

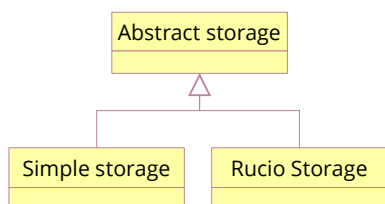


SRC | Net

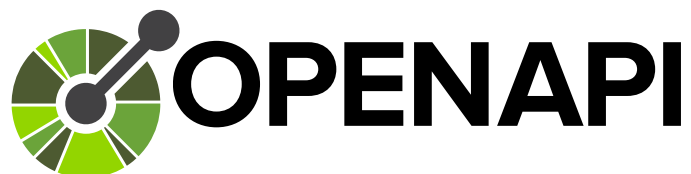
SKAO Regional Centre Network

## Using OpenAPI for IVOA standards

### Lessons learned



Dave Morris  
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IVOA interop meeting  
Valletta, Malta  
November 2024

Dave Morris  
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GWS working group

Developing a new standard for remote execution of software.

Moving the code to the data.



*International  
Virtual  
Observatory  
Alliance*

## IVOA Execution Broker

Version 1.0

IVOA Working Draft 2024-11-15

Working Group  
GWS

This version

<https://www.ivoa.net/documents/ExecutionBroker/20241115>

Latest version

<https://www.ivoa.net/documents/ExecutionBroker>

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Valletta, Malta  
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Dave Morris  
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New standard, new document structure.

*The Execution Broker service is based on the following IVOA standards :*

- *The IVOA REST service framework*
- *The IVOA structured error messages*
- *The IVOA HTTP protocol profile*
- *The IVOA JSON encoding profile*
- *The IVOA YAML encoding profile*

*Unless otherwise stated, the Execution Broker service follows the profiles defined in these standards.*

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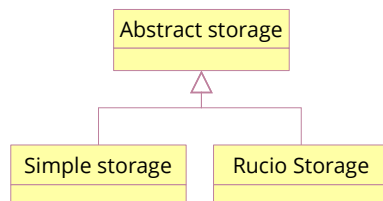
Dave Morris  
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New standard, new document structure.

*“This document explains the reasoning behind the design and uses examples to describe the service behavior.”*

*“The technical details of the data model and web-service API are defined in the OpenAPI specification published alongside this document.”*



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Version 1.0

IVOA Working Draft 2024

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GWS

This version  
[https://www.ivoa.net/doc/latest/specs/core/execution\\_broker/1.0/](https://www.ivoa.net/doc/latest/specs/core/execution_broker/1.0/)

Latest version  
[https://www.ivoa.net/doc/latest/specs/core/execution\\_broker/](https://www.ivoa.net/doc/latest/specs/core/execution_broker/)

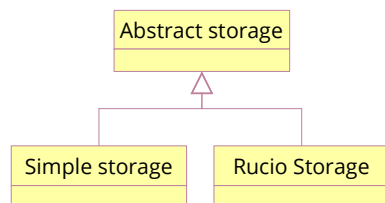
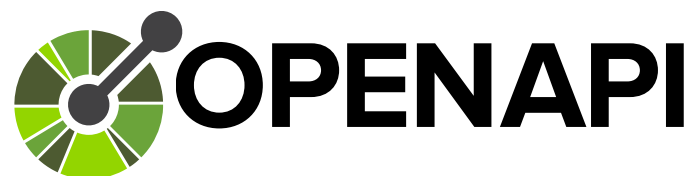


```

openapi: 3.1.0
info:
  title: IVOA Execution Broker
  version: "1.0"
  description: >
    IVOA Execution Broker web service
  license:
    Name: >
      Creative Commons Attribution
      Share Alike 4.0 International
    identifier: CC-BY-SA-4.0
paths:
  /offersets:
    post:
      requestBody:
        content:
          application/json:
            schema:
              $ref: 'OfferSetRequest'
          application/yaml:
            schema:
              $ref: 'OfferSetRequest'
            required: true
  
```

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Using OpenAPI to specify the data model and web service API.



