groundtruth2.0

Environmental knowledge discovery of human sensed data

Deliverable D5.6

Third Advisory Board Meeting

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Abstract of deliverable	The purpose of this deliverable is to capture the discussion of the third Advisory Board meeting of the Ground Truth 2.0 project and to record the action points. The discussions focused on three topics: the six Demo Cases, the Work Packages and the project progress in general. A summary of the recommendations of the Advisory Board and an action list are provided.

Versions and Contribution History

Version	Date	Modified by	Modification details
V0.1	08/01/2019	Onno Giller	First Draft, based on detailed minutes by Cheron Constance
V0.2	30/01/2019	Uta Wehn and PMT	Round of revisions by Uta Wehn and the PMT
V0.3	31/01/2019	Onno Giller	Addressing the comments from the round of revisions in preparation for submission to the Advisory Board

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List of abbreviations

AB	Advisory Board	GT2.0	Ground Truth 2.0
CO	Citizen Observatory	PMT	Project Management Team
DC	Demonstration Cases	WP	Work Package

1 Introduction

1.1 Background of the Ground Truth 2.0 project

Citizen science, enabled by ICTs, is on the increase. Using their own observations and mobile devices, citizens can provide a new data stream that provides localized information about the environmental situation on the ground, complementing existing data systems and surveys. However, many efforts to successfully implement citizen observatories are facing problems with the sustained engagement by citizens, limited scalability and limited impact on governance processes.

Ground Truth 2.0 will deliver the demonstration and validation of 6 scaled-up citizen observatories in real, operational conditions, with 4 European and 2 African demonstration cases. Ground Truth 2.0 will demonstrate the technological feasibility, the sustained use and the societal and economic benefits of such citizen observatories. The ultimate objective is the global market uptake of the concept and enabling technologies.

1.2 The Ground Truth 2.0 Advisory Board

The Ground Truth 2.0 Advisory Board provides strategic advice to the consortium during key milestones. The Advisory Board can help review the project from a broader and higher strategic perspective. This will allow for the entrance of new ideas and guarantee that the project is linked to the general public´s interest. Concretely, the main tasks of the Advisory Board are:

- To ensure the link between the corresponding stakeholders and the Ground Truth 2.0 project deliverables and results (incl. dissemination);
- To advise on the market analysis, the potential business models definition and the identification of the market barriers for the Ground Truth 2.0 enabling technologies and services;
- To advise on dissemination activities/material about project results for relevant stakeholders, incl. policy makers and other EU projects;
- To disseminate information about the outputs and impacts of Ground Truth 2.0 to the stakeholder groups they represent and/or are linked to.

The members of the Advisory Board have been appointed strategically with a balanced composition in terms of gender, background and communities that they represent (e.g. GEO community, lobby, spatial planners, governments, citizen science community, etc.).

The thorough involvement of the Advisory Board is sought annually back-to-back with a face-to-face PMT meeting.

1.3 Purpose and structure of this document

The purpose of this document is to capture the discussion of the third Advisory Board meeting which took place on Wednesday the 12th of December, 2018, in Delft, The Netherlands and to record the actions points that were identified. The agenda of the meeting and its participants are presented in Annex 1.

The meeting started with an overview of the Advisory Board members (section 2.1) and a short overview of the project (section 2.2). Next, the six Demo Cases were presented and discussed in detail (section 2.3), followed by presentations and discussions of the four Work Packages (section 2.4). Finally, a summary of the recommendations of the Advisory Board and a list of Action Points are provided in section 3.

2 Minutes

2.1 Introduction of Advisory Board members

Barbara Anton works for ICLEI – Africa, part of the International Council for Local Environmental Initiatives – Local Governments for Sustainability (ICLEI – Local Governments for Sustainability), a global city network. She is working from the European Secretariat, in the team called 'Sustainable Resources, Climate and Resilience.' Her focus area is mostly the water domain, which is why she is especially interested in the parts of the project that focus on water.

Liselott Sjödin Skarp works for the Swedish Species Information Centre (ArtDatabanken), which is part of the Swedish Agricultural University (SLU). They do many things related to citizen science, for example providing information when it comes to observation and national support for nature conservation.

Henk van der Kamp is a member of the Executive Committee of the European Council of Spatial Planners (ECTP-CEU) and is very interested in how GT2.0 can contribute to better and more participative planning. ECTP-CEU has adopted a Charter on Participative Planning.

Three Advisory Board members could unfortunately not attend the meeting:

- **Dr. Clairie Papazoglou**, working as an Independent Environment Consultant;
- **Mr. Pontus Westerberg**, working for UN-HABITAT in Nairobi;
- **Mr. Gregory Giuliani**, working for UNEP-GRID.

2.2 Ground Truth 2.0 update by the Project Director

***Presenter:* Uta Wehn, IHE Delft.**

Dr. Uta Wehn is Associate Professor of Water Innovation Studies at IHE Delft and Project Director of Ground Truth 2.0. Her background is in Computer Science as well as social sciences (Science, Technology and Innovation Policy Studies). She is very interested in the role of science in society. Besides Ground Truth 2.0, she coordinates another H2020 project called AfriAlliance and has a leading role in various citizen science projects with case studies in Europe, Africa and the Middle East.

Uta presented a short overview of the approach and objectives of Ground Truth 2.0 (GT2.0). She also discussed the progress and achievements over the first two years, focussing on the project objectives and the outputs. She then moved on to the plans for the final year of GT2.0. This presentation is included in Annex 2. After the presentation, the Advisory Board (AB) is asked for their first reactions.

Discussion

Henk (question) asked for clarity on the challenges at the objective level?

Barbara (question) inquired whether there were any major re-directions within the project?

Uta (response): Both of these matters will be addressed more directly in the remainder of the meeting. Uta did explain that there were shifts in the partner configuration in one case after the co-design process had begun, which will also be further elaborated.

Liselott (question) inquired whether there will be a follow-up call - a sort of GT part two?

Uta (response) explained that the EC is not normally in favour of the same consortium submitting proposals again. It is unclear at this point in the project process what the following activity would be. There are a number of follow up projects planned, but it is likely that they will be in a different configuration of partners.

Liselott (question): Recent conferences: Similar or different experiences in other projects?

Uta (response): Coordination action, experiences are actually captured and exchanged in Europe in WeObserve project.

2.3 Demonstration Cases

All six Demo Cases (DC) are presented by the Demo Case leaders. The presentations are included in Annex 3 of this document. At the end of each presentation the Demo Case leaders present issues or questions that they would like to discuss with the AB. After each presentation the AB was given a chance to discuss the issues and questions, as well as pose their own.

2.3.1 Grip op water Altena (Dutch DC)

***Presenter:* Rianne Giessen, HR.**

The DC area experienced a lot of flooding in 2014/15 and there were many calls to improve communication to reduce damage in the future.

Activities included testing the platform, excursion to a water storage basin, presentation at a festival, and multiple planning sessions. There is significant social media presence and use of the platform to produce mapped information that brings information from the Water Board and weather data. In the beginning, there was not much enthusiasm from the citizens on collecting data, but answered with a number of activities. There was a survey on gardens that coincided with the Week of Water, which achieved 232 responses. (The survey was about why people have green vs grey garden - flora and grass vs paved/gravel/tiles - which have different abilities to store water in weather events.) A number of outreach events was organized, including an excursion and a visual model as a tool to engage citizens in conversation.

Successes include a small but stable stakeholder group that is slowly increasing in numbers, over 300 people attending the outreach events, and a significant response to the garden survey.

Challenges: increasing active core members, diversifying the age representation of the active members, and improving chances for longer term sustainability of the CO.

Next steps: To incorporate more dynamic data into the platform and other general platform improvements, a public event based on the garden survey, activation around Water Board elections and the week of Water.

Questions for the Advisory Board: How to match the different stakeholder incentives in the co-design group? How to convey a simple and clear message?

Discussion

Henk (question): Is it a weakness of the study design that people in the DCs may not have a clear understanding of the potentials of the data collection process?

Uta (response): We have objectives in the project that are broadly to address concerns for the common good, and it's okay that some people might only want to take measurements and win a rain barrel, while others want to change the world - even if they have to attend lots of meetings and it will take 20+ years to do something.

Uta (extra observations): Interesting example of learning process in the project, citizens in the Dutch DC originally not really interested in data collection. Encounter with Meet Mee Mechelen (Belgian DC), during the excursion as part of the F2F Plenary Meeting earlier this week, sparked interests - “they get to measure

all sorts of things, which is so nice". It is difficult to raise interest before it is clear what an observatory is and can do. Another point on incentives, is that Sweden did survey of the different stakeholders in their work to gather specific motivations - surprised to find split between people collecting for themselves and others to support broader nature conservation.

Henk (comments): There is a need to think bigger. Consider scenario techniques to showcase impacts of climate change for example. People might have to be shown or allowed to investigate how the issues affect people individually in their own lives - on their own patch - using a collection of different metrics to build a picture of their own environment (soil, water, particulates, etc.) could be one approach. Maybe there is a role for citizen's data in warning systems, recognising that there might be cases and environmental events were mitigation is the only thing that one can do. Find ways to ensure the data is used for measures that lead to actual improvements in the original issue, if resources are available that seek to keep updating the CO system with newer technologies to ensure it stays relevant.

Henk (question): Interest in this project should stem from protection and safety, and water management is really a climate change topic, so why should people need incentives?

Uta (response): water management can be very abstract, and people have different roles.

2.3.2 Meet Mee Mechelen (Belgian DC)

***Presenter:* Stijn Vranckx, VITO.**

Success/activities: Total of 4 Air Quality measurement campaigns to observe spatial and temporal changes in pollution levels: Oct-Nov '17, Feb-Mar '18, June-July '18 and Sep '18. A joint analysis of the observations has been initiated and continues, highlighting (as an example) the impact made by the traffic restrictions in the city centre. There were several community awareness events, which were well-attended and coincided with several city events, including the local elections. We received media attention (local news papers) of both the measurement (cycling through the city) and the public events (awareness about air quality). The City of Mechelen is part of the CO, and the coalition of the Green Party and Liberal Party - the most pro-environmental parties interested in air quality have won a plurality in the municipal government, an opportunity for a smooth continuation of the CO and reaching our objectives. Antwerp has begun a co-design process on heat stress and there has been an awareness raising blitz with heat stress measurements.

Challenges: The people we are reaching, are already convinced that there should be action on improving environmental quality. How do we broaden our audience? Going from observations to action must be a next step. There are frictions and different agendas among environmental organisations in the group. How do we involve environmental planners?

Next Steps: Working group on Air Quality - report and analysis of current situation, working group on Noise, working group on communication and the continuation of the co-design process in Antwerpen.

Questions for the Advisory Board: the questions to the AB are clearly linked to the challenges stated above.

Discussion

Henk (comments and questions): Congratulations, good case, media attentions, results and issues even extent beyond initial data set. But low hanging fruit. Could you go to other parties who didn't do as well in local elections to discuss some of the data, but from a starting point of their agenda? Also, can you do something exciting - e.g. using green infrastructure to address heat stress or to run scenarios how green infrastructure would affect situation on heat stress or noise?

