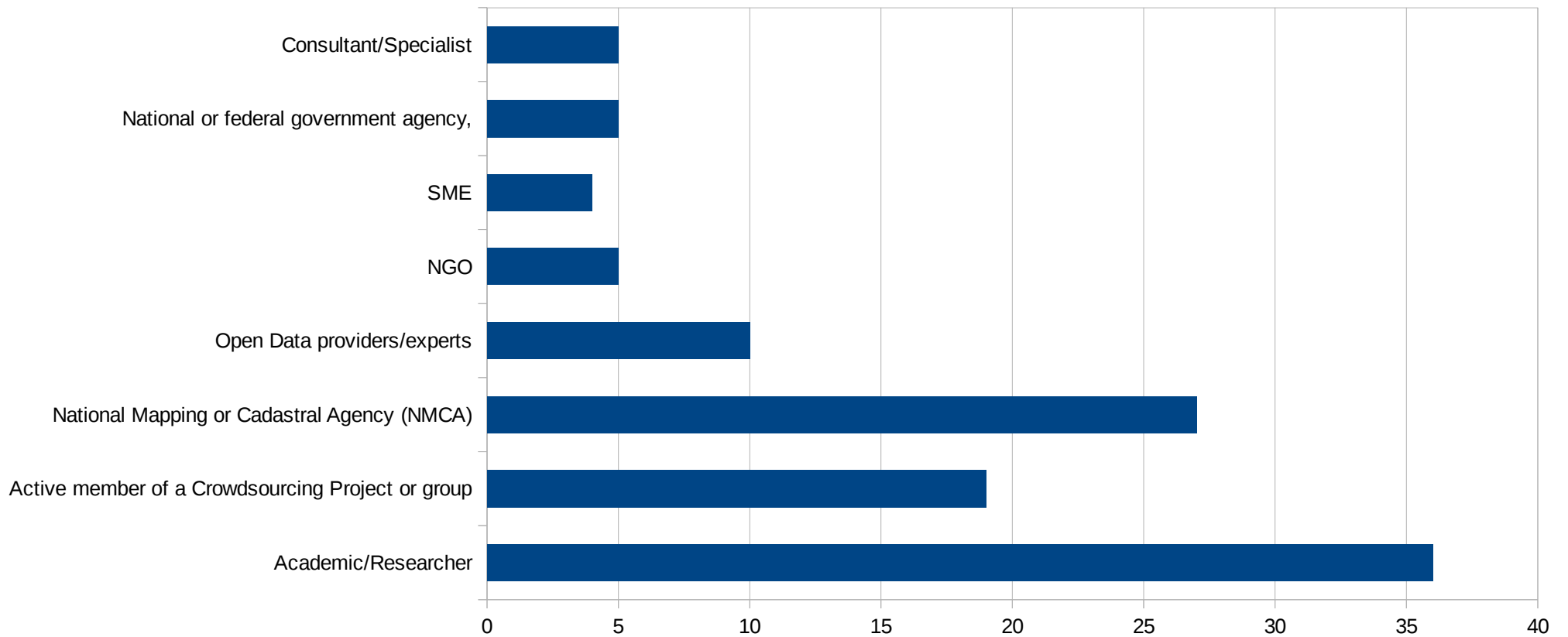# Crowdsourcing in National Mapping

## An international workshop

# Leuven, Belgium – April 2017

Organisers and Co-Chairs
Peter Mooney, Joep Crompvoets, Rob Lemmens

# Welcome to everyone

Workshop Delegates

**January 2012** – Workshop in University of Nottingham – 30 delegates (including representatives from 6 NMCAs)
**Summer 2012** – Call for Projects
**October 2012** – 9 project proposals, 5 selected for funding – EuroSDR, AGILE and ESRI Europe supplied funding
**October 2013** – All projects completed – report to EuroSDR board of delegates in Gävle, Sweden.

