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Modeling RESTful Conversations with Extended BPMN Choreography Diagrams

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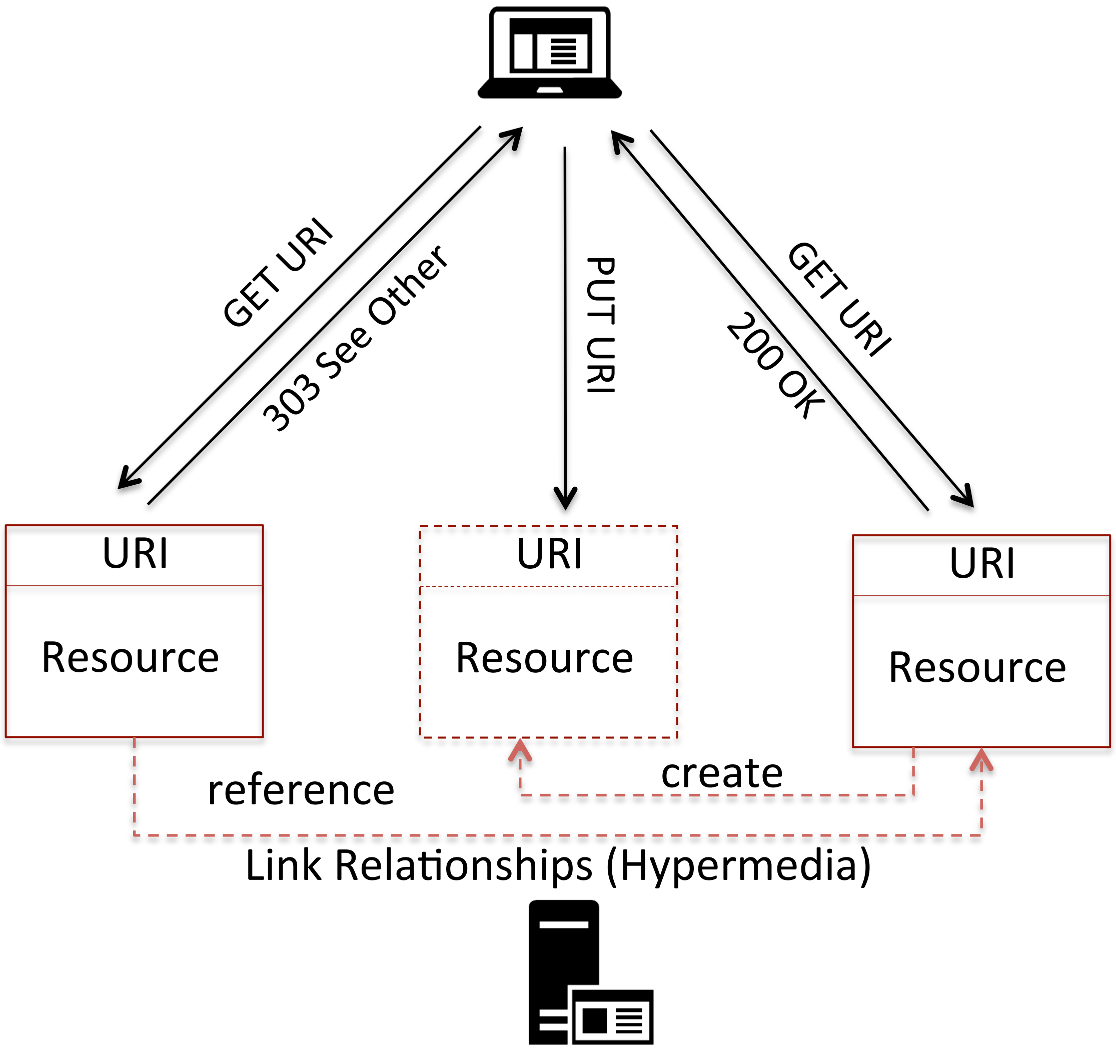
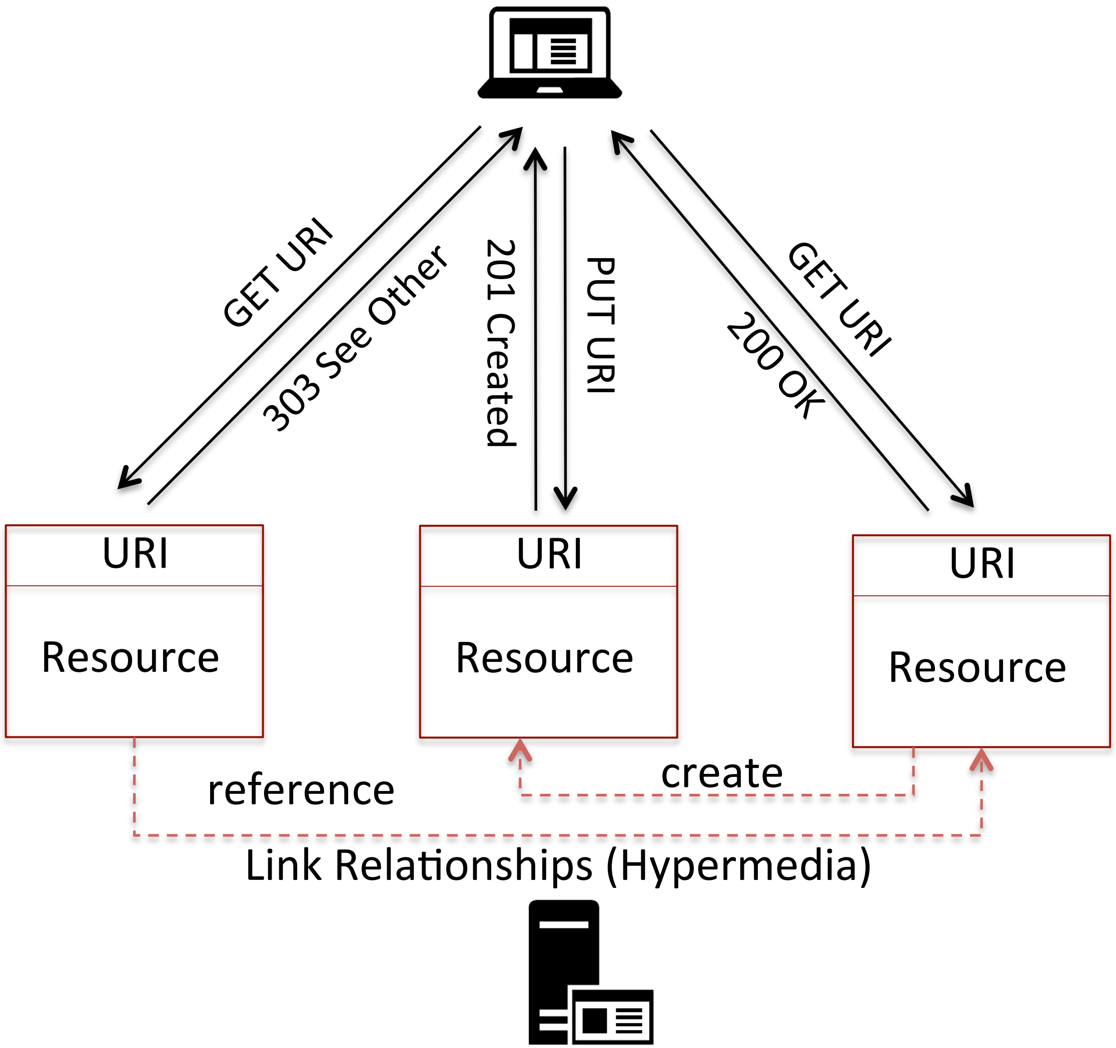
RESTful conversation



RESTful conversation



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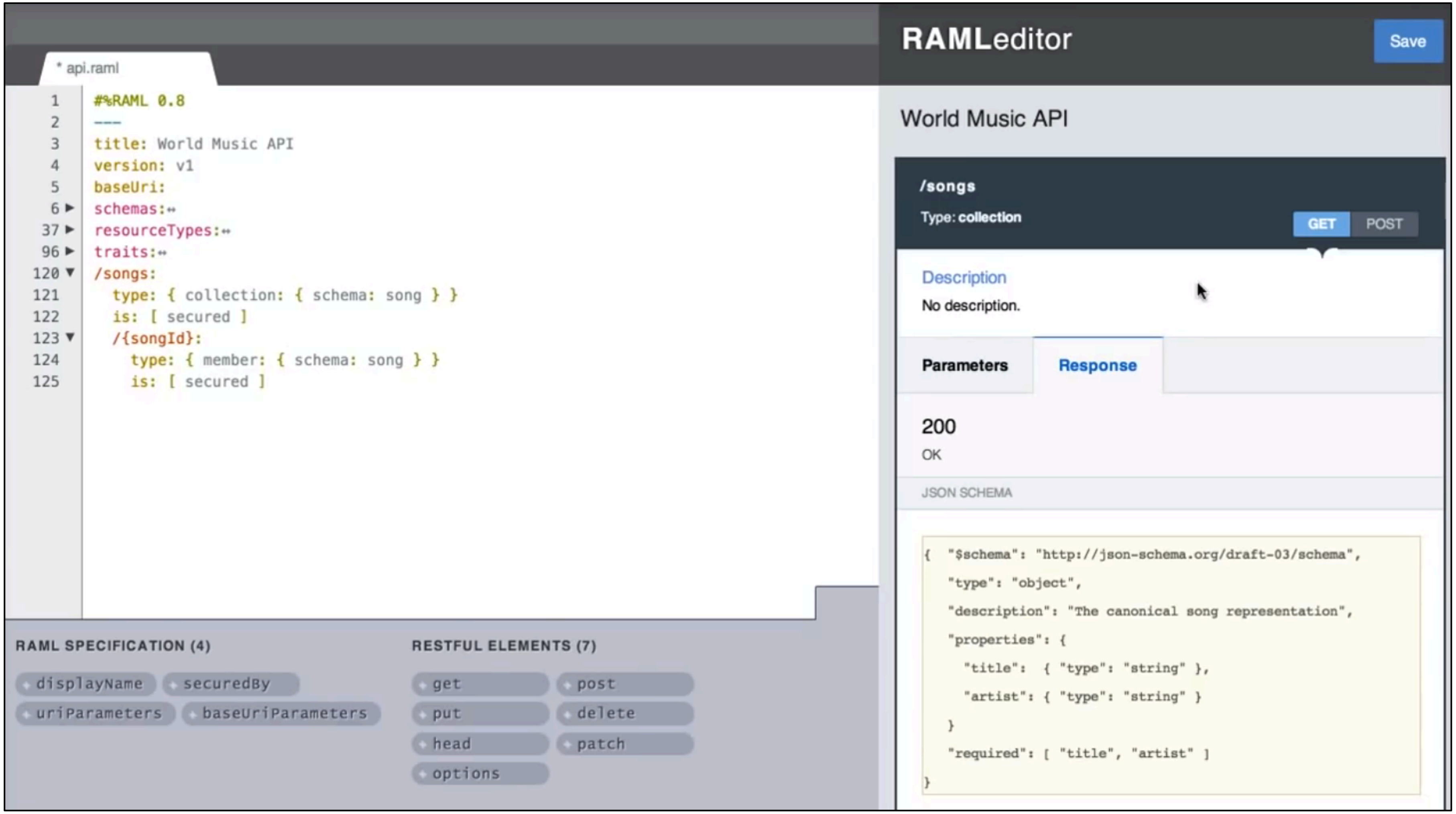
REST API structure - RAML



REST API structure- Swagger

POST /pet

Add a new pet to the store

OFF

Parameters

Parameter	Value	Description	Parameter Type	Data Type
body	{ "id": 0, "category": { "id": 0, "name": "string" }, "name": "doggie", "photoUrls": [Parameter content type: application/json	**Pet object that needs to be added to the store**	body	Model / Model Schema

```
{
  "id": 0,
  "category": {
    "id": 0,
    "name": "string"
  },
  "name": "doggie",
  "photoUrls": [
    "string"
  ],
  "tags": [
    {
```

Click to set as parameter value

Response Messages

HTTP Status Code	Reason	Response Model	Headers
405	Invalid input		

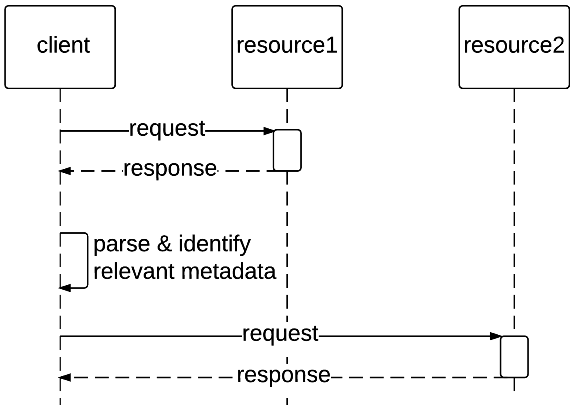
Try it out!

