

nesta  **THEGOVLAB**

Using Collective Intelligence to Solve Public Problems

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This research has benefited from the input of an advisory board of exceptional scholars and practitioners in the field of collective intelligence. Board members helped us to identify cases for study and finalise research outputs, and their significant contributions to the collective intelligence literature provided a strong foundation for our work.

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Foreword

Nesta's Centre for Collective Intelligence Design explores how human and machine intelligence can be combined to develop innovative solutions to social challenges. Within this we want to understand how digital platforms, new approaches to analysing, collecting and sharing data, and forms of online collaboration can help mobilise people and their collective knowledge to identify problems, develop solutions and learn in new ways.

We believe that collective intelligence can help make our public services better and more inclusive and that it should be part of how any institution thinks about solving problems in the 21st century.

The last decade has seen a rapid increase in experiments and pilots by institutions that have explored different approaches to tapping into the collective intelligence of a place or community through large-scale collaboration with crowds. However, while there are many individual examples, ranging from Taiwan to Helsinki, of how collective intelligence can help improve how we solve public problems, we still don't know nearly enough about how to do this well and how to replicate and build on the successes of pioneering civil servants, non-governmental organisations and community groups. As a result, many organisations still struggle with realising the potential in collective intelligence.

We are delighted to work with The Governance Lab (The GovLab) on trying to address this challenge through capturing the lessons learned from some of the world's leading collective intelligence projects and distilling these into practical advice in the guide that accompanies this report.

Peter Baeck, Co-Head of the Centre for Collective Intelligence Design, Nesta



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Collective intelligence: Governing differently, governing better

As city planner for the City of Lakewood, Colorado, Jonathan Wachtel grew increasingly frustrated with the limits of his ability to develop sustainability projects for this mid-size suburb of Denver. Although many Lakewood residents were enthusiastic about sustainability and frequently called the city to share ideas for neighbourhood projects, Wachtel had few resources to advance them. With the public's calls directed his way, he became frustrated with 'not being able to say anything except thank you'.¹ That's when he decided it was time to try engaging Lakewood's residents.

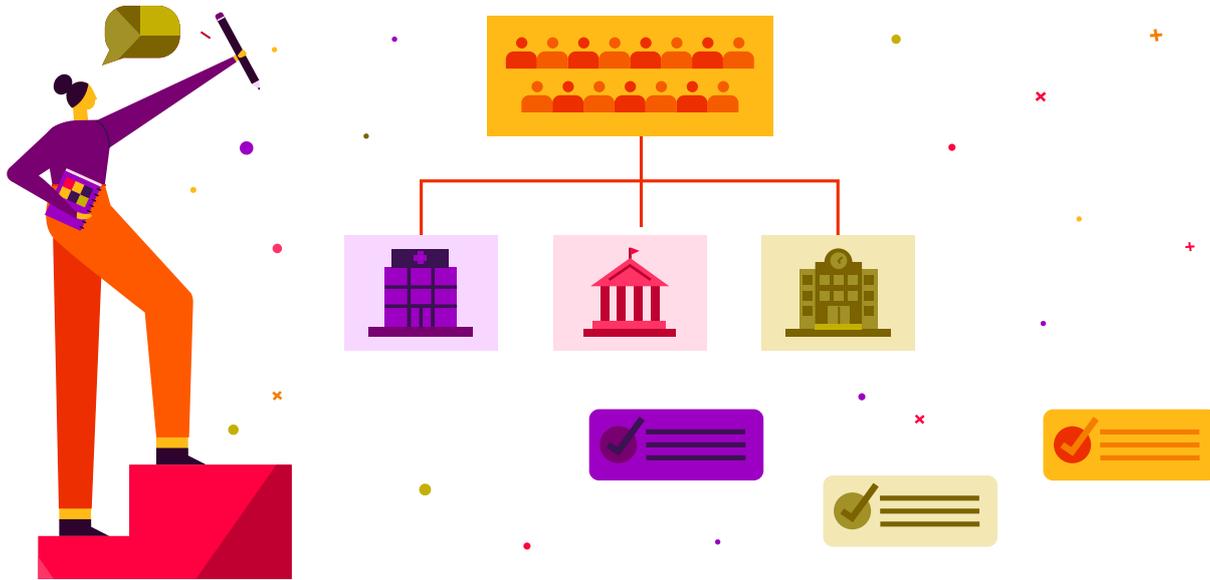
In order to extend his own capacity, Wachtel launched the Sustainable Neighborhoods Program. The programme encourages residents to design and implement their own ideas for sustainability projects, that the city backs with technical advice and leadership coaching as well as help to secure grants and navigate city bureaucracy. Since launching the programme in 2012, nearly 21,000 residents have planned, implemented or participated in more than 500 events, workshops and projects that have reduced waste, conserved water, improved energy efficiency and more.

By leveraging the collective intelligence and collective action of his community, Wachtel has been able to do far more than he could ever accomplish alone. For example, in one project in the neighbourhood of Morse Park, residents have planted 134 new trees on private residential properties, well on their way to their target of 200 by the end of 2020 and helping the city achieve its goal of 30 per cent tree canopy coverage by 2025. 'It works', says Wachtel, who changed his title to Sustainability Manager, 'because we don't tell people what to do. We allow them to propose projects and because they are doing them for their own neighborhoods, there is tremendous agreement'.²

Lakewood is just one of many examples of governments, non-profits and other institutions who are turning to new ways of working to become more effective at solving problems. Key among those new methods is greater collaboration and engagement with the public enabled by new technology.



Figure 1: Residents in Lakewood building a community garden
Source: City of Lakewood



Collective intelligence and 21st-century public institutions

More and more institutions have come to recognise that in the 21st century their in-house capacity and knowledge are too limited when compared to the speed, scale and complexity of many public problems. Instead, they look to networks of people inside and outside of government to make decisions and take action more effectively and, because those decisions involve the community, more legitimately.

The experience, expertise and passion of a group of people is what we call collective intelligence. The practice of taking advantage of collective intelligence is sometimes called crowdsourcing, collaboration, co-creation or just engagement. But whatever the name, we shall explore the advantages created when institutions mobilise the information, knowledge, skills and capabilities of a distributed group to extend our problem-solving ability. Smartphone apps like [PulsePoint](#) in the United States and [GoodSAM](#) in the United Kingdom, for example, enable a network of volunteer first responders to augment the capacity of formal first responders and give

cardiopulmonary resuscitation (CPR) to a heart attack victim in the crucial, potentially life-saving minutes before ambulance services can arrive. Deliberative 'mini-publics', where a small group of citizens work face to face or online to weigh up the pros and cons of alternative policy choices, have helped governments in Ireland and Australia achieve consensus on issues that previously divided both the public and politicians. In Helsinki, residents' involvement in crafting the city's budget and its sustainability plan is helping to strengthen the alignment between city policy and local priorities.

Despite these successes, too often leaders do not know how to engage with the public efficiently to solve problems. They may run the occasional crowdsourcing exercise, citizens' jury or prize-backed challenge, but they struggle to integrate collective intelligence in the regular course of business. Citizen engagement is largely viewed as a nice-to-have rather than a must-have for efficient and effective problem-solving.

Working more openly and collaboratively requires institutions to develop new capabilities, change long-standing procedures, shift organisational cultures, foster conditions more conducive to external partnerships, alter laws and ensure collective intelligence inputs are transparently accounted for when making decisions. But knowing how to make these changes, and how to redesign the way public institutions make decisions, requires a much deeper and more nuanced understanding of when and how to use collective intelligence.

To help institutions meet this challenge, [The Governance Lab](#) (The GovLab) at New York University and the [Centre for Collective Intelligence Design](#) at Nesta have conducted three dozen interviews with public officials, platform creators and community managers across six continents to gather hard evidence of what does and does not work. We studied 30 examples – most of which

were crowdsourced from a network of global practitioners and scholars – from around the world in order to identify what is involved in using and institutionalising collective intelligence successfully. Drawing on this body of original research, we explain how to make collective intelligence an efficient mechanism for improving governance.

Throughout each section, we refer to the case studies to illustrate how collective intelligence can be used to solve different kinds of problems. They cover a wide range of topic areas from sustainability to transportation and include local, regional, national and international perspectives from six continents.

They also illustrate different methods and tools, such as collective problem identification, collective solution identification, group deliberation and more. The tools include everything from simple mobile applications for opinion gathering to more complex data analysis tools that use artificial intelligence. The methods range from completely digital consultations to in-person deliberations, and everything in between.

Finally, 10 of the case studies cover projects that have attained institutionalisation, meaning that they have achieved longevity, survived a change in political administration or achieved success at scale.

Who this report is for

This report is aimed at those mission-driven leaders and managers who have an interest in improving their ability to solve problems legitimately and effectively. We are focused on the public sector, especially city and local governments, but the lessons learned are relevant to anyone trying to become a better public problem-solver.

This includes those who want to design and run a collective intelligence project and those in executive positions who want to embrace a more collaborative and participatory culture.

For the novice, materials are intended to be accessible, regardless of your level of knowledge about collective intelligence. For the experienced practitioner, however, the report is accompanied by 30 original case studies and first-hand research about how collective intelligence is working in the field today.

Anyone with the desire to innovate within a bureaucracy can use collective intelligence to improve the way that public institutions function, and this report and the accompanying practical guide and case studies provide guidance for how to do so, when and under what circumstances.

However, the type of person who will find most value in these materials is the public leader of the 21st century – the public entrepreneur. This emerging class of public servants is eager to try collective intelligence methods like open innovation and crowdsourcing to solve problems and willing to build partnerships across agencies and sectors in order to do so.

How to read this report

This report is structured in three parts. The first is an introduction to collective intelligence and the value proposition for its use in solving public problems. The second part is an introduction to 10 examples of crowd and institution collaboration in practice. Based on the lessons learned from the analysis of institutionalising the use of collective intelligence, the final part focuses on designing for more sustained and effective collaboration between crowds and institutions.

Additional resources

The full set of case studies covering examples of collective intelligence from around the world and the literature review with videos and additional articles that accompany this report, are available at: <https://www.thegovlab.org/collective-intelligence.html>.

01

**Introduction to
collective intelligence**

What is collective intelligence?

In the Internet era when technology decreases the costs of collaboration across a distance, it is an anachronism to assume that 'intelligence resides primarily in the space inside the human skull'.³ The Internet is enabling the proliferation of collective intelligence, which, at its simplest, refers to humans, aided by machines, becoming smarter acting together than doing so alone. When groups of people work together online, they can mobilise a wider range of information, ideas and insights. When such collaboration results in more than the sum of its parts, that is collective intelligence.

Organisations can become more effective in tackling public problems when they know how to tap into such distributed intelligence, expertise and action. No amount of individual erudition or leadership skill substitutes for engaging with others to understand and define the problem to be solved and tapping distributed intelligence and expertise

to refine the problem definition, design solutions, build partnerships and coalitions to implement those solutions, and distribute the labour of taking action and measuring what works.

Applying collective intelligence well and in the right circumstances can lead to public problem-solving that is both more effective and more legitimate.

How collective intelligence is making a difference

There are many benefits to using collective intelligence processes like crowdsourcing, collaboration and co-creation in problem-solving.

Getting more hands on deck

When we turn to a larger community of people, whether from a different agency, from another sector like academia or business, or from across our own community or around the globe, we are getting more hands on deck, more insights and experiences and more collective wisdom and action faster. The diversity of people and perspectives can be very helpful, as can simply having more people working together to accomplish what is hard for you to do alone.⁴ For example, short mobile phone surveys with thousands of people in [Liberia and Sierra Leone](#) who were affected by the 2014 Ebola crisis helped the World Bank to build a just-in-time picture of socio-economic impacts at a time when it was near impossible to safely deploy field researchers.

Understanding the root causes of problems

Working with communities can also help institutions to understand the root causes of problems and develop solutions that solve the problems in ways that are most valuable to the people experiencing them. For example, in York, England, local residents were trained in community research and spoke with more than 1,000 of their

peers to identify triggers of loneliness. They then worked with the city council, non-governmental organisations and community groups to develop solutions such as a 'community cafe' at a local church, where lonely residents could have a safer place to connect.

Engaging larger and more diverse audiences

Engaging a larger and more diverse audience in problem-solving can also help to accomplish what institutions cannot do alone. For instance, the [Ushahidi](#) project originated as a software platform to crowdsource and map incidents of violence following the contested 2007 election in Kenya. The software's developers gave the platform away, and thousands of others have downloaded and adapted the tool for numerous other 'crowdmapping' projects. Today, [Ushahidi's](#) network of users spans 160 countries. More than 150,000 activists have used [Ushahidi](#) for projects ranging from preventing forest fires in Italy to crowdsourcing incidents of sexual harassment in Egypt.⁵

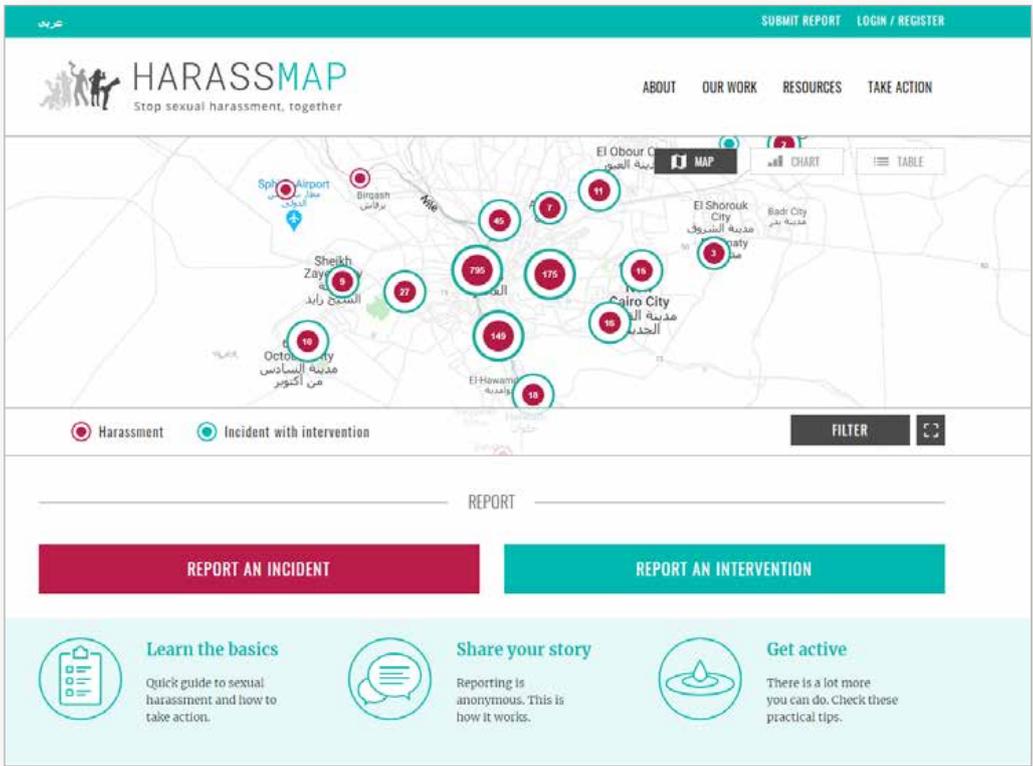


Figure 2: The HarassMap project in Egypt, one of 150,000 global projects using the Ushahidi software
 Source: <https://harassmap.org/en/>

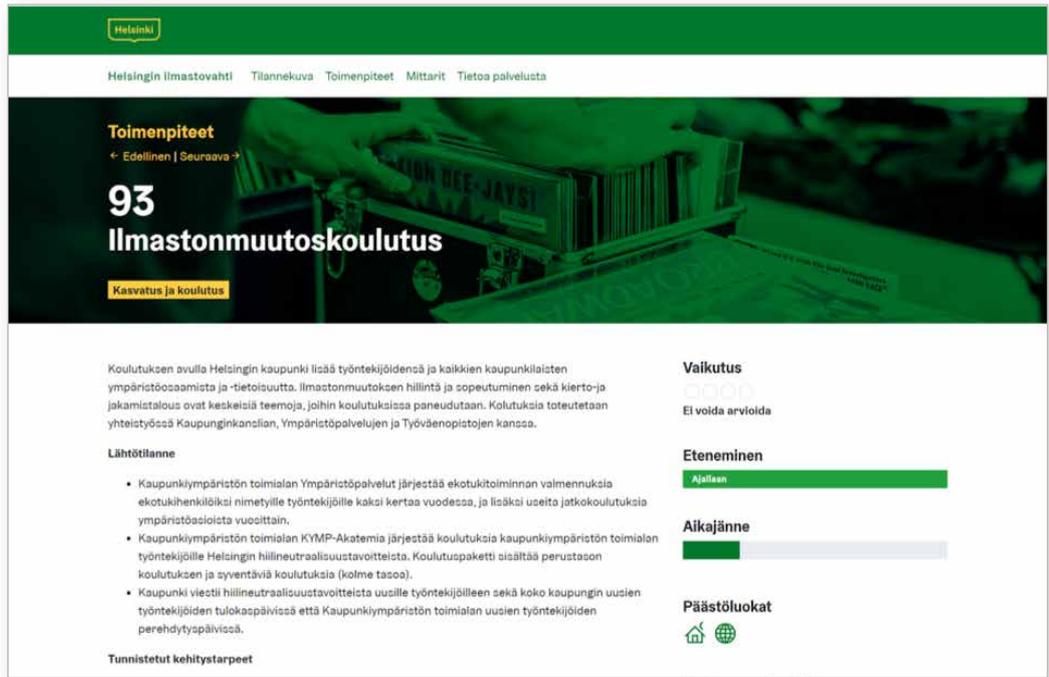


Figure 3: Carbon-Neutral Helsinki Measure 93, which deals with climate change training
 Source: <https://ilmastovahti.hel.fi/actions/93>

Solving problems in new ways

Collecting insights and data from a broader community also helps institutions to solve problems in new ways. In Kentucky in 2012, the Louisville Metro Government and digital health firm Propeller Health (then a research project known as Asthmapolis) worked with more than 1,000 residents to collect data about environmental triggers of asthma and chronic obstructive pulmonary disease. They provided participants with inhalers fitted with sensors that recorded where and when they used their inhalers and the dosage. The metro government then used the data collected to design actions such as new zoning policies and tree planting in at-risk areas. Over a 12-month period, the pilot programme reported an average 82 per cent reduction in asthma rescue inhaler use among participants.

Providing greater accountability

Another function of collective intelligence is to engage a larger audience in providing greater accountability by sharing the work of oversight and evaluation. In the Carbon-Neutral Helsinki 2035 Action Plan, residents of the capital city use the Climate Watch website to hold city officials to account for accomplishing the 147 targets on which civil servants and citizens have collaboratively agreed. Ordinary people serve as real-time monitors of progress.

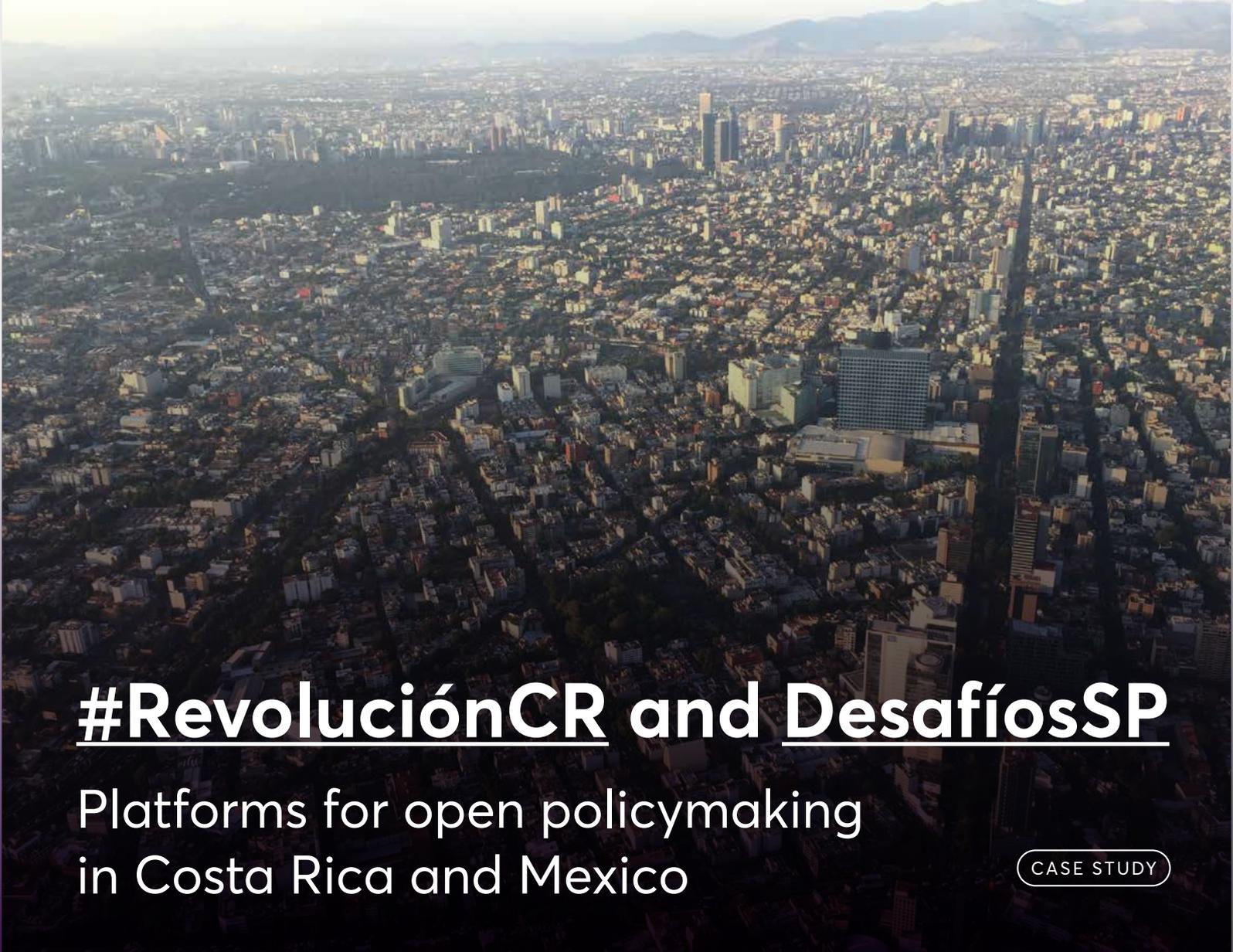
Strengthening legitimacy of decisions

Including citizens in spending money is helping cities to make decisions that are more legitimate. In Iceland, for example, over half of the City of Reykjavik signed up for My Neighbourhood, a yearly participatory budgeting initiative launched in 2011. The city allocates a budget of kr450 million (€3.1 million) for neighbourhood-level projects that citizens propose and vote on using Your Priorities, open-source software developed by the Citizens Foundation. Involving citizens in lawmaking can also bolster legitimacy by creating a channel for citizens to translate their ideas and opinions into real legislative changes. In Belgium, the Parliament of the Brussels-Capital Region and the parliament of the French-speaking community are triallying a citizens' assembly of 45 randomly selected members of the public which will work with 17 members of parliament (MPs) to design new policies. A similar experiment is underway in the German-speaking Ostbelgien region. As these legislative assemblies are the first of their kind, anywhere in the world, to be institutionalised into formal lawmaking practice, they will test whether citizen assemblies can create a more effective and legitimate lawmaking process at the regional level.

02

**Ten examples of
crowd and institution
collaboration in practice**

In this section of the report we examine 10 of the cases that have attained institutionalisation, meaning that they have achieved longevity, survived a change in political administration, are supported by legislation or have achieved success at scale. In some cases, we compared those which have achieved 'staying power' with those that have not, to draw lessons learned about why and when collective intelligence works.



#RevoluciónCR and DesafíosSP

Platforms for open policymaking in Costa Rica and Mexico

CASE STUDY

Location: Costa Rica; Mexico

Years in operation: 2016–2017; 2016–present

Introduction

Many governments are exploring how they can efficiently and effectively co-create solutions to public problems with their residents using open innovation, namely prize-backed challenges to source good ideas from a broader audience and open up policymaking to include citizens. This case study presents two examples, both from Latin America, of such co-creation projects. The first, #RevoluciónCR, a national project run by a non-profit organisation in Costa Rica in 2016, did not achieve institutionalisation due to a lapse in funding, but it did result in Costa Rica's government making several policy changes and led to the creation of a new, award-winning

cooperative organisation, all of which are still in place today. The project's organiser is planning to launch an expanded version of the project in 2020. The second, DesafíosSP, a city-level project in San Pedro Garza García, Mexico, which launched in 2017, also led to specific and implementable proposals as well as the institutionalisation of the process within the municipal government. The goal of presenting these cases in parallel is to: 1) demonstrate the importance of a rigorous problem definition exercise to develop problems that lead to policy solutions; 2) underscore the value of political buy-in for institutionalising collective intelligence projects within public institutions; and 3) illustrate how training citizens and civil servants can amplify the impact of successful proposals.

#RevoluciónCR

IDEAS Labs, a Costa Rica-based social, political and regulatory lab, ran #RevoluciónCR to crowdsource solutions to national regulatory challenges in Costa Rica in 2016–2017. IDEAS Labs crowdsourced solutions to 13 policy challenges. While one of IDEAS Labs’s goals was to develop policy solutions to each challenge, they also aimed to learn what citizens believed were the main problems that Costa Rica faced in each of the 13 policy areas. Participants defined problems and then developed solutions through an open innovation process, which led to an unexpected outcome: only four of the winning proposals were policy changes, while the remainder were ideas for social impact organisations or businesses. Costa Rica’s government has implemented all four policy changes, including the creation of a national public innovation lab. While the challenge has not been repeated due to lack of funding, IDEAS Labs is planning to relaunch #RevoluciónCR as a multi-city challenge called #RevoluciónCR-MUNIS (Municipalities of Local Governments) in mid-2020.

How it all started

The idea for #RevoluciónCR originated in 2015 at a Nesta [conference](#) about public innovation labs. At a coaching retreat following the workshop, IDEAS Labs President Luis E. Loria recognised that many innovation labs tackled incremental problems at the local level.

Loria began working on a way to better understand public problems, based on his experience working with Latin American political organisations. Loria was growing increasingly concerned about the closed-door nature of policymaking in Latin America, where governments tapped a few experts but largely excluded those with lived experience.

These observations led Loria, even before he started IDEAS Labs, to begin developing what he called ‘a model for incubating and accelerating social, political and regulatory solutions’ to public

problems.⁶ The key insight was to engage people who had experienced problems first-hand in articulating and defining those problems with policymakers. Similar to the startup ‘incubators’ or ‘accelerators’ of Silicon Valley, the programme he envisioned would support citizens in designing and developing solutions as well.



Figure 4: Luis E. Loria presenting his model at the Antigua Forum in 2016.

Source: IDEAS Labs

In January of 2016, Loria presented his model at the [Antigua Forum](#), a problem-solving event hosted by the Universidad Francisco Marroquín in Antigua, Guatemala. During the feedback session, conference attendees told Loria that he should test the model in the real world, and so #RevoluciónCR was born.

He named the project #RevoluciónCR ironically. ‘Costa Rica is a very peaceful country’, Loria explained. ‘We have no army, so we haven’t had an armed revolution in decades. So this was something that would immediately catch the eye and will get people interested to learn more about what’s going on.’

