

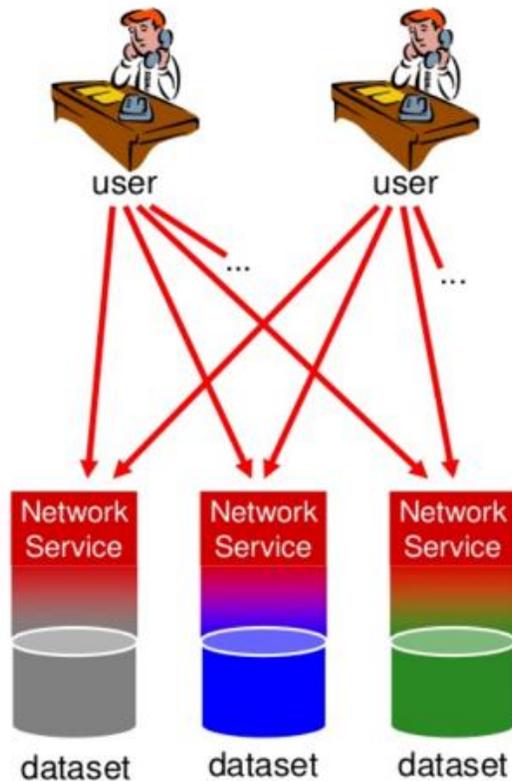
Como garantir a qualidade dos serviços de uma IDE

Fabio Bittencourt
15 de Novembro 2017





VOLUME DE DADOS VS INTEROPERABILIDADE



O volume de dados espaciais coletados aumenta rapidamente com as cada vez mais poderosas formas de simular o ambiente e o comportamento humano

Uma boa IDE permite descobrir, filtrar, adquirir e interagir com os dados espaciais requisitados para uma utilização específica de forma fácil, confiável e eficiente

Um bom exemplo disto é a INSPIRE.



> QUALIDADE DO SERVIÇO



Service health Now: ●	Last 7 days	Year 2017
Availability	100%	100%
Total downtime	0 hours	0.1 hours
Pre-announced service interruptions	0 hours	0 hours
Unexpected downtime	0 hours	0.1 hours





COMUNICAÇÃO COM UTILIZADORES

Preview

Status now Up

Availability last 30 days

99%

✓ No recent notifications

Monitored by Spatineo

Anúncios de manutenção ou interrupções

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

Availability widgets

Example Widget

Create new

Name Example Widget

Widget enabled

Time period Last 30 days

Language English

Color theme Light

Background color

Allowed only on domains *

Separate domains with a comma (*.mydomain.com, another.domain.info)

Delete

Revert

Apply

Widget loader snippet

```
<script type="text/javascript" src="https://monitor.spatineo.com/widgets/bootstrap.js"></script>
```

Copy this piece of code in the head of more Spatineo widgets. Note that JavaScript order to display the widget.

Widget element snippet

```
<div class="spatineo-widget" data-widgetid="200-125-5450fec54e36fd5f1cea8b82"></div>
```

Add this code inside the content part appear. Note that you don't have to update above.

Preview

Status now Up

Availability last 30 days

99%

✓ No recent notifications

Monitored by Spatineo



COMUNICAÇÃO COM UTILIZADORES

Liikennevirasto

Service status

Availability last 30 days

Liikennevirasto avoin WMS

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto avoin WFS

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto rajoitettu WMS

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto rajoitettu WFS

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

FTA INSPIRE - View Service (WMS) for Transport Networks

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

FTA INSPIRE - Download Service (WFS) for Transport Networks

Status now **Up** 
Availability last 30 days
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto WMTS

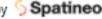
Status now **Up** 
Availability last 30 days
 100%
✓ No recent notifications
Monitored by 

Liikennevirasto Primar WMS

Status now **Up** 
Availability last 30 days
 99%
✓ No recent notifications
Monitored by 

Availability last 12 months

Liikennevirasto avoin WMS

Status now **Up** 
Availability last 12 months
 96%
✓ No recent notifications
Monitored by 

Liikennevirasto avoin WFS

Status now **Up** 
Availability last 12 months
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto rajoitettu WMS

Status now **Up** 
Availability last 12 months
 97%
✓ No recent notifications
Monitored by 

Liikennevirasto rajoitettu WFS

Status now **Up** 
Availability last 12 months
 98%
✓ No recent notifications
Monitored by 

