Microsoft Protégé 2020 Case Study: Empowering bushfire-affected communities through data

Team **Capybaras:**

Olga Khabuktanova

and

Lachlan O'Neil

The devastating effects of bushfires extends well beyond the season itself

The aftermath

- Critical infrastructure has been damaged and property destroyed.
- Businesses have been disrupted or wiped out, both due to loss of property and tourism.
- The COVID-19 situation has left no opportunity for these communities to heal through Easter trade[1].
- The ecosystem has been decimated. So far, we know of at leat 84 nationally listed threatened ecological communities[2]. **Almost half a billion animals were lost in the fires[3].** Hundreds of species have been identified as '*the highest priorities for urgent management intervention*'[4].
- The emergency services and volunteering efforts are driven by urgency and day-to-day information from governments. They do not play a role in the long-term recovery.
- In the local communities, often crucial and life-saving information spreads through the word-of-mouth, local initiatives and social media pages[5].

It is hard to see the full extent of these disasters. There are numerous consequences in different areas of life that are not yet apparent or not a priority. Naturally, the government resources are focused on financial aid to restore lost and damaged property and infrastructure. However, it is vital that our information strategy allows us to take a proactive approach and mitigate further devastation.

There is a definite scope for improving the information strategies currently in place

- Right now, problems are assumed, not known. Communities are told, not asked. At the same time, there is a tendency for speculation and misinformation to spread when it comes to the highly-politicised disaster[6].

- There is an opportunity for researching and analysing key issues (including bushfire prevention, ecosystems and wildlife posture and local commerce recovery) and sharing this knowledge within the community and with the local governments.

- The rollout of the NBN in most rural communities creates the opportunity for those places to use technology like never before.

- Microsoft is in a position to share their immense technological capabilities and intellectual resources to help the people help themselves. We should use these technologies to put the power into the hands of the community. After all, they will know best what is needed to promote community recovery.

Microsoft is about empowering people through technology. This core approach is vital in helping the affected communities re-grow

Proposal summary: Empower through data

We propose to give schools in affected communities access to the Power Platform tools and create voluntary extra-curricular clubs for students willing to participate. The students will learn and use the tools on open data sets (data made publicly available to access and use under the open licence). They will pick and analyse problems in their community that resulted from bushfires to help address and prevent those problems from arising again.

Proposal: Community-driven analytics initiative (CDAI)

Setting up the initiative

High-school students in the affected communities receive access to the Power Platform and relevant learning materials to help them analyse relevant public datasets. Participation is voluntary, and the students can choose what datasets they use and what problems they tackle, be that grocery price analysis to identify price gauging or modelling the koala population in their region.

Mentoring by Microsoft's data minds

Each school is paired with a Microsoft Facilitator, whose role is to:

- Explain the platform functionality to students and teachers at a remote introductory session
- Provide inspiration in terms of the power of analytics and the sorts of techniques to consider
- Provide fortnightly mentoring and advice sessions

