



The



Arazzo

Specification

#apidays

I'm Frank Kilcommins

- › Principal API Technical Evangelist @ SmartBear
- › Developer and Architect (❤️ APIs & Developer Experience)
- › Governance Board member on OpenAPI Initiative (OAI)
- › Contributor on the Arazzo Specification

› Connect:

`/* insert embarrassing photo here */`



@fkilcommins



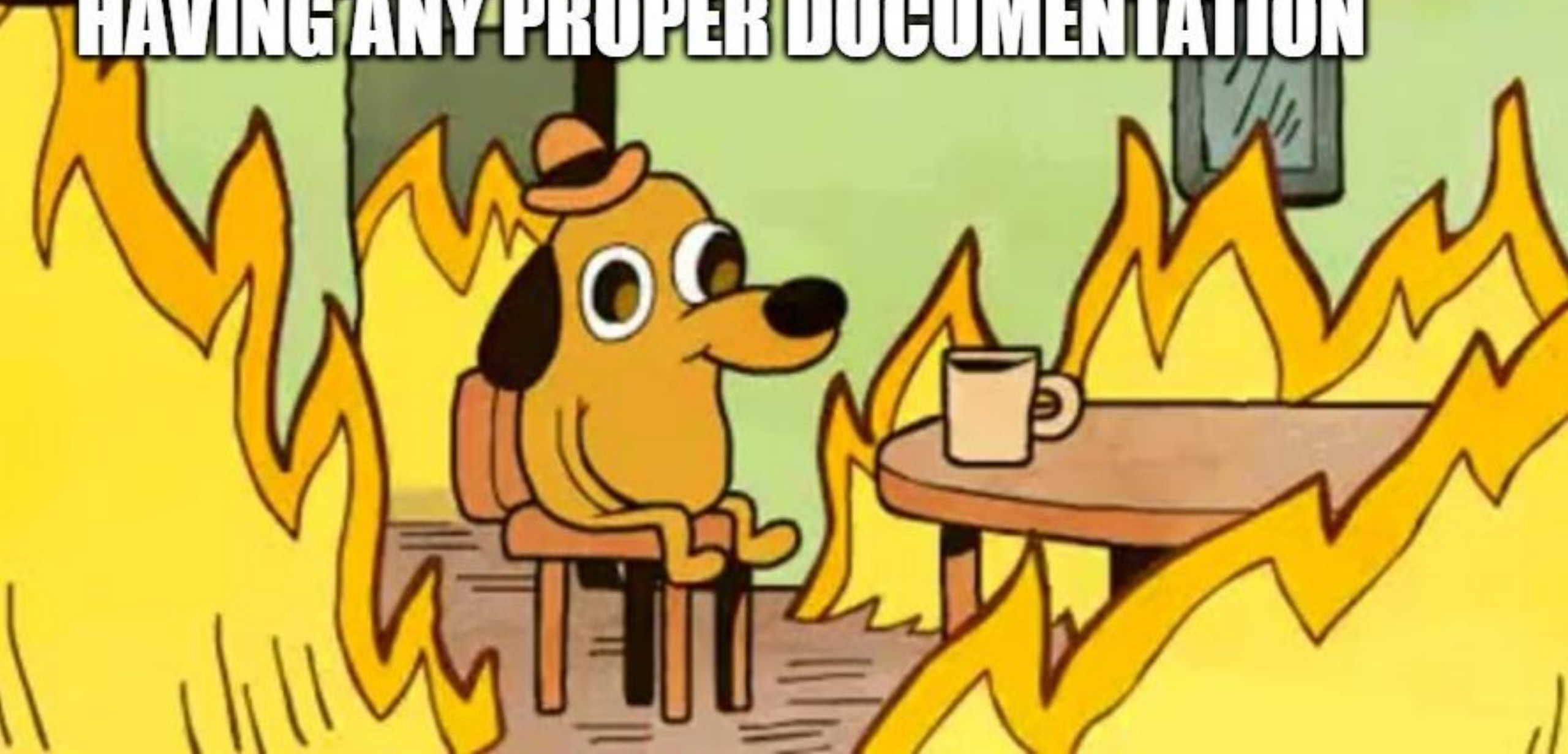
@frank-kilcommins



frank.kilcommins@smartbear.com



**COMPANIES USING API'S WITHOUT
HAVING ANY PROPER DOCUMENTATION**



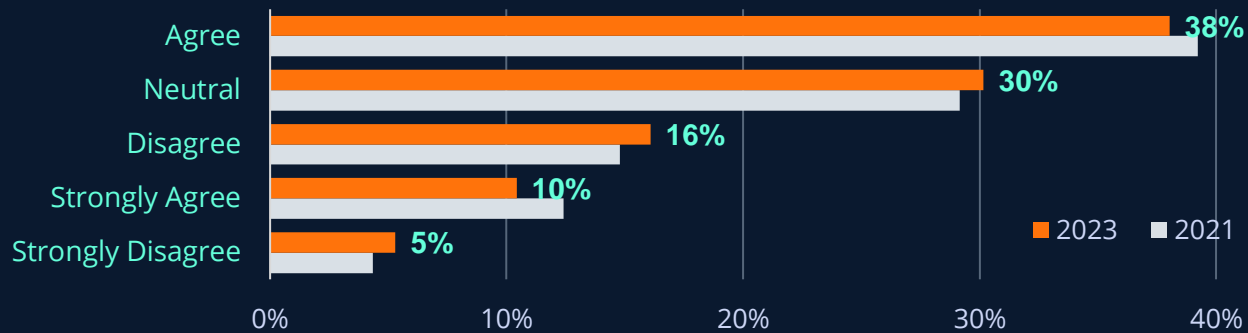


GIF by [Butler University](#)



