GeoHealthCheck

QoS Monitor for (OGC OWS)

Geospatial Web Services

Just van den Broecke

Tom Kralidis

Hannes I. Reuter

geohealthcheck.org

Credits

This presentation has been created with
Reveal.js by Hakim El Hattab
Create beautiful interactive slide decks using HTML.

Use left/right arrow keys. ESC for slides overview

PDF Print then File|Print... (Chrome only)

Tom Kralidis

- **Founder of pycsw**
- **Founder of GeoHealthCheck**
- **OWSLib**
- **pygeometa**
- **GeoNode**
- **QGIS (MetaSearch)**
- **PyWPS**
- **MapServer**

Hannes Isaak Reuter

- Geoecologist (GIS, Soil) and DEM Scientist

- Contributor to GHC and other OSS

- Long Term user of ArcInfo, QGIS, GDAL, Python, pyWPS
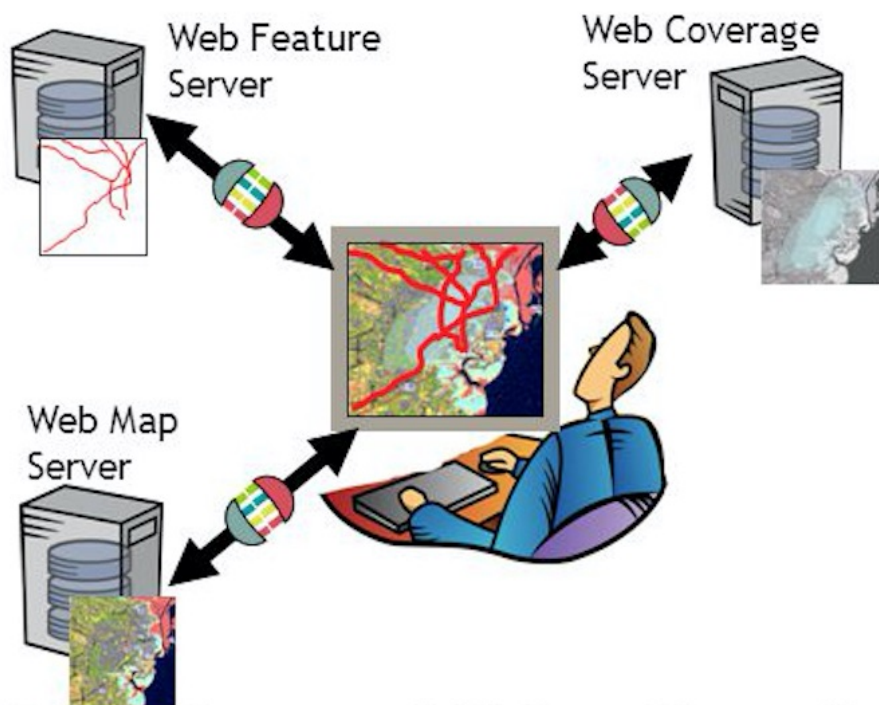
- Working in the GISCO Team

OGC ?   OWS?

- OGC: **Open Geospatial Consortium**

- OGC defines OWS standards

- OWS: **OGC Web Services**

- OWS standards include:

   WMS, WFS, WCS, CSW, SOS, WPS, WMTS

OGC Web Services (OWS)

Just as http:// is the dial tone of the World Wide Web, and html / xml are the standard encodings, the **geospatial web** is enabled by OGC standards:

Web Map Service (WMS)

Web Feature Service (WFS)

Web Coverage Service (WCS)

Catalogue (CSW)

Geography Markup Language (GML)

OGC KML

Others…

Relevant to geospatial information applications: Critical Infrastructure, Emergency Management, Weather, Climate, Homeland Security, Defense & Intelligence, Oceans Science, others

OGC

Helping the World to Communicate Geographically

Contents

GHC=GeoHealthCheck

OWS Monitoring Challenges

"I see pink tiles!"

KadViewer - Versie 1.3 - Made with Heron and Map5.nl by Just Objects

Lagen Beheer

Basis Kaarten
- ☑ OpenTopo (Map5.nl)
- ☐ OpenSimpleTopo (Map5.nl)
- ☐ Relief (AHN2/3, Map5.nl)
- ☐ Relief + Labels (AHN2/3, Map5.nl)
- ☐ Luchtfoto (Map5.nl)
- ☐ TopRaster (Kadaster via Map5.nl)
- ☐ OpenBasisKaart - OpenGeoGroep
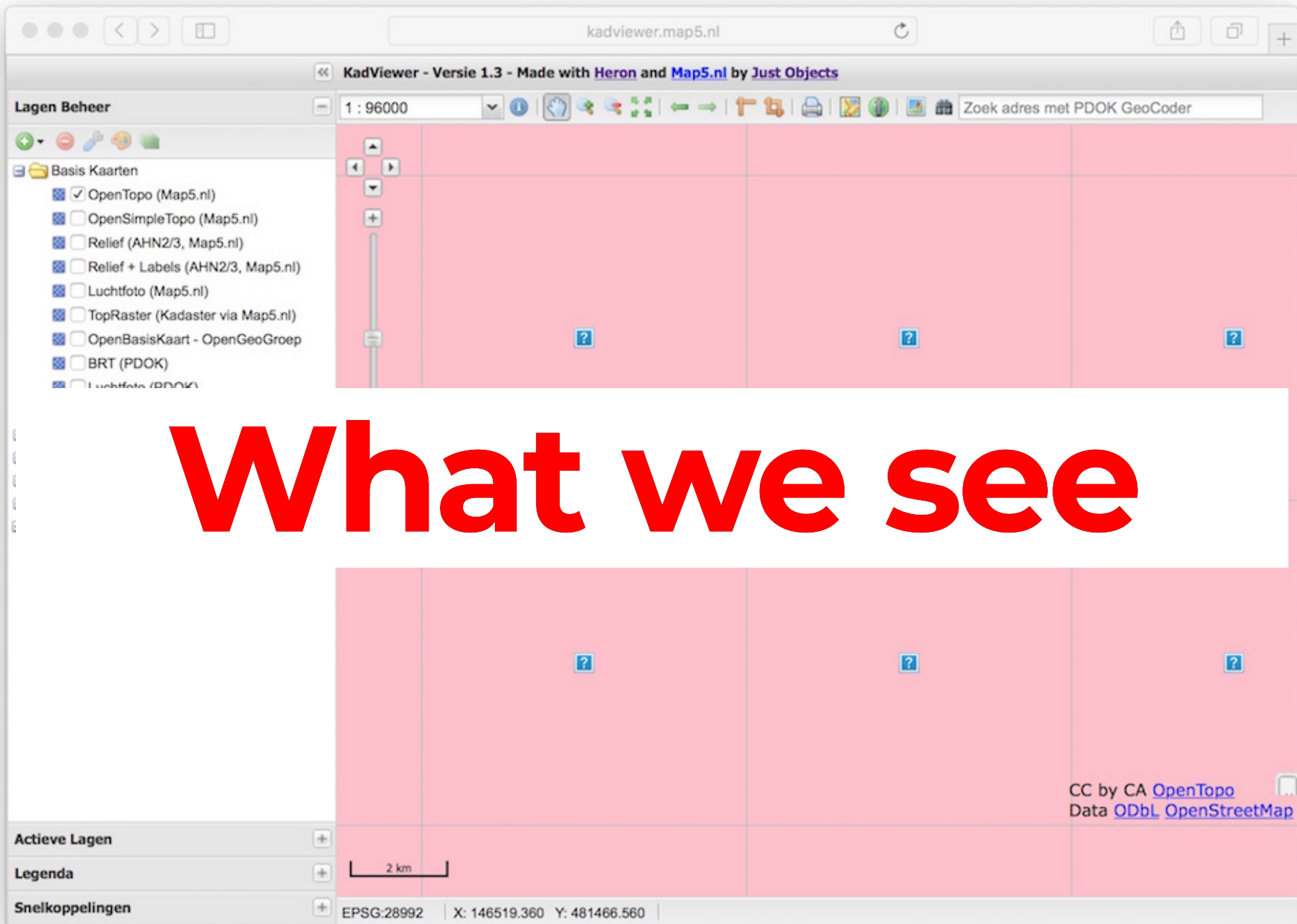- ☐ BRT (PDOK)
- ☐ Luchtfoto (PDOK)

