

# Citizen Engagement

Emerging Digital Technologies  
Create New Risks and Value

*Tiago Peixoto and Tom Steinberg*





# Citizen Engagement

## Emerging Digital Technologies Create New Risks and Value

*Tiago Peixoto and Tom Steinberg*

*Cover Image – Photo by Daniel Chen via Unsplash*





## Some rights reserved

This work is a product of the staff of The World Bank Group with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of the World Bank Group, its Board of Executive Directors, or the governments they represent. The World Bank Group does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Nothing herein shall constitute or be considered to be a limitation upon or waiver of the privileges and immunities of the World Bank Group, all of which are specifically reserved.

### Rights and Permissions



This work is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <http://creativecommons.org/licenses/by/3.0/igo>. Under the Creative Commons Attribution license, you are free to copy, distribute, transmit, and adapt this work, including for commercial purposes, under the following conditions:

**Translations**—If you create a translation of this work, please add the following disclaimer along with the attribution: This translation was not created by the World Bank Group and should not be considered an official World Bank Group translation. The World Bank Group shall not be liable for any content or error in this translation.

**Adaptations**—If you create an adaptation of this work, please add the following disclaimer along with the attribution: This is an adaptation of an original work by the World Bank Group. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by the World Bank Group.

**Third-party content**—The World Bank Group does not necessarily own each component of the content contained within the work. The World Bank Group therefore does not warrant that the use of any third-party-owned individual component or part contained in the work will not infringe on the rights of those third parties. The risk of claims resulting from such infringement rests solely with you. If you wish to reuse a component of the work, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright owner. Examples of components can include, but are not limited to, tables, figures, or images.

All queries on rights and licenses should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA;  
e-mail: [pubrights@worldbank.org](mailto:pubrights@worldbank.org)



## Table of Contents

Abstract .....	9
Introduction.....	11
Eleven Predictions on the Influence of Emerging Technologies .....	19
<b>Prediction 1</b> <i>The “fake news” arms race will grow further, shifting the focus of public debates.</i>	20
<b>Prediction 2</b> <i>“Social scores” will influence political and governmental responsiveness.</i>	22
<b>Prediction 3</b> <i>ID technologies will increase citizens’ pressure on decision makers.</i>	27
<b>Prediction 4</b> <i>More political parties will develop policy and choose candidates using digital platforms.</i>	31
<b>Prediction 5</b> <i>Different national regulation of social media will lead to increasingly different spaces for public debate.</i>	34
<b>Prediction 6</b> <i>Activists and tech companies will fight over who gets to speak to citizens.</i>	37
<b>Prediction 7</b> <i>“Free internet” will influence civic and political conversations.</i>	39
<b>Prediction 8</b> <i>Augmented reality may become a driver of increased citizen awareness.</i>	41
<b>Prediction 9</b> <i>Automation will reduce certain kinds of citizen feedback.</i>	43
<b>Prediction 10</b> <i>Bots will be used to acquire, mobilize, and coordinate activists.</i>	47
<b>Prediction 11</b> <i>Many will try to use ‘blockchain’ to raise trust in participative exercises.</i>	51
Implications & Measures.....	55
<b>Measure 1</b>   <i>Governments should adopt user-centered digital practices.</i>	56
<b>Measure 2</b>   <i>Set boundaries for the use of social scoring.</i>	58
<b>Measure 3</b>   <i>Make use of citizens assemblies to set digital policies.</i>	60
<b>Measure 4</b>   <i>When regulating tech companies, don’t forget to consider citizen engagement.</i>	62
<b>Measure 5</b>   <i>Telecoms regulators need to consider citizen engagement.</i>	65
<b>Measure 6</b>   <i>Design civic technologies for inclusiveness.</i>	66
Conclusion .....	69
About the Authors .....	70
References .....	71



*This paper was prepared by Tiago Peixoto (Governance Global Practice, World Bank) and Tom Steinberg (Governance Global Practice, World Bank) as part of the Governance Global Practice's programmatic analytics and advisory service (ASA) "Citizen Engagement: Re-building the State and Citizen Social Contract". The ASA aims to help provide analytical insights, knowledge, and learning to support implement the next phase of the World Bank Group's Strategic Framework for Mainstreaming Citizen Engagement in World Bank Group Operations. The authors are grateful to peer reviewers Beth Noveck and Zahid Hasnain as well as Helene Bjuremalm and Norman Eisen for their very helpful comments, Asmeen Khan, Saki Kumagai, and Helene Grandvoinnet for their guidance and comments on various drafts, and Barbara Rice for editorial support.*



## Abstract

The recent rapid evolution of digital technologies has been changing behaviors and expectations in countries around the world. These shifts make it the right time to pose the key question this paper explores: *Will digital technologies, both those that are already widespread and those that are still emerging, have substantial impacts on the way citizens engage and the ways through which power is sought, used, or contested?* The authors address this question both to mitigate some of the World Bank's operational risks, and to initiate a conversation with peers about how those risks might require policy shifts. The overall framing question also is being explored in case the approaches to citizen engagement advocated by the World Bank are changing and may require different advice for client countries. Despite the lower technology penetration levels in developing countries, their more malleable governance contexts may be more influenced by the effects of emerging technologies than older states with greater rigidity. Digitally influenced citizen engagement is, in short, one of those "leapfrog" areas in which developing nations may exploit technologies before the wealthier parts of the world. But countries can leapfrog to worse futures, not just better ones. This paper explores what technology might mean for engagement, makes predictions, and offers measures for governments to consider.

”

Something has been said about the telegraph which appears perfectly right to me and gives the right measure of its importance. Such invention might be enough to render democracy possible in its largest scale. Many respectable men, among them Jean-Jacques Rousseau, have thought that democracy was impossible within large constituencies.... The invention of the telegraph is a novelty that Rousseau did not expect to happen. It enables long-distance communication at the same pace and clarity than that of conversation in a living room. This solution may address by itself the objections to large [direct] democratic republics. It may even be done in the absence of representative constitutions.

*Alexandre-Théophile Vandermonde (1735–1796)*  
*on the connection between democratic practice and the telescope-based Chappe Telegraph*

# Introduction

For more than 200 years, waves of new information technologies have been accompanied by claims that these same technologies will have a significant influence on who controls political power within states.

An article published in the *San Francisco Chronicle* in 1919 praised the potential of the telephone to return society to Athenian democratic conditions in which “every citizen could take part and be represented.” In the 1980s, information technology scholars and enthusiasts saw in the emergence of cable television an opportunity to invent a “teledemocracy” of direct and continuous public participation. In 1994, U.S. Vice President Al Gore foresaw a “new Athenian Age of democracy” emerging from the traffic on the Information Superhighway. More recently, an article in the *Harvard International Review* asks whether citizenship can be redefined in the internet age with “the widespread democratic governance of ancient Greece” (Edick 2015).



This pattern of innovation followed by prediction did not go unnoticed. Sociologist Armand Mattelart (1999) observed these cyclical manifestations of optimism and labeled them as a “strange alchemy of cynicism, naïveté, and amnesia.” Mattelart was quite right that a simple, causal connection between “better information technology” and “better citizen control over government” was always too simple.<sup>1</sup>

Society must not, however, make the opposite mistake and blithely assert that governments and decision makers are impervious to radical changes to the information technology milieu in which a society operates. Information technology clearly has influenced changes in the way citizens and leaders obtain, use, and compete for power in the last two centuries. From the use of a stone-built kleroterion device in ancient Athens to randomly

---

<sup>1</sup> For a more recent discussion of the hopes and disappointments regarding digital technologies and democracy, see Kornbluh (2018).



Photo by Pavan Trikutam via Unsplash

select legislators<sup>2</sup> to today's regular online elections in Estonia using mobile phones, every generation of information technology has some kind of impact on the ways citizens engage with governments and political leaders, even if the nature of those impacts is often highly contentious and hard to disentangle.

As an institution that attaches great value to citizen's involvement in government decision making, the World Bank has an obligation to pay attention to all the factors that influence the operation of citizen engagement. Modern digital technology is only one of these factors. However, it warrants particular attention because of the sheer amount of claims that have been circulating about the connection between the internet and the health of key governance systems upon which nations are founded.

---

<sup>2</sup> *The kleroterion was a device used by the Athenians to randomly select citizens to occupy important civic positions such as the Council of 500, which represented the full-time government of Athens. In 2018, researchers built a fully functioning stone replica of the kleroterion.*

Will digital technologies, both those that are already widespread and those that are still emerging, have substantial impacts on the way citizens engage and the ways through which power is sought, used, or contested?

## The Purpose of This Paper



The recent rapid evolution of digital technologies has been changing behaviors and expectations in countries around the world. These shifts make it the right time to pose the key question this paper explores:

*Will digital technologies, both those that are already widespread and those that are still emerging, have substantial impacts on the way citizens engage and the ways through which power is sought, used, or contested?*

There are three specific reasons why this question was chosen.

First, the World Bank works in a network of other national, local and trans-national organizations many of which work on and think about citizen engagement on an ongoing basis. This is a contribution to the ongoing debate that exists within that network.

Second, the World Bank already researches and endorses certain approaches to citizen engagement. This advice may have to change if technologically driven developments change norms and practices.

Finally, the World Bank makes risk assessments as part of all its work, and these risk assessments may have to change if the way citizens and states interact change.

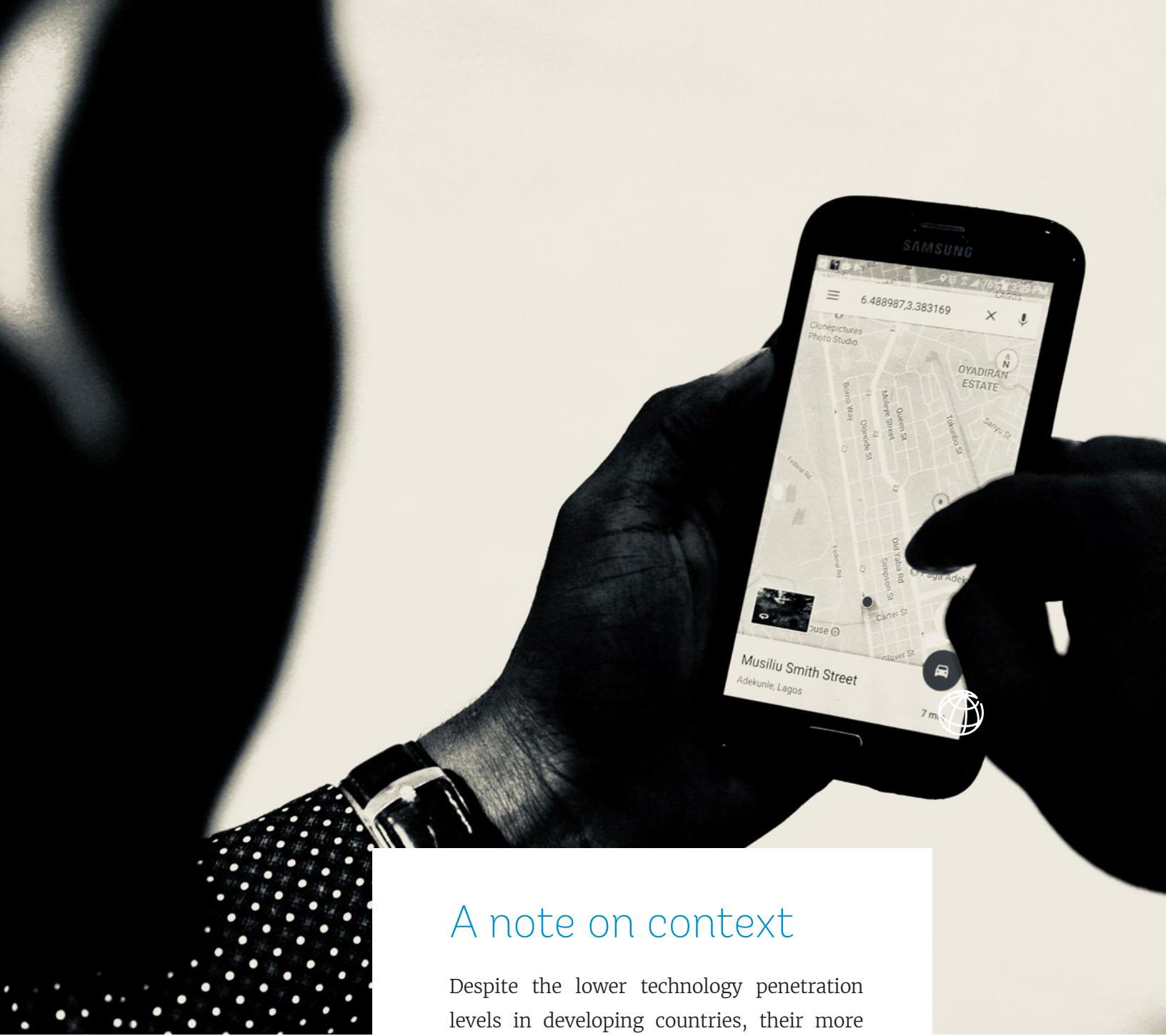
This paper explores what technology might mean for citizen engagement, whether for good or for bad. It makes a range of predictions, and offers measures for governments to consider. It is one in a series of four notes from the Governance Global Practice on citizen engagement in the areas of fragility, conflict, and violence situations, governance, trust, and emerging technology.

