aapti institute

THE STATE OF CIVIC TECHNOLOGY IN INDIA

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ABOUT THIS REPORT

The civic technology ecosystem is rapidly evolving in India, but our understanding of the space is still fairly limited. The *State of Civic Technology in India* is a review of ~30 civic technology organizations across the country, and an evolving map of the ecosystem. This report aims to do the following:

- Develop a perspective on civic technology in India
- Establish a definition of civic technology based on our understanding of the current ecosystem in India
- Highlight trends and needs in the space

About Aapti

The Aapti Institute is a public research institution interested in the intersection of technology and society. Aapti believes that better technologies and better policy will come from understanding lived experiences on the ground. Therefore, we aim to research the impact of tech, and bring up insights to the design of both technology and policy that surrounds it.

As a core focus of our work is understanding lived experiences with technology, we find civic technology an interesting and important space to explore.

Aapti works across three key areas all viewed from the prism of technology- futures of workers, or the changing relationship between people and their work; governance and welfare, or the relationship between the people and institutions of the state such as welfare, judiciary, public services; and finally, the data economy, or the decisions to share and exchange data as it is increasingly commodified.

THE GLOBAL CONTEXT

The term civic technology itself is amorphous in nature. In recent years, however, civic technology has gained attention from those who see value in using technology to enhance citizen/state relations.

Where is civic technology rooted?

In recent years, civic technology has received a wave of new attention from investors – and is especially appealing to those looking to make an impact in government and public life. While there are some concerns around developing solutions in the private sector governance-related issues, the flexible nature of civic technology leaves room for innovation and creativity.

The aims of civic technology are simple – use digital tools to strengthen democracy. Civic tech can effectively be developed through collaborative governance - partnership between government, community, and private sectors to jointly develop solutions for social good. (Gash and Ansell 2008, Torfing and Sorensen 2011). As the demands of government become stronger, civic tech becomes a useful tool to strengthen democracy from the outside, allowing for stronger accountability mechanisms and increased stakeholder involvement. (Gilman, 2017).

Civic technology is also a mechanism to enhance digital democracy. 'Digital Democracy' is a term that describes how digital tools can enhance citizen engagement and participation in decision-making in the government. For many political theorists, true democracy is rooted in participation, particularly in discussion and debate (Simon, 2017). Therefore, ICTs are a useful tool to democratize the public sphere and enhance communication between the citizen and the state.

These lessons are helpful in thinking about where civic technology fits in the context of the India. Regardless of its function, we find it important to root civic technology with the citizen; considering the dual existence of both of social architectures and technology to fully enhance the citizen experience

Why is it important to study civic technology?

Technology has always been designed to advance or enhance the human experience. However, when thinking about improvements to civic life, technological developments are limited. As distrust in government grows, civic tech is more critical than

ever to – first, to strengthen democratic processes and second, to minimize the risk that existing technologies enable to weaken democratic processes (Luminate 2019).

The global discourse on civic technology

Much of the current discourse around civic tech stems from investment firms/thought leaders who are interested in the economic potential and growth of the space. Below we've highlighted key pieces of work and thinking on civic tech around the world:

Trends in Civic Technology – Knight Foundation
The Knight Foundation (2013) notes a 20% annual growth rate in the launch of civic tech organisations, and has mapped out how civic tech can help citizens to more actively participate in democratic society, including: data access, visualisation, resident feedback, voting, public decision-making, neighbourhood forums, information crowdsourcing, crowdfunding and peer-topeer sharing of goods and services.

Civic Tech Field Guide
Civic Hall, a non-profit collaborative for the world' civic innovators released a Civic Tech Field Guide which hosts a .

global collection of civic technology tools and projects. They have cataloged not only the tools and resources, but also the conferences, awards, and projects relevant to the civic tech work

MIT/GovLab – Is Civic Tech Fulfilling it's promise?
With the advancement of technology, there is increasing evidence to show its merits and the role it plays in strengthening government. This report explores whether civic technology successfully enhances participation, feedback, and government responsiveness (Zomer, 2017). It demonstrates an understanding in the limitations and purpose of civic tech, and highlights the necessity of impact evaluation.

CIVIC TECHNOLOGY IN INDIA

In recent years, India has a seen a growing number of technology-related initiatives fueled by the government (Digital Cities, BharatNet, Smart Cities). While the landscape is still nascent, investors and activists are increasingly realizing the importance of civic technology to deepen the democratisation of urban governance and improve government accountability.

