Pamela Robinson: Hi, everyone. I'm Pamela Robinson. I'm an associate professor at Ryerson's School of Urban and Regional Planning. I'm here to represent the simple human beings who are neither lawyers nor technology people in this effort to talk about smart cities.

We're a bit crunched on time and we're the last five people between the booze and the drones, so we're going to try to keep this lively, engaging, and on time. I'm going to let the panelists briefly introduce themselves and get going, and our goal is to wrap up with just enough time to go to a quick bathroom break before the fun starts with the cocktails.

Without further ado, here we go. We'll start with the Mayor of Barrie, Jeff Lehman. He's going to talk about smart cities.

Either/or.

Jeff Lehman: Okay.

If this is working, I think I'll just, I'll stay here. I'm Jeff Lehman. I'm the mayor of the city of Barrie. For three years, I chaired Ontario's Big City Mayors' Caucus, which is the terrible brand of LUMCO; stands for Large Urban Mayors' Caucus of Ontario. If it sounds like a brand of gravy, it's because we have a terrible brand.

But as an organization, we represent the 27 largest cities in Ontario, and we are very much considering many of the issues that are on the table today, and discussing the ways in which all of our municipalities, hopefully through collaboration, can start to deploy smart city technology to the benefit of our residents.

I want to talk just a little bit today and thank you, Pamela, for setting expectations. I'm in no way an expert, but one who... I think the smart city movement often, like many things, there's a lot of attention paid to the largest projects, perhaps the most significant new or different technologies, and what few people realize is, it's actually an incremental process that's occurring in the background often without discussion of some of the key issues that this conference is considering, and that we need to consider as society.

Obviously, with Sidewalk Toronto and some of the larger deployments that have been occurring around North America, privacy is a major consideration, data storage, data use, intellectual property, so I do want to touch on a few of those issues. But just to set the context for somebody like the mayor of Barrie, our city's 145,000 people, and we've deployed smart meter technology both in the electricity sector and also in the water sector. That provides a very, very rich data stream, which in many cases we can't use. And we can't use it for a number of different reasons.

One of the major reasons is, we simply don't have the capacity. And our procurement models are not built to encourage the kind of collaboration that

would allow the most, I believe, innovative use of that data. I'll put a plug in for something that's happening right now with three sort of unlikely partners, the cities of London, Guelph, and Barrie. We have something called the MIX Project, the Municipal Information Exchange, which is an innovative procurement model which is actually based in not a new idea. The idea is loosely based around civic challenges, but the concept is embedding startups within our organizations to develop new technologies and use data in new ways to the benefit of our service models.

This is based around the concept of putting out, instead of, as you might imagine, a traditional municipal tender which can run to hundreds of pages and have a very specific scope of work, we put out a very, very short document, a request for solutions. So, an RFS instead of an RFP, with a simple problem statement and invite, through a fairly open procurement process, responses to address some of our civic challenges.

And one of the more interesting things I've got to do over the last year is sit with my executive management team and say, "What are those particular challenges that we have, that we feel could be solved or could potentially be solved through this innovative procurement model, this civic challenge model?"

Watch for more on this in 2019. Guelph, London and Barrie will each be issuing two civic challenges each, one this spring, one this fall, hopefully addressing six quite different, and a bit of a cross-section, of different categories of service delivery. Just to give you a sense, the three of us, we were good partners for this because we're a little bit unique in the municipal world. There's 444 municipalities in Ontario. There are only about 20 that are what are called separated cities. They range in size from the city of Toronto to much smaller towns, such as Kawartha Lakes.

But separated cities deliver all services together. We don't have an upper tier and a lower tier where the upper tier's doing, say, police and transit and water and social services and the lower tier's doing everything else as happens across the GTA and the 905 regions. As separated cities, Hamilton, Toronto, Guelph, London, Barrie and Kingston and a few others, we have all of those services under our roof.

That actually exacerbates the challenge of lack of analytic capacity, and the challenge of delivering AI solutions because we're spread very thin. It also is a tremendous opportunity because as we partner, as the City of Barrie has with the University of Toronto in public health, and actually, with our family health team, we have a three-way partnership that includes an attempt to look at population level interventions for health and wellness, it gives us a very concrete and cohesive partnership opportunity where you're not split among different levels of government and running back for different approvals at different levels.

I wanted to make a few points... I'm just pulling up my notes, here, about some of these key issues in my remaining sort of six minutes. Yeah. Ooh, five minutes, there we are.

Obviously, there's a sort of key and central question here, the balance between opportunity and protection of data and privacy, and how do we maximize those opportunities without violating both expectations of privacy and, in fact, the privacy climate, legal climate? Sidewalk Toronto and a few other technologies and, in fact, we've faced this issue, they have the challenge of, consent is impossible. How do you... What is an appropriate level of privacy expectation? Should you leave, for example, all individual identifiers off the table and, as some privacy experts have argued, scrub the data at source, de-identify at source?

I tend to think that's a very good idea, although that may well limit the applicability of data. I think, though, especially in what we do, it's, individual identifiers are really not where the value is. And the value in delivering new services is really understanding things like consumption patterns, travel patterns, use patterns, time of day. And although the ability to collect additional data about individual users could be very helpful in building a relationship, for example, with our residents, for the purpose of maximizing our service models and delivering innovative service models, aggregated data or at least de-identified data should be good enough.

A couple other points that I thought I'd make. The storage of data in Canada has become a big, big issue for a good reason. I really have a strong view on this one. As long as we live in a world where national governments will set the rules around access to data, it is a very reasonable expectation that if data is collected in a particular location, it's stored in that location or at least within the same legal framework. I think that's an expectation that our residents would have and probably don't realize is a threat or a challenge to them.

That one, I think, as we're deploying the MIX civic challenges and so on, that's one that we feel is almost a non-starter; the data must reside here. It also has the economic development benefit that the work needs to be done here, frankly, or at least within our legal regime.

One notion that I wanted to talk about in the last couple of minutes, if the private sector's investing the money or is investing in the capital equipment that we need to collect information, they're going to have an expectation of return. I think one of the biggest challenges, and I don't have an answer to this one, but one of the biggest challenges is: can you allow any preferential level access to data, or do you truly need an open data, completely open data, climate?

There are many good arguments to say that there must be a totally open data movement around the use of the information that's collected through smart city technologies, and perhaps the return is the first mover advantage. And that's it! Whether that's going to be good enough is a really interesting conversation that we're going to have with some of our suppliers, and certainly, that's been playing out quite publicly around Sidewalk Toronto.

