

New approach to
Business Automation



Agenda

1

Introduction

2

Kogito

3

Current State (Orchestration)

4

Serverless Workflow

5

Kogito + Serverless Workflow

6

Demo

Current Architectures

Serverless

Microservices

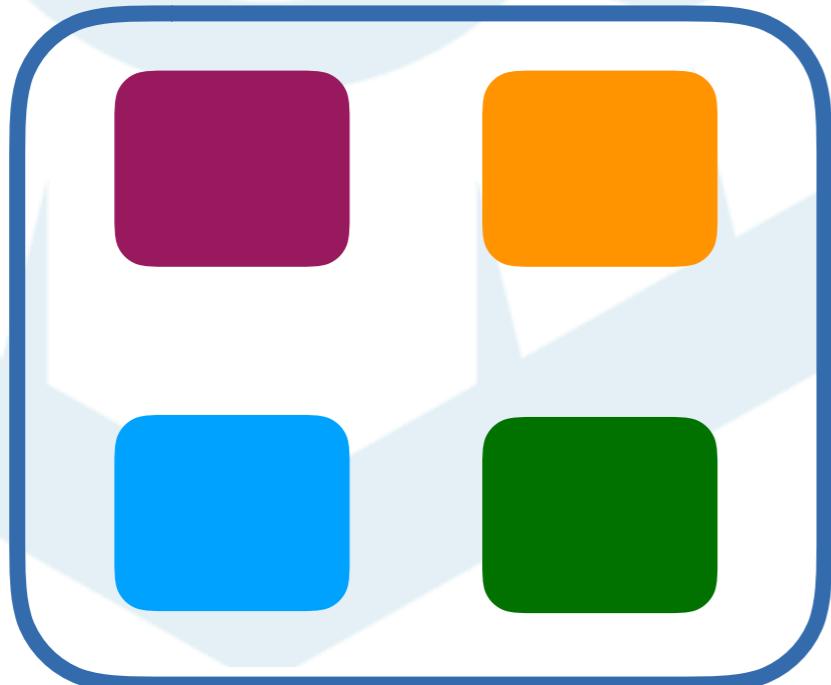
Scalable **Cloud**
Polyglot

Loosely coupled

Event-driven
Isolation

Focus on business

Monolith



Platform B

1