Thought leaders identify major challenges in governance in India, claiming that there are large gaps between citizen interest and governmental action. Major civic technology companies are now focused on addressing public infrastructure issues around water, sanitation, and waste.

"Catalyzing Civic Technology in India" Report
The Knight Foundation, CIIE, and the Omidyar Network put out a report in 2018 attempting to breakdown the state of civic technology in India, estimating that by their definitions of civic tech, around 450-475 civic technology organizations currently exist in India (Wrobel, 2018). The report aims to "help venture investors understand civic tech India" in order to encourage major investments of civic tech in this area. Their core beliefs around civic technology are rooted in the emergence of several crucial factors in the ecosystem, including a number of smartphone adoption, increasing tech talent, and a growing number of government incentives.

Civic Tech Accelerator
In 2018, Village Capital and Omidyar Network launched the first Civic Tech accelerator in India, bringing together both entrepreneurs and investors in India to build the ecosystem. To date the Omidyar network has invested over $9M USD and is looking to continue their investments in this space.

Civic Technology and India
In India, civic technology has been studied and understood mostly through a funder perspective. This report aims not only to build on existing work in the space but also more deeply understand how technology interfaces with the citizen, encouraging future civic tech builders to develop technology with the current ecosystem and context in mind. We see immense potential to improve citizen/state relations and the delivery of public services – and find it imperative to look outside the technology to incorporate the human/citizen experience.

HOW IS CIVIC TECH DEFINED AROUND THE WORLD?

Those who have studied the interaction between civic life and technology in recent years have defined it in variety of ways. While the number of organisations in the ecosystem is limited, civic tech companies offer a variety of products and services. In addition, these companies vary in business models, industry type, etc. (Poppert,2019).

The phrase most commonly confused with civic tech is govtech, or egovernance. This term is historically associated with internal technology solutions the government deploys to increase operational efficiency. Some players include this in their umbrella term of civic technology – others regard it as separate. We've noted this distinction in our own definition on the following page.

Here are some examples of the ways in which key stakeholders/investors in the ecoystem have defined civic technology:

- **The Knight Foundation** notes a difference in CivicTech and GovTech, saying "GovTech is defined by the intended user (that is, government), civic tech is defined by the intended outcome." The Knight Foundation includes citizen to citizen services such as Lyft in their definition of civic technology, because they promote a broader enhancement of civic life. (Scaling Civic Tech, 2018).

- **The Omdiyar Network**, a large funder of civic technology organisations in recent years, defines civic technology as the following: "Any technology that is used to empower citizens or help make government more accessible, efficient, and effective" (Fretwell, 2016).

- **MySociety** defines civic tech as: "Civic tech is an umbrella term for diverse projects that attempt to make engagement easier for citizens, improve communication and feedback between governments and citizens, and strengthen political accountability" (Cridge, 2018).

- **The International Data Corporation** report defines civic tech as merging "technology innovation with civic purpose" and cites its rapid growth, particularly in state and local government (Clarke, 2014).
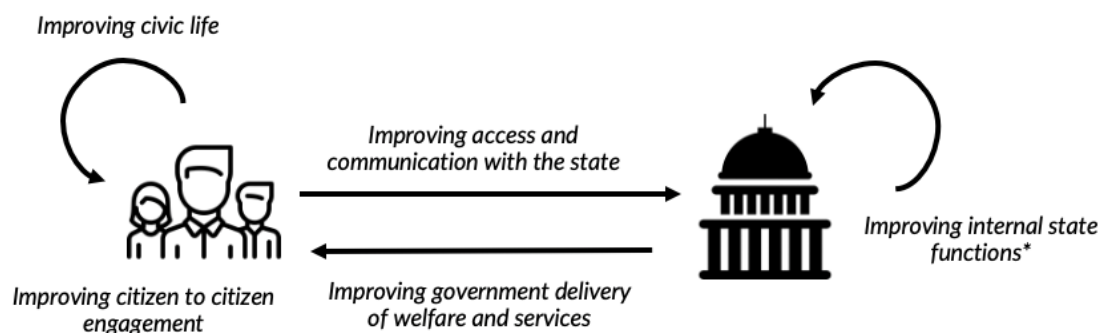
Figure 1: Where does technology intercept the citizen experience?