# EuroSDR

**European Spatial Data Research**

April 2014

Crowdsourcing in National Mapping

Peter Mooney, Jeremy Morley

Official Publication N° 64

"*Moreover we intend this report to be the first point of reference on a longer journey towards establishing the technical, legal, and social infrastructures necessary to promote crowdsourced geospatial data and VGI as a potential partner with NMCAs and Government Agencies in Europe and beyond*"
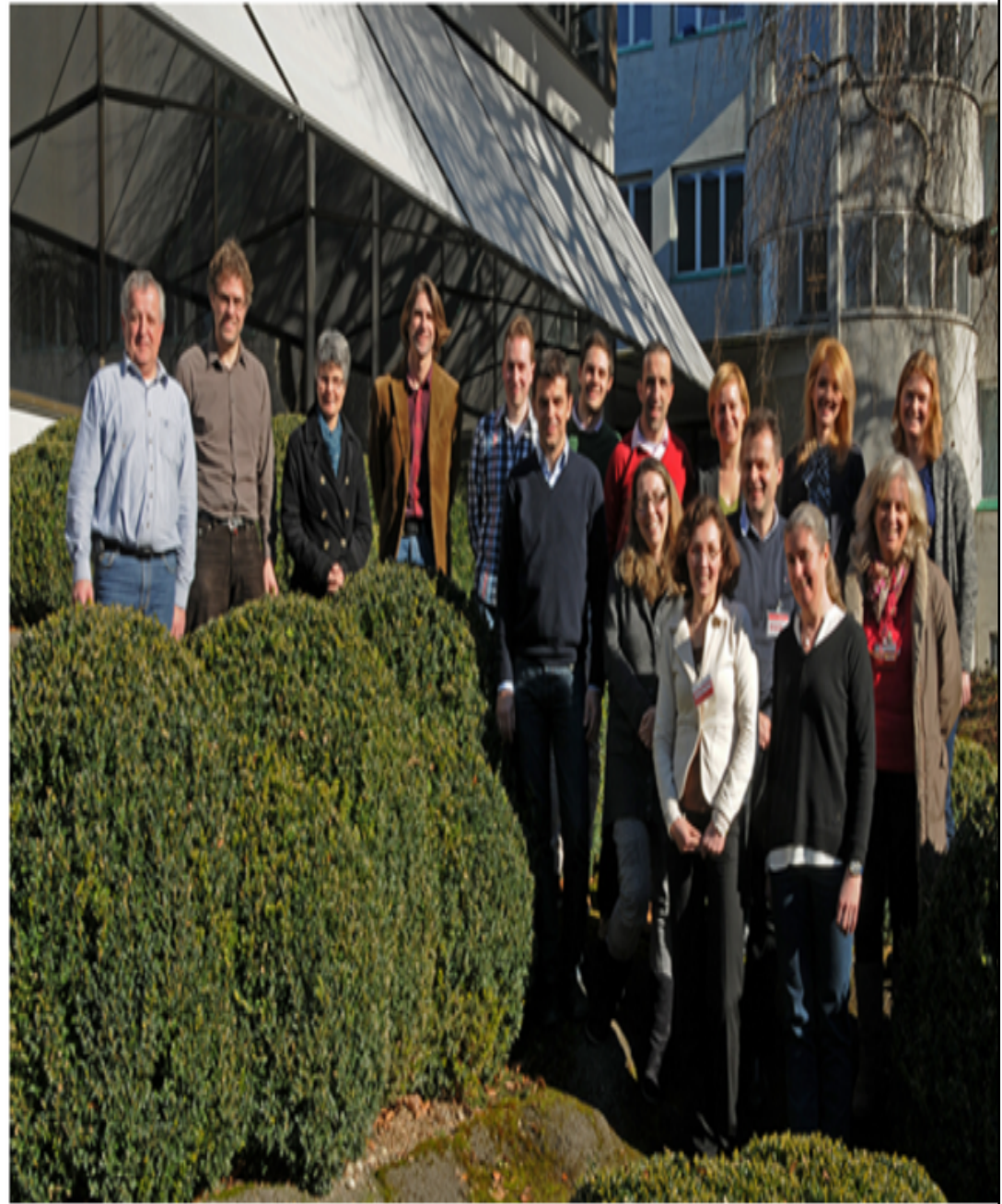
# COST Action TD1202 "Mapping and the Citizen Sensor", Berne, CH Feb 2015

There were 16 attendees (15 from COST Action TD1202), representing:

- 12 nations;
- 8 national and regional mapping agencies (NRMAs: swisstopo CH, OS UK, kadaster NL, BKG DE, IGN FR, ANCPI RO, HMGS EL, FGI FI);
- 4 academic research organizations (Politecnico Milano IT, Univ. of Coimbra PT, International Institute for Applied Systems Analysis AT, National Technical University of Athens GR);
- two Early Stage Researchers; and
- an equal gender balance.