Introduction

Current Architectures

From



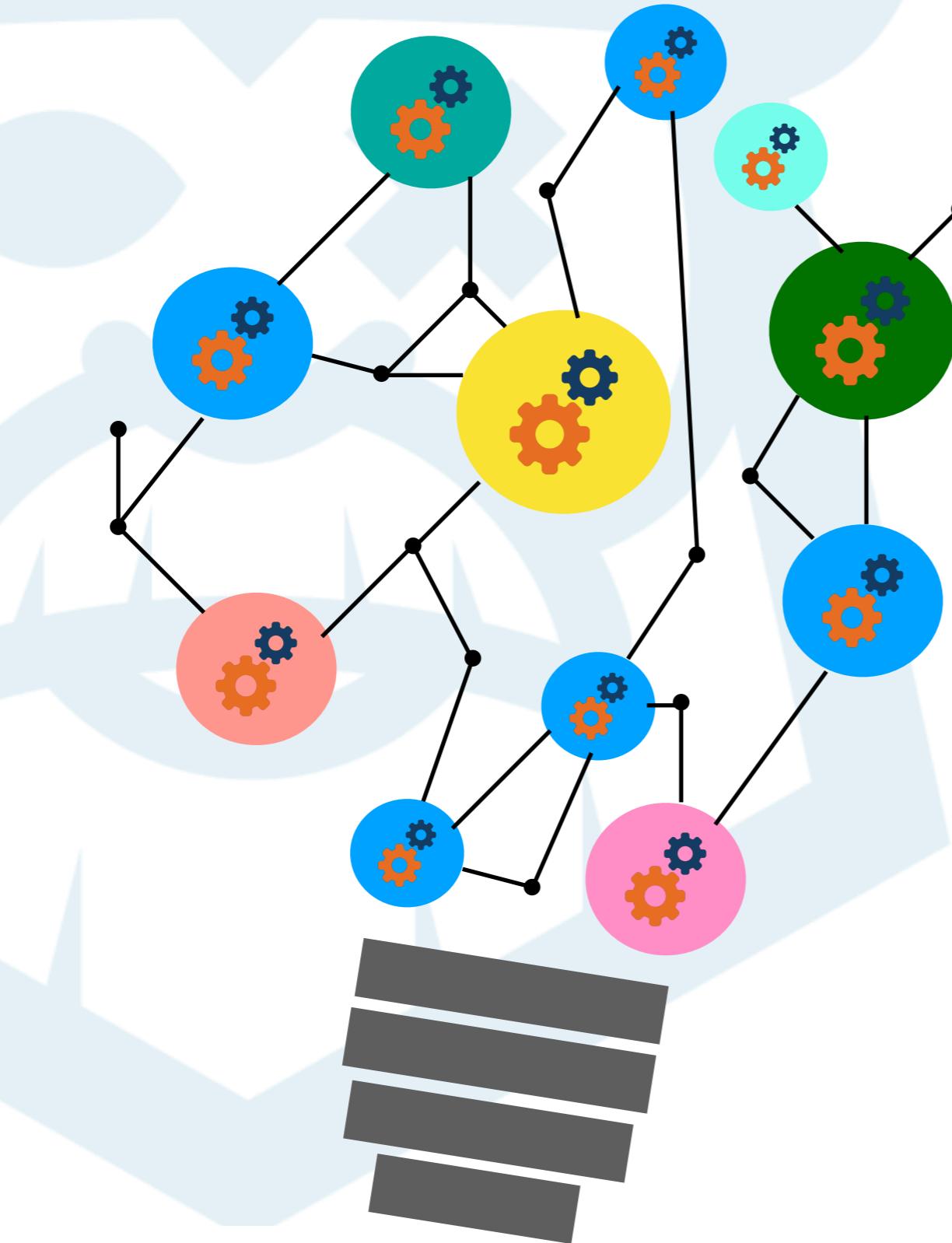
To



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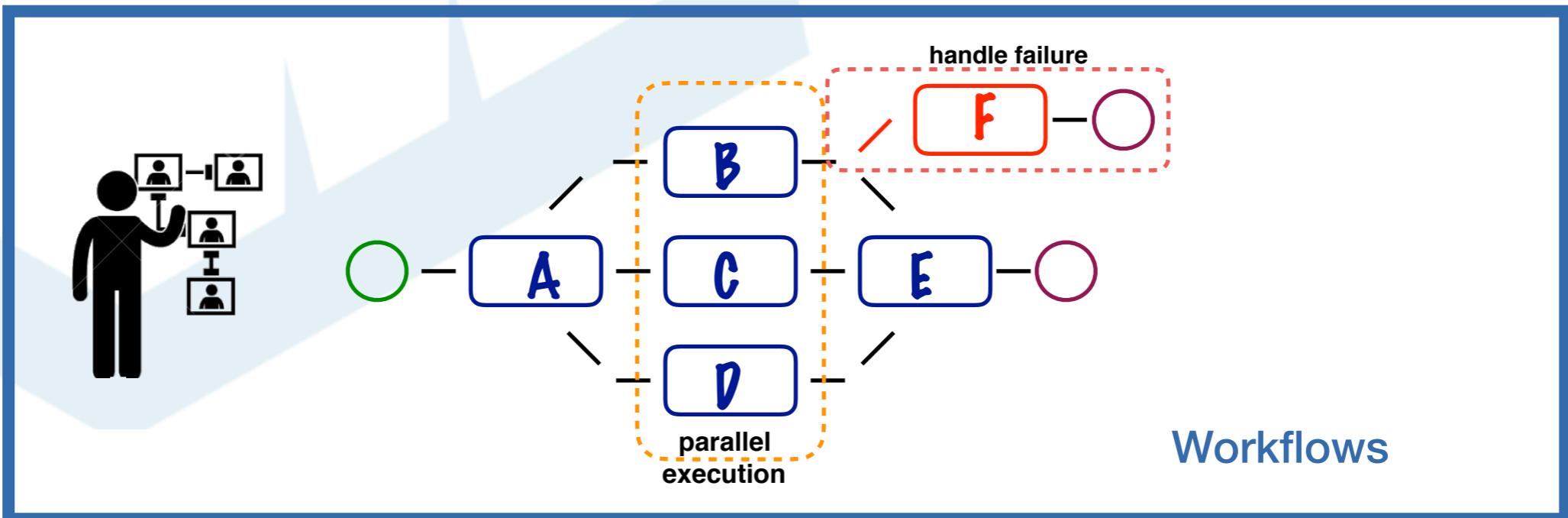
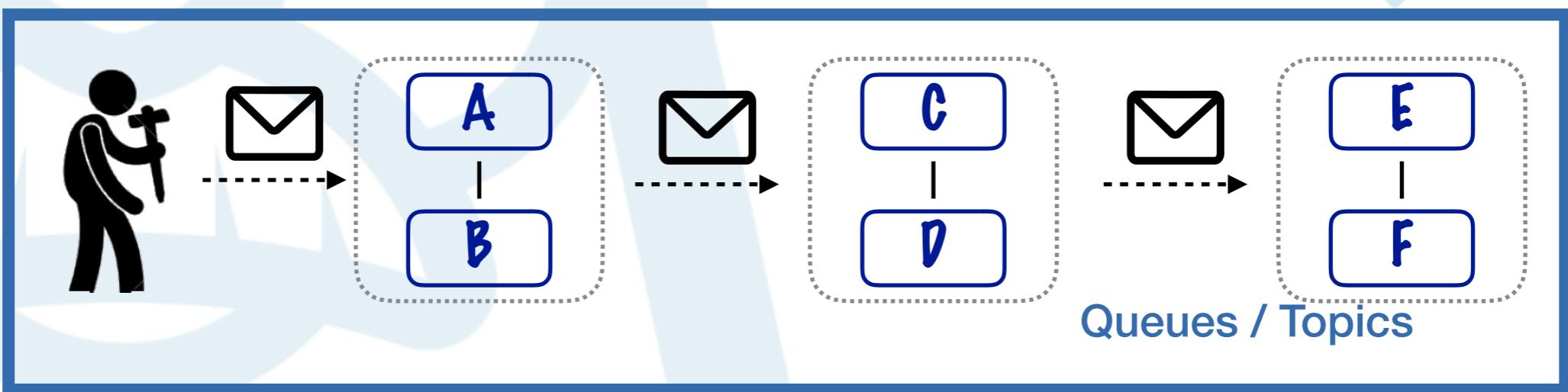
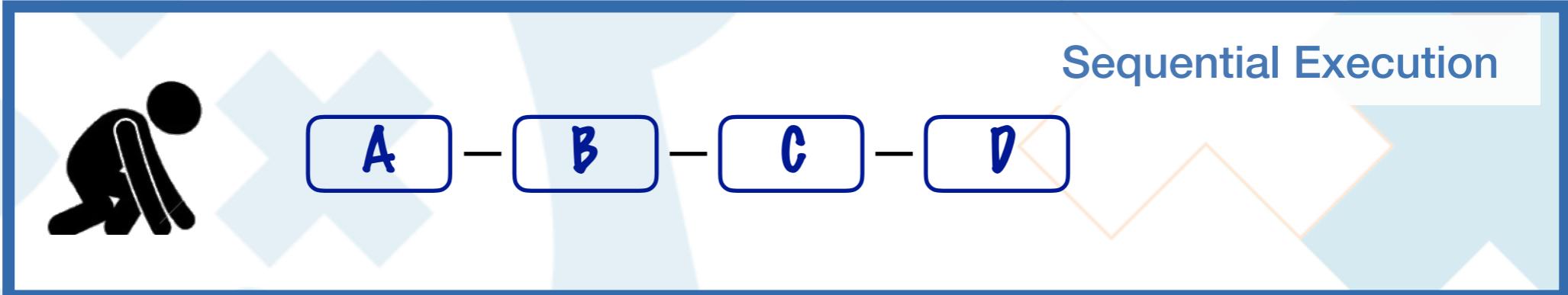
Introduction

Seeing the big picture



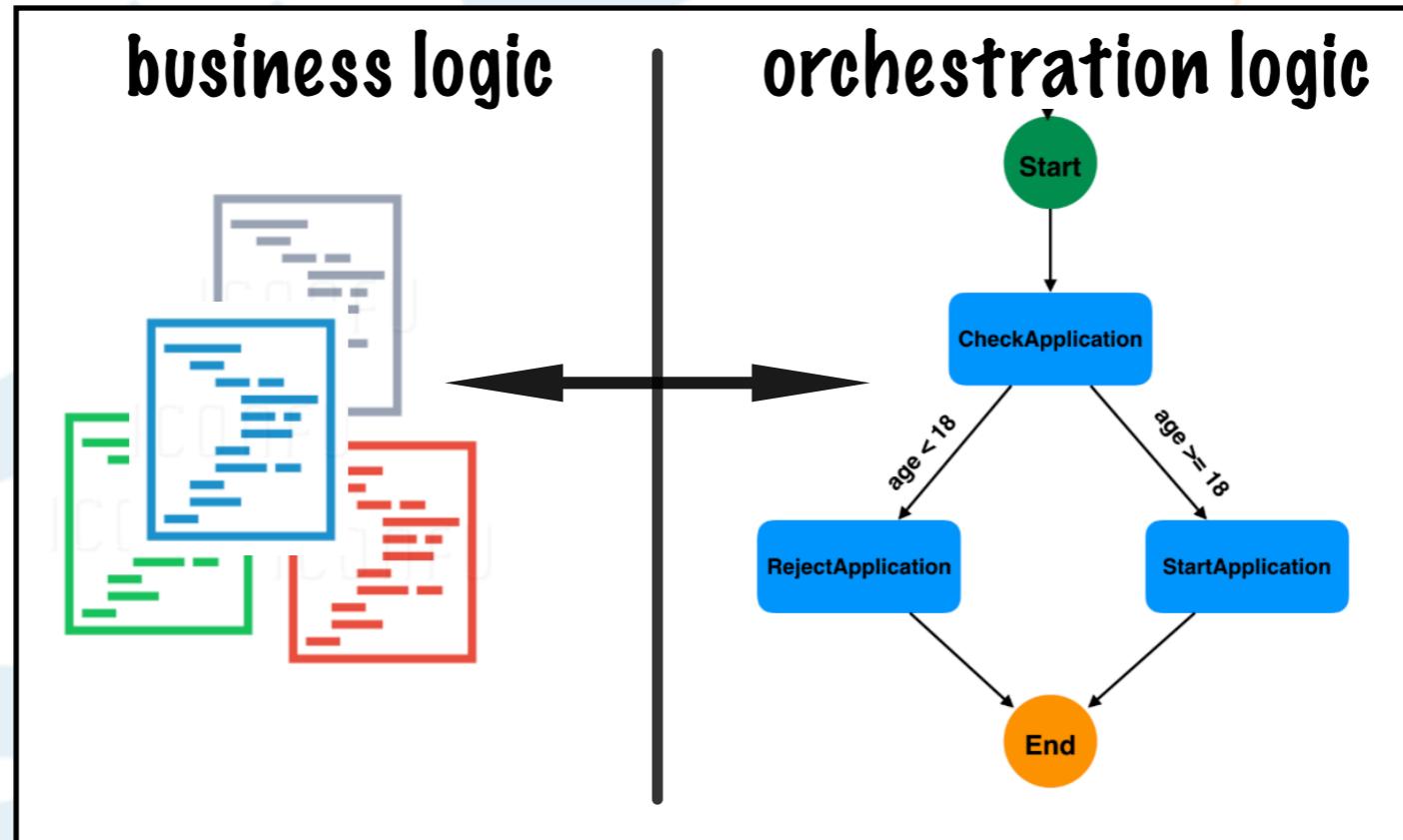
“Knowledge /
Domain
is
Everything”

