Coordinating Services in AWS

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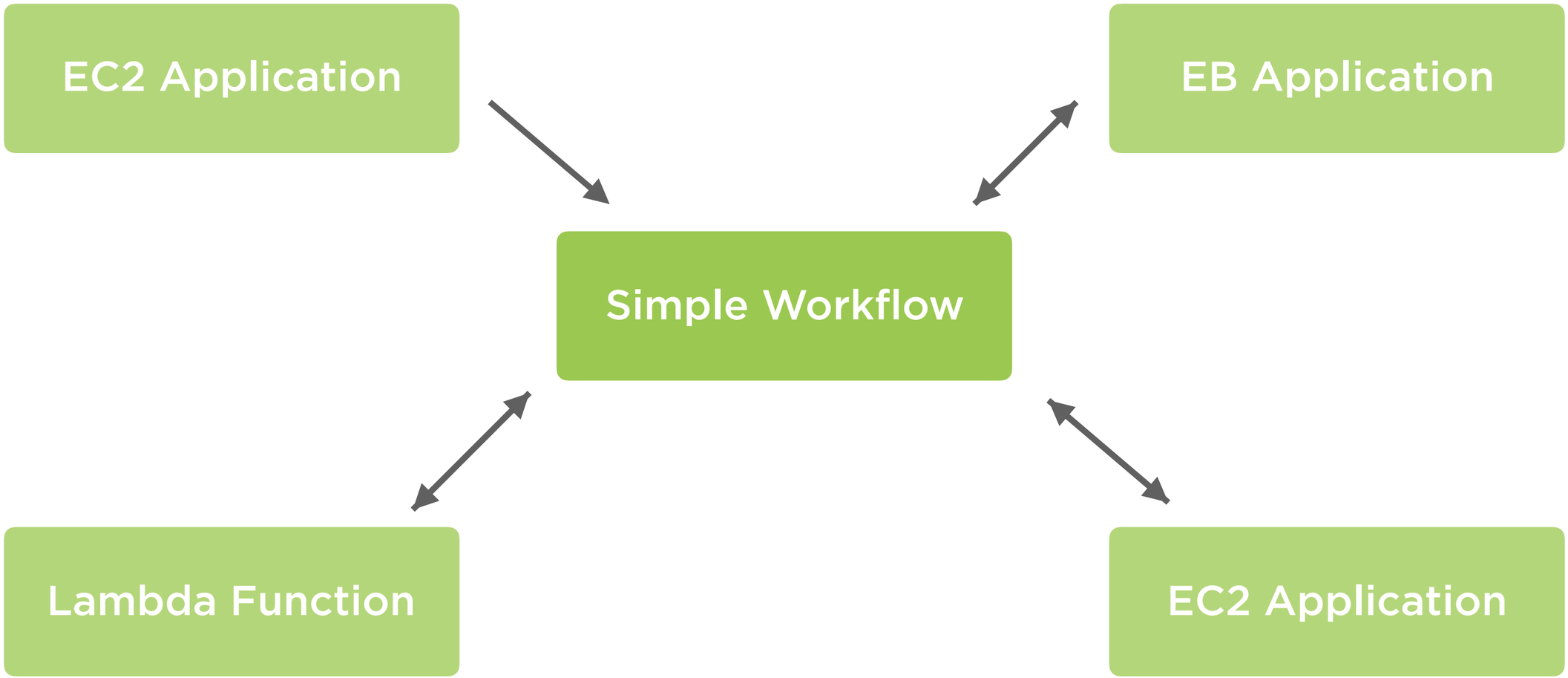

EC2 Application
EB Application
Simple Workflow
Lambda Function
EC2 Application

Overview

When is Simple Workflow the answer?

