

Toekomst van geodata: van SOAP naar API's

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Status Openbaar



Toekomst van geodata

- Opbouw presentatie:
 - SOAP
 - Wat is het
 - Waar komt het van
 - Interprotocol
 - Aanleiding
 - REST API
 - Wat is het
 - Hoe komt het
 - Demo
 - BI



SOAP

SOAP Binding, wanneer gestart?

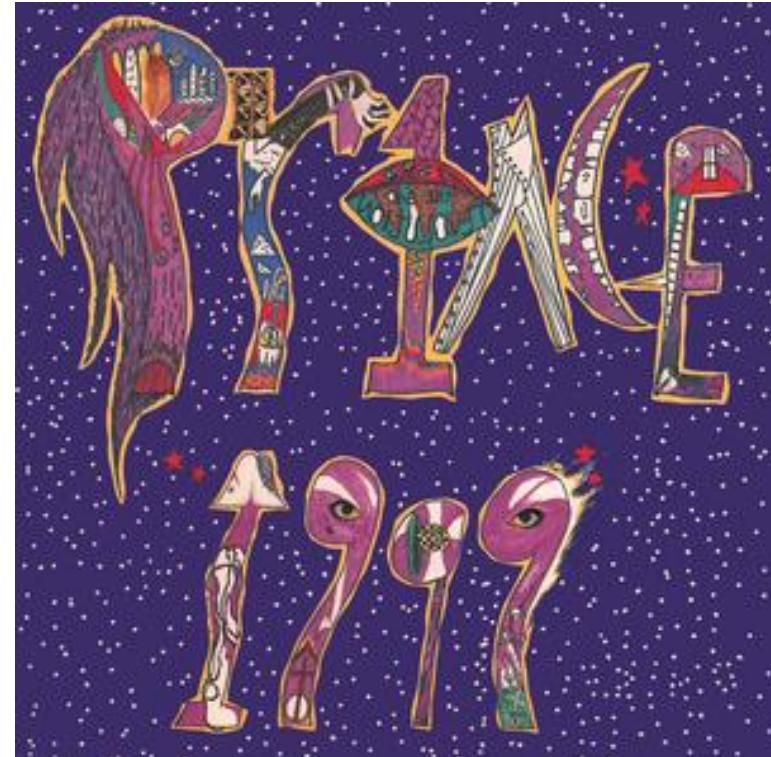


Bron: Disney

Vorige eeuw



Bron: Spice Girls



Bron: Prince

Eerst even terug in de tijd...

- Het web werd gezien als ‘de toekomst’, maar het web zelf was nog relatief immature (REST bestond nog niet*).
- Het web was ook XML georiënteerd
- Er waren nog geen afgetekende patronen
 - (Zoals we die nu kennen)
- OGC liep voor de troepen uit met WMS
- Grote drivers: NGA en iets later INSPIRE



* Roy Fielding in 2000

The Good, the Bad and the Ugly (in hindsight)

Good:

- OWS, Publish-Find-Bind, (Metadata)

Bad:

