

Polisdigitocracy: Digital Technology, Citizen Engagement and Climate Action

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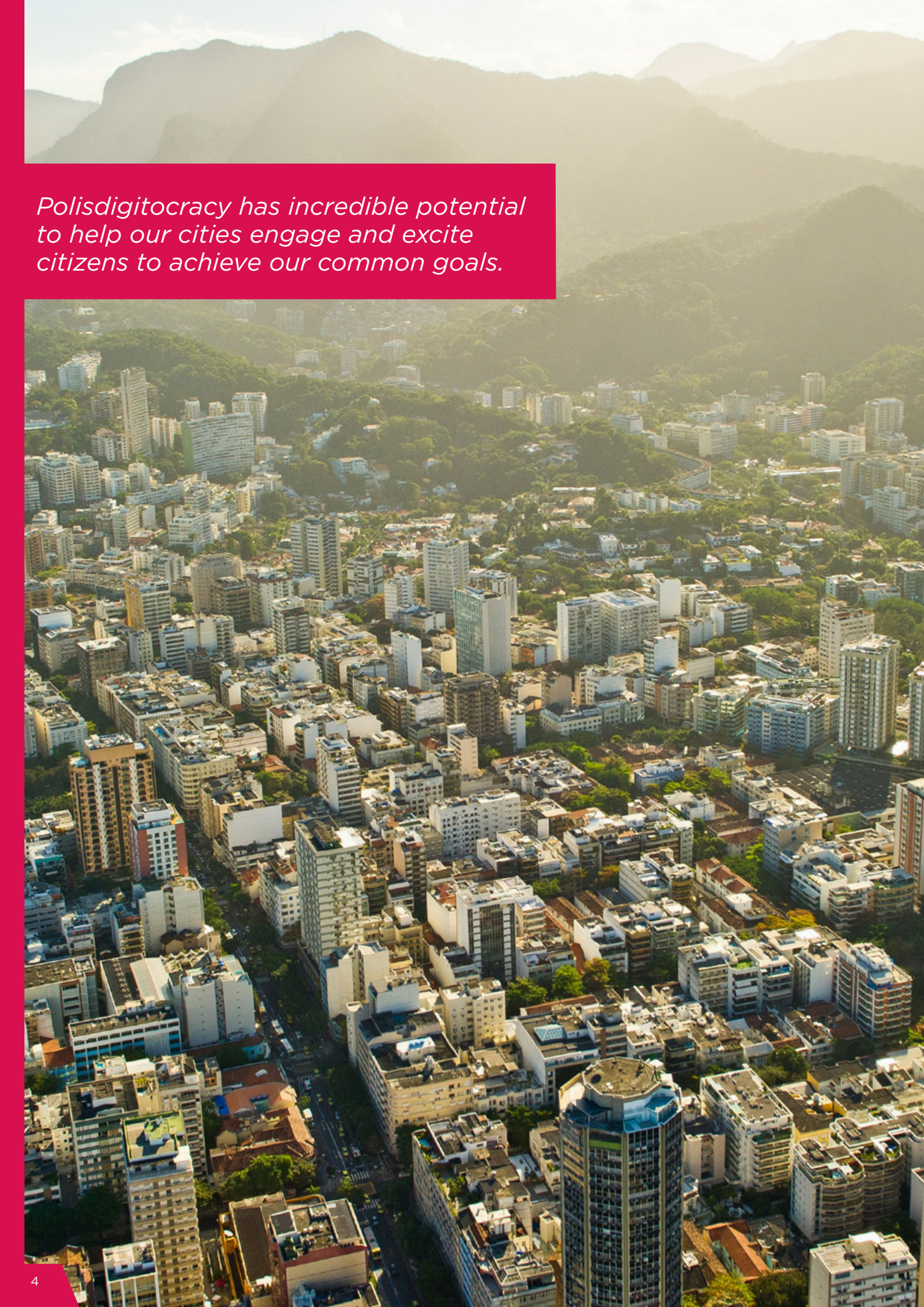
Partnership

Arup has worked with C40 since 2009 to develop strategic research that is central to progressing our understanding of how cities contribute to climate change mitigation and adaptation. This is why in June 2015, Arup announced a major partnership with C40, committing \$1 million of professional support over three years to help cities take meaningful action against climate change.

This partnership is founded on Arup's independent and evidence-based approach, alongside C40's longstanding belief in "measurement for management". The partnership supports a strong research agenda, aggregating and analysing city data to help city actors identify opportunities, collaborate and to build roadmaps that will enable them to take meaningful climate action faster and more efficiently.

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An aerial photograph of a densely populated urban area, likely Rio de Janeiro, Brazil. The city is built on a hillside, with numerous high-rise apartment buildings and commercial structures. The buildings are packed closely together, with some greenery visible between them. In the background, a range of mountains is visible under a hazy sky. A red banner is overlaid on the top left of the image, containing white text.

Polisdigitocracy has incredible potential to help our cities engage and excite citizens to achieve our common goals.

Foreword - Mayor Paes

If we are to understand Polisdigitocracy as a concept we must head back some 2,800 years and step into the Greek city-states, the Polis where citizens engaged in heated debate over political issues. That was the birth of direct democracy, the form of government by which citizens' opinions forged rules and legislature. Throughout the centuries, the political model has remained the same as in ancient times.

Two recent phenomena are prompting a significant change to what people perceive as democracy. First, the rising power of the cities. Most of the world's most pressing issues belong to cities: health, education, mobility and even matters that apparently pertained to nations, such as climate change and employment. The second phenomenon is the ubiquity of the digital revolution. Technology has made it possible for people to connect and communicate on an unprecedented scale. Debates among citizens are now more agile and much more varied than ever.

The digital revolution has deepened the crisis within representative democracy. But as it forces its demise, it might also dictate its future. Traditional representative democracy within nations is no longer enough. People want more participation and collaboration with their government. They demand to be closer to institutions and authorities. How do we deal with this revolution and merge the two phenomena? There are no easy answers. First, we must listen. In essence, people yearn to connect with institutions, more than merely participating in the electoral process. Legitimacy has to be renewed every day in real-time and not once every four years. Formal consultation must develop into constant collaboration.

What we are witnessing is the birth of something I call Polisdigitocracy. This is a form of government that counts participation and transparency as its cornerstones and uses technology as its guide. And we are only at the beginning of that journey. Polisdigitocracy has incredible potential to help our cities engage and excite citizens to achieve our common goals.

At C40 Cities Climate Leadership Group, our 82 member cities are working together to address climate change. By collaborating, sharing knowledge with and learning from other cities around the globe, we are delivering meaningful action that improves the lives of our citizens locally. We need every tool available to address the most pressing issue of our time and Polisdigitocracy can be a powerful instrument. That's why I asked C40 and Arup to investigate how we can incorporate the principles of Polisdigitocracy into the way our network operates. This report is the first step towards that and I look forward to working with my mayoral colleagues to deliver its recommendations. Together, we can capitalise on the benefits of digital technology to drive meaningful citizen engagement to make our cities more sustainable, liveable and equitable.



Eduardo Paes

Mayor of Rio de Janeiro

Chair, C40 Cities Climate Leadership Group

It is the ability to understand the city as a metropolis, a melting pot of players connected by physical, personal, institutional and increasingly digital means, that is amazingly powerful and sometimes difficult to comprehend.



Cities around the world strive to respond to a growing digital agenda. This report from C40 and Arup addresses the changing relationship between government and citizens, the emergence of Polisdigitocracies. Together with a step change in efficiency and the ability to create jobs and prosperity, city governments are developing new strategies to lead digitisation top down and capture the bottom up or activist nature of start-ups and academia.

C40 is helping cities to act in this rapidly changing world and ensure that dealing with climate change stays centre stage. We are delighted to support C40 and its member cities, we are fully committed to their climate change goals and know from our previous research regarding “Information Marketplaces: the New Economics of Cities” and “Delivering The Smart City: Governing Cities in the Digital Age” about the opportunities, barriers and key enablers cities, national governments and industry face.

Mayor Paes’ vision for more and richer participation of citizens is at the heart of this report. The report captures the desire of city leaders around the world to reach out and connect with all citizens, young and old, rich or poor. It addresses the growing bottom up and activist culture enabled by the internet and social media. It provides an independent and city led voice in what sometime feels industry driven “Smart” city frameworks.

The report also refers to the second key area, the chance to deliver a step change in efficiency and functionality. Cities are trying to harness the growing potential that the Internet of Things (IoT) and Big and Open Data present in building better water, energy, transport and waste infrastructure. These technologies offer the potential to help social and care provision, security and education to respond to increasing demands from growing urban populations.

Thirdly, it’s the economy. Cities around the world want to be part of the tech industries job growth and inward investment. The tech industry is one of the fastest growing sectors globally and appeared resilient to the most recent recession across western economies. City governments have a role to play. They can be the key catalyst in complex digital ecosystems, help to unleash the potential of digital assets in major infrastructure projects and ensure that wealth is created on the ground, for all and not just in the cloud.