The last thing I wanted to talk about is that, you know, when we built hard infrastructure in Ontario for the past 40 or so years, there's been something called

an environmental assessment process. Any of you who are familiar with building anything in a city, whether it's a building or a road or a pipe, know the EA process. It's actually evolved from being just an evaluation of environmental impact, to a much broader impact assessment that looks at social and economic factors as well, and ultimately has become a bit of an evaluation tool, as well.

It's very clear to me that we're going to need some form of privacy impact assessment as smart city technologies play out, and there's this, a great deck which I've kept in my office or on my desk or close to me by the Information Privacy Commissioner of Ontario. She put this out, I think, about a year and a half ago, talking about privacy impact assessments. This is just going to need to be a key piece going forward, and to those in the private sector who might look at that and say, "Oh, great! You're inventing a new bureaucratic step that's going to slow everything down and add to the regulatory burden," just look at the knots that Sidewalk Toronto's had to twist itself into trying to deal with these issues. And if you had a framework to engage the public, if you had a framework to evaluate the privacy impacts, if we had a systemized approach to these things, and back to my opening comment around, it's a bit of the frog in boiling water, we have an incremental deployment of each of these technologies.

We are going to need that framework, I think, in our society going forward to provide a standard approach to it and ultimately, it will benefit, I believe, both the private and public sectors because it will create consistent expectations and a consistent process, which will probably move a lot faster than fighting about it over and over and over. Always in the early stages of deploying a new technology or confronting one of these very hairy challenges like privacy, the lack of a framework gets played out in terms of very important conversations. Ultimately, developing that framework, I think, is going to be part of the next 40 years, so where we have an environmental impact assessment process today, I think a privacy impact assessment is going to be part of that process, or an essential replacement for that as smart city technologies deploy into our communities.

Thanks for that. Oh, I was close to time!

Pamela Robinson:	Thank you.
Jeff Lehman:	And I didn't stand too far in the way of you and cocktails.
Pamela Robinson:	That's good. Thank you very much.
	Our next speaker today is Nitika Sauti from Electra Incorporated, and they're a public utility... go ahead, do you want to speak at the podium?
Neetika Sathe:	Thank you. Sure.
Pamela Robinson:	Yeah. Okay.
Neetika Sathe:	Good evening. Everything that Jeff just said, I'm going to say the exact same thing

but putting on a utility hat from the perspective, from the lens of a utility.

My name is Neetika Sathe, and I head the green energy and technology center in advanced planning at Electra, and for those of you who may not be familiar with Electra, we serve about a million customers in the beautiful province of Ontario, basically the area around greater Toronto and Hamilton area, and very happy to serve the city of Barrie, Guelph, Richmond Hill, Markham, Mississauga, St. Catherine's. The list is getting longer and longer, so it's difficult to remember all the communities, but basically, I am, we are serving about... I think it's about 15 or 16 communities, and we are the second-largest municipally-owned energy services company in North America.

Just a quick setting of the stage; smart cities, there's a lot of... It's picking up huge momentum and traction globally, and just looking at the numbers, this is Accenture's forecast for global smart city market to reach 4.55 billion. I can't even count the number of zeroes there.

In the near future, 2026 is [inaudible] not too far away, and the way Infrastructure Canada defines smart city is, it's really a community that achieves meaningful outcome for residents, for the citizens, through the collective use of emerging technologies, through the collective use of data and connected technology.

And we are proud to be in a position where we can, as a utility, come to the table as a very active, proactive participant, because I really do believe that utilities can be the backbone of smart cities, and I'll get a little bit into more detail here.

As most of you would know, in your homes where you live, you are paying your electricity bill based on time of use. The reason why you can pay on time of use is most of the time, your meters are now intelligent smart meters. Ontario made the plunge in 2007. A lot of investment was made, and the grid was automated all the way up to your doorstep. With a lot of intelligence being built into the distribution grid, whether it's distribution automation, sensors at the feeder level, at the transformer level, and the [inaudible] and buyers are right up to your homes by way of intelligent and smart meters, as well as some of the initiatives that we are now embarking behind the meter inside our homes, there's a lot of data being collected.

Initially, years ago, the most important thing in our industry was the single line diagrams, was the power flow. Now equally important is the coms flow. How is information flowing, how is data flowing back and forth, where is it being saved, and how is it being shared? And we have huge ownership of ensuring that we safeguard this public data that we are collecting in a way that we don't break anyone's trust.

I just wanted to throw this in. When we are talking smart city data policies, there are data policies being discussed and worked on at every level, whether it's municipalities, and Jeff already touched on quite a few there, so I will not repeat, but even on provincial policy, very close to our own backyard on the energy file,

OEB has mandated all local distributed companies like Electra to report on the cybersecurity measures and privacy maturity. This is something we've seen over the past few years because now, as much as the brick-and-mortar world needs to be made to safeguard and secure, we all understand that cybersecurity is just as real and needs to be protected. All our citizens need to be protected by a planned outage that could be there for whatever activities.

On top of it, besides making sure that utilities are covered on cybersecurity, there is also the initiative on green button, by which utilities will mandated to share information with customers or whomever the customers want their information to be shared with if they are to download my data, but also connect my data. And connect my data eventually when it'll be in place, will give realtime access to whomever the customers are okay to give that access to. Which means that's how apps and new business opportunities will thrive by getting meaningful information from the data that utilities are collecting, mainly by way of smart meters.

There's federal policies in place, again, mainly for confidentiality of information of citizens, and going forward, and we heard about it earlier today, is the national data strategy. Again, a lot of [inaudible] on private firms, how the information can be used for advertising and monetization purposes, as well as ethical, how do we make sure that... also, how the privacy for citizens is safeguarded?

I find this a very interesting case study on Chicago [inaudible] platform, and it's really interesting to see that just as we have FitBit for our personal health, here is what they are trying to put together as a FitBit for the city, really an urban sensing project. And what really is interesting to see is how many different collaborators, coalition of the willing, need to come together to make something like this possible. Key project developers include the University of Chicago, it includes a national lab, lots of startups, and then the heavy weightlifters like Microsoft and Cisco, et cetera, there as advisors. And the key stakeholders are, of course, residents. There's a lot of community engagement going into this project, but researchers, urban planners, developers, and of course the government itself.

And the challenges that they're facing are not different than what have been discussed throughout the day. In fact, I was smiling, looking at various slides that the previous presenters were putting up as key challengers. Those are exactly the challenges that this project is undergoing, is the whole, how do we protect customer data, how do we make sure that our data strategy is transparent, that governance is put in place early enough and not as an afterthought, and how do you make sure that your trust with the stakeholders is safeguarded?