This work goes beyond the World Bank's standard definition of citizen engagement, which is "the two-way interaction between citizens and governments or the private sector within the scope of the World Bank Group's interventions" (World Bank 2014). A broader definition encompasses a range of activities widely understood in the literature as political and public participation, which includes both electoral and nonelectoral types of participation. This approach is aligned with recent World Bank research that highlights the interplay between electoral and nonelectoral types of participation and their role in promoting accountability and development outcomes (World Bank 2016a,b, 2017).

For clarity, the authors focus primarily on the interaction between citizens and state actors, and they do not consider interaction between citizens and other powerful actors, such as businesses.

*Photo by NESA by Makers via Unsplash*





## A note on context

Despite the lower technology penetration levels in developing countries, their more malleable governance contexts may be more influenced by the effects of emerging technologies than older, ‘higher-tech’ states with greater rigidity. Digitally influenced citizen engagement is, in short, one of those “leap-frog” areas in which developing nations may exploit technologies before the wealthier parts of the world. But countries can leapfrog to worse futures, not just better ones.

# Approach

The very nature of emerging technologies is track records too short and distribution too narrow to allow for meaningful statistical or economic modeling (unlike, for example, trade data). As a consequence, the authors use an inductive and aspirational approach. Being inductive, this work does not test hypotheses after the fact. Instead the authors' insights—and those of interviewees—are meant to be no more than general propositions based on available observations of how technologies affect, or fail to affect, citizen engagement in both distant and recent history.

This study is aspirational because it summarizes a search for ways in which emerging technologies might plausibly promote more effective citizen engagement. It also conveys concerns about the negative effects modern digital technologies can have on the governance of nations.<sup>3</sup>

Despite many new challenges created, new and better citizen engagement approaches might be possible. Focusing solely on threats would add little new to a public discourse already saturated with worries. What is missing from public discourse is a wide range of options that citizens or decision makers could call on to make their interactions more successful.

---

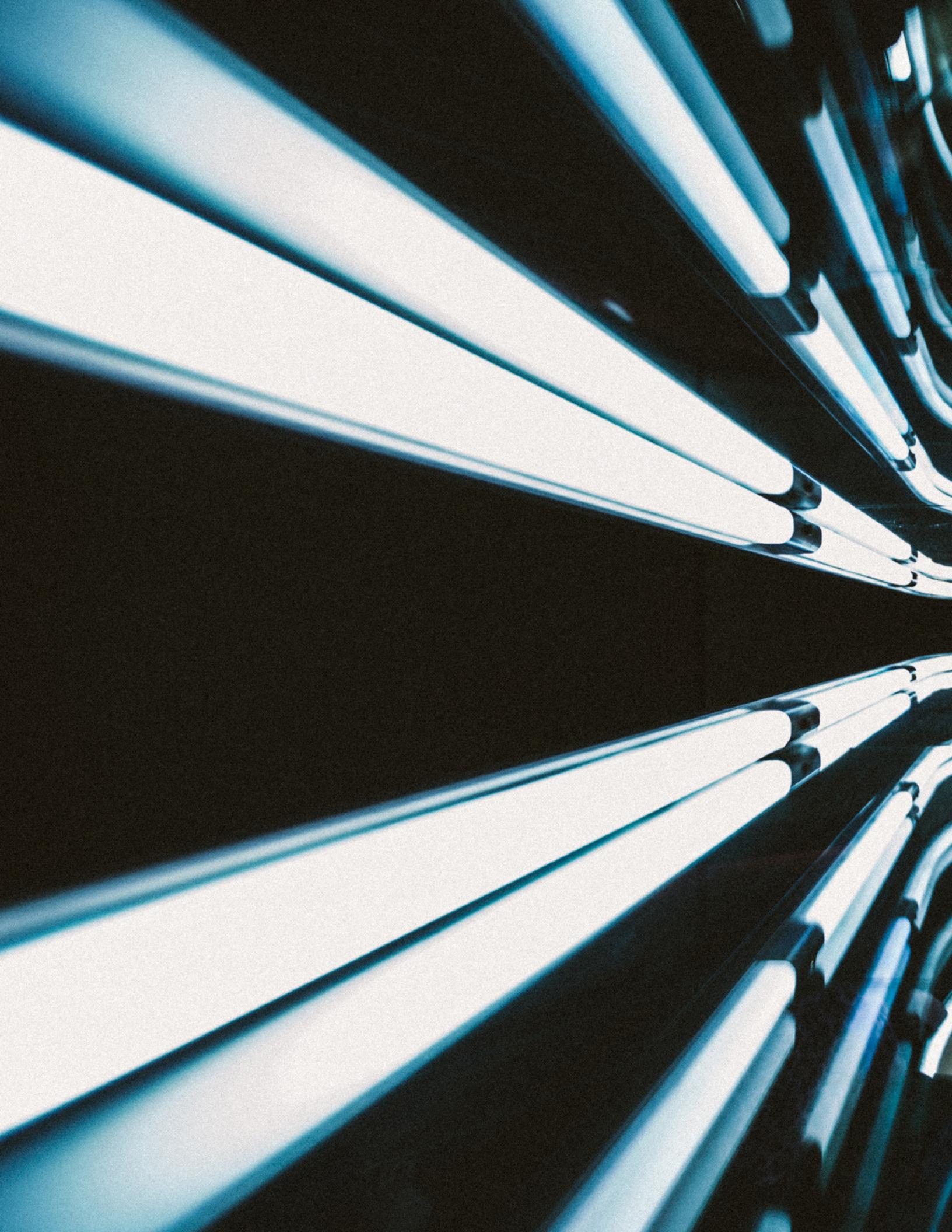
<sup>3</sup> The authors are cognizant of the potential exclusionary effects of digitally enabled citizen engagement, particularly in developing contexts. However, this issue falls outside the scope of this paper and is extensively addressed in other World Bank publications (e.g., Peixoto and Fox 2016; Spada et al. 2016; Mellon, Peixoto, and Sjoberg 2017; Mellon et al. 2017; Peixoto and Sifry 2017). The authors also recognize that their efforts are not immune to Amara's law, where predictions about the effects of digital technologies are overestimated in the short run and underestimated in the long run.

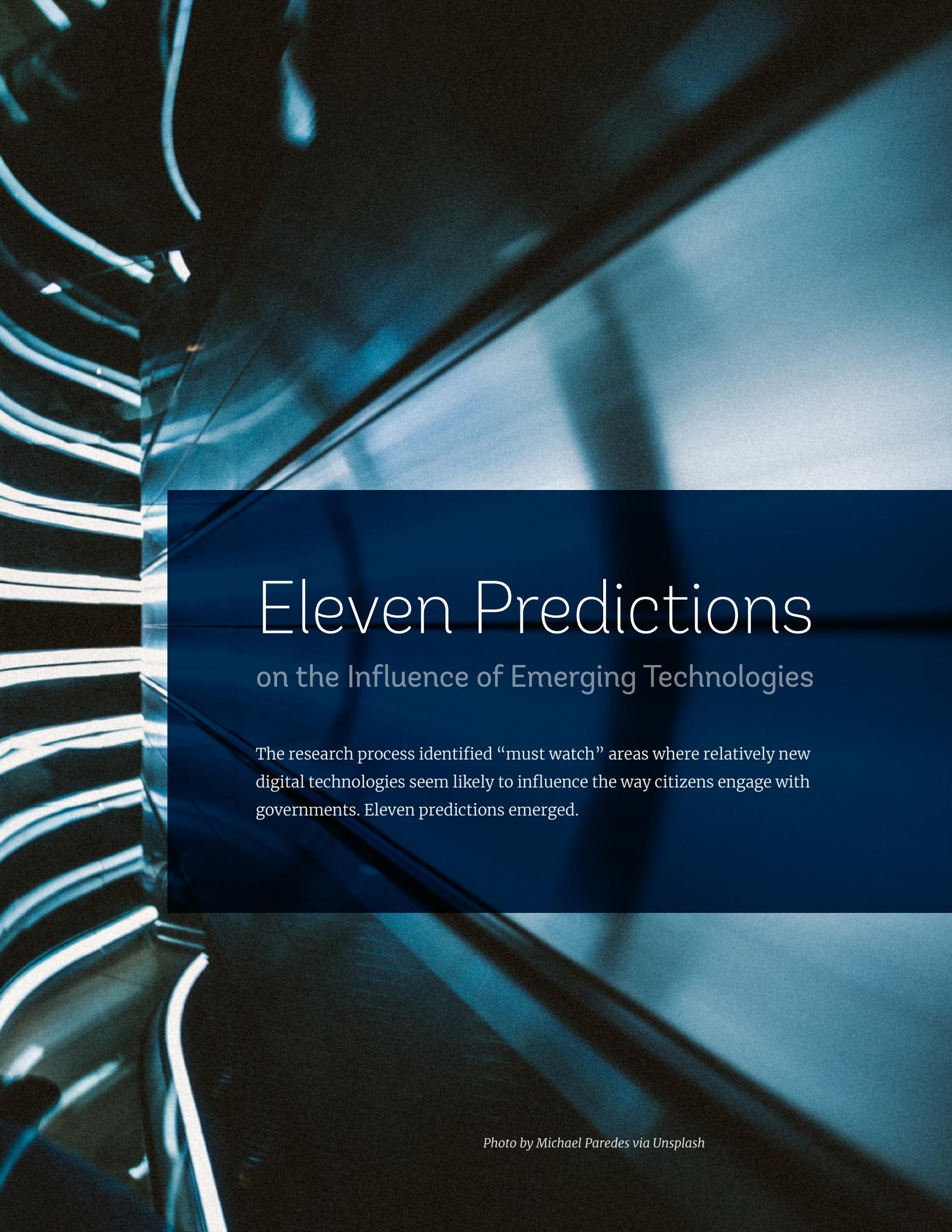
To help the authors with this effort, leading researchers and practitioners in the field kindly offered interviews and comments. Where appropriate, they are quoted directly: Ben Berkowitz (SeeClickFix); Emiliana de Blasio (Center for Media and Democratic Innovations); Marco Deseriis (Northeastern University); Jonathan Fox (Accountability Research Center at American University); Erhardt Graeff (MIT Center for Civic Media); Craig Hammer, Zahid Hasnain, and Kaushal Jhalla (World Bank); Justin Herman (U.S. General Services Administration); Cesar Hidalgo (MIT Media Lab); Alexander Howard (writer and open government advocate); Luke Jordan (Grassroot); Ronaldo Lemos (Institute for Technology and Society — ITS Rio); Flavia Marzano (Rome Municipality); Rafael Morado (Dapper Labs); Leonardo Moreno (AES Corporation); Norman Eisen (Brookings Institution); Alessandra Orofino (Nossas); Tapan Parikh (Cornell Tech); Ben Rattray (Change. org); David Robinson (Upturn); Hollie Russon-Gilman (Columbia University); Antonio Saraiva (Gojira.tv); David Sasaki (Hewlett Foundation); Beth Simone Noveck and Gianluca Sgueo (New York University); Michele Sorice (LUISS); Christopher Wilson (Beeck Center for Social Impact and Innovation); Harry Wilson (Social Coin); and Anthony Zacharzewski (The Democratic Society).



*Photo by Martin Sattler via Unsplash*







# Eleven Predictions on the Influence of Emerging Technologies

The research process identified “must watch” areas where relatively new digital technologies seem likely to influence the way citizens engage with governments. Eleven predictions emerged.

