

e-Volunteering in Unprecedented Times: New Synergies to Address Environmental Challenges

A Paper by FIG Working Group 3.6 and the Volunteer Community Surveyor Program

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Key words: e-Volunteering, VGI, open-source mapping, global partnerships, environmental crises, young surveyors, VCSP, Volunteer Community Surveyor Program

SUMMARY

Globally, the surveying industry is experiencing challenges with engaging young surveyors to both enter the industry and stay engaged to continue their careers in the industry. With the advent of COVID-19, making progress on this front seemed even more challenging, however the Volunteer Community Surveyor Program (VCSP), an initiative of the FIG Young Surveyors, collaborated with Australia's Surveying & Spatial Sciences Institute (SSSI) to make unique progress on helping young (and seasoned) surveyors from multiple countries across many time zones engage in humanitarian surveying efforts.

The VCSP is an innovative volunteer program working to be a powerful driver for social impact and professional development. This multifaceted program includes an e-Volunteering Path, which provides opportunities for young surveyors to volunteer remotely for high-impact projects worldwide. e-Volunteering projects have varied applications, are low-cost, not limited by scale, and provide a safe way for the VCSP to organise and engage volunteers during the COVID-19 pandemic.

In October 2020, over 400 e-Volunteers from 37 countries participated in the FireWater Mapathon over 24 hours, collecting spatial data on static water infrastructure to support bushfire preparedness efforts. In total, 515,000 hectares were mapped with over 37,000 new infrastructure features digitised. The VCSP team was key in providing 24-hour moderation to the SSSI Firewater Mapathon, and instrumental in bringing it to the global stage by utilising the 11,000-member strong FIG Young Surveyors Network. The data produced during this Mapathon is a valuable resource for several stakeholders. Industry partners of the mapathon can use collected data as a training dataset for artificial intelligence applications. State and Federal partners will validate the data and use it to create important updates to the national foundation spatial data.

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This type of initiative taps into young surveyor's eagerness to contribute to SDGs. The outputs of this project demonstrate that e-Volunteering is an achievable way to keep the VCSP relevant and active. The VCSP team has gained valuable experience from the FireWater Mapathon, preparing it well for deploying young surveyors remotely in future efforts. In a move to enhance networking and engagement for future e-Volunteering projects, the VCSP has formed a relationship with the newest Working Group of FIG Commission 3, WG 3.6 Geospatial Next. The joint outcomes are expected to develop young surveyors' technological and organizational skills when it comes to using spatial data solutions to tackle global and regional environmental challenges.

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1. INTRODUCTION

Globally, the surveying profession is vital for national societies and economies to function prosperously and sustainably through effective land administration. The surveying profession is one of the world's oldest professions, however, in recent decades, with the advent of digitization and many new technological developments, retention of young surveyors in the industry has become challenging. Ongoing challenges faced by surveying and other STEM industries range from attracting talent and stemming the 'leaky pipeline', to engaging people from tangential fields to value the quality that surveyors bring to science (Fairlie et al. 2010), facilitating new names for the programs (Couatts, 2017), to some countries having many young professionals while still building the industry to cater for jobs for them (Elmas, 2020).

For millennia, surveyors have leveraged technological advancements to answer the changing needs of society through improvements in geospatial data. The Industrial Revolution 4.0 brings the rise of technologies such as machine learning, artificial intelligence, and robotics. The integration of the technology-driven world to daily life has accelerated due to the pandemic in 2020/2021. As much of the workforce transitioned to working home and schools transitioned to online learning, the world experienced a rapid digital advancement for billions of individuals across multiple generations. The world is currently experiencing a rapid evolution of the way we work across many industries, leading to the loss of some jobs as new ones arise through greater automation and new ways of working.