The collective intelligence process

IDEAS Labs organised #RevoluciónCR around 13 themes. It selected broad topic areas that it considered to be major issues or opportunities that Costa Rica would need to address and asked the public for solutions to problems in each of these areas: Access to credit



Figure 5: Innovative outreach contributed to #RevoluciónCR's success

Source: <http://www.revolucioncr.com/blog/oportunidades-para-todos/evento-revolucioncr-primeras-conquistas-y-nuevos-desafios>

1. Openness and globalisation
2. Art and culture
3. Quality of life
4. Creativity and innovation
5. World-class education
6. Responsible companies
7. Modern and efficient state
8. World-class infrastructure and logistics
9. Opportunities for everyone
10. Regulation
11. Health
12. Transparency

IDEAS Labs intentionally excluded topics (including pension, tax and monetary reforms) that the organisation was already working to address through other projects.

In keeping with the revolutionary theme, to make the competition more compelling, IDEAS Labs assigned each topic an 'enemy'. For instance, the enemy of 'access to credit' was unemployment. In turn, the winning solutions were framed as the '13 weapons to break the chains that condemn us to misery'.

To lend credibility to the process, for each thematic area, IDEAS Labs invited three well-known leaders in their field to form an expert group, including one representative each from the private sector, the non-profit sector and academia.

On 4 July 2016, the Costa Rican Congress held the launch event for the #RevoluciónCR competition.

During the first phase of this open innovation challenge, which ran from 4 July to 30 September, participants submitted solutions for 1 of the 13 thematic areas on the [revolucioncr.com](http://www.revolucioncr.com) website.⁷

They had to fill out a form, providing their name, occupation, sex, place of birth, place of residence and contact information (email address and phone number) along with a description of:

- The problem at hand
- Why the problem is important for Costa Rica
- The proposed political, social or regulatory solution
- The expected impact and how it will be measured
- A plan for implementing and financing the solution
- A list of three experts who could act as mentors in the implementation
- A list of three organisations who would be interested in collaborating

Participants submitted 660 proposals, with the greatest number relating to the 'quality of life' category (147 proposals).⁸ Then, the panel of three experts in each area evaluated the submissions based on feasibility, quality and potential impact. The 'arts and culture' thematic area received only five submissions, none of which met the minimum standards of the theme's expert group. As a result, the category was eliminated, bringing the number down to 12. In October, each expert group released a shortlist of the three best submissions for its theme. Each of the 36 finalists were then invited to submit a three-minute video explaining the solution.

From 2 December 2016 to 15 January 2017, the public voted on the best solution in each theme. Voting was conducted on the [revolucioncr.com](http://www.revolucioncr.com) website and was open to anyone who registered using a Facebook account.⁹

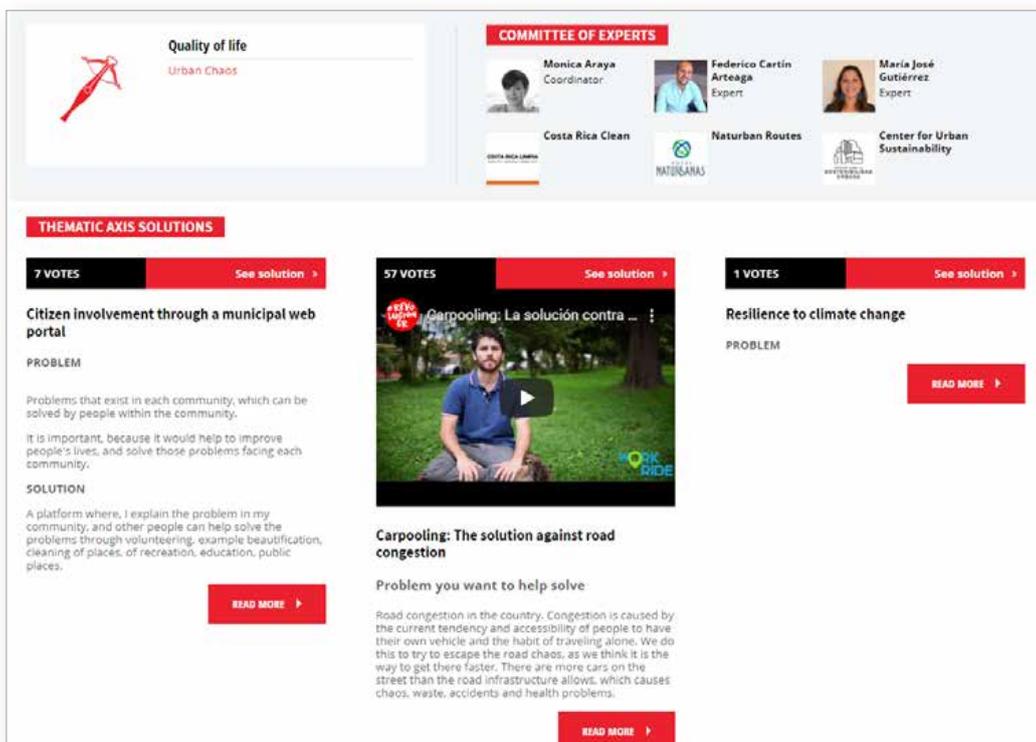


Figure 6: Voting results for the 'quality of life' theme (translated by Google)

Source: <http://www.revolucioncr.com/ejes-tematicos/calidad-de-vida>



Figure 7: The winners were honoured on 4 July 2017 <http://www.revolucioncr.com/blog/creatividad-e-innovacion/costarricenses-podran-apoyar-desde-todas-sus-trincheras-implementacion>

The 13 winning solutions were announced on 16 January 2017. IDEAS Labs then met individually with each of the participants who submitted a winning proposal to learn more about each solution and what kind of support would be needed for implementation.

As an incentive for participation, IDEAS Labs pledged to provide support to the 13 winning solutions.¹⁰ While IDEAS Labs did not provide financial backing, they did offer connections to ministers or organisations doing relevant work. On 4 July 2017, IDEAS Labs hosted an event at the Hall of Former Presidents of the Republic of the Costa Rican Congress to honour the winners on the one-year anniversary of the 'revolution'.¹¹

Outcomes and impacts

#RevoluciónCR attracted a lot of attention and demonstrated that ordinary people, if asked, would participate constructively in defining problems and generating ideas for solutions.

As noted above, while #RevoluciónCR intended to source policy and regulatory solutions, only four of the winning solutions were clear policy proposals. The remainder were ideas for new organisations or businesses that would address the problems identified in the proposal. For example, the winning solution in the 'responsible companies' category was a proposal to create a cooperative organisation for the deaf community. Today, that idea has been realised by BoaPaz Coop, an award-winning project founded by Jose Noboa that empowers people with disabilities, migrants, LGBTQ+ people and other marginalised groups through social inclusion.

IDEAS Labs originally planned to engage the winners in a three-day accelerator programme inspired by the Antigua Forum model, which would have brought together policy experts, donors and public and private sector leaders to develop implementation plans around the ideas. However, since the majority of winning solutions were not related to policy solutions, the meeting was cancelled.

Despite these challenges, four policy solutions can be directly attributed to #RevoluciónCR, including the government's creation of a national public innovation lab. As of early 2020, although the lab has been established by the Presidency of the Republic of Costa Rica with support from the Inter-American Development Bank, it has not yet been publicly launched. So far, the lab has run three pilot projects, including a conditional cash transfer programme, a programme for home improvements reform and a reform to the process of dealing with minor car crashes. Two of the three remaining policy reforms, which cover access to credit and regulatory improvements through the elimination of unnecessary procedures, were implemented by the Ministry of Economics, Industry and Commerce. The other, a proposal to improve transparency and access to information for tax collection, was taken into consideration by the vice president of the Republic and is a priority for the Ministry of Finance that should be implemented in the next two years.

While intended as an annual event, #RevoluciónCR ran only once, from 2016 to 2017. The initiative then stopped due to lack of funding. However, IDEAS Labs, taking a page from the success of DesafíosSP in Monterrey (see below), plans to restart the #RevoluciónCR challenge in mid-2020. This time, it will be a multi-city Challenge called #RevoluciónCR-MUNIS (Municipalities of Local Governments). They are also considering relaunching the project at the national level in Costa Rica or in collaboration with civil society organisations that have expressed interest in Mexico, Venezuela and the Dominican Republic.¹²

DesafíosSP

DesafíosSP (Challenges), a year-long pilot initiative run by the city of San Pedro Garza García in collaboration with The GovLab and Codeando México, which also ran from 2016 to 2017, resulted in the implementation of the winning solutions during that year. The city is also implementing five more. It hired the director of DesafíosSP to run citizen engagement for the city and implemented the use of collective intelligence to tackle urban challenges. San Pedro Garza García is also one of five cities that will replicate the method in 2020.

What was the difference? The organisers of DesafíosSP and #RevoluciónCR had different objectives and, consequently, the initiatives yielded different outcomes. DesafíosSP aimed to develop multiple solutions to a small set of specific problems at the city level. As such, it included a rigorous process of defining the problems prior to the open innovation competition. It ran an open innovation competition in 4 areas – rather than the 13 covered by #RevoluciónCR – and collaborated with the municipal government, thereby securing engagement from civil servants. It also required more detailed solutions from citizens. To win the competition, citizens and civil servants had to go through training together to turn ideas into implementable proposals.

How it all started

In 2012, the United Nations Human Settlements Programme declared Latin America and the Caribbean the most urbanised region on the planet, with 80 per cent of its population living in cities.¹³ The city of San Pedro Garza García in the Monterrey region of Mexico is one of the many localities that has been grappling with challenges brought on by growing urbanisation, and transportation and its associated costs has persisted as one of the most troubling issues. In an area where residents own 1.34 cars on average and 85 per cent of school children are driven to school individually, the time these inhabitants were spending in traffic became excessive, as did the economic and health implications that came with it.¹⁴

To address this problem, city council member Graciela Reyes recognised the value of soliciting expertise and experience from the often-overlooked public. She acknowledged that the city council did not necessarily have the answers to all pressing challenges, such as reducing traffic and improving transportation, but realised that the community might. So she got backing from Mayor Miguel Treviño and launched the Desafíos programme in October 2016. Working in partnership with Codeando México and The GovLab, the city posed a call to action for residents to help tackle the mobility crisis and three other major urban challenges: reducing pollution, improving government efficiency and enhancing public spaces.

The collective intelligence process

How did it work?

In collaboration with the City of San Pedro Garza García, The GovLab aimed to pilot a new methodology for citizen engagement that would create the 'conversational infrastructure' necessary to source novel approaches from civil servants and the public.¹⁵ This crowdsourcing and capacity-building process aimed to collect, develop and learn from a diverse group of proposals through four steps:

- **Design** and launch five open innovation challenges to solicit good ideas from the public and civil servants to solve hard problems facing the municipality.
- **Train** the winners of the challenge to further develop their proposals into actionable and implementable policies.
- **Connect** the winners with an expert network of global and local experts to support the problem definition efforts of the municipality and, later, the project development efforts of the selected participants for each challenge.
- **Learn** from the experience of running this pilot, with the aim of articulating a replicable method for Latin American cities.

The city launched an online call for proposals on 8 October 2016. Participants could submit an idea in response to one of the four challenges or in response to an open topic of their choosing. The community was given a chance to explain how they would solve an aspect of a given problem and then asked to form teams that would help develop the idea. In turn, the government committed to implementing the 10 best proposals and to helping develop the ideas using coaching and mentoring by leading experts in the region.¹⁶

Overall, participants submitted 125 applications on the four designated topics. There was also the option to submit an application under 'other'. The mobility challenge was the most popular topic with 22 submissions. After winnowing down the less-developed or off-topic proposals, 52 remained, and in December, a panel of judges selected 10 winning submissions from teams and individuals comprising 50 participants. In January of 2017, The GovLab launched a 10-week coaching programme consisting of a series of weekly two-hour meetings held both online and in person. These sessions included collaboration with mentors from government and academia within the municipality and from across Mexico and around the world to help semi-finalists improve their projects.



Figure 8: The 50 participants in DesafíosSP

Source: <https://www.forbes.com/sites/bethsimonenoveck/2018/01/24/city-challenges-collaborative-governing-for-public-problem-solving/#4ef7b0216df3>

Who participated?

Any community member with an interest in collaborating with public institutions and who was willing to commit to coaching in the event of success could enter, with priority given to teams over individuals. While the initiative was promoted on social media, at neighbourhood meetings and by email, nearly half of the applicants reported that they learned of the project through word of mouth.¹⁷

Only 26 per cent of the applicants had previously participated in other citizen engagement opportunities (not counting voting in elections). They were motivated in part by using technology to improve the area. As one participant said: 'We want to make a difference and improve the place in which we live by learning how to use tech for the public good.'¹⁸

Nearly half (47.2 per cent) of applicants came from the private sector. The other half was split between students (34.0 per cent) and academics (14.4 per cent).

While participation was diverse in gender terms, with more women participating than men, the group was less diverse in relation to educational background. The vast majority of participants were highly educated, with 94 per cent holding a university degree. A further 14 per cent held a master's degree, and 12 per cent held a PhD. Only 6 per cent of participants were current college students.



Figure 9: A face-to-face workshop for DesafíosSP participants

Source: <http://desafios.sanpedro.gob.mx/galeria/>

Outcomes and impacts

Fifty participants contributed 20 hours per week for 10 weeks to develop their solutions – a total of 1,000 hours of public service. Through coaching sessions, these participants developed 10 implementable plans to address challenges in the city, which covered all five topic areas. So while the programme did not engage a particularly large audience, it successfully facilitated collaborative problem-solving between diverse groups across sectors.

For example, to address the mobility issue, two lawyers, one civil engineer, one architect and one political scientist formed a volunteer team using open city data about school locations and routes to develop a plan to get more kids to school efficiently through carpooling, bussing and walking together. A first-phase pilot was carried

out in nine education centres. This consulted 1,570 families about their transportation habits, routes and estimated time of daily transfers, to better understand the mobility conditions within the city.

As a result of the mobility challenge, several schools in the area committed to implementing an initiative aiming to reduce the number of vehicles on the road transporting children to and from school. In other words, the mobility aspect of DesafíosSP led to collective community action to solve a major problem for which no one had been able to champion a movement to address.

One year after the team completed the plan and launched the pilot to test new ways of travelling to school, according to the Mayor's Office, less than 5 per cent of children in the pilot neighbourhood were being driven to school individually, down from 85 per cent. The pilot also produced the necessary data for the city to establish a carpooling policy for schools, city officials and commuters in private sector corporations.

Current status

In San Pedro Garza García, several of the Desafíos projects are in the design and implementation phases. The carpooling project, which was piloted in 2016, is currently being scaled up and replicated across the city, which is also looking to improve commute times for public servants as well as schoolchildren. Five of the other winning projects are on their way to being implemented.

The GovLab is planning to expand the DesafíosSP method to other Latin American contexts through a multi-city Challenge programme. This initiative will engage five cities in Northern Mexico simultaneously to define specific problems, then design and implement open innovation challenges to develop solutions. The programme is planned to run for nine months and will involve San Pedro Garza García as a co-sponsor along with four other cities that will be chosen by a board of advisers. The multi-city Challenge aims to repeat the successes of DesafíosSP while also allowing the participating cities to pool their resources and collective intelligence to solve problems at a greater scale.¹⁹

Lessons learned

#RevoluciónCR and DesafíosSP offer several lessons for open innovation challenges in the future:

1. **Get high-level buy-in:** City council member Graciela Reyes and Mayor Treviño championed the initiative in Mexico, and Vice President Ana Helena Chacón supported the project in Costa Rica. This high-level backing is something the initiatives shared in common.
2. **Limit the number of topics:** Monterrey crowdsourced solutions to 4 topics compared to the 13 covered by #RevoluciónCR. This allowed them to secure relevant coaches and task public servants who would later be responsible for implementation. In retrospect, #RevoluciónCR was too broad. Future initiatives could garner more focused and impactful submissions if they concentrate on 2 or 3 targeted areas rather than 13 complex themes. The length of the initiative – a year from start to finish – also posed a challenge in retaining the public's interest throughout.
3. **Engage with participants early:** IDEAS Labs could have provided mentorship to participants earlier in the process to encourage stronger submissions with a greater chance of implementation. Loria remarked that many of the participants did not have a well-developed understanding of the problem they were aiming to solve, leading them to submit ideas that were already in place. In contrast, in Mexico, there was a rigorous process of defining more detailed problem statements, which, in turn, led to more focused solutions from citizens.
4. **Combine methods:** While civil servants and members of the public are eager to participate in solving public problems, they too often lack the know-how to leverage digital technologies and the collective intelligence of institutions to this end. Anticipating this challenge, The GovLab successfully combined the open innovation challenge with a mandatory training programme that readied Desafíos participants to meet and overcome the hurdles they would face in designing and implementing their projects.

Carbon-Neutral Helsinki 2035

Collaborative climate action in Helsinki

CASE STUDY

Location: Helsinki, Finland

Years in operation: 2018–present

Introduction

Many cities have a long-term sustainability plan with a series of ambitious goals for the distant future. Yet such plans are too often long on promises and short on actual accomplishments. Seeking to avoid this pitfall, Helsinki's Mayor's Office published its collaboratively drafted and continuously monitored Carbon-Neutral Helsinki 2035 Action Plan in 2018. The plan lays out 147 goals with concrete actions assigned to civil servants within Helsinki's government, who in turn report data on their progress through the city's

Climate Watch website, where citizens can hold them to account for progress. This collaborative approach, which engages the whole city in setting and achieving targets, helps to ensure that each necessary action is taken, while also institutionalising collaboration across government departments to further fine-tune the carbon-neutral plan and its implementation. The unique website is open-source, meaning that others can freely adapt and modify its code to create their own citizen monitoring projects, and the creators strongly hope other cities will reuse the tool to set and monitor goals as a community.

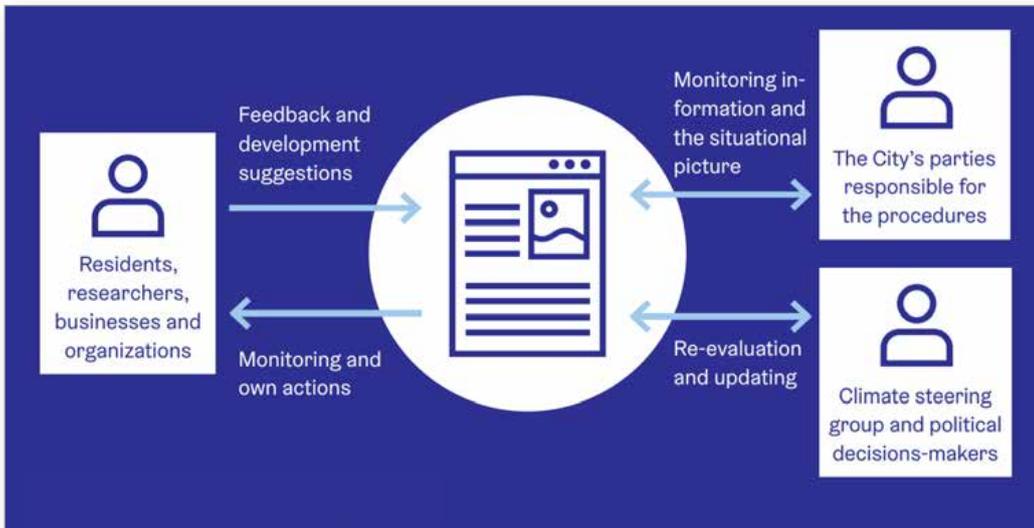


Figure 10: Blueprint for the Collective Action Scheme model

Source: https://www.stadinilmasto.fi/files/2018/12/Helsinki_180618_FinalReport_CASintoPractice.pdf

City of Helsinki, Avanto Insight Ltd, Finnish Institute of Health and Welfare

How it all started

In 2017, Helsinki's newly elected city council drafted a four-year [strategic plan](#). The council aimed, among many other goals, to make Helsinki carbon-neutral by 2035. The plan tasked city officials with rapidly putting in place an effective road map for carbon neutrality 15 years earlier than was previously planned (the previous target was for 2050). Recognising the ambitiousness of this goal, the city sought to engage as many stakeholders as possible in the design and implementation of the plan.

With this in mind, the Carbon-Neutral Helsinki 2035 Action Plan was co-written by an expert group convened by the city's Urban Environment Division in an open process, using input from workshops for civil society organisations, stakeholders such as Helen (the city's energy company) and researchers.²⁰ Furthermore, the city displayed all documents online in real time for public comments through the action plan's website (stadinilmasto.fi).

This collaborative drafting process produced an action plan identifying 147 actions to be taken to reduce the city's carbon emissions by 80 per cent from 1990 levels while also offsetting the remaining 20 per cent by 2035.²¹ Acknowledging that few of these tasks could be undertaken by the government alone, as well as the need for public accountability lest the plan fail to be implemented and become obsolete, the city sought to create a collaborative monitoring system that would engage the public as stakeholders in the plan's implementation, evaluation and refinement.

The collective intelligence process

How does it work?

In November 2019, the city launched the Helsinki Climate Watch website (<https://ilmastovahiti.hel.fi/>) to track the city's progress towards each of the 147 measures defined in the action plan. For each measure, the website identifies:

- If the measure is on track, behind schedule or not started
- The planned time span for completion
- Specific tasks that have been accomplished
- The tasks that still need to be completed
- The departments responsible within the city organisation
- A contact person (or persons) in the city's government who is responsible for updating the measure on the website
- Key performance indicators of the measure and the steps by which these will lead to emission reductions
- Estimated emission reduction potential and the scope (rated as 1, 2 or 3)

The aim is to develop an operating model for effective, transparent and collaborative management of climate actions that offers more real-time feedback instead of waiting for annual reviews or multi-year milestone reporting. The website is currently the most visible element of this – it provides an easily digestible snapshot of each task along with the person responsible for completion, making it easier for interested citizens

Pyöräliikenteen baanaverkon toteutunut pituus

Viimeisin mittaus

2018
6 km ▲1 km

Tavoitteeseen matkaa

1 vuotta
14 km

Tavoite

2020
20 km

Mittari mittaa pyöräliikenteen baanaverkon toteutunutta pituutta eli sitä, kuinka monta kilometriä erityisen laadukasta, baanankriteerit täyttävää pyörätietä Helsingin alueella on. Tämän avulla seurataan toimenpiteen 3 Pyöräliikenteen baanaverkko edistymistä. Kattavampi ja yhtenäisempi pyöräväyläverkosto on yksi pyöräilybarometrissä tärkeimmiksi nousseista asioista, joka saisi helsinkiläiset pyöräilemään enemmän. Erityisen laadukkaiden ja mukavasti ajettavien pyöräväylien määrän lisäämisen pitäisi siis suoraan lisätä pyöräilyn määrää Helsingissä. Pyöräilyn määrän lisääntyminen paitsi vähentää liikenteestä koituvia päästöjä, myös edistää kuntalaisten terveyttä.

Lisää tietoa menneiden vuosien pyöräteiden pituuksista ja suunnitelmista löytyy tästä kaupunkristölautakunnan päätöksestä ja (myös päätöksen sivulta löytyvästä) vuoden 2014 pyöräilyn edistämishjelmasta. Edistämishjelmasta löytyy esimerkiksi kartta suunnitelluista pyöräteistä. Vuoden 2018 tilanne ja 2018-2020 tavoitteet löytyvät 2019 pyöräilykatsauksesta.

Kuvaaja

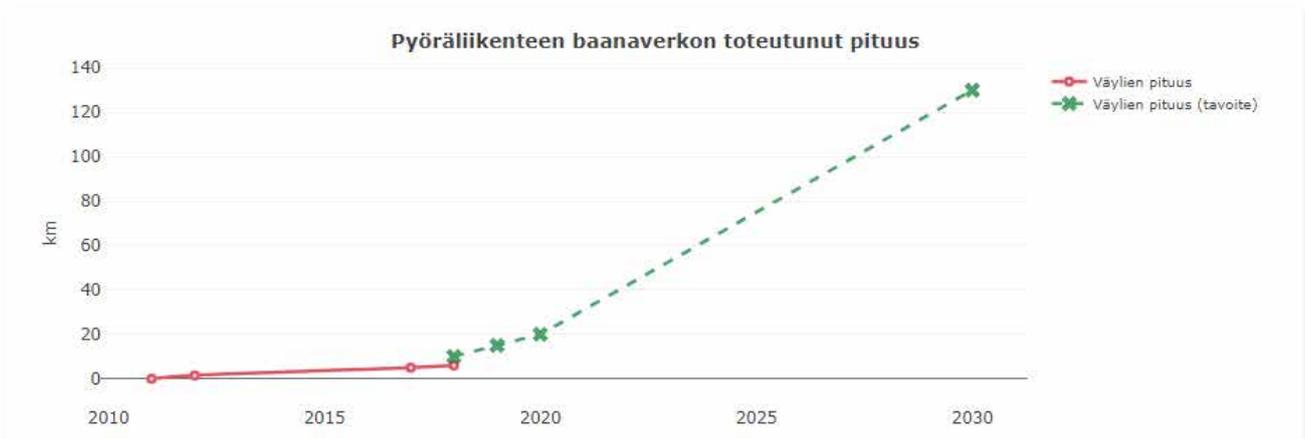


Figure 11: The indicator and data visualisation for Measure 34, which deals with the inner-city cycling network

Source: <https://ilmastovahti.hel.fi/indicators/34>

CC BY 4.0

to get involved in the monitoring and evaluation of the issues they care about. 'We want to let people see what we are doing so that they can also put some pressure on the politicians', said Sonja-Maria Ignatius, product owner of Climate Watch. 'If they don't know what's happening, it's very difficult to influence anybody.'

While Climate Watch is the public-facing interface, it has also developed capacity for city officials to

work collaboratively to coordinate actions and monitor them in real time. Each of the 147 actions is attributed to a unit within the city's government which is responsible for its implementation. Each unit assigns one or more contact persons to each task, who update the content for each action on the Climate Watch website. There is a separate administration interface where the contact person can log in to make these updates.

Box 2: Carbon-Neutral Helsinki 2035 contact persons

Most of the actions within the Carbon-Neutral Helsinki 2035 Action Plan require effort from other stakeholders outside the government to succeed. However, the City of Helsinki assumes responsibility for making sure these actions are completed and allocates these actions to departments within the city's government to oversee their implementation.

The city also realises the importance of delegating a specific person to oversee each of the actions. The contact person is in charge of *monitoring* a specific action or actions. In most cases, the contact person is not solely in charge of the *implementation* of the action, because most of the actions require collaboration among many departments and often also necessitate political decisions. The contact person helps in the coordination of the action, including liaising with those responsible for its implementation and making sure that the information on the Helsinki Climate Watch website is up to date.

To quantify progress towards each target, the platform also pulls raw data from the relevant unit in the city's government, entered manually using the administration interface directly into the Climate Watch website. If necessary, the data is then run through a statistical model to calculate the final 'indicator' – a measurement that quantifies how much progress has been made towards the target and what remains to be done. For example, progress towards Goal 2, which aims to construct a 130-kilometre bicycle path network by 2025, is measured in kilometres of bicycle paths. Or Goal 68, which aims to eliminate oil as a form of heating by 2035, is measured by the amount of greenhouse gas emissions from oil heating. These data are collected by the relevant agency. But because the information is made transparent via the website, the public can also verify claims.

