OpenSearch implementation status
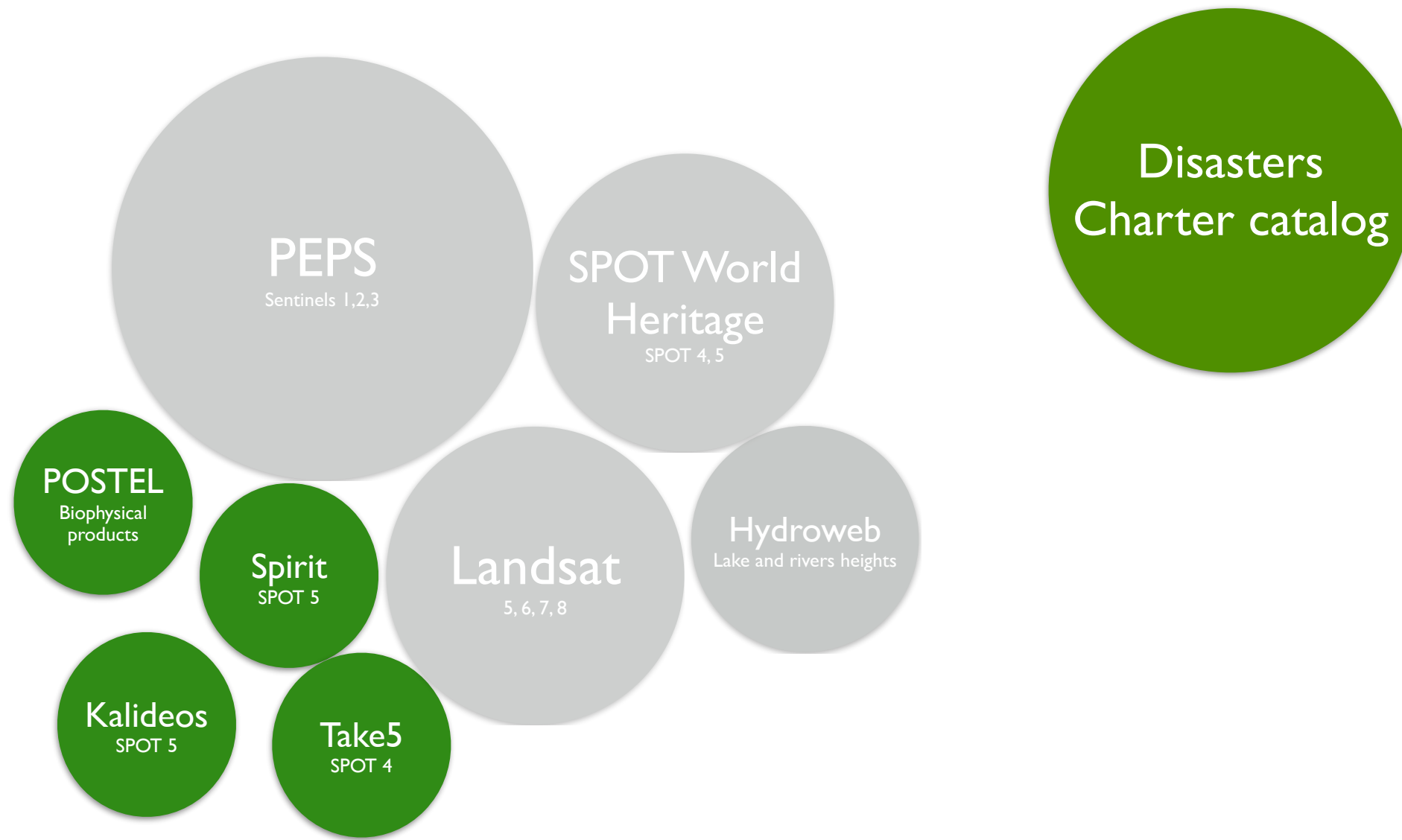
Jérôme Gasperi