## PREDICTION 1

*The “fake news” arms race will continue and will grow both in geographic breadth and in resources consumed. It will shift the focus of public debates and drive more people away from participative processes.*

It is now widely recognized that state and nonstate actors in numerous countries are deliberately using digital communications platforms to promulgate information known to be untrue for the purposes of disempowering opponents. There are numerous mechanisms by which this can happen, from bogus news stories on Facebook, to selectively edited videos circulating through YouTube.

One of the most eye-catching of these new mechanisms is "deepfakes," the process of using still-emerging artificial intelligence technologies to produce videos in which people are portrayed doing and saying things they never did or said. The technology is somewhat immature, and the quality of video and audio is at present mostly unconvincing. But the increasing use of artificial intelligence (AI) techniques is leading to a new generation of fake imagery and audio with increasingly realistic results. There are, understandably, widespread concerns of the impact of deepfake technologies if they improve to the point of being indistinguishable from authentic footage.<sup>4</sup>

---

<sup>4</sup> Part of these concerns stem from a perception that deep fakes hold greater potential to mislead, particularly given some evidence suggesting that audiovisual content is more persuasive and more likely to be watched, shared, and remembered by users than textual content (see Tucker et al. 2018; Chesney and Citron 2018).

Even if deepfakes do not improve to the point of being truly disruptive, more traditional forms of online misinformation still matter significantly to the success of bona fide citizen engagement. Two key problems emerge from our analysis.

First, the focus of public debates is likely to take a further and unhealthy shift toward disputes over the authenticity of statements and evidence, which will in turn reduce the time and energy left to discuss possible actions or solutions to problems. As trust in empirical evidence is undermined, the quality of public debate will decline with more discussions of the type “did Person X really say statement Y?” instead of “how are we going to fix a particular policy problem?”

Second, citizens may react to a larger amount of unreliable news or active disinformation by simply tuning out of civic and political discourse altogether.<sup>5</sup> This would mean that even if opportunities arise for citizens to have a say, they may simply fail to leverage these opportunities.

Unfortunately, there is every reason to believe that efforts to disempower opponents through digital misinformation attacks will only grow. There are still numerous countries in the world with internet penetration below 50 percent. Currently the rewards for delivering online disinformation in these countries may be relatively limited, but those rewards will grow as internet usage rises, particularly in weakened democratic systems where these activities are less likely to be scrutinized and sanctioned.



The phase ahead can be characterized as an arms race because malign actors and those attempting to mitigate them will invest larger and larger sums on more and more sophisticated techniques in the years ahead. Considerable resources will be spent both on more sophisticated technologies built by software developers and on armies of lower-skilled content processors, who will either produce or help remove disinformation. What side-effects this arms race will have are still entirely unclear.

---

<sup>5</sup> This potential scenario draws from emerging evidence suggesting a deleterious effect of fabricated information and propaganda on citizen engagement, leading to increased apathy and cynicism (e.g., Balmas 2014; Huang 2018). However, as noted by other authors (e.g., Lazer et al. 2018; Tucker et al. 2018), knowledge is still limited on the medium- and long-term impacts of fake content on political behavior and disaffection.

## PREDICTION 2

*Governments and politicians will increasingly use data about citizens to decide how important it is to respond to their requests and demands.*

For as long as loans and debt have existed, the people who make loans care a great deal about how likely they are to get their money back. For a long time, the ways people acquired enough confidence to make a loan were informal—asking around, seeking references, only loaning to families with “a good name,” and so on. Then, in 1956, a financial company called Fair, Isaac, and Company introduced a systematic scoring system to rate the creditworthiness of U.S. citizens. The score was based on data about potential borrowers, rather than hunches about them. Over time, this process became the FICO score and pioneered the credit rating field, the business of systematically trying to work out how likely a person or a business is to pay back a loan.

The sources of data used to compile credit ratings were originally limited in nature and mainly related to internal records about prospective borrowers held by banks. During the information technology boom, these data grew in volume and detail, but remained fundamentally internal. They evolved into more and more complete list of what banks, credit card companies, and other similar entities knew about a person. However, as the internet revolution came to pass, some credit rating companies have begun to look

at data created by people as they live their lives online. An average internet user's "data trail" will contain public and private data on where they go, what they do, what opinions they express about various issues, and who they talk to. This information is potentially valuable to a financial company trying to decide if a person is likely to pay back a loan diligently or repeatedly miss their obligations.

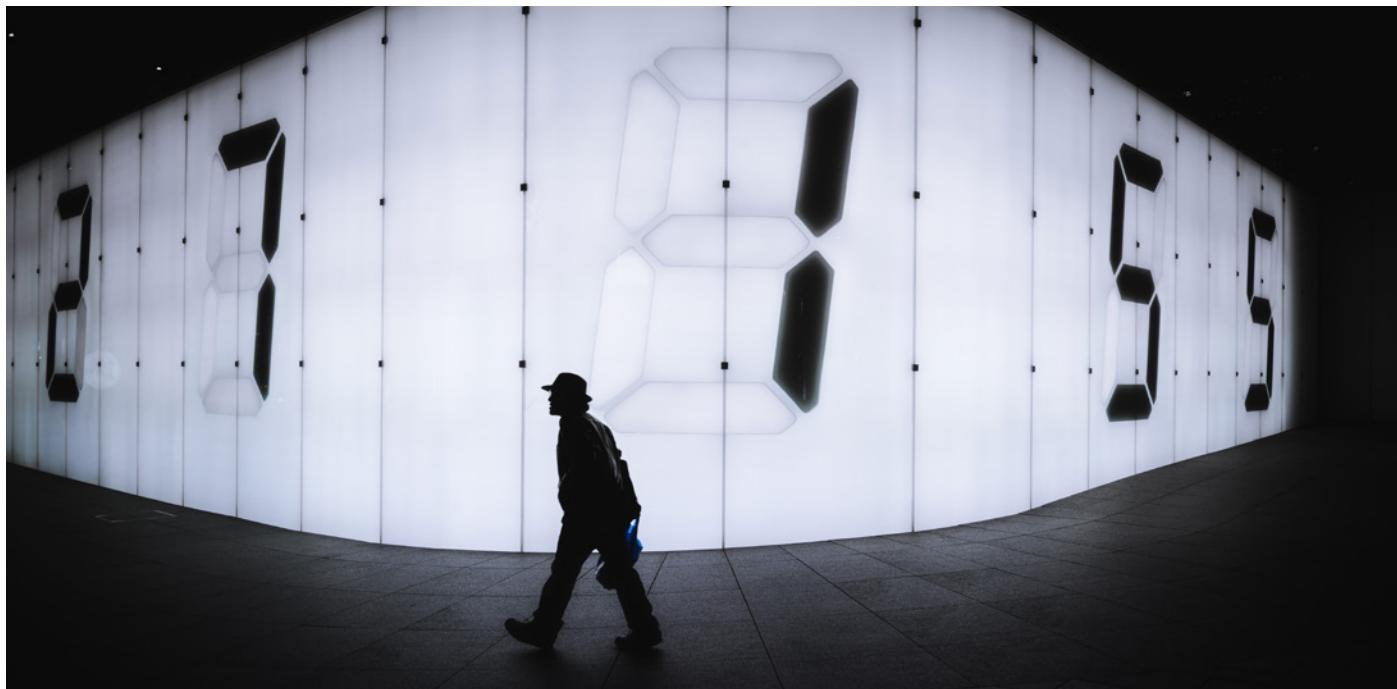
Until recently, these kinds of data trails weren't of much interest to governments, with the exception of security agencies that use data to catch certain kinds of criminals, such as gang members, terrorists, and pedophiles. In recent years, governments are starting to realize they might use this enormous wealth of personal data for purposes beyond the prevention and detection of classic criminal activities.

The most famous example of this is China's "social credit" scoring system, which was announced in 2014 and expected to be rolled out by 2020 (Creemers 2018).



This system (or perhaps more accurately network of systems) develops profile scores for citizens, which are based on a range of activities that people carry out online, and indeed offline. This score is then used to determine whether citizens are eligible to carry out a wide range of activities, such as buying domestic flight tickets or business class train tickets, or if they have full-speed access to the internet.

*Photo by Ryoji Iwata via Unsplash*



The social credit system is not entirely about deterring behaviors deemed to be undesirable. The Chinese government is also using good scores to give perks to citizens. These include avoiding the need for cash deposits when booking hotels and speeding up paperwork related to international travel. It is even claimed that dating sites are increasing prospective matches for people with higher social credit scores. Most notable for a study on citizen participation is the policy decision to give people with high credit scores preferential access to hospital doctors. This explicitly links social credit scores with the provision of public goods.

Most countries are far behind China in terms of explicitly analyzing online activity and generating a score from it. However, in a much softer way, this trend is already happening with Twitter's Verified status to show someone is who they claim to be on Twitter and Facebook's new Constituent Badges tool, a small service that shows a politician if a person leaving a comment or sending a message is actually a constituent.

Both these initiatives, which do not come with any of the reputational baggage of China's credit scoring system, have the effect of telling decision makers that one person is more credible and more worthy of response than someone without that status. Neither system requires government intervention, or has statutory status, but each still fulfills some of the same roles. These two interventions might be far removed from the Chinese social credit scoring system, but it is important to see the similarities between them.

Even in countries where state-sanctioned social credit scores will never become politically acceptable, an ever-increasing amount of data will likely be used by politicians and decision makers to help them identify which citizens are most worthy of their time.

Lest this seem like a dystopian vision driven solely by digital technology, it can be seen as the latest manifestation of a tradition of thought about citizen participation that goes back over a hundred years. This is a tradition that argues that enfranchisement and the right to be listened to by government can be earned or lost through the behaviors of individuals. In

the 19th century, the British philosopher John Stuart Mill advocated giving extra ballots to those who were more educated.<sup>6</sup>

In some countries, being incarcerated or having a criminal record is justification for withdrawing the right to vote.<sup>7</sup> This turns out to be highly problematic, of course, as differential rates of incarceration lead to differential enfranchisement of entire groups within countries, as found in the United States.

Not all choices to favor some groups over others are founded on a political philosophy. In most countries, politicians and other decisions makers will tend to give more attention to very wealthy citizens than those of more modest means. This is clearly driven by self-interest and homophily more than by ideology. Similarly, businesses use reputation data to segment and favor certain groups. Digital reputations on platforms like Amazon, eBay, and Wikipedia are used to give some people more power than others within those systems. Facebook recently admitted to rating users on a trustworthiness metric to help them automate anti-abuse measures (Dwoskin 2018).



What is not clear is the extent to which some countries will take deliberate actions to encourage, permit, or prohibit decision makers from taking into account social credit scores, or more informal online reputation scores. On the one hand, many countries have antidiscrimination laws that prevent governments from making decisions based on a citizen's race, sexuality, or religious beliefs. On the other hand, it can be important for governments to have mechanisms to exclude citizens from services, positions, opportunities or physical areas. Motivation can vary from deeply legitimate concerns, such as preventing sex-offenders from working with children, to profoundly illegitimate ones, such as using records of private conversations to block people from employment.

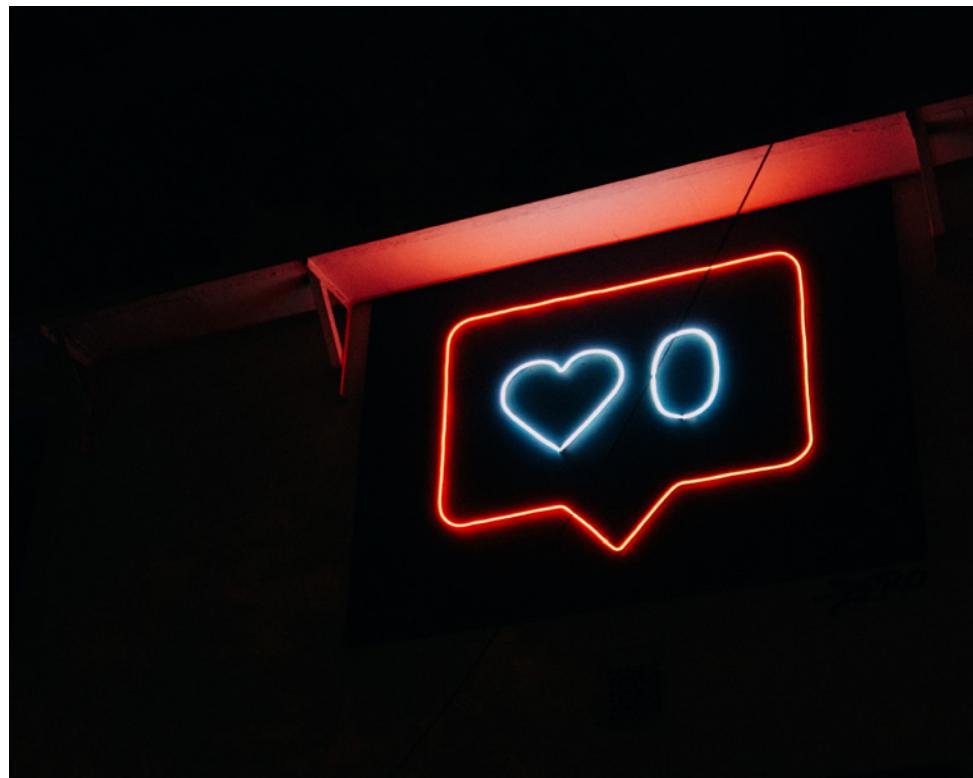
---

<sup>6</sup> Mill's elitist proposal of weighing votes according to voter competence has gained renewed support. Two recent books revisiting the idea have received widespread attention in the mainstream media. In *Against Democracy*, the political scientist Jason Brennan (2016) proposes that voting be restricted to those who can pass a basic test on political knowledge. In her most recent book, *Edge of Chaos: Why Democracy Is Failing to Deliver Economic Growth*, the economist Dambisa Moyo (2018) also argues for a similar system in which the weight assigned to an individual's vote could be determined by a civics test or one's profession or educational level.