Service Orchestration



Why Workflows?

Separation Of Concerns

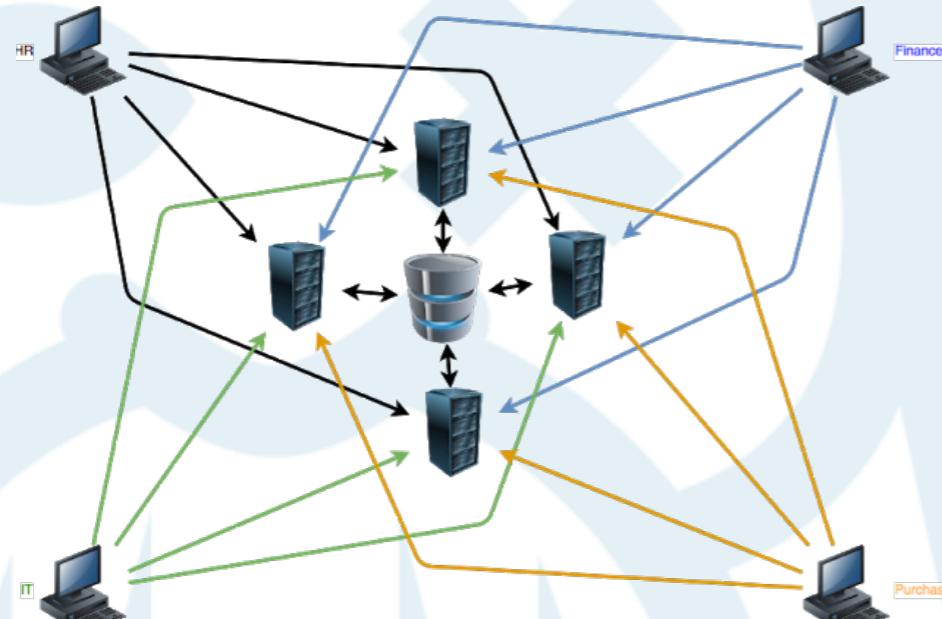


Business Domain Driven

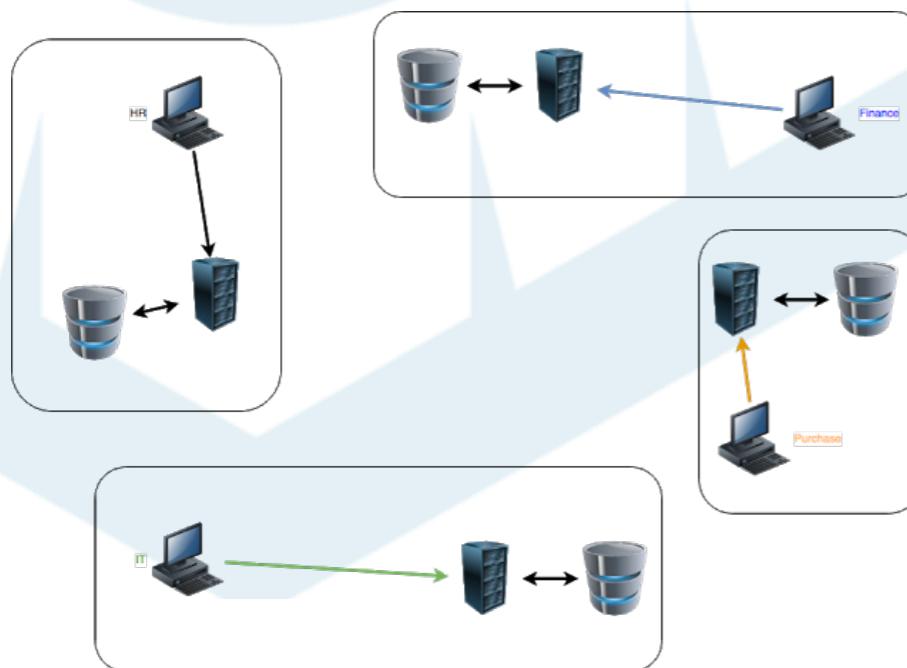


Why not "traditional" BPM Solutions?

Traditional BPM



Modern BPM



Big product suites
Difficult to maintain
Difficult to scale
Tightly Coupled

Decoupled
Scalable
Polyglot
Cloud-native

*"Still provide
value to
the
business"*

Cloud-native Business Automation

Kogito

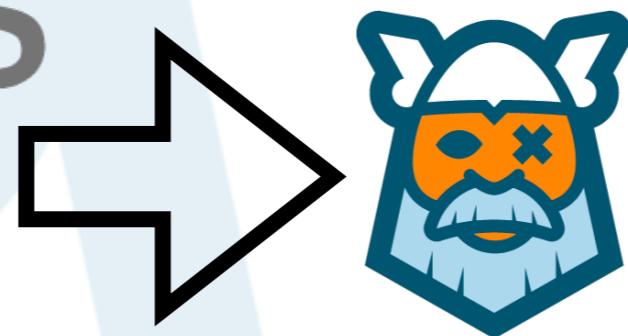


“Battle tested”

“Mature”

“Based on standards”

“Open Source”



Kogito

“Event-driven”

“Cloud-native”

“Based on standards”

“Open Source”

