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Evolving with Camunda: Architecture, UI and Orchestration

Yuvraj Keenoo

About Me

Yuvraj Keenoo

Senior Software Engineer at MCB
11+ years experience in IT

Lives in Mauritius

Master degree in Software Engineering Projects and Management

Part-time Tutor at Open University of Mauritius

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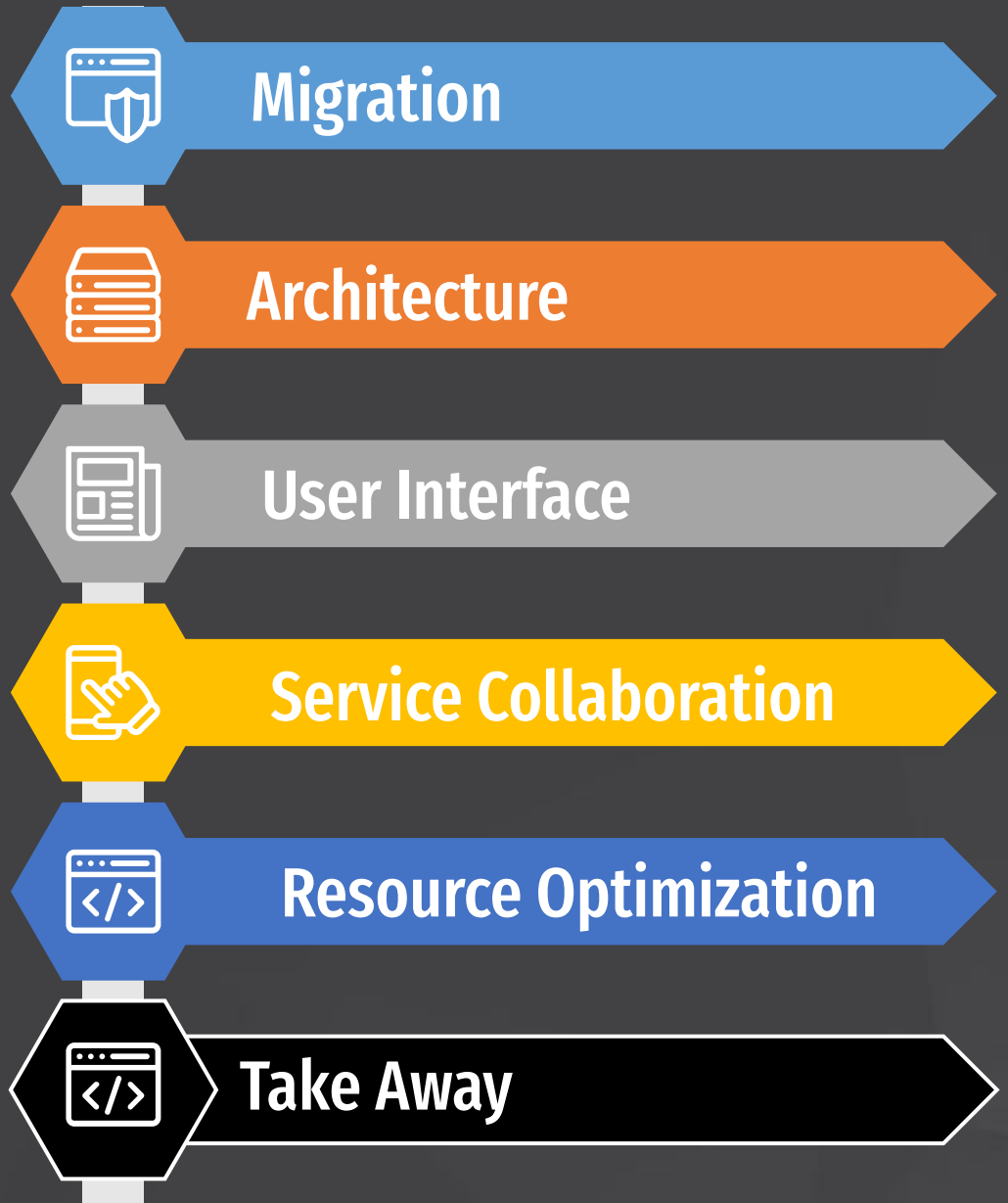
Agenda


Migration
Architecture
User Interface
Service Collaboration
Resource Optimization
Take Away

What’s in it for you?

- Share experiences around migration from legacy system to Camunda BPM
- Benefit from our lessons learnt


Migration

Legacy system

- Bought in 2012
- Monolithic system
  - Application deployed in one server
  - One database
  - Less scalable and configurable
  - Closed-source (black box components)
- No use of BPMN standards
- Deployment takes time

How it started with Camunda BPM?

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Sep-2018

Experimentation at Digital Factory Lab & attended CamundaCon

Feb-2019

Implemented Camunda BPM Community version

Jun-2020

Rollout the Camunda BPM Enterprise version

Aug-2021

Coarse-grained services (SOA)

Jan-2022

Fine-grained services (Microservice)

Legacy vs Modern apps

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Legacy apps	Modern apps
No in-built support for mobile app	Cross platform
Fixed user interfaces	Themable / Branded UX
Limited integration capabilities	Designed for integration and mashups
Static fields and relationships	Extensible fields and dynamic relationships