- XML (GML*), SOAP

Ugly

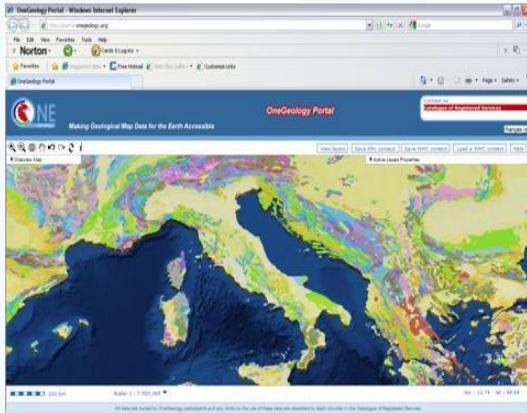
- Geospatial bubble!
- OWS 2-step**



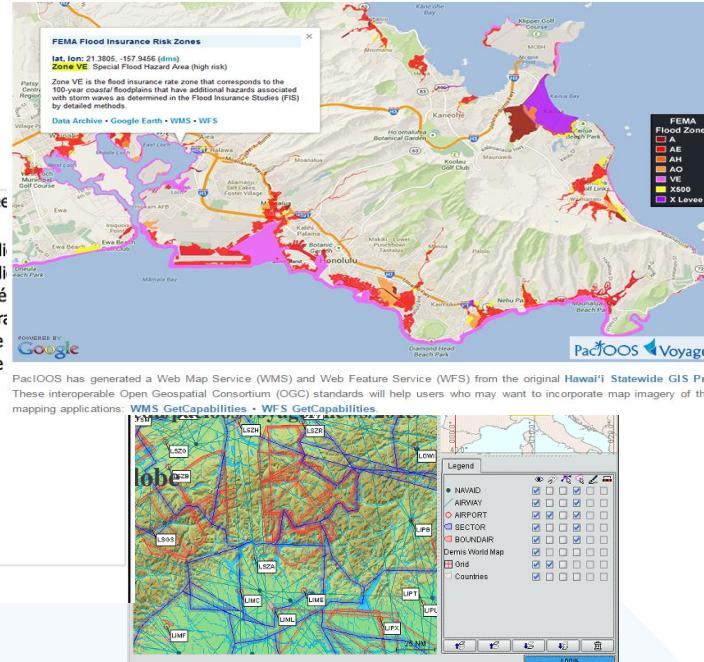
Millions of Geospatial Datasets on >200K Servers



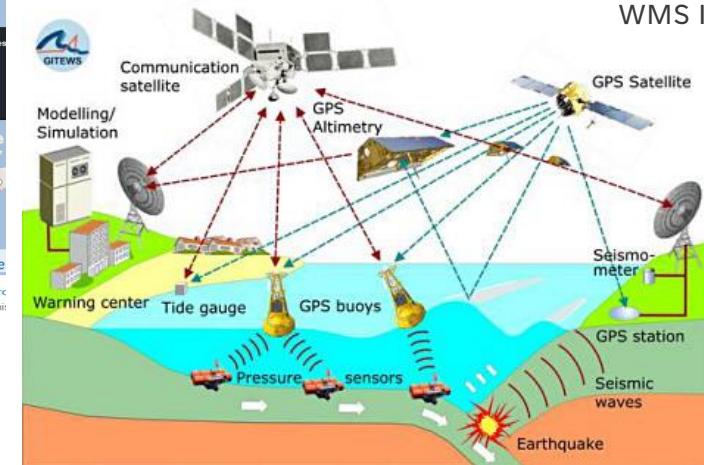
OneGeology.Org



Web Map Service (WMS) Web Map Tile Service (WMTS) Web Feature Service (WFS) Web Coverage Service (WCS)



Aviation Flight Information / Safety



Meteorology, Hydrology,
Ocean Monitoring



WMS INPSIRE de la STIB
Irisnet.be

Source of statistics: GeoSeer spatial data search engine:
<https://geoseer.net>

Interprotocol

Madame Globe and Mister Cube met in 2014



OGC and W3C come together in 2014



OWS and API Innovation

- OGC is advancing new standards while simultaneously maintaining the OGC Standards Baseline
- The OGC API approach is based on technologies that did not exist during development of initial OGC Web Services (OWS).
- OGC will continue to maintain the approved OWS Standards, e.g., WFS, Version 2, while developing and maintaining new standards based on using approaches for APIs and OGC building blocks

This approach is consistent with the OGC Innovation Statement from 2014 that anticipates OGC addressing the innovator's dilemma of maintaining the current OGC standards baseline while simultaneously developing standards to support evolving and potentially disruptive technologies, community needs and market trends. ”

OGC/W3C Best Practices for Spatial Data on the Web



Web principles for spatial data

- Use globally unique persistent HTTP URIs for spatial things
- Make your spatial data indexable by search engines
- Link resources together to create the Web of data

Key spatial aspects

- Use spatial data encodings that match your target audience
- Provide geometries on the Web in a usable way
- Provide geometries on the Web at the right level of accuracy, precision, and size
- Choose coordinate reference systems to suit your user's applications
- State how coordinate values are encoded
- Describe relative positioning

Access

- Use appropriate relation types to link Spatial Things
- Provide information on the changing nature of spatial things
- Expose spatial data through 'convenience APIs'

Metadata

- Include spatial metadata in dataset metadata
- Describe the positional accuracy of spatial data



<https://www.w3.org/TR/sdw-bp/>

Web APIs

SOAP

- Standardized protocol with clear guidelines
- Function-driven (data available as services)
- XML messages only

REST

- Architectural style, looser guidelines
- Data-driven (data available as resources)
- XML, JSON, HTML, YAML and more

Oversimplified

- The Web more and more works as linked data
- “Webby” linked data requires web resources to be identified by URIs
- RESTful resources are identified as URIs

API

Waarom OGC API's ?