WGISS #37
Cocoa Beach, Florida - USA - April 15th, 2014

OpenSearch enabled data sources
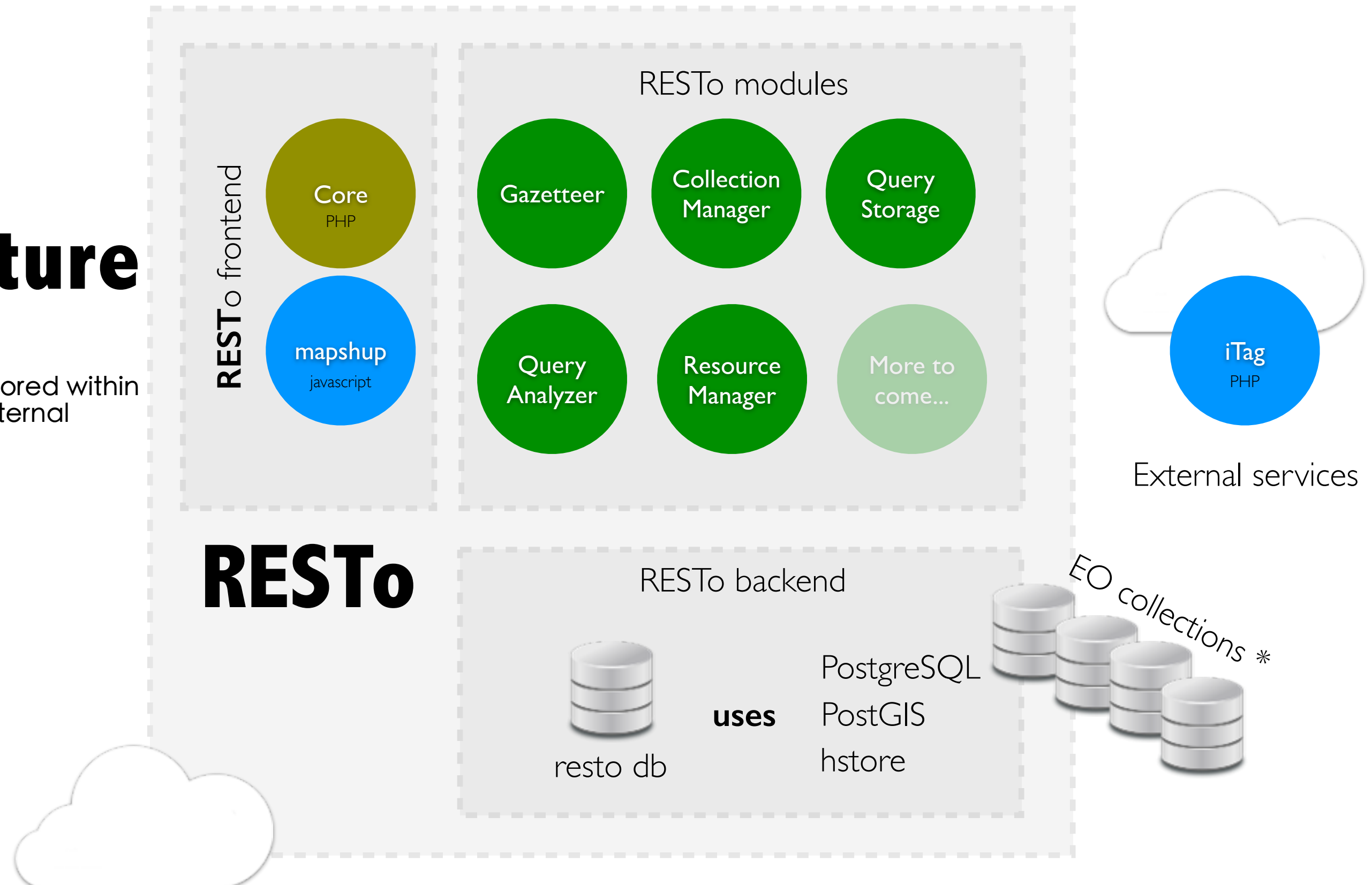

PEPS
Sentinels 1,2,3

SPOT World Heritage
SPOT 4, 5

Disasters Charter catalog

POSTEL
Biophysical products

Spirit
SPOT 5

Landsat
5, 6, 7, 8

Hydroweb
Lake and rivers heights

Kalideos
SPOT 5

Take5
SPOT 4

Theia - Land Surfaces Portal

Available as of 04.2014

Planned for end of 2014

OpenSearch capabilities are provided by RESTo

RESTo - restful semantic search tool for geospatial is an implementation of OGC13-026 OpenSearch Extension for Earth Observation

