

# Data models, Query Languages, Implemented Systems and Applications of Linked Geospatial Data

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# Tutorial Organization

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- **14:00 – 14:15** Introduction
- **14:15 – 15:00** Background in geospatial data modeling
- **15:00 – 15:30** Geospatial data in the Semantic Web – stSPARQL
- **15:30 – 16:00** Coffee break
- **16:00- 16:30** Geospatial data in the Semantic Web – GeoSPARQL
- **16:30 – 17:00** Implemented systems and applications
- **17:00 – 17:15** Conclusions, questions, discussion
- **17:15 – 17:30** Demo of Strabon



## Introduction

Presenter: Manolis Koubarakis

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# Outline

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- Why geospatial information?
- Geographical Information Science and Systems
- Why this tutorial?

# Why Geospatial Information?

- **Geospatial**, and in general **geographical**, information is very important in reality: everything that happens, happens somewhere (**location**).
- **Decision making can be substantially improved** if we know where things take place.



# Geography

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- From <http://en.wikipedia.org/wiki/Geography>
  - **Geography** is the science that studies the lands, the features, the inhabitants and the phenomena of the Earth.
  - From the Greek word **γεωγραφία (geographia)** which means “describing the Earth”.

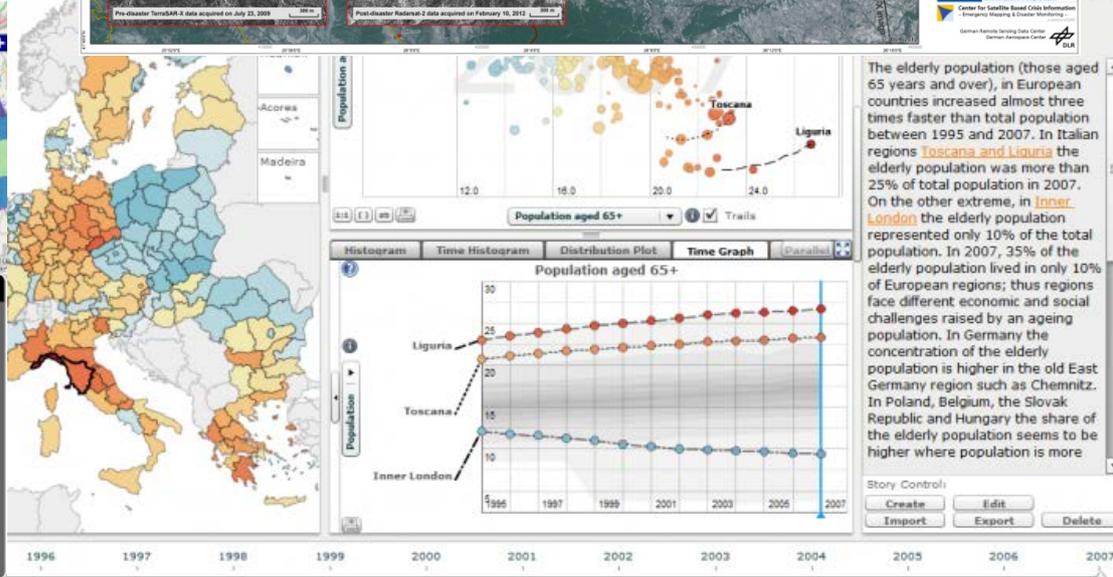
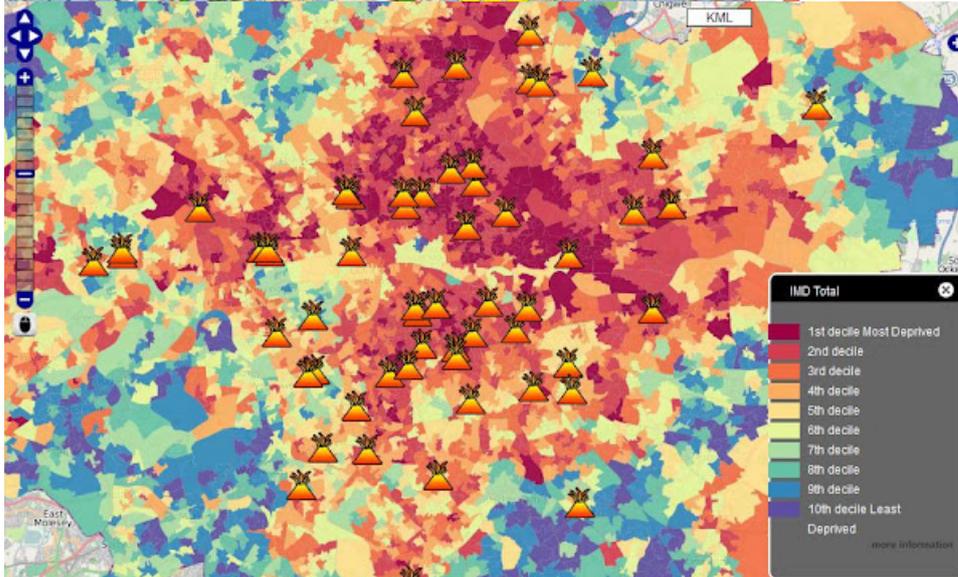
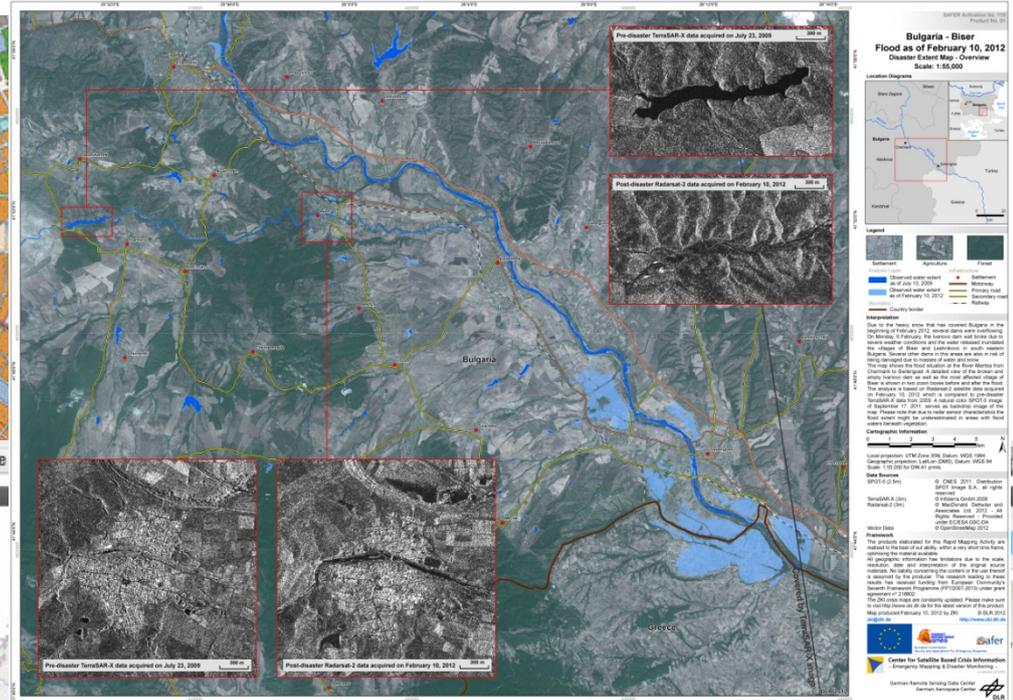
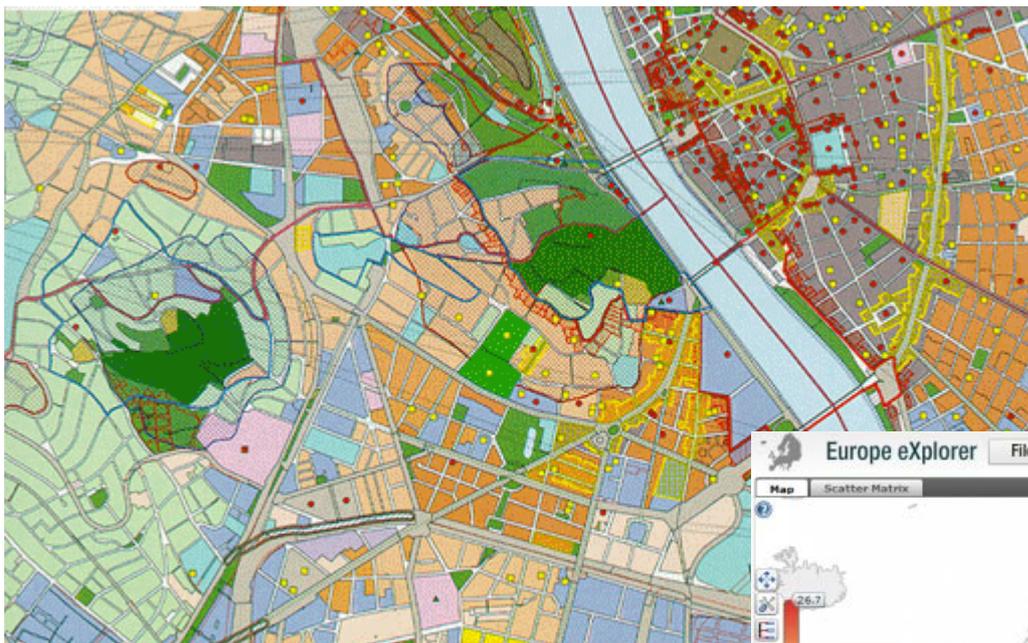


