Smart Cities Governance Lab

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Compute • Calcul Ontario



AUTHORS



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INTRODUCTION

Globally, cities have seen an intensification of population with average urban growth of 2% in 2017 and 54.8% of people living in urban centres¹. Canada and Ontario are exceeding global averages, posting urban rates of over 80%². It is easy to see the attraction of cities. There are many opportunities for employment, prosperity, social interactions and activities that large urban cities offer. With this tremendous growth, cities now face a rise of demands and challenges for public services such as hospitals and schools, housing affordability, traffic congestion and a greater need to coordinate with the provincial and federal governments who support these services.

Cities around the world have been experimenting with using Internet of Things (IoT) technology to capture data from sensors to develop a 'smart city', in which technology is used to streamline public services and raise the quality of life for citizens. The Smart Cities Challenge run by Infrastructure Canada on Impact Canada proposes the following definition: "A smart cities approach means achieving meaningful outcomes for residents through the use of data and connected technology."³

In a smart city, sensors can be embedded almost anywhere and capture data in real time, raising concerns around the ethics, security and privacy of the collection, storage, use and misuse of data. Smart cities are a complex ecosystem featuring multiple levels of government and other stakeholders. Decision makers are challenged with leveraging these emerging technologies for social good, ensuring that smart cities are kept citizen-centric, data is kept private and wellfunctioning governance models are in place.

In this context, Compute Ontario and ORION are engaging in a series of activities to help inform policy makers, firms, organizations and the general public on the evolving state of data governance and examine whether data trusts are suitable within the context of smart cities and can serve the public good by protecting privacy, delivering economic benefit and maintaining open access. The Smart Cities Governance Lab held in Kitchener, ON, at Catalyst 137 on March 28th represents one initiative aimed at informing this objective.

SUMMARY

The Smart Cities Governance Lab generated opportunities for all levels of government, research, industry, not-for-profits and citizens to learn from thought leaders and share their perspectives while exploring applications of data governance models.

The event started with insightful presentations covering a range of topics from new governance methods and new technologies within cities, to how we can create inclusive cities. The afternoon workshop was designed to take the perspectives of the participants (comprised of citizens, policy makers, civil servants, academics and private sector stakeholders) through three activities designed to understand their concerns with smart city data. The activities drew on their expertise to identify elements that are critical for Ontario to incorporate into future governance models as well as to clarify the roles and actions each stakeholder can take to build a positive future smart city.

Three core themes emerged from participants during the lab. First, smart cities start with informed citizens. It is important to equip citizens with the necessary information to empower and engage them to build the city they desire. Second, smart cities are open cities. Transparency and communication are essential in establishing trust and social license to have city stakeholders generate, collect and store data. Third, smart city data needs trusted stewards. Stewards must be dedicated to urban data governance while keeping the public interest and sustainability of the governance model intact.



³ https://impact.canada.ca/en/challenges/smart-cities/applicant-guide

¹ https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS

² https://www.cbc.ca/news/canada/windsor/stats-can-population-census-1.5075855

THE PRESENTATIONS

The Smart City Governance Lab took the participants through a series of presentations to build foundational knowledge of and context for smart city data. Industry experts and public leaders discussed smart city data, its importance, its uses and governance models which provided context for the workshop later that afternoon.

Canadian Smart Cities: What's at Stake and How to Not Mess It Up

Andy Best, Executive Director at Open Cities Network, began the morning session by analyzing the current state of Canadian smart cities. He raised questions around who controls citizens' data, how it should be protected and whether public institutions are equipped to put cities first when partnering with industry for smart cities initiatives. His presentation offered an overview of the risks associated with smart cities including power imbalances between industry and cities, closed architecture models, a potential lack of funding for new infrastructure and public trust. Andy suggested the solution lies within a city-first smart city model, characterized by a strong governance and policy structure, open technology architecture, publicly owned data and significant investments into public institutions. Andy concluded that technology is the easy part of smart cities and that policy needs to influence technology, not the other way around, in order to ensure the long-term value of city data stays in public hands, for public benefit. Video