Within Electra, I mentioned that I had the green energy and technology center. Really proud to have Pina as the chair of the upcoming inaugural advisory committee for the green center, and one of our focus areas at this green energy and technology center is enabling smart cities. As part of that exercise... and by the way, the center is based out of Guelph. We're really excited to have it there, because that's in the middle of the innovation corridor between Toronto and Waterloo, and Guelph is a very hands-on, very energy-efficient city. It actually is the

solar capital for Ontario, and there's just a lot of groundswell of innovation in the clean tech in that area.

And as part of our effort to foster between RND and commercialization in enabling smart city, just got a very quick few examples that I wanted to share with you. Electra drive at work places an initiative and we are trying to promote fostering of electric vehicle driving, and really, this is where we have come across challenges on data collection and mobile versus stationary. It's one thing to collect data behind the meter for our homes; it's a completely different game to collect data from the cars. Through data loggers, as we are collecting data from the cars, now if that gets hacked or it gets misused, now the implications are so much more severe.

Lots of talk on how we can collect this data without tracking every customer movement, how do we make sure it is safeguarded, and how do we get the insights in an anonymized way without giving up the customer privacy?

Another project pilot that we're working on is to provide our customers with variants of time of use. If you're driving electric and you sign up for low overnight APP, advantage power pricing, then you get electricity between 12 o'clock at night and six o'clock in the morning for two cents per kilowatt hour. Which is usually, otherwise, it's about eight cents, seven, eight cents for us. So, super low, cheap electricity at night so you can fill up the tank of an electric car with super-clean electrons coming from nuclear. It's a win-win situation. And we've got a few other variants, as well.

But again, we are storing data. We're able to get lots of insights on customer habits by way of their utilization. We are even throwing back a report to them dis-aggregating that data to help them understand which of their appliances are the most energy hogs, where are they spending their energy money at.

And lastly, we are working on a transactive energy platform that's based on blockchain and, as with blockchain, it's a private blockchain network, so the access to data is on permission basis only, and there are lots of layers to protect data. But we do believe that the future of our industry is going towards increased transparency through a decentralized ledger technology. And I'm going to leave it at that, because I believe I'm over time.

Thank you!

Pamela Robinson: Okay, great. Our third speaker is Natasha Dusikov, who's an assistant professor at the department of social science at York University. Thank you.

Natasha Tusikov: Thank you. Is this on? Oh, excellent.

Thank you for staying around today. I look at smart cities. I've got a research project on smart... Is this the... which button do I want?

Neetika Sathe: Green. The top.

Natasha Tusikov: Just... Ah, perfect.

I have a SSHRC Insight development grant that I'm just starting on smart cities and data governance, so I'll be asking questions about who should own and control and store and govern data relating to smart cities. What is that divide between public partners and private partners in relation to smart city data?

I thought today, I would ask four questions to help structure my talk, and to kickstart some discussion. And as we're a little short on time, I'll just start the first one.

So, what is and, more importantly, what should be the role for government? This depends on the city, this depends on the society, distinct needs of that society. The role of companies is often very clear as the providers of this technology, but the role of governments, I argue, is often much less clear. What do we expect from governments in a smart city? Do we expect them to set the overall rules under which these private tech vendors would operate? Is there some kind of co-regulatory role where companies and the government set rules together, some kind of collaboratory role?

But this also raises the issue of conflicting public, private authority. What should be and what is the division between the private sector and government in relation to smart cities? Who should set these rules, and when and where should rules be streamlined? This is often a very prominent narrative of smart cities, to streamline or modernize the regulatory structure. Where could we or where should we see some streamlining of this bureaucratic infrastructure, some of these rules? And we just have to make sure that this isn't benefiting a single actor.

And finally, who assumes the risk for smart city projects? We often hear the term "cities as a platform." Well, platforms are risky, especially for profit platforms. So, who assumes the risk if a city as a platform fails? If there's a shift in the technology provider's business structure? If they go bankrupt? And this is something that we really have to think about when we're moving towards some really innovative mechanisms in terms of smart cities.

Second, how should smart city data be governed? Certainly in relation to the proposed city in Toronto, Sidewalk Labs has proposed a civic data trust that would be handled by some kind of government or independent actor that would store and then grant access to civil society or a business for this data.

This would then, this trust, would balance innovation with privacy. But I think before we debate the merits of a civic data trust, we should really step back and think, "Should we even..." We should be talking about data collection. One question I think we should ask is, in terms of data collection, should there be some data that's off limits to collection? Are there certain types of data that we don't feel comfortable having either the government or the private sector collect? How do we balance principles of privacy and data protection more broadly with innovation

in a smart city?

And when we talk about storing data, what actor, or maybe this is several actors, have the authority and legitimacy to store and to govern data? Do we want the storage of data in Canada? And if we can't have the storage of data in Canada, does this effect what type of data we think should be collected in a smart city environment?

Part of this debate, I think, involves how we value data, and the certain services, the certain goods we want from a smart city. And it's really only after we've had this very broad, very in-depth, very publicly inclusive discussion that we should move onto what type of data should be collected and who should govern that data. So, what we're really talking about is authority and legitimacy of that actor, because granting access to this data, making sure that there's a proper oversight mechanism into how that data's being used, and making sure that there's compliance with data protection rules is not easy. That's a very difficult task.

And when we're talking about smart city data, I think we have to recognize that the growth of private data infrastructure can disrupt the capacity of government officials to regulate city services. In some cases, we're seeing municipal authorities losing access to formerly public civic data, such as rental data which is now captured by sharing platforms like Airbnb. This has been a problem in Vancouver, in San Francisco, which has both battled Airbnb over access to data.

And how can cities really then set policies on housing if they don't have access to this very important data? Could this mean Toronto ends up paying for data that used to be public? Could this mean that city council has to negotiate some kind of licensing agreement with a private company in order to access that data?

What we may see is municipal authorities experiencing a data deficit that limits the capacity for public planning, for regulatory activities. An University of Ottawa law professor, Theresa Scaza, has written an article on data deficits and challenges with public policy-making.

Third, we need to talk about intellectual property in smart cities, who owns intellectual property, as we've talked about today, isn't a secondary question. It's a central question. It lies at the heart of what we call the knowledge economy, and ownership of intellectual property and data has not been fully discussed during this entire quayside at Sidewalk Labs' smart city debate. Waterfront Toronto, as well, isn't really the expert on intellectual property; it's an expert on land development.