Such data-driven indicators provide empirical measures of success while also allowing less-technical users, whether citizens or those in the city's government, to more easily understand how much progress has been made towards

each goal and what remains to be done. Sharing this data in a common system, rather than this intelligence being compartmentalised within each department, also helps civil servants to learn from the challenges others have faced.

Who participates?

This monitoring scheme taps the collective intelligence of three main stakeholder groups:

- **Civil servants** are responsible for reporting on the city's progress towards the goals. The network of contact persons consists of approximately 100 civil servants.
- **Citizens, businesses and organisations** can see how the actions are progressing and can ask for further information from the contact persons. The platform will pilot features to further engage these participants in the near future.
- **Political decision makers** are responsible for re-evaluating and updating the Carbon-Neutral Helsinki 2035 plan as necessary.

The website has seen between 1,300 and 1,800 visitors per month. As the city has not marketed the site much, those numbers are considered reasonable at this stage.

Outcomes and impacts

The monitoring system is less than a year old, so it is too early to calculate the impact the plan has had on greenhouse gas emissions or civic engagement in Helsinki.

However, anecdotally, the monitoring system has helped engage members of Helsinki's government in monitoring the action plan collaboratively. Sonja-Maria Ignatius mentioned that the responsible persons for each measure have helped to build accountability in city government departments. By distributing responsibility, the initiative has spurred departments to organise events to support Carbon-Neutral Helsinki of their own accord rather than at the initiative of the Environment department. Esa Nikunen, Director General of Environmental Services, echoed this sentiment, saying that

Climate Watch also empowers our staff to take more responsibility of the climate actions, and the citizens can observe how we are advancing. The openness of the platform creates a lot of opportunities to improve collaboration in climate change mitigation.

Citizen groups have also stepped up their efforts. Just days after launch, a community group in Helsinki calling themselves the Climate Watch Dogs formed to aid in monitoring the city's progress towards each goal. The group reached out to each Climate Watch agency contact person to ask why some measures were delayed and to discuss the city's planned steps to get these back on track. This engagement demonstrates the public's interest in collaborating with the city to evaluate and continuously refine the climate action plan.²²

Key innovation

Carbon-Neutral Helsinki 2035 has incorporated collaboration at each step of implementation, from the collaborative drafting process that produced the report through to the transparent monitoring system. As one city leader wrote: 'Collaboration is the key in making Helsinki carbon neutral, and the city is constantly looking for ways to engage people into climate action.'²³

The city also designed the Climate Watch platform itself through a collaborative process. The city first created prototypes and demos of the website, which it presented at workshops with city stakeholders and residents to garner their feedback. For example, people reported that it was difficult to compare progress across actions. In other words, while it was easy to understand progress on one of the 147 goals, comparing the progress of one goal to that of another was difficult. Responding to the input, the team added tasks within each action, determined by the city group responsible for completing the action. This more granular means of measurement made it easier to compare progress across goals. This innovative focus on collaboration has created a plan with reasonable tasks and a monitoring system with an enthusiastic and engaged user base. The platform plans to continue to refine both the platform and the targets themselves with input from its users.

Current status

The carbon-neutral initiative appears to be well positioned within the current administration. The city council and mayor have made collaboration between citizens and the city's government a priority. Furthermore, the Urban Environment Division created a software development team of five people working full or part time to manage implementation of the Climate Watch website. The website's project manager works in tandem with the action plan's project manager to manage the network of officials working on policy implementation.

The city spent a significant amount of time and energy building a competent team with a commitment to open government. As Ignatius told us:

it has been crucial for us to have a versatile team: visionary people with big ideas and engineer type of people who understand the big picture but can actually break the visions down to the next concrete steps and execute them.

The City of Helsinki has received funding from the European Union climate change innovation [initiative](#) (EIT) Climate-KIC for the development of Climate Watch.

Going forward, the city has also expressed an interest in giving citizens greater opportunities to collaborate with one another and with city leaders on Climate Watch. One way the platform's organisers would like to do this in the future is by inviting citizens' input on which, if any, of the 147 measures needs to be updated or suggestions for how to scale these up to have a greater impact. Another idea is to allow users to form groups oriented around a particular topic – 'adopt a measure' – which would help to build a network and encourage citizens to take action.

However, as the Carbon-Neutral 2035 plan was only launched in 2018, the initiative has not yet survived a change in administration. It is also not widely publicised, as the organisers are still designing more participatory mechanisms for citizens, meaning the aspiration for robust citizen engagement is still largely unrealised. Furthermore, the indicators are driven by data that, for the most

part, must be manually collected and calculated. Unless more is invested in awareness building and training for both public servants and the public to participate, the possibility remains that a future administration could abolish the plan and its accompanying monitoring system or that the process will fizzle out.

Lessons learned

While Carbon-Neutral Helsinki 2035 is still in its early days of implementation, four factors will be key to its ongoing success:

1. **Accountability by design:** Even though it is highly collaborative, the architecture of Carbon-Neutral Helsinki's implementation plan assigns clear responsibilities to specific persons. This combination of public participation and collaboration with executive accountability suggests a successful pathway to action that takes advantage of collective intelligence while ensuring orderly implementation.
2. **Policy and delivery:** The Urban Environment Division brings together policy and implementation. Responsibility for the substance of the plan and the creation of the web tools are housed in the same place, which may limit the problems that have arisen elsewhere where the website has been created as an afterthought.
3. **Data-driven and real-time performance management:** The process envisions real-time calculation of how the city is progressing on its 147 indicators. This is an ambitious task, especially as not all indicators are supported yet by data that can be automatically tabulated and updated. But the aspiration to calculate performance in real time and to do so transparently in public view represents a sea change in governing that will have implications far beyond this project.
4. **Use of open-source tools:** The use of free and open-source software may contribute to the initiative's staying power in Helsinki and beyond. Future administrations can freely adapt the existing websites and tools to meet new challenges without the need to pay licencing costs for expensive proprietary software. During development, the city reports that its use of open-source tools allowed the development team to create and then change the prototype for the Climate Watch platform, refining it according to users' feedback. Open-source software is also used to engage users on the platform. The Jupyter Notebook software, for instance, allows any user to experiment with creating and calculating indicators within their own web browser. It may be that other cities and institutions see even greater success from use of the platform than Helsinki itself.



Challenge.gov

More than 100 federal agencies crowdsource solutions

CASE STUDY

Location: United States

Years in operation: 2010–present

Introduction

When policymakers in the United States identified the ‘word gap’ as a key problem affecting long-term educational outcomes of children from poorer families, they chose to respond by launching the Bridging the Word Gap Challenge, a prize-backed challenge designed to attract innovative solutions to the problem of poverty’s impact on educational outcomes. A prize-backed challenge is a contest or competition that involves soliciting responses from a group of people and picking a winner. They are often used when it is not obvious what solution will lead to the best outcome. Bridging the Word Gap is one example of over a thousand such

challenges run by an agency of the United States government using its [Challenge.gov](https://www.challenge.gov) web platform. Since 2010, more than 100 federal agencies have conducted ‘open innovation’ challenges in an effort to crowdsource solutions to hard problems from the American people.²⁴

The [Maternal and Child Health Bureau](https://www.mchb.hhs.gov/) (MCHB), which decided to launch the Bridging the Word Gap Challenge, is part of the Health Resources and Services Administration – the primary federal agency for improving healthcare access for people who are geographically isolated or economically or medically vulnerable. Knowing that research shows a large difference in the number of words preschool children from low-income families are

exposed to compared to preschool children from high-income families, and that a concrete way to address the word gap involves encouraging parents and caregivers to talk, read and sing more to their children, the MCHB worked with federal partners and stakeholders to develop the challenge. By creating a prize-backed challenge, the MCHB was able to attract a wide array of innovations, tapping the collective expertise of large numbers of innovators, to respond to the problem.

How it all started

Researchers had identified the word gap much earlier in a 1992 study which found that by age three, children in low-income families may be exposed to 30 million fewer words than children in high-income families.²⁵ This gap, the study's authors argued, put many children at a learning disadvantage even before they enter the classroom. The MCHB's challenge offered cash prizes totalling up to \$300,000 for innovative solutions that could help to close the word gap. The goal for the challenge was to: 'develop a low-cost, scalable, technologically-based intervention that drives parents and caregivers to talk and engage in more back-and-forth interactions with their young children (ages 0–4)'.²⁶ The MCHB also hoped to use the challenge to attract atypical partners to its problem-solving efforts, such as startups, tech companies, coders, academics, private citizens and private sector research and development incubators.

The collective intelligence process

How does it work?

The MCHB launched the Bridging the Word Gap Challenge in September 2015 by posting a detailed notice on the Federal Register which laid out the timeline, rules and judging criteria.²⁷ The four-phase challenge lasted for a year and a half. After each phase, the same panel of four federal employees from relevant agencies, including the Department of Education and the Office of Maternal Health, judged which entries would advance to the next round. The panel evaluated each proposal on numerous criteria, including accessibility, measurability, sustainability, implementation, scalability, evidence base and impact. The Federal Register notice explicitly defined which criteria would be used for each phase and included specific questions to help participants focus on key requirements.²⁸ For example, 'sustainability' meant participants should address questions such as: 'Is the proposed intervention "sticky?" Does it fit into daily life? Is it fun to use?' The rules defined 'impact' as 'present[ing] a theory or explanation of how the proposed intervention would inspire behavior change'.

Phase 1 – Design

In the first phase, the MCHB aimed to attract a large set of ideas and participants. Challenge organisers asked participants to supply only a limited amount of information to help determine the most promising ideas. This information included a description of the proposed intervention and evidence related to it, an outline of methods and technologies involved in its implementation and a statement about the participant's ability to execute the intervention in later phases. Both traditional and social media were used to attract participants. The MCHB awarded \$10,000 to each of the 10 participants selected by judges, to allow them to progress to Phase 2.

Phase 2 – Development and small-scale testing

In this phase, the MCHB gave participants six months to prototype and refine their idea with users and demonstrate that it could create impact. The MCHB then invited the nine participants (one chose not to continue) to a live Demo Day where they pitched their idea to the challenge organisers, federal judges and the public. After the Demo Day, the MCHB announced five semi-finalists and awarded each \$25,000.

Phase 3 – Scaling up

In this phase, the five semi-finalists demonstrated that their intervention could be scaled up at low cost and was feasible to implement at the community or programme level. After six months, the MCHB held a virtual Demo Day and awarded the overall winner \$75,000. That prize was awarded to Háblame Bebé.

Co-developed by a professor in applied linguistics, a developmental psychologist and an assistant professor who was also a registered nurse in neonatology, Háblame Bebé is a free app designed to encourage Hispanic parents and caregivers to speak both Spanish and English with their children.²⁹ Underpinning the app is the insight that language development for children in low-income Hispanic families can be negatively affected when parents are incorrectly told to speak English to their children instead of their native Spanish language.³⁰ Put another way, social scientists have found that, counter-intuitively, children who learn to read and speak in their native language do better, not worse, in learning English.³¹ The MCHB described the winning solution – Háblame Bebé, or 'Talk to me baby' – as 'exactly the outcome we had envisioned'.³²

Key innovation

The success of Háblame Bebé is just one example of the power of prize-backed challenges for promoting innovative problem-solving, especially in science, technology and other areas where innovation can more easily be judged and measured. Crowdsourcing competitions, especially those which incentivise participation with a prize, unlock the potential for innovation by exposing institutions to new and different ideas and perspectives from 'outside'. We know that customers are a vital source of innovation for firms. MIT professor Eric von Hippel coined the term 'user innovation' to explain customers' contribution to the design of products and services they use.³³ In 'The Dominant Role of Users in the Scientific Instrument Innovation Process', von Hippel documented more than 100 examples of the most important scientific and commercial innovations inspired by customers rather than firms. He found that approximately 80 per cent of those new products had been invented and field-tested by customers who were end users, rather than by the traditional process of manufacturers trying to guess a market gap. Von Hippel says customers have the real 'expertise' about where problems lie and are better placed than anyone else to drive the product innovation that meets their needs.

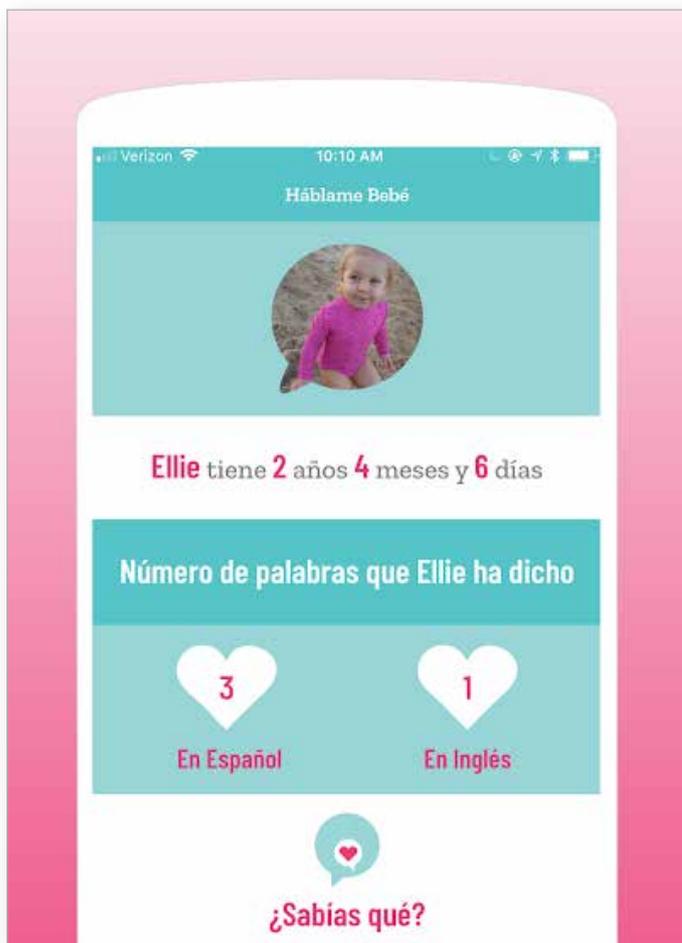


Figure 12: Screenshot of the Háblame Bebé app
Source: https://play.google.com/store/apps/details?id=org.talkwithmebaby.app&hl=en_US



Figure 13: The Challenge.gov home page

Source: <https://www.challenge.gov/>

Building on von Hippel's work, in 2003 Henry Chesbrough, a professor at the Haas School of Business at the University of California, Berkeley, popularised the term, 'open innovation'. This term describes the distributed process in which people work across organisational boundaries in order to accelerate innovation. Crowds of problem-solvers can outperform a company's internal research and development unit if one knows when – and how – to use them.

Plenty of subsequent research has borne out the findings of von Hippel and Chesbrough about the creative power of groups working together in an open innovation process.³⁴ When federal agencies engage the public in tackling hard problems, they are looking for more people to help solve those hard problems. But involving a greater number is only one reason to prefer an open innovation approach. A greater diversity of people, with various skills and perspectives, can be just as important, especially when care is taken to go beyond the usual suspects.³⁵

The White House Open Government Initiative enshrined public collaboration as central to its policy pronouncements, and out of that strategy came the plan for Challenge.gov, which launched in September 2010 and continues to host competitions, engaging the public in solving problems with and for government. Congress formally granted agencies authority to award prizes in the Reauthorization of the America Competes Act, signed into law in 2011, and since then, the use of the Challenge.gov platform has taken off.³⁶ There is even a community of

practice for federal officials who manage prize-backed challenges, which regularly talks online and convenes in Washington DC. The number of members is estimated to be over 700.

Outcomes and impacts

The Bridging the Word Gap Challenge received 80 submissions from individuals, private businesses and non-profit organisations. The judges selected 10 to advance and, subsequently, chose five semi-finalists and one overall winner.

The challenge also supported the development and scaling up of the four other semi-finalists' interventions, that 'represent an incredible diversity of approaches and expertise'.³⁷ These included mobile apps that offer caregivers tips for age-appropriate language interactions throughout the day, send location-specific messages for interactions during community outings and provide videos demonstrating positive interactions between parent and child. Another semi-finalist developed a wearable device that counts the number of words a child hears in real time, with the data accessible via an app and a web dashboard.

After the challenge, the MCHB connected the five semi-finalists to the [Bridging the Word Gap Research Network](#) and other programmes that have helped participants to generate publicity for their solutions and win additional grant funding.

In addition to attracting a diversity of participants and solutions, the challenge process also enabled the MCHB to engage 10 experts in the fields of

technology and early childhood education as well as other relevant areas in return for a small honorarium. These experts operated as advisers on challenge design and evaluation criteria, and as one-on-one mentors to the initial 10 participants selected by judges.

Again, the Bridging the Word Gap Challenge is but one example of the innovations generated by Challenge.gov. The General Services Administration tells the story of a dozen other challenges and their outcomes in a series of published case studies.³⁸ Beneficial outcomes from the prize include not only the solution to the problem but also additional grant and other funding that follows the initial prize. Háblame Bebé also attracted research partnerships with those who could conduct further randomised controlled trials on the app's use, and it forged a partnership with Univision to promote uptake among Spanish-language speakers. Of course, winning the competition also led to a great deal of media attention, that helped both the winner and the other semi-finalists enjoy greater success. In many cases, the primary benefit for the winner and the government is a government contract. Solutions have also led to changes in policy and the formation of new communities of innovators who continue to work on and bring attention to important problems.

Challenge.gov has inspired imitators all around the world. In Australia, to take one example, the InnovationXchange, created in 2015 to foster fresh thinking across Australia's aid programme, has asked companies and non-profit organisations from around the world to submit other solutions for safe drinking water for Timor-Leste, better education in India and microlending in the Philippines. Between 2015 and 2018, the department partnered with more than 100 organisations to support 100 projects operating in more than 50 countries through the launch of 11 challenge prizes.³⁹

Lessons learned

Challenge.gov has continued to thrive for over 10 years, surviving a change of administration and political party. This is unusual in a hyper-partisan climate. So why has it worked and stayed afloat for so long? In short, Challenge.gov works. It helps to attract solutions to problems that the government could not come up with

on its own. At the same time, Challenge.gov continues to struggle to get the word out about opportunities to participate.

1. **Legal institutionalisation:** While challenges were used prior to the America Competes Reauthorization Act and some prize-backed competitions are still run using other legal authorities, the promulgation of clear legal backing for offering prizes has helped to solidify the position of Challenge.gov. In addition, the issuance of regular guidance by the General Services Administration and the Office of Management and Budget along with How-To Toolkits and a supporting Community of Practice have helped Challenge.gov achieve its staying power.
2. **Clear evaluation criteria:** Being clear and specific about how submissions would be judged helped challenge organisers generate relevant, high-quality solutions from suitably qualified participants.
3. **Low initial barrier to entry:** By keeping the initial submission requirements to a minimum, challenge organisers were able to elicit submissions from a more diverse range of organisations, capable of more innovative approaches, than is possible through traditional procurement processes.
4. **Risk management:** The incubation nature of the challenge, which identified and supported the development of the most promising ideas, helped to reduce the risk of prematurely committing to a solution that would be infeasible.
5. **Targeted financial support:** Offering funds to support the development of well-founded ideas helped to ensure that the best solutions, not just those from participants with the most resources, could emerge.
6. **Non-monetary incentives:** By complementing the financial support with expert guidance, opportunities for publicity and links to a wider network of potential partners, challenge organisers strengthened incentives for those genuinely interested in solving the problem to participate.



Finnish Citizens' Initiative

Crowdsourcing legislative proposals in Finland

CASE STUDY

Location: Finland

Years in operation: 2012–present

Introduction

The Citizens' Initiative law is a direct democracy law that empowers any Finn with the right to propose new legislation or a change to existing legislation – or to support the proposals of others – through an online petition. Citizens' Initiative is also the name of an online [platform](https://kansalaisaloite.fi) (kansalaisaloite.fi) run by the Ministry of Justice, where citizens can initiate and sign petitions. The country's parliament must consider any initiative which receives at least 50,000 signatures. To date, more than 1,000 petitions have been proposed, which have collected millions of signatures. Thirty-seven initiatives have collected at least 50,000 signatures. One has become law.

From 2012 to 2017, a non-profit organisation known as Open Ministry played a key role in organising signature campaigns, including the 2013 campaign to legalise same-sex marriage – the first and, so far, only citizen-proposed legislative proposal which the Eduskunta (Parliament) has directly implemented in law. Open Ministry also offered its own online platform (avoiministerio.fi) where citizens can collaborate on drafting bills. While the organisation folded due to a lack of funding, the Citizens Initiative process continues, demonstrating that ordinary people can productively set the legislative agenda.

How it all started

Prior to the Citizens' Initiative, Finland did not have a long history of direct citizen involvement in lawmaking. In its nearly 100 years of independence, the country had held only two national referenda, both of which were non-binding.⁴⁰ Seeking to bring citizens greater opportunities to participate in the lawmaking process, in 2011 a group of forward-thinking parliamentarians proposed amending the constitution to allow for citizens' initiatives – proposals for new laws or changes to existing laws that parliament would be required to consider if they reached a certain threshold of support among citizens.

Technology entrepreneur Joonas Pekkanen recognised that, if passed, the initiative would include an online platform for citizens to organise and sign petitions. As it would take time for the government to develop such a website, Pekkanen began developing his own [platform](#), Avoin Ministeriö (Open Ministry) and formed a non-profit organisation of the same name to run it.

Parliament passed the Citizens' Initiative Act on 1 March 2012. In parallel, Pekkanen began gathering signatures for citizens' proposals using paper petitions. The new law went into effect on 1 October and Pekkanen launched the Open Ministry website on the same day.

The collective intelligence process

How does it work?

Under the Citizens' Initiative law, any Finn who is entitled to vote (i.e. a citizen 18 years or over) can propose a new law or a change to existing legislation. The citizen or group of citizens must organise a petition either on paper or online and collect statements of support (signatures). The law does not mandate use of a specific website. Rather, it sets standards for using the web to file a petition. If using an online system, the organiser must set up a secure mechanism for verifying identity – for instance, using online banking codes or mobile certificates provided by telecom companies – and obtain a certificate from the Finnish Communications Regulatory Authority. If the petition obtains at least 50,000 signatures within six months, the organiser shall submit the statements of support to the Population Register Centre for verification, and the proposed law to parliament.⁴¹

Notably, the Citizens' Initiative law does not establish any procedure by which parliament must consider proposals, and there is no obligation to adopt a proposal. Under parliament's rules, it will first hold a preliminary debate in a plenary session and then refer the proposal to the relevant committee. The committee must give the organisers of the proposal an opportunity to state their case. If a citizens' initiative is still in committee at the end of the electoral term, it lapses.

In other words, the Citizens' Initiative law plays a role only of influencing the legislative agenda within parliament; while the parliament is obliged by the law to consider the proposal, it can choose to approve, reject or accept an amended version of the proposal, as with any other piece of proposed legislation.⁴²



Figure 14: Screenshot of the Open Ministry platform, March 2016 (translated by Google)

Source: <http://web.archive.org/web/20160115183456/http://www.avoiministerio.fi/>

For the first five years of the Citizens' Initiative, Open Ministry played an active role in collaboratively drafting proposals and collecting signatures. 'The original vision was to have a platform where we could develop the online collaboration tools to allow crowdsourcing of the concept and even co-edit the initiatives', Joonas Pekkanen told us.⁴³ Prior to launching a signature campaign, Open Ministry used existing collaborative drafting tools, like Google Docs, to co-edit ideas into detailed proposals. The group also worked with relevant civil society organisations to promote the proposals within their networks. Then, they launched the campaign for signatures on the avoiministerio.fi website. After five years, Open Ministry ran out of funding, and the government-run kansalaisaloite.fi website became the only active platform for collecting signatures on initiatives.

The Ministry of Justice launched kansalaisaloite.fi in late 2012. In addition to providing information about the Citizens' Initiative, the website also allows citizens to create and sign proposals.

Participants sign in using their bank identification details, mobile phone certificate or electronic identification card and then fill out a form including:

- The title of the proposal
- A description of the proposal
- A justification of why the proposal is important
- Contact information for the submitter
- Contact information for others who wish to be involved

At least five citizens must initially co-sign the initiative to get it posted on the website. It bears

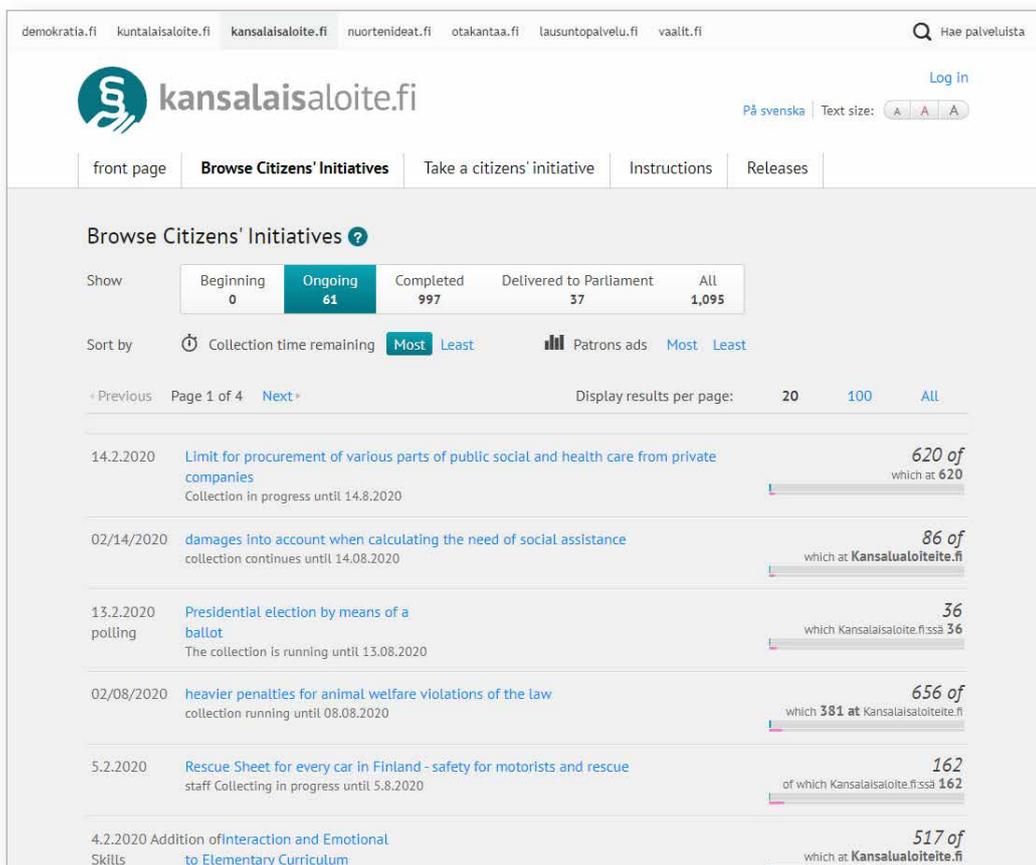


Figure 15: Screenshot of the Ministry of Justice's petitioning platform (translated by Google)
Source: <https://www.kansalaisaloite.fi/fi/hae>

similarities to online direct democracy projects like Decide Madrid launched in Spain or We the People in the United States.

