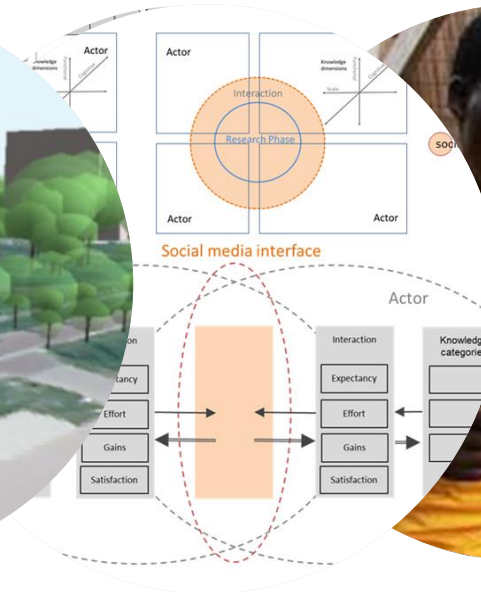
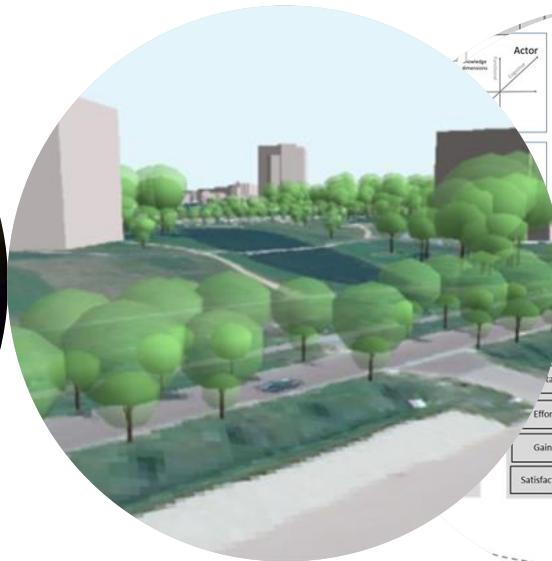