Learning and discovery

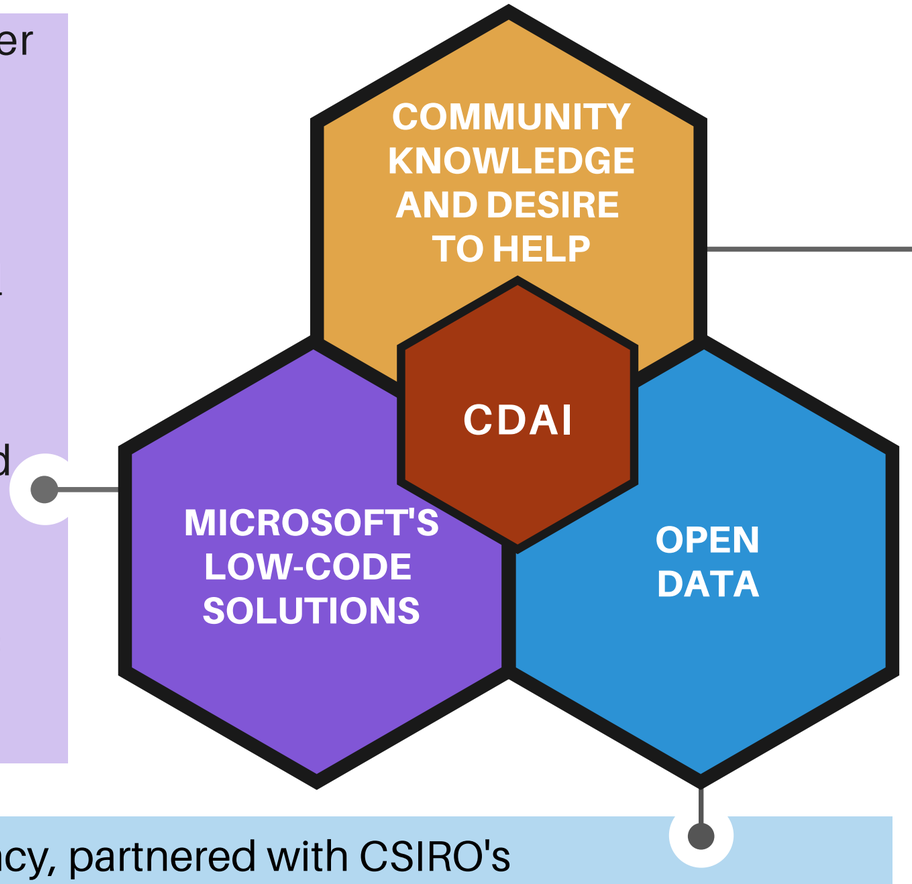
The school teachers become secondary facilitators, guiding students through the daily or weekly discovery process, but are also learning through the experience at the same time. They will get a chance to bounce their ideas off the Microsoft Facilitators in the remote fortnightly one-hour sessions.

Making a difference

The products are publicised and shared with councils, businesses and the general public to promote understanding of the issues within the community and facilitate data-driven decision-making for many different stakeholders: local businesses, not-for-profits, community organisations and governments.

Proposal: Community-driven analytics initiative (CDAI)

The beauty of Microsoft's Power Platform is in its accessibility. Anyone with decent computer literacy can learn to dig into data insights or build powerful analytics and ML applications. Power BI and Power Apps will put descriptive, diagnostic and predictive analytics at the public's fingertips and make it easy to share findings with the community.



Affected communities can ask the right questions and can therefore identify the most relevant data better than external stakeholders. Recognising this fact lets communities take ownership of their future and allows governments to become enablers.

Citizens in regional communities are passionate, creative and eager to help their neighbours. In the aftermath of the bushfire crisis we are lacking not human resources, but tools and direction.

The Digital Transformation Agency, partnered with CSIRO's Data 61 initiative, has so far released over 30,000 public sector datasets (and there are countless agencies releasing data outside this initiative!)[7][9]. Non-sensitive datasets are contributed by numerous government agencies, universities, councils and scientific bodies, from the AFP to the Australian Government Department of the Environment. These datasets are untapped sources of insights waiting to be explored.

Capabilities address information strategy issues and more

The data will help helps communities spot misinformation, identify problems that actually exist and take a proactive approach in reacting to them. The scope is broad and there is room for descriptive, diagnostic, predictive and prescriptive analytics to be used in assessing anything from the bushfire mitigation strategies to tourism-generated cash flow.

Consultants and advisors come and go. CDIA will create knowledge that stays, and is shared, within the community.

This approach gives communities agency and a real say in the governance/strategies that are employed to address the crisis.

It engages the youth, a frequently overlooked stakeholder group, in an educational manner. Above all, CDIA will raise awareness of issues that are not obvious. Not every student will come up with game-changing analysis, but they will come out of the program empowered to make a difference.