FIG (International Federation of Surveyors) is a not-for-profit organization that represents the activities of the surveyors globally. It has a concrete mission and vision to increase the number of young surveyors involved in the FIG and support them through their careers by providing an extensive international network, thereby increasing the retention and engagement of young surveyors in the industry. This paper explores the potential of e-Volunteering to engage young surveyors (and seasoned surveyors) for humanitarian surveying - an initiative which a collaboration between the Volunteer Community Surveyor Program (VCSP) (URL-2), an initiative of the FIG Young Surveyors Network, and FIG Commission 3 Working Group 3.6

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Geospatial Next (URL-1). The VCSP is an innovative volunteer program that enables young professionals to take part in humanitarian surveying activities focussed on land administration. Working Group 3.6 is built on the idea of creating a response to the changing roles of the surveyors and skill sets needed to counterbalance the emerging new technological needs. These two ‘young’ initiatives share common goals, and this paper explores synergies for future collaborations between the VCSP and Working Group 3.6. For retaining and engaging young surveyors globally.

1.1. From Volunteered Geographic Information to Volunteer Community Surveyor Program

For the past millennia, mapping has played a key role in governing land, its assets and human activity, largely completed by specialist individuals and organisations rather than being accessible to lay individuals. Spatial data collection and mapping has continued to be important for authoritative agencies and relevant professionals globally. Technological developments over the past two decades in particular, such as Web 2.0, high-accuracy GNSS, smartphones, etc., have revolutionized the role of lay individuals to contribute to these areas, which was previously limited to specific scientific and professional groups. The effectiveness of crowd-based projects such as Wikipedia in 2001 and Mechanical Turk of Amazon in 2005, have presented an effective way of distributed contribution and workforce in a global scene. These technological advancements returned as new policies known as the Open Science initiative from the European Commission [(URL-3) and the USA (URL-4) to democratize and integrate knowledge and science across society, providing an innovative and collaborative solution for society in the digital era. Under the broad umbrella of Open Science, the power of a citizen’s role for contributing scientific research was reframed with public participation which has come to be known as ‘citizen science’. The launch of Google Earth in 2004 and OpenStreetMap in 2006 has empowered anyone, anywhere in the world, to be able to explore the world from their fingertips and to produce, edit and affiliate user-generated content with location without specialist training. These innovations have launched a new era for the surveying community - Goodchild (2007) coined the term Volunteered Geographic Information (VGI) to describe this as the involvement of volunteers (without specialist geospatial training) to contribute geospatial data through web platforms.

To begin with, the paradigm shift of geospatial data production by individuals without formal geospatial training brought many questions such as inconsistency, lack of accuracy and data quality (Elwood et al., 2012). However, as more geospatial data is recorded and various citizen science / VGI projects have continued, their benefits have opened a new field of research, enabled by rapid data production and the consensus of multiple data collectors.

Today VGI’s role as part of Citizen Science is explained in various examples from observing animals (Zhang, 2020) to rapidly defining disaster affected area (Yalcin et.al, 2020) to contributing to the UN Spatial Development Goals (SDG) (Fraisl et al., 2020). VGI has been

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used to achieve positive real-world results in several situations. For example, two emergency management groups in New Zealand established NZGIS4EM in 2017 because of shared concerns between the geospatial and emergency management sectors that GIS was often not being implemented for the emergency management sector. NZGIS4EM now has over 500 members, over 140 partner organisations, including 80 government agencies and 60 private sector / academic / NGO partners - and won the New Zealand Spatial Excellence Supreme Award in 2019. In the land administration sector, many tools have been developed that leverage mobile technology for participatory work on land rights through establishing parcel boundaries for underdeveloped and vulnerable communities. For example, USAID's Mobile Applications to Secure Tenure, the Global Land Tool Network's STDM, and the Cadasta Platform.

In Turkey, "Needs Map" (www.ihdiyacharitasi.org) is a social platform for cooperation and solidarity among individuals and corporations to reach non-monetary support to disadvantaged individuals through a VGI-driven online map platform. Following a 6.6 magnitude earthquake that hit Izmir, Turkey, in October 2020, the Needs Map served as a VGI project for mapping damaged buildings in the epicenter and extending to other needed goods such as blankets, baby food, hygiene products, and urgent housing. FIG Commission 3 released a detailed publication with various examples, guiding how nations and organizations should position the role of the land surveyor in this changing paradigm (FIG, 2019).

Synonymous with VGI, the VCSP has introduced the term 'e-Volunteering' - a way for young surveyors to volunteer their time online, contributing their skills and time in a way that works more flexibly with their schedules, commitments, and abilities. The VCSP is excited to collaborate with Working Group 3.6 to explore initiatives which create new applications of VGI to solve humanitarian and geospatial problems through engaging young surveyors online - bringing people into the industry as well as providing a global network to help them stay in the industry for longer.