# Social media: a new resource from a geo-science perspective

EVOCA international workshop 160511

Ron van Lammeren, Laboratory of Geo-information Science & Remote Sensing



# Geo-information science research

## Creating a Digital Earth of Locations

Sensing a changing world

Understanding human-space interaction

Empowering agro-environmental communities



1. Sensing & measuring



2. Modelling & visualization



3. Integrated land monitoring



4. Human space interaction



5. Empowering & engaging communities

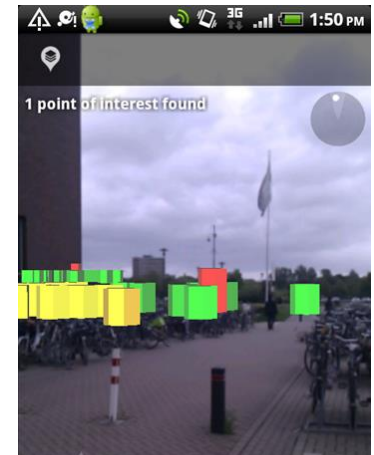
<http://bit.ly/1VRvyHg>



# Trends: everyone is in the centre but who owns his location



Tovar, 2013

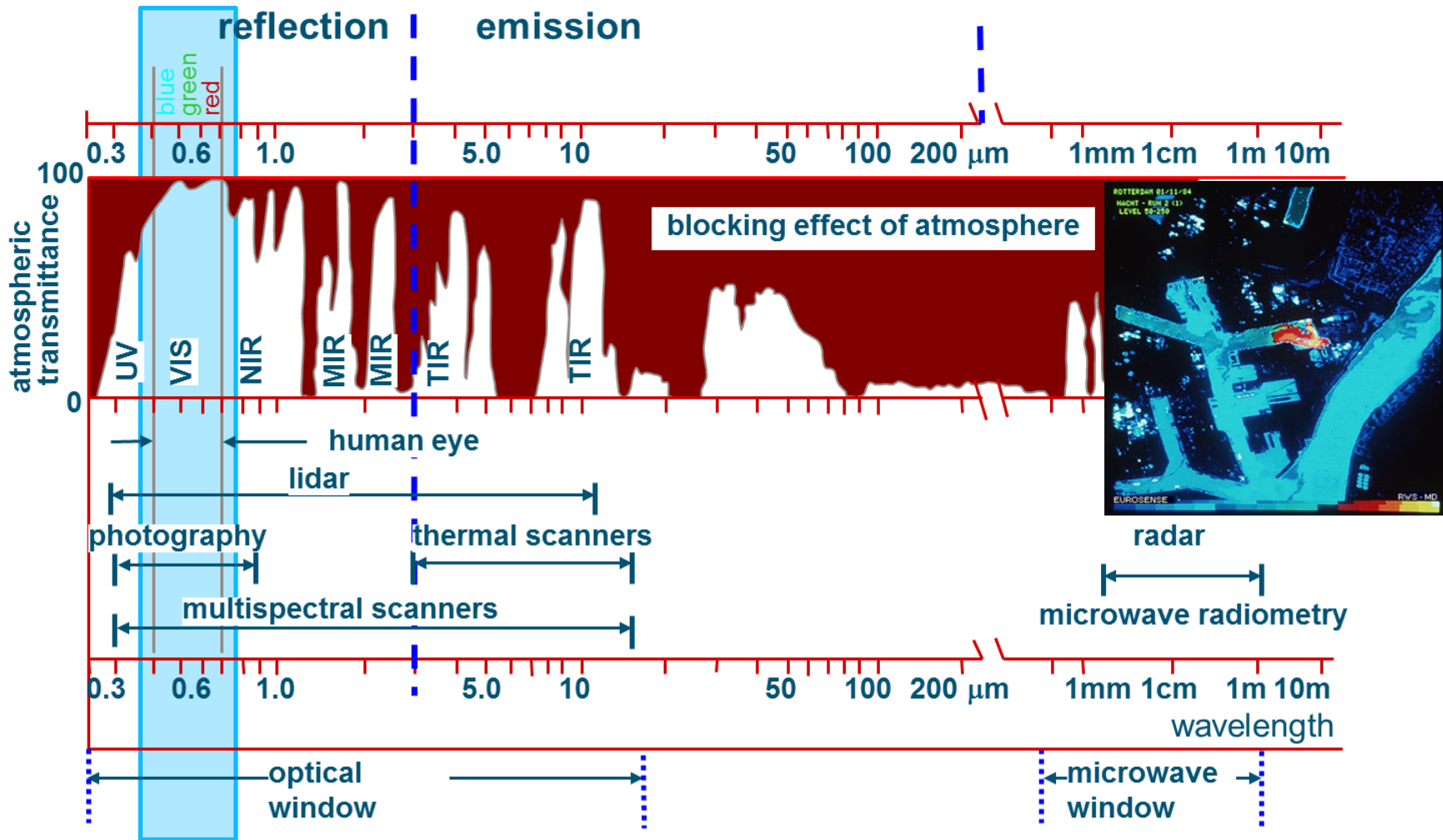


Google