FTA INSPIRE - View Service (WMS) for Transport Networks

Status now **Up** 
Availability last 12 months
 96%
✓ No recent notifications
Monitored by 

FTA INSPIRE - Download Service (WFS) for Transport Networks

Status now **Up** 
Availability last 12 months
 96%
✓ No recent notifications
Monitored by 

Liikennevirasto WMTS

Status now **Up** 
Availability last 12 months
 98%
✓ No recent notifications
Monitored by 

Liikennevirasto Primar WMS

Status now **Up** 
Availability last 12 months
 98%
✓ No recent notifications
Monitored by 



CRITÉRIOS PARA QUALIDADE DO SERVIÇO

CRITERIO PARA QS

DISPONIBILIDADE

DESEMPENHO

CAPACIDADE



CRITÉRIO PARA QS - DISPONIBILIDADE

Average service availability %



This month

98.9%

-0.7%

Alert settings

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

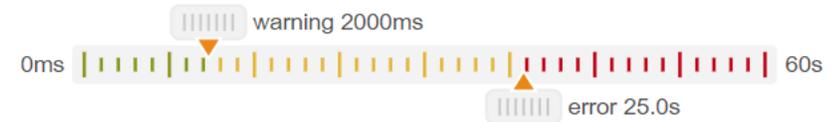
Indicator name

Error & warning thresholds



1h average response time

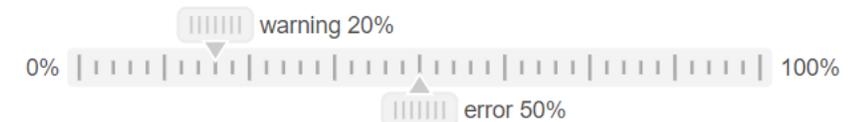
use to trigger alerts



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



CRITERIO PARA QS - DESEMPENHO

Service: Hydrografia #28038

http://paikkatieta.ymparisto.fi/arcgis/rest/services/INSPIRE/SYKE_Hydrografia/MapServer Spatineo Directory page

Assigned to service groups: SYKE, SYKE MapServer REST [Edit groups](#)

[Stop following ser](#)

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

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

Response time (ms) average



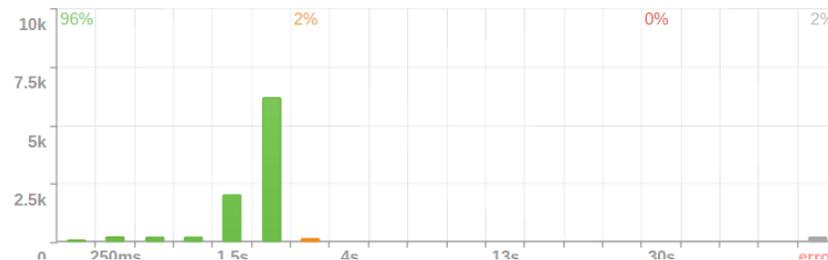
Period: 1/15/2017 - 2/15/2017 [Download](#)

[Zoom out](#)

[Last day](#) [Last week](#) [Last month](#)

Service availability

97.8% of the selected time period



Response times

Response time (ms)	Request time	Result
53409	2/6/2017 2:25 PM	✓ open request
28192	2/6/2017 3:15 PM	✓ open request
21259	2/6/2017 1:45 PM	✓ open request
11514	1/19/2017 11:18 AM	✓ open request
6435	2/6/2017 2:45 PM	✓ open request
5403	2/1/2017 9:40 AM	✓ open request
4687	1/24/2017 8:39 AM	✓ open request
3825	2/15/2017 10:27 AM	✓ open request
3708	2/14/2017 5:41 PM	✓ open request
3537	2/15/2017 9:17 AM	✓ open request



CRITERIO PARA QS - CAPACIDADE

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) ← ← — Additional options

Limit request to a bounding box:

Lower corner X: Y:

Upper corner X: Y:

INSPIRE_SYKE_Hydrografia #5 ✕

Load (req/s)