Workflows, deciders, and workers

Envision the complete flow

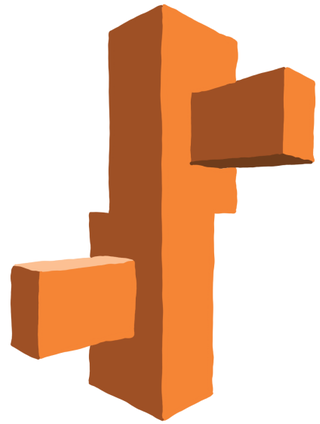
Cooking a workflow from scratch

How a workflow should behave

Understanding Simple Workflow

EC2

Virtual server hosting



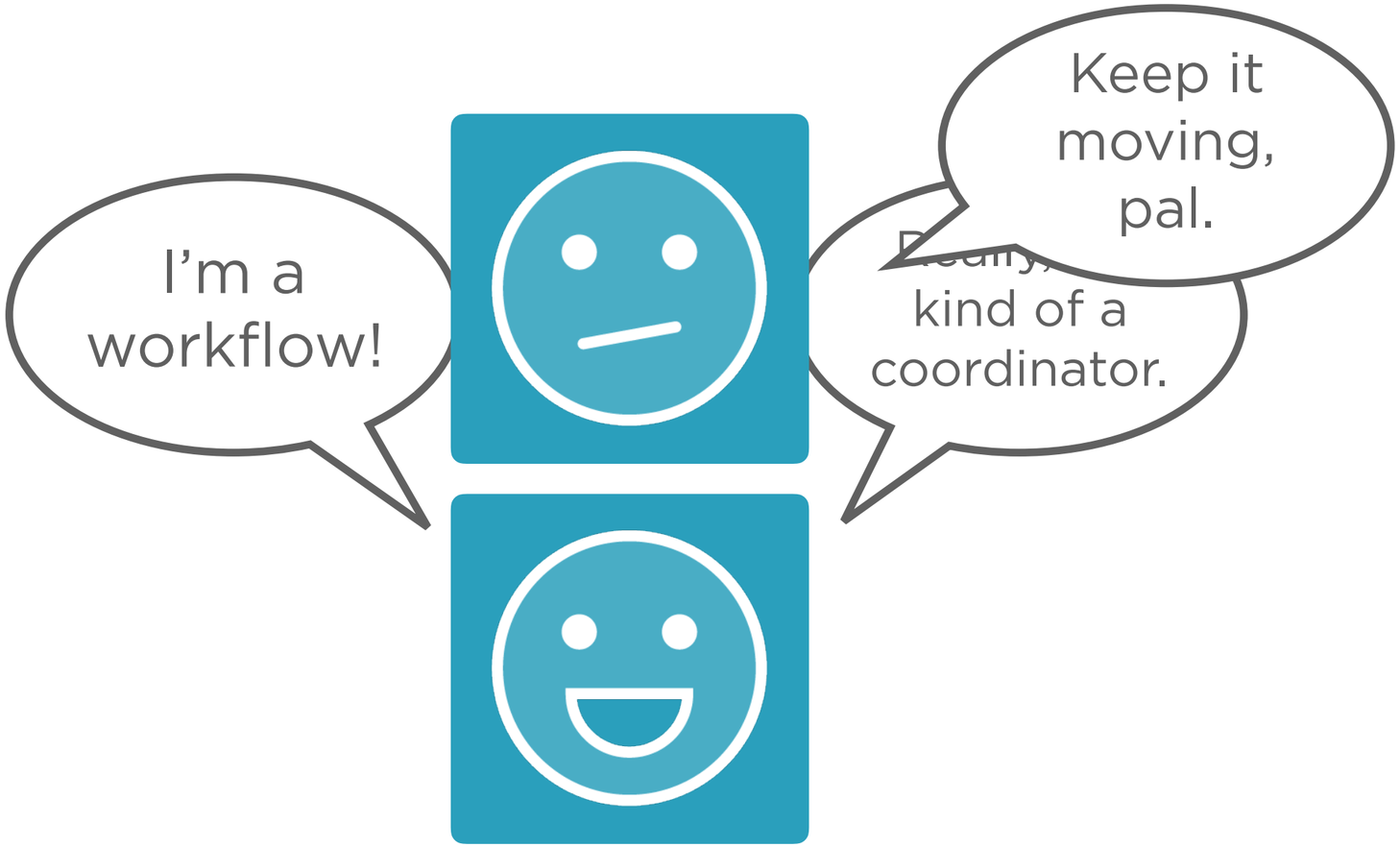
Elastic Beanstalk

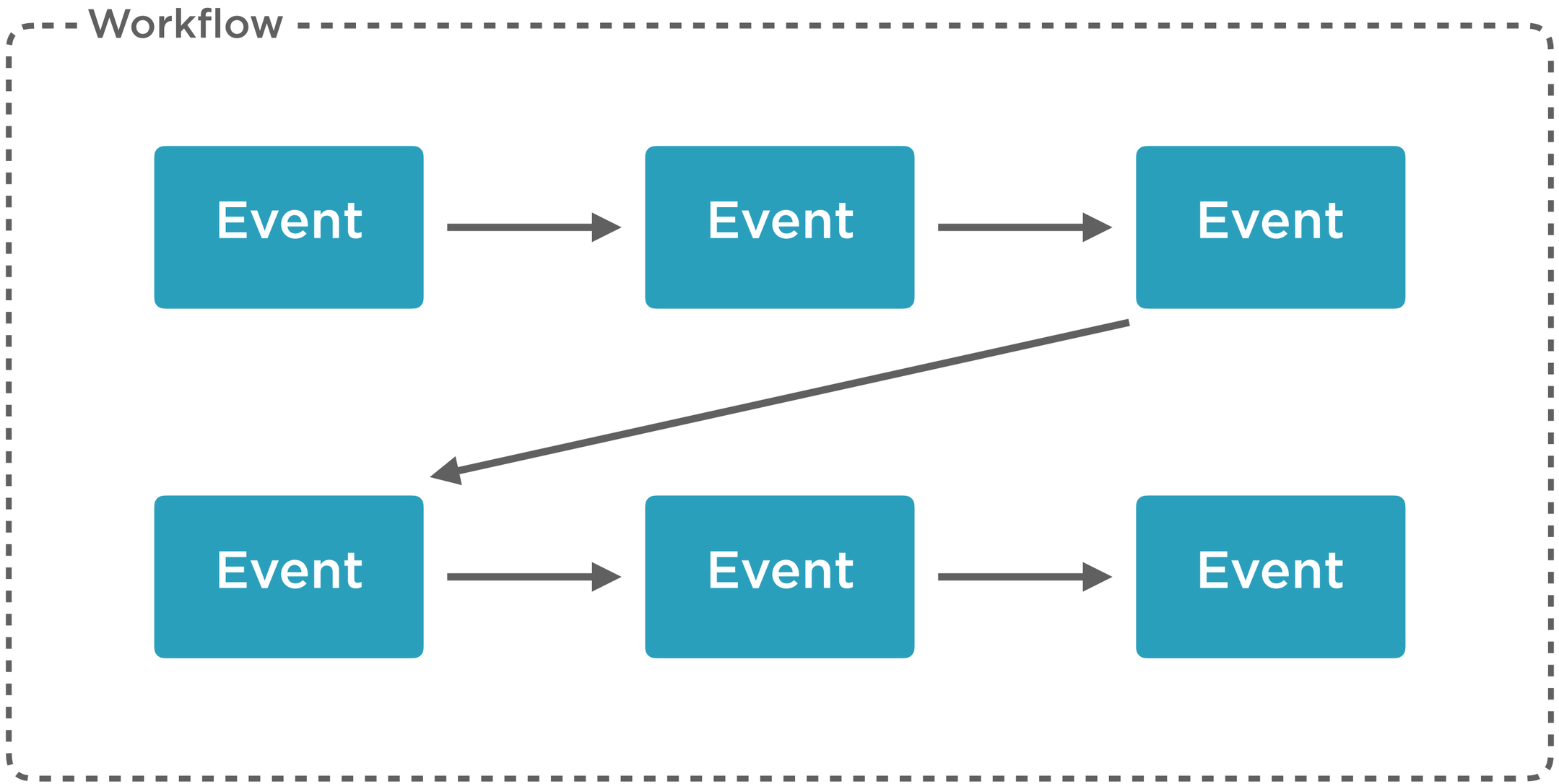
Simple application deployment

Simple Workflow

Service that acts as an intermediary coordinator to disparate services and applications. Exposes an interface to connect to.

Simple Workflow confusing?
Let’s break it down!


I’m a workflow!
Keep it moving, pal.
kind of a coordinator.


