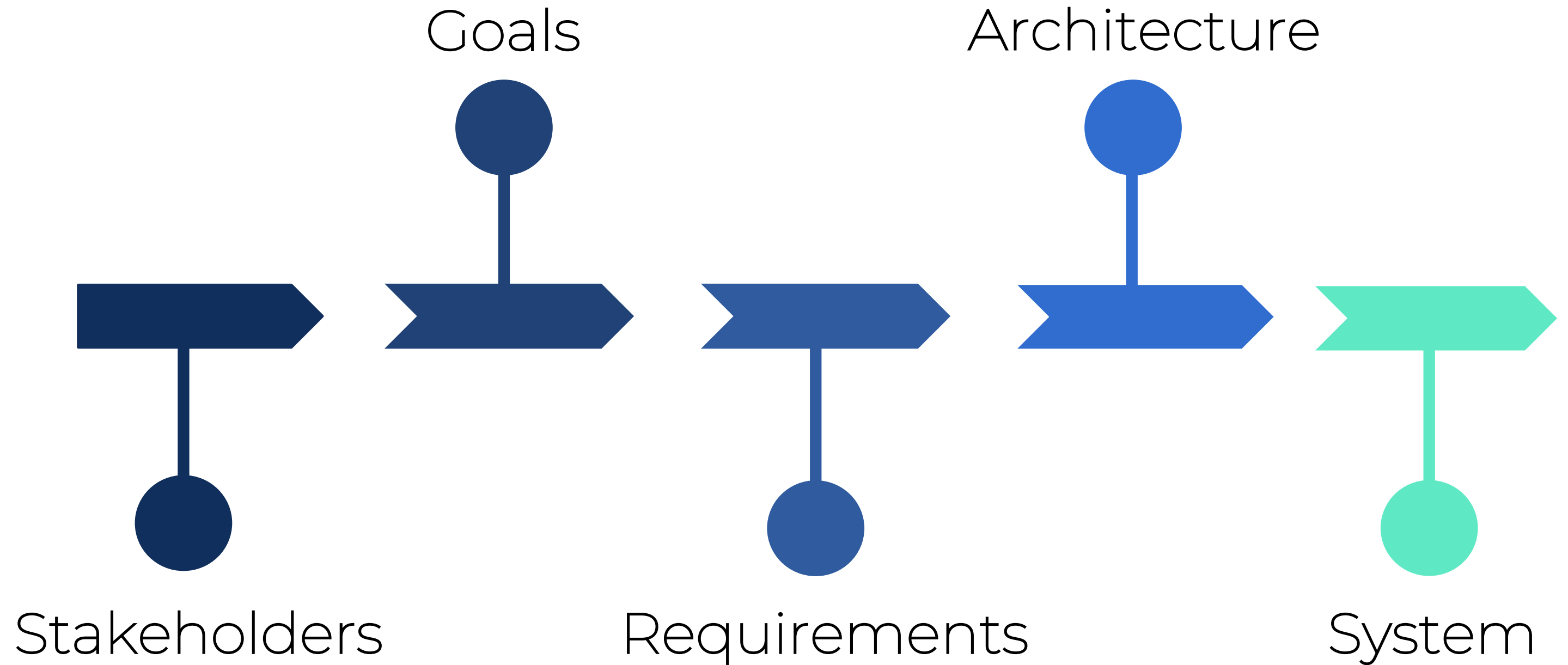- Only Android System

- Only Offline

- Deadline is 2 months

Just need PWA

Isomorphism

Architecture Cycle

Goals

Architecture

Stakeholders

Requirements

System

Example of requirements

User Type | User type | Add |

Please enter no more than 50 characters.

User Name | User login name | @some.com |

Please enter no more than 50 characters.

404
Page not found

The Page you are looking for doesn't exist or another error occurred.
Go back, or head over to Scass Tech to choose a new direction.

MoSCoW

M - MUST

o

S - SHOULD

C - COULD

o

W - WON'T

Functional Requirements

"If only the functionality would matter then we would need no internal structure, a single monolithic blob would be enough."
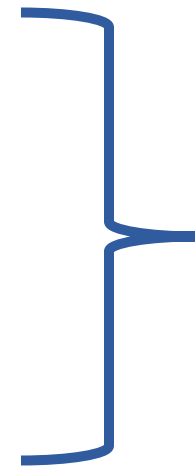
Software Architecture in Practice

Requirements

Functional

Constrains

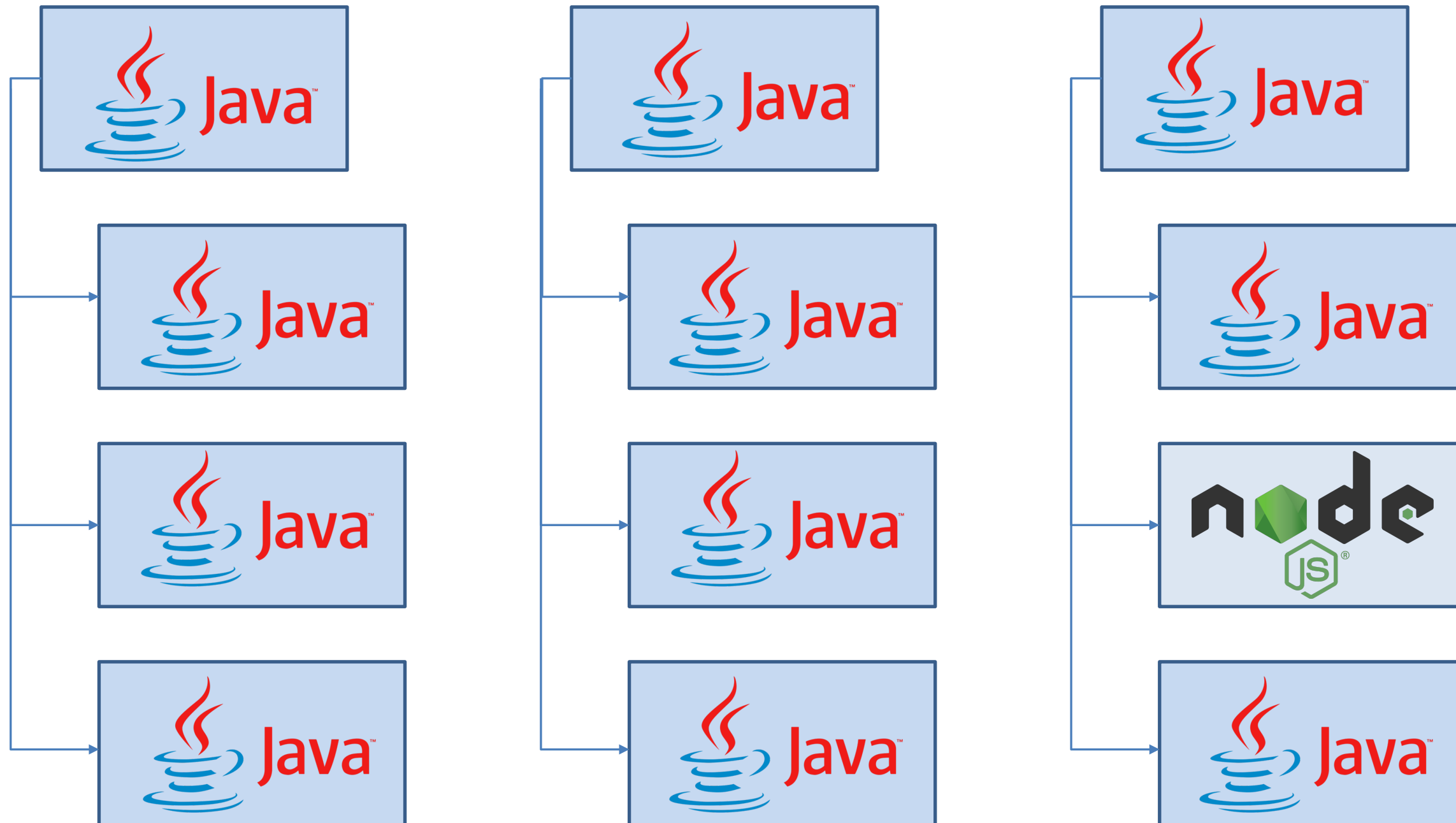Quality Attributes } Non-Functional

History: White Crow

Architectural Kata is …

- Separate service
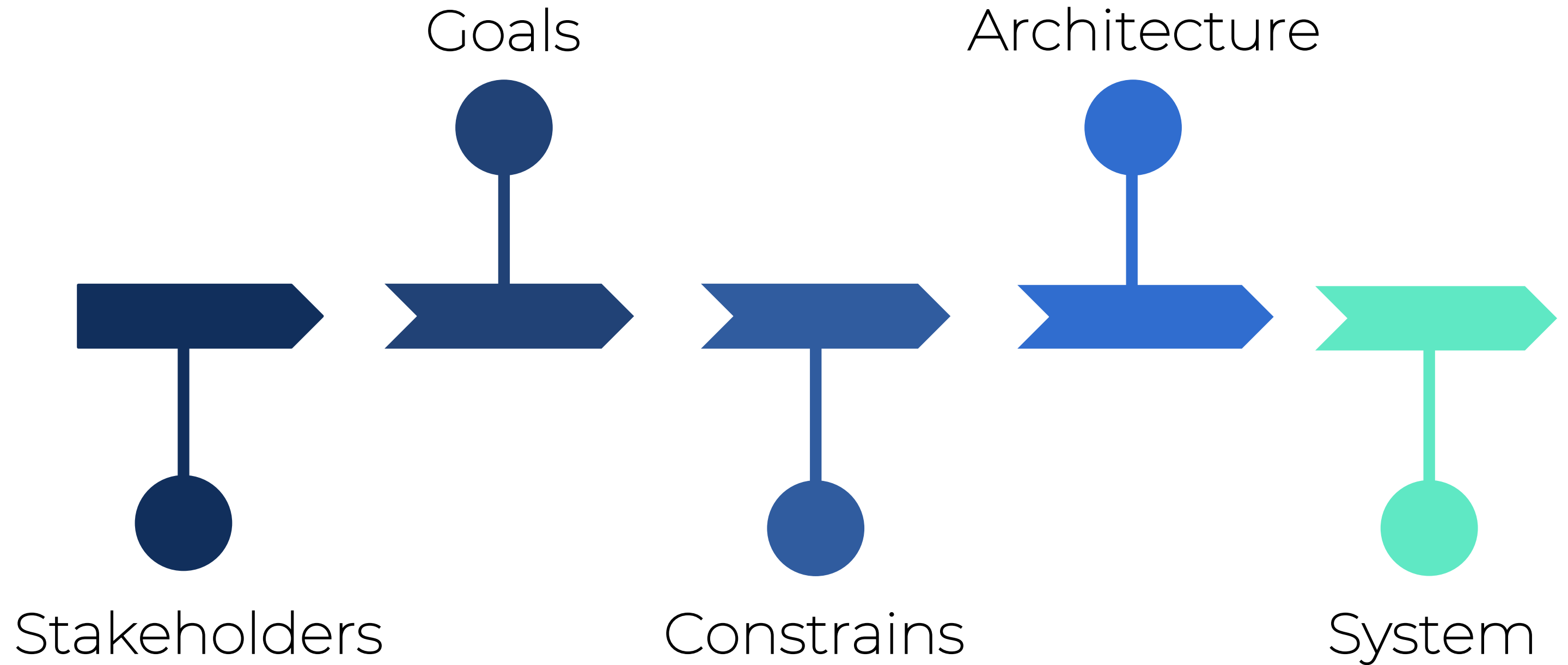- Converting and caching data in xml format
- Legacy system

