

MAKING A CIVIC SMART CITY

DESIGNING FOR PUBLIC
VALUE AND CIVIC
PARTICIPATION

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No. 05
2018

The right side of the cover features a vertical strip of abstract, organic shapes in muted colors: teal, orange, and brown. These shapes are overlaid with various patterns, including dashed lines and small dots, creating a textured, layered effect. The overall aesthetic is modern and artistic.

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AND CIVIC PARTICIPATION**

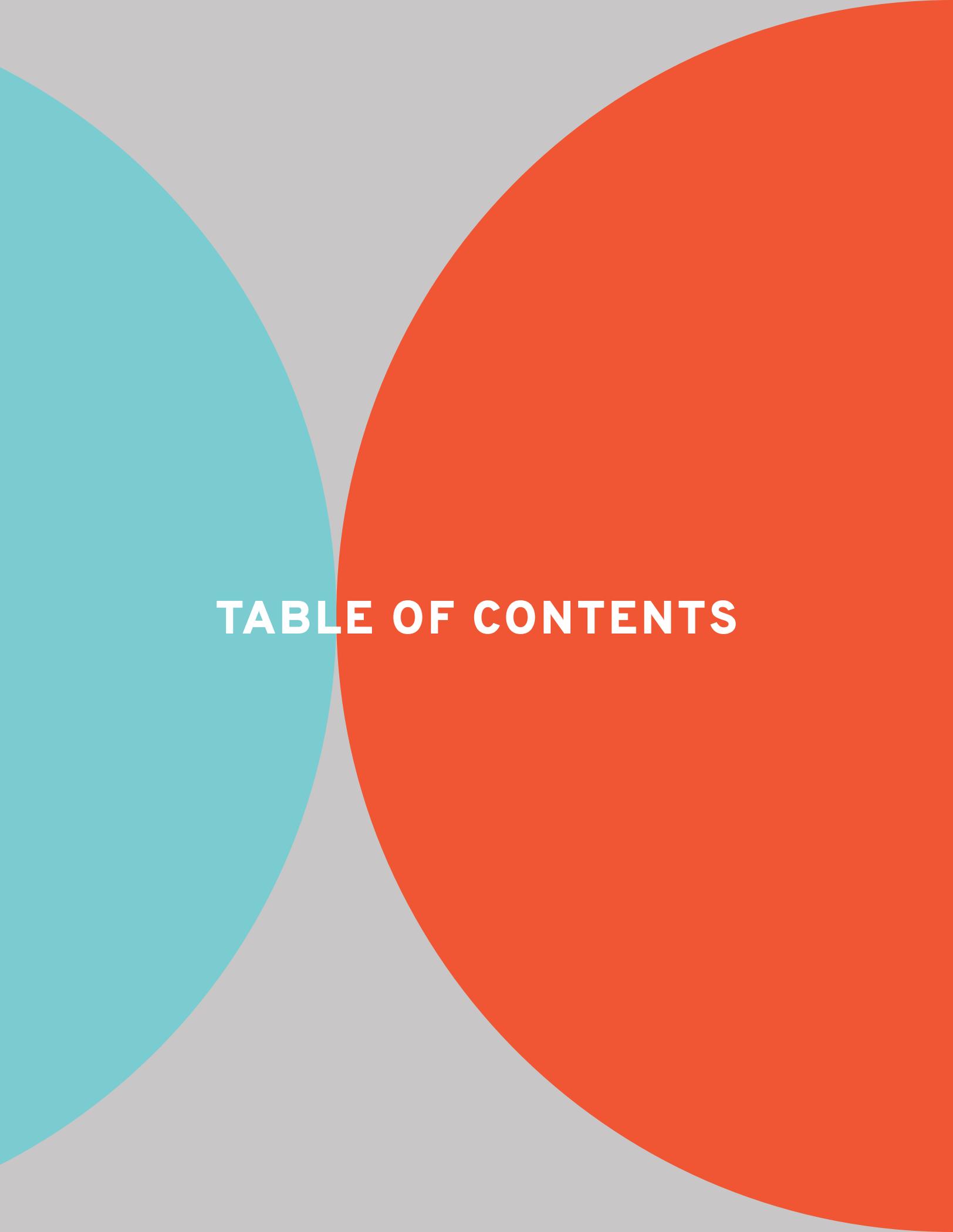


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EXECUTIVE SUMMARY

The dominant discourse of the smart city is focused primarily on issues of technology: the integration of networked devices into the built environment of the city, the use of big data and algorithms, and the construction of smart infrastructure are all centered in our conception of what it means for a city to be smart. While these technologies have been beneficial to many cities, a concerning trend has emerged in which smart technology is implemented without the consultation or engagement of publics. Running parallel to these concerns are the issues of transparency and accountability in the use of personal data collected in the course of implementation and administration of smart city technologies. Unfortunately, in current practice the smart city often becomes a project implemented by governments and corporations, with communities being excluded from knowledge, discussion, and the decision-making processes.

By bringing together thought leaders across sectors, we sought to discover methods of increasing civic participation in municipal decision-making and standard-setting; that is, we looked for ways in which cities can more effectively engage publics in the complex issues surrounding the implementation of smart city technologies. We held a symposium entitled “Right to the Smart City: Designing for Public Value and Civic Participation” at the Berkman Klein Center for Internet & Society at Harvard University in March 2018. This symposium was designed to bring together diverse perspectives, inviting participation from individuals

differing in geographic location, disciplinary perspective, and professional experience. We presented participants with scenarios that embodied the complex problems surrounding the civic design and implementation of the smart city, prompting them to find ways in which publics can be more effectively engaged in the process of decision-making around smart city infrastructure and tools.

The results of this symposium were five “plays” for assuring the widespread right to the smart city. We define a “play” as an action that can be taken by the range of actors involved in the design and implementation of the smart city, prioritizing a values-first approach that can be implemented across organizations. In this white paper, we explore the following plays, arguing that their implementation can result in greater civic engagement and a more equitable process.

01

EMBRACE SMART CITIES

To embrace the smart city means to leverage the enthusiasm of publics, the private sector, and government organizations for digital technologies and devices into conversations that encourage civic participation and provide public values. The dominant idea of the smart city as defined by its technology can be used to highlight matters of local importance and involve publics in defining the values and dynamics of the local versions of “smart”.

02

CULTIVATE LOCAL INNOVATION ECOSYSTEMS

To cultivate local innovation ecosystems, cities must support and partner with those private and public organizations which have an understanding of and desire to serve their community’s needs, rather than placing the development of smart cities entirely in the hands of large national corporations. Seeking talent and knowledge within the community, cultivating data literacy, and developing technologies that prioritize public values are all means by which local ecosystems can be involved in the implementation of smart city technology.

03

INVITE PUBLIC INFLUENCE

Inviting public influence requires a re-imagining of traditional means of involving the public in the civic decision-making process, developing new frameworks for participatory action and augmenting engagement with new technologies. This re-defining of what civic participation entails must be a value-centered process, specifically for those values of equity and community agency, without which a city cannot be truly smart.

04

QUESTION DATA

To question data is to think critically about the reasons it is collected, how it is acquired, and to what purpose it is given. It is essential that these questions be asked of government, public, and private sector organizations that use large data sets in the development and implementation of smart city technology and infrastructure; doing so can help to prevent the violation of people’s privacy and civil rights.

05

DESIGN FOR PLAY AND CIVIC IMAGINATION

To design for play and civic imagination means to look beyond the corporate values of efficiency, productivity, and profit when designing the smart urban landscape. To create livable smart cities, it is essential to incorporate creativity, experimentation, and the element of play into the processes of conception, design, and construction.

The implementation of these plays can be of great benefit to the process of smart city building, encouraging the inclusion of local values and priorities and moving beyond technology in the conception of what it means to be “smart”. However, each city is unique, and requires a process that is tailored to their local context and futures. To this end, we provide a toolkit in the form of a day-long symposium, adapted from the model we piloted in March 2018. When used in conjunction with the five plays described, this toolkit is intended to help cities to define their own localized version of “smart”, and to construct a workable strategy to encourage greater engagement with publics in the civic processes of designing the smart city.

ACKNOWLEDGEMENTS

This publication would not have been possible without the support and guidance of Lilian Coral from the Knight Foundation. We are grateful to Mary Beth Dawson for event planning and project management of the March 2018 symposium. We reserve a special thanks for the facilitators at the March 2018 event: Chris Bavitz and Gabriel Mugar, as well as the note-takers: Brian Ho, Neha Ravella, Lauren Stott, and Amy Zhou. Carey Anderson provided on-site planning and logistical support with the help of Amar Ashar, Rob Faris, Daniel Jones, Reuben Langevin, and Ellen Popko. Video and audio recording of event interviews was provided by Sean Van Deuren. Courtney Lord designed and laid out this document.

HOW TO READ THE DOCUMENT

This document is a modular tool for public, private, and government sectors designing processes of public participation in smart city planning. It includes four major sections that can be read in any order.

- 01** The Introduction provides an overview of major debates in smart city planning and implementation, with a focus on public participation and the ethics of technology deployment.
- 02** The Smart City Plays includes five “plays” or generalizable actions for shaping how your place conducts smart city planning.
- 03** The selected Participant Interviews give greater context and dimension to the arguments and findings we offer in this paper.
- 04** The Local Process Toolkit is a template for municipalities to reproduce our process on a local level in order to ground-truth our general findings and provide local texture to the definition of smart.

