Event-driven Applications with Kogito Serverless Workflows and Knative

OpenShift Commons Briefing 2021

Ricardo Zanini
Senior Software Engineer

Red Hat

Agenda

CNCF Serverless Workflow Specification

Kogito Project

Use Case Example

Short Demo

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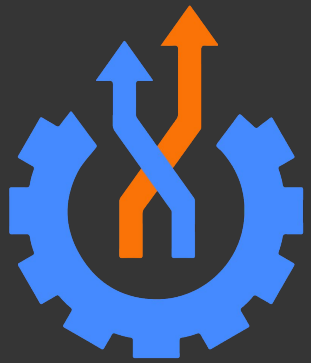
CNCF Serverless Workflow Specification



*"A specification focused on defining a **declarative workflow language** that targets the serverless computing technology domain."*

CNCF Serverless Workflow Specification Website

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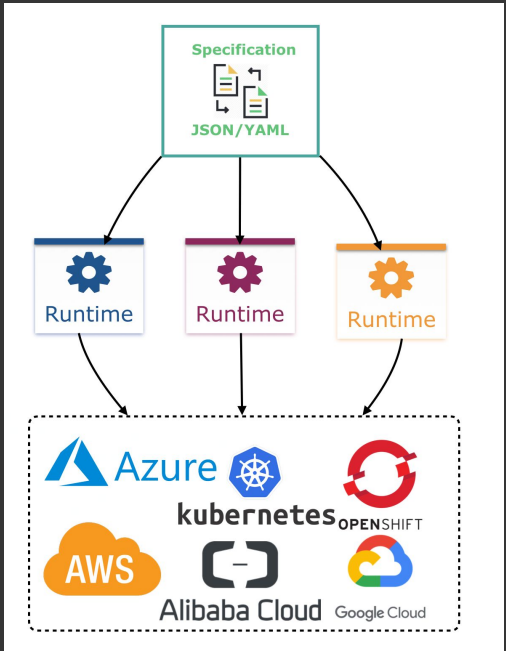
Serverless Workflow Specification is a CNCF Sandbox Project: https://www.cncf.io/sandbox-projects/



Why?

Workflows can capture and organize **business requirements** in a unified manner

The specification addresses the need for a **vendor-neutral**, **platform-independent** and **declarative** workflow language

Having a common way to define workflows increases the potential for common libraries, tooling and infrastructure

Being **vendor-neutral**, increases **portability**, **productivity** and l**earning curve**

Source: https://github.com/serverlessworkflow/specification/blob/main/specification.md#Overview

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OpenAPI

Services

- Operations
- Invocation

CloudEvents

Events

- Produced
- Consumed
- Correlations

Workflow Patterns

Control Flow

- Execution Order
- Error handling
- Data Management

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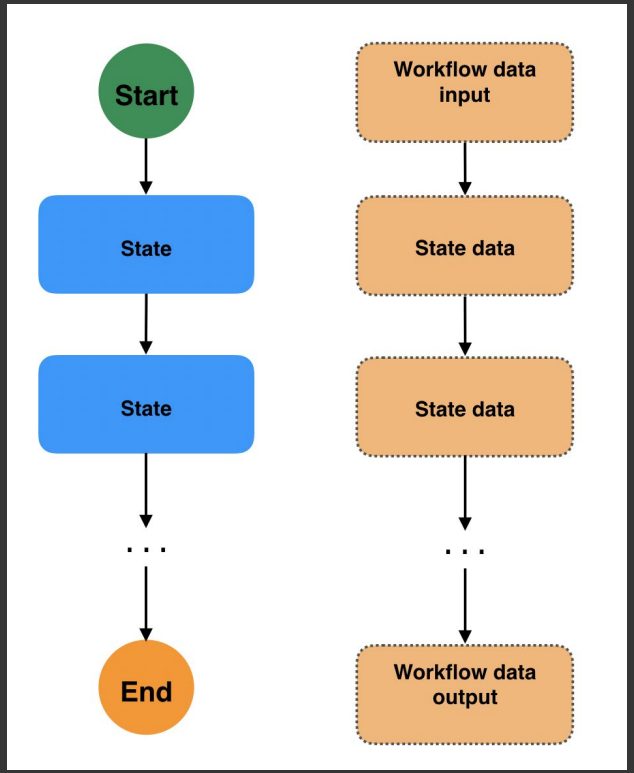
Source: https://github.com/serverlessworkflow/specification/blob/main/specification.md#focus-on-standards

