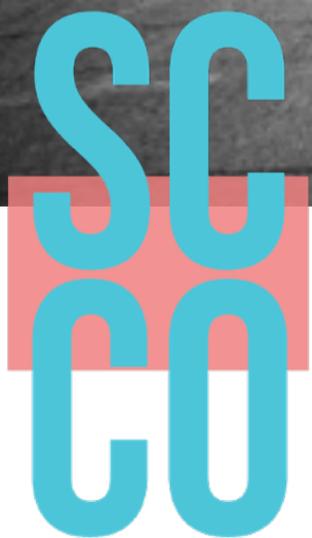


# SMART CITIES

for city officials

A SOCIAL SCIENCES APPROACH



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## MODULE 7

### Suggestions for Moving Forward

*In this module we build on the critical thinking and debates from the previous modules and seek to offer applied, constructive suggestions on how to make more inclusive, just and equal smart cities. We asked our Smart City scholars: ‘what recommendations would you like to give to Smart City officials?’*

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# Module 7

## Suggestions for Moving Forward

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**CHIARA VALLI-** In this module, we will build on the critical thinking and debates from the previous modules, and try to offer applied, constructive suggestions on how to make more inclusive, just and equal smart cities.

**GUY BAETEN-** For those of you who might not have watched or listened to the previous episodes, we present here a brief recap.

In the last six modules, we have discussed the major debates and conversations that social scientists have about smart cities. We talked about the smart city concept: has it turned into a buzzword or an empty signifier? And what are the consequences of having such a cloudy concept?

We discussed the role of narratives and storytelling behind the smart city model and the power held by the ones telling the story.

We talked about technical solutionism and how this logic is ignoring deep structural societal problems.

We also discussed the complexity of data and algorithmic systems for city management and the incomplete perspective provided by data. As scholars have underlined, “data doesn’t speak by itself.”

Then, we question what data and other kinds of knowledge should be used to understand power and equality in smart cities. And we discussed the great potential of a feminist approach to bring together multiple partial perspectives.

We talked about democracy and participation in smart cities and how, even though smart city technologies can be a tool to improve communication with citizens and local governments, research has shown that genuine citizen participation is not present in most smart city projects.

And in the previous module, we discussed how the smart city model is continuously redrawing the lines between private companies and public administrations, so we discussed what the role of the local government within a smart city has become and what it should be.

**CHIARA VALLI-** In this module, we will illustrate the answers from our interviewees when we asked them if they had any recommendations to smart city officials.

The idea, of course, is not that external observers have privileged positions to give advice, when they are not immersed in the complexity of everyday practice. However, we believe there is something very valuable about sociological and geographical knowledge, and on the decades-long ethnographic, close study of the operations of smart cities that is produced by academics. We see that the interaction and communication between the knowledge produced from practice, and the one produced by research is often lacking. We start bridging this gap by asking the researchers what they would like to say to smart city officials and practitioners.

Later in the program of *Smart Cities for City Officials* there will be plenty of occasions for discussing these ideas, and for city officials to respond to these suggestions.

**GUY BAETEN** - We will start with Gillian Rose, who, as an outcome of her research in the UK, developed a Toolkit for Avoiding the Inadvertent Exclusion of Communities for Smart City Projects. She shared the lessons learned from the research, and she made some suggestions to city officials in other cities.

**GILLIAN ROSE** - I didn't think the lessons were rocket science in the end. Because they know that technology is working the way any technology has ever worked, so they play out in places. But I think our sense was, as we talked to more people and all sorts of different actors within the city, was that nobody really actively wants to exclude anyone from smart. There is this, perhaps sometimes rather naive and utopian vision, that the city will be improved by this new digital era. And that is not naive, it's often genuinely meant, and it would be lovely if we all lived in these gorgeous cities where everything worked smoothly, and everything was a touch of a screen, or there's lots of convenience and pleasure that could be had from that. But I think a lot of ways in which things happened actually resulted in certain people not being able to be included.

One of the recommendations that we came up with, and this really was relevant to all the different stakeholders in a smart city, whether that's a council or private sector entrepreneurs or community groups, was that the cities are not a blank slate. There are already groups and organisations within it, and potentially also groups and organisations that have had long traditions of collecting their own data or working with other kinds of data, often with quite clear views about how they would like the city to be improved. And working with them and building up collaborations, which means long term collaborations, not just this "parachute in" for a few months and then out again, its far more likely to get genuine engagement and social justice outcomes for smart city innovation.