So, to understand the implications of this smart city project, we need to think clearly and very critically about who gets to own intellectual property. Canadian tech firms are quite concerned that they might be locked out of a smart city in Toronto, locked out of providing technology and services, and the Canadian government broadly has warned that Canada risks becoming a nation of data cows, right, for other countries. This very colorful agricultural metaphor, we are resources to be sucked dry with the value from data being extracted from Canada, harvested

by other countries, largely the United States.

I think something in the smart city context we have to be careful about is who makes the rules, and where do those rules apply? Are we going to be a rule-making country, or are we going to be a rule-taking country?

And fourth, what can we learn about Barcelona's smart city experience? Barcelona is a leading site in really thinking about smart cities, balancing different values in the smart city, and advocating for a very strong role for government and for civil society. Since 2015, Barcelona's mayor, Ada Colau, has worked to strengthen civic participation through the city's use of technology, and through Francisca Bria, the chief tech officer, is really redefining what we can understand the smart city to be.

Barcelona's created Decidim, this civic platform in which citizens, residents are able to upload what matters to them, right? To vote and to indicate what strongly matters to them so government officials can see where, from the bottom up, the citizens want a smart city to go.

We have to ask, then, what do people from the GTA, what do Torontonians want in terms of their smart city? It might be heated sidewalks, it might be these timber skyscrapers, but I'm guessing it's probably going to be improved public transit, affordable housing, and better public services.

In conclusion, we face some really difficult questions and very... This is a good time to re-open, to kickstart again, a public debate on what we want our cities to be. What we want a smart city in Toronto to be. This appropriate desire to division between the public and private. And I would argue that we need a stronger role for governments in smart cities, setting policies independently and setting policies in terms of the government acting with some, hopefully, public interest in mind.

Returning to the idea of data governance, how do we value data? Who do we think should govern this data? And to think how we should govern data, we have to think about what values we really want to prioritize in our smart cities. Much of the discussion so far has focused on innovation, and rightly so; we need to have technology firms and other kinds of businesses healthy in this environment. We need to make sure that our local tech firms have a fighting chance, but we also need to make sure that smart cities are spaces of fairness, of equality, of justice. And data governance itself is a very important issue. We see the province of Ontario is crafting a data strategy, we see moves at the federal level to craft a data strategy. There's a lot of interest here, and I think this is time to really make sure that there's a lot of public input in this area.

And finally, returning to Barcelona, the city's recently adopted a manifesto to govern its smart city, and two points are relevant for our discussion. First, the manifesto proposes technological sovereignty for the city. This means that the city retains full control and autonomy over its ICT's and its infrastructure. And secondly, it argues that citizens' digital rights should be at the center of digital policies.

And I think just to end the discussion here, or my presentation, to say, what would technological sovereignty look like in Toronto? And what would a citizen-based approach, from a digital rights point of view, look like in Toronto?

Thank you.

Pamela Robinson: That was an amazingly rich nine minutes, thank you so much for adjusting on the fly. And I just have to say, these speakers are doing an awesome job. They're not just talking faster, but thank you for working on the fly with us.

Our last speaker on the panel's John Rygell. He's the national technology officer for Microsoft Canada, and he brings a wealth of experience across technology applications in municipal and other contexts. Off you go, John. Thank you.

John Weigelt: Thank you. Over the 20 years that I've been working with smart cities, it's been really intriguing to watch these big bang initiatives come through. When we think about smart cities, we see things like smart cities, CityNext, New Songdo off in the Sea of China. We see, hear about Taijin, the city, Egypt's new capital and Waterfront Ontario, or Waterfront Toronto. And then we mash that together with technologies like Internet of Things. We mash them together blockchain, machine learning, deep learning, artificial intelligence; even quantum computing's getting mashed into that.

And I've been working in the domain of accessibility, privacy, security, and seeing the impact of technology in those domains. And what happens when technology and complexity faces humans in those domains? Well, we take something that we know and we anchor on that. We use that as a reference point, and then we try to color outside the lines. And so, as we start to think about these things, we take that reference point and we say, "Well, is this a Jetsons-type scenario? Do we go back to those cartoon eras and say, 'Hey, this is going to be a great era where we're driving around in flying cars and we have these robots there?' Or do we go onto something else, where we've been conditioned almost for 50 years with Robbie the Robot; HAL, the computer in 2001: Space Odyssey; the T-800, and start to look at things like that?"

We have this tendency of wanting to look at the glass half empty as we look at these domains. It's important as we start to then look at these domains that we get rid of the buzzwords, get rid of the memes, we get rid of the Hollywood [inaudible] scenarios, and we get very, very crisp on what we're talking about. Because I think what happens when we start to talk about mega-projects and mega-concerns, we get mega-worried. We need to make sure that we have this nudge and figure out, what is a smart city? What is a smart community? What is a smart building? What is artificial intelligence? What is machine learning? Is it that thermostat on the wall? Is that what we're worried about? Is it the automated vacuum cleaner, is that what we're worried about? Is it the pacemaker that's tracking us as we go down the street? Is that what we're worried about?

We need to really look at these things! We need to really understand who the

participants are, what's their business model, what's their motivation? We lump everybody together. All private sector gets put into social media company that does nothing but mine data.

That's not the business of everybody. We need to get crisp on that. We have to understand the business models. We need to adjust our business models. We're focused on open-source type models, but open-source has moved to API's. It's moved beyond the data to algorithms. People are selling algorithms now! What does that mean in this environment?

We need to get beyond that. We to understand cloud computing! Cloud computing's not this computer on the desk. Cloud computing's 1.6 million computers in a hundred places around the world on the second-largest network in the world. There's no people that can access that information. There's nobody going in there and retrieving information from around the world. We need to get crisp, we need to get access. We need to look at the economic value. Where does the money land? If I spend a dollar here, who benefits from it? If I spend a dollar here, where's the IP go? If I spend a dollar here, who gets the jobs?

We need to be crisp. We need to get more crisp on these things, or else we're not going to have a good understanding of what we're talking about. We're going to be talking in different levels and we're going to get upset with each other, and we're going to grandstand and we're going to quash great projects that are there. So, it's important that we get very specific on what we're talking about because a smart city is a livable city, safe, efficient, productive, and ultimately, prosperous spaces.

