



On the Volunteered Geographic Information Quality

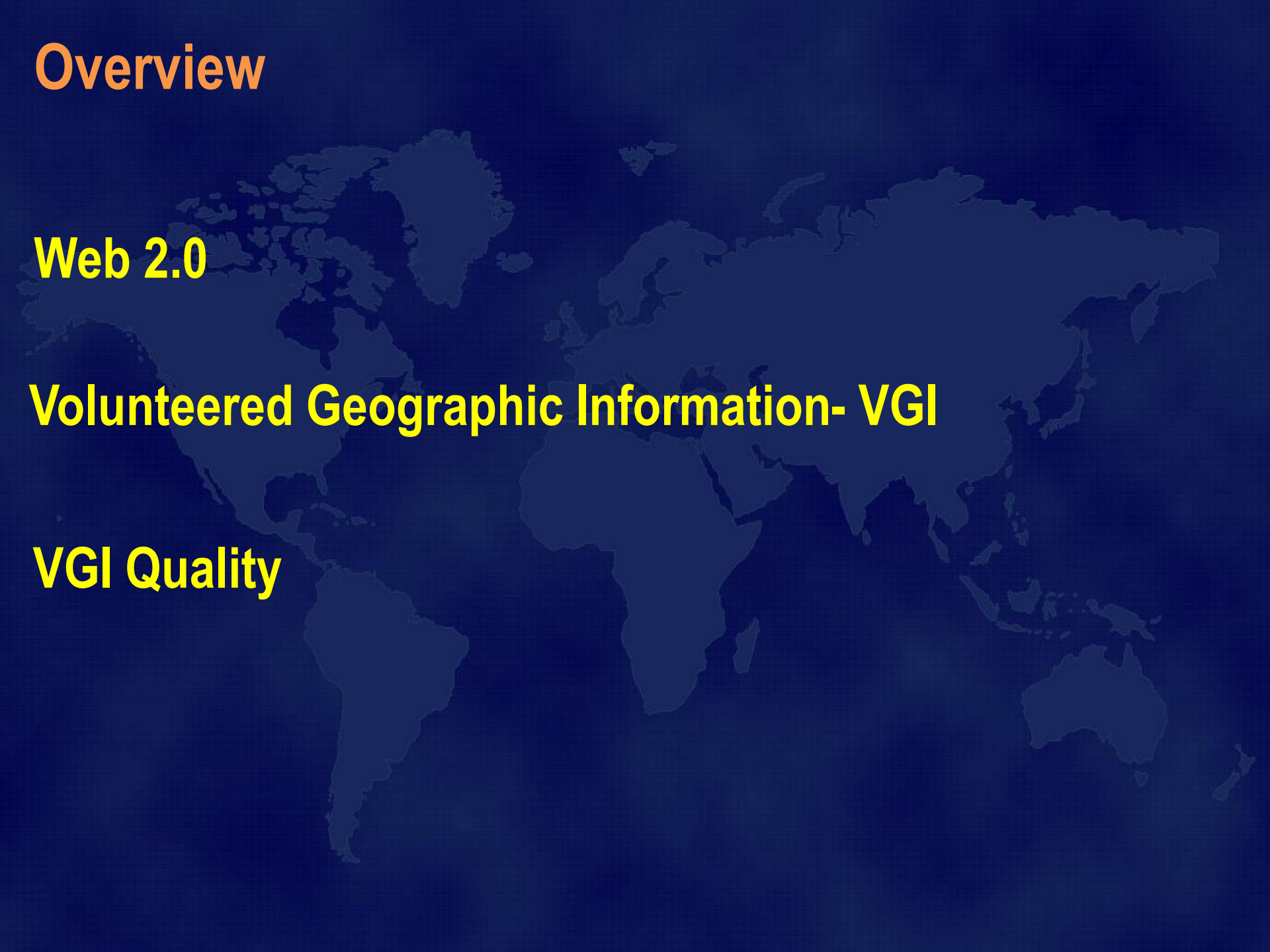
Vyron Antoniou

Overview

Web 2.0

Volunteered Geographic Information- VGI

VGI Quality



Web 2.0

Collective intelligence

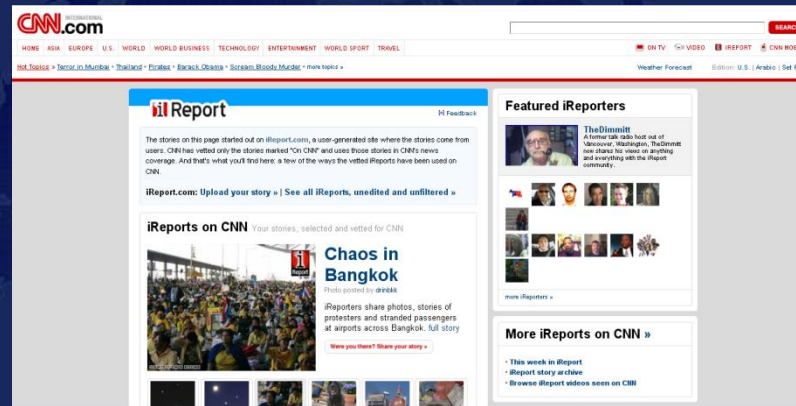


WIKIPEDIA
The Free Encyclopedia

Long tail



Bi-directional Web



User Generated Content



Platform



Web 2.0



Volunteered Geographic Information - VGI

OpenStreetMap

The Free Wiki World Map

OpenStreetMap is a free editable map of the whole world. It is made by people like you.