Workflow Data Handling



Source: https://github.com/serverlessworkflow/specification/blob/main/specification.md#workflow-data

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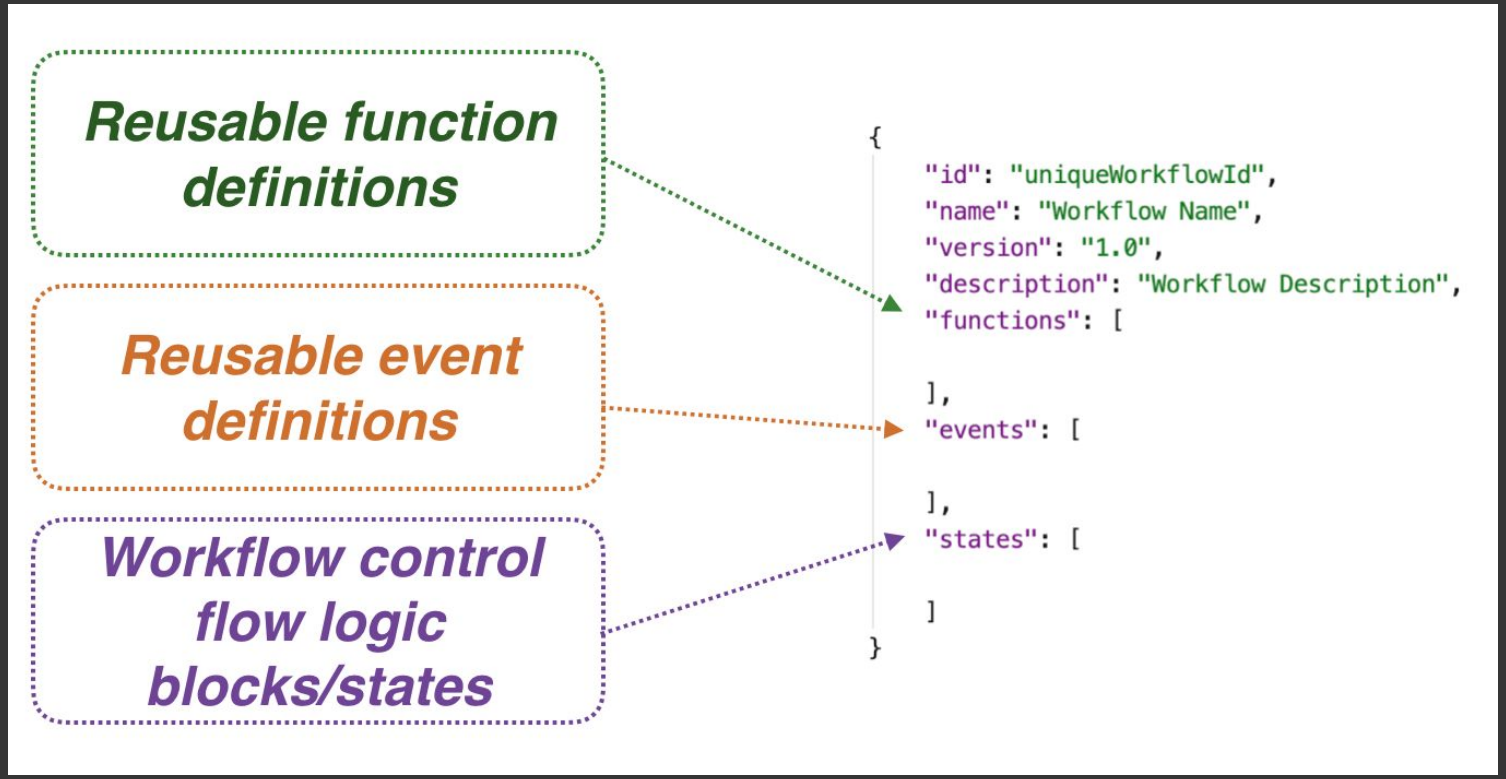