<sup>7</sup> For a comparative table across countries, see <https://felonvoting.procon.org/view.resource.php?resourceID=000289>.

The extent to which social scoring will be used to include or exclude people from influencing decision making is unknown. Some commentators are not optimistic. “One could argue that the dominant trend seems to be not so much a hierarchy in terms of who is listened to (the glass half full) but rather the actual trend looks more like the use of scoring to exclude (the glass more than half empty,” said American University Professor Jonathan Fox during an interview.

A lively debate will be seen soon in almost all countries about whether or not data emitted by citizens going about their everyday lives can and should be used to create scores that can include or exclude people from certain services or opportunities. Those countries that permit large amounts of data to be used to score and differentiate citizens will almost certainly see changes to the nature of power relationships that are highly likely to reinforce and exacerbate existing access and power inequalities.



*Photo by Prateek Katyal via Unsplash*

## PREDICTION 3

*The spread of identity verification technologies will be used by citizens to increase pressure on decision makers.*

The modern world presents citizens with an ever-increasing number of situations in which they are required to prove who they are to institutions and authority figures. From claiming food rations in refugee camps<sup>8</sup> to boarding aircraft in megacity airports, the very structure of modernity appears to be premised on the idea that most people can provide some evidence about who they are, on a regular basis.



This is not entirely new. Many countries have been issuing identity cards, passports or driving licenses for decades, in some cases for centuries.<sup>9</sup> However, the last two decades have seen an explosion in the number of technologies deployed to verify that a person is who they claim to be.

Passports now routinely contain a microchip allowing automated facial

---

<sup>8</sup> The Building Blocks project is one of the first users of blockchain technology in the humanitarian field through which the World Food Programme has been distributing cash-for-food aid to Syrian refugees in Jordan.

<sup>9</sup> Early modes of identification were conceived as a travel document to provide individuals with safe passage through foreign territories. The first historical account of its use dates to around 450 BC, when King Artaxerxes of Persia allowed his royal cupbearer, Nehemiah, to travel to Jerusalem to rebuild its walls, granting him a letter requesting safe passage through lands beyond Artaxerxes ruling. King Henry V of England is credited with introducing into law a version of the passport under the Safe Conducts Act 1414. The French workers' identity card (*livret d'ouvrier*)—streamlined by Napoleon in the early 1800s—is considered the precursor of modern national identification cards. A compulsory document to be possessed by French workers, it was a mechanism to constrain job mobility and the employment of seasonal workers who were perceived as a group prone to disorderly behavior.

recognition at immigration checks and reducing interactions with border guards. Governments increasingly care more about biometric identity databases of fingerprints, irises, and faces, and less about a plastic or paper pocket card. Cards and papers can be lost, stolen, or forgotten; irises and fingerprints are somewhat more firmly attached to their owners.

However, governments aren't the only ones rolling out progressively sophisticated and widespread identity technologies. Credit card companies and credit rating agencies have offered identity verification for some time, especially at major life moments like buying a house or car.

More recently and more visibly, major social networks offer seemingly throwaway digital identities that over time are proving to be increasingly strong. While services like Twitter and Facebook are well known for containing large numbers of fake or duplicate accounts, this problem can sometimes conceal the remarkable robustness of mature social network user accounts as identity mechanisms. Specifically, if a person has a Facebook profile with hundreds of friends and a lively, extended, highly personal posting history, then that person controls a form of identity verification technology that is probably similarly robust to most nations' driving license registers. In the case of social network identities, certainty is based on networks of friends and family, rather than the official stamp of an administrator.

Furthermore, the identities offered by private digital identity providers are fundamentally more flexible and interoperable than those offered by most governments. A Google profile can be used to login to thousands of apps. In most countries, a passport cannot be used to login to anything.

The overall effect of this expansion and multiplication of identity technologies is that more and more people are acquiring the ability to prove who they are, quickly, easily, and in many instances, independent of governments. And, more people are acquiring the ability to prove who they are remotely—over the internet. This development has real consequences for restricting or enhancing citizen engagement.



*Photo by Carson Arias via Unsplash*

## The Growing Impact of Identity Technologies on Citizen Engagement

*Why will this technology trend likely have an impact on citizen engagement?*



First, widespread adoption of identity technologies will lead many governments to require them as part of the voting process. In regimes with widespread voter fraud, this result could be a net good. However, it is well known that identity requirements are frequently used as a deliberate mechanism to exclude voters likely to support what the electoral authorities consider to be the “wrong” party. Whether used for good or bad, identity technologies will affect the status quo of elections.

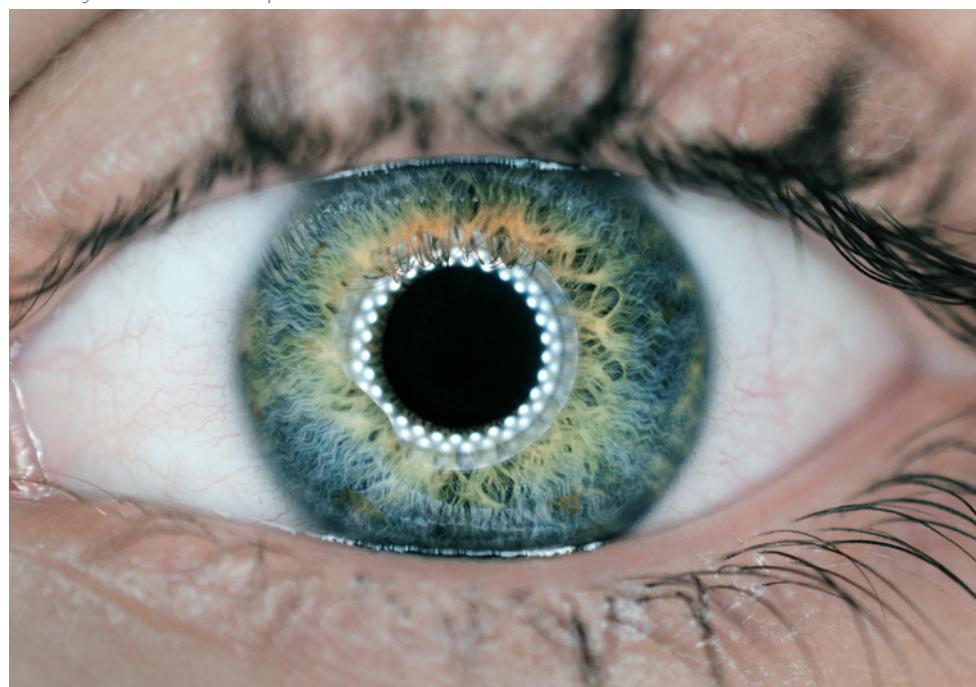
Second, greater usability means easier engagement. Highly usable, ubiquitous identity technologies mean that feedback, petitioning, and voting mechanisms that sit at the heart of citizen engagement can all be made quicker and easier for participants by the use of seamless digital identity mechanisms. Signing an online petition or joining a group can become one click, not several. If someone attends a local meeting and wants to express concerns, a fingerprint or a swipe of a phone screen will be able to produce a quick and authoritative record of attendee opinions. This increasing amount of data, even if not representative, is likely to influence some decisions in a way that a traditional meeting might not.

Third, these new identity systems could be used to make it clearer to decision makers that a citizen who is lobbying for or requesting some change is indeed a bona fide local citizen, not a bot or someone from another country. Citizens and activists know that decision makers are increasingly skeptical about whether speech online is actually coming from real local people. The new wave of identity technologies will make it easier for decision makers to believe the voices speaking are both human and relevant (i.e., people living in a certain area). If identity technologies are combined with social credit scoring, decision makers may feel new and acute forms of pressure to comply, as they will be exposed in detail to the size and heft mobilized by campaigns.

Society is entering an era in which decision makers will steadily obtain more precise and convincing data about who is asking them for action, which is likely to increase the pressure on decision makers to conform, especially if data are mixed with wider reputation data. However, research undertaken for this paper leads to the conclusion that confusion on the part of decision makers about whether they are being pressed for change by real residents or ‘fake’ people is likely to be a temporary phase that is likely to be largely gone within a decade.

Verifying the identity of individual citizens is only one piece of the puzzle that needs solving if politicians and decision makers are to have certainty that citizen demands are real. Prediction 11 looks at what happens if the demands are felt to be phony.

*Photo by Createria via Unsplash*



## PREDICTION 4

*More political parties will develop more of their policy and choose more of their candidates through dedicated digital platforms.*

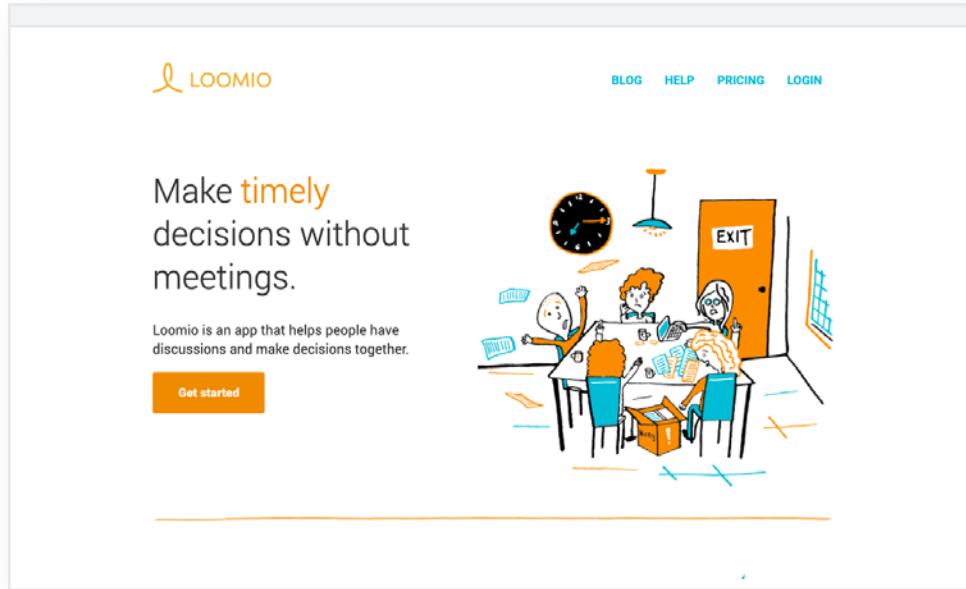
Over the last decade a range of digital tools have been built for a common purpose: to help groups of politically minded people to make decisions together. Typically, these tools allow political parties or campaign groups to set up their own private deliberation websites, open only to members of particular communities. Some of the best known tools in this space are Loomio, DemocracyOS, Decidim and LiquidFeedback.



The websites powered by these tools offer users a mixture of debating, proposing, and voting functions that give them ways to voice opinions, propose motions, debate ideas, and vote to find positions that will command the respect of majorities. The ultimate purpose of these tools is to help groups of people be more successful and effective at coordinating collective action.

These tools are not new, but over the last half decade, they have been finding their way into the internal decision-making machinery of increasingly more powerful political movements (Bennett et al. 2017).