Alignment Gap

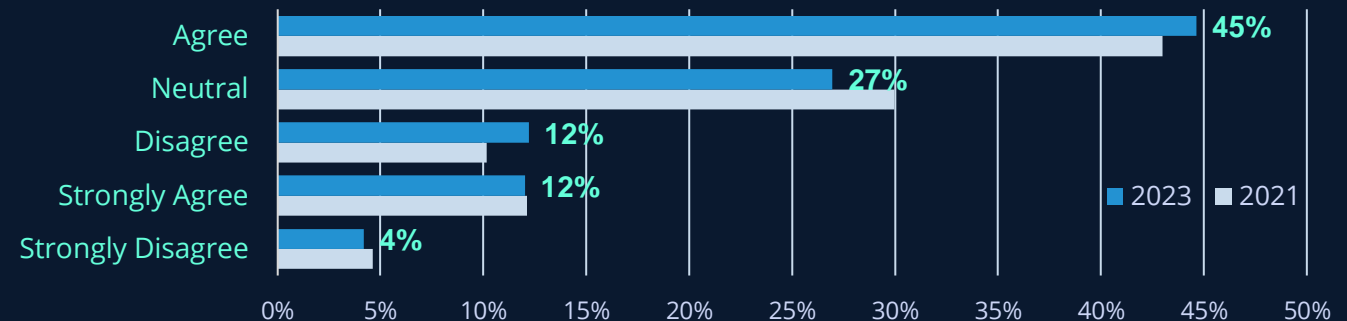
Our APIs are well documented for our consumers



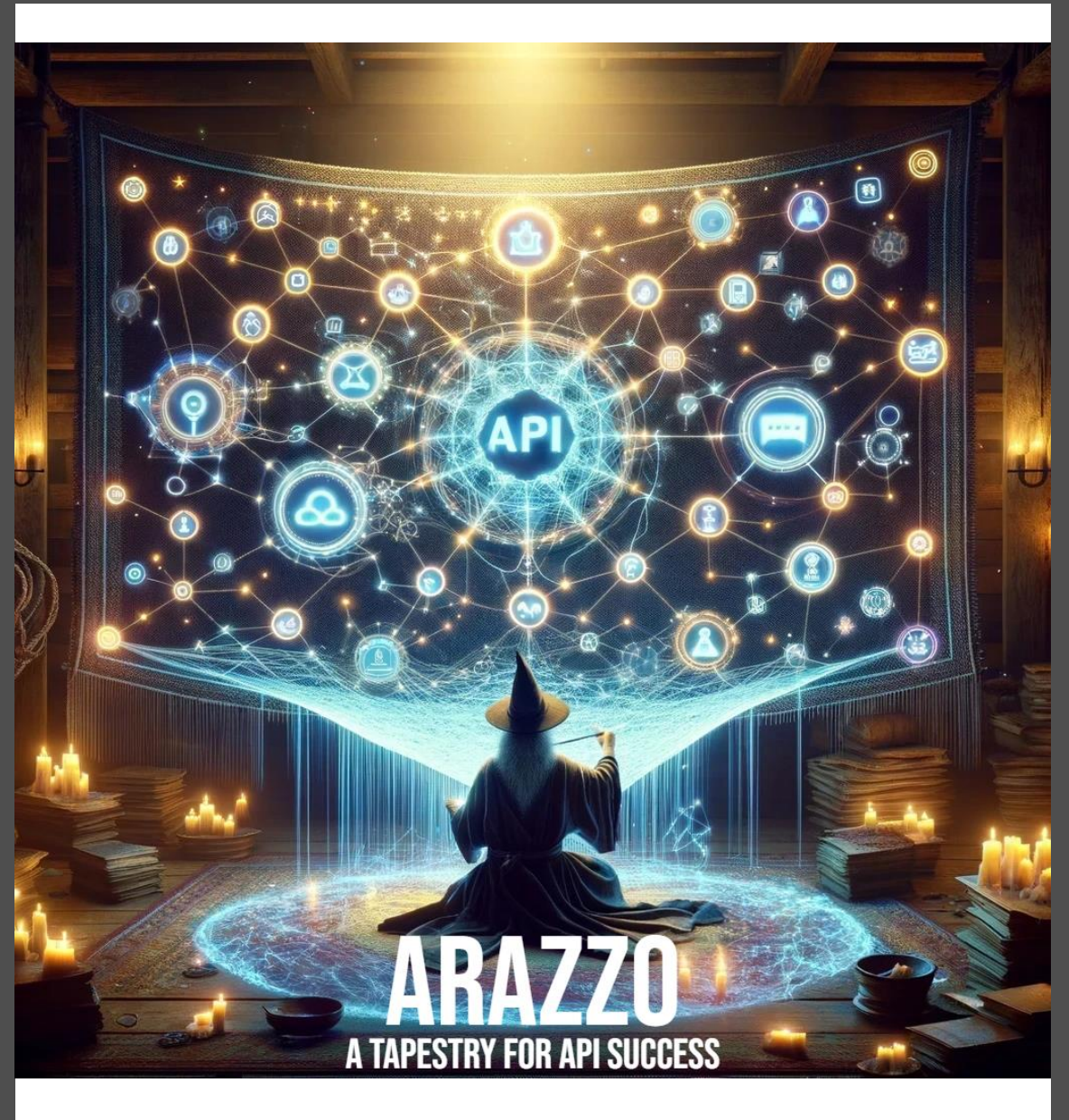
› Only 48% are confident their APIs are well documented and explain value for consumers

› ~43% unsure their processes will deliver appropriate developer experience (DX)

Our organization has good processes in place to ensure APIs can be efficiently consumed







What is the Arazzo Specification?

- › It describes an approach to document use-case oriented workflows in a programmatically readable format.
- › A workflow is a series of API calls which when woven together accomplish some business objective.
- › The additional human readable nature improves the ability of API specifications to tell the story of the API(s) in a manner that can improve the consuming developer experience.

