

# **Assuring Quality & Reliability for SDIs of Mapping, Cadastral & Land Registry**

**Fabio Bittencourt**

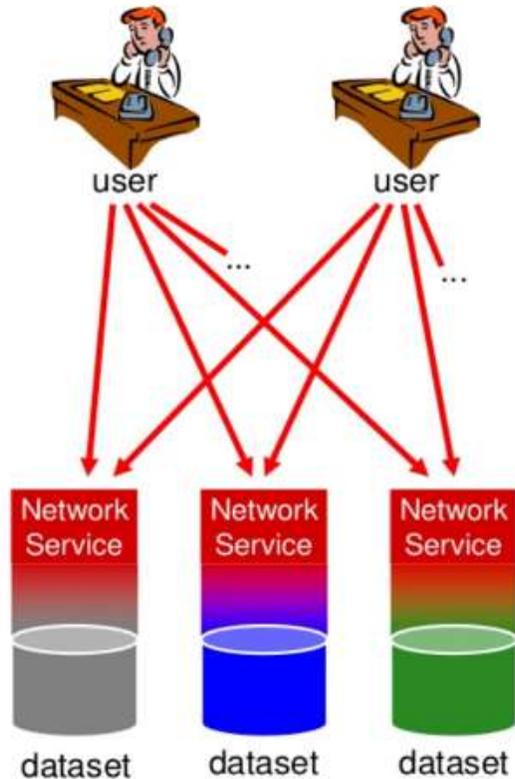
**7<sup>th</sup> May 2018**

**FIG Congress**





## VOLUME OF DATA VS RELIABILITY



The volume of spatial data collected increases rapidly with ever more powerful ways to simulate the environ and human behavior

A good SDI allows you to find, filter, acquire and interact with spatial data required for a particular use in a reliable, efficient and easy-to-use manner

National Mapping, Cadaster and Land Registry are good examples of this environ and the challenges involved in providing a reliable platform of services



## > QUALITY OF SERVICE - QoS



### Wikipedia:

**Quality of service (QoS)** is the description or measurement of the **overall performance of a service**, such as a telephony or computer network or a cloud computing service, particularly the **performance seen by the users** of the network.

### CZE INSPIRE View Service - Cadastral Parcels

<http://services.cuzk.cz/wms/inspire-cp-wms.asp>

INSPIRE view service for theme Cadastral Parcels provides a possibility to view data image for INSPIRE theme Cadastral Parcels. The data are harmonised according to INSPIRE Implementing Rules. The service fulfils technical guidance for INSPIRE view services v. 3.11 and simultaneously fulfils the OGC WMS 1.1.1 and 1.3.0 standards.

#### Available map layers (4)

- Cadastral Parcel** (CP.CadastralParcel)  
Category layer containing cadastral parcels  
Layer metadata ([xmi](#))
- Cadastral Boundary** (CP.CadastralBoundary)