When we look across Canada, we see ruthless incrementalism on smart cities. We heard from Barrie. We know Bridgewater, Nova Scotia. Regina, Saskatchewan. Smart city initiatives. We're working with PCL construction. Now, you might think of PCL constructions as a mortar company, as a rebar company; they're a smart company. Why? Because when you look across Toronto, there's more cranes in Toronto than anywhere else in North America. They can't get enough construction workers to work there. And so, they've created a system, what's called digital twins. It allows them to have a foreman with a heads-up display on their site to be able to build that building. They're building the building in modules. They build a bathroom offsite, and they plunk it down on the site. They're building these things altogether. They're instrumenting the building since the hole goes in the ground, all the way til it goes up. They don't have to share binders anymore. They can bring this all together so that they can take the burden off our transportation system, so that the cement trucks only come at night; so that they know what's happening in those environments.

Is a cement truck a personal information protection concern? Are we looking at the right things? Are we having these right conversations? It's important that we get very, very crisp upon these things and start to look at these capabilities.

These capabilities include all these different technologies, and this is an area that Microsoft has been working in for some time, and me throughout my career:

security, privacy, accessibility. It's where that interface between government and industry and individuals comes together. And as you start to work through those environments, you realize that, "Hey, there's a bigger thing that's in play here." And Satya Nadella, our CEO, was he was looking at the future of technologies, looking at artificial intelligence, he said, "Look, we need to look at data and the privacy associated in the macro level. We need to put in place principles for artificial intelligence," and he listed these three might be empowering:

"Artificial enables and empowers individuals. It helps us as people be better at what we do. It's trustworthy and respectful and inclusive," and he included six principles to support it. "AI must support humanity. Smart cities must support humanity. AI must be transparent." We're not going to know how it makes decisions. "Must maximize efficiencies without destroying dignity." Critically important. "Must design for intelligent privacy, algorithmic accountability, and guard against bias."

And I apologize, I've gone through this very quickly because of the time, and I am the last speaker so that's... We'll go on even further. That's further amplified in this freely downloadable book, The Future Computed. The main three takeaways from this, if I were to give you the [inaudible] notes, the first one: those municipalities, those countries, those companies that are going to be first or prosperous are those that are going to be first in this domain. And we see that in Canada. Montreal, for the science that's happening there, and we heard from Element AI, so great AI science that's happening there. Toronto, it's the application of it. You know, we see down at 111 Front Street, they have AI that's being used for legal-type conversations. It's really, really interesting to see that. The first, that's going to be there.

Second, AI is a big problem... a big challenge, excuse me, that's going to solve societal challenge. We need to work together. And the third is that we have a shared responsibility between organizations.

Now, at Microsoft, we've taken that to heart. We actually have a committee within the organization that looks at sensitive uses of AI, and we review them, and if there's a sensitive use that we don't like, we don't deploy that solution. And we realize that having a US-centric view of that world didn't really make sense in all different geographies, and so we distributed that around the world. We have a local team in Canada that's able to do that, as well, and help organizations then wrestle with the challenge of privacy, security, accessibility, and the ethical use of these technologies.

Some areas require more focus than others, and this comes very true and apparent within the smart cities environment when we look at facial recognition. And while there's some areas where we choose to go faster to innovate, there's other places where we may want to be more deliberate and thoughtful about our approach. And one area that we feel strongly about is in the area of facial recognition, the ability to make sure that facial recognition is put in place in scenarios that don't harm people's rights and freedoms. So, working closely with governments to

understand and put in place proper legislation, and we've been supporting US legislation in Washington, state and in the federal level, to support the guidance around facial recognition.

There's some things an industry can do, and we in industry are working with the Partnership for Artificial Intelligence, some 80+ companies; 50 are from civil society, including the ACLU to put in place a strong frameworks for this. Provide transparency, moving deliberately, and working together. But what's key is that we educate ourselves about this domain. We educate the thought leaders, the business leaders around this environment. Just last week, we launched the AI Business School, which includes modules for business leaders, and that includes putting together an AI-ready culture in the business. How do you put in that governance structure within your organization? And what are those principles for responsibly deploying those solutions?

And that's critically important, because these smart city solutions aren't going to be the big bang explosions. They aren't all going to be the Waterfront Toronto, or the New Songdo City where you're reclaiming land. They're starting small. It might be that escalator that reports when it needs some grease, and it's important that we start to wrap our heads around there because we're at a critical decision point. These things are happening. They're happening today. And we have the opportunity to lead in this domain, from a Canadian perspective, we have the horsepower from an AI perspective, we have the willingness from a community perspective.

We have the opportunity to lead, but we need to bring that together to constituents. Diverse communities from across our communities to really have the opinions on that, and it's up to all of us to employ these tools in a responsible manner that helps empower individuals and organizations around our country to achieve more.

With that...

Pamela Robinson:	Thank you very much. That's great.

Because our speakers did us all the great gift of truncating what they were going to say, we have some time for questions. I've got some questions I could ask, but I actually would like to open it up to the room, because all day, we've kept a pretty hectic pace. I can pitch back up, but I think we'll go to you first. Does anyone have any questions you'd like to start with? You ready to stand up, after sitting for a bit?

Yep, go ahead. I think we've got folks with microphones, so, Michelle's just coming behind you.

Audience member:	I just have a quick question. I mean, I think in case of our... at the Sidewalk Lab, there is a lot of data is being collected, knowingly or unknowingly. So, what is the best way we approach about this privacy and the consent, about the collecting the unprecedent amount of data in terms of this launching the smart city initiatives?

Pamela Robinson:	Okay. We've got a question that's specific to Sidewalk Labs, but I think we can think beyond that project, too. Yeah?
Audience member:	No, I'm just saying side lab as an example.
Pamela Robinson:	As an example, yeah. I think we've got a local case, but a bigger challenge, and so, we've got four people uniquely positioned, I think, to speak to that.
John Weigelt:	I think consistent with the theme that I had is, we need to break this down. We need to have kind of the range of the possible, but break this down into particular use cases, and then explore those use cases from a practical perspective. How much data has been collected by Waterfront Toronto today? Very little if any, right? So, we're looking at what the range of the possible is, but we haven't had any concrete use cases.
	Perhaps we could look at an experiment that's happening at the Ambassador Bridge, where they're contemplating taking containers from one side of the border to the other with the robotic transport systems, and then putting the bill of leading across those systems. That might provide a useful crucible for regulatory investigation exploration, and then build upon that. I think the framework and the construct is, "Let's determine some useful scenarios, and then work those through to see what can happen in those scenarios."
	Now, we don't necessarily have to have live data with people. But we need to have a concrete thing that we can sink our teeth into to say, "This is what we plan to do, here's the existing legal framework for it, and here's where there's gaps."
Pamela Robinson:	Okay.
Natasha Tusikov:	I would say that one thing we need to think about is having the rules or a framework in place first. Instead of thinking down the road, here's how to fix the problem, here's how to aggregate or anonymize the data, have the framework in place at the beginning and that might mean introducing new rules. Introducing new frameworks in terms of governing that data, and I think we have to get the public involved, right? Because this is going to be people's data, we have to know what the public feels comfortable with.
Pamela Robinson:	Great.
John Weigelt:	Yeah, I just want to echo the same comments. A citizen-centric data strategy needs to be in place, and data governance needs to be right up front, not an afterthought.
Jeff Lehman:	Certainly agree with that, and whether that's the privacy impact assessment framework or otherwise, I think the ground rules need to play out through a process of, absolutely through public engagement, and that's got to be a role. And I actually think that actually can be a role for cities, because the technologies are so unique and related to the individual applications, and to the very good point that,