It is not just the specific benefits in climate change, new political engagement, economic growth or efficiency that makes our work with C40 so rich and rewarding. It is the ability to understand the city as a metropolis, a melting pot of players connected by physical, personal, institutional and increasingly digital means, that is amazingly powerful and sometimes difficult to comprehend.

We remain inspired by the ability of C40 cities to look beyond what might appear to some as messy urban sprawl to create new strategies, policy and most of all actions cities can take. We are looking forward to seeing how this report will help members and possibly an even broader audience. Our hope is that the work with C40 will lead to tangible outcomes and perhaps we can help a little to shape a better world.

I would like to thank all those cities that responded to our requests for support, as well as Dr Ellie Cosgrave as our lead researcher, Léan Doody, Arup’s Digital Cities leader and Shannon Lawrence, C40’s Director of Global Initiatives for their contributions.



Volker Buscher
Director, Arup’s global digital business

Cities are leading the smart revolution...

Cities are increasingly taking a leading role in delivering climate action. The Climate Action in Megacities 3.0¹ (CAM 3.0) report shows that since 2011 C40 cities have taken 9,831 actions to reduce emissions and adapt to climate change. In 2015, 51% of these actions are occurring on a city wide scale.

Simultaneously digital technologies are transforming the way in which citizens communicate - amongst their peers, their wider communities and with government. This is prompting governments to re-think how they engage with citizens and incorporate their voices into decision making - particularly around climate action. CAM 3.0 shows that more cities are allocating specific staff to plan and manage climate action as it relates to the Information and Communications Technology (ICT) sector, to improve cities' operational efficiency across multiple sectors through the use of smart solutions.

Mayor Paes of Rio de Janeiro, chair of C40 Cities Climate Leadership Group, has introduced the concept of 'Polisdigitocracy' which considers how city governments leverage ICT and new social platforms to improve democratic engagement². Meanwhile other cities are working with similar technologies that engage citizens in the co-creation of solutions to make their cities more liveable and sustainable.

In recognition of these trends, C40 and Arup have collaborated on this report to investigate and document what is happening on the ground in the use of digital technologies for citizen engagement in climate action. The aim has been to understand how cities are using digital platforms, social media, open data, crowdsourcing, hackathons and other engagement tools to create truly participative solutions and unlock climate action. Additionally, the report seeks to uncover the key building blocks for mainstreaming innovative uses of technology for community engagement and empowerment.

Call to collaborate

As the 'Powering Climate Action'³ and 'Climate Action in Megacities 3.0' reports demonstrate, cities that collaborate are more likely to take effective and transformative action. Since 2005, the C40 Cities Climate Leadership Group has convened its member cities - now numbering more than 80 - to exchange ideas, solutions and experiences through 16 thematic networks and six overarching initiative areas for climate mitigation and adaptation. As such, C40 is well placed to facilitate deeper city-to-city collaboration on Polisdigitocracy, both by embedding digital technology and citizen engagement discussions through its existing energy, waste, transport, adaptation and other networks, and also by convening city IT officials to support the integration of Polisdigitocracy for climate action throughout city government.

This report calls for city governments to work together to understand the opportunities of Polisdigitocracy in their cities, innovate around potential solutions, adapt best practice guidance, and jointly assess potential challenges as well as share tactics to overcome them.

¹ Climate Action in Megacities 3.0: Networking works, there is no global solution without local action, C40/Arup/UCL, 2015.

² http://www.huffingtonpost.com/eduardo-paes/polisdigitocracy_b_4044222.html

³ Powering Climate Action: Cities as Global Changemakers, C40/Arup/UCL, 2015.

Digital participation supports four city objectives

Through our engagement with cities we have found a groundswell of projects, programmes, policies and strategies in cities all across the world. From San Francisco to Rio de Janeiro to Lagos to Melbourne, cities are beginning to realise the opportunity of incorporating citizens into their city processes using digital technology. And they are backing it up with action. In this report we present an array of examples of city projects and programmes, which we frame around four objectives:

1. Improving services to citizens: using digital platforms to crowd-source information from citizens about the real-time functioning of the city. This might include for example, 'tagging' graffiti, abandoned vehicles and other maintenance requirements as well as collecting data about congestion hotspots. This can support sustained effectiveness of initiatives to reduce greenhouse gas emissions and enhance climate resilience.

2. Improving city planning and projects: incorporating online engagement into the city's existing and proposed projects. These are being leveraged to support better city strategies for climate change mitigation and resilience, and to help ensure projects are appropriate for the communities in which they are being implemented.

3. Unlocking community action: making city data available to enable citizens, community groups and small companies to innovate around solutions to climate-oriented challenges. They are also creating special departments within the city with a mission to promote civic participation.

4. Responding to external pressure: private companies and community groups are able to leverage digital platforms to make their voices heard, lobby government and hold them to account for their climate commitments and other responsibilities. This is putting pressure on government to respond through policy changes and other actions.

Polisdigitocracy: the building blocks

The study shows that cities are still exploring how to effectively implement digital engagement projects in a way that can drive new and expanded climate action. This report categorises four cross-cutting 'building blocks' that will support effective implementation of Polisdigitocracy-related projects across city departments:

1. Let everyone participate: gaining increased awareness of who is engaging through digital platforms and the voices they represent, as well as understanding how to remove barriers to access so that the climate priorities of multiple stakeholders can be understood and addressed.

2. Use data effectively: ensuring that city data is made available in a streamlined and appropriate format that is accessible and inspiring to local communities and entrepreneurs, and that it is the right data to support innovative climate action.

3. Create capacity to try new things: ensuring there are mechanisms within city government to take risks and innovate around service provision. Climate action often requires new ideas and integrated approaches across city sectors; digital technologies have a critical role in allowing innovative service provision.

4. Work out how to pay for it: forming effective partnerships, funding and business models to develop sustainable projects and programmes. This requires a variety of approaches ranging from seed funding innovative projects to mainstreaming activities into departmental budgets.

An aerial photograph of a city square. The pavement is made of grey cobblestones. A large, bright yellow graphic, resembling a stylized 'M' or a series of curved lines, is painted on the ground. Numerous people are walking or sitting on the square. In the bottom left corner, the white structure of a wind turbine is visible.

Introduction

As part of their smart city strategies cities are increasingly investing in open data stores, citizen engagement platforms, intelligent transport systems, smart grids and a vast array of other technologies.

Introducing Polisdigitocracy

Mayor Paes of Rio de Janeiro, chair of the C40 Cities Climate Leadership Group (C40), has coined the term 'Polisdigitocracy' which describes the use of Information and Communications Technologies (ICT) and new social platforms by city governments to improve democratic engagement and drive participatory climate action.

City governments globally are investing in 'smart' technologies to help them provide better services at lower financial and environmental cost. As part of their smart city strategies cities are increasingly investing in open data stores, citizen engagement platforms, intelligent transport systems, smart grids and a vast array of other technologies.

In the past, proponents of the smart city have been criticised for focusing solely on opportunities for system optimisation, efficiency and economic development. In more recent years city governments themselves have been developing a more holistic approach to understanding the opportunities afforded by digital technology. In particular there has been a drive towards understanding how ICT might be adopted to mediate citizen-government interaction. Polisdigitocracy is an attempt to bring this issue into sharper focus and unpick the political and governance implications of the smart city agenda.

From a climate perspective citizen engagement is a key enabler for progressing effective government action towards climate change targets across sectors. From understanding the challenges, developing potential solutions, implementing projects to evaluating outcomes, city governments around the world are experimenting with how to make the most of digital engagement tools to support their work.

Structure and purpose of this report

Inspired by the idea of Polisdigitocracy, C40 and Arup collaborated on this report to investigate and document what is happening on the ground in cities in the use of digital technologies for citizen engagement in climate action. This report presents the findings of a series of interviews with city governments in the C40 network as well as key C40 staff and a C40-hosted webinar where representatives from Mexico City, Buenos Aires and Rio de Janeiro presented their Polisdigitocracy related activities.

The study set out to understand whether Polisdigitocracy was relevant to climate action in cities. It has sought practical examples of how cities are using digital platforms, social media, open data, crowdsourcing, hackathons and other engagement tools to create truly participative solutions and unlock climate action.

This report is framed around three main sections. The first section provides the background to the concept of Polisdigitocracy and sets it within both the context of the smart city and climate action.

The second section presents a series of practical examples of how city governments are already using digital engagement technologies to meet a variety of city objectives.

The third section of this report discusses the building blocks being established by city governments to embed progressive democratic engagement across their departments and points to challenges city governments are still attempting to address.

C40 intends to integrate Polisdigitocracy concepts into its existing energy, waste, transport, adaptation and other networks and explore opportunities for deeper city collaboration on these issues. C40 and Arup hope that the insights in this report will stimulate a global dialogue on the political dimension of the smart city, prompt city governments to reflect on their own practice and take action accordingly.

1. The Motivation for Polisdigitocracy

98% of cities surveyed for Climate Action in Megacities 3.0 recognise the risks presented by climate change, and 70% of cities are already experiencing climate change impacts



1.1 The relationship between ICT and climate action

City governments are now leading the charge on global climate action. C40 cities in particular are setting ambitious emissions targets, investing in sustainability strategies and programmes, and rolling out innovative and challenging infrastructure projects. As they do so they are increasingly finding the need to leverage digital platforms for community engagement, manage and open up their data and work in partnership with the ICT sector.

