



# SexTant: Visualizing Time-Evolving Linked Geospatial Data



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TANT



Exploration of linked geospatial data that span across multiple SPARQL endpoints



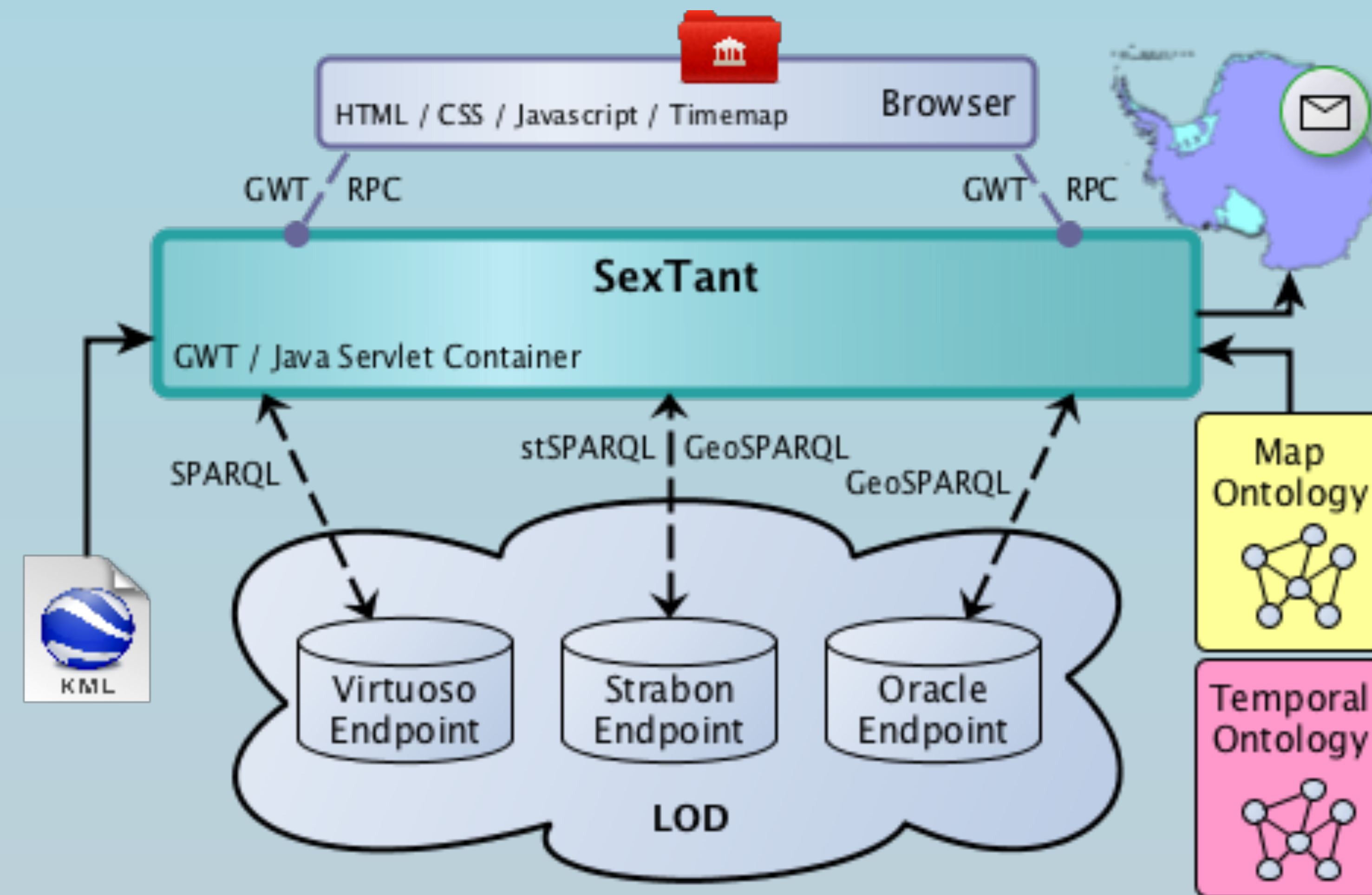
Creation of thematic maps produced by querying the temporal and spatial dimensions of linked data and other geospatial data sources in OGC standard file formats (e.g., KML, GeoJSON)