- Modular building blocks: de manier om aan geo-enablement te doen
 - Aanpassen van bestaande API's: filter/search capabilities, GeoJSON/JSON-FG
- Developer friendly
- Beter te vinden door zoekmachines
- Verschillende types gebruiken hetzelfde patroon en zijn daardoor ook eenvoudiger te combineren.

API Patronen:

Table 1. Overview of resources, applicable HTTP methods and links to the document sections

Resource	Path	HTTP method	Document reference
Landing page	/	GET	7.2 API landing page
Conformance declaration	/conformance	GET	7.4 Declaration of conformance classes
Feature collections	/collections	GET	7.13 Feature collections
Feature collection	/collections/{collectionId}	GET	7.14 Feature collection
Features	/collections/{collectionId}/items	GET	7.15 Features
Feature	/collections/{collectionId}/items/{featureId}	GET	7.16 Feature

OpenAPI

Capabilities

essential characteristics of this API

GET / landing page

GET /openapi OpenAPI definition

GET /conformance information about specifications that this API conforms to

GET /functions information about functions supported in the CQL filter extension

GET /collections the feature collections in the dataset

GET /collections/{collectionId} describe the feature collection with id `collectionId`

GET /collections/{collectionId}/queryables lists the queryable attributes for the feature

Data

access to data (features)

GET /collections/{collectionId}/items fetch features

GET /collections/{collectionId}/items/{featureId} fetch a single feature

```

openapi: 3.0.2
info:
  title: Geonovum OGC API Demo Service
  description: This OGC API Service is provided by Geonovum from instructional purposes only. The code onGitHub is written with readability in mind, not performance.
  contact:
    name: Geonovum
    url: https://geonovum.nl
    email: info@geonovum.nl
  license:
    name: CC-BY 4.0 license
    url: https://creativecommons.org/licenses/by/4.0
  version: 1.2.3
  servers:
    - url: http://okapi.aardvark.myds.me/demoservice/v1
  tags: []
  paths:
    /:
      get:
        tags:
          - Common
        summary: landing page
        description: The landing page provides links to the API definition (link relations `service-desc` and `service-doc`), the Conformance declaration (path `/conformance`, link relation `conformance`), and other resources in the API.
        externalDocs:
          description: "The specification that describes this operation: OGC API - Features - Part 1: Core"
          url: https://docs.ogc.org/is/17-069r4/17-069r4.html
        operationId: getLandingPage
        parameters:
          - $ref: "#/components/parameters/fCommon"
        responses:
          "200":

```

REST(ful) API. REST?

- REST is short for REpresentational State Transfer
- Between client and (layered) server
- Stateless
- CRUD (using HTTP Verbs) op een <Resource>
 - Create Read Update Delete
- Cache