This study has found that city governments are already investing in digital technologies to enhance their climate action. From smart grids to intelligent transport systems to city operations centres, cities are demonstrating how digital technology can help manage city services more efficiently. CAM 3.0 shows that cities are increasingly appointing staff with a responsibility for 'smart' climate actions, led by ICT.⁴ But there is a view emerging from city governments that more can be achieved. Within the C40 networks cities are calling for a better understanding of how digital technologies can be used to enable ongoing growth of climate action.

For example as Mandy Ikert, Head of C40's Water and Adaptation Initiative explains:

"A lot of the data we need to understand city climate change adaptation and resilience at a local level resides in the citizenry. Our cities are starting to experiment with digital platforms that can crowd-source this data and put it to use both in emergency situations and to inform longer term planning decisions."

Likewise Zoe Sprigings, Head of C40's Energy Initiative explains how the exploitation of ICT and data could be central to engaging and informing people about the impact of their energy behaviour:

"Cities in our networks have been grappling for a long time with how they might better use energy data to cultivate enhanced citizen action - and begin to encourage a change in energy usage behaviours."

Increasingly, digital platforms are being used by city governments to foster relationships with civil society and the private sector. The Arup, C40 and University College London (UCL) report 'Powering Climate Action' found that city governments are often more successful in delivering climate action when they cooperate with other actors from the private sector and civil society. As the report explains, "Nurturing partnerships with actors from both state and non-state sectors may afford cities the opportunity to employ their powers most effectively and ultimately catalyse climate action."⁵

There is a clearly articulated desire from city managers to understand how digital technologies can improve the efficiency of city services as well as facilitate effective cross-sector collaboration.

⁴ http://www.c40.org/blog_posts/infographic-c40-cities-releases-landmark-research-revealing-expansion-acceleration-of-climate-actions-in-megacities

⁵ http://www.c40.org/blog_posts/new-research-from-c40-and-arup-shows-how-city-governments-are-changing-the-world

1.2 There are co-benefits to the Smart City

Smart city strategies are now appearing in city policies and urban plans across the globe.⁶ The term refers to a city that is using ICT, digital technologies and data to drive improvement across their city functions.

Arup and UCL's joint report on 'Delivering the Smart City'⁷ describes how governments might use ubiquitous urban sensing, big data and analytics to better understand the real-time functioning of their cities as well as inform longer-term planning and policy decisions. More specifically it explains how smart grids could enable efficiency within our energy infrastructure and intelligent transport systems may encourage multi-modal low carbon urban mobility.

There are multiple potential co-benefits of smart city investment. The smart city is about how ICT and data can be leveraged across city systems to improve multiple dimensions of city operations and experience. Specifically Arup refer to five potential outcomes of the smart city:

1. Functional - improving the efficiency and integration of urban systems such as intelligent transport systems and smart energy grids.

2. Humane - supporting people, culture and experiences through greater connectivity and modes of expression.

3. Economic - Arup's research for UK government predicts that the global market for smart systems and additional services will be around \$40billion 2020. This market can be captured and developed locally.

4. Environmental - Supporting our ability to increase resource efficiency and reduce carbon outputs of city systems.

5. Political - Allowing government to shape how disruptive technologies impact negatively upon specific communities, drive community engagement and empowerment.

These five elements are not mutually exclusive but rather are inherently interconnected. It is clear that any single city intervention is likely to have an impact on more than one of these outcomes. As climate action escalates up cities' priority lists there will be increasing use of digital engagement tools and data being leveraged to support effective action. If well designed and implemented this action will bring other benefits, including economic opportunities, health improvements, quality of life enhancements and greater efficiency.

1.3 Polisdigitocracy is already here

City governments are beginning to re-think citizen engagement in light of the digital revolution as well as an increased urgency for innovative climate solutions. Local governments globally are struggling to entice people to the ballot box, but it is possible this disengagement is more representative of a failure in the out-dated tools of government rather than a failure of communities themselves, as Luti Guedes, Director of Lab Rio explains:

⁶ City Leadership Initiative (2015) "Safer Smarter and sustainable cities: complimentary or competing agendas?" available at: http://media.wix.com/ugd/6c6416_4db306a941ef45b699800b6fd59e3fe6.pdf

⁷ Arup (2014) Delivering the Smart City www.arup.com/smart

“We hear so much talk of disengaged citizens, but go on Facebook or Twitter and you will see groups of people uniting over a vast array of political issues and taking action together. These groups are springing up all over the place, taking action and holding government to account... What if our citizens are more engaged than ever, and we are missing out on their voices because we are not meeting them where they are – online?”

City governments have the opportunity to use 21st century citizen engagement tools for 21st century problems. These tools include:

Social media, where political conversations are already being cultivated and gaining momentum

Open data that allows people into the inner workings of government and gives them the power to hack it, mash it up and re-design civic services

Big data, which can help governments to understand the pulse and flow of citizens in real time

The word Polisdigitocracy has its roots in the ancient Greek Polis (city-states) where individual citizens gathered to debate issues and participate in decision making for the city. This model of democracy became less viable as cities grew into states and empires, and representative democracy was adopted where citizens elect representatives to act in their interest. This is where modern democracy was born and has remained essentially unchanged ever since.

Technology however has moved on in the last 2000 years. Social media is an increasingly ubiquitous part of peoples' lives. Facebook now has over 1 billion active users, more than 100million people use Instagram every month and Weibo has over 600million registered users. Digital technologies offer a new capability that is already being captured by communities across the globe. This is the capability to participate in complex conversations in larger numbers than ever before and to hold government to account. It is now possible for tens of thousands of people to gather online around pressing social and environmental matters.

The opportunity is clearly wide ranging, however a transition to digitally-enabled democracy is not without its challenges. Just like the Greek polis, the inherent inequalities in the systems we adopt must be acknowledged. The polis engaged only with the social elite, where only those classified as 'citizens' (over 18, born in the city and male) were able to vote, which was approximately 10-20% of the population at the time.⁸ The internet also excludes many communities, from those who can't afford to access the technology, those who are alienated by it, to those who are illiterate, disabled and face other barriers to access.

Polisdigitocracy is therefore not about shifting all government processes online. It is about critically reflecting on the appropriateness of our political systems to meet the needs of modern communities and make change accordingly. Polisdigitocracy looks to create a more dynamic and responsive social contract by transforming the nature of government processes rather than trying to sidestep them.

Simultaneously, as digital technologies continue to define and redefine city functioning, C40 and Arup believe there is a significant opportunity to leverage these technologies for effective climate action. Polisdigitocracy at C40 is about building upon the nexus of digital technology, citizen voices and climate action to maximise climate change mitigation and adaptation in cities.

This section has laid out the motivation for Polisdigitocracy. The next section presents examples of projects that are underway in C40 cities to dig deeper into the potential impact of Polisdigitocracy-inspired activities.

⁸ <http://project-history.blogspot.co.uk/2006/01/democracy-in-ancient-athens.html>

2. Digital Engagement in Cities

This section presents the four main objectives for these digital projects and provides illustrative examples

Recent years have seen a groundswell of tech innovation borne largely through the exploitation of digital platforms, open data and social media. Some of these have come in the form of social enterprises that seek to unite urban communities around common action. Others like Uber and Airbnb, have mobilised the 'sharing economy' to transition from small scale start-ups to global tech giants in a matter of years, transforming patterns of mobility and use of space in the cities as they go.

The wide range of activities and programmes can be difficult to navigate. This chapter showcases some of the initiatives already underway in C40 cities, highlighting the vast array of tools that can be used by cities to promote Polisdigitocracy for climate action. This section presents the four main objectives that these digital projects hope to meet and provides illustrative examples.

1. Improving services to citizens:

using digital platforms to crowd-source information from citizens about the real-time functioning of the city. This might include for example, 'tagging' graffiti, abandoned vehicles and other maintenance requirements as well as collecting data about congestion hotspots. This can support sustained effectiveness of initiatives to reduce greenhouse gas emissions and enhance climate resilience.

2. Improving city planning and projects:

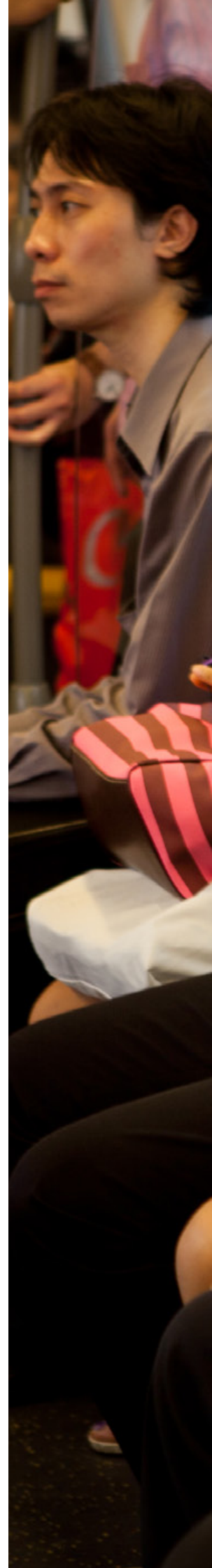
incorporating online engagement into the city's existing and proposed projects. These are being leveraged to support better city strategies for climate change mitigation and resilience, and to help ensure that projects are appropriate for the communities in which they are being implemented.