Migration strategies

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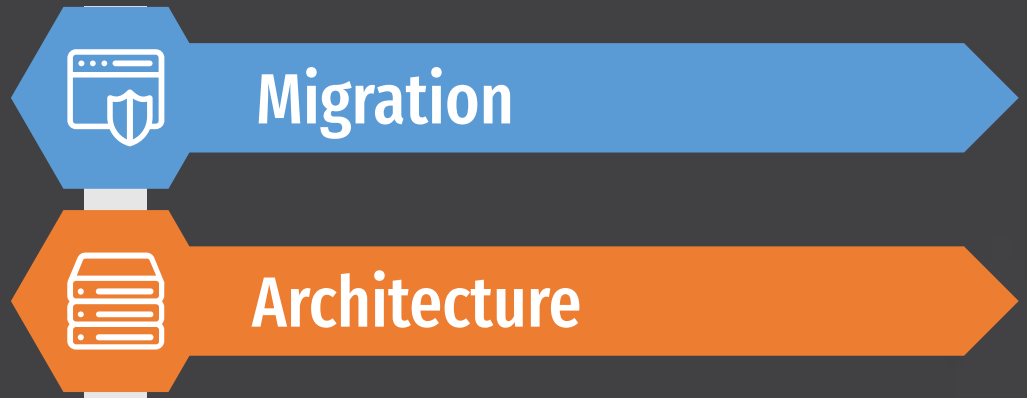
- Depending on the nature of the process, we have adopted different combination of migration strategies such as:
  1. Big bang
     - old process was stopped on the core banking system
  2. Phased
     - progressively adding features to the application deployed for all business unites
  3. Pilot + phased
     - deployed to some business units and new features were added progressively to the application


Migration
Architecture

Why to review architecture as and when needed?

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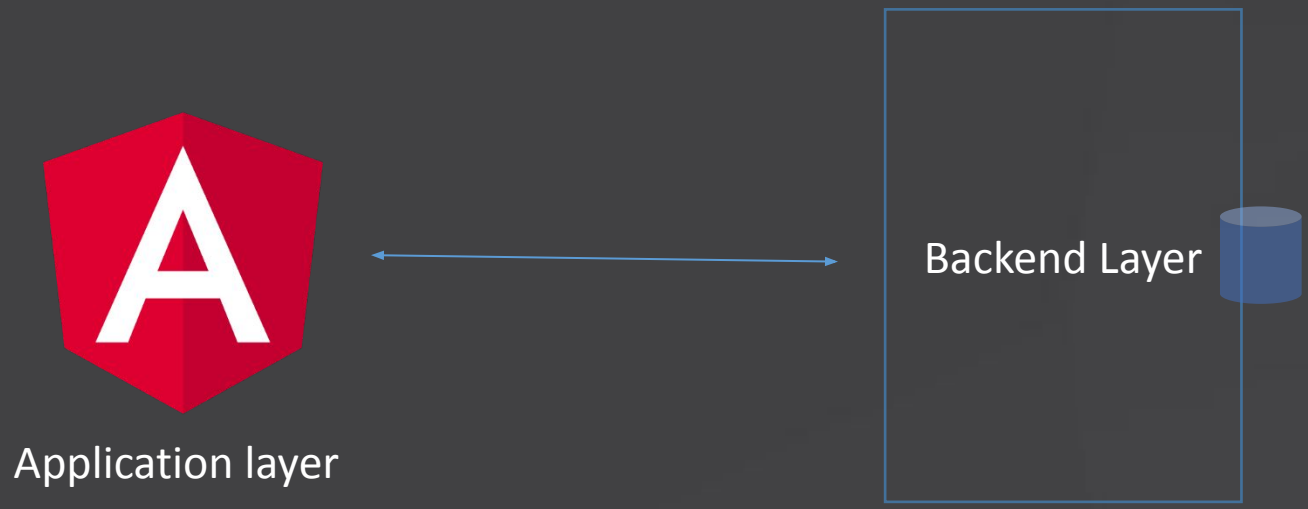
- Point out places where architecture fails to meet requirements and show **alternative designs** that would work better
- Determine where **finer-grain depictions** of architecture are needed
- Ensure **consistency** across entire system
- Disseminate ideas on what constitutes a **good architecture** to align with industry standards and best practices

http://lhcb-comp.web.cern.ch/Reviews/Gaudi-1998/goals_of_the_architecture_review.htm

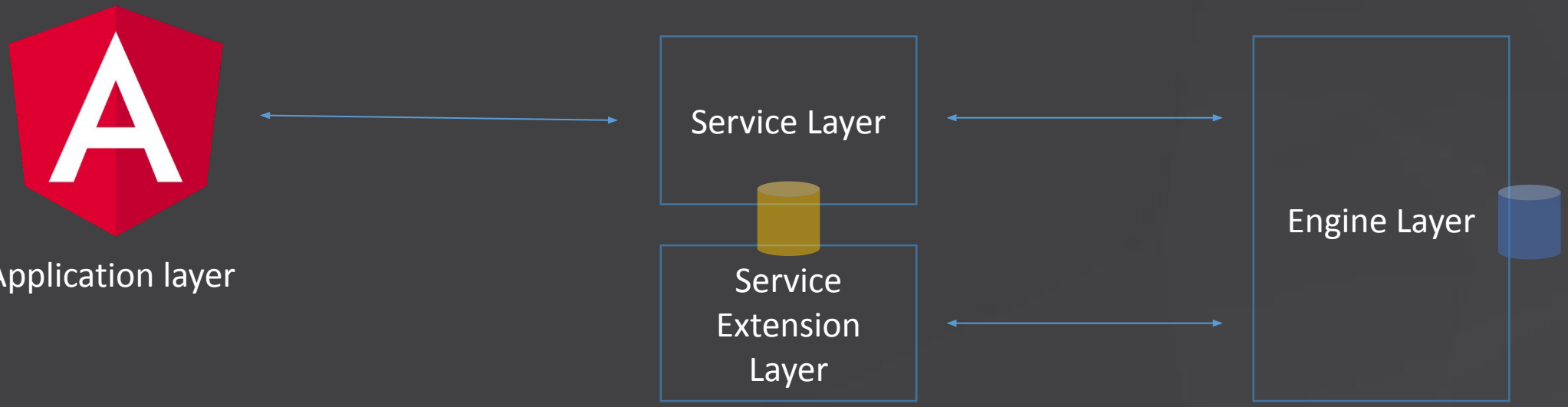
Architecture - Version 1.0

- 1 frontend and 1 backend layer



Architecture - Version 2.0

- 1 frontend and 3 backend layers
- Coarse-grained services



Processes:

1. Card PIN request
2. Customer onboarding
3. Document classification

Architecture - Version 3.0

- Isolated processes
- Fine-grained services

Service Layer

Engine Layer

Card PIN request service

Application layer

Service Layer

Engine Layer

Customer onboarding service

Application layer

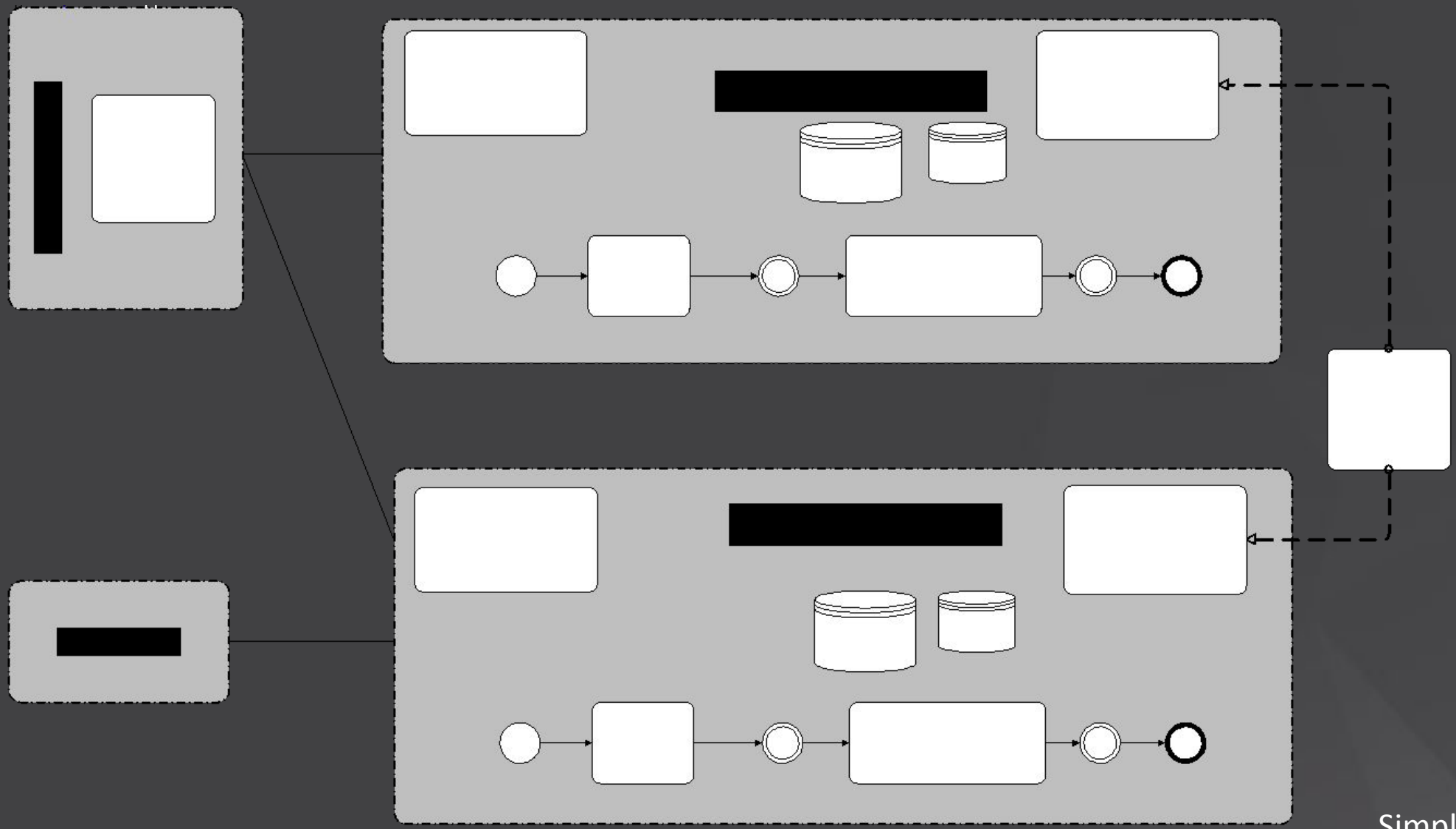
Service Layer

Engine Layer

Document classification service

Application layer

Target Microservice Architecture



Simplified version

Technology Stack

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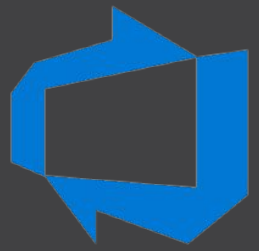