Stijn (response): We actually have data and knowledge on this issue, for example make visible differences in places with and without green spaces, by measuring both we (try to) make the data and effects visible.

Uta (additional comment): We could also bring in Tygron now and with their powerful gamification tools explore experiments as you suggest, create awareness for the potential for change.

Henk (comments and question): Terrific scope, also ideal variables for people to measure - simple technology, immediately something that people have an opinion on - I also liked the model in the Dutch DC, but you should pour water on each garden model - or include such visualizations in the computer simulation - what is the reaction in the new place?

Stijn (response): Antwerp is really excited. Initiated by them, suggested to work on these variables - in Antwerp already many campaigns on air quality, but on heat stress we are the first.

Liselott (comments): to take next step, you have great stakeholder group, so seems you should be able to reach high data quality - consider engaging a postdoc or genuine research staff to work with the data, e.g. infrastructure analysis in landscape perspective - use as (additional) feedback (at another level) to decision makers. This could have possibly showcase potential, even at the national level.

Barbara (questions): What do you expect most - voluntary citizen action, or closer connection with city authorities? Do you wait for people to take action like putting on a green roof, or are you trying to actively stimulate change, e.g. policy change?

Stijn (response): Part of the group discussion - who do we expect to take action? Very different perceptions in group.

Henk (comments): Maybe you are forgetting third way, which might be most important one: make citizens talk about (planning) policy. That is the engagement you might get based on the collected data. Planners actually have trouble getting citizens engaged. I see two main reasons to do a project like this AT ALL - generate new data, or communicate with planners and stimulate collaboration. You don't change policy, you show that citizens are willing to engage, and then it is somebody else's job to change the policy.

Stijn (response to comments): Noted and a lot of activity driven by cyclists federation which lobby intensely to make Mechelen the most cycling friendly city in Belgium. There is an upcoming opportunity for redevelopment of an industrial site; there is the intention to use the Tygron engine for a collaborative planning experiment. The infrastructure analysis could provide other feedback. There is potentially more use to tie this into Air Flanders and have maps that add to the validation of the data.

Barbara (question): Are you trying to change policy or drive specific action - like putting a green roof on their house?

Stijn (response): It's both, hopefully going hand-in-hand.

Henk (comment): It's more important that the citizens take an interest in planning policy, which would spark a higher level of policy for the city.

Uta (comment): The door has to be open from the policy makers in order for citizens to be involved. You can't necessarily implement all requested the changes, but the idea is to get the dialogue with citizens going.

2.3.3 RitmeNatura.cat (Spanish DC)

***Presenter:* Camille Pelloquin, STARLAB.**

Activities: Ritme Natura is based in Catalonia and working on phenology and climate change. We have gone through methodology proposed by the project and now have the platform and social media with

Natusfera, a platform originally designed to measure biodiversity. Natusfera measures the location, time, species, and it allows people to be able to ask crowd-sourced questions, if you don't find the name of a species or have difficulty identifying it. This is similar to the OPAL project in the UK. Last year, we had an event (translated as "After the end of the world") that was presented with a museum and an environmental health clinic. There were dissemination events, including demonstrating various tools for observation at the Barcelona Science Festival. Some stakeholders were already working on phenology - presented at IEC Phenology and Global Change.

Successes: Platform is up and running, and there's an engaged stakeholder group; long-term agreement (MoU) with CREAF-Meteocat

Challenges: We need more observations and more observers. How do we get people to go home and 'do their homework'? Long-term sustainability? There's a gap between data collection a period and actual climate change and mitigation policy. We need much more data over time. Most be careful to respect extant data collection protocols and activity already being done by groups.

Next steps: Co-design session for January 2019.

New actions: guided nature part work for schools and other engagement methods for school group

Discussion

Barbara: Most critical question for me is what happens in 2020? Especially if you engage more people, you need to offer something. It would be a disaster to just let it collapse. Advice of WP3 available and needed.

Uta (additional comment): build it into the project DNA, with focus on the sustainability of the six observatories from the start as part of the co-design methodology and by WP3.

Liselott (comments and questions): To create an educational package, the collected data needs to be augmented with information, for example if you collect data on species, then you need information on the species. But also consider that the outreach affects data quality. This is known to create potential problems with existing communities. How much does the future data collection, collect knowledge on species? We had long discussions in Sweden on this issue and in some cases collected data does not go into the system until it has been reviewed by an expert. One opportunity is to work with checklists that simplify data collection by citizens (what to report and what not to report, even in terms of species in their own garden). You could create your own checklist.

Camille (response): Natsufera operates by allowing submissions of species that you don't know. "I have seen THIS" - then expert matches and adds the tagging.

Uta (extra comment): also noted OPAL project from UK that has created interesting approach to deal with such issues.

Liselott (comments): Huge strides being made, in the meantime even AI might be considered. Using encyclopaedia live to check emerging standards at the global level, Sweden created a system called Artportalen on ALL swedish species, creating systems with comprehensive reference for schools. You should seek to integrate such tools into your system as there is much to get from these existing systems. You already have a lot, but what else to you need to create a package suitable for schools. Becoming a "qualified user" could also be an incentive.

Henk (question): You have collected data - how was this reported back to community? How will it be used?

Camille (response): Not yet reported back, but Meteocat reports back quarterly, planned to release it through these quarterly reports.

Henk (comment): Note how the Belgian DC used publication of a report to attract attention and more volunteers, make use of that. Advice on schools: Create an educational package that would be modular for the communities involved/needed.

2.3.4 VattenFokus (Swedish DC)

***Presenter:* Somya Joshi, Stockholm University.**

Activities: Interested in water quality specifically. Lots of campaign and measurements. Water Blitz in 2018. Regular sampling within CO and the wider country. Platform launched during a water week that was very high profile and we have a fixed date at the country headquarters. Measured nitrates and phosphates using the Earthwatch kits. We had a very hot summer, so some conversation in light of this context. In this CO, the community has been sampling over the last year.

Challenges: Sustained engagement with policymakers. Scepticism (by in-situ data collection networks) around data quality, which has been addressed in various dialogues, but it's an ongoing process. We also try to make sure they see the CO as complimentary, not a threat. The forward sustainability and who is going to take on the CO is the main challenge. We're also outside Stockholm, and the remoteness of the active areas is problematic.

Next steps: CO workshop with Tygron. Improvements to the platform for community members. Engagement with schools in Sweden (already working with 4). Presentation of results on 7 February.

Discussion

Henk (response): Is there a WP that looks at horizontal analysis on the cases?

Uta (response): This is in part of WP1. There was a lot of engagement with people in a variety of sub-groups (experts and not). The wider COs have a few different objectives, depending on interests and involvement. Participation varied but tried to get a full range of voices.

Liselott (comment and question): Trust in data issues seems one of the most important. Can the data be more specific, matching to types of water systems, or also consider looking at seas?

Somya (response): Planned to scale up data collection, start with one small water body and then evolve

Henk *(question)*: In data - do you have a work package on that?

Joan (response): Yes.

Henk (comment): From a non-expert perspective, it should be sufficient to show very simply variables - difference between accurate measurement and highly granular data. We found a difference between expert collection and citizen data. We looked into it and found that the tendency is the same, but certain differences exist, it has to evolve further.

Liselott (comment): As mentioned before, work to analyse the collected data every important.

Somya (response): We are considering bringing in MSc or PhD students to conduct analysis and work with the data.

Barbara (comments and question): To sustain interest - have you profiled your stakeholders, who are the ones inclined to contribute - older, younger, man, women, and nature lovers? Who is concerned about water quality?

Somya (response): Extensive stakeholder engagement strategy in project, citizens directly impacted as they live around the lake, various groups of policy-makers and scientists identified in the exercise, it was clear that people were hall interested though coming into project from different perspectives. Difference

between group going out during the Blitz (volunteers), and the group involved in designing the wider CO - more involvement of decision-makers in the latter.

Barbara (question): So you identified them - did you get the ones you were looking for?

Somya (response): Yes, although participation fluctuated. Challenge is to get people to attend the formal co-design sessions, but all voices kept on board.

Liselott (comment): Make sure to have different types of information (nature for nature lovers, bath water quality for leisure) to make it easy to engage a broad a range of citizens, may be a way to make you more attractive.

2.3.5 Maasai Mara Citizen Observatory (Kenyan DC)

***Presenter:* Hans van der Kwast, IHE Delft.**

Activities: Very dynamic year with campaign at world Wildlife Day, MMCO tools training, stakeholder engagement at a plenary, roadshow, workshop, training, and a mapathon. Maasai Mara CO has a twitter stream and apps that include significant amounts of data that can be linked from TAHMO.

Successes: Improved engagement of Maasai Mara University. Platform enhancement, mapping of some points for the first time that were usable to citizens. Deployment of more TAHMO weather stations. New key stakeholders and support of local chiefs. Re-engagement of county government. Community training on tools. More active and larger CO group primarily via WhatsApp.

Challenges: apparent indifference by the County government; difficulty finding self-motivated champions rather than opportunistic members; getting locals to collect data w/o getting paid; Limited community building, willingness to cooperate

Next steps: Improvement of tool feedback, building relationships with key stakeholders, diminish concerns about data quality, work on knowledge component of platform and full launch of platform (when politics are solved).

Questions for the Advisory Board:

- How feasible is it to set up a full CO with all stakeholders including government in a sustainable manner?
- How to deal with politics?

Trying to think about the difficulties that show up in the cases in EU cases vs Kenya, might be a starting point.

- Can you make the case study fit the reality instead of vice versa?
- Can you start with the common ground that everyone would agree on?

Discussion

Liselott (comment and question): Maybe you need a different model of consortium, as there's more than one to choose from. Can you see the need for water as an organising part of the project?

Hans (response): the flooding issue is the most present part of the situation that everyone sees as important.

Uta (additional response): Everyone sees the project as a resource, regardless of whether they are representing themselves as individually or an organisation. Basic needs are just such a strong issue, that the short term is paramount.

Liselott (question): Is there a way of looking at the short term interests that could eventually feed into the long term?

Henk (comment): The disruptive issues must be made visible.

Hans (response): That's the threatening part to Marok County, and as soon as those processes are examined, there's hostility. If you take the most important stakeholder out of it, you would take out the County, but maybe some remaining ones could have better participation.

Uta (additional response): But there might be even more fear from those that remain (possible retribution).

Henk (comment): The mapping could be totally sufficient for an outcome.

Liselott (comment): Maybe the answer is to keep it on such a level that the mapping is the best and immediately useful outcome.

Henk (comments and questions): Can you turn it around - if we made a list of differences between African and European conditions and see if disadvantages can be turned into advantages? Awareness for your own interest, being political, speaking out can also be strengths. Can we observe something that is in everybody's interest - which nobody can disagree with?

Liselott (comments): Yes, these challenges are very hard. It sounds like you needs to assemble some sort of consortium to be able to keep various stakeholders involved, and note that there are different types of consortia, different issues might be closely connected, core issue might be to preserve wildlife to make money out of it, but you actually need water for that.

Hans (response): Flooding was actually found to be a rather apolitical issue that was interesting to all stakeholders.