Workflow
Event
Event
Event
Event
Event
Event

WorkflowExecutionStarted

Event that starts the workflow

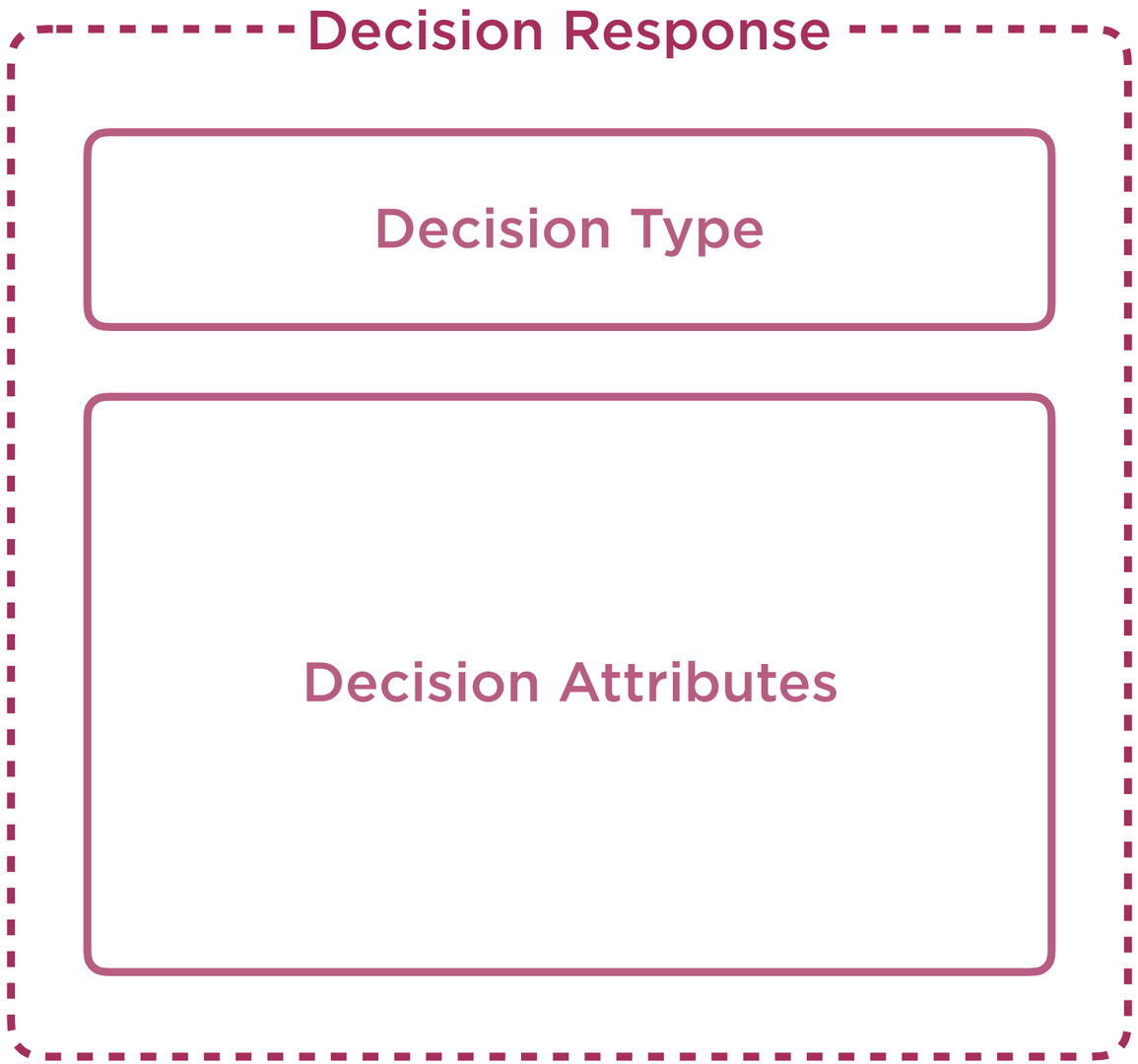
DecisionTaskScheduled

Event that indicates a decider
needs to make a decision

Task List

DecisionTaskCompleted

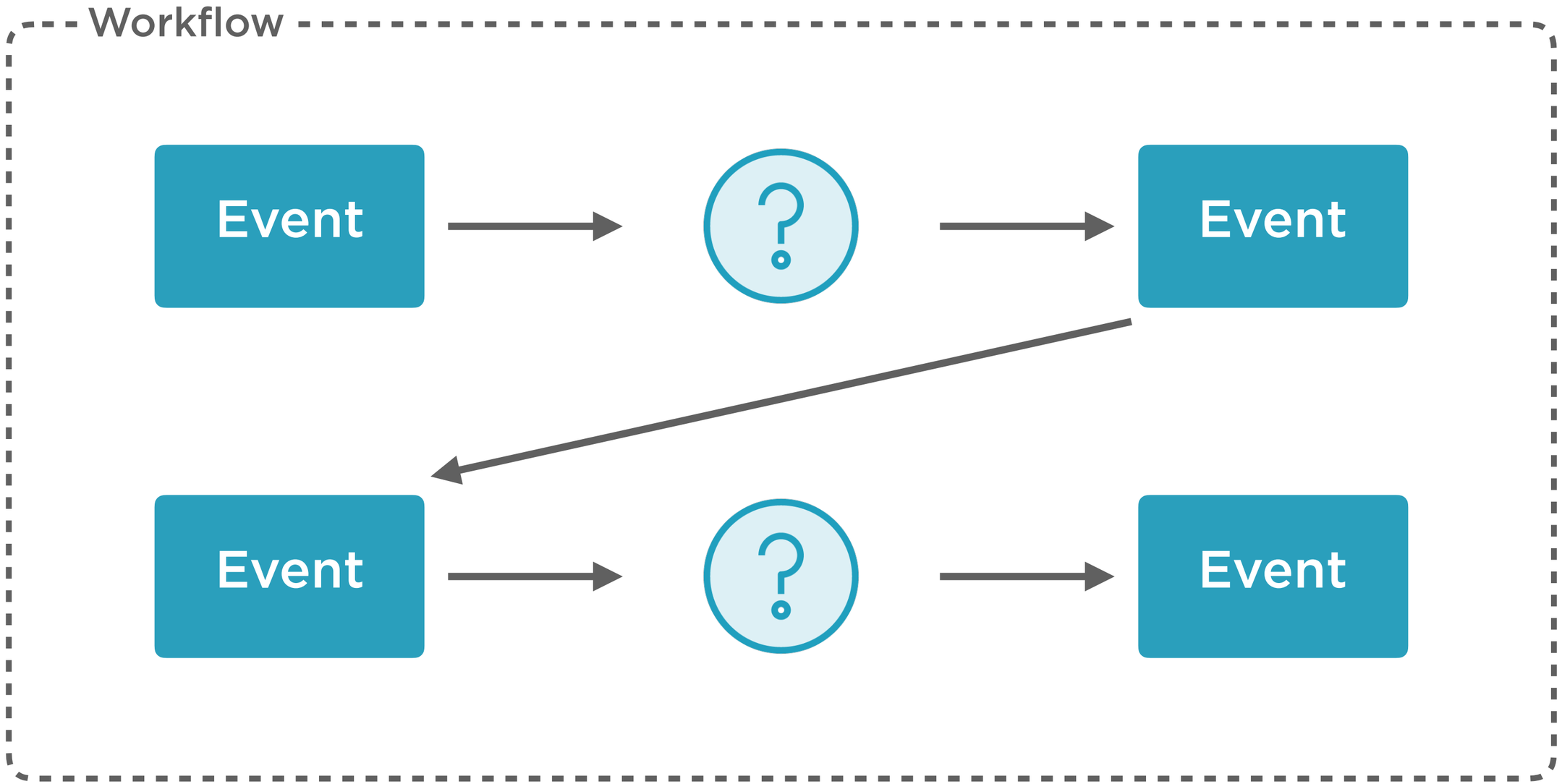
Event that indicates a decider
has responded with a decision


Decision Response
Decision Type
Decision Attributes

Activity Task Contents

Task List	Where to put the task
Activity Type	What type of task to run
Input	Input text for the task worker

Workflow


Workflow
Event
?
Event
Event
?
Event

Pros of Simple Workflow

Decouples workflow steps

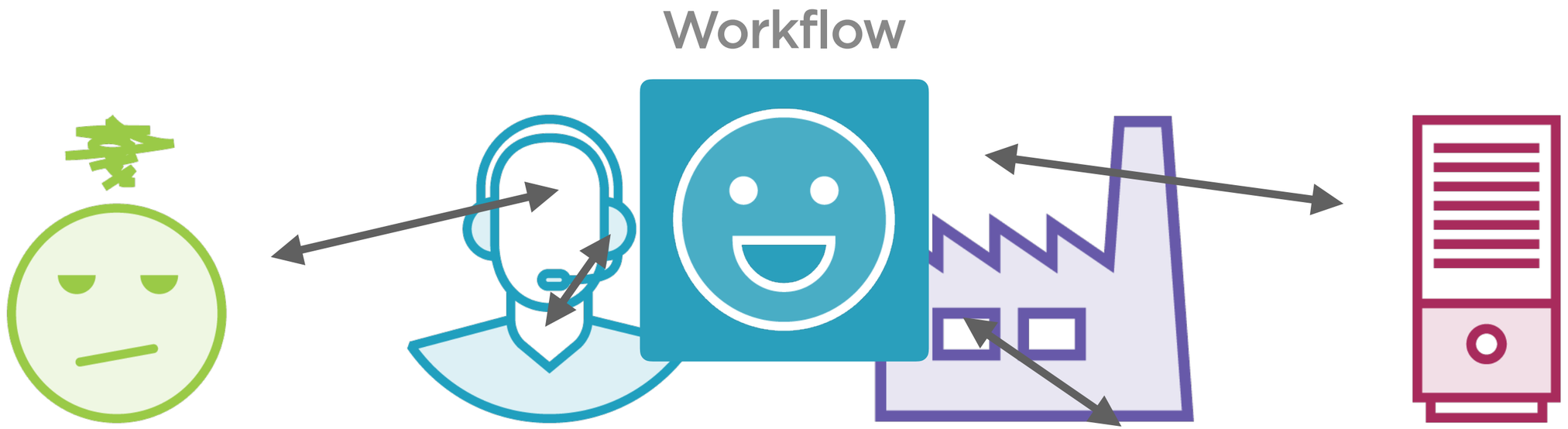
Handles failure and scaling

Works with almost anything

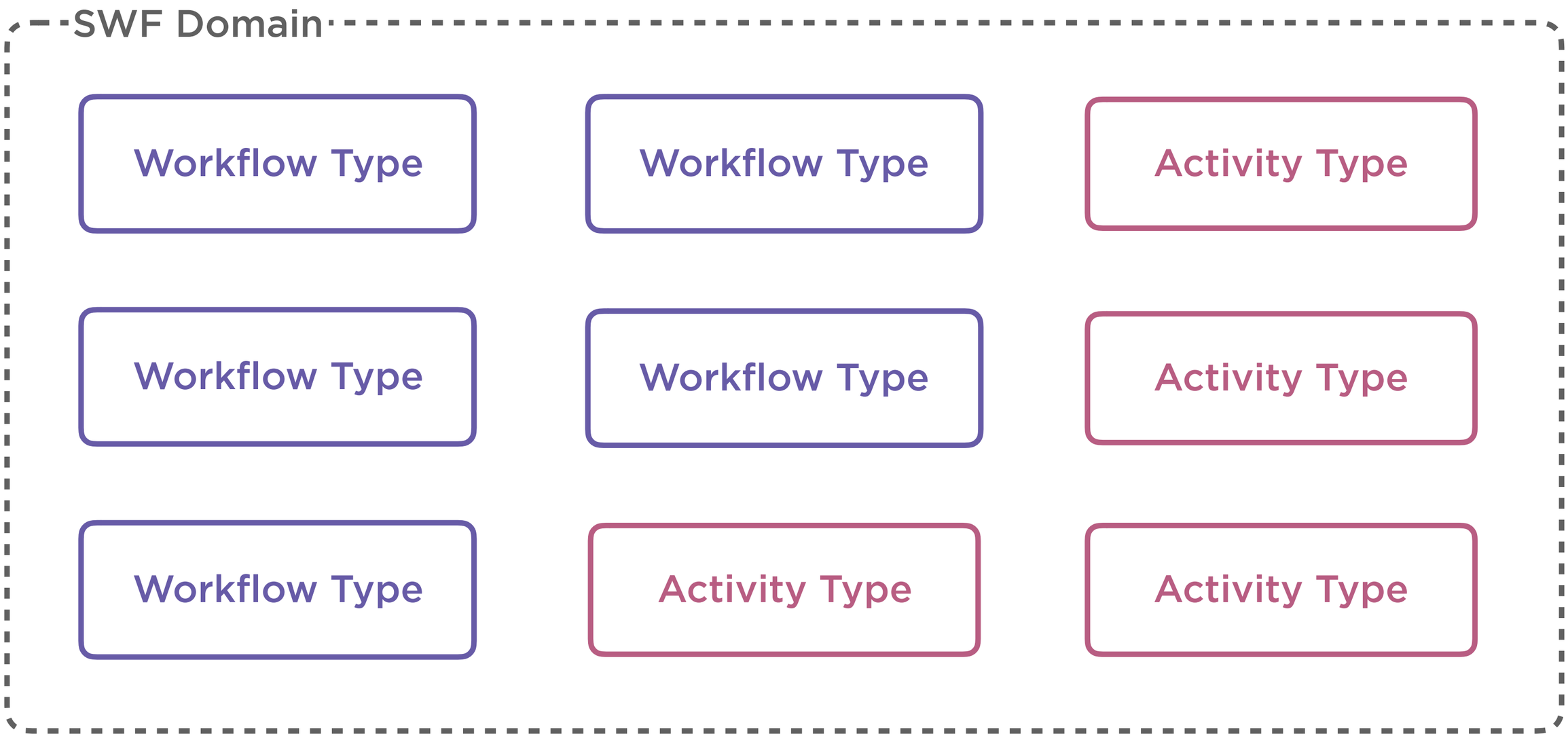
You can even use SWF when you have IRL task workers