Architecture

(*) Collections can be stored within RESTo database or in external databases

RESTo

RESTo frontend

Core
PHP

mapshup
javascript

RESTo modules

Gazetteer

Collection Manager

Query Storage

Query Analyzer

Resource Manager

More to come...

iTag
PHP

External services

RESTo backend

resto db   **uses**   PostgreSQL
PostGIS
hstore

EO collections *

RESTO

R R R

restful   responsive   reliable

R

restful

|		
GET	/	List all collections
POST	/	Create a new collection
GET	/collection/$describe	<u>Describe</u> collection OpenSearch service
GET	/collection	Search collection
POST	/collection	Insert a resource within collection
DELETE	/collection	Delete collection
PUT	/collection	Update collection
GET	/collection/identifier	Show resource metadata
GET	/collection/identifier/$download	Download resource product

R

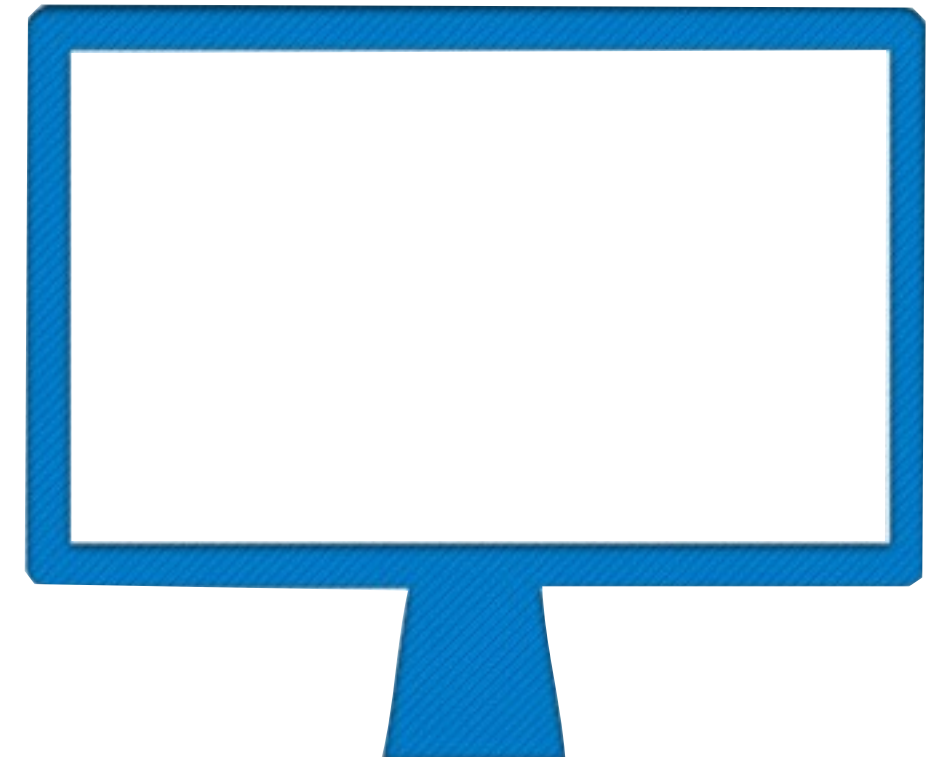responsive

0 to 500 px   501 to 959 px   960 to > 1280 px
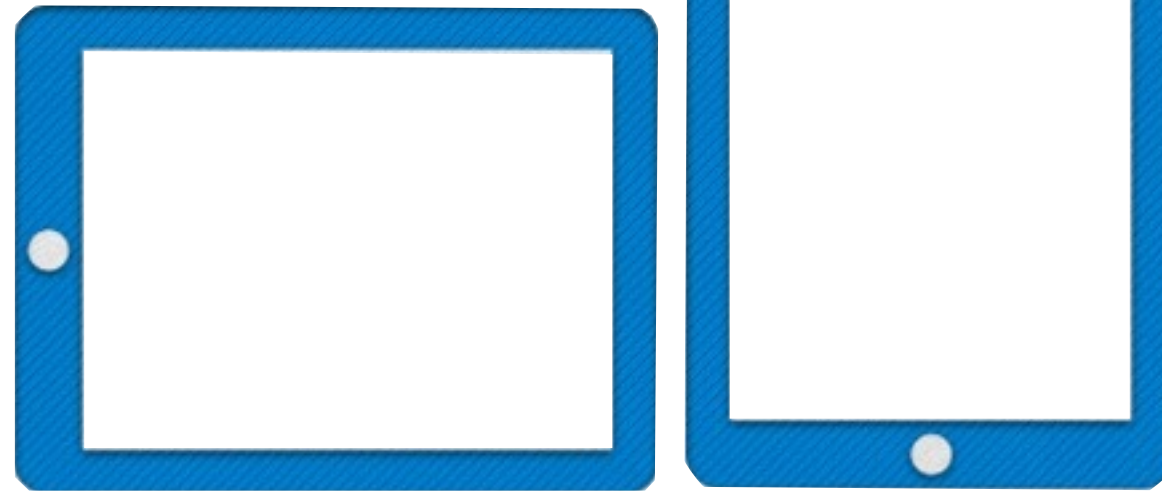
Mobiles   Tablets   Desktops

R
reliable

1 000 000
SPOT DATABASE
New products retrieved every 3 hours from ADS catalog

0.2s
SEARCH
Time period of 1 month within a 10x10 km² box

0.5s
INGEST
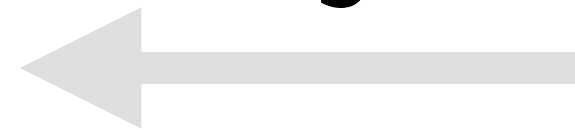Per product for a ~5000 products ingestion