Uta (additional response): Situation actually much more dire than visible on the surface. Livelihoods intrinsically connected to the issues at hand, and while project is supposed to balance interests, for participants the project is a source for resources. Concern is to put food on the table, so project needs to be acutely aware of and how the project is disconnected and distant from the daily lives.

Liselott (question): Can we include how income is affected by resources and maybe provide some limited incentives in the short-term?

Henk (comment and questions): Dealing with individual and collective rationality? If you can show that mapping or water data can affect all livelihoods, you might get all stakeholders behind you, tragedy of the commons is very basic. Maybe a drastic vision like in the Netherlands can help?

Uta (response): These pictures have all been used, people know that it does not leave money in their pockets.

Hans (additional response): Common ground is visible and has been identified in co-design session, but turning it into practice, assigning roles and ownerships is much more difficult, at that point the discussion turns violent.

Liselott (comment): To keep system alive, focus on driving forces in terms of identifiable individual interests, maybe target on a really small scale to create visible showcases on a practical level.

Hans (response and question): Thought experiment - taking corrupt stakeholder out?

Uta (response): Would rather that we increased representation of different groups and wider range of stakeholders - and then actually create visible and little-contested results, like putting houses on maps, and show, here, we are putting streets on the map. Problem might start as soon as the jurisdiction of an authority gets touched.

All of the members of the Advisory Board (comment): Maybe the small items and focus on safety is really the starting point?

2.3.6 Niti Luli Sesheke & Mufulani (Zambian DC)

***Presenter:* Ellen Pfeiffer, IHE Delft**

Note: Bwendo Kabanda is introduced as new interim WWF DC Co-lead, who will be joined by the new Head of Partnerships in January. As he joined the project only one week ago, the DC will be presented by IHE.

Activities: The DC develops a digital support infrastructure for community-based natural resource management in Zambia, which is a formal institution under Zambian law. The intended design is wuite "big" and visionary, but is fully based on priorities set by local communities during extensive village roadshows. One of the core issues the CO will address is that communities are dealing with dozens of departments and donors that don't coordinate their activities well.

In the Zambian DC, the GT process had to be slightly adjusted in order to make the community interactions happen. On the one hand, many stakeholder require more time to engage with the topic and form an opinion. O the other hand, conflicts between stakeholders mean that safe spaces for one or the other side were required to have a frank discussion before all sides came together. Accordingly, we had very targeted workshops with specialised groups. At this point, we started to have the platform prototype validated.

Successes: we have high level political buy-in enabling the support of a formal institution, and delivered a joint multi-stakeholder roadshow with a coordinated group of projects. Communities have had negative experiences before, so trust-building is important. There was a highly positive response to the app - we are simplifying something that is already familiar, so they see connection to what is happening now and what will happen in the future. Biggest breakthrough - The Zambian NAtional CRB Association endorsed the platform, so we will now move to develop the CO as a national level CBNRM Observatory with local subgroups.

Challenges: Highly political process needs time. Project-specific: Exchange of enabling technology and addition of Upande as technology support partner; Leadership and staff transition at WWF Zambia; Highly supportive Assembly representative passed away, and local Village Action Groups had new elections.

Questions for the Advisory Board:

- How can we balance GT branding and local branding for ownership?
- When we upscale to other areas, how can we keep the responsiveness of the co-design but in a much faster process?
- Evolving the full platform will take years, so as part of the exploitation strategy we need to train developers and build partnerships for future services - any ideas?

Discussion

Liselott (question): Question about structure and membership?

Ellen (response): It's not a membership but it's a non-profit public sector organisation. There are 72 CRBs, and the national group is an umbrella group

Barbara (question): CRBs are elected? How do they work?

Ellen (response): Law on community resource exploitation allows mobilized community groups to engage democratically with the government - and the it's the way that the gov't can engage to manage resources. There are 4 parallels structures, including appointed district officials, locally elected councils, traditional authorities with village headman, and 4 laws on natural resources management in all.

Henk (response): What's the data collection plan? On biodiversity, logging, etc.?

Ellen (response): We are digitising things currently collected with pen and paper. However, the app will allow a broader range of data to be collected. Data collection plan is currently being discussed, as we have to address sensitive issues. For example, some data may only be publicly available after a time lag to protect animals from poachers, or to protect witnesses.

Liselott (question): Can you get a longer support agreement from the WWF to get local authorities to own the system?

Ellen (response): e're trying to avoid this, because of WWF processes and limited geographical reach of work (four areas in Zambia), history of WWF funding and structures that were related to the govt. This is why there was a need to get a local institution to be part of the structure.

Bwendo (additional response): WWF is partnering on national resources management, wildlife issues, and other parallel issues at national level, so it would be a change in course. But the transition would make WWF into another long-term stakeholder and needs to be seen as a partner.

Liselott (comment): The most important thing is to get the NCRB association to take this up.

Ellen (response): They came to us to say that they want this. We didn't have to ask.

2.4 Work Packages

2.4.1 Work Package 1: Social dimensions: co-designing citizen observatories

***Presenter:* Uta Wehn, IHE Delft.**

Activities: Focuses on social dimensions of co-design sustainable COs. Bring in all the learnings of the process into co-design guidelines. Did an initial analysis of incentives and barriers and updated stakeholder analysis. Stakeholder engagement strategies per CO. Reverse Impact Journey to achieve CO objectives. From DC to CO with identity and purpose. Research about COs has included economic impact of data fusion (method) and creating a baseline for impact assessment.

Co-design: There may be a difference in who has time to participate in co-design processes vs who should be participating regarding representation. But at the same time, we have to be opportunistic. Also it's an iterative process, because we don't necessarily know who should be part of the CO until the issue evolves. There are incentives and barriers to non-participants who may not know/understand what a CO is. We also have to cut through the complexity of achieving the CO objectives.

Year 3 Roadmap: Year 3 will be about upscaling CO engagement. We have to update the analysis of incentives and barriers and do an impact assessment in the DCs, though that part of the process has been moved to as late in the project as possible.

Questions for the Advisory Board:

- Work ourselves out of a job by fostering community leadership for the sustainability of the COs?
- How do we translate the scenarios of the business models to make sure they can engage properly, especially with business cases?
- How do we reach the non-participants?

Discussion

Barbara (comments): We still have to create the demand, but what if they decide that they can live without us. Maybe they have no solutions but aren't waiting for ours. If we have to accept that different communities don't grab this opportunity, we might have to do so.

Uta (response): they need it but they don't realise it or don't see how CO can be part of the solution. It remains difficult, even if we co-design. I think there's further refinement needed.

Henk (comments): We need to turn it around - citizens are collecting data. THAT is the key of the project. It's not to get the community leaders to collect the data, but to say that you have it, and it's valuable.

Uta (response): we need to hand this over, because we're the impetus.

Henk (comment): The case studies have to show that all you have to do is continue what has been designed.

Uta (response): People collecting data is not the main driver.

Liselott (comments): In some cases, it will continue. If it is a success, it will continue. It's always hard to have a project continue without funding; it's the lifeline of the project. There will be a meeting in Leiden in 2019 for making standards specifically for citizen science, and that's the way for making these processes and methods last.

Uta (comments): Indeed, a legacy is the method.

Action point: Leiden conference, find information on it.

Barbara (comments): Contradiction remains with all of us that projects like this do not really come out of demand, we supply, and we create. We have to create demand. We have already broken the rules when we applied for funding with the EU. Now we have to hope that they see the opportunity

Uta (response): Have to partly contest. Groups are aware of problem, just need to see if and how a CO is the solution to that problem.

Henk (comments): Think you need to turn that around. Citizens collecting data is at the heart of it - genuinely NEW data, this is what I got from the start. Community leaders don't have to wait for policy makers to take action, you can do it yourself. All the project is to prove that communities can simply continue

Uta (response): Not community leaders, CO community leaders, dealing with variety of attitudes, including "collecting data is not my job, thank you very much".

Liselott (comments): I believe this will be successful, that COs will continue, but it's always difficult to keep a project alive without resources. Community in Leiden working on standards for citizen Science

Uta (response): Important to realize we are aiming to achieve two goals: Create sustainable COs, and preserve method and the lessons learned from the experience

2.4.2 Work Package 2: Enabling technologies

Presenter: **Joan Masó, CREAF.**

Activities: Progress and achievements in technical design Data quality modules - Have various examples or data quality modules; the tool would generate reports for each case. CO platform and data collection (presented some screenshots of maps). Working with 2 other universities outside the project to create land use mappers.

Challenges: providing indicators obtained by the web page and provide information for the measurement of impact of DCs. Finalising platform developments in time to collect the data. Define and develop the significant roles and expectations for any DC: the new approach

Year 3 Roadmap: Finalise technological platform in each DC, collect and aggregate data in the DC, Implement validation/QA methods in the DCs

Questions for the Advisory Board: How to ensure the appropriate shared development of Land Use Maps?

Discussion

Liselott (comments): Data quality is huge, so define it more clearly → taxonomy, measurements, map images. It's a diverse topic, so you need to define it better if you want to standardise it. Starting with the international standards is a good place to begin. When you get the ISOs into your system, you can get others on board. Take contact with the group to get an idea of what types of data quality measurements are important for each.

Joan (response): I agree very much, and it's also important to recognise what kind to data the COs are collecting, how it might be different, what is difference it makes, how it can be used

Henk (comments and question): You asked the question about the kind of data collected by citizens that might be different - and what could the the uses, how to understand with metrics are useful to the DCs. Do you want to develop the LUM and put all 6 projects in there?

Hans (response): We are starting off with OpenStreetMap data, and the data collected in the DC. We are collaborating with 2 other universities and will put the data sets together and take out inconsistencies to make one product.

Henk (question): so you're measuring land use in 6 cases?

Hans (response): Measuring land use emerges from other things, we don't measure land-use itself.

Liselott (comments): Then just trying to assess all the parts ongoing in different projects, to create one thing that is useful. You need to define what data quality means - in connection to maps, to phosphorus, to xyz, need to see international standards, and then integrate it into the project. Understand you have done work with the GEOSS communities, you should make contact with ISO, and see which approaches are compatible.

Joan (response): challenge how we make people understand that citizen data that is different from official statistics may still be useful. Not just talk about data, also talk about usage.

Henk (question): What are the examples of citizen data that is different from official data, in order to understand what the quality issue is? Reliability, validity… create matrix of issues? Land use mapping: create on mapper and then integrate data from all six cases?

Hans (response): Planned to do that, realized that approach has already been done in other projects. Also, the dynamic changed due to the co-design project. Now vision more to collaborate with 2 universities working on web access, use data from the demo cases for quality layer and validation, as that quality control and calibration needs very different types of data. Ground Truth 2.0 offers am opportunity for the collaboration with partners.

Liselott (comment): In that case, just creating coherence between the different projects will already be very valuable.

2.4.3 Work Package 3: Business development to accelerate uptake

***Presenter:* Ana Pérez, STARLAB**

Activities: We do market analysis to see what GT analysis for possibilities for exploitation and financial sustainability. Looking at each CO, we translate incentives and barriers into value. What do each of them offer in the away of value? We are talking about apps, data collection, what are the costs that would be associated in their provision. It's not always easy to look for incomes when you are measuring social phenomena. COs have to identify clearly the impact that has value for them through creation of a revenue stream toolbox. Who is giving you money to do what? What is the cost avoidance? How can I measure the impact of the observatory to translate it into a financial implication?