API en Implementatie

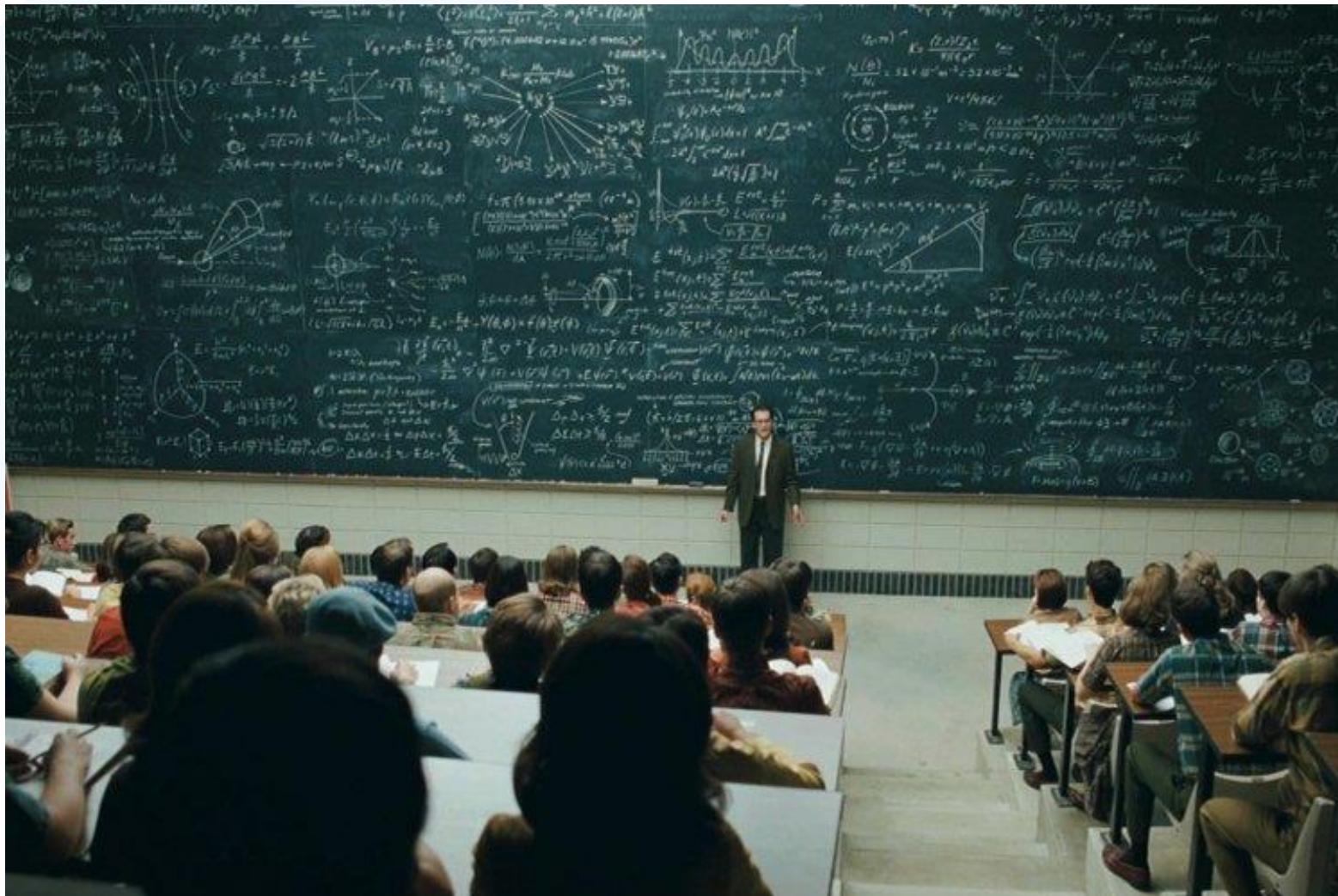
- API is een beschrijving
- Om het te gebruiken, moet je het implementeren
 - NodeJS
 - Java
 - Go
 - C#
 - ...
- OGC API's staan nu op de PTOLU!

The Jeff Bezos API Mandate

The mandate in question was issued in 2002 to Amazon by founder Jeff Bezos. For many reasons, it's become somewhat legendary in the API/microservices space, as it formed the basis for much of the modern API design paradigm within the corporate view. By legend, the mandate is as follows:

1. All teams will henceforth expose their data and functionality through service interfaces.
2. Teams must communicate with each other through these interfaces.
3. There will be no other form of interprocess communication allowed: no direct linking, no direct reads of another team's data store, no shared-memory model, no back-doors whatsoever. The only communication allowed is via service interface calls over the network.
4. It doesn't matter what technology they use. HTTP, Corba, Pubsub, custom protocols – doesn't matter.
5. All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say, the team must plan and design to be able to expose the interface to developers in the outside world. No exceptions.
6. Anyone who doesn't do this will be fired.
7. Thank you; have a nice day!