REST API dynamics

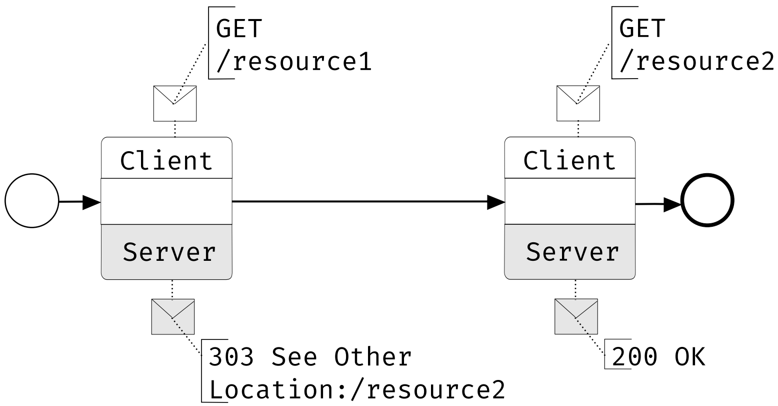
- Redirect -

GET /resource 1 HTTP/1.1	
HTTP/1.1 Location:	303 See Other /resource2
GET /resource2 HTTP/1.1	
HTTP/1.1	200 OK

UML Sequence diagram



BPMN Choreography diagram



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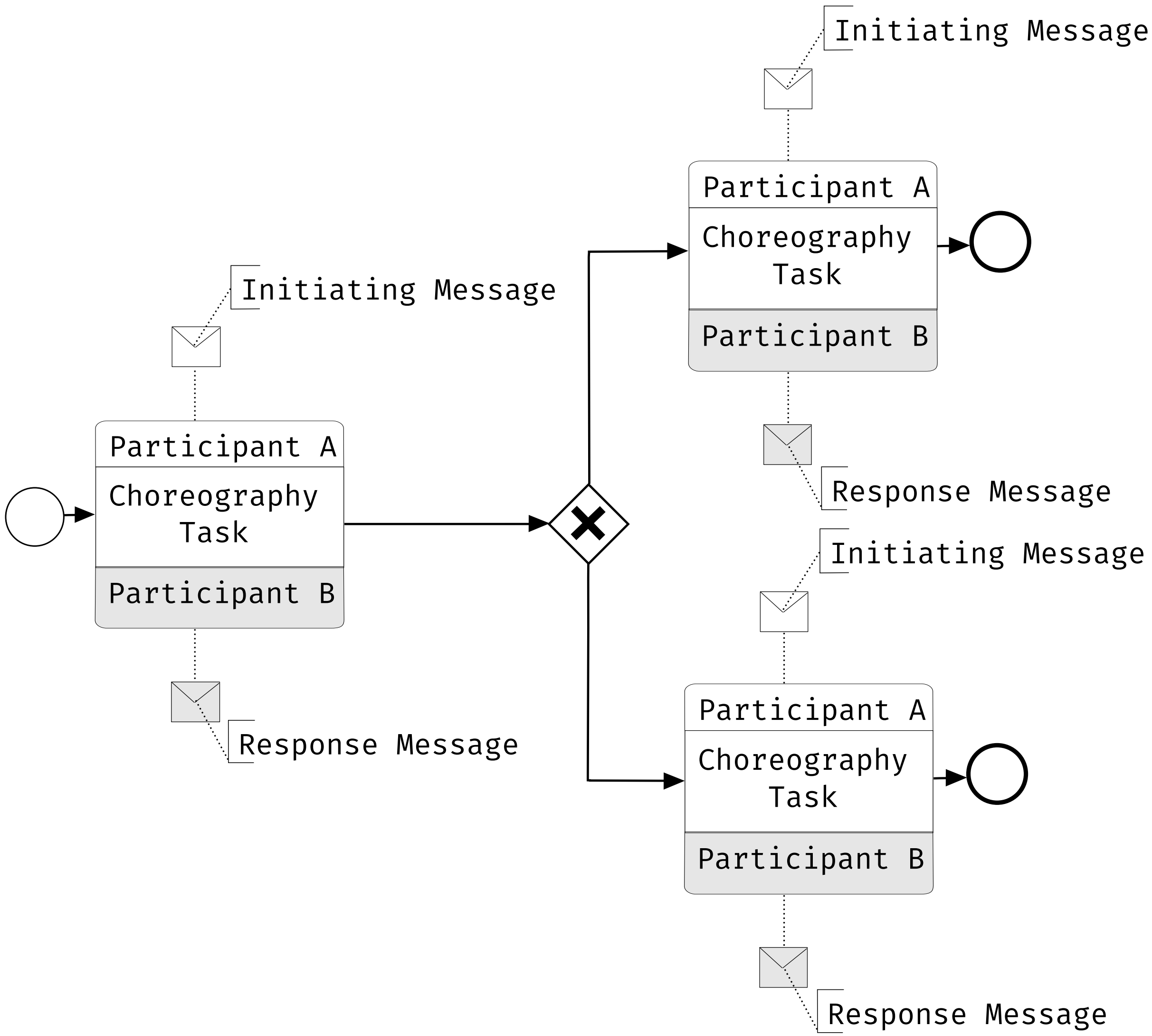
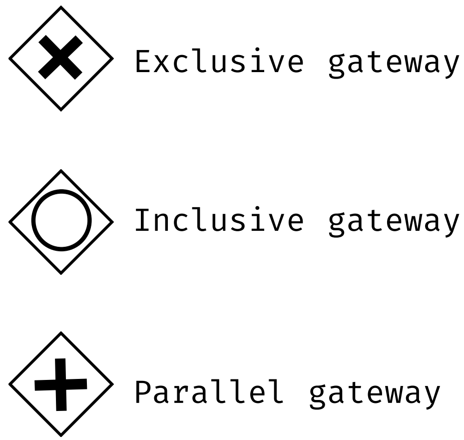
BPMN Choreography



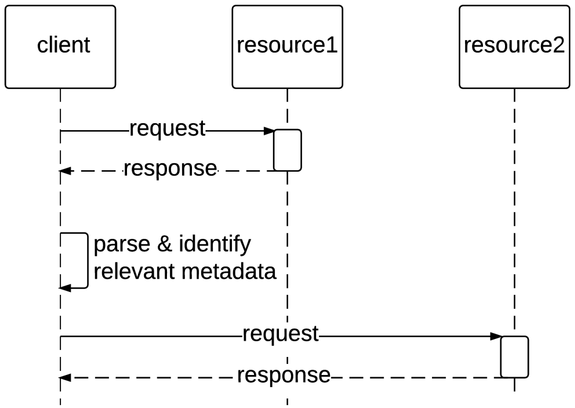


REST API dynamics

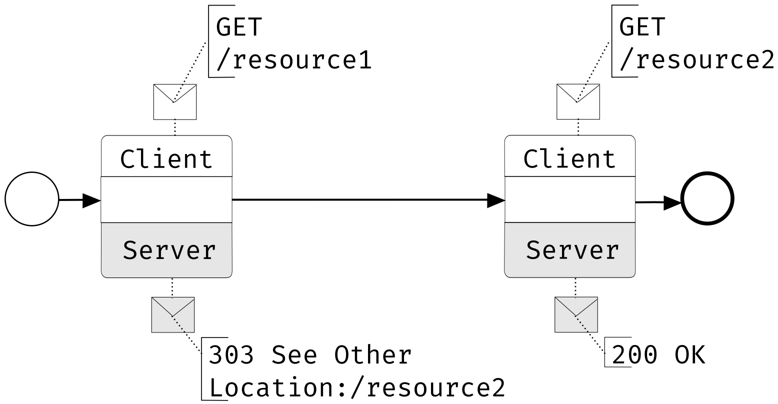
- Redirect -

GET /resource 1 HTTP/1.1	
HTTP/1.1 Location:	303 See Other /resource2
GET /resource2 HTTP/1.1	
HTTP/1.1	200 OK