Use cases

- › Deterministic recipes for the use of APIs
 - › Make sense of large unwieldy API description
 - › Bridge the *gap* where business flows span more than one API description
- › Living API documentation and improved consumer developer experience (DX)
- › Assertable business value
- › Targeted code generation tooling for APIs driven by use cases
- › Improved regulatory checks via assertable workflows
- › The AI potential for value orientated interaction with APIs



Specification Structure

Arazzo Specification 1.0.0

info

sourceDescriptions

workflow (*)

inputs

parameters

success actions

failure actions

step (*)

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failure actions

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Metadata about the defined Arazzo Document

Arazzo Specification 1.0.0

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criteria

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Arazzo Specification - Info Object Example

```
arazzo: 1.0.0
```

```
info:
```

```
  title: A pet adoption workflow
```

```
  summary: Search for and adopt a pet from the PetCo
```

```
  description: This workflow walks you through the steps of `searching` for, `selecting`,  
and `adopting` an available pet.
```

```
  version: 1.1.0
```

Arazzo Specification 1.0.0

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Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Arazzo Specification 1.0.0

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Metadata about the defined Arazzo Document

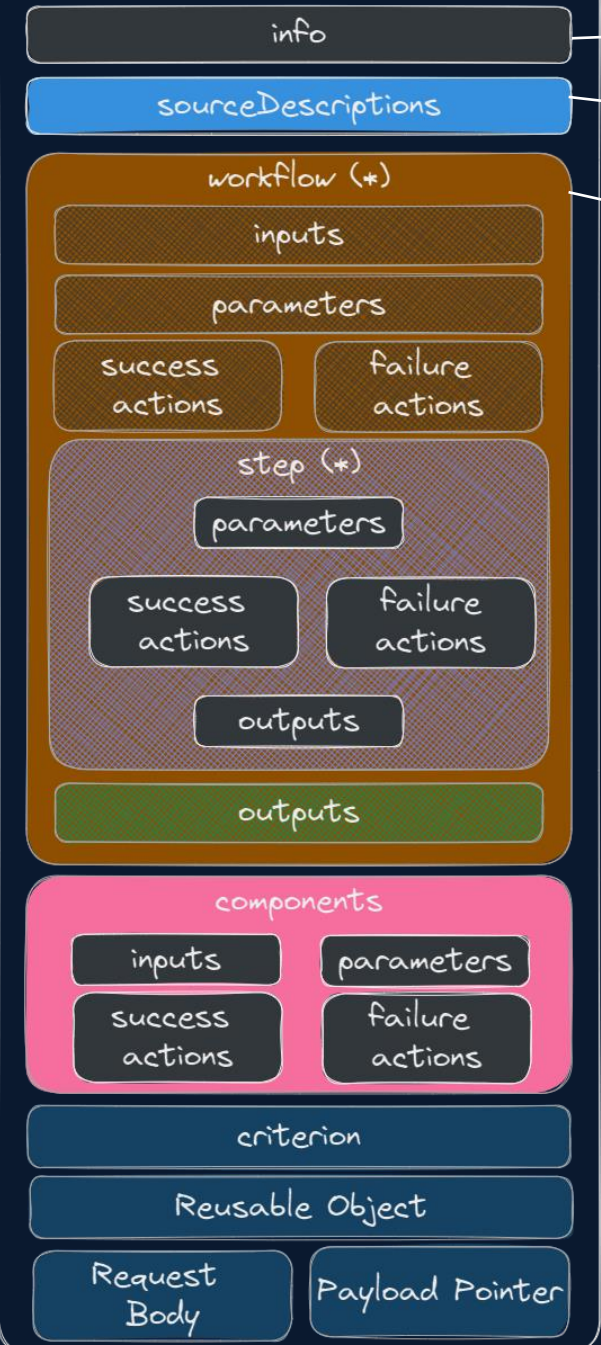
Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Arazzo Specification - Source Descriptions Example

sourcesDescriptions:

- name: **petsAPI**
url: **https://api.swaggerhub.com/apis/frank-kilcommins/Pets-API/1.0.0/swagger.json**
type: **openapi**
- name: **adoptionsAPI**
url: **https://api.swaggerhub.com/apis/frank-kilcommins/Adoptions-API/1.0.0/swagger.json**
type: **openapi**

Arazzo Specification 1.0.0



Metadata about the defined Arazzo Document

Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

Arazzo Specification 1.0.0

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Metadata about the defined Arazzo Document

Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Arazzo Specification -Workflows Example

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

workflows:

- workflowId: FindAndAdoptPet

summary: This workflow lays out the steps and API calls needed to search for and adopt a Pet

Description: This workflow lays out the steps needed to adopt a pet.

inputs: {}

parameters: []

successActions: []

failureActions: []

steps: []

dependsOn: []

outputs: []



- Metadata about the defined Arazzo Document
- Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows
- Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.
- A JSON Schema object representing the inputs used by this workflow

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inputs

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Arazzo Specification - Workflow Inputs Example

```

inputs:
  type: object
  properties:
    category:
      type: string
    breed:
      type: string
    location:
      type: string
    apiKey:
      type: string
  required:
    - apiKey
    - category
    - breed

```

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Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

A JSON Schema object representing the inputs used by this workflow



- Metadata about the defined Arazzo Document
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- Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.
- A JSON Schema object representing the inputs used by this workflow
- The defined workflow steps, each representing a call to an API operation (or another workflow)

info

Metadata about the defined Arazzo Document

sourceDescriptions

Arazzo Specification - Steps Example

Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

workflow (*)

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

inputs

steps:

- stepId: searchPets

description: This step demonstrates how to search pets matching the criteria

operationId: petsAPI.getPets

parameters: []

successCriteria:

The defined workflow steps, each representing a call to an API operation (or another workflow)

- condition: \$statusCode == 200

- condition: \$[?length(@.pets) > 0]