WHAT WE DID

On March 22–23, 2018, we convened a symposium entitled, “Right to the Smart City: Designing for Public Value and Civic Participation”¹ at the Berkman Klein Center for Internet & Society at Harvard University. We set out to answer this question: **What are the best ways of involving publics in decision-making about smart digital infrastructure and tools in their city?** The symposium’s priorities were informed, in the months leading up to the event, by a series of interviews with participants, who provided preliminary thoughts on the topic of civic participation and public value in the smart city. During the event, we framed complex problems of smart civic design and implementation; participants engaged with these problems to create five plays with resonance across locations. These plays offer strategies for engaging publics and provide value propositions that explain why such engagement is necessary.

Our intention was to gather participants from diverse locations and disciplinary perspectives to create a critical framework that centralizes civic participation in smart city design. We set out to provide a counterpoint to the technologically-driven smart city that dominates current practice, represented by global competitions for the “smartest city,” whose criteria typically include things such as autonomous vehicles and kiosks. While these technologies may be an important part of future smart cities, our challenge was to define a framework that involves communities in public decision-making. We sought to position meaningful and inclusive civic participation as a necessary component of “smart.”

OVERVIEW



39 people participated in the workshop (with 33 in attendance) representing a range of fields and disciplines. Participants came from Amsterdam, Atlanta, Boston, Los Angeles, Mexico City, New York City, Seattle, Washington, D.C., and Toronto.² We had representation from academia (17), municipal government (8), nonprofits (5), and the private sector (3). Sixteen participants identified as female, 14 identified as male, and 3 identified as non-binary. Participants were predominantly white (21), with the remaining participants identifying as Black, Asian, Latinx, and mixed race.

¹ <https://www.righttothesmartcity.org>

² 12 came from Boston, 5 from New York City, 4 from Los Angeles, 3 from Atlanta, 3 from Seattle, and the rest were from Amsterdam, Washington D.C., Mexico City, Toronto, and Waterloo. Areas of expertise included policy making and governance, civic media, architecture and design, data infrastructures, labor, urban development, and community building.

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³ Participants listed with an asterisk were interviewed before the symposium, but were unable to attend the event. In some cases, there were last minute scheduling conflicts, but most were prevented from attending by a late winter blizzard that disrupted air travel.

INTRODUCTION

In December 2017, more than 200 parents of Boston Public School (BPS) children gathered at a school committee meeting to protest the implementation of new start times for schools across the city. Many of the city's high schools had extremely early start times—well before 8AM—and the district was responding to research that teenagers generally perform better with later school start times. The district's goal was for all high school students to start after 8AM, and all elementary school students to return home by 4PM. However, because of a complex juggling act that required stretching a limited number of school buses across the city's 125 schools, changing some start times meant changing nearly all start times. The school board enlisted smart technology to sort out the scheduling problem and commissioned MIT engineers to design an algorithmic solution. The outcome was perfect on paper; in practice, it was a fiasco.

The mathematical modeling produced new start and end times for 84% of the city's schools, with over two-hour differences in many cases. Some elementary schools' start times changed from 9:30am to 7:15am. When these new schedules were announced, families were furious on two accounts: they had not been consulted in the change, and the new schedule made no sense for their actual daily routines. The algorithmically-produced schedule seemed to have maximized efficiencies (such as bus routing), but did not, in application, include the reality of getting kids to school. As angry parents protested, holding

signs in front of schools such as “Students are not widgets” and “Families over algorithms,” the message to the school committee was unmistakable: big data has its limits. Smart design needs to include critical data from the people impacted - in this case, from the school districts' families. The day after the protest, Superintendent Tommy Chang announced a policy reversal: BPS would spend another year considering the implications of the schedule changes.

In theory, the school algorithm was a triumph of efficiency; it connected two complex systems (school start time and transportation) with the least amount of friction—that is, until people spoke up and exposed the friction between theory and application. While efficiency is often a priority of government organizations, it may have a very different meaning for the people those organizations serve. Parents sought a “smart” solution that would improve the public school system without destroying the family routine. Dimensions other than the mathematical or technological were needed to make the algorithmic solution meaningfully smart – specifically, families needed to be engaged in defining the problem.

This example is one of many in which cities around the world are struggling to integrate local knowledge with the perspectives of big data and algorithms. The smart cities movement has resulted in successes, particularly in the context of smart infrastructure such as traffic flow and other mobility targets.⁴ But

many projects fall short for the very same reasons as the BPS start time decision: an insufficient integration of smart technology with the engagement of citizens. This can result in underutilized systems, distorted data, and misleading conclusions. These problems in smart cities are not new; rather, they are intertwined not only with previously existing urban and suburban problems, but also with long-standing, unsolved challenges regarding empowering publics in municipal decision-making.⁵

Yet smart city discourse has captured the popular imagination as a meeting point between anxiety and promise, focused no longer on the distant future, but instead on the proximate present in which sensor technology is available and proliferating. Unfortunately, these new technologies often get implemented through bilateral communication between cities and companies, leaving publics without information and excluded from the decision-making process.⁶ Further, the process of procuring and implementing smart technologies tends to focus more on technologies' potential and less on communities' realities, histories, and needs.⁷ With "The Right to the Smart City," the smart city innovation we pursue is the recognition of the civic as a constitutional aspect of the smart.

As smart technologies, from predictive policing to autonomous vehicles, purport to transform lives in cities, municipal governments need to consider new methods of public engagement in "smart" decision-making, remaining mindful of issues such as the ethical implications of sharing data across departments and municipalities as well as the spectre of data surveillance, particularly in relation to communities that have historically suffered from social bias in urban planning. The introduction in May 2018 of the European Union's General Data Protection Regulation (GDPR) has already begun an international shift in the policies and culture around data privacy online. However, in addition to jurisdiction limitations, that legislation does not address the change in context and scale of computational functions [such as sensors, automation, or artificial intelligence

(AI)] built into the physical environment. Such smart city technologies introduce data collection, sharing, and usage in decision-making into the public realm, where individual choice is no longer a gatekeeper. As administrators of many new smart city technologies, governments become the keeper of the public's trust in a social contract between city and citizen. Based on this obligation, a constitutive aspect of this white paper, and the meeting from which it was derived, are the issues of transparency and accountability of privately and publicly held data. We argue that critical to smart cities is the inclusion of civic participation in standard-setting and decision-making. In other words, how can cities effectively engage publics about issues so complex that even experts are struggling with their meaning? Or, perhaps, a better question might be: how can cities afford not to?

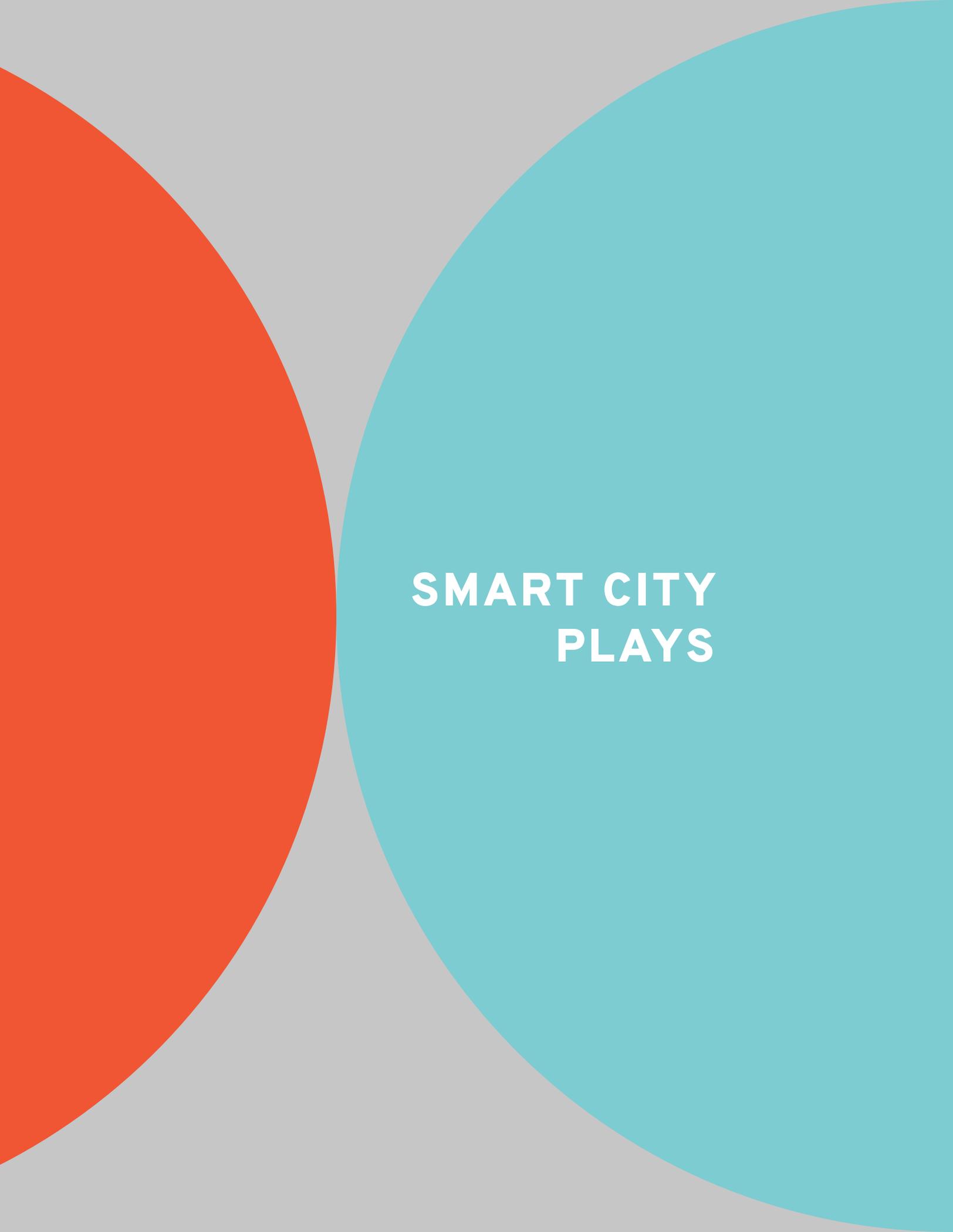
⁴ Woetzel, et. al. (2018). *Smart Cities: Digital Solutions for a More Livable Future*. McKinsey Global Institute. McKinsey and Co.