White Crow

White Crow

Architecture Cycle

Goals

Architecture

Stakeholders

Constrains

System

Constrains

- Technical
- Time and budget
- People

Solution Architecture Book

- Stakeholders

- Business Goals

- Constrains

Quality Attributes

Quality Attributes

- accessibility
- accountability
- accuracy
- adaptability
- administrability
- affordability
- agility
- auditability
- autonomy
- availability
- compatibility
- composability
- configurability
- correctness
- credibility
- customizability
- debugability

History: Security in Library
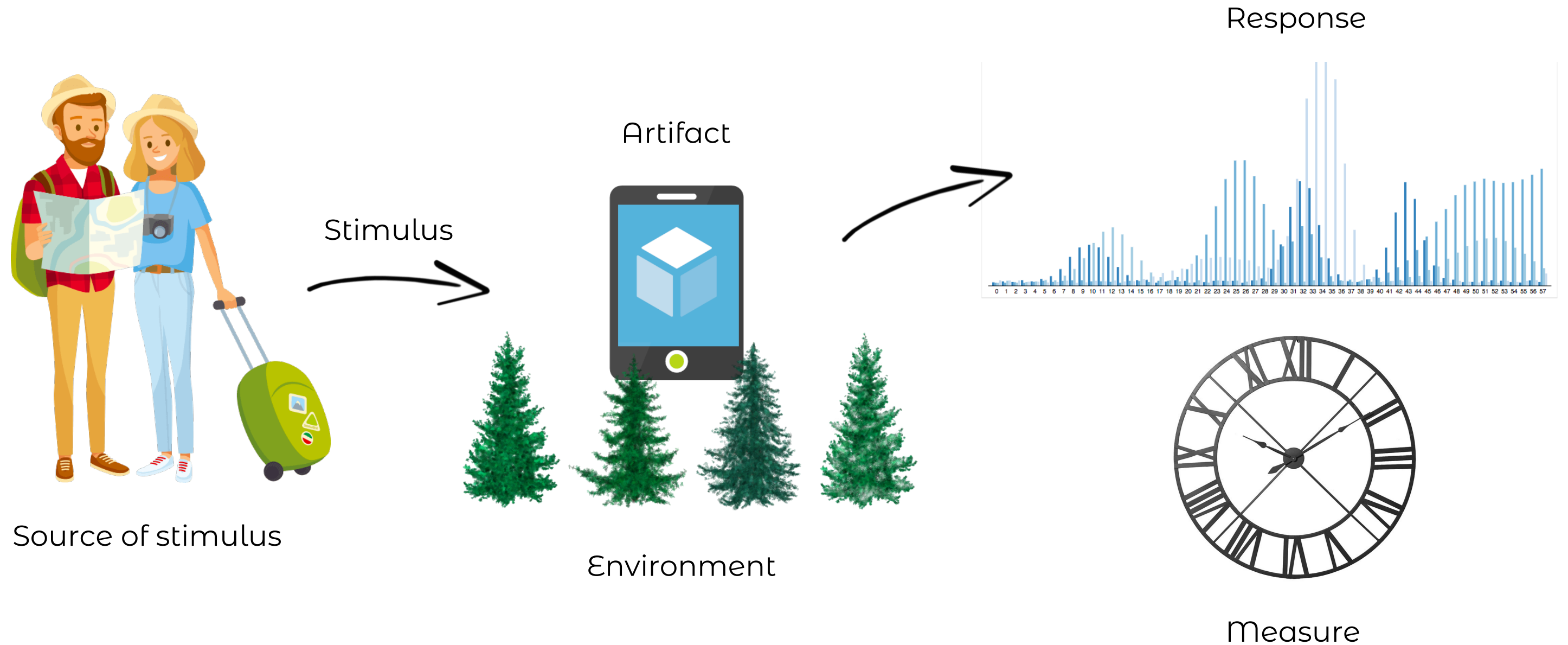
Security?

Security in Library

Architecture Cycle

Goals

Architecture

Stakeholders

Quality Attributes

System
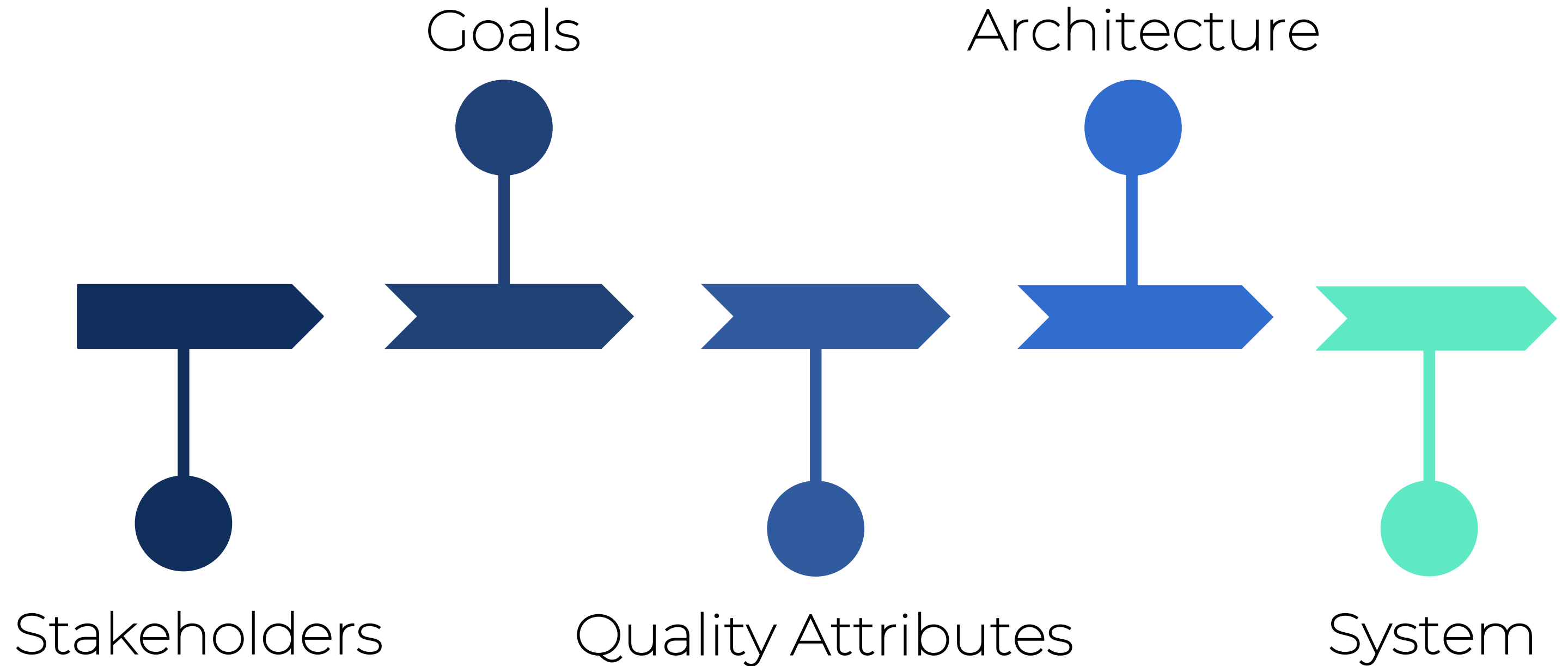
Quality Attributes Scenario

Performance?

Quality Attributes Scenario

Source of stimulus

Stimulus

Artifact

Environment

Response

Measure

Solution Architecture Book

- Stakeholders

- Business Goals

- Constrains

- Quality Attributes

Architecture Cycle

Goals

Architecture

Stakeholders

Quality Attributes

System
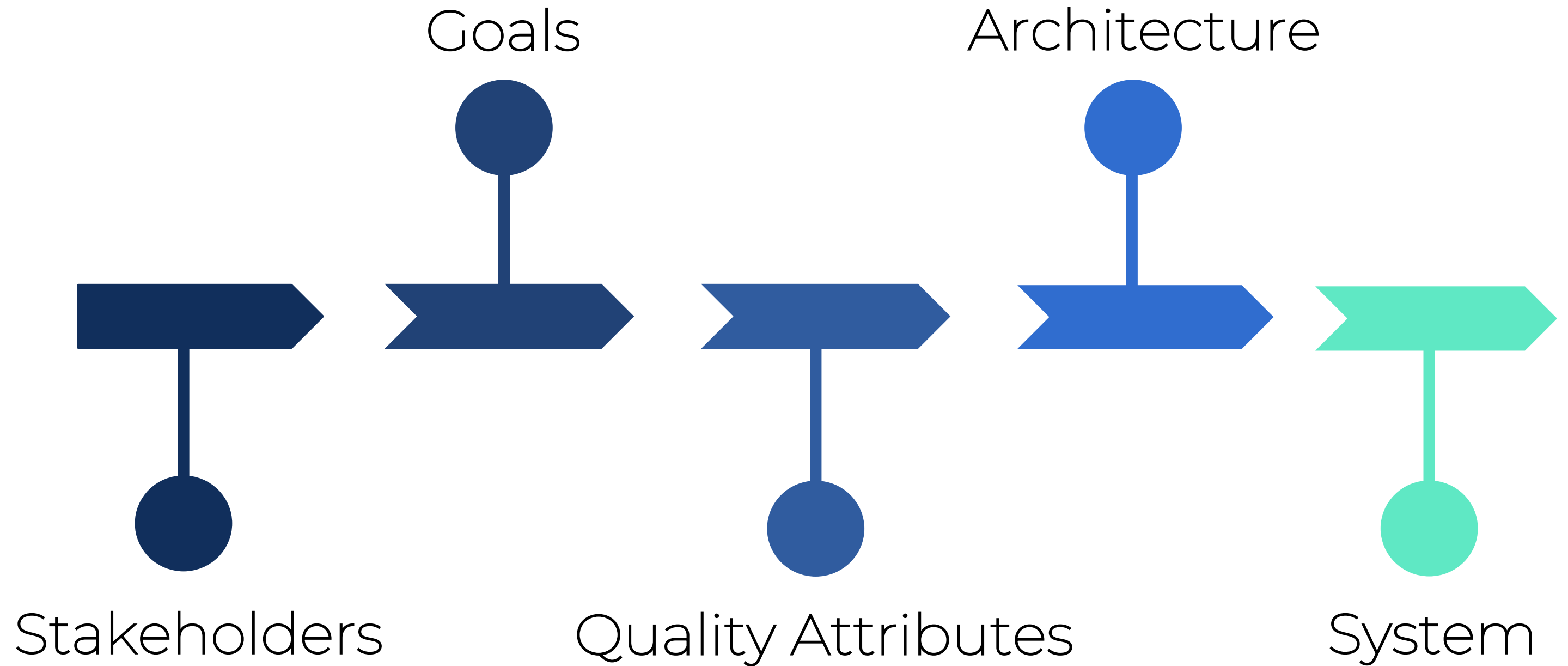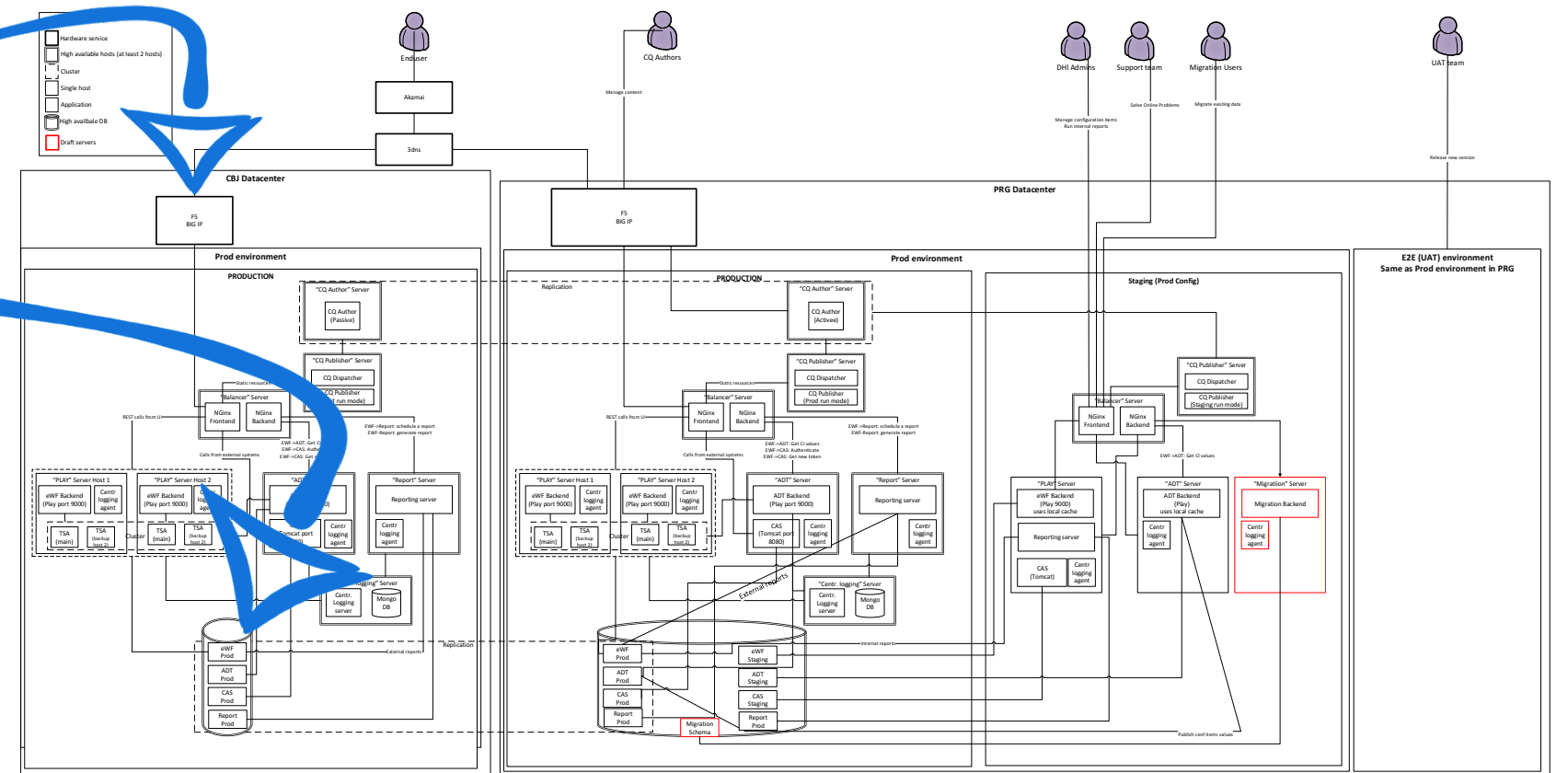
Architecture