The list of attendees included: Steffen Fritz (AU); Marie Laakso (FI)[ Ana-Maria Olteanu-Raimond (FR); Bianka Fohgrub (DE); Andriani Skopeliti (EL); Antoniou Vyron (EL); Peter Mooney (IE); Marco Minghini (IT); Magdalena Grus (NL); Hasper Hogerwerf (NL); Cidália Fonte (PT); Oana Popescu (RO); Jean-Christophe Guélat (CH); Tobias Kellenberger (CH); André Streilein (CH); and Jenny Harding (UK).

## 3. Identification of "no-go" practices and tools

No info about reliability of VGI or citizens

Little or no feedback to citizens

Complicated Tools or unreliable tools

NRMA does not sustain VGI collection efforts

Lack of transparei **NOTHING HAPPENS**
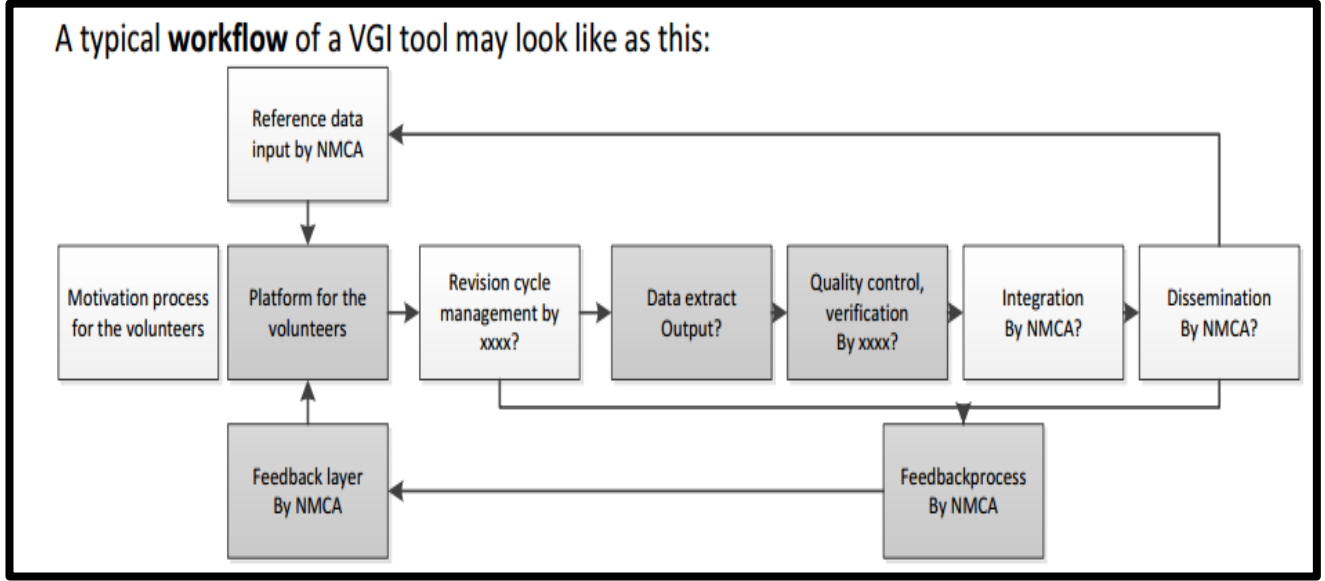
Lack of promotion of VGI project by NRMA

No motivation for the citizens

Not using modern interfaces

Missing terms and Conditions (legal – small 'l')

## 6. The Gaps/Deltas Overcoming the gaps

- **What does the ideal solution(s) look like?**

- **Transparent Systems/status for all**: A psuedo-Wiki idea - "*show errors reported, where they are, their resolution*" (UK)

- **Join internal updating processes with external gathering processes**

- **Excellent conflict resolution** [Manual and Automatic] (small correct user feedback can create LOTS of work)

- **Everybody contributes** – "*give something to get something*" - understand motivations – Crowd gives, NRMA gives "better map" [is this enough?]