+ Add new meter

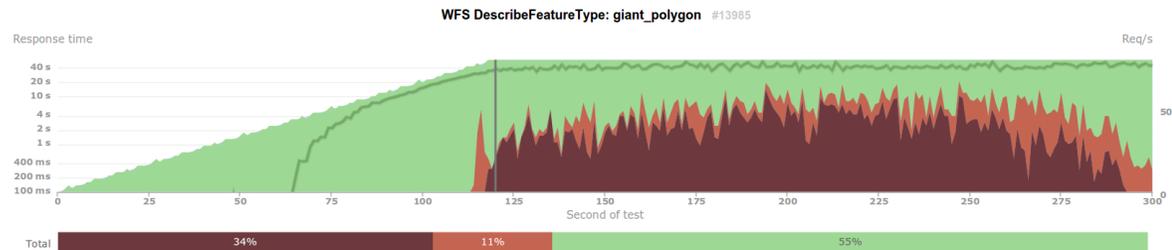
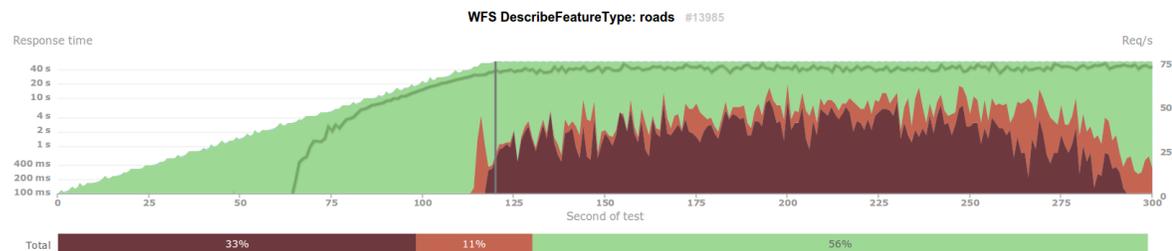
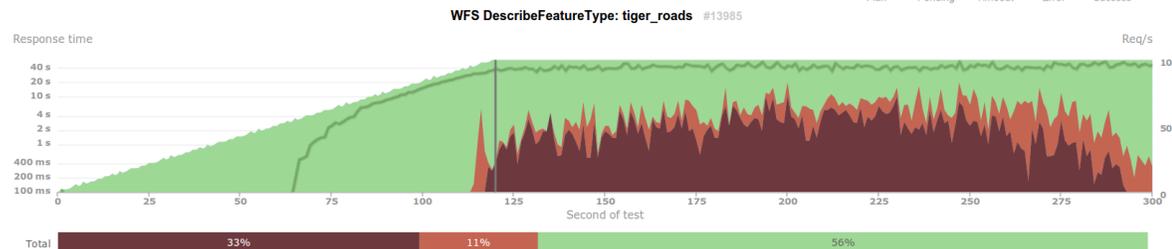
COMO GARANTIR A QUALIDADE DOS SERVIÇOS DE UMA IDE



CRITERIO PARA QS - CAPACIDADE

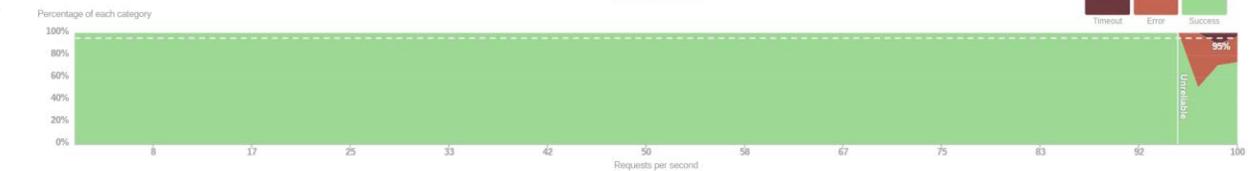
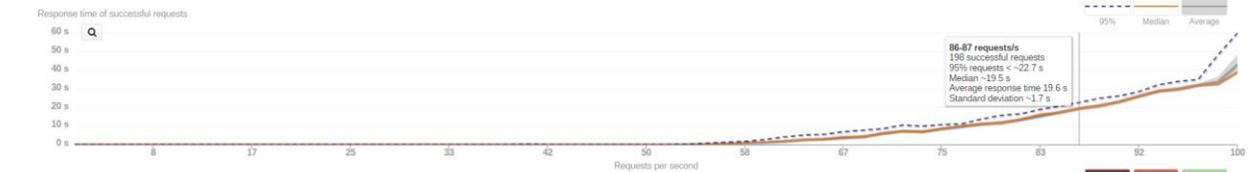