1 : 96000

Zoek adres met PDOK GeoCoder

What we see

CC by CA OpenTopo
Data ODbL OpenStreetMap

Actieve Lagen

Legenda

Snelkoppelingen

EPSG:28992 | X: 146519.360 Y: 481466.560

```xml
ml version="1.0" encoding="UTF-8" standalone="no"
OCTYPE ServiceExceptionReport
TEM "http://kademo.nl/gs2/schemas/wms/1.1.1/
exception_1_1_1.dtd">
rviceExceptionReport version="1.1.1" >
Se
```

What we received

```xml
    featureType: nlextract:pand does not have a
    properly configured datastore
/ServiceException>
rviceExceptionReport>
```

kademo.nl/gs2/nlextract/wms?LAYERS=pand&STYLES=&EXCEPTIONS=INIMAGE&FORMAT=image/png&SERVICE=WMS&VERSION

Internal error
featureType: nlextract:pand does not have a properly
configured datastore

In Image Error Message

KadViewer - Versie 1.3 - Made with **Heron** and **Map5.nl** by **Just Objects**

Lagen Beheer

1 : 1500

Zoek adres met PDOK GeoCoder

- Basis Kaarten
- Kadastrale Kaart (zoom >11)
- PDOK
  - BAG
    - ☑ BAG Adressen
    - ☐ BAG Woonplaatsen
    - ☑ BAG Ligplaatsen
    - ☑ BAG Standplaatsen
    - ☐ BAG Verblijfsobjecten
    - ☑ BAG Panden
    - ☐ BAG Panden (WFS)
  - Bestuurlijke Grenzen
  - Digitaal Topografisch Bestand (DTB)
  - Actueel Hoogtebestand (AHN)

"The Blank Stare"

Actieve Lagen

Legenda

Snelkoppelingen

50 m

EPSG:28992   X: 130729.460   Y: 477187.180

But our HTTP Monitor said: 200 OK...

GetCapabilities response OK, but

- Capabilities doc may be static file

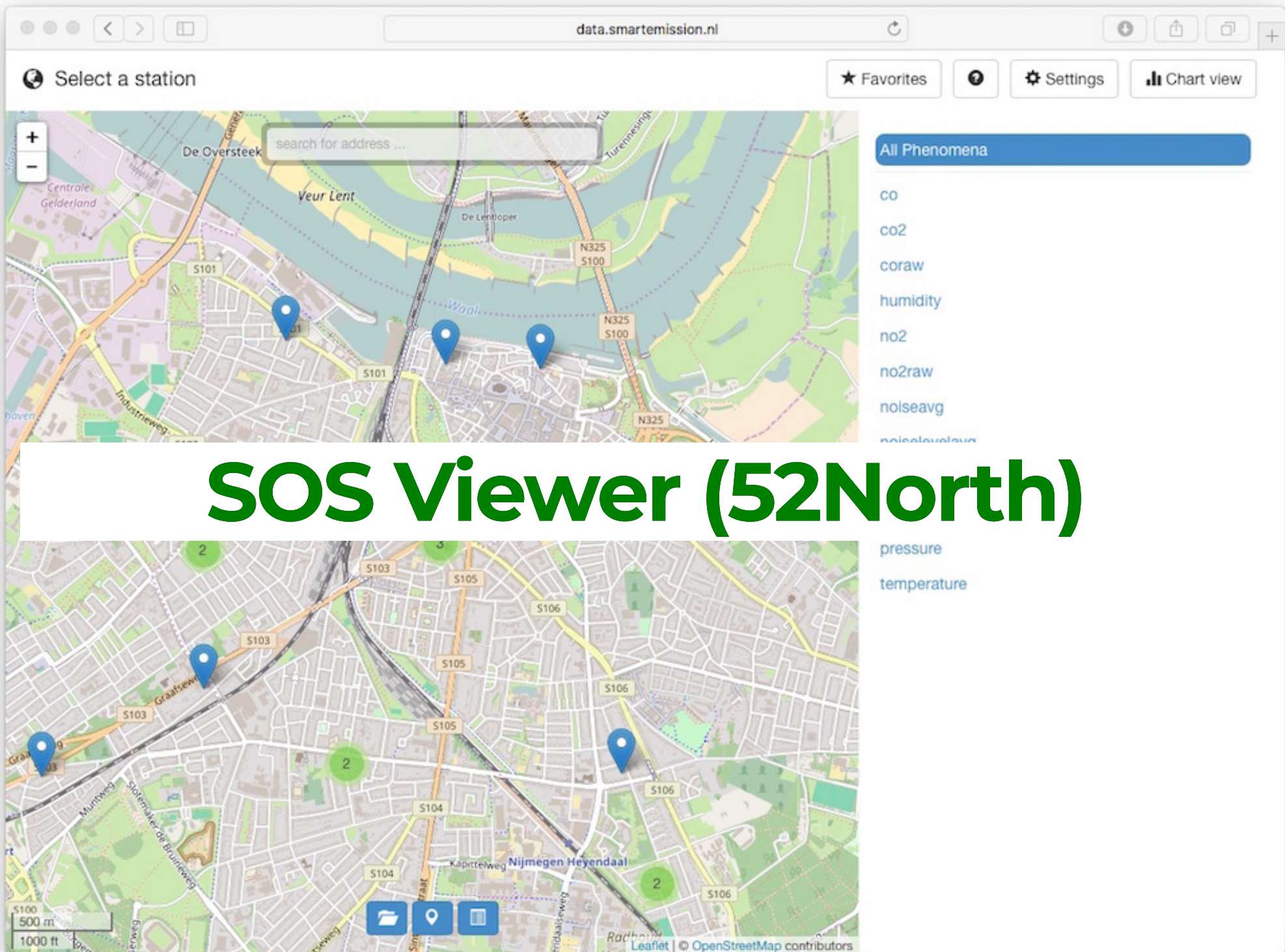- No guarantee specific services will work:

   WMS GetMap, WFS GetFeature, ...

Time-based OGC Services

- SensorWeb Enablement (SWE)
  Internet of Things (IoT)
- Sensor Observation Service (SOS)
- SensorThings API (STA)

SOS Viewer (52North)
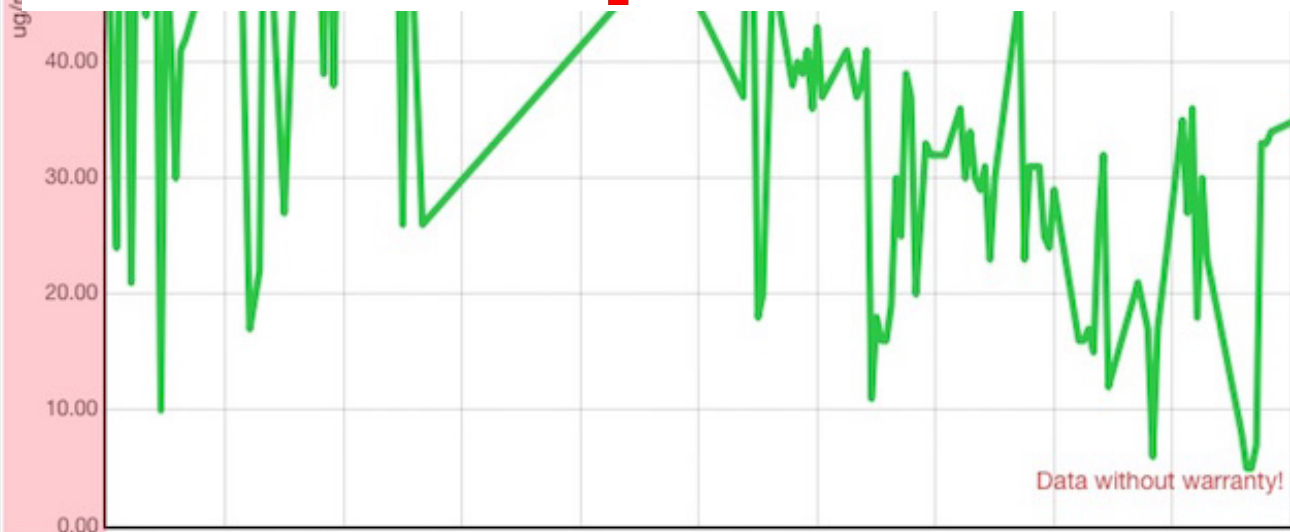
Public "Uptime" services

Generic HTTP checking (keywords)

But: most critical OGC-services

run internally on intranets

Conclusion

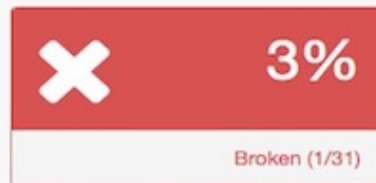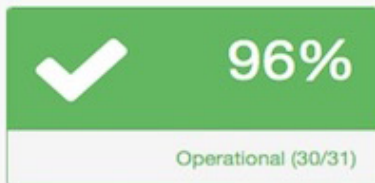**Need (FOSS) OGC-Service (OWS)**

QoS Checking

with History Capture

GeoHealthCheck
Walk-through
demo.geohealthcheck.org

🏠 GeoHealthCheck Demo

Add ✛   Login ➔   Language ✛   Help ❓

Dashboard

Monitoring Period: 2017-05-03T15:47:45Z - 2017-05-04T13:00:01Z

Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (8)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

Tags

Netherlands (8)

Tiling (3)
Show All

Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:37:14Z

✔ 96% — Operational (30/31)

🔗 90.57% — Reliable

✖ 3% — Broken (1/31)

➕➖ Leaflet

Resources ⬇ JSON   ⬇ CSV

Search...   (foo, site:.org, title:foo, type:wms, url:example.org)