- **Generate REAL WORLD benefits/motivations for citizens** (I'm first, my neighborhood is first, games,etc)

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A typical **workflow** of a VGI tool may look like as this:

# Transactions in GIS

# The Scale of VGI in Map Production: A Perspective on European National Mapping Agencies

Ana-Maria Olteanu-Raimond,* Glen Hart,† Giles M. Foody,‡
Guillaume Touya,* Tobias Kellenberger§ and Demetris Demetriou**

*French Mapping Institute, Saint-Mandé
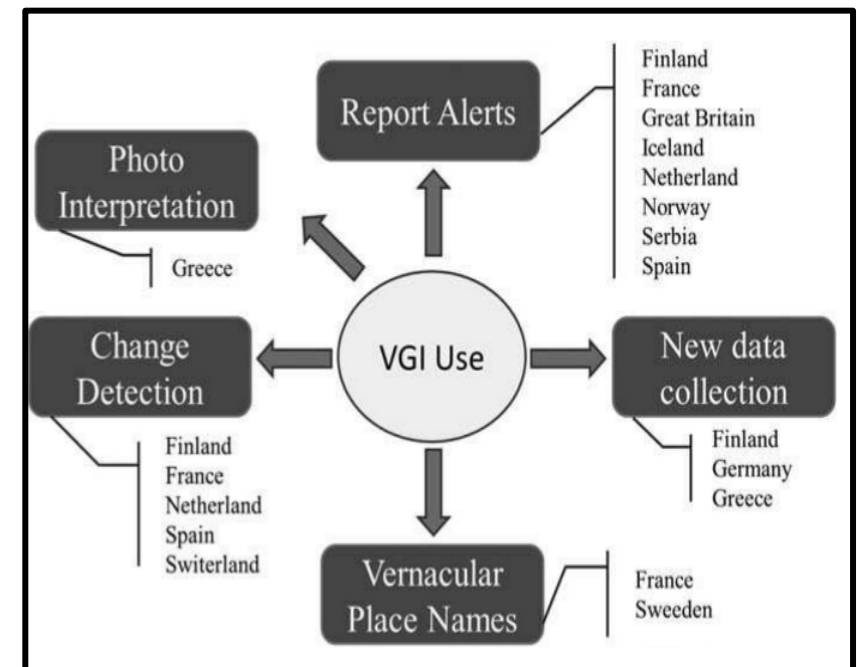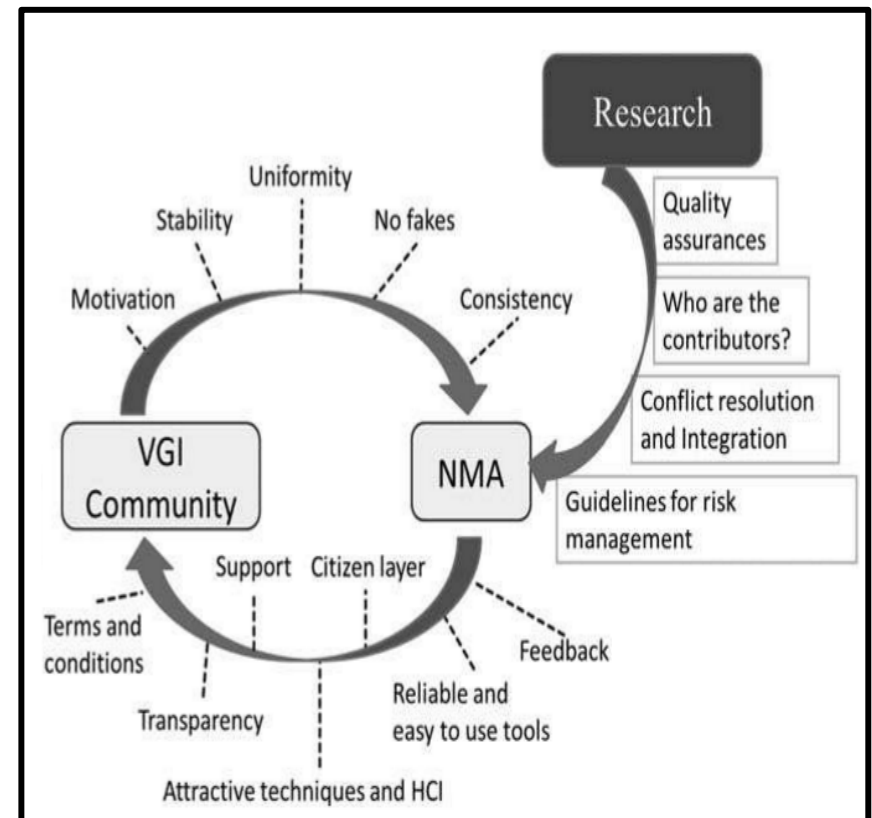†Nottingham Geospatial Institute, University of Nottingham
‡School of Geography, University of Nottingham
§Federal Office of Topography, Wabern
**Public Works Department, Nicosia