2

Cloud-native Business Automation

Kogito



DRL



BPMN



DMN



Custom

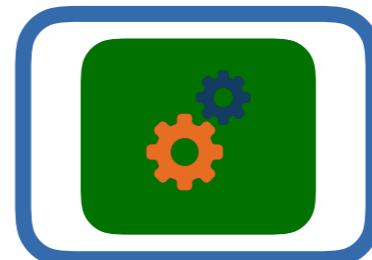


Kogito

Code Gen

Optimization

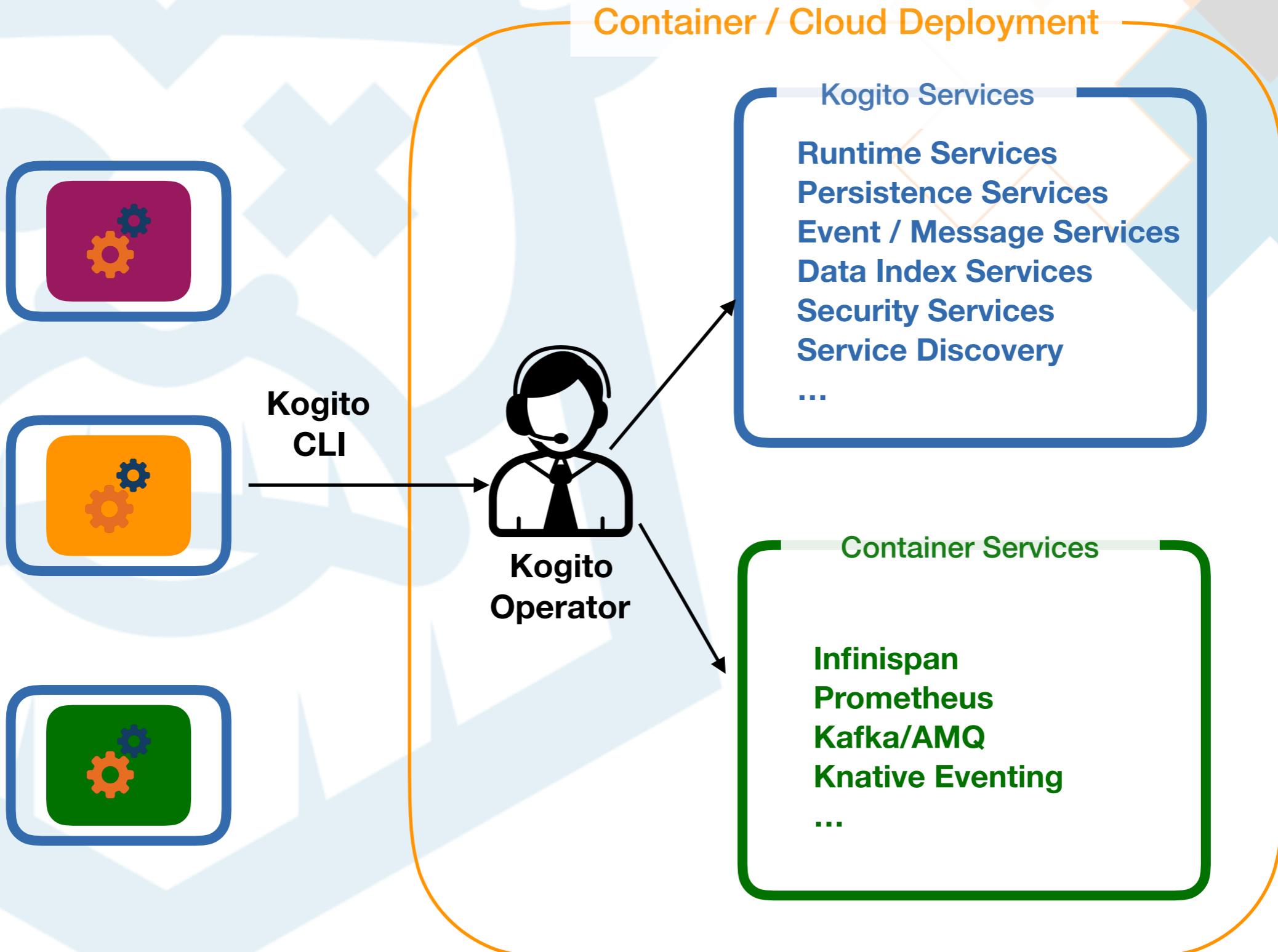
Domain-specific Microservices



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Kogito CLI and Operator



Deployment +
On-demand Provisioning and Scaling

What about Orchestration?

First Idea: “Just use BPMN”...failed:

- * Orchestration has much smaller scale
- * Needs to be embeddable
- * Needs to be machine / human readable
- * Should have clear, “serverless” constructs / patterns

So we went out looking and found...a ton of stuff :)

3

Current state

Serverless Orchestration - current state



AWS



Apache Airflow



Fn Flow



Flow



argo
Workflow

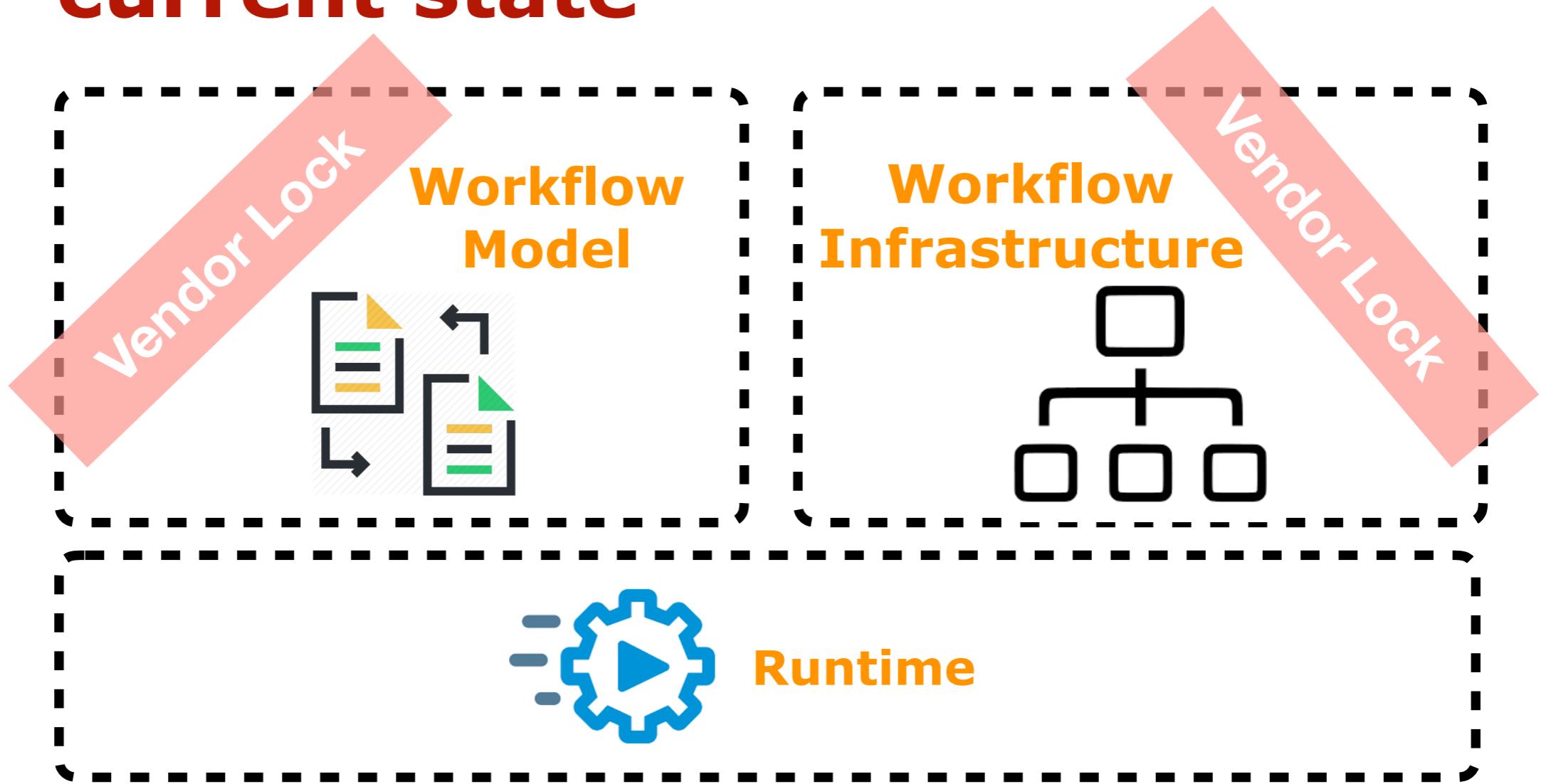


Cloud
Workflow

...