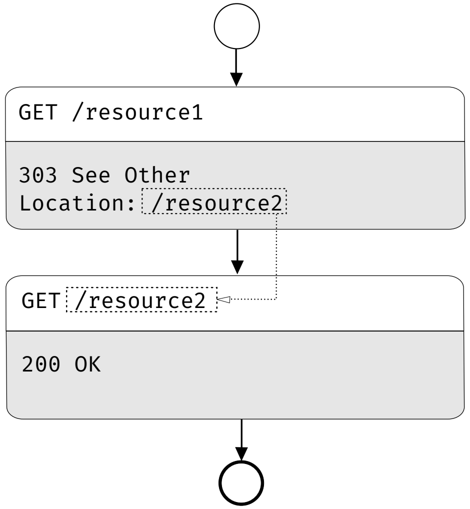
UML Sequence diagram



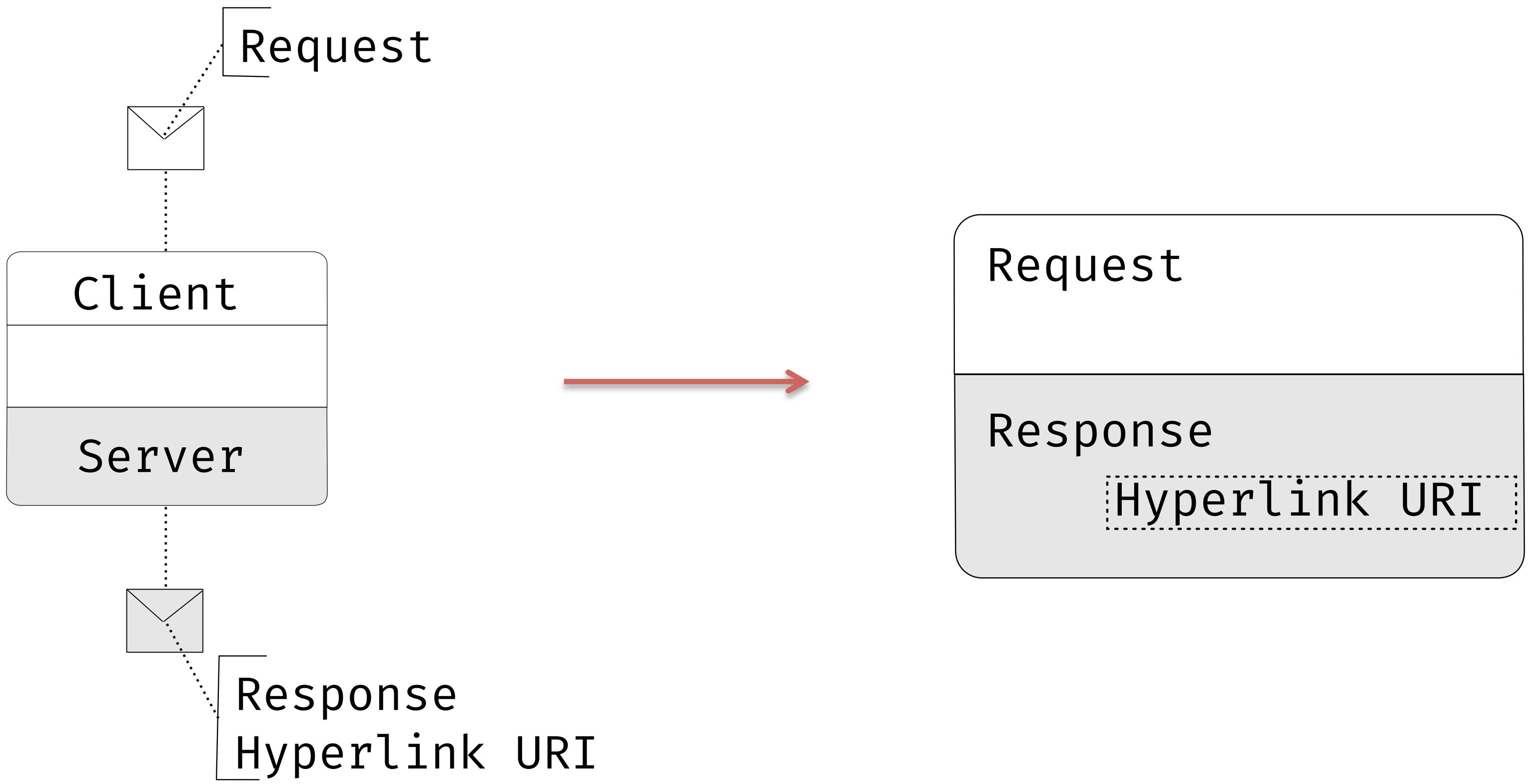
BPMN Choreography diagram



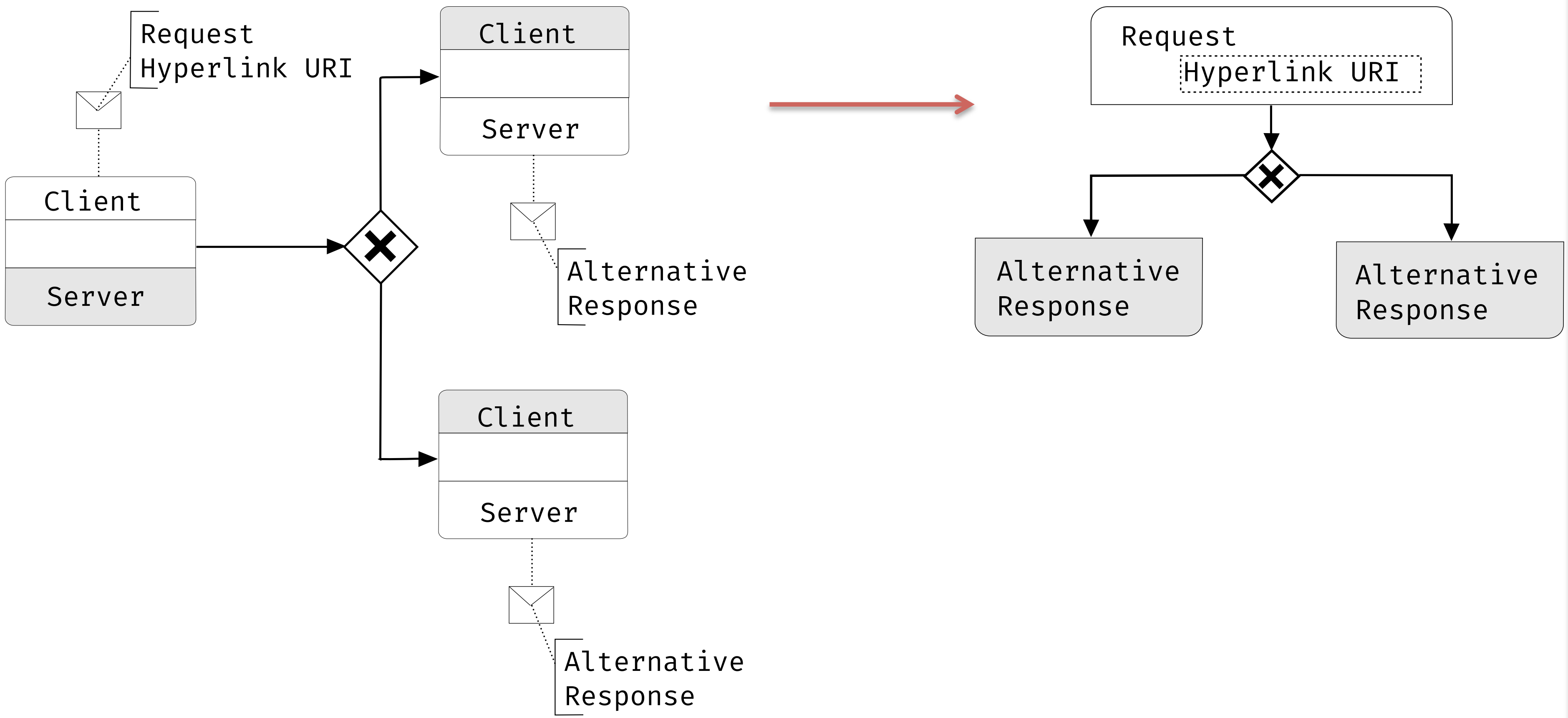
Our proposal

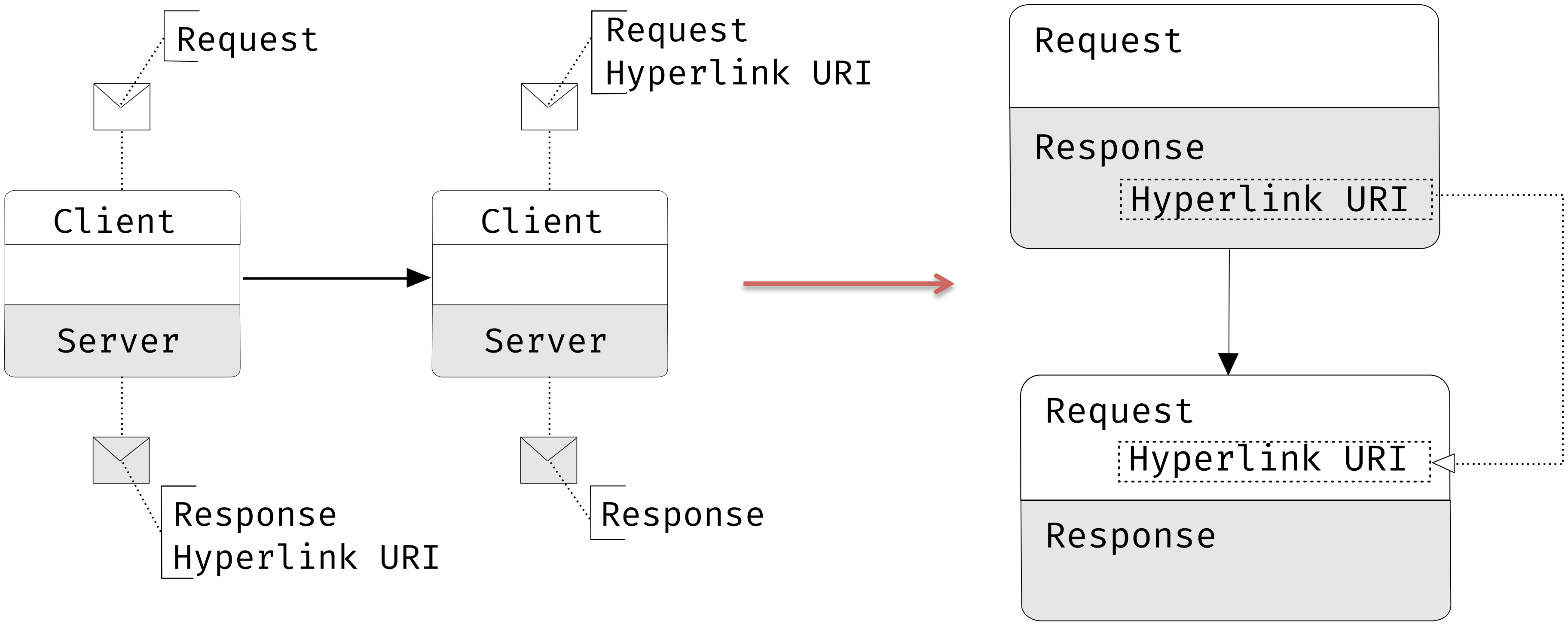


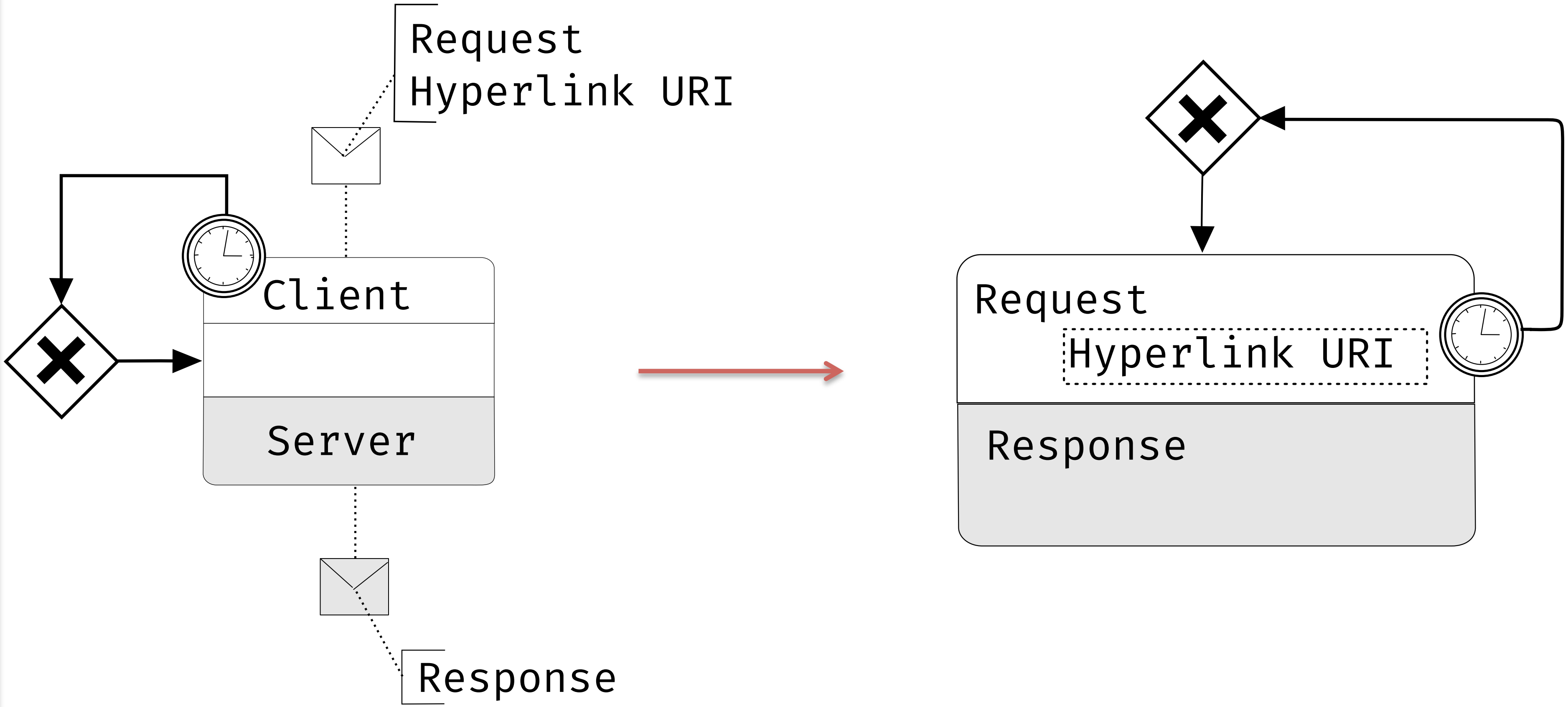
Extended BPMN Choreography



Assumption:
ONE client – **ONE** server


Request
Hyperlink URI
Client
Server
Client
Server
Alternative
Response
Client
Server
Alternative
Response
Request
Hyperlink URI
Alternative
Response
Alternative
Response


Request
Client
Server
Response
Hyperlink URI
Request
Hyperlink URI
Client
Server
Response
Request
Response
Hyperlink URI
Request
Hyperlink URI
Response


Request
Hyperlink URI
Client
Server
Response
Request
Hyperlink URI
Response

Long-running Request

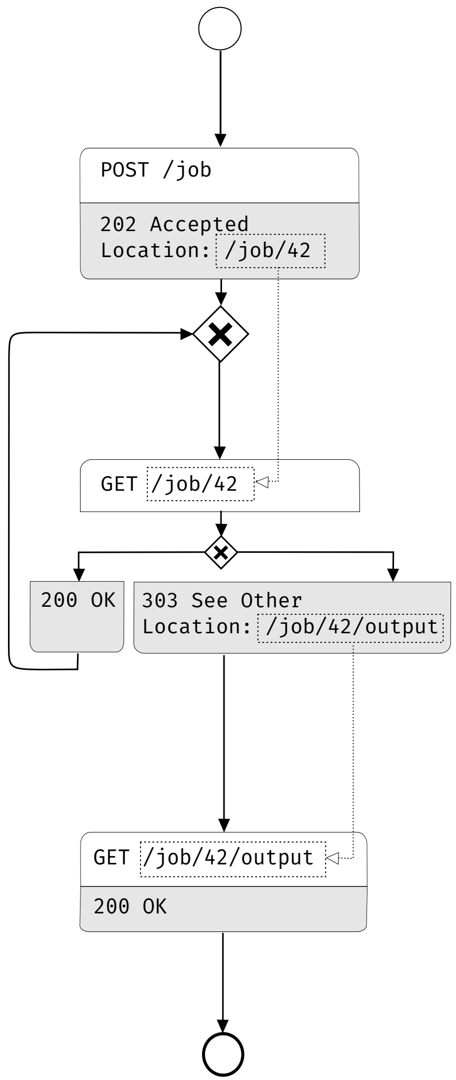
-RESTful Conversation Example-

e.g.: http://docs.aws.amazon.com/amazonglacier/latest/dev/job-operations.html

Long-running Request

- Happy path -

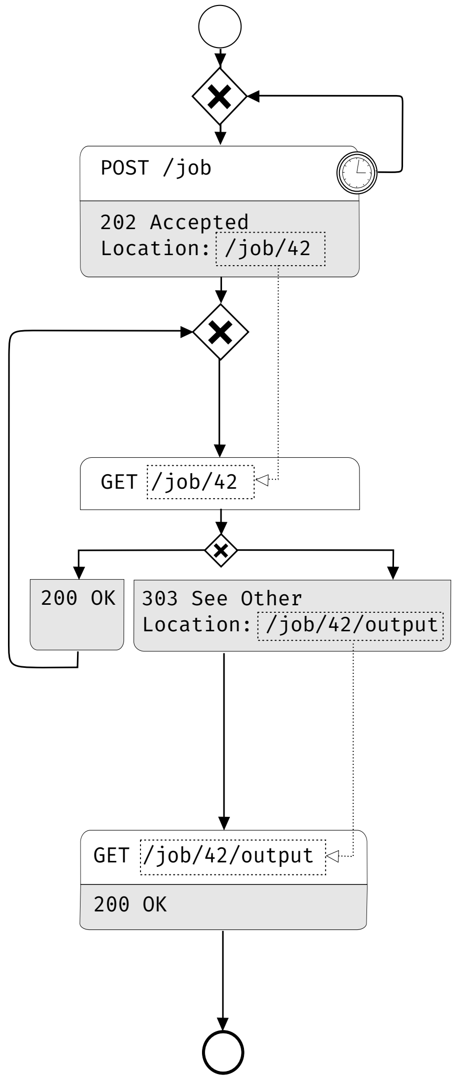
Create job	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK



Long-running Request

- Resending the request -

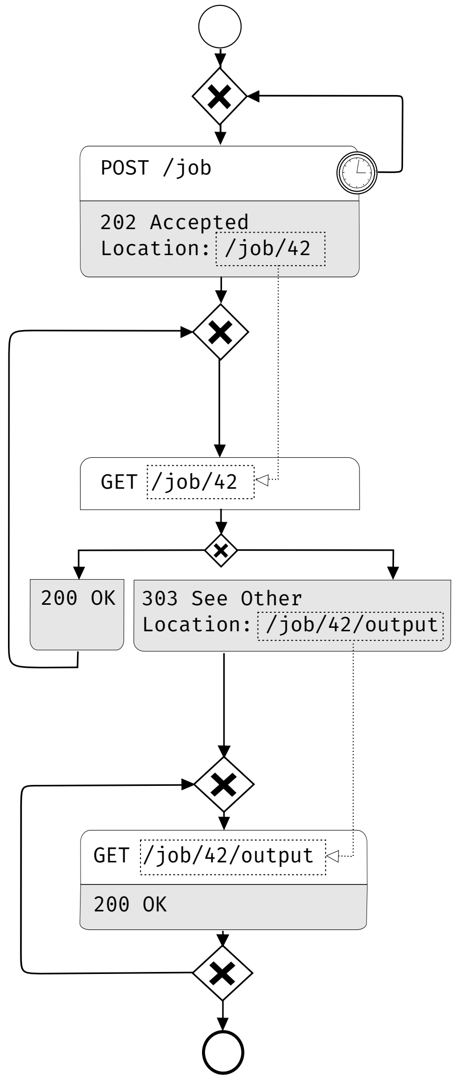
Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK



Long-running Request

- Reading the results -

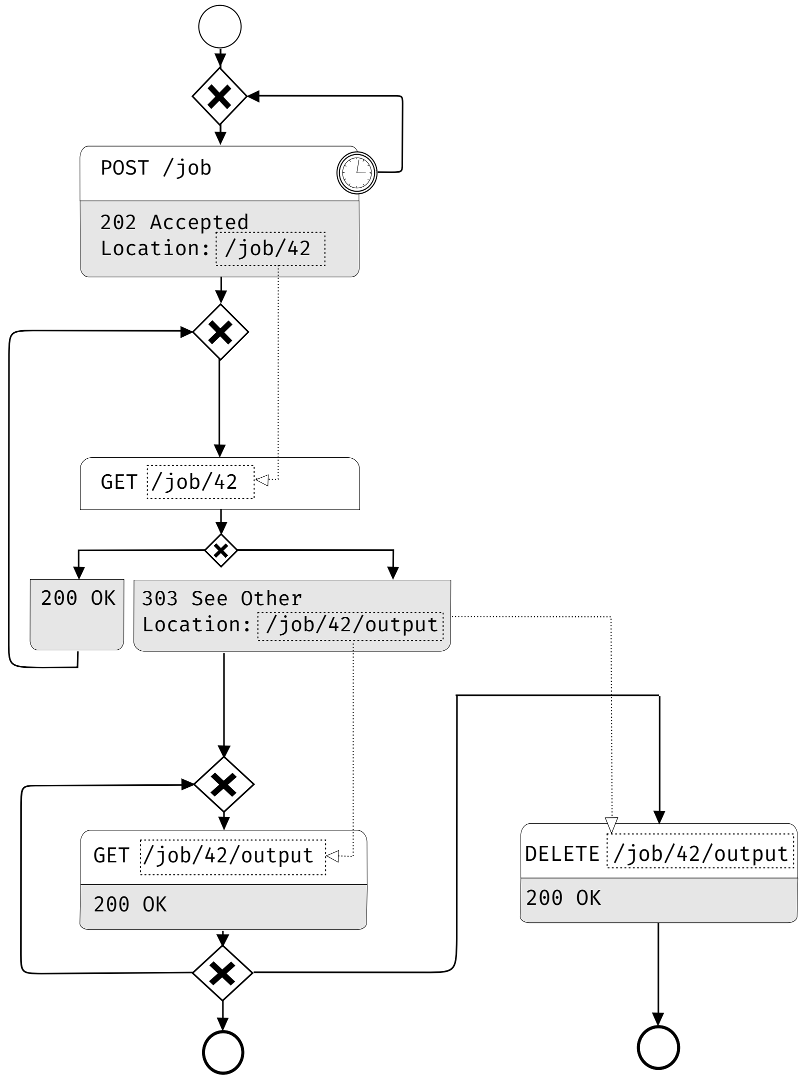
Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK



Long-running Request

- Deleting the output resource -

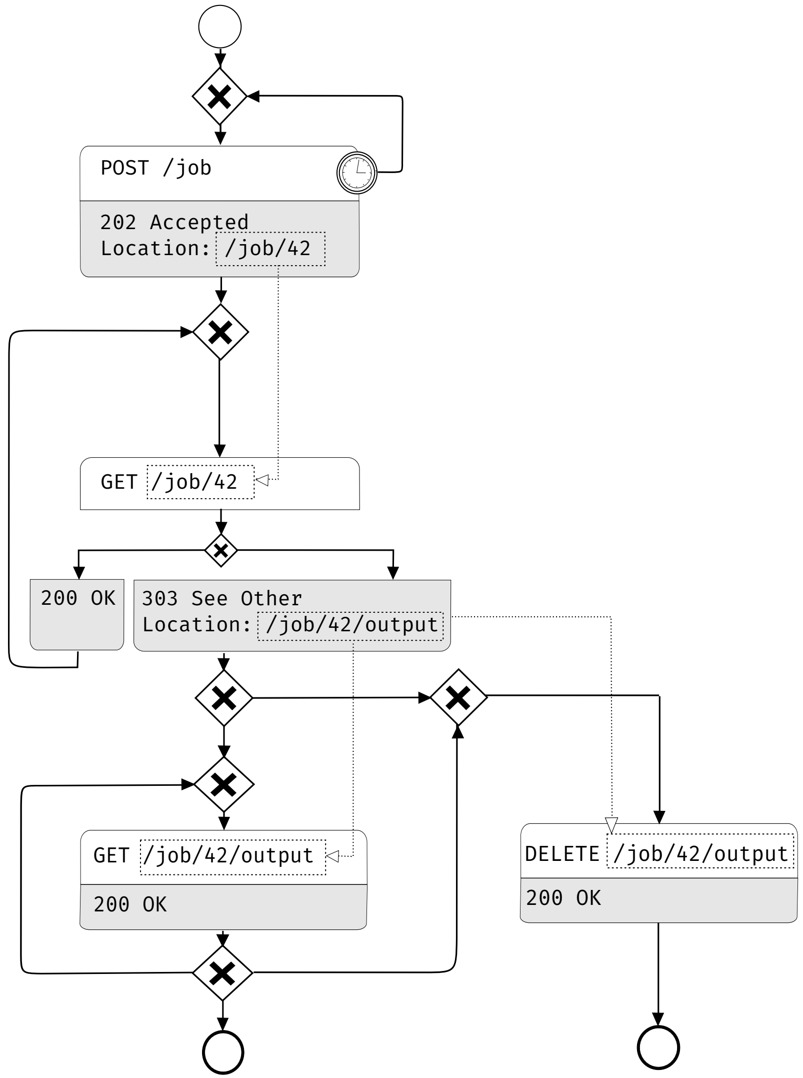
Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
Delete output	**DELETE / job / 42 / output HTTP/1.1**
	HTTP/1.1 200 OK



Long-running Request

- Deleting the output resource -

Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Delete output	**DELETE / job / 42 / output HTTP/1.1**
	HTTP/1.1 200 OK



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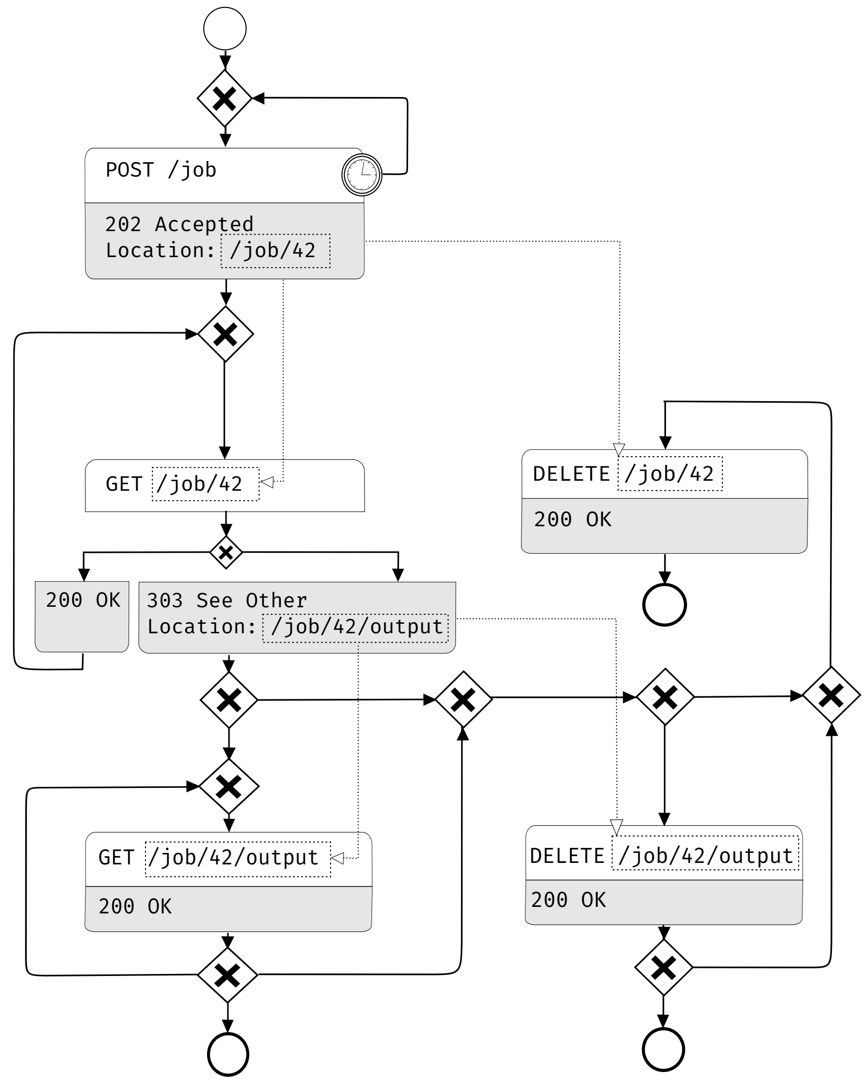
Long-running Request