## Abstract

The perspective of European National Mapping Agencies (NMA) on the role of citizen sensing in map production was explored. The NMAs varied greatly in their engagement with the community generating volunteered geographic information (VGI) and in their future plans. From an assessment of NMA standard practices, it was evident that much VGI was acquired with a positional accuracy that, while less than that typically acquired by NMAs, actually exceeded the requirements of the nominal data capture scale used by most NMAs. Opportunities for VGI use in map revision and updating were evident, especially for agencies that use a continuous rather than cyclical updating policy. Some NMAs had also developed systems to engage with citizen sensors and examples are discussed. Only rarely was VGI used to collect data on features beyond the standard set used by the NMAs. The potential role of citizen sensing and so its current scale of use by NMAs is limited by a series of concerns, notably relating to issues of data quality, the nature and motivation of the contributors, legal issues, the sustainability of data source, and employment fears of NMA staff. Possible priorities for future research and development are identified to help ensure that the potential of VGI in mapping is realized.





http://onlinelibrary.wiley.com/doi/10.1111/tgis.12189/epdf

# Olteanau-Raimond et al (2016)

- *VGI was often used for change detection and the identification of errors. Only very rarely, however, was it integrated directly into the authoritative databases.*

- **Most of the NMAs have some concerns regarding the quality and the heterogeneity of VGI.** Moreover, legal uncertainties, and the manner in which much data is collected as typified by aspects such as the applied classifications, are among the reasons behind this situation.

- **Although VGI offers the mapping agencies potentially useful data, a series of obstacles to its use were evident**, notably relating to issues such as data quality, legal issues and sustainability. Some research on these has been undertaken but **further research needs to be conducted to enhance the ties between mapping agencies and VGI community.**

- From the authors' point of view, **even if some barriers are broken down, VGI cannot completely replace authoritative data**;

- **The authors, without engaging the institution to which they belong, do however believe that NMAs will exploit the potential of VGI in order to reduce their production costs and improve currency** by defining new workflows for VGI integration and quality assurance on the one hand and building trust and cooperation with VGI communities and citizens on the other hand.

# Overall Goal of this Workshop

- The goal of this workshop is to engage with **stakeholders from NMCAs,the Geomatics Industry, academic research, software developers, citizens involved in geographic crowdsourcing and VGI, leaders or managers of crowdsourcing or VGI projects** over 1.5 days to develop a set of the most prominent and pressing **questions related to crowdsourcing and national mapping in Europe (and beyond) today**.

- The outcomes of the workshop will be synthesised and summarised into a **report which will be delivered to EuroSDR in May 2017** for immediate consideration for future funding of research and development projects into tackling some of these questions.

# Workshop Topics and Themes

**The topics for discussion in the workshop** will include (but are not limited to) the following:

- What are the key sources of VGI and how do they complement each other? How are they relevant?
- How can these sources of VGI be successfully combined?
- How can VGI and crowdsourced spatial data compliment or assist in the work of NMCAs and industry?
- How do we then improve/measure the quality of VGI for NMCA and industry applications?
- European-wide SWOT analysis of VGI in NMCAs – by survey? Interview?
- What can VGI be used for (and not used for) in NMCAs or in Industry?
- Investigation of Geographic Information services for facilitating VGI
- What are the precise needs of NMCAs for VGI?
- What are the precise needs of the VGI community from NMCAs?
- In practical terms how can NMCAs and the VGI commmunity work together?
- Semantics and Interoperability of VGI for use by NMCAs and Industry
- Development of business models for VGI at NMCAs
- Privacy, legal and ethical issues related to the use of crowdsourced information and VGI by NMCAs and industry.
- The future of VGI – sustainability, attracting contributors, etc.