⁵ Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of planners*, 35(4), 216-224.

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⁶ Mattern, S. (2016). Interfacing urban intelligence. In R. Kitchin & S. Pong (Eds.) *Code and the City* (pp. 49-60). New York, NY: Routledge.

⁷ Vanolo, A. (2016). Is there anybody out there? The place and role of citizens in tomorrow's smart cities. *Futures*, 82, 26-36. <https://doi.org/10.1016/j.futures.2016.05.010>



**SMART CITY
PLAYS**

Emerging from the workshop were **five** distinct “plays,” or generalizable actions, that can be taken by a range of actors engaged with the design and implementation of the smart city. As the symposium had representation from public and private sector organizations, academia, and civil society, the plays are designed to cut across organizational nuance; they represent a values-first approach that can be adopted by any organization.

01

EMBRACE SMART
CITIES

04

QUESTION DATA

02

CULTIVATE LOCAL
INNOVATION
ECOSYSTEMS

05

DESIGN FOR
PLAY AND CIVIC
IMAGINATION

03

INVITE PUBLIC
INFLUENCE

These plays emerged from a day and a half of conversation as well as one-on-one interviews with participants. While we use quotes from some participants to emphasize particular themes, all participants, even if not directly quoted, contributed to the following insights.

PLAY #1

EMBRACE SMART CITIES

In conversations concerning smart cities, diverse perspectives can bring many different understandings of the definition of “smart” to the table; “smart” can refer to devices, data, analytics, processes, people, or all of those things. This breadth offers opportunities to strategically usher priorities into conversations about the future of the technologically enabled city. The term “smart city” has the power to draw companies, municipalities, researchers, and publics together to transition cities from the analog past into the digital future. Public values should define the contexts, nuances, and dynamics of such transitions, which might otherwise be subject only to market values.

DISCUSSION



Smart city originated as a marketing term used to sell mainframes to cities in the 1980s; it functioned as a clever and compelling articulation of streamlined city infrastructure, using accessible, everyday language. Unfortunately, this type of branding exercise too frequently comprises the extent of public outreach concerning “smart,” with cities often prioritizing technological solutions that exclude public participation and knowledge. Thus we pose the question: how might cities better leverage popular excitement about smart cities into opportunities for greater civic participation that provides public value?

In reimagining the relationship between city governance and civic participation, how might the complexity and diversity of human experience be better included? Ceasar McDowell says that “cities are so drawn to sensor technologies because they provide easy answers. They explain complex reality using data and images, but that won’t work, because there’s much more to people than the data we collect about ourselves.” Toni Griffin agrees, saying, “I don’t believe that the data you’re able to gather through technological means is sufficient to address and discuss betterment of the city. There’s other data needed that you can’t necessarily gather through certain

technologies. Not just counts of things, but qualitative things.” The phrase “smart city” often exclusively connotes technology, but participants agreed that technology was just a hook; that in fact, for a city to be smart, it needs to ground technological innovation in local knowledge.

Many participants thought that the smart city frame should be deployed as a “Trojan horse,” that is, as a way of sneaking a civic agenda into market enthusiasm. Dan O’Brien points out that this - perhaps misguided - enthusiasm extends to the general public: “The average person thinks of smart cities as being the autonomous vehicles, the ubiquitous sensor systems, things of that nature. Those technologies we talk about are big and sexy and really expensive and really inaccessible to most populations. We need to be more concerned with the more modest day-to-day stuff that we could do with datasets that any municipality has and could have real impact tomorrow.” Here, the excitement for new smart city technologies is an opportunity to reconsider mundane, low-tech, or even analog options for solving public problems.

Lilian Coral asks, “Do we really have the right pulse on what is of value to the average city dweller? I wonder if we’re making assumptions in our own circles about what we should be working on.” The appropriate time needs to be committed, from the very beginning of a process, to inviting and facilitating public input. Indeed, the smart city should be an informed city. Layman Lee points out that it takes time to convene stakeholders and “ask what they want. What are residents afraid of? What do residents want to see?” This type of ongoing engagement can produce and refine guiding principles for what smart cities mean to a specific neighborhood. In Layman’s work with the Brownsville Innovation Lab, for example, the community filed several public requests for proposals (RFPs) about how sensors might activate community spaces. **All that is knowable is not measurable.** Through taking the time to talk to people about the data that exists, we can verify what we think we know and shed light on that which we do not.

ACTION IDEAS



- Embrace the smart city frame as an opportunity to highlight what matters in your place
- Turn jargon and technical language into language accessible to publics
- Use “smart” to revisit how your place engages publics

PLAY #2

CULTIVATE LOCAL INNOVATION ECOSYSTEMS

To compete in the smart innovation landscape, cities must cultivate supportive environments for individuals and local companies. Unlike business models backed by venture capital funding and research and development branches of mega-corporations, local innovation ecosystems are incentivized to understand and serve their community's needs. Public investment and procurement processes should support the development of technologies that prioritize collectively-defined public value and locally-sourced innovation.

DISCUSSION



It is no surprise that funder agendas steer smart city values. However, the project constraints stipulated by public sector and foundation investments tend to underestimate the lengthy engagement processes necessary for community-led innovation. Layman Lee says that “meaningful relationships with people and neighborhoods don’t fit within 12–18 months of foundation timelines. Well-meaning [project teams] are trying to make community engagement a priority, but trust-building takes time and is rarely supported.”

Large smart technology vendors might pay lip service to community engagement, but cities typically have no processes in place to mandate such engagement prior to procurement. It is typical, therefore, for RFPs to be awarded to companies with few or no requirements for public input. Moreover, as the definition of smart is still very much in flux, fast-moving industry sectors appear to be defining the terms for cities and citizens. In framing a local innovation ecosystem, we identify an alternative strategy of partnerships with universities, innovation hubs, labor, and community organizations both invested in local public value and better attuned to community needs. These relationships can help cities determine and prioritize public sector values, ethics,

and knowledge when negotiating with large corporations. As Catherine D'Ignazio says, "We need to discover creative mechanisms for the public sector to exert pressure on corporations who want to do business with cities, [and] to reallocate their funds into engagement, capacity-building, and addressing equity gaps." Cities need to create opportunities for publics to dissent, as well as for the public sector to fail honestly without activating the narrative of the political scandal.

Cultivating a local innovation ecosystem goes hand-in-hand with supporting an informed public voice on smart city technology use, and a key component of informed publics is basic data literacy. Public sector and civil society organizations need to invest in cross-sector data literacy for publics to critically assess the values and risks of smart infrastructure. Such capacity is often relegated to data scientists or technical staff, but in an economy increasingly driven by data acquisition and deployment at the level of government and corporation, civic smart cities must prioritize data literacy or, more broadly, a data culture. This is not simply for the purpose of public input, but for idea generation and creative problem solving. The historic misuse of data that disproportionately impacted low-income Black and Latinx communities (such as stop-and-frisk police regimes) highlights the pressing need for greater data literacy - especially for those at heightened risk- to not only express their opinions, but to propose alternative solutions.

Informed publics need legitimate accountability measures for bodies with the authority to collect and act on data. Toward this end, the ability to audit government or private data sources is a key component of a data culture, as is the cultivation of citizen groups as technology innovators rather than simply consumers. By reinforcing channels for greater transparency and access under the umbrella of the smart city, cities can better facilitate public trust and local partnerships, creating healthier innovation ecosystems.

ACTION IDEAS



- Seek partnerships with local universities to source talent and knowledge
- Cultivate data literate publics to empower critical input and innovation
- Identify local innovation capacity by creating an asset map of skills and interests
- Support public experimentation with new technologies and cultivate local expertise

PLAY #3

INVITE PUBLIC INFLUENCE

The opportunistic economic and technological climate fueling today's smart city investments creates a parallel ethical urgency to effectively consult publics in the design and adoption of these investments. With new participatory frameworks and technologies, cities have the chance to move beyond tired and non-representative town hall models of engagement, and to entirely reimagine their processes for inviting publics to influence decision-making. For participants, these processes are built on an understanding of smart that appreciates their local expertise and involves publics from start to finish. Processes that request deep engagement should convey deep respect for elicited opinions and labor as well, committing to transparency and providing evidence of impacts on decision-making to build trust. Lastly, input into civic processes can be augmented with technologies as means of active and passive participation.