31 results

Type ⇅	Name ⇅	Last Check ⇅	Status ⇅	Response Times (seconds) ⇅	Reliability ⇅
Catalogue Service (CSW)	CSW interface for catalog.data.gov	• 2017-05-04T13:00:01Z • 0.99 seconds	✔	• Min: 0.18 • Average: 2.61 • Max: 33.34	99.23%
Catalogue Service (CSW)	CSW Geospatial Catalogue for NOAA Data Catalog (data.noaa.gov)	• 2017-05-04T13:00:01Z • 0.68 seconds	✔	• Min: 0.13 • Average: 0.68 • Max: 1.79	99.74%
Catalogue Service (CSW)	CSW interface for catalog.data.gov	• 2017-05-04T13:00:01Z • 0.14 seconds	✔	• Min: 0.12 • Average: 0.37 • Max: 5.54	100%
Catalogue Service (CSW)	CSW Geospatial Catalogue for Department of Interior Data Catalog (data.doi.gov)	• 2017-05-04T13:00:01Z • 0.12 seconds	✔	• Min: 0.12 • Average: 0.4	11.54%

Dashboard

Monitoring Period: 2017-05-03T15:47:45Z - 2017-05-04T13:00:01Z
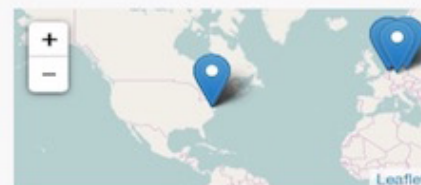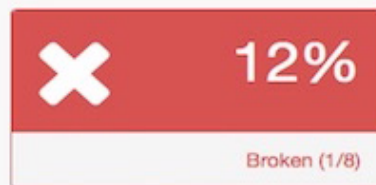
✔ 87%	🔗 86.35%	✖ 12%	Map
Operational (7/8)	Reliable	Broken (1/8)	Leaflet

Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (8)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

Tags

Netherlands (8)

Tiling (3)
Show All

Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:39:03Z
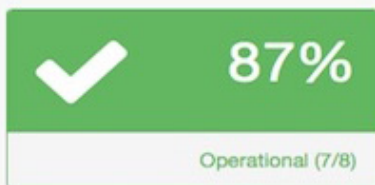
Resources ⬇ JSON ⬇ CSV

Search...   (foo, site:.org, title:foo, type:wms, url:example.org)

8 results

Type	Name	Last Check	Status	Response Times (seconds)	Reliability
Web Map Service (WMS)	WMS for bgt Netherlands	• 2017-05-04T13:00:01Z • 0.35 seconds	✖	• Min: 0.11 • Average: 0.54 • Max: 3.23	11.03%
Web Map Service (WMS)	ISRIC - WMS Services for soil maps	• 2017-05-04T13:00:01Z • 0.14 seconds	✔	• Min: 0.11 • Average: 6.97 • Max: 31.72	79.74%
Web Map Service (WMS)	NOAA/National Hurricane Center Tropical Cyclone Forecasts WMS	• 2017-05-04T13:00:01Z • 0.11 seconds	✔	• Min: 0.11 • Average: 0.46 • Max: 0.99	100%
Web Map Service (WMS)	NOAA/National Hurricane Center Preliminary Best Track Tropical Cyclone Tracks WMS (Dynamic Filtering)	• 2017-05-04T13:00:01Z • 0.12 seconds	✔	• Min: 0.11 • Average: 0.38	100%

ISRIC - WMS Services for soil maps

Monitoring Period: 2017-04-18T07:00:23Z - 2017-05-04T13:00:01Z

▼ Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (8)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)

Show All

▼ Tags

Netherlands (8)

Tiling (3)

Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:39:52Z

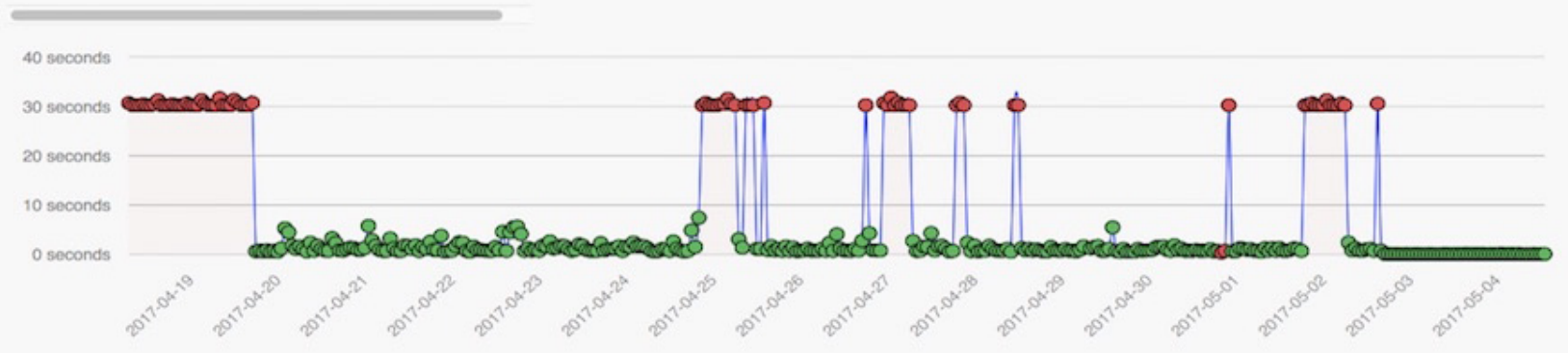| Type	Web Map Service (WMS)
Owner	jesuss
Name	ISRIC - WMS Services for soil maps
URL	http://webservices.isric.org/geoserver/wm
Tags	
Probes	
Response Times (seconds)	• Min: 0.11 • Average: 6.97 • Max: 31.72
Reliability	79.74%
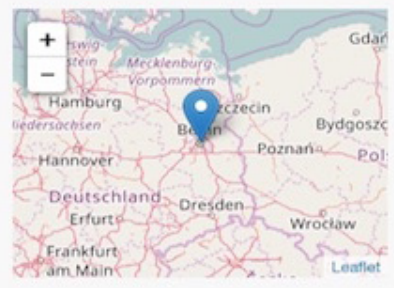
Last Run Result

- Last Check : 2017-05-04T13:00:01Z
- Success: True
- Message: OK
- Response Time: 0.14

Last Run Summary

⬇ JSON   ⬇ CSV

History ⬇ JSON ⬇ CSV

Date	Response Time (seconds)	Status

Login ⇥

Username

Password

Sign in

Register
Forgot password?