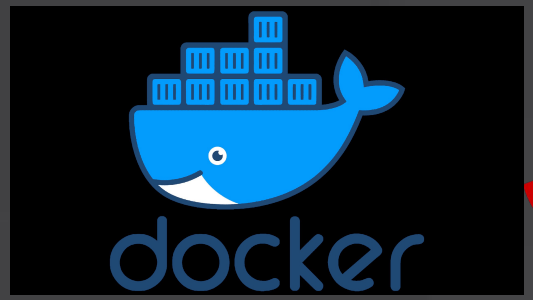

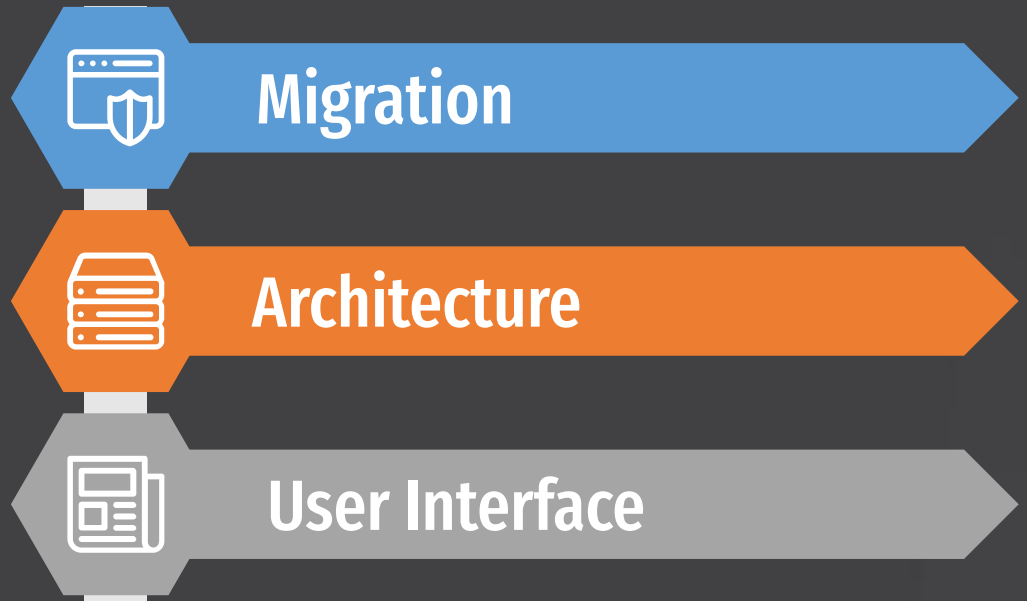
Migration
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User Interface

Having a good UI/UX makes **users feel more comfortable and are able to get things done more quickly**.

Benefits of Angular

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- Business benefits
  - Cross-platform
  - High quality of the application
    - User friendliness
  - Improved speed and performance (SPAs – lazy loading)
- Technical benefits
  - Faster development process (Ivy compiler engine)
  - Unit and E2E test cases
  - More lightweight web applications
  - Codes reusability
  - Availability of excellent material design library

Angular is an application design JavaScript framework and development platform for creating efficient and sophisticated single-page apps (SPAs).

Achievements with Angular

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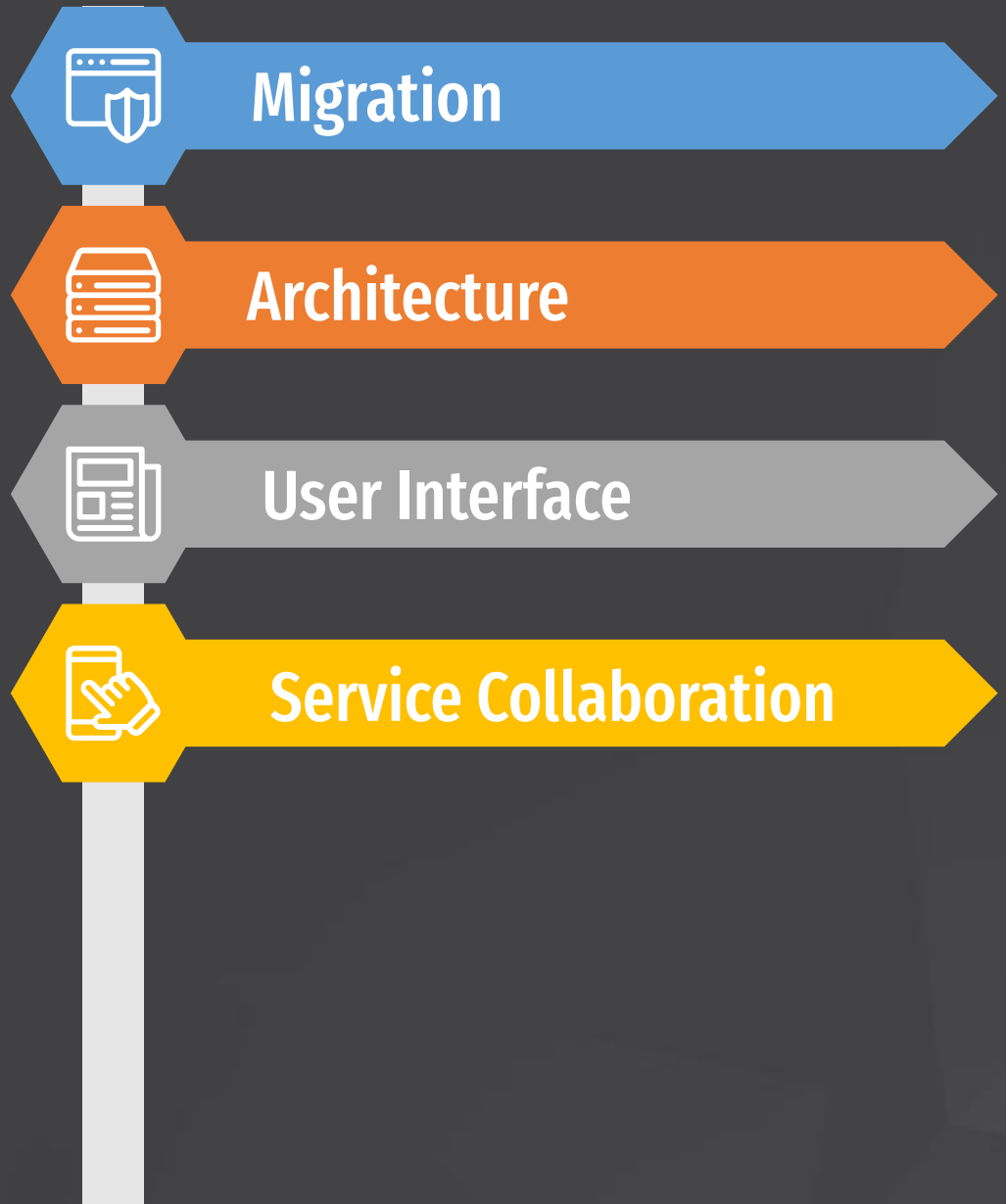
- Can design complex screens: PDF viewer, reactive forms, etc.
- Angular material design: pagination, dialog box, etc.
- MCB branded UI/UX – Custom Angular library
- Code reusability: components, custom directives and pipes
- Custom to-do list: assigned, unassigned and team tasks
- Authentication and interceptor
- Encryption and decryption (using CryptoJs)