High school students are an obvious choice

- Tech-savvy
- Curious
- Eager to help their communities
- Bushfire preparation programs involving children have shown to be a success[8]
- Will be learning valuable skills to help them in their further education

Bushfires are a reality that are not going to disappear. If young people have a strong understanding of the causes and consequences, they will be well-placed to deal with them in the future.

Feasibility: the stakeholders are primed to start

Technology and Resources

Thanks to Microsoft's extensive collaboration tools, it is possible for dozens of schools to participate remotely. Multiple schools from the same area can participate in the initial video conference (this would be up to 5, though it can be more or less). After that, the fortnightly catch-up sessions should be done in groups of three schools per Facilitator, to ensure a more interactive experience. Once the program is fully rolled out and, say, 100 schools are taking part, it will require roughly 34 hours of fortnightly support from Microsoft, which can be split between 16 Facilitators (2-3 hours each).

On the school's end, only one device (that of a teacher) will be required to conduct the sessions with the Facilitators. Assuming that every school has computers and projectors, all that is required is the provision of Teams or Skype to teachers if not already installed.

The feasibility depends, to some extent, on schools and/or households having access to high-speed internet. Fortunately, the rollout of the NBN is at an advanced stage and most communities on the Eastern Seaboard now have access to at least Fibre to the Node.

Feasibility: room to accomodate all affected communities and beyond

Scalability

The program can be trialed in selected schools, gradually letting others join.
The Power Platform manuals are already in place. Any extra learning materials will be developed as required and the feedback form the first set of schools will be used to refine the program approach.

The initiative does not require substantial capital investment on the part of Microsoft and there are few limitations in terms of resources. The software is in place and the public data is free, diverse and growing each day. The only real limit to the scalability is the amount of human resources that Microsoft, schools and students are willing to put in.

Also, the teachers can go on to become primary Facilitators, which should reduce Microsoft's expenditure in the long run. It may be worth considering making Power Platform accreditation available to them for free.

Feasibility: no significant legal barriers

Legal

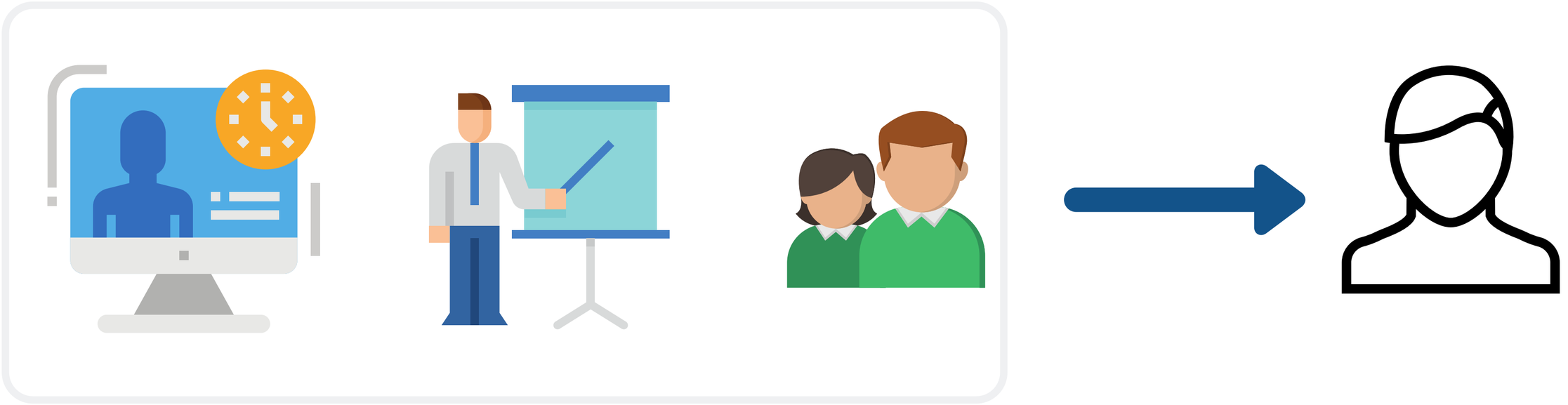
Microsoft facilitators will require to obtain a Working With Children Check. It typically takes between 1-3 weeks and costs $80-$90 per person, depending on the state. The check is valid for five years[10].