Challenges: Build on the business models while the GT and the COs are still under development/evolving. Translating the social impacts into financial value. How to clearly identify the benefits that come only from the CO?

Year 3 Roadmap: Update the market analysis, including the GT tools. Implement revenue stream toolbox, provide guidelines for business models, and integrate long-term sustainability discussion into the periodic DCs.

Questions for the Advisory Board:

- Is there a thematic topic that's easier to implement from a CO perspective?
- What are the main challenges associated with a CO's long-term sustainability?
- What are your expectations for the future of COs?

Discussion

Henk (comments and questions): It's important to put values in front of us? How to value your CO? Ask what it would cost to collect the data that your CO does in placing sensors, human hours, etc.? Alt. there's a real governance value here - get people talking about local issues that this obviates - lesson the needs/costs for public participation. AND if you look ahead, it's even a new way of managing local environment - and the African case studies might help highlight this with how people are collecting data.

Liselott (comments): What Henk said is good, it's important to help understand the value of crowdsourcing. We did this to get our own government to give money for our COs. It cost 2 euros for each observation point. Another way is to make definitions using short-term projects to market this in order to gain data. You can advertise it, you have a method, and i… Long-term project is needed to address the different stakeholders involved. The challenge is the long-term financing for a project, because it costs a lot to keep the systems alive for those who want to report.

Barbara (comments): Do you know of COs that have survived?

Uta (response): We know one in Italy. The process/idea is now part of the long-term process that has been worked into the policy and has written it into a technical tender - even though the actual CO isn't still running. They used the financial argument of cost savings.

Henk (comment): Traffic patterns/blockages can be reported through an app, and it's immediate and usefull.

Liselott (comments): The problem is that someone needs to maintain the system, and that's the actual cost. About 80% of costs are about maintaining the system.

Henk (comments): Can't you just compare what it would cost to collect data in another way? Must be possible to quantify that. Also, there is real governance value in this. If you get people to talk, you don't have to do it another way. For example, in Mechelen I would do public consultation process. You should capture that.

Liselott (comments): Understand the value of crowd-sourcing. We were attempting to quantify value of observations, came up with 2 euro per observation, and we have 75 million in one system. Could make business model out of defining short-term projects using the method to collect data, might not need to have long-term commitment. Advertise and market for short periods, could reap loads of data. Distinguish these two models. Really cost a lot to keep systems alive, 80% is maintenance.

Henk (comment): When I listen to radio, citizens can call in, can't you make business model out of that?

Liselott (comment): Maintaining the system really important.

2.4.4 Work Package 4: Dissemination and communication

Presenter: **Joan Masó, CREAF.**

Activities: Raise awareness of the project. Increase engagement and exploitation of the results = but it's not the dissemination of the individual cases.

Year 2: We had an evaluation of the communication toolkit, poster highlighting methodology, adapted to the GDPR, lots of social media, several F2F meetings, contribution to several data quality groups, proposal to the EC EuroGeOSS.

Year 3 Roadmap: Update GT2.0 materials. Consolidate presence at relevant initiatives/events. Organising the GT2.0 Week 2019 - organise lots of events.

Challenges: Coordination with other work packages.

Questions for the Avisory Board:

- What do you want to see at GT2.0 Week?
- How to export the methodology and best practices developed in GT2.0?

Discussion

Henk (comment): Highlight the similarities and differences of the 6 practice cases.

Liselott (question): What are the generalised AND individualised methodologies for each DC that are transferable?

Henk (comment): You have have to do well in explaining the the really general methodology for DCs - that's the value!

Liselott (comment): Also explain it to the policy makers.

Henk (comments): Also important not to look too much at the short term. You have to see this in a 50-yr long, term view. That's the activation point about climate change.

Liselott (comment): Make an event in Africa, but timing might be off.

Ellen (comment): Adaptation futures conference - every other session was about co-design with govt' and everyone was asking how to get connected with everyday people.

2.5 Final words and closing

Final reflection: Very useful to have had the contributions of the AB members.

Uta: Just to be clear, there won't be a 4th AB meeting, but we would love to have you at the GT week. We will make resources available to enable you to attend.

Liselott: Offers good luck and best wishes.

Thanks all around.

3 Actions

3.1 Action points

Ref.	Action point	Who?	By when?
F2F.AB2018.1	Find information about citizen science conference in Leiden https://biodiversitynext.org/ 21-25 October, Leiden the NL	PMA at IHE	14/12/2018
F2F.AB2018.2	Ground Truth to inform the advisory board about the Save the Date for the Ground Truth 2.0 Week 2019.	PMA at IHE	14/12/2018

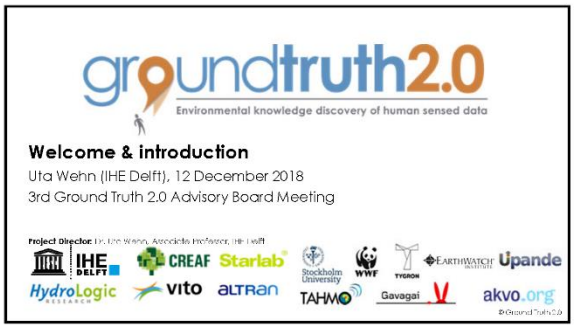
Annex 1: Agenda and list of participants.

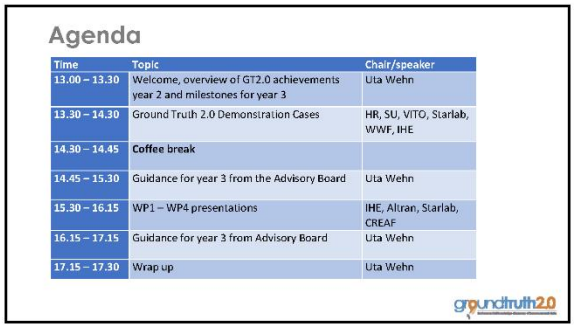
Time	Topic	Chair/Speakers
13:15 – 13:35	Introduction	*Chair*: Uta Wehn *Speaker*: Uta Wehn
13:35 – 15:15	Demo Case presentations and discussions	*Chair*: Uta Wehn *Presenters*: Rianne Giese, Stijn Vranckx, Camille Pelloquin, Somya Joshi, Hans van der Kwast and Ellen Pfeiffer
15:15 – 16:45	Work package presentations and discussions	*Chair*: Uta Wehn *Speakers*: Uta Wehn, Joan Masó and Ana Perez
16:45 – 17:00	Wrap up	*Chair*: Uta Wehn

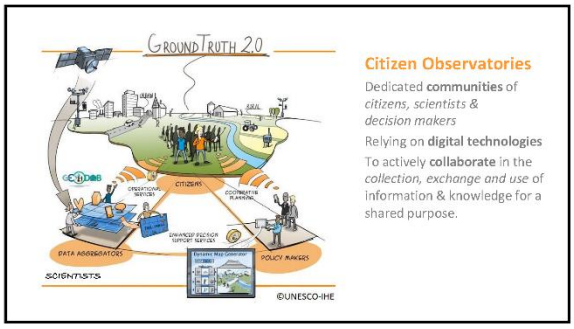
Name	Organisation
Advisory Board Members	
Barbara Anton (AB)	ICLEI Africa
Liselott Sjödin Skarp (AB)	ArtDatabanken
Henk van der Kamp (AB)	ECTP-CEU

Name	*Organisation*	*Role*
Uta Wehn	IHE Delft	Project Director, WP1 leader
Ana Perez	Starlab	WP3 leader
Joan Masó	CREAF	WP4 leader, WP2 Representative
Camille Pelloquin	Starlab	Spanish Demo Case leader
Rianne Giesen	HR	Dutch Demo Case leader
Somya Joshi	SU	Swedish Demo Case leader
Bwendo Kabanada	WWF Zambia	Zambian Demo Case leader
Ellen Pfeiffer	IHE Delft	Zambian Demo Case representative
Stijn Vranckx	VITO	Belgian Demo Case leader
Hans van der Kwast	IHE Delft	Kenyan Demo Case leader
Cheron Constance	IHE Delft	Project Assistant

Annex 2: Presentation by Project Director Dr. Uta When







GT2.0 plenary meetings

- Kick-off meeting, Delft – Sep 2016
- Plenary meeting, Barcelona – Dec 2016
- Plenary meeting, Stockholm – May 2017
- Plenary meeting, Mechelen – Nov 2017
- Plenary meeting: Talek – May 2018
- Plenary meeting : Delft – December 2018

Time line

Pyramid sessions (*March – June*) **Testing & pilots** (*July onwards*)

Year 1: Co-design & prototyping | Year 2: Upscaling | **Year 3: Consolidate, create impact**

September 2016 — *December 2019*

Feedback on mock ups by co-design group (*June onwards*)

Roll out of 1st release (e.g. launch events) & process integration

Roll out of 2nd release

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Project objectives (1/4)

Specific objectives GT2.0	Ground Truth 2.0 outputs	
Demonstration of societal and economic benefits		
Objective 1: *To **engage citizens** in large-scale data collection and maintain their **active and continuous engagement** in the observatories for cooperative planning and environmental stewardship.*	• **Active citizen observatories** set up at the six demonstration sites (WP1-2) • **Mechanisms** for cooperative planning and increased environmental stewardship established (WP2) • **Guidelines** for setting up sustainable (active, continued engagement) citizen observatories (WP1)	• **Methods & instructions** (WP1) • 6 DCs: multi-stakeholder co-design groups • Research into **incentives & barriers** (WP2) • **Alignment** of platforms with user insights (WP2) • CO toolkit (WP4)
Objective 2: *To **customise, test and validate** interoperable and scalable technologies for large scale citizen-based data collection at lower costs compared to existing data sources*	• **Operational systems** for citizen-based data collection: i) Capable of handling large amounts of data, ii) A global network of sensors deployed without high infrastructure expenses, iii) IT tools ready, working and intensely used by citizens (WP2) • **Data fusion** by integrating all possible data sources (data via crowd-sourcing and social media monitoring, existing in-situ observations and remote sensing) to accurately model the rural and urban hydrological cycles to describe and determine the effects of abundant water, water shortages and other changes due to climate change and population growth (WP1) • **Ensure data quality** (spatial, thematic and temporal) (WP2) • **Evidence of cost-reduction** of citizen-sensed data compared to existing data sources (WP1)	• Tailored approach for documenting **requirements** (WP1) • Captured current **in-situ** monitoring networks in DCs (WP1) • 1st version of **platform deployed** in 5/6 DCs (WP2) • **Tranposition** of standardisation & interoperability debates into DCs (WP4)

Project objectives (2/4)