3. Unlocking community action:

making city data available to enable citizens, community groups and small companies to innovate around solutions to climate-oriented challenges. They are also creating special departments within the city with a mission to promote civic participation.

4. Responding to external pressure:

private companies and community groups are able to leverage digital platforms to make their voices heard, lobby government and hold them to account for their climate commitments and other responsibilities. This is putting pressure on government to respond through policy changes and other actions.





2.1 Improving services to citizens

Using digital platforms to crowd-source information from citizens about the real-time functioning of the city. This might include for example, 'tagging' graffiti, abandoned vehicles and other maintenance requirements as well as collecting data about congestion hotspots. This can support sustained effectiveness of initiatives to reduce greenhouse gas emissions and enhance climate resilience.

Cities are using a variety of digital tools to bring citizen-sourced information into the service delivery and decision making processes in cities. They are also opening up existing city control rooms to the public and media who are able to gain insight into how the city is managed and the challenges the city faces.

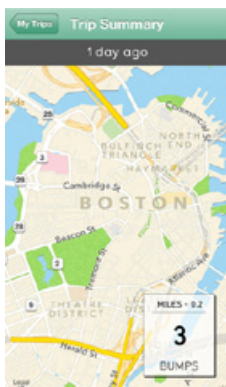
The purpose of these platforms is to:

- Extract information held by citizens about the operational and functional requirements of the city. This might include for example, 'tagging' graffiti, abandoned vehicles and other maintenance requirements as well as collecting data about congestion hotspots.
- Improve citizen-council relationship through providing a transparent, easily accessible and responsive service built around citizen need and provide a mechanism to hold city authorities accountable.

Reporting platforms

Private companies have proposed crowd-sourcing citizen-held data to improve city service delivery. For example, Google have suggested using in-car sensors to enable the automated mapping of the 'bumpiness' of roads as well as real-time congestion. The aim of these types of platforms is around increasing efficiency, reducing wasted resource and pollution from city services. City governments are also now using digital platforms to gain essential maintenance information from citizens.

A number of platforms have been developed that allow citizens to report local maintenance needs directly and efficiently to local governments. These platforms can be mobile applications where citizens can take photos of pot-holes or abandoned vehicles, geo-locate them and send them directly to the local authority. They are then able to track the response to their reports through platforms like the CleanIslington app in London. In Chicago, New York and other US cities services like Open311 build upon existing city call centres to allow online reporting and photos, as well as service tracking and open APIs for use by local developers.



Street Bump⁹

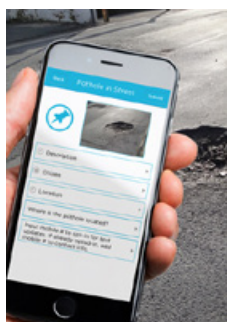
A project of Boston's Mayor's Office of New Urban Mechanics, Street Bump helps residents improve their neighbourhood streets. Volunteers use the Street Bump mobile app to collect road condition data while they drive. Boston aggregates the data across users to provide the city with real-time information to fix short-term problems and plan long-term investments.

In partnership with New Urban Mechanics, Connected Bits designed and developed the app, collaborating with IDEO and building upon research by Professor Fabio Carrera. The City of Boston will make the app freely available so others can use and build on the project's efforts.

⁹ <http://www.streetbump.org/about>

Many citizen science projects are also developing momentum and making use of the crowd to gain insights into the environmental performance of cities. One such project called the “Smart Citizen Kit”, incubated in Barcelona, distributes devices to citizens which measure carbon levels, nitrogen levels, temperature, humidity, noise and light.¹⁰ This information is then uploaded onto a web platform and the data is made available through an open API.

These services are supporting the creation of an unprecedented network of data points to monitor environmental performance as well as streamlining local authority responses to maintenance of the public realm, increasing their operational efficiency and reducing resource waste. Projects like this also enhance citizen awareness of local environmental quality so they can lobby for change.



Open311¹¹

Open 311 is a system used in many US cities (including New York and Chicago) connecting residents with the local government for non-emergency needs, reinvigorating City service delivery with the latest in digital technologies. Web and smart phone developers can create apps that tap into Open 311 to submit service requests, send photos and check status. 311 receives 3.9 million calls annually.

City Operations Centres

Some cities are adopting city wide control rooms in order to manage their services in a more connected and responsive way.

In Rio de Janeiro the Centre of Operations was created in response to climate hazards. In 2010, a landslide killed fifty people, and Mayor Paes took the decision that a more professional and joined up system was required. It was built from scratch in eight months in partnership with IBM and Oracle, and is now used by decision makers in the city to operate general city services, but especially to coordinate emergency response. Over time, the administration has begun to develop routine operational uses for the Centre of Operations. For example the garbage trucks are coordinated through GPS, so in an emergency the trucks can be re-purposed for other tasks. This helps the city manage resources and improve efficiency of response.¹²

Of particular note in the Rio Centre of Operations is that it is open to both citizens and media, who have seats in the centre. This aligns with the government's aims to improve transparency and engage with citizens on a more open basis.

¹⁰ <https://www.kickstarter.com/projects/acrobotic/the-smart-citizen-kit-crowdsourced-environmental-m>

¹¹ <http://www.open311.org/>

¹² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249397/bis-13-1216-global-innovators-international-smart-cities.pdf

2.2 Improving project implementation

Incorporating online engagement into the city's existing and proposed projects. These are being leveraged to support better city strategies for climate change mitigation and resilience, and to help ensure that projects are appropriate for the communities in which they are being implemented.

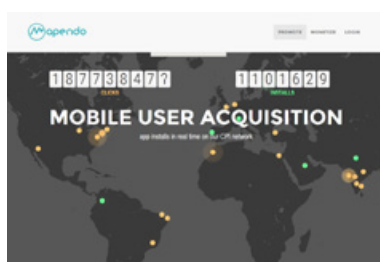
Cities are experimenting with using digital engagement to improve the planning and delivery of climate actions. To date this has been achieved primarily by moving existing consultation activities online, but increasingly cities are experimenting with approaches that allow citizens to participate more directly in decision making through, for example, participatory budgeting.

Consultation around specific projects

Online participation is being adopted to guide and inform the curation and roll-out of specific projects within some cities. The purpose of this engagement is often around developing appropriate solutions, reaching a greater cross section of the community, understanding and pre-empting adoption challenges and ensuring the sustainability of projects or programmes.

For example the LA/2B transport planning project in Los Angeles used a series of online engagements over a number of years to re-shape and envision a new way of moving around the city, using its streets for mobility and beyond. As part of the process they created an online 'Town Hall' where citizens could pose questions and make suggestions for the programme.

City authorities are beginning to explore how better communication could help to ensure large infrastructure projects are well designed and adopted by the community in a way that ensures both the sustainability and safety of the projects in the longer term, whilst simultaneously safeguarding climate outcomes. These projects are often controversial and require a significant shift in both the city layout and the behaviour patterns of citizens. This has been demonstrated in the implementation of Bus Rapid Transit (BRT) systems that offer significant climate benefits in terms of modal shift to mass transit, but take road space away from existing users and can have safety implications for pedestrians.



Mapeando¹³

Mapeando is an online project led by the city council in Rio de Janeiro that enables citizen to suggest physical changes to the city by marking them on an online map. For example citizens have in the past put in requests for where they would like to see bike lanes. It is a place where citizens can add their demands for the future of the city- these are then compiled into a report and used to support planning processes.

¹³ <http://mapeando.rio.gov.br/#/>

Civic crowd funding and participatory budgeting

Some city governments are looking at how social platforms might be leveraged to hand over decision making about the development of the public realm to citizens. These projects range from allowing communities to crowd-fund their own projects to directly handing over portions of city budgets to citizens.

This year Milan is offering 9 million Euros of its budget through participatory approaches. Milan is the first Italian city to engage in participatory budgeting, a process spearheaded in Brazil in the late 1980s which allows citizens to have some say over local spending priorities. Milan has adopted it this year, and extended it to people aged 14-22. By the end of the year, the Administration aims to select a few projects suggested by citizens, to be carried out during the course of 2016.

As part of the same new grassroots democracy scheme, the Administration is developing a crowd-funding programme where city projects related to social innovation can be posted- citizens then 'vote' on these projects by contributing money to support it. The City of Milan is the first Municipality in Italy that will promote a crowdfunding platform dedicated to projects with high social impact in the city. The initiative is part of a collaboration between two different Departments of the Municipality: Labour Policies, Economic Development, University and Research Division + Social Policies and Health Culture Division. If a project raises 50% of the funds required, the government will invest the remaining 50%.