Drawing clear definitional lines around civic technology initiatives can be challenging. We understand the divergence and convergence of these definitions, but through our own definition, aim to take a step back from this to develop a cohesive definition centered around the citizen.

Technology and the citizen experience

Technology is traditionally designed with the consumer in mind (Alexander, 2013). Civic technology, however, carries a different burden – the rights of the citizen. This movement is therefore the first of its kind to think about technology in terms of the individual as not a consumer, but as a citizen, making the nature and responsibilities of this technology distinct. We believe the purpose of civic technology can be understood by exploring the following question: *How can and does technology enhance the citizen experience?*

When thinking about the citizen experience, technology can intercept at a variety of points. Adapted from Nesta's report on digital democracies (which includes a more comprehensive overview of types of citizen activities), we've identified points at which technology intercepts what we understand as the citizen experience'. (Figure 1)

The technology is simply a means to an end rather than being the ultimate solution; it has certain moral obligations to uphold the citizen experience. It is an opportunity to place the needs of the citizen at the center, to design equitable and inclusive technologies for enhancement of better public services and citizen engagement.

Our Definition

Civic technology is any technology that enhances the citizen experience, which involves both citizen-citizen relations or citizen-state relations.

*We've highlighted what is traditionally designed as GovTech or eGovernment – technology used to improve internal state functions. In our landscape map and definition of CivicTech, we've excluded this as a result of it not directly interfacing with the citizen.

MAPPING CIVIC TECH IN INDIA

To design effective civic tech in the future, it is important to understand how the ecosystem is already enhancing the citizen experience, and where challenges and opportunities lay. The space is growing rapidly, especially with the recent of attention civic tech has recieved from investors.

Methods

For our research, we started by building a database of ~30 civic tech companies or organisations ('Civic Tech Database'). We also conducted secondary research (using existing literature on civic technology both in India and internationally), and corroborated data points with experts. Using these insights, we conducted analyses on the Civic Tech Database, which is presented here.

Key Metrics Used

In our database of ~30 civic technology organizations in India, we identified key metrics we thought would be helpful to better understand the landscape in India. Table 1 shows key questions we sought to answer, and corresponding metrics used to build our database.

Guiding Questions

We used our map of the civic technology landscape to better understand the following:
1. How does the civic tech landscape look?
2. How are civic tech organisations built and structured?
3. How does civic tech link the citizen and the state?

Questions	Metrics*
1. How are civic technology currently structured?	Headquarters, Revenue Model, Organizational Size, Company Type
2. What types of technologies are these companies currently using?	Technology Type
3. How does the technology interface with the citizen?	Citizen Touchpoint
4. How does the technology enhance citizen/state relations?	Technology Function
5. Who is interested in funding civic tech organizations? Where does most funding come from?	Funded?, Funder, Amount Funded
6. What types of issues do civic technology companies in India aim to tackle?	Focus Area

Table 1: Key metrics used in civic tech database

1. HOW DOES THE CIVIC TECH LANDSCAPE LOOK?

1. Who are the major civic tech funders in India?

Since civic technology has sparked a lot of interest from major investors across India, we found it important to understand key funders in the ecosystem.

The Omidyar Network and Village Capital have demonstrated the most interested in this space, followed by Acumen. However, largely, Indian investors have so far stayed away investments in this space, due to the fact that civic tech companies are fairly limited and in early stages of development in India.
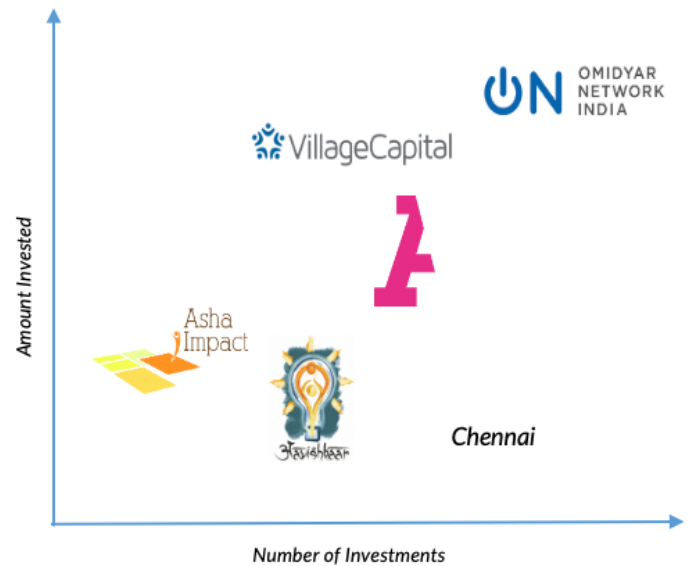
Figure 2: Major civic tech funders in India