SWF Use Case Example

Online Store Return Process



Workflows, Deciders, and Workers


SWF Domain
Workflow Type
Workflow Type
Activity Type
Workflow Type
Workflow Type
Activity Type
Workflow Type
Activity Type
Activity Type

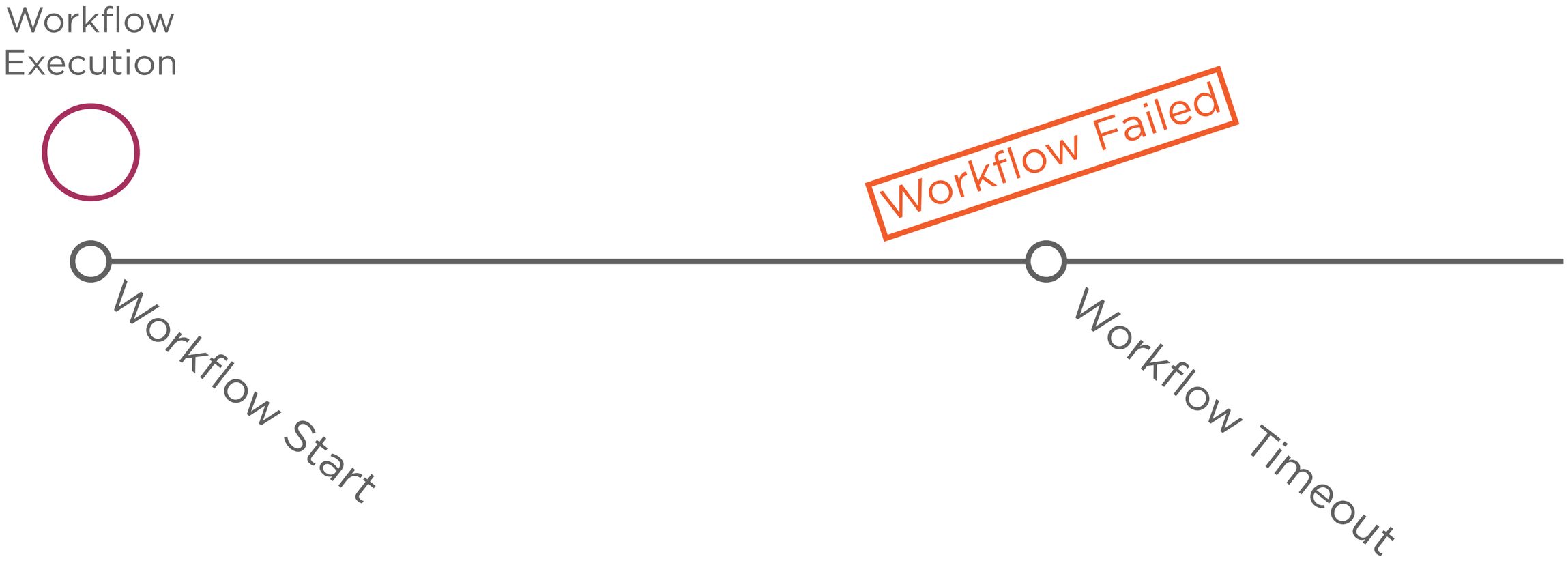
Workflow Properties

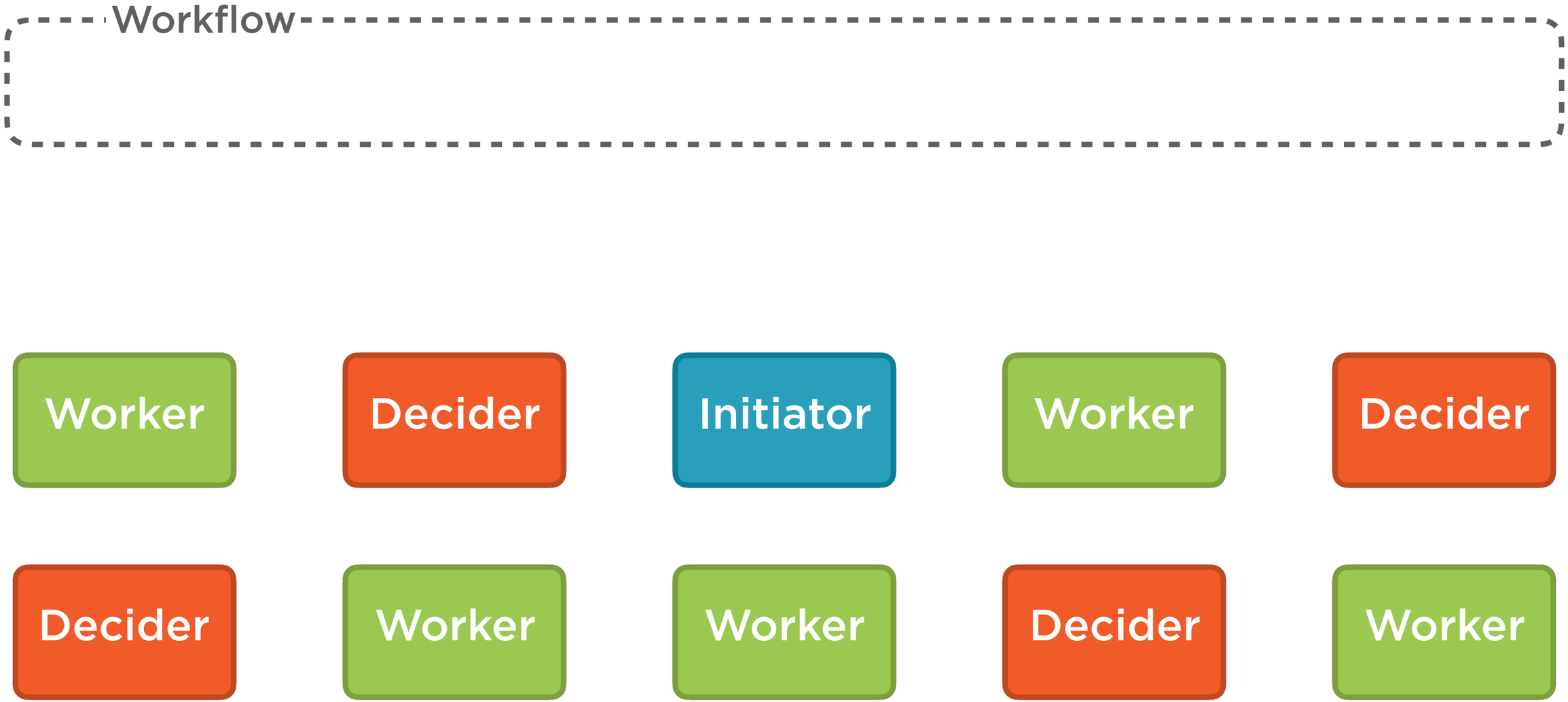
Name
Version
Default Task List
Timeouts

Most entities in SWF (workflow types, activity types) are versioned.