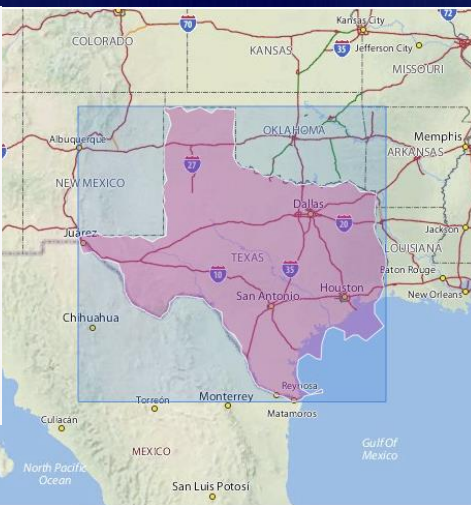
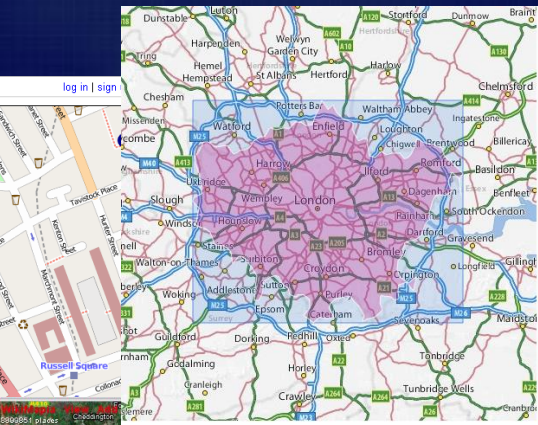
OpenStreetMap allows you to view, edit and use geographical data in a collaborative way from anywhere on Earth.

OpenStreetMap's hosting is kindly supported by the UCL VR Centre and ianmark.

Help & Wiki
News Blog
Shop
Map key

Search Where am I?

examples: "Akumar", "Resent Street, Cambridge", "CB2 3AQ", "my foot" etc. For more examples.



EveryTrail

HOME | EXPLORE | MOBILE APPS | CREATE TRIP | MY EVERYTRAIL

(Update Current Location)

Valetta Malta Hike
by GHine with EveryTrail for iPhone

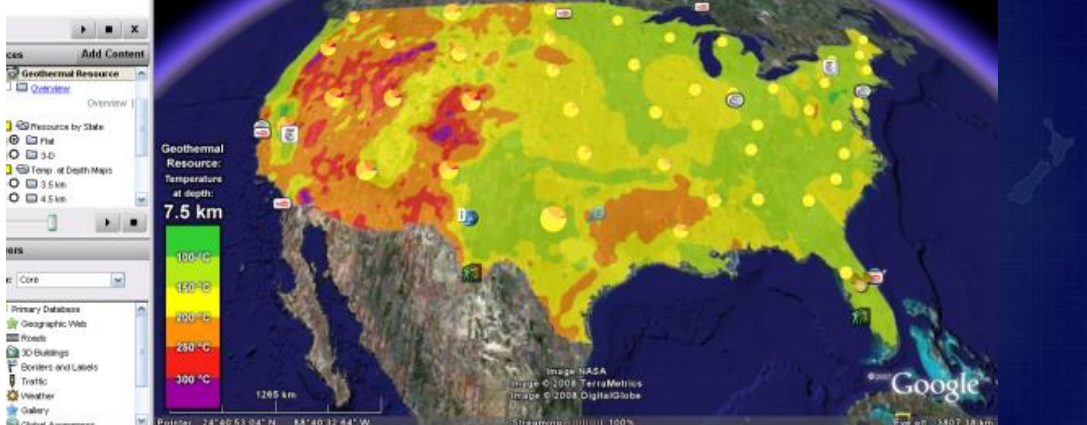
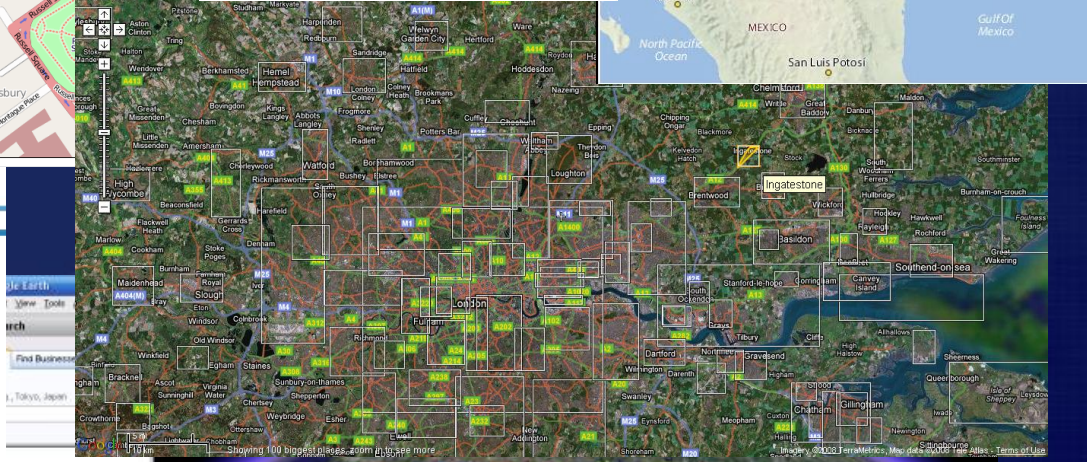
[Tweet](#) [Μου αρέσει!](#) [Θα είστε ο πρώτος από τους φίλους σας που θα το μοιράσετε!](#)

☆☆☆☆☆ (0 votes) | [Add to favorites](#)

This trip was created using EveryTrail. Like what you see? **Get the FREE iPhone App** and share your trips.

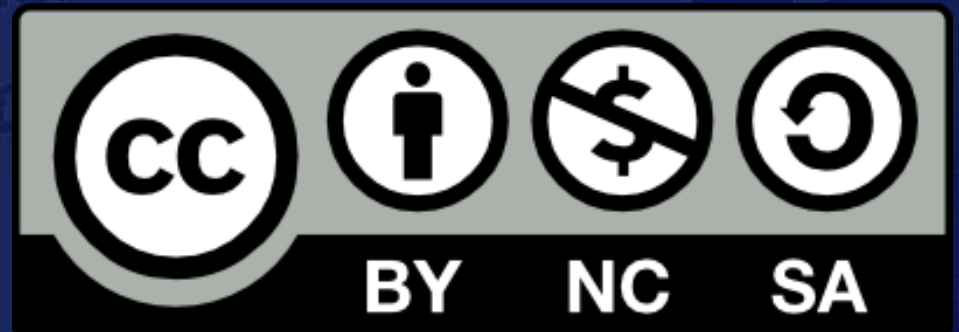
©2015 Δεδομένα χάρτη Google. Όροι Χρήσης

[View map fullscreen](#)