Figure 3: Civic issues in civic tech

2. What types of issues are civic tech organizations in India focused on?

Of the civic technology companies we looked at, about 30% of them were focused on developing civic intelligence solutions, an indication that these companies are trying to develop solutions that are mostly upstream. Civic intelligence is knowledge or data used to address public or civic issues.

A large portion of these companies are also interested in looking at mobility and transportation solutions and issues around water/waste management. Civic technology companies in India seem to be largely focused on solving issues around basic infrastructure needs in India and the delivery of public services, as that is where the most basic need in the realm of citizen services exists.
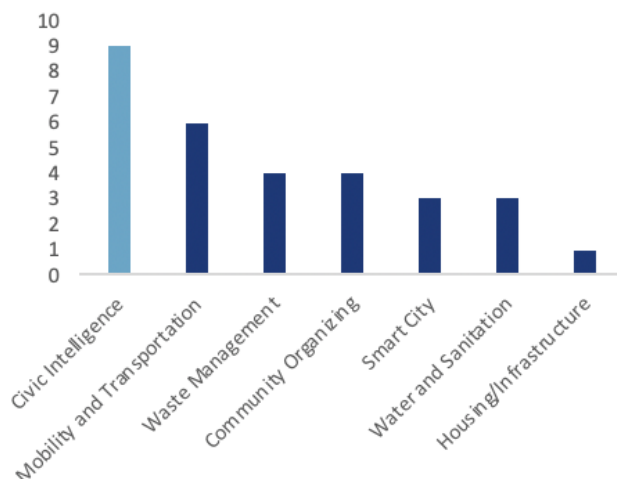
3. In what Indian cities are these civic tech companies located?

Civic technology organizations, as one would expect, are predominantly headquartered in major metropolitan cities across India.

Bangalore, the technology hub of the country, holds strong technology talent and therefore is an obvious choice in developing technology solutions for civic issues. While a majority of these companies are headquartered in Bangalore, many of them are also designing technology solutions for rural populations – over half of the organizations we looked at serve both rural and urban populations.
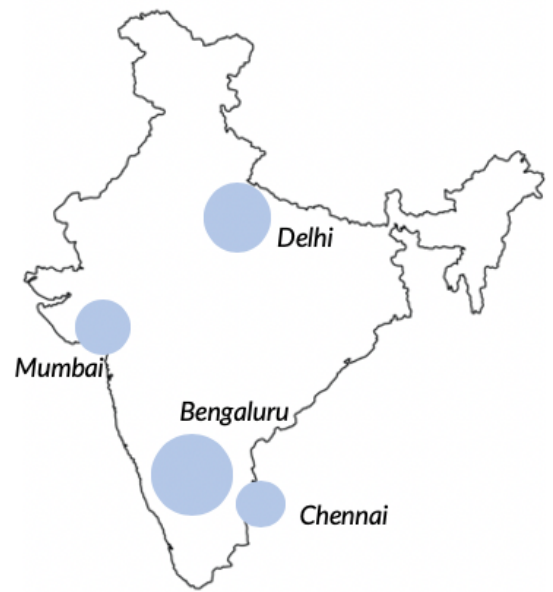
Figure 4: Indian cities with the greatest number of civic tech companies

4. What has been the growth trajectory of civic tech India?

In the last 10 years, developing tech solutions for public good has become increasingly common – below we see a spike in civic technology innovation predominately in the last five years.
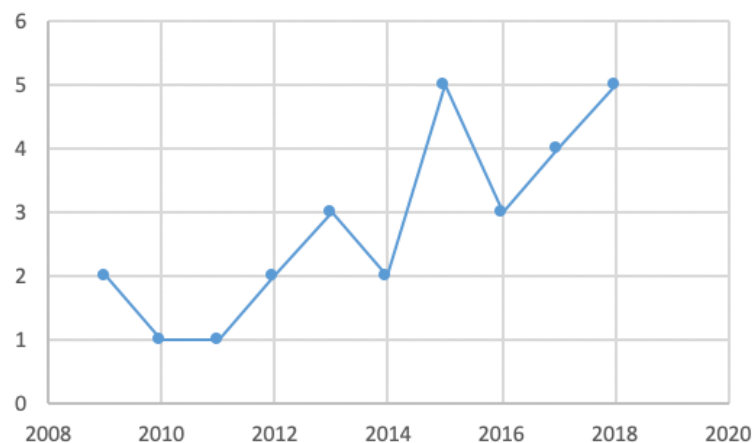
Figure 5: Growth in the # of civic tech companies in the last 10 years