Google, 2013  
<http://bit.ly/1fxf0KC>



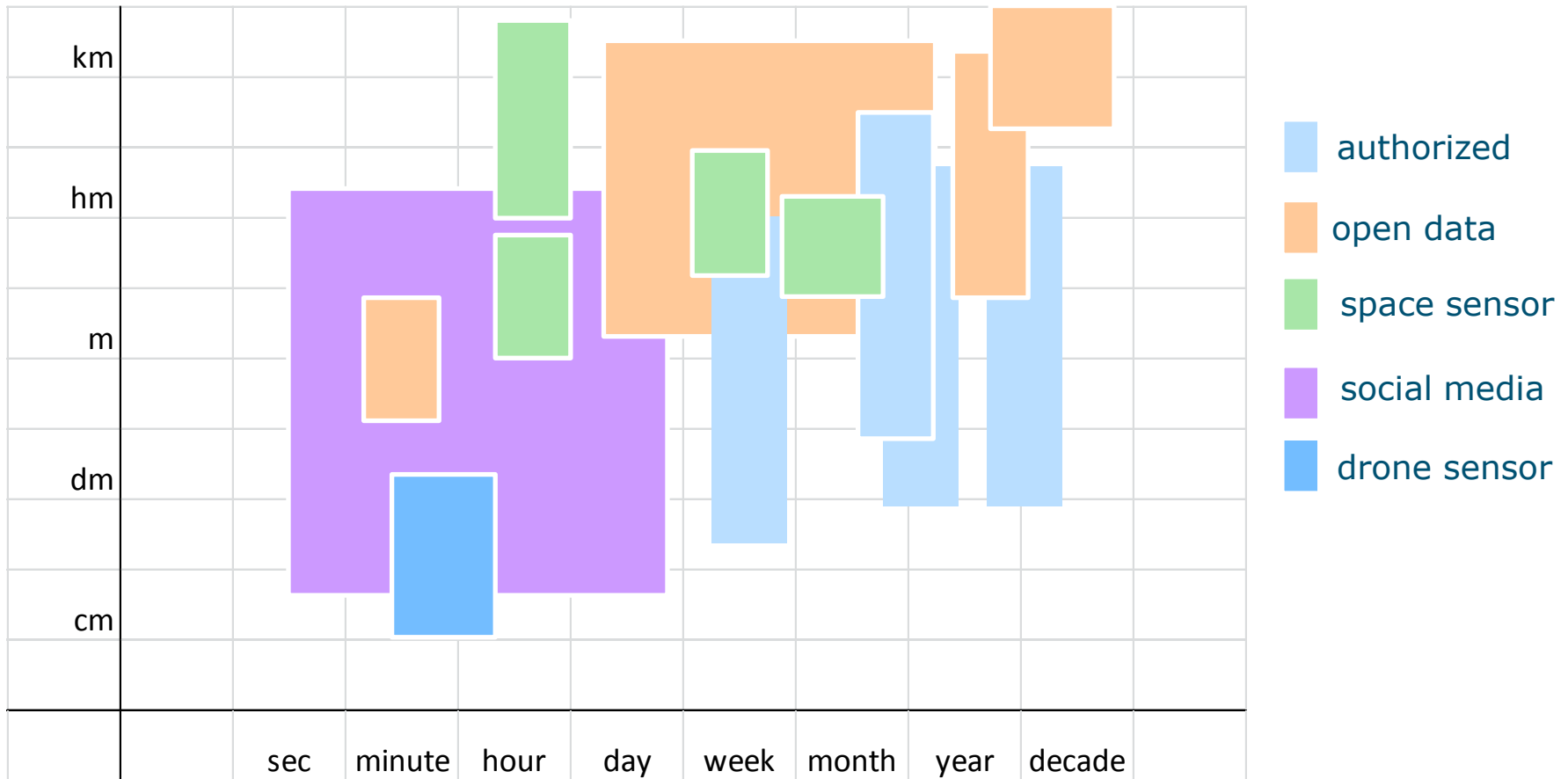
# Trends: more and precise bandwidths



Clevers et al, 2011

# Trends: resolution

<http://bit.ly/24L0SfS>

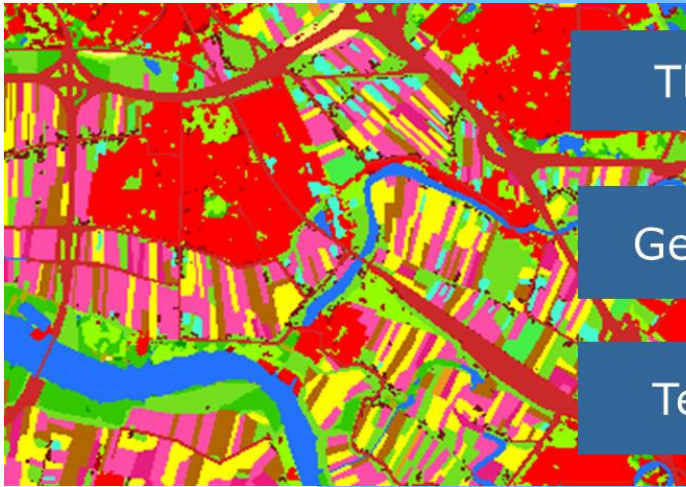


based on Eldering, 2016



# Geo-information | the who factor

Owner description (Who)



Thematic description ( What)

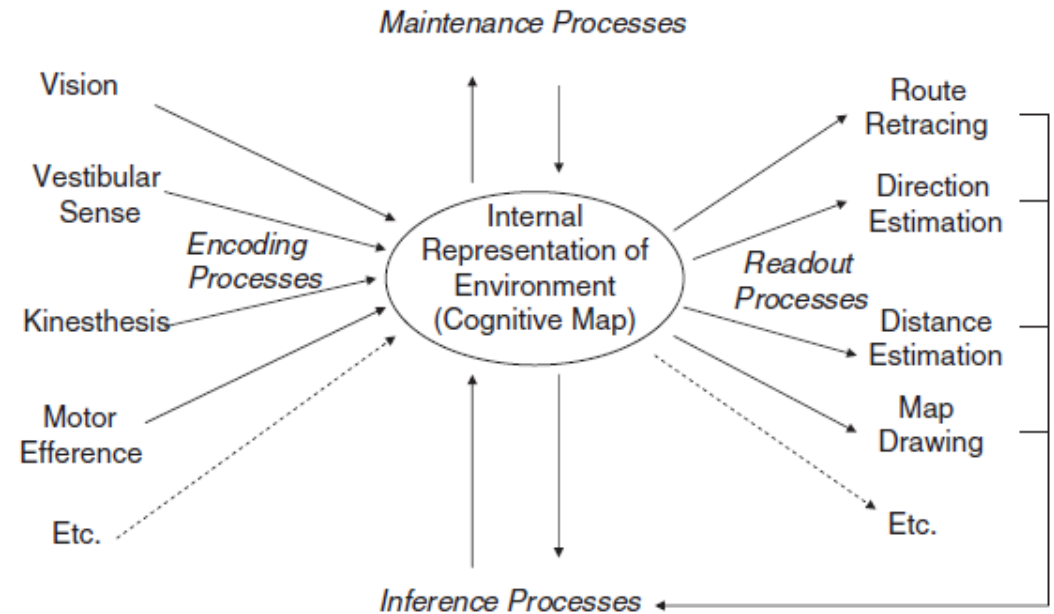
Geometric description ( Where)

Temporal description ( When)

# Spatial thinking

Sensory Inputs

Outcome Measures

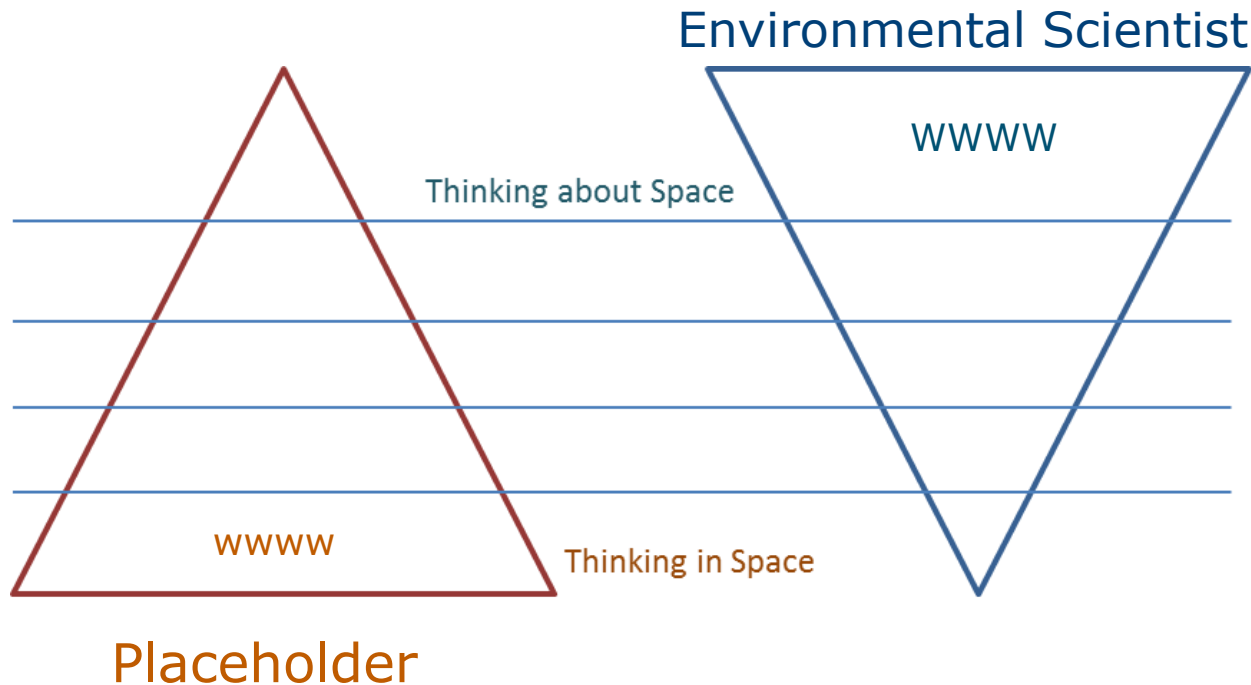


Hegarty et al, 2006

- Thinking in space -> action oriented
- Thinking about space -> understanding phenomena
- Thinking with space -> translation into representation