Architectural Tactics
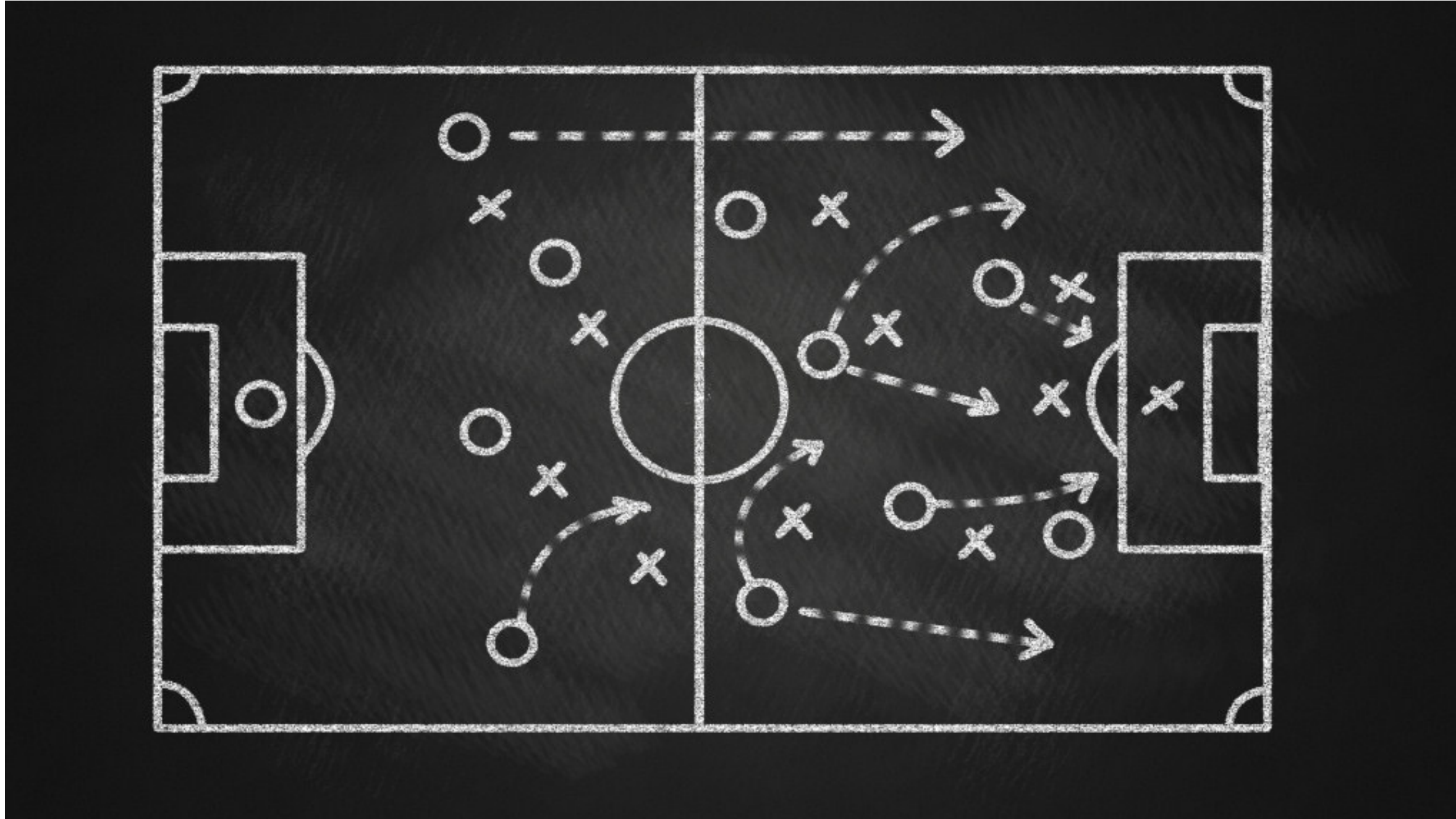
FE Performance Tactics

- ~~Improve User Experience~~

- Optimize Resources (js, css, images, fonts, etc)