2. HOW ARE CIVIC TECH ORGANISATIONS BUILT AND STRUCTURED?

Our second goal in mapping the landscape of civic technology was to understand the structure of civic technology organizations themselves.

5. Company Type

Most technology solutions occur in the private sector, both in India and globally. Therefore, most companies follow a for-profit model. However, we are increasingly seeing technology solutions developing in the non-profit space as well. For example, Enable India, an NGO that works towards economic independence for individuals with disabilities, has developed a technology solution called Enable Vaani, which uses phone connectivity to help those impaired ease the job search.
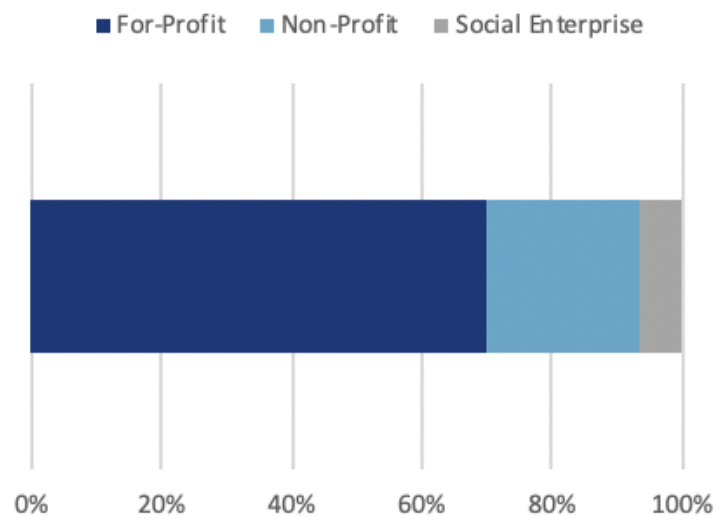
Figure 6: Breakdown of civic tech companies by type

6. Revenue Model

Most civic technology companies we looked at employed a SaaS revenue model, unsurprisingly. *Catalyzing Civic Technology in India* notes that "Many civic tech startups in India employ a SaaS model to offer proprietary software solutions to government bodies at both the local/state (urban local bodies) and national (ministries, national boards, etc) levels. These range from generic to customized offerings, and often come with one-time hardware and installation fees along with recurring subscription costs." As large portion of civic tech innovation happens in the private sector, understanding the types of revenue models these companies employ is also helpful in understanding the types of technology solutions that are most predominant in this sector. Consulting, product/service, and commission models were also fairly common revenue models.
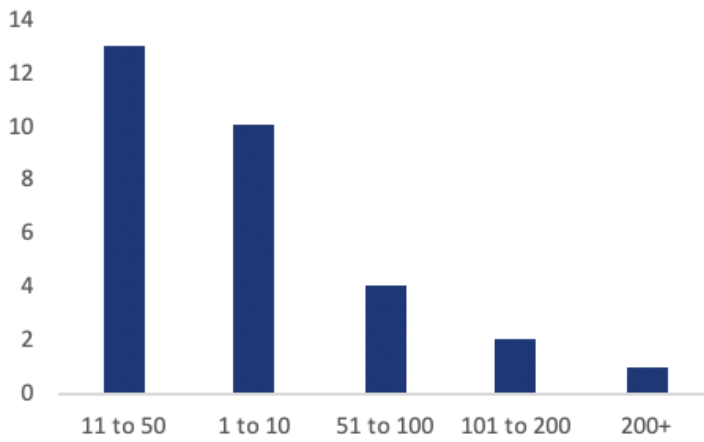
Figure 7: Size of civic tech companies by # of employees