Response time and status during test



WFS DescribeFeatureType: tiger_roads

Service: Spatineo Legacy Geoserver WFS #13985
Service endpoint: http://ec2-54-73-122-159.eu-west-1.compute.amazonaws.com:8080/geoserver/ows
Maximum load: 100 requests per second

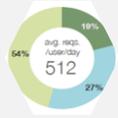


Reliability degraded beyond	95 req/s	Unreliable beyond	95 req/s	Errors	2,606	Timeouts	8,005
Total requests	24,100	Successes	13,489	Median	-0.1 s	95% <	-59.9 s
Average successful response time	29.4 s	5% <	-0.1 s	Average bytes per response	914.3 bytes		
Total bytes received	14.0 MB						

Download JSON



Test Log / Discussion



QUALIDADE ENTREGUE

Est. requests hindered by service interruptions



Longest service interruptions

Date	Service title	Time
11/8	WMS Basemap service	2.5 h
11/20 ×	Ortophoto service (WMTS)	1.1 h
11/20	WMS Basemap service	18 min
11/7	WMS Basemap service	6 min

× marks announced interruptions

5 service interruptions with a combined duration of 12 hours, out of which 12 hours were unannounced

Acompanhar a disponibilidade pelo registro das interrupções assim como pelo número de requisições bloqueadas devido a interrupções do serviço, lança uma luz em qual o nível qualidade de fato entregue aos utilizadores



TENDÊNCIAS A AFETAR OS SERVIÇOS

Most used services

Service title	Requests	Users	Transfer	Type	Service ID
National Mapping Agency basemaps	22M	62k	51 GiB	WMTS	#1
NMA Ortophoto service	1.5M	5.1k	2.4 GiB	WMS	#2
NWA combined for mobile access	251k	1.3k	431 MiB	WFS	#3

Services with the biggest speed changes

Compared to Oct 2015

Service title	Response time		No. of users	
NMA Ortophoto service	460 ms	-7.5%	41k	+5.4%
National Mapping Agency basemaps	2 sec	-6.1%	16k	-2.1%
NWA combined for mobile access	252 ms	-1.1%	16k	+10%

Combinar a informação dos serviços mais populares com aqueles com maiores mudanças na velocidade no mesmo período, leva a correlações que ajudam a tomar decisões mais eficazes ao identificar a origem mais provável dos problemas de desempenho

COMO GARANTIR A QUALIDADE DOS SERVIÇOS DE UMA IDE



VALIDAR COM PADRÕES OGC/INSPIRE

The screenshot displays a web interface for validating a service. It is divided into several sections:

- Service info:** Shows the service name as "OGC Web Map Service 1.3".
- Standards compliance:** This section is the primary focus, showing validation results for two standards:
 - OGC Web Map Service 1.3:** A red circle highlights a failure: "OGC Web Map Service 1.3: failed General XML compliance tests". Below this, it lists "2 passed tests".
 - OGC Web Map Tile Service 1.0:** A red circle highlights a success: "OGC Web Map Tile Service 1.0: passed General XML compliance tests". Below this, it lists "2 passed tests".
- Web Map Service tests:** Shows "18 passed tests".
- INSPIRE View Service tests:** Shows "5 passed tests" and "1 warning". The warning is "Layers should probably be prefixed", with details: "If no theme-specific layer prefix is used, the harmonized layer names cannot be verified. The INSPIRE harmonised name of a layer consists of the two-letter uppercase theme abbreviation, a dot, and an identifying string. See Data Specification for each theme, chapter 11.1." It lists three rows with unknown harmonized layer prefixes.
- Capabilities document source code:** Two code snippets are shown. A red arrow points from the "Basic service metadata must be present" error to the first snippet, which shows an XML structure where the title element is missing. The second snippet shows a correct XML structure with a title element.



**VALIDAR COM PADRÕES
OGC/INSPIRE**

Open Geospatial Consortium Inc.

