1. Workshop name/title (and acronym is applicable)

VGI-Analytics - Volunteered Geographic Information (**VGI**): Integration, **ANALY**sis, **T**ailoring multiple sources for diverse app**lIC**ation**S**
The **VGI-Analytics** workshop is the 4th workshop in a series of AGILE pre-conference workshops organised by this committee. Previous workshops have been held in 2013, 2015 and 2016.

2. Description of the workshop by listing topic(s), objective(s) and planned outcome(s)

2.1 Topic(s)

- Joint analysis of crowd-sourced VGI/social media data originating from different data sources
- Technical aspects of crowd-sourced data fusion
- Spatio-temporal analysis of activity patterns for individual users across multiple VGI and/or social media platforms
- Quality assessment of VGI/social media data through analysis of data from different platforms
- Analysis of cross-linked data and cross-link editing methods in VGI and social media platforms and its applications
- New sources of VGI and social media data
- VGI across different regions and cultures
- Semantic issues arising from the conflation or cross-linkage of several different sources of VGI
- Tailoring VGI for different applications

2.2 Objective(s)

- Identify future research directions that emerge from the analysis of cross-platform data contributions and data fusion
- What are the limits of VGI Analytics?
- Exchange research findings on cross-platform user contribution patterns
- Learn if and how data are linked across different VGI/social media platforms and what kind of communities evolve
- Share experiences with accessing and handling new VGI data sources
- Explore methods for VGI data quality assessment by use of different crowd-sourcing platforms platforms
- Learn about new applications that use or analyze cross-linked crowd-sourced data

2.3 Planned outcome(s)

The submitted papers will be uploaded to an online repository so that they can be trackable and citable. Furthermore, a special issue in the journal Geo-spatial Information Science http://explore.tandfonline.com/cfp/est/gsis will be organised and established. This is a journal with open access published by Taylor and Francis with no article publishing charges to encourage submissions.

A workshop website will be managed on an ongoing basis after the workshop ensuring open access to presentations, materials and summaries of the contents of the workshop.

3: ABSTRACT

Volunteered Geographic Information (VGI) and social media data have become part of our everyday lives over the past few years. Whereas in the early beginnings of crowd-sourced data the collection occurred primarily to isolated, individual platforms, contribution patterns are now beginning to be more intertwined between different platforms, both at the application level and at the user side. This means that crowd-sourcing applications nowadays begin to offer opportunities to share data between them during data collection and contribution processes, for example, by tweeting an Instagram image or by viewing a Mapillary image layer while editing OpenStreetMap data. This advancement on the application side can lead to novel analysis methods of user contribution patterns. Recent data contribution trends show also that geographic data are beginning to be linked across different VGI and social media platforms. As an example, users started to cross-link OSM point of interests (POIs) and street features (e.g. street lamps, sidewalk information) based on Mapillary photographs, or by tagging Flickr pictures with OSM tags to facilitate automatic extraction of descriptive information for Flickr images. This cross-linkage of data between different platforms brings new opportunities and challenges, including questions of data quality and the formation of user communities across platforms. This change in contribution patterns may require different analysis techniques than for data contributed to individual data platforms. The number of VGI and social media platforms is continuously growing, providingnew data sets to be analyzed. A recent example is the Pokémon Go application which triggered the crowd-sourced local business review Website "Yelp" to add a Pokémon stop attribute. This attribute can reveal in which parts of a city Pokémon stops are placed and thus where Pokémon Go players explore Pokémon stops.

This workshop provides an opportunity for interested researchers to share ideas and findings on cross-platform data contributions, innovative analysis approaches, current data fusion methods, real-world applications using cross-linked data, and novel crowd-sourcing and social media platforms. It allows participants also to discuss technical questions and innovations on data access. One portion in the workshop is dedicated to a collaborative session, where break-out groups will discuss some specific aspect of cross-linked VGI data, potentially leading to a joint contribution to a special issue of the journal Geo-spatial

Information Science http://explore.tandfonline.com/cfp/est/gsis. Concurrently we plan to offer a technical hands-on session on VGI related APIs and software as well.

4. Short description of the intended length (half or full day) and the format of the workshop

The workshop will be a full day workshop. We intend to begin at 09:00 and finish at around 17:00. This will allow workshop delegates to either return back to their accommodation before the evening reception or to explore the university grounds or city of Wageningen. In the tentative outline below we have provided two options for parallel sessions in the afternoon. We aim to attract a high number of attendees and consequently we believe that we can provide the option of both sessions.