How Technology Can Inform Public Policy for Smart Cities

Dr. Srinivasan Keshav, Professor at the Cheriton School of Computer Science at the University of Waterloo, spoke about emerging technologies and their potential to inform public policy relating to smart cities. Dr. Keshav likened the city to a living organism within which we need to understand the flows of people, materials, energy and waste. He believes that IoT technology can help analyze and understand these processes and help solve societal problems though there are associated risks. Keshav suggests that blockchain is the technology best suited to address the underlying risks around privacy, data ownership and transparency associated with mass data collection and use. Blockchain technology can hold consent for data use, prove its validity and help close the privacy gap. Keshav concluded that as an unchangeable transparent ledger,

blockchain, can allow policymakers to draw on empirical evidence to make policy and governance decisions surrounding smart cities while avoiding influence from outside stakeholders with a personal agenda. <u>Video</u>

Panel: Different Data, Different Needs

<u>Moderator</u>: Bianca Wylie, Founder of Open Data Institute Toronto <u>Panelists</u>:

Rosario Cartagena, Chief Privacy and Legal Officer, IC/ES Joe Greenwood, Lead Executive for Data, MaRS Discovery District Matthew Chandy, Project Manager, Smart Waterloo Region Adam Blinick, Director of Public Policy and Communications, Uber

The Different Data, Different Needs panel offered a variety of perspectives on the access, use, limitations and opportunities of various types of data. Rosario examined health data, explaining that it may be the most valuable type of data in Ontario in terms of opportunities, but also has limitations due to strict policies, procedures, legal boundaries and strong governance models that have limited flexibility. Novel uses such as the Health Artificial Intelligence & Data Analysis Platform were explored. In this example, the AI analysis of massive population-level health datasets is used to increase the efficiency and delivery of public health resources.

> Before we agree how we share smart city data, we need to agree how we share the city

Data sharing and smart cities were discussed by Joe, explaining that transparent, citizen-centric smart cities should be the goal for Ontario. The challenge, however, is ensuring that society's social and data contracts can coexist. Cities must also acknowledge that, while citizen's data exists in the public realm, it may lead to private gain. Decision makers have to ensure that the lion's share of smart cities benefits are being enjoyed by citizens, rather than industry. Matthew gave a first-hand look at his experience developing a smart city in Waterloo. The focus of his smart city initiative was on increasing the quality of life for children and youth. Waterloo was able to accomplish this goal through collaboration with outside stakeholders, developing a data collaborative to store data and building a framework for performance measurement to evaluate project success. Adam shared Uber Movement, a website built by Uber to share the anonymized, aggregated traffic data their drivers collect. Anyone can access the website to view traffic trends in cities on

specific days or times. He stressed the importance of industry sharing data with the public to advance data sharing and to be better actors in their environment. <u>Video</u>

Policy Enabling the Adoption of Technology for Public Good

Francis Bilodeau, Assistant Secretary of the Office of the Chief Information Officer, Digital Policy and Services, offered a first-hand look into how Canada's government is transforming through technology adoption and developing digital services. Francis explained that data and technology are evolving rapidly and, while the benefits of digital transformation are evident, it is harder for the government to keep pace with these advances than it is for industry. Private companies have to adapt to new technologies or they will cease to exist, but that is not the case for government. Francis identified two critical actions to help support the government's digital transformation: build policies and frameworks which enable new technology adoption and learn by doing, rather than developing long-term plans that will be outdated by the time they are executed. He provided examples of programs such as the Canadian Digital Service that are currently in place to help digitize Canada, however, he believes more needs to be done. Canada has to learn by doing and continue to implement policies that will enable the adoption of technology for public good. Video

Intro to Data Trusts

Sean McDonald, Co-Founder of Digital Public, provided an overview of the components that make up a legal data trust and the questions, risks and opportunities surrounding that. Sean explained that a citizen's rights in a digital society are determined by where our data is stored, who owns that data and who has access to view and use it. While trusts are a legal mechanism dating back over 1000 years, new regulations and frameworks need to be established for a trust to be used specifically for data. Civic data trusts based on accountability and public interest seem like the ideal mechanism for a smart city, however, Sean believes that model is not ready yet. Accountability, ownership, usage and other legal principles pertaining to data will need to be better defined in the coming years. Until data trusts can answer all of the legal questions surrounding their possession and use of data, they cannot effectively be used as a steward for public data in smart cities. Video

Digital Leadership

Ryan Androsoff, Director, Digital Leadership Program at the Institute on Governance, spoke about digital leadership and digital literacy particularly pertaining to government. He explained that technology is being adopted more quickly than ever and with applications such as Netflix and Instagram becoming the norm, citizens are left wondering why their government cannot operate as efficiently and transparently as these applications. Ryan presented the idea that in today's digital government era, every policy issue is now also a digital issue, leading to a need for digital literacy in public sectors employees. While he does not believe every public sector employee needs to be able to write or understand code, a baseline digital literacy, which he refers to as "technical intuition", is crucial. Technical intuition includes the ability to understand the limits and possibilities of technology, ask informed questions and detect when something may sound too good to be true. Ryan concluded that new technologies and digital governance can be difficult to implement. When a digital transformation goes wrong at the government level, it can have a negative impact on an entire society, making technical intuition critical for government employees in all sectors.