Workflow Properties

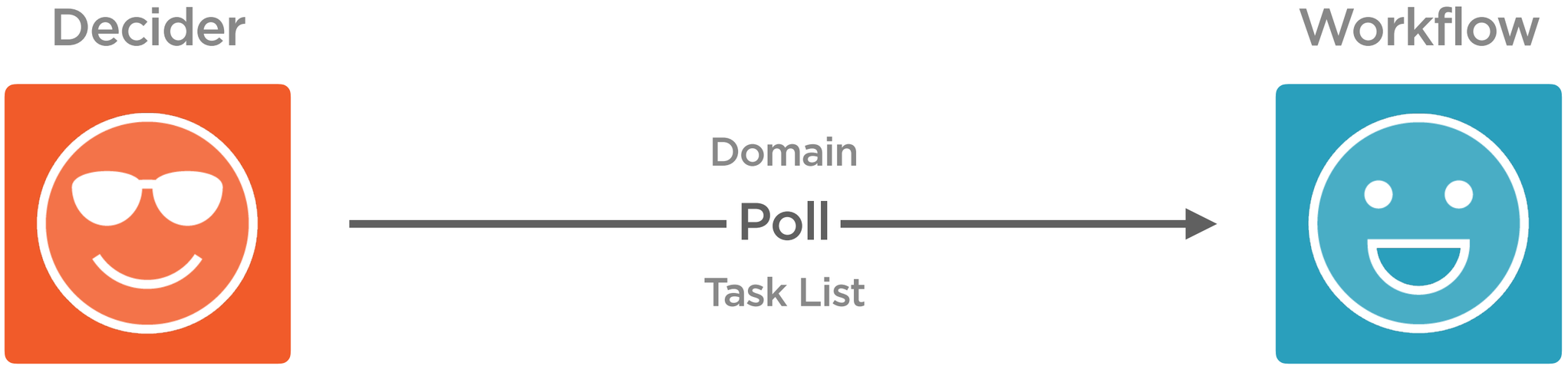
Name
Version
Default Task List *optional
Timeouts

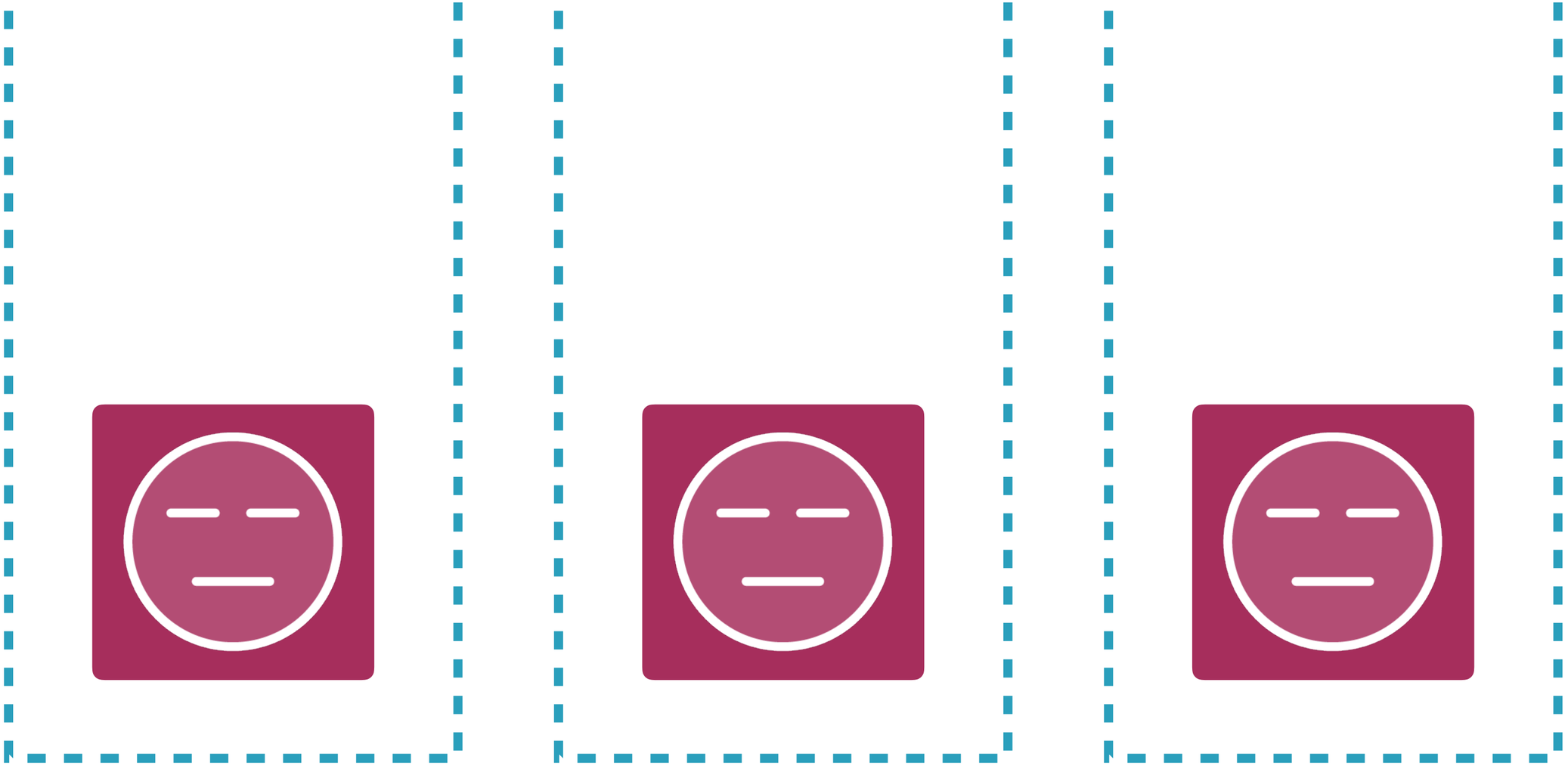

Workflow
Execution
Workflow Failed
Workflow Start
Workflow Timeout


Workflow
Worker
Decider
Initiator
Worker
Decider
Decider
Worker
Worker
Decider
Worker