▼ Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (8)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

▼ Tags

Netherlands (8)

Tiling (3)
Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:41:57Z

GeoHealthCheck Demo

Add **+**   just ▾   Language **+**   Help ❓

File Transfer Protocol (FTP)
Web Map Service (WMS)
Web Address (URL)
Catalogue Service (CSW)
Web Map Tile Service (WMTS)
Web Processing Service (WPS)
Web Coverage Service (WCS)
Web Feature Service (WFS)
Tile Map Service (TMS)
SensorThings API (STA)
Web Accessible Folder (WAF)
Sensor Observation Service (SOS)

Dashboard

Monitoring Period: 2017-04-18T07:00:15Z - 2017-05-04T1

96% Operational (30/31)

90.57% Reliable

Leaflet

▼ Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (8)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

▼ Tags

Netherlands (8)

Tiling (3)
Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:49:44Z
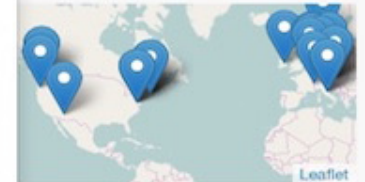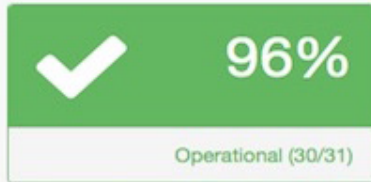
Resources ⬇ JSON ⬇ CSV

Search... (foo, site:.org, title:foo, type:wms, url:example.org)

31 results

Type	Name	Last Check	Status	Response Times (seconds)	Reliability
Catalogue Service (CSW)	CSW interface for catalog.data.gov	• 2017-05-04T13:00:01Z • 0.99 seconds	✓	• Min: 0.18 • Average: 2.61 • Max: 33.34	99.23%
Catalogue Service (CSW)	CSW Geospatial Catalogue for NOAA Data Catalog (data.noaa.gov)	• 2017-05-04T13:00:01Z • 0.68 seconds	✓	• Min: 0.13 • Average: 0.68 • Max: 1.79	99.74%
Catalogue Service (CSW)	CSW interface for catalog.data.gov	• 2017-05-04T13:00:01Z • 0.14 seconds	✓	• Min: 0.12 • Average: 0.37 • Max: 5.54	100%
Catalogue Service (CSW)	CSW Geospatial Catalogue for Department of Interior Data Catalog (data.doi.gov)	• 2017-05-04T13:00:01Z • 0.12 seconds	✓	• Min: 0.12 • Average: 0.4	11.54%

Powered by GeoHealthCheck 0.1.0rc1

Add Resource ➕

Web Map Service (WMS)   ⬍

http://geodata.nationaalgeoregister.nl/bag/wms

Enter the URL without any query parameters:
good: http://host/wms
bad: http://host/wms?
service=WMS&version=1.1.1&request=GetCapabilities

× Netherlands

Submit

▼ Resource Types (31)

Catalogue Service (CSW) (13)

Sensor Observation Service
(SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS)
(2)

Web Map Service (WMS) (8)

Web Map Tile Service
(WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

▼ Tags

Netherlands (8)

Tiling (3)
Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:51:47Z

[Edit] BAG

▼ Resource Types (32)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (9)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)

Show All

▼ Tags

Netherlands (9)

Tiling (3)

Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:52:59Z

Type	Web Map Service (WMS)
Owner	just
Name	BAG
URL	http://geodata.nationaalgeoregister.nl/bag/wms
Tags	× Netherlands

Probes

WMS GetCapabilities - by GHC Team
Perform GetCapabilities Operation and check validity   [Edit] [Delete]

Probes Available

HTTP GET Resource URL - by GHC Team
Simple HTTP GET on Resource URL   [Info] [Add]

HTTP POST Resource URL with body - by GHC Team
HTTP POST to Resource URL with body content(-type) to be user-supplied   [Info] [Add]

WMS GetMap WMS v1.1.1. operation - by GHC Team
Do WMS GetMap v1.1.1 request with user-specified parameters   [Info] [Add]

HTTP GET Resource URL with query - by GHC Team
HTTP GET Resource URL with ?query string to be user-supplied (without ?)   [Info] [Add]

WMS Drilldown - by GHC Team
Traverses a WMS endpoint by drilling down from Capabilities   [Info] [Add]

WMS GetCapabilities - by GHC Team
Perform GetCapabilities Operation and check validity   [Info] [Add]

Status   OK

Action   [Save] [Test] [Cancel] [Delete]

× Netherlands

Probes

T Resource Types (32)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (9)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)
Show All

T Tags

Netherlands (9)

Tiling (3)
Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:55:19Z

WMS GetCapabilities - by GHC Team [Edit] [Delete]
Perform GetCapabilities Operation and check validity

Probe Parameters

version	1.1.1
service	WMS

Probe Checks

Check: Valid XML response [Delete]
Check: HTTP response contains valid XML.

Check: Response NOT contains OWS Exception [Delete]
Check: HTTP response does not contain an OWS Exception

Check Parameters

strings	ExceptionReport>,ServiceException>

Check: Response contains strings [Delete]
Check: HTTP response contains all (comma-separated) strings specified

Check Parameters

strings	Title>

Checks Available

Valid XML response [Add]
HTTP response contains valid XML.

Check Demonstration - dev branch   Add **+**   admin ▾   Language

[Edit] GeoServer Web Map Service

Type	Web Map Service (WMS)
Owner	admin
Name	GeoServer Web Map Service
URL	https://opengeodata.zeeland.nl/geoserver/ows
Tags	× ows × zeeland

Probes

WMS GetCapabilities - by GHC Team   Edit   Delete
Perform GetCapabilities Operation and check validity

WMS GetMap WMS v1.1.1. operation on SINGLE Layer - by GHC Team   Edit   Delete
Do WMS GetMap v1.1.1 request with user-specified parameters for single Layer.