The tentative outline of the workshop is as follows

09:00 - 09:30 Welcome and some introductions from the organisers
09:30 - 12:30 Presentations and lectures from delegates - these will be drawn from submissions to the workshop after a Call For Papers process
12:30 - 13:30 LUNCH
13:30 - 15:30 Session Option 1 Collaborative Session - the idea here would be to break the workshop up into 4 - 5 small groups. Each group would be led by one of the organisers or an experienced academic/researcher. Then each group would try to tackle some of the current challenges in VGI-Analytics with the view of working towards the draft for a multi-author journal paper that could be potentially submitted to the special issue of the Geo-spatial Information Science journal. At the end of the session each group will have gathered together a roughwork document of ideas, formulations, plans, etc to bring their paper forward after the workshop. Very often one of the negative aspects of workshops is that the potential energy for collaboration and future networking diminishes after the workshop is finished. A tangible and shared collaborative output like this could help build capacity for sustaining this collaboration
13:30 - 15:30 Session Option 2: A hands-on VGI-Analytics data/API/software session. This follows on from the successful hands-on session at Link-VGI in 2015 in Helsinki. It is of particular interest to delegates who do not have extensive experience in working with VGI data but would like to learn how to use some basic tools and APIs related to VGI-Analytics
15:30 - 16:00 Coffee
16:00 - 16:30 Short feedback and summary from each group leader
16:30 - 17:00 Closing - summary and overview of the day from the Workshop Chair. Plans for the future.

5. Brief statement of the relevance of the workshop for AGILE

This workshop proposal is very relevant to the work, research and mission of AGILE. Indeed this proposal corresponds to the 4th pre-AGILE workshop in this subject area. The number of Volunteered Geographic Information (VGI) and social media platforms is continuously growing. This growth has provided massive datasets of georeferenced content that is either actively contributed or collected passively by smartphone applications or automated geolocation of user-generated content. While much of the research attention in this area has focussed on the analysis and study of individual VGI datasets and data sources there has been less attention given to the research challenges of combining or integrating several VGI datasets and data sources together. Many new and interesting challenges emerge as a results - semantic understanding and linkage between datasets, spatial accuracy and resolution, legal and ethical concerns, etc. It is clear that over the last few years there is an increasing number of papers and presentations at the AGILE annual conference connected to the VGI research domain. This workshop also offers AGILE attendees an opportunity to be involved in a pre-conference workshop on the topic of VGI with a (potentially) large number of fellow researchers and experts in the area. This is a very important tool for AGILE to assist in building European research capacity and skills in this growing and exciting area.

6. What is the approximate number of expected participants?

In our workshop at AGILE 2016 we had approximately 30 participants. Given the popularity of the subject matter, the easily accessible location in the Netherlands and the attraction of the AGILE conference we are targeting a similar number of participants again.

7. Names and e-mail addresses of the organizing member(s)

Leading AGILE member (or sponsor) and contact person:
- *Maynooth University, Ireland (Peter Mooney); Peter.Mooney@nuim.ie*

Contributing AGILE members (including the persons involved) – at least one seconding AGILE member is needed:
- *University of Heidelberg, Germany (Alexander Zipf); zipf@uni-heidelberg.de*
- *Aalborg University Copenhagen, Denmark (Jamal Jokar); jja@plan.aau.dk*

Contributing non-AGILE members (including the persons involved) – if applicable:

- *University of Florida, United States (Hartwig H. Hochmair); hhhochmair@ufl.edu*

Programme Committee: We intend to assemble a small but expert programme committee pending the acceptance of our workshop proposal.

8.   Additional   information   about   previous workshops, if held.

VGI-Analytics follows on from a very successful pre-AGILE conference workshop in Helsinki in June 2016 with 30 attendees registered. Please see our workshop web-page here [http://www.cs.nuim.ie/~pmooney/LinkVGI2016/] as well as a published data descriptor from the hands-on session [http://www.mdpi.com/2306-5729/1/3/15]. Indeed the workshop organisers have been working together in this general research areas for several years now. An earlier pre-AGILE conference workshop was held in Leuven in May 2013 [http://flrec.ifas.ufl.edu/geomatics/agile2013/index.html] . A journal paper was produced after this   workshop   on   the   key   outcomes   of   the   workshop [http://www.tandfonline.com/doi/abs/10.1080/17489725.2013.859310]

9. Expected resources needed

We do not foresee any special technological needs except for a WiFi connection for participants, a desktop computer connected to a projector/screen, and a white-board or flipchart board. Participants will be encouraged to bring their own laptops/tablets with them.

As outlined above we are targeting a workshop with about 30 participants. Therefore our requirement for accommodation would be a room capable of holding this number of participants comfortably.

We will carefully timetable the events within our workshop to ensure that they easily synchronise with the coffee and lunch breaks of other workshops happening simultaneously.

For the collaborative group session and technical hands-on session participants may want to bring their own laptops. To ensure the smooth running of this aspect of the workshop we will need access to additional power outlets. Depending on the current power infrastructure in the workshop rooms this may already include power outlets at desks. But as a backup some power outlet extension sets would be very helpful. In the case of running the parallel collaborative group session and technical hands-on session in the afternoon it would be very useful to have access to a second break-out room. This room could accommodate those in the collaborative group session leaving the hands-on session in the original workshop room.