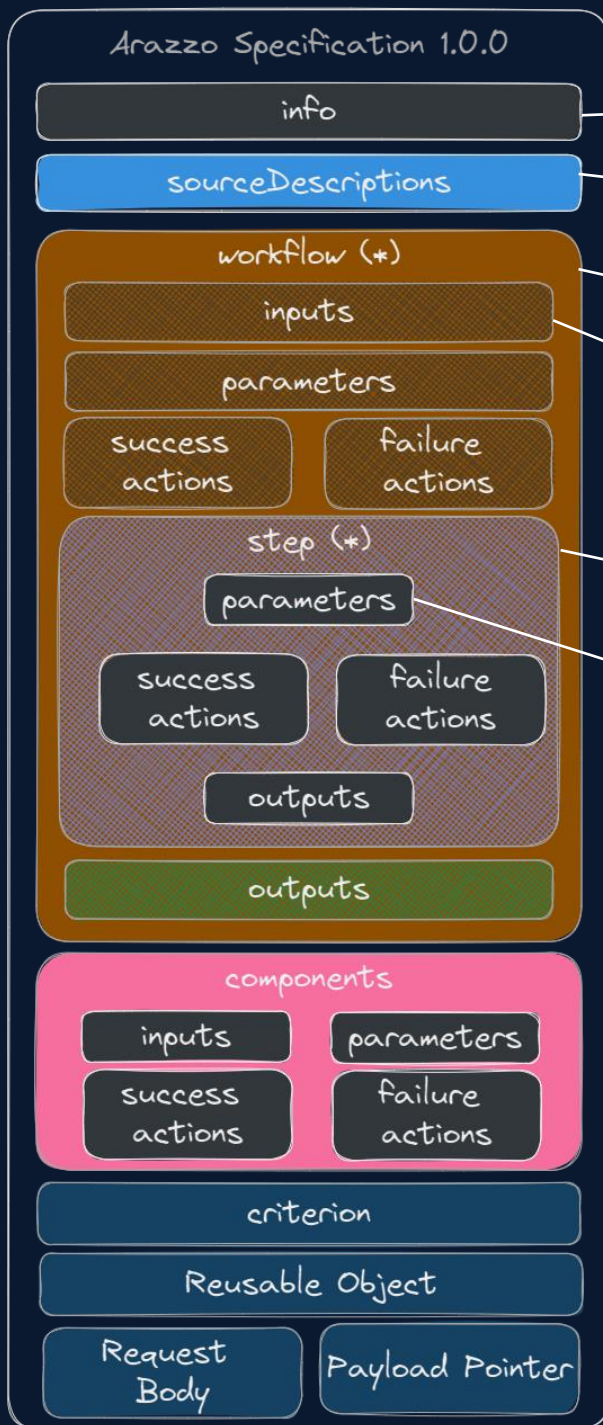
context: \$response.body

type: JSONPath

onSuccess: []

onFailure: []

outputs: []



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- A list of parameter objects, representing parameters to pass to an operation or workflow

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Arazzo Specification - Steps Parameters Example

```
parameters:  
- name: category  
  in: query  
  value: $inputs.category  
- name: breed  
  in: query  
  value: $inputs.breed  
- name: location  
  in: query  
  value: $inputs.location  
- name: status  
  in: query  
  value: available
```

Metadata about the defined Arazzo Document

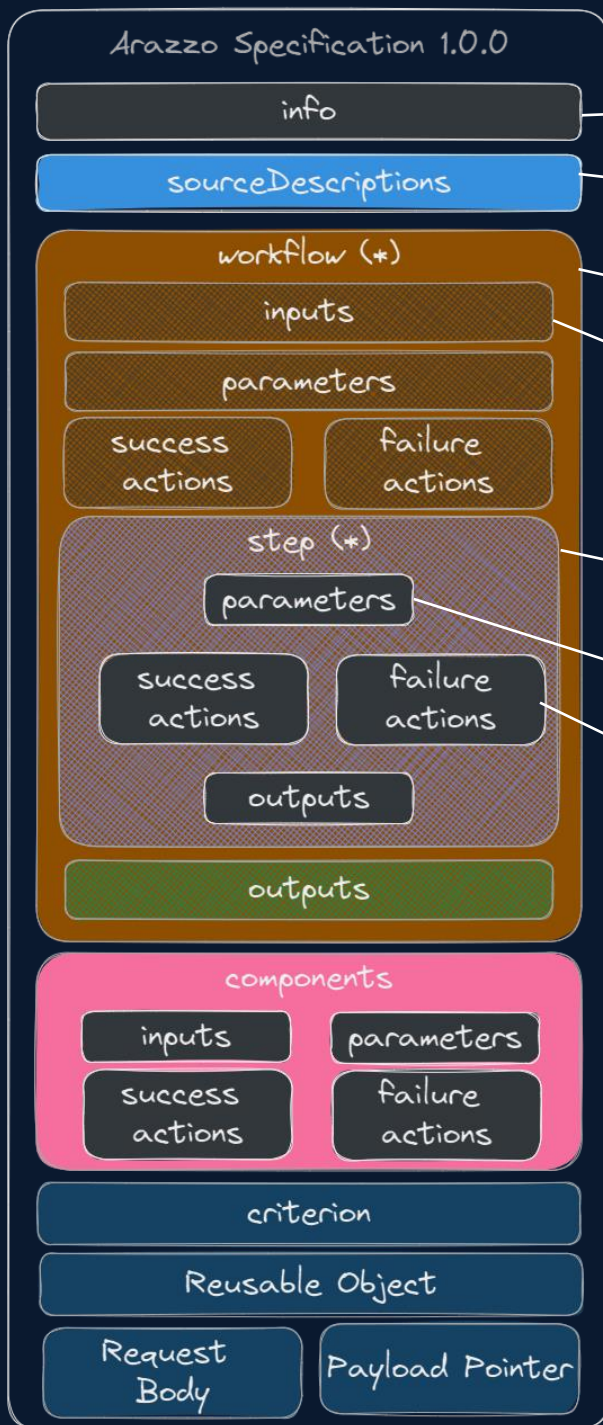
Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

A JSON Schema object representing the inputs used by this workflow

The defined workflow steps, each representing a call to an API operation (or another workflow)

List of parameter objects, representing parameters to pass to an operation or workflow



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- A JSON Schema object representing the inputs used by this workflow
- The defined workflow steps, each representing a call to an API operation (or another workflow)
- A list of parameter objects, representing parameters to pass to an operation or workflow
- An array of failure action objects that specify what to do on step failure

Arazzo Specification 1.0.0

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name: retryStep

type: retry

retryAfter: 1

retryLimit: 5

criteria:

assertions to determine if this action should be executed

- **condition: \$statusCode == 503**

success actions

failure actions

criterion

Reusable Object

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Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