Migration
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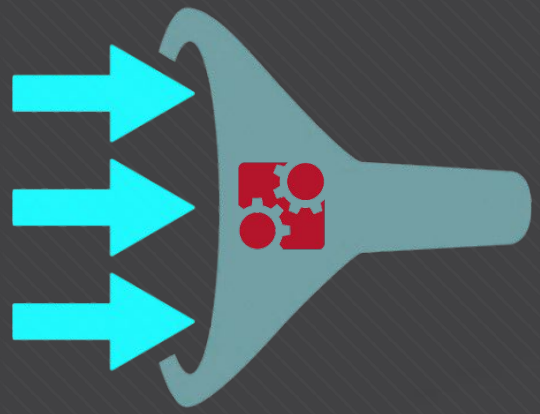
Service Collaboration

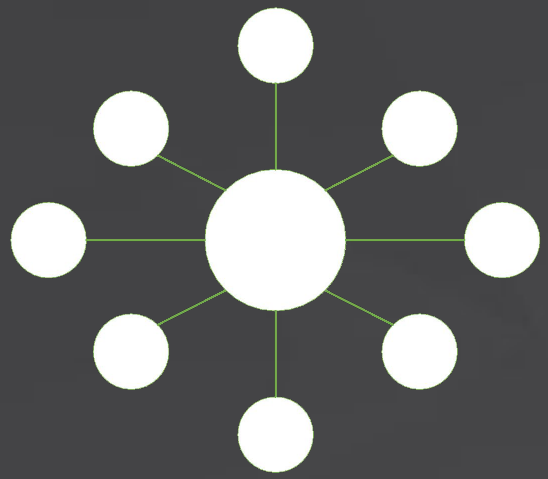
Service Collaboration

- Data ingestion from the Core Banking System to the Omni-channel system

Core Banking System



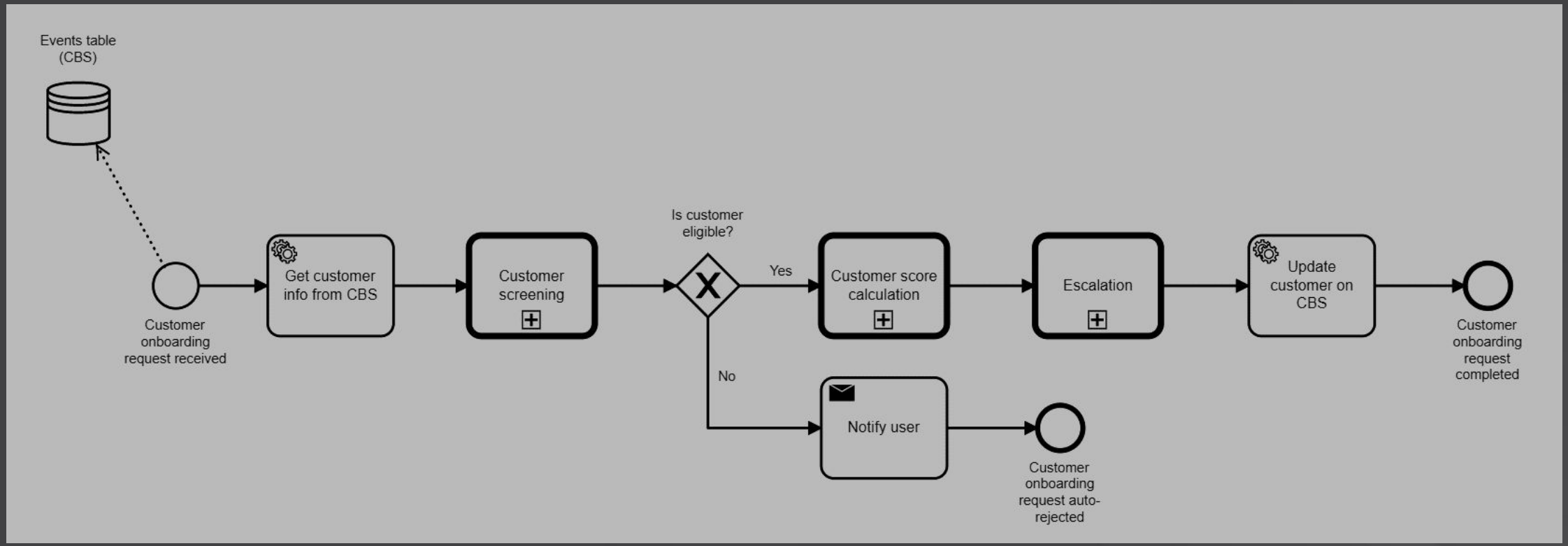
Camunda Engine

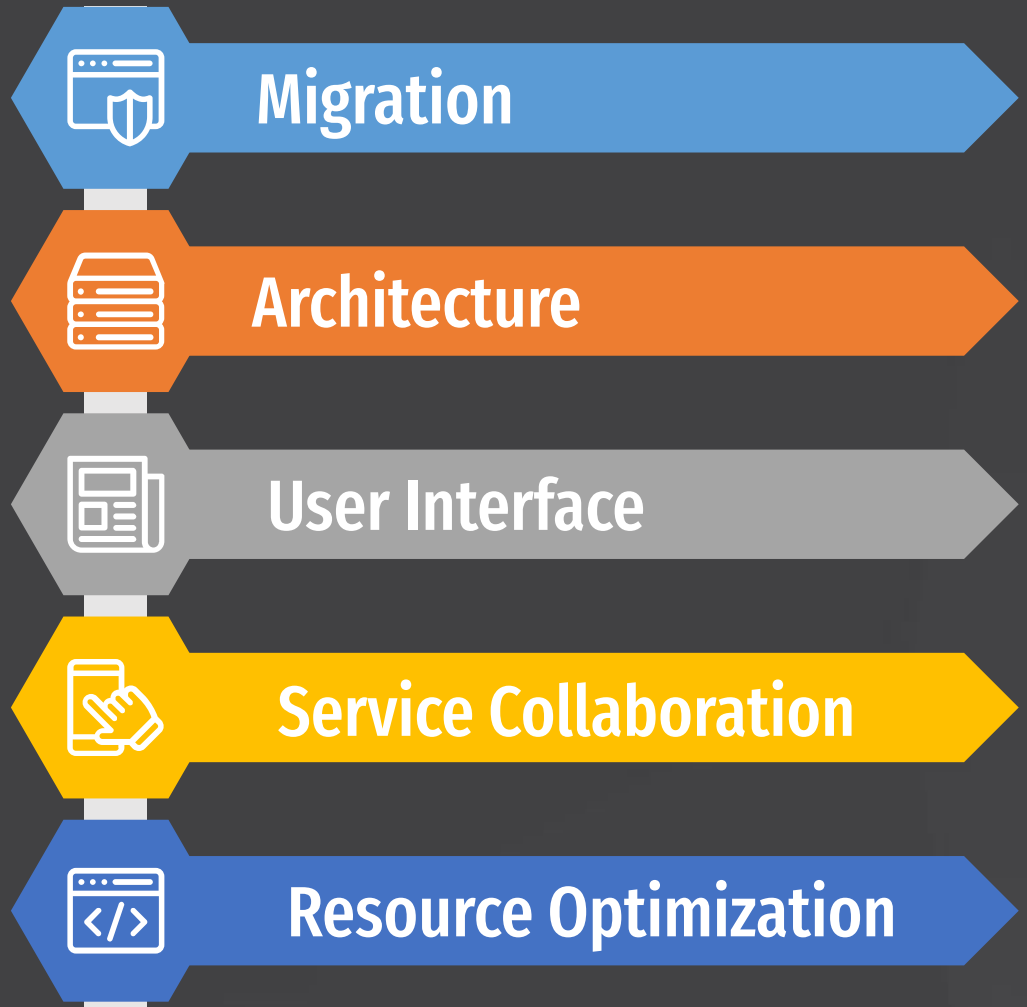


Omni-Channel System

Service Collaboration

- Customer onboarding process (simplified version)

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Optimize your Spring Boot apps