National Research council, 2006  
Madsen and Rump, 2012

# Space-Place nexus



Neo-Geography: use of geographical techniques and tools for personal and community activities or by a non-expert group of users. Typical not formal and not analytical.

Turner, 2006



# Social media



Micro blogs  
(Twitter, Tumblr)

Social networks  
(Facebook, LinkedIn)

Social news  
(Digg, Leakernet)

Content communities  
(Flickr, Panoramio)

Collaborative projects  
(Open Street Map,  
Wikipedia)

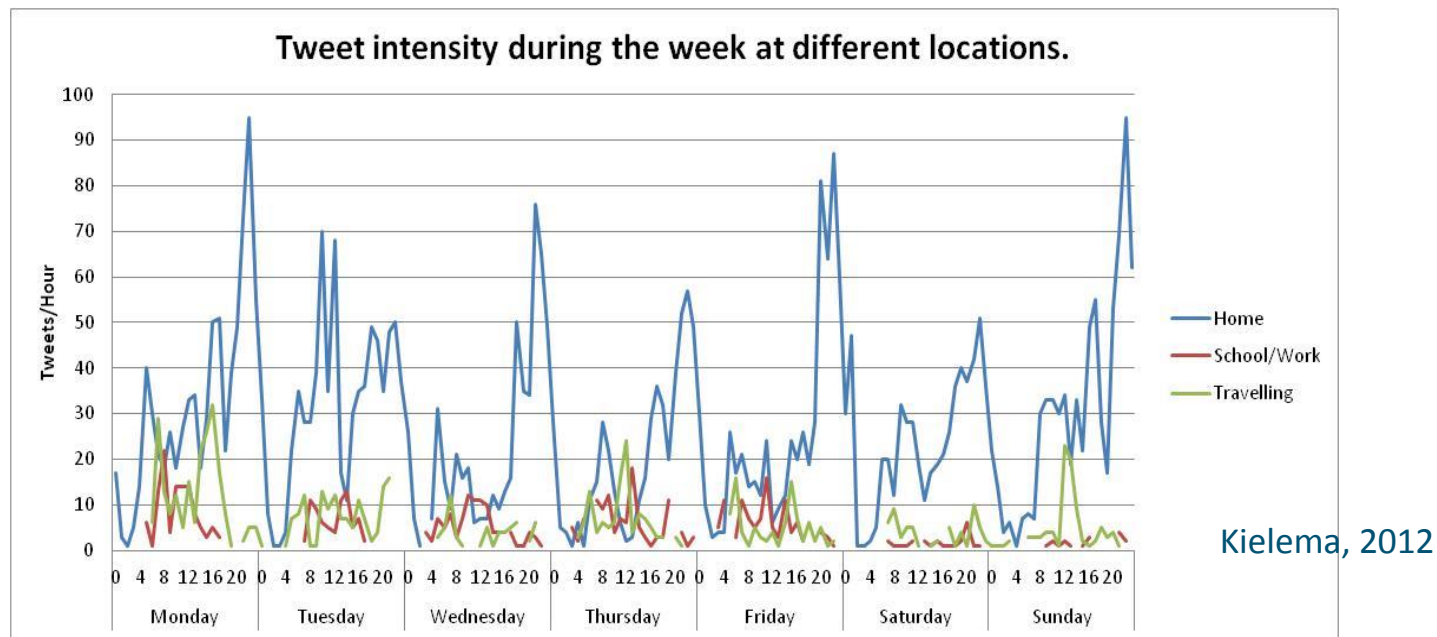
<http://www.openstreetmap.org/#map=5/51.500/-0.100>

# Geo-Social Media

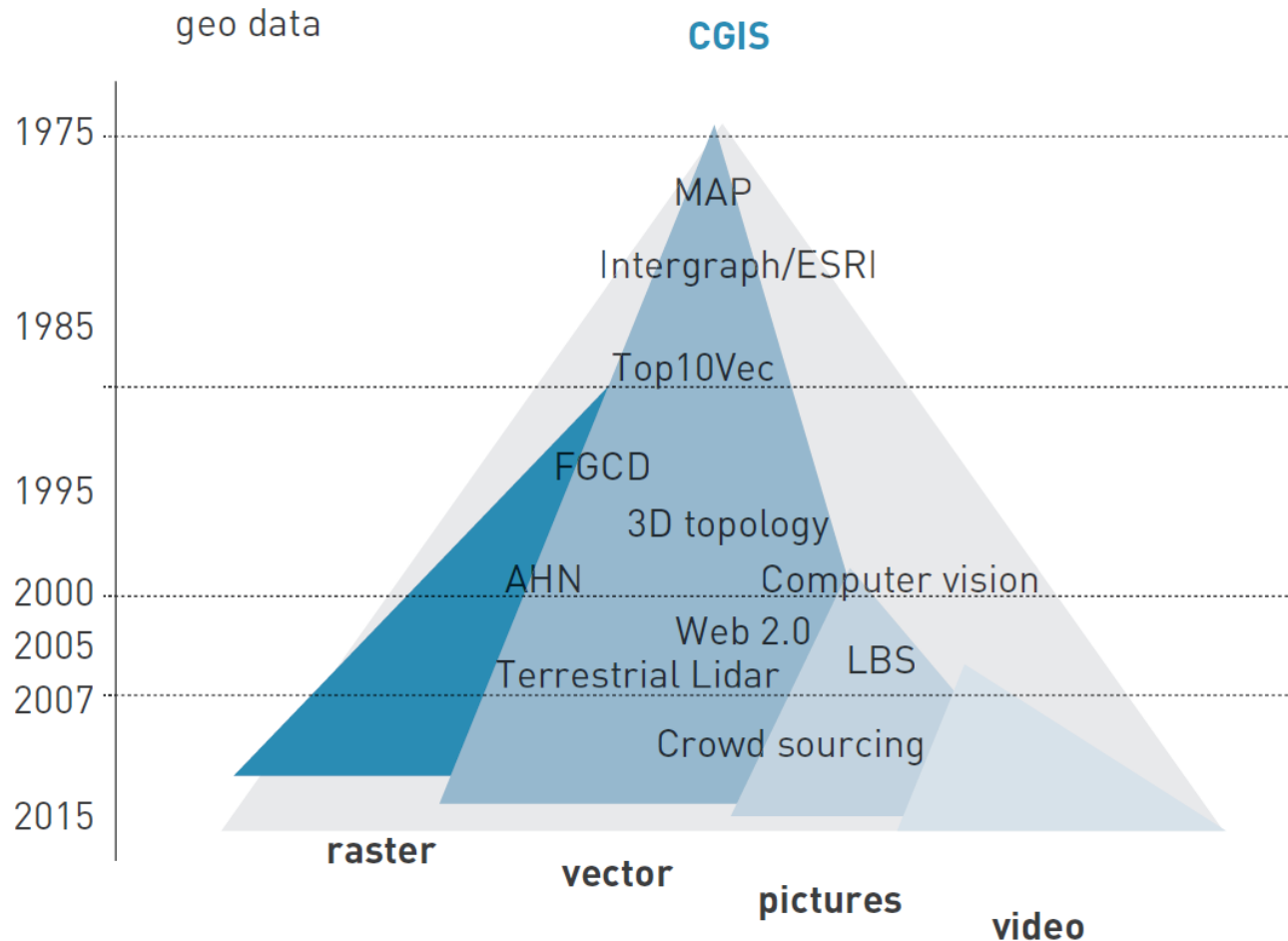
All social media messages are implicitly tagged  
(location, time, format, service)  
--- ambient geo-information ---