do we really care about the escalator that's telling a central system that it needs some help? No, probably not, of course not. And these sorts of things should be easily deployable in the interest of an escalator that works better.

But where it does really bump up, and I think this is where national data strategy or regulation is going to become very important, is around those unique, those individual identifiers in an environment where consent is impossible, or virtually impossible. And I think that Sidewalk's labs has surfaced that issue in Toronto, but it's surfaced all across the globe in similar environments.

So, then you fall back and say, "What are our principles going to be?" And I think the principle of de-identification at source is a good one. I mean, I think there's going to be challenges that that creates in terms of the applicability of the data. We could be leaving very positive innovation on the table.

But that's the kind of question that needs to be asked, and I think that's a very good role for government as we look at the privacy considerations around deploying smart city technologies.

Pamela Robinson:	Great. Okay, we've got a question here, our friend in the striped shirt, and then we'll go to the back. I'm sorry, white shirt and a tie. Thank you.
Audience member:	Hi. When I think of smart cities in terms of the digital divide, and so even Toronto and most cities in Canada's portion of the population that doesn't have their own computers or reliable internet access, and my question is, would you consider a smart city being one when everybody has kind of equity and access to kind of technology, and that way, they can participate in the economic benefits as well as the citizen participation pieces that we talked about?
Pamela Robinson:	Okay, great.
Jeff Lehman:	Well, I could start on that, we'll go in reverse order? That's going to be very difficult to accomplish. I mean, you know, the notion of universality of access, you saw it even in the federal budget yesterday, right?
	It's a goal, a commitment which is a very worthy one in terms of broadband, and I think on that basic level, of course. Of course we should pursue that as a country.
	When we start to get into much more advanced levels of technology and complexity, especially in urban environments, they're so driven by scale, I think it's going to be very, very difficult to accomplish that. That being said, I think, is there a right of access? Especially to information? Yeah, I think that's a much more interesting question, and this gets to the question of, is the delivery of access to that information a public service?
	If it is, how can we feasibly deliver it in an equitable way? The only way we can do that... I know my people can't do that, the municipal people. Can we as government, though, set some standards and then create the supportive types of

funding models that would actually work in a business model with the private sector to accomplish that? I would hope so, yeah.

Pamela Robinson: Okay.

Natasha Tusikov: I think your question's an excellent one, and I think it gets at the heart of, what do we want a smart city to be? And part of a real fulsome public engagement is getting people's interests, right? People's needs, people's values in terms of what they want technology to deliver.

And much of the conversation debate to date focuses on innovation, and then there's some good discussions there, but your question gets at, we need to have that discussion much broader.

John Weigelt: I'd like to just change that dialogue a little bit from the traditional view of that, what is to have technology and what is not, in a smart city. We've got some projects underway for helping those people that need adaptive technologies, so things like vision artificial intelligence that allows you to read out screens that are there. We're working with the CNIB here in Toronto around soundscape that provides you a 3D aural view of the world around you, so that you can participate with your sighted friends within those environments.

Those are parts of smart cities, and it's a story of inclusion. We look at virtual kiosks that are appearing throughout North America that provide internet access to communities that are there, and while there might be a quick ad that shows up at the beginning to say, "Brought to you by Brand X, Y or Z of phone," then you have access to that technology, as well.

As these technologies disappear into the background, are we asking ourselves the right questions around what it means to be part of the inclusive environment, and how do we support that using different business models? That's what I challenge us all, is to take that, again, that nudge away from what we've once looked at, that brown box that was on our machine plugged into the modem, and now to look at what these technologies can actually do.

Pamela Robinson: Nikita, do you want to jump in? As a utility provider, you're in an interesting position, I think, because you have lots of customers who use your service, but now you're advancing technology, so you probably understand the gap in an interesting way.

Neetika Sathe: For sure. The truth is, not all customers will be equally engaged. And it should not matter.

The city needs to be smart for those who understand the technologies and for those few who understand the technology, and for all the others who don't, cannot understand or don't care to understand, technology needs to be the means to get the lifestyle delivered to the citizens of that city.

We find that within the utility, too, that we're not on a customer's mind other than when the bill needs to be paid, or when there is an outage. Perhaps, I think the statistics is we take up eight minutes of mental space of our customers. We're like, "Let's face it, we're like an old married couple. The spark is a little bit missing." It's a trusted relationship. When you flip the switch, you will get electricity. There is a very strong trust, and then when we send our bills, you pay.

It's a two-way trusted relationship, but it's not... We're not on a customer's mind right now as much, but that does not stop the engagement that we need to be there to provide them with the choices that they need. I think that's not very different from what will be expected from the smart cities, whether the customers want to be actively engaged or they really don't care what the pipes and the guts of the city is going to be, what information technology platforms are going to be put; all they care about is, "Give me a better lifestyle in a more affordable and reliable fashion."

Pamela Robinson: Okay, great. Thank you.

I promised our friend in the... Yep, go ahead.

Audience
Member: Throughout the conference, we've moved from spaces with arguably the specter of consent, but at least that, Facebook, Google, to health, which is a little bit more questionable. You know, you need the healthcare. And finally, to smart city engagement where there's... The consent is inherent in being a citizen.

And you could argue that by stepping out of the public domain, you do provide some level of consent, but for things like getting data in private businesses from the car that you mentioned, or within the private domain and it becoming public, have you guys given any thought to the fact that aggregation without that element of consent being behind it is a different kind of concept than aggregation with consent, and what that means for the value of that private information and what that might mean?

Pamela Robinson: Who wants to take that one?