R

Ingest

POST

RESTo

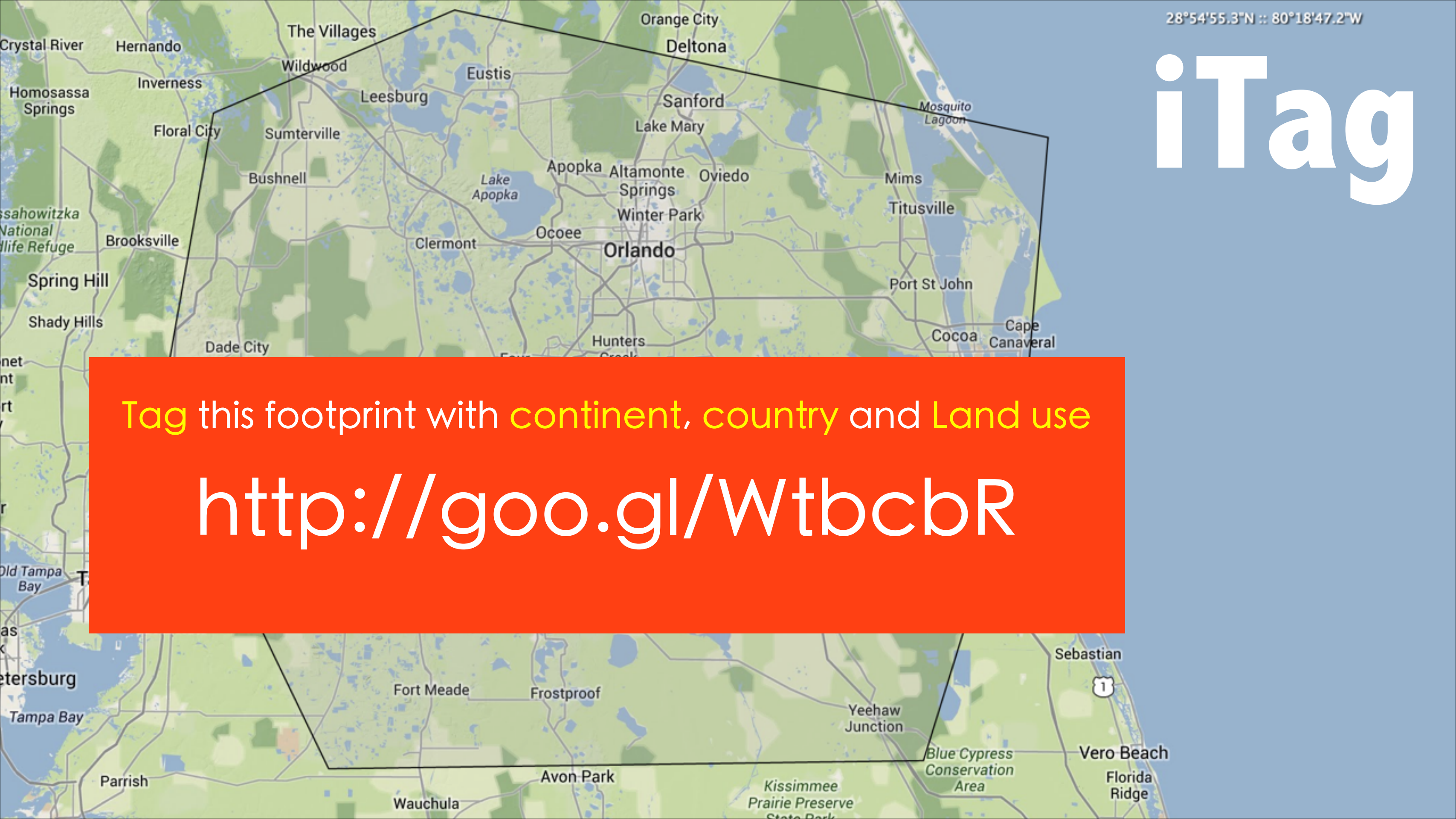During ingestion process , resources are automatically tagged with location and land use

github.com/jjrom/itag

28°54'55.3"N :: 80°18'47.2"W

iTag

Tag this footprint with continent, country and Land use

http://goo.gl/WtbcbR
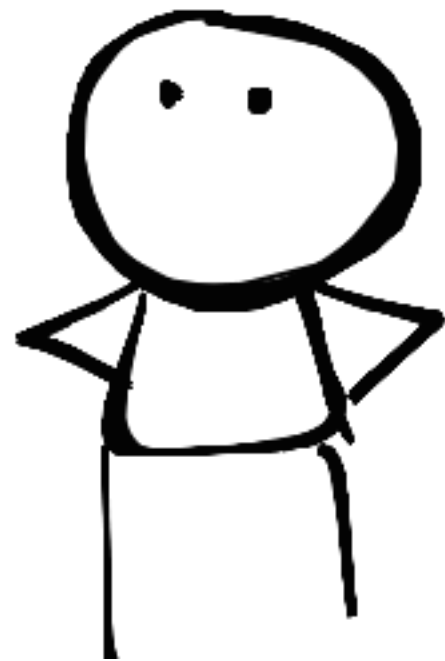
Additionally, conditional ingestion rules can be defined at the collection level to provide specific tags

e.g.

Add tags #mh370,#plane,#malaysianairline
to resources acquired between 2014, march 8th and 2014, april 14th
in the south of the Indian Ocean

http://goo.gl/W8VIPV

RESTo provides semantic search capabilities

It uses a Query Analyzer to translate natural language query into
a set of EO OpenSearch parameters

Query Analyzer goodies

Multilingual - current languages are EN, FR, IT and DE
Synonyms supported (e.g. unit «m» is «m», «meter» or «meters»)
Each collection can define its own dedicated keywords
Automatic typing error correction using similarity
Embed a Gazetteer containing ~9 000 000 toponyms