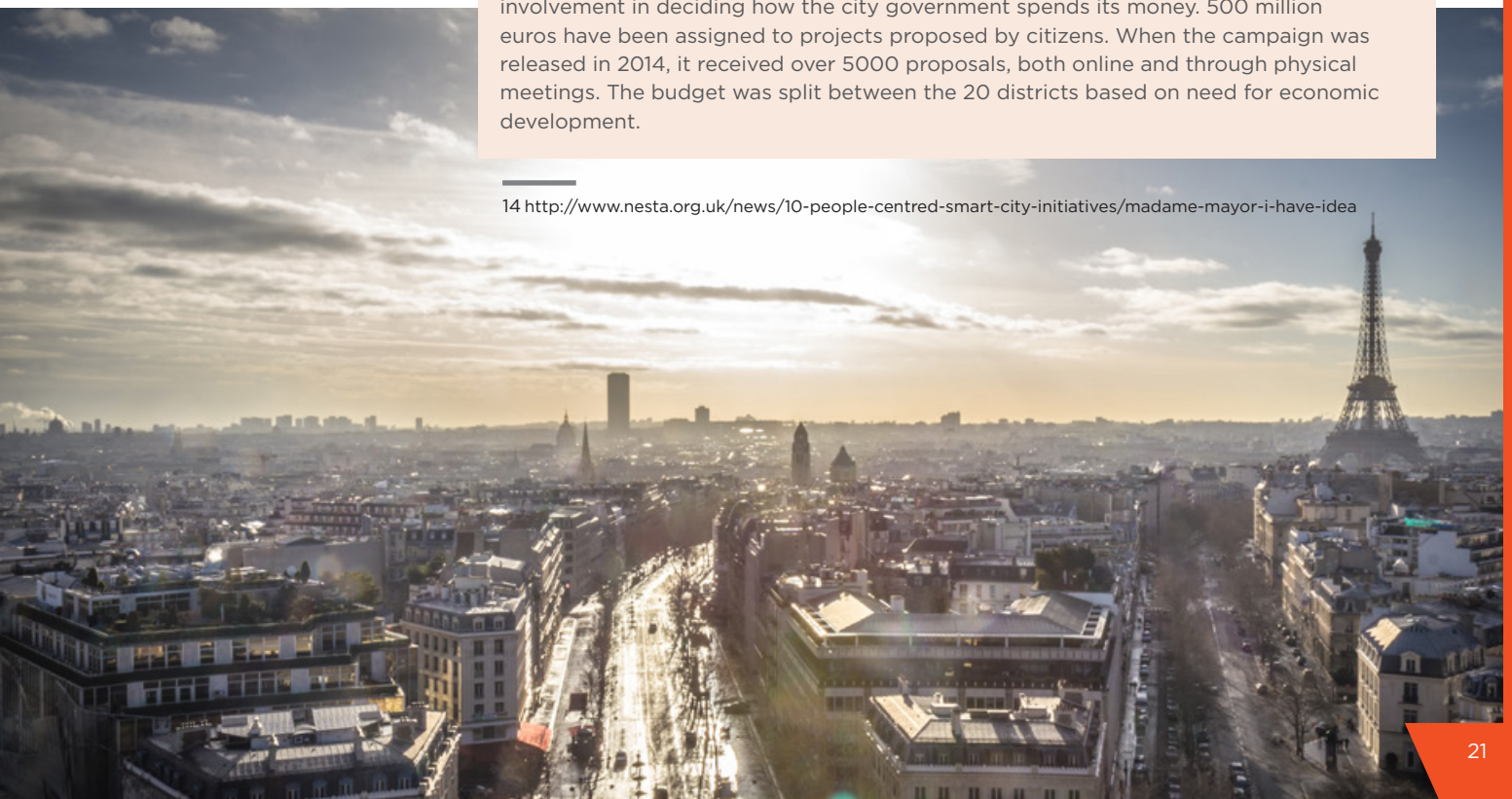
This is a move away from the traditional bureaucratic approach to investment decision making that goes through government committees and evaluation frameworks. Lucia Scopelliti, Smart Cities Manager at Milan City Government explains,

“In Milan we believe social platforms could be a key tool to improving decision making about civic investment projects while simultaneously gaining civic buy-in to development projects “

Madame Mayor I have an Idea¹⁴

Madame Mayor I have an idea is a budgeting scheme in Paris that encourages citizen involvement in deciding how the city government spends its money. 500 million euros have been assigned to projects proposed by citizens. When the campaign was released in 2014, it received over 5000 proposals, both online and through physical meetings. The budget was split between the 20 districts based on need for economic development.

¹⁴ <http://www.nesta.org.uk/news/10-people-centred-smart-city-initiatives/madame-mayor-i-have-idea>



2.3 Unlocking citizen action

Making city data available to enable citizens, community groups and small companies to innovate around solutions to climate-oriented challenges. Some cities are also creating special departments within the city with a mission to promote civic participation.

Citizen communication platforms

Recognising the need to create space for communities to explore local issues together and have their voices heard by government, many city authorities are investing in platforms that enable a range of different engagement opportunities. Platforms built to sustain city conversations over time can improve the efficacy of climate projects as well as feed into strategic sustainability planning.

For London, the most recent wave of their citizen engagement activities started in 2010 when the Greater London Authority (GLA) crowd-sourced ideas for climate change mitigation. This led to Talk London, a place where communities can discuss London's big issues. The GLA are now focusing on how to translate these opinions into policy decisions - from those affecting London's young people, transport, safety and policing, to health, housing and the environment. A recent conversation hosted on the platform explored how Londoners could mitigate air pollution in the city.¹⁵

Other cities have simply made use of existing freely available technologies to facilitate community engagement. For example both Lagos and Rio de Janeiro have used Google hangouts to host conversations between citizens and city authorities. Other cities including Durban use SMS messaging to communicate with their citizens, many of whom have limited or no access to the internet.

This type of commitment to engagement is not politically benign. Governments that choose to open up more responsive and pervasive citizen dialogue must also have the agency take and respond to the political risks this presents. Particularly there must be a willingness to be openly criticised, a capability to act on the feedback raised by citizens and be backed up by a strong mandate from political leaders. As Christine Wingfield, Statistics and Information Services Manager at the Greater London Authority explains,

“Political leadership has been a key enabler for London in changing how we do citizen engagement. Mayor Boris Johnson wanted to inspire and capture open debate and dialogue on public policy challenges, not just between the Mayor and Londoners, but citizen to citizen. Launched in 2012, the Talk London initiative has enabled Londoners to take part in robust discussions to ensure that we design policies, interventions and services that deliver maximum impact, while delivering a community experience that empowers individuals and communities to take positive actions that support our shared vision of the city.”

¹⁵ <http://talklondon.london.gov.uk/>

City Labs and innovation hubs

Cities including Buenos Aires, Boston, Copenhagen, Athens, Melbourne and many others are creating 'innovation hubs' within their municipalities. These groups have emerged out of the need for diverse and creative teams within government that can challenge the status quo and bring about innovative projects. They are often focused on exploring the role of data and digital engagement in fostering a culture of innovation and creativity both within the government and the city more generally.

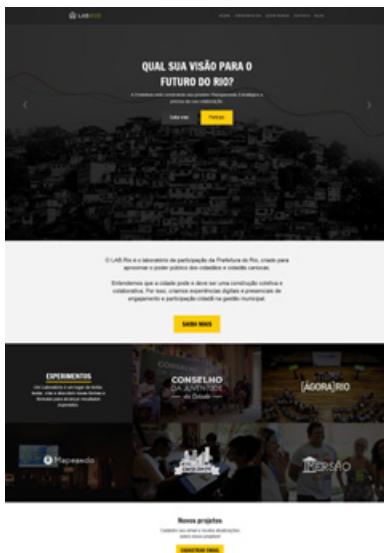
City Labs are generally focused around two core aims:

To create better, more efficient city services through innovative digital projects and collaboration with communities and local enterprises. These are often incubated in the innovation hub and then scaled-up in partnership with a city department or private organisation.

Progress political conversations and challenge norms both within government and more broadly.

These groups are generally located in the Mayor's office, enabling them to work across city departments whilst being removed from the day to day service delivery functions of the city

The other model adopted is to set up the innovation hub as an arms-length organisation that is able to be more agile in the way it operates. These arms-length groups are able to partner with the private sector and offer grants that would otherwise be difficult for cities to manage. For example the Smart Chicago Collaborative¹⁶ run a vast array of projects including the CUTGroup, a community of over 1,000 Chicago residents who get paid to test websites and apps to help create better technology.



LabRio

LabRio is a programme set up explicitly to make city hall more participative. In its fundamental sense it is a citizen engagement platform, although it goes much further than that. LabRio is run by a group of young people who caught the mayors attention when they used social media to organise protests about bus fares. The Lab now supports citizens in challenging the decision making processes in Rio City Hall. There are many projects and programmes that LabRio manages, including:

- **Come Together**, where children of the city got together to make plans for the education budget and presented it to the secretary of education. A similar thing happened for culture etc. and were presented to the mayor.
- **Agora Rio**, where citizens can send in their ideas to the city and debate them. People are then able to vote on the best ones. One project was based on the legacy that people would like to see.
- **Mapeando**, is a place where citizens can add their demands for the future of the city to an online map- these are then compiled into a report that shows what people would like. For example people might put in requests for where they would like to see bike lanes.
- **Imersao**, this project invites citizens to come to city hall for three days of intensive debate with the city authority and to discuss matters that are of importance to them. 30 citizens are selected as part of an open call to Rio citizens.