<u>Video</u>



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THE LAB: AN INCLUSIVE AND PARTICIPATORY WORKSHOP

The Smart Cities Governance Lab convened a diverse group of stakeholders many of which are actively involved in smart city initiatives. Participants shared experiences and provided feedback on how models such as principles-based governance, data trusts and data commons can be used to enhance individual privacy and autonomy while creating social and economic benefits for communities.

The objectives of the workshop were to:

- Familiarize participants with plausible data governance models;
- 2. Capture feedback on what is desirable and viable in Ontario; and
- **3.** Articulate the roles, opportunities and risks for different stakeholder groups with respect to urban data governance.

Activities Performed Within the Lab

Icebreaker

To start the workshop, participants engaged in an exercise to envision what the world would look like in 2035. Using a dystopian (The Terminator's Skynet) to utopian (Star Trek) spectrum, participants were asked to select the point along the spectrum where they felt a data-driven society would be and provide a rationale. The expectations of participants varied from pessimistic views such as the privatization of technology dooming civilization; to more optimistic views of public benefit within an open and prospering society. The facilitation team aimed to create open communication, discover areas of expertise and table any potential views and biases of the participants.

Activity 1: Use Cases

The use case activities were designed to immerse the participants in a plausible smart city data governance model to identify three key components:

- Elements that would be key to incorporate in the Ontario context;
- 2. Critiques and factors that would not be applicable; and
- **3.** Gaps in the current model.

Participants were divided into groups to respond to abstracted versions of real-life data governance models which highlighted various data uses. The use cases selected included the Pittsburgh Principles as a mobility use case, the Silicon Valley Data Trust as a health use case and the DECODE project in Barcelona as a smart city IoT use case. Each use case included a summary description of the initiative along with four key elements: the business model, technical architecture, legal framework and civic participation process.

The <u>Pittsburgh Principles</u> uses a principles-based framework to foster open collaboration among autonomous vehicle (AV) and shared mobility industry actors along with public agencies to create transparency for citizens. The principles outline the rules of engagement for AVs and shared mobility companies to adhere to while testing and prototyping new forms of mobility.

The <u>Silicon Valley Data Trust</u> (SVDT) uses a centralized data trust that gathers youth information from relevant health agencies, education institutions and youth services to improve outcomes for at-risk youth while maintaining control and oversight of the sensitive data in the trust. With highly sensitive and personally identifiable information, the Silicon Valley Regional School Board elected to use a data trust as a mechanism to oversee the data access and use by vetted third-party and partnered organizations.

The <u>DECODE</u> project in Barcelona is an open data initiative that allows citizens to take control of their data while creating awareness of smart city data initiatives through exposure and education in new technologies. The Smart Citizen initiative places sensor technologies in local communities while utilizing the CityOS platform to access their data as well as a broader network of sensors.

Activity 2: Roles and Responsibilities

The last activity allowed participants to self-identify into groups to further discuss their roles and responsibilities in enabling a positive future smart city. These groups included government, public agencies, citizens, private sector and researchers. Each group discussed its role within a smart city and how it could foster potential opportunities and mitigate risks with new technologies. Groups were then asked to focus on a particular type of data that could be used to enable a smart city initiative for a more focused conversation. The four classes of data on which their initiative could be based were attributable to: a single person, aggregated set of people, a single thing (e.g. one IoT sensor) or aggregated set of things.



INSIGHTS GENERATED BY PARTICIPANTS

The workshop activities generated a high level of engagement from participants who provided feedback on the use cases, debated and contested the presented models and suggested new models and stakeholder roles for urban data governance. The following are important themes that emerged from these activities.

Principles for a Living Lab

In an age where technology is rapidly changing and emerging, the balance of technological evolution and citizen safety needs to be appropriately navigated. The principles-based approach provides an opportunity to set a clear vision and direction to which all new products and services entrants must adhere. The Pittsburgh Principles provide a useful benchmark which resonated with participants for guiding the testing of new mobility solutions in defined geographic locations. Clear purpose and societal benefit were critical elements in the principles framework for the participants. The participants wanted these principles to both act as rules of engagement for companies for testing and to define the ideal future state where citizen pain points such as congestion, safety and environmental goals could be addressed.