Sharing and collaborative editing of thematic maps



Interoperability with well-known GIS tools (e.g., ArcGIS, QGIS)



## SPARQL to KML translation

### SPARQL query

```

SELECT DISTINCT ?t ?geo
WHERE {
  ?area clc:hasLandUse clc:sclerophyllousVegetation ?t .
  ?area clc:hasGeometry ?geo .
  ?ba rdf:type noa:BurnedArea ?t2 .
  ?ba noa:hasGeometry ?geo2 .
  FILTER (strdf:intersects(?geo, ?geo2) && strdf:before(?t, ?t2)) }

```

### SPARQL XML results

```

<result>
<binding name='geo'>
<literal datatype='http://strdf.di.uoa.gr/ontology#WKT'>
POLYGON((21.821 38.283,21.821 38.282,...))
</literal>
</binding>
<binding name='t'>
<literal datatype='http://strdf.di.uoa.gr/ontology#period'>
[2000-01-01T00:00:00,2012-09-30T00:00:00)
</literal>
</binding>
</result>

```

Query evaluation

SPARQL XML results to KML

### KML file

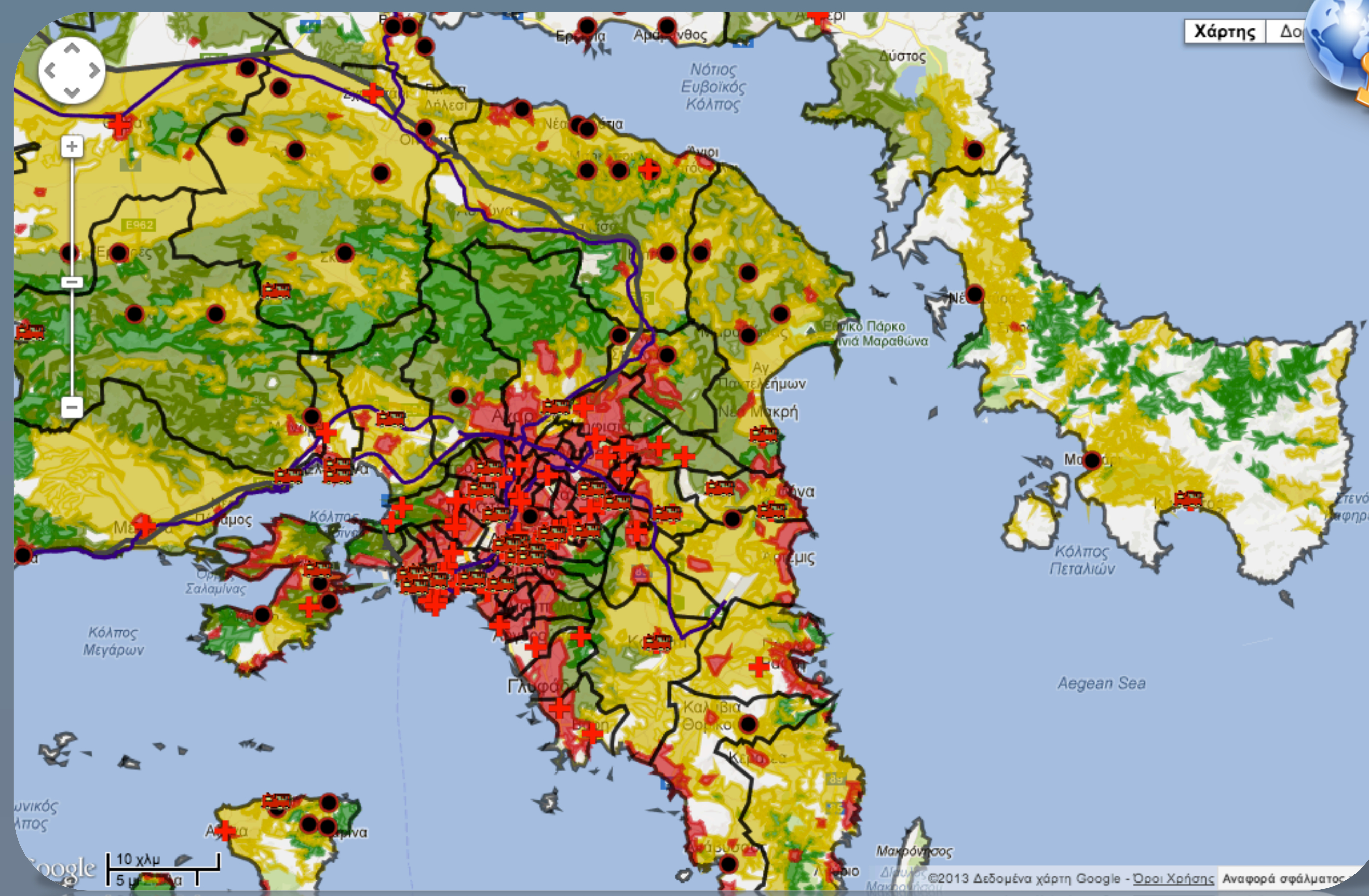
```

<Placemark>
<TimeSpan>
<begin>2000-01-01T00:00:00</begin>
<end>2012-09-30T00:00:00</end>
</TimeSpan>
<Polygon>
<outerBoundaryIs><LinearRing>
<coordinates>21.821,38.283 21.821,38.282...</coordinates>
</LinearRing></outerBoundaryIs>
</Polygon>
</Placemark>