Use of these tools started at the margins of mainstream politics. “Pirate Party” political movements in various European countries were early adopters of a tool that enabled them to practice a form of party governance called “Liquid Democracy.” The Pirate Party has never achieved more than



Screenshot Loomio App

modest levels of political success in national elections. However, over the last five years, these technologies have found their way closer to delivering significant power through their use by major breakthrough parties such as Podemos in Spain and, most significantly of all, the Five Star Movement in Italy, which is now part of the governing coalition of the country.

Adopting these tools is not a trivial or an easy choice for parties. Their open and egalitarian design cuts directly against traditional party norms of control, patronage, and hierarchy, and they pose a range of difficult questions to parties that use them, such as:

*Who gets to propose policies and candidates in an online space, and who doesn't?*

*Who gets to vote on these policies and candidates?*

*Are online votes binding or advisory?*

*What processes must be put in place to prevent political opponents from using these tools to destroy parties or movements?*

So profound are the challenges these tools represent that they have not caught on with traditional political parties, making them different from

social media tools like Twitter and Facebook – modern tools that meet timeless political party needs for propaganda and recruitment.

Previously, in a period where traditional parties were dominant, these kinds of novel deliberation tools could be safely labeled as marginal. However, with new political parties disrupting and usurping older parties in many countries, it seems likely that the spread of these tools will continue. For reasons of electoral mathematics, these tools will likely have a significant role only in countries electing governments through proportional electoral systems.<sup>10</sup> The impact is still modest, as a proportion of all party systems worldwide. Nevertheless, the use of these tools is expected to grow steadily.

One final observation is offered. These participative digital tools are not simply about setting national policy priorities or agreeing on national election candidates. Research for this paper uncovered evidence of these tools being used to help parties develop and agree on policy at a local level, including one claim these tools are now operational in “dozens” of cities in Spain. In one notable circumstance, an Italian city mayor is using a deliberation system that organized party business during an election campaign to help determine post-election local policy. This poses an interesting question about whether this innovation brings open policy making to more people, or actually closes it down as single-party digital systems start to be used in favor of more general public consultations.



In conclusion, as political parties everywhere struggle to deal with a drop of trust in institutions, it is likely that tools will continue to grow in popularity that help members and supporters believe they have more control over their parties and movements. Correctly deployed, these tools offer party members an alternative to relying solely on the goodwill of party leaders. That is an offer that is likely to remain attractive to many citizens for the foreseeable future.

---

<sup>10</sup> Proportional electoral systems tend to favor the emergence of multiparty and consensus systems (Kriesi 2015), thus increasing the likelihood of new parties emerging from movements favoring more intraparty democracy. It is no coincidence that the majority of parties experimenting with these technologies comes from countries with some degree of proportionality in their electoral systems (e.g., Pirate Party in Germany and Iceland, Demoex in Sweden, Podemos in Spain, and the Five Star Movement in Italy).

## PREDICTION 5

*Nations will diverge in their regulatory approaches to the use of AI by social media platforms, leading to very different spaces in which citizens and civil society will talk to each other and to government.*

The majority of public discourse about political issues now takes place on a small number of very large social media platforms, most significantly Facebook, Twitter, WeChat, and Sina Weibo. There is also an unknowably large amount of political discourse within private chat applications like iMessage and WhatsApp.

The companies that run these platforms are already regulated by different regimes in different countries. For example, Germany has legal prohibitions against certain kinds of hate speech that would be constitutionally protected speech in the United States. Both legal systems need to be respected by platforms like Facebook, which means programming different solutions for different markets, all while keeping the overall systems interoperable.

Regulatory regimes focusing on controlling unacceptable kinds of speech date largely to the era before social media and were often put in place to limit what could be said in print publications or on broadcast media. As well as being old, the regulations were put in place primarily to control the decisions and actions of newspaper editors and professional writers.

The digital revolution is now challenging one of the core assumptions within all pre-modern regulatory models: the assumption specific humans are making the key editorial choices. More and more today, software code, rather than editors, determines whether a piece of content is promoted, censored, or shown to some people but hidden from others.

Once it becomes more widely understood that software rather than people make many of the key decisions about what speech can be public and what cannot, debates will begin about what algorithms should or shouldn't do in a complex variety of different circumstances. These debates will produce very different conclusions depending on local cultural and political factors and lead to very different environments in which civic discourse happens. To be more concrete, consider the effects on the experience of citizens who have widely differing opinions if the following questions were answered by governments:



*Should citizens see many posts and videos about civic and political issues, or few?*

*Are activists permitted to “blast” large numbers of potential supporters with messages containing calls to action, or should they be blocked to reduce “spam”?*

*Are citizens deliberately exposed to civic or political ideas that come from “outside their comfort zone,” or are they encouraged to consume only what they find most comfortable?*

*What kinds of speech are defined as “simply unacceptable” and banned?*

In some countries, for example, speech will be heavily regulated to protect a local notion of taste and decency, and AI systems will be instructed to heavily upweight content that praises civic, family, and religious virtues. In other countries, there will be no state-enforced attempt to control for taste and no attempt to ensure that “virtuous” content trumps “mere” entertainment. In some countries, there might be relatively little control over the limits of speech, but strong legal mandates that require social media platforms to show citizens the content designed to bridge political extremes.

As different countries settle on different acceptable boundaries for the conduct of AI algorithms, differing impacts will be felt on the discourse of citizens about civic issues and their interactions with power centers. In some places, it may become very easy to tell everyone in a neighborhood about an important new local issue; in others, it may be close to impossible. In some places, it may be easy for activists to mobilize their own supporters; in others, it may be prevented by “anti-spam” mechanisms built into platforms. Without regulation it will be the platform companies that decide this balance. With regulation it will become the decision of the regulators, and their regulations are likely to vary as widely as human cultures vary today.

Ultimately, the regulation of AI in social media and online searches will be about more than just how the extremes of political discourse are treated—the issue that dominates this conversation at present. It will be about the extent to which power and change can be mobilized in different countries and the fluidity with which new ideas can appear and evolve. It will be about how easy regular interaction between citizens and decision makers is made, or how hard. It will be about who gets invited to have a voice and express an opinion, and who is simply never shown the opportunity to do so.

*Photo by Franck V. via Unsplash*



## PREDICTION 6

*Activists and large technology companies will fight an ever-escalating arms race about who gets to speak to citizens, and who doesn't.*

Activists and large technology companies have a problem—they face fundamentally conflicting incentives. Activists want and need to be able to reach as many people as they can who can be potentially influenced to build and mobilize support for causes. Technology companies need to protect people from being bombarded by so much irrelevant or uninteresting content that those people switch off and stop using the platforms. And, as sellers of advertising, technology companies are competing for the same thing as activists—citizens' attention.<sup>11</sup>



Since the rise of the first email spam filters, activists have found that technology companies regularly place barriers between themselves and potential supporters. Facebook, for example, has on numerous occasions changed how easy it is for an owner of a group or a page to alert their followers to new ideas or new campaigns.

In recent times, campaigners have taken to piggybacking on waves of emerging technologies to do an end-run around blocks that are more problematic on more established channels. For example,<sup>12</sup> the recent surge of interest in internet chatbots was used by at least one group in Brazil as a

---

<sup>11</sup> For a broader discussion on the “attention economy” and its effects on politics, see Williams (2018).

<sup>12</sup> “Beta” is a Facebook chatbot developed by Nossas, a Brazilian nongovernmental organization, that mobilizes citizens to exert pressure on government regarding women’s rights issues.

way of being able to message far more potential supporters than would have been possible through Facebook's more traditional methods.

As other emerging technologies like drones, internet of things<sup>13</sup> devices, and virtual reality are rolled out in an experimental fashion, it is only likely that campaigners will seize on these as mechanisms to get messages to people who would not otherwise receive them. With a form of new cyclical inevitability, once communication through these new channels becomes burdensome for users, platform rules will be changed and, once again, activists will find it harder to communicate.

Governments will have to actively choose to what extent they want to promote and protect civil society's ability to bypass platform content restrictions, so that citizens hear from causes that might matter to them. The world will likely see a bifurcation between governments that believe a strong civil society is an asset and those delighted to find that activist voices naturally tend to drown beneath the waves of memes and celebrity gossip.



*Photo by Jason Rosewell via Unsplash*

---

<sup>13</sup> The 'internet of things' (IOT) is the extension of internet connectivity into physical devices and everyday objects that can communicate and interact with others over the internet and be remotely monitored and controlled.

## PREDICTION 7

*The rise in “free”  
(cross-subsidized) internet access will  
influence civic and political cultures and  
conversations.*

In the countries where internet technologies were originally developed, payment for access has largely followed one standard approach. For connectivity, subscribers pay an internet service provider for the ability to send and receive packets of information from anywhere on the internet. Sometimes subscribers pay per gigabyte or per month, but the essential model is the same everywhere—you pay and you receive connectivity.



This model is not how the internet has been rolling out in an increasing number of countries. Instead the usual method of acquiring internet access for millions of people is through Facebook’s Free Basics program. It allows someone with a phone and SIM card to access certain parts of the internet entirely free of charge. The mobile company’s costs are paid for by Facebook, which makes money by selling advertising through its tools.<sup>14</sup>

The limit to the free offer is that citizens cannot access any site or app on the internet, only those that Facebook subsidizes access to, such as Wikipedia and Dictionary.com.

This approach means that a range of “standard” citizen participation tools,

---

<sup>14</sup> Facebook’s Internet.org website reports its Free Basics program to be available in more than 60 countries. Last accessed on August 25, 2018, <https://info.internet.org/en/story/where-weve-launched/>.

ones hosted outside the ‘free’ zone, may not be accessible to citizens in certain countries. For example, independent petition sites, activist websites, political party deliberation platforms, or government consultation sites will only be available to “Free Basics” users if the company paying to subsidize the internet access actively permits their access.

If current patterns of differential access persist, certain kinds of digitally enabled civic and political activity will start to thrive in some countries while being almost completely missing in others.

## PREDICTION 8

*If augmented reality glasses become truly widespread, they may become a driver of increased citizen awareness around local issues.*

Augmented reality (AR), the overlaying of the real world with additional data, has been a science fiction standby for decades. In the last three years, it has become a technology that is embedded in the vast majority of new smartphones, but used only sporadically in games and special purpose apps, such as IKEA's application to show how a new piece of furniture might fit into a real room.<sup>15</sup>



Substantial amounts of money are being put into research and development for AR glasses that will allow people to see data overlaid on the world without having to run a special app and then lift their phone up to their faces. Some working prototypes, such as Microsoft Hololens, make it seem possible that affordable headsets with a minimally acceptable quality of data augmentation may be widespread within a decade.

If AR glasses successfully leave the prototype stage, fall in price, and sell widely, they represent a fundamentally different kind of interface from a

---

<sup>15</sup> As early as 2009, the Sunlight Foundation, a nongovernmental organization, launched an AR phone application for citizens to monitor recovery contracts in the United States, with limited uptake at the time, according to an interviewee. This was supported by the American Recovery and Reinvestment Act of 2009, which provided stimulus for job preservation and creation, infrastructure investment, energy efficiency and science, and assistance to the unemployed.



Ikea Place App – Photo by Mark Hillary via Flickr

smartphone. Whereas a smartphone is most frequently used to avoid having to interact with our immediate surroundings in favor of remote contact, the fundamental affordance of glasses is that they are about where the wearer is standing.

This likely bias toward data about “where I am now” opens up a range of opportunities that relate to civic engagement. The built and natural environments in which people live are the products of innumerable political and administrative choices. One of the most obvious kinds of data to overlay on AR glasses will simply be “What is that?” around objects, buildings, and places. This opens up the possibility of exposing to a large number of people information about the choices and power-related decisions that have shaped their environments. These choices tend to be invisible to everyone except the most diligent readers of local news media, but AR opens up the possibility that far more people will be exposed to far more local choices and decisions as part of their everyday lives.

The question is: How does citizen engagement change in a world in which far more citizens are simply aware of the choices made in their built and natural environments? Does engagement go up and become richer, or do people disengage because of an overwhelming volume, followed by a sense of powerlessness? And, crucially, whose answer to the question “What is that?” will people get when they look at a place or building through their AR glasses? The suppliers of these data, and the algorithms that determine what is shown, will be just as political as the regulation of the social media platforms, and possibly even more so.