> I don't trust industry players to be responsible for testing & safety

> > "

Concerns raised by participants included the transparency of data collected by private companies and the speed with which it would be communicated to the wider public. This impacts the citizen's trust with these private companies and affects their safety while interacting with these new technologies. They felt citizens needed better visibility into the plans, data (i.e. fleet miles travelled, where the AVs are operating), and the privacy and safety concerns that may arise from real-time, free-flowing data. Providing more data and transparency into AV testing within the city would help alleviate potential citizen safety concerns and create a better understanding of testing practices being conducted. Further questions emerged when discussing the principles approach in Pittsburgh for Ontario's context.

- How might we influence or reframe the mobility problem so that companies focus more on citizens and the environment rather than just on being first to market?
- How might we create a real-time flow of data?
- How can we better engage citizens to help shape the desired future state?

Centralized Data Trusts

The SVDT's function as a mechanism for managing data of at-risk youths resonated with participants and was viewed as both a noble social mission and a successful way to protect sensitive data. The defined scope of the SVDT provided participants with some confidence that a trust can appropriately manage and oversee vetted partnered organizations which provide and utilize the data.

With a trust of this nature, participants anticipated significant overhead expenses associated with the operation, management and sustainability of the data trust. Concerns were raised around the funding structure and potential revenue models of the trust to keep it operating. Furthermore, participants questioned the ability of traditional public services to curate and identify novel patterns in the data and to provide smart city services. The potential for a neutral third party to play this role was raised, with a mandate to provide guidance and expertise in identifying and analyzing the data.

Understanding that this is a novel form of data governance held in a centralized structure, several open questions were raised for further exploration:

- How can we assure that the data of vulnerable populations are managed appropriately and they are not left behind?
- How might beneficiaries of the trusts seek recourse in cases of misuse?
- Who provides consent? How might youth participate and provide input?

Open Data IoT Sensors

The Barcelona Smart Citizen initiative (part of the EU's DECODE project) provided insights into a city that utilizes open data, leveraging the data created by citizens on a micro-scale. The important element of this data model was the level of citizen engagement. Citizen engagement seems to accomplish two major goals from

our participants point of view. First, it created a sense of ownership and affinity towards creating and participating in smart city data generation. Second, it involved increased communication and education around data collection, access and use. The work done in the DECODE project to identify a uniform set of rules and standards around data ontology was an important factor for the participants when developing a data governance protocol. Benefits outlined by the participants included the scale and quality of data and a strong affinity to collaborate with other cities and countries to develop these standards for greater flexibility and innovation opportunities in the future.

> I love all of it! I love how I have access to data; I love how I have control of it; and I love how there is transparency and education around city data

However, with IoT devices, concerns arose around protecting data that could be attributable to individuals and their neighbourhoods. Although the data collected in this scenario seemed to be low risk, discussion of unintended consequences for homeowners emerged. For example, could noise levels attributed to specific neighbourhoods cause properties to devalue or become less prestigious?

The groups also identified some key open questions related to this use case:

- What economic impacts will this have for the individual, community and city?
- Who is the best stakeholder to manage the data? What are their underlying motivations and are they aligned with civic and environmental benefit?
- How might individuals keep up-to-date with new uses of their data? Can they opt-out? Be forgotten?

Stakeholder Roles, Risks and Opportunities

The final activity of the workshop elicited the role of each stakeholder group in delivering positive social benefit, identifying the opportunities and risks of a smarter city for these stakeholders. At the start of this activity, each group chose which specific class of data to consider when contextualizing their role in a smart city use case. The identified stakeholder groups included cities and municipalities, other levels of government and public sector organizations, industry, researchers, academics and citizens.

Cities and Municipalities

Cities are in a unique position as they are closely connected with their citizens, compared to other levels of government. However, they are also constrained by limited resources (both people and budget). The data required by the participants in the cities' group gravitated towards both individual and aggregated objects as they look to create efficiencies with their physical assets. Examples of utilizing new technologies to create efficiencies included managing parking spots with an intricate sensor network and reducing traffic congestion with robust analytics and AI.

Concerns from participants focused on the role of cities in emphasizing privacy and personal safety. Creating appropriate methods to deal with safeguarding sensitive information and responding to breaches was viewed as essential. An increasingly digital city posed concerns about the ownership and the longevity of the new technology solutions. The participants noted that proper public-private partnerships, governance and standards can mitigate the downside risks to new technology adoption.

