

Testing CSW services by requirements of INSPIRE

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Inspire discovery service

- Commission Regulation (EC) No 976/2009 of 19 October 2009
- Technical Guidance for the implementation of INSPIRE Discovery Services version 3.1
- Based on OGC CSW 2.0.2
- Performance – response maximum 3 seconds
- Capacity – 30 served simultaneous requests
- Availability – 99 % of time
- Search criteria defined in Annex A



Tested services

- 44 European services found at INSPIRE Geoportal
- Various platforms (Geonetwork, ArcGIS, Intergraph SDI Pro, Deegree etc.)



Performance and capacity testing

- Apache JMeter 2.10
- Windows server 2008 R2 8 CPU, 8 GB Ram
- Thread group of 30 users
- 90 % of request "GetRecords" and 10 % "GetCapabilities"
- Dynamically changing BBOX and AnyText ="dataset"
- During weekends

Parameter Name	Parameter Value
SERVICE	CSW
REQUEST	GetRecords
VERSION	2.0.2
ElementSetName	full
TypeNames	gmd:MD_Metadata
ResultType	results
ConstraintLanguage	FILTER
Constraint	OGC filter value
OutputSchema	http://www.isotc211.org/2005/gmd
maxRecords	5
CONSTRAINT LANGUAGE VERSION	1.1.0



Availability

- Not tested in details
- One week test of availability
- 10 request GetRecords / 1 hour to each service
- Should be tested for whole life of service



Queryable testing

- Apache JMeter
- Each service tested with all required search criterias - 28 querybles

INSPIRE queryable metadata elements	INSPIRE Discovery Service (CSW ISO AP) queryable properties
Keyword	Subject
Topic category	TopicCategory
Spatial data service type	ServiceType
Lineage	Lineage
Spatial resolution	
Denominator	Denominator
DistanceUOM	DistanceUOM
DistanceValue	DistanceValue
Specification	
SpecificationTitle	SpecificationTitle
SpecificationDate	SpecificationDate
SpecificationDateType	SpecificationDateType
Degree	Degree
Geographic bounding box	BoundingBox
Conditions applying to access and use	ConditionApplyingToAccessAndUse
Limitations on public access	
AccessConstraints	AccessConstraints
OtherConstraints	OtherConstraints
Classification	Classification
Responsible party	OrganisationName
Responsible party role	ResponsiblePartyRole
Resource Title	Title
Resource Abstract	Abstract
Resource Type	Type
Unique resource identifier	ResourceIdentifier
Temporal Reference	
TemporalExtent	
TempExtent_begin	TempExtent_begin
TempExtent_end	TempExtent_end
PublicationDate	PublicationDate
RevisionDate	RevisionDate
CreationDate	CreationDate
Language	Language



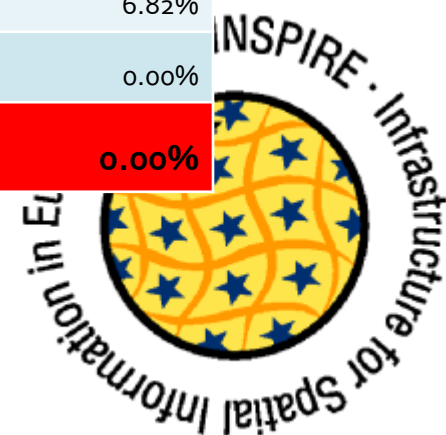
GetCapabilities testing

- INSPIRE validator at Inspire Geoportal



Results

Test type	Absolut values	Relative values from all 44 services
Num. of servers for performance test	44	100.00%
Num. of servers with relevant response	36	81.82%
Capacity (more than 30 req./s)	10	22.73%
Response time les than 3 seconds	22	50.00%
Num of servers for queryable test	44	100.00%
Num of servers meeting INSPIRE queryable criteria	22	50.00%
Only one queryable unsuported	11	25.00%
Num. of server meeting capacity, performance and Queryables parameters	3	6.82%
Num of . Servers with valid GetCapabilities	0	0.00%
Num. of INSPIRE valid services	0	0.00%



Testing of selected CSW parameters to performance and capacity

- Number of records in catalogue
- Selected parameters:

Parameter	Parameter Value
ElementSetName	full
	brief
	summary
OutputSchema	http://www.isotc211.org/2005/gmd
	http://www.opengis.net/cat/csw/2.0.2
MaxRecords	5
	10
ResultType	results
	hits