VGI Value

- ★ Cost - License
- ★ Extended field of scope
- ★ Local knowledge
- ★ Creation of novel datasets
- ★ Timely data



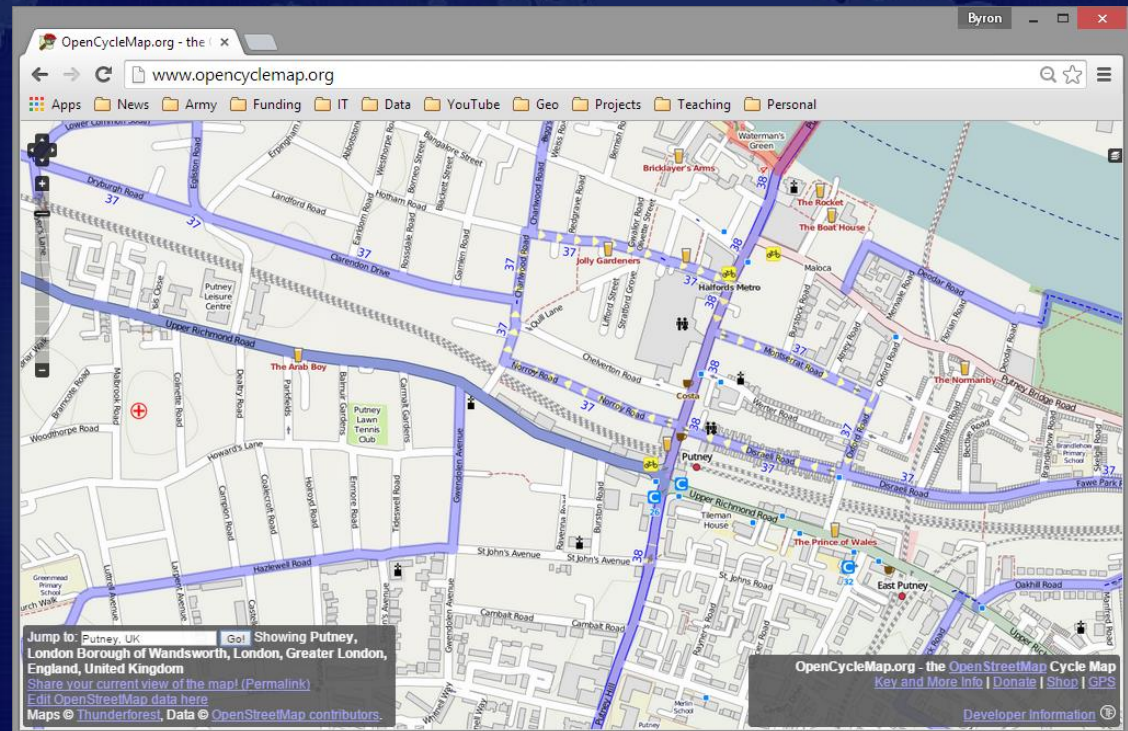
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VGI: A lot of effort

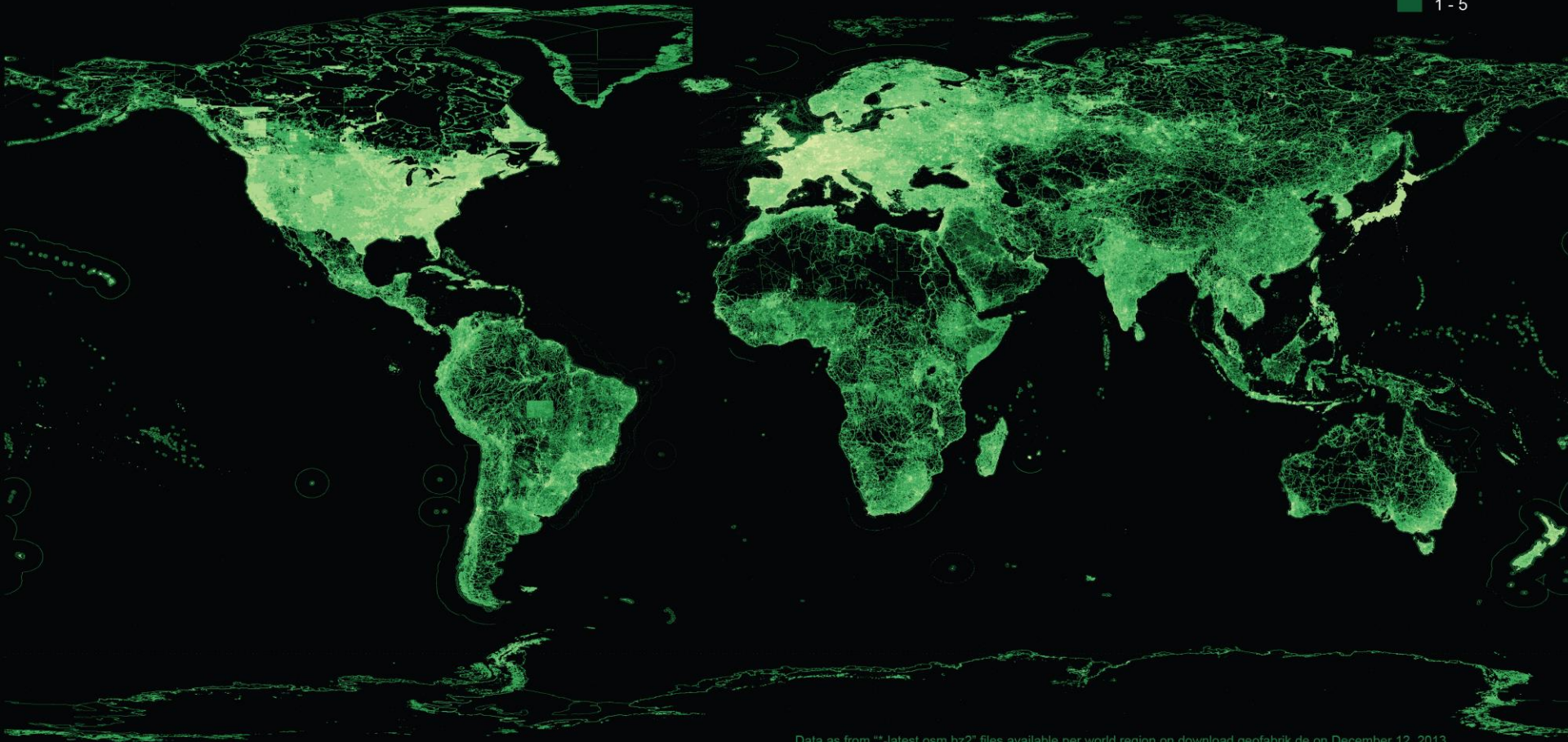
oioioioi Oxford Internet Institute
oioioioi University of Oxford
oioioioi