Collaboration was a major focus for the city groups, not only as a way to learn about new initiatives and borrow best practices but also to share data with one another and coordinate larger and more cost-effective procurements. Creating common standards and governance models among cities were viewed as an opportunity to unlock innovation, spur communication and stimulate data sharing.

Government and the Public Sector

The provincial and federal levels of government play a critical role in enabling opportunities within a smart city. The government and public sector participants chose to consider the cases of aggregated data from both individuals and things. These sources reinforce the need to have accurate and representative data to create a conducive environment for economic growth while managing the safety and wellbeing of citizens. Examples from participants included adopting air quality sensors and combining that data with health data to drive a better understanding of how air quality impacts respiratory illnesses. These types of initiatives could influence environmental policy thereby potentially reducing the burden on public services (such as



healthcare) by improving air quality. The ambitions voiced by the government and public sector groups focused on the ability to provide greater benefit to the communities they support while being lean and efficient in their use of resources.

Concerns from this group focused on the privacy of identifiable data and factors of inclusivity such as ongoing education and managing the "digital divide."

The scale and scope of governments and the public sector allow for the ability to build critical pieces of infrastructure and standards to promote public good. Furthermore, governments can enable public-private partnerships for the development of medium- to largescale technological initiatives for well-functioning smart cities.

Researchers and Academics

Researchers and academics play an intriguing role in creating, exploring and shaping the next-generation solutions we bring into our cities through startups and industry. The researcher groups viewed themselves as a connector between emerging technology and citizen needs. These stakeholders chose to utilize both individual and aggregated data to drive insights and create new solutions that can be potentially adopted into the smart city. Examples of ways in which researchers could support smart cities included new uses of technology and data, such as facial recognition, transportation logistic, or health technologies for immigrant and vulnerable populations. With their unique role, researchers look to create methods and standards that can help guide future innovation and marketplace adoption.

An area of concern from our research participants centres around data quality and potential biases in the algorithms and data used for their research. As researchers are equipped to identify biases, creating tools and methods to provide transparency about how the data is collected, captured and its accuracy will increase their ability to work with various data sets and alleviate these concerns.

Researchers and academics need to continue to explore, discover and test new creative futures for our cities. Legislation, principles and standards play a critical role in fostering collaboration across sectors by breaking down silos, allowing researchers to access the data they require and providing testbeds to experiment. Leaders and champions within the government are vital to sustaining research momentum and autonomy and expanding that to further various fields of study from which a smart city can derive benefit. The research community is about pushing boundaries of what is possible for our cities.

Industry

Groups representing the private sector viewed themselves as the "sense-makers" in the smart city ecosystem. With a deep understanding of their customers' (both citizens and cities) desires and experiences, they take these insights and use their expertise to tailor products and services for their customers. The data required to provide value span both attributable and aggregated data of both citizens and things, dependent on the type of solution. They perceived their value-add as being able to work quickly, creating viable products and services which deliver value to their users. They presented as willing stakeholders with the ability to connect with citizens and build new innovative solutions for cities.

Concern areas for the private sector groups revolved around the mounting importance to secure and safeguard the data they collect and generate. Another concern for these organizations was a reputational risk from breaches in data security, misuse of data, biased automation and unintended consequences of their solutions.

As personalization intensifies, the need for more attributable data will be evident. The private sector seeks guidance and common standards around topics of consent, privacy, appropriate data use and re-use, and data ownership. Furthermore, they need buy-in and adoption of their new solutions from both citizens and the public sector to further test their prototypes and create meaningful change in their respective communities.

Citizens

Citizens are the key constituents in a smart city ecosystem. However, participants in the citizen groups viewed themselves as being on the outside looking in as they are typically not well versed in the technological, legal, privacy and viability implications at the forefront of many of these discussions. The citizen groups were excited about solving the concerns that plagued their urban lifestyle and wanted to be included and voice their concerns and ideal future states. Core to the discussions with citizen participants at the workshop was the need to understand how these smart city initiatives impact them. What does it mean for their commute? How will it affect their wallet? Who will be able to see what they are doing?

> There needs to be a clear problem to be solved – and how does it add value to me?

Privacy and manipulation (whether positive or negative) are growing concerns for citizens. They emphasize the need for greater communication and transparency around smart city developments. Citizen participants understood the value of attributable data in creating tailored solutions for them, confirming the need for data users to provide a clear value back to the individual citizen while instituting proper safeguards to protect their identity and privacy.