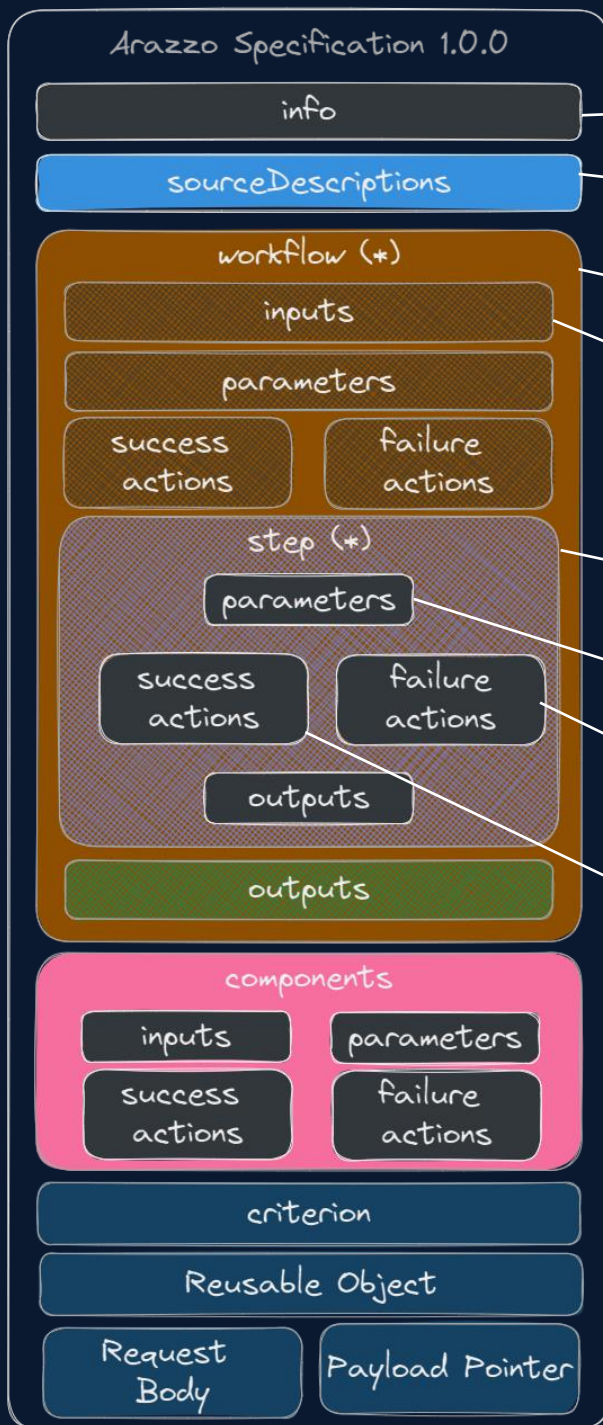
A JSON Schema object representing the inputs used by this workflow

The defined workflow steps, each representing a call to an API operation (or another workflow)

A list of parameter objects, representing parameters to pass to an operation or workflow

An array of failure action objects that specify what to do on step failure

Arazzo Specification - FailureAction Object Example



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- An array of failure action objects that specify what to do on step failure
- An array of success action objects that specify what to do upon step success

Arazzo Specification 1.0.0

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step (*)

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Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

Describes the workflows to be taken across one or more APIs to achieve an objective/outcome.

A JSON Schema object representing the inputs used by this workflow

The defined workflow steps, each representing a call to an API operation (or another workflow)

A list of parameter objects, representing parameters to pass to an operation or workflow

An array of failure action objects that specify what to do on step failure

An array of success action objects that specify what to do upon step success

Arazzo Specification - SuccessAction Object Example

name: JoinWaitingList

type: goto

stepId: joinWaitingListStep

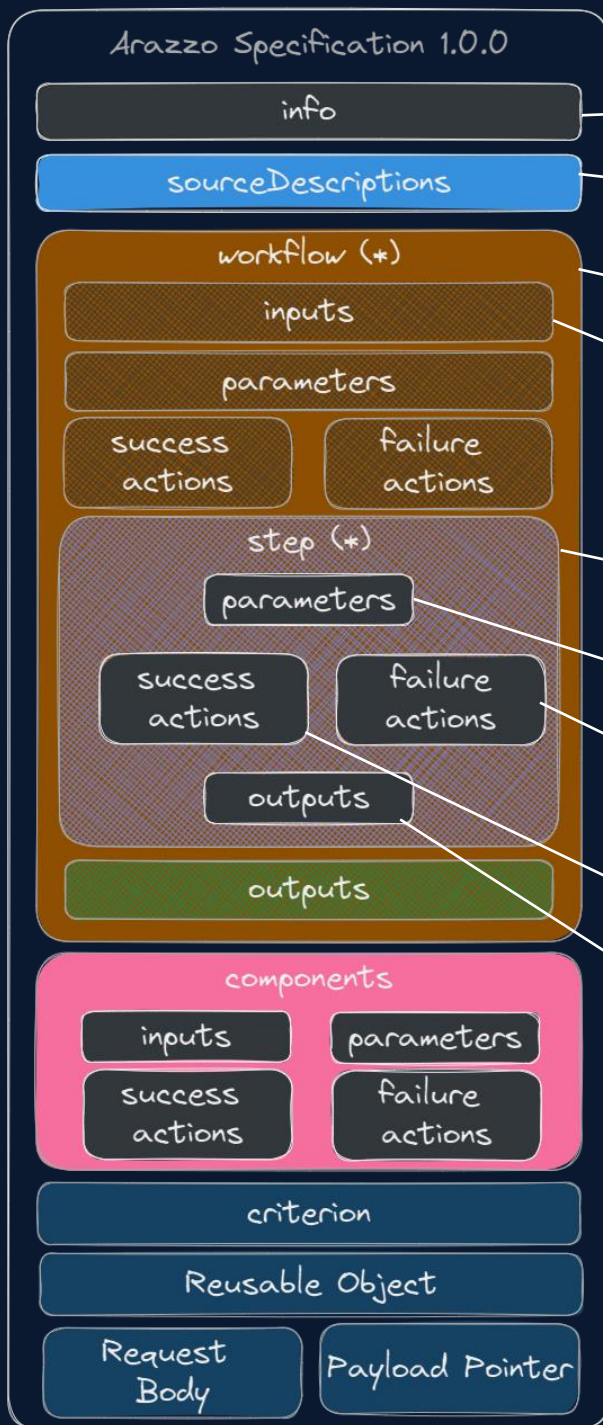
criteria:

assertions to determine if this success action should be executed

- **context:** \$response.body

condition: \$[?count(@.pets) > 0]

type: JSONPath



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- The defined workflow steps, each representing a call to an API operation (or another workflow)
- A list of parameter objects, representing parameters to pass to an operation or workflow
- An array of failure action objects that specify what to do on step failure
- An array of success action objects that specify what to do upon step success
- A map between a friendly name and a dynamic output value for a step