Stefanidis et al. 2013

and could be explicitly tagged  
(better location, semantics)



# Geo data ensembles



Lammeren, 2011

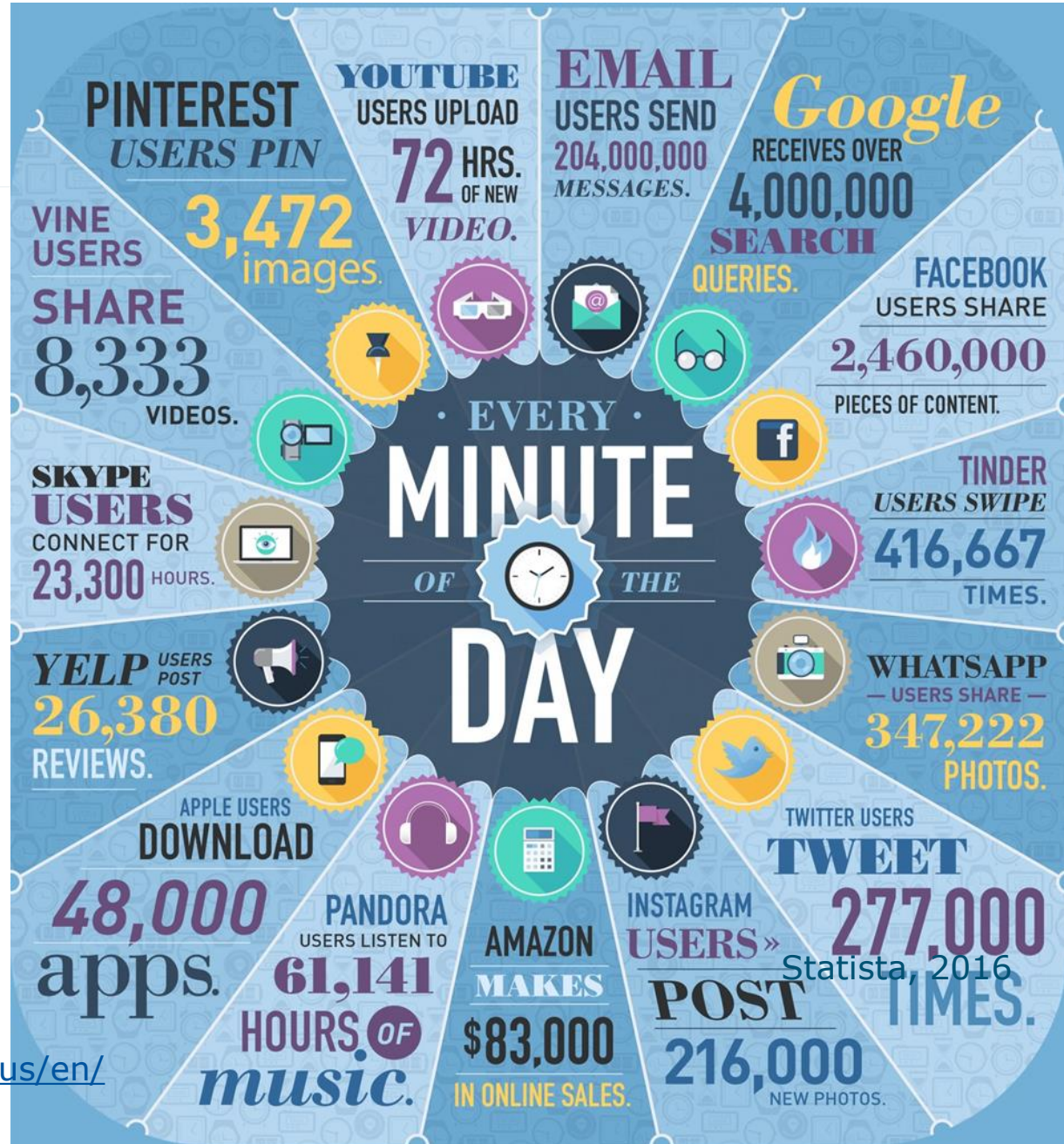




# Volume

In 2012 every day  
2.5 exabytes were created

Relation with authorized  
administrative and research  
data e.g. sensor data



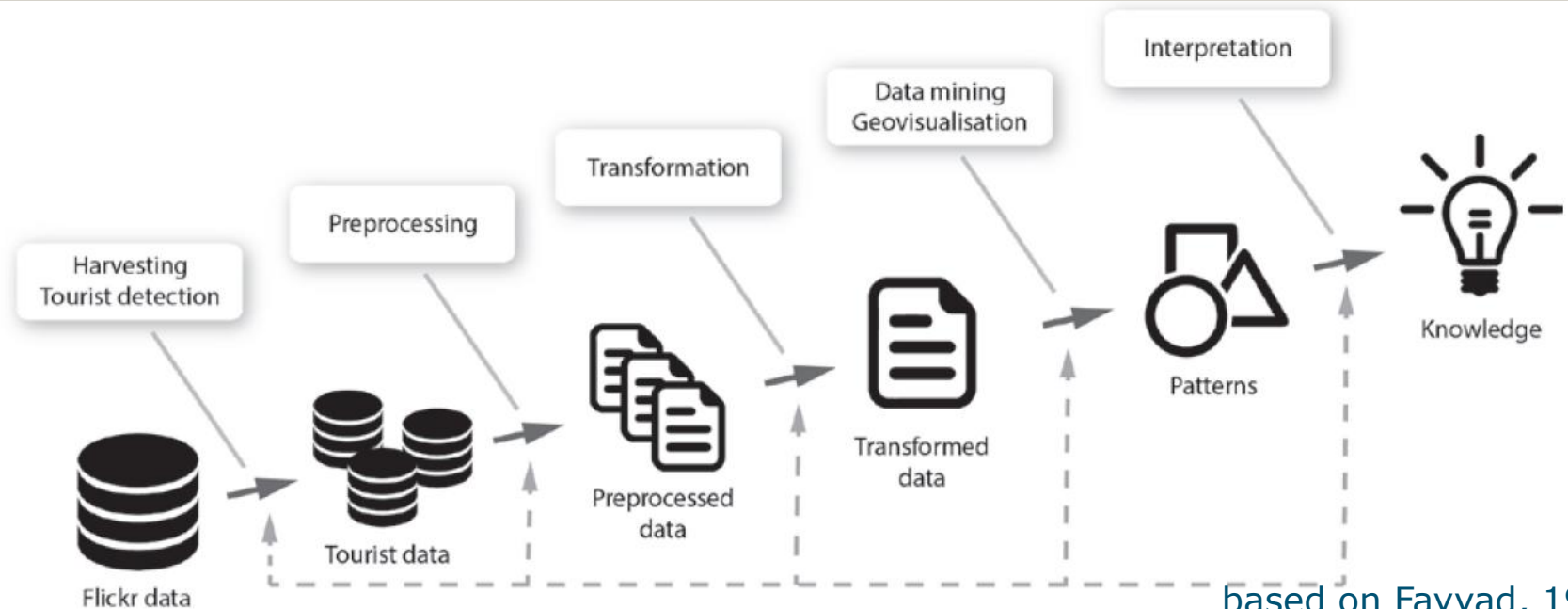
<http://www.ibm.com/big-data/us/en/>



# Variety



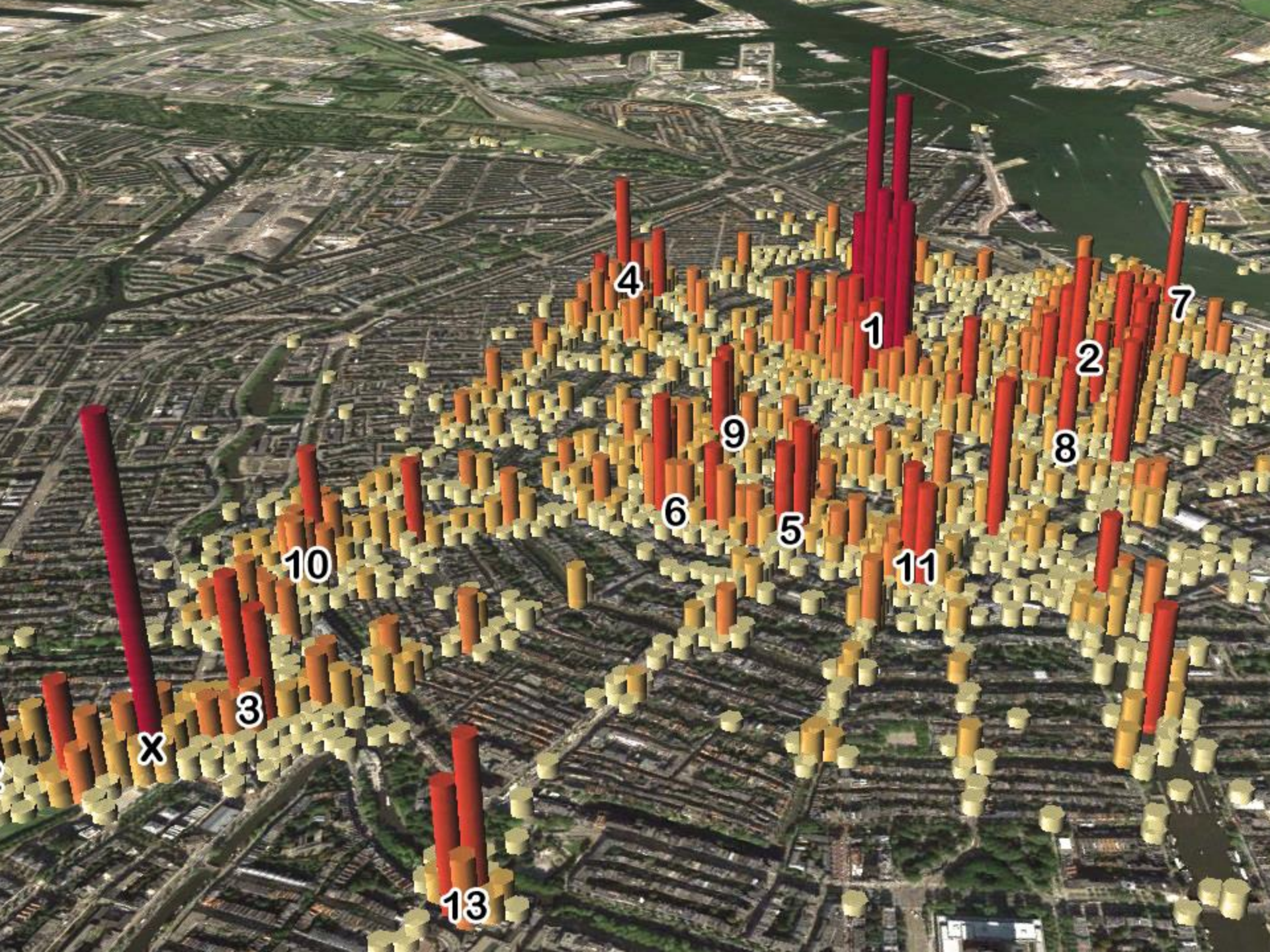
ETCHES, MAPS, SCENES, PHOTOS, AUDIO, VIDEO, TEXT, NUMBERS, SKETCHES, MAPS, SCENES, PHO