CONCLUSION

The Smart City Governance Lab was an opportunity to bring together Ontario's smart city ecosystem. With representation from city officials, policy makers, citizens, the innovation community, researchers and academics, we were able to voice concerns about the future, locate opportunities and create tangible takeaways in our pursuit of creating governance mechanisms for the digital layer of smart cities.

With the many perspectives brought together during the lab, it is clear how complex data governance in a smart city will become. This reiterates the need to create flexibility in our traditional ways of working to incorporate more assumption testing, improve our understanding of uncertainties and risks, and become agile through rapid prototyping of potential solutions.

Convening stakeholders around realistic use cases allowed for a robust and thoughtful discussion about present issues rather than an abstract philosophical debate. The Data Governance Lab allowed participants to dive deeply into areas of concern and opportunity in order to help shape what governance models could look like in Ontario. Participants appreciated the opportunity afforded by the forum to both learn and interact with the topics of discussion. Participants also commented on the length and rigour of the day. Despite the demanding nature of the conversations, we maintained a high level of engagement and participation through the presentations and workshop components.

The following lessons from the lab should be considered for incorporation in future Ontario smart city governance initiatives:

- Smart cities start with informed citizens. Citizens must be given the necessary tools and information to be empowered to set the vision for city futures. By providing them with subject matter experts and tools to stay informed on new trends, technologies and data use, they will be more apt to critique new initiatives and set strategic goals for their city.
- 2. Smart cities are open cities. With the added privacy and security concerns of collecting, storing and using smart city data, public and private actors need to be even more transparent while upgrading their civic engagement approaches to build legitimacy, trust and a freer flow of data.
- 3. Smart city data needs trusted stewards. To govern the data collected in a smart city for the public interest, there need to be independent organizations dedicated to urban data governance.



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APPENDICIES

1. List of Speakers

Time of Day	Speakers				
Morning	Dave Jaworsky, Mayor of Waterloo				
	Nizar Ladak, Compute Ontario				
	Andy Best, Open Cities Network				
	Dr. Srinivasan Keshav, University of Waterloo				
Panel Discussion	Bianca Wylie, Open Data Institute Toronto (moderator)				
	Rosario Cartagena, IC/ES				
	Joe Greenwood, MaRS Discovery District				
	Matthew Chandy, Smart Waterloo Region				
	Adam Blinick, Uber Canada				
Afternoon	Francis Bilodeau, Treasury Board of Canada				
	Sean MacDonald, Digital Public				
Workshop	Jerry Koh, MaRS Discovery District				
Closing	Ryan Anderosoff, Institute on Governance				
	Berry Vrbanovic, Mayor of Kitchener				

2. Ice Breaker Activity



3. Use Cases

(clockwise from top left) Health, Smart City IoT and Mobility



Framework	Technical Architecture	Business d	A B B B B Civic Participation	Activi ^{Use Post-It No}
				ty 1: Use Case Discussion
				Stop Thegs you dialae Thegs that should not sent
				Coution They but over risk, They but might have water

4. Use Case Discussion Activity

5. Roles and Responsibilities

	Pick one high impoct use case	one use case	3 Brainstorm Use Cases Brainstorm potential use cases that fit within the	Decreased congestion by shored AV which data Ethicrement of load note in neighborhood with annors Constant of the provided in the provided	Senser at traffic light to odept cross times based on individual movement speeds Better park maintenance Better park maintenance Reduced house energy with through soil sensor		2 Type of Data Mark on the 22 the quadrant the type of data you	1 Voice of : ie. city, citizen, academic, legal, etc.	ideas from our personal positions and perspectives	As we explore these use cases and the types of data that they use and require, we will dive into how we can start actioning these	Roles and Responsibilities
	What do you or your teams need to enable these opportunities? W	Enablers & St			What can you do that can turn these opportunities into big value?	Actions to realize opportunities			List 1-2 opportunities/benefits that exist in this use case	Opportunities	Actions What are the apportunities and risks in the use case. Identify the actions we can take to create positive autoanes, drive value and find ways to promote enablers in value creation
Compute-Calcul COSO	nat resources do you need? Eg. Enablers: Authority, Mandate, Talent	uccess Factors			What can you do to minimize or mitigate the risks?	Actions to minimize risks			List 1-2 risks that exist in this use case	Risks	



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