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Source: https://github.com/serverlessworkflow/specification/blob/main/specification.md#workflow-definition-structure

Meet Kogito

Kogito is a work in progress implementation of the CNCF Serverless Workflow specification

A cloud-native solution to build business applications

https://kogito.kie.org/

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Rules: Describe business rules in specific domain-driven DSL

Decisions: Design complex decisions with DMN

Serverless Orchestration: Execute workflows based on CNCF Serverless Workflow specification

Business Process: Design, execute and track business-driven process based on BPMN

Cloud native: Tools to model and run business applications for cloud-native architectures

The Kogito Project

Editors

VSCode plugins, online and standalone editors

Engine

Based on battle tested frameworks such as Drools, jBPM and OptaPlanner

Supporting Services

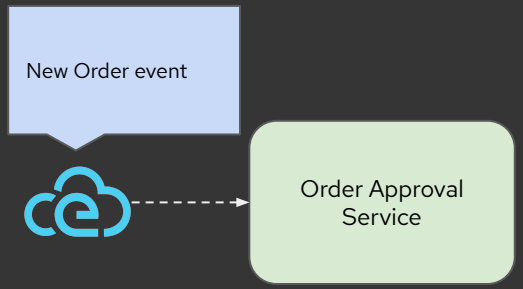
Cloud-native services to support your business applications