1.2. Volunteer Community Surveyor Program (VCSP) Definition

The VCSP is a powerful driver for both social impact and professional development. It leverages on the skills, experience, talents, and education of young surveyors, and matches this competence with the needs of its partners. As an FIG Young Surveyors Network (FIG YSN) initiative, the potential of the VCSP reaches far beyond the bounds of individual achievement. It brings together a community of surveyors willing to give their time to challenges that threaten our climate and stunt the potential for securing equal land rights. The FIG YSN are highly motivated to grow the VCSP into an inclusive, sustainable, and globally respected humanitarian service. To achieve its ambitious goals, the VCSP strategically includes wide and diverse volunteering options and new partnerships to complement existing relationships with UN-Habitat Global Land Tool Network (GLTN) and the FIG Foundation.

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The VCSP has one portal, one workshop series, and two paths. The Knowledge Portal in its final form will be an online platform that Partners, VCSs, mentors, and the VCSP Team can log in to before, during, and after one of the below paths to share lessons, gather knowledge, and connect. Wisdom Workshops provide skills and knowledge to prepare young surveyors who are interested in applying for an in-Country deployment and/or gaining humanitarian surveying skills. For in-Country Deployments, the VCSP joins with existing programs that need volunteers within different contexts but usually relating to securing land rights in the developing nations.

The final path, and the subject of this paper, is VCSP e-Volunteering. As mentioned above, e-Volunteering is a chance for young surveyors of various levels and backgrounds to volunteer their time and skills in a way that not only helps them grow, but also can provide vital online support toward projects geared toward sustainable resource use and environmental protection.

VCSP e-Volunteering is intertwined with the various other VCSP goals. Through up-skilling young surveyors' mapping skills, a greater number of these skilled surveyors may choose to apply these skills into in-Country volunteering. Secondly, e-Volunteering events in the future will support content drives for the VCSP Knowledge Portal, bringing groups of young surveyors together to collect, research, and summarise content for the Portal. Finally, to create a greater base of higher-skilled young surveyors for e-Volunteering projects, future Wisdom Workshops may be geared toward e-Volunteering skills instead of the purely in-Country focus they currently have.

1.3. Links to the Sustainable Development Goals

Working toward the Sustainable Development Goals is a default position of the VCSP. It is an innate goal, given our main vision is to achieve “land rights for all” and contribute to the “fight against environmental crises”. In particular, the impact VCSP e-Volunteering has can be seen through the use of data captured and verified by our young surveyors, which can enable effective decision making for an array of problems facing our globe. With transparent, truthful spatial data and maps, solutions can be reached to problems like deforestation, marine pollution, lack of access to clean water, displaced climate refugees, and of course, disaster-preparedness.

While a lack of technical capacity exists in the parts of the world that need it most, technical capacity can be volunteered online and is available. With e-Volunteering, the VCSP can support African countries, developing countries, and small island developing states through providing the data and verification required to enable these countries to enhance their technological position and boost innovation.

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To achieve the VCSP e-Volunteering goals, strong partnerships are being formed. Keeping in mind that the problems mentioned above are far-reaching and complex, it is not the sole responsibility of the VCSP to create new projects ‘from scratch,’ but instead, work with existing experts in the area of open-source data and humanitarian surveying. The VCSP will bring an inspired community of skilled young surveyors forward to rise to the partners’ challenges and provide high-value outputs to their causes.

There is potential to also support analysis efforts of the many land-related targets and indicators under the Sustainable Development Goals that are established but currently have no regular data to start from. Thus, the VCSP not only helps achieve the FIG YSN Outreach goals and the FIG Council’s vision of Volunteering for the Future but it also contributes towards the greater goal of attaining “a better and more sustainable future for all by 2030”.

Finally, all volunteers on the VCSP including the Core Team, the Volunteer Community Surveyors, their Mentors, and e-Volunteer Community Surveyors, bring their perspective from various ethnicities, genders, surveying backgrounds, and experience levels. With this representative group of volunteers, the SDGs can be tackled in a more effective way using local knowledge from each member and the empowerment of local people. The aim being to grow each person’s capacity in soft skills and technical skill and ultimately reduce inequalities.