- Caching

- ~~Critical Path~~

- Compression

- HTTP/2

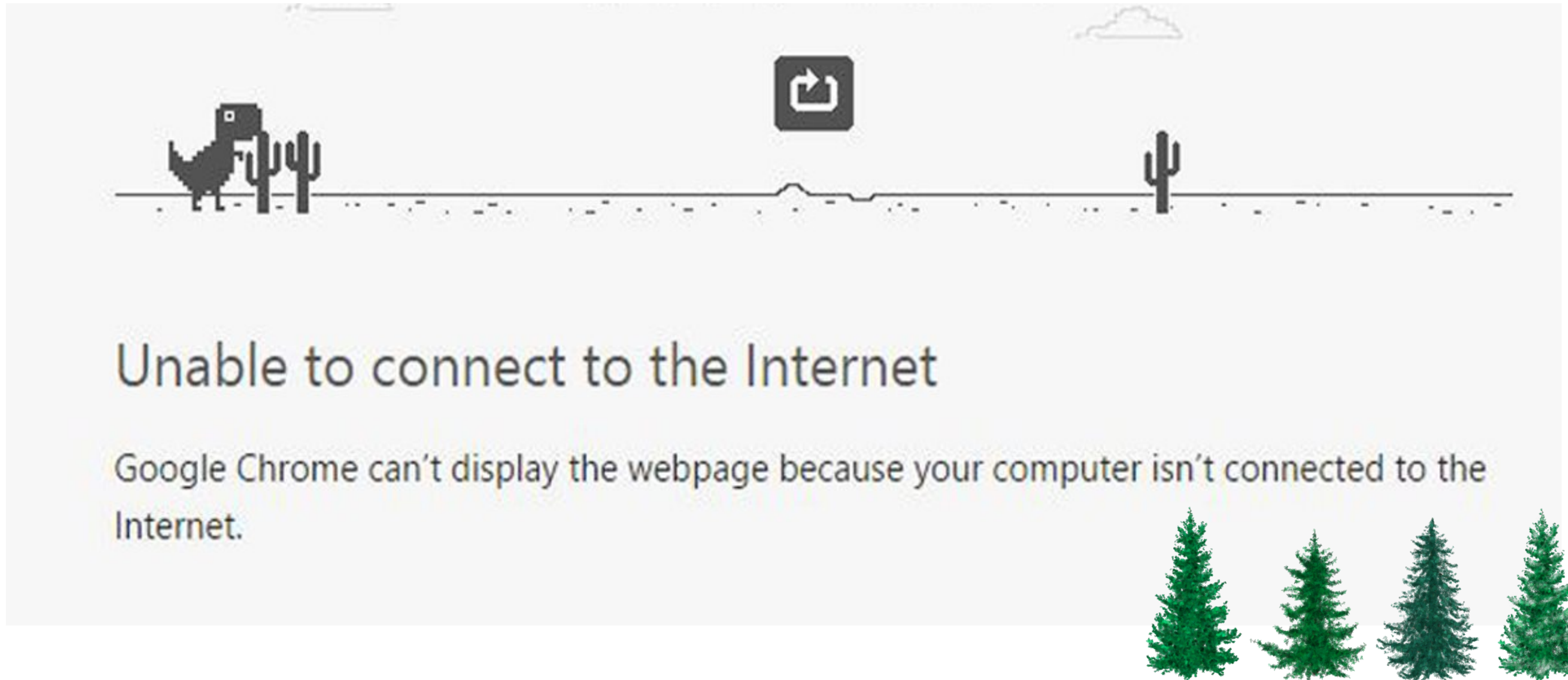# Layered Architecture

VIEW

DNS

BACK-END

DATA LAYER

CQRS

Controllers/Services/API

WRITE Service

READ Service

Consumer

Data Access

Data Access
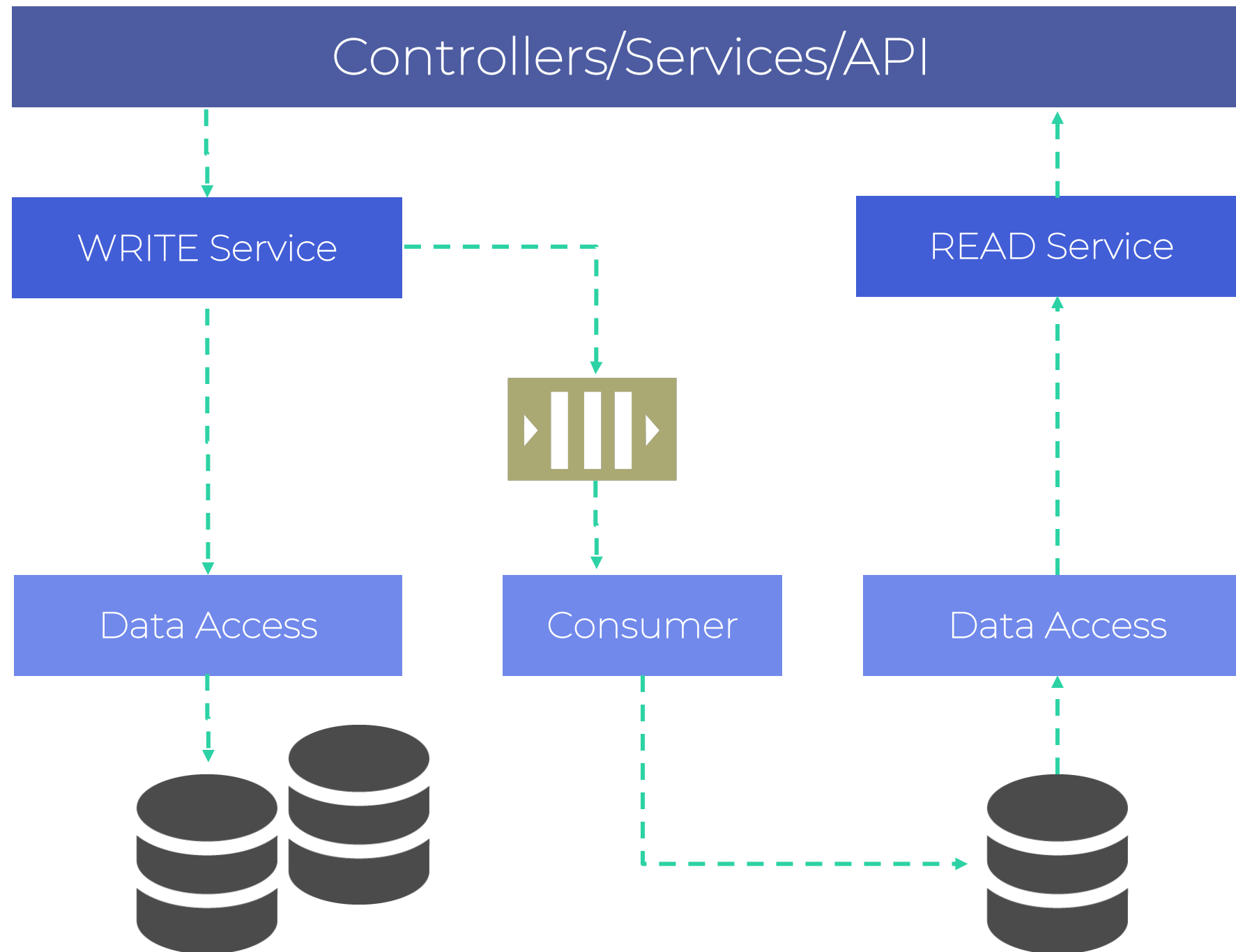
Fault Tolerance

Fault Tolerance

Fault will always

Fault -> Error -> Failure

Fail Fast

Fail Fast

- Verify Integration Points early

- Avoid Slow Responses
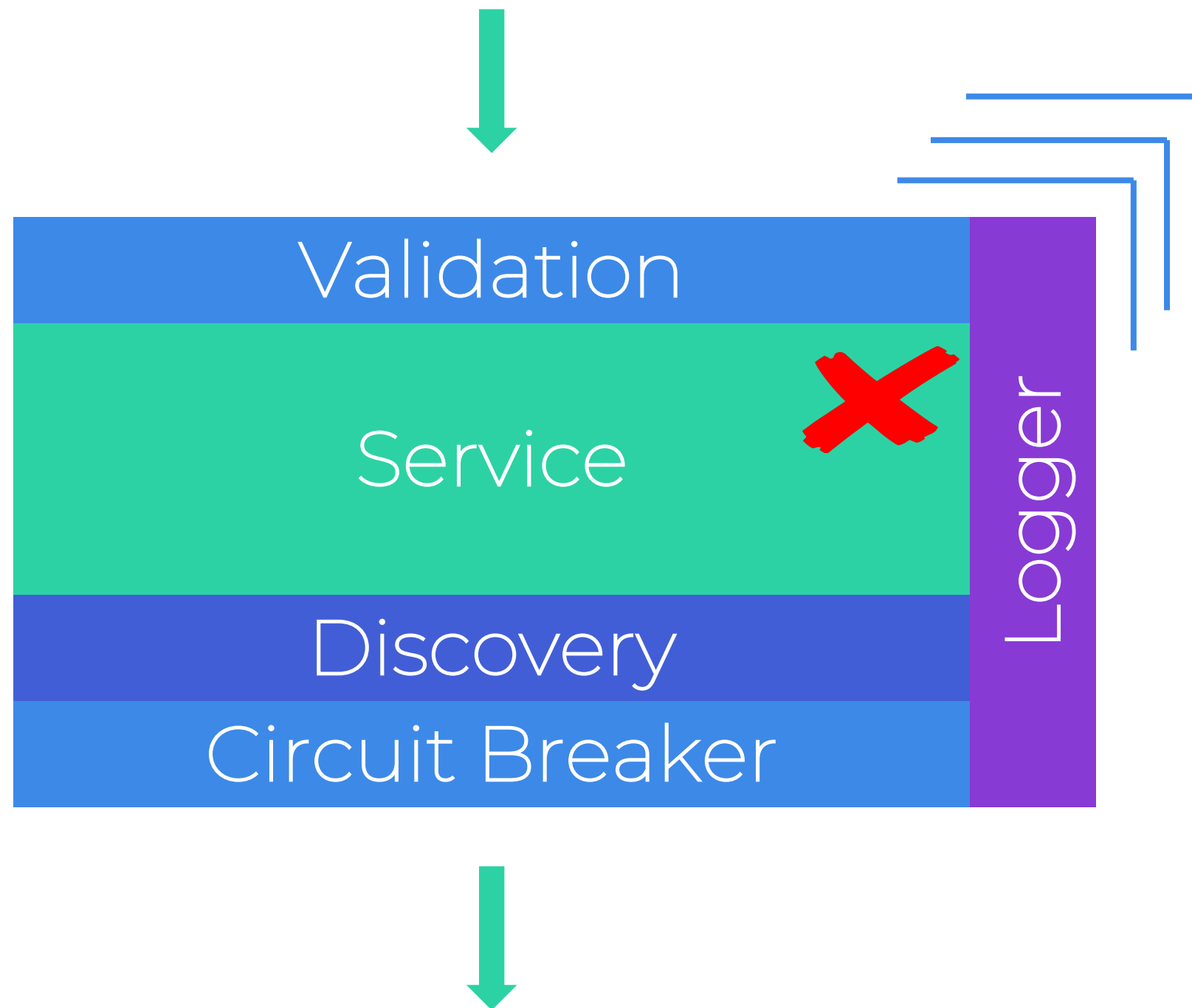
- Input validation