Cloud Tools

Kubernetes Operator and a CLI to deploy and manage Kogito services

Example Use Case

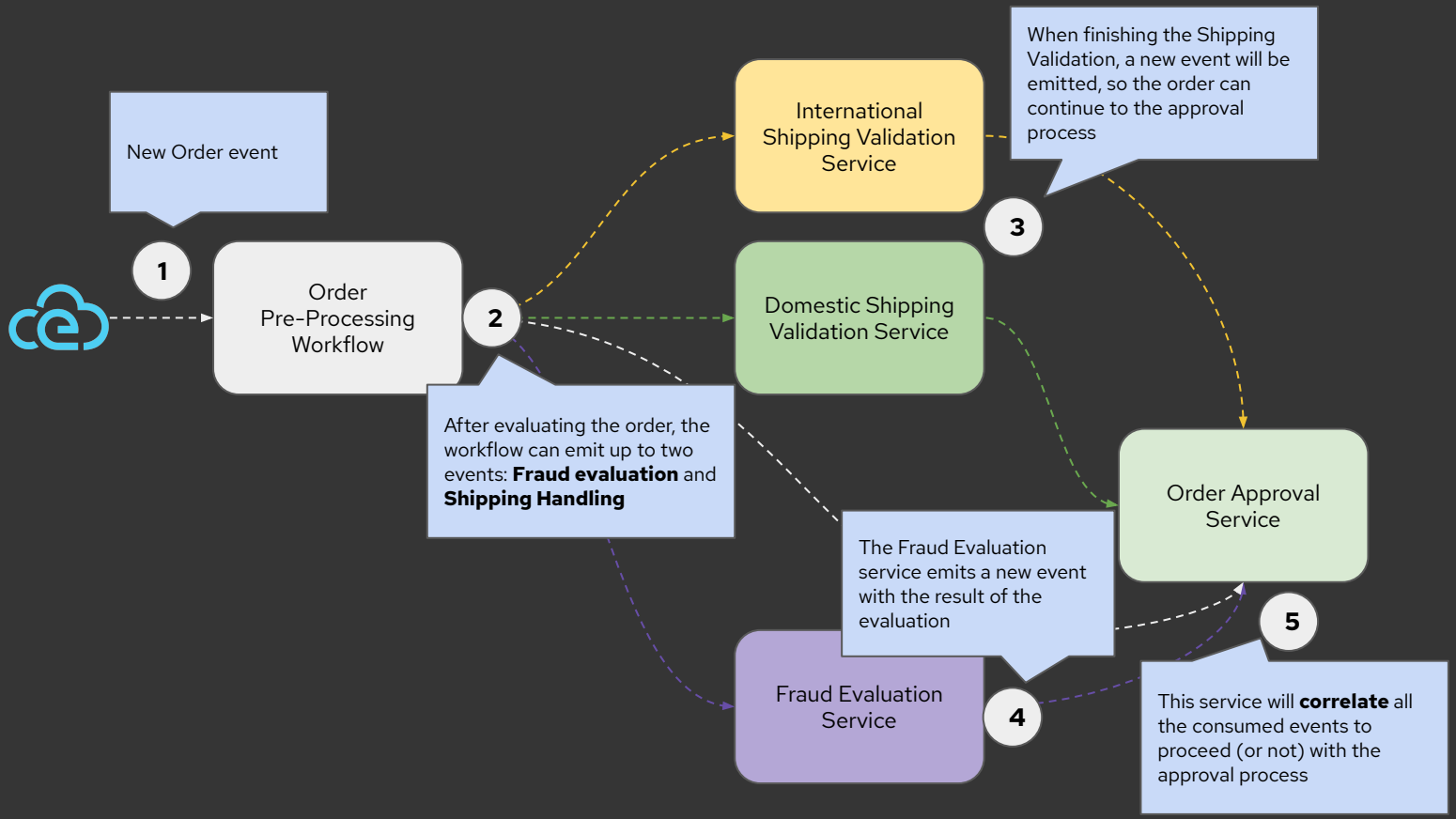
Online Store Order Processing



An online store needs to perform **Shipping** and **Fraud verification** before proceeding with the **Order process**

John Doe, CEO

Red Hat


New Order event
1
Order Pre-Processing Workflow
2
After evaluating the order, the workflow can emit up to two events: **Fraud evaluation** and **Shipping Handling**
International Shipping Validation Service
When finishing the Shipping Validation, a new event will be emitted, so the order can continue to the approval process
3
Domestic Shipping Validation Service
Order Approval Service
The Fraud Evaluation service emits a new event with the result of the evaluation
Fraud Evaluation Service
4
5
This service will **correlate** all the consumed events to proceed (or not) with the approval process