- Deleting the job resource -

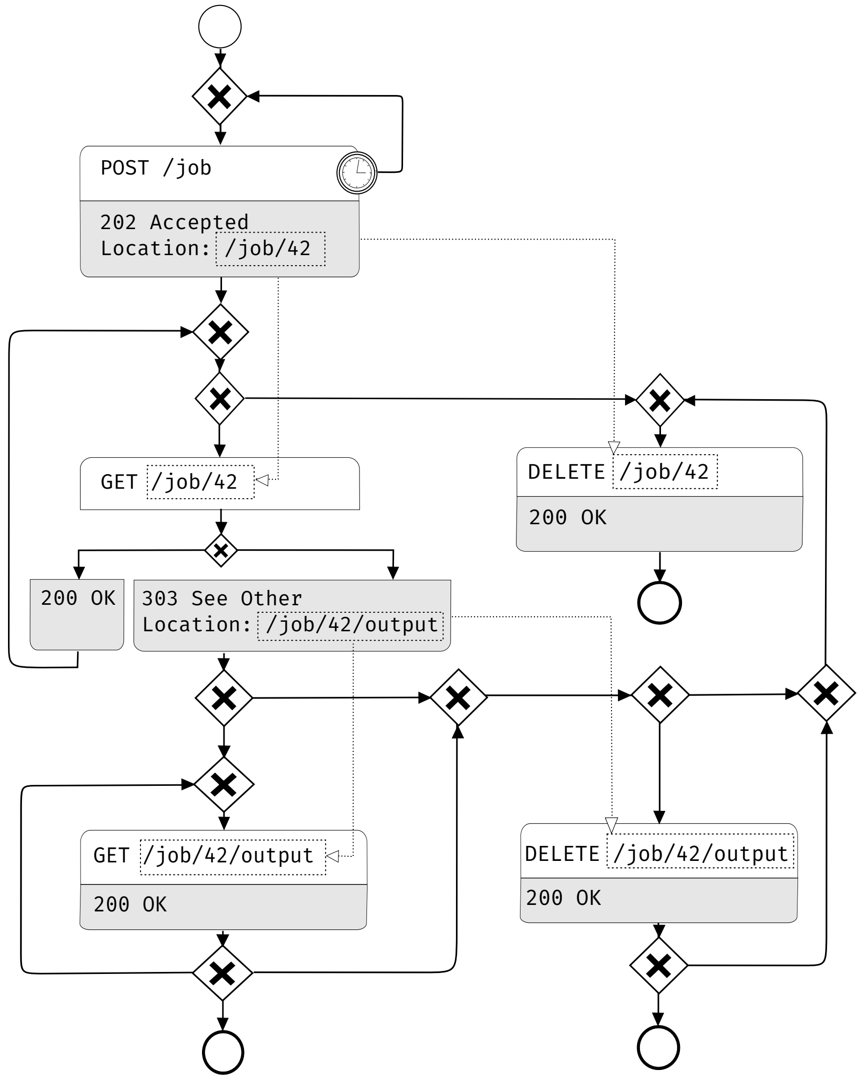
Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Delete output	DELETE / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
Clean up	**DELETE / job / 42 HTTP/1.1**
	HTTP/1.1 200 OK



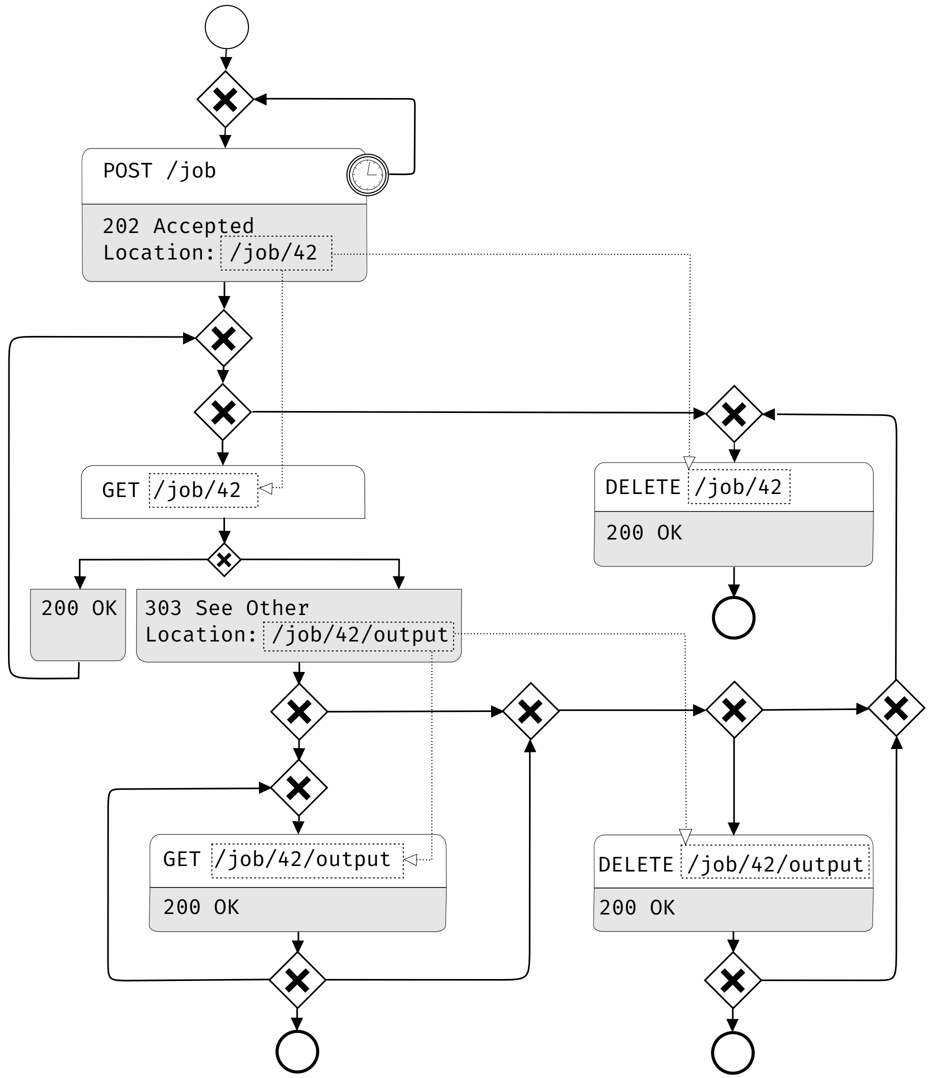
Long-running Request

- Deleting the job resource -

Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Delete job	**DELETE / job / 42 HTTP/1.1**
	HTTP/1.1 200 OK



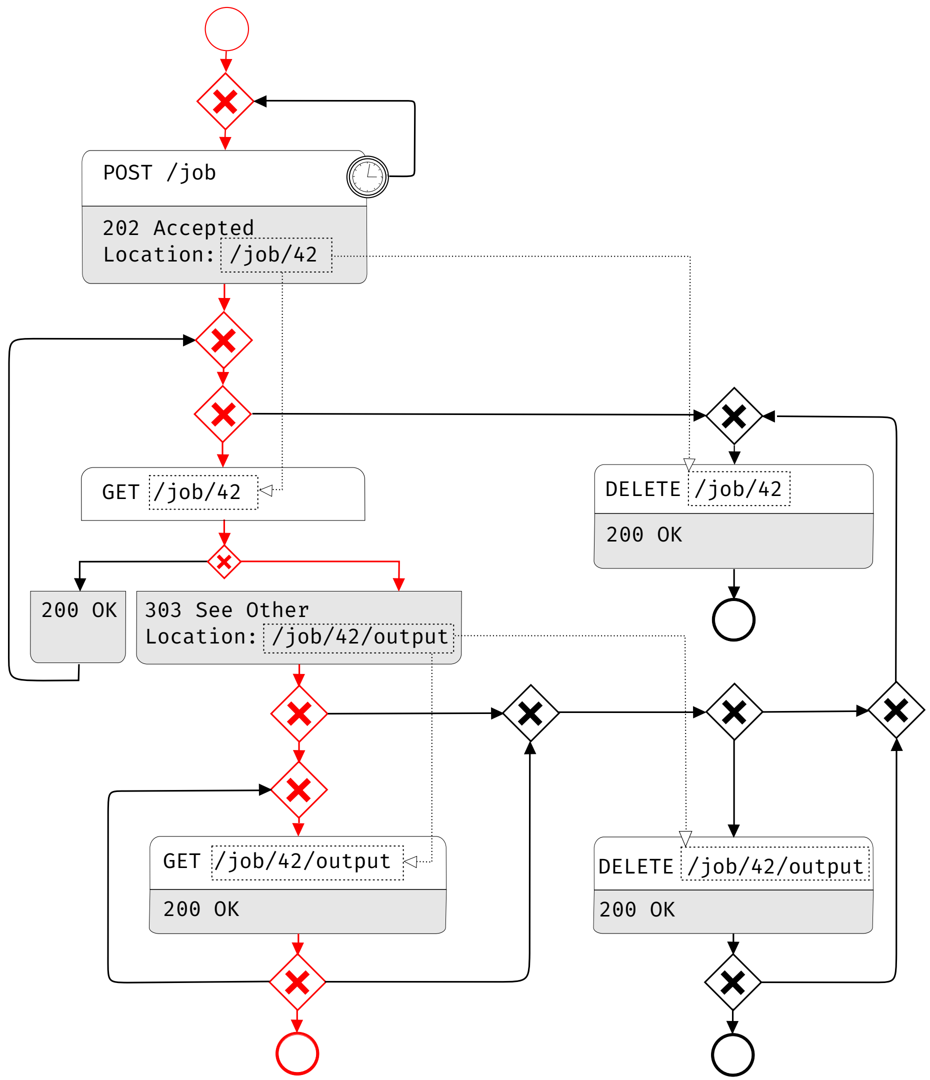
Long-running Request



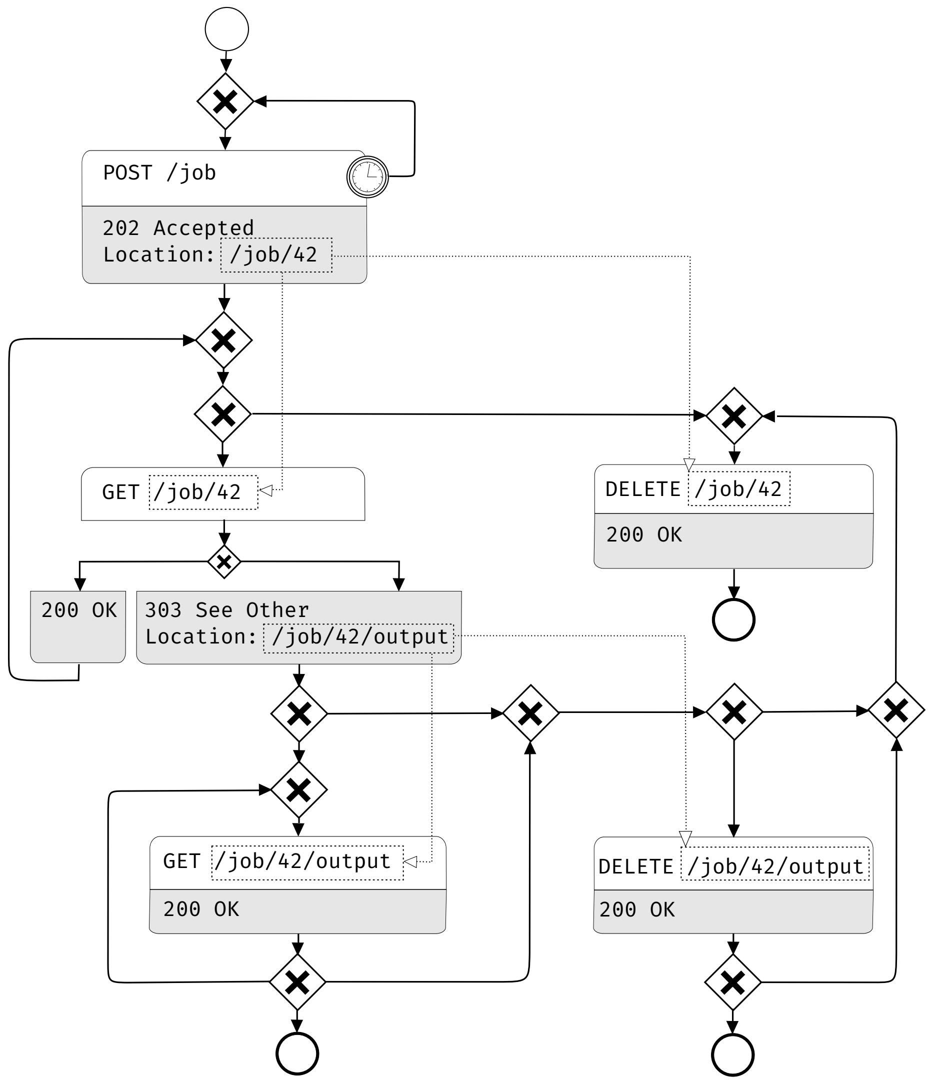
Long-running Request

- Short happy path -

Create job	POST / job HTTP/1.1	
	HTTP/1.1 Location:	202 Accepted / job / 42
Poll	GET / job / 42 HTTP/1.1	
	HTTP/1.1 Location:	303 See Other / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1	
	HTTP/1.1	200 OK