OGC API training coming



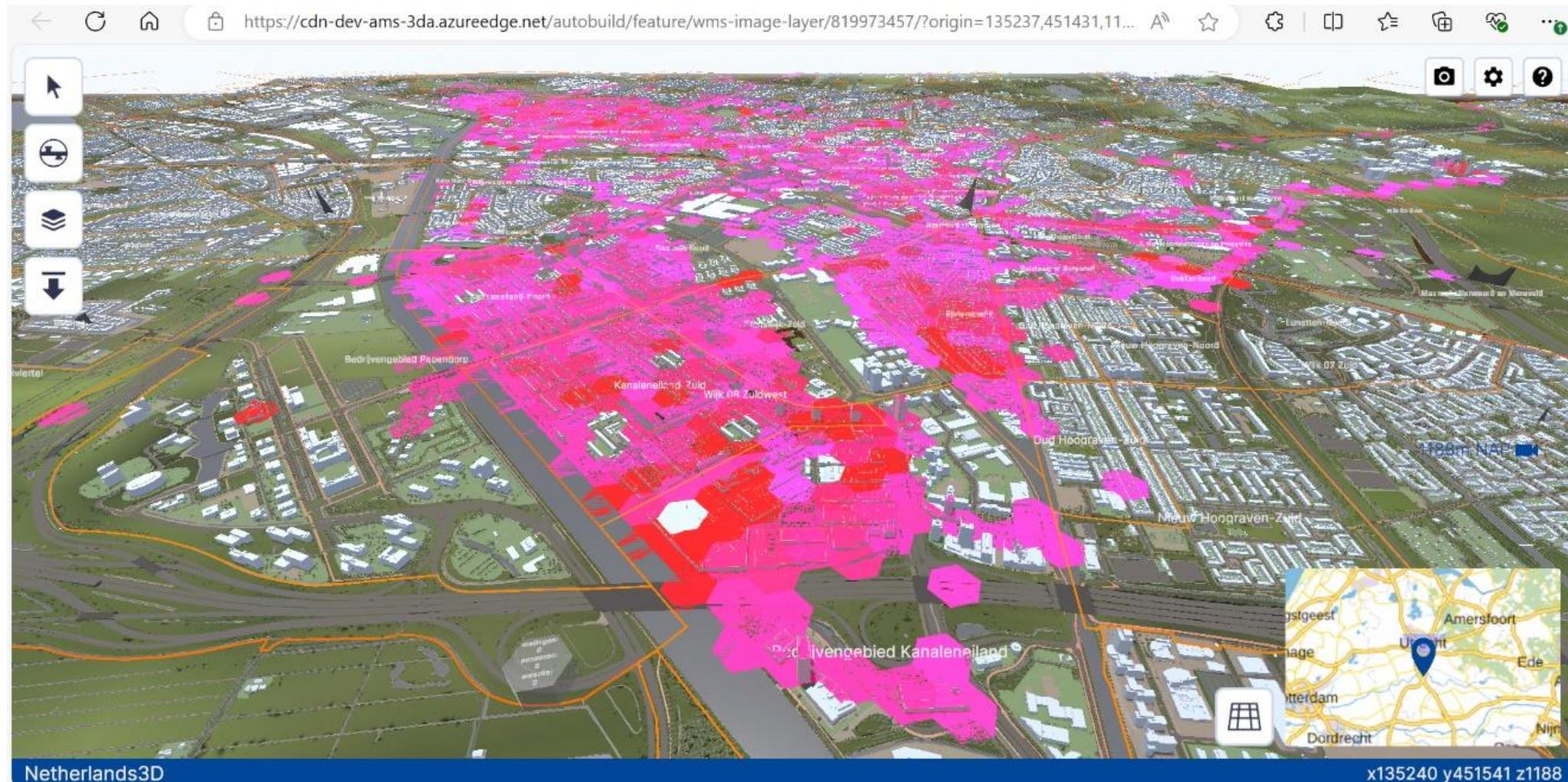
Bron: <https://www.eahea.org>

API in toepassingen – BI!