DISCUSSION



As technologies become more complex, smart city conversations are increasingly relegated to the realm of technology experts, who may be fluent in community inclusion rhetoric, yet struggle to actually include publics in smart processes. For civic smart city design, it is imperative that cities acknowledge and leverage existing local expertise, giving a diverse group a seat at the decision-making table. Cecily Garrett points out that in addition to inviting a diversity of stakeholders to the table, "It matters just as much to ask, whose table is it?" Or as Kathy Nyland suggests, sometimes it is the city's responsibility to let local communities make their own table: "We are trying to provide a platform in the City [of Seattle] that empowers a lot of community-led initiatives that, otherwise, would be seen as peripheral or small or fragmented." Additionally, these partnerships cannot be temporary; it is important that cities support persistent input. "Always involve community from beginning to end," says Layman Lee, "even if they don't know anything about technology."

Cities need to design for trust, not only function. Kade Crockford argues that we need "systemic reforms for engagement. Cities won't be able to get people engaged with city projects unless they know their voice is being heard."

In practice, this means creating feedback loops between government and publics to demonstrate that the city is listening.⁸ Cities must prove their trustworthiness over time, to varying publics, with particular focus on communities with historical and persisting reasons to distrust government. Understanding priorities across the range of publics and making evident how resources are allocated should be a primary goal of smart city planning.

This play calls for a shift from “smart technologies in search of problems” to “defining problems with publics, then working to solve them with technologies.” The goal is not to talk about smart cities, but to get smarter in the way we talk about cities. In designing toward greater civic participation, we must also recognize that people can only attend to so many things at once before attention deficit or sheer exhaustion erodes their ability to engage. With the labor of civic participation in mind, cities should anticipate the complexity of participation when either the same people are asked to come to the table over and over again, or certain communities are in the constant churn of being surveyed. This is especially true for lower-income communities. Beth Coleman says, “We have a two-tiered system where people who are ‘at-risk’ (more likely to be surveilled) are asked to do the double task of having a job and also sustaining a community activist position.” This isn’t unique to smart cities—most planning processes place more demands on the people who are most vulnerable—but if we want our cities to be smart, we can start by designing more equitable engagement processes.

Civic technologies can be designed to “gently nudge engagement in public discourse,” Catherine Geanuracos suggests. Technologies that invite conversation, from online discussions to public art, can effectively “bring the city to the people,” Sun-ha Hong says. But we cannot continue with the pattern of cities building platforms for communities. Ceasar McDowell argues that “[cities] should build a process that community members can initiate themselves.”

ACTION IDEAS



- Reframe “smart” to include local expertise
- Support communities defining their own engagement processes
- Be aware of demands placed on at-risk communities — assure expectations are equitable

⁸ For a rich description of effective public engagement processes, see: “Accelerating Public Engagement: A Roadmap for Local Government.” Eric Gordon (2017). <https://engage.livingcities.org/guide>

PLAY #4

QUESTION DATA

Data is at the heart of smart cities, as data is what makes technology “smart.” They provide the computational values about the world that technology calculates and activates. The real-time analysis of smart city data can lead to better service provision and information accessibility; however, it can also lead to profiling and social isolation. **Public sector and public-serving organizations need to ask why, how, and what of data before it is collected and interpreted.** Robust and responsible data policies and protocols must be included in the development of smart technology infrastructure, and organizations should make these policies and protocols known to the publics they serve.

should be to question the use of new datasets and to clearly communicate the values that justify their collection and analysis. “We have a burden — as practitioners, as researchers, as policymakers — to make as strong an attempt as we can at explaining the effects and explaining the principles of data use. We need to strive for interpretability,” says Julia Stoyanovich. This is brought into focus by Steve Walter: “If data is owned by government, it is necessarily everyone’s data.” As a result, government needs to think through the consequences of such ownership. Pedestrian traffic data being collected because it serves the purpose of timing walk signals would seem to be desirable. But when that same dataset is mined by an advertising company for demographic information, that may be an unwanted and unintended consequence.

DISCUSSION



Kathy Nyland cautions to not “romanticize data, but to recognize its power and its consequences.” Her statement captures the spirit behind this play: data is often seen as a resource to be controlled, but the public sector’s responsibility is to steward this new data landscape with clear justifications. Nearly everything can be data-fied, but that does not mean it should be collected and stored. Government’s role

Government is not the only actor in public data use; civil society organizations need to play a significant role in stewarding the data landscape. Layman Lee states, “Nothing’s free. Somebody’s collecting our data. If someone’s trying to make money off that data, instead of them going directly to city government on a very wide scale, what happens if the neighborhood owns them?” If a community organization owns the data, they can use them for the purposes they want, without making them available to every organization and company that wants them.

There are significant complications in how data is shared across agencies or organiza-

tions. As Sari Ladin-Sienne states, the City of Los Angeles' job is not simply to make data available; "its job is to educate people on how to contextualize and use data." Cicely Garrett discussed the complexity of sharing sufficiently contextualized data across departments in the City of Atlanta, saying, "There isn't a shared summary of data. I'm not sure that people know a good way to share data."

The responsibility of data collection, management, and analysis within government is often left to understaffed "innovation and technology" offices or designated "smart city" staff. In reality, citizens' digital lives reach across government agencies. To provide more integrated and targeted services for publics, governments must also share and manage data across agencies. Data sharing involves data classification, standardization, and cross-departmental communication, while *informed* data sharing is even more difficult. This involves discussion about which data to share or make public, time spent on providing context to datasets, and attention to the gaps in data collection and analytics. As Adam Forman says, "When sharing open data between departments and with the public, **governments shouldn't adopt a data culture of yes; they should adopt a data culture of why.**"

Gabriel Mugar asks, "Why, if we optimize our personal lives with Fitbits, can't we consider how to optimize civic data, and decide as a community how to use it?" Smart city public engagements are not town hall meetings about capital projects; they are collective processes to determine how to manage data. Symposium participants proposed a flipped data ownership model, such as creating citizen councils for data sharing. As Carl DiSalvo suggests, "Instead of police giving citizens a report, what if citizens gave the city a report about their own data?" A data ombudsman or civic technology jury are options for making these sorts of decisions.

There is too often an assumption that data speaks for itself, and that data cannot be distorted or misinterpreted. Martijn de Waal reflected on a project ran by Het Nieuwe Insti-

tuut in the City of Eindhoven (The Netherlands) that did this work well: "The project started with a lot of existing data, so a lot was known about which problems were at stake in which neighborhoods. But then the organizers went into the communities, asked people to tell their stories, then mapped those stories to the known problems. Turns out that the problems people found relevant were not the ones that local government had data about. For example, people identified loneliness as a problem, but that wasn't represented in any existing data set." Predictive policing is another example: when the majority of arrests in a particular neighborhood involve Black men, an algorithm justifies that Black men be more thoroughly surveilled, thus leading to more arrests.⁹ One response to data bias is context for data sets, as adding context to data can help to surface bias through providing a critical lens on the use of algorithms and analyses, as well as filling in gaps in data.

ACTION IDEAS



- Adopt a data culture of thinking critically about how, when, and why to collect and use data
- Find data about problems, not problems in the data you have
- Empower a civic technology jury to veto smart city technology proposals that don't provide public value

⁹ Ferguson, A. G. (2016). Policing predictive policing. *Washington University Law Review*, 94.

PLAY #5

IMAGINE THE POSSIBLE

Any livable future city needs to be a place of delight, discovery, play, and pleasure in serendipitous encounter. When future smart cities are imagined by corporations, however, urban experience often gets relegated to responsive and frictionless infrastructure. For smart cities to be truly citizen focused, developers, civil society, and government need to incorporate opportunities for play and creativity as a means of imagining the future city.

DISCUSSION



While most conversation during the symposium focused on smart infrastructure and public decision-making, the question of how technologies shape social interactions was never far from the surface. This included the kinds of tools, both digital and analog, used for dialogue, augmented reality (the insertion of a data layer onto physical space), and the interactions that urban screens and urban art might provide. Benjamin Stokes shared stories of several efforts by major cities to leverage Pokémon GO for city goals, including encouraging people to visit overlooked neighborhoods and engage with local history.¹⁰ Eric Gordon spoke about the intentional design of playful process as a means of cultivating rich dialogue.¹¹ Play in these contexts is distinct from “gamification” or “funification,” where games are used as a motivator for participation (in the best case) or a means of placating publics (in the worst case). Here, play means to foreground social interaction in smart design. For example, in 2017 the City of Boston staged a “Robot Block Party” that introduced smart city concepts such as autonomous vehicles and artificial intelligence by massing the “largest collection of autonomous vehicles and robots ever assembled in Boston.”¹²

As smart becomes a dominant frame for

the future city, it will take effort to move the conversation beyond the purely rational and cognitive. In line with Play #1, participants agreed it is strategic to latch onto the enthusiasm around smart, but that in doing so, it is essential to ensure that the term is broad enough to include all the things that make life in cities tolerable, and even desirable. The High Line in New York City is smart infrastructure.¹³ The whimsical repurposing of parking spaces into mini-parks, as takes place during the international art event Park(ing) Day, is smart infrastructure.¹⁴ While Play #1 seeks to capture smart for a civic agenda, Play #5 seeks to broaden out civic to include a range of shared experiences in the public realm, ensuring that publics, not just corporations, can actively imagine the future city.