Date: 2006-03-15

Reference number of this document: OGC® 06-042

Version: 1.3.0

Category: OpenGIS® Implementation Specification

Editor: Jeff de la Beaujardiere

OpenGIS® Web Map Server Implementation Specification

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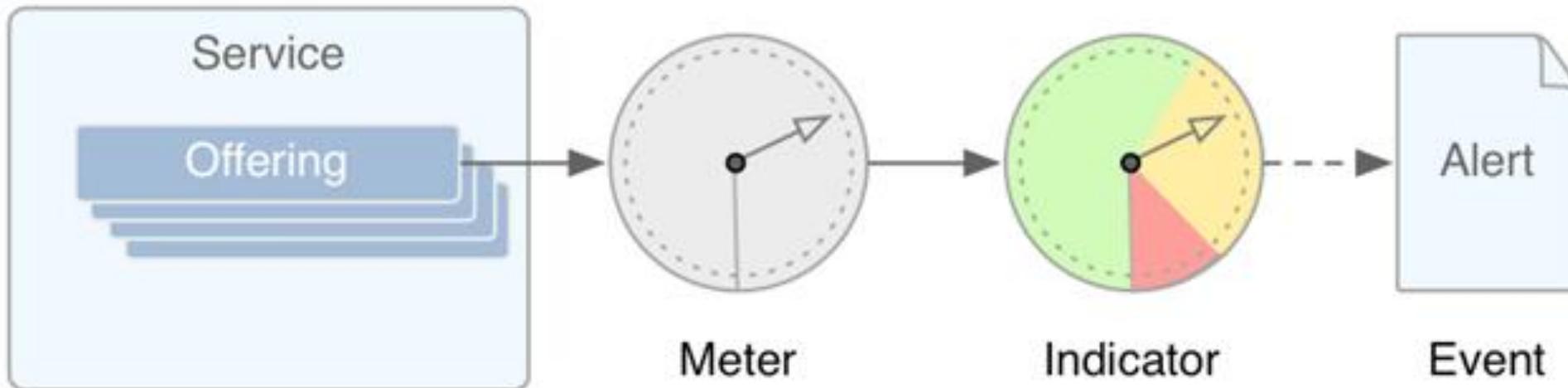
VALIDAR COM PADRÕES OGC/INSPIRE

Capabilities document source code

```
211         <Format>image/png</Format>
212         <OnlineResource xlink:href="http://paikkatieto.ympari
213         </LegendURL>
214     </Style>
215     <MaxScaleDenominator>18898809.523810</MaxScaleDenominator>
216     <MinScaleDenominator>9449.404762</MinScaleDenominator>
217 </Layer>
218 <Layer queryable="1">
219     <Name>Reporting.WFDLake</Name>
220     <Title><![CDATA[VPD Järvi]]></Title>
221     <Abstract><![CDATA[VPD Järvi]]></Abstract>
222     <CRS>CRS:84</CRS>
223     <CRS>EPSG:4326</CRS>
224     <CRS>EPSG:2393</CRS>
225     <CRS>EPSG:4258</CRS>
226     <CRS>EPSG:3034</CRS>
227     <CRS>EPSG:3035</CRS>
228     <CRS>EPSG:3046</CRS>
229     <CRS>EPSG:3047</CRS>
230     <CRS>EPSG:3048</CRS>
231     <CRS>EPSG:3067</CRS>
232     <EX_GeographicBoundingBox>
233     <westBoundLongitude>16.384607</westBoundLongitude>
234     <eastBoundLongitude>33.079527</eastBoundLongitude>
235     <southBoundLatitude>59.724297</southBoundLatitude>
236     <northBoundLatitude>70.035181</northBoundLatitude>
237 </EX_GeographicBoundingBox>
238     <BoundingBox CRS="CRS:84" maxx="33.079527" maxy="70.035181" minx="16.
239     <BoundingBox CRS="EPSG:4326" maxx="70.035181" maxy="33.079527" minx="
240     <BoundingBox CRS="EPSG:2393" maxx="7773112.500000" maxy="3732599.3370
241     <BoundingBox CRS="EPSG:4258" maxx="70.035181" maxy="33.079527" minx="
```



INDICADORES



Os valores limites de % de erro e tempo de resposta para um serviço, são mostrados através de um indicador. Os indicadores tomam a informação produzida por um medidor e auferem o valor do status atual da QS para o serviço, baseado nos resultados da monitorização produzida pelo medidor



LIMITES/ALERTAS

Quando um indicador muda o status da QS de Ok para “Warning” ou “Error”, cria um alerta e registra este alerta na base de dados da monitorização