<http://directory.spatineo.com/>





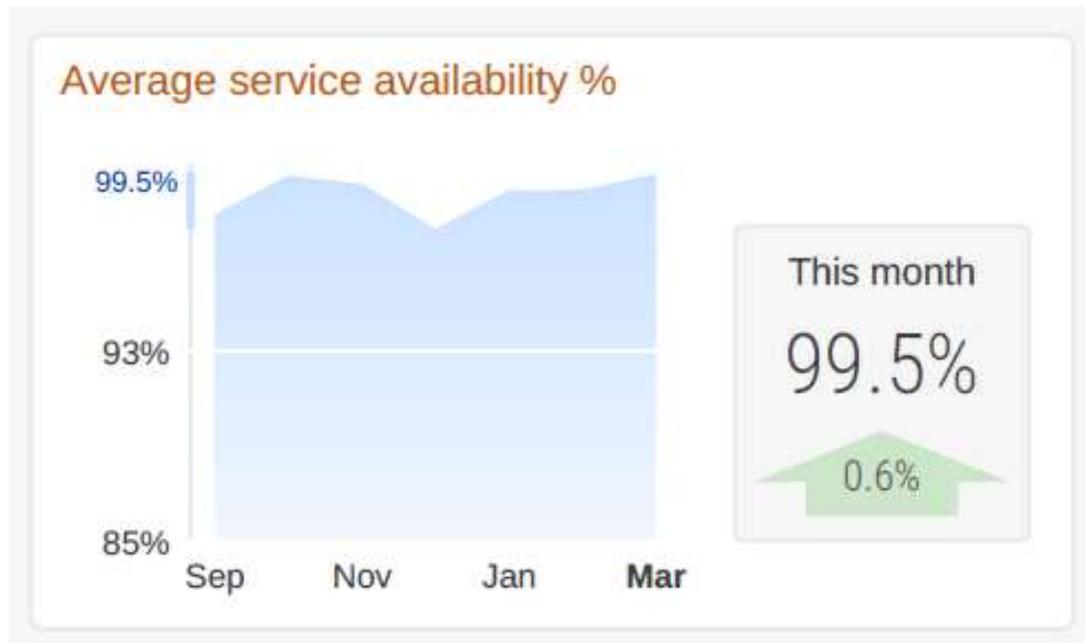
## CRITERIA FOR QUALITY OF SERVICE

Examples with information to illustrate the quality criteria described here are extracted from open data, public geospatial services provided around the globe



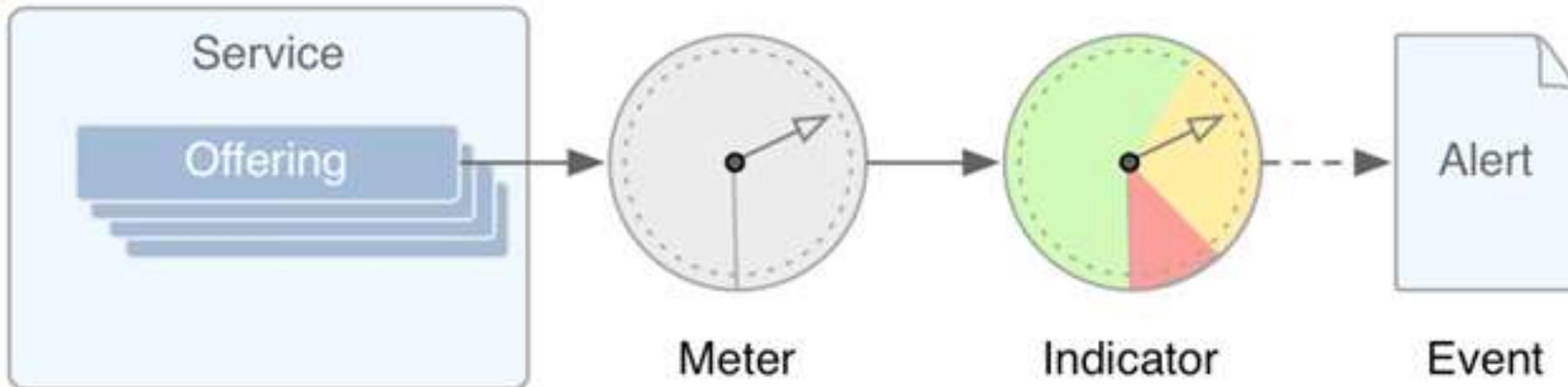


## CRITERIA FOR QoS - AVAILABILITY





## CRITERIA FOR QoS-METERS/INDICATORS



The limit values of error % and response time for a service are shown through an indicator. The indicators take the information produced by a meter and aufer the value of the current status of QoS for a service, based on the results of the monitoring produced by the meter



## CRITERIA FOR QoS - LIMITS/ALERTS

When an indicator change the status of the QoS from Ok to “Warning” or “Error”, it creates an alert and records the alert in the monitoring database

### Alert settings

Meter name Network.HydroNode (wkid:3067, 256x256px, PNG, export)

Indicator name

### Error & warning thresholds



#### 1h average response time

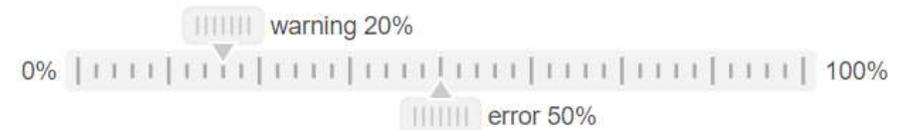
use to trigger alerts



Note: You can also use the above settings to change the warning and alert coloring of the meter's response time graphs in the application.