Probe Parameters

layers

    √ zeeland:Grondwaterbeheersplan 2002-2007 (Kwetsbare gebieden)
    luchtfoto:Luchtfoto Nederland 25cm 2015
    luchtfoto:Luchtfoto Zeeland 10cm 2015
    luchtfoto:Zeeland_50cm_1959
styles   luchtfoto:Zeeland_50cm_1970
    zeeland:geocmd_chsmipobjpnt
    zeeland:geocmd_chsmonpnt
format

dev.geohealthcheck.org

althCheck Demonstration - dev branch   Add **+**   admin ▾   Language **+**

URL	https://opengeodata.zeeland.nl/geoserver/ows

es (14)

Service

servation
OS) (1)

gs API

re Service

Service

Tile Service
)

ss (URL) (1)

Tags	× ows × zeeland

Probes

WMS GetMap WMS v1.1.1. operation on ALL Layers - by GHC Team   Edit   Delete
Do WMS GetMap v1.1.1 request for all Layers with user-specified parameters.

Probe Parameters

layers	all 70 layers

styles	

format	image/png

height	256

srs	EPSG:28992

bbox	29144.485,371977.0642,68063.0093,414270.668

exceptions	application/vnd.ogc.se_xml

Subject	From	Date
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Failing: GeoServer WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Lufo via Kaartenbalie - A - [geoweb|geoapl|lufo1]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: GeoServer WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Lufo via Kaartenbalie - A - [geoweb|geoapl|lufo1]	**GeoHealthCheck RVB OpenGIS**	12-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	14-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	14-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	15-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	15-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	15-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	15-03-18
[GeoHealthCheck RVB OpenGIS] Failing: GeoServer WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	17-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: GeoServer WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	17-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	17-03-18
[GeoHealthCheck RVB OpenGIS] Fixed: Kaartenbalie WMS - A - [geoweb|geoapl]	**GeoHealthCheck RVB OpenGIS**	17-03-18
[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - P - [geoweb|geoapl]	GeoHealthCheck RVB OpenGIS	15:05

GeoHealthCheck RVB OpenGIS <Postbus.RVB.GISloket@rijksoverheid.nl> ☆

↩ Reply   → Forward   ▨ Archive

[GeoHealthCheck RVB OpenGIS] Failing: Kaartenbalie WMS - P - [geoweb\|geoapl]

Postbus.RVB.GISloket@rijksoverheid.nl ☆, Just van den Broecke ⭐

g: Kaartenbalie WMS — P — [geoweb|geoapl]

is is an automated message from the GeoHealthCheck RVB OpenGIS service.

ce: Kaartenbalie WMS — P — [geoweb|geoapl]
ce type: OGC:WMS
ce URL: http://geoweb.frd.shsdir.nl/kaartenbalie/services/2ae9da6588f0af2a04811b26b5b039f1
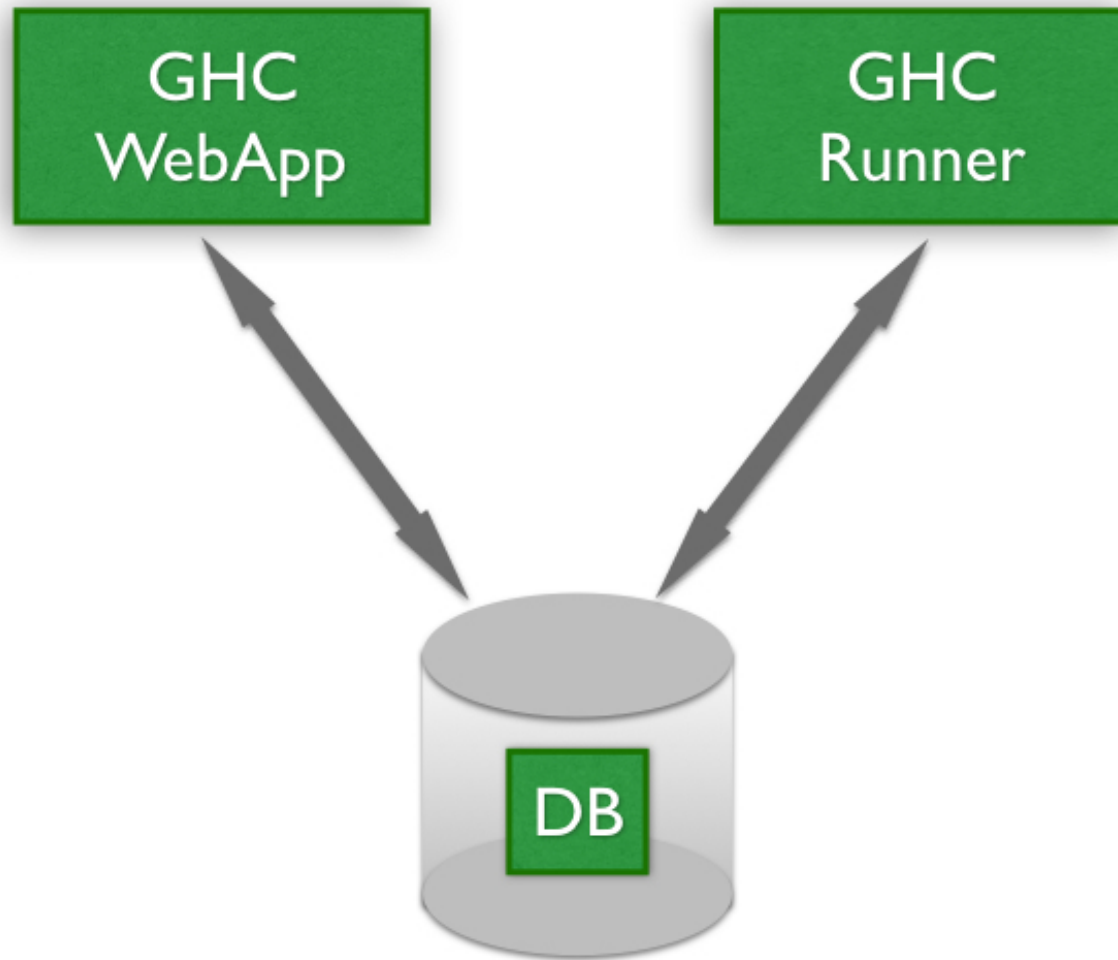
s:

2018-03-18T14:00:01Z

e: HTTP response header content-type is not image type — error: act the server administrator at

GeoHealthCheck Setup

GHC Parts

- **Python Webapp (Dashboard)**

- **HealthCheck Runner (Plugins!)**

- **Database**

Dashboard

- Flask - web framework

- Standard Python WGSI

- Run w Nginx, Apache2, Gunicorn..