1.4. From the Vision of FIG to the Collaboration of VCSP and WG 3.6.

Working group 3.6 is a joint WG of Commission 3 and the FIG YSN and was established with the mission to maintain the link with the changing role of surveyors in the society based on the near future geospatial technologies and next generations within the scope of the Commission 3 Spatial Information Management. The working group can be visualized as a quick response to test and contribute to the efforts of new skills for technological and organizational needs of the surveyors to exist in the dawn of the new era.

The Synergies between FIG, VCSP and Working Group 3.6 are:

- To address issues and demonstrate real life examples that may play roles in the future of the profession;
- To produce collaborations and succession planning between generations of geospatial professionals under Commission 3 and society members; Further increase the outreach and impact of each of these separate groups by collaboration and connecting our networks and initiatives; and
- Allow greater visibility to Young Surveyors of other work being done by other Young Surveyors, increasing engagement and active participation.

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To achieve these joint goals, the VCSP and WG 3.6 are working to collaborate on unlocking the potential of e-Volunteering to answer the needs of the surveying community, the needs of communities lacking secure land rights, and the needs of our global environment.

2. e-VOLUNTEERING TO DEMOCRATISE VOLUNTEERING IN SURVEYING

Traditionally, volunteering as a surveyor has come with a high price tag. It often means travelling, lodging, and provision of specialist tools and resources to facilitate the volunteer survey work. Traditional survey volunteering therefore has a prerequisite of self-funding or having access to existing networks that can support fundraising. Furthermore, as the travel takes time out of the surveyor's job, there is also the cost of not earning wages during the time spent volunteering. These factors contribute to an opportunity cost that is not as palatable for those without financial security.

With the advancements in the industry as described in Section 1, new volunteering opportunities are becoming available to surveyors that leverage these data-centric trends. These new opportunities remove a lot of the aforementioned opportunity costs that come with traditional volunteering abroad, while still offering many of the benefits that come with volunteering. E-Volunteering campaigns can be run by organisers for little or no cost, and volunteers can use their own personal computers and phones to contribute with minimal financial burden.

While this seems incredibly attractive, there are challenges to be overcome in making e-Volunteering successful. Traditional means of volunteering in-Country bring additional benefits of travelling and experiencing new cultures and places, meeting new people, and learning about different ways of doing things through these experiences. These afford the building of broader networks, adventure and exploration, immersive learning of languages and cultures, and direct transfer of knowledge through giving and receiving.

It is clear that e-Volunteering cannot replace many of these benefits for the volunteer, however it does offer a range of alternate benefits. Perhaps most attractively, e-Volunteering commitments are flexible - the time required to volunteer and make a positive difference to a community can be fitted around their existing commitments, lowering the opportunity cost significantly. Additionally, e-Volunteering allows for global access to volunteering opportunities - there is no limit to geography or the range of different experiences a volunteer can have, or the exploration of ways they can make a difference. Relevant to more recent times, e-Volunteering is also COVID-safe and works around travel restrictions.

2.1. Case Study: the SSSI FireWater Mapathon

In late 2019 and early 2020, Australia experienced a swathe of significant bushfires of unprecedented ferocity. The Surveying & Spatial Sciences Institute (SSSI), the peak national

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body for the Australian geospatial industry, responded to the industry's desire to contribute in a positive way by organising a national-scale map-a-thon in early February 2020, pulling together over 600 volunteers. While many participants were from Australia, promotion of the event by the FIG Young Surveyors Network allowed participation from people across over 25 countries. The February 2020 Mapathon was targeted towards supporting bushfire recovery efforts through participants digitising buildings damaged by the bushfires, with a total of 2,793,879 hectares mapped (15,731 edits, 13,891 overall buildings, 1,091 damaged features and 945 damaged buildings mapped).