# Geographical Information Systems and Science

- A **geographical information system (GIS)** is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data.
- **GIS science** is the field of study for developing and using GIS.

The image displays the Esri website on the left and the ArcScene software interface on the right. The website features the Esri logo with the tagline "Understanding our world." and a navigation menu including Home, Industries, Products, and Training. The main content area highlights "ArcGIS 10" with sections for "Increase Your Productivity", "What's new", and "Update!". The ArcScene interface shows a 3D map of Boulder County with various layers visible in the Table of Contents, including Building Parcel Centroids, Framework, Major Roads, Roads, Hydro, and Wildfire Risk. The Wildfire Risk layer is currently selected and displays a color-coded risk map.

# Combining GIS Data for Decision Making

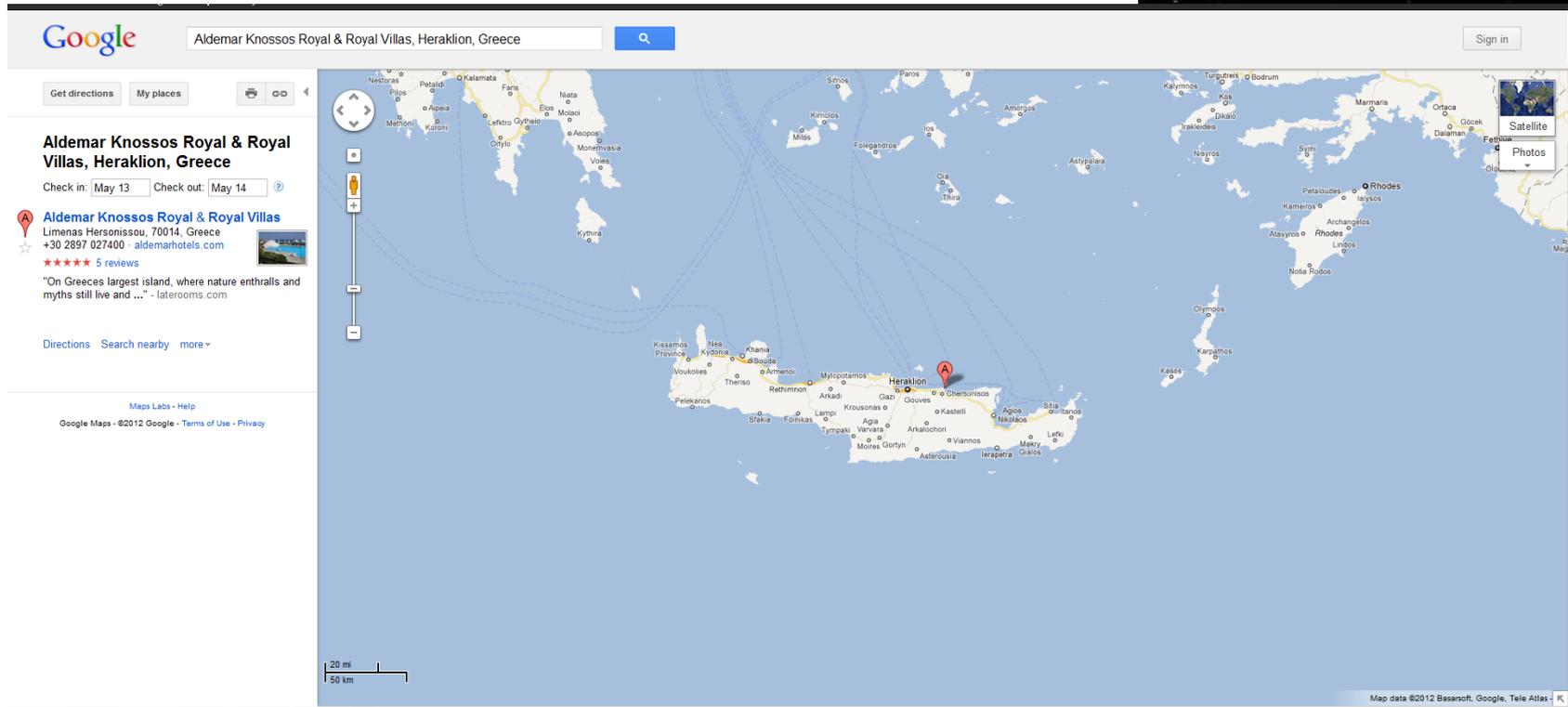
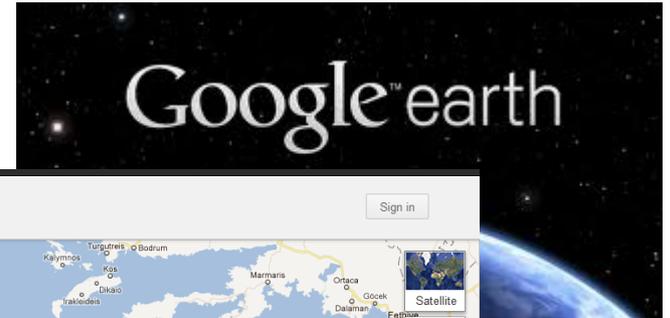


# Why this tutorial?

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- Lots of **geospatial data** is available on the Web today.
- Lots of **public data** coming out of open government initiatives is **geospatial**.
