Meeting minutes

Inspiration and Networking Day 2024

Community engagement in citizen science

30.05.2024 at KMI-IRM

The day was marked by a series of presentations and discussions centered around the main question: "What is the role of local communities in scientific research?" This is a summary of the key contributions that highlighted the importance of constantly rethinking our research methods.

Maarten Reyniers (KMI-IRM) and Luiza Mitrache (AfricaMuseum) welcomed the colleagues. Maarten discussed the origins and the added value of Citizen Science initiatives at the Royal Meteorological Institute.

Chloë Rogiers (BELSPO) announced the development of a Citizen Science online platform which will function as an aggregator for all the Citizen Science initiatives of the Federal Scientific Institutes.

Annelies Duerinckx (Scivil) gave a masterclass introduction to Citizen Science. She announced the Citizen Science Networking Day which will take place in Mechelen on 12.09.2024. Scivil will be joined by partners FARO, Histories and AfricaMuseum to explore the role of heritage in citizen science. Registration is open and free.

Panel 1/2 Presentations

Gert Gielis from the State Archives introduced project PARDONS, in which amateur palaeographers decipher 16th-century letters of pardon and help train artificial intelligence models using Transkribus. Larissa Smirnova from the AfricaMuseum has collaborated with newcomers in the conservation and study of biological collections in project CRESCO, making the collections accessible to the public. Danielle Fernandes from the VUB talked about co-creating, together with a group of young women, the board game City confessions to raise awareness about street harassment.

Panel 1/2 Discussion

The presentation session were followed by a discussion. The stand-out themes were the following:

Is co-creation possible in a short time frame? What is the uptake of the project outside the academic world?

Yes, co-creation does require time and the evaluation of the process behind, said Danielle Fernandes. “City confessions” was initially a 6-month project, but thanks to support of Equal Brussels it continues.

Danielle introduced the collaboration with the VUB Buddies project. This project involves welcoming new students and engaging them in small projects, with a focus on providing contact points for issues like sexual harassment. This shows that the game can be implemented as a tool at the university level.

The speaker sees potential in expanding this model to other groups, such as youth organizations and city safety action plans. However, Danielle faces challenges in maintaining the engagement of their project Ambassadors, as participants often get busy and drop out. Those with an interest in academia do stay on and will co-author publications. Thanks to the Impetus grant, the participants received a stipend, which was an extra incentive.

Is there an easy way to make a game?

Collaborating with a game developer is likely the best approach, says Danielle. Game development is typically technical and tailored for those in the game industry, which made it challenging for her, given her background in public health and social sciences. To bridge this gap, she collaborated with a game developer. She's now working on a publication aimed at making game development more accessible to social scientists.

Who controls the quality of the data ?

Gert Gielis (PARDONS) said you need transcriptions to be as good as possible for the AI model to function properly. The 16th century pardon letters require experts who can read the texts very well. They usually enjoy making transcriptions, but not re-reading someone else's submission. That is something he as project coordinator does.

Will AI replace manual transcriptions by citizens ?

This won't happen soon, as digitization is essential before AI can perform tasks like text recognition, and not everything is digitized yet, said Gert. Archives contain vast amounts of data, and there's still much work for scientists. AI technology is rapidly advancing, and language models have become more capable over the past two years. However, the citizen scientists involved are not eager or digitally equipped to use Transkribus. Instead, they use Word. Gert has experienced the challenges of guiding non-digitally literate volunteers and acknowledges the need for better infrastructure. In hindsight, he would approach the project differently, incorporating transcribing in Transkribus from the start.

Does DoeDat work for transcribing text?

Larissa Smirnova (CRESCO) discussed developing her project on the platform DoeDat, with assistance from the Botanic Garden Meise. This collaboration involves creating templates for transcribing labels and collection registries, providing images and a manual for the online transcribers. While AI can handle basic text in columns, it struggles with complex data like handwritten notes and varied recording methods used

by researchers in the past. DoeDat focuses on text transcriptions, of labels, posters, herbaria, postcards, etc., while Zooniverse can help do measurements and image annotation.

How does one evaluate the participation in the project ?