One to two people from the Ministry of Justice and one person from the Legal Register Centre manage the kansalaisaloite.fi website. They work on the initiative part time.⁴⁴

Who participates?

The level and duration of participation vary greatly depending on how popular the current proposals are.

The first citizens' initiative, a proposal to ban fur farming initiated with the help of Open Ministry, gathered over 70,000 signatures. Though the parliament rejected the proposal in 2013, it brought substantial attention to the Citizens' Initiative process.⁴⁵

Citizens initiated nearly 350 proposals between March 2012 and August 2015, including submissions via paper, the Open Ministry website and the Ministry of Justice website. These proposals garnered over 1.3 million signatures, with over 90 per cent of signatures collected through the kansalaisaloite.fi website.⁴⁶ The site received an average of 200,000 visitors

per month. According to the 2015 Finnish National Election Study, roughly one in three citizens who were eligible to vote signed at least one proposal. The younger generation was particularly active.⁴⁷

Of course, some proposals received more attention than others. Of the first 350 or so proposals, only 10 gathered more than 50,000 signatures. Further, 93 per cent obtained fewer than 10,000 signatures, and 45 per cent collected fewer than 100 signatures.⁴⁸

Outcomes and impacts

Of the more than 1,000 initiatives which citizens have launched since 2012, 37 have collected at least 50,000 signatures. Parliament has enacted only one piece of legislation through a citizens' initiative: a law legalising same-sex marriage which parliament passed in 2017. Parliament either rejected or is still considering the other 36 initiatives.

The same-sex marriage proposal was one of the most popular citizens' initiatives. In 2013, a coalition of equal rights advocates organised a campaign called Tahdon2013 (I Do), which was supported by Open Ministry, Amnesty International, the European Union Youth in Action programme and other organisations.⁴⁹ Open Ministry helped

develop the same-sex marriage law through a series of co-editing workshops, mainly with law students. Then, several volunteer law professors proofread and commented on the draft proposal to transform it into a complete piece of legislation. This hard work paid off. The campaign was launched on the Ministry of Justice's website in March 2013 and gathered more than 50,000 signatures in the first few hours and over 160,000 signatures in the next six months.

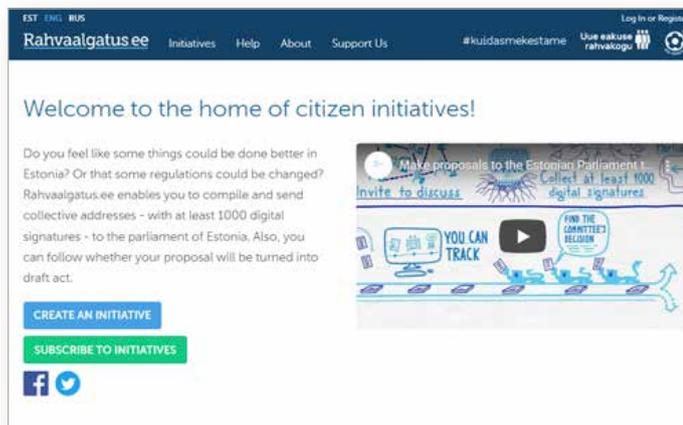


Figure 16: Screenshot of the Rahvaalgatus platform

Source: <https://rahvaalgatus.ee/>

The Tahdon2013 campaign presented the proposal to the Speaker of the Parliament in December 2013.⁵⁰ After several rounds of discussion and voting in committees, the parliament voted to legalise same-sex marriage in November 2014. The president signed the bill the next year and it went into effect in 2017.⁵¹

Whether the Citizens' Initiative in its current form has increased citizens' trust in democracy is less clear. A key risk is that the public will see the initiative as illegitimate if citizens' proposals do not lead to new legislation. A survey of visitors to avoiministerio.fi and kansalaisaloite.fi, conducted by a researcher at Åbo Akademi University, found that respondents who signed an initiative reported a minor decline in political trust compared to those who did not.⁵² Notably, those who signed the successful same-sex marriage initiative reported an increase in political trust, indicating that a participant's trust is linked to the legislative outcome of each proposal they support.⁵³ The most recent edition of the Finnish National Election Studies found that the share of respondents who agreed with the statement 'The citizen initiative improves Finnish democracy' declined from 83 per cent to 76 per cent between 2015 and 2019.⁵⁴

Box 3: Trust building: A common challenge for citizens' initiatives

Finland's legislature is not the only one that uses online petitioning to focus the collective intelligence of its citizens towards influencing the legislative agenda. Since March 2016, citizens of Estonia have organised their own citizens' initiatives on the [Rahvaalgatus](http://Rahvaalgatus.ee) (Citizens' Initiative) platform. Citizens can create an initiative or sign others' petitions. When an initiative reaches 1,000 signatures (Estonia has a population of only 1.3 million), the platform transfers the proposal to the country's parliament. Committees then process each initiative through a process similar to that in Finland.⁵⁵

Finland is not the only country that has experienced challenges in using the citizens' initiatives to build trust. The idea for [Rahvaalgatus](http://Rahvaalgatus.ee) originated in a 2013 citizens' assembly, which Estonia's president convened to rebuild trust with the public after a corruption scandal involving an MP. But in addition to accepting the proposal, the parliament rejected several of the assembly's other suggestions, which would have curbed many of the powers of its members, including a proposed procedure for voting on certain bills in public referenda. This trend has continued with the current platform. In 2017, a former manager of the project acknowledged that 'the 30+ collective addresses [proposals] have not had a measurable impact on how the Estonian society is being governed or problems solved'. The author also noted a 'vicious circle of distrust' that hindered public participation on the [Rahvaalgatus](http://Rahvaalgatus.ee) platform.⁵⁶ Regardless of the good intentions behind citizens' initiatives, this experience underscores that if parliament is unwilling to accept proposals that would shift more power into citizens' hands – or if citizens are unable to develop them – citizens' initiatives risk becoming a liability that degrades the public's trust in institutions rather than building it.

Current status

The 2012 amendment to Finland's constitution lends the Citizens' Initiative a tremendous deal of staying power. According to Section 53 of the constitution, 'at least fifty thousand Finnish citizens entitled to vote have the right to submit an initiative for the enactment of an Act to the Parliament, as provided by an Act'.⁵⁷ While the constitution establishes the 50,000-person threshold and the right to petition the parliament, the Citizens' Initiative Act lays out the operational details, such as establishing the government's online platform. So revoking the right to petition would require amending the constitution as well as repealing the act.

As mentioned, Open Ministry is no longer active. The organisation originally received a €30,000 grant from Sitra, Finland's public innovation fund, and €15,000 from the Ministry of Justice. The organisation's volunteers used this funding to set up the avoinministerio.fi platform, but it did not receive any funding for operations.

As no equivalent to Open Ministry has arisen, groups organise campaigns on their own – for instance, using their own website – and then use the online platform to propose and sign new initiatives. Most recently, a coalition of environmental groups initiated a campaign known as Lentovero (Flight Tax) calling for Finland to implement a tax on commercial airline flights to discourage flying and reduce carbon emissions. The petition collected over 55,000 signatures between May and November 2019. The coalition introduced the petition to parliament in February 2020.

Lessons learned

1. **Get legislative support:** So long as a future legislature does not repeal Section 53 of Finland's constitution and its accompanying legislation, the basic mechanism for citizens to propose and introduce bills to parliament will remain in place. Rolling back these rights would likely be a very politically unpopular move, as even eight years later, citizens continue to propose initiatives.

2. **Collaborate with competent partners:** In the first five years, Open Ministry played a key role in collaboratively drafting initiatives and organising campaigns to support them, as well as bringing the right civil society organisations to the table, as the Tahdon2013 campaign demonstrated. As the Citizens' Initiative law allows any group which obtains a licence from the Finnish Communications Regulatory Authority to organise online petitioning platforms, another organisation could potentially play a similar role in the future. As Open Ministry organised the only legislative proposal that parliament has enacted, the importance of these non-governmental institutions should not be understated.
3. **Expand the idea of impact:** Joonas Pekkanen notes the Citizens' Initiative has had numerous impacts on the legislative process in Finland. While the same-sex marriage law is the only direct legislative outcome of Citizens' Initiative proposals, 'Many others have had indirect legislative effects and even more have spurred active political debate on issues that would not have been raised otherwise', he told us.⁵⁸ This observation is also reflected in a Ministry of Justice survey published in 2017 which asked participants about their motivation for creating a citizens' initiative. While almost all reported legislative changes as a goal, many others also aimed to spark a discussion in parliament or to increase awareness about a subject.⁵⁹ As such nuanced impacts may not be immediately obvious to citizens, institutions should develop communications strategies that emphasise the indirect influence of their campaigns as well as the direct outcomes.

PulsePoint and GoodSAM

Smartphone apps that crowdsource first responders to help others experiencing life-threatening emergencies

CASE STUDY

Location: the United States; the United Kingdom (UK)

Years in operation: 2009–present; 2014–present

Introduction

Sudden cardiac arrest (SCA) is the third leading cause of death in the United States, affecting approximately 356,000 people each year and killing 9 out of 10 victims.⁶⁰ In the United Kingdom it's a similar scenario with the survival rate for out-of-hospital cardiac arrest at just 8 per cent.⁶¹ However, research shows that when a bystander

administers CPR and, where appropriate, uses a defibrillator immediately after SCA, this can double or triple a person's chance of survival.⁶² The challenge is having enough emergency responders to attend to all victims in a timely fashion. But in many places, whether due to a lack of personnel or high volumes of traffic, government first responders can be late on the scene.

Now, two smartphone apps – [PulsePoint](#) and [GoodSAM](#) – are helping cities in the United States and the United Kingdom to mobilise volunteer responders to assist in life-threatening emergencies. In PulsePoint’s first five years of operation, 11,000 nearby citizen rescuers came to the aid of 4,000 heart attack victims in more than 1,100 communities across 14 states. Today more than 2 million people use the PulsePoint app, and the number of responses has exceeded 100,000. GoodSAM has 25,000 first responders in the UK, and its use has spread around the world. As services like PulsePoint, founded in 2011, and GoodSAM, founded in 2013, demonstrate, people are smart and capable; they have specific skills and abilities; and if they are aware of an urgent need, many can help.

How it all started

Richard Price, a former fire chief in San Ramon, California created the PulsePoint app in 2010. Recognising that a majority of adults in the United States say they have undergone training in CPR, Price believed response times could be decreased by enlisting nearby volunteers to come to the aid of those in distress.⁶³ GoodSAM (Smartphone Activated Medics) co-founder Mark Wilson, a neurosurgeon, explains a similar rationale behind the GoodSAM app and web platform.

Using the same analogy that you are never more than 5 metres from a spider, we figured in cities you’re probably never more than 200m from a doctor, nurse, paramedic or someone able to hold an airway and (if appropriate) perform high quality CPR. The problem was alerting these people to nearby emergencies.⁶⁴

Wilson was a medic with the London Air Ambulance as well as an expert in traumatic brain injury. Just as Price was concerned with the impact of unaided cardiac arrest victims, Wilson was concerned with the consequences of loss of oxygen to the brain after a traumatic injury.

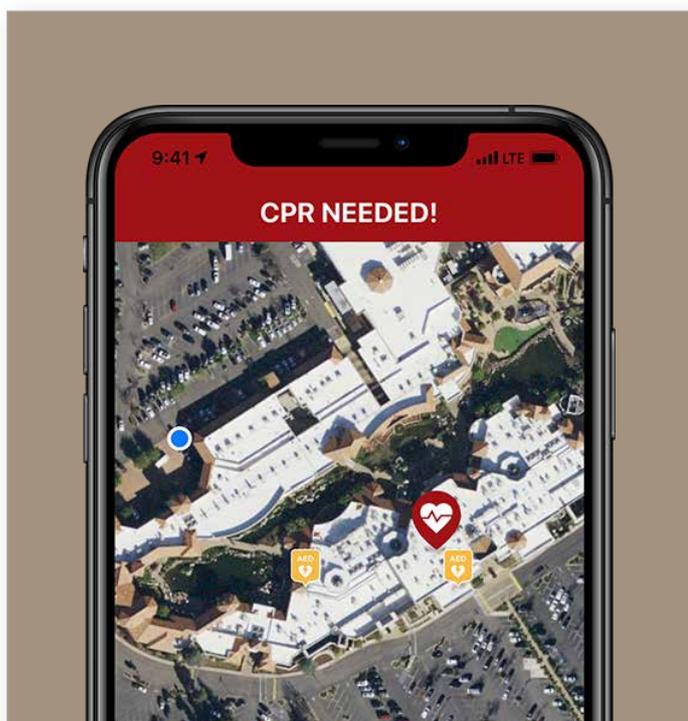


Figure 17: PulsePoint user interface

Source: <https://www.pulsepoint.org>

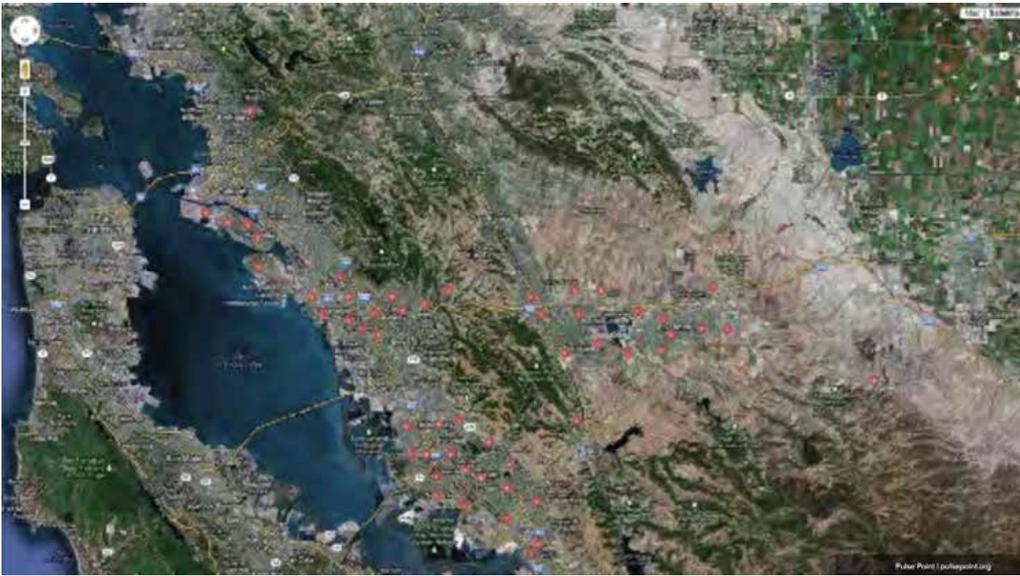


Figure 18: Number of emergency responders in San Ramon before PulsePoint

Source: <https://www.slideshare.net/PulsePointFoundation/pulsepoint-overview>⁶⁵

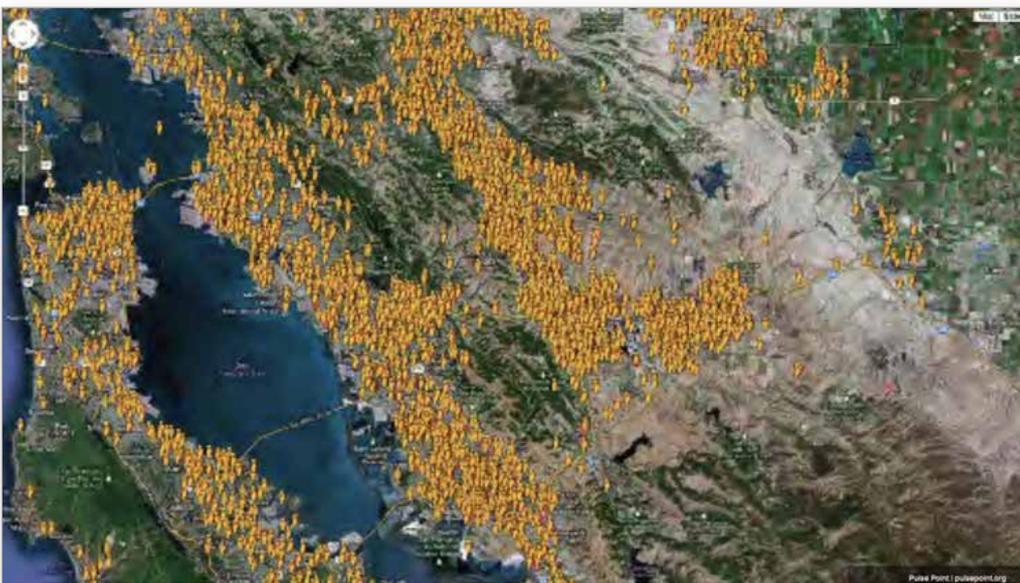


Figure 19: Number of emergency responders in San Ramon including those registered on PulsePoint

Source: <https://www.slideshare.net/PulsePointFoundation/pulsepoint-overview>⁶⁶

The collective intelligence process

How it works

PulsePoint and GoodSAM work in a similar way by sending an alert about an incident to trained responders in the vicinity, such as off-duty doctors, nurses, paramedics, police officers and appropriately certified amateurs. They receive the information about incidents taking place in communities where the municipality has made its emergency call (911 in the United States and 999 in the UK) data openly available.

The alerts relay crucial information about the incident, geolocate the victim and the volunteer, and help direct the volunteer responder to the scene. These initiatives also collect information about the location of defibrillators so that good samaritans know where to find them. This

enables victims to receive life-saving treatment before emergency services arrive. PulsePoint and GoodSAM are now being integrated into emergency service agency response procedures so that in addition to alerts being triggered when an emergency call is received, volunteer responders can communicate and coordinate with agency responders en route.

PulsePoint

The PulsePoint app allows people to self-identify as being CPR trained and then sends them alerts about incidents occurring in public places near their location. The app also provides basic 'CPR how-to' advice, including an animation of where and how fast to apply chest compressions. Off-duty firefighters, emergency medical service providers and other medical professionals are eligible to apply for 'verified responder' status,

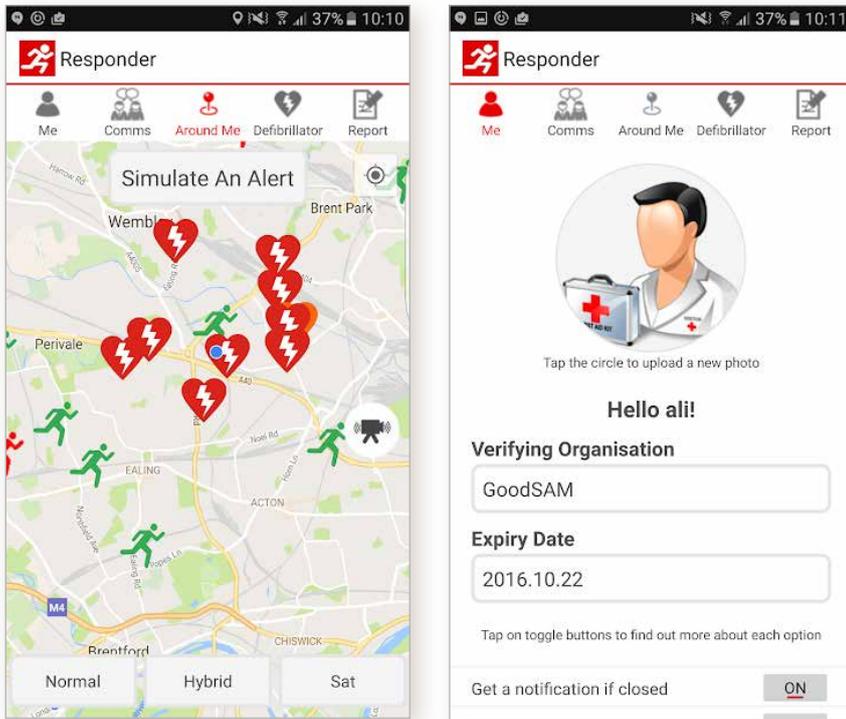


Figure 20: GoodSAM user interface

Source: https://play.google.com/store/apps/details?id=com.goodsam.alerter&hl=en_US

which alerts them to events in private locations (such as a home) as well. These individuals must apply and undergo vetting before being granted verified responder status.⁶⁷

PulsePoint works with governments and communities using a road map for implementation that outlines a series of steps from building consensus for its use and collaboration with emergency services agencies through to public outreach to recruit app users, launch and ongoing management. A dedicated project manager works alongside communities to help them implement the road map.

When PulsePoint is operating in a community, app users can be asked to perform three functions:

- They can administer CPR.
- They can locate and apply a defibrillator.
- They can update and share the location of a public defibrillator so others can quickly find the device.

The first two of these tasks require app users to be CPR certified, while any user can access and update information about defibrillators.

To help match victims with nearby volunteers trained in CPR, PulsePoint also partners with emergency response services to tap into an open data feed of 911 calls received. Using this data, the PulsePoint app notifies CPR-certified responders near the cardiac arrest victim.

The notification reads 'CPR NEEDED', and the app sends further details such as a location, relays additional information in real time and uses GPS to direct responders to the victim. Responders can also access information about the location of public defibrillators.

GoodSAM

GoodSAM demands more vetting than PulsePoint. It requires app users to submit their occupation. If they are a medical professional, they can upload their work identification or certificate to verify they are CPR trained. If they are a civilian who is CPR qualified, they must upload their certificate and select an organisation that can verify their identity and training, such as the British Red Cross, or they can select GoodSAM. Users must wait until their identity is verified before they can access the responder app.

The GoodSAM website contains pages offering detailed instructions explaining how different individuals can participate, sorted by categories such as members of the public, doctors, police officers and medical students. Each page guides users in setting up their account, advises what to do in case of an emergency, provides an equipment guide (if applicable) and outlines how to manage their mission log, which lets them record what happened and what they did during every clinical interaction.

GoodSAM also integrates with ambulance service computer-aided dispatch systems to alert bystanders to nearby cardiac arrest victims at the same time as the ambulance service is deployed. There are GoodSAM apps for two different types of user:

- The Responder app – certified individuals can receive and respond to SCA alerts.
- The Alerter app – users can dial the 999 emergency hotline and trigger the alert system directly.

In both apps, an 'Instant-On-Scene' feature, enables callers to use their mobile phone camera to locate and visualise the scene/patient and share these images with emergency service responders while artificial intelligence analyses the patient for vital signs such as pulse rate.

For both PulsePoint and GoodSAM, members of the public without CPR training are assigned other tasks that don't require such expertise, such as updating location details for defibrillators, calling the emergency response number to trigger an alert or supporting community adoption through evangelism and use of the platform.

Outcomes and impacts

PulsePoint works in 3,891 communities in the United States and Canada. To date:⁶⁸

- More than 2 million people have registered with PulsePoint.
- There have been more than 368,000 alerts issued, leading to more than 104,000 CPR activations.
- The location of more than 94,000 automated external defibrillators (AEDs) has been captured.

PulsePoint also provides cities with access to a map of incidents and response data that informs their implementation strategy. For example, city agencies can learn how many responders they have per event, how many verified responders are located in a given area, or what impact time of day or day of the week have on CPR requests and responder availability.

More than 40,000 volunteers are currently registered on GoodSAM. The platform is integrated with 10 ambulance services across the UK and is also being used by individual alerters and responders in Australia, India, the United States and parts of Europe and South Africa.⁶⁹ GoodSAM also has a database of more than 50,000 AEDs, that app users help to create.⁷⁰ For fixed-location AEDs, app users supply and update this data by simply taking a photo of a fixed-location AED (e.g. fixed to a wall), enabling their phone's location services and uploading the photo to the GoodSAM app. App users can also indicate if they carry an AED in their vehicle. AED data is shared with ambulance services and synced every 72 hours to keep it up to date. GoodSAM has also introduced drones for delivering AEDs to remote locations.

Research has confirmed the effectiveness of mobile app- and text message-based systems for alerting volunteer responders, with a [range of peer-reviewed studies](#) finding that bystander CPR can significantly reduce response times and improve cardiac arrest survival rates.

The use of smartphone apps to provide emergency medical care is now being extended into other settings. For example, taking a page from GoodSAM's playbook, PulsePoint can now give vetted responders (such as off-duty firefighters or medical professionals) a verified responder status that means they can respond to cardiac arrest as well as other time-sensitive emergencies, and they can also respond to incidents in private homes. GoodSAM started out exclusively working with credentialed professionals rather than volunteers, wanting to take advantage of the distributed capacity of those certified, trained and licenced individuals who might be nearby but simply off duty.

In March 2020, GoodSAM teamed up with the UK's National Health Service and Royal Voluntary Service to offer support to those affected by the COVID-19 pandemic. Through this scheme, local health authorities and medical professionals refer people they believe to be at risk and who would benefit from this support, such as the elderly. Volunteers can sign up to be couriers who deliver medicine and supplies to these people and, in some cases, transport patients to hospital. As with cardiac arrest victims, the NHS initiative uses the GoodSAM app to match volunteers with those in need. Less than a week after launching at the end of March 2020, more than 750,000 people signed up to be volunteers. This was such a large uptake that recruitment was put on pause to allow the initiative time to process these applications.⁷¹

Lessons learned

PulsePoint and GoodSAM continue to achieve successful outcomes and have thrived over the years because of five common aspects:

1. **Articulating clear goals:** Both platforms clearly identify the problem they address (slow response to acute medical need) and the goal they're hoping to achieve (getting those trained in CPR to the scene quickly). They offer a demonstrable way in which people can personally and directly intervene to help save lives, either by performing bystander CPR or another medical intervention or by gathering data about defibrillators.
2. **Targeting people's skills:** Unlike many crowdsourcing efforts that depend on volunteer participation by just anyone, PulsePoint and GoodSAM take advantage of people's skills and abilities – in this case their ability to perform CPR and use a defibrillator. Unlike an open call, these services do not ask anyone and everyone to participate in a mass effort, but target only those with the right skills for the job. Like other crowdsourcing efforts, people self-select whether, when and where to respond, but here they get to use a skill in which they have already invested time to learn.
3. **Demonstrable success:** Both efforts show the number of volunteer first responders, activations and responses. There is quantifiable, hard data about lives saved, demonstrating how collective intelligence is succeeding at solving a real problem. Participants can see that number grow over time. They use social media to communicate activations and to tell the story of lives saved.
4. **Clear tasks:** Both platforms carefully assign tasks that fall within the capabilities of users, which helps to ensure effective and safe interventions, and both have resources that support adoption by institutional users.
5. **Community partnership and community building:** Both services partner with existing institutions and networks. They work with cities, for example, to tap into their feed of emergency calls and to coordinate responses. GoodSAM works with licencing bodies to vet and approve its professional but off-duty responders, taking advantage of the work already invested to certify professionals. The combination of online collective action by distributed communities with offline coordination with public institutions helps to ensure that the collective intelligence they catalyse is coordinated rather than chaotic.