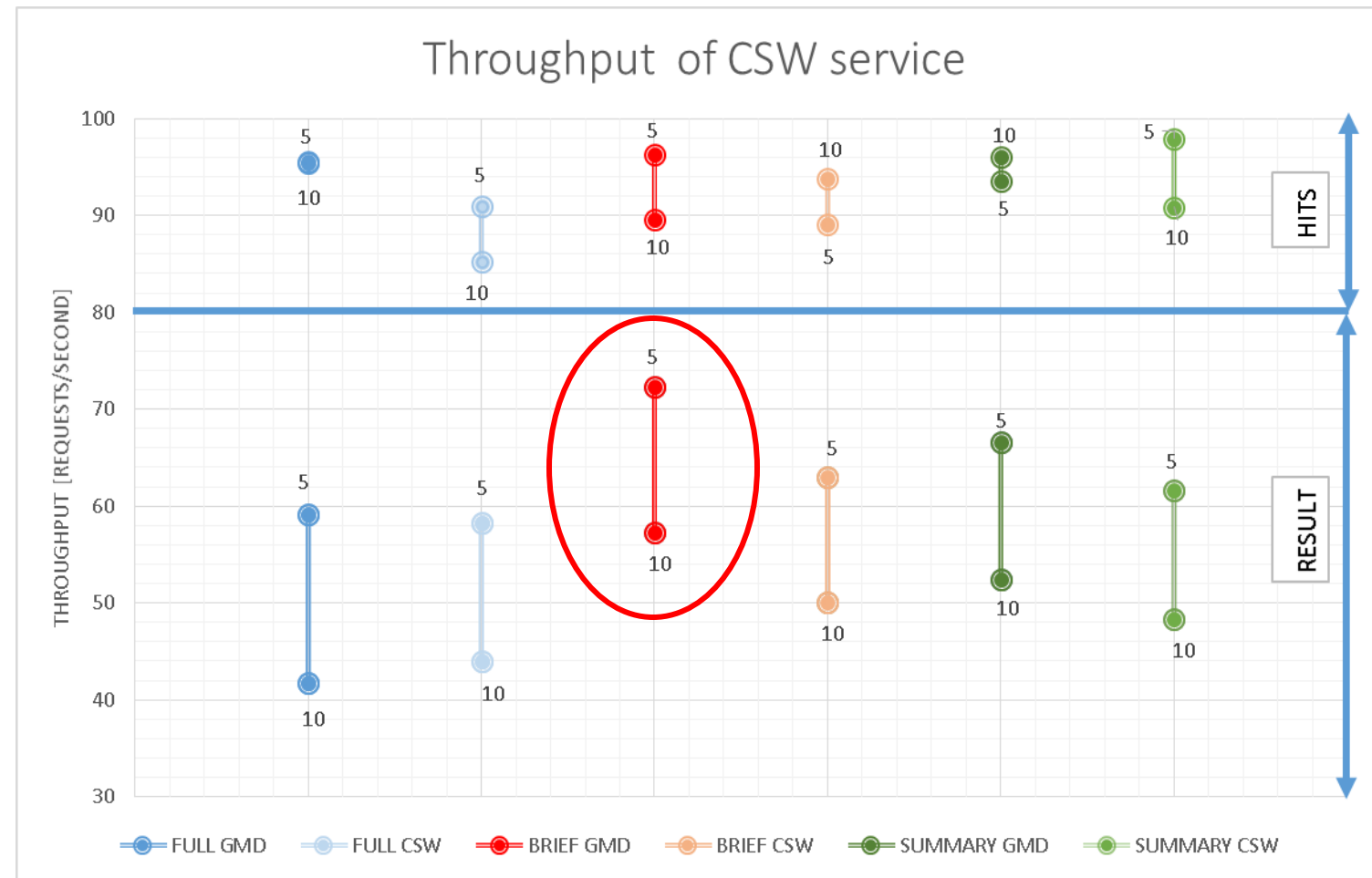
Num. of records in catalogue

- Deegree 3.3.6
- Catalogue based on PostgreSQL9.2 / PostGIS 2.1
- Python script for creation sample metadata
- Jmeter test

Num. of metadata	Results		
	Num. of samples	Response Time [ms]	Throughput [req./s]
100	4572	390	75.9
1000	3596	501	59.5
5000	1150	1589	18.8
10000	636	2918	10.2
50000	181	10380	2.8

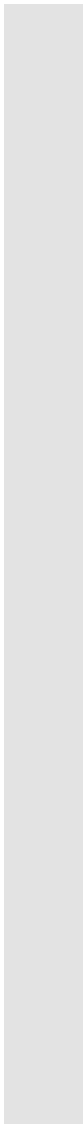
Query parameters

- 24 test combination



Conclusion

- Exact definition of parameters for performance and capacity testing of discovery service
- Using actual testing parameters/recommendation everybody can meet INSPIRE requirements but also can't
- Queryable AnyText (full text search) is not mandatory and it is not in legislation but in technical guidelines it is recommended queryable parameter
- Consider the response of the service and its structure
- Consider Queryable test



Thank you!

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