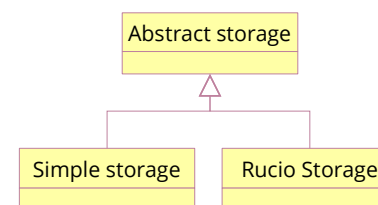
What worked

What didn't work

Would I use it again

# What worked

Using OpenAPI to describe the data model and service API

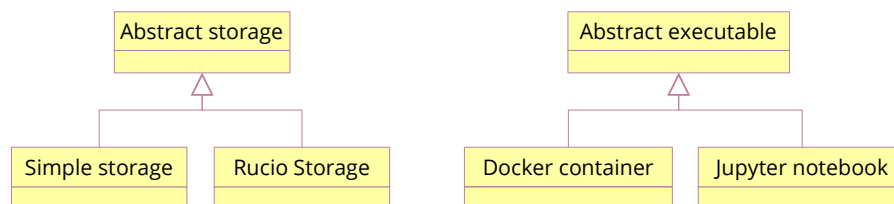


- Shallow learning curve
- Good documentation
- Clear and easy syntax
- Good feature coverage

# What worked

Generating Java service code from the OpenAPI specification

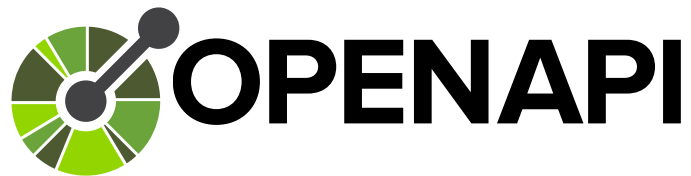
Including support for polymorphic types in the message content.



# What worked

Generating Java service code from the OpenAPI specification

Including support for HTTP content type negotiation.



Content-type:

Accept:



<XML/>

{JSON}

YAML

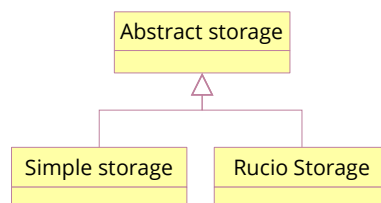




# What didn't work

Generating Python service code from the OpenAPI specification

Issues with both polymorphic types and content negotiation.



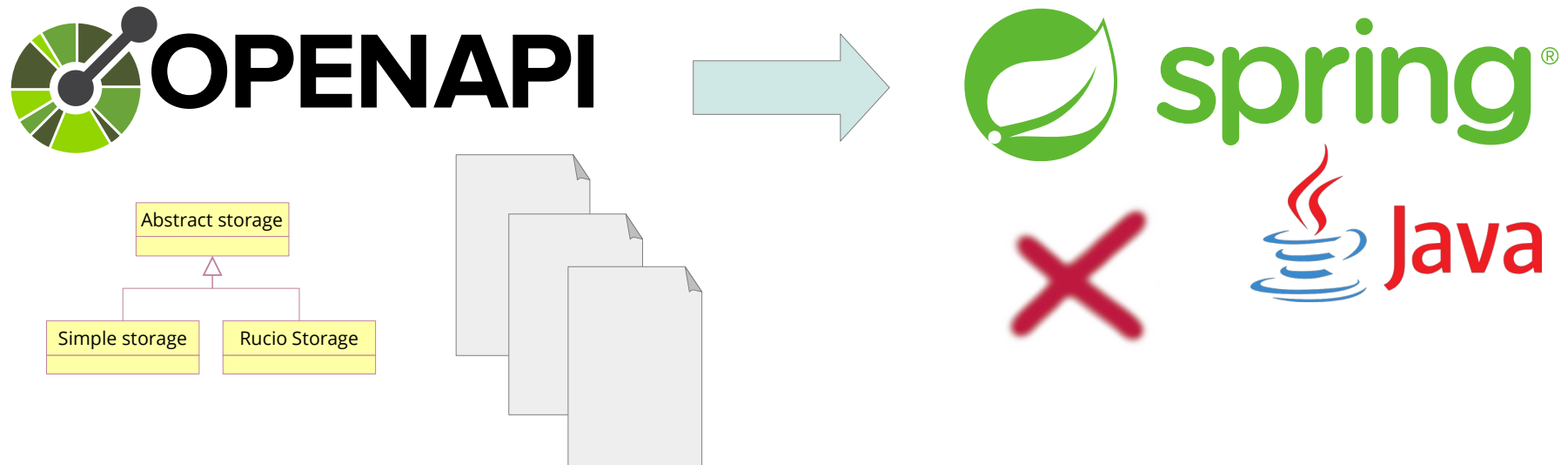
Content - type :

Accept :

# What didn't work

Splitting the OpenAPI specification into separate files.

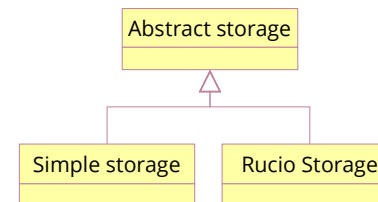
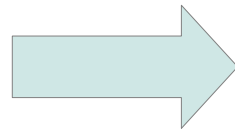
Java code generator loses the polymorphic inheritance links.



# Would I use it again ? YES

Using a structured schema to define the service API is a huge benefit.

Writing clear and precise technical specifications in text is hard.



- Shallow learning curve
- Good documentation

- Clear and easy syntax
- Good feature coverage