Specific objectives GT2.0	Ground Truth 2.0 outputs	
Demonstration of societal and economic benefits		
Objective 3: *To **provide technologies and approaches** that address concerns about the use of citizen-sensed data in terms of **privacy, trust and accountability***	• **Technical solutions and protocols** for layering and aggregating data before passing it on to other actors or agencies to ensure anonymity based on local regulations (WP2) • Appropriate **data policies** developed • **Practical guidelines** for awareness raising about adopted policies and technological solutions to foster trust prepared (WP1, WP4) • **Communication material** produced to clarify to citizens what, why and how data are collected (WP4) • **Protocol** developed to evaluate veracity of citizen-sensed data to eliminate unintentional or intentional errors (WP2)	• Facilitation of gathering user requirements (WP1) • Privacy concerns considered in all CO platforms (WP2) • CO comms material on privacy (WP4) • Data quality standardisation (WP4)
Objective 4: *To **improve land-use mapping** in terms of availability of land-use data, consistency of time series of land-use maps and accessibility to land-use information*	• **Innovative web-based service** for worldwide mapping and updating land-use data, building on existing mobile applications, sensors, community driven services such as OpenStreetMap as well as Copernicus and GEOSS, to generate land-use maps and time series for multiple uses at multiple spatial and thematic resolutions (WP2)	• **Research** on relevant developments • **Revision** of initial approach • **Collaboration** with external initiatives (WP2)

Project objectives (3/4)

Specific objectives GT2.0	Ground Truth 2.0 outputs	
Demonstration of societal and economic benefits		
Objective 5: To **empower citizens'** active role in planning, decision making and governance which results in the improved management of environmental issues	• **Fully functioning citizen observatories** for land resource management in the six demonstration cases (WP1-2) • **Online platforms** actively used by citizens providing feedback and response to/from authorities (WP2) • **Evidence** about the citizens' involvement and contribution of data and additional information (WP1) • **Extensive citizen participation** in activities in environmental governance via data collection, cooperative planning and environmental stewardship (WP1-2)	• **Methods** to identify & target actors, processes and social practices to ensure CO relevance in DM (WP1) • **Targeted** messages in dissem. material (WP4)
Objective 6: To ensure the **long-term sustainability** of the citizen observatories	• **Sound business models** for the long-term sustainability of the citizen observatories of the demonstration cases (WP3) • Integration of citizen-sensed data into GEOSS at the same level as in-situ observations (WP4)	• Co-design methodology as **foundation** for long term CO sustainability (WP1) • **Market analysis** (WP3) • Efforts to integrate citizen data into **GEOSS** (WP4)

Project objectives (4/4)

Specific objectives GT2.0	Ground Truth 2.0 outputs	
Global uptake		
Objective 7: To create **business opportunities and market access** (EU and worldwide) for the Ground Truth 2.0 partners as well as other European companies	• **Road map for market uptake and exploitation** of the Ground Truth 2.0 technologies and services. Business development based on real-life demonstration of Ground Truth 2.0 citizen observatories in a wide range of settings (WP3) • **Strong business case developed** and **new market opportunities** created both inside and outside of Europe (WP3) • **Be a reference implementation** for a common set of interoperable standards for citizen observatories (WP2, WP4)	• Identification of **GT2.0 products** for market evaluation (WP3) • **Networking** as foundation for GT 2.0 to become reference implementation (WP4) • **Interoperability efforts** to create business opportunities (WP4)

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Thank you
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Environmental knowledge discovery of human sensed data
u.wehn@un-ihe.org
Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft
IHE DELFT
Starlab
vito
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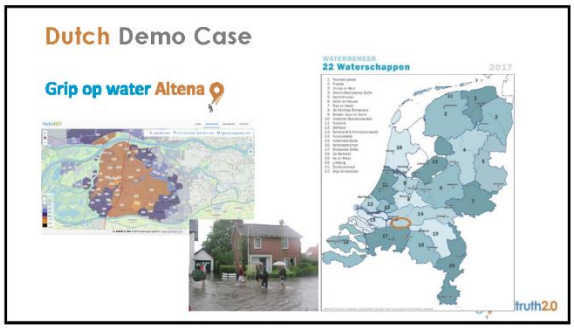
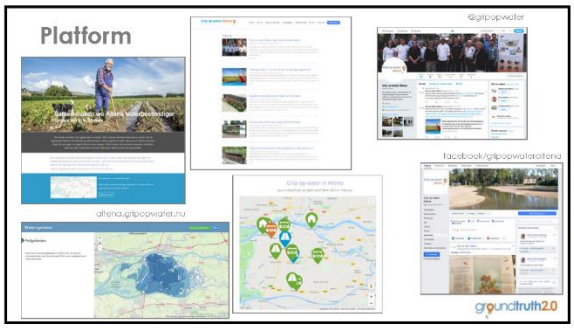
EARTHWATCH
CREAF
ALTRAN
HydroLogic
WWF
Stockholm University
Upande
TAHMO
TYSKRON
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 688744

Annex 3: Demo Case presentations

Grip op water Altena (Dutch DC)





Successes

- Stable core stakeholder group, slowly increasing in numbers
- Platform and social media are up and running
- Reached about 300 people at dissemination events
- Garden survey had 232 responses

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Challenges

- Increasing the number of active core members
- Reaching out to underrepresented groups (younger ages)
- Long-term sustainability of the observatory

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Next steps

- Public event on the garden survey results (January 2019)
- Planning other activities
  - Around water board elections (March 2019)
  - In Week van ons Water (May 2019)
- Incorporation of dynamic water board data in the platform
- Other platform improvements: reporting functionality
- (Re)engage stakeholders according to engagement strategy

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Questions for the Advisory Board

- How to match the different stakeholder incentives in the co-design group?
- How to convey a simple and clear message at dissemination events?

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Thank you

Project Director Dr. Ida Wehn, Associate Professor, IHE Delft

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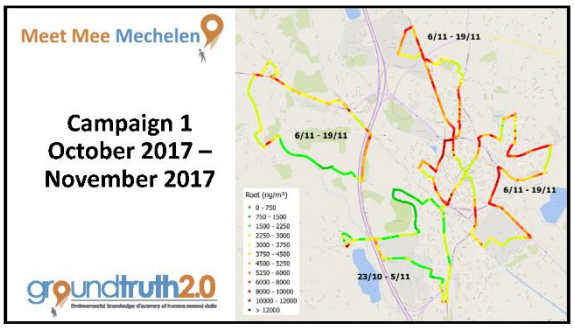
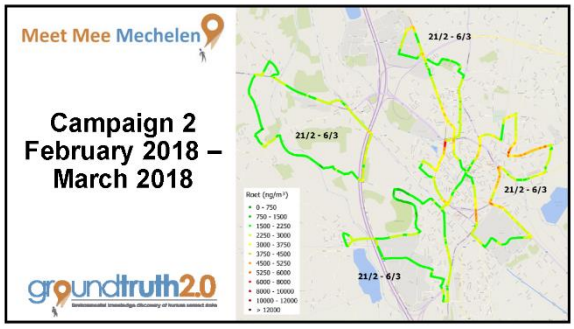
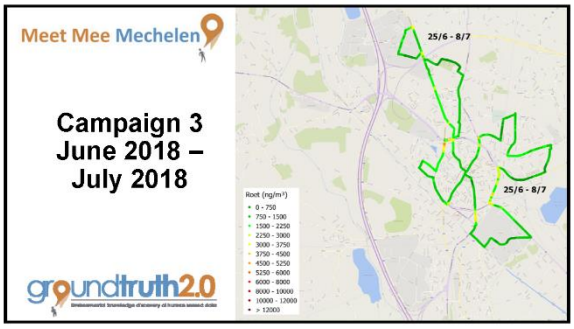
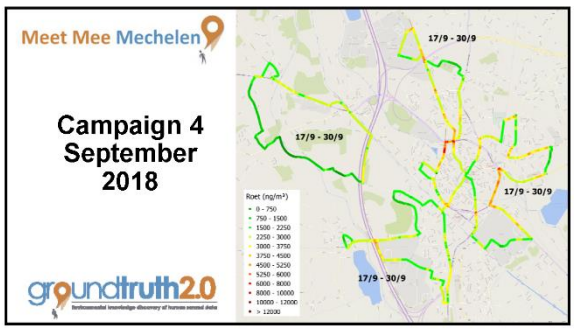
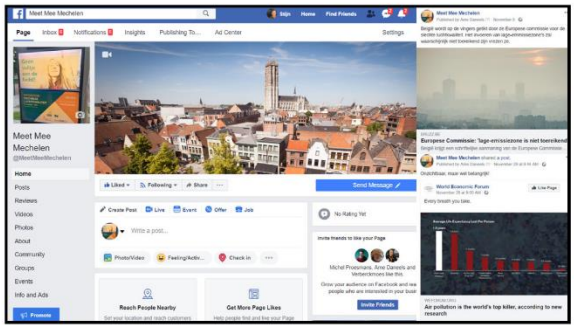
Meet Mee Mechelen (Belgian DC)



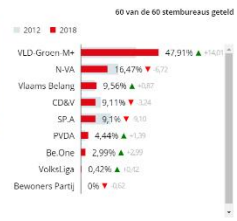








Mechelen: Elections



- Air Quality and environment received much attention
- Municipal councilor remains in place
- MMM report with advises and insights on air quality

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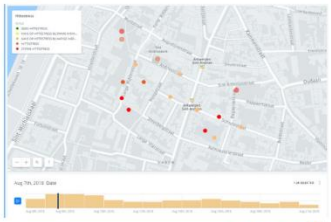
Heat stress in Antwerp: Starting with a blitz



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Challenges

- Broadening our audience
- From observations to actions to improve our environmental quality
- Frictions in group: Difference between CO and environmental organisations
- Involving urban planning

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Next Steps

- MMM Working group Air Quality:
  - Report with analysis of current situations and list of possible measures
  - Tour of Mechelen: reaching more people
  - Discussion with new city council
- MMM Working group Noise:
  - Plan an open discussion on impact of highway on liveability
  - Events and parties: Should it be so loud?
- MMM Working group Communication:
  - After-movie of our campaigns
  - Physical presence in the city
- Antwerp: co-design and launch

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Thank you!