The FireWater Mapathon was the second mapathon initiative of SSSI, held on 31 October 2020 and focused on bushfire preparedness efforts. Participants collected data on static water infrastructures (such as dams, water tanks and swimming pools) to support firefighting efforts by providing information on where these vital sources of water could be found for emergency management personnel. This crowdsourced data is being validated and used to update the accuracy and completeness of foundation spatial data used by emergency management such as the Australian Static Water Supply System, through the efforts of Geoscience Australia (GA) and the Intergovernmental Committee on Surveying & Mapping (ICSM). The OpenStreetMap (OSM) Platform and Hot Task Manager were used to coordinate the mapping effort, set up by NGIS Australia. High-quality aerial imagery was donated to the mapathon event by Nearmap and the Department of Environment, Land, Water and Planning (DELWP Victoria), providing the detail required to detect these relatively small on-the-ground features accurately. Additionally, the Growing Data Foundation has created a web application called FireWater, which will use the data collected in the mapathon alongside existing data to more accurately direct fire crews to nearest available water sources during bushfire events.

140 e-volunteers representing 45 countries came together to participate in this 24-hour Map-a-thon, contributing over 800 hours of crowdsourced citizen science time. They mapped water resources over 294,000 hectares, with over 37,000 edits and the digitising of 37,000 new infrastructure features over the course of the mapathon.

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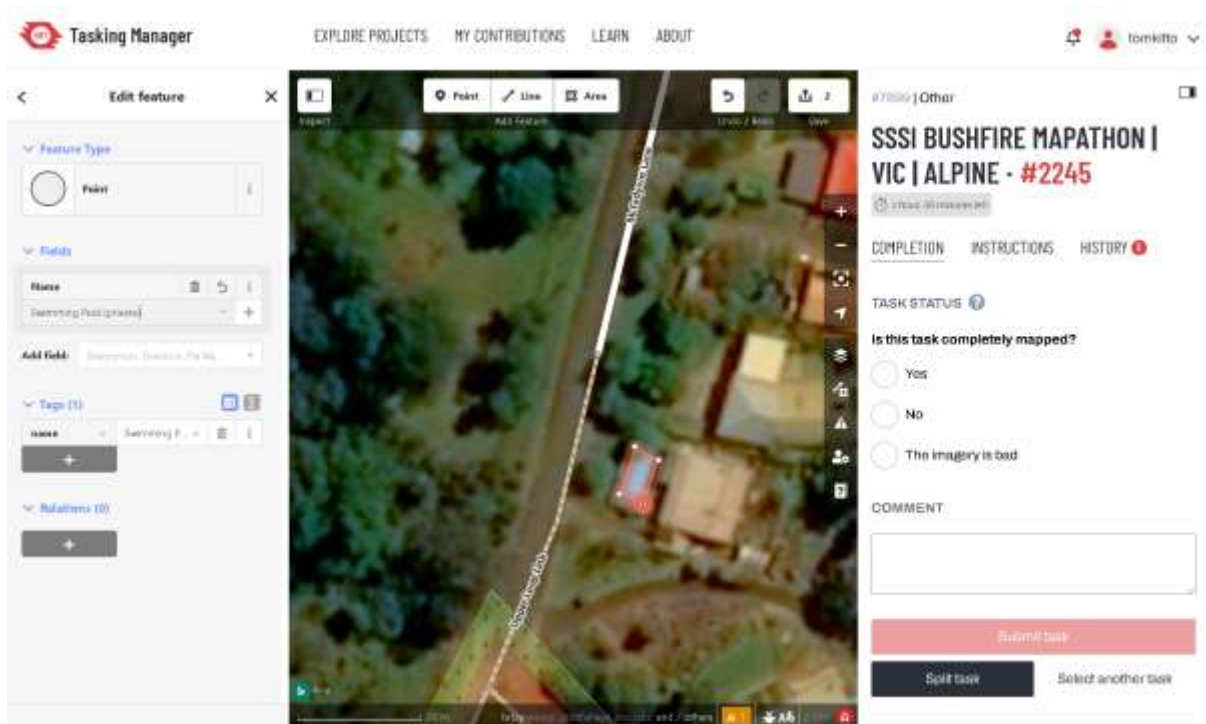


Figure 1: Screenshot example of a typical mapped water resource during the FireWater Mapathon (<https://tasks.hotosm.org/projects/7899>)

The FIG Young Surveyors Network (YSN) was instrumental as a partner in the SSSI FireWater Mapathon in extending the mapathon to a global reach as well as in facilitating the 24-hour length of the mapathon. Volunteers from the FIG YSN undertook training and provided technical support and guidance to allow participants from around the world to take part in the mapathon across various time zones.