Natasha Tusikov: Yeah, absolutely. This is a huge issue. I think this is where we first start about, what values do we have for our technology, right? What do we want our technology to do? What types of data collection do we feel comfortable with?

I think we also have to recognize that people don't read Terms of Service, they don't understand, so even when we do have consent from people, we know it's not fully informed consent. We have to be very realistic that people are very bad about first, giving consent, understanding that, and then when we're asking them to project in the future for future services and products, do you also give consent for that? People are terrible about that, so this is a big issue. And I think this is where we need to have a very critical series of discussions about data governance, about what types of data we should collect, and whether we should even be collecting some types of data if we can't get consent from people, if we have poor data

protection or poor privacy practices.

Pamela Robinson: Anyone else want to-

John Weigelt: Again, [inaudible] in the abstract, it's one of these nebulous things that you can't put your arms around. And we end up with these huge scenarios where we're collecting all data and we've got a Minority Report-type scenario where people are getting tracked as they're getting their latest pair of khakis pushed on them from an advertising perspective.

So, let's be very specific about what those use cases could be. When we look at something like providing assists to people with visual difficulties, can you dial up the amount of ads that are on the street? Can you dial down the amount of ads that are on the street? How much control do you put in the individual's hands? What type of education do you require for the user before they consent? What do you need to talk to them about?

I really worry about having a conversation with communities in Canada around the impact of quantum computing. I hardly even understand it, and then, how do we have that informed conversation around, "This is how it's going to change your life for the better. Here's where it could possibly go wrong"? So, there are some steps that need to be taken, and those nudges is a great way to do that, is to say, "Here, we're going to try this out, we're going to let you see that, experience it, and then we're going to go from there in safe places." It's not to suggest we're going to go to the hospital that was up earlier and say, "You know what, your health record's now open data, feel free!"

No. We need to structure these things, and work them through so that we can see how existing legal frameworks, how existing consent frameworks and tool sets that we have really work in the new era.

Pamela Robinson: Okay. Do we have any more questions from the audience? Okay, there's one in the back over there. Yep.

Audience member: Hi. I'm curious what the panel thinks of this issue we seem to have in Canada related to the model that we have to have things then that are unique to us. We need to determine what a smart city is to us. We need to develop our governance. Why can't we use models that have worked well before? Barcelona did exactly the same thing. They created data, they shared data, they used data to launch private enterprises. Governance was dealt with, privacy was dealt with, security was dealt with.

So, we seem to continue to try to make things unique to us. We did it with the health records, we did it with the vaccination registry, we did it with the Metro Pass, with the subway pass, everything. Nobody has anything that we can use.

Why do you think that is happening?

John Weigelt:	I'll jump in from the international perspective. I think the view of reuse when possible is an important one. Reusing individual patterns, standards and policies and processes from international areas will help Canada leapfrog those organizations in those other nations and other cities in a rapid fashion.

However, we do need to tailor them for our local context. How often have we heard about the state of Estonia and their digital government? And so, it's a fantastic story. You can't cash a check there anymore. They don't accept the paper anymore. Really, really kind of amazing. But they also have a national ID card, and you get that national ID card from the police department, and the national ID card allows you to not only cross the border but allows you to do your banking and allows you to take public transit.

For inhabitants in Toronto, how many will be comfortable going to the police department to get an ID for the bus?

I would argue there's a subset of the people that say, "No, I'm not going to do that." And so, that patterns needs to be adjusted a little bit from Estonia as we bring it into Canada. So, let's reuse whatever we can, but let's recognize the Canadian context. And for an example, the AI ethics program that we've implemented on a worldwide basis. You know, we have regional communities that are able to look at local sensibilities, and to say, "You know what? The Canadian community would not feel comfortable with that particular use." |
| Neetika Sathe: | I can say the same for the utility industry. We look across the globe for ideas and learning. We don't want to reinvent the wheel, but the truth is that our sector is highly regulated and it comes with its own challenges, so we need to look around. But as we bring back ideas, we really do have to tweak and customize it to our own area. |
| Jeff Lehman: | I guess I'd just throw in there two thoughts. One is that, again, on behalf of my people, cities, we probably have a local relationship or a relationship with our citizens that is arguably stronger than regional or national government, and that makes us uniquely suited to deploy some of those more trusted technologies. That might be a sweeping statement; I'm sure there's lots of people won't be happy going to City Hall, just like they might not be happy going to the police department. Maybe a few more.

But the other reason I think that we've got to be a little careful with the international context is the example of concerns around use of data by government in different national settings. Of course, there's been a huge amount of difference... or attention paid to the difference between US and Canada, the access to information and the Patriot Act and so forth. That's probably the reason to look at customizing the information or the regulation to allow your citizens to have the confidence to allow the deployment of the technology.

Here, we should have an advantage, as Canada. |

Pamela Robinson:	Anyone else? I think, just to add to that, I think one of the challenges that Canadian citizens are facing right now in the smart cities landscape is that this work is coming hard and fast, and it's in addition to the already good ordinary work that municipal governments are doing. Barcelona had a head start; Milan had the foresight in 2011 to convene a round table on the quality of work for workers in a sharing economy, but foresight is uniquely specific, and Canadian municipalities are doing really good work on other fronts and so, I think we'll see them start to learn from each other. We have good examples, like in the case of climate change, we have lots of really great municipal learning that works.
	But I think it's early days for how the smart city's going to land. Certainly, the federal government's smart city challenge, round one is just wrapping up with its finalists just submitting last week, may help accelerate the learning network piece, but I would... it's pretty early days, still. I think we'll see it, but we're just getting going.
	One last question from the audience? Anyone else? Yep, go ahead, last one to you.
Audience Member:	Yeah, thank you. All the great thoughts and I agree with your point that we need to customize our initiatives with the local thoughts or local opinions. So, what is the government doing... or, no, organizations doing? In this case, utilities for example, to ensure, how can we bridge the gap between the people who we are serving to and the organizations who are the providers?
	Let's say in the case of consent. The consent statements, when we accept or disagree or agree, they are quite complicated and lengthy, so that's why people really don't understand and accept or disagree. How can we make it simplified?
	The other things are around, what a consumer thinks from smart city perspective, what they need, and that will probably increase the experience or adoption about when we put in place, actually, a smart city, the adoption or experience will be better. So, how are you bridging that gap between who are going to get that service, and what is going to be provided?
Pamela Robinson:	Okay. Anyone want to jump in?
Neetika Sathe:	I can take a step.
	That's a really good point. How do we simplify it so that we get a higher proliferation of a larger a buy-in from the citizens? The truth is that all of digitization, all of our efforts to try to make the city smarter and cleaner and greener, all of it will fall flat if people don't buy it. If they don't get excited by the idea, if they don't get engaged, it's going to fall flat. It could be launched and abandoned in many, many different places.
	One way that, within the utility perspective at Electra, we find it really difficult to go out, as I mentioned, to engage with our consumers, but we are finding that if you use technology to unravel customer behavior, to deepen the engagement, we

are having much more hits and a much better strike rate. Going back to our blockchain technology, to put a transactive energy platform together, it's a lot easier to engage a customer through an app, which is very simple and there's smart contracting built into that app, the customer does not need to understand the guts of blockchain technology and how it works. But what it does do is provide a very simple and clean, easy to understand language, easy for the customer to get engaged with, and that gets converted into a smart contract where everybody then understands, because they don't have to read pages and pages of extremely small fonts on their phone, it's a relatively easy way to explain.