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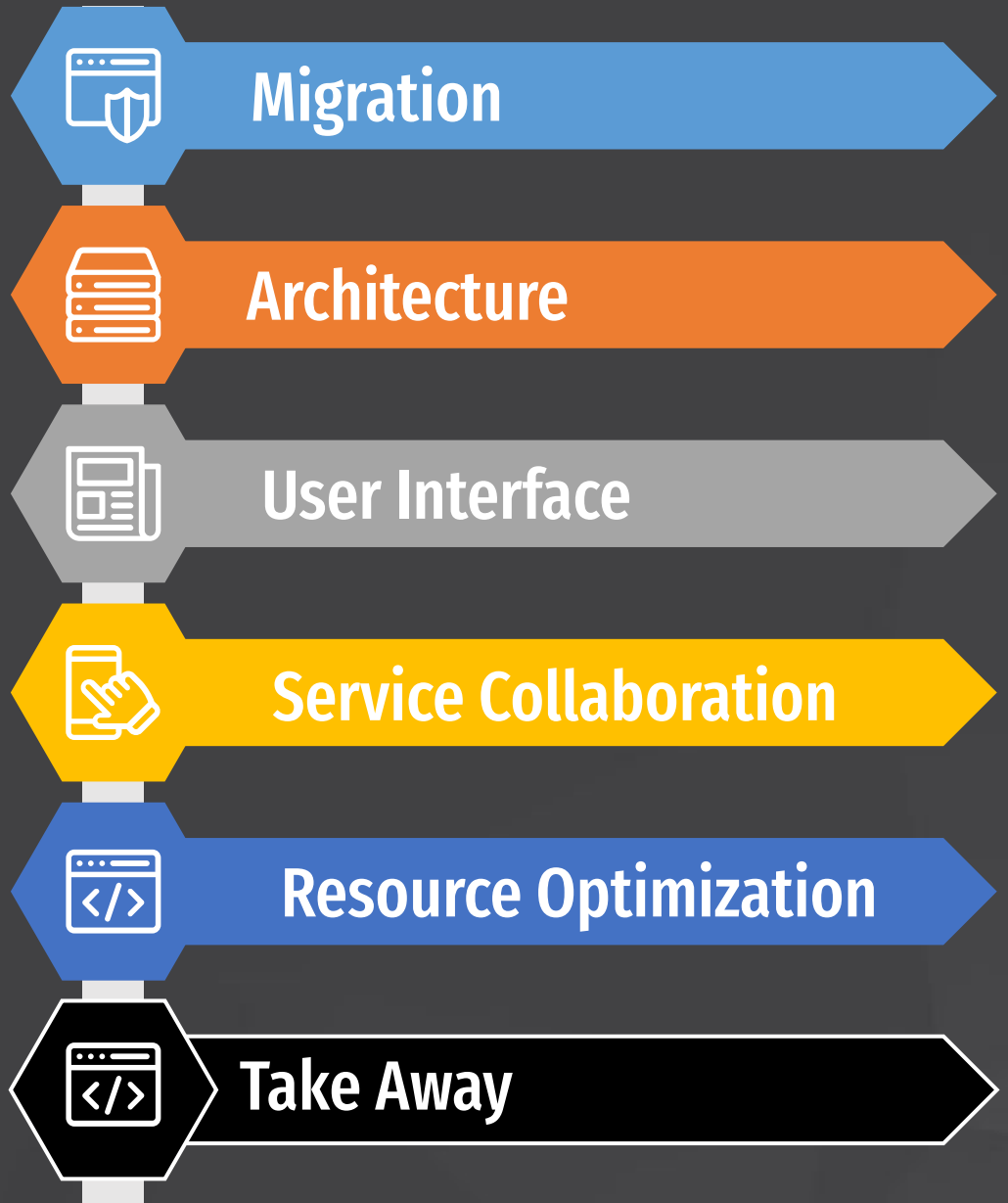
- Segregate your application data
  - Frontend and backend
- Actuator metrics
- Prometheus
- Shedlock
- Stable dependencies and open-source resources
- GraphQL
- API Health Check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- Orchestration (synchronous) vs choreography (asynchronous)
- Implement event-driven microservice by Chris Richardson
  - Microservice + Events + Docker = The Perfect Trio
- Loose coupling and distributed
  - Think services not objects
- Git branching model
  - Branch early, branch often
- Strictly adhere to the BPMN standards