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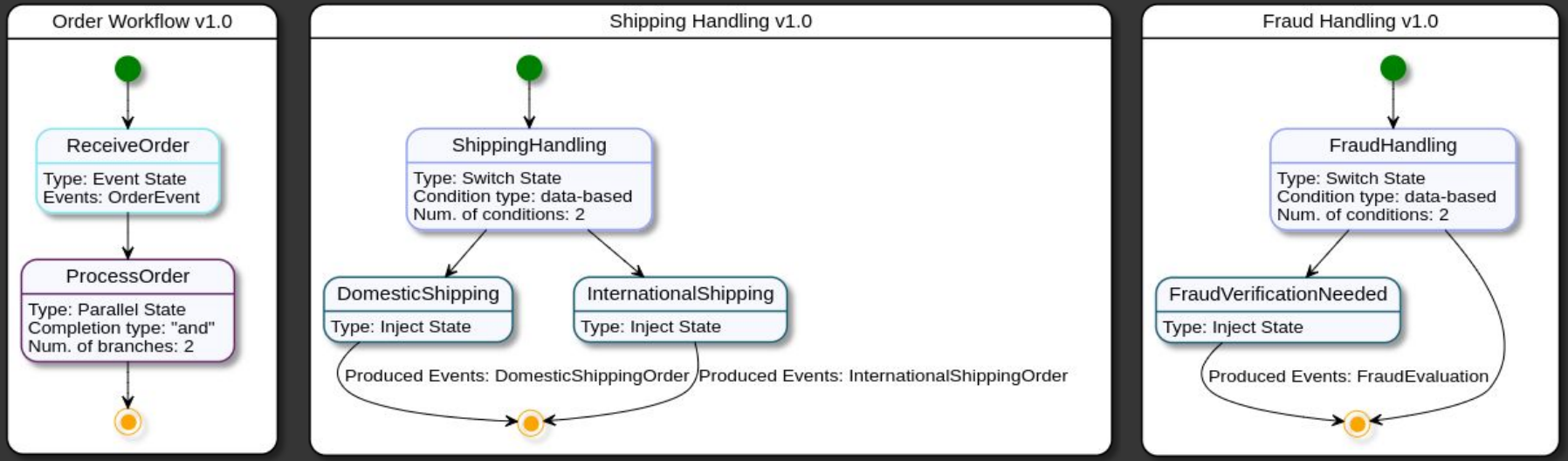
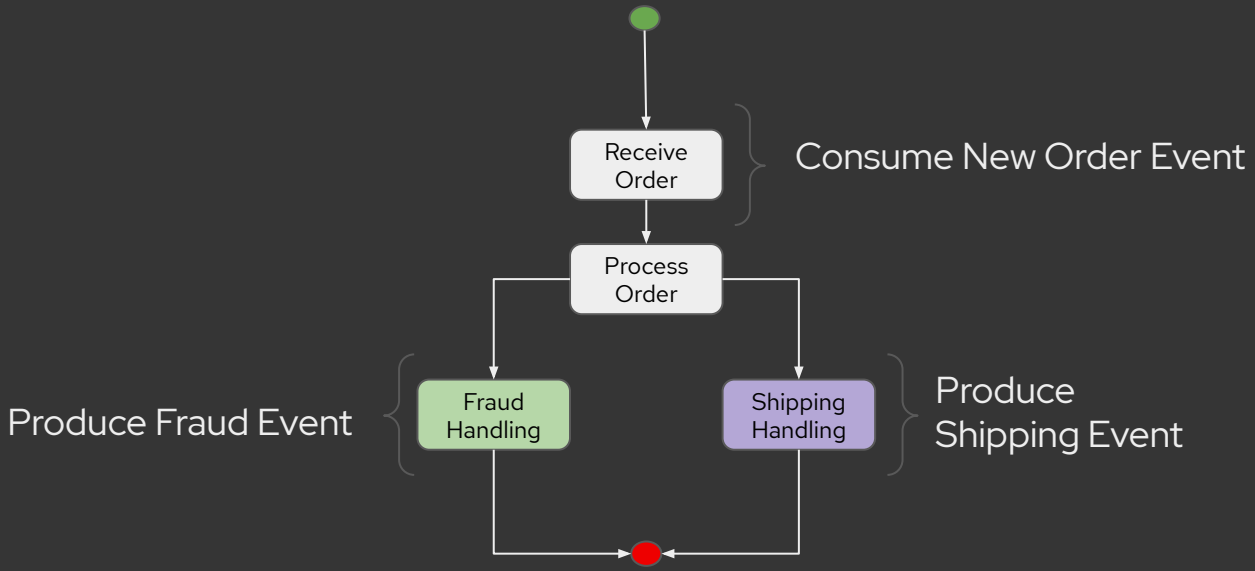
The Order Pre-Processing Workflow