#### % of errors in 1h

use to trigger alerts



### Alert message recipients

SMS

Email

Cancel Ok



## CRITERIA FOR QoS - PERFORMANCE

Service: **Servicio de Mapas de la Dirección Provincial de Defensa Civil del Neuquén** #45763

<http://sagdefensacivil.neuquen.gov.ar:8080/geoserver/ows> Spatineo Directory page

Assigned to service groups: Neuquen [Edit groups](#)

[Stop following se](#)

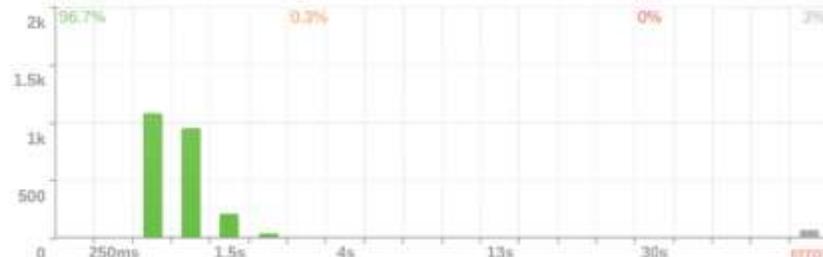
Service info Standards compliance Usage analytics **Meters & alerts** Sharing

Meter: **operativorieve15:ag\_nac\_seg\_vial** (EPSG:22182, 256x256px, image/pn... Response time (ms) maximum



Period: 2/20/2018 - 2/27/2018 [Download](#) [Zoom out](#) [Last day](#) [Last week](#) [Last month](#)

**Service availability**  
97.0% of the selected time period



**Response times**

| Response time (ms) | Request time       | Result         |
|--------------------|--------------------|----------------|
| 3512               | 2/23/2018 8:52 AM  | ✓ open request |
| 3254               | 2/21/2018 5:11 PM  | ✓ open request |
| 2732               | 2/21/2018 4:21 PM  | ✓ open request |
| 2469               | 2/25/2018 9:53 PM  | ✓ open request |
| 2419               | 2/21/2018 4:51 PM  | ✓ open request |
| 2245               | 2/21/2018 4:26 PM  | ✓ open request |
| 1905               | 2/21/2018 4:16 PM  | ✓ open request |
| 1880               | 2/25/2018 3:52 AM  | ✓ open request |
| 1832               | 2/20/2018 9:16 PM  | ✓ open request |
| 1757               | 2/26/2018 11:03 AM | ✓ open request |



## CRITERIA FOR QoS - CAPACITY

Setup

Test timeline

Result analysis

Name

Generate load for  with  ramp-up to maximum load  
*Specify the maximum loads for the included meters in the table below*

Simulation only

*Run this test using simulated service responses (learning mode). No requests will be made to the actual services. Running a simulated test does not cost you test credits.*

### Test setup assistant

#### Select layer to test

|                |                                      |
|----------------|--------------------------------------|
| Layer          | PhysicalWaters.Catchments.RiverBasin |
| Projection/CRS | EPSG:3067                            |
| Image size     | 256x256 px                           |
| Image format   | image/png                            |

Test name

Finish the assistant by giving the new test a name to help you find it later. Note that you can fine-tune the given test parameters and add new meters before you start the test.