## PREDICTION 9

*Automation will drive a reduction in certain types of feedback from citizens to governments.*

One of the most common and least political of all the ways citizens attempt to wield power over government is by giving feedback on public services. Whether complaining about a teacher to a school or reporting a broken street light to a local government, “complaining” services play an important role in citizen engagement. While often unglamorous in nature, these moments can be the gateways to deeper engagement later, giving citizens their first experience in demanding better results from public authorities (Bode 2017).



Combinations of various current and emerging technologies will change this. Traditionally, for illicitly dumped trash to be reported, a person would have to spot the trash and contact the authorities to report it. In the future, cameras and other sensors on passing municipal vehicles, like police cars and school buses, will pick up two- and three-dimensional data traces of the trash. The data will be analyzed by machine learning systems specially designed to recognize out of place objects. These systems will then generate and prioritize clean-up tasks. Finally, cleanup crews will be dispatched to clean it up (where governments can afford this service).

This is only just one way in which semi- or fully automated data systems will spot problems before citizens get around to it. Dirty or undrinkable water will be detected by sensors plugged into the water networks. Broken public infrastructure (such as street signs) will be detected most likely from the

”

The more data you have, the less participation and voluntary input from citizens will the governments need.

*Cesar Hidalgo*

*MIT Professor*

camera footage taken by municipal vehicles. Noise pollution from houses or factories will be identified by microphones already embedded in a huge variety of devices. Even teacher or police underperformance might be detected automatically and remotely through different kinds of data analysis.

The net effect of an automated data system will be to give local governments adequate resources to detect and solve more problems before local citizens have to report them. The number of people who make complaints or report problems will be reduced. It will also be more convenient for individual citizens, saving them time and effort. This convenience, however, may come at a price.

Hollie Russon-Gilman, lecturer in technology and public participation at Columbia University, assesses the potential situation as worrisome. “If people don’t see what prompts the government to respond, they will fail to understand a basic dynamic of participation, because the nexus between the citizen’s voice and the government’s response tends to disappear.”

This change seems likely to accelerate as governments start to leverage troves of data to engage in predictive responsiveness—using data analysis to prevent problems before they emerge. For instance, local governments in Asia and Latin America have been experimenting with tools that combine different sources of data, such as from weather monitoring and Twitter, to predict dengue outbreaks (Marques-Toledo et al. 2017). In a similar vein, Kansas City in the United States is experimenting with AI solutions

to predict where potholes will occur, and the City of Chicago has been systematically using predictive analytics for food inspections and to combat rodents. All these point in the same direction for citizen engagement.

In the words of MIT Professor Cesar Hidalgo, “The more data you have, the less participation and voluntary input from citizens will the governments need.”

### **If automation could eliminate the need for citizens to report municipal problems, could it also eliminate citizens need to partake in deeper forms of participation?**

Reporting a vandalized bus stop and voting in a general election may not seem to have much in common. However, they both are ways in which citizens express to governments their desires for action through official channels that are built and maintained by those same governments.

Some thinkers have started to argue that if automation can do away with trivial citizen feedback like pothole reporting, then it may also be able to do away with more weighty kinds of citizen feedback. For instance, Hidalgo has recently suggested an experimental system using AI-powered representatives, commonly called digital twins, to increase people’s ability to take part directly in legislative decisions (Hidalgo 2018). Drawing from data on the user’s preferences and behaviors, the system would predict how the user would vote on a bill being discussed in a given congress or parliament.<sup>16</sup>



Most people would probably react with horror at the thought that machines might simply vote for them. But foundational research is already being done

---

<sup>16</sup> The model put forward in this case is experimental and with nonbinding effects on the actual lawmaking process. While this may still seem fanciful, AI-politicians are starting to emerge, if primarily as publicity stunts. In the recent 2018 Russian elections “Alisa,” an AI-powered virtual assistant developed by tech firm Yandex, ran for president. Employing slogans like “the presidents who knows you best” and “the political system of the future,” more than 80,000 people voted on Alisa’s website to nominate her for the presidency. In last year’s mayoral election of Tama, a city in Metropolis Tokyo, a robot named Michihito Matsuda received more than 4,000 votes, with the campaign based on the promise that AI would change Tama. New Zealand’s virtual politician SAM expects to run for the country’s next general election in 2020. According to its official website, SAM is powered by citizen “views, values, and opinions, not just data.” For more information about these examples see <https://www.themoscowtimes.com/2017/12/07/artificial-intelligence-robot-alisa-nominated-for-russian-president-a59845>; <https://www.softarecs.com/artificial-intelligence-robot-alisa-is-nominated-for-russian-president/>; <https://u.today/robot-secures-4000-votes-in-mayoral-election>; and <http://www.politiciansam.nz/>.



*Photo by Clint Adair via Unsplash*

that could enable this dystopian vision. Several projects have been carried out to predict individual voting and policy preferences drawing from digital behavioral data, with some success (Kristensen et al. 2017). For instance, researchers have been able to determine political preferences with growing levels of accuracy based on Facebook likes. Even seemingly insignificant online actions, such as liking “Harley Davidson” or “Hello Kitty,” can tell a lot about an individual’s wants and political leanings (Kristensen et al. 2017). As individual data trails get longer and more detailed, and as machine learning techniques get steadily better, it seems likely that the ability of computers to predict people’s political beliefs based on their online activities are only going to get better.

It is not hard to imagine governments observing this, and then making the case that they want to analyze the social media data of citizens to be more responsive and do what the people truly want rather than deciphering the blunt, vague signal that a vote gives. It is even possible to imagine scenarios in which social scientists start to provide evidence that the desires and intentions of citizens detected by computers are more legitimate, more granular, and in a sense more “true” than traditional mechanisms such as votes, petitions, or polls.

Few people appear to be enthused by this scenario. Ben Berkowitz, founder and CEO of SeeClickFix, conveys a sense of dismay in the face of a radical automation scenario. “There is something really sad about it. The experience of a human that can change something, with automation, that goes away. I don’t know when the moment comes when we realize we have gone too far—and we have lost the capacity to provide that moment of empowerment.”

## PREDICTION 10

*Conversational AI bots will be used to acquire, mobilize, and coordinate activists.*

Chatbots and voice bots are terms for computer programs that people interact with by talking to them, either through written messages or spoken word. Probably the most famous of all such bots is Amazon's Alexa, which will respond with useful replies if spoken to with commands like, "Is it going to rain?" or "What is this song?" Most of the big technology companies have equivalents to Alexa, including Apple's Siri and Google's Assistant.



To date, text-based chatbots of the kind that a user might talk to over Facebook Messenger or WeChat are facing a backlash. Having been promoted as a possible significant paradigm shift for computer interfaces, they do not appear to have disrupted major businesses as when shopping shifted from retail stores to the web. From an investor's perspective, disappointingly few breakthrough businesses have used the conversational format to break open a new market. In the words of Digit's Ethan Bloch (Asay 2018), "I'm not even sure if we can say 'chatbots are dead' because I don't even know if they were ever alive."

At the same time as bots are being pronounced dead, a different kind of conversational AI bot is being criticized for being entirely too alive. These are bots used to post content on social media platforms, pretending to be humans with particular political or ideological beliefs. The purposes of these bots vary from straightforward campaigning and message amplifi-

cation, through to much more sophisticated and cynical confusion generation—where bots are employed to pollute the public debate with so much confusion that no form of consensus on desirable actions can form. Social media companies are aware they are being used to disrupt public debates and the conduct of governments, and are fighting an ongoing arms race with bot creators to reduce this disruptive noise.

It is not yet obvious who will win, the bot writers or the platforms that host and fight them. In Twitter alone, out of its 336 million users worldwide so far, researchers estimate up to 50 million are bots (Varol et al. 2017). Furthermore, these bots are prolific communicators. A recent Pew Research Center study suggests that up to 66 percent of links shared on Twitter come from suspected bots (Wojcik et al. 2018). And, the problems are not limited to bots that live on social media platforms. For instance, researchers found that over 5.8 million submissions made to the U.S. Federal Communications Commission on the topic of internet neutrality were fakes produced by bots (Flaherty 2017).

Bots with social and political objectives now get such a bad press that it is worth noting they are also sometimes used for more unambiguously positive purposes, such as increasing job opportunities in Ghana, combating sexual abuse in Liberia, and facilitating access to welfare programs in India and the Philippines. Outside of social media platforms, they are used by thousands of online businesses to offer helpful chat-to-us services on company websites. These pop-ups often give customers access to what they want faster than simply clicking around.<sup>17</sup> These days a phone call to a bank will be partly or entirely handled by a voice bot to answer questions like “What is my balance” more quickly and cheaply than a human can. While AI chatbots might not fundamentally reshape the economy, they do matter, and unlike many new digital technologies chatbots may actually matter more to civil society than they do to business.

---

<sup>17</sup> *The business use of “Any questions?” chatbots on company websites are usually human-bot hybrids. The bot is used to give a quick and friendly response while a real operator becomes available.*



*Photo by Przemyslaw Marczynski via Unsplash*

There are two reasons why bots will continue to have a role in driving greater citizen engagement in both activism and government affairs.

The first is that bots provide one of the only scalable ways of communicating through popular instant messaging tools with large numbers of supporters. A campaign that has acquired permission to send personal message to thousands of users of a chat tool like WhatsApp or Signal will get more of those users attention than almost any other current way of communicating. This means that as much as chat platforms try to limit unwanted or distracting content, activists will keep trying to find ways round this.



The second reason that chatbots have a future is that the coordination of individuals who do express an interest is complicated and potentially chaotic. With a bot asking simple questions like “What day are you free?” or “Can you help with this task?,” a certain amount of administrative tasks can be reduced, freeing up campaigners to do work that really demands human intelligence.

Bots may be increasingly used to support coordination and collective action in a seamless and incremental manner. Based on the data they collect, and drawing insights from machine learning and predictive analytics, bots will become better and better at connecting citizens who are most likely to engage in activities together and who have complementary skills for collective action, and at targeting requests for action (e.g., donate, attend a rally) based on the data they collect.

## PREDICTION 11

*Numerous attempts will be made to use “blockchain” to improve trust in participative exercises.*

Most citizen engagement processes, from participatory budgets to general elections, depend on reliable recordkeeping. If the votes in an election are not recorded correctly, that election will generally be thought to be illegitimate. If written feedback from citizens is doctored so that criticism is recorded as praise, trust between citizens and governments will never rise.

Unfortunately, fears about this kind of abusive misreporting of data are real and widespread.

Consider, for example, the idea of online voting—the idea that citizens should be able to vote from their own devices over the internet. Despite being debated in many countries for at least two decades, electoral voting online has thus far only been rolled out in a small number of jurisdictions. This low level of global adoption is due primarily to strong and persistent concerns that the data about votes will be manipulated by malicious actors, and elections will be stolen. This is just one particularly high profile example of how a fear of unreliable digital recordkeeping has had major impacts on the level of ease for citizen engagement. While a steadily increasing proportion of global citizens access a huge array of goods and services through phones and computers, voters largely must physically visit polling stations or post paper ballots.

Elections aren’t the only area in which a lack of trust in digital recordkeeping has real impacts. Professor Marco Deseriis of Northeastern University

told us about the impact that unreliable data storage has on modern European political parties. Some of these parties, especially newer ones, use online platforms to allow their supporters to discuss and propose policies as well as discuss and vote on prospective candidates who might stand for election. Deseriis told us that accusations about the malicious manipulation of data within these systems were now widespread. Similar stories seem likely to suppress the willingness of more citizens to get involved in these kinds of services. They will have reason to doubt that their ideas and wishes will be faithfully conveyed to their peers and to party decision makers.

Finally, doubts about robust recordkeeping have a negative impact on the effectiveness of petitions and their close cousins, citizen initiatives. Research for this paper uncovered evidence that unreliable recordkeeping of signatures on petitions has a long and problematic history.<sup>18</sup> Time after time, doubts about the veracity of petition signatures have been used by politicians to delegitimize demands from citizens and resist calls for action and change.



In summary, a lack of faith in the reliability of civic recordkeeping is an active suppressor of many kinds of citizen engagement activities, both old and new.

## Enter Blockchain Technologies

Into this doubt-riddled scene, a new technology has appeared; a technology that can, in the eye of its proponents, eliminate some of the mistrust of data. This new technology has various names, but in this paper it's called "blockchain" to reflect its most popular moniker.<sup>19</sup>

A blockchain is a special and relatively new kind of database engineered

---

<sup>18</sup> As early as 1916, an article in the *American Political Science Review* ardently criticizes how "unfair and impossible formalities" to verify the authenticity of signatures constrained participation and restricted the full use of petitions as a democratic instrument (Schnader 1916).