- Lots of this public data is quickly being **transformed into linked data!**
- People have started building **applications** utilizing linked data.

# Geospatial data on the Web



# Open Government Data

The image displays three overlapping screenshots of open government data portals:

- data.gov.uk (top left):** Features the HM Government logo, the text "data.gov.uk BETA Opening up government", and a navigation menu with "Data", "Apps", "Consultation", and "Forum". A search bar is visible with the text "Site search" and a "SEARCH" button. A large banner reads "HAPPY THIRD ANNIVERSARY, DATA.GOV!".
- dati.gov.it (middle left):** Shows the logo "dati.gov.it" with the tagline "I dati aperti della PA". Below it, there is a navigation bar and a section titled "La piattaforma dei dati aperti del CNR" (The open data platform of CNR) with a brief description of the CNR's role.
- geodata.gov.gr (right):** Features the logo "geodata.gov.gr" with the tagline "beta ΔΗΜΟΣΙΑ ΔΕΔΟΜΕΝΑ, ΑΝΟΙΚΤΑ ΔΕΔΟΜΕΝΑ". It includes a search bar with the text "αναζήτηση ..." and a "Αναζήτηση" button. A section titled "Δημόσια, Ανοικτά Δεδομένα" (Public, Open Data) contains text about the portal's mission and a list of bullet points.