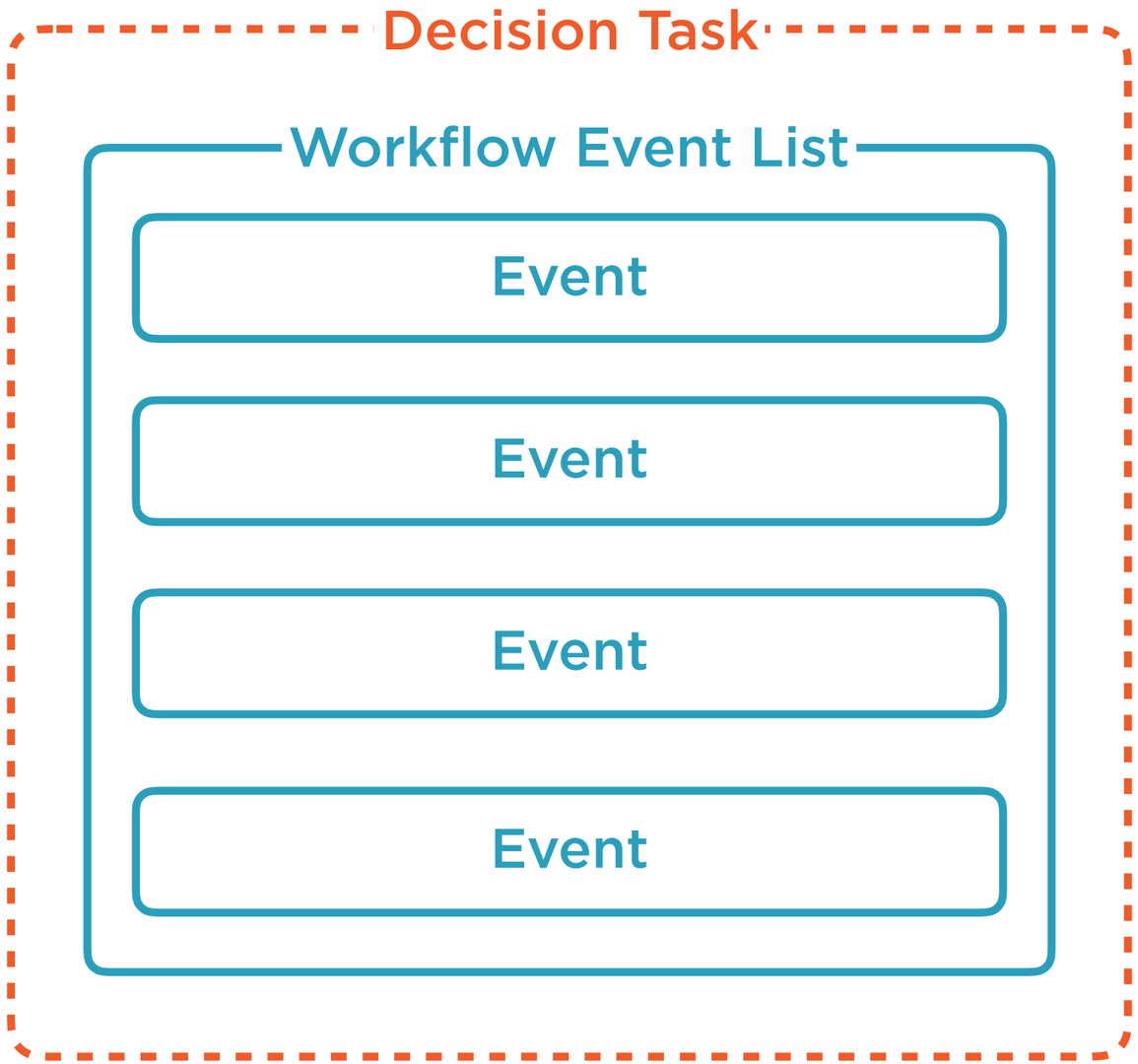
SWF Workflow API Functions

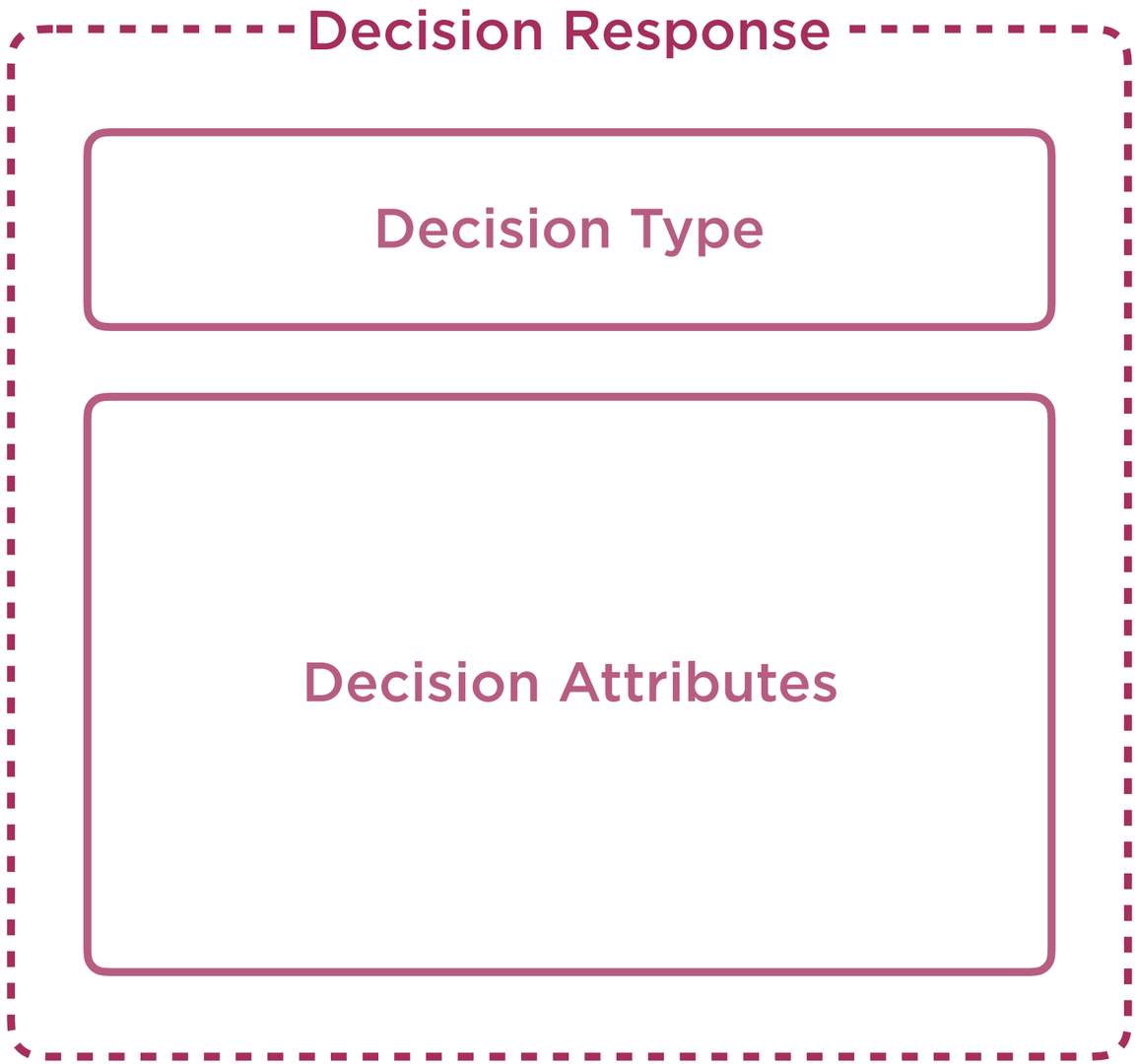
```
swf.startWorkflowExecution()

swf.pollForDecisionTask()

swf.respondDecisionTaskCompleted()

swf.pollForActivityTask()

swf.respondActivityTaskCompleted()
```