- Preferred: via Docker!

HealthCheck Runner

- Scheduled (cron)

- Run "Probes" and "Checks"

- Result reporting

- Notifications: email, webhook

Plugins - Probes and Checks

- Standard (included in GHC)

- Custom (include your own!)

- Configurable via Web UI

- More later on...

Database

- **Entities:**

  Users, Resources, Runs, Tags

  ProbeVars, CheckVars, Recipients

- **Maintains history (Runs)**

- **Multiple backends**

  via SQLAlchemy: default SQLite

Tags

- For grouping Resources

- Provide in UI

- More later on...

Installation

- Standard Python setup - **Instructions**

- Paver for setup and management tasks

- Alembic with Flask-Migrate

  for DB upgrades

Use Docker!

- **Versioned GHC Images on DockerHub**

- **Docker Compose support:**

  complete stack: Webapp, DB and Jobs

- **Documentation**

GHC Up & Running in minutes!!

Settings

```
GHC_RETENTION_DAYS = 30
GHC_RUN_FREQUENCY = 'hourly'
GHC_SELF_REGISTER = False
GHC_NOTIFICATIONS = False
GHC_NOTIFICATIONS_VERBOSITY = True
GHC_ADMIN_EMAIL = 'you@example.com'
GHC_NOTIFICATIONS_EMAIL = ['you2@example.com', ..]
GHC_SITE_TITLE = 'GeoHealthCheck Demonstration'
GHC_SITE_URL = 'http://host'
GHC_SMTP = (email settings)
GHC_RELIABILITY_MATRIX = (when to show green/orange/red)
GHC_MAP = (map setup)
GHC_PLUGINS = (Built-in Probes and Checks)
GHC_USER_PLUGINS = (Probes and Checks, YOURS!)
GHC_PROBE_DEFAULTS = (Default Probe per Resource Type)
```

GeoHealthCheck Architecture

Data Model
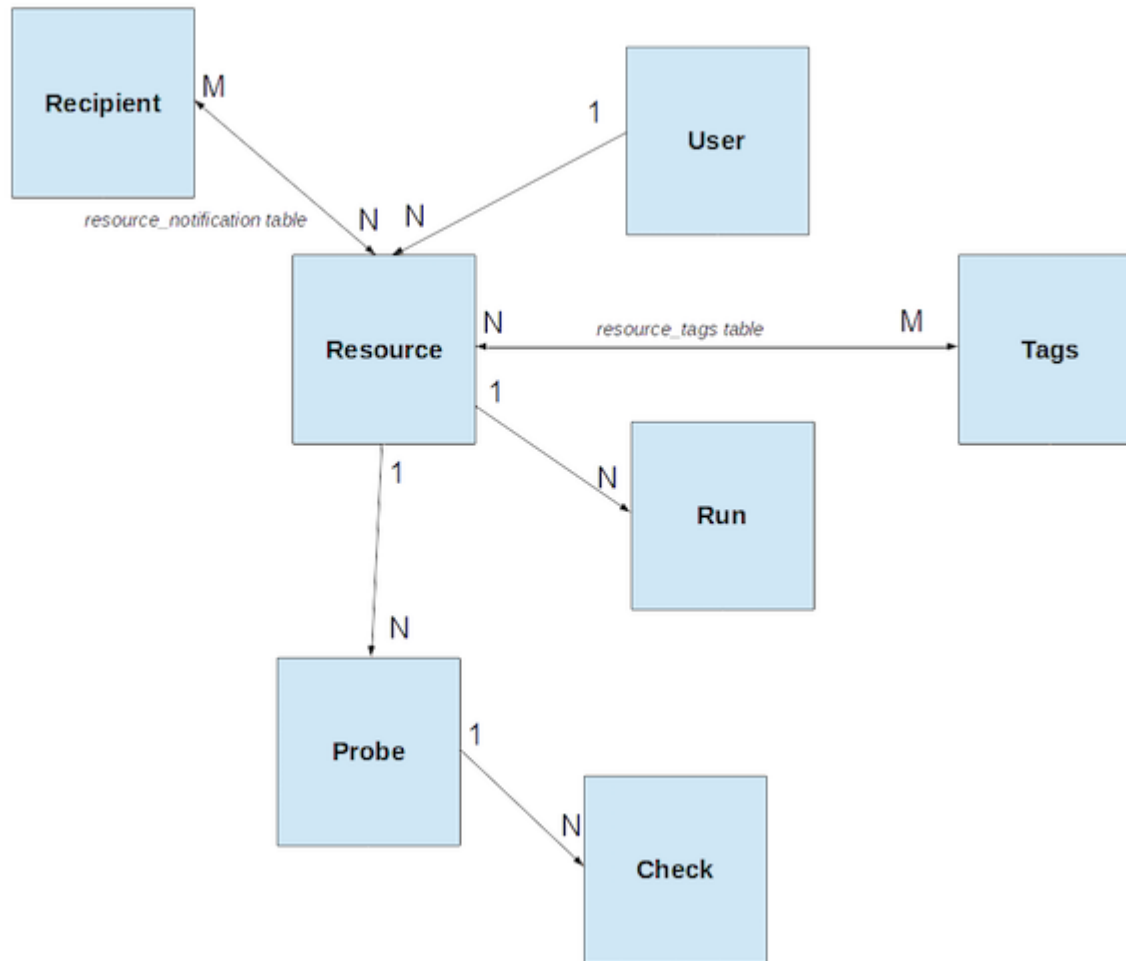
HealthCheck Model

- Resource has URL

- URL is usually OWS Endpoint

- Probes: fire request(s) on URL

- Resource has N Probes

HealthCheck Model

- Probe has N Checks (checklist)

- Each Check checks Probe result aspect

- Check gives aspect verdict (success/fail)

- All Checks: Probe Run Report (JSON)

Plugin Model

- Probes and Checks are Plugins

- Plugin class and/or modules in config

    * Built-in Plugins: GHC_PLUGINS=

    * Your Plugins: GHC_USER_PLUGINS=

- Must be in $PYTHONPATH

Plugin Model - Probe Types

- Template (OWS) Requests

- Free-form: Probe Anything!