Gabriella Gomez-Mont warns, “What does it mean that corporate agendas have the power to take over our imagination? And what are corporations optimizing for?” Most importantly, how do we enable publics to do the work of imagining possibilities?” Media scholar Henry Jenkins has introduced the concept of civic imagination, or “our collective vision for what a better tomorrow might look like,”¹⁵ as a self-conscious process of negotiating future visions. While he does not explicitly refer to smart cities, his focus on imagination and its connection to art and popular culture is instructive for the civic imagination of the future smart city.

Public art and creative placemaking is part of this play, but the play should not be mischaracterized as “more public art.” Instead, **it is the deliberate design of creative and playful encounters as a means of imagining the smart city.**

ACTION IDEAS



- Include creative placemaking in smart city projects
- Experiment with new, immersive forms of storytelling, sourced from citizens, to evolve the definition of smart
- Tap into popular culture to provide opportunities for play and delight in the city

¹⁰ For the full report, see: “Cities Remix a Playful Platform: Prominent Experiments to Embed Pokémon GO, from Open Streets to Neighborhood Libraries and Local Data.” June, 2018. Benjamin Stokes, Samantha Dols, and Aubrey Hill. <https://playfulcity.net/go/pokemon-report/>

¹¹ Gordon, E.; Haas, J.; Michelson, B. “Civic Creativity: Role-Playing Games in Deliberative Process.” *International Journal of Communication*, [S.l.], v. 11, p. 19, Sep. 2017. ISSN 1932-8036. Available at: <<http://ijoc.org/index.php/ijoc/article/view/7344>>

¹² See, <https://www.boston.gov/calendar/robot-block-party>

¹³ See, <http://www.thehighline.org/>

¹⁴ See, <https://www.citylab.com/life/2017/09/from-parking-to-parklet/539952/>

¹⁵ See <https://www.civicimaginationproject.org/about> for more information about how civic imagination is put into practice.

CONCLUSION

A smart city is not solely defined by its technology. It includes how the public is brought into decision-making, how technologies are procured and deployed, and how democratic principles of transparency, access, and inclusion are incorporated into city life. Smart incorporates the latest technologies, but it should also recognize the limits of those technologies, and make room for the social, playful, and imaginative qualities that define city life.

Every city's conversation about smart cities will be different, nuanced to their values and envisioning diverse futures. This document provides plays that cities can use to make their "smart city" inclusive of local values and priorities, moving beyond the subset of technologies typically referred to as smart. To give greater context to the arguments and findings we offer in this paper, we provide selections from [Participant Interviews](#), following which is the applied practice of the [Toolkit](#). Our intention is to provide critical framings and procedures for city leaders to leverage this conversation with local specificity. The preceding five plays and the toolkit that follows are designed to be used together as a means of helping cities define a workable definition and strategy for their locally resonant version of smart.



PARTICIPANT INTERVIEWS

This section of the paper gives longer-form citation of interviews conducted with symposium participants in advance of the March 2018 meeting. The purpose of the interviews was to a) establish a shared agenda for the symposium, and b) surface frameworks, projects, and procedures from participants' own background in smart cities and civic engagement. We offer selections of the interviews to provide context and dimension to the symposium proceedings. Interviews include the following:

JENNIFER CLARK

KADE CROCKFORD

BHASKAR KRISHNAMACHARI

SARI LADIN-SIENNE

CEASAR MCDOWELL

KATHY NYLAND

JENNIFER CLARK

DIRECTOR OF THE CENTER FOR
URBAN INNOVATION; ASSOCIATE
PROFESSOR OF PUBLIC POLICY
AT GEORGIA INSTITUTE OF
TECHNOLOGY

I am an urban planner by training, and I publish primarily in urban planning and in economic geography. I'm the chair of the Economic Geography Specialty Group of the American Association of Geographers, and I'm also the associate director for the Smart Cities and Inclusive Innovation Initiative here at Georgia Tech. What I do, in terms of smart city, is urban and regional economic development. For me, smart cities is largely a question about economic development, a question about how smart cities are enabling and evolving industry.

And the interesting thing about it is that we're looking at an industry where the technology diffusion is going into both the public and the private sector sort of simultaneously, rather than simply into the private sector, as we typically see. For me, this is a really interesting subject because of the complexity of the technology diffusion story that's emerging. It is a complex discussion about what is public, what is private, what is really third sector, what sits within what is publicly provisioned, and what is in fact part of the private market.

That conversation is not happening after the technology is developed; that's happening as the technology is developed. So, I saw smart cities as it was emerging onto the popular stage as an unusual opportunity to look at all of those questions simultaneously, in particular the question of how the stakeholders and different actors lined up to make these decisions without actually knowing what the outcomes were. So, we don't know what the market for smart cities looks like. Typically, you have some sense of what a market is going to look like, right? In this case, people are making decisions without actually understanding even what the products of smart cities are, or the process for how they're produced. And, of

course, there's an additional question about the uneven development of these initiatives that ends up creating an uneven landscape for economic development, and for competition from technology development.

All the questions that we have about infrastructure development and, say, who gets better sidewalks, who gets better roads and bridges, and all of these sorts of things that have always been a question in urban planning, we then layer on top of that a question about 21st century technology deployment that is sitting on top of that uneven story that hasn't been remedied or addressed in the first instance.

The challenge here is to understand the city. A lot of the people engaged in smart cities don't understand cities. They literally don't understand cities. And this whole story about smart cities has made me spend a lot more time on the questions of where urban planning sits and where urban planners are in the smart cities conversation. You look around the room when I attended the launch of the Smart Cities Initiative out of the White House at the end of the Obama Administration (what ended up becoming MetroLab), and there were only two other urban planners. Of the 20-odd universities there, only two other universities had sent people who had urban planning backgrounds. I'm looking around and saying, "How did the urban planners not get into this conversation?" That's part of my work now, saying, "Okay. What happens if we bring that expertise on how uneven development actually happened, and how cities actually operate, to how the data, and the devices, and the sensors and all of these questions layer on top of this?"

KADE CROCKFORD

DIRECTOR OF THE TECHNOLOGY
FOR LIBERTY PROGRAM AT THE
ACLU OF MASSACHUSETTS

The work that I do, mostly, focuses on trying to ensure that new technologies don't eclipse our core civil rights and civil liberties; and, on the other hand, actually using technology, wherever possible, to advance civil rights and civil liberties. The smart city conversations fall squarely within that subject of concern. Obviously, privacy is a major concern for us, but we are certainly interested in ways that cities can make life more efficient and fun, without compromising people's core rights like privacy.

What do I mean by "efficient"? Well, I live in the city, and I would prefer that the transportation system work better. I would prefer that government is efficient and effective, and so to that end, with the ACLU, we're not remotely opposed to innovation in government. The question, really, is can those innovations occur in ways that actually benefit the citizenry, as opposed to simply lining the pockets of corporations that want to get in on a new industry? Like IOT or smart cities or something like that.

What do I mean by "fun"? Well, they should be fun, right? One of the benefits of living in a high-density, urban area is that there are a lot of exciting cultures and people who are really different from you. I'm curious about ways that the city can make connecting with different communities and cultures easier and more exciting, and make the city a more fun and exciting place to live for everyone.

I can think of interesting smart city projects that have not been pursued by city governments. For example, in the aftermath of [Hurricane] Sandy in New York City, a number of community activists started a mesh network in Red Hook, NY, to enable people to communicate when their broadband was down. My assumption is that community groups in the aftermath of that crisis heard directly from community members, "Wow, it's really difficult to communicate. We don't have

a way of sharing information because the cell phone network and the internet are both down." As a response to that direct need, community groups got together and created that mesh network. I think two things are necessary for a smart city project to be relevant and appropriate. One is to involve communities in the process from the get-go, a community-centered design approach. And, two, actually provide a service that people really need and want.

I consider the ACLU to be a part of the community, and there are certainly other people all across the city who are attuned to privacy concerns. So, yeah, absolutely, there are going to be areas in which maybe the ACLU's position on a privacy issue doesn't jive, exactly, with what folks actually want. I think that would be a lovely conflict for us to have, frankly, because too often the conflict is that there's a top-down approach, whether it's from law enforcement or from other parts of the city government, deciding in a totally anti-democratic process what the policy of technology is going to look like. Then, the ACLU has to step in after the fact and go, "Hey, wait a minute. You didn't take privacy into account, at all. What are you doing, here?" If there was a real process that involved community and disagreement between folks in the community who say, "Actually, we do want this technology that may violate folks' privacy," I think, frankly, that would be a lovely conflict to have. It would give us an opportunity to do public education on privacy issues that I think don't get enough attention. We may be able to change folks' minds. We may not.