Arazzo Specification 1.0.0

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The defined workflow steps, each representing a call to an API operation (or another workflow)

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An array of failure action objects that specify what to do on step failure

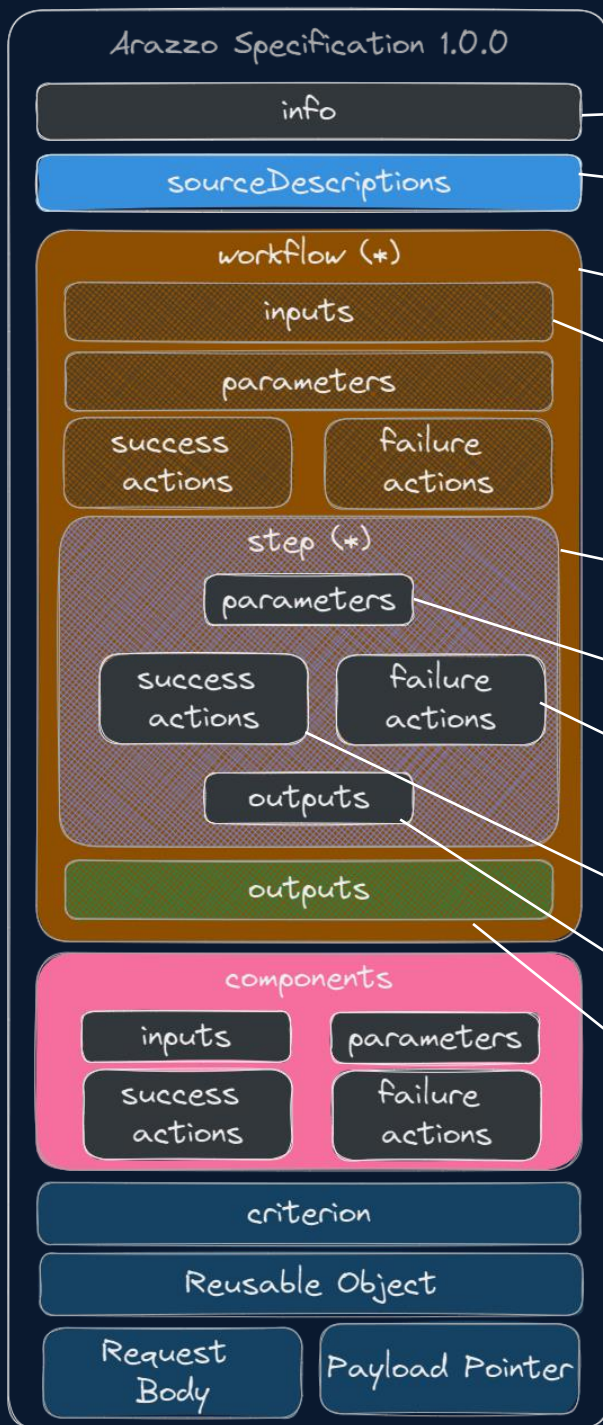
An array of success action objects that specify what to do upon step success

A map between a friendly name and a dynamic output value for a step

Arazzo Specification - Step Outputs Example

outputs:

petId: `$response.body.pets[0].id`



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- An array of success action objects that specify what to do upon step success
- A map between a friendly name and a dynamic output value for a step
- A map between a friendly name and a dynamic output value for a workflow

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Lists source descriptions (e.g., OpenAPI description) that can be referenced by one or more workflows

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An array of success action objects that specify what to do upon step success

A map between a friendly name and a dynamic output value for a step

A map between a friendly name and a dynamic output value for a workflow

Arazzo Specification - Workflow Outputs Example

outputs:

petId: `$steps.searchPets.outputs.petId`

petName: `$steps.searchPets.output.petName`

status: `$steps.approveAdoption.outputs.status`

Arazzo Specification 1.0.0

info

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Reusable Object

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Reusable (referenceable) components and objects

Creating a Pet Adoption Service



Problem:

We're overwhelmed by the number of pets being abandoned at our pet store.

Solution:

Following research and evaluation, we've decided to create the ability to search for and adopt pets that we catalog.

We'll offer the service via our website but also with a wider eco-system of shelters, charities, and pet orphanages.



Example Workflow Use Case

› Adopt a pet matching specific criteria

› Steps:

1. Search for a pet
2. Initiate adoption request
3. Confirm adoption by updating status
4. Verify pet has been updated to adopted