# Linked geospatial data – Ordnance Survey



OS OpenData™

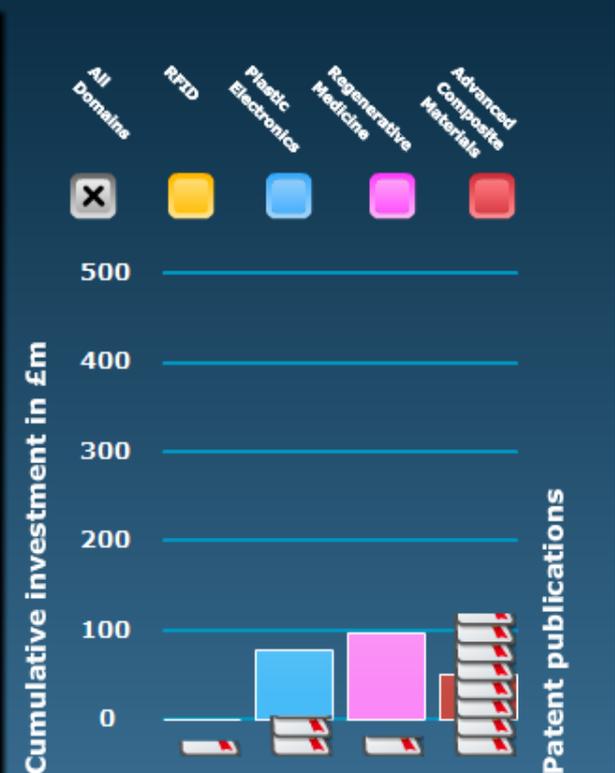


# Linked geospatial data – Research Funding Explorer

BIS Department for Business Innovation & Skills

Research Funding Explorer

Home About Regions Organisations Subjects



£150m  
£120m  
£90m  
£60m

# Linked geospatial data – Spain



# Linked geospatial data – Open Street Map

Instances Search: rKnossos Royal Village powered by Nominatim

1: Anissaras  
2: Hotel Oasis  
3: Robinson's Lyttos Beach  
4: Supermarkt  
5: Aldemar Royal Mare Village  
6: Supermarkt  
7: Hotel Galini  
8: Supermarkt  
9: Supermarkt  
10: Annabelle Village  
11: Aldemar Cretan Village  
12: Cretan Garden Apartment  
13: Aldemar Knossos Royal V  
14: Lidl  
15: Albatros Spa & Resort Ho  
16: Creta Maris  
17: Terra Maris  
18: Chrysalis Apartments  
19: Anna Maria Apartments  
20: Aquis Zorbas Village  
21: Kosta Mare Palace  
22: Anissa beach  
23: palace  
24: palace

Aldemar Knossos Royal Village  
Οδός Αγίου Γεωργίου

Facets  
Node (42)  
Place (1)  
Tourism (21)  
Amenity (19)  
Historic (2)  
Leisure (1)

hide  
Aldemar Knossos Royal Village  
<http://linkedgeodata.org/triplify/node417582584>

rdf:type <http://linkedgeodata.org/ontology/Node>  
rdf:type <http://linkedgeodata.org/ontology/Tourism>  
rdf:type <http://linkedgeodata.org/ontology/TourismHotel>  
lgdo:directType <http://linkedgeodata.org/ontology/TourismHotel>  
geo:geometry POINT(25.3832 35.3352)  
geo:lat 35.3351643  
geo:long 25.3832134  
lgdo:contributor <http://linkedgeodata.org/triplify/user46288>

AKSW  
25.36630, 35.3461

<http://browser.linkedgeodata.org/#>



# Conclusions

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- **Introduction**
  - Why geospatial information?
  - Geographical Information Science and Systems
  - Why this tutorial?
  
- **Next topic:** Background in geospatial data modeling