<sup>19</sup> Technically, Blockchain is a specific brand name for the distributed ledger technology used by the Bitcoin cryptocurrency. The term has rapidly become generic and is frequently used to refer to non-Bitcoin-based data stores. While the term is technically inaccurate in most common usage, it has caught on because more accurate terms, such as distributed ledger technology, are more effortful to write and say.

to make it very difficult to alter historic records. For more detailed explanations of what blockchains are and how they work, see Skella (2018) and Crosby et al. (2015).

The claim that blockchain makes data resilient against tampering makes these databases attractive in situations where people want to exchange things of value. For example, a person who is about to hand over money to acquire land has a huge interest in ensuring the land ownership records clearly state he or she is now the new owner. If those records are subsequently changed to deny that the buyer owns the land, the harm to the victim would be great.

A wave of blockchain-based projects claim they can prevent records from being changed. Most are not in the citizen engagement landscape (most are types of financial instruments), but a few are in the civic space. One interesting example operates in Brazil.

The Brazilian constitution gives citizen initiatives, signed by large numbers of people, a certain statutory power. However, in practice it has been impossible to verify that signatures are genuine. In several cases, this obstacle has been used to deny citizens their chance at influence, by rejecting citizens initiatives as bogus.<sup>20</sup>

In reaction, a new project called Mudamos has been established to help citizens create and sign initiatives to the Brazilian parliament that are less likely to be decried as fake. Part of the claim that signatures made through the Mudamos app are more trustworthy is the use of a popular form of blockchain to store data. Ronaldo Lemos, a cofounder of ITS Rio, explains the rationale of the initiative: “When the framers of the Brazilian constitution created the possibility of citizens to propose laws directly, their goal was precisely to make people independent from congressional structures, delivering that power to civil society.”

---

<sup>20</sup> To date, the few citizen initiatives that have been approved in Brazil at the national level, after meeting the threshold of signatures required, had to be adopted by a member of parliament who was supportive of the issue and presented the project as his or her own. This is a workaround solution necessary because of the impossibility of verifying the authenticity of signatures. More recently, at the subnational level in the Brazilian municipality of Passo Fundo, a citizen’s initiative requesting the salaries of councilman be reduced—considered abusive by citizens—was denied on the basis that some of the signatures’ authenticity could not be verified.

And, according to Lemos, blockchain allows precisely that. “The blockchain is perfect for this purpose. It creates an immutable and auditable record of signatures, attached directly to the identity of the voter. Because of the blockchain and other certification mechanisms we are adopting, the possibility of fraud will be much lower than when paper signatures are used.”

This project is not the only citizen engagement project that claims to be using blockchain to make citizen feedback more reliable and believable. Several startups are working on the problem of trustworthy digital voting, including Horizon State and Votem.

It is worth noting that numerous authoritative voices in the digital security world doubt that blockchain does bring adequate certainty to online voting (Laurie 2018). Ultimately, it is not the security or quality of either blockchain or identity technologies that will determine whether or not this mix of technologies influence citizen engagement, or the governments that respond to it. Rather it will be a matter of perception. Do policy makers and citizens come to believe that a certain kind of online interaction (whether a vote, petition, comment, or a suggested amendment to a bill) is truly trustworthy, or truly hard to ignore? New technologies might actually offer little advancement in genuine security, but they might cause people to believe an advancement has been made. Conversely, new technologies could easily undermine faith and leave decision makers less confident that messages from the public have been faithfully conveyed. The battle for perceptions is only in its middle stage, and the only thing known for sure is that blockchain advocates will push hard to persuade decision makers that their solution is the way to acquire legitimacy.





# Implications & Conclusions

These predictions vary in their confidence. For example, the ever-escalating arms race between activists and social media platforms is a virtual certainty, whereas the impact of AR glasses is far less certain because of their developmental immaturity. Furthermore, while these scenarios are not mutually exclusive, the extent to which some of them materialize may reduce the odds others might do the same. For instance, the growth of free-to-use plans restricted to certain platforms may constrain the space for the multiplication of tech savvy organizations that promote activism, such as Avaaz and Nossas.

It should also be noted that none of these scenarios will emerge unintentionally. Technology is not fate, and the translation of any of the predictions into reality requires a substantive degree of human agency. The degree to which the realization of these scenarios further societal goals equally depends on which measures are taken in the near feature. In this case, despite the uncertainty inherent to this exercise, there are measures that would be prudent for governments<sup>21</sup> to take.

---

<sup>21</sup> Government here refers to three branches—executive, legislative, and judiciary.

## MEASURE 1

*Governments can be ready for what comes next by embracing the user-centered digital government movement.*

In recent years, governments around the world have been adopting a new way of building and improving public services. This approach bases its working methods and quality standards on most people's experience of the internet, rather than most people's experience of public services. It is heavily informed by design and technology skills that emerge from the modern internet industry, and is based on the founding principle that "user needs come first."

This new approach has been driven, across a range of nations, by a group of public servants who share enough values and working practices that we can meaningfully group them into a transnational public service movement. This movement can be called the "user-centered digital government" movement. It is most clearly instantiated in a range of digital service government organizations that share a similar naming scheme (e.g., the Government Digital Service in the United Kingdom, the U.S. Digital Service, and the Canadian Digital Service).

The biggest single change marked by these services is the in-sourcing of sophisticated digital skills into the heart of government. This means directly employing public servants who have skills in computer programming, digital design, agile project management, user research, data sci-

ence and more. This partial reversal of the outsourcing orthodoxy that surrounded government technology until around 2010 has led to some governments having sophisticated in-house technology teams. These teams are primarily employed to deliver services, but they have a spill-over benefit in that they give governments improved ability to deal with wider digital policy questions.

As the governments of high-income countries grow more skeptical of the “outsource key decisions” approach to government technology, government-facing technology providers are likely to focus their market growth in middle- and low-income countries, especially those with limited capacity to assess costs and technological needs. Whether these countries can leapfrog technologically depends—among other things—on the extent to which their governments can resist market pressures and lobbying, and grow their capacity to internally promote and retain digital skills.

Both governments and legislative assemblies can take steps to become active parts of this new user-centered digital government movement, as a way of acquiring the diverse skills that will be required not only to deliver user-centered public services, but also to know how to cope with external innovations.



Photo by Alvaro Reyes via Unsplash

## MEASURE 2

*Stakeholders can initiate formal public debates on social scoring now to ensure their nation, city, or region is ready to make informed choices.*

A great many institutions would benefit enormously from every citizen having a range of transparent social scores available to anyone who asked. Prospective employers could be more certain about applicants, police could pursue suspects more easily, and even people going on dates could be more confident that they would get what they wanted from the person who showed up.

However, these benefits may be achieved at considerable cost to individuals. People who make one mistake may find themselves unemployable, or unmarriageable. Entirely legal and morally permissible activities today could be recorded in social scores, and then retrospectively, be deemed socially or legally unacceptable tomorrow.

Ultimately each society will have different views on the trade-off between individual privacy and the rights of institutions and individuals to know about a person's history.

Decision makers and civil society leaders should plan now with the expectation that social scoring systems will arrive soon, and their arrival will present a significant policy dilemma with high levels of public salience.

To prevent profoundly ethical decisions being made in undue haste, or in a state of crisis, decision makers should initiate conversations now, in the calm before the storm. Discussions about boundaries between acceptable and unacceptable uses of social scoring can be debated in calmer, more extended conversation when there is no immediate crisis to tackle. Governments can use participative methods like citizen assemblies to ensure that conclusions reached are considered, legitimate, and ready to be translated into regulation when the time is appropriate.

Photo by Curtis MacNewton via Unsplash



## MEASURE 3

*Citizen assemblies can craft informed, robust, and legitimate digital policies.*

The discussion on regulations that directly affect citizens, such as social scoring, algorithmic decision-making, and data protection, should not be confined to governments and tech industry actors. Instead modern participatory methods should be deployed to leverage the expertise of those affected by the decisions made.

The fact that some of these regulatory choices will be highly technical should not be used as an excuse not to engage the public in these choices. Citizens will be very directly affected by the regulation of major platforms, and will be highly suspicious of government intervention in almost all circumstances.

To mitigate this suspicion, we recommend the use of citizens assembly approaches. A citizens' assembly is composed by a randomly selected panel of citizens who deliberate on an issue of public importance. Throughout the process—which normally involves multiple face-to-face meetings—citizens have time to learn about the issue at stake, consult experts, hear the different points of view on the issue, and take part in facilitated discussions. At the end of the process, which normally involves multiple meetings, citizens come up with decisions or a set of recommendations for the government.<sup>22</sup>

---

<sup>22</sup> This has been the case for the Irish Citizens' Assembly, in which 99 randomly selected citizens represent the broadest possible cross-section of the country's population. The recent liberalization of Irish abortion laws largely covered by the international press was a recommendation made by the Citizens' Assembly and a vital step for the reforms undertaken.



*Photo by João Marcelo Martins via Unsplash*

Considering the complexity of issues at stake, and the major problem of making legitimate choices in this arena, governments should resist the temptation to limit their engagement practices to simplistic consultations restricted to online environments. Given the far-reaching consequences of decisions taken, any participatory process should be carefully designed to promote inclusiveness and informed judgment.

## MEASURE 4

*Governments can ensure that regulatory structures for digital multinationals are tasked with working on citizen engagement issues.*

The rise of major transnational digital technology companies has given governments world-wide regulatory headaches. Whereas traditional companies like banks or airlines could largely be managed by a sector specific regulator, a company like Google raises regulatory questions across areas from taxation to national security, and from advertising to child protection.

Governments are starting to take steps to update and reconfigure their regulatory institutions to cope with these multifaceted giants. As this is happening, however, it is possible that high profile national security and taxation priorities might lead to governments simply not building regulatory structures that can intervene to improve citizen engagement outcomes.

Without building such structures, governments and citizens could potentially miss out on various benefits, including:

Giving citizens new and ultra-fluid ways of engaging with power structures from directly within social media platforms (especially where these would not be profitable for the platform companies); and

The addition of tools and features within major platforms that are specifically deployed to break down and bridge harmful social divides.

As governments and decision makers rebuild their regulatory regimes to cope with this new era, they should challenge the leadership of these regulators to ensure that they (i) employ at least some of the skills required to engage in the citizen engagement space; and (ii) give those institutions remits that extend to improving and safeguarding the quality of interactions between citizens and decision-makers, rather than being limited to security, taxation, and market regulation.

*Photo by Bernard Hermant via Unsplash*





## MEASURE 5

*Governments should ensure that telecommunications regulators are aware of and responsive to the impacts of pricing regimes on citizen engagement and power distribution.*

Telecoms regulators traditionally worry primarily about the cost of services, and whether or not services are being used to make nuisance or illegal (fraudulent) calls. They would not traditionally see their role has having any implications for citizen participation in power and decision making.



In an era where telecommunications is data-centric, this view is changing. Free-to-use plans that limit internet access to certain tools and platforms will result in large numbers of citizens being unable to participate in a range of spaces. This will narrow the scope of involvement, most likely for the worse.

Telecommunications regulators can work with participatory specialists to identify key services that must be accessible and free of charge to give citizens access to services and information allowing them to engage in the governance of their nation, region, or city.<sup>23</sup>

*Photo by Markus Spiske via Unsplash*

---

<sup>23</sup> This approach includes measures that lower the barriers for civic technology organizations and entrepreneurs to access social media application programming interfaces to develop more solutions that promote citizen engagement.

## MEASURE 6

*Civic technology initiatives should be designed for inclusiveness.*

The emerging research on the effects of technology on citizen engagement clearly highlights the risk of technologies to amplify existing participatory biases favoring, for example, the participation of those who are male, have higher income, or have educational attainment (Peixoto and Sifry 2017). Careful considerations in terms of institutional and technological design are therefore essential if inclusiveness is a value to be pursued.

To date, most civic technology initiatives have relied on voluntary, self-selected models of participation. These initiatives have lagged behind recent sophisticated participatory innovations designed to promote the inclusion of individuals that are unlikely to participate in mechanisms based on self-selection. In this case, two institutional approaches are worth highlighting.