pets offering you everything required for cataloging, and managing pets

GET `/pets` Get a list of pets registered with the store

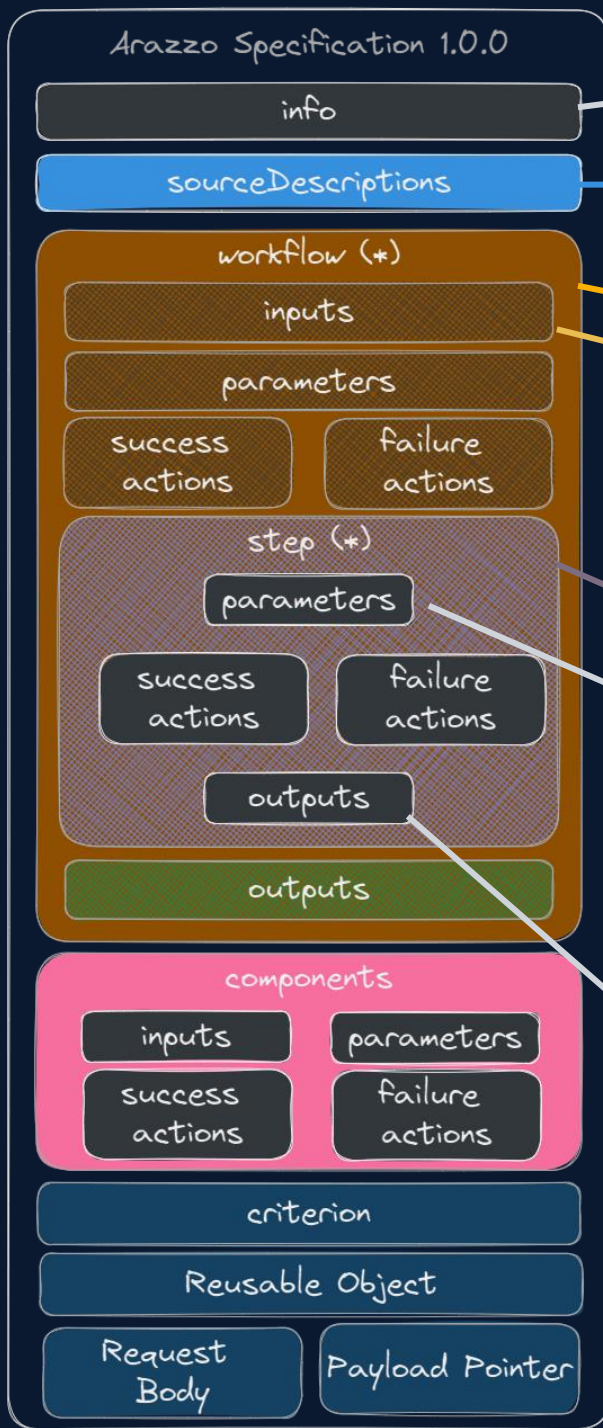
GET `/pets/{petId}` Get the details on a specific pet