7. Organisation Size

Though the landscape is young, civic tech companies seem to be invested in dedicating resources to further developments in the sector. Of the companies we mapped, over half of them were medium sized (11-100 employees).
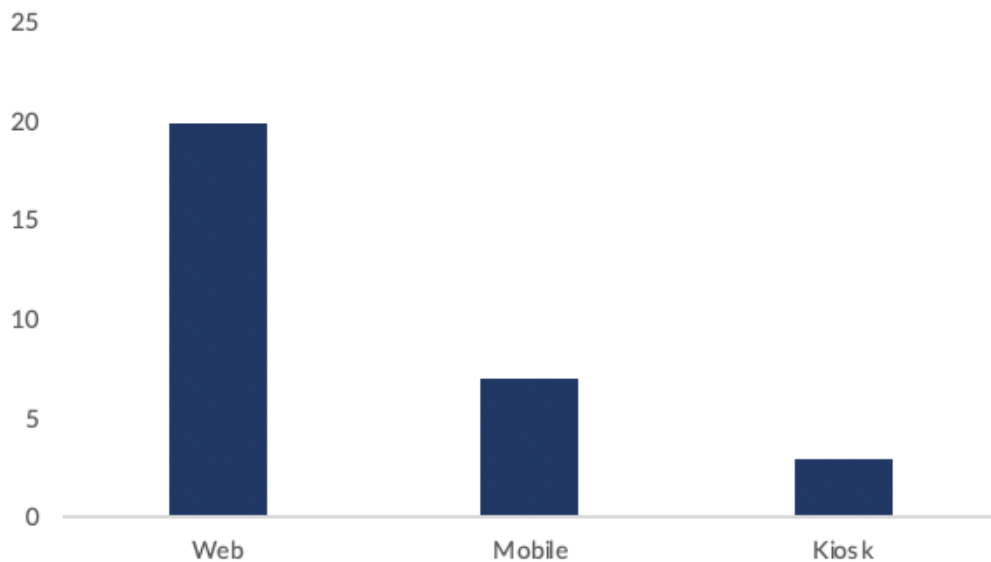
3. HOW DOES CIVIC TECH LINK THE CITIZEN AND THE STATE?

Figure 8: Civic tech touchpoints

8. How does technology interface with the citizen?

When designing civic technology for the citizen, it's important to understand how the citizen interacts with technology and in what capacity he/she uses it. We defined three major categories of citizen touchpoint with the technology: mobile, web, and kiosk. (or physical object). Figure 8 shows how this broke down.

This gives us deeper insight into what types of technology solutions are being developed to enhance civic life – and more importantly, the ways in which companies are thinking about designing for the citizen.The majority of civic tech companies we mapped use web-based solutions, and offline mechanisms are incredibly important in ensuring the success of these interfaces.

Case Study: Haqdarshaak

Haqdarshak is a Pune-based civic technology organization which connects citizens with their eligible welfare schemes. Their web-based platform scans citizen profiles with scheme eligibility to determine a customized list of eligible schemes.

Once the citizen is matched with a scheme, Haqdharshaks then comes to the citizen's home to help them manually apply for these schemes. In more rural areas, these citizens are directed towards the closest Haqdarkshak help center. Due to lack of access and digital literacy, technology solutions can only enhance the citizen experience to a certain extent, so offline intermediaries are crucial in maximizing impact of civic tech organizations such as Haqdarshak.

9. What is the function technology?

Rand's report, *How can digital technologies underpin citizen-powered democracy?,* examines the opportunities and challenges technology faces in enhancing democracy (Dubow, 2017) The report highlights four ways in which technology can benefit citizens. In our analysis of the role civic technology plays in linking the citizen and state, we used these four categories to better understand how tech is being utilized in India.

### Digital Technologies for citizen-powered democracy (Dubow, 2017)

Sharing and Interpreting Data: Digital technologies can facilitate the generation and communication of data, often in real time, helping to build knowledge and inform timely decision making and action both by citizens and policymakers.

Strengthening Citizen Voice: Digital technologies have brought new ways for individuals to get their voices heard in the public sphere.