IHE DELFT · CREAF · Starlab · HydroLogic · vito · ALTRAN · Stockholm University · WWF · TYGRON · EARTHWATCH · TAHMO · Gavagai · Upande · akvo.org

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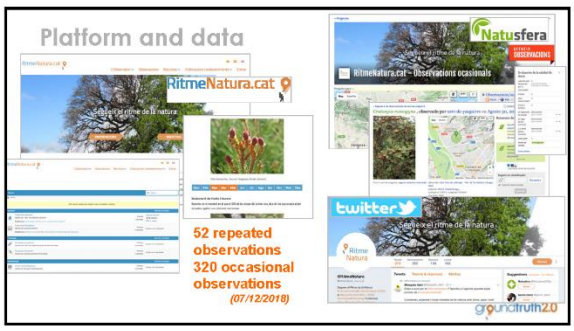
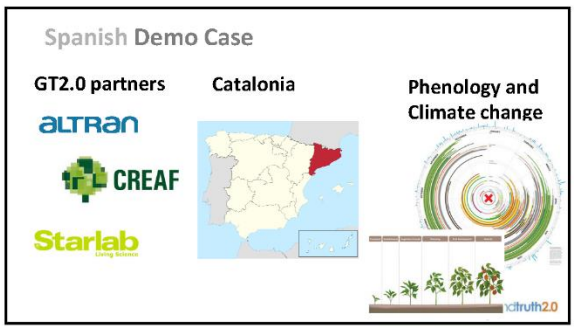
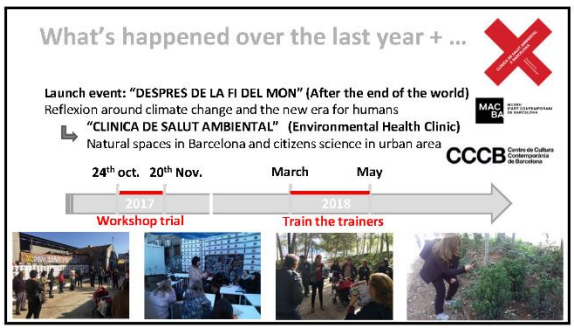
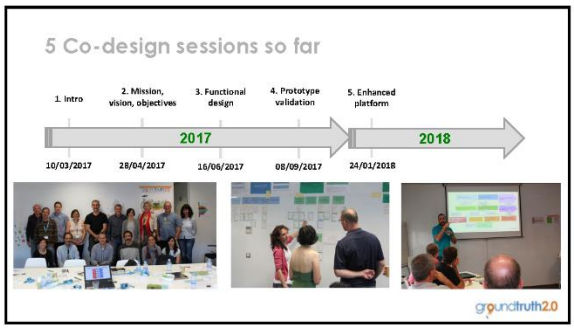
RitmeNatura.cat (Spanish DC)









Engagement / Dissemination events

10th June 2018
Science Festival Barcelona
Guided itinerary in the park observing Nature

Challenges

- How to increase number of observations and gain more observers?
- How to engage interesting sectors like educators/schools?
- Long term sustainability of the observatory beyond the life of the GT2.0 project
- There is a large gap between data collection and actual climate change mitigation policy change
- Don't want to interfere with existing communities and their data collection protocols but they would be great catalysts for long-term sustainability and multiplying number of observations

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Engagement / Dissemination events

28th June 2018
IEC Phenology and global change
Organised by ourselves, including a presentation of RitmeNatura, a conference and a round table

RitmeNatura.cat

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Next steps

- Working on a 6th co-design session for January 2019
- Planning new actions:
  - Guided nature walk in a park for schools / visitors to report phenological observations (talks ongoing with Diputació BCN/AMB)
  - New attempt to engage education sector through schools
- Incorporation of Meteocat's flow of data in the platform
- Other platform improvements: map visualization
- Participate in Oficina de Ciencia Ciutadana events
- Reengage stakeholders according to engagement strategy

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Successes

- We have an engaged core stakeholder group and platform is up and running
- Long-term agreement between CREAF-Meteocat has been finalized and is in revision by Meteocat legal services
- Well-positioned in Barcelona – e.g. included in the list of projects supported by the Oficina de Ciencia Ciutadana
- Dissemination/engagement events have been well attended by stakeholder group and general public

Name, date + location of event where presentation is given

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Thank you!

Project Director: Dr. Ida Wehn, Associate Professor, IHE Delft, i.wehn@unesco-ihe.org

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689444.

VattenFokus (Swedish DC)

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Swedish Demo Case - Vattenfokus

Somya Joshi (SU)
December 2018
3rd Ground Truth 2.0 Advisory Board meeting, IHE Delft

Project Director: Dr. Ir. G Wehry, Associate Professor, IHE Delft

IHE DELFT, CREAF, Starlab, Stockholm University, WWF, TYGRON, EARTHWATCH, Upande, HydroLogic RESEARCH, vito, altran, TAHMO, Gavagai, akvo.org

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Summary of Past Year - Highlights

Busy Year of Campaigns and Measurements!

Second Water Blitz in Spring 2018

Regular Sampling within CO and wider Sörmland region.

F2F meetings/ Workshops

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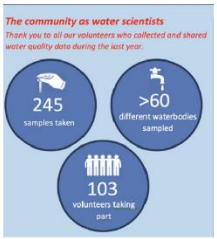
Update: sessions and activities

1. Testing the platform
2. Presenting to Policy Makers
3. Water Blitz
4. Launch Vattenvecka
5. Improving Platform
6. Communication of Results
8. CO Meeting & Serious Gaming

Jan, Feb, May, 2018, May, June-Oct, Oct-Nov, Feb 2019

Purpose: Awareness and Stewardship



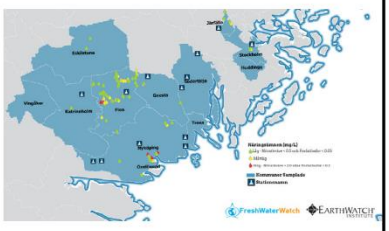
- Data collection on water health (N/P)
- Visibility of Climate and Environmental Issues – esp. in light of record hot Swedish Summer
- Community of Interest
- Platform for Dialogue
- Sustained and Repeated Measurements

Results from Water Campaigns

- Most waterbodies measured had relatively low levels of nutrient pollution. More than 80% of samples had a nitrate concentration below 0.5 mg/L and 60% of phosphate values were below 0.05 mg/L which reflects low levels of pollution in the water.
- About 55% of the total collected records indicated overall healthy water conditions.

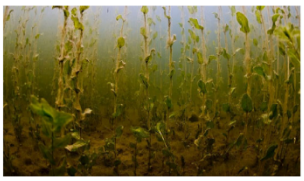
Situating Vattenfokus

- The Dunkern group has created a network of local stakeholders and started a *dialogue between the Flen Kommun, Stockholm University and a local Limnologist from Länsstyrelsen*, creating a partnership around local water quality.



Challenges

- Sustained engagement of key stakeholders, especially from the policy side
- Trust in Data Accuracy and Scientific Validity
- Geographic split between Stockholm and Södermanland County
- Limited resources



Successes

- Sustained community with regular water sampling over two years
- Dialogue between citizens and policy makers established over water health
- Interest growing in expanding CO to other contexts such as schools and Nature Conservation Society
- Local presence and visibility – invitation to second Vatten-Vecka in 2019.

Citizen to Policy Maker – Consultation 2018

•"As a participant in the EU project GroundTruth 2.0, in Sweden through VattenFokus, we have for almost a year made a survey of the waters of Dunkern and Mistel with regard to phosphorus and nitrogen levels. Our interest in the water area has thus increased as we become even more aware that Dunkern has eutrophication problems, mainly in its western part"

Next Steps

- CO Workshop in Feb 2019 together with Tygron, where the cooperative planning game will be employed – to visualise, engage and generate dialogue on the data collected via CS campaigns so far
- Presentation of results and progress of CO to Nyköping County – Feb 7th
- Preparation for next Water Blitz together with NSF (Nature Conservation Society) – Spring 2019
- Engagement and Roll out with Schools across Sweden (already 4 on board)
- Improvements to current Vattenfokus platform and interface to increase impact and accessibility for CO members
- Sustainability Efforts – applications

Thank you!

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft, u.wehn@un-ihe.org

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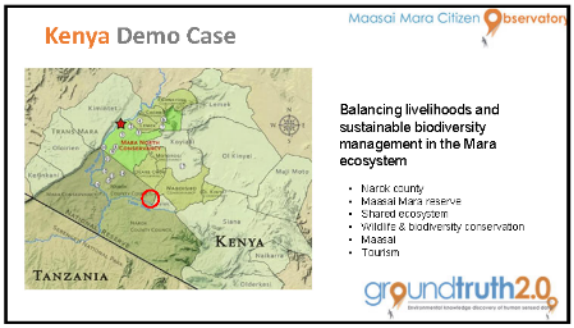
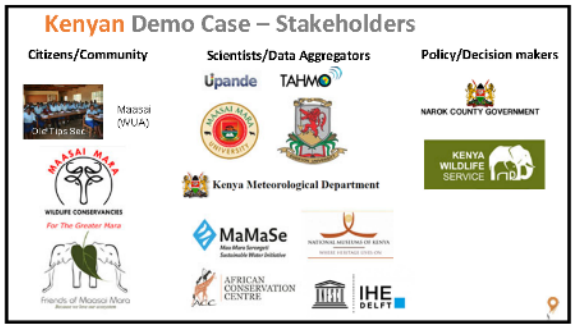
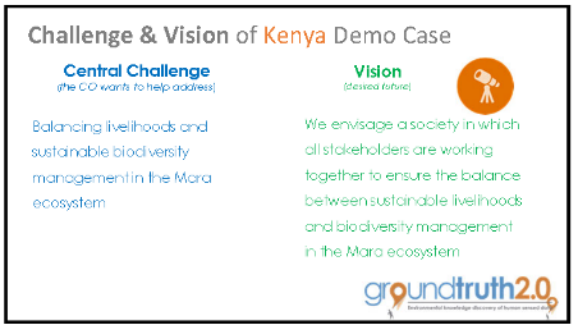
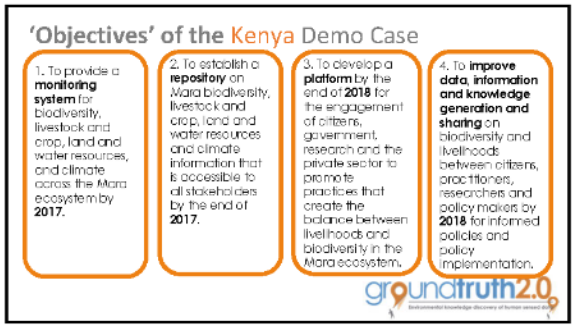
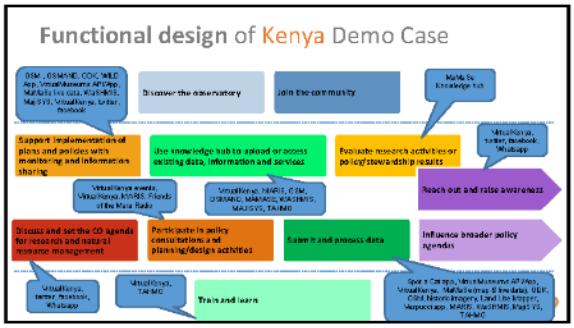
Maasai Mara Citizen Observatory (Kenyan DC)











Kenya Demo Case Update – last year

- Campaign World wildlife day (March)
- MMCO tools training (April)
- Stakeholder engagements around plenary meeting Talek (May)
- Road show, Workshop, training
- Mapathon (November)

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Platform of Kenya Demo Case

Maasai Mara Citizen Observatory

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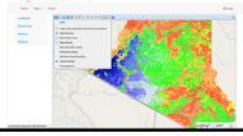
Platform of Kenya Demo Case

Maasai Mara Citizen Observatory

Weather Tool pulls data from Tahmo stations to the platform

Livelihood tool: serves data submitted by local citizens or organisations touching on HWC, Grazing, Water etc



Biodiversity tool: Pulls biodiversity data on the Mara from the SDI repository

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Platform of Kenya Demo Case

Maasai Mara Citizen Observatory

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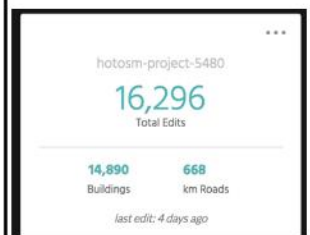
Mapathon for the Kenya Demo Case