We are very deliberate about the creation of a process. We're not trying to say, "The city can never obtain new surveillance technology." That's not the point. We want there to be debate; we want there to be conversation. We're confident that when there is debate and there is conversation, the ACLU's position will probably win a lot of the time (because we think we're right, right)? The process is really what's important, in my view.

BHASKAR KRISHNAMACHARI

PROFESSOR IN ELECTRICAL
ENGINEERING AT UNIVERSITY OF
SOUTHERN CALIFORNIA

I'm a faculty member at the University of Southern California, in the Viterbi School of Engineering, and the director of our Center for Cyber-Physical Systems and the Internet of Things. I'm looking at, from an engineering perspective, a range of new technologies that are emerging and finding use in many applications (networks, security, artificial intelligence and machine learning). This addresses big data science, various types of computational sensing, and actuation hardware. Those are classes of technologies that researchers in engineering all over the world have been working on, which are finding new applications when they're put together in the context of domains like smart buildings, smart transportation, health, and smart cities.

I come at this from the perspective of new technologies and where they are applicable, where they can provide the most benefit to society. To an engineer, "smart cities" conjures visions of new ways of gathering information about what's happening in the city, and processing that information and making decisions (whether it is citizens making the decisions or the city) that are somehow improving the lives of the citizens. Whether it is to deal with traffic, to manage conditions of streets, or air pollution, can we monitor and identify the sources of air pollution, and then enact policies that can mitigate those?

From a technology perspective, we've been conjuring up these visions for many years, at least in engineering. And various companies have touted products that will make cities smarter. But when we really look around at adoption and deployment of smart city technologies, you don't see it very much at all. If you really prod city officials about examples of things they've done that have made their cities smart, some of them will point at internet kiosks—which are glorified laptops encased in boxes with a glass case where you can select various options. Yes, you

can learn more about the city or learn something about tourism, and so on. But ultimately, it's just a public deployment of computers in display cases.

In our mind, that doesn't necessarily make the city a whole lot smarter by itself. Really, we see a need to start a process of talking to companies, talking to people in governments at various levels, and talking amongst ourselves about intersections between engineering and business, and incentives. We came to this realization that what is really missing are incentives for creating — let's say, a whole ecosystem of businesses working with citizens and governments to make the city smarter, as opposed to individual products that companies come up with. And so, a lot of our work on smart cities has focused on how you make cities smarter by creating thriving ecosystems around new technologies, such as the Internet of Things (IoT).

So, in November 2017 we launched a consortium called I3, which stands for Intelligent IoT Integrator. This consortium is led by the USC Schools of Engineering and Business, working together, along with folks on the operational side of the university. The consortium includes the City of Los Angeles mayor's office, and a number of companies like Verizon, Warner Brothers, Tech Mahindra, and a number of startups in the Los Angeles area.

The idea of the I3 Consortium revolves around what I would call the middleware layer of software that is a community marketplace. This is the layer to which device owners that deploy sensors in the city can connect to measure air quality or occupancy of parking spaces, or traffic, and so on. The sensors provide real-time data streams about whatever they're measuring in the environment to this community marketplace. They essentially describe what data they're providing, the usage rules, and constraints associated with using that data. For example, there may be certain privacy constraints, or uses for which that data is okay to be used, and others that it should not be, or certain types of users granted access to that data and others who may not. The marketplace sets a price for that data, to monetize the data that's coming from the sensors.

SARI LADIN-SIENNE

CHIEF DATA OFFICER FOR CITY OF
LA; RESEARCH FELLOW FOR THE
CIVIC ANALYTICS NETWORK

I oversee [Los Angeles] Mayor Garcetti's strategy for open data and other similar directives. We work on developing a stronger culture of data-driven governance for the city and helping departments understand what data they can use to improve their operations internally and address some of our thematic priorities, including equity and responsive governance. Our shop developed dashboard tools for them to use. We also trained them on how to best think about metrics and how to best track their progress, using a variety of practices that we see have worked in the city and elsewhere. Additionally, we try to get our departments to regularly report on how their open-data programs are doing. Because we're such a vast city, we're really focused on empowering the departments to release data that they think is impactful and would be very useful for civic engagement, economic development, and for data journalism and other potential avenues; research, etc.

We developed a city-wide data collaborative that meets quarterly with over 80 data coordinators. The mission of this collaborative is to fill in the gaps for our data stewards and create a community of practice where data is celebrated. Thus, we created a data-publishing guide for our data coordinator last year. This year, we're working on open-data action plans to really track progress over time. Tomorrow we're having our city-wide data collaborative for the first quarter and talking more about what it means to track progress when it comes to open data. Then, another big audience that we have, obviously, is re-searchers, civic tech, and advocates that are interested in using city information for their own mission. We oversee over ten different academic partnerships, currently, and are developing brand-new data literacy initiatives.

Recently, we had our first workshop with community stakeholders through our neighborhood councils, which are our volunteer neighborhood associations in L.A. Now, we're building out that partnership and really making it part of the core mission of the Empower L.A. department that oversees neighborhood empowerment. We're also working with a local university partner to leverage their community trainings and complement each other. It's all at the beginning stages of our smart city strategy of not only becoming smarter and more connected in how we implement IoT [Internet of Things], but also thinking about the people who make the city smarter, making sure that we have the pipelines in place to really make sure all Angelenos understand what data is and how to use it.

To us, data collection involves continuing to evaluate what type of data we're currently required to collect but also thinking about what data we should be collecting, and I think that's part of the feedback loop that we receive from the open mailbox that we have for open data and when the public also nominates data sets on our open data portal. When the data exists, we obviously provide it, but we use it as a conversation starter with departments to encourage new sources of data and more relevant data collection.

A great example that we always talk about is the novel data collection process through the Clean Streets Initiative, and we want to be doing more projects like that — documenting people out in the field with geolocated field ops, collecting information about our city with images — and now we're beginning to actually classify all those images and use them for machine learning. I see data collection as completely separate from data use. Data use is really all of the work that we do in developing contextualized use cases that prove the value of using data for operations.

CEASAR MCDOWELL

PROFESSOR OF CIVIC DESIGN AT
MIT

My work is primarily around the issue of civic engagement, but I think right now, the way I look at it and frame it, it's really around the notions of civic design. How do we design new civic infrastructures, given both the changes and the complexity of who the public is, and also the changes in the methods and tools that we have for actually connecting and engaging people? The notion is that we, as a society, actually do need to design a new civic infrastructure. It's not that I have designed one. The way we will go about that is through lots of experimentation. From my viewpoint, the place that we're at, particularly in this country, is that people in cities are living amongst the most demographically complex set of people who've ever lived together. So, we have a very complex mix-up of who is the public. And yet, cities actually do not have an infrastructure or process in place that enables complex publics to do the work that a public needs to do in a democracy.

The systems that we do have in place, be it everything from political parties to interest groups, all were built at a time in this country when building systems was about supporting exclusion in public discourse. And my sense is that we have reached the limit of where modifications of a system founded on a wrong premise—one of exclusion instead of inclusion—can take us. And so, the challenge that we have is: how do we create new civic infrastructures that enable this complex public to do the kind of thinking and engagement that the public needs to do in a democracy, in order for institutions to actually serve them well?

I see there are conversations the public needs to be involved in for a democracy. They need to be involved in framing what issues are important. The complex public needs to be involved in ideating how to then approach those issues that they framed. They need to be involved in prioritizing which of those

ideas to go forward with, which is really about values. They need to then decide which path, and which ideas to move forward on, and they need to be involved in conversations about implementing and monitoring.

So, in creating spaces and opportunities for that, we have to figure out how to design those spaces so they are able to bring as much of the complex public in as possible. From that standpoint, I see eight principles for designing those kinds of opportunities or spaces:

- 1 Design so that it works for people who are most at the margins of the issue being taken care of.
- 2 Design for collaboration.
- 3 Design for equitable outcomes.
- 4 Design so that people are able to attend to systemic issues and systemic change.
- 5 Design in a way that enables people to investigate network-based solutions.
- 6 Design for both an analog and a digital world — so basically, in person and also online.
- 7 Design for multiple ways of expression, because people express in lots of different ways — not just language, but all kinds of ways.

So, if we are trying to create something that allows the public to bring itself forward, then we have to design spaces to enable those things. And the last is:

- 8 Design for healing, because so much of the public, and particularly people who are marginalized in this country, have been so damaged and traumatized by the public's processes. In order to build trust in new systems and new efforts, we have to tend to the harm that's already been done.

KATHY NYLAND

FORMER DIRECTOR OF
DEPARTMENT OF NEIGHBORHOODS
FOR CITY OF SEATTLE

I'm going to have a bias on the smart city thing. Before I get into the bulk of the question, my Deputy Director and I went to a conference last year about smart cities. It was the most enlightening and frustrating thing because it felt like Seattle was doing a lot of work. But it wasn't known work, and we haven't been telling that narrative, so it was really frustrating for me, because I felt like we could be doing so much more.

I am the Director of the Department of Neighborhoods, and what that means is morphing each and every day. We have really been given the directive to lead outreach and engagement efforts for the city, so we partner with our internal and external stakeholders — meaning 12,000 employees as well as 700,000 residents. Our guiding principle is equitable outreach and engagement, and we work to make sure people know what's going on and are part of the conversation, whether they're physically at the table or we utilize every single tool we can think of to make sure people have the opportunity and ability to participate, if they so choose.