# Crowdsourced Geospatial Data – the new "data food" revolution

| | | |
|---|---|---|
| **Research It** | **Grow It** | **Renew It** |
| **Make It** | **Raise It** | **Process It** |
| **Trade It** | **Manage It** | **Invent It** |
| **Innovate It** | **Change It** | **Solve It** |

# Summary of Workshop Timetable

- **Day 1** Until Lunchtime
  - Invited Expert Presentations
- Day 1 Afternoon until Workshop close at 18:00
  - Breakout Session 1 - RESEARCH Session.
    - We've assigned everyone to groups.
    - One rapporteur per group.
  - Breakout Session 2 - Hackathon Challenge (more from Rob)
    - Different groups.
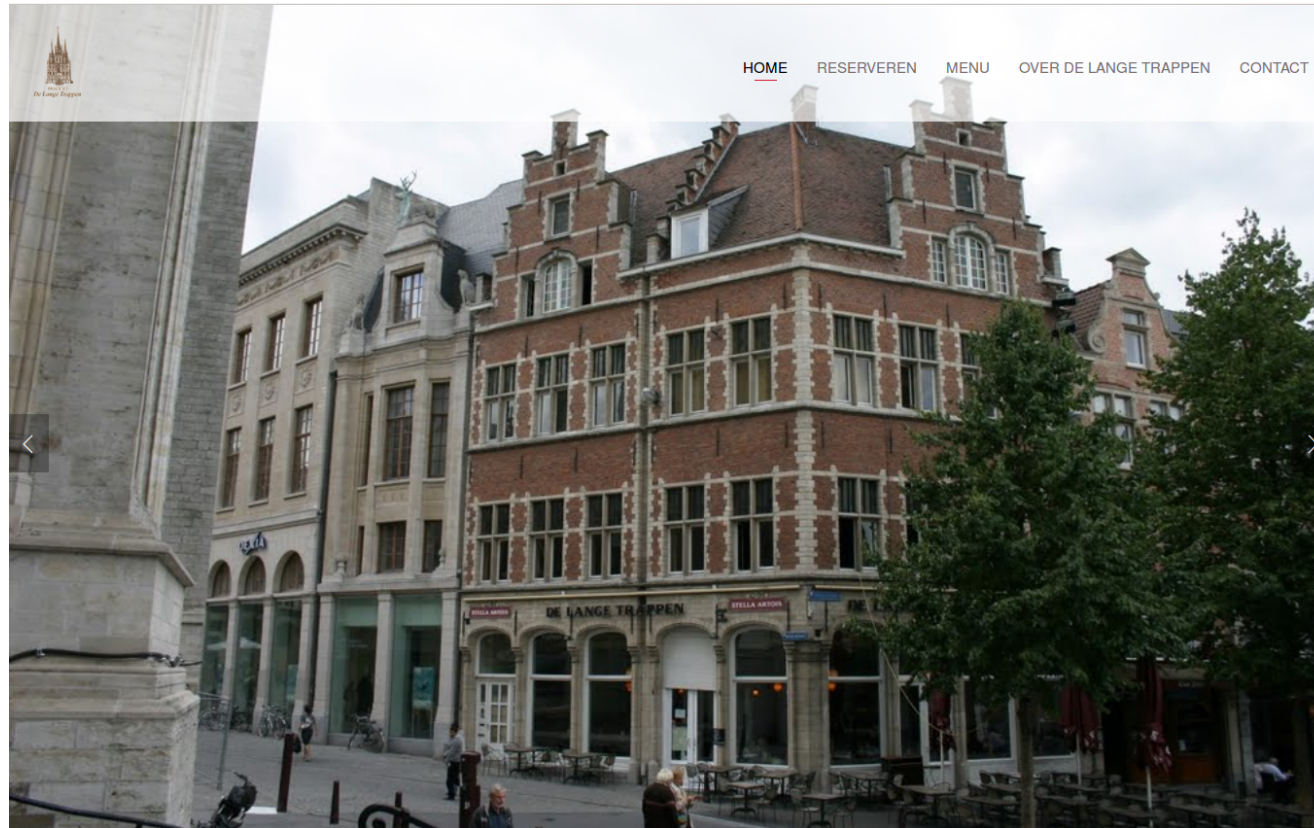- Workshop close at 18:00
- Group dinner at 19:30

- **Day 2**
- Invited Expert Presentations until Coffee break at 11:00
- Breakout Session #3 The Crowdsourcing in National Mapping Future Research Agenda
- Breakout Session #4 The VGI Knowledge Portal
- Summary of workshop and official closing.
- Lunch and departures.