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Platform enhancement of the Kenya Demo Case

Mara Collect App: Mobile data collection tool based around CCK. Data captured includes HWC, sightings, incidents, emergencies, etc.
Mara Citizen Observatory App: Mobile app developed by Upande that integrates observations, TAHMO data, MaMaSe low cost data, livestock prices

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Kenya Demo Case Successes

- Improved engagement Maasai Mara University
- Deployment of several more TAHMO weather stations
- New key stakeholders present (WRA, KFS, Ministry of Defence)
- More active and larger CO user group (WhatsApp)
- Improved versions of tools (e.g. river water level in app)
- Training community on use of tools
- Brought onboard local chiefs
- Re-engagement (?!) of County Government

Kenya Demo Case Challenges

- County Government apparent indifference (junior staff sent), politicization of their involvement
- Finding 'self motivated champions' iso 'opportunistic members'
- Getting locals to collect data (without getting paid)
- Limited:
  - ownership of CO
  - building community
  - willingness to contribute (e.g. on data policy)

Kenya Demo Case Next steps

- Incorporate improvement of tool feedback from last workshop
- Build out relationship with key stakeholders (e.g. MMWCA, MMU, Friends of Mara)
- Take away concerns on data access/quality
- Develop Data Policy (drafted by Kenya DC team)
- Work on the knowledge component of the platform
- Analysis of CO member interactions through social media platforms (Gavagai tools)
- Full launch of all functionality the Maasai Mara Citizen Observatory
- Develop business model, engage commercial users (e.g. hotels)

Kenya Demo Case Questions AB Members

- How feasible is it to setup a full CO with all stakeholders including government in a sustainable manner?
  - Power play amongst stakeholders
  - Business case (revenue streams vs offsetting running costs)
- How do we deal with politics?

Thank you!

Project Director Dr. Uta Wehn, Associate Professor, IHE Delft, u.wehn@un-ihe.org

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689744.

Niti Luli Sesheke & Mufulani (Zambian DC)

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Zambian DC – Niti Luli Sesheke& Mufulani

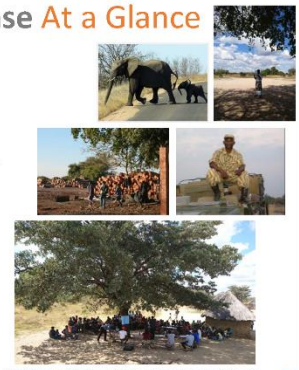
Ellen Pfeiffer (IHE Delft) & Bwendo Kabanda (WWF Zambia)
12th December 2018
3rd Ground Truth 2.0 Advisory Board meeting, IHE Delft

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft

Zambia Demo Case At a Glance

Niti Luli
Sesheke West & Mufulani
Citizen Observatory

A digital support infrastructure for Community-based Natural Resource Management in Zambia



➔CO as "Virtual Community Meeting"

Zambia Demo Case Our mandate

1. Departments and donors talk to each other
2. Communities have actual influence in decisions
3. Communities are more pro-active and hold representatives to account
4. Improve bottlenecks in current process with help of IT

Zambia Demo Case Progress Year 2

- **4** Co-Design Workshops with **~100** stakeholders (3rd IM, 3 technical consultations)
- **8** community meetings in 2nd Village Roadshow with ~**400** stakeholders
- Prototye **platform** validated
- **Upscaling** and development of long-term operational model started

Zambia Demo Case Successes

- High-level political buy in

- Joint multi-stakeholder Roadshow

- Highly positive response to app

Zambia Demo Case Upscaling

National **CBNRM**
bservatory
Zambia

Zambia Demo Case Challenges

- General: Highly political process needs time
- Project specific: Exchange of enabling technology and addition of Upande as technology support partner
- Leadership and staff transition WWF Zambia
- VAG, CRB, and Assembly elections – keeping momentum

Zambia Demo Case Next steps

- Split and Re-launch of four DC Teams (technical design, national strategy, pilot, consortium)
- Speedy customization of Platform and Launch
- Community Activities
  - Infrastructure support plus responsibilities
  - Test digital & paper event book
  - Community Mapping
- Initiating handover to long-term operation and evolution

Zambia Demo Case Issues for AB

- Ground Truth 2.0 branding – need to actively 'hide' the project
- Upscaling and Co-Design – how to stay responsive in a faster process
- Exploitation strategy – training of developers and building relationships for after the project

"Amano yafuma mwifwesa yaya muchulu"

(Bemba saying: "Knowledge comes out of an anthill and grows into a mountain")

IHE DELFT, CREAF, Starlab, HydroLogic Research, vito, altran, Stockholm University, WWF, Tygron, Earthwatch Europe, TAHMO, Gavagai, Upande, akvo.org

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft, u.wehn@un-ihe.org

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689744.

Work Package presentations

Work Package 1: Social dimensions: co-designing citizen observatories

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WP 1 – Social dimensions: Co-designing sustainable citizen observatories

Uta Wehn et al. (IHE Delft)
December 2018
3rd Ground Truth 2.0 Advisory Board meeting, IHE Delft
Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft

IHE DELFT · CREAF · Starlab · Stockholm University · WWF · TYGRON · EARTHWATCH · Upande · HydroLogic · vito · ALTRAN · TAHMO · Gavagai · akvo.org

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Key objectives of the WP (summary)

- To provide the basis for co-designing COs
- To validate and combine the results from all six demonstration cases into guidelines for COs and future recommendations

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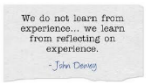
WP1 Progress & achievements in Year 2

Supporting the Demo Cases:
- Initial analysis of Incentives & Barriers for stakeholder participation in COs
- Updated stakeholder analysis
- Stakeholder engagement strategies per CO
- Reverse impact journeys to achieve CO objectives
- From Demo Cases to Citizen Observatories with identity & purpose

Research about COs:
- Economic impact of data fusion (method)
- Baseline for impact assessment

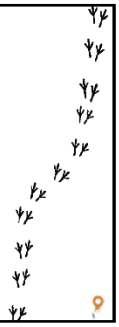
WP1 Reflection on Year 2

- Co-design: who has time to participate in co-design process can be very different from who *should* participate
- Stakeholder analysis timing
- Incentives & barriers of non-participants
- CO stakeholder turnover & local elections: re-start engagement
- Cutting through complexity of achieving CO objectives
- Hand-over of "driver's seat" to CO members



Year 3 Roadmap

- Upscaling COs via engagement
- Updated analysis of Incentives & Barriers for stakeholder participation in COs
- Impact assessment in the Demo Cases
- Validation of the GT2.0 methodology
- Economic impact of data fusion
- Finalise guidelines & policy recommendations



Questions to the AB members

- Working ourselves out of our job: fostering community leaders, sustainability of the COs
- How to reach non-participants for incentives & barriers – and for eventual engagement – with no CO understanding?

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Thank you!
IHE DELFT
CREAF
Starlab
HydroLogic RESEARCH
vito
altran
Stockholm University
WWF
TYGRON
EARTHWATCH INSTITUTE
TAHMO
Gavagai
Upande
akvo.org
Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft, u.wehn@un-ihe.org
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689744.

Work Package 2: Enabling technologies

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WP 2 – Enabling technologies

Alberto Masa (Altran), all. → Joan Masó CREAF

December 2018

3rd Ground Truth 2.0 Advisory Board meeting, IHE Delft

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft

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Key objectives of the WP4 (summary)

Enable adequate customization, deployment and upscaling of the required **technical solutions** in each *demonstration case* and to improve land-use mapping by means of the *Land Use Mapper*.

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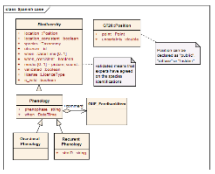
WP2 Progress & achievements in Year 2

Technical design:

- Implementation of the Technical Design methodology, having as outcomes the specific technical design for each demo case.
- The technical guidance and accompanying materials were produced for the DC workshop facilitators.



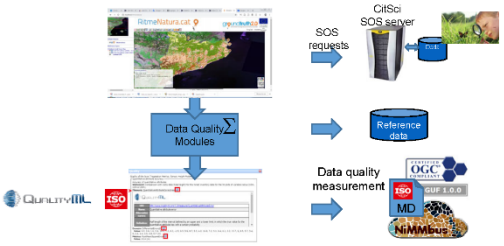
Monitoring and ensuring technical performance

- Define and select performance indicators for any DCs.

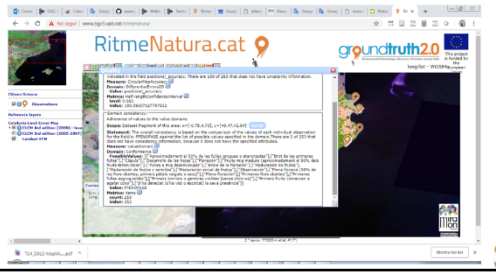
Data validation and data quality

- Conceptual design of the mechanisms for data validation and data quality in the CO.

Data quality (with WP2)



Computing & documenting Data quality (with WP2)



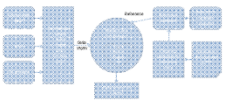
WP2 Progress & achievements in Year 2

CO Platforms & data collection:

- Deployment of the first version of the platforms and start of data collection.

Land Use Mapper:

- Coordination with the Coimbra and the Heidelberg universities to draw up the shared new approach.



WP2 Questions to the Adv. Board

- How to ensure the appropriate shared development of LUM with the other initiatives?
  We have to ensure the appropriate share of responsibilities and efforts involved with these external organizations with their own objectives and resources available.
- How can we make standard access something valuable for the CO?
  Investment should be made and the return of this investment seems less clear than data quality.

Thank you

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689744.

Responsibility for the information and views set out in this publication lies entirely with the authors.

Work Package 3: Business development to accelerate uptake

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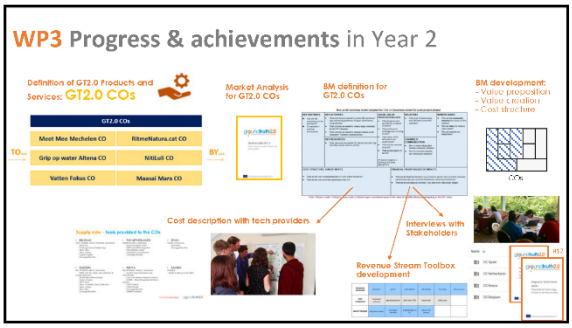
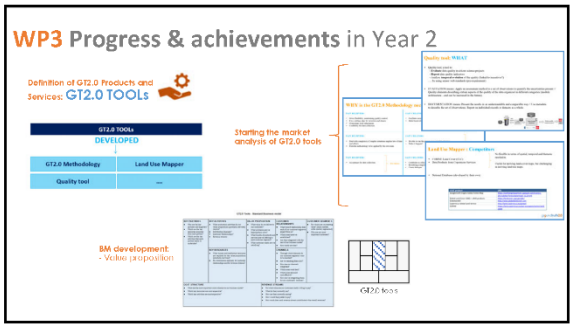
WP3 Business Development to accelerate uptake

Ana Pérez (STARLAB), Nina Costa (NDConsult), Annemarleen Kersbergen (Hydrologic)
12 December 2018
Ground Truth 2.0 Advisory Board, Delft

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft





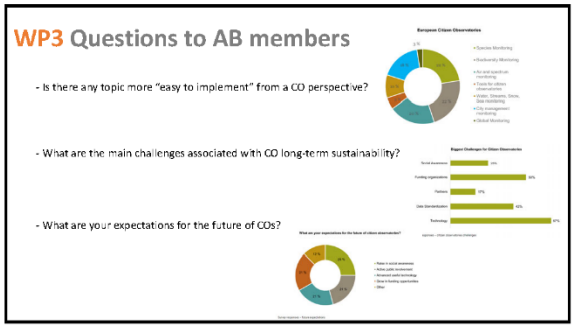
WP3 Challenges

- Build on the business models while the GT2.0 tools and the COs are still under development/evolving.
- Translation of (social) impacts into financial value:
  - Social outcomes & Impacts
  - Institutional outcomes & Impacts
  - Economic Impacts
  - Environmental Impacts

→ How to clearly identify the benefits that come "only" from the CO? (ie. air quality improvement?).