Lie connection

Circuit Breaker Pattern
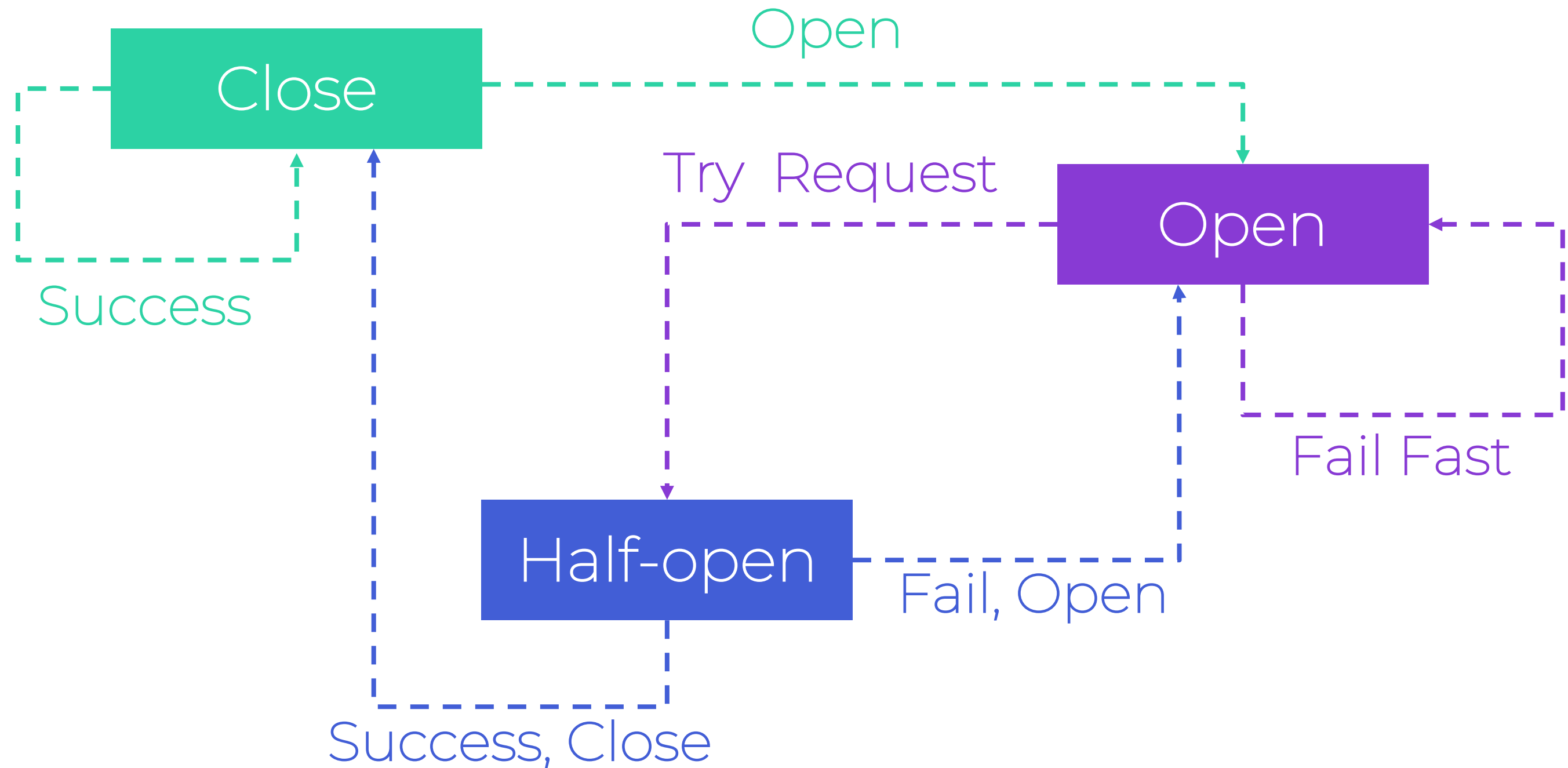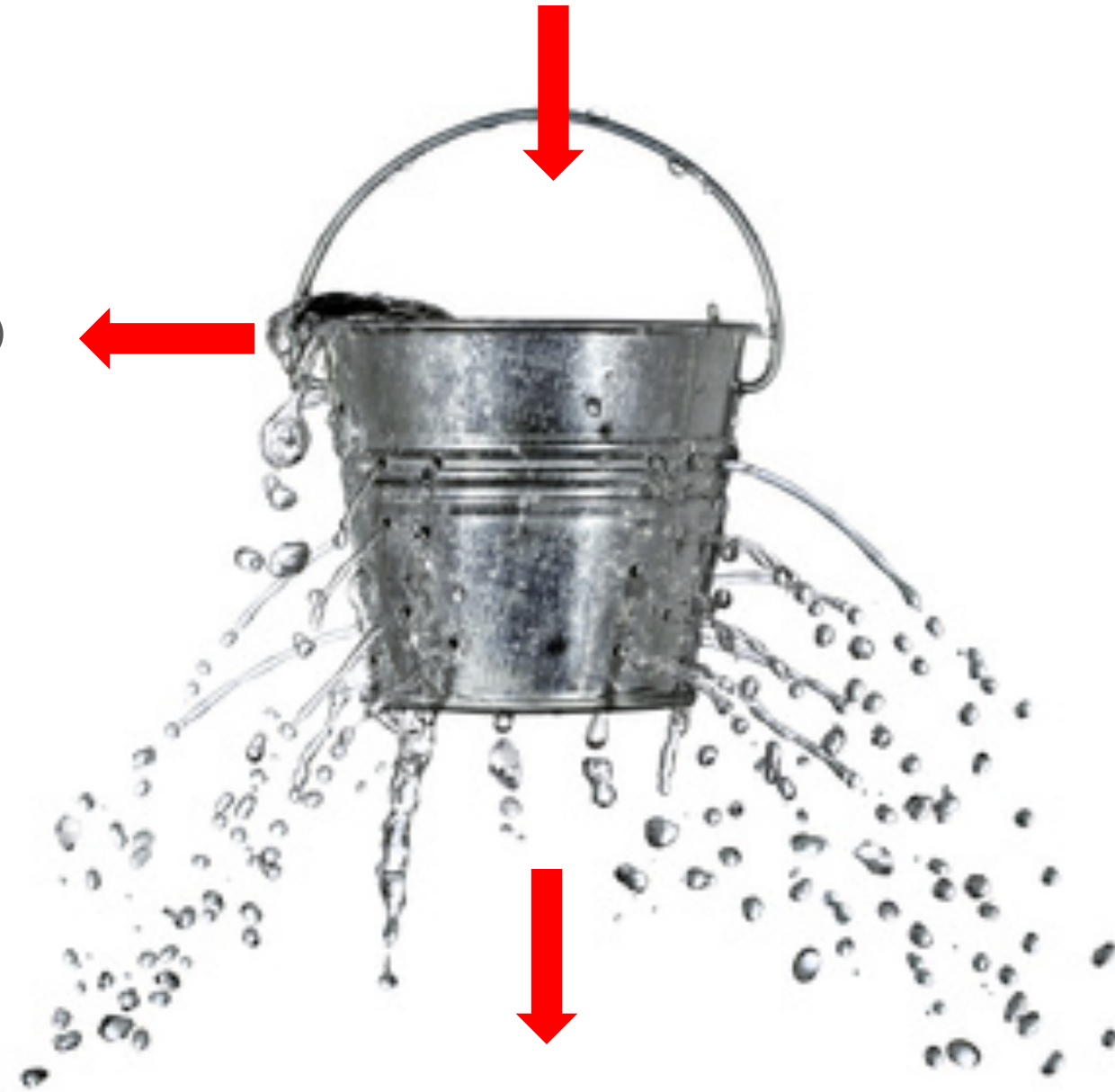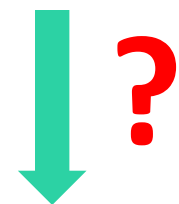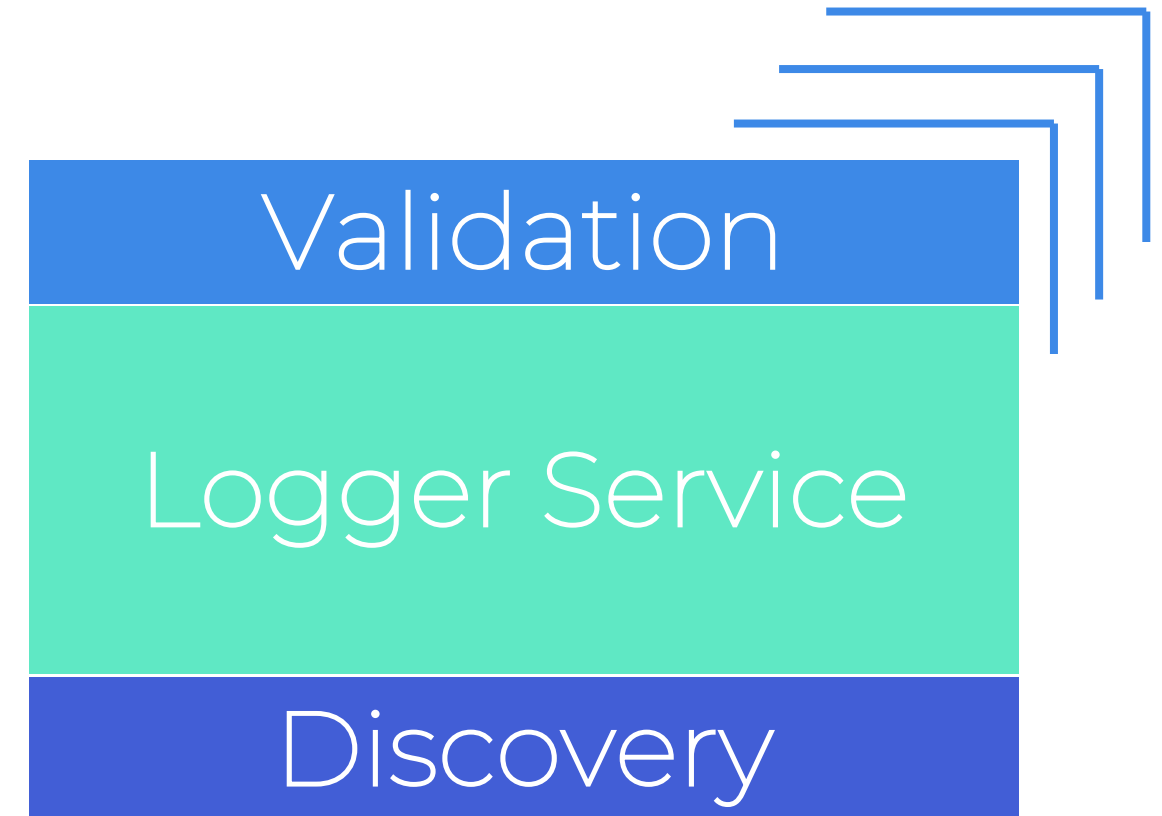
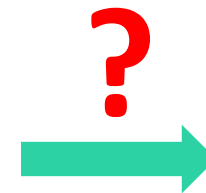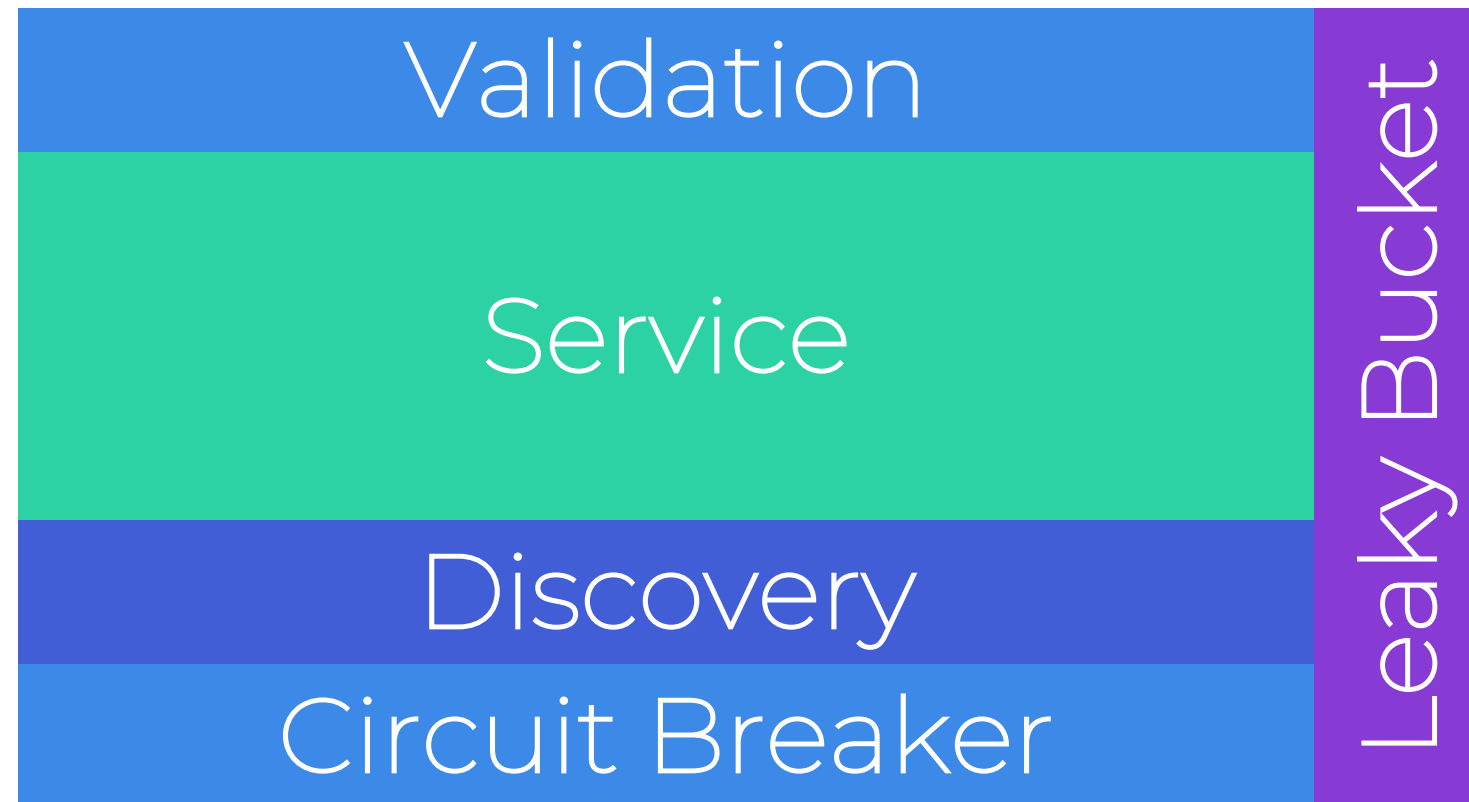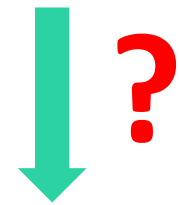# Bulkheads
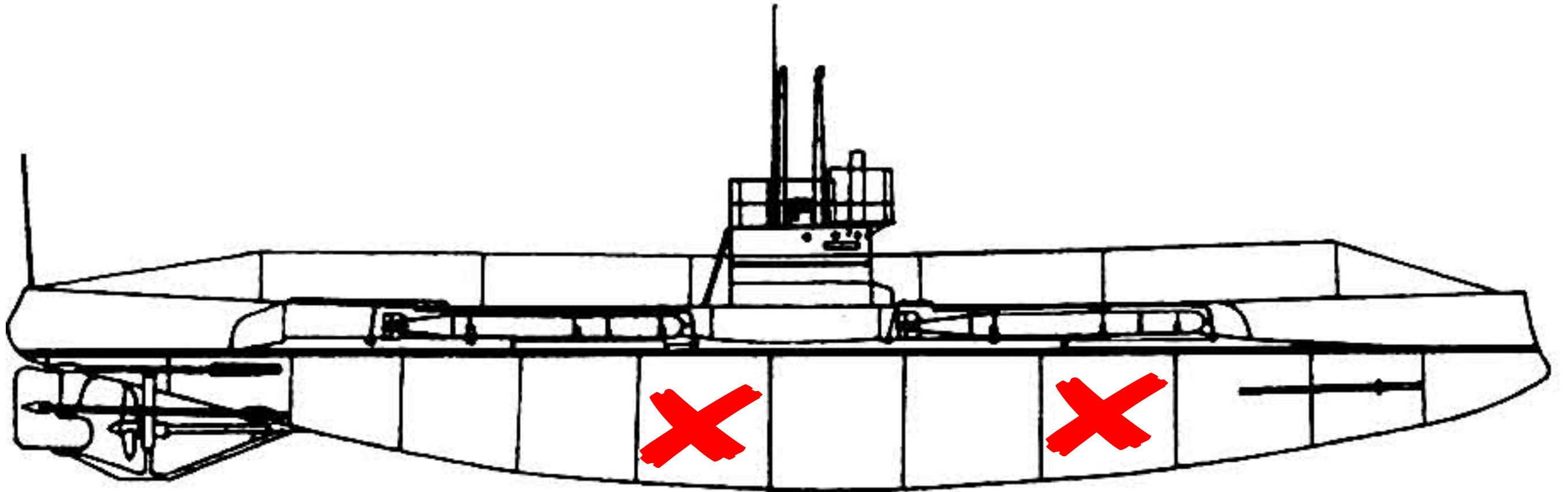
Summary