And we are finding that that really is changing the level of engagement of these customers onto the kind of new energy choices that we want to provide, which really is the backbone for a smart city.

John Weigelt: I think I'll answer the question in two different... I think they're two different questions. I think one is through broad consultation between the stakeholders. We have the good fortune at Microsoft to be able to engage with the federal provincial CIO's and the service delivery leaders, the Municipal Information Systems Association, the Association of Canadian Municipalities, and all of the other communities there. In addition, we consult on a proactive basis with the privacy commissioners from the federal and across all provincial, and have dialogue about the potential use of these technologies.

I think we've had a lot of emphasis on the digital side, on the technology side. And I don't think we've emphasized enough on the digital transformation, the business transformation. This is all about a livable city. It's all about enjoyable spaces. It's all about a place where small businesses can thrive, right? We have, 97% of Canadian businesses are less than 100 people; that's over a million businesses. How do we make it easier for that business owner to follow their passion and not to do the paperwork? How do we transform those municipal systems, those municipal services, those provincial services, federal services?

This is not about technology for technology's sake. Let's transform the way that we do the business. Why do I have to fill out 100 pages of documentation just to get a liquor license here in the city of Toronto? Three different levels of government. Why can't I have an app for that, right?

Technology enables that scenario. Let's focused on a scenario and not on the technology.

Natasha Tusikov: Two points. First point, privacy scholar Helen Nisbaum says that, talks about the privacy paradox, right? If we try and simplify and shorten and make more concrete these privacy policies, we lose a lot of nuance, and that's a problem. People may understand it, but we lose exactly what the privacy policy is saying.

If we have the lengthy, complex, nuanced, fully articulated privacy policy, we understand what's going on, but people don't read it. So, that is a huge challenge, and that's something a number of academics are working on, that's something a

number of civil society groups are working on, and I would echo the point about consultation. We do have, at the federal level we had a national data consultation. It was during the summer months, it was rushed, I think we should have a much longer, fuller, deeper conversation than just in July and August. And we recently had one conclude in Ontario. I hope both parties will go back to the public for a much more in-depth consultation.

Pamela Robinson: We'll give the last word to the elected official who understands how to mitigate these kinds of spaces probably better than most of us, yeah.

Jeff Lehman: Yeah, right.

Pamela Robinson: Jeff, over to you.

Jeff Lehman: Well, maybe closing thought is more around the approach than the right tool. I really like what John had to say about looking at the scenario, because I think the quick answer for me, or the obvious answer; the quick answer for me is a design thinking approach where we reverse-engineer the expectations, the consent approaches, the privacy approaches from the point of view of the customer, of the individual who's going to use this service of the organization that's going to benefit. Because I don't think they're built that way. I think they're written for other reasons, and I think that the role that the public can play in that is, I think, around the outcome rather than around the legal framework.

And then the challenge to the legal community, and there are some brilliant minds in this room on that matter, is to then translate that into an understandable and transferrable legal framework. But I think, as John says, you've got to start with really understanding what it's for, and that should be built based on our customer or our residents or our citizens.

Pamela Robinson: That's great. I think I'll just wrap up by thanking our panelists. I think, in John's presentation, he asked the question: are we having the right conversation? And from four very different vantage points, we heard people making a plea for how technology needs to work in the spirit of the public good, I think, and in terms of making quality of life and the ability to prosper in Canadian communities better. From a panel of non-lawyers, I think they gave you lots of good homework to work with.

Thanks to everybody for sticking around. Does anyone from the conference want to get up and add directions about next steps? Yeah? You'll have drink tickets, I think.

Pina D'Agostino: [inaudible] You have a drink ticket.

Pina D'Agostino: Well, thank you! I should start by thanking you all the while we were trailing behind 15 minutes, and you cut us up. So, I think John, what you said, we need to get crisp. I think you really did that, so thank you, and thank you, Pam, for really getting everyone in line.

I really want to thank all of the speakers. You were naturally intelligent. As I started off by saying, so grateful for you all to be here with us, and hopefully it was a learning experience for you all. I don't think it was lost on you that we're actually in a public library, and libraries, of course, are public spaces and the very first, really, repositories of the fruits of human knowledge. And I think what we've been talking about all day has been really about that learning and human knowledge, and I think the keynote Professor Lee, talked about he's doing all this mind-blowing stuff, but for him, it's really about getting to know the human condition a little better.

With that, really, a big round of applause to you all. Thank you to all of you in the audience, so the speakers, the session chairs; to Microsoft, you've been phenomenal. I know that we enjoyed working with you from the very beginning in putting together the thinking behind this, and to today. I think it was a really beautiful collaboration and look forward to many more going forward.

And on that note, I'm so grateful to Michelle Li and Aviv Gaon, where is Aviv? Somewhere? There you are. And Ian Stedman. It's been so nice working with you, and I mean, you put this all together, so we'll grateful to, look forward to, yeah, the next... maybe part three, right? That's the series kicking forward.

Daniel Rizzi, I see behind there, and Wael Louis also were traveling around with the microphones, so thank you, as well. The conversation always continues, as I like to say, so check out our website, IPOsgood.ca, where you'll see a blog, the audio recorded version of today. Also, for our next events, we have April 17, another event coming up, and just as soon as we put this one to bed, we're going to start planning for that one.

And this one is about, really, the federal government's vision here with its national IP strategy, and it's executing it on the IP clinic space. We have an Innovation Clinic at Osgoode, and we're going to be holding the first workshop to really articulate and really give space to what the government is trying to do with its national IP strategy.

Stay tuned to that, look on the website, and thank you you all again. And now it's time for drones and cocktails! So, big round of applause.