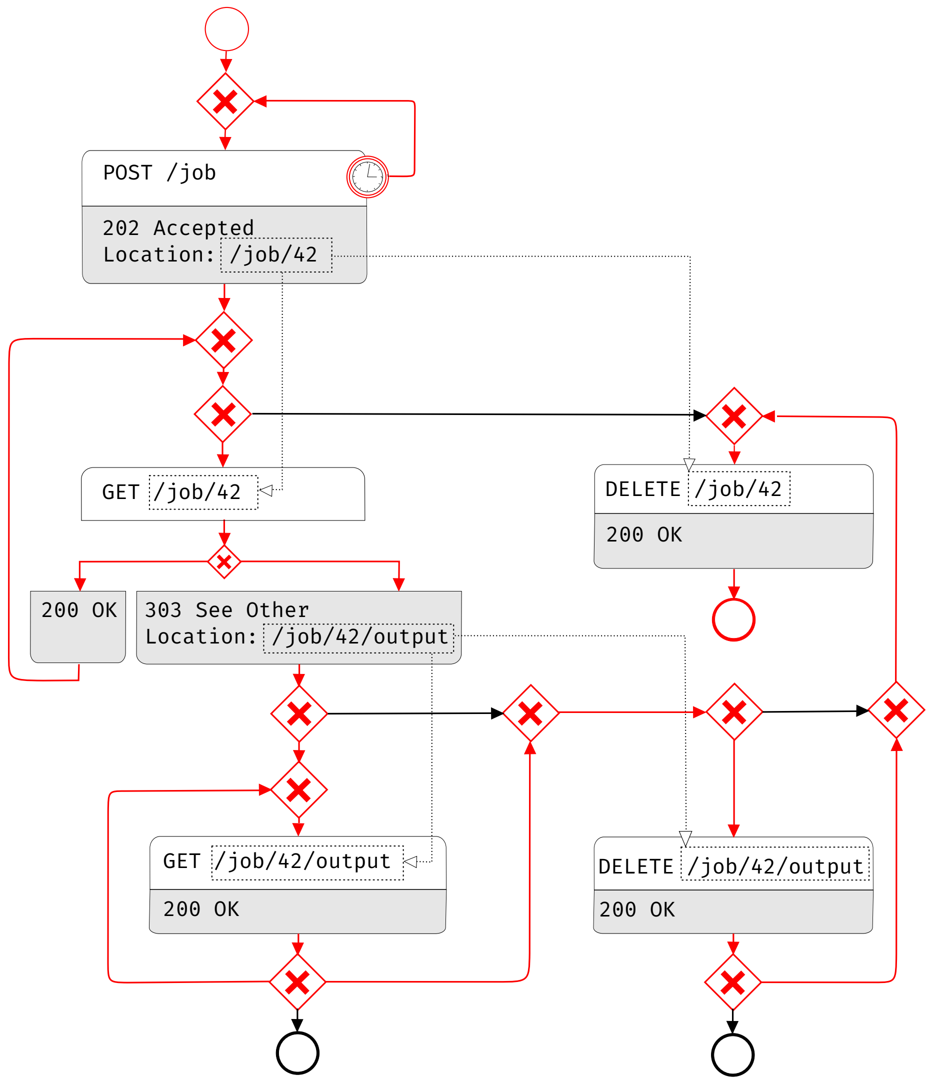
Long-running Request



Long-running Request

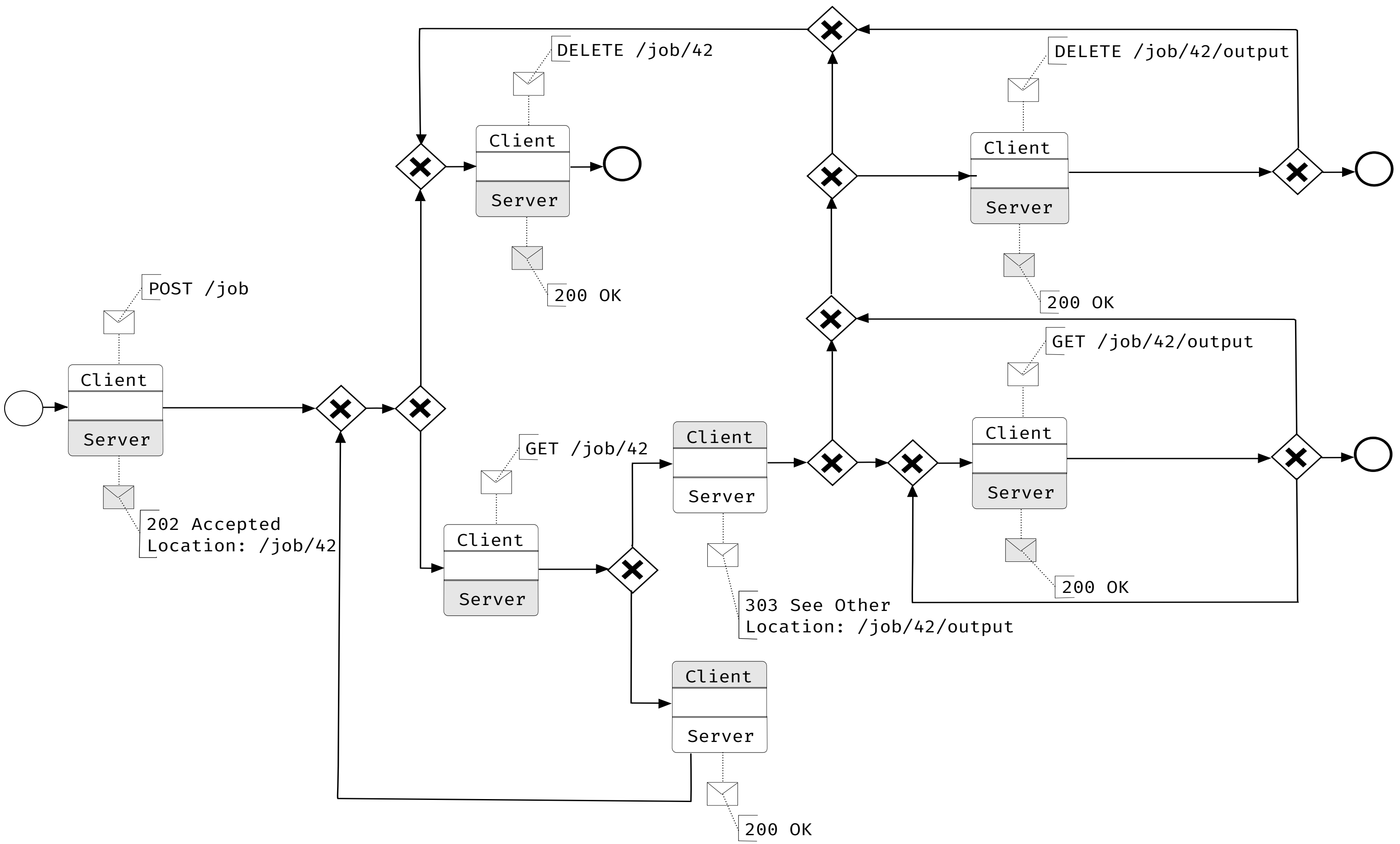
- Long unhappy path -

Create job	POST / job HTTP/1.1
	POST / job HTTP/1.1
	HTTP/1.1 202 Accepted Location: / job / 42
Poll	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 HTTP/1.1
	HTTP/1.1 303 See Other Location: / job / 42 / output
Read results	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
	GET / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
Delete output	DELETE / job / 42 / output HTTP/1.1
	HTTP/1.1 200 OK
Delete job	DELETE / job / 42 HTTP/1.1
	HTTP/1.1 200 OK



Long-running Request

-BPMN Choreography-



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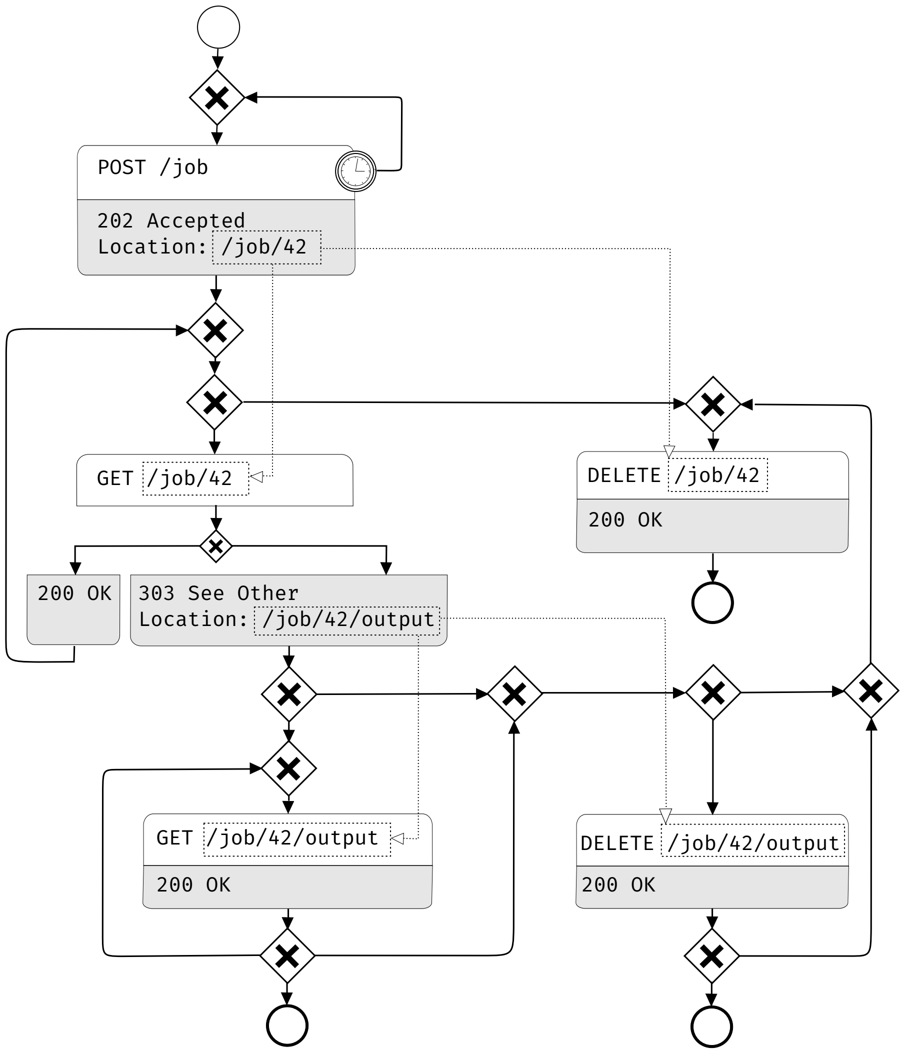
Long-running Request