based on Fayyad, 1996











Map tiles by Stamen, Data by OpenStreetMap

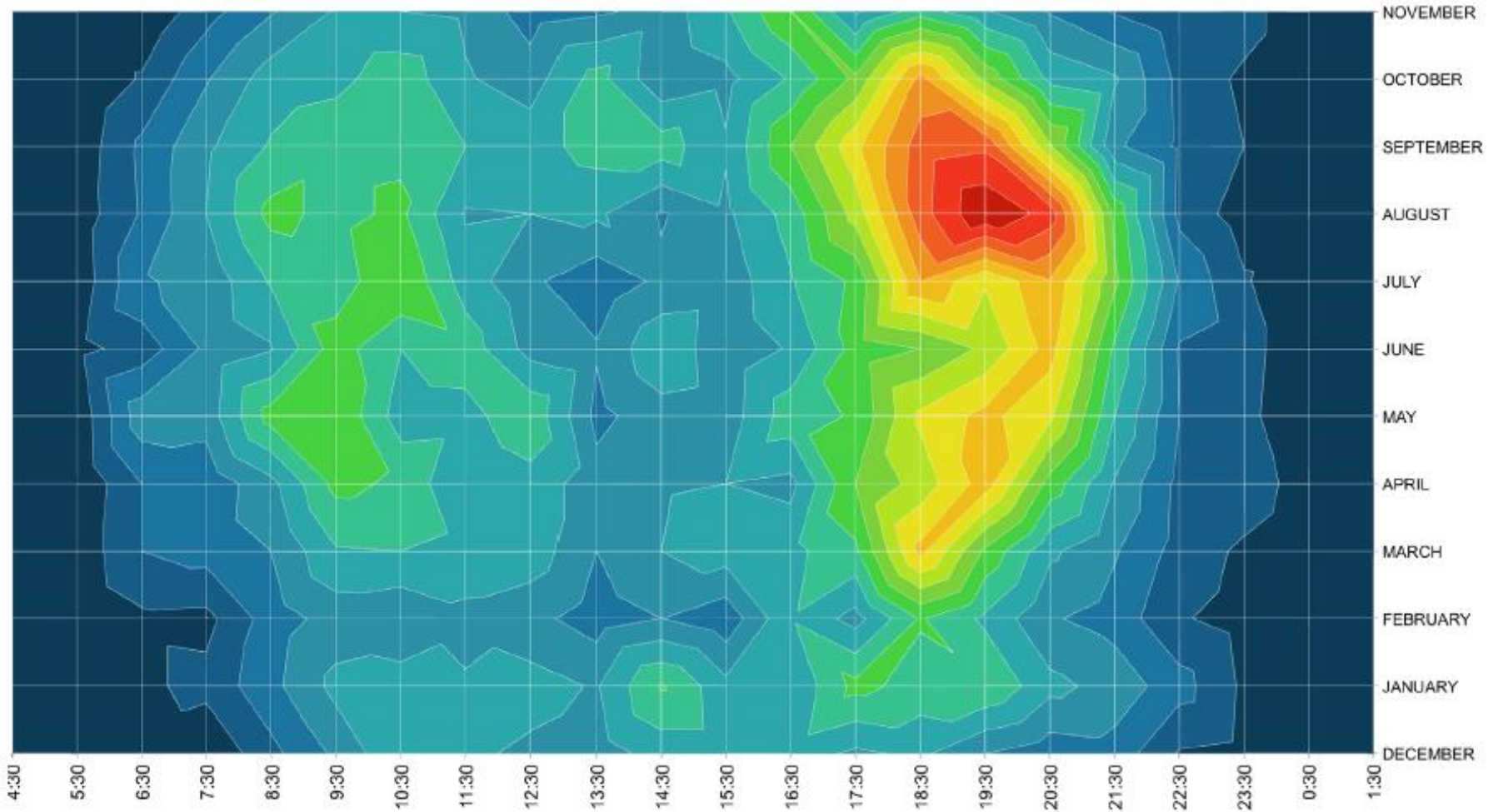
Van der Drift, 2015







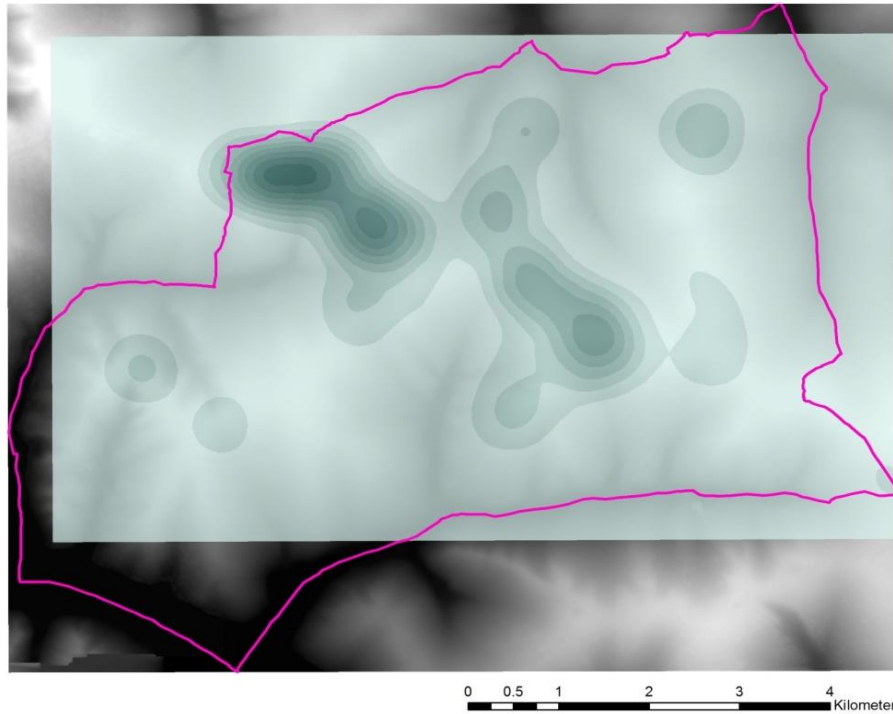
0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100 100-110 110-120 120-130 130-140 140-150



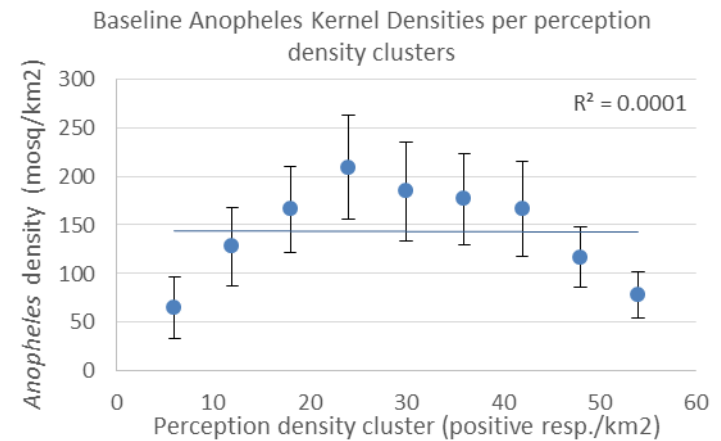
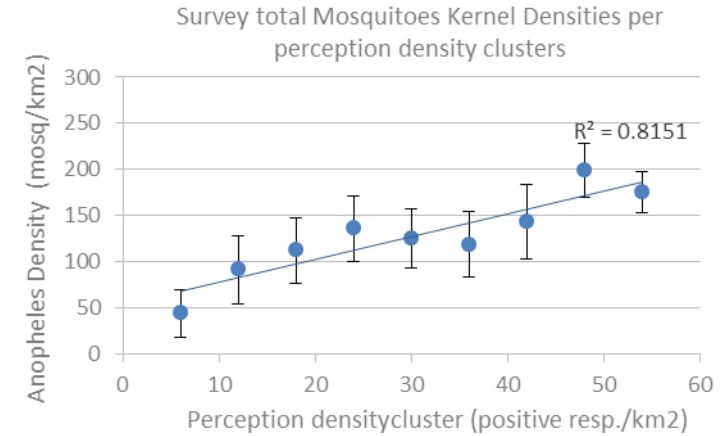
Dolders, Reiling, 2016



