When thousands of citizens innovate: how policy-makers can contribute

Alena Valderrama
Public health physician and researcher Sainte-Justine Hospital, University of Montreal

Tiberius Brastaviceanu
Founder and coordinator, Sensorica, Montreal

Fabio Balli
Lead civil society, EUvsVirus
Researcher, Concordia University

The COVID-19 pandemic is a great challenge to our global society, exposing our limitations as well as new ways to generate adequate responses to global crises.
Communities and individuals have spontaneously organized to deal with this crisis. Thousands of skillful individuals have engaged in the development of mechanical ventilators and masks, SARS-CoV-2 test kits, mobile applications for contact tracking and for coordinating mutual help and care, to name just a few.

Since March, we recorded 63 groups focused on open source solutions for the coronavirus crisis, on Facebook alone. Open source enables faster innovation, as everyone can build on existing knowledge and information. In parallel, over 80 online hackathons were organized. Between April 24-26, 380 volunteers organized EUvsVirus, a hackathon initiated by the European Innovation Council to federate projects realized across Europe. 20,900 people registered for this event, which resulted in 2,150 projects submitted [1] At the same time, traditional organisations worldwide bridged with the crowd, proposing over 26 challenges and prices to crowdsource innovation [2].

This burst of crowd-based organized action propagated on top of existing networks of hackers and makers of all sorts, share a common culture of open collaboration. Governments around the world have started to pay attention to this phenomena, acknowledging its potential. Open source development and open science are well documented, but they have not yet been integrated into the mainstream. Some have coined the term "fourth sector" in referring to this wide-scale mobilization of individuals around a common purpose or issue.

Although the response of this movement has been very prolific, the results have not been up to the expectations that could be derived from this massive mobilisation. We need to better channel the potential expressed in this unique manifestation of will and this demonstration of skills, into practical, real, solutions. Is this a loss of opportunity? If so, what have been the shortcomings?

First, we can look at some issues within the movement: redundancy and poor horizontal coordination. For example, let's consider the vast number of open source ventilator projects that have been proposed. Many of them share multiple similarities and could have benefited from more collaboration and mutualization of resources. Moreover, we also observe poor trans-disciplinary coordination within these ventilator projects, many of which have suffered from lack of medical expertise.

Secondly, we can look at some issues between this movement and traditional sectors: recognition and legitimacy. Some open source development groups

have proposed very promising solutions, but they have not been considered by decision makers or by health institutions. Most projects have lacked direction and help from health organisations, many of which do not take these hacks seriously. Regulatory institutions need to learn how to work with these online groups in order to put in place appropriate processes for rapid scientific validation, accreditation and certification.

Third, we see cross-regional issues stemming from the digital divide. Although less industrialized countries can benefit a lot from less sophisticated but low cost open source solutions, they are not proportionally represented in these online communities. Technology re-contextualization and transfer to less industrialized countries is too slow, compared to the timescale of the pandemic.

This preliminary list of shortcomings is convincing enough to make us pause and think about policies that would allow our society to tap into the vast potential of the crowd, especially in similar situations of rapidly deteriorating conditions, when the public sector is overwhelmed and the private sector's capacity is greatly reduced.

The crowd must be recognized as a sector in itself, developing in parallel with the corporate, not-for-profit, and institutions sectors able to sense problems, mobilize resources, create, and validate solutions. The French Government is already moving in that direction with its Mission Société Numérique program [3] . Canadian policymakers can follow by elevating their viewpoint to consider the crowd not just as an extension, but as an origin, as a new locus of development and production that can be coordinated with the traditional sectors. It is already understood that intersectoral coordination can increase the speed of innovation, as in private-private partnerships. We can hypothesize that private-public-crowd partnerships can unlock a new potential.

The COVID-19 crisis has provided an environment for this new sector to raise above the ground and be noticed. Who hasn't heard about open source ventilators and 3D printed masks and face shields? But it is still in its early stages of development and suffers from lack of recognition and legitimacy, which is the biggest barrier in front of its potential. By eliminating this barrier we give ourselves another way to channel human creativity and resources into solving humanity's most wicked problems, such as peace, food security, climate change, and even democracy.

Therefore, we advise that the Canadian Government recognize this movement. This would lead to a second step of creating a normative system to regulate this new sector and to legitimize it [4]. From that basis, policies can be conceived to address the current issues of this movement and to accelerate its development. As this sector gets plugged into mainstream regulatory systems, its methods and its output will be trusted and its impact will be greatly amplified.

References available in online version at https://sciencepolicy.ca/response-covid-19