Example

« Images of urban area in the US acquired in the last 10 days with less than 5 % of cloud cover »
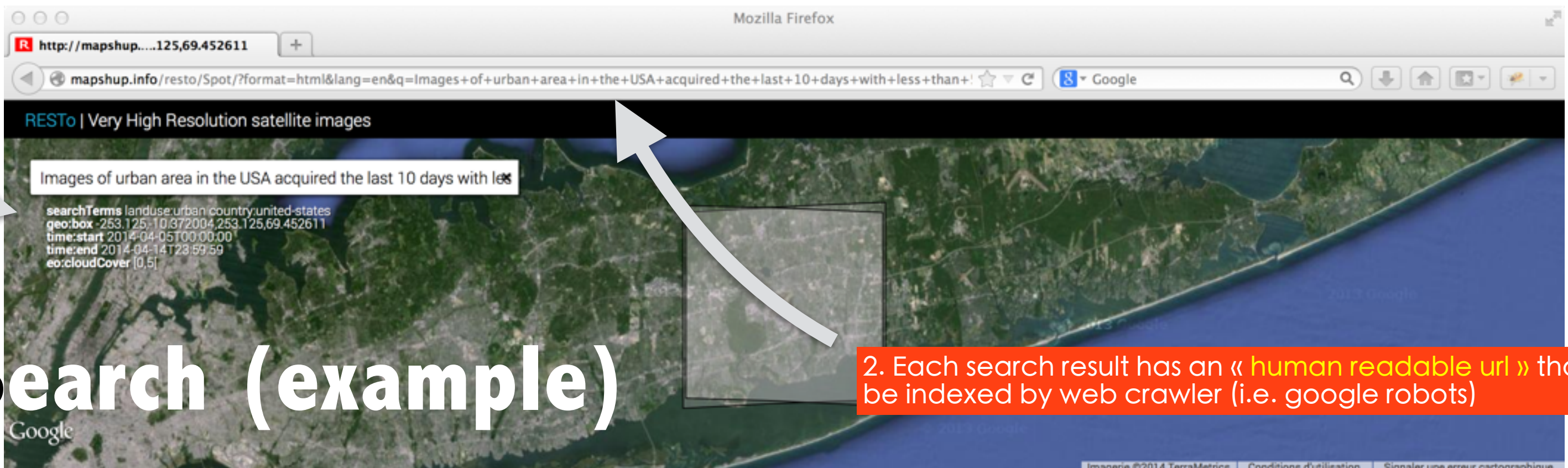
Example

« Images of **urban** area in the **US** acquired in the **last 10 days** with **less** than **5 %** of **cloud** cover »

keyword   location   date   acquisition   parameter

Search (example)

Mozilla Firefox

http://mapshup.....125,69.452611

mapshup.info/resto/Spot/?format=html&lang=en&q=Images+of+urban+area+in+the+USA+acquired+the+last+10+days+with+less+than+!

Google

RESTo | Very High Resolution satellite images

Images of urban area in the USA acquired the last 10 days with les

searchTerms landuse:urban country:united-states
geo:box -253.125,-10.372004,253.125,69.452611
time:start 2014-04-05T00:00:00
time:end 2014-04-14T23:59:59
eo:cloudCover [0,5[

Google

Imagerie ©2014 TerraMetrics | Conditions d'utilisation | Signaler une erreur cartographique

2. Each search result has an « human readable url » that can be indexed by web crawler (i.e. google robots)

1. Search parameters are derived from Natural Language query

PHR1B | 2014-04-13 15:59:03   PHR1B | 2014-04-13 15:58:26   PHR1B | 2014-04-13 15:58:01

Land cover Urban area (45%) , Forest (37%)

Location United States , North America

Land cover Forest (30%) , Urban area (25%) , Water (23%)

Location United States , North America

Land cover Forest (28%) , Urban area (25%) , Water (25%)

Location United States , North America

Land cover Urban area (45%) , Forest (38%)

Location United States , North America

http://goo.gl/GvMEHj

3. Keywords on resources are links to search requests : they can be indexed by web crawler…and so on

! http://mapshup.info/resto

github.com/jjrom/resto