Serverless Orchestration

- current state



We need a portable and
vendor-neutral
specification!

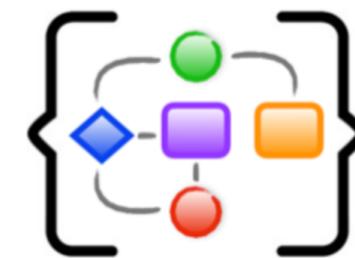
3

current state

Serverless Orchestration

- current state

But then

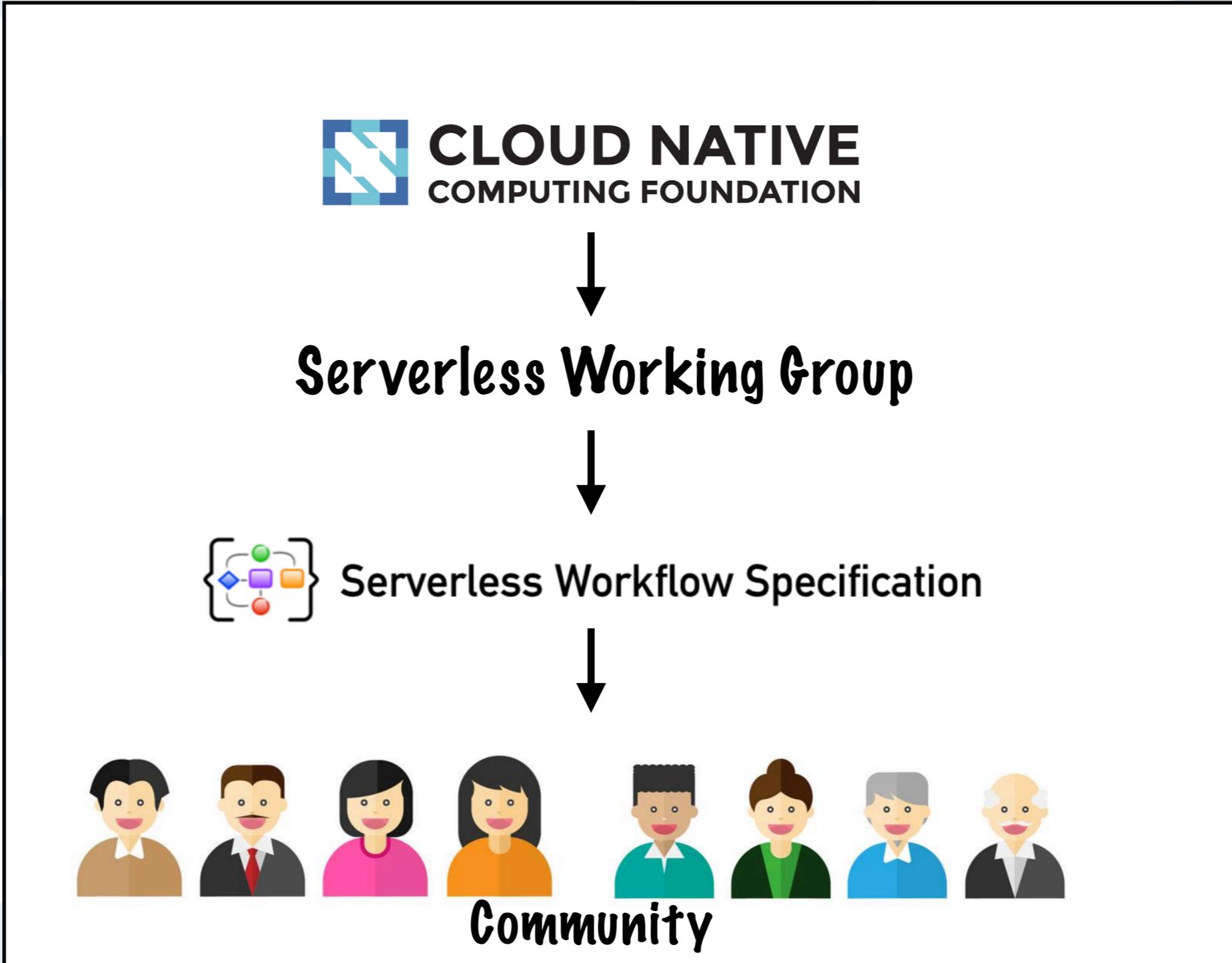


**Serverless
Workflow**



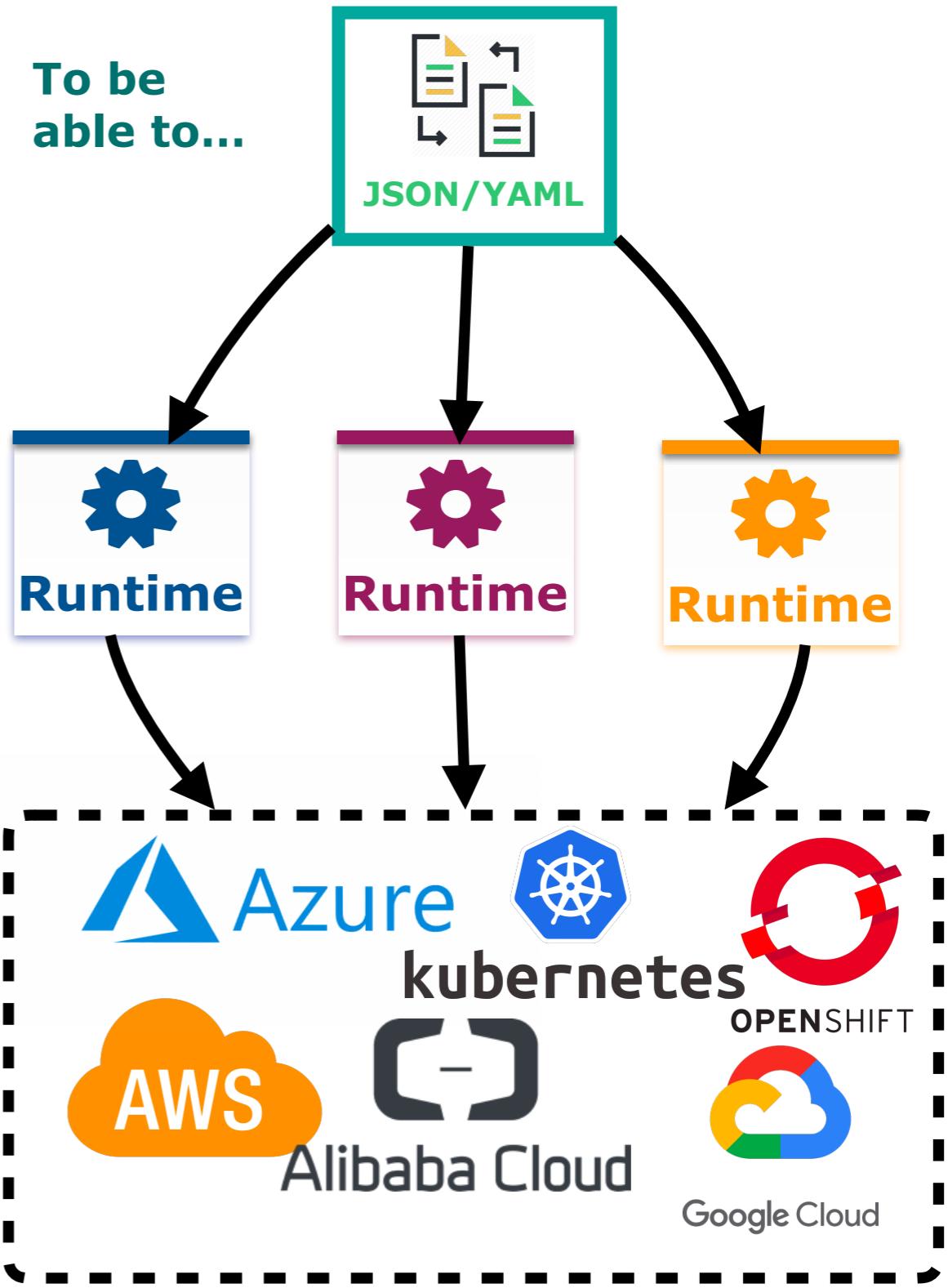
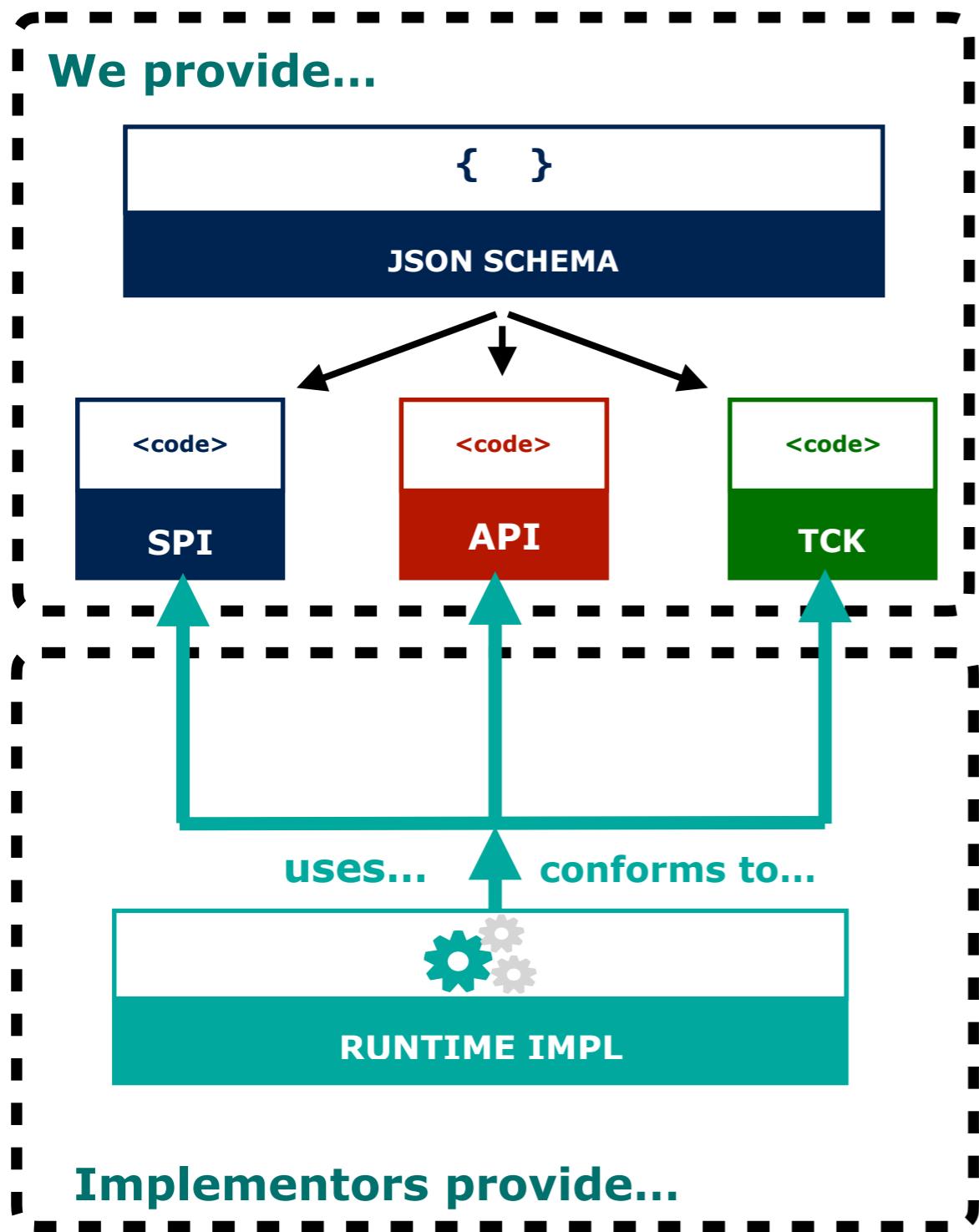
Wild Specification
appeared!