adoptions Initiate and manage pet adoptions across our stores

GET `/adoptions` Get a list of current pet adoptions

POST `/adoptions` Add a new adoption

PATCH `/adoptions/{id}` Update the status of an adoption



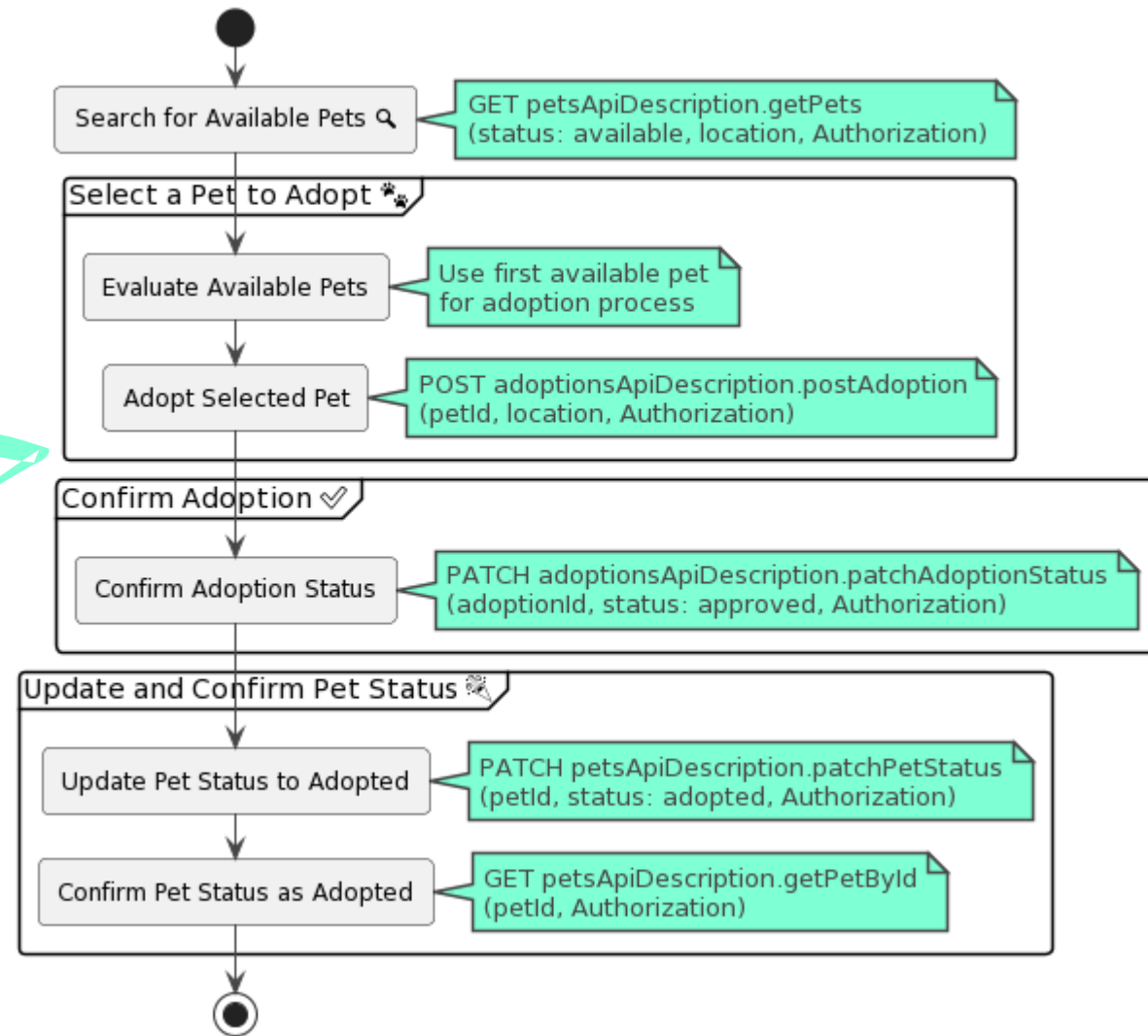
```

arazzo: 1.0.0
info:
  title: A pet adoption workflow
  summary: Search for and adopt a pet from the PetCo
  description: This workflow walks you through the steps of `searching` for, `selecting`, and `adopting` an available pet.
  version: 1.1.0
sourcesDescriptions:
- name: petsAPI
  url: https://api.swaggerhub.com/apis/frank-kilcommins/Pets-API/1.0.0/swagger.json
  type: openapi
- name: adoptionsAPI
  url: https://api.swaggerhub.com/apis/frank-kilcommins/Adoptions-API/1.0.0/swagger.json
  type: openapi
workflows:
- workflowId: FindAndAdoptPet
  summary: This workflow lays out the steps and API calls needed to search for and adopt a Pet
  inputs:
    type: object
    properties:
      category:
        type: string
      breed:
        type: string
      location:
        type: string
      apiKey:
        type: string
    required:
    - apiKey
    - category
    - breed
  steps:
- stepId: searchPets
  description: This step demonstrates the search pets flow for the first pet matching the criteria
  operationId: petsAPI.getPets
  parameters:
  - name: category
    in: query
    value: $inputs.category
  - name: breed
    in: query
    value: $inputs.breed
  - name: location
    in: query
    value: $inputs.location
  - name: status
    in: query
    value: available
  successCriteria:
  - context: $response.body
    condition: ${?length(@.pets) > 0}
    type: JSONPath
  outputs:
    petId: $response.body.data.pets[0].id
    petName: $response.body.data.pets[0].name
    petLocation: $response.body.data.pets[0].location

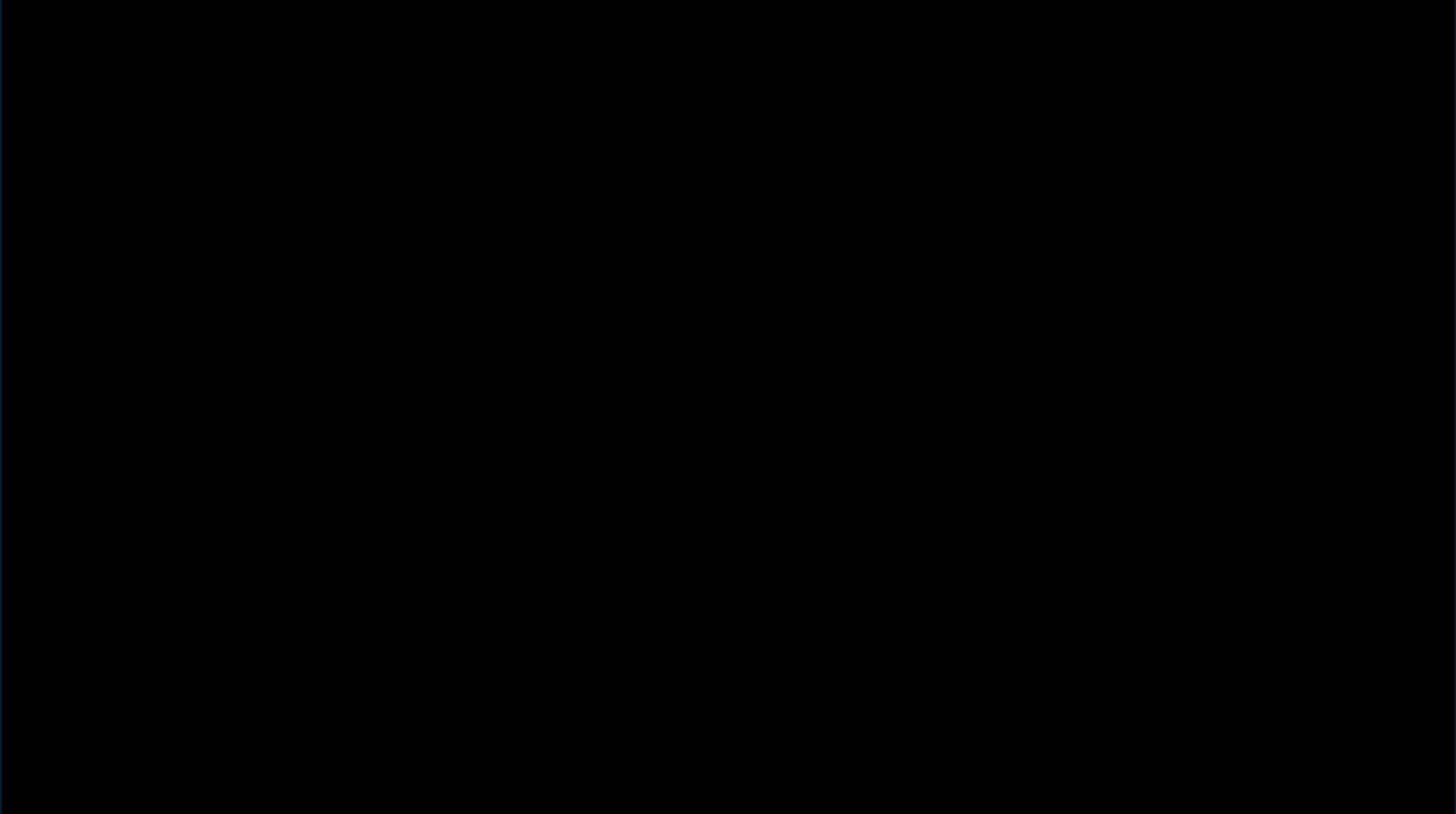
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workflows:
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  inputs:
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    properties:
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      breed:
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      location:
        type: string
      apiKey:
        type: string
    required:
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  operationId: petsAPI.getPets
  parameters:
- name: category
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- name: breed
  in: query
  value: $inputs.breed
- name: location
  in: query
  value: $inputs.location
- name: status
  in: query
  value: available
  successCriteria:
- context: $response.body
  condition: ${?length(@.pets) > 0}
  type: JSONPath
  outputs:
  petId: $response.body.data.pets[0].id
  petName: $response.body.data.pets[0].name
  petLocation: $response.body.data.pets[0].location
```

A Pet Adoption Workflow



My Arazzo Specification GPT



Call to Action

- › Join the slack workspace: <https://communityinviter.com/apps/open-api/openapi>
- › Star the repo: <https://github.com/OAI/Arazzo-Specification>
- › Submit your use cases (as discussions or issues)

Learn more

- › Arazzo Specification:
 - › <https://github.com/OAI/Arazzo-Specification/blob/main/versions/1.0.0.md>
- › Examples (OAuth, FAPI-PAR, LoginAndRetrievePets, & more):
 - › <https://github.com/OAI/Arazzo-Specification/tree/main/examples/1.0.0>

Thank You!

Questions?

› Connect:



@fkilcommins



@frank-kilcommins



frank.kilcommins@smartbear.com