by Mark Graham (@geoplace) and Stefano De Sabbata (@maps4thought)
Internet Geographies at the Oxford Internet Institute • 2014 • geography.oii.ox.ac.uk

data sources:
Openstreetmap.org
Geofabrik.de



Content edits to OpenStreetMap



VGI: by neo-geographers



VGI Creation Processes

- Loose, crowdsourced mechanisms
- No specifications
- No standardized production line
- No Metadata
- No formal gatekeeping / data curation
- Patchwork
- Socio-economic mechanisms

Formal Quality
Assessment & Evaluation
Processes:

Hard, if at all possible, to
implement

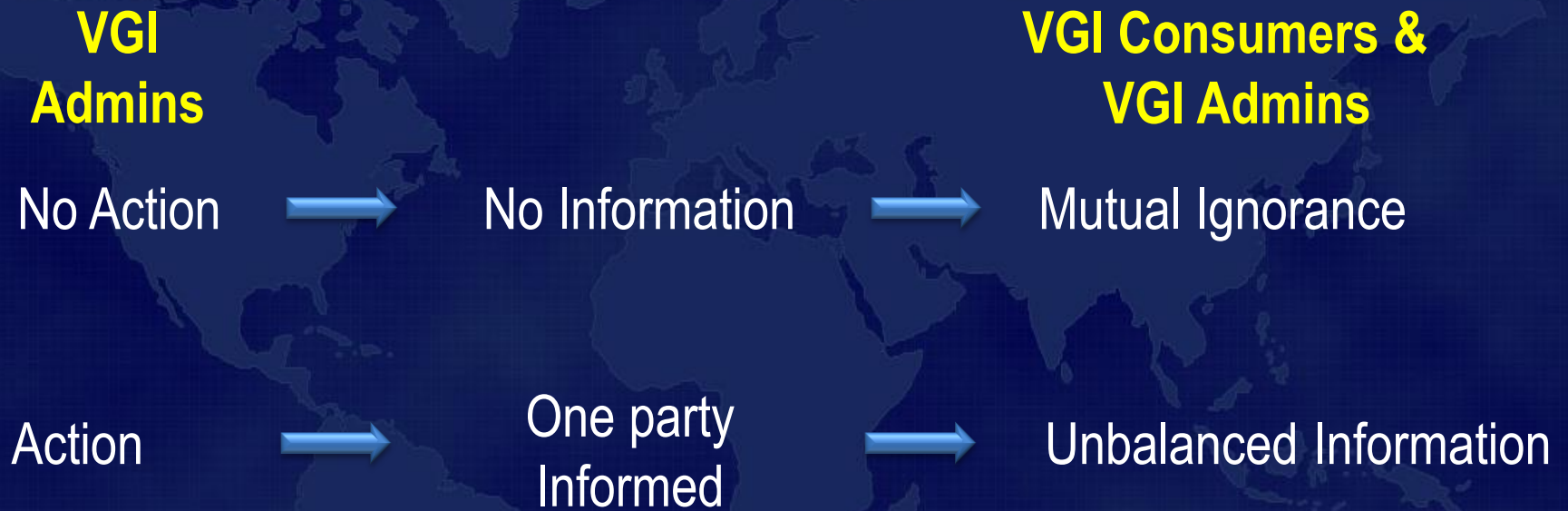
VGI Diffusion



- EU – COST Actions
- EuroSDR
- World Bank
- Governments - Cadastral Agencies
- FIG
- Private Sector (Apple, Yahoo!, MapQuest, Foursquare)
- US (Al Gore: Digital Earth, White House Report)

VGI Quality – Fundamental Problem

There is no clear understanding of VGI Quality.

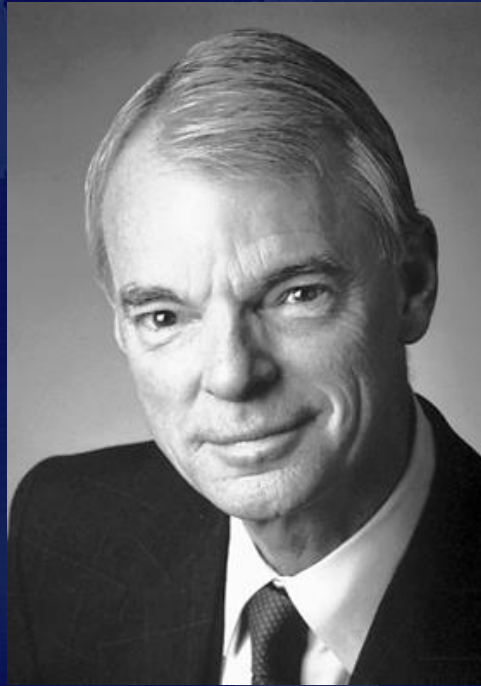


YET ... Need for transactions over VGI datasets

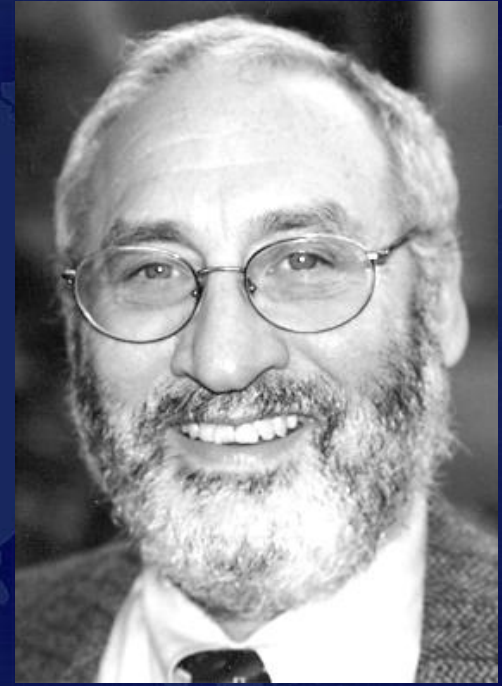
2001 Nobel Prize in Economics:



G. A. Akerlof



M. A. Spence



J. E. Stiglitz

Markets with asymmetric information

Many markets are characterized by *asymmetric information*: actors on one side of the market have much better information than those on the other.