Facilitating social cohesion and support: Citizen-to-citizen online communications and connections, enabled by digital technology, can help to mobilise existing communities, as well as build new ones – unconstrained by size or geographic location.
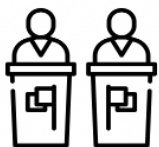
Supporting direct citizen participation in democratic processes: digital tools may empower citizens to take a more active role in shaping political processes, policymaking and public services.
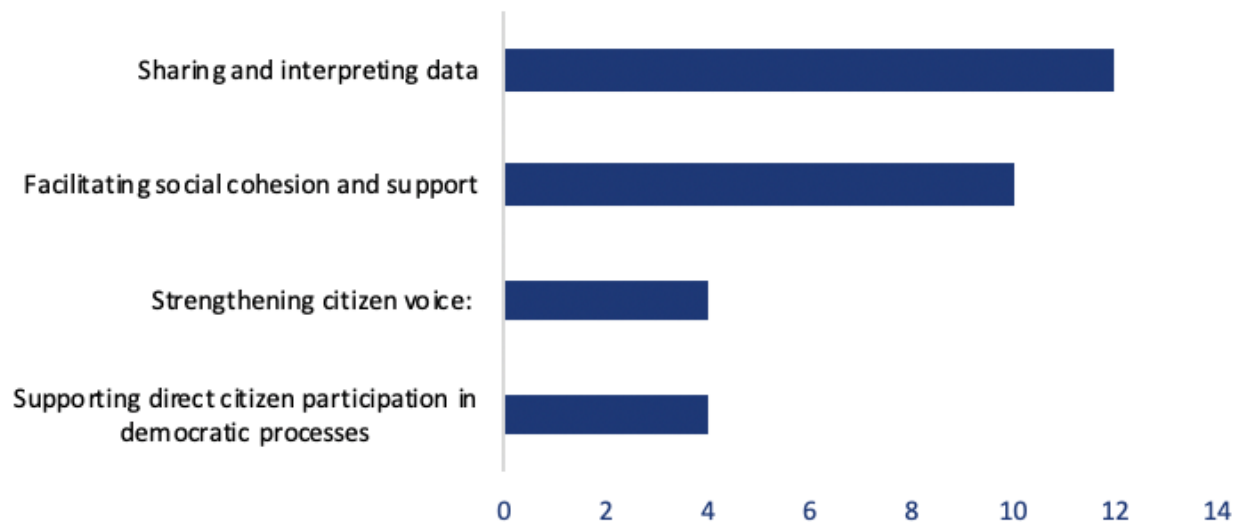
Figure 8: What function does the tech serve?

We used these categories to understand what function technology plays in civic tech organizations. Most organizations fell in the *sharing and interpreting data* or *strengthening social cohesion and support* categories. In our current context, the role these civic tech companies play in facilitating information sharing is critical. There is a large need for efficient networks and information channels; only by focusing on improvements in this area can we innovate for other solutions in the realm of citizen services.

Where civic tech is still lacking, however, is in its inability to provide bottom-up technology solutions. When it comes to equipping the citizen directly through voice and participation, the landscape is still nascent. The transformation of democracy takes places at 3 levels: information, expression, representation/reclaiming and power (Yohan, 2017). Where the gap in civic tech lies is at the third level – empowering the individual. While these four categories are not MECE, and a tech solution can serve more than one purpose, it's important to understand the primary function of these technologies to see where the needs within the citizen/state relationship lie.

ERP Systems: a centralized system that provides integrations with major enterprise functions such as HR, sales, finance, etc.
Technology Stack: a combination of programming languages, tools, and frameworks used to develop web and mobile applications
AI/ML: using algorithms/statistical modeling to learn patterns and behaviors and carry out tasks without explicit instructions
Geospatial Analytics: uses and manipulates GIS (geographic information system) data and imagery
Data Analytics: cleansing, inspecting, cleaning, and transforming data sets
IoT: interconnected computing devices with the ability to transfer data over a network

10. What technologies are most commonly used when creating civic tech solutions?

We also sought to understand the actual technologies themselves. While most civic tech organizations used a mixture of the following tech solutions, in this analysis we simply mapped the most prominent/visible solution.