2.1.1 Analysis and lessons learnt

The Firewater mapathon was successful in achieving many of the goals it sought from the outset, in particular:

- Gathering high quality crowdsourced data for the FireWater app and Australia's Foundation Spatial Dataset; and
- Raising bushfire awareness through advertising and participation.

This mapathon was a pivotal learning experience for the VCSP team, highlighting some important lessons around critical areas to focus on for future similar events. Our summation below is our findings of the elements that made FireWater successful and reflects on how future e-Volunteering events could be run in collaboration with Working Group 3.6 to engage young surveyors across the world.

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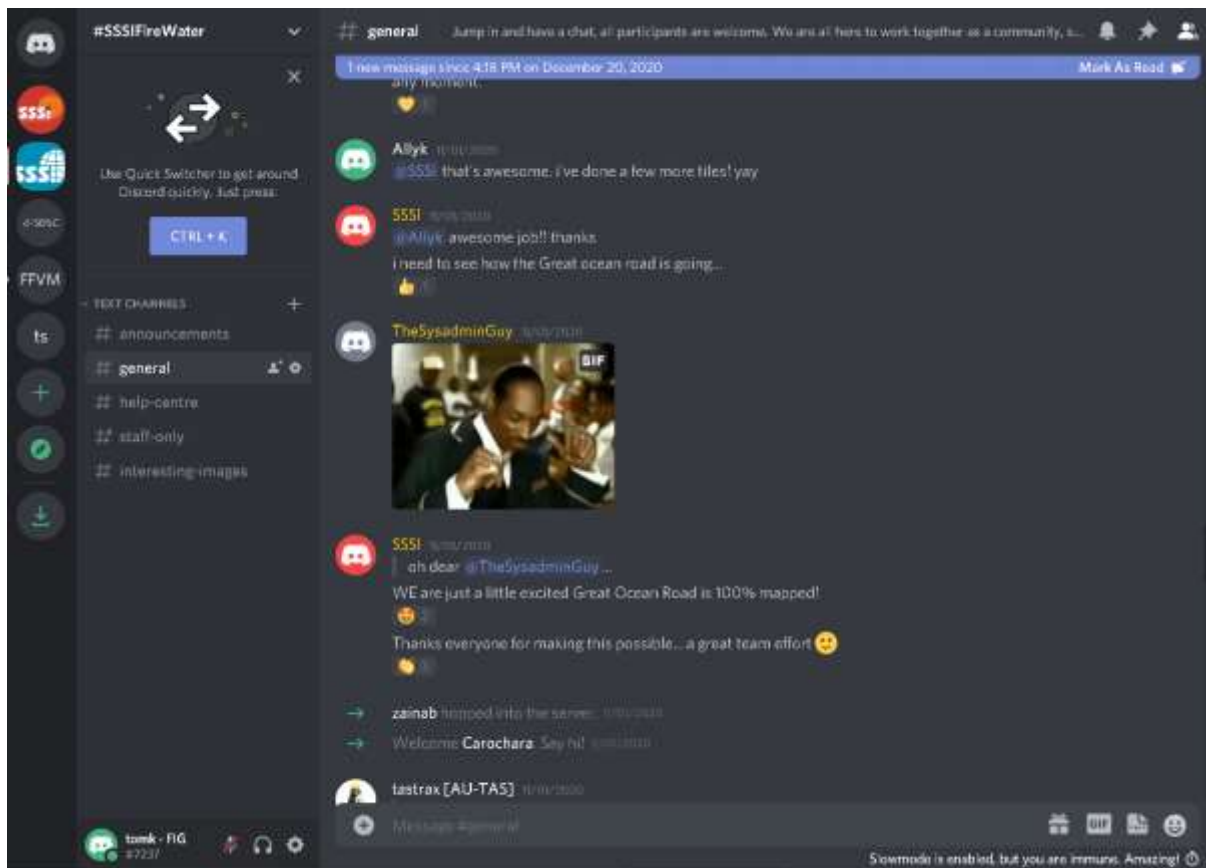


Figure 2: Discord chat server was used as a live forum for all participants to engage, get assistance, and have some fun. (<https://discord.com/channels>)

The Partner & Purpose

Finding partners who are strongly connected to the overall cause or goal is critical for developing a well-structured scope that effectively addresses their needs. Having a partner with a compelling need also assists in building a story that will connect with potential volunteers. In this instance there were several partners to support the FireWater mapathon who had a defined requirement to create a water infrastructure database. These partners also helped us tell and “sell” the story of why this dataset was important for mitigating future bushfires.