```

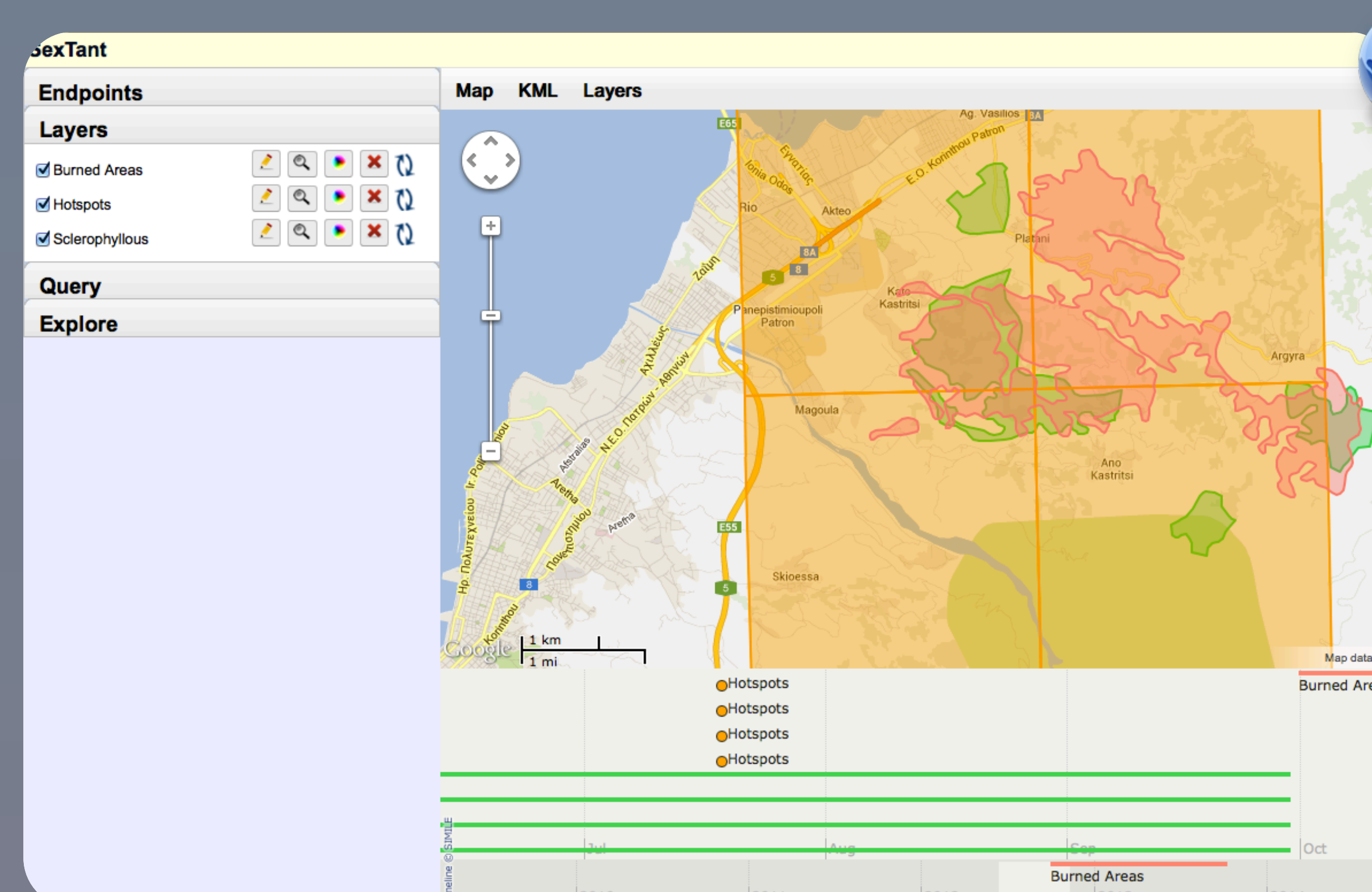


## Rapid mapping for emergency response



A map produced on SexTant using the query languages stSPARQL/GeoSPARQL, linked geospatial data, and KML files.

## Studying the evolution of land cover of areas



The interface of SexTant that an EO expert employs to produce thematic maps with time-evolving linked geospatial data. The technologies used are: (i) the query language stSPARQL for queries with temporal constructs, (ii) the spatiotemporal RDF store Strabon.

- The spatiotemporal RDF store **Strabon** ([strabon.di.uoa.gr](http://strabon.di.uoa.gr))
- K. Kyzirakos, M. Karpathiotakis, M. Koubarakis: **Strabon: A Semantic Geospatial DBMS**. *ISWC 2012*
- K. Bereta, P. Smeros, M. Koubarakis: Representation and Querying of **Valid Time** of Triples in Linked Geospatial Data. *ESWC 2013*
- C. Nikolaou, K. Dogani, K. Kyzirakos, M. Koubarakis: **Sextant: Browsing and Mapping the Ocean of Linked Geospatial Data**. *ESWC 2013*

More info



**TELEIOS** is a European project that addresses the need for scalable access to petabytes of Earth Observation data and the discovery and exploitation of knowledge that is hidden in them using **Scientific Database**, **Semantic Web** and **Linked Data** technologies. **SWeFS** is a Greek project that develops a novel Sensor Web platform for protecting wildland-urban interface zones against the serious threat of forest fires. To achieve its goals, SWeFS integrates techniques from **sensor networks**, **distributed vision** systems, **remote sensing**, **data stream fusion**, space-time predictive modeling, and control systems. **Optique** is a European project that brings a unique combination of technologies to bear on **Big Data** challenges: an end-user-oriented query interface; scalable query rewriting from the end-user to the source vocabulary; **temporal** and **real-time** continuous stream processing; scalable storage and query evaluation using elastic clouds.



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