Problem realisation - documentation



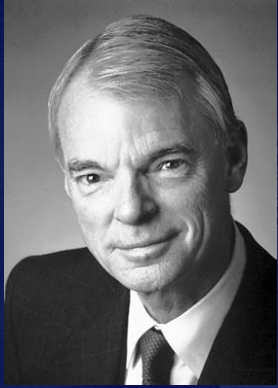
“George Akerlof demonstrated how a market where sellers have more information than buyers about product quality can contract into an *adverse selection* of low-quality products.”

Source: Nobelprize.org

- The buyers' awareness of their ignorance make them suspicious and force them to treat any product as being of low quality.
- Bid down their offers for the products.
- Sellers lower the quality of their products.
- Transactions stop or low-quality products prevail.

Examples: Borrowers know more than lenders about their repayment prospects, managers and boards know more than shareholders about the firm's profitability

Solution by the better informed



“**Michael Spence** identified an important form of adjustment by individual market participants, where **the better informed take costly actions** in an attempt to improve on their market outcome **by credibly transmitting information to the poorly informed.**”

Source: Nobelprize.org

- The better informed should signal their information to the less informed.
- Signals must have a cost.
- Signaling cost should not be the same for everyone.
- Signaling cost must be negatively correlated with the quality of the product or the credibility of the better informed party.
- Can apply to distinguish permanent from one-off actors.

Examples: Education as a productivity signal in job markets

Solution by the poorly informed



“**Joseph Stiglitz** clarified the opposite type of market adjustment, where *poorly informed agents extract information* from the better informed”

Source: Nobelprize.org

- Poorly informed should create incentives for information disclosure by the better informed.
- Incentives should put the better informed into a self-screening process.
- The better informed will reveal quality information during their effort to get the incentives.

Examples: Insurance companies dividing customers into risk classes by offering a menu of contracts where higher deductibles can be exchanged for significantly lower premiums

Back to Geomatics domain

Better informed



VGI Admins

Poorly Informed



VGI Consumers

Product



VGI datasets

Signals?

Incentives?

Signals



- VGI Specifications
- QA&QC Teams of volunteers
- Metadata
- Firm Extraction Guides and Contribution Protocols
- More than APIs: Standards-based Geo Web Services
- Long-term investments (Interactivity – HCI, software etc.)

Incentives



- Different level of premiums
 - Financial support
 - Hardware
 - Online help
 - Mentoring
 - Consulting
- Participation statistics
- Quality benchmarks

What is next?

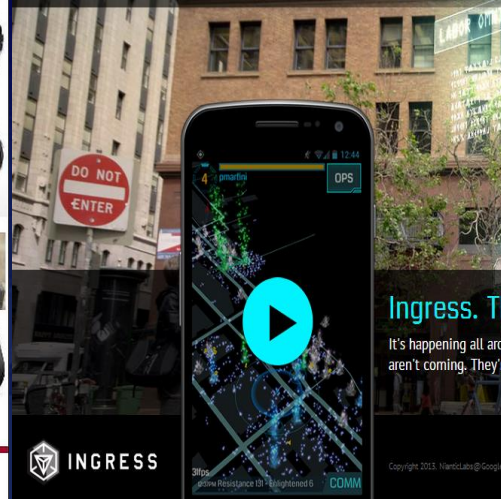


CREDIT SUISSE

Source: Company Website, iFlowreader, Credit Suisse Estimates,

Produced by: John Pitzer
Slide 6

The world around you
is not what it seems.



WE PLAY OUR VIDEOGAMES
OUTSIDE...



Ingress. The game.

It's happening all around you. They
aren't coming. They're already here.