It is also important in the planning stages of the event to understand with the key partners what alternatives there are - what use will the end product serve, could it be sourced or developed in another way, such as being purchased from another source where it already exists or could it be generated as a project resourced by the partner, etc. as well as what the plans are for the data after the e-Volunteering event is complete. This helps to clarify and build the case around why citizen scientists will be willing to contribute their time to the cause.

The Project Parameters

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It is important to work with the partners to define as accurately as possible the size and scope of the project to better understand how many volunteers will be required, and what level of experience or skill will be required. Any major miscalculation in these factors can reduce the efficiency of the volunteers' effort, affect morale, and lead to disappointment with the stakeholders.

Project urgency needs to be carefully considered in this assessment. Many immediate disaster response services have requirements for higher level ability and commitment from volunteers to ensure quality and timely deliverables, as well as a pre-existing framework to ensure reliability. Capacity building and longer-term e-volunteering projects have more room to engage less skilled volunteers

In the case of FireWater, the event was a capacity building project with a sense of urgency - having the dataset completed in the early stages of the bushfire season was important for implementation of the dataset. To allow involvement of citizen scientists and still create a high value dataset, two stages of volunteers were enlisted - the first and largest being the lay public as well as experienced geospatial professionals working to digitise static water infrastructure features into HOT OSM. The second included a much smaller team of validators, who were experienced in HOT OSM and were able to rapidly check the quality and accuracy of the edits which the larger group of digitising volunteers created.

The Platform

As with any initiative, particularly those including volunteers, it is important to target the right audience in order to get quality outcomes. To achieve this, an e-Volunteering event should have a sufficient level of difficulty to match the ability of the audience. In the case of the FireWater mapathon, HOT OSM was used as the platform for e-Volunteering, and it is globally accessible and very easy to learn for a lay-audience. This made it appropriate to reach as many potential volunteers as possible, engaging them to easily and quickly assist in the mapping, successfully scaling the group mapping efforts.

Additionally, the Discord platform (Figure 1) was used alongside HOT OSM, serving as a place for active mappers to chat, share their work, meet other mappers, etc. A Spotify playlist (Figure 2) was created for the day which was accessible in many countries worldwide adding a sense of atmosphere, and in some locations, people used videoconferencing to share their mapping experience.

Data to be Analysed

Quality and fit-for-purpose data is the core of a successful e-volunteering event. In making the assessment of what data will be required to achieve the desired outcomes, several not-so

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obvious factors need to be considered, including copyright, temporal and spatial extent, and compatibility with the platform. For the FireWater mapathon, a commercial imagery provider, NearMap, supplied access to their entire ultra-high resolution imagery library for the extent of the mapathon and validation. Having access to this data meant that the resultant water resource dataset was much more reliable and complete, however it was limited in time. The spatial dataset created in Firewater is not able to be linked or referenced back to its parent raster data due to copyright restrictions.

Legal implications

A useful experience from the FireWater mapathon was the discussion around legal implications of creating and using the resultant datasets from mapathons. One of the Firewater partners, a government department, concluded that they could not integrate the FireWater dataset into their existing spatial data framework as it would have constituted a record of private assets, the collection of which had not been formally consented by the asset owners. Legal restrictions of the collection and use of spatial data varies widely between jurisdictions, and this anecdote is an example of why legal implications should be thoroughly considered prior to undertaking an event.