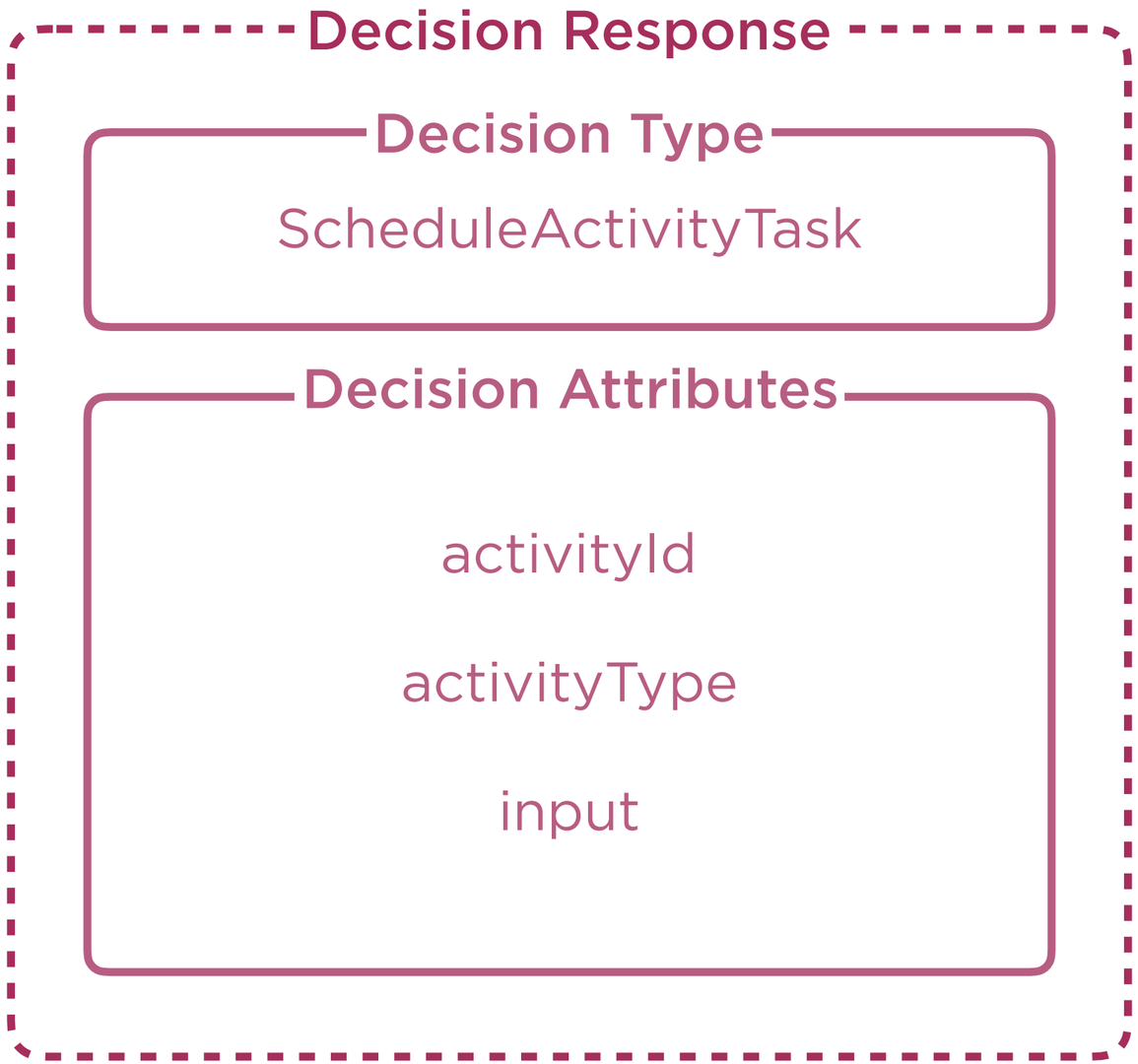

Decider
Workflow
Domain
Poll
Task List

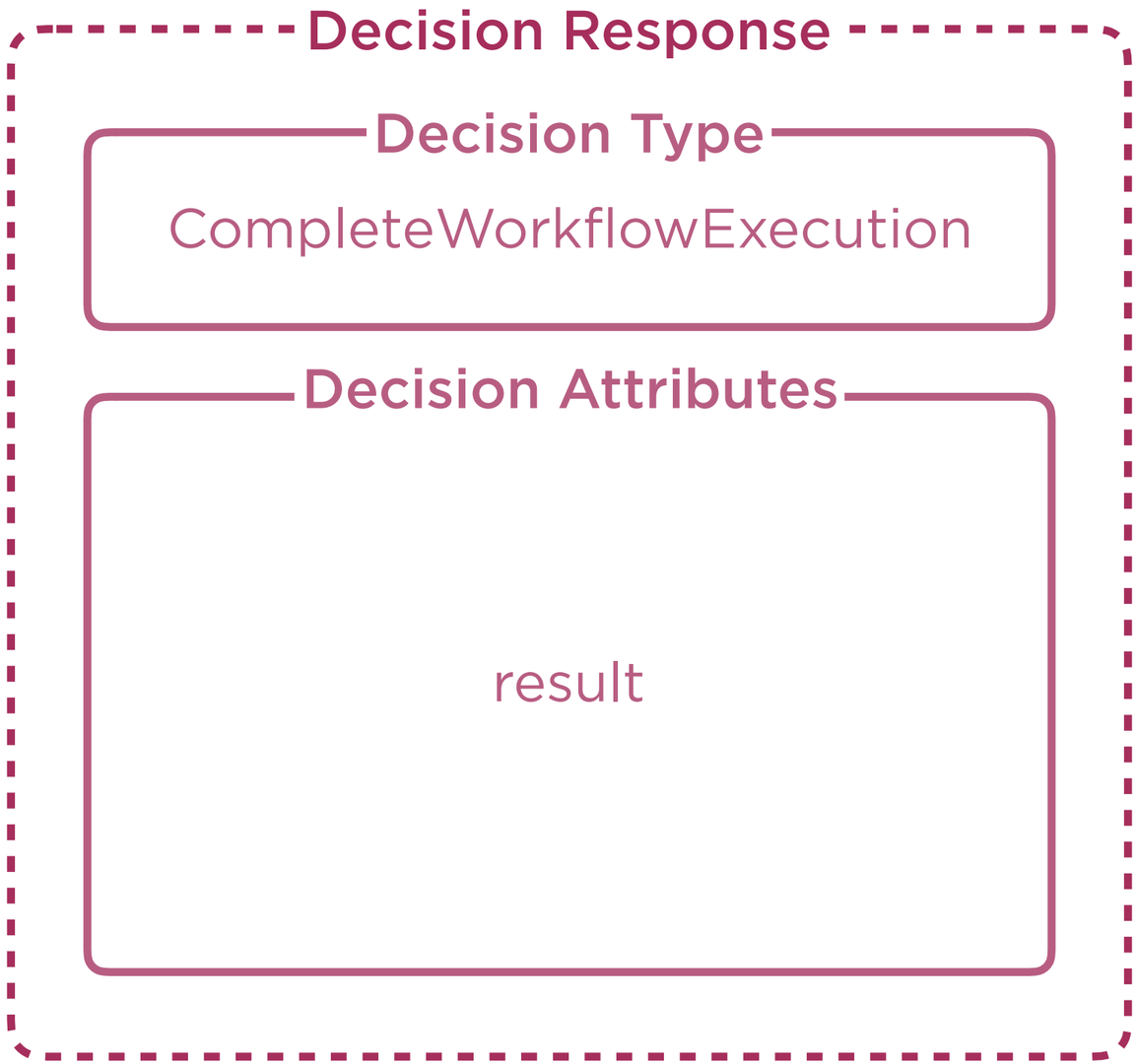

Task List A
Task List B
Task List C

Actors will long poll for a maximum of 60 seconds


Decision Task
Workflow Event List
Event
Event
Event
Event


Decision Response
Decision Type
Decision Attributes

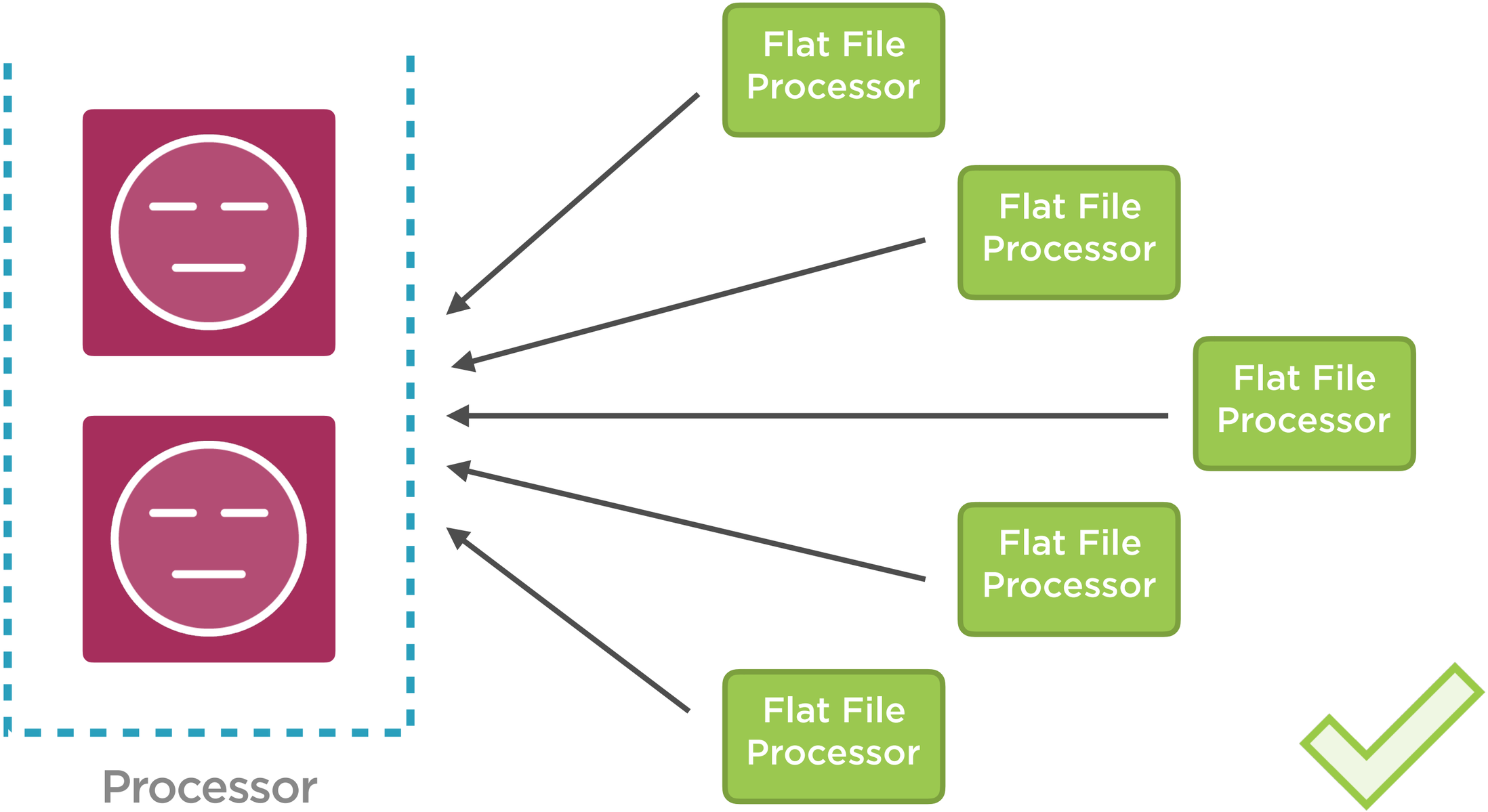

Decision Response
Decision Type
ScheduleActivityTask
Decision Attributes
activityId
activityType
input