- Timeout user session (monitor user activity using host listener) and renewing JWT

Take Away

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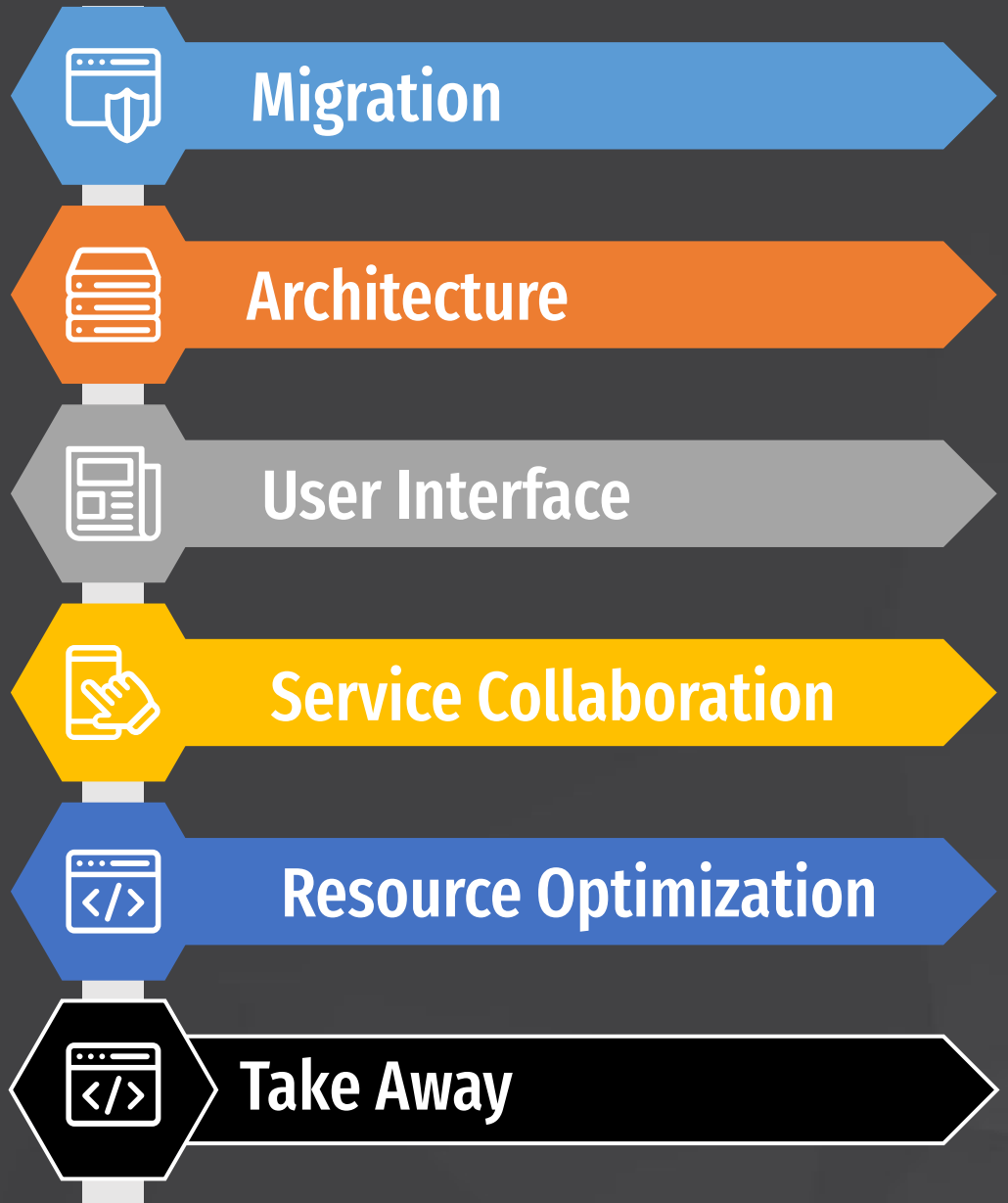
- Use **SOLID** principles in Java
  - **S**ingle Responsibility Principle
  - **O**pen-Closed Principle
  - **L**iskov Substitution Principle
  - **I**nterface Segregation Principle
  - **D**ependency Inversion Principle
- Code smell with SonarQube
- Database: entity relationships, indexes, audit fields, write procedures and functions inside packages
- Collect everything (logs, metrics, pings and traces)
  - Can use Kibana and Elasticsearch to visualize logs