Perks

Sometimes, small things such as prizes can be great incentives to increase engagement levels and heighten participation intensity. In the FireWater mapathon, partners donated small prizes which were offered to participants for a range of participation-related factors, such as most interesting features seen while mapping, and were mailed out to winners after the event. A consideration for future events will be finding e-prizes, such as service, subscription, or web-based products. While regional compatibility or access to such prizes needs to be considered, this creates a more effective incentive with less logistical considerations than a physical prize.

Marketing

Once the partner and scope are defined, most critical element is engaging and recruiting the right number and type of volunteers for the project. To do this effectively some marketing ability is required; market research targeting the desired volunteer audience, branding, advertising campaigns, and consistent messaging all factor into how successful the recruiting drive and the overall event will be. Creating a “marketing brief” at the outset of the event planning is a good way to establish the key requirements for making a cohesive and attractive event.

Training

A simple and short training manual was put together for participants to help to clearly explain the process of creating a HOT OSM account, select a project and tile to work on, and start

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digitising different types of static water infrastructure features, tagging them appropriately. This manual was produced by the SSSI Young Professionals team, and the HOT OSM team checked it prior to release in order to ensure that it was correct. While many participants were familiar with HOT OSM, this manual made it very simple for those who weren't to join the mapathon quickly and easily.

Closing Reflections

The benefits of the VCSP e-Volunteering path are greater than at the individual level. Not only does the e-VCS gain valuable technical skills relating to spatial data and soft skills from working in a global, collaborative program, there are also many benefits to the wider profession. A key benefit is through the increased visibility of the FIG to young surveyors, attracting them toward being more involved in a global network of peers. Additionally, as the VCSP gains more traction, the FIG will become more well-known as a leader having a global impact. Thirdly, the technical lessons learned through this process around crowd-sourced data capture, data analysis, and AI training, will bring the profession into the fore-front of big-data expertise. Finally, young surveyors learning these skills will grow the profession's base of quality mappers.

2.2. Global Collaboration and Remote Governance

2.2.1. The way forward

As part of this new partnership between WG3.6 and the VCSP, the two groups have had open discussions around future collaborations. There are many ideas to develop on including the context and value-add of future e-Volunteering events, their outcomes, and the impact they can have on their audience.

The outcomes of e-Volunteering events will always be to create a useful product or service for the VCSP Partner, while also giving volunteers the opportunity to get tangible and valuable/desirable new skills. The specific audience will depend on the project requirements but will continue to be targeted toward young surveyors for the next three years at least.

The kinds of issues that both groups consider needing addressed are:

- A lack of access to spatial data for decision making and an increasing number climate disasters;
- A lack of preparedness for natural disasters;
- A desire for young surveyors to use AI technology to solve problems but no clear process for them to do so;
- Little-no reference frame / CORS in SIDS;
- A lack of validators for OSM projects; and
- Data on deforestation to assess the impact it is having on our climate.

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To strengthen the relationship between VCSP and WG3.6, address the above issues, and to further increase both groups' outreach, the following are some concepts that may be developed during this partnership.

2.3.2. Future VCSP e-Volunteering Events and WG3.6 Collaborations

While discussion and planning are still required, just some of the projects that the VCSP are looking to hold, range from deforestation prevention or reforestation projects, Missing Maps or OpenStreetMap mapathons, disaster preparedness efforts, and one day, offering support to the FIG Commission 4 and YSN collaboration on Mapping the Plastic. Together, these two groups can increase the value the VCSP can bring to projects by up-skilling young surveyors with particular skills required for e-Volunteering (including OSM validation, data and gap analysis), providing online support to in-Country volunteers (VCSs), and connecting skilled young surveyors through networking and training.

These two groups also see potential in collaborating in some more innovative ways. Brief discussions have been had around developing basic algorithms to support machine learning, creating a Geospatial Next podcast, and creating a package for future e-Volunteering events. Already though, the VCSP have begun collaborating in a more definitive manner: with this paper but also in supporting Commission 3 with their publication planning.

By extending and increasing the outreach of VCSP events, with the help of WG3.6, young surveyors can gain new skills to help solve environmental and social challenges by contributing their existing skills. Vice versa, with the help of the VCSP, WG3.6 can connect with a greater number of young surveyors and create more visibility and attract them to participate in Commission 3 and its activities. In turn, attracting more young surveyors into joining FIG activities and contributing to the continuum of the profession and the Federation.

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