The Order Pre-Processing Workflow



Workflow source files: https://red.ht/kogito-sw-order

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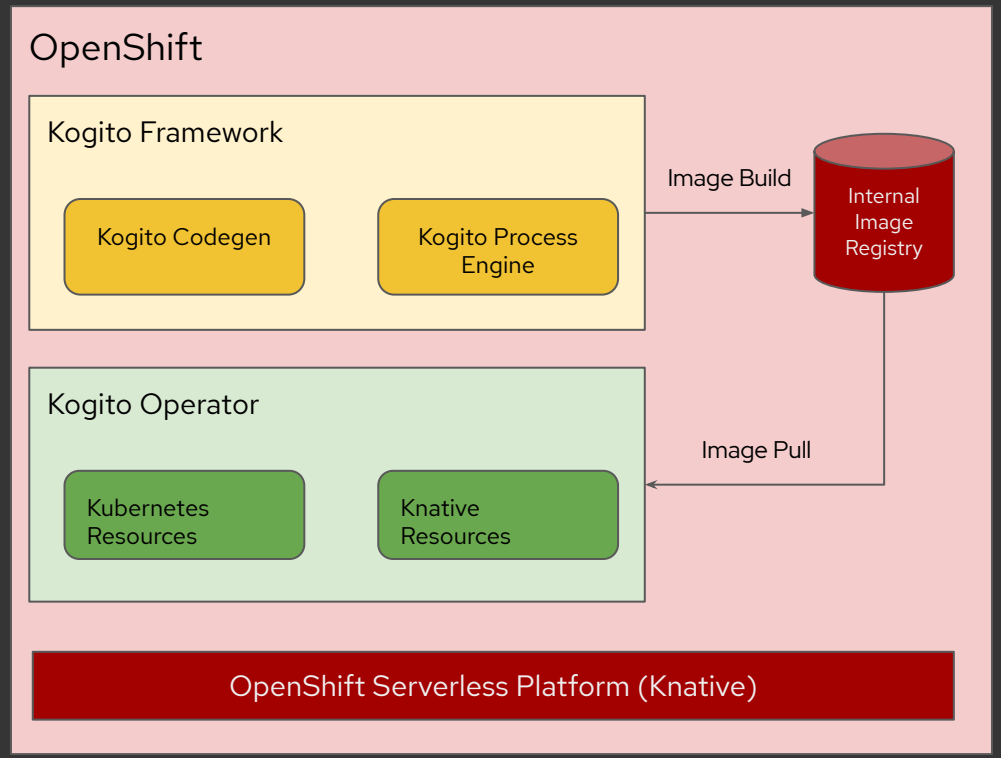
Workflow definition file(s)

```
kogito deploy order-sw <myfile.sw.yaml>
```



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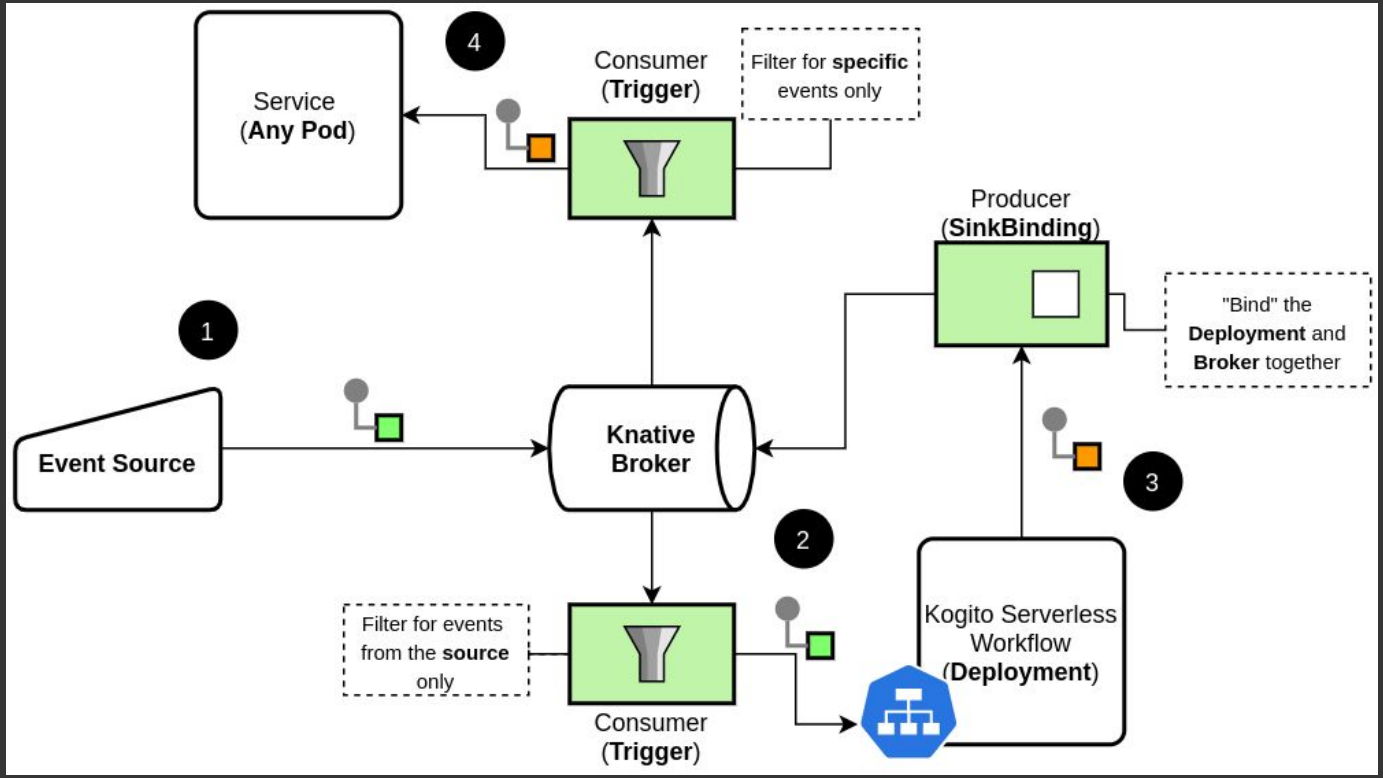
Service
(Any Pod)
4
Consumer
(Trigger)
Filter for specific
events only
Producer
(SinkBinding)
"Bind" the
Deployment and
Broker together
1
Event Source
Knative
Broker
3
2
Filter for events
from the source
only
Consumer
(Trigger)
Kogito Serverless
Workflow
(Deployment)