Log Errors

- Error Info

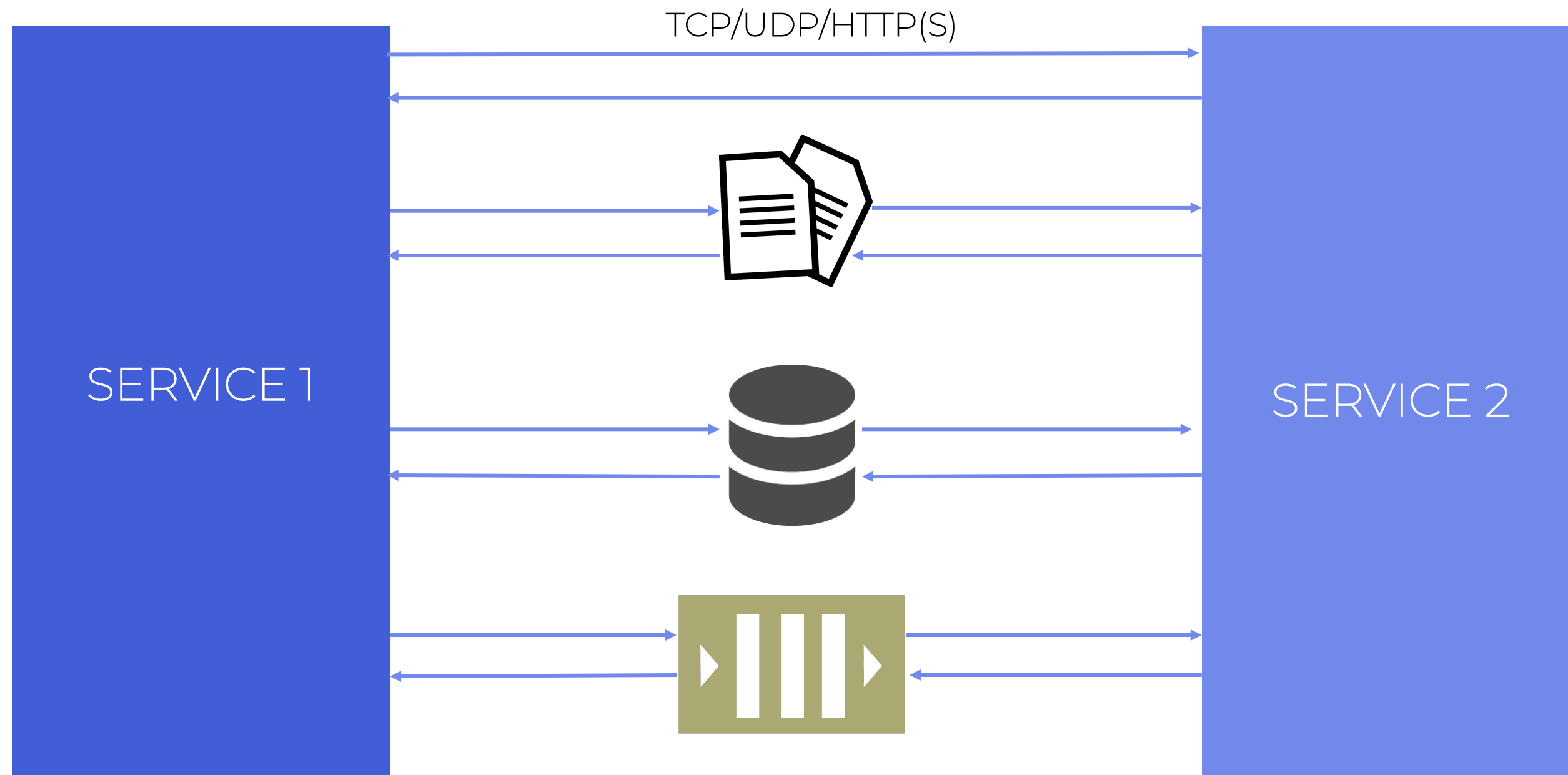- Context Data
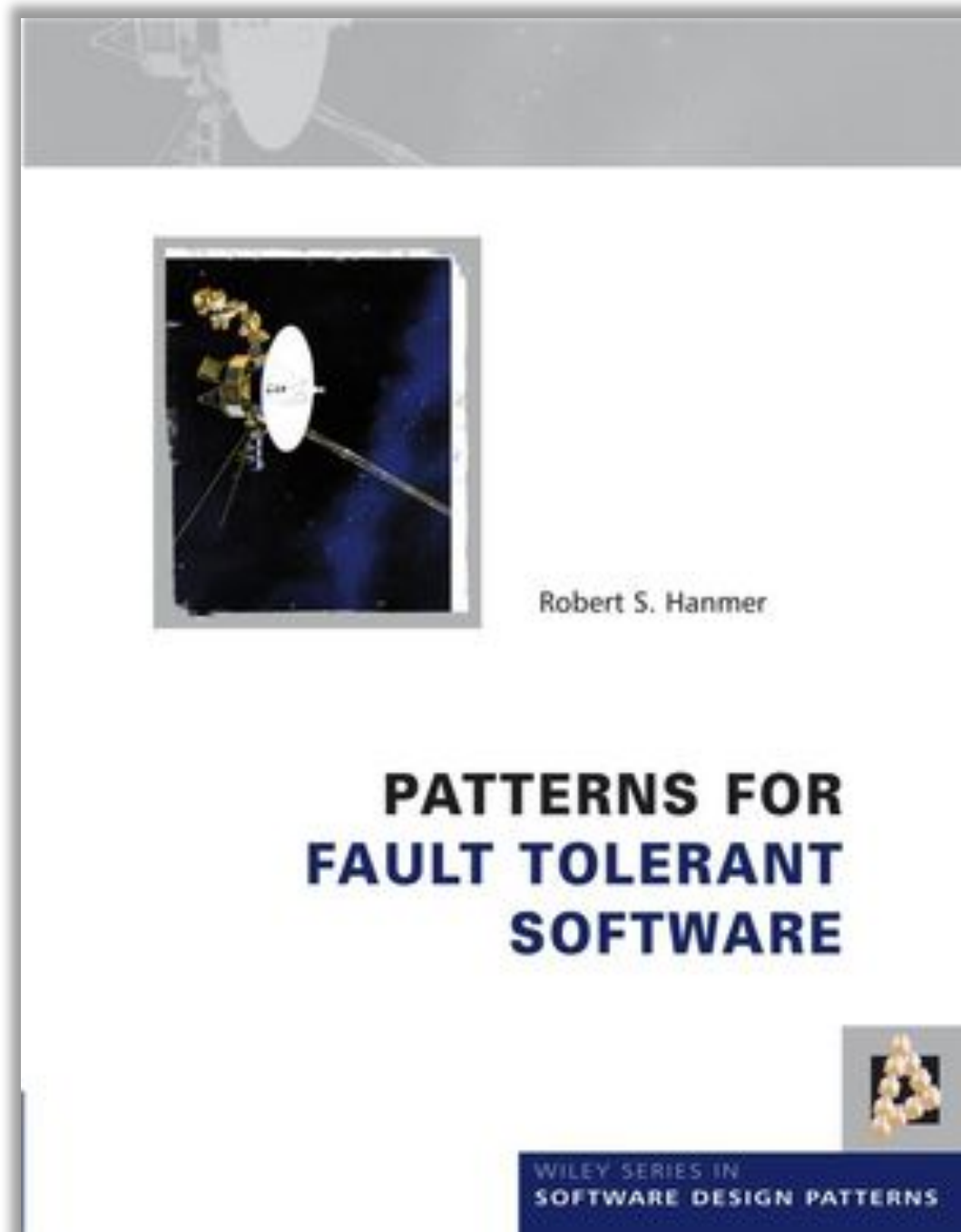
- Core Dump ~ 500 Mb

Leaky Bucket Counter

Core Dump

Summary

Validation

Service

Discovery

Circuit Breaker

Leaky Bucket

Validation

Logger Service

Discovery

Integration

TCP/UDP/HTTP(S)