¹⁶ <http://www.smartchicagocollaborative.org/>

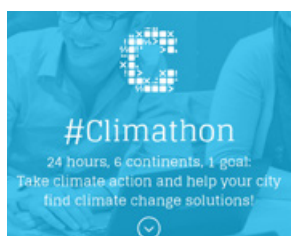
¹⁷ <http://www.smartchicagocollaborative.org/work/ecosystem/civic-user-testing-group/>

Open data competitions and civic tech companies

Many tech communities in cities are uniting around open data to create innovative services and solve local environmental challenges. In some cases this innovation has been spurred by city governments who frame challenges through competition-style programmes, open up city data and offer seed funding and entrepreneurial coaching in order to help scale innovations. In New York City the 'Big Apps' competition has been running annually since 2009 and has successfully incubated a number of civic tech enterprises.

But it is not just city governments driving innovation around city challenges. Tech communities themselves are now developing mechanisms to convene a variety of city stakeholders around specific challenges and co-create solutions. In New York City, 'Civic Hall' is a new kind of community centre designed for the world's civic innovators. They provide a space for social entrepreneurs, 'change-makers', government employees, hackers, academics, journalists, and artists to share knowledge, build tools, and solve problems together.¹⁸

City government can also support civic tech start-ups by providing the opportunity to trial their technologies. In Boston, the Mayor's Office of New Urban Mechanics (MONUM) acts as a civic innovation incubator and R&D lab. It focuses on enabling connections between government, citizens and social entrepreneurs to innovate around service delivery in the city and enable partnerships between people inside and outside of government to tackle city challenges. MONUM supports private companies to make new connections, apply for funding and find new business opportunities. It is also able to provide seed capital, or help them to develop the technical elements of their proposal. As Nigel Jacob, co-chair of MONUM explains, "When [civic entrepreneurs] find us they typically have a basic pitch in mind that they need support and a resource to get that project off the ground and we are able to help them do that."



Climathon¹⁹

A global 24-hour hackathon-style climate change event organised by Climate-KIC took place simultaneously in 20 major cities around the world on 18 June 2015.

Each participating city set climate challenges, which were tackled by local participants each developing solutions. Addis Ababa's challenge was focused on sustainable water management, asking hackers to explore the question: "How can local business contribute to more sustainable, climate-smart urban water management?" Meanwhile the challenge in Beijing was oriented around community uptake of PV panels, asking: "How to encourage citizens to install distributed PV panels?"

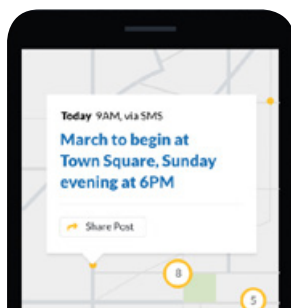
The winning teams are now developing their ideas with support from specialised coaches and entrepreneurs.

Third sector organisations with socially-oriented goals are also galvanising citizen voices to hold government to account. Change.org is used in the UK to gain momentum over social campaigns and raise specific issues up the political agenda. In Nairobi, Ushahidi (the Swahili word for 'Testimony') was developed by citizens to map reports of violence in Kenya after the post-election turmoil in 2008. Since then, thousands have used their crowdsourcing tools in cities across the world to raise their voice to government. For example, after the 2010 BP oil spill, the Louisiana Bucket Brigade (LABB) publicly launched the iWitness Pollution Map as a repository of eyewitness reports and photos documenting the impacts of petrochemical pollution on human health and the environment. Since 2010 LABB has collected over 14,000 reports.

¹⁸ <http://civichall.org/>

¹⁹ <http://www.climate-kic.org/climathon/>

These platforms and services are convening citizen voices and putting increasing the pressure on them to respond. What is not yet clear is how city governments are able to truly understand how representative these voices are of their citizens.



Ushahidi²⁰

The Ushahidi platform enables the mapping of critical information about cities in crisis. It allows crowd-sourcing of data about incidents, data management and filtering, visualisation and automatic alerts to citizens. Since its founding in 2008 the Ushahidi platform has been deployed 90,000 times, received 6.5 million posts or ‘testimonies’ and reached 20 million citizens.

This platform was used in the major earthquakes in Haiti, Chili and Christchurch, as well as the flooding crises in Queensland and Missouri.

Ushahidi Resilience Network Initiative

Through the 100 Resilient Cities network, pioneered by The Rockefeller Foundation, Ushahidi supports and trains community based organisations engage with local government using open-source tools. This work is in partnership with The Rockefeller Foundation’s 100 Resilient Cities.



NYC Big Apps Competition²¹

Running annually since 2009 this competition challenges local groups to create tech to transform the city, and offers cash prizes to the winning group in each category which is intended to help incubate the projects. One of the categories this year is around civic engagement, as follows:

Develop a 21st-century model for civic engagement. New York City has 8.4 million voices – and growing. Help create tools that allow all New Yorkers to engage around City priorities, enable real-time feedback between residents and government, connect New Yorkers to civic resources, and help New York City achieve President Barack Obama’s charge to “make ‘we the people’ mean something in a 21st-century context.”

Another challenge is focused on apps for zero waste:

Equip New Yorkers with new tools to achieve zero waste. The average New Yorker throws out nearly 24 pounds of waste at home, at work, and at commercial establishments every week. Help advance the City’s goal to reduce landfill waste citywide by 90% within 15 years by encouraging every New Yorker to do his or her part to reduce, reuse, recycle, and create a more sustainable New York.



Negawatt challenge²²

Negawatt is a global competition empowering communities to innovate around local energy issues. Using a multi-phase open innovation methodology, this initiative aims to transform cities into more sustainable and energy efficient places. Cities all over the world have been selected on the basis of their government’s commitment to energy efficiency and low carbon growth, as the existence of dynamic growing entrepreneurial and technology sectors.

²⁰ <https://www.ushahidi.com/>

²¹ <http://bigapps.nyc/p/>

²² <http://www.negawattchallenge.com/>

2.4 Responding to external pressure

Private companies and community groups are able to leverage digital platforms to make their voices heard, lobby government and hold them to account for their climate commitments and other responsibilities. This is putting pressure on government to respond through policy changes and other actions.

Digital platforms created by the private and third sector are beginning to prove extremely disruptive to existing city systems and call on governments to reassess existing policies as well as manage often very controversial change.

Uber and Lyft are mobile platforms that allow users to 'source' rides by communicating with private vehicle drivers through mobile platforms. According to a recent UC Berkeley study carried out in San Francisco, wait times for these services are vastly shorter than for traditional taxi services with around 90 percent of customers being picked up in less than 10 minutes.²³ These services are proving disruptive for existing taxi providers in cities across the world as well as having implications for the public transport usage in cities and perhaps even on levels of private car ownership.

In Mexico City where there are 140,000 registered taxis in operation, the introduction of Uber has proved extremely controversial and has incited mass demonstrations. A central contention was around the fact that Uber drivers, not registered as official taxis, do not have to pay the expensive registration fees to the government. In response the government's CityLab - LabCDMX²⁴ - hosted a debate with 50 figures from both sides, as well as transportation experts. The core recommendation emerging from this debate was to reduce and simplify fees and formalities aimed at regulating taxis.

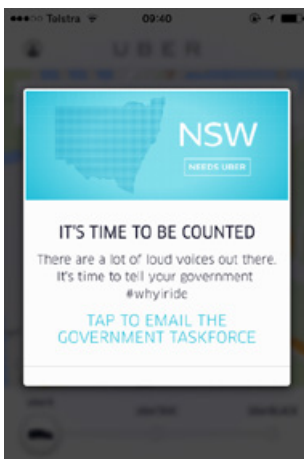
²³ <http://www.uctc.net/research/papers/UCTC-FR-2014-08.pdf>

²⁴ <http://labcd.mx/labforthecity/>



LabCDMX director Gabriella Gomez-Mont explains,

“We can’t freeze the city in a point in time in order to avoid moving things from where they are... new technologies bring with them new paradigms and more transparency, so we’re looking to create an equal playing field.”



Uber are also galvanising their customers to lobby government in support of the platform. For example on opening the app in Sydney Uber customers have been invited to email the government taskforce to convey their support for the service. On clicking the link a pre-written email appears that is addressed to the chair of the taskforce and can be sent within a matter of seconds. City governments are now being faced with a new type of lobbying, driven by large private companies leveraging their customer base to influence government policy.

The challenge for city governments in this case stems from the pace and scale of change. Digital companies that come to new cities are often already well-established global corporations that understand how to scale extremely quickly as well as manage civic backlash. City governments are often caught off-guard and are forced into a reactive mode rather than proactively anticipating and planning for change.