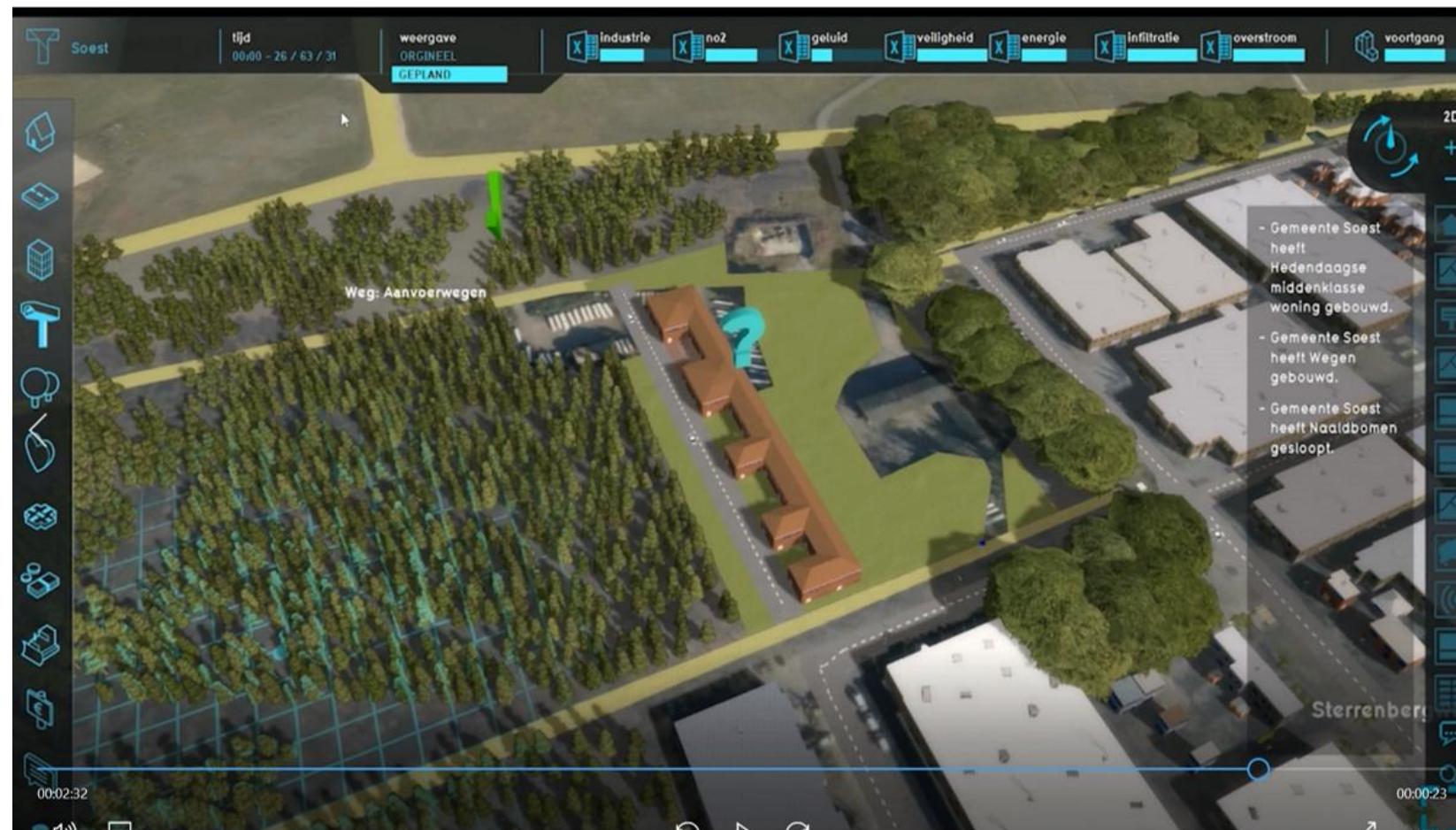
De GGO Digitale Tweeling provincie Utrecht

API in toepassingen – BI!



Temperatuurmetingen data weergegeven in GGO Digitale Tweeling provincie Utrecht
(bron: 3d.netherlands.eu)

API in toepassingen – BI!



Voorbeeldweergave van de GGO Digitale Tweeling provincie
Utrecht

Conclusie

- API's zijn eenvoudiger
- Geo API's zijn API's
- API nu op PTOLU
- Waar wacht je nog op?
- Demotje?

<https://okapi.aardvark.myds.me/demoservice/v1>



Conclusie

- API's zijn eenvoudiger
- Geo API's zijn API's
- API nu op PTOLU
- Waar wacht je nog op?
- Demotje?
- Oh ja, BI,... wel ... gebruiken API's

<https://okapi.aardvark.myds.me/demoservice/v1>



Dank u

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