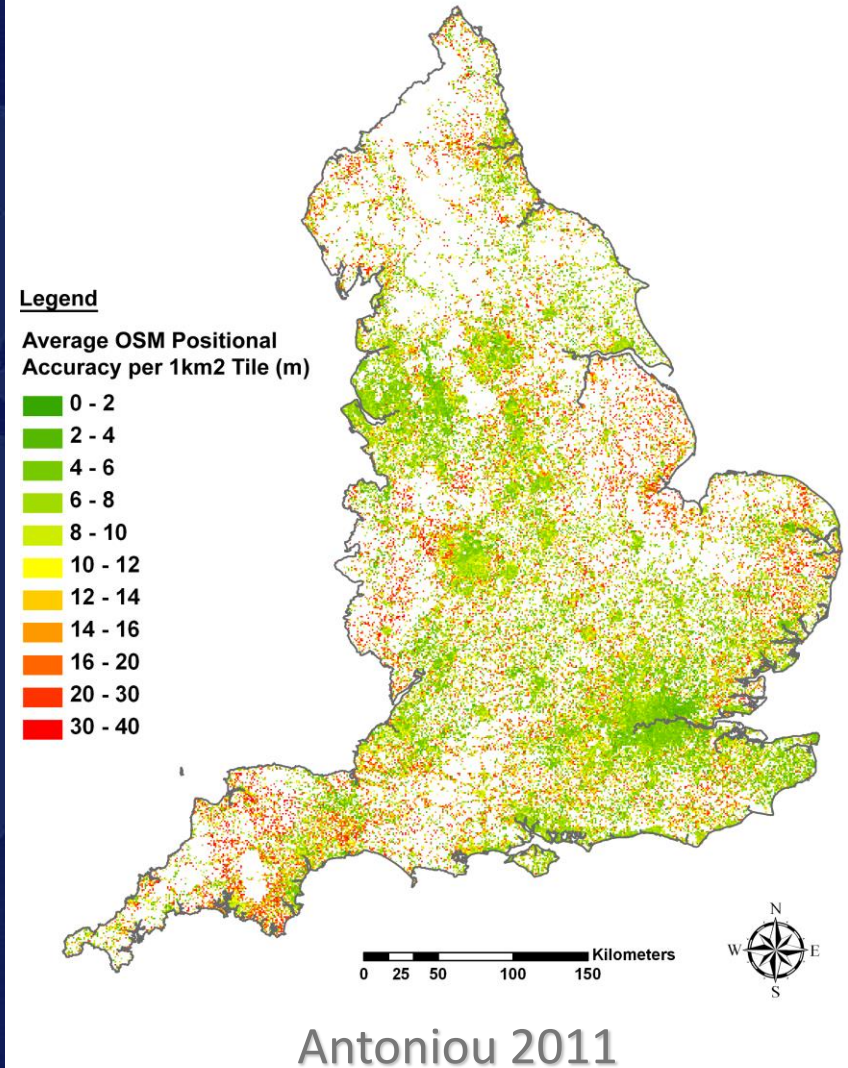
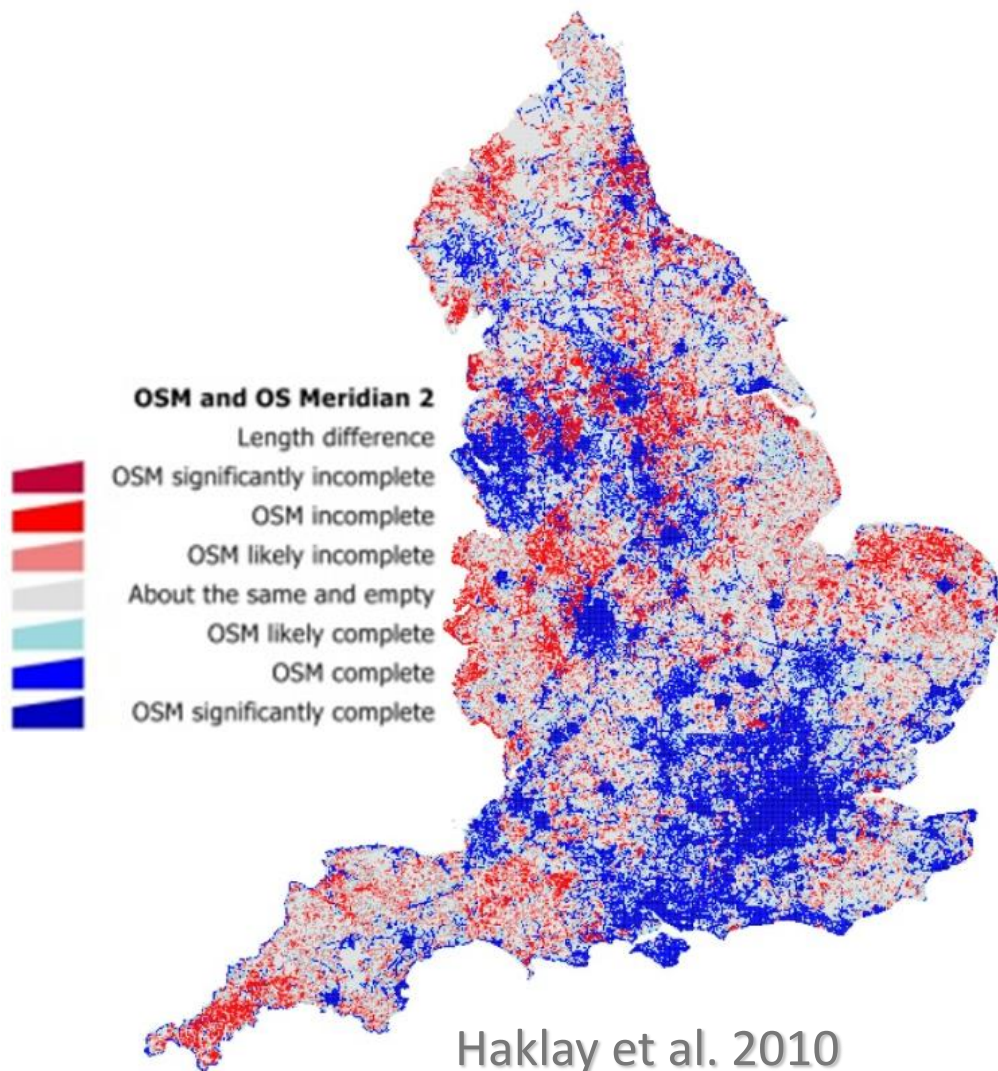
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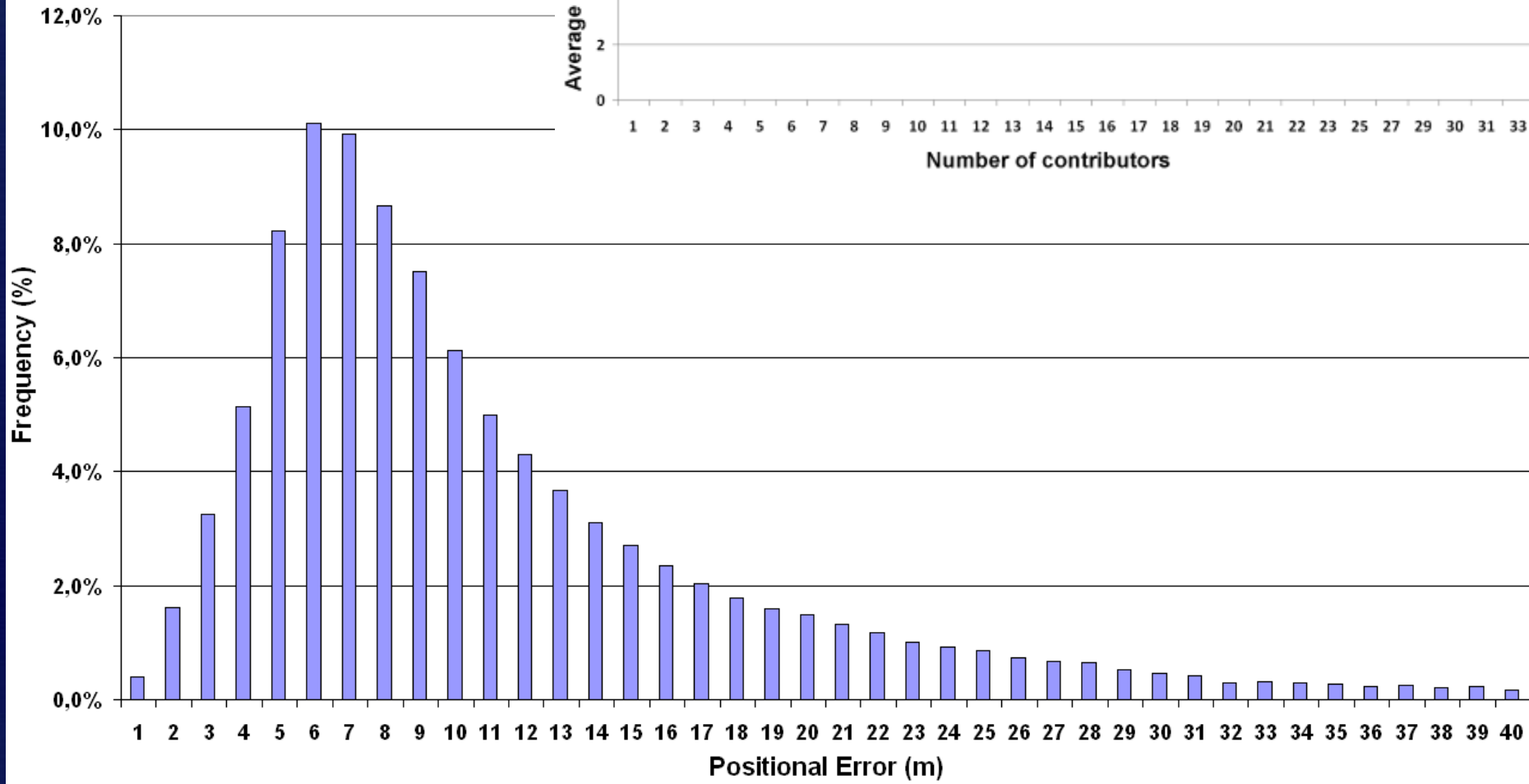
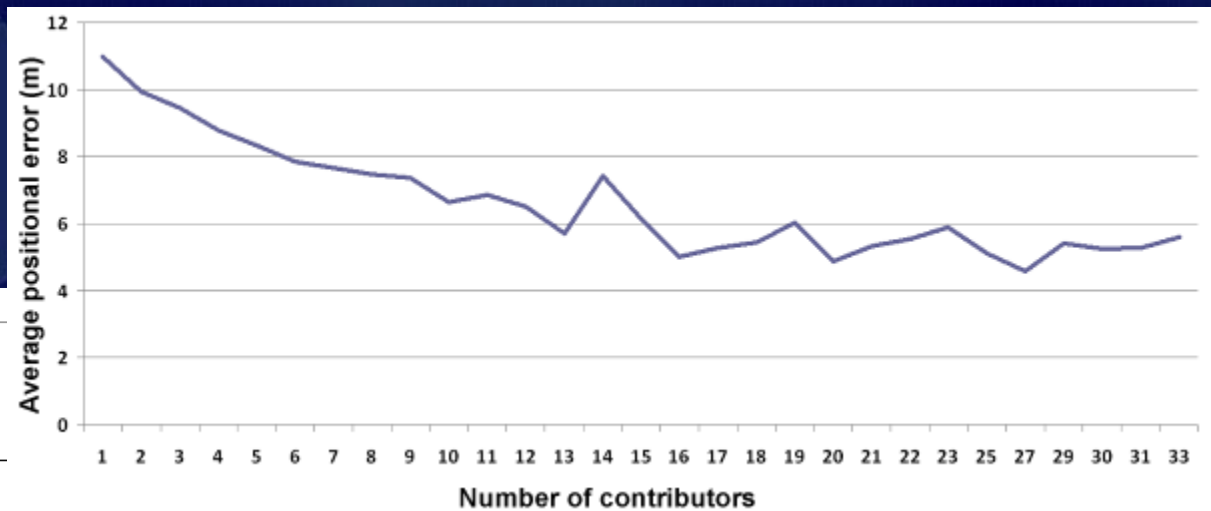