-Extended BPMN Choreography-



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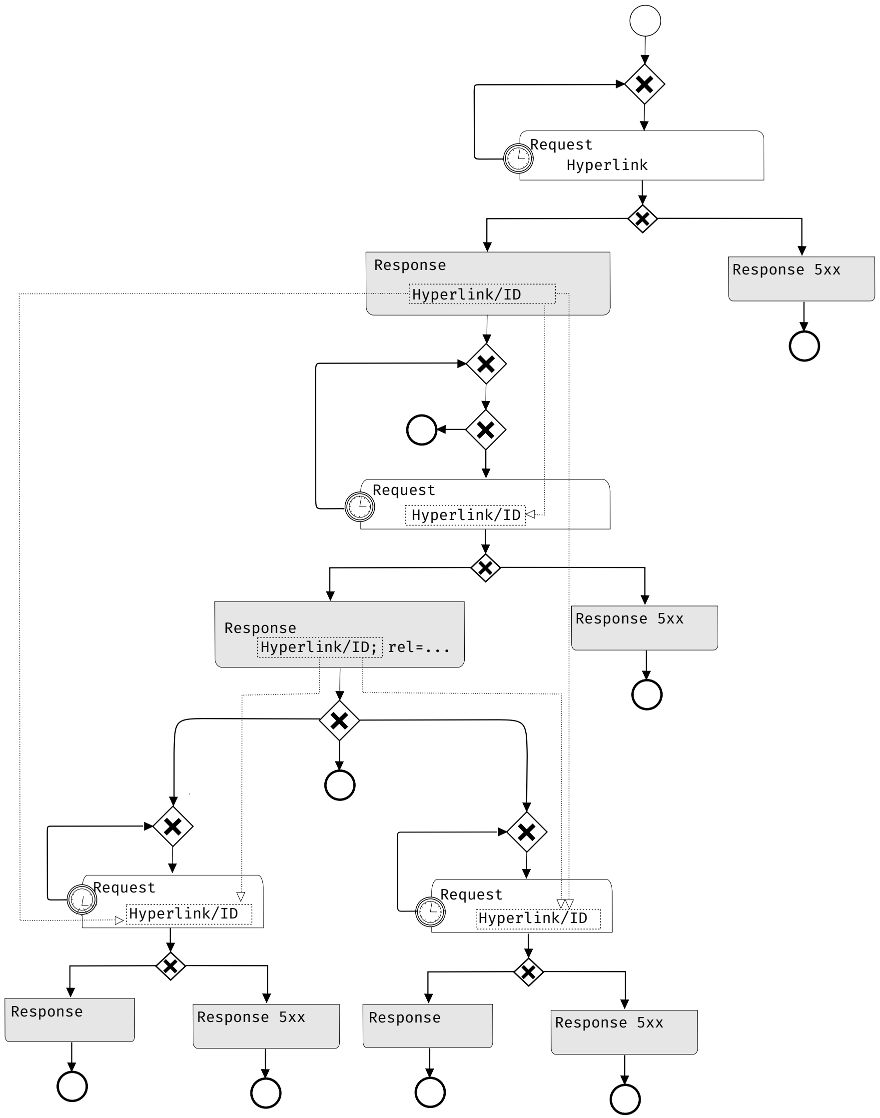
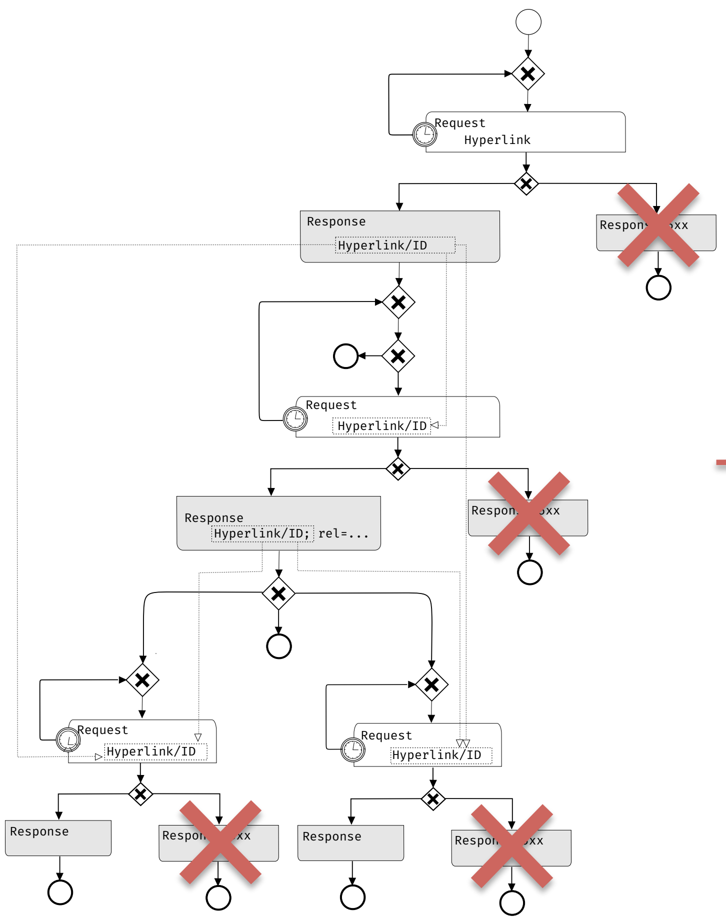
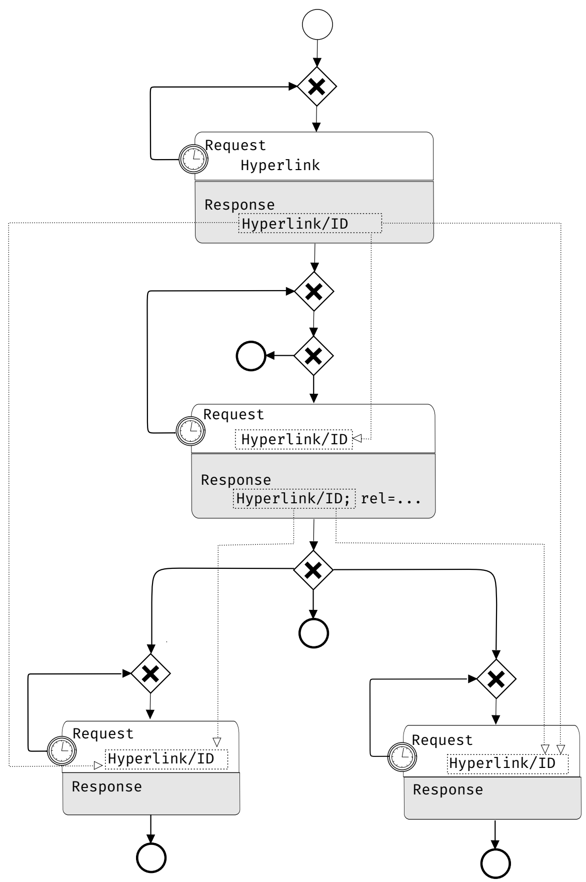
Abstractions and Simplifications

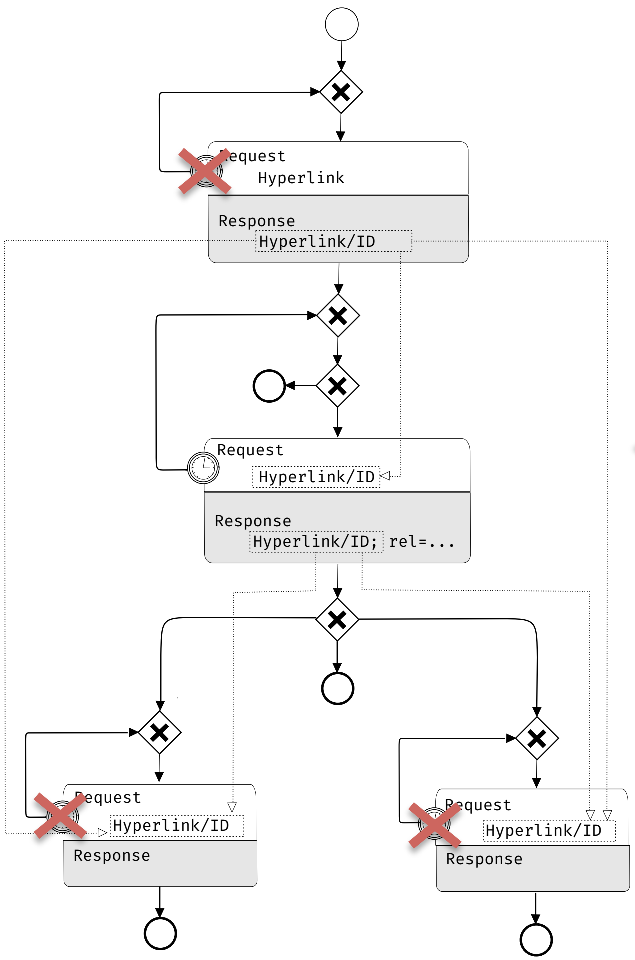


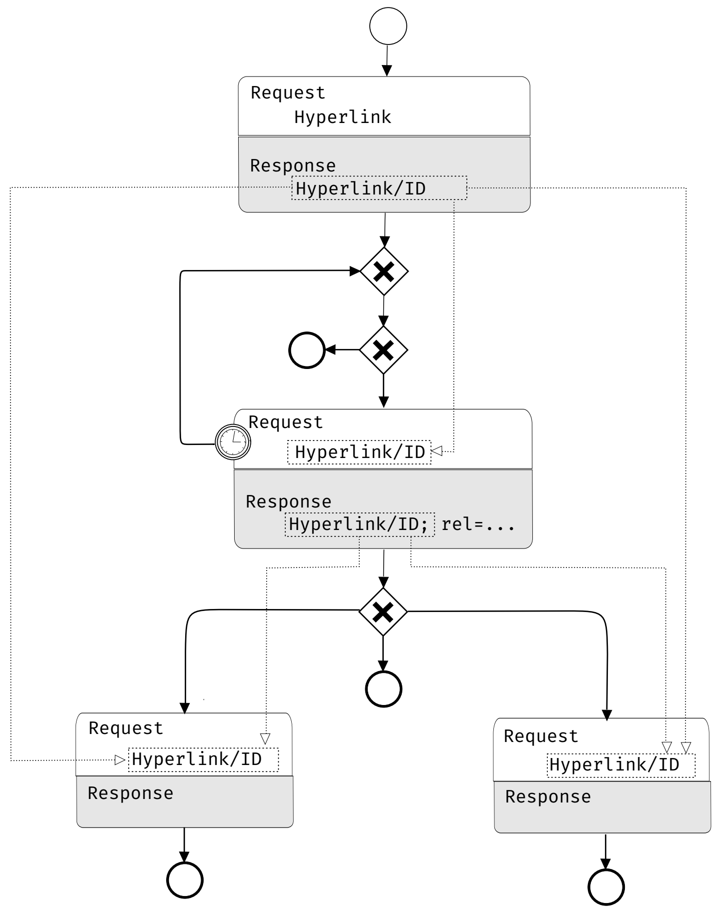
Abstraction – Server Error Response





Abstraction – Idempotent requests





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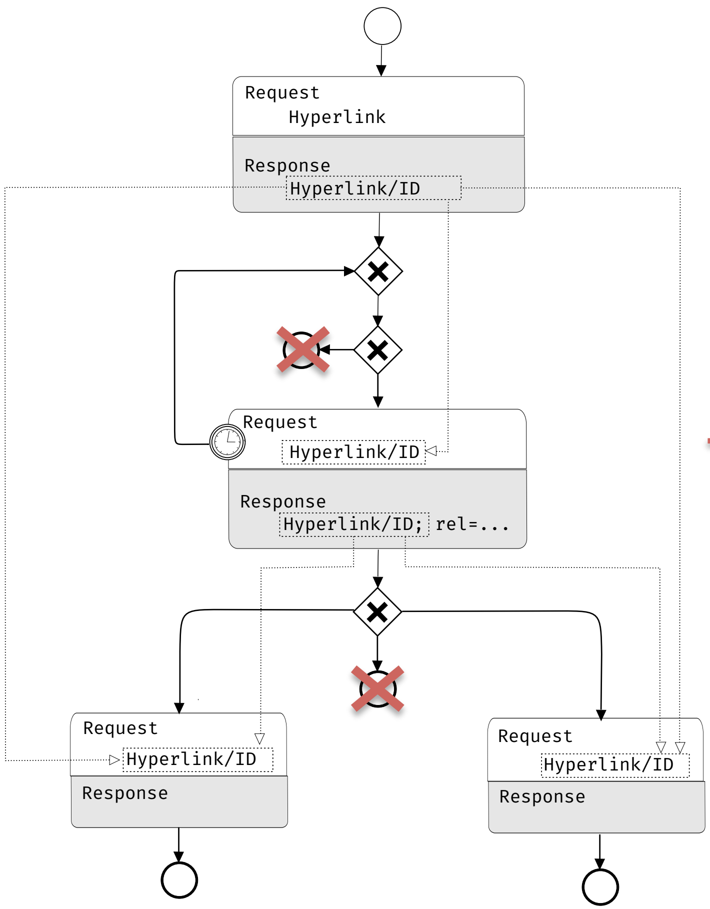
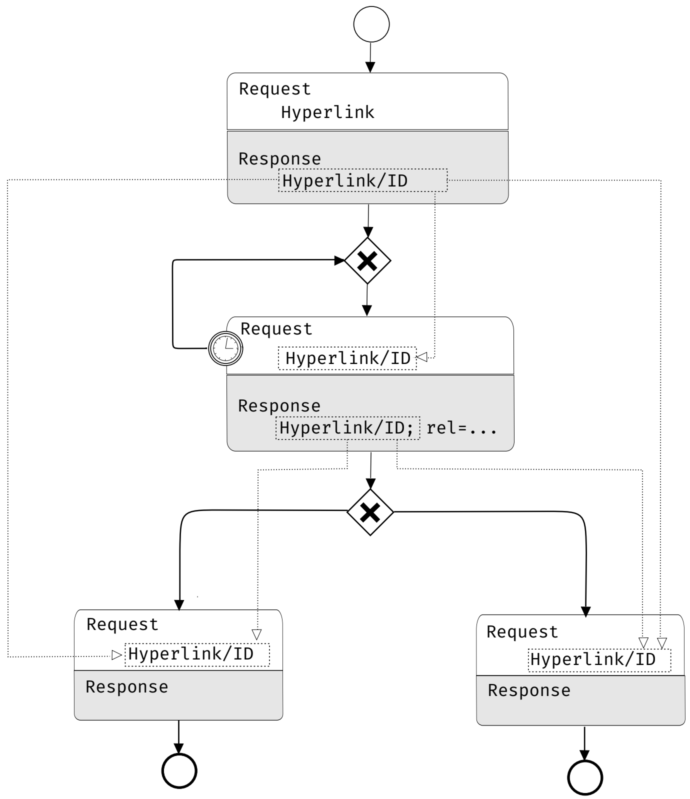
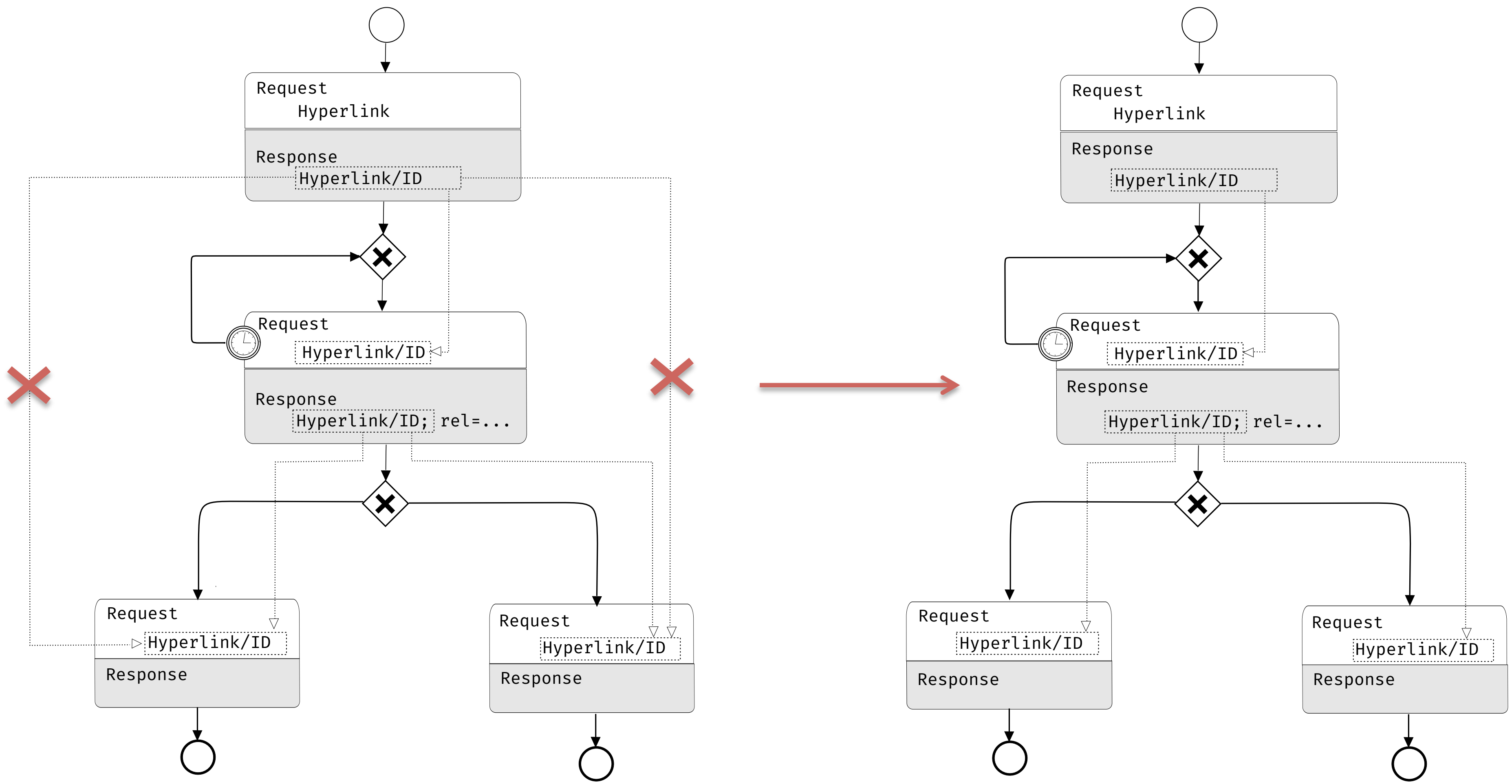
Simplification – End events