Recap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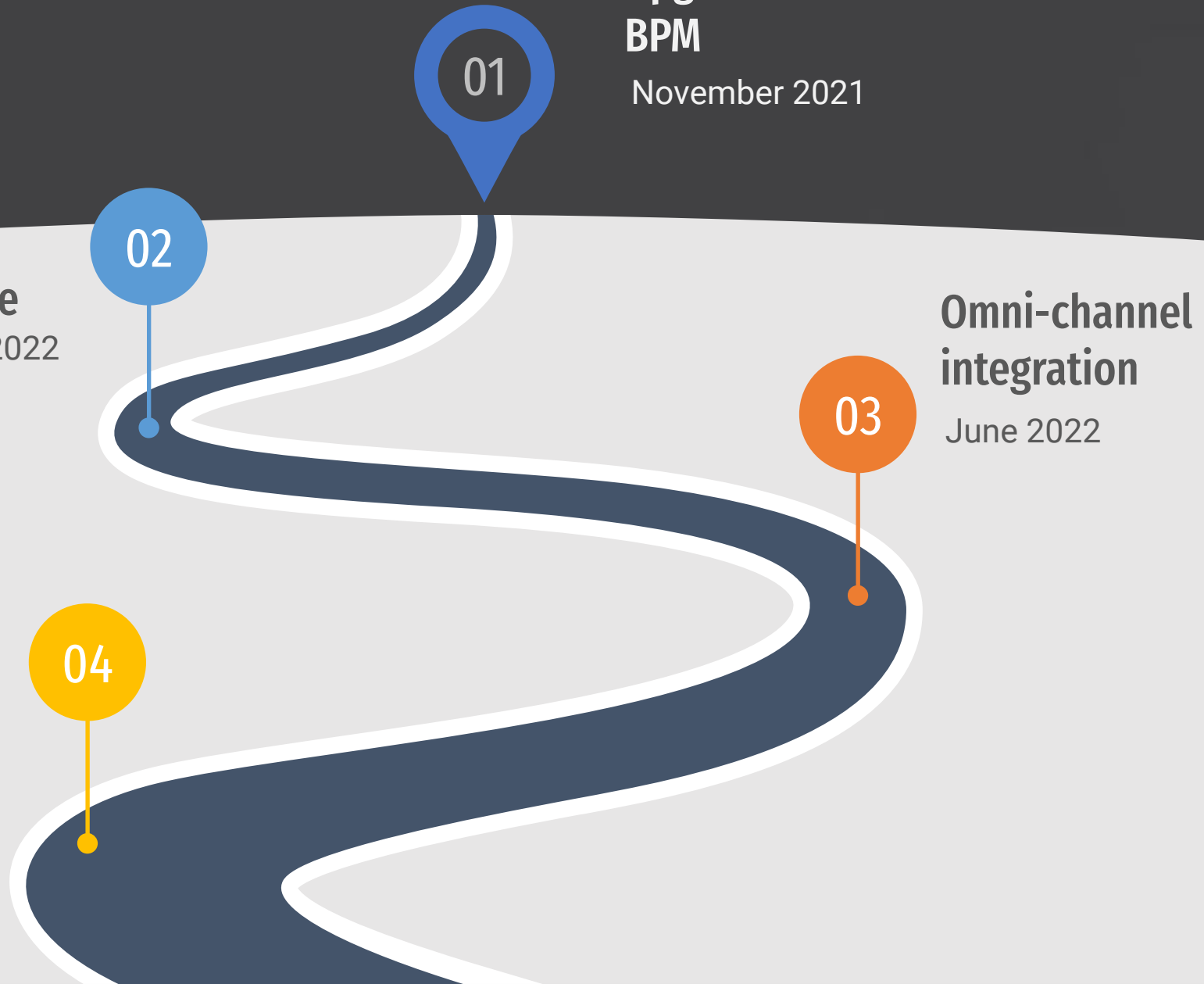
Roadmap



** Some dates can change

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Thank You

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Questions?