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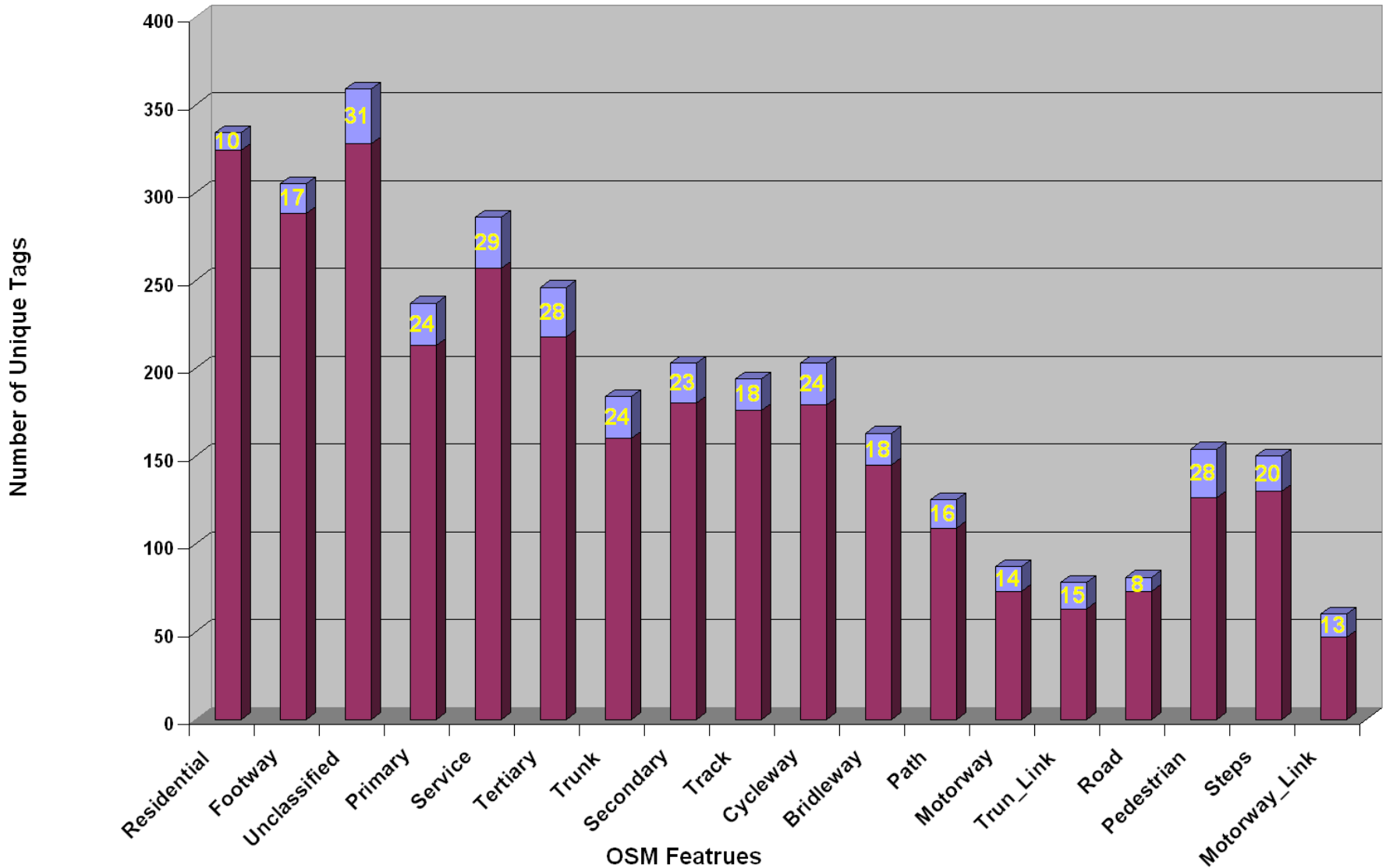
OSM: Completeness and Positional Accuracy