The consent of the Parents and Community Council will be required in some cases, although typically such matters will be at the discretion of the principal.

Microsoft often deals with educational organisations, meaning similar licence agreements can be used in this case.

Sucess of CDIA rests on maintaining effective communication between all stakeholders

Further down the tracks and regardless of the main execution framework, CDIA could benefit greatly from multidisciplinary, Agile-like teams involving a Facilitator, a teacher and a student representative. Fortnightly meetings should be held to share experiences, discuss progress and quickly identify and address issues through a constant feedback loop. This setup is also beneficial for communicating important findings to external stakeholders, such as councils and volunteering organisations.



Timeline: Deployed to full capacity in less than a year

JULY-AUGUST

Contacting 2-3 schools (principals and PNCs) to participate in the trial. At this stage, internal recruitment of Facilitators can begin.

SEPTEMBER-OCTOBER

Teacher training/briefing. The teachers may wish to familiarise themselves with the Power Platform beforehand, although the program intends to see students and teachers going through the learning together

NOVEMBER-DECEMBER

The volunteers have applied for Working With Children Checks. Both schools and Microsoft are ready to beging after the summer break.

All mechanisms and documentation are in place to begin after the summer break.

FEBRUARY

The kick-off at the start of the school year. Schools "attend" their first virtual session with the Facilitator and begin on the project. Facilitator sessions are held every two weeks, where the students share their progress and experiences.

APRIL

End-of-term results showcase. The projects are published through community and school sites. Any feedback is acted on and CDIA is ready to expand.


Knowledge is power and Microsoft can give communities the power to regrow and thrive

Sources

[1] ABC News. *Bushfires and now coronavirus put businesses on the brink in Mogo.* Available at https://www.abc.net.au/news/2020-04-12/bushfires-now-coronavirus-put-businesses-on-the-brink-in-mogo/12111280

[2] Department of Agriculture, Water and Environment. Wildlife and threatened species bushfire recovery research and resources. Available at https://www.environment.gov.au/biodiversity/bushfire-recovery/research-and-resources

[3] BBC News. *Australia fires: How do we know how many animals have died?* Available at https://www.bbc.com/news/50986293

[4] Parliament of Australia. *2019–20 Australian bushfires—frequently asked questions: a quick guide. Available at https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1920/Quick_Guides/AustralianBushfires*

[5] The Conversation. *Spread the word: the value of local information in disaster response*. https://theconversation.com/spread-the-word-the-value-of-local-information-in-disaster-response-11626

[6] The Sydney Morning Herald. #ArsonEmergency: how 'fake news' created an information crisis about the bushfires. https://www.smh.com.au/world/oceania/arsonemergency-how-fake-news-created-an-information-crisis-about-the-bushfires-20200211-p53zma.html

[7] Australian government. Data.gov.au. Available at https://data.gov.au/

[8] ABC News. Strathewen Primary school shows the world what kids can do in disasters. Available at https://www.abc.net.au/news/2019-08-29/strathewen-children-bushfire-education-program/11459508

[9] Digital Transformation Agency. Open Data. https://www.dta.gov.au/help-and-advice/guides-and-tools/requirements-australian-government-websites/open-data

[10] NSW Office of the Children's Guardian. Working With Children Check. Available at https://www.kidsguardian.nsw.gov.au/child-safe-organisations/working-with-children-check

Images credit

The New Daily - https://thenewdaily.com.au/news/national/2020/02/14/plant-regrowth-bushfires/

ABC News - https://www.abc.net.au/news/2019-08-29/strathewen-students-embrace-bushfire-education/11454572

ABC News - https://www.abc.net.au/news/2020-01-15/gospers-mountain-fire-1/11870896