The first one concerns citizens' assemblies. Particularly for engagement in policies, citizens' assemblies stand as the gold standard for citizen engagement. The second one concerns the *proactive outreach* of individuals, which we particularly advise when governments want to seek simple feedback from citizens (e.g., quality of service delivery, complaints). For example, this is the case for the Jhang Model used by the Punjab government in Pakistan. Instead of waiting for citizen reports to come in, the government

evaluates its performance on an ongoing basis by directly calling or texting citizens to solicit their feedback on public services they recently used.<sup>24</sup>

There are other measures that can be taken when designing participation tools that must be available to all. For example, when designing citizen engagement efforts, the use of technology should be limited to devices that are already available and largely used by the target audience. Alessandra Orofino, executive director of Nossas, shares their approach, “To be successful our use of tech has to be thoughtful and smart. We do value accessibility, so we never really choose an emerging technology that is at the early adoption phase. We want people first, not tech.”

Yet, keeping things highly accessible from a user perspective does not exclude the possibility of using emerging technologies. Tapan Parikh, professor of human-computer interaction at Cornell University, cites the example of sophisticated call centers in developing countries that use AI solutions to handle calls, while taking calls from virtually any type of phone. “I’ve been making this argument for years. We need to think about the user interface as simply as possible, and do all the smart stuff on the backend.”



Good design of participation systems, however, require more than assumptions about what users’ needs and habits probably are. Any inclusive technological design will systematically require multiple rounds of user research and user testing as the technological solution is incrementally developed. In this sense, the capacity of governments and activists to appropriately conduct research and testing with users constitutes a core skill if emerging technologies are to be effectively used to leverage citizen engagement practices.

---

<sup>24</sup> Promoting inclusiveness also requires expanding the meaning of the term “citizen” beyond its formal acceptance; that is, a legally recognized national of a state. On inclusive citizen engagement, citizens are those whose lives are affected by the decisions taken—*independent of their formal status*. Examples of this approach are the government-sponsored participatory budgeting initiatives in New York City and Paris in which national citizens and undocumented immigrants vote on equal footing.



# Conclusion

Emerging technologies are not on the cusp of fundamentally rebooting the way power is held and decisions made in mature states. But they are constantly eating away at the norms, subtly undermining some structures, and boosting others. Both governments and civil society actors should be paying close attention to the disruptive wave that is currently only half broken, if citizens are to be truly put first.

However, technologies are only as good as the institutions and processes in which they are embedded. An inefficient and cumbersome visa application process, if transferred to an online environment, will still remain cumbersome and inefficient. The same applies to citizen engagement, and emerging technologies are unlikely to make a meaningful difference in the absence of responsive institutions.



What is needed are true institutional upgrades to bring institutions into the 21<sup>st</sup> century.<sup>25</sup> Pushing a button or casting a ballot every few years and expecting governments to respond in-between is starting to show signs of insufficiency, as a model. In the same way that recent software is unlikely to run on a computer from the 1980s, the full benefits of emerging technologies are unlikely to be reaped under institutions that do not modernize their rules and cultural norms. The real win for citizens will take place when institutions start to change their rules to match the capabilities of modern tools, and the expectations of modern publics.

*Photo by Annie Spratt via Unsplash*

---

<sup>25</sup> While the list of potential upgrades is extensive, examples of reforms that could be considered include:

(i) mandating participatory budgeting exercises across all levels of government (with significant portions of budget); (ii) lowering the threshold for citizens initiatives; (iii) mandating citizens' assemblies to enable the co-design of legislation; and (iv) establishing laws that accepts electronic authentication for binding participatory processes. If this list could be expanded, a common trait of reforms is the goal to give citizens a binding voice in decision-making processes, from lawmaking to service delivery. While they might sound unlikely for now, they may well be considered a possibility in the near future.

## References

- Asay, Matt. 2018. "Chatbots Are Dead. A Lack of AI Killed Them," *Artificial Intelligence*, April 17. <https://www.techrepublic.com/article/chatbots-are-dead-a-lack-of-ai-killed-them/>.
- Balmas, M. 2014. "When Fake News Becomes Real: Combined Exposure to Multiple News Sources and Political Attitudes of Inefficacy, Alienation, and Cynicism." *Communication Research* 41 (3): 430–454.
- Bennett, W. Lance, Alexandra Segerberg, and Curd B. Knüpfer. 2017. "The Democratic Interface: Technology, Political Organization, and Diverging Patterns of Electoral Representation." *Information, Communication & Society* 21 (11): 1655–1680.
- Bode, L. 2017. "Gateway Political Behaviors: The Frequency and Consequences of Low-Cost Political Engagement on Social Media." *Social Media + Society* 3 (4).
- Brennan, Jason. 2016. *Against Democracy*. Princeton, NJ: Princeton University Press.
- Chesney, R., and D.K. Citron. 2018. "Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security." Available at SSRN: <https://ssrn.com/abstract=3213954> or <http://dx.doi.org/10.2139/ssrn.3213954>.
- Creemers, Rogier. 2018. "China's Social Credit System: An Evolving Practice of Control." Available at SSRN: <https://ssrn.com/abstract=3175792> or <http://dx.doi.org/10.2139/ssrn.3175792>.
- Crosby, Michael, Nachiappan, Pradhan Pattanayak, Sanjeev Verma, and Vignesh Kalyanaraman. 2015. *BlockChain Technology: Beyond Bitcoin*. Technical report. Berkeley, Calif: Sutardja Center for Entrepreneurship and Technology.
- Dwoskin, E. 2018. "Facebook Is Rating the Trustworthiness of Its Users on a Scale from Zero to 1." *Washington Post*, August 21. [https://www.washingtonpost.com/technology/2018/08/21/facebook-is-rating-trustworthiness-its-users-scale-zero-one/?noredirect=on&utm\\_term=.23076312b6bb](https://www.washingtonpost.com/technology/2018/08/21/facebook-is-rating-trustworthiness-its-users-scale-zero-one/?noredirect=on&utm_term=.23076312b6bb).
- Edick, Cole. 2015. "The Golden Age of Piracy: Can Open-Source Democracy Redefine Citizenship for the Internet Age?" *Harvard International Review* 6 (4): 7–9.
- Flaherty, Peter. 2017. "Another 5.8 Million Fake Net Neutrality Comments Found; 1.5 Million Fakes Put Online for Public Scrutiny." National Legal and Policy Center (blog), August 8. <https://nlpc.org/2017/08/08/another-5-8-million-fake-net-neutrality-comments-found-1-5-million-fakes-put-online-public-scrutiny/>.
- Hidalgo, César. 2018. "A Bold Idea to Replace Politicians," filmed April 10–14, 2018 in Vancouver, Canada. TED video, 13:08. [https://www.ted.com/talks/cesar\\_hidalgo\\_a\\_bold\\_idea\\_to\\_replace\\_politicians](https://www.ted.com/talks/cesar_hidalgo_a_bold_idea_to_replace_politicians).
- Huang, H. 2018. "The Pathology of Hard Propaganda." *The Journal of Politics* 80 (3): 1034–1038.
- Kornbluh, Karen. 2018. "The Internet's Lost Promise: And How America Can Restore It." *Foreign Affairs* 97 (5): 33.

- Kriesi, H. 2015. "Party Systems, Electoral Systems, and Social Movements." In *The Oxford Handbook of Social Movements*, edited by Donatella Della Porta and Mario Diani, 668–680. New York: Oxford University Press.
- Kristensen, J. B., T. Albrechtsen, E. Dahl-Nielsen, M. Jensen, M. Skovrind, and T. Bornakke. 2017. "Parsimonious Data: How a Single Facebook Like Predicts Voting Behavior in Multiparty Systems." *PLoS ONE* 12 (9): e0184562.
- Laurie, B. 2018. "The Security Properties of Variable Append Only Ledgers." Medium, August 22. [https://medium.com/@benlaurie\\_18378/the-security-properties-of-verifiable-append-only-ledgers-8dab8d1f8a86](https://medium.com/@benlaurie_18378/the-security-properties-of-verifiable-append-only-ledgers-8dab8d1f8a86).
- Lazer, David M.J., Matthew A. Baum, Yochai Benkler, Adam J. Berinsky, Kelly M. Greenhill, Filippo Menczer, Miriam J. Metzger, Brendan Nyhan, Gordon Pennycook, David Rothschild, Michael Schudson, Steven A. Sloman, Cass R. Sunstein, Emily A. Thorson, Duncan J. Watts, and Jonathan L. Zittrain. 2018. "The Science of Fake News." *Science* 359 (6380): 1094–1096.
- Marques-Toledo, C.A., C.M. Degener, L. Vinhal, G. Coelho, W. Meira, C.T. Codeço, and M.M. Teixeira. 2017. "Dengue Prediction by the Web: Tweets Are a Useful Tool for Estimating and Forecasting Dengue at Country and City Level." *PLoS Neglected Tropical Diseases* 11 (7): e0005729.
- Mattelart, A. 1999. La communication et la promesse de rédemption [Communication and the Promise of Redemption]. *Quaderni* 40 (1): 69–78.
- Mellan, J., T. Peixoto, and F.M. Sjoberg. 2017. "Does Online Voting Change the Outcome? Evidence from a Multi-Mode Public Policy Referendum." *Electoral Studies* 47: 13–24.
- Mellan, Jonathan, Hollie Russon Gilman, Fredrik M. Sjoberg, and Tiago Peixoto. 2017. "Gender and Political Mobilization Online: Participation and Policy Success on a Global Petitioning Platform." In *Ash Center Occasional Papers*, edited by Tony Saich. 1–49. Cambridge, MA: Harvard Kennedy School.
- Moyo, Dambisa. 2018. *Edge of Chaos: Why Democracy Is Failing to Deliver Economic Growth*. New York: Basic Books.
- Peixoto, Tiago, and Micah L. Sifry. 2017. *Civic Tech in the Global South: Assessing Technology for the Public Good*. Washington, DC: World Bank and Personal Democracy Press.
- Peixoto, Tiago; Fox, Jonathan. 2016. "When Does ICT-Enabled Citizen Voice Lead to Government Responsiveness?" *World Development Report 2016* Background Paper. Washington, DC: World Bank.
- Schnader, W. A. 1916. "Proper Safeguards for the Initiative and Referendum Petition." *American Political Science Review* 10 (3): 515–531.
- Skella, Jamie. 2018. "A Blockchain Explanation Your Parents Could Understand." *Lifehacker* January 22. <https://www.lifehacker.com.au/2018/01/a-blockchain-explanation-your-parents-could-understand/>.



- Spada, P., J. Mellon, T. Peixoto, and F.M. Sjoberg. 2016. "Effects of the Internet on Participation: Study of a Public Policy Referendum in Brazil." *Journal of Information Technology & Politics* 13 (3): 187–207.
- Tucker, Joshua, Andrew Guess, Pablo Barberá, Cristian Vaccari, Alexandra Siegel, Sergey Sanovich, Denis Stukal, and Brendan Nyhan. 2018. *Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature*. Available at SSRN: <https://ssrn.com/abstract=3144139> or <http://dx.doi.org/10.2139/ssrn.3144139>.
- Varol, O., E. Ferrara, C.A. Davis, F. Menczer, and F. Flammini. 2017. "Online Human-Bot Interactions: Detection, Estimation, and Characterization." Proceedings of the Eleventh International AAAI Conference on Web and Social Media, Montréal, Québec, Canada, May 15–18. Published by the AAAI Press, Palo Alto, California. <https://arxiv.org/pdf/1703.03107.pdf>.
- Williams, J. 2018. *Stand Out of Our Light: Freedom and Resistance in the Attention Economy*. Cambridge, UK: Cambridge University Press.
- Wojcik, Stefan, Solomon Messing, Aaron Smith, Lee Rainie, and Paul Hitlin. 2018. *Bots in the Twittersphere*. Washington, DC: Pew Research Center.
- Wojcik, Stefan. 2018. "5 Things to Know About Bots on Twitter," [pewresearch.org](https://pewrsr.ch/2uZI4OF), April 9, <https://pewrsr.ch/2uZI4OF>.
- World Bank. 2014. *Strategic Framework for Mainstreaming Citizen Engagement in World Bank Group Operations: Engaging with Citizens for Improved Results*. Washington, DC: World Bank Group.
- . 2016a. *Making Politics Work for Development: Harnessing Transparency and Citizen Engagement*. Policy Research Report. Washington, DC: World Bank.
- . 2016b. *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank.
- . 2017. *World Development Report 2017: Governance and the Law*. Washington, DC: World Bank.









# Citizen Engagement

Emerging Digital Technologies  
Create New Risks and Value

*Tiago Peixoto and Tom Steinberg*



WORLD BANK GROUP  
Governance