OSM: Positional Accuracy

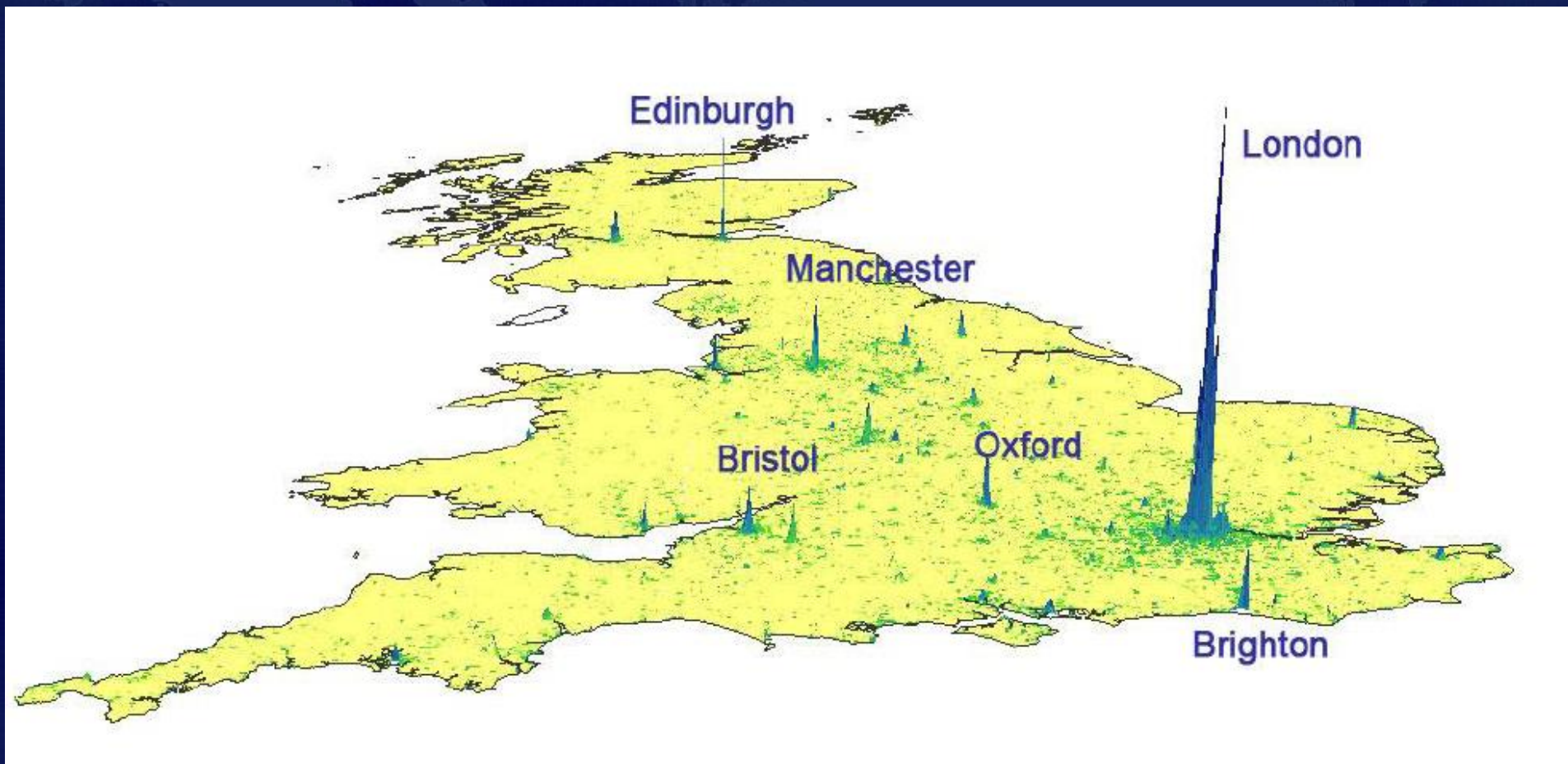


Participation Patterns – OSM Attributes



Participation Patterns for geo-tagged photos

Flickr in 3D



Participation Patterns in OSM



Hot-spot Analysis on the number of edits for each feature



On the Volunteered Geographic Information Quality

Thank you!