Alert settings

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

Indicator name

Error & warning thresholds



1h average response time

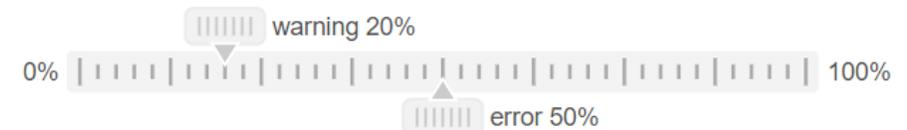
use to trigger alerts



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

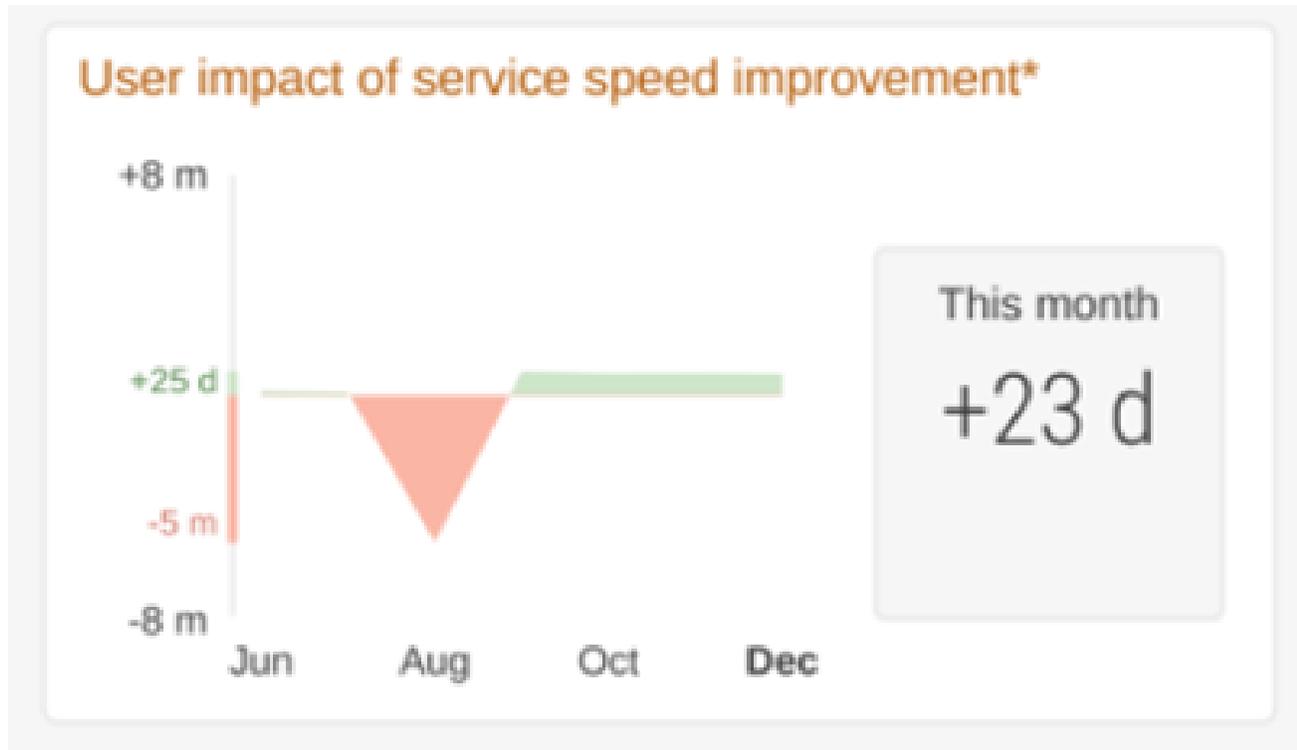
SMS

Email

Cancel Ok



> IMPACTO DAS MELHORIAS



Uma medição bastante útil é o impacto do tempo economizado pelos utilizadores. O gráfico mostra a diferença de um mês específico para um a media dos últimos 6 meses (baseado no tempo de resposta multiplicado pelo N^o de requisições mensais)



CONCLUSÕES

- Sem a ampla disponibilização dos serviços espaciais, o esforço no desenvolvimento de uma IDE perde seu valor
- Exemplo de objetivo: “Garantir o nível mais alto possível de disponibilidade dos serviços espaciais aos usuários, aumentando a utilização dos serviços.”
- Conceito AHARP
- Garantir níveis de disponibilidade, desempenho e capacidade, otimizando os investimentos
- Análise de inteligência com boa visualização de indicadores, alinhados com a estratégia é essencial
- Comprovar o valor dos serviços espaciais, promovendo maior desenvolvimento!





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