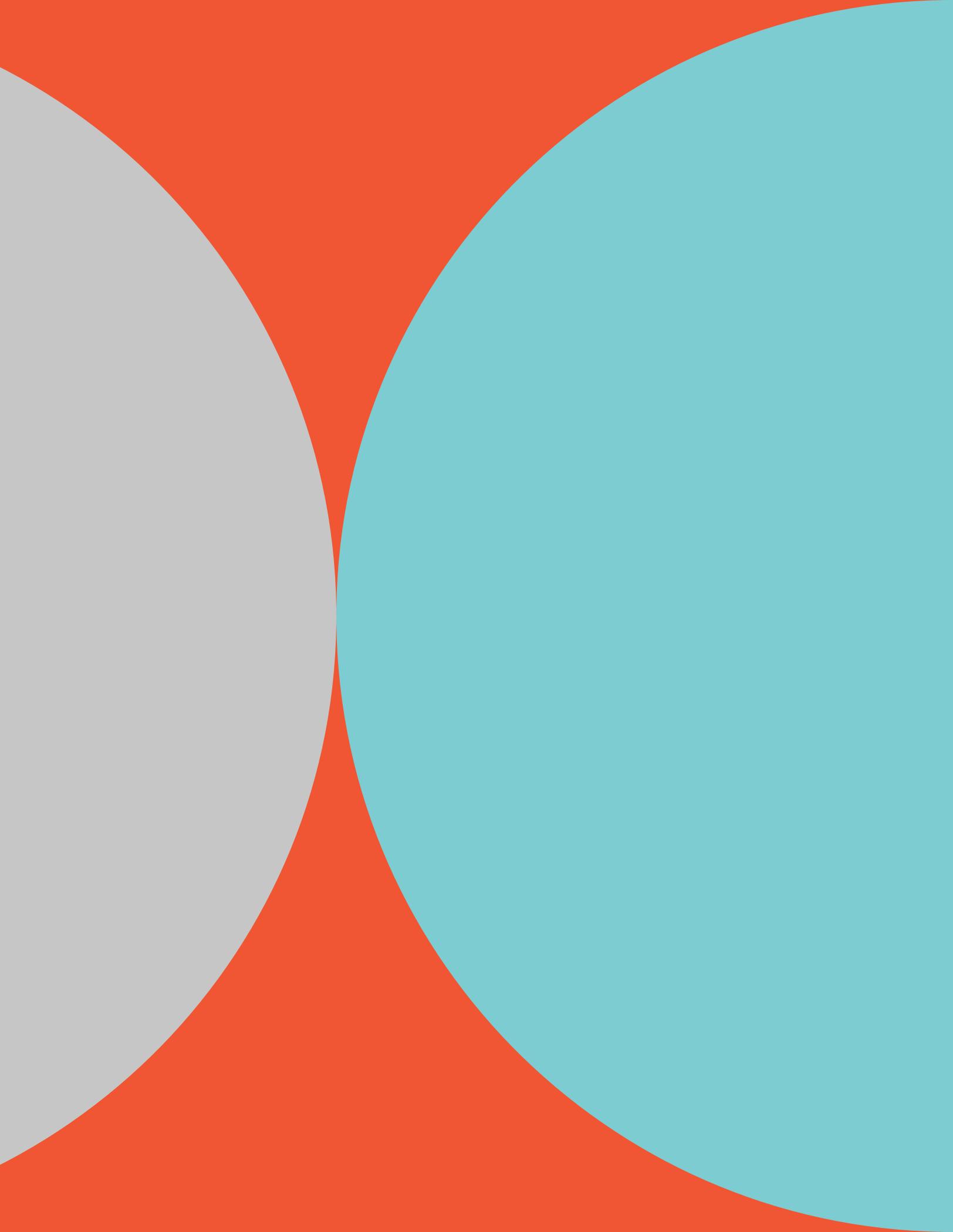
How does that fit in with the smart city work? We are slowly inserting ourselves into that conversation. Right now, our smart city efforts seem to be really focused on our capital departments. The work that they're doing is great, but it's known mainly amongst the capital department, so we are inserting ourselves, learning more, and hoping to broaden that narrative and connect some more dots.

The smart city work is really utilizing existing systems and improving them (whether that's with drainage, or with transportation and signalization), and just being smarter, more effective, and more efficient. I know our I.T. department is working on an array of things. We're using metering to collect data. That's a new conversation that's just starting because

that is something that could be very visible. Communities need to understand what it is, how those decisions are made, and where communities fit into the project. We're just starting to unearth it.

The Department of Neighborhoods has never really utilized data before. In the last year, year-and-a-half, we have just started putting those metrics in. We established a baseline to see how well we are working, what kind of improvements we are making, and how many people are involved. So, that mindset of performance management has been introduced to this department, and it's something that we're going to carry through. With the smart city efforts, the big projects that we've started talking with I.T. about is the array of things that puts sensors in communities so we understand a little bit better about what's happening with traffic patterns, weather patterns, and pedestrians walking around, just quality-of-life measurements.

We also understand privacy is a huge issue, so beforehand, we take the steps to really understand what the program is, who gets to decide, and what we're going to do with that information. That's where we're being brought in to bring up those more sensitive issues involving the community. I think a lot of the things that we were talking about were slowed down during the transition of mayors. As you know, we had four mayors in four months. Now that we've hit some stability, and have a mayor in office, we're going to be sitting down and having those conversations, again. It's just so big. Anything with technology and services and then community, it's just such a big issue and it's complicated with a lot of layers. So, you've got to bring every single sensitivity to the forefront, and really understand all that you're trying to do and the consequences that people may perceive.





**LOCAL
PROCESS
TOOLKIT**

WHY DO THIS?

Every city needs to define its own approach to smart. This toolkit offers a set of activities for exploring and shaping smart city discourse in your place. Sensors, algorithms, and new data flows and practices are rapidly changing governance in cities, and giving publics influence over the decisions that integrate new technologies and processes is imperative. To facilitate such participation of publics, we offer the following **day-long symposium** adapted from the model we piloted in March 2018.

HOW TO BEGIN?

Once you have secured a venue and date for your symposium, we recommend these criteria for recruiting participants:

- **Diversity of disciplinary approach** (i.e. policy, art, technology, education, community)
- **Diversity in race, gender, age, income, and location** (of residence and employment)
- **Representativeness of participants**
- **Inclusivity by supporting robust participation**—consider time, location, transportation, and cost for participants and see what resources may be available to support different needs.

Activities are designed for a facilitator to lead at a table of up to eight participants, with a volunteer taking notes. The more participants you recruit, the more facilitators and note-takers you will want to train.

HOW TO PREPARE?

To prepare for this symposium, choose an online platform accessible to the public where results from the symposium will be shared. We recommend you spend two to three hours training the people who will facilitate and take notes at table conversations. During the training, provide facilitators printed copies of this toolkit, and review the agenda. You may want to help facilitators co-create very short scripts for parts of the toolkit, which they would read to participants.

HOW TO DOCUMENT OUTCOMES?

To record the event, we recommend recruiting a volunteer to take notes at each table. After the event, the facilitator and note-taker can use the notes to identify:

- Main ideas and themes
- New plays suggested by participants
- Tensions

That data should be made publicly available online, along with the raw notes, pictures of the frames, and the prototypes produced by the tables. Please refer to Appendix 1 for a note-taking template.

AGENDA

MORNING

INTRODUCTION

15 MIN

A brief overview of goals and activities

FRAMING THE SMART CITY

60 MIN

Participants collaboratively explore the “frames” they bring to smart cities, and make those frames with provided materials.

BREAK

IDENTIFY VALUES

60 MIN

Participants apply their frames to a near-future smart city scenario, and discuss implications of that future.

LUNCH

60 MIN

AFTERNOON

PLAYS

60 MIN

Plays are actions for the design and implementation of the smart city. Five example plays seed discussion of what plays make sense in your place, what obstacles those plays might face, and strategies to overcome those obstacles.

BREAK

PROTOTYPING

60 MIN

Participants select a specific play and design an object, space, or process that brings it to life.

INTRODUCTION

15 MIN

Thank everyone for coming, and give a brief overview of the symposium's goals and activities. Offer a broad definition of smart cities, and invite everyone to develop and refine their own thoughts about smart cities throughout the symposium. Answer any questions, and explain that each activity will be led by a facilitator.

FRAMING THE SMART CITY

60 MIN

Everyone has "frames of reference," or the values through which they see the smart city. This activity invites participants to collaboratively explore the "frames" they bring to the event, and build props representing those frames to serve as tactile reference points.

MATERIALS

- Poster board to make the frames / pre-cut sides to put together
- Markers and pens for labeling frames
- Post-its, paper
- Art supplies

ACTIVITY

01

INTRODUCTION 5 min

- Explain that this will be a getting-to-know-you activity.
- Define “frame” for this activity as a frame of reference, or “a value contributing to how judgments about the smart city are made.”
- Show example frames
 - Stakeholder frame:** I have people with disabilities as a frame.
 - Location frame:** I have a West Coast frame.
 - Problem frame:** I have a loss of privacy frame.
 - Technology frame:** I have algorithms as a frame.
 - Professional frame:** I have an urban planner’s frame.
 - Disciplinary frame:** I have a computer scientist’s frame.