SERVICE 1

SERVICE 2

Book with 63 Patterns

Robert S. Hanmer

**PATTERNS FOR
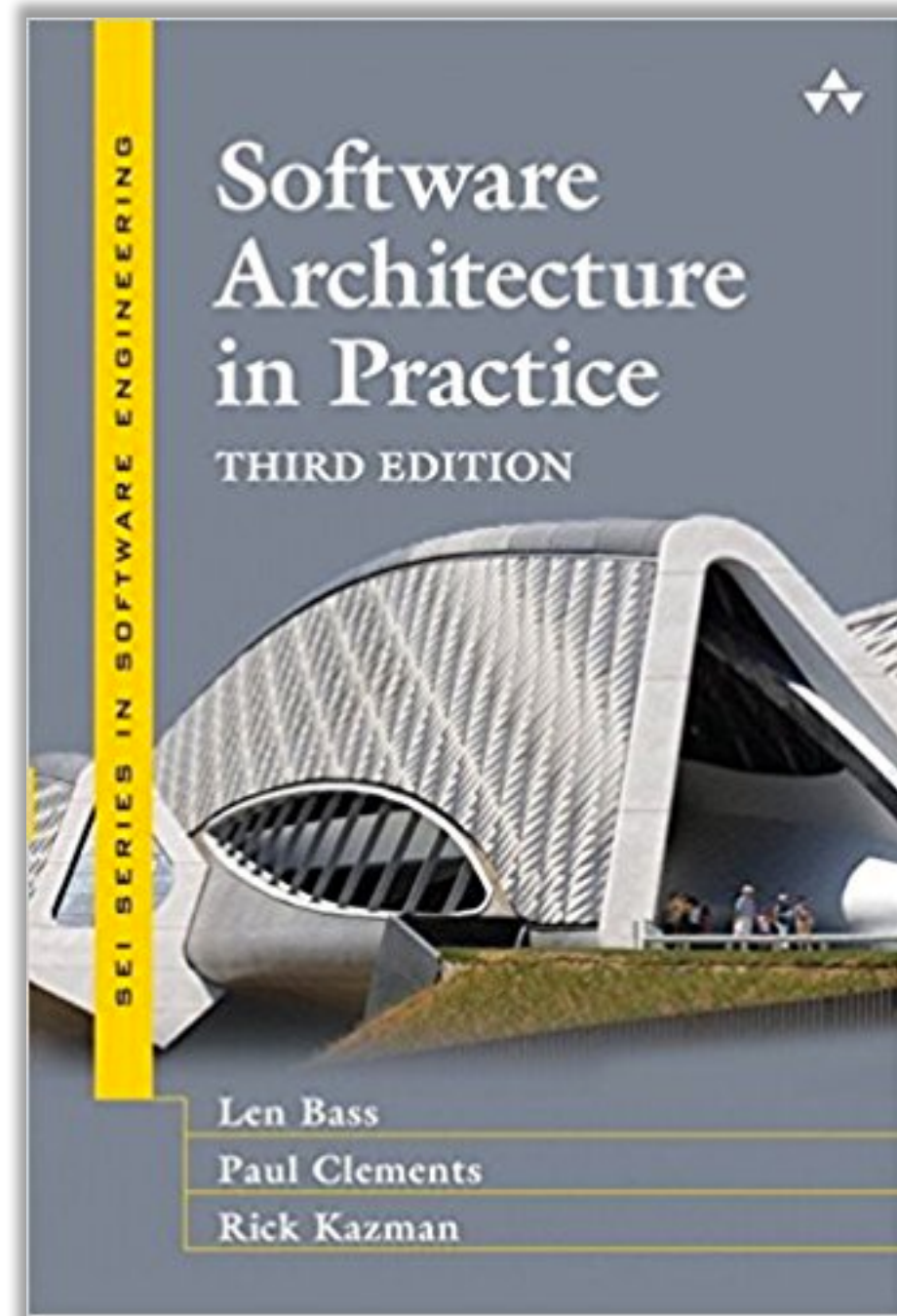FAULT TOLERANT
SOFTWARE**

WILEY SERIES IN
SOFTWARE DESIGN PATTERNS

# Book about architecture

Solution Architecture Book

- Stakeholders

- Business Goals

- Constrains

- Quality Attributes

- Architecture

But Let's do an Example

Architectural Kata is …

- Provide improvements for current digital platform

- 400 consumer static websites

- High Cost and Long Time to Market for Upgrades

- Expensive content management workflows

- Drupal

Solution
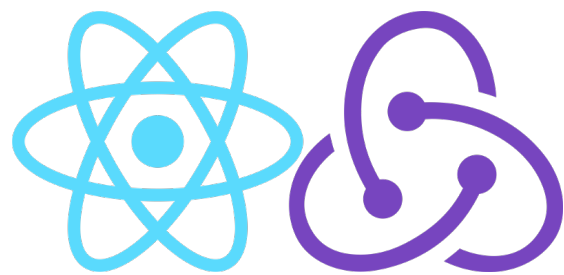
Other Solution?

Let's play Architecture Game

Define Goals

Business Driver   Improve customer satisfaction

Business Goals   Optimize costs

Objectives   Decrease time to market by X%

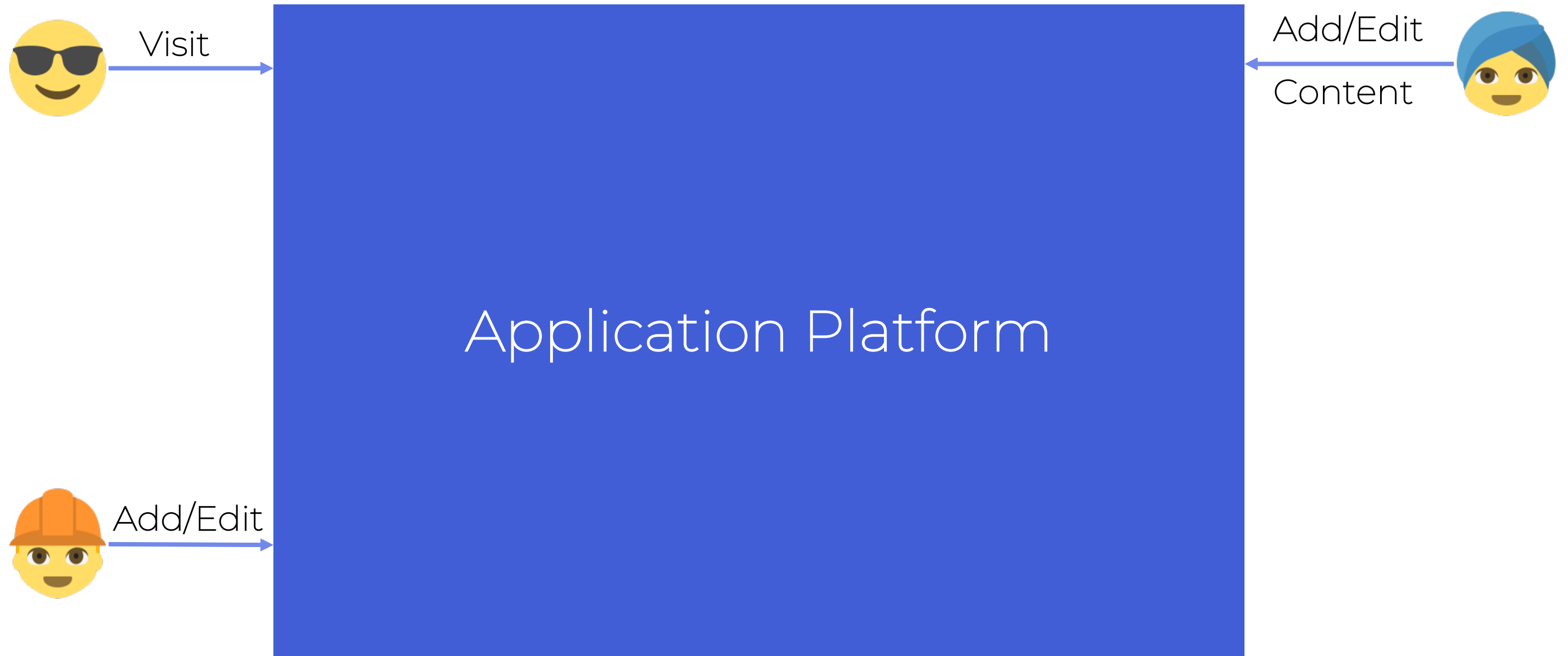Decrease time for content management by X%

Define Constrains

- Can't say goodbye to Drupal

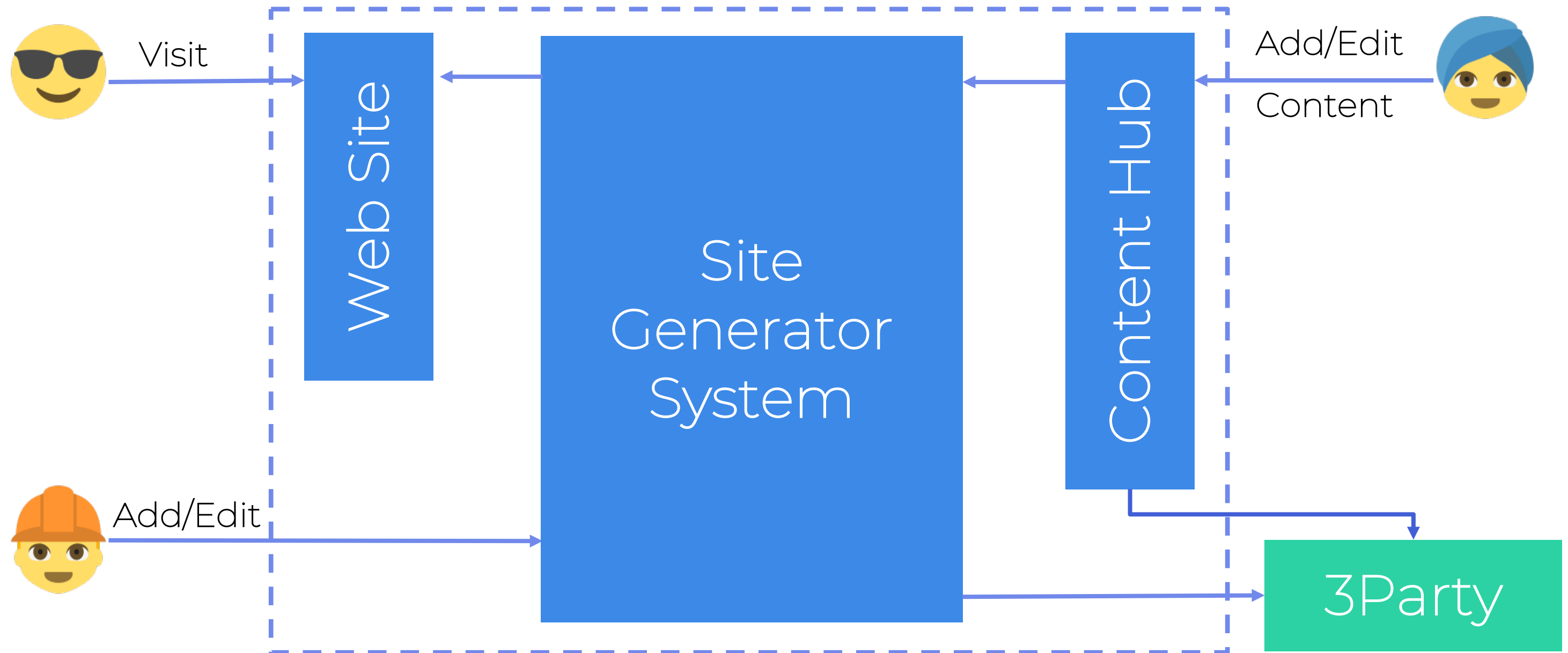- ReactJS and VueJS is used in the company