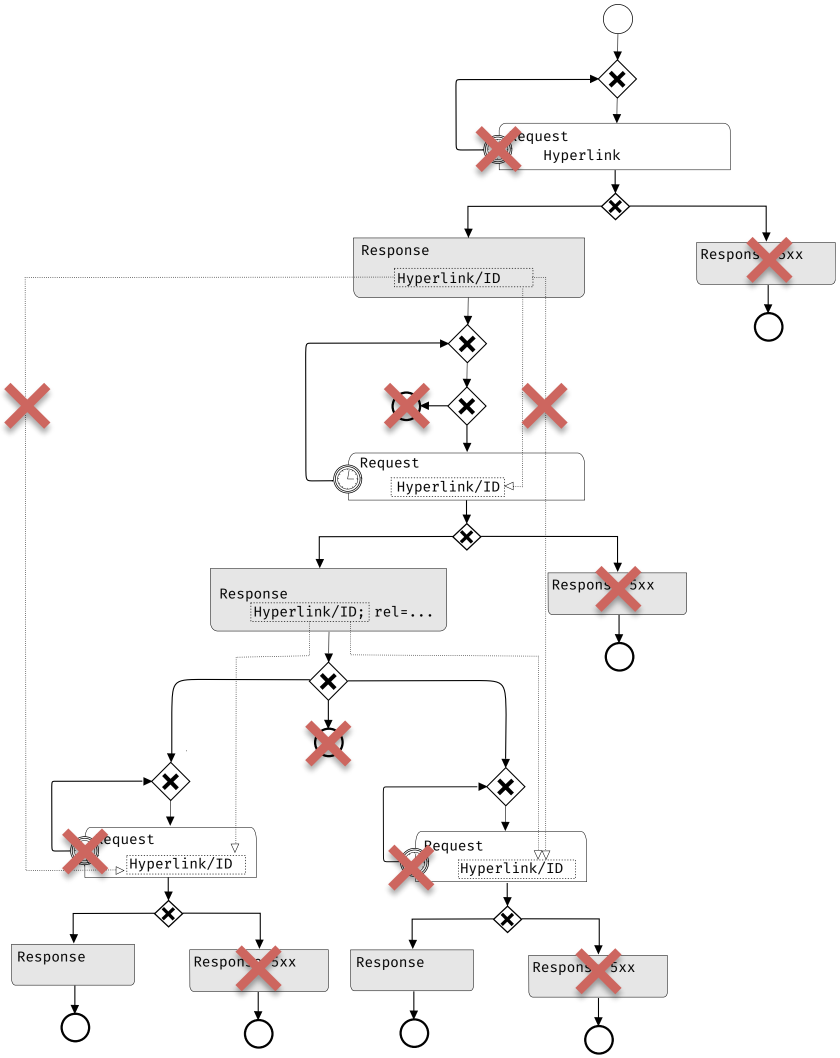


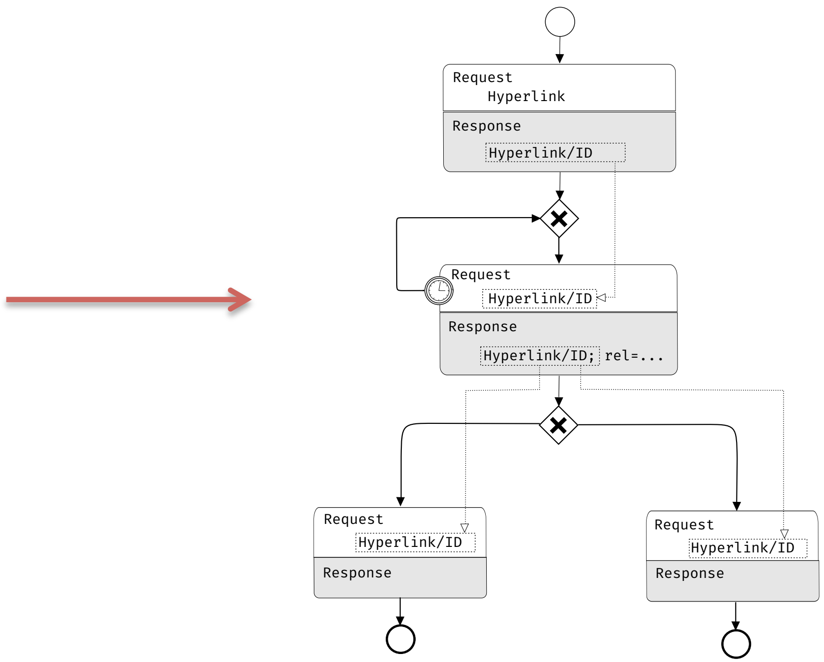


Simplification - Hyperlinks



Simplifications and abstractions summary





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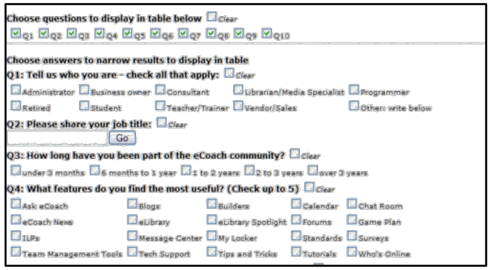
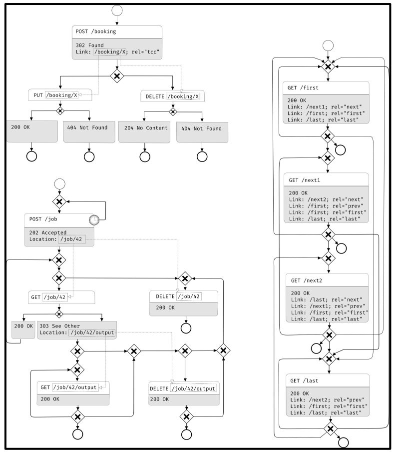
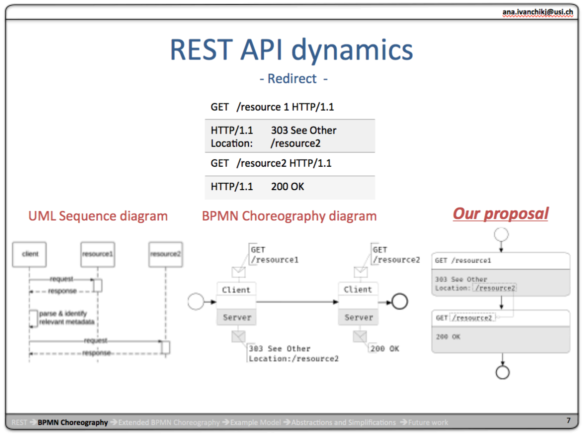
Future Work

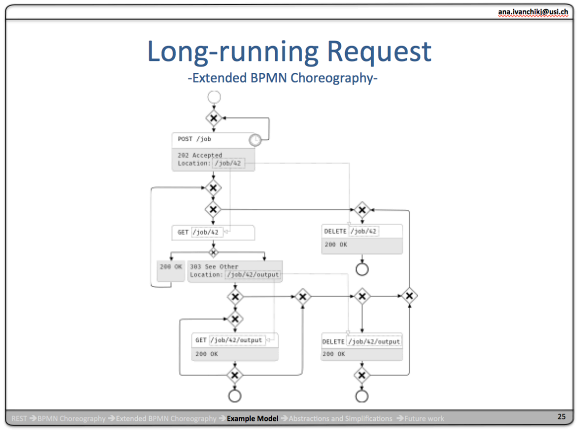

Choose questions to display in table below ☐ Clear
☑ Q1 ☑ Q2 ☑ Q3 ☑ Q4 ☑ Q5 ☑ Q6 ☑ Q7 ☑ Q8 ☑ Q9 ☑ Q10

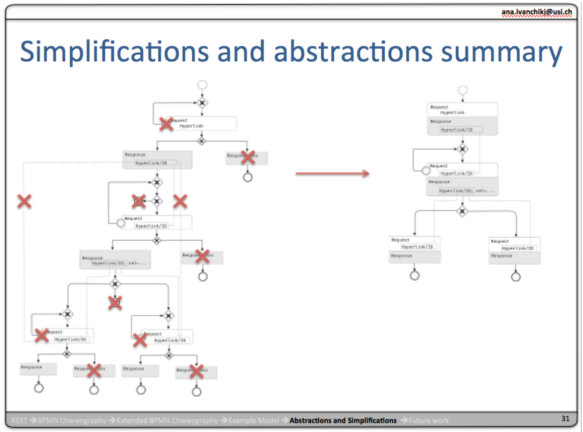
Choose answers to narrow results to display in table
Q1: Tell us who you are – check all that apply: ☐ Clear
☐ Administrator ☐ Business owner ☐ Consultant ☐ Librarian/Media Specialist ☐ Programmer
☐ Retired ☐ Student ☐ Teacher/Trainer ☐ Vendor/Sales ☐ Other: write below
Q2: Please share your job title: ☐ Clear
Go
Q3: How long have you been part of the eCoach community? ☐ Clear
☐ under 3 months ☐ 6 months to 1 year ☐ 1 to 2 years ☐ 2 to 3 years ☐ over 3 years
Q4: What features do you find the most useful? (Check up to 5) ☐ Clear
☐ Ask eCoach ☐ Blogs ☐ Builders ☐ Calendar ☐ Chat Room
☐ eCoach News ☐ eLibrary ☐ eLibrary Spotlight ☐ Forums ☐ Game Plan
☐ ILPs ☐ Message Center ☐ My Locker ☐ Standards ☐ Surveys
☐ Team Management Tools ☐ Tech Support ☐ Tips and Tricks ☐ Tutorials ☐ Who's Online



- Survey
  - Understandability
  - Ease of use
- Conversation Patterns
  - Expressiveness
  - Collection
  - Reusability







Contribute to our research by filling in the ***survey!!!***

http://restfulconversations.limequery.com/index.php/215135/lang-en

Contact us at:

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silvia.schreier@innoq.com