# Speakers .... please be considerate of your timing
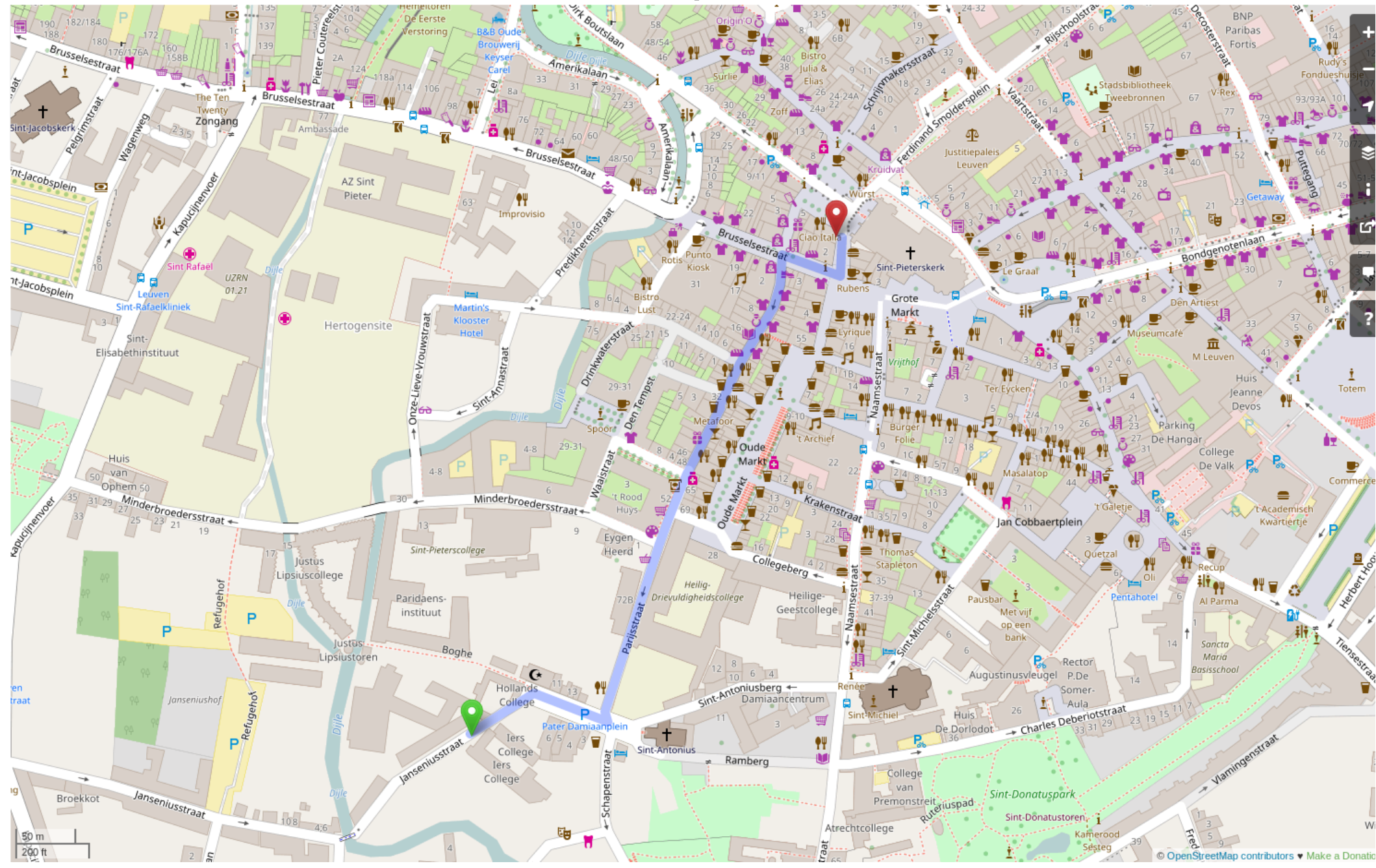
# Group Dinner – Tonight @ 19:30
# **De Lange Trappen**



http://www.delangetrappen.be

- Please sign your name on the yellow sheet (before coffee break) – so we can make reservations.

- Please note this dinner is 'pay your own'

# 50.87961, 4.70035

# Sponsorship and Support for this Workshop

We are very grateful for **the sponsorship and support of this workshop** from the following organisations:



We are very grateful for **organisational support** from our academic institutions:



This workshop is fully endorsed by the
**International Cartographic Association**



A unique resource for Ireland in Europe