Larissa discussed how citizen scientists involved in the project gained significantly more confidence in the AfricanMuseum. Volunteers often became specialists and were involved in various stages, beyond initial expectations. Volunteers' trust in the institution and their learning process were indeed evaluated. The approach included a baseline and a post-project survey. This included data on learning, community building, and behavioural change. The survey-based method was somehow limiting, added Luiza Mitrache (AfricaMuseum).

Danielle Fernandes (City Confessions) conducted an emotional evaluation at the end of the project, where participants wrote down their feelings at different project stages on post-its and discussed why they felt that way. This method helped understand volunteers' emotions and perspectives throughout the project.

Panel 2/2 Presentations

During the second session, Arnaud Jacobs (Belgian National Scientific Secretariat on Invasive Alien Species) introduced ecological monitoring through citizen science. He talked about implementing a Flatworm Watch network to monitor invasive flatworm species. Maarten Reyniers from the Royal Meteorological Institute demonstrated how crowdsourcing observations transform weather forecasting, by improving the accuracy and reliability of meteorological predictions. Karolien Lefever from the Royal Belgian Institute for Space Aeronomy advocated for ethical scientific communication, made also with and for marginalized communities. In project RoadMap, art students interpreted scientific research on Mars' atmosphere through art installations, using sound and light.

Panel 2/2 Discussion

How did the scientists receive the art installations ?

Karolien Lefever (RoadMap) discussed the internal reaction of scientists to the project, highlighting that scientists are accustomed to dealing with highly complex and precise data. This created challenges in balancing scientific accuracy with more approximate, accessible presentations of data. When introduced to the material, the scientists immediately began asking detailed technical questions, reflecting their habit of scrutinizing data presentation rigorously. This mindset made it difficult for them to view the data from the perspective of those less familiar with it. This is a recurring issue and addressing it requires navigating between scientific exactitude and broader accessibility, said Karolien.

How do you work with color maps ?

Karolien Lefever (Roadmap) emphasized the importance of considering accessibility when creating color maps, as they may not be equally discernible to all viewers.

Using patterns instead of colors can enhance visibility, particularly in situations where precise distinctions are necessary, added Danielle Fernandes (City Confessions).

What will be the logistic challenges of a species monitoring project?

Arnaud Jacobs (Flatwormwatch) elaborated on the challenges of collecting samples from citizens. One major issue is the timing: by the time a scientist decides to collect a sample after receiving input from a citizen, the specimen might no longer be available in the garden. This problem arises because rare observations can be fleeting. Arnaud mentioned that the team must anticipate which samples to collect based on the observations received, which can vary in quantity and quality. The audience suggested possible solutions, such as partnering with local libraries or nature organizations to distribute sample kits. This approach could streamline the process, but would require extra funds to formalize partnerships.

What will happen if an invasive species is recorded?

Arnaud Jacobs (Flatwormwatch) mentioned finalizing a plan with relevant authorities which will be informed once such an observation is made. The invasive flatworm has not been recorded in Belgium yet. In case it happens, it will require intervention of relevant authorities and a negotiation with the owner of the private property on which it was recorded. This scenario is carefully considered.

Annelies Duerinckx (Scivil) commented that it can be discouraging for community members who invest time and effort not to find anything. Despite the disappointment, such outcomes can still yield valuable scientific results, which researchers need to effectively convey to participants.

Do you plan on collaborating with other nature-monitoring citizen science projects?

Arnaud Jacobs pondered the possibility of collaborating with other citizen science projects, like those focused on observing birds and other garden creatures. He highlighted the potential benefits of joining forces, such as keeping participants engaged by providing opportunities to spot different species. By integrating the project with existing platforms, such as Mijntuinlab, the goal is to engage citizens who are already involved in other monitoring projects on the platform.

How do you calculate reputation scores for weather observations ?

Maarten Reyniers (KMI-IRM Weather App) addressed a question about quality checks and reputation scores for a device. The reputation score is calculated based on the observations received. They use a "plausibility check" to see if an observation is probable. If an observation is clearly false, it gets a zero score. The reputation score for each device is an average of the scores (0, 50, or 100) from all observations made by that device. However, due to GDPR compliance, they cannot store the complete history of observations from each device, only the mean score and the number of uses. Users of the device cannot see their own reputation score.