Safecast

Using citizen science to map radiation and air quality at a global scale

CASE STUDY

Location: Global

Years in operation: 2011–present

Introduction

Every year since 1900, the National Audubon Society in the United States sponsors a Christmastime 'bird count'. Thousands of volunteers participate in this annual bird census, which records information on local bird populations to inform conservation efforts.⁷² It is one of countless examples of laypersons participating in scientific research, known as citizen science. Citizen science typically refers to scientific tasks, such as data collection,

measurement and classification, undertaken collaboratively either online or offline between volunteer members of the general public and professional scientists. Citizen science makes use of the enthusiasm and willingness of ordinary people to participate in measuring air or water quality in their communities, cataloguing flora and fauna in museums or analysing satellite photographs and making maps after a natural disaster.⁷³ But what began in scientific circles as a way to use collective intelligence and collective action to accelerate research has also become a

vital tool for governing. Laypersons can often do more than government can do – sometimes more than government will do – alone to gather and share important data, allowing everyone to have a more granular understanding of on-the-ground conditions needed for responsive policymaking and service delivery. So where the government in Japan was not providing needed information after the Fukushima nuclear plant disaster, the activists from Safecast took it upon themselves to fill the gap, creating one of the most important, sustained and vigorous citizen science initiatives of all time and proving that ordinary people and communities are just as good as government or universities at collecting data. Nine years on, Safecast has grown from a disaster response effort following a crisis to an ongoing global environmental monitoring network.

How it all started

On 11 March 2011, a 9.0Mw earthquake, the most powerful earthquake ever recorded in Japan, unleashed a powerful tsunami, and 19,000 people died. Sensors at the nuclear power plant at Fukushima in north-eastern Japan detected the shock waves from the earthquake and automatically shut down the reactors. Due to flooding from the tsunami and a series of resulting malfunctions, the generators powering the systems that cooled the reactors stopped working, leading to three nuclear meltdowns, three hydrogen explosions and widespread nuclear contamination. An estimated 160,000 people were displaced from their homes. It was the worst nuclear disaster since the 1986 Chernobyl event.

In the aftermath, residents worried about contamination levels. Artist and entrepreneur Sean Bonner, who was living in Los Angeles at the time, had deep ties to Japan, having been a regular visitor before moving there in 2017.

When the disaster struck, he reached out to friends, including the very influential and connected Joi Ito, former director of the MIT Media Lab, but there was no clear information about what was going on.⁷⁴ Everyone was panicked. Coincidentally, Bonner was scheduled to hold an event during the first week of April about what's

new on the Internet. Joi and Sean connected online with their network of friends via Skype to discuss whether it was safe to come to Japan, and that morphed into a discussion about: What do we do next in Japan? What does recovery look like? As Bonner explains: 'We started discussing how the little bit of data we could get was really just "giant averages" ... but even with devices we had, readings would change in a matter of footsteps and was not granular enough.'⁷⁵

The public did not trust the accuracy or comprehensiveness of the government's published information. There seemed to be discrepancies between radiation readings and the neighbourhoods that the government chose to evacuate. In fact, it was five days before any official data came out of Fukushima after the disaster, and the government's sensor network was entirely offline for a month following the earthquake. What Geiger counters there were in the country quickly sold out.

The collective intelligence process

How does it work?

Following the meltdown, Sean's friends – the original network that grew into Safecast – began to monitor, collect and openly publish data about radiation levels. They used handheld Geiger counters that, when they could not buy them, they built for themselves.⁷⁶ Participants used a device to take readings and upload them. Data started to flow in. Because it was crowdsourced from many more people than the government had on the ground, the readings – which were taken at different heights and conducted street by street with common devices and with greater frequency – were more granular and useful than what the government produced. Furthermore, because volunteers were collecting the data, there was intentional overlap, with more than one person taking readings in the same place, which enables greater accuracy and accountability than is possible from a single official reading.

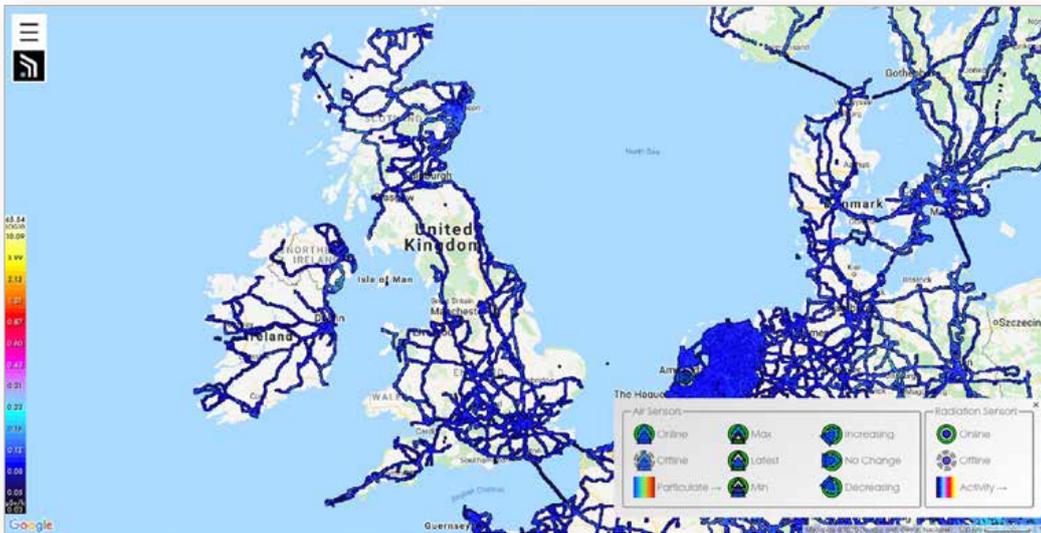


Figure 21: Safecast's real-time map of air quality and radiation sensors, zoomed in to the United Kingdom

Source: <https://map.safecast.org/?y=54.39&x=0.45&z=6&l=0&m=0>

To date, Safecast's network of volunteers has collected more than 150 million measurements of radiation and air quality.⁷⁷ Users can interact with this massive data set through several online channels according to their technical ability. Each day, Safecast publishes a file containing all the radiation and air quality readings that users have uploaded to its database to date. More tech-savvy users can also filter the data set and download only the readings they need, or they can upload their own data using Safecast's API.⁷⁸ Anyone can easily explore Safecast's data through the platform's interactive web map, which shows hotspots of radiation and particulate matter (an indicator of poor air quality) around the world. Safecast also publishes this information through a mobile iOS application, which accesses the user's location to show radiation readings in their area in real time.

Who participates?

Safecast exists because of the volunteer work of its committed participants, who collect the data but also build radiation monitors, develop the software to transmit and upload the data, including solar, weatherproof uplinks, offer sites to locate sensors, design the Safecast website and clean the data, which, in turn are made freely and openly available to governments, research scientists and activists to engage in distributed monitoring. Today with the advance of machine learning, researchers are using this historical data to predict future trends.

Foundations and individuals have funded the network's efforts – such as the cost of building the sensors, like handheld Geiger counters – which have been going for nine years now.⁷⁹ As Sean

Bonner wrote: 'A few hundred volunteers with Geiger counters built the largest radiation data set ever amassed while politicians sat around talking about why they couldn't do it. That's the proof that a few committed people can do the work that everyone else will benefit from.'



Figure 22: the bGeiger Nano, a portable handheld Geiger counter that is widely used by Safecast volunteers⁸⁰

Source: <https://safecast.org/devices/>

Current status

Today, Safecast has expanded beyond Japan. Its volunteer network has mapped radiation data across most of Western Europe, the United States and Australia. Safecast has data from over 100 countries, representing every continent. In fact, Safecast has supported the collection of over 150 million data points, making it one of the largest distributed data collection projects in the world.⁸¹

As with other crowdsourcing projects, like Wikipedia, the most active 10 per cent of participants collect over 90 per cent of the data, all of which is put in the public domain, allowing the data to be openly published and freely shared for reuse. This is in marked contrast to, for example, the United States, where the government restricts radiation data and treats its release as a national security risk.

The impact of the project, as with many 'open' projects which freely give away data, is hard to measure, because those who use the data are under no obligation to credit Safecast or to report back to them. For example, one international report with recommendations on how to deal with nuclear crisis recommends exactly what Safecast does and even mentions Fukushima, but does not mention Safecast by name.⁸² However, Sean Bonner wrote: 'I think the largest thing here is that the expectations of what is available have completely changed and researchers (and local politicians and people) are demanding more than they used to be happy with.' France's Institute for Radiological Protection and Nuclear Safety uses Safecast data in its own maps.⁸³ The United States Defense Advanced Research Projects Agency has its own closed version of Safecast in which the public cannot see the data.⁸⁴ Safecast leadership have spoken on several occasions before the International Atomic Energy Agency about the work.⁸⁵

Beginning in 2016, Safecast expanded into measuring air quality data, again helping to construct devices and set standards for how to measure as well as offering the space to publish data to ensure transparency and consistency. Again, volunteer participants choose where to measure and take readings, using approved sensors, that they then share with the Safecast

community. While radiation levels tend to be fairly static over time, air quality demands more frequent readings, as levels can change from day to day. This means that many more monitoring sensors are needed. But with better air quality data, scientists, policymakers and individuals can assess how seasons, time of day, temperature or other conditions impact the health of our air. As such, **Safecast is collaborating with partners like the Los Angeles Public Library system; they are working together to put monitors outside 23 library buildings in Los Angeles and Pasadena – at human height in public spaces – so that individuals can take readings, enabling comparison across rich and poor neighbourhoods. People can use the library to see and discuss the information and use it to guide their actions. The library serves as a convening point for engaging people in environmental monitoring and civic action.**⁸⁶

However, Safecast still faces myriad challenges imperilling its sustainability. While many governmental groups use their devices and data, outside of Japan there is limited collaboration between government and the network. Even in Japan, there is often a reluctance to credit Safecast for its efforts, because this risks embarrassing the government. But non-democratic governments, which do not encourage free speech (you can see where they are from the gaps in Safecast's mapping data), are less likely to collaborate with this citizen science effort. But the challenge is not only related to governments. Many volunteers drawn to the crisis response origins of Safecast are less interested in sustained engagement that involves developing solutions than they are in gathering data alone.

Why has Safecast succeeded?

Whereas many civic engagement exercises have been one-off pilots, Safecast has enjoyed incomparable longevity for a variety of reasons.

1. **Robust volunteer network:** Safecast relies on a network of volunteers who want to participate less out of altruism than because they are curious about the environmental conditions in their own neighbourhoods. That is what drives the data collection, and the recognition that comparing their own communities to others is of value drives the data sharing.⁸⁷ While the website offers tutorials and guidance (and Safecast helps with offline training as well), participation is by self-selection. People choose to volunteer, and they decide what geography they will cover. The voluntarism of the activity makes people more invested in and enthusiastic about the work.
2. **Volunteers and professionals:** While most of the work is done by volunteers, Safecast has a handful of dedicated professional staff, like Sean Bonner, Global Director, and Angela Eaton, North Americas, who are able, for example, to create strategic partnerships like the work with the Los Angeles libraries and to ensure that robust standards are set across the community for the quality of devices and the techniques for measurement. In order to ensure that data is high quality and comparable, this requires standard setting, which ensures consistency and transparency. More important, they help to tell the story to their own community of what people are doing so that otherwise isolated volunteers feel connected to something bigger.
3. **Focused task:** While crisis got Safecast off the ground, it is the focused nature of the project that sustains it. From 2011 to 2016, Safecast focused exclusively on measuring radiation. Since then, it has expanded into the closely related area of measuring air quality. It does not, however, attempt to be a general citizen science platform or serve as a portal for any kind of data. This has allowed it to create important partnerships and have a well-defined message for participants, funders and media.
4. **Funding:** Having a generous and consistent set of funders has allowed the Safecast team to focus on its priorities rather than fundraising. Key supporters like Joi Ito, the former head of the MIT Media Lab, and Reid Hoffman, founder of LinkedIn, along with the Knight and Shuttleworth foundations, have allowed the effort to remain independent of government, free for its participants and sustainable. Continuing support will be vital for Safecast to thrive and grow.



synAthina

Athens's collective intelligence ecosystem

CASE STUDY

Location: Athens, Greece

Years in operation: 2013–present

Introduction

synAthina is an online-offline public platform where the City of Athens supports citizens in developing and implementing projects that improve the quality of life in the city. While an activist working outside of the city's government initiated the project in 2013, the city's government has owned the project since 2014. synAthina has achieved widespread participation. A network of nearly 450 social impact groups have shared almost 4,000 activities on the online platform. According to the synAthina manager for the

city, the project's greatest contribution has been fostering a creative and collaborative ecosystem that engages both civil society and Athens's municipal government to face the city's challenges in innovative ways. synAthina has survived a recent transition in mayoral administration and is still going strong, demonstrating that, even within a bureaucratic and cash-strapped city government, innovative public servants can channel the collective intelligence of citizens to develop and implement solutions that improve the quality of urban life.

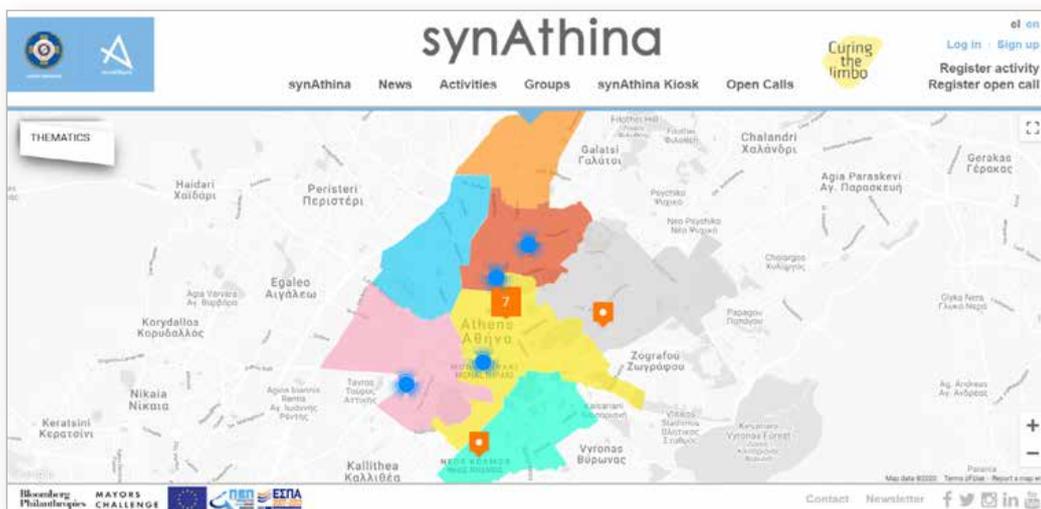


Figure 23: The synAthina home page, centred around an interactive web map that captures citizens' initiatives
Source: <https://www.synathina.gr/en/>

How it all started

Greece was hit hard by the global financial recession of 2007–2008. Several years of austerity measures left the nation's capital pockmarked with dilapidated buildings and vacant lots, and its citizens' trust in government shaken. Yet at the same time, citizens' initiatives sprang up around the city to address issues such as homelessness, poverty and vandalism.⁸⁸

In 2013, former documentary film-maker Amalia Zepou approached the city's mayor, George Kaminis, with an idea: create a central hub within the city's government that would connect citizens' projects in various neighbourhoods so that the projects and the authorities can share resources and learn from one another. Seeing the project as an opportunity to bridge the gap between civil society and the government, Mayor Kaminis invited Zepou to assume an advisory role in the Mayor's Office to develop the project.⁸⁹

The first version of synAthina was a physical map of grassroots communities in the city, which grew into a digital map hosted on a simple website. In 2014, the project received a major boost when it won €1 million from the Bloomberg Mayors Challenge to develop a fully fledged online platform. In the same year, Amalia Zepou was elected as a city council member and assumed the role of Vice Mayor of Civil Society and Innovation, officially bringing synAthina into the city's government.

The collective intelligence process

How does it work?

The synAthina platform functions as a central portal for civic participation in Athens.

The 'Activities' section acts as an events board where users can post about their actions aiming to build community and improve quality of life in the city, from community cooking events to free medical care and counselling for substance abuse. Residents can search for these events by district, topic and date, or by scrolling through the interactive web map on the site's home page.

The 'Groups' section covers the network-building aspect of synAthina. Here, any non-profit, business or unincorporated group of people can create a team profile to showcase their community-oriented work. This includes a written description, a list of actions and events the group has been involved in and an optional photo gallery.

The 'Open Calls' page helps citizens to address a broad network of community groups with calls to action for collaborative initiatives or for the municipality programmes to engage with numerous local stakeholders when implementing projects for the city. For instance, the Open Schools initiative – a city programme for students and their parents to participate in after-hours cultural activities in schools – regularly solicits ideas for activities, and people to organise them, through Open Calls.



Figure 24: The mobile installation Athens, My New Neighbourhood was one of the tools used by Curing the Limbo programme and synAthina to help refugees assimilate into life in Athens.

Source: Photo courtesy of synAthina

While the synAthina.gr platform has been the main entrepôt for active citizens and city officials, much of the collective action takes place offline. A prime example is Curing the Limbo, a pilot programme for the City of Athens to model innovative strategies for the integration of migrants and refugees, using €5 million in funding from the European Union's Urban Innovative Actions initiative. Curing the Limbo engages around 300 refugees and migrants who have been granted asylum and are living in Athens in collaborative actions and community-building activities supporting local collectives and citizens that work equally to benefit Athenian neighbourhoods and improve the quality of life of the city's communities.

Such actions and collectives include initiatives to improve accessibility of public space, projects around the promotion of Athens as a multicultural/alternative tourist destination, neighbourhood cultural communities (theatre groups, sound collectives, arts and crafts projects, etc.), local sports and well-being groups and environmental initiatives. In one case, participants worked on a photography project that captured life in the city as seen through the eyes of a new citizen. Two days of photography tours and workshops produced a public exhibition entitled *Athens, My New Neighbourhood*, which travelled around the city's public spaces. 'The project experiments around the hypothesis that citizens can have an institutional and systemic contribution to the way such groups are included in our societies', Haris

Biskos, current Project Manager for synAthina said in a recent conversation.⁹⁰ synAthina, along with several local and international partners, is running the initiative from 2018 to 2021.

Who participates?

synAthina is open to anyone who wishes to take part, so long as their projects have social impact rather than profit as their primary motive. Participants need only register with a name and email to be able to sign up and organise or join an event. Any group can also register, regardless of whether it is a non-profit, a social impact business or an unincorporated group of people.

Participation started out strong and has seen steady growth. In 2013 (synAthina's inaugural year), 42 groups shared 208 activities on the city's digital map. As of 2020, a total of 443 groups have posted 4,050 activities on synAthina, in cooperation with 148 sponsors. In an interview, Haris Biskos remarked that the younger generation is the group most engaged on the platform.

While synAthina allocates funding to certain projects, such as activities organised by the Curing the Limbo initiative, access to the larger network of innovative groups and projects is the main incentive for participation.

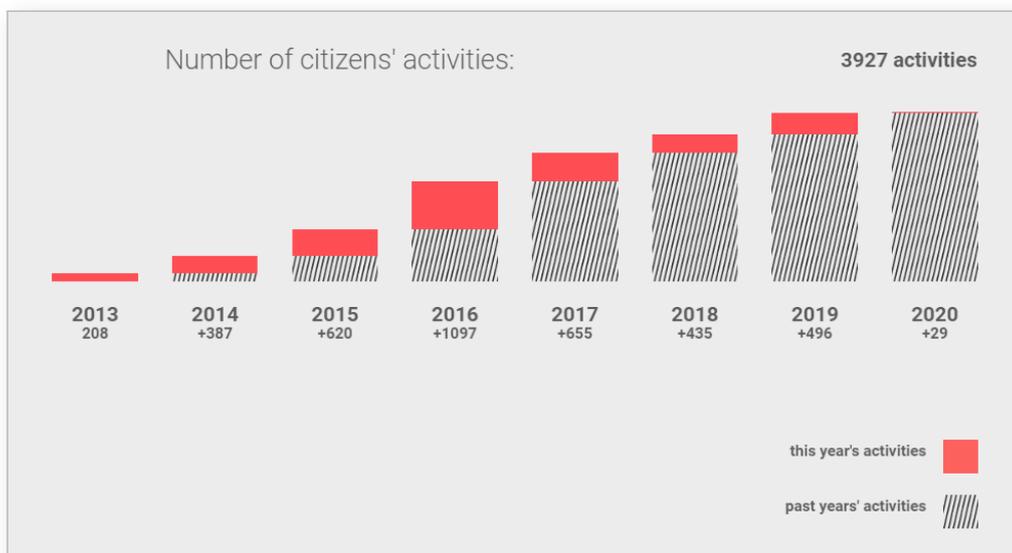


Figure 25: The growth of synAthina activities over time

Source: <https://www.synathina.gr/en/synathina/statistics.html>

Outcomes and impacts

As the synAthina team does not manage or track the outputs of all the groups with a presence on the platform, it is difficult to quantify the number of projects that have had positive outcomes. The collaboration described above – the network of nearly 450 innovative groups working to improve the quality of life in Athens – is synAthina's primary impact.

In a larger sense, synAthina has also contributed to the rebuilding of trust between citizens and the city's government. The initiative's mediating role in the redevelopment of the Kypseli Market is a clear example. Prior to the city's decision to refurbish the market in 2012, the historic municipal building had lain vacant for a decade, and the city even considered demolishing it.

In 2015, synAthina launched a public consultation to engage the community in co-designing this new market space. The platform collected 470 ideas for the future use of the building, from 200 participants. synAthina then held an open call for community groups, non-profit organisations and charitable organisations to determine the market's operator, eventually settling on the social innovation group [Impact Hub Athens](#). Finally, synAthina ran a six-week programme of community events and workshops in the market.⁹¹

Today, Impact Hub Athens describes Kypseli as a 'market for social entrepreneurship' whose tenants include social organisations that provide educational and social services alongside the traditional second-hand stores and fruit vendors.⁹²



Figure 26: synAthina has been hosting numerous collaborative workshops with citizens about pressing challenges of Athens

Source: <https://www.athensinsider.com/how-kypseli-championed-change/>

For synAthina, the most important outcome of the Kypseli Market consultation was not to generate new ideas, but to let the market community know that the city was listening. 'Public consultations can be extremely boring and quite hypocritical things, because they are usually question sessions where only elected representatives would come', Vice Mayor Zepou told CityLab. 'We could have almost predicted the ideas that came in ... what was more significant was that synAthina broke the ice, and the tension among community groups in that area, helping them to collaborate.'⁹³

Key innovation

While the synAthina website attracts a great deal of international attention, opportunities to participate in person have been key to the initiative's success. 'What synAthina is doing,

most importantly as a process, is to engage with communities and help empower citizens initiatives', Haris Biskos said.

The synAthina kiosk is one example. Located in Varvakeios Market in the city's centre, the kiosk is an indoor and outdoor public space that any registered user can reserve for a group meeting or to host an activity. While a simple idea, the kiosk provides a place to meet or have face-to-face events, accessible even to informal groups who lack an office space.⁹⁴



Figure 27: A group meeting at synAthina's outdoor kiosk space
Source: <https://www.synathina.gr/el/%CF%83%CF%84%CE%AD%CE%B3%CE%B7.html>

synAthina is managed by a team of five people working full time and one person working part time within the Vice Mayor's Office for Civil Society and Innovation. This includes two team members who are designated Public Engagement Officers. The mandate of these team members is to form and maintain relationships with community groups, mainly by attending events and meetings within the community. Meeting with groups face to face helps the synAthina team to better understand the challenges each part of the community faces while also showing isolated groups, such as refugees, that the city government can be a trusted partner.

Katerina Gkoutziouli, a former synAthina public engagement officer, described the outreach challenges for a project to transform a building into a community centre for refugees: 'At first, I did not reveal my identity, because I know that some groups are sceptical of what the government does', Gkoutziouli wrote. After slowly gaining the group's trust, Gkoutziouli offered to put them in touch with educators or architects who could support their project.⁹⁵

The Open Mondays programme is another

way synAthina connects with the community. During this weekly meeting held at synAthina's offices, anyone is welcome to gather around a communal table and discuss ideas they would like to see implemented or simply connect with like-minded people in the community or municipal government. These meetings often centre around a specific theme. For instance, when Athens's population of refugees began to grow, synAthina invited relevant community groups and city departments to share ideas about how the city could better support refugees.

Current status

Notably, synAthina does not take funding from the city government. The initiative primarily receives funding from the European Commission's Urban Innovative Actions programme. The team allocates approximately two-thirds of its funding to personnel. The remaining budget goes to operational costs, such as organising events and workshops and calls to action supporting and nurturing community-led initiatives. These days, as the team does not make major changes to the online platform, the website requires minimal funding.

While this external funding may seem to insulate synAthina from changes in administration, Biskos emphasises that political support is important to the initiative's survival. 'Political support is the most important parameter in sustaining synAthina', he said in a recent conversation. As synAthina is not backed by any legislation, the political support of the Mayor's Office is what gives the initiative its staying power.

This reliance on political support throws a veil of uncertainty over synAthina's future, as the initiative's two key champions recently exited Athens's government. Founder Amalia Zepou left her role as vice mayor to pursue a fellowship abroad, while George Kaminis resigned shortly before the end of his term as mayor in 2019. As the new administration has been in place for only a few months, and the current funding from the European Commission will last only through the next year, Biskos admits that it is difficult to say whether synAthina will continue in its current form and, if so, for how long. 'This is a crucial time as the government approach is changing with the new administration on board', Biskos said. 'If we lose the political support, there might be no synAthina in its current form.'

Lessons learned

- 1. Harnessing passions:** A key ingredient in the longevity of the project is that the website serves as a one-stop locus for setting up and finding civic engagement projects of all kinds. Rather than limiting projects to those created by the city, synAthina helps civic groups source participation. It also channels European funding and provides support and coordination for these volunteer efforts. At the same time, there is a dedicated city staff of five who run the network.
- 2. Hybrid online/offline collective intelligence:** Another reason for the project's success is its use of an online platform to coordinate real-world activities, taking advantage of key spaces in the City of Athens to invigorate civic life. The successful blending of online action with offline mobilisation has been a reason for success.
- 3. Key personalities:** Another reason for synAthina's longevity may be the key role of the vice mayor. Like Audrey Tang in Taiwan (see the section on vTaiwan), who went from civil society into government, Amalia Zepou too started as a civic leader and then assumed a leadership role in the administration. However, her renown in the civic community helped to instil trust and interest in synAthina.
- 4. Institutionalisation has trade-offs:** While achieving institutionalisation in the city government is an admirable goal for many collective intelligence projects, synAthina demonstrates that involving bureaucracy can also lead to unexpected obstacles. For instance, the team would like to further experiment with the online platform, but as the website sits on the city's servers, it can be difficult and time-consuming to make changes within the rules of the bureaucracy.
- 5. Success is fragile:** Though many media outlets in Greece and abroad frame synAthina as a major success, Haris Biskos emphasised that the initiative has faced major challenges, even in its most celebrated projects. The Kypseli Market has delivered numerous benefits to the community. But the process of developing the market put considerable pressure on synAthina's relationship with both the operator and the city hall. This underscores the importance of seeing the larger aim – building of collective intelligence within the city's government – rather than becoming discouraged by the difficulties faced by one particular project.
- 6. Aim for cultural change:** synAthina began with the ambitious goal of building trust between Athens's government and its people. As Biskos told us, one aspect of this approach was 'reaching out to unknown spaces in the city ... exploring and bringing forward voices that are not heard inside the city hall or in the municipality offices'. By demonstrating the successes of this outreach strategy and its positive effects on Athens's quality of life, synAthina has been able to drive change in the mentality of the city's government that has carried over into the new administration. 'This mentality of co-creation is a mentality that is now embroidered into the administration of Athens', Biskos said. 'Now it's part of how the administration runs the city.'



