How the standardization of OAS 3 refactored a government

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APIWISE

kadaster

Government of the Netherlands
The Netherlands
The Netherlands

- 17 million inhabitants
- 41.543 square kilometers
- 55% below sea level
- 12 provinces
- 390 municipalities
- 24 water districts
The Environmental Act
The Netherlands

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The solution: APIs!
API Strategy for the Environmental Act

- REST(ful) first
- JSON first
- Hypermedia
- Error formatting
- Auth
- Developer Experience
- Even if we're wrong…
CRS Negotiation

POST /buildings/_search
Content-Crs: wgs84
Accept-Crs: etrs89

{
  "type": "Polygon",
  "coordinates": [
    [5.2734375, 53.12040528310657],
    [5.9765625, 53.12040528310657],
    [5.9765625, 53.9560855309879],
    [5.2734375, 53.9560855309879],
    [5.2734375, 53.12040528310657]
  ]
}

Location: /buildings/_search
Content-Crs: etrs89

{
  "type": "Polygon",
  "coordinates": [
    [6.4375, 54.0528310657],
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    [6.5625, 54.855309879],
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  ]
}
One way to describe APIs

- Available tools
- Sharing knowledge
- Sharing templates
- Sharing examples
- Own (extensions on available) tools
- EU: WCAG 2.0
- Even if we're wrong…
OpenAPI Specification 3.x
Application for 'apply or explain'

Forum Standaardisatie

(Dutch Standardisation Forum)
Application process

• Paperwork
• Expert lobbying
• Expert reviews
• Expert examination
• Public reviews
• Ministry approval
• House of Representatives approval
Overheidsbrede Beleidsoverleg Digitale Overheid (OBDO)
FORUM STANDAARDISATIE
'pas toe of leg uit' beleid

OpenAPI Specification 3.0

Forum Standaardisatie feliciteert de Nederlandse vertegenwoordiging van het “Open API Initiative” met de verplichting op de ‘pas toe of leg uit’ lijst voor de open standaard Open API Standard 3.0, toegekend door het Overheidsbrede Beleidsoverleg Digitale Overheid (OBDO) op 25 mei 2018.

25 mei, 2018

Nico Westpalm van Hoorn
Geheime Staten Secretaris
National API Strategy
Multiple domains

- Environment
- Culture
- Healthcare
- Defense
- Justice
- Education
- Etc.
Github

- API Guidelines in Markdown
- Collaboration
- Versioning
- Forks for different use cases
- Reusable OAS3 components

$ref: 'https://rawgit.../headers.yaml'
Distributed OAS
Example

paths:
/buildings:
get:
  summary: Buildings
  parameters:
  - $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/parameters.yaml#/acceptCrs'
  - $ref: 'https://rawgit.com/PDOK/open-api-specs/master/shared/parameters.yaml#/pageSize'
responses:
  '200':
    $ref: '#/components/responses/Buildings'
  '401':
    $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/responses.yaml#/401'
  '403':
    $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/responses.yaml#/403'
  '406':
    $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/responses.yaml#/406'
  '503':
    $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/responses.yaml#/503'
Buildings:
  description: OK.
headers:
  Content-Crs: 
    $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/headers.yaml#/contentCrs'
X-Pagination-Page: 
  $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/headers.yaml#/xPaginationPage'
X-Pagination-Limit: 
  $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/headers.yaml#/xPaginationLimit'
X-Total-Count: 
  $ref: 'https://rawgit.com/dvh/KP-APIs/master/oas-components/headers.yaml#/xTotalCount'
content: 
  application/hal+json: 
    schema: 
      required: [ _embedded, _links ]
      type: object
      properties: 
        _embedded: 
          required: [ buildings ]
          type: object
          properties: 
            buildings: 
              type: array
              items: 
                $ref: '#/components/schemas/Building'
paths:
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X-Total-Count:
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content:

application/hal+json:

schema:
  required: [_embedded, _links]
  type: object
  properties:
    _embedded:
      required: buildings
      type: object
      properties:
        buildings:
          type: array
          items:
            $ref: '#/components/schemas/Building'
But...

paths:
/buildings:
/buildings/{id}:
/collection-2:
/collection-2/{id}:
/collection-3:
/collection-3/{id}:
/collection-n:
/collection-n/{id}:
Example

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      type: object
      properties:
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          required: ['buildings']
          type: object
          properties:
            buildings:
              type: array
              items:
                $ref: '#/components/schemas/Building'
“You don't generate the spec!”

Yes, we do.

```
{
    "title": "Test API",
    "version": "0.0.1",
    "resources": [
        {
            "buildings": {
                "singular": "building"
            }
        },
        {
            "places": {
                "singular": "place"
            }
        }
    ]
}
```
Multiple layers
OpenAPI first

openapi.yaml
OpenAPI first
OpenAPI first
OpenAPI first

openapi.yaml -> extensions -> internal endpoint -> public endpoint

openapi.yaml - ex extensions

gateway

openapi.yaml - ex extensions
OpenAPI first

- openapi.yaml
- extensions
- security conf
- gateway
- public endpoint
- internal endpoint
- openapi.yaml
  - ex extensions
  - inc security conf

- openapi.yaml
  - ex extensions
  - ex security conf
OpenAPI first
Different endpoints, different servers

- **Absolute URI’s**
  - _links.next.href: '/buildings/?page=2'
  - _links.coc.href: 'https://api.coc.../'

- **Mocking**
- **Examples**
OpenAPI Challenges

- **Reusability**
  Traits?

- **Extendability**
  allOf:
  - $ref: 'openapi.yaml'

- **Examples**
  Runtime expressions?
Next steps

- Github project
- Portal with tools (to collect gov APIs, sssshh…)
- Benchmark gov APIs
- Secure maintenance
Next steps

• Github project
• Portal with tools (to collect gov APIs, sssshh…)
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• developer.government.nl
Thank you!

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Brewery: https://untappd.com/brouwtoren ;-}