This section has demonstrated there is an appetite and capability within city governments to use digital technologies to meet a variety of city objectives. C40 cities are already taking the lead in using digital tools to promote Polisidigitocracy for climate change action. It is clear, however that the opportunity has not yet been fully realised, and that some cities are taking more action than others. C40 and Arup see an opportunity for cities to share their learning as well as unpick the remaining challenges together.



3. Polisdigitocracy: The Building Blocks

This section presents the four building blocks that need to be addressed and cultivated by city governments seeking to develop robust and sustainable digital engagement programmes.

Cities hoping to act upon the potential opportunities raised by a Polisdigitocracy approach to governance must ensure that they are set on a strong organisational foundation. While it may be tempting to assume digital platforms will enable unprecedented levels of citizen participation and that better big data will improve decision making and optimise all city services, the reality of implementation and organisational change is not so straight forward.

This section presents the four building blocks that need to be addressed and cultivated by city governments seeking to develop robust and sustainable digital engagement programmes:

1. Let everyone participate: gaining increased awareness of who is engaging through digital platforms and the voices they represent, as well as understanding how to remove barriers to access so that the climate priorities of multiple stakeholders can be understood and addressed.

2. Use data effectively: ensuring that city data is made available in a streamlined and appropriate format that is accessible and inspiring to local communities and entrepreneurs, and that it is the right data to support innovative climate action.

3. Create capacity to try new things: ensuring there are mechanisms within city government to take risks and innovate around service provision. Climate action often requires new ideas and integrated approaches across city sectors; digital technologies have a critical role to play in allowing innovative service provision.

4. Work out how to pay for it: forming effective partnerships, funding and business models required to develop sustainable projects and programmes. This requires a variety of approaches ranging from seed funding innovative projects to mainstreaming activities into departmental budgets.





3.1 Let everyone participate

Gaining increased awareness of who is engaging through digital platforms and the voices they represent, as well as understanding how to remove barriers to access so that the climate priorities of multiple stakeholders can be understood and addressed.

This study has shown that digital platforms are providing new opportunities to host and harness political conversations, create innovative solutions and engage citizens on important issues. However cities are still working out how best to manage and maximise this engagement. This involves developing capabilities to engage citizens that are already digitally literate in city activity, as well as understanding the barriers to digital engagement, how to mitigate them and balance them with other more accessible forms of engagement.

One key area that cities are getting to grips with is how to minimise the impact of the digital divide. Many citizens do not have access to the internet, smart phones or the latest mobile smart applications, and many cities don't have adequate ICT infrastructure to allow these solutions to be used effectively. On top of this many citizens do not feel comfortable using technology and do not have the digital skills to be able to engage with it effectively.

Cities across the world are taking different approaches to mitigating this challenge. In Durban, Magash Naidoo, Project Manager in the Energy Office of Durban City Council explains,

“The challenge is that a lot of the residents don't have access to either the technology or the educational background that allows them to easily understand climate change issues. Some are becoming increasingly aware of climate change but using the internet will not currently effectively reach most people in eThekweni Municipality (Durban). There is a significant uptake of smart phones. There are various projects that we have in the pipeline to better utilise smart phones to communicate climate change information, however it is envisaged that a key barrier will be data costs for residents that receive or want to engage with climate change information. In the spirit of reducing barriers to climate change information we have various ideas such as collaborating with cellular network providers to make the ‘apps’ free to utilise from a data point.”

Other cities including Mexico, Buenos Aires and Paris are choosing to mitigate the digital divide by combining digital and physical citizen engagement, which they hope will foster more inclusive and broader dialogue. These cities use different scales of dialogue (from city-wide to roundtables to individual engagement) to encourage different types of conversations.

Governments are faced with the challenge of understanding the voices that digital engagement platforms represent as well as those that they don't. Many marginalised groups will not have the political, social, educational or technological capital to raise their voices through social media, while other voices may be amplified despite being non-representative.

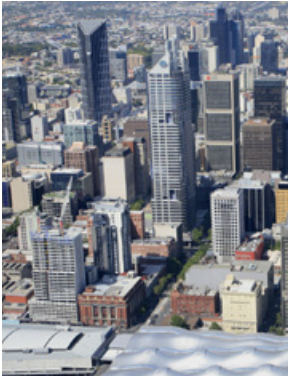
Another key challenge faced by city governments hoping to maximise participation is in how to engage citizens who are already digitally literate but less interested in city activity. Many private companies, charities and some city governments are now exploring the characteristics of social media campaigns that are particularly likely to garner attention, raise awareness and 'go viral'. For example, some cities have found that crowdfunding projects for a civic activity tend to be more engaging than city-hosted discussion forums. Both of these types of engagement give city governments insight into citizens' aspirations for their places, but the latter is more likely to meet people where they already are on Facebook, Twitter and Instagram.

3.2 Use data effectively

Ensuring that city data is made available in a streamlined and appropriate format that is accessible and inspiring to local communities and entrepreneurs, and that it is the right data to support innovative climate action.

Opening up city data can be an important conduit for allowing citizens to connect into government. Previous sections of this report have demonstrated how citizens and Small and Medium-sized Enterprises (SMEs) are leveraging government data to create new services and enterprises, including those that can help cities advance action on climate change. However as cities attempt to adopt open data approaches they are facing various logistical, organisational and legal challenges. Cities wishing to maximise positive outcomes from big and open data are addressing these challenges in a number of ways.

- **Managing data security, liability and risk:** City governments are often wary of the risk associated with opening up the data they hold. They are not always confident about the inherent data protection and privacy issues associated with data release. On top of this there are concerns about the maintenance of certain data streams and their liability to organisations that may build services on top of their data. This difficulty in estimating the risk associated with open data has been a barrier to action in some cities. Melbourne City Council has addressed the authority's concern over risk by convening a 'risk board' populated by representatives from different parts of the council. This enables the whole council to convene around the issue and build a consensus and strategy about how to manage risk.
- **Working across departments:** open data platforms in cities require data from a variety of city departments to be streamlined into a single portal. This can be a challenge for cities who are used to operating in single-discipline departments/units, rather than as a multidisciplinary collaborative. This challenge has been overcome in some cities through strong leadership and a mandate from the Mayor's office. Other cities have managed the challenge by convening members from different departments to work together on data portals.
- **Curating open data:** City governments often lack the human capital and experience to understand how data platforms could best be designed to facilitate SMEs in developing innovative services and climate actions. Some cities, like Rio, Mexico City and Buenos Aires are focusing on employing young and diverse teams to drive open data programmes.



Melbourne Data Portal

City of Melbourne Open Data Principles:

Data will be available for open use: Data will be made available under flexible and open licenses, allowing for reuse by the public, including businesses, researchers and individuals ensuring the data is released in a manner that does not breach privacy, public safety, security, commercial confidentiality or legislative requirements.

1. **Data will be available free:** Data will be made available at no cost, unless explicitly authorised to charge a fee by Council or the cost is set by legislative requirements.
2. **Data will be in accessible formats and easy to find:** Data will be easily discoverable through an Open Data Platform in accessible formats that promote its reuse.
3. **Data will be released within set standards and accountabilities:** Data will be available in a timely and relevant manner. A governance framework will be implemented to ensure the release of fit-for-purpose data in accordance with set standards and guidelines. Sufficient context and metadata will be provided to notify the user of any limitations or gaps in the dataset.
4. **Continue to engage with the community:** Opportunities will be provided for the community to request datasets and provide feedback and the Open Data Program will be continually improved and refined based on this feedback.

Datastore Personas

The Melbourne data portal offers a tailored service to different profiles of user. These personas include: change-makers, entrepreneurs, planners, interested citizens, ratepayers and reporters. For each of these categories it pre-empts the datasets that these personas might be interested in and offers a more tailored service.

Digital Catapult Trust Framework²⁵

The Trust Framework has been established by the UK's Digital Catapult as a voluntary service for individuals to share their personal data freely with the public and private sector. This responds to the fears of privacy and ownership of personal data by educating and enabling the individual to unlock the value of their data.

²⁵ <https://www.digitalcatapultcentre.org.uk/open-calls/trust-framework/>



3.3 Create capacity to try new things

Ensuring there are mechanisms within city government to take risks and innovate around service provision. Climate action often requires new ideas and integrated approaches across city sectors; digital technologies play a critical role in allowing innovative service provision.

Driving innovative approaches to problem solving in cities is an inherent challenge to governments that are often set up to deliver services, operating on tight budgets and funded by the tax-payer. It can be difficult for government to justify unproven or unconventional approaches to city management when they are accountable to citizens to spend funds responsibly. As this report has shown, some cities are creating groups within the council that are specifically oriented towards driving innovation.