Ushahidi

Crowdmapping to inform responses in chaotic or disaster situations

CASE STUDY

Location: Kenya (operating in 160 countries)

Years in operation: 2008–present

Introduction

Ushahidi ('testimony' in Swahili) is an online platform for crowdsourcing data in support of crisis relief, human rights advocacy, transparency and accountability campaigns. A non-profit organisation of the same name originally developed Ushahidi to track acts of violence during a media blackout in the aftermath of Kenya's contested 2007 election. Since then, Ushahidi has grown from an ad hoc blog with a simple web map into one of the most prominent 'crowdmapping' platforms, with more than 150,000 deployments – Ushahidi's term for each new project that uses its software – capturing data gathered by millions of volunteers in 160 countries. Especially in the early days of a crisis, whether an election dispute or a natural disaster,

when conditions are chaotic and traditional reporting is sometimes restricted, Ushahidi makes it possible to rapidly gather, validate and publish information collected from and reported back to those on the ground and the wider public to aid in providing situational awareness and targeting the delivery of disaster relief.

How it all started

On 30 December 2007 Mwai Kibaki was sworn in for his second term as President of Kenya after a tense, and at times violent, campaign. The opposition candidate, Raila Odinga, claimed voter fraud and contested the results of the election. Riots quickly broke out between supporters of both candidates, while a news blackout made it difficult to determine where violence was happening and at what scale.⁹⁶

The collective intelligence process

How does it work?

The Ushahidi platform provides tools for organisations, companies or individuals to crowdsource, map, analyse and publish information. While the Ushahidi organisation operates some projects, any organisation can set up its own Ushahidi site and use it to do distributed mapping. These tools have been developed by volunteers over the past decade in response to the needs of humanitarian crisis mappers during various disasters.

While the duration and structure of each deployment varies, the platform provides four key functions: data collection, data management, data analysis and visualisation, and response.⁹⁸ Ushahidi's website provides [documentation](#) that guides the user through the process of designing and launching their project.

Data collection

The organisers of the deployment create a data collection [plan](#), including the time span and target geographic area for collection. The administrator can then collect information from users on the ground through several diverse channels, including:

1. Text messaging
2. Email
3. Twitter
4. Smartphone applications
5. Custom surveys embedded in web or mobile applications
6. File uploads (CSV [comma-separated values] files)
7. RSS feeds

The administrator determines which channels to enable depending on the needs of the local population and the capacity of their team.

Lawyer Ory Okolloh, having travelled to her native Kenya to vote in the election, returned to her home in Johannesburg and booted up her laptop. As Okolloh received updates on the violence from colleagues in Kenya, she relayed this information on her blog in real time. As she gathered more information, Okolloh recognised the need to document the reports of violence and disseminate these to people on the ground. 'For the reconciliation process to occur at the local level the truth of what happened will first have to come out', she wrote in a [blog post](#) on 3 January 2008, adding '...any techies out there willing to do a mashup of where the violence and destruction is occurring using Google Maps?'

Several other bloggers and software developers, including Erik Hersman, Juliana Rotich and David Kobia, answered her call. Over several days in early 2008, the team developed a simple online platform where anyone who witnessed or experienced a violent incident could report it, either by text message or through an online form. A team of volunteers then verified reports, either by comparing it to a second report or by contacting submitters, and displayed the incidents on a Google Map – more than 40,000 reports in all. The group called their platform Ushahidi.

Also in 2008, the team formed a non-profit organisation of the same name to oversee the future development of the Ushahidi platform. Crucially, they made their software open-source, publishing the code online so that those facing a future crisis could adapt it to their own needs. The platform quickly caught on, with a Kenyan wildlife charity using it to track lion and elephant sightings and the news organisation Al Jazeera using it to track violence during the 2009 war in Gaza.⁹⁷ In 2010, Ushahidi launched its first software-as-a-service product, [Crowdmap](#); as Crowdmap was hosted on a cloud server, it was easy to install and use, helping to grow Ushahidi's community.

In the 12 years since its launch in 2008, Ushahidi has grown into one of the world's most popular 'crisis mapping' platforms for collecting distributed data, with projects in 160 countries.

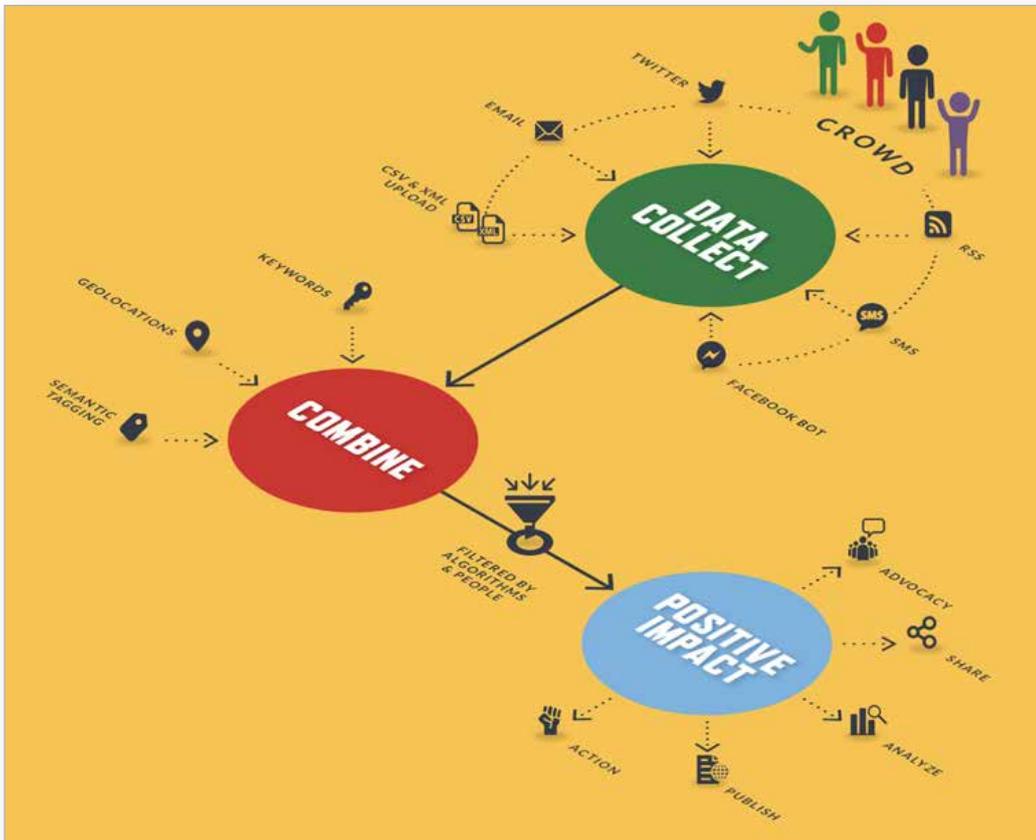


Figure 28: The workflow for running a deployment using Ushahidi

Source: <https://www.ushahidi.com/blog/2018/11/05/how-the-ushahidi-platform-works-and-what-comes-next>

Data management

The Ushahidi platform then helps the administrator organise the data into categories. Categorisation makes it possible to search or filter data – for example, by the date each incident was reported or by the type of incident. The administrator can also set permissions to give different team members access to different parts of the data set.

Data analysis and visualisation

The organisation can also visualise and analyse the data. The platform can display reports on a map in real time so that the organisation can see what is happening in every location and spot any trends or problems. They can also filter the live map by time and category. The organisation can also export the data as a spreadsheet (CSV file) for further analysis using an external tool.

Response

After drawing insights from the data, the organisation can choose to respond by further refining their data collection campaign or by taking action. The Ushahidi platform allows an organisation to trigger automatic notifications – for example, to field staff. They, of course,

may also choose to share the information with relevant organisations, government or media, or they might publish it.

Who participates?

The level of global participation using the Ushahidi platform is impressive. Ushahidi reports that the software has been deployed more than 150,000 times in more than 160 countries. The platform has gathered 50 million reports from 18 million people.⁹⁹ Ushahidi has been translated into 48 languages, often by volunteers from the community who translate the software piece by piece, allowing for participation at a global scale.

The level of participation varies within each campaign depending on its scope. The Uchaguzi deployments discussed below received reports from thousands of people, but also involved hundreds of volunteers in processing and verifying claims.

Key innovation

Ushahidi is one of the most prominent examples of crowdsourcing geographic data to create maps – what some have called ‘crowdmapping’.¹⁰⁰ At one time, Ushahidi even marketed a version of its software under the name Crowdmap.

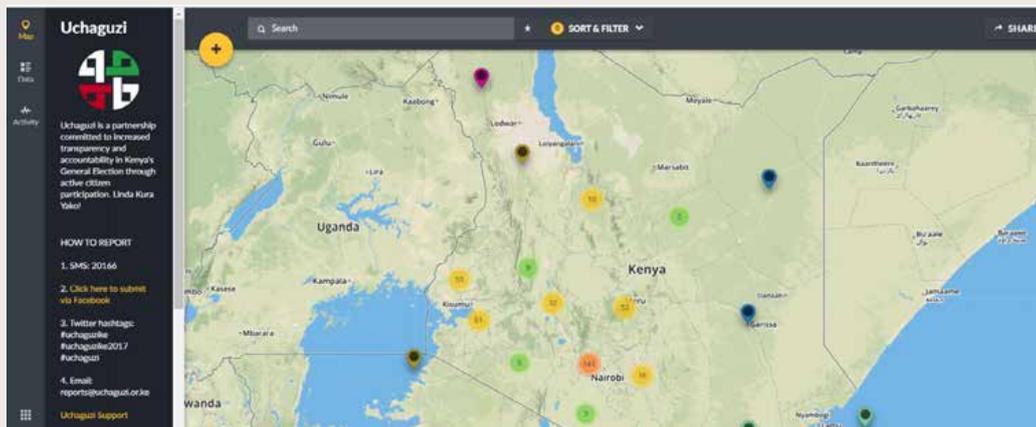


Figure 29: The 2017 Uchaguzi deployment

Source: <https://uchaguzi.or.ke/views/map>

Box 4: Uchaguzi: A story of impact

Ushahidi can be even more impactful when organisations set up the monitoring system in anticipation of a planned event, such as an election, rather than after the fact. Learning from the violence of the 2007 election in Kenya, Ushahidi collaborated with several civil society organisations, including the Social Development Network and the Constitution and Reform Education Consortium (CRECO) to create Uchaguzi (Election), an initiative to monitor Kenya's constitutional referendum in 2010. Uchaguzi also monitored Kenya's general elections in 2013 and 2017, when, due to earlier constitutional reforms, voters elected many more positions, increasing the risk of voter intimidation.¹⁰¹ CRECO deployed 700 volunteers to monitor polling stations around the country. Meanwhile, Ushahidi used its own software to develop an online platform (uchaguzi.or.ke) for data collection and provided in-person training for 250 volunteers on how to effectively manage, verify and publish reports of irregularities, or even violence, from citizens or officials across Kenya.

On 5 August, three days prior to the election, Uchaguzi volunteers gathered at a 24-hour 'situation room' in a suburb of Nairobi to monitor reports of everything from property vandalism to missing ballots. One team monitored Twitter and Facebook for instances of hate speech.¹⁰² Another team processed users' submissions from Twitter hashtags, text messages and even a Facebook Messenger chatbot. After verifying the credibility of reports, the volunteers categorised responses and posted them on a live map.

As in 2007, the losing candidate contested the election results. Violent protests again broke out, though they were less widespread than in 2007. In September, the Supreme Court nullified the

results and ordered a new election within 60 days. Uchaguzi responded by organising another monitoring campaign for the second election.

In monitoring the second election, Uchaguzi received a total of 6,875 reports; volunteers were able to categorise 535 of these posts in the project's classification structure and posted them on the uchaguzi.or.ke website. These reports included a mixture of polling station and administrative issues (84), vote counting and results issues (55) and instances of violence (29).¹⁰³

While post-election violence has not reached the levels seen in the 2007 election, Ushahidi continues to play a valuable role in aggregating and disseminating information about voting irregularities and the violence that occurs. 'You can definitely see the role that technology has played when people are actively involved in sharing information around how the electoral process is going', said Angela Oduor Lungati, Chief Executive Officer of Ushahidi. 'They feel some sort of personal responsibility to make sure that things are going well.'¹⁰⁴

Ushahidi has even helped to prevent potential instances of violence. In a recent conversation, Lungati recounted a story of the 2013 election in which Ushahidi received a text message report of a group with machetes and knives gathering outside a polling place. Within 15 minutes of receiving the report, Ushahidi forwarded the message to authorities, who in turn responded to the situation.

'I live in Kenya, so I lived the reality that happened in 2007 and 2008', Lungati said. 'So whenever Kenyan elections are happening, that is one instance where we put our heads down and give everything possible to make sure that the project works.'



Figure 30: The portable BRCK device
Source: <https://www.brck.com/about/press/>

But the Ushahidi organisation has gone beyond simply creating a platform for data aggregation and visualisation. It has continued the development of new tools and strategies to harness the collective intelligence of its network and grow the crisis mapping community. For instance, when team members reported difficulties connecting due to power failures and Internet outages, several Ushahidi co-founders created BRCK, a portable battery-powered device that allows users to connect to a free Wi-Fi network known as Moja. Several of the founders later spun out BRCK into a separate company focused on providing Internet access to areas of Africa that lack connectivity.

Likewise, Juliana Rotich, Ushahidi co-founder and former Executive Director, told the story of BantuWatch, an election monitoring scheme run by civil society organisations in Zambia during the country's 2011 elections. While travelling with a group to observe a polling place in a low-income area of Lusaka, an angry group surrounded Rotich's vehicle and forced them to turn back. Rotich later learned that there had been reports of SUVs bringing people into the area to buy off voters, which the locals wanted nothing to do with. 'If we had had the alerts from the Ushahidi deployment, we would have known that in that particular area there's a sensitivity around certain types of cars', Rotich said. 'Then, going into that situation, we would have communicated differently.'¹⁰⁵ After that experience, Ushahidi developed real-time alerts so that anyone on the ground can receive security notifications – via SMS, for instance – based on their location.

Like Ushahidi's crowdmapping software, both BRCK and the real-time alerts feature originated out of connectivity problems faced by Ushahidi's

team members. As it turns out, others were facing the same challenges. In both cases, Ushahidi developed a solution that was adopted by a far larger community than the one for which it was originally designed.

Current status

The Ushahidi organisation comprises a team of 11 people. Approximately 40 per cent of the staff work on product development while the remaining 60 per cent deal with operations, fundraising and community outreach. Notably, 75 per cent of the team's members and leadership are female.

The Ushahidi organisation receives both grant funding and revenue from providing their software as a service.¹⁰⁶ As the Ushahidi software is open-source, the code is available online for any developer to use and modify. The price for a single deployment is \$499, which includes software hosting and maintenance. Non-profits with an annual operating budget of less than \$250,000 can apply for a free basic plan. The organisation also provides ongoing support and customisation of its software through an enterprise model. Prices begin at \$15,000 to set up a single deployment.¹⁰⁷

The flexibility of Ushahidi's software has allowed organisations to expand its use to campaigns beyond election monitoring. 'We've been able to expand the reach to various categories of social impact', Lungati said. 'The three most notable ones are around crisis response, transparency and accountability, and human rights and advocacy.' One notable deployment is HarassMap, a non-profit initiative launched in 2010 which crowdsources reports of sexual harassment and abuse from women in Egypt. In another instance, after the 2010 earthquake in Haiti, a team of volunteers used the Ushahidi platform to gather reports of people in need of help, which they passed along to rescue teams on the ground.¹⁰⁸ The platform has helped to prevent forest fires in Italy, reduce humanitarian disaster in Syria and stem the spread of sexual violence in India.

Ushahidi's success in attracting participation has also led to some operational challenges. Juliana Rotich notes that the large volume of crowdsourced reports often exceeds what a team of people can reasonably process. As such, valuable insights risk getting lost in the 'noise' of off-topic or otherwise unusable reports. Ushahidi previously developed a tool, SwiftRiver, which

used algorithms to aggregate, filter and sort news from various sources. However, at the time there was a lack of the necessary open-source tools to develop machine learning algorithms on a small budget, leading Ushahidi to discontinue support for SwiftRiver in 2015.¹⁰⁹

Thus, Ushahidi is now researching and developing new tools to improve the management and analysis of its data. For instance, they are developing tools that use artificial intelligence and machine learning to improve the efficiency of processing crisis reports, which could allow them to act on reports more quickly. Looking farther into the future, they are also researching how the platform could use such tools to fact-check online information in the run-up to elections. 'We're building these tools within the mind frame and context in which people are using our tools currently', said Lungati. 'The problems that existed 12 years ago are still the same ... it's just that the tactics to solve those problems are shifting.'

Lessons learned

Ushahidi has had tremendous staying power, longevity and impact. This is attributable to a few key reasons.

1. **Compelling need:** Winston Churchill famously said, 'never let a good crisis go to waste'. Indeed, Ushahidi grew out of a crisis and continues to provide much-needed information after, during and to prevent a crisis, responding to the need for high-quality information and situational awareness in otherwise chaotic circumstances. While fake news and misinformation can spread like wildfire on social media, Ushahidi helps to organise volunteers to rapidly collect and share good information to inform action.
2. **Broad need, narrow purpose:** Ushahidi does one thing very well, namely crisis mapping; and that is in widespread demand in many situations. Whether wildfires or elections, there is a need for situational awareness, which can best be achieved by crowdsourcing on-the-ground data. By focusing on doing this well, Ushahidi has made itself instrumental to disaster relief.
3. **Open-source promotes innovation:** Ushahidi has continuously adapted its platform to fit the needs of the audience for each project.
4. **Many ways to contribute:** Ushahidi recognises that not all participants have the same skill level or technological expertise, and it designs tools that aim to lower these barriers to access. It offers many ways for people to contribute information, including via text message, the web and Twitter. It also enables people to contribute in different ways, from writing software to validating data. 'While we're doing user experience research, it's an iterative process that involves the people who are using the tools', said Lungati. 'It involves bringing in the designers, bringing in the people who are building the tech, the developers, and those grassroots organisations, and the end user – that 90-year-old woman – into the room.'
5. **Robust funding, but for how long?** Many philanthropic organisations and companies have supported Ushahidi, and it charges for the services of its professional staff. Ushahidi faced challenges raising enough revenue to remain viable through its open-source model, a problem that many in the open-source community face. 'The biggest question that still exists, right now, is how to build sustainability around open-source projects', said Lungati. While so far Ushahidi has offered deployments of its software as a paid service in order to supplement its grant funding, Lungati acknowledged this model may change again in the future. 'For us, maybe it's not selling the software itself', Lungati said. 'Maybe it is our support and expertise that is of additional value.'

vTaiwan

Reaching consensus using collective intelligence

CASE STUDY

Location: Taiwan

Years in operation: 2015–present

Introduction

vTaiwan is a four-stage online and offline process in which the public and government work collaboratively to create legislation relating to the digital economy. The project is managed by gov.tw (pronounced 'gov zero'), the country's largest civic technology organisation, with political support from Taiwan's Digital Ministry and parliament. Since vTaiwan launched in 2015, more than 200,000 people have participated, resulting in 26 pieces of legislation passed through Taiwan's parliament. Though not institutionalised by a regulatory framework, the platform has achieved a high degree of staying power by remaining a volunteer-run, transparent process that has grown over time and 'survived' a presidential election. While vTaiwan enables citizen engagement throughout the legislative process, it is a good

example of collectively defining the problem, because the collective intelligence of the vTaiwan community is used to better understand and come to consensus around regulatory issues related to Taiwan's digital economy, which the community then works to solve with the input of external stakeholders.

How it all started

In March 2014, a group of young activists began a three-week occupation of the Taiwanese Parliament in Taipei in response to the Cross-Strait Service Trade Agreement, that would have liberalised trade with China and which, despite strong public protest, the country's parliament had negotiated behind closed doors. This series of sit-ins, which would come to be known as the Sunflower Movement because student protestors used the flower as a symbol of hope,

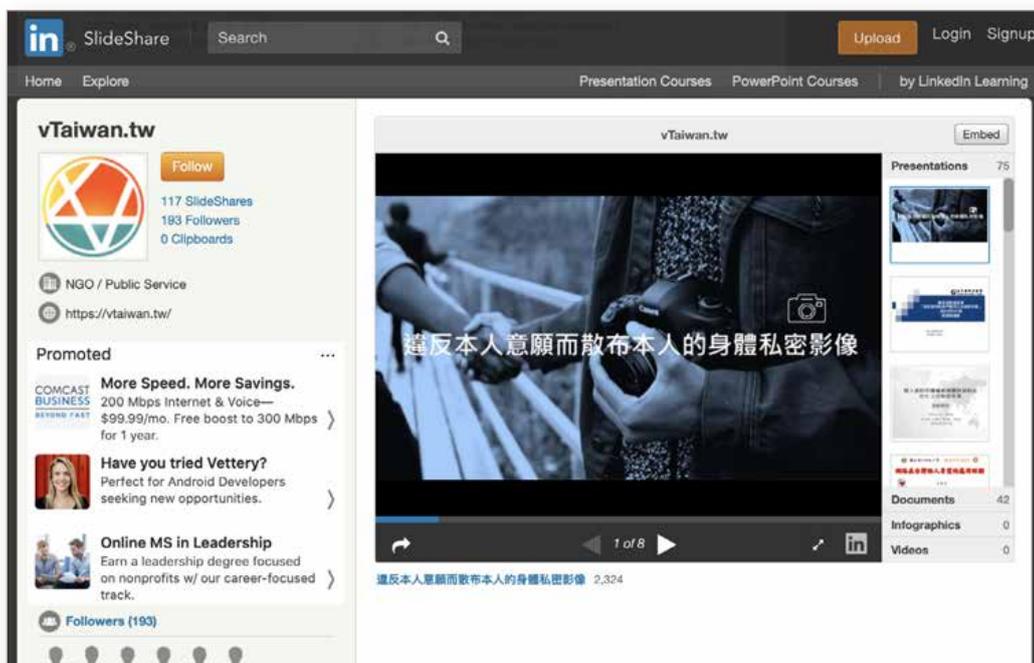


Figure 31: Screenshot of SlideShare, the tool used to share presentations and documents in the proposal stage

Source: https://www.slideshare.net/vtaiwan?utm_campaign=profiletracking&utm_medium=sssite&utm_source=ssslideview

was led by g0v, a 'civic hacker' group which saw the movement as an opportunity to promote transparency and the use of digital tools in the lawmaking process.¹¹⁰ g0v had been working on improving the delivery of Taiwan's public services since the group's founding in 2012. Its first project, for instance, was a visualisation tool to help citizens understand how the national budget was allocated across sectors and at the local level. The tool was eventually adopted by Taipei's mayor to publish online visualisations of the city's budget.

Jaclyn Tsai, Minister without Portfolio of the Executive Yuan (Taiwan's parliament), was receptive to the group's goal of promoting citizen engagement. At a g0v hackathon in December 2014, she asked the attendees if they could 'create a platform for rational discussion and deliberation of policy issues that the entire nation could participate in'. In response to the minister's challenge, a team of g0v programmers headed by Audrey Tang and Chia-Liang 'CL' Kao developed vTaiwan, an open consultation process that brings together experts, government officials and citizens on a national scale to deliberate, reach consensus and craft legislation.¹¹¹

The collective intelligence process

How does it work?

The vTaiwan lawmaking process has four key engagement stages: proposal, opinion, reflection and ratification.

I. Proposal stage

- A. Every Wednesday, vTaiwan hosts a mini-hackathon where programmers, developers, public servants, journalists, scholars, legal specialists, students and others convene online or offline to propose issues to discuss. Anyone can propose an issue to a 'competent government authority', which may choose to either accept (thereby becoming accountable for the issue) or refuse to take on the topic. A proposed issue will not initiate the vTaiwan process without a government authority agreeing to become accountable for it and a facilitator taking charge of the issue.
- B. At each stage, the facilitator leads the group in a discussion about the issue. The vTaiwan community, meanwhile, is responsible for researching and identifying relevant stakeholders, defined as any person or group affected by and/or having knowledge about the given issue.

- C. During the proposal stage, notes taken during mini-hackathons are shared using the collaborative note-taking tool [HackMD](#), while documents and presentations are shared using [SlideShare](#).

II. Opinion stage

- A. The vTaiwan community launches the opinion collection process and produces a description of the case in an easily digestible form, including publishing any documents or research relevant to the proposal. Opinions are then gathered through 'rolling questionnaires', which are used to ask stakeholders within the community's network what they know about the issue and their experiences with it. Stakeholders are also asked if they can recommend others with knowledge and/or experience relevant to the issue.
- B. The vTaiwan community creates an online forum on which anyone, not restricted to Taiwan residents, can ask questions, comment on ideas or choose to 'agree', 'disagree' or 'pass on others' ideas, and that forum is open for a designated period of time. Each round of opinion collection lasts for at least one month, but there is no limit to the number of rounds.
- C. Two digital platforms are then used to build consensus among participants.
- D. [Discourse](#) is a discussion platform which allows users to tag competent authorities, who, in turn, are obliged to respond to comments within seven days.
- E. Pol.is is an opinion mapping tool to support a large group to build consensus by helping the group visualise its own opinions. Participants develop a series of statements about the problem, which users can respond to by voting to 'agree', 'disagree', 'pass' or answer the question 'Is this statement important to you?' As users respond, the software develops an opinion landscape which visualises in real time where there is consensus and where there is disagreement. At the end of the process, vTaiwan publishes reports on the results that are viewable by the public and submitted to the relevant government authority.