Serverless Workflow Spec

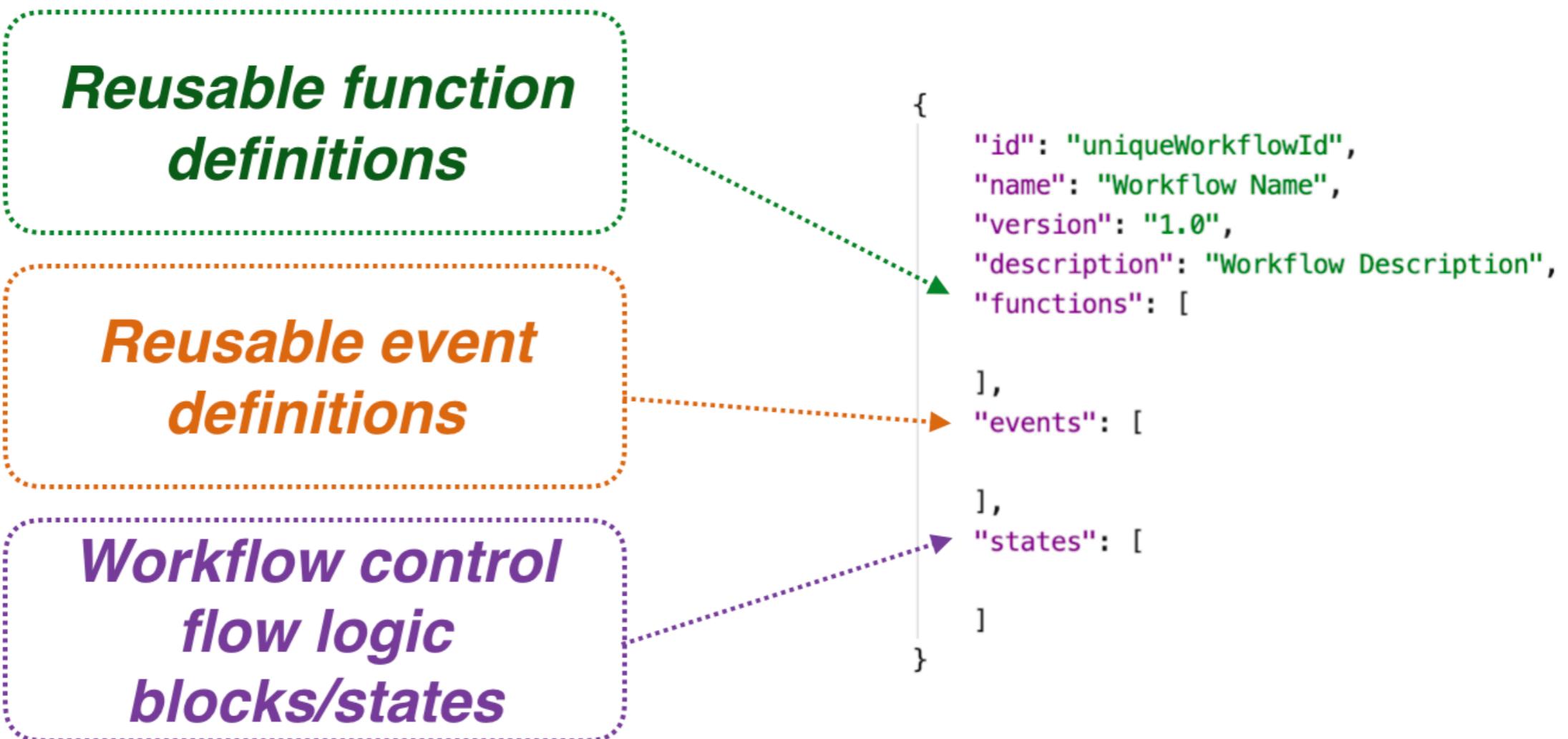


<https://github.com/cncf/wg-serverless/tree/master/workflow/spec>

Specification Goals



Serverless Workflow - Model



Serverless Workflow - Function Def

```
"functions": [  
    {  
        "name": "HelloWorldFunction",  
        "resource": "arn:aws:lambda:us-east-1:123456789012:function:lambda-hello-world"  
    },  
    {  
        "name": "HelloWorldFunction2",  
        "resource": "myhellofunctionapp.azurewebsite.net/api/hellofunction",  
        "type": "GET"  
    },  
    {  
        "name": "HelloWorldFunction3",  
        "resource": " https://openshift.redhat.com:8443/oapi/v1/sayhello",  
        "type": "REST",  
        "metadata": {  
            "Authorization: Bearer": "$.token"  
        }  
    }  
]
```

Serverless Workflow - Event Def

```
"events": [  
    {  
        "name": "ApplicationSubmitted",  
        "type": "org.application.submitted",  
        "source": "applicationsource",  
        "correlationToken": "applicantId"  
    },  
    {  
        "name": "SATScoresReceived",  
        "type": "org.application.satscores",  
        "source": "applicationsource",  
        "correlationToken": "applicantId"  
    },  
    {  
        "name": "RecommendationLetterReceived",  
        "type": "org.application.recommendationLetter",  
        "source": "applicationsource",  
        "correlationToken": "applicantId"  
    }  
]
```



CloudEvent

```
{  
    "specversion": "1.0",  
    "type": "org.application.satscores",  
    "source": "applicationsource",  
    "subject": "Received SAT Score",  
    "id": "A234-1234-1234",  
    "time": "2020-01-05T17:31:00Z",  
    "applicantId": "STUDENT-12345",  
    "data": {  
        "score": "1600"  
    }  
}
```



Serverless Workflow - State Def

```
{  
  "name": "MyState",  
  "type": "STATE_TYPE",  
  "start": {  
    "kind": "DEFAULT"  
  }  
  ... type specific params ...  
  
  "end": {  
    "kind": "EVENT",  
    "produceEvent": {  
      "nameRef": "myEventName",  
      "data": "$.person.name"  
    }  
  },  
  ... or,  
  "transition": {  
    "nextState": "MyNextState"  
  }  
}
```

Unique Name

Defined Type

Can be start state

Can be end state

I
or
I

Can Transition

Serverless Workflow - State Types

Name	Description	Consumes events?	Produces events?	Executes actions?	Handles errors?	Allows parallel
<u>Event</u>	Define events that trigger action	yes	yes	yes	yes (includes)	yes
<u>Operation</u>	Execute one or more actions	no	yes	yes	yes (includes)	yes
<u>Switch</u>	Define data-based workflow transitions	no	yes	no	yes	no
<u>Delay</u>	Delay workflow execution	no	yes	no	yes	no
<u>Parallel</u>	Causes parallel execution of branches	no	yes	no	yes (includes)	yes
<u>SubFlow</u>	Represents the invocation of another	no	yes	no	yes	no
<u>Relay</u>	Relay state data input to output	no	yes	no	yes	no
<u>ForEach</u>	Parallel execution of states for each	no	yes	no	yes (includes)	yes
<u>Callback</u>	Manual decision step. Executes a function	yes	yes	yes (including)	yes	no

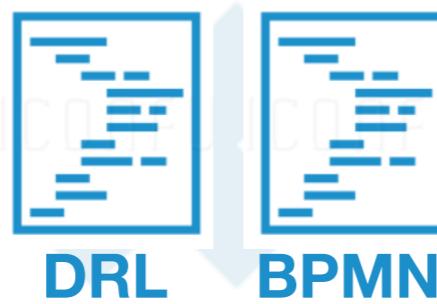
Serverless Workflow - Get Involved!

Group Info	CNCF Serverless WG - Workflow Sub-Group
Communication	Monthly zoom calls - first Monday every month @10-11 PT https://docs.google.com/document/d/1xwcsWQmMiRN24a7o7oy9MstzMroAup31oOkM5Dru1jQ/edit#heading=h.g2rizfze8av2
GitHub Info	https://github.com/cncf/wg-serverless/tree/master/workflow Version 0.1 release: https://github.com/cncf/wg-serverless/tree/v0.1/workflow/spec
Governance	Consensus and Community-driven Current Owners: Red Hat, Nokia, Camunda, Huawei
License	Apache v2.0
Community	Mailing list: https://lists.cncf.io/g/cncf-wg-serverless Slack: #serverless-workflow Slack channel: https://slack.cncf.io/ Blog: https://serverlessworkflow.blogspot.com/
TOC Sponsors	Brendan Burns, Liz Rice