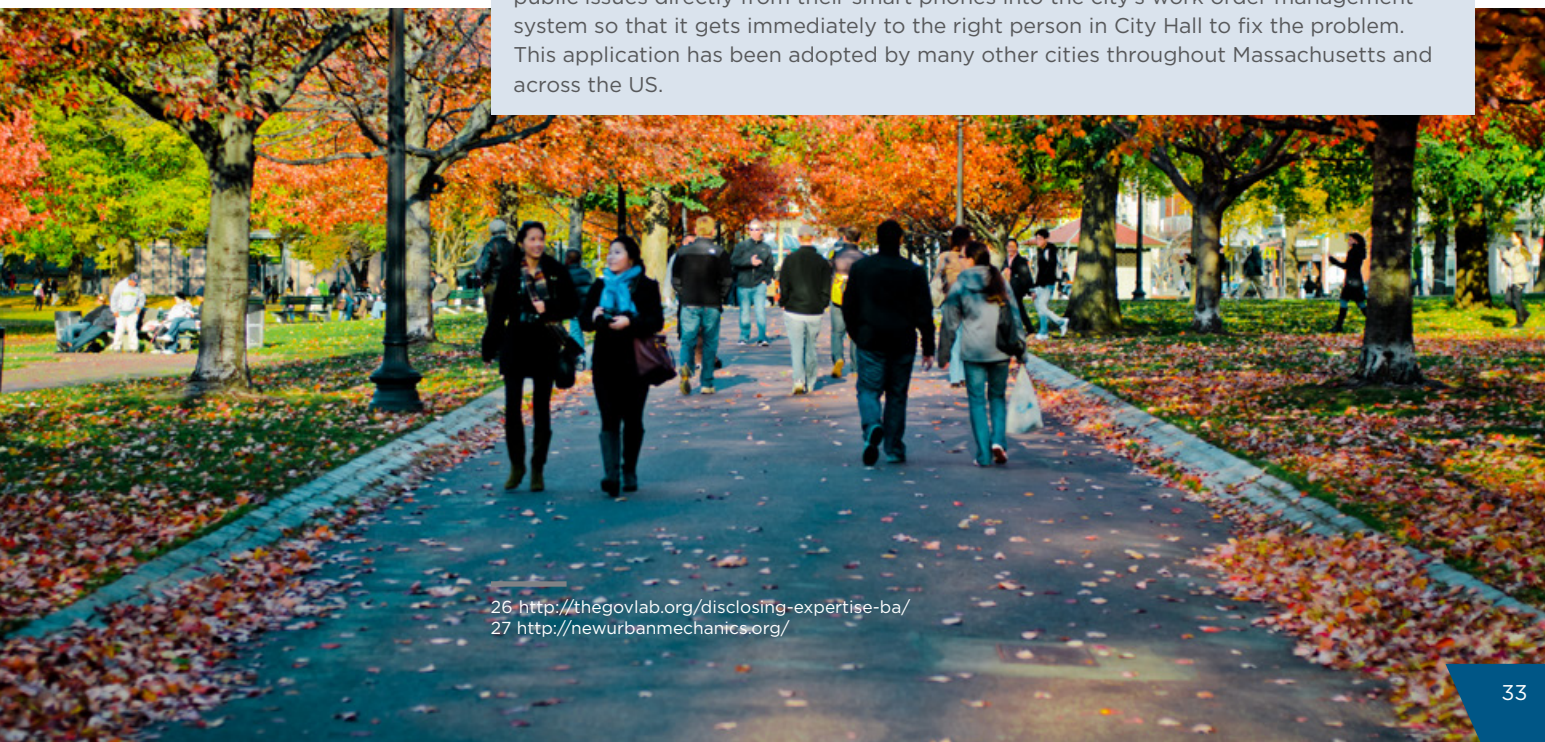
Buenos Aires is tackling the challenge of cross-disciplinary working and innovation by establishing 'innovation roundtables' where champions of different agencies meet each week. The council has also adopted a programme called the Expertnet project, which is building open source tools to enable municipal government employees to identify each other's areas of expertise.²⁶ They will also test the efficacy of knowing more about the skills and abilities of employees for improving collaboration and problem solving.

City authorities have also identified the benefits of working with other cities tackling similar challenges. The Boston Mayor's Office of New Urban Mechanics, which aims to 'push the boundaries of citizen-government interaction on technology, design and policies' has now been set up in other cities across the US.²⁷ The aim of this networks is to share learning, replicate effective projects and programmes and collaborate where appropriate. In Latin America, Mexico City, Buenos Aires and Rio de Janeiro are also forming a network of 'City Labs' to support one another in driving innovative projects.

MONUM - Boston, USA

Mayor Martin Walsh of Boston established a network of civic innovation groups to connect residents and government to improve services and opportunities for all. Originating in Boston, New Urban Mechanics now also operates in Philadelphia and Utah Valley; with the aim to push the boundaries of citizen-government interaction on technology, design and policies.

Citizens Connect is a mobile application incubated at MONUM where residents report public issues directly from their smart phones into the city's work order management system so that it gets immediately to the right person in City Hall to fix the problem. This application has been adopted by many other cities throughout Massachusetts and across the US.



²⁶ <http://thegovlab.org/disclosing-expertise-ba/>
²⁷ <http://newurbanmechanics.org/>

3.4 Work out how to pay for it

Forming effective partnerships, funding and business models required to develop sustainable projects and programmes. This requires a variety of approaches ranging from seed funding innovative projects to mainstreaming activities into departmental budgets.

City governments are now experimenting with funding mechanisms and governance models that can help seed and scale digital innovation projects. In some cases, funding has been derived from specialised 'innovation' pots within the council. Once the project or programme is proven it can then be transferred to the operational budgets of city departments.

Stockholm used a €70 million budget surplus to create a central pot of money for innovative ICT projects coordinated in the Mayor's office. City departments were then able to pitch their ideas to the central budget holder. This model ensured that investment is aligned both to the needs of the ICT innovation vision owner and the more operational departments in the council.

In Chicago the city council partnered with the MacArthur Foundation (one of the largest philanthropic foundations in the US) and the Chicago Community Trust to form the Smart Chicago Collaborative. The Collaborative is a civic organization that focuses on using technology to improve the quality of life in the city. This special partnership is able to direct funds from the public and third sector to directly support city government engagement objectives. This is useful mechanism to sidestep some of the traditional obstacles inherent in government processes.

As already noted in this report some cities are turning to citizens to crowd-fund new projects, using platforms such as Spacehive in the UK.²⁸ Cities adopting these methods are now grappling with the ethical implications of crowd-funding for civic projects. They are aware that such projects may be seen as an increased local taxation, or that only people who are able to pay are able to have a say in local community projects.

London Mayor's High Street Fund²⁹

The GLA has made use of Spacehive (a civic-oriented crowdfunding platform) to encourage and support urban regeneration activities. Citizens can propose their own projects and if they are well supported by the community can gain up to £20,000 in support from government. Criteria for support include projects that are seeking to attract visitors, improve the environment, bring together local groups or reuse empty spaces.

City networks can provide collaboration opportunities for cities seeking national and international government funding for their work. The CAM 3.0 report found that city networking supports cities in diversifying the sources of funding for climate actions. For example the European Commission's Horizon 2020 grant scheme is being targeted by groups of cities seeking to implement and test innovative digital engagement strategies. Other cities are partnering with the private sector and philanthropic foundations to fund their work.

As city governments have begun to implement digital engagement projects for climate action they have had to adapt their practice and develop new approaches to project delivery. As cities across the world start to replicate these activities C40 and Arup believe it is important that pioneering cities share best practice on the key enablers of these projects.

²⁸ <https://www.spacehive.com/>

²⁹ <https://www.spacehive.com/Initiatives/mayoroflondon?Tid=hive-99-2c53f9d7>



Conclusion

Polisdigitocracy is already here

This report has documented a small segment of the vast number of digital engagement projects and programmes currently underway in cities. Many of these are directly focused on climate action and all of them offer lessons when developing good practice for project implementation. While cities are still evolving their understanding of the fundamental building blocks of Polisdigitocracy it is clear that digital civic engagement is something that will stay high on city priority lists in coming years.

Call to collaborate

As the 'Powering Climate Action' and 'Climate Action in Megacities 3.0' reports demonstrate, cities that collaborate are more likely to take effective and transformative action. Since 2005, the C40 Cities Climate Leadership Group has convened its member cities - now numbering more than 80 - to exchange ideas, solutions and experiences through 16 thematic networks and six overarching initiative areas for climate mitigation and adaption.

This report calls for city governments to work together to understand the opportunities of Polisdigitocracy in their cities, innovate around potential solutions, adapt best practice guidance, and jointly assess potential challenges as well as share tactics to overcome them. Specifically, city governments should integrate Polisdigitocracy across all city sectors and not approach it as an isolated initiative so it becomes digital engagement simply for digital engagement's sake.

But it is not just government action that is required. City networks, the private sector, institutions and civil society must commit to working together if Polisdigitocracy activities are to have a significant and lasting impact on climate change. C40 is well placed to facilitate deeper city-to-city collaboration on Polisdigitocracy and will look to integrate the concept into practice in two ways. Firstly, recognising the need for Polisdigitocracy to be embedded across government sectors, it will be incorporated into C40s existing energy, waste, transport, adaptation and other networks. There is also a need to convene more focused attention on the role of ICT in cities. As such C40 will continue to convene city ICT officials to support the integration of Polisdigitocracy for climate action throughout city government.



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