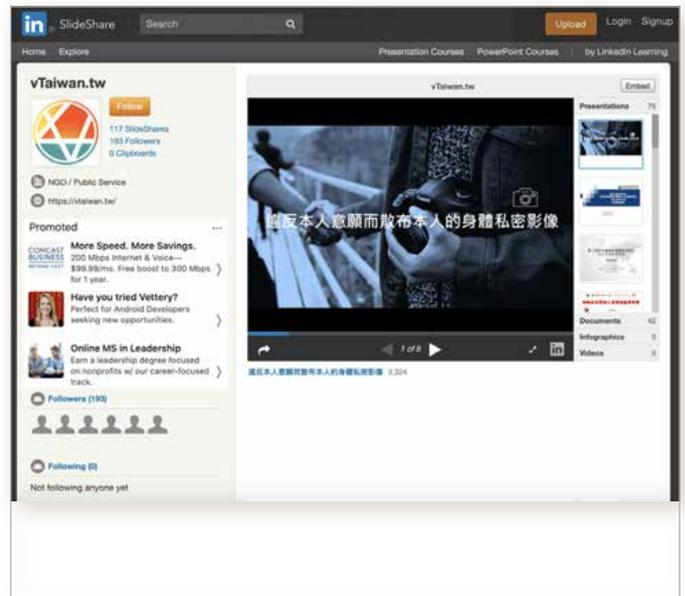


Figure 32: Screenshot of the Pol.is tool user interface used for opinion mapping

Source: <https://pol.is/3phdex2kjf>



Figure 33: Sample opinion map generated by the Pol.is tool

Source: <https://pol.is/3phdex2kjf>

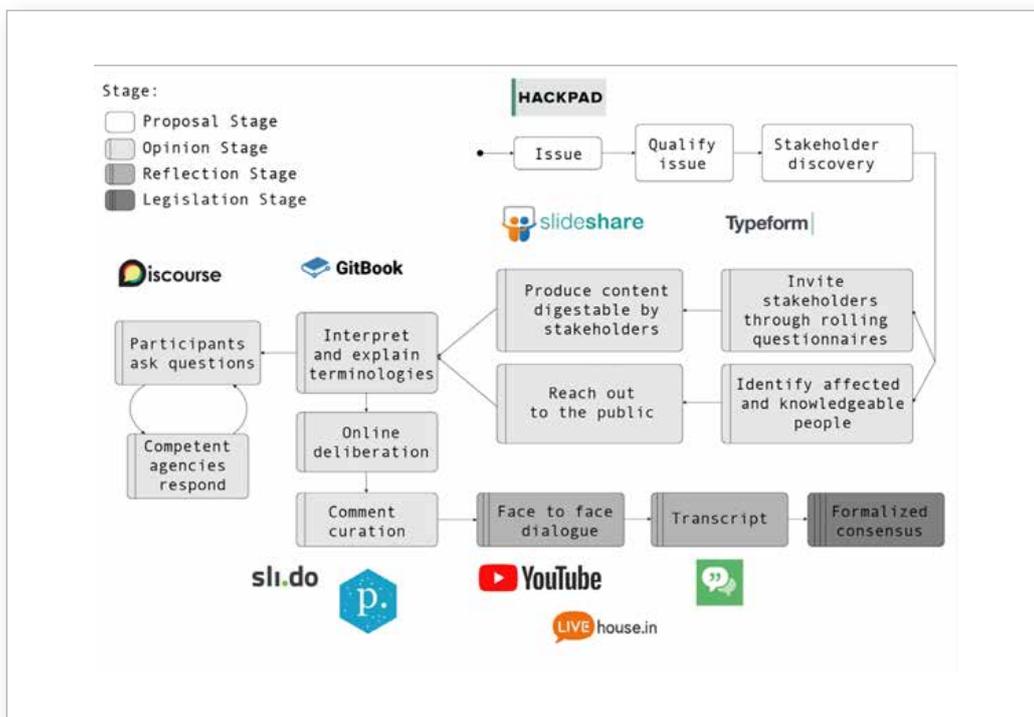


Figure 34: Diagram of the vTaiwan process
Source: <https://info.vtaiwan.tw/>

III. Reflection

- A. Through two face-to-face events, the community reflects on the findings and decides if it is time to proceed. If so, they design an in-person consultation, including identification of the size and scope of the issue.
- B. At the consultation meeting, led by the facilitator, key stakeholders, including scholars, public servants, private sector representatives and participants who were deemed highly active during the earlier stages, are invited to present on the issue at hand. During this process, the facilitator takes notes digitally to document a summary in real time, all of which is displayed on a projector. Following the meeting, the videos are released on the vTaiwan Facebook page so that citizens can continue to share ideas in the following weeks.

IV. Ratification

- A. After the consultation, a final discussion takes place on the results of the process to decide the action that the government will take. Considering the feedback that has been produced so far, including input from the relevant government agency, the community reaches a final resolution on the issue. The final outcomes can take one of two forms:
 1. In some cases, the issue is resolved with a guideline, policy or statement from the

competent government agency. This often includes a point-by-point explanation of why legislation is not being enacted.

2. In other cases, the issue is formulated into a draft bill to be sent to the Legislative Yuan (Taiwanese Legislature).

The process is flexible and adaptive according to the unique challenges each issue presents. Rather than defining a threshold of support that each proposal must reach, the vTaiwan community decides to advance the proposal to the next stage when a 'rough consensus' has been reached.

Who participates?

Anyone can join at any stage of the process. Participation is based on self-selection. A notable exception is the in-person consultation, which occurs during the reflection stage, where attendees must be invited. However, anyone can view the online live stream and contribute ideas through the chat, which the facilitator can decide to include in the meeting.

As g0v is the largest civic tech organisation in Taiwan, the community has a substantial network for outreach. As g0v activist Wu Min Hsuan remarked in 2017: 'I wouldn't say that everyone knows g0v, but people who are interested in tech and/or in politics definitely do.'¹¹² For instance, during the opinion stage, stakeholders within g0v's network receive surveys to collect their

feedback from stakeholders on the initial parts of the process. Surveys also reach others via online advertisements and Facebook.

vTaiwan has created a community that encourages open collaboration and experimentation, which in turn leads to sustained participation. This means that new participants do not have to start from scratch. Audrey Tang, Taiwan's Digital Minister remarks that participants do not 'have to fight an existing authority [and established] culture that says no'.¹¹³ For example, in the 2015 engagement on the regulation of Uber, there was active participation, involving:

- 31,115 total votes (the highest of any process to date)
- 145 statements submitted via the Pol.is survey (during the opinion stage)
- 925 participants voted via the Pol.is survey (during the opinion stage)
- 1,875 participants joined online during the two-hour live-streamed consultation meeting
- 4,000+ participants crowdsourced the meeting agenda for the consultation

How is it run?

g0v volunteers manage the process. The use of effective online tools has greatly diminished the need for human moderators. On the Pol.is platform, users 'vote' on the comments of others rather than replying to them directly, which reduces the risk of 'flame wars' and endless arguments. This functionality helps to drive the discussion and build consensus without the need for moderators.¹¹⁴

The unique volunteer-based structure of vTaiwan also keeps costs down. Most of the tools used by vTaiwan are free. The standard price for using Pol.is is \$5,000 per month and \$48,000 per year for unrestricted use and unrestricted support from the team. The cost and service level are negotiable. While g0v does not charge for its services, the value of having a team of tech-savvy civic hackers actively involved in the project should not be underestimated. The process also receives support from the Digital Ministry, which spends about \$100,000 each year on the project.

Key innovation

Taiwan's Digital Minister, Audrey Tang, describes vTaiwan's approach as a kind of 'bootstrapping' – a term borrowed from computing – meaning that the community uses its past work to drive itself forward rather than relying on external inputs. As Minister Tang said: 'I think [vTaiwan] is closer to the civic tech community than it is actually to my office or any minister ... what we're doing is institutionalising the parts that worked.' This approach is reflected in the plethora of related projects vTaiwan and the larger g0v community has developed to fill the gaps that vTaiwan is not designed to address.

A prime example is the online platform [Join](#), launched in 2015. Join provides several functions – many of them inspired by previous projects – on a common site that is maintained by Taiwan's government. The petitioning function, like vTaiwan, uses Pol.is for consensus building. The forum section, where users can respond to petitions, uses an upvote/downvote functionality inspired by [Your Priorities](#) (the online forum software developed by the Citizens Foundation for the [Better Reykjavik](#) initiative in Iceland). Another section, an adaptation of g0v's inaugural project, visualises the allocation of Taiwan's national budget.

The vTaiwan community has also tackled democratic issues outside of lawmaking. In the run-up to each national election, the [vote.ly.g0v.tw](#) platform aggregates information about legislative candidates into a common system. This includes information such as the attendance and voting records of incumbent legislators on particular issues (e.g. education or finance) so that any user can easily compare candidates. Another example is [Fact Check 2020](#), a platform created to fact-check statements made by 2020 presidential candidates during campaign speeches and debates.

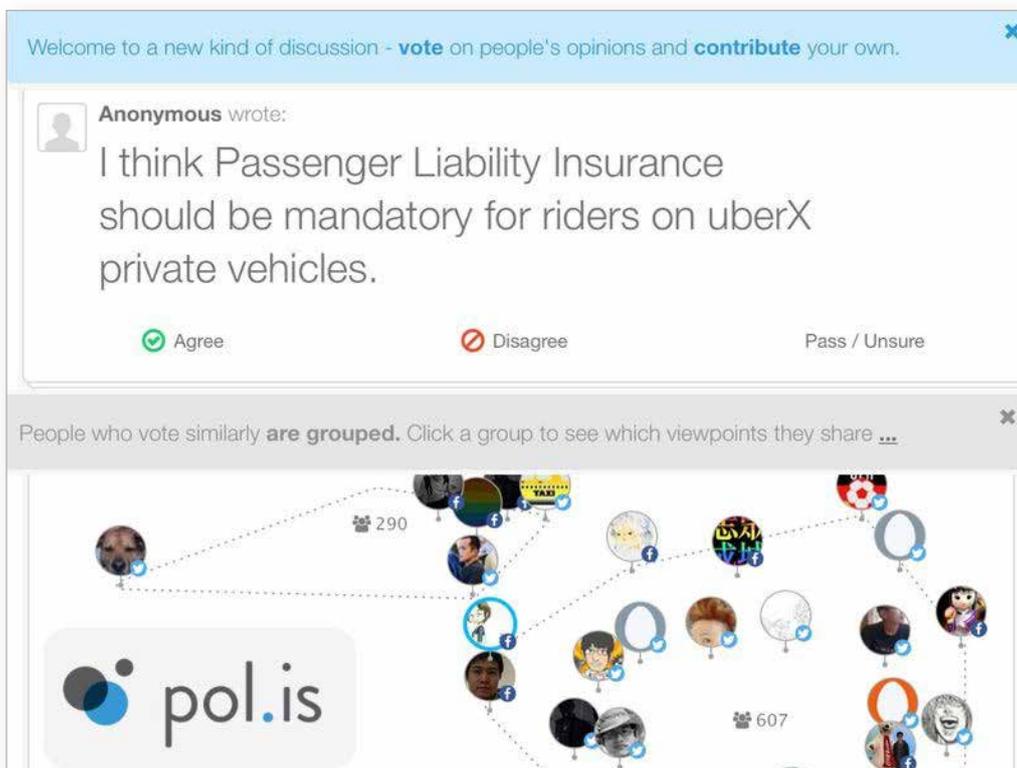


Figure 35: Commenting and forming opinion groups using Pol.is
 Source: <https://civichall.org/civicist/vtaiwan-democracy-frontier/>

Outcomes and impacts

To date, 200,000 people have participated on vTaiwan to define problems around such complex issues as Uber, telemedicine and online alcohol sales. More than 80 per cent of processes initiated on the platform have led to decisive government action, including the passage of 26 pieces of national legislation.

vTaiwan's most impactful contribution has not been the sheer volume of participation nor its numerous legislative accomplishments, but the smoothing of public discourse around controversial issues. This is a result of the platform's approach of bringing together groups with differing viewpoints to find a rough consensus. The 2015 debate over ride-share regulation, for example, engaged representatives from Uber Inc., the Association of Taxi Drivers in Taipei, Taiwan Taxi, and the ministries of Transport and Communications, Economic Affairs, and Finance to create amendments to the country's existing regulations that were acceptable to all parties involved. This validated vTaiwan's approach as a methodology for improving the quality of legislation even when dealing with a contentious topic.¹¹⁵

Similarly in 2016, a controversy about online sales of alcohol was partially resolved on the platform. In this instance, alcohol merchants, e-commerce platforms and social groups had reached an

impasse in the debate on how to regulate a 2011 law that legalised online sales of alcohol, which some feared would make it easier for children to surreptitiously purchase alcohol using the Internet. Over the course of several weeks, 450 citizens proposed and debated solutions to the issue on vTaiwan. Several of the resulting regulations – e.g. requiring the vendor to verify the age of the purchaser for online sales – were incorporated into a series of amendments in a draft bill that were introduced to parliament in April 2016. However, the bill did not pass parliament after President Tsai Ing-wen 'withdrew all bills awaiting legislative approval' upon taking office in May of the same year.¹¹⁶

The flexibility of the vTaiwan process has also allowed the platform to experiment with new approaches to regulation. In 2017, a vTaiwan-initiated law created Taiwan's first 'regulatory sandbox', which liberalised regulation for qualifying financial technology companies testing innovative approaches.¹¹⁷ Similar regulatory sandboxes for electric scooter usage, autonomous vehicles and the 5G spectrum network are currently in development on vTaiwan.

Join also plays a major role in resolving controversial debates on regulatory topics beyond the digital economy. In one recent example, a user posted a petition entitled 'Stop the divine pig weight competition sacrifice', which called

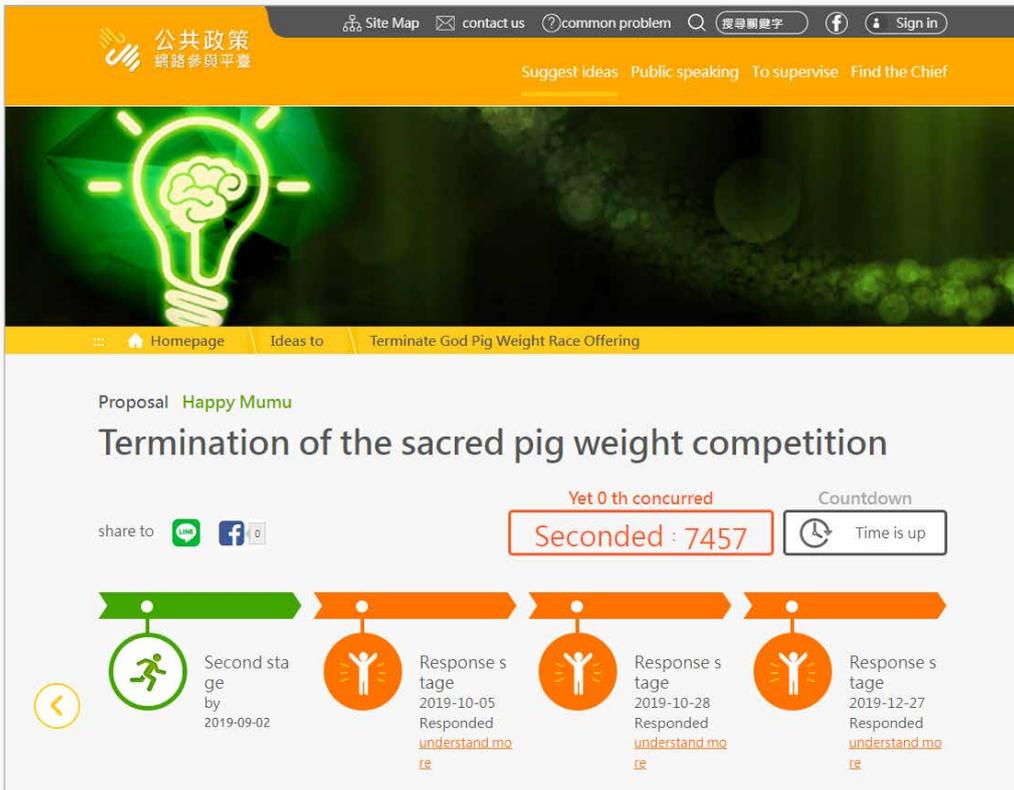


Figure 36: Tracking the progress of a Join petition (translated by Google)

Source: <https://join.gov.tw/idea/detail/09ae5b7b-b8d9-4c92-bc51-46416f4b2df4>

for an end to the practice of raising excessively fattened pigs for slaughter as part of the annual Hakka Yimin folk culture festival. Upon acquiring the requisite 5,000 signatures on Join, the case was adopted by three participation officers, who convened a series of collaborative meetings involving religious and cultural groups, animal rights groups, pig farmers and relevant ministries.¹¹⁸ These meetings produced a series of recommendations on how to resolve the dispute, which included:

- Recognising the religious freedom of the Hakka people and the cultural significance of the divine pig sacrifice
- Encouraging Hakkas to transform the custom into a creative competition, where practitioners would craft holy pigs out of natural materials rather than slaughtering live animals
- Coaching by the Agricultural Committee to educate pig farmers about how to raise their animals in a more humane way

Divine pigs aside, the participation officer network has processed 60 such cases since its creation in 2017. The Join platform as a whole has seen more than 10 million unique visitors – nearly half of Taiwan’s population – since its launch in 2015.¹¹⁹ Minister Tang attributes this success in part to the platform’s innovative recommendation system. When a user clicks on a particular

petition, for instance, the platform recommends related petitions, budgets or regulations for them to comment on. This encourages users to keep participating, as the platform retains their interest, similar to browsing products on Amazon or titles on Netflix.

Current status

vTaiwan’s independence has helped the platform to achieve legitimacy in the eyes of its community and among MPs. Indeed, vTaiwan survived the transition from Ma Ying-jeou to Tsai in May 2016 largely because the platform is seen as an independent, pro-transparency force that could benefit the opposition party as much as the incumbent administration.

In recent years, the platform has become more closely tied to the government. In 2016 Audrey Tang, a key figure in the Sunflower Movement who led the development of vTaiwan and the Join platform, was appointed Digital Minister by President Tsai. Further, since 2017 a regulation has been in place that requires each ministry to appoint one or more participation officers to act as ‘links between the general public and the public sectors, and as channels for inter-agency collaboration’, which includes engaging in vTaiwan.

The creation of the participation officer network is a step towards mitigating one of the key risks

of vTaiwan – namely, that the appointment of Minister Tang, with her close ties to the platform, could make vTaiwan a target for a future leader seeking to undo the accomplishments of the Tsai Administration. ‘As long as there is a horizontal minister willing to call up relevant stakeholders within the government, which is easy now with the [participation officer] network, then the binding process is still there’, said Minister Tang. ‘My main function is just to ensure that the right stakeholders within the government show up.’

Yet, in the absence of a legal framework, the risk that a future administration could dismantle the binding power that vTaiwan currently enjoys remains a real possibility. The vTaiwan community has also made some attempts to institutionalise the process in law. One piece of legislation, a clause in the Digital Communications Act (DCA), would have created a legal framework for the executive branch to respond to cross-ministerial issues that originate on forums like vTaiwan. However, this legislation, itself a product of vTaiwan, did not complete the parliamentary process in 2019 due to a technicality. President Tsai Ing-wen had previously promised to create a digital ministry or council to act as the competent authority for digital lawmaking. As the language in the DCA charged the president’s cabinet, rather than a designated ministry or council, with this task, the clause was considered outdated and did not pass.

Regardless, there appears to be cross-partisan support to create a dedicated authority to institutionalise digital policymaking processes like vTaiwan. During Taiwan’s 2020 presidential election, President Tsai Ing-wen’s challenger, Han Kuo-yu, concurred that there was a need to create a dedicated authority rather than leaving the cabinet to deal with digital lawmaking.

Lessons learned

Due to its complexity and its design for the circumstances of Taiwan’s political system, it would be neither easy nor advisable to attempt a carbon copy of vTaiwan in another context. Despite lacking binding power by law, vTaiwan has achieved a high level of institutionalisation through a unique combination of top-down political support and a grassroots ethos that lends the initiative legitimacy.

- **Administrative buy-in:** Since its inception, vTaiwan has had a complicated relationship with Taiwan’s government. The platform was borne out of a challenge from the Prime Minister, though one whose hand was forced by an anti-government protest movement. Despite this, the vTaiwan community has made a concerted effort to involve the country’s civil servants not only in voting on legislation but also in its creation. While the involvement of participation officers on the Join platform is an obvious example, an even more high-profile instance is the vTaiwan-inspired [Presidential Hackathon](#), the first of which was held in 2018. Through this event, teams use open data published by the country’s government to define public problems and propose solutions in a competition overseen and judged by the president herself, with the opportunity to develop these solutions in coordination with the government. Such involvement is crucial for public servants to see the value of supporting public engagement initiatives as a process that can provide valuable solutions, rather than simply a box to be ticked. Equally important is the role of the process in demonstrating that without some form of binding power, whether through legislation or administrative support, the collective intelligence of participants will not be reflected in the government’s actions.
- **Apolitical approach:** From the beginning, vTaiwan intentionally insulated itself from affiliation with political parties. This is partly informed by g0v’s ethos. While the group considered forming a political party, g0v decided against it so as not to become exclusionary. Pragmatically, this approach has helped the initiative to avoid being tied to one particular administration. Beyond that, it has also helped to build a broad coalition of support among participants; it is not uncommon for vTaiwan meetings to have participants from five or more political parties. Public servants, too, see vTaiwan as a tool that can provide them benefits rather than as a disruptive force that will threaten the power of their political party. ‘We see many collective intelligence tools have this ... idea to take apart existing representative mechanisms. That will face a lot of headwind if a new administration or a new mayor comes’, said Audrey Tang.



Belgian sortition models: The Ostbelgien Model and the Brussels Model

Institutionalising deliberative democracy

CASE STUDY

Location: Belgium

Years in operation: 2019–present

Introduction

In Belgium, two regional governments are trialling related but distinct models of deliberative democracy based on sortition – the ancient practice of randomly selecting citizens to participate in legislative citizen assemblies.¹²⁰ Although these cases, unlike our other examples of collective intelligence, do not rely on the use of new technology, we include them because, while new, they represent an effort to institutionalise citizen engagement as formal practice and, therefore, impart significant and useful lessons.

While the parliament of the German-speaking Ostbelgien region, which has a population of only 77,000, was the first to adopt the sortition model in early 2019, the much larger Parliament of the Brussels-Capital Region, which has a population of

1.2 million, will implement its own sortition method in 2020. A selection of legislative committees, each comprising 17 legislators, will be complemented by a random sample of 45 citizens who will work alongside them.

These regional parliaments benefit from Belgium's unique federal system, which devolves substantial powers to the governments of each linguistic and cultural region. As political scientist Min Reuchamps wrote: 'Belgian Regions are critical actors as they oversee urban development and housing, environment, water and nature conservation, economy and employment policy, transport, public works, energy policy, local authorities and subsidiary authorities, external relations as well as scientific research.'¹²¹ While it is too soon to report any impacts of these assemblies, the adoption of these innovative



Figure 37: Citizens presenting their agenda at the 2017 trial in Ostbelgien
 Source: <https://epale.ec.europa.eu/en/node/42418>
 CC BY 4.0

methods – the first of their kind, anywhere in the world, to be institutionalised into formal lawmaking practice – will test whether the time-consuming sortition process can effectively use the collective intelligence of a randomly selected group of citizens to set the legislative agenda and develop policy recommendations at a regional level.

The Ostbelgien Model

The Ostbelgien (East Belgian) Model, launched in 2019, has two randomly selected citizen councils (one with 24 members to collaborate in setting the legislative agenda and one with 25 to 50 members to develop policy recommendations) that sit within the Parliament of the German-Speaking Community in Belgium (PDG). Participants deliberate in person at the parliament building in Eupen, the capital of the region of East Belgium. G1000, a civil society organisation, designed the model in collaboration with the PDG in 2018.

How it all started

Belgium's PDG first used a sortition-based citizens' dialogue to debate the issue of childcare in September 2017. The parliament randomly selected 26 East Belgians to gather in the city of Eupen to develop a 'citizens' agenda' of the most important issues within childcare and to participate in several days of workshops with experts to formulate policy recommendations. At the end of the process, the committee presented its agenda to MPs, who in turn incorporated the citizens' recommendations into the so-called masterplan for childcare in East Belgium.¹²²

Inspired by the experience and the enthusiasm of its participants, Alexander Miesen, President of the PDG, approached author and deliberative democracy advocate David Van Reybrouck with an idea: create a permanent sortition method that would institutionalise the process

within the region's parliament.¹²³ In 2018, G1000, Van Reybrouck's organisation for democratic innovation, brought together half a dozen experts, including the leaders of past sortition experiments in Ireland, Australia and Poland along with several notable Belgian academics, to develop a model for implementing sortition in the PDG.

The output, which G1000 branded the Ostbelgien Model, combines temporary agenda-setting citizens' councils with permanent citizens' assemblies charged with making policy recommendations to the parliament. G1000 then worked with the PDG's legal department to mould its model into a draft decree (the equivalent of a bill).

The PDG unanimously adopted the decree in February 2019¹²⁴ and launched the first Bürgerdialog (citizens' dialogue) in September 2019.

The collective intelligence process

How does it work?

To facilitate the citizens' dialogue, the Ostbelgien Model created two new types of body with rotating membership within the PDG: the citizens' council and the citizens' assembly.

The **citizens' council** is the 24-person standing body in charge of selecting the topics that each citizens' dialogue will cover, as well as determining the size of each citizens' assembly. The citizens' council comprises former citizens' assembly participants, randomly selected by the permanent secretary (a PDG employee in charge of facilitating the sortition process).¹²⁵ The PDG replaces one-third of the citizens' council members with new participants every six months.

A **citizens' assembly** is convened for each new topic selected by the citizens' council. Each assembly can have between 25 and 50 members, determined by the citizens' council.



Figure 38: The first citizens' council in Ostbelgien

Source: <https://www.buergerdialog.be/news/detail/erster-buergerrat-hat-seine-arbeit-aufgenommen>

Participants can be any willing member of the public selected through sortition by the permanent secretary.

These bodies carry out the citizens' dialogue process through four steps: topic selection, deliberation, policy recommendations, and implementation.

Once per year, the citizens' council initiates a call for topic proposals. Any East Belgian, including members of the public, government and citizens' council members themselves, can submit a topic for consideration using a form on the burgerdialog.be website, via email or on paper. The citizens' council can choose any topic so long as it has collected at least 100 signatures of support, as set out by the PDG.

The citizens' council determines the size and lifespan for each citizens' assembly, which is then convened by the permanent secretary. To prepare the participants, the permanent secretary provides the new citizens' assembly with relevant information, invites experts to deliver presentations on the topic at hand and selects an external moderator to lead the discussion.

Once the discussions have finished, the citizens' assembly formulates a set of policy recommendations, which they discuss at an open meeting of the relevant parliamentary committee. The MPs and relevant minister then determine whether or not they want to

implement the recommendations, and they announce their decision at another open meeting. If the MPs want to proceed, they can introduce the measures necessary for implementing the recommendations. If not, they must provide the assembly with a detailed justification of why they have rejected the suggestions.

The citizens' council and permanent secretary are in charge of monitoring the implementation of recommendations. Within one year, MPs, the relevant minister and the citizens' assembly members must hold another open meeting to discuss the progress parliament has made in implementing the recommendations.

Who participates?

Anyone aged 16 years or older who resides in one of the nine German-speaking municipalities in East Belgium is eligible to be randomly selected for a citizens' assembly, so long as they do not hold public office. To smooth the learning curve, only those who previously participated in a citizens' assembly are eligible for selection in the citizens' council. The permanent secretary randomly selects participants through a sortition process overseen by a judge. If selected, participation is voluntary. The PDG covers participants' travel costs and provides €64 per meeting as compensation for their time.