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Short Demonstration

Want to know more?

Resources

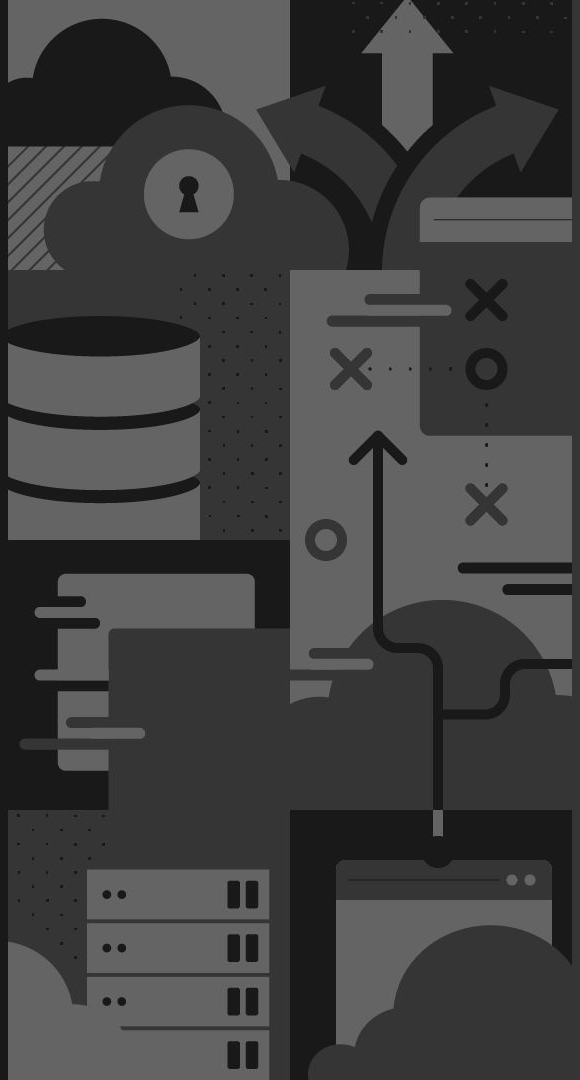
CNCF Serverless Workflow Specification: https://serverlessworkflow.io/

Kogito: https://kogito.kie.org/

KIE Blog: http://blog.kie.org/

Demonstration source code: https://red.ht/kogito-sw-order

KubeCon 2020 US Presentation: https://www.youtube.com/watch?v=noVf6qzyP1U



Thank you! :)

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