Time for some code!

See also Plugin Docs

Simplest Probe Class

- an HTTP GET on a *Resource* URL
- checks if the HTTP Response is not errored, i.e. a 404 or 500 status
- optionally checks if the HTTP Response (not) contains expected strings

Below is the implementation of the class `GeoHealthCheck.plugins.probe.http.HttpGet` :

```python
from GeoHealthCheck.probe import Probe


class HttpGet(Probe):
    """
    Do HTTP GET Request, to poll/ping any Resource bare url.
    """

    NAME = 'HTTP GET Resource URL'
    DESCRIPTION = 'Simple HTTP GET on Resource URL'
    RESOURCE_TYPE = '*:*'
    REQUEST_METHOD = 'GET'

    CHECKS_AVAIL = {
        'GeoHealthCheck.plugins.check.checks.HttpStatusNoError': {
            'default': True
        },
        'GeoHealthCheck.plugins.check.checks.ContainsStrings': {},
        'GeoHealthCheck.plugins.check.checks.NotContainsStrings': {},
    }
    """Checks avail"""
```

Check Class HTTP Status

Next look at the Checks, the class `GeoHealthCheck.plugins.check.checks.HttpStatusNoError` :

```python
import sys
from owslib.etree import etree
from GeoHealthCheck.plugin import Plugin
from GeoHealthCheck.check import Check


""" Contains basic Check classes for a Probe object."""


class HttpStatusNoError(Check):
    """
    Checks if HTTP status code is not in the 400- or 500-range.
    """

    NAME = 'HTTP status should not be errored'
    DESCRIPTION = 'Response should not contain a HTTP 400 or 500 range Error'

    def __init__(self):
        Check.__init__(self)

    def perform(self):
        """Default check: Resource should at least give no error"""
        status = self.probe.response.status_code
        overall_status = status / 100
        if overall_status in [4, 5]:
            self.set_result(False, 'HTTP Error status=%d' % status)
```

Base GetCapabilities Probe

```python
class OwsGetCaps(Probe):
    """
    Fetch OWS capabilities doc
    """

    AUTHOR = 'GHC Team'
    NAME = 'OWS GetCapabilities'
    DESCRIPTION = 'Perform GetCapabilities Operation and check validity'
    # Abstract Base Class for OGC OWS GetCaps Probes
    # Needs specification in subclasses
    # RESOURCE_TYPE = 'OGC:ABC'

    REQUEST_METHOD = 'GET'
    REQUEST_TEMPLATE = \
        '?SERVICE={service}&VERSION={version}&REQUEST=GetCapabilities'

    PARAM_DEFS = {
        'service': {
            'type': 'string',
            'description': 'The OWS service within resource endpoint',
            'default': None,
            'required': True
        },
        'version': {
            'type': 'string',
            'description': 'The OWS service version within resource endpoint',
            'default': None,
            'required': True,
            'range': None
        }
    }
```

WMS GetCapabilities Probe

```python
class WmsGetCaps(OwsGetCaps):
    """Fetch WMS capabilities doc"""

    NAME = 'WMS GetCapabilities'
    RESOURCE_TYPE = 'OGC:WMS'

    PARAM_DEFS = Plugin.merge(OwsGetCaps.PARAM_DEFS, {

        'service': {
            'value': 'WMS'
        },
        'version': {
            'default': '1.1.1',
            'range': ['1.1.1', '1.3.0']
        }
    })
    """Param defs"""


class WfsGetCaps(OwsGetCaps):
    """WFS GetCapabilities Probe"""
```

GeoHealthCheck Demo

Add +   just ▾   Language +   Help ❓

× Netherlands

Probes

▼ Resource Types (32)

Catalogue Service (CSW) (13)

Sensor Observation Service (SOS) (2)

SensorThings API (STA) (1)

Web Feature Service (WFS) (2)

Web Map Service (WMS) (9)

Web Map Tile Service (WMTS) (2)

Tile Map Service (TMS) (1)

Web Address (URL) (2)

Show All

▼ Tags

Netherlands (9)

Tiling (3)

Show All

⚙ Settings

History: 15 days

Test Frequency: hourly

2017-05-04T13:55:19Z

WMS GetCapabilities - by GHC Team   [Edit] [Delete]
Perform GetCapabilities Operation and check validity

Probe Parameters

version	1.1.1

service	WMS

Probe Checks

Check: Valid XML response   [Delete]
Check: HTTP response contains valid XML.

Check: Response NOT contains OWS Exception   [Delete]
Check: HTTP response does not contain an OWS Exception

Check Parameters

strings	ExceptionReport>,ServiceException>

Check: Response contains strings   [Delete]
Check: HTTP response contains all (comma-separated) strings specified

Check Parameters

strings	Title>

Checks Available

Valid XML response   [Add]
HTTP response contains valid XML.

GeoHealthCheck Project

Open Source (MIT) on GitHub

Founded by **Tom Kralidis**

- Started in the air, literally!

- In flight en route to **FOSS4G 2014** (YYZ -> YYC -> PDX)

A geopython Project

geopython

 geopython is a GitHub organization comprised of Python projects related to geospatial.

- OWSLib
- pycsw
- PyWPS
- MetaSearch
- GeoHealthCheck
- MapSlicer
- CadTools
- Stetl

Also join us in irc://freenode.net/#geopython or the mailing list.

For more geospatial projects, check out the Toblerity Project.

Current Status (June 23, 2017)

- Second alpha release: v0.2.0

- Tags and Plugins (Probes & Checks)

- Demo demo.geohealthcheck.org

- Dev dev.geohealthcheck.org

- Docker: Images on DockerHub

Under Development

- See **Issue Tracker**

- Documentation

Planned

- **REST API architecture**

- **Monitoring tools integration (Icinga, Munin etc)**

You Can Help!

- Coding (Plugins!)

- Testing

- Documentation

- User Stories

- Sponsored Development

- Translation

Thank You!

- Website: geohealthcheck.org
- Demo: demo.geohealthcheck.org
- Development: dev.geohealthcheck.org
- Sources: code.geohealthcheck.org
- Docs: docs.geohealthcheck.org
- Presentation: geohealthcheck.org/presentation