5

Kogito + Serverless Workflow

Kogito + Workflow

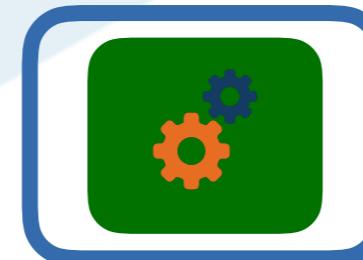


Kogito

Code Gen

Optimization

Domain-specific Microservices



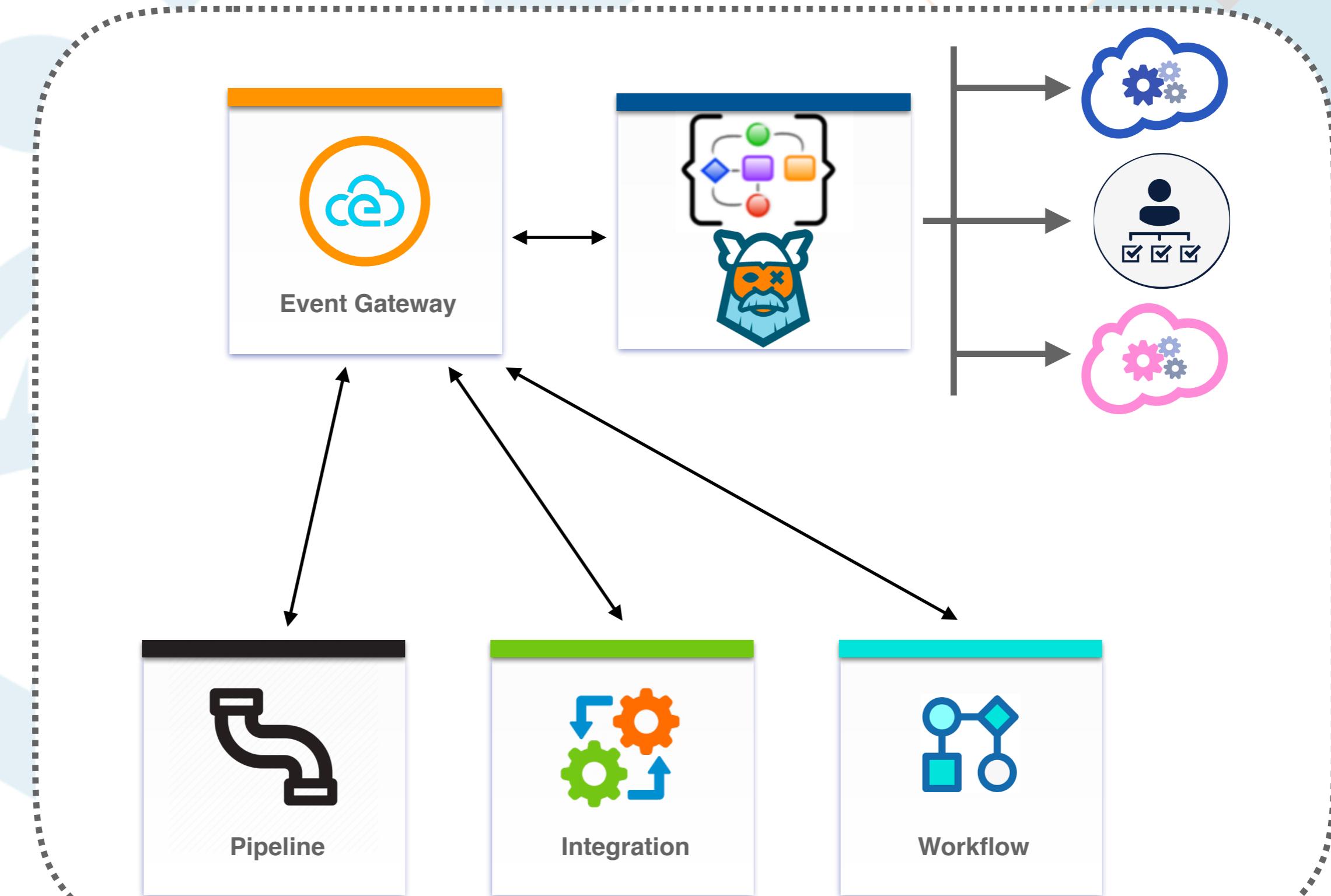
Domain-specific Orchestration



5

Kogito + Workflow

Kogito + Serverless Workflow



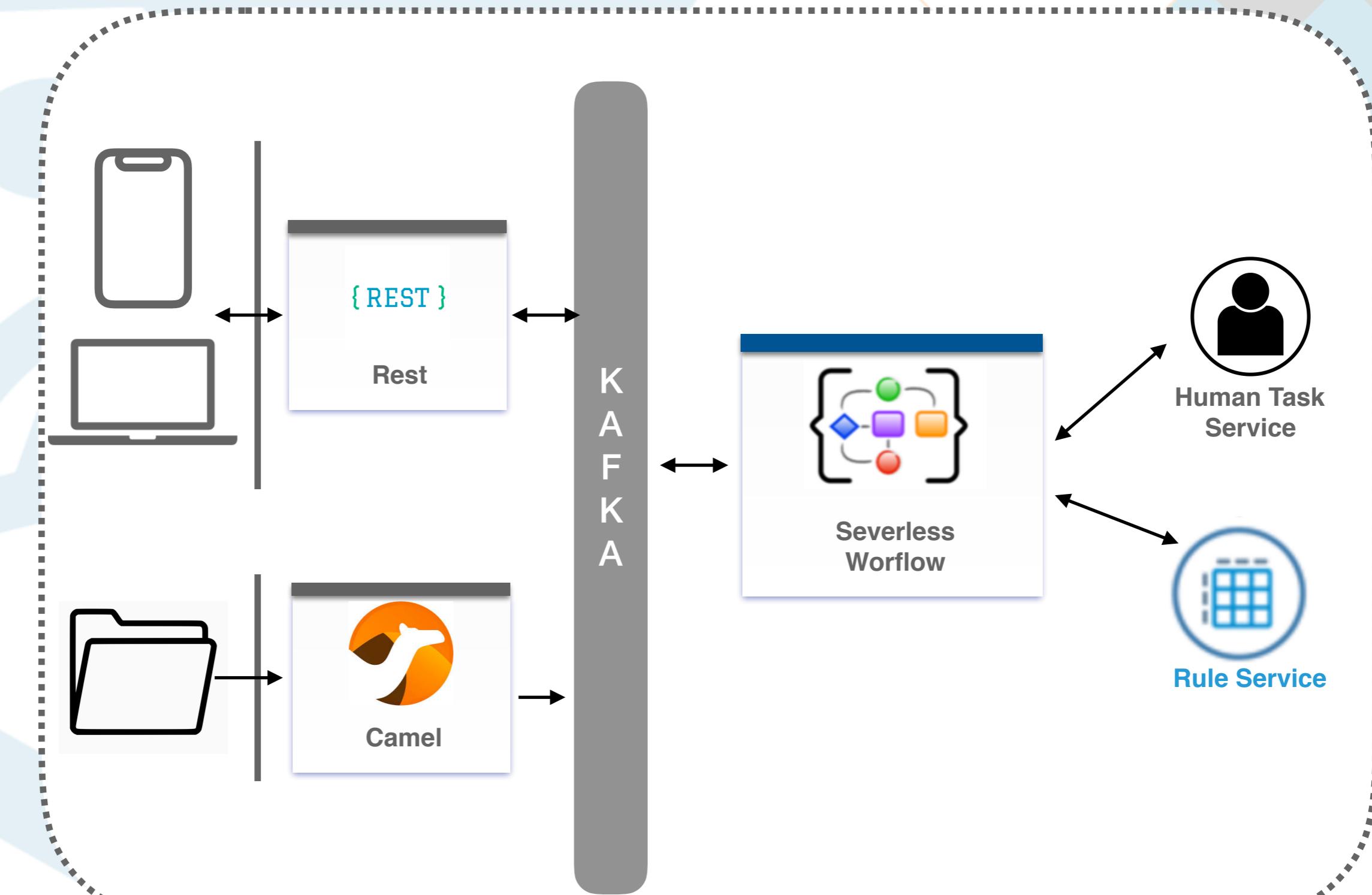


/tsurdilo/serverless-workflow-kogito-demo

6

Demo - New Order Approval

Demo



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