Define Quality Attributes

- Maintainability

- Testability

- Re-usability
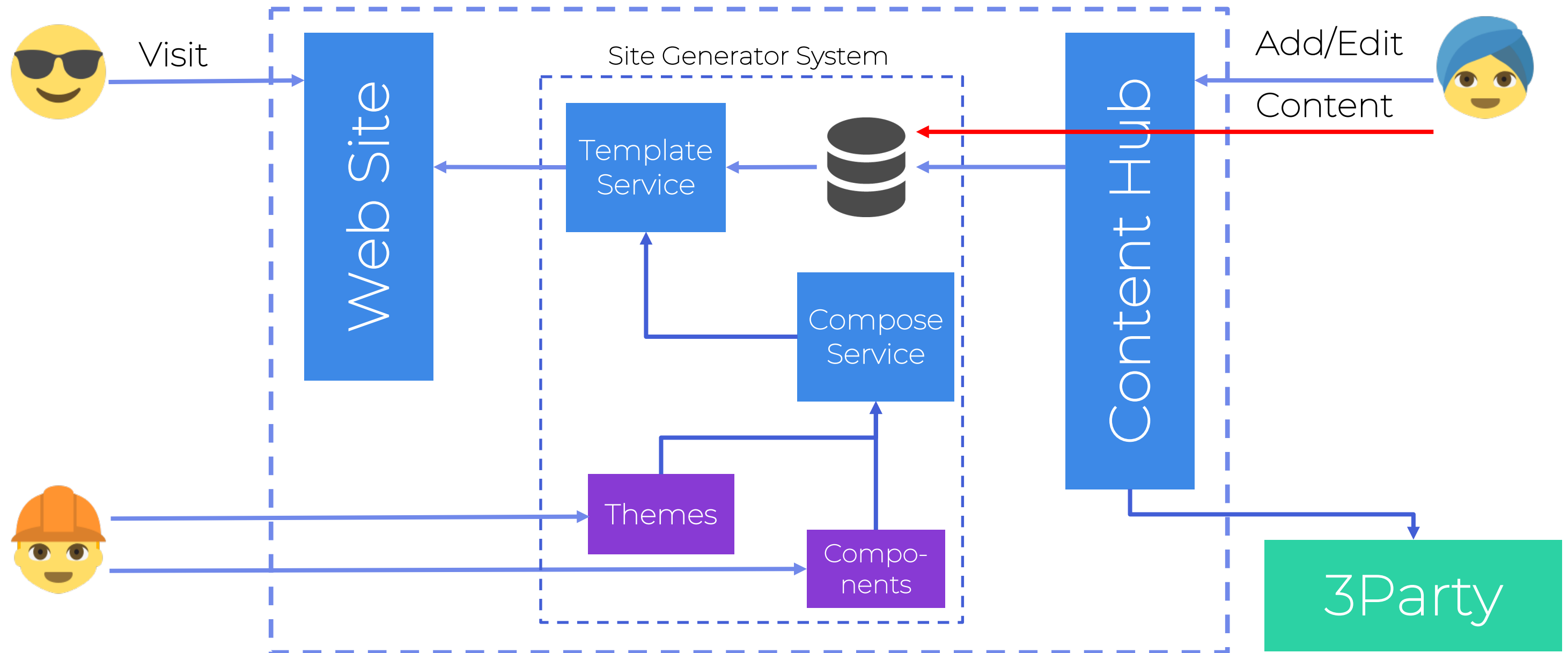
- Performance

- Accessibility

Design – C4

Visit

Add/Edit
Content

Application Platform
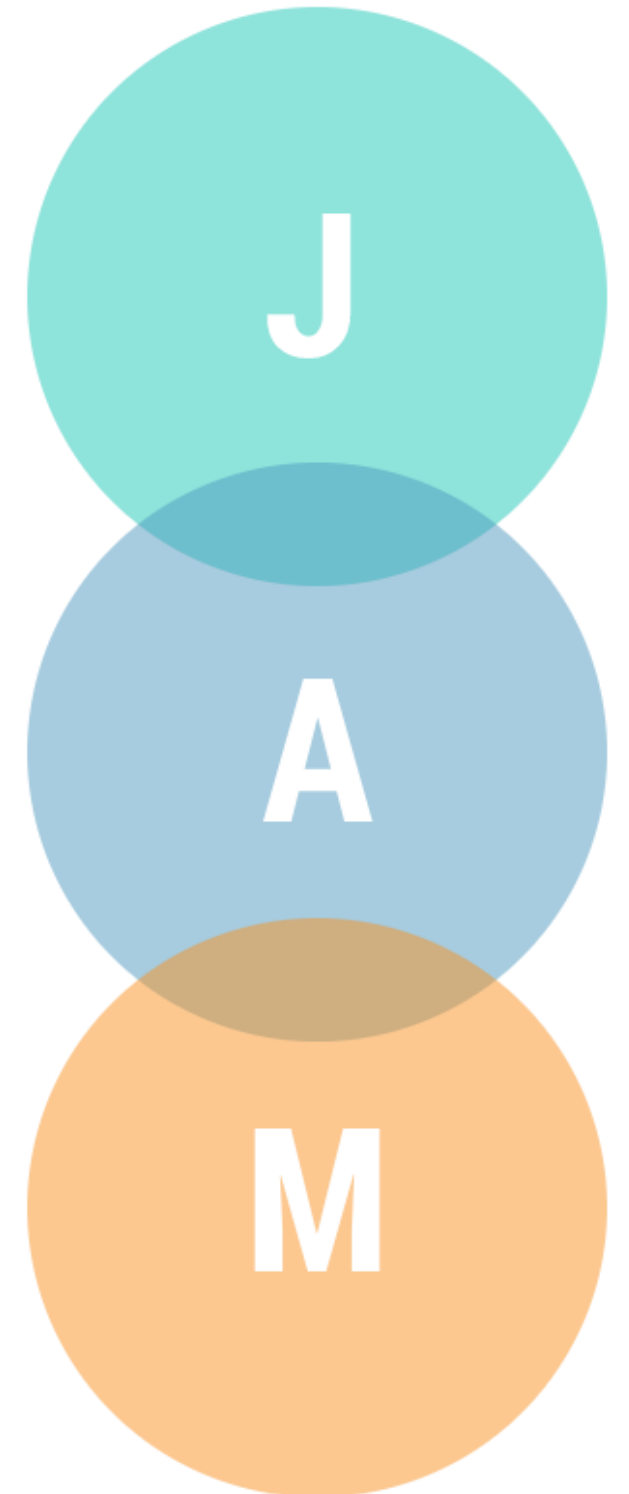
Add/Edit
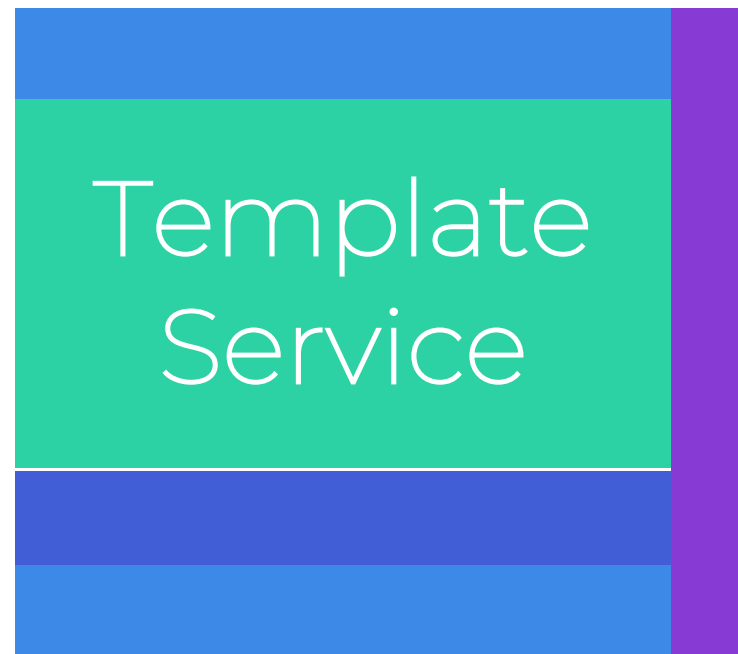
Design – C4

Application Platform

Design – C4

Application Platform
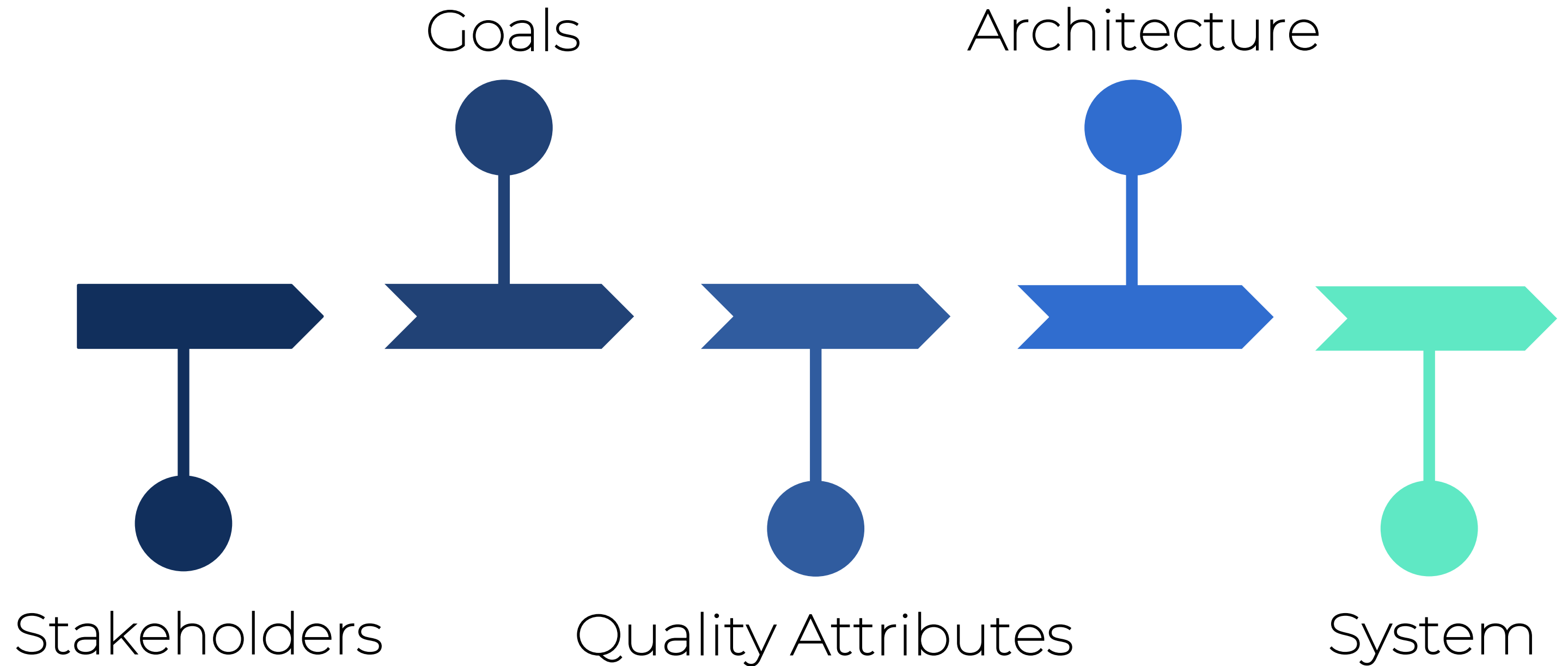
Technology Solution

Solution
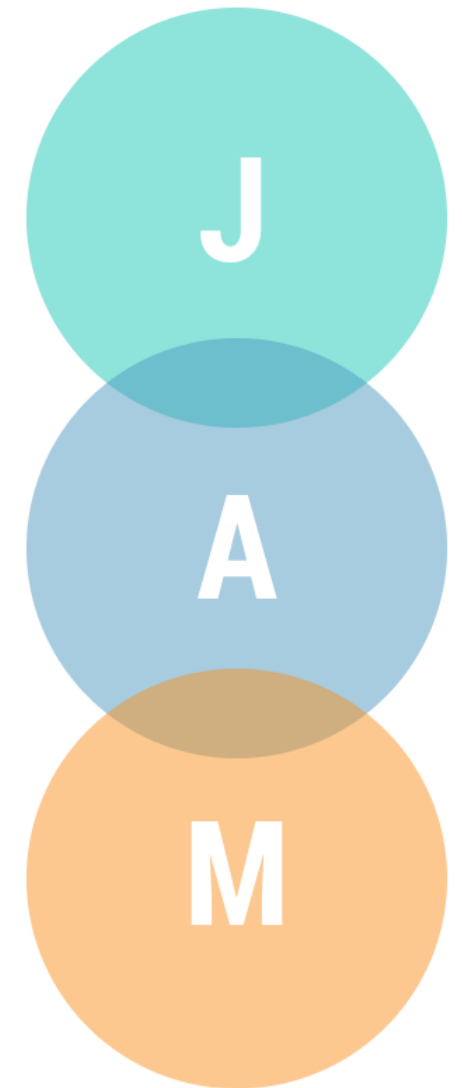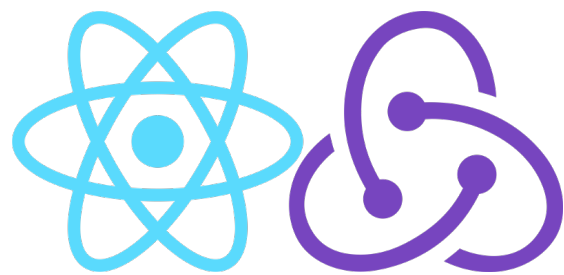
Solution Architecture Book

- Stakeholders

- Business Goals

- Constrains

- Quality Attributes

- ...

- Choice of technology

Think about architecture?

Architectural Kata is …

- Defined all Architecture Requirements/Goals/etc
- Developed solution
- The project was failed. Why?

Architecture Cycle

Is your project failed?

Thank you!

Link to the Presentation

https://goo.gl/zz2J96

Thank you!

Questions?

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bogachuk.alex@gmail.com