Year 3 Roadmap

- Update the **market analysis** including new GT2.0 tools: Methodology, Land Use Mapper, Quality tool and new info from the evolution of COs last year.
- Implement **revenue stream toolbox** for each CO.
- Provide **guidelines** for business model application in each CO.
- Integrate **long term sustainability** discussion in the periodic DC meetings.
- Continue **impact interviews** with pending stakeholders in COs.
- Define the best strategy to develop **sustainable exploitation roadmaps** based on different scenarios.


WP3 Questions to AB members
- Is there any topic more "easy to implement" from a CO perspective?
- What are the main challenges associated with CO long-term sustainability?
- What are your expectations for the future of COs?


Thank you!
Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft, u.wehn@un-ihe.org
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689744.

Work Package 4: Dissemination and communication

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WP 4 – Dissemination and communication

Joan Masó, Ester Prat CREAF
12 December 2018
3rd Ground Truth 2.0 Advisory Board meeting, IHE Delft

Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft

Key objectives of the WP4 (summary)

- Raise **awareness** of the project
- Increase the level of **engagement** and **exploitation** of results
- Give the six Citizen Observatories the communication and engagement **tools** to promote their activities to society and policy makers
- Provide **training** on technologies, **demonstration** results, methods and guidelines developed

WP4 Progress & achievements in Year 2

Communication toolkits:

- Evaluation of the GT2.0 Communication Toolkit ★★★★☆
- GT2.0 methodology slide
- Poster highlighting also the methodology
- Banners/roll-ups for each CO
- D4.4 *Land Use Mapper communication toolkit* postponed until March 2019
- Preparations for a final video started

WP4 Progress & achievements in Year 2

Online presence:

Networking:

- *EGU General Assembly*, April
- *EU Green Week Partner Event*, May
- *2nd ECSA Conference*, June
- *Adaptation Futures*, June
- *PERCCOM Summer School*, June
- *Stockholm World Water Week*, August
- *EuroGEOSS Workshop*, September
- *ESA Earth Observation Φ-week*, November

WP4 Progress & achievements in Year 2

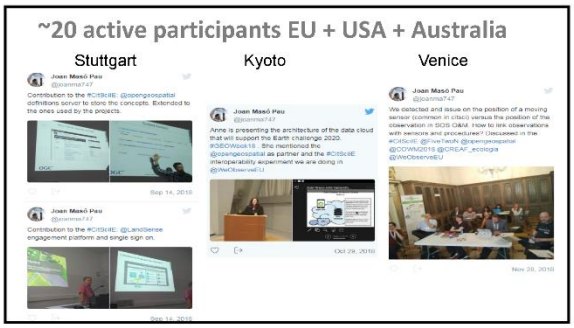
- Face-to-face meetings in OGC TC meetings in New Zealand (remote), Orleans, Stuttgart
- Contribution to NAD (Non Authoritative Data, CitSci and Data quality groups)
- OGC Gardels gold medal
- Proposal to the EC EuroGEOSS action groups for including CitSci in the Land Use showcase accepted
- Two projects in ERA-Planet with CREAF participation have been kicked-off
- Common webpage and final event with sister projects in the

- Meeting about standards

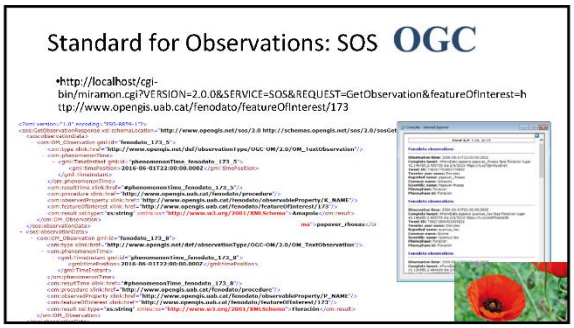
Example 1: Citizen Science; the new silo?

- The administration is opening data in portals
  - e.g. the INSPIRE directive makes official this obligation in the EU,
- The projects of citizen science give priority to other aspects.
  - There are excellent exceptions like OSM and GBIF
- Need for action!


CitSciIE
UAB
CREAF
IIASA
JRC
EUROPEAN COMMISSION
esa
Wilson Center
CoP-Interop
We Observe
NEXTGEOSS
OGC
Initiators
Support
Interoperability experiment


~20 active participants EU + USA + Australia
Stuttgart
Kyoto
Venice


Example 2: Integration in GEOSS. GEO week
•13:30 – 13:45: Welcome and Introduction to Community Activity (K. Wilson, SWF)
•13:45 – 14:15: Lightening talks—What's new since the last GEO Meeting? Moderator (S. Fritz, IIASA)
•14:15 – 15:45: Panel 1: Emerging Initiatives (J. Maso– CREAF)
•16:00 – 17:00: Panel 2: Next steps for scaling CS within GEO (Moderator – K. Wilson)
•Regional GEO Networks and CS (Stefano Nativi, JRC)
•Collaboration with other GEO activities GBIF and GEOGLAM
Wilson Center
SOUTH
BDHUB
CREAF
IHE DELFT
GEO WEEK 2018


Standard for Observations: SOS OGC
•http://localhost/cgi-bin/miramon.cgi?VERSION=2.0.0&SERVICE=SOS&REQUEST=GetObservation&featureOfInterest=http://www.opengis.uab.cat/fenodato/featureOfInterest/173


Serving data in standard way (with WP2)
RitmeNatura.cat
groundtruth2.0
Meet Mee Mechelen
VattenFokus


Future: Year 3 Roadmap

Year 3 roadmap

Year 3 Roadmap

- Release of
  - Land Use Mapper communication toolkit
  - GT2.0 methodology promotional materials
  - Data quality module promotional materials
  - Newsletters 4, 5 and 6
  - Appealing final GT2.0 summary video
  - Special issue in the Environmental Science & policy

Year 3 Roadmap

- Update GT2.0 general materials into final versions
- Consolidate our presence in relevant events and initiatives
- Continue involving in the OGC CitSci Interoperability Experiment
- Focus the networking on political and business sectors

Save the Date!!

groundtruth2.0

Ground Truth 2.0 Week 2019

Save the date: 30 September – 4 October 2019

Location: Online and F2F at IHE Delft Institute for Water Education, Delft, the Netherlands

From 30 September - 2 October 2019	3 - 4 October 2019
Online webinars, offline events, Ground Truth 2.0 demonstration cases, data collection campaigns, on-site demonstrations, webinars, workshops, panel discussions **in Belgium, Sweden, Zambia, Kenya, the Netherlands and Spain.**	**Face-to-Face workshops at IHE Delft** in Delft, The Netherlands. You will have the opportunity to participate in interactive sessions on the six citizen observatories.

Find out more: www.gt20.eu gt20@un-ihe.org @Groundtruth20

GT2.0 week proposed structure

	Sunday 29.9.2019	Monday 30.9.2019	Tuesday 1.10.2019	Wednesday 2.10.2019	Thursday 3.10.2019	Friday 4.10.2019
KE DC	Data collection campaign & demonstration	**Local workshop/ panel (morning)**	Data collection campaign & demonstration	Data collection campaign & demonstration		
SW DC	Data collection campaign & demonstration	Data collection campaign & demonstration	**Local workshop/ panel (morning)**	Data collection campaign & demonstration		
BE DC	Data collection campaign & demonstration	Data collection campaign & demonstration	Data collection campaign & demonstration	**Local workshop/ panel (morning)**		
ZA DC	Data collection campaign & demonstration	**Local workshop/ panel (afternoon)**	Data collection campaign & demonstration	Data collection campaign & demonstration		
SP DC	Data collection campaign & demonstration	Data collection campaign & demonstration	**Local workshop/ panel (afternoon)**	Data collection campaign & demonstration		
NL DC	Data collection campaign & demonstration	Data collection campaign & demonstration	Data collection campaign & demonstration	**Local workshop/ panel (afternoon)**		
General (@IHE Delft)	Introductory webinar about GT2.0 (1 hour) – premiere & exhibition (IHE Delft)	Introductory webinar about GT2.0 (1 hour) & exhibition	Webinar about GT2.0 methodology (1 hour) & exhibition	Webinar about GT2.0 outputs (1 hour)	F2F event (all day) IHE Delft	F2F event (all day) IHE Delft

WP4 Challenges on Year 3

- Coordination with other WPs for the **promotion** of the GT2.0 **outcomes & results** (with WP3)
- Orchestration of the final **GT2.0 week** (with WP1)
- Create a **high impact** within the last year of the project
- Reinforce targeting **political and business sectors**
- **Coordination** with relevant initiatives conserving our own **identity**
  - GEOSS, OGC, EuroGEOSS
  - **OGC** CitSci Interoperability Experiment **second edition**
  - **Common Dissemination Booster**

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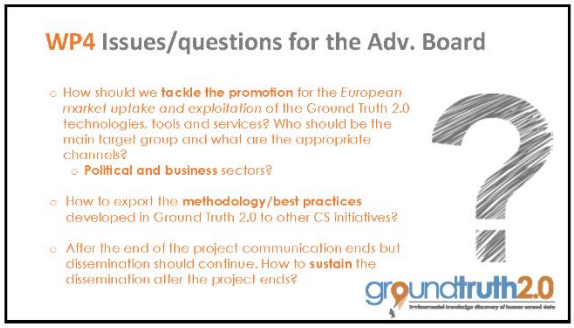
WP4 Issues/questions for the Adv. Board
How should we tackle the promotion for the European market uptake and exploitation of the Ground Truth 2.0 technologies, tools and services? Who should be the main target group and what are the appropriate channels?
Political and business sectors?
How to export the methodology/best practices developed in Ground Truth 2.0 to other CS initiatives?
After the end of the project communication ends but dissemination should continue. How to sustain the dissemination after the project ends?
groundtruth2.0


Thank you!
IHE DELFT
Starlab
vito
Gavagai
akvo.org
EARTHWATCH INSTITUTE
CREAF
ALTRAN
HydroLogic RESEARCH
WWF
Stockholm University
Upande
TYGRON
TAHMO
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Project Director: Dr. Uta Wehn, Associate Professor, IHE Delft