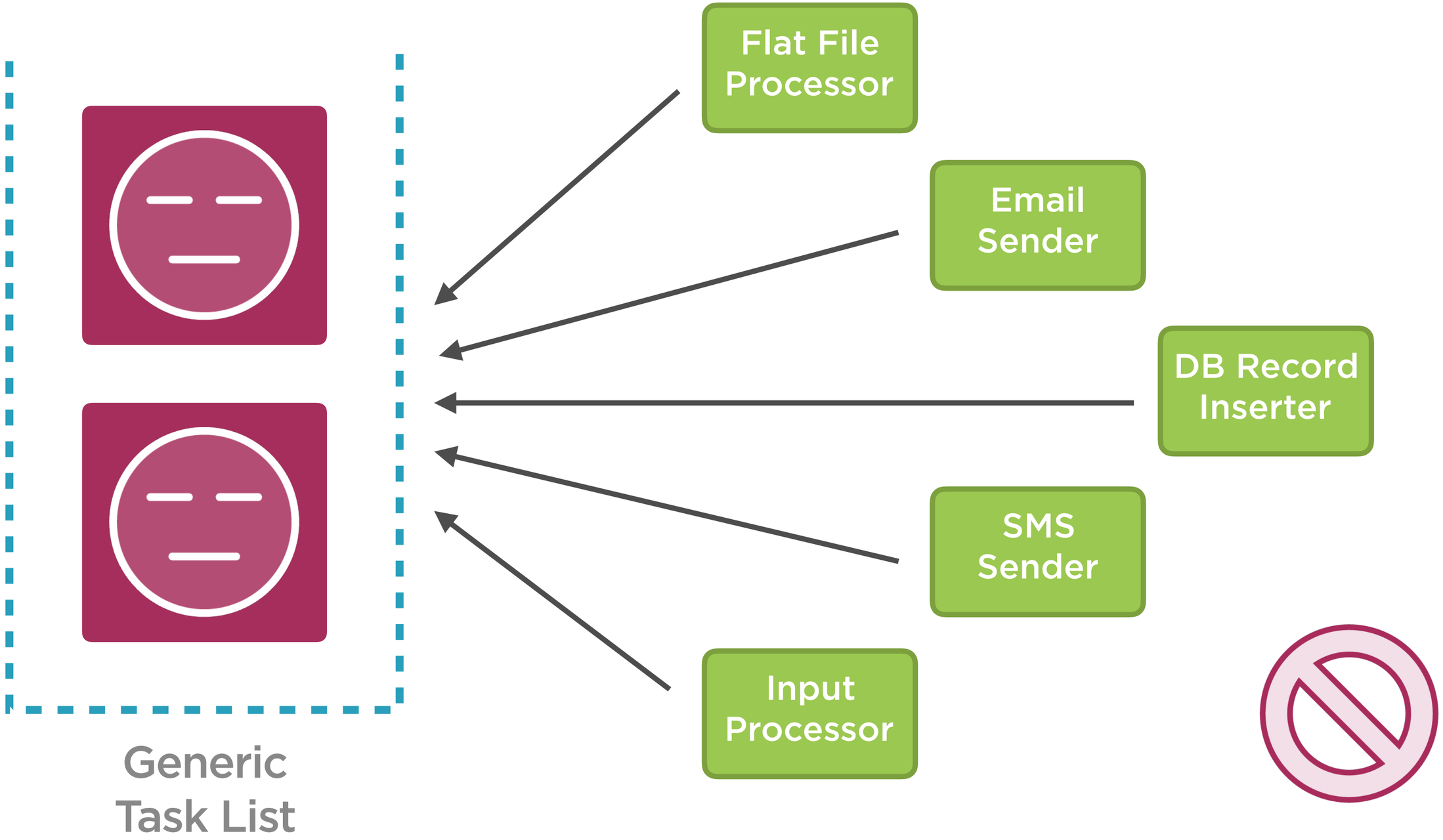

Decision Response
Decision Type
CompleteWorkflowExecution
Decision Attributes
result

Worker

Processes activity tasks after polling a task list in a workflow.

Use one task list per activity type. This keeps workers from retrieving tasks that they can't process.


Flat File Processor
Flat File Processor
Flat File Processor
Flat File Processor
Flat File Processor
Processor Task List


Flat File Processor
Email Sender
DB Record Inserter
SMS Sender
Input Processor
Generic Task List

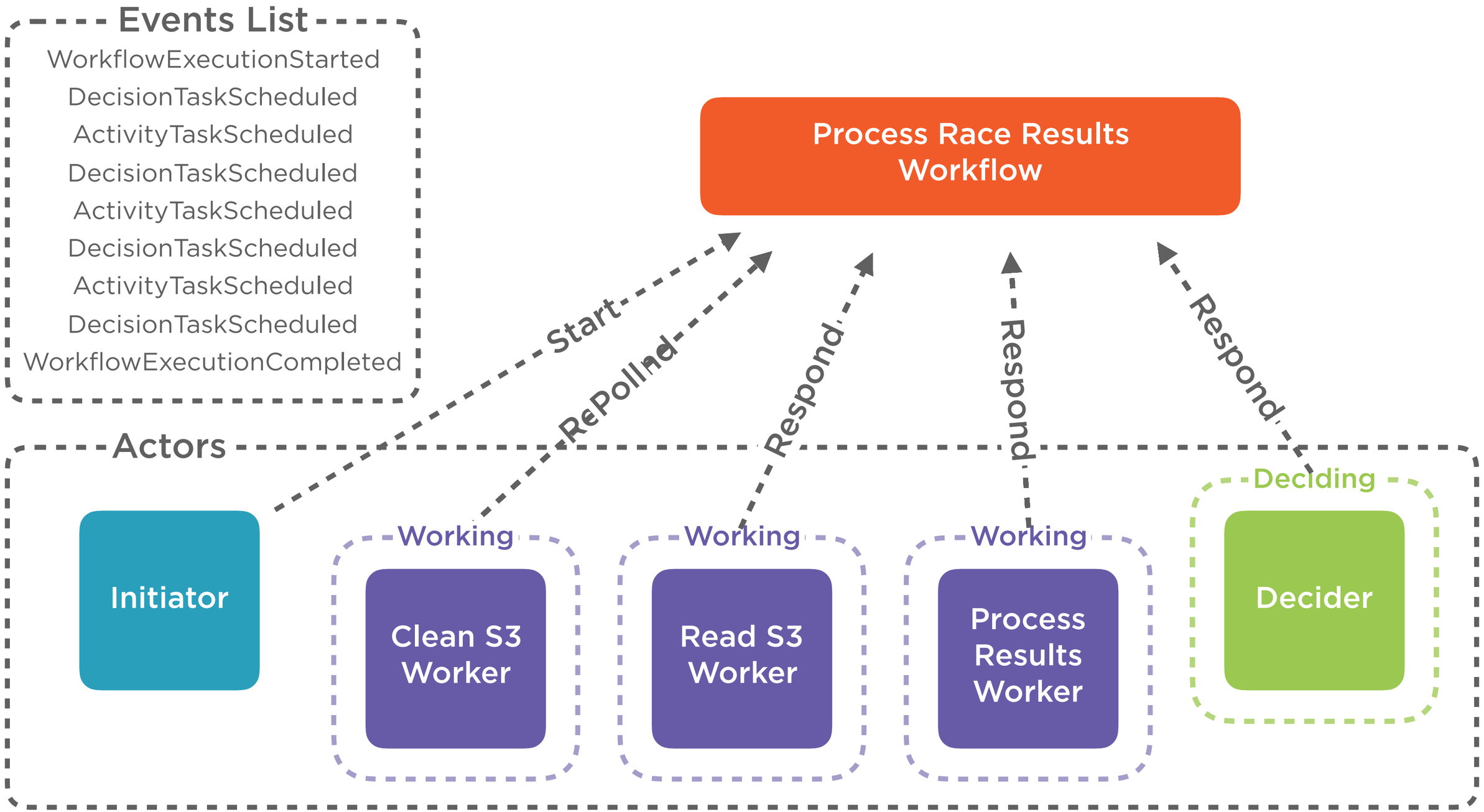
Activity Task
Activity Type
CompleteWorkflowExecution
Activity Attributes
input
taskToken

Activity Response
Activity Response Attributes
result
taskToken

One more thing...

Tasks are first come, first served.

A Day in the Life of a Workflow


Events List
WorkflowExecutionStarted
DecisionTaskScheduled
ActivityTaskScheduled
DecisionTaskScheduled
ActivityTaskScheduled
DecisionTaskScheduled
ActivityTaskScheduled
DecisionTaskScheduled
WorkflowExecutionCompleted
Process Race Results Workflow
Start
RePolled
Respond
Respond
Respond
Actors
Initiator
Working
Clean S3 Worker
Working
Read S3 Worker
Working
Process Results Worker
Deciding
Decider

Creating Workflows in SWF

Nothing in SWF can be deleted, only deprecated.

This means that names are one-time use per region.

Running a Workflow

Conclusion

Summary

“S” is for “Simple”

The nuts and bolts of SWF

Animated boxes pretending to be software

SWF + Serverless = Magic

Executed workflow returns positive result

Up Next

Infrastructure Security

with Virtual Private Cloud