02

ASK PARTICIPANTS TO INDIVIDUALLY WRITE DOWN SOME OF THEIR FRAMES OF REFERENCE. 5 min

03 INVITE THE TABLE TO CHOOSE AND BUILD ONE OR MORE “FRAMES OF REFERENCE” USING THE AVAILABLE MATERIALS. 10–15 min

- a** Encourage participants to decorate their frames to reinforce their choice.
- b** Optional: Restrict certain necessary materials to facilitate turn-taking and negotiation (e.g. one pair of scissors per table).

04 GROUP SHARE AND INTRODUCTIONS 2–3 min per person, <25 min

- a** Once everyone has created their frame(s), specify that sharing is optional, and people can share if they are comfortable doing so.
- b** Ask whether anyone would like to volunteer to show and describe their frame(s), and introduce themselves.
- c** Go around the table and invite everyone who would like to share to describe their frame(s).

05 INTRODUCE “SMART” CITIES 5–10 min

- a** “Smart” often refers to devices, such as kiosks, automated traffic lights, or air quality sensors. However, “smart” can also refer to data collection, algorithmic data analysis, and other technology or art-enabled municipal practices and processes. Let’s keep this in mind, and clarify how we are using “smart” today.
- b** “Smart” technology can be both a platform for (e.g., Facebook) and the object of civic engagement (e.g., new sensors in your neighborhood). When discussing civic engagement in the smart city, we will consider both these aspects, and delineate between them.
- c** Cities had many problems before “smart.” For the purposes of this event, we will focus on the problems contingent on smart” by acknowledging previous, persistent, and systemic issues as they arise, then moving back into the space bounded by smart.
 - i** Optional prompts to move conversation back toward smart: *That’s a great point. Can you think of any ways that smart might affect that?*

IDENTIFY VALUES

60 MIN

To give participants space to apply their frames and discuss implications, we drafted a near-future smart city scenario. This exact language was well received and generated rich discussions during our symposium. The language can be adapted for your local context, but it is advised that the story remain short with lots of “holes” to enable discussion and questioning.

MATERIALS

- Frames
- Scenario printout

SCENARIO

The year is 2030, and Chloe is on her way home. She sips a latte from the self-driving car's coffee maker while she works on a report at the mini-desk. Halfway through her commute, Chloe remembers to order her groceries, absentmindedly declining a video call from the organizer of that evening's neighborhood "meet the patrol-bot" event. Chloe arrives home just after her groceries to an unpleasant smell and tells her home assistant to file a complaint with the City because her trash has not been picked up. As her kids walk in the door from basketball practice, she asks whether they like the new self-driving car service better than taking the bus. A couple of sneezes remind her that she forgot to renew her daughter's allergy prescription, and she tells the home assistant to have it delivered.

DISCUSSION QUESTIONS

How does this scenario look through your frames?

20 min

What else would you want to know about this world?

20 min

**What would you recommend to secure community, equity,
and access in this scenario?**

10 min

REPORTING

Each table shares some of their discussion with the symposium
(2 min per table; <10 min)

PLAYS

60 MIN

A play is a generalizable action that can be taken by a range of actors tasked with the design and implementation of the smart city. This activity facilitates discussion of five predefined smart city plays and opens opportunity to source new plays and identify specific tactics. Participants will explore opportunities and obstacles in implementing plays and tactics.

MATERIALS

- Frames
- Sticky notes
- Large flip chart
- Printout of five existing plays (Appendix 2)

ACTIVITY

01 INVITE PARTICIPANTS TO REVIEW EXISTING PLAYS ON THEIR PRINTED HANDOUT. 15 min

- a** Answer any questions about those plays.
- b** Ask what other plays participants would add to that list.

02 ONCE THE PLAYS ARE WELL UNDERSTOOD, ASK HOW THOSE PLAYS MIGHT WORK WITHIN: 20 min

- a** The Chloe scenario
- b** Your place

03 ASK THE TABLE TO CHOOSE A PLAY, THEN: 15 min

- a** Ask everyone to individually write out potential implementation obstacles. (5 min)
- b** Share obstacles, and discuss potential strategies to overcome them. (10 min)

REPORTING

Each table shares some of their discussion with the symposium (2 min per table; <10 min)

PROTOTYPING

60 MIN

This activity will produce an object, space, or process based on the previously developed frames and plays. Participants will select a specific play and design an object, space, or process that brings it to life. Participants are encouraged to be creative.

MATERIALS

- Paper
- Pens/pencils
- Markers/crayons
- Modeling clay
- Legos
- Whatever materials you feel would contribute to prototyping

ACTIVITY

01 INTRODUCTION 5 min

- a Show participants available prototyping materials.

02 CHOOSE A PLAY 15 min

- a Facilitator: "How might we implement this play for civic participation in our future smart city?"
 - i Record ideas
- b Choose an implementation idea to prototype using criteria of:
 - i Expected impact
 - ii Required funds
 - iii Required time
 - iv Required partners

03 PROTOTYPE THE PLAY 40 min

- a Specify:
 - i Subject matter
 - ii Location / Medium
 - iii Target audience
 - iv Expected influence on decision-making
 - v How data will be
 - Collected
 - Stored
 - Analysed
 - Reported
- b Draft:
 - i User interface
 - ii User experience

REPORTING

Each table shares some of their discussion with the symposium (2 min per table; <10 min)

CONCLUDING REMARKS

30 MIN

Thank everyone for attending, then highlight a few key points or themes from the day. Specify how the outcomes of the symposium will be shared and how long it will take. Finally, invite people to remain part of the local smart city planning process and reinforce that this will be an ongoing dialogue.

INSTRUCTIONS



01

Note the names and initials of those present at the table. We recommend using their initials as shorthand while taking notes.

03

As soon after the discussion as possible, write a summary of the main points and any notable quotes, points, or interactions.

02

Take notes in the “Expanded Notes” section.

04

When finished, please email your notes to **an event organizer (email)**.

1	5
2	6
3	7
4	8

EXPANDED NOTES:

**NOTABLE QUOTES
AND POINTS:**

**SUMMARY OF
MAIN POINTS:**

**NOTABLE INTERACTIONS
BETWEEN SPEAKERS:**

APPENDIX 2:

SMART CITY PLAYS

01 EMBRACE “SMART CITIES”

To embrace the smart city means to leverage the enthusiasm of publics, the private sector, and government organizations for digital technologies and devices into conversations that encourage civic participation and provide public values. The dominant idea of the smart city as defined by its technology can be used to highlight matters of local importance and involve publics in defining the values and dynamics of the local versions of ‘smart’.

02 CULTIVATE LOCAL INNOVATION ECOSYSTEMS

To cultivate local innovation ecosystems, cities must support and partner with those private and public organizations which have an understanding of and desire to serve their community’s needs, rather than placing the development of smart cities entirely in the hands of large national corporations. Seeking talent and knowledge within the community, cultivating data literacy, and developing technologies that prioritize public values are all means by which local ecosystems can be involved in the implementation of smart city technology.

03 INVITE PUBLIC INFLUENCE

Inviting public influence requires a re-imagining of traditional means of involving the public in the civic decision-making process, developing new frameworks for participatory action and augmenting engagement with new technologies. This re-defining of what civic participation entails must be a value-centered process, specifically those values of equity and community agency, without which a city cannot be truly smart.

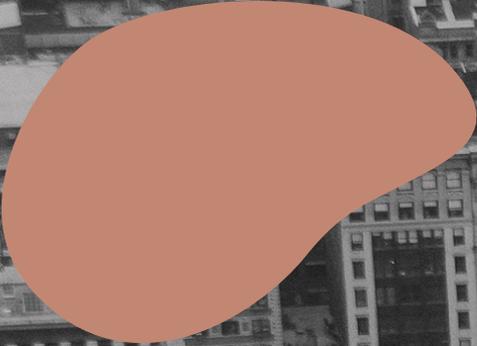
04 QUESTION DATA

To question data is to think critically about the reasons it is collected, how it is acquired, and to what purpose it is put. It is essential that these questions be asked of government, public, and private sector organizations that use large data sets in the development and implementation of smart city technology and infrastructure; doing so can help to prevent the violation of people’s privacy and civil rights.

05 DESIGN FOR PLAY AND CIVIC IMAGINATION

To design for play and civic imagination means to look beyond the corporate values of efficiency, productivity, and profit when designing the smart urban landscape. To create livable smart cities, it is essential to incorporate creativity, experimentation, and the element of play into the processes of conception, design, and construction.

The implementation of these plays can be of great benefit to the process of smart city building, encouraging the inclusion of local values and priorities and moving beyond technology in the conception of what it means to be ‘smart’. However, each city is unique, and requires a process that is tailored to their local context and futures. To this end, we provide a toolkit in the form of a day-long symposium, adapted from the model we piloted in March of 2018. When used in conjunction with the five plays described, this toolkit is intended to help cities to define their own localized version of ‘smart’, and to construct a workable strategy to encourage greater engagement with publics in the civic processes of designing the smart city.

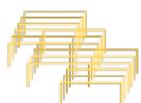




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CITY AS PLATFORM
CREATING AN API FOR THE CITY



BERKMAN KLEIN CENTER
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Made possible by generous support from the Knight Foundation