Box 5: Sortition: An innovative yet ancient practice

Sortition dates back to the democracy of ancient Athens, where in the fifth century BC, Cleisthenes instituted governance by lot. In ancient Athens, where democracy began, citizen competence and expertise were central to economic and military success. Athens developed extraordinary institutional innovations for governance – with and by citizens – of a population of a quarter of a million people spread across 2,500 square kilometres. In doing so, it made it possible to aggregate and distribute knowledge across the realm. All in all, there were 14 unique Athenian governing institutions that managed the polis, all comprising amateur citizen participants, not professionals. The city's success, coupled with its openness and opportunity, attracted talented people from across the Mediterranean, who helped populate these new institutions. In addition, every free adult male participated in the deliberations on the Pnyx, the hill west of the Acropolis.¹²⁶

Today, governments are bringing back the practice as a means of tapping the collective intelligence of citizens. Legislative bodies often use these randomly selected groups, sometimes called 'mini-publics', for one-off reforms and

to create an opportunity for engagement that is more informed, thoughtful and deliberative than a referendum (alone). Ireland, for instance, initiated a Constitutional Convention in 2012 in which 66 randomly selected citizens and 33 politicians recommended changes to the country's constitution. The convention recommended legalising same-sex marriage, which a public referendum passed into law in 2015. Likewise, in 2017 an even larger citizens' assembly recommended amending the country's constitution to legalise abortion, which again passed into law through a public referendum the next year.¹²⁷



Figure 39: Dublin Castle, the site of the first meeting of the Irish Constitutional Convention

Source: https://en.wikipedia.org/wiki/Dublin_Castle#/media/File:The_Dubhlinn_Gardens_Dublin_Castle_01.JPG
CC BY-SA 3.0

Current status

The PDG organised the first sortition process in July 2019. As there were no former citizens' assembly members to choose from, the PDG randomly selected 1,000 residents who they invited to participate in the first citizens' council. Of the 115 who replied positively, the PDG selected a random sample of 12, representative of the population with regard to age, gender, place of residence and level of education. An additional 6 participants from the 2017 childcare sortition experiment and 6 representatives from political parties rounded out the group of 24.¹²⁸ The group met in Eupen in September and again in October to plan the topic selection process.

The citizens' council organised the first call for proposals on 1 October. The council asked residents to submit an idea for a topic, including a title, explanation and reason why the topic is suitable for the citizens' assembly, by 31 October.

Each proposal then had until 21 November to gather the requisite 100 signatures, either on paper or through the burgerdialog.be website.¹²⁹ The council shortlisted the 13 best proposals and posted these for public comment on the website. After another meeting, the Council decided to convene the first citizens' assembly on the topic of nursing staff and the care they provide to patients, posing the question: 'Care concerns us all! How can the care conditions for staff and those affected be improved?'¹³⁰

As of February 2020, the PDG is in the process of selecting the 25 citizen assembly participants who will develop policy proposals for the dialogue on nursing care. The PDG expects the first meetings to take place in March and early April of 2020.

Each year, the citizens' council will approve a budget for the citizen dialogue process, which the parliament's praesidium must approve. These public funds cover the permanent secretary,

compensation for the citizens who take part in the citizens' council, organisational and logistical costs and fees of the experts and external moderator. While the exact cost will vary depending on the size and scope of each year's meetings, the PDG estimates that the citizens' dialogue will need a budget of €140,000 per year.¹³¹

Though the PDG passed the citizens' dialogue decree in February 2019, it decided to pause its implementation until June so as not to allow the general election to influence the initiative.

The Ostbelgien Model, which Constitutional Convention organiser Dr David Farrell helped to design, improves on the Irish experience in several ways. First, the PDG compensates participants for their time, which will help retain participants and increase the diversity of participation. Second, the Ostbelgien Model gives citizens rather than MPs the agenda-setting power. And most important, the citizens' council, rather than parliament, holds the power to convene a citizen assembly. These changes demonstrate that Belgium is learning from the experience of others while continuing to improve the ancient practice of sortition. 'Most things that exist in Ostbelgien exist elsewhere', said Dr Yves Dejaeghere, director of G1000. 'What we did is institutionalise it.'¹³²

The Brussels Model

The Parliament of the Brussels-Capital Region, led by a political coalition headed by the Green Party, will implement sortition in 2020. Later this year, the French-speaking parliament, which comprises the 72 members of the regional parliament who represent French-speaking districts, will also implement the same model. Unlike the Ostbelgien Model, the Brussels Model retains agenda-setting power in the hands of the parliament and creates a citizen assembly of 45 citizens who will serve on a parliamentary committee together with 17 legislators and make recommendations.

How it all started

Even before the German-speaking parliament launched the Ostbelgien Model, Belgium's Green Party supported the idea of including randomly selected citizens in parliamentary debates, but it lacked the political support to implement it. Upon winning a number of new seats in the 2019 general election, the Greens were able to include this democratic reform on the agenda for the new governing coalition.

As a result, the coalition drafted a bill that would allow a mixed committee of MPs and randomly selected citizens to draft policy recommendations for parliament to consider. President of the French-speaking parliament, Magali Plovie, shared that the goal of citizens' committees was to create better relations between politicians and the people by giving the broader public a chance to participate in important debates about the future.¹³³

In December 2019, the Parliament of the Brussels-Capital Region passed the coalition's proposal into law. MPs widely supported the measure: 60 MPs voted in favour and the remaining 25 MPs who were present abstained. The French-speaking parliament in Brussels (Cocof) also approved the bill.

The collective intelligence process

How does it work?

Once per year, the regional parliament and the Cocof can create one or more citizen assemblies comprising a random sample of residents who work with legislators to draft policy recommendations for a given topic. These assemblies are composed of 45 randomly selected citizens in the regional parliament and 36 in the Cocof. They are joined to the relevant standing committee for the topic at hand (15 legislators in the regional parliament and 12 in the Cocof).

Unlike in East Belgium, the Brussels regional parliament and Cocof do not give these citizen assemblies agenda-setting power. Rather, citizens propose ideas and the Bureau of the Parliament selects the topic and defines the task of each assembly. Any citizen can organise a petition, and any group of 100 citizens can post a petition on the parliament's [website](#). At least 1,000 citizens must sign the petition for the parliament to consider choosing the topic. The topic must also fall within the competence of the parliament.

After selecting the assembly members, the parliament then organises a series of meetings in which the citizen participants and MPs deliberate on the topic and develop policy recommendations. The assembly lasts for a minimum of four days. The exact duration of the assembly depends on the topic and is determined by a scientific committee composed of experts on participatory democracy, thematic experts and members of



Figure 40: Inside the Cocof
Source: [Photo courtesy of the French-speaking parliament](#)

the administration. At the end of deliberation, both citizen and parliamentary members of the assembly vote on each recommendation. Citizens vote secretly while the MPs hold a public vote.

If a majority of the citizens in the assembly approve a recommendation, those MPs who voted against it or abstained must publicly justify their decision. Within six months, the standing committee should publish a report justifying the steps it has taken towards addressing the recommendations. It must provide detailed reasons for its choice of follow-up actions. The standing committee invites the citizen participants to take part in a meeting where the committee presents the results of the report. As in the Ostbelgien Model, the parliament is not bound by law to implement any of the recommendations that citizen assemblies make.¹³⁴

Who participates?

The parliament chooses the participants for the citizen assemblies through two rounds of sortition. In the first round, the parliament, working with the federal administration in charge of the National Register, chooses random members of the public and invites them to participate. To be chosen one must be a resident of the Brussels Region, at least 16 years old and not holding public office. A second draw among those who have expressed interest in participating selects

a sample that is representative of the region's population in terms of gender, age, geography, level of education and language spoken. Citizens serve for the length of the assembly, which differs depending on the topic.

Current status

The parliament plans to hold the first citizen assemblies by the end of 2020. As the initiative passed so recently, parliament is still organising and ironing out the details, but plans to start with two to three assemblies per year – each one affiliated with a different parliamentary committee – and then expand and repeat the process if it appears to be working.

The parliament plans to use an online platform to explain the random selection process and track the process of each assembly. To ensure that those who live in poverty can participate, it does not plan to incorporate much use of technology beyond that. This is based on the as-yet-to-be-tested assumption that face-to-face participation is more equitable than online participation. 'Collective intelligence is more a question of diversity than interest', said Jonathan Moskovic, Democratic Innovation Adviser for the Cocof. 'What we really want – otherwise it will be a failure – is we want to avoid having the usual suspects of participation.'¹³⁵ To reach populations that are represented

less well, they will organise a public awareness campaign including traditional outreach through newspapers and radio as well as with unions and other non-governmental stakeholders.

The parliament is also considering several steps to build its institutional capacity, including hiring a permanent secretary to administer the process. It will also hire a scientific committee to evaluate the process and recommend improvements.

To ready participants, the parliament is considering training, particularly language training for those who do not speak French or Flemish. It is also considering training MPs to help them support citizens and their ideas.

Lessons learned

1. **Media support critical for innovation:** Yves Dejaeghere and Jonathan Moskovic shared that for both the Ostbelgien Model and Brussels Model, media attention was important in getting the bill through parliament. While politicians may be wary of giving up their own power, it is very difficult for politicians to oppose measures that empower citizens without losing political support. 'It is very hard as a politician to be against citizens', said Dr Dejaeghere. 'So if you design something really well, but you still leave a handbrake for the parliament itself ... and have some media coming up, it is very hard for a politician to go against this.' Indeed, neither bill received a single vote in opposition.
2. **Be open to experimentation:** Both models allow the flexibility for parliament to try out different approaches, as backing legislation does not provide specific time spans for implementation or limit the topics that can be covered beyond what is legally necessary. Dr

Dejaeghere mentioned that while the media attention was helpful in getting the needed votes, it also put a lot of pressure on the PDG to make the sortition approach work. 'You must allow room for things to possibly go a bit wrong because you still have parliament as a brake', he told us. 'So when I talk to politicians who do this for the first time, I always say first try something small, as an experiment.' Likewise, Jonathan Moskovic emphasised that implementing the Brussels Model will be a learning experience: 'We know that democracy – although most people don't think so – is something that is in a constant and permanent evolution. So, of course, we'll learn by doing.'

3. **Game-changing innovation or toothless tiger? You won't know until you test it:** As no legislation has yet been passed through either model, it is difficult to predict what the impacts and outcomes of the citizens' assemblies in Belgium will be. While it is possible that each will become a success story for the use of sortition and deliberative democracy, there are clear risks. First, the assumption that face-to-face participation is more equitable may prove to be wrong when residents complain of the costs associated with turning up somewhere in person. Second, if legislators choose to ignore citizen recommendations, this may lead to political conflict and dissatisfaction. Third, without adequate time and training, citizen recommendations may be illegal or impractical to implement. Perhaps the greatest risk of all is that the running of the mini-publics will be all sound and fury, signifying nothing. 'You could vote it out with a simple majority', Dr Dejaeghere said. 'A challenge with mini-publics in general is that if they become toothless, then people agree it is not really worth the money to invest in them.'

03

**Designing for better
collaboration**

While at one time we had only a nascent understanding of the potential for collaboration between crowds and institutions, in the past decade, the number of such efforts has exploded. Researchers have stepped up their efforts to measure the depth and impact of collective intelligence efforts in the private and public sectors.

Our volume of research collects the lessons learned from the most successful collaborations between crowds and the public sector. We have sought to understand how leaders at all levels of government have solved problems, what resources were involved, what level of time commitment was required and what practices made it possible to solve problems more efficiently and effectively using collective intelligence as well as what does not work.

We want to help you clearly understand why some projects succeed while others do not. That is to say, for every Wikipedia – a well-established example of people collaborating with one another across a distance to useful effect – the floor is also littered with failed citizen engagement and citizen science platforms, irrelevant public deliberation exercises and well-intentioned but short-lived efforts to engage citizens in decision-making. We study projects that have been successful

– that is to say, they have: 1) achieved their intended outcomes; 2) efficiently produced their desired outputs using such collective intelligence approaches as crowdsourcing, collaboration or co-creation; and 3) continued over time, surviving a political transition such as a change of leadership. We compare these to projects that, by these same measures, have failed.

Our aim is to draw out what works and what doesn't, with a particular focus on the institutional arrangements that need to be in place. We want to learn when and how collective intelligence can help to solve problems in less cumbersome, less costly and more effective ways than traditional approaches.

Ultimately, we aim to demonstrate how and when every organisation can tackle problems more successfully if they tap into a 'bigger mind'.

Ten lessons learned: How to institutionalise collective intelligence

While there are many examples of collective intelligence projects, many efforts are often short-lived, fail to achieve impact or are unable to scale up because they do not create the mechanisms for sustained engagement between the crowd and the institution. Public institutions too often relegate collective intelligence to one-off pilots or separate departments, rather than using collective intelligence to create more coherent

strategies for transparency, accountability and public engagement.¹³⁶ Community-driven collective intelligence projects that seek to partner with institutions can overlook this more strategic approach too. Drawing on the 30 cases we analysed for this project (and the hundreds more we have researched in the past), we lay out here 10 key lessons for the sustained application of collective intelligence.



Figure 41: Ten lessons learned: How to institutionalise collective intelligence

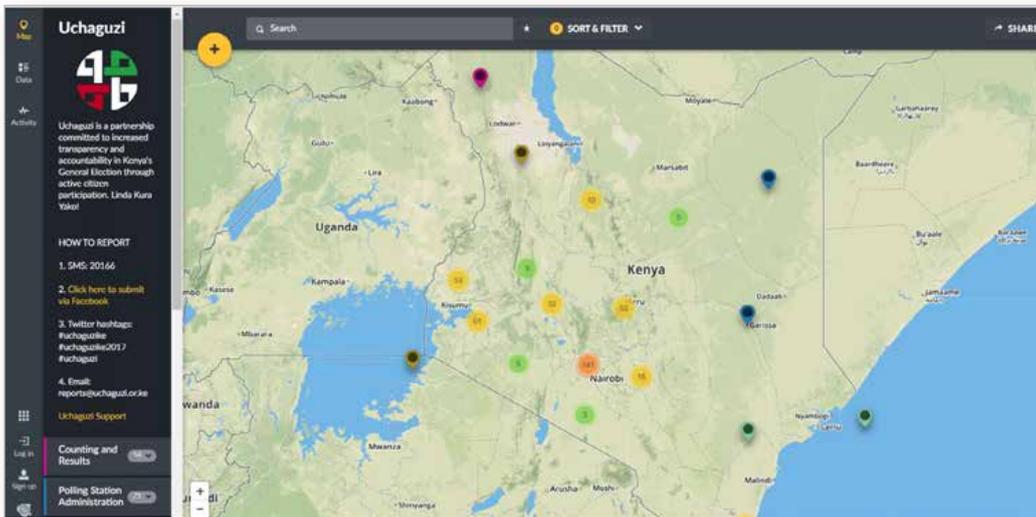


Figure 42: The 2017 Uchaguzi election monitoring project in Kenya, one of 150,000 projects to use Ushahidi's open-source software
Source: <https://uchaguzi.or.ke/views/map>

Design for success

The most successful cases are those where organisers have planned ahead. They can articulate a concrete and specific task. They know who should participate. They have a clear process and workflow, and, above all, they use what they learn. For instance, [Civic Bridge](#) has a 50-page guide for how to run an engagement. [Safecast](#) has videos and training seminars to explain the project. Anyone can set up a project using [Ushahidi](#) – the how to and the why are both clear and compelling. Consider how you can design your own initiative to mirror these successes within your own constraints and circumstances.

Solving a problem, transforming an institution

The projects with the greatest longevity are those that combine a very specific and concrete task, such as taking radiation readings after the Fukushima nuclear plant disaster ([Safecast](#)) or mapping incidence of wildfire ([Ushahidi](#)), with a broader mission to transform institutional culture and change the way of working from closed to open. That is to say, the longest-lasting projects, are very narrow in scope. This helps owners to design and the public to understand them. The simplicity is what makes them elegant and easy to use and, like the best consumer apps, creates an incentive for their uptake. However, by itself, simplicity is not enough; it must be married to a deeper commitment to creating an open and collaborative process. There has to be genuine institutional buy-in either from the outset or that develops over the course of the project. What

gives rise to that acceptance? When the project helps to solve a deeply felt problem. And which projects do that? The ones that are well designed, taking into account the nine design factors mentioned throughout this discussion. [synAthena](#), which has thrived for the last seven years, set out to build trust between Athens's government and its people by having the city support peer-to-peer engagement. As Haris Biskos, the current Project Manager, explained, one aspect of this approach was 'reaching out to unknown spaces in the city ... exploring and bringing forward voices that are not heard inside the city hall or in the municipality offices'. By demonstrating the value of co-creation, [synAthena](#) has been able to change the DNA of the City government. 'This mentality of co-creation is a mentality that is now embroidered into the administration of Athens', Biskos said. 'Now it's part of how the administration runs the city.'

Use open-source tools

All of the successful projects we studied use open-source software, meaning that the software can be freely modified. While open-source software may not be any less expensive than other kinds of technology because of the need for modifications and support, communities can modify and adapt open-source platforms to their needs, enabling projects to learn, evolve and be designed for a given project.

[Climate Watch](#), part of Helsinki's plan for achieving carbon neutrality, uses open-source tools for its citizen monitoring efforts. The city reports that its use of open-source software allows the development team to refine the website according to users' feedback.¹³⁷ This flexibility allows the

project to grow and evolve instead of dying when the features turn out not to be appropriately designed to match the needs of the community.

On this note, the open-source ethos also connects projects to the wider community of developers and civic hackers, who are often eager to participate in impactful projects. By making its software open-source, [Ushahidi](#) was able to organically build a grassroots network of 150,000 projects whose organisers collaborate with and learn from one another.

Tap existing passions and interests

Projects that address a real need can tap the enthusiasm of people, both leaders and participants, who wish to solve public problems. An illustrative example is [synAthena](#), an online-offline public platform where the City of Athens supports citizens in developing and implementing projects that improve the quality of life in the city. Rather than steering participants towards a particular topic or limiting projects to those owned by the city, the [synAthena](#) website acts as a one-stop locus for setting up and finding civic engagement projects of all kinds. It helps those with passion and enthusiasm to find one another rather than trying to create interest where it does not exist. Since launching in 2013, [synAthena](#) has grown into a network of nearly 450 social impact groups that have shared almost 4,000 activities on the online platform.¹³⁸

This grassroots approach is also reflected in the initiative's leadership. The project's creator, Amalia Zepou, was an activist and film-maker working outside the government but saw the value in connecting people to create solutions together. Likewise, Haris Biskos was an architect and urbanist who closed his practice to work on the project full time. Such enthusiastic champions, whether they are public entrepreneurs already working within the existing bureaucracy or those who choose to enter it, are valuable resources for sustaining any collective intelligence project.

Provide training to participants

Many civil servants and members of the public are eager to participate in solving problems, but often lack the know-how to do so effectively. Training participants, including accounting for varying skills in onboarding processes, can amplify their impacts and make them more likely to participate for the duration.¹³⁹

In the [DesafíosSP](#) project in San Pedro Garza García, The GovLab supplemented the open innovation competition with a mandatory training programme for those who submitted winning solutions to the city's traffic congestion problems and three other problems. Fifty participants completed this 10-week coaching programme, which consisted of a series of weekly two-hour meetings held both online and in person. This training readied [DesafíosSP](#) participants to meet and overcome the hurdles they would face in designing and implementing their projects. The process resulted in a successful carpooling project in 2016, which is currently being scaled up and replicated. Five other projects are on their way to being implemented.

Secure robust and predictable funding

Collective intelligence projects can benefit from diverse, and often unexpected, sources of funding. For instance, while [synAthena](#) is owned by the City of Athens, it takes no municipal funding and is currently funded by a grant from the European Commission.

Funding can also come from selling services, and even non-profit initiatives can take an entrepreneurial approach. While [Safecast](#) is financed through donations from philanthropic organisations and individuals, [Ushahidi](#) supplements its grant funding by offering deployments of its software through a software-as-a-service model.

The funding model can shift according to the skills that the institution builds as it develops its projects. [Ushahidi](#) may need to alter its funding model as it remains difficult for development projects to remain viable using an open-source model. 'For us, maybe it's not selling the software itself', said Angela Oduor Lungati, [Ushahidi](#)'s Chief Executive Officer. 'Maybe it is our support and expertise that is of additional value.'¹⁴⁰

Test, adapt and test again

No situation remains stable forever. As problems and interests shift, collective intelligence projects need to continuously adapt to meet emerging challenges and remain relevant in the eyes of the public.

[Safecast](#) is a good example of this adaptive approach. As public attention to radiation waned in the years since the 2011 Fukushima nuclear power plant disaster, in 2016 [Safecast](#) expanded its focus to include air quality monitoring as well as radiation monitoring. In both areas, [Safecast](#) provides support to participants including helping to construct measuring devices, setting standards for how to measure and providing a platform to publish data. [Safecast](#) taps people's eagerness to learn about the environmental conditions in their own neighbourhoods. It is this curiosity and a willingness to adapt that has helped [Safecast](#) grow into one of the world's largest distributed data collection projects, with more than 150 million data points collected since 2011.¹⁴¹ [vTaiwan](#) is another demonstrable example. In 2015, a group of civic hackers known as g0v (Gov Zero) created the online-offline [vTaiwan](#) platform, on which the public and government work collaboratively to create legislation relating to the digital economy. Despite the platform's success, g0v recognised that the complex and time-intensive [vTaiwan](#) procedure was not well suited to all types of public debate. As a result, the [vTaiwan](#) community created [Join](#) in 2015 to serve as a platform for the public to discuss issues beyond the digital economy in collaboration with public officials. Since its inception, more than 10.6 million people (nearly half Taiwan's population) have participated on the Join platform, debating issues ranging from vacancy taxes to the [ritual sacrifice of animals](#).¹⁴²

[Ushahidi](#) has taken a similarly adaptive approach. When team members reported difficulties connecting due to power failures and Internet outages, several [Ushahidi](#) co-founders created [BRCK](#), a portable, battery-powered device that allows users to connect to Moja, a free WiFi network. Another example is SwiftRiver. Recognising that the volume of reports could quickly overwhelm the team during times of

crisis, this tool used algorithms to aggregate, filter and sort reports to make them easier to process. Not all of these innovations have survived; while BRCK became a stand-alone company, [Ushahidi](#) ended support for SwiftRiver in 2015, citing a lack of open-source tools to develop the needed algorithms. However, this experimentation marks a willingness to meet new challenges, which will continue to be an integral part of [Ushahidi](#)'s longevity.

Resource availability

Time and money are scarcities in public institutions that can hamper the ability of public agencies to collaborate with crowds effectively. Governments that are unable to provide basic online services, whether due to a lack of funding, willpower or in-house skills, will face difficulties engaging a crowd through digital platforms. They may be unable to develop well-designed platforms or struggle to sustain an audience that is sceptical that their work will be put to use.

While collective intelligence cannot make funding or time appear out of thin air, engaging crowds can be a more efficient way of using public resources to solve problems. Creating a small team of dedicated employees to manage collaboration between the crowd and institution can be one of the most effective ways to do so. Virtually all of the successful public sector projects we studied were run by one or more employees, if not a dedicated unit, within the public office. This team need not be large. For the [synAthing](#) initiative, for instance, a team of five full-time employees and one part-time employee manage a network of nearly 450 social impact groups that span the City of Athens. If resources allow, involving more public servants can amplify the impact of the crowd's work. In Taiwan, a regulation in place since 2017 mandates that each ministry appoints one or more participation officers, who facilitate public engagement and inter-agency collaboration including on [vTaiwan](#) and the related, government-run platform [Join](#). Since its creation in 2017, this network of civil servants has processed more than 60 cases on the Join platform alone.

Organisational culture

The hierarchical, bureaucratic structure of the typical public institution may limit the ability of the institution to respond to inputs from the outside. While a well-designed collective intelligence workflow can nudge the crowd towards producing outputs that are manageable and meaningful, how do you ensure that the institution listens?

Fostering a culture of transparency can help communicate important information within the organisation and among the public. Transparency within an institution helps avoid some of the pitfalls otherwise caused by a high degree of hierarchy and bureaucracy. External transparency – making more usable information available to the public – enables better public engagement and indicates that the government is willing to listen.

We have seen countless examples of how, by making small but visible changes that allow more collaboration between crowds and institutions, collective intelligence champions have been able to transform the way that governments operate. Perhaps the most promising example of transparency that we studied is the [Carbon-Neutral Helsinki 2035](#) initiative. The architecture of the action plan assigns clear responsibility for who needs to accomplish each task, and the Climate Watch monitoring system makes it possible for both the public and the city to hold these actors to account.

Widely publicising collective intelligence efforts can also help to attract support and foster engagement. Public institutions may be wary of giving up their own power, and politicians find it difficult to oppose measures to empower citizens while still retaining political support. In Belgium, for instance, media attention was an important asset for getting the Brussels parliament and the Ostbelgien parliament to pass the [use of citizen assemblies into law](#). Indeed, neither bill received a single opposing vote.

Political support

The most successful collaborations between crowds and institutions are supported by champions within the institution. Political support lends the collective intelligence initiative legitimacy within the institution. Backing by a public champion makes it more likely that the public will see the initiative as important and that other bureaucrats will come to support it as well. For example, city council member Graciela Reyes and Mayor Miguel Treviño championed the [DesafíosSP](#) initiative in San Pedro Garza García, Mexico. Likewise, Vice President Ana Helena Chacón supported the [#RevoluciónCR](#) project in Costa Rica, even though it was run by the non-profit IDEAS Labs rather than by the government. Both initiatives led public institutions to make specific policy changes that are still in place today.

Using collective intelligence as a means of truly solving problems and creating greater transparency can help sustain collaboration and can even weather a change in political administration. While [vTaiwan](#) is not institutionalised by any legal framework, it survived the transition from President Ma Ying-jeou to President Tsai Ing-wen in May 2016, largely because the platform is perceived as an independent, pro-transparency force with benefits for the opposition party as well as the incumbent administration. The success of the participation officers network gives [vTaiwan](#) an additional degree of 'staying power', as it provides another proven mechanism for each ministry to engage with the public.

Legislation can help to circumvent political or organisational barriers while also institutionalising government commitment to public engagement. For instance, a 2012 amendment to Finland's constitution allows any Finn to petition the parliament to make legislative changes, and the legislature must respond to any proposal that accrues 50,000 signatures within six months. Here, rather than limiting the use of collective intelligence to a specific platform, the law established the basic legal framework for citizens to propose laws. This legislative change led to an uptick in public engagement that has continued in the years since. Ten proposals reached the 50,000-signature threshold within the first three years, and an additional 27 have done so since.

Endnotes

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- 3 Geoff Mulgan, *Big Mind: How Collective Intelligence Can Change Our World*, (Princeton University Press, 2018), 2.
- 4 New Jersey Office of Innovation/The GovLab, "Innovation Skills Accelerator: Module 8: Introduction to Collective Intelligence," 2019, <https://innovation.nj.gov/skills/modules/collective-intelligence.html>
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- 7 "Proponer Soluciones [Propose Solutions]," #RevolucionCR (website), accessed February 19, 2020, <http://web.archive.org/web/20160806121739/http://www.revolucioncr.com/proponer-soluciones>.
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- 10 Since one category was eliminated, the solution that received the second-highest number of votes across the topic areas was also included to bring the number of winning solutions up to 13 .
- 11 "Costarricenses Podrán Apoyar, desde Todas Sus Trincheras, Implementación de 13 Soluciones Ciudadanas [Costa Ricans Can Support, from All Their Trenches, Implementation of 13 Citizen Solutions]," Revolucion CR (blog), July 5, 2017, <http://www.revolucioncr.com/blog/creatividad-e-innovacion/costarricenses-podran-apoyar-desde-todas-sus-trincheras-implementacion>.
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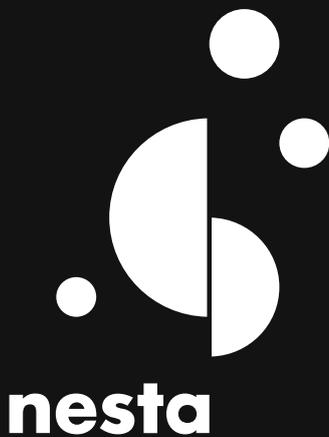
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