### Services & meters to include

INSPIRE\_SYKE\_Hydrografia #5

Load (req/s)

Limit request to a bounding box:

Lower corner X:  Y:

Upper corner X:  Y:

INSPIRE\_SYKE\_Hydrografia #5

Load (req/s)

+ Add new meter

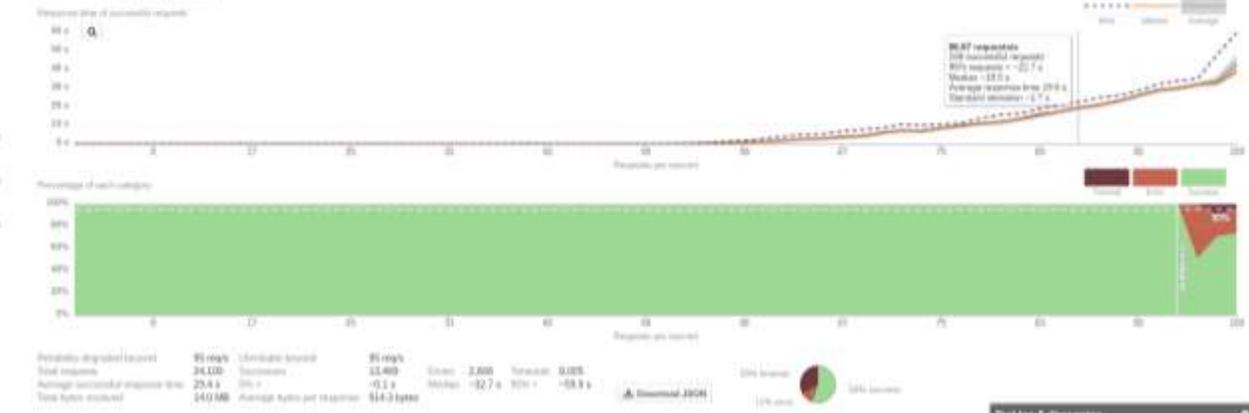


## CRITERIA FOR QoS - CAPACITY



### WFS DescribeFeatureType: tiger\_roads

Service: Spatineo Layer: DescribeFeatureType WFS #11000  
 Service URL: http://test-qa-75-122-150.de.wed:13070/ds/DescribeFeatureType  
 Minimum load: 100 requests per second



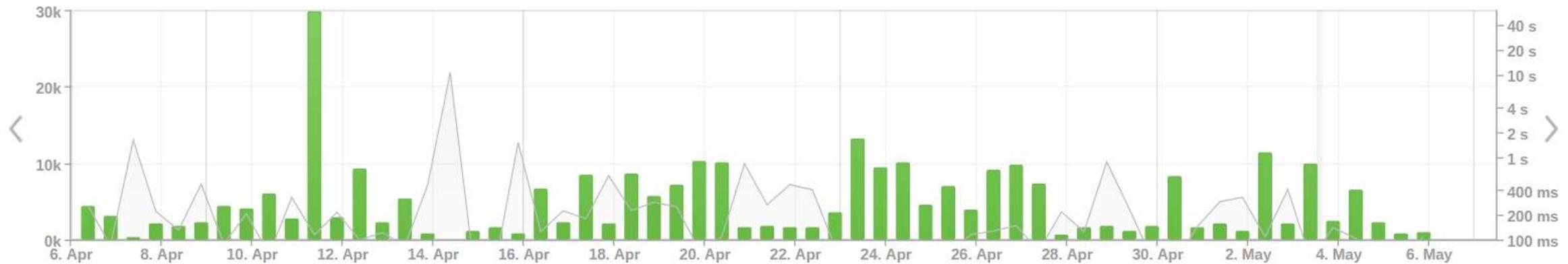


## Actual QoS DELIVERED

Service info | Standards compliance | **Usage analytics** | Meters & alerts | Sharing

Number of requests   Include monitoring by Spatineo

Response time (ms)  ?



Period  -

Reviewing the response time records experienced by the users helps defining the actual level of service quality delivered to those users, for each individual service or a group of them



## IMPACT OF IMPROVEMENTS



Measurement of the amount of time saved or spent in excess by users. Graph shows the variation in a month against the average over the previous 6 months (based on the response time multiplied by the number of monthly requests from users).

How much less (or more) time the users are spending **to access the same information?**

**What's the financial impact in the society?**



## CONCLUSIONS

- Without a **high level** of availability of services, the effort to build an SDI has **low value**
- You can assure availability, performance and capacity, while **optimizing** the infrastructure
- Good visualization of analytical indicators is key to **recognise your success**
- Data driven **impact assessment** to track progress can reveal how successful the implementation is...





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