# EVOCA - Malaria Rwanda (data: Hakazimana, Koenraadt, RNRA)



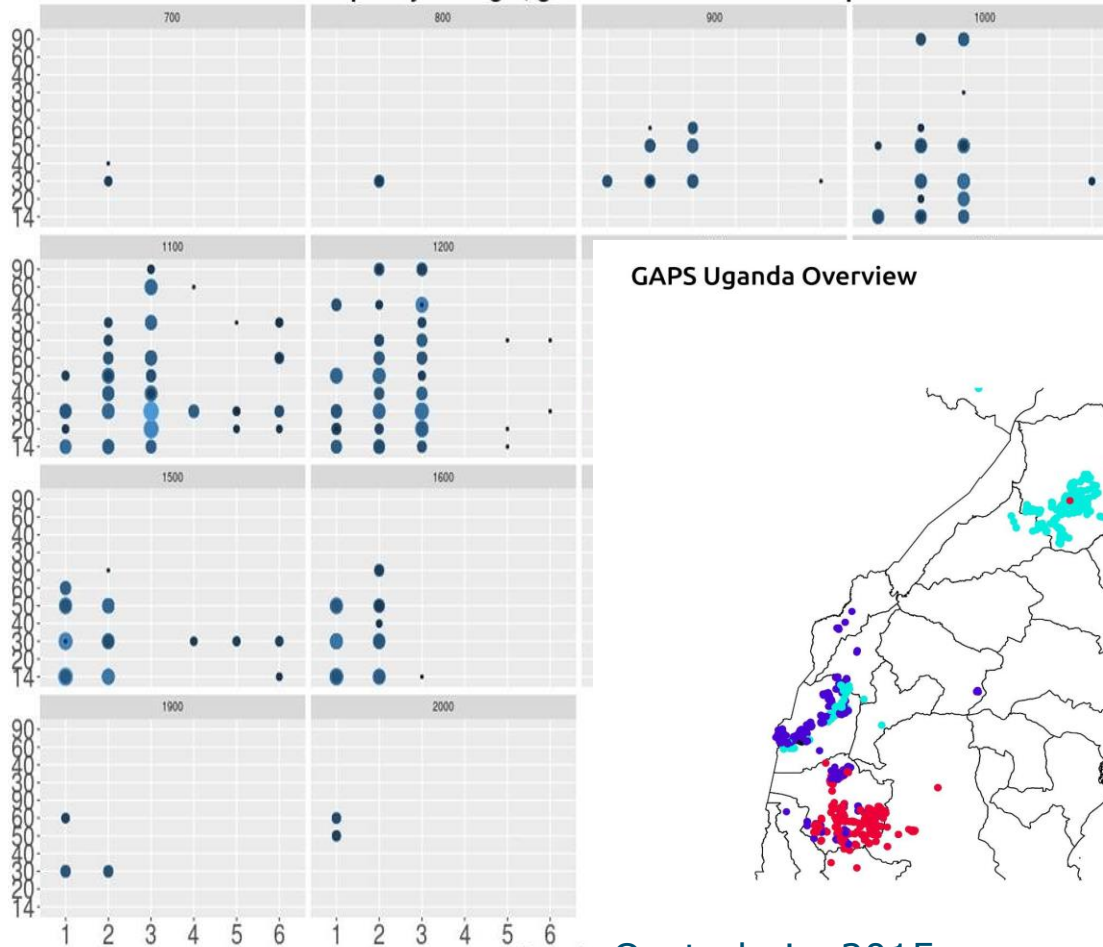
Hoeboer, 2016



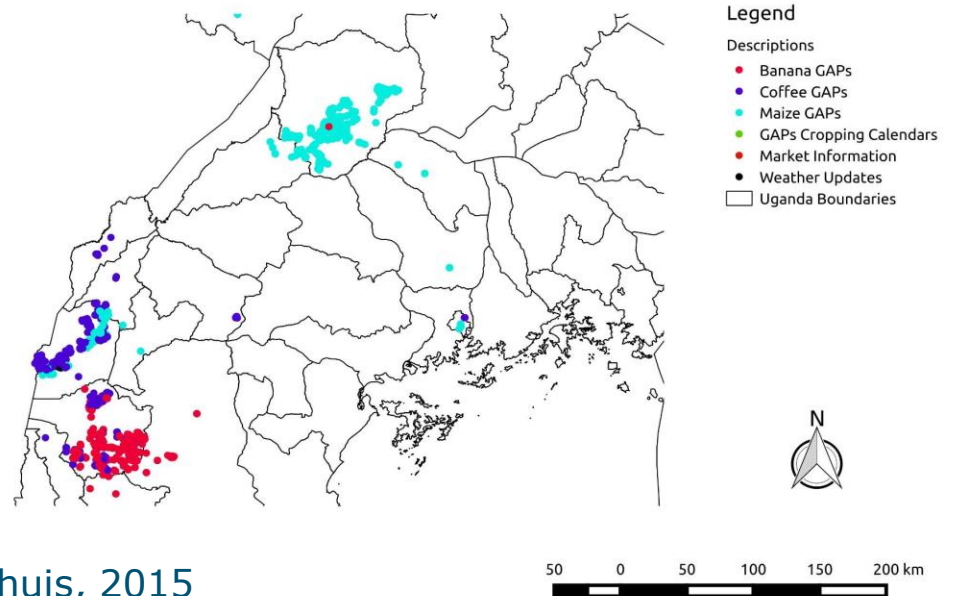


# EVOCA | GAP analyses (data: Grameen Foundation 2015, Globcover)

Pointfrequency to height, global land cover and description

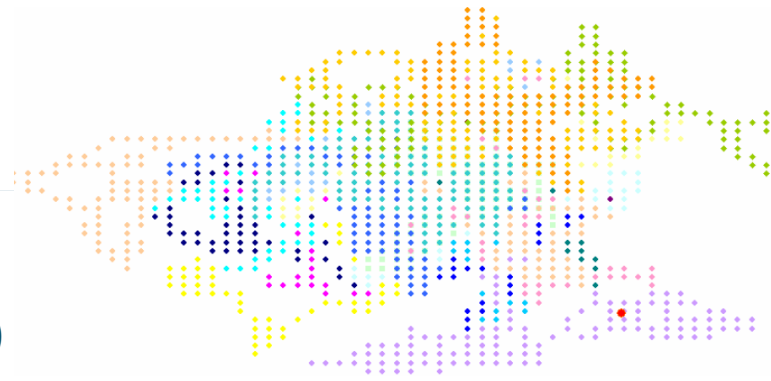


GAPS Uganda Overview



Oosterhuis, 2015

# Veracity



- Location (accuracy, reliable)
- Time (world time zone, temporal accuracy)

Cause	Number of records	Percentage of total
<i>The accuracy is not 16 (street level)</i>	774,008	27.2%
<i>The taken granularity is not 0 (YYYY:MM:DD hh:mm:ss)</i>	13,812	0.5%
<i>The media is not photo but video</i>	5,474	0.2%
<i>The photo does not have additional metadata available</i>	1,657	0.1%

Van der Drift, 2015

- Meaning (semantic analysis, spread of false information)

Content	Qwiek			City of tomorrow		Total	%	
	Twitter	Facebook	LinkedIn	Twitter	LinkedIn			
fact	13	54	28	39	13	147	10%	
question	29	17	7	82	18	153	11%	
opinion	18	53	39	130	38	278	19%	
idea	6	11	8	135	26	186	13%	
event	194	12	0	349	1	556	38%	
report	5	0	3	114	4	126	9%	
total	265	147	0	85	849	100	1446	100%

Eikelenboom, 2012





# Value

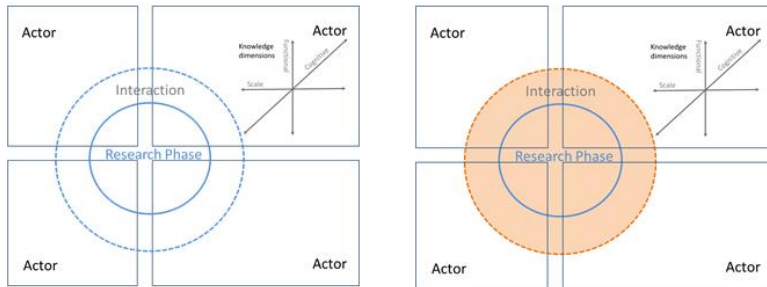
- 'About Space' (scientist, policy maker)  
*perspectives for more accuracy, link to real world 'precision', testing and validating*
- 'In Space' (placeholder, policy maker)  
*perspectives for action related to local environmental conditions*



UN, Sustainable Development Goals, 2015 | <http://bit.ly/23EUGQy>



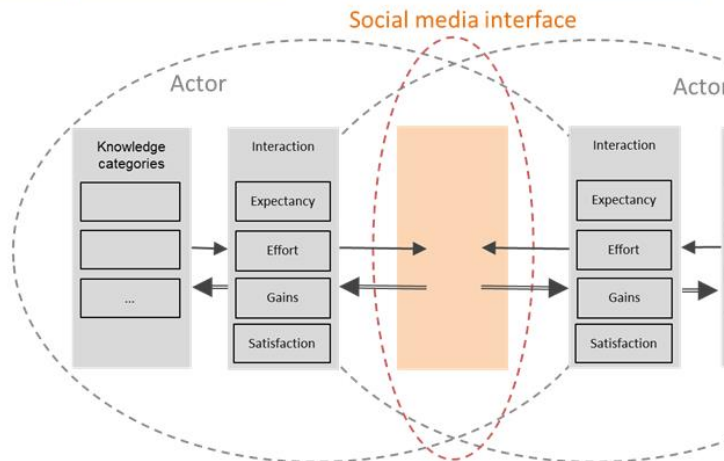
# Virtual Observatory : social media +



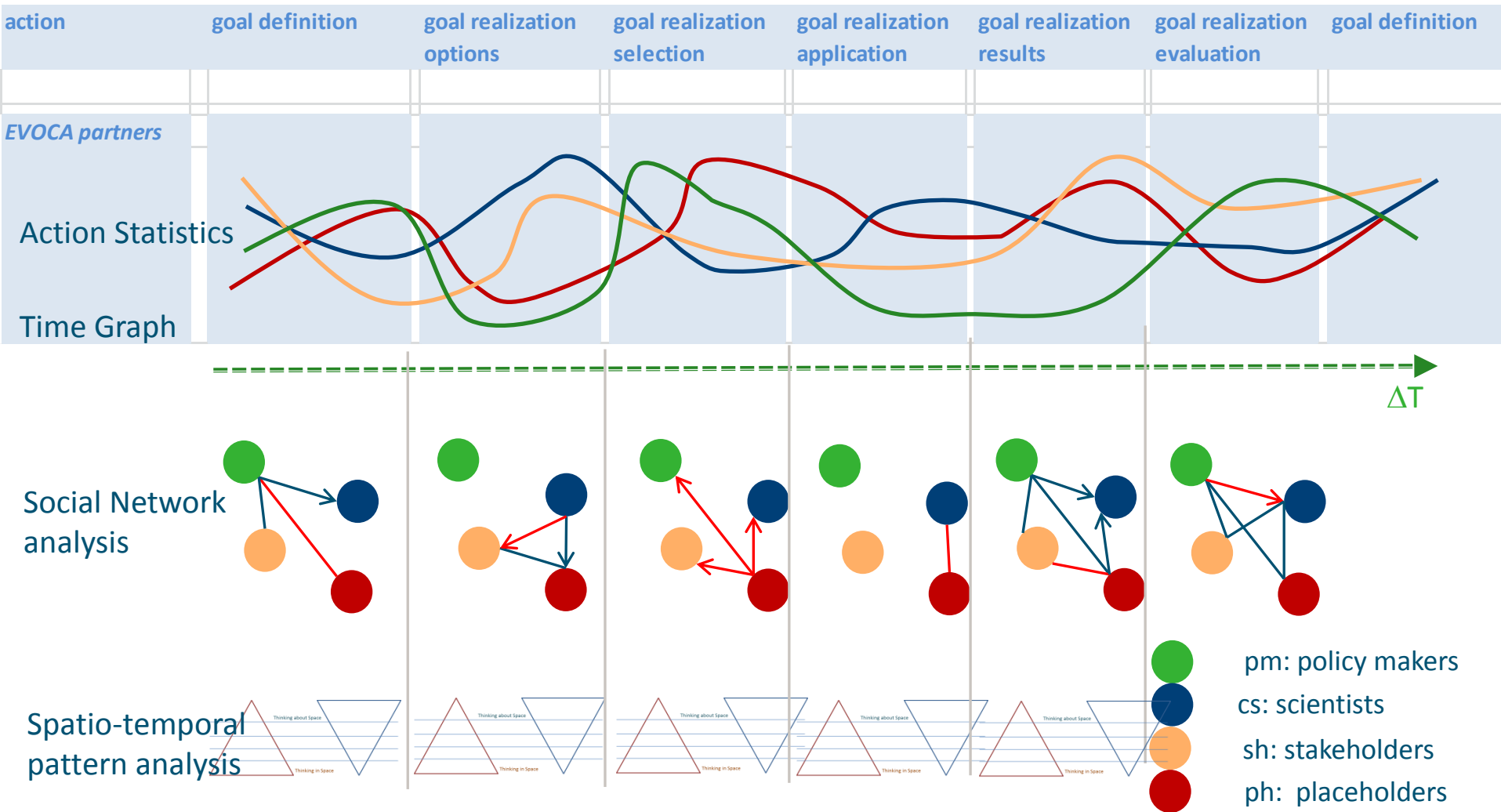
[b]

social media interface

[a]