Unsurprisingly, a majority of civic tech organizations heavily rely on data analytics, further evidence for the upstream-heavy work in the civic tech ecosystem. The type of technology is also heavily dependent on the type of organisation – for example, organisations designing for improving mobility and transportation are most likely to use geospatial analytics.
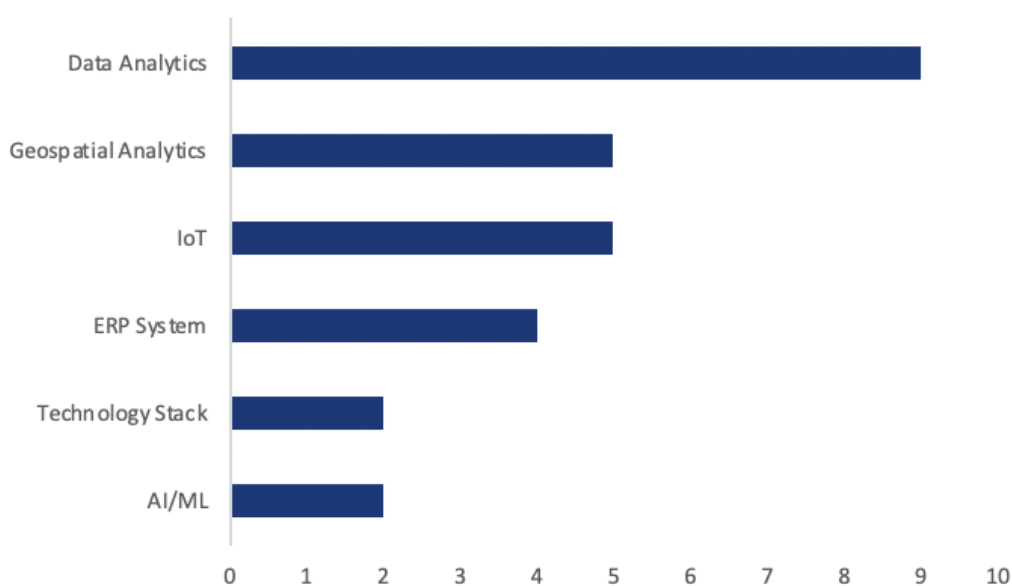

Figure 9: Types of tech used by civic tech companies

CHALLENGES AND OPPORTUNITIES

Limited guidance for successful design of civic technology

Civic technology, by nature, is difficult to design. It requires strong user centered design, and a deep understanding of the citizen experience. Globally, several toolkits have been developed to ease the process of design of successful user tech. Erhardt Graeff highlights the need for empowerment based design and thinking about equipping citizens with the necessary skills, knowledge, and attitudes that lead to effective civic engagement (Graeff, 2018). Graeff notes "These creators of digital technology used for civic engagement should be understood as stewards of democracy with an ethical obligation to serve the public good." The Civic Technology Field Guide has good case studies for what effective civic technology design can look like as well.

The challenge with designing effective civic technology in India is first understanding what being a citizen in India looks like – what the needs and rights of a citizen are. Furthermore, there is a need to think about how to incorporate issues of caste, class, location, etc., in our design of civic tech in India.

Can civic technology be apolitical?
Civic technology is inextricably linked to government and democracy – by creating stronger links between the citizen and state, civic tech organizations are bound to become politicized, Civic tech is important for many reasons – from spurring innovation to empowering citizens at all levels. There is need, however, to build civic tech with care and purpose, and to understand the consequences of building technology into civic life and political life.

Drawing the line between private profit and public value
As seen earlier in this report, a majority of civic tech companies are for-profit organizations. The 2018 report Unlocking the Potential of Civic Technology distills this dilemma well (Hartley, 2018). Civic tech organizations, using the public sector strategic management framework, can be evaluated on 3 key elements: public value, legitimacy, and operational capacity

The future of civic technology in India

While the landscape of civic tech is just developing, there is immense potential for it to transform civic life in India. Through this report, we have highlighted gaps in the ecosystem, but also important considerations of design and impact important for the development of future ivic tech organizations..

ANNEX 1: METRICS USED IN CIVIC TECH DATABASE

Metric	Definitions
Technology Type	• Web Applications • Mobile Applications • IoT • Data Analytics • Geospatial Analytics • AI/ML • Technology Stack • ERP System • Business Analytics
Company Type	• Social Enterprise • For-profit • Non-profit
Revenue Model*	• SaaS • Consulting • Product/Sales • Commission/Fee • Syndicated Data • Advertising • Grant Funded • Foundation
Purpose the Technology Serves in Linking Citizen and State	• Sharing and interpreting data • Strengthening citizen voice • Facilitating social cohesion and support • Supporting direct participation in democratic processes
Citizen Touchpoint	• Mobile • Web • Kiosk
Focus Area	• Civic Intelligence • Water and Sanitation • Waste Management • Mobility and Transportation • Community Organizing • Smart City • Housing/Infrastructure

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