# For Connective Action

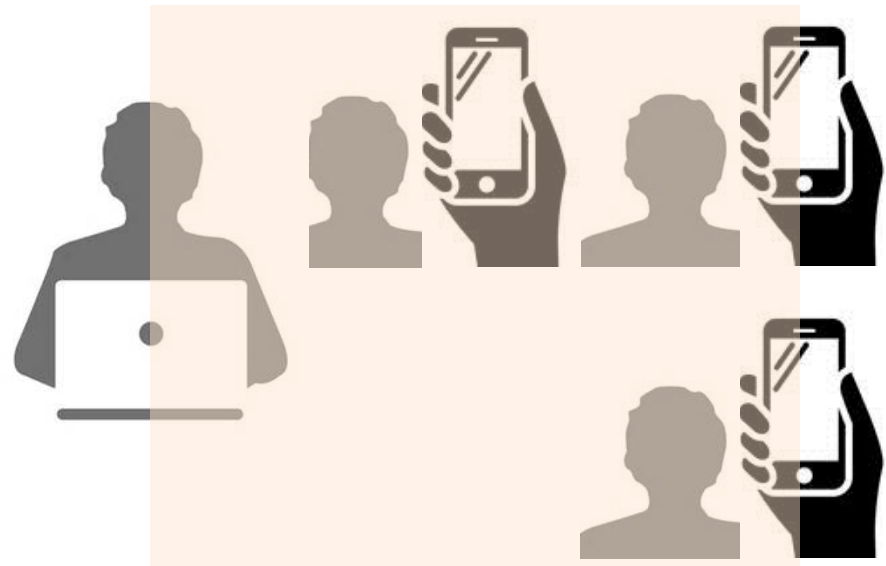


# Evoca & Geo-Information Science

Creating and Using a Digital Earth of Locations



by Environmental Virtual Observatories  
in relation to Connective Action



# Social Media: a new geo-information resource

Inspired by:  
"Geo media: a new resource"  
by van Lammeren, Bruns, Stemmer and Theil, 2016

and

the INREF EVOCA project and community



160511 | rvl |

[www.geo-informatie.nl](http://www.geo-informatie.nl)

[ron.vanlammeren@wur.nl](mailto:ron.vanlammeren@wur.nl)



WAGENINGEN UNIVERSITY  
WAGENINGEN UR

# What, where, when



Location

Orientation

Geometric reference

Size (length, area)

Shape ( ratio of length-area)





# Geo-information



[link to kmz](#)

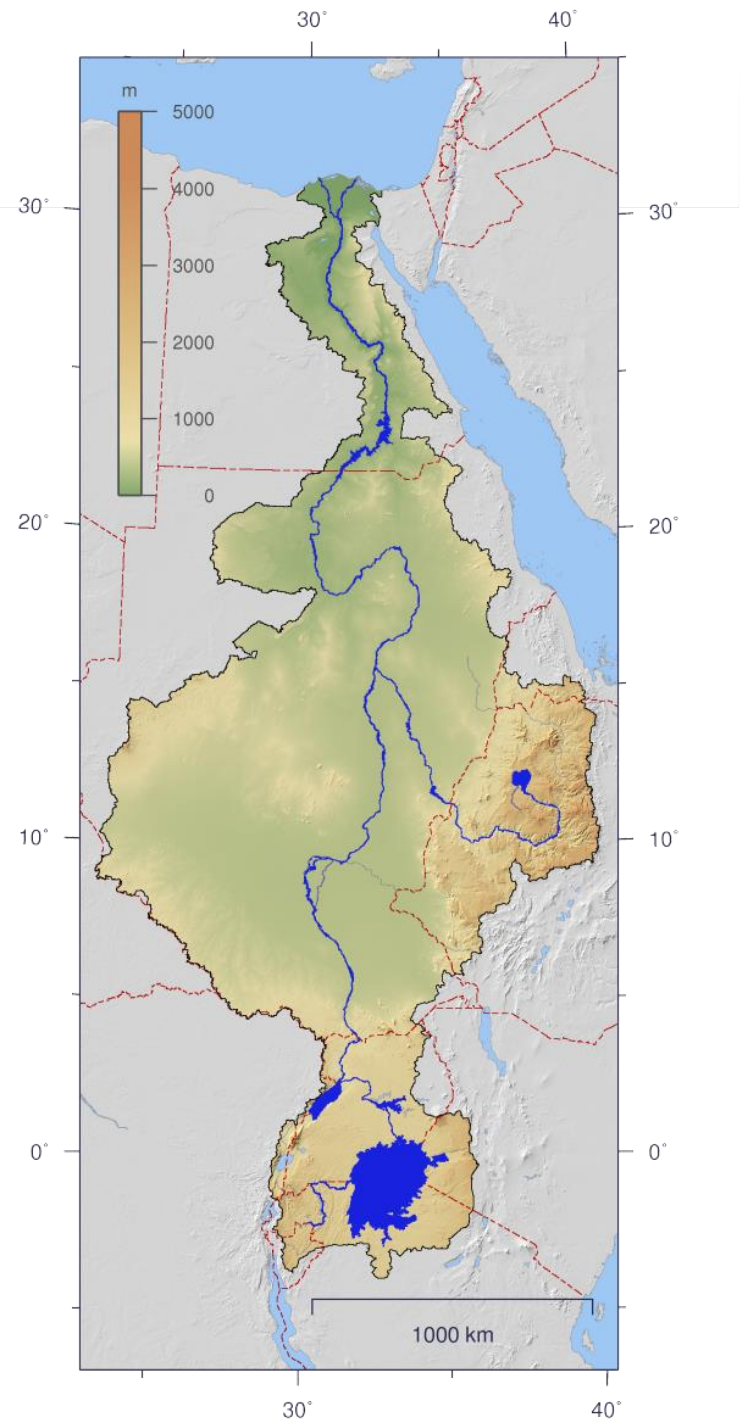


Table 3-1: Flickr metadata attributes per photo

Attribute	Explanation
<i>id</i>	Unique identifier of the photo
<i>secret</i>	Unique key to get additional metadata of a photo
<i>server</i>	Server number where the photo is stored
<i>user_id</i>	Identifier of the photographer
<i>user_name</i>	User name of the photographer
<i>user_real_name (optional)</i>	Real name of the photographer
<i>user_location (optional)</i>	Home location of the photographer (city and / or country)
<i>title (optional)</i>	Title of the photo
<i>media</i>	Type of media (photo or video)
<i>date_taken</i>	Timestamp of photo capture
<i>taken_granularity</i>	Granularity of date taken timestamp (0: YYYY:MM:DD hh:mm:ss, 4: YYYY-MM, 6: YYYY, 8: Circa...)
<i>tags (optional)</i>	Set of labels that describe the content of the photo
<i>latitude (optional)</i>	Latitude coordinate of photo location (EPSG:4326)
<i>longitude (optional)</i>	Longitude coordinate of photo location (EPSG:4326)
<i>accuracy</i>	Accuracy of the photo location (World level is 1, Country is ~3, Region ~6, City ~11, Street ~16)
<i>url</i>	URL to the photo and profile of the photographer