["Look to the Future..."](#) By 666isMoney is licensed under [CC BY-SA 2.0](#)

I think there are questions around how collaboration works with digital technology. And in particular, one of the projects that I would have been really interested to carry on, and we couldn't find the funding for, interestingly, was that, at least in the UK, the professional training tracks which tech entrepreneurs, or digital information scientists, or computer scientists emerge, they are hardly ever asked to think about anything to do with communities, ethics, social justice. They have a very particular deeply ingrained technical vocabulary. And conversely, people who've come from local organisations, communities, neighbourhood networks and so on, particularly from Milton Keynes, chances are, they probably wouldn't have gone to university, not alone got a degree in computer science. And there's a there is a real problem in trying to find a shared method or language where that collaboration between tech and the communities of the city, can really talk to each other and understand each other. I think it can happen, it often depends on really motivated individuals, or perhaps a really specific problem that absolutely is clearly, going to A make money and B solve a real social issue, and then maybe they'll come together.

I think there's almost like a third language we need to develop, which is a more social version of what the tech people do, and a more tech version of what the community do. I have no idea what that would look like. And maybe there are some visual methods or workshopping type methods, or more creative design methods that might help. But having said long term collaboration, it's easy to say, but I think digital stuff makes it particularly harder to do.

The other major takeaway is that a lot of this hype around the digital, and particularly this model where you trial something in one place in order to get it to scale up to others, both of those things produce quite abstract vision of what a smart city is. The commercial adverts are particularly bad at this. In smart cities are always these skyscrapers with loads of traffic, kind of blue network zapping around. No place looks like that. And actually, people are really cynical about that imagine, that future visioning of smart. I think people see it in that slick, computer generated urban environment, you see it on billboards for expensive redevelopment projects in a city, you see it in computer games, you see it in Hollywood movies. And when you see it as part of what your city might look like, people just shrug and just turn away. And I think there might be a need for more nuanced languages around this, which actually acknowledged the kind of problems, the fact that this is not going to solve everything, the fact that it's going to age, the fact that it's going to continue to need updating.

And then the final thing to say, because I've sort of emphasised working with what is already existing in the city, I should also say that the city is always changing itself. And while there may be very long standing and vocal community groups, I think it's really important as well to work with less visible groups too. And not just marginalised, all sorts of social identities have their own forms of organisation. Invisibilised the wealthier and simply always focusing on the marginalised is not particularly helpful either. So, I think there needs to be a real nuanced engagement with different aspects of the complexity of urban life.

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**CHIARA VALLI** - Gillian Rose's recommendation focuses on inclusion. She reminded us that cities are not a blank page. Working with existing organisations, using their knowledge and their data in genuine collaboration, can help conceive a more inclusive smart city. She also underlined that inclusion doesn't mean focusing only on marginalised groups. A nuanced engagement with different aspects of the complexity of urban life is needed, and it must also include wealthier communities.

Gillian Rose also reflected on the need for a more nuanced language around smart city narratives and what technologies can do. She also suggested finding a common language with the tech industry, a language that can talk social with the tech and talk tech with communities.

Now let's listen to Germaine Haleboua, author of the book "Smart Cities" of the M.I.T. Essential Knowledge Series. What are her recommendations for smart city officials?

**GERMAINE HALEBOUA** - A main thing is to really examine carefully and understand the social context in which the residents of your city exist and which you are part of creating.

What are the historical inequities in your city? What problems have citizens identified in the past that need solutions immediately or longitudinally? What efforts are happening on the ground that are driven by grassroots initiatives, that are driven by citizen populations? because you as municipal officials should be paying more attention to because maybe you could scale them up? Or maybe you could provide resources to the good work that's being done within these local contexts to improve everyday lives.

Thinking about social context, also in technological context, in a local capacity might also mean, what are different populations relationships to technology, but also to each other and to city government, and to pass city government initiatives. What have worked well? what hasn't? So, reflecting on sort of the specific social, cultural, economic, technological context in which you're trying to implement these new or different smart city initiatives.

I think also, as we've talked a lot about, thinking about power structures, social hierarchies, relations of power, and trying to undo the ones that are inequitable or unjust.

Also, what's really important on a practical level, is setting defined questions, goals, outcomes and measures of success when you're thinking about implementing smart city models. So if you're thinking about digital inclusion and civic participation, which is great if you are, then have a meaningful process for achieving these goals, and have some way to measure whether these worked, or whether these big data initiatives that you launched, actually produced actionable outcomes. And thinking about the most vulnerable populations and marginalised populations and social groups first, and the risks and benefits that they might experience through the initiatives you're proposing, is key, is important. And that's flipping sort of what we've traditionally seen.

involving these populations and all residential communities in the decision making and evaluation processes for smart city initiatives from the beginning, and not at the end,

**“Thinking about the most vulnerable populations and marginalised populations and social groups first, and the risks and benefits that they might experience through the initiatives you're proposing, is key, is important. And that's flipping sort of what we've traditionally seen.”**

when you just want to say that you included people in these design processes. So including, like really working and allocating resources for inclusion and listening sessions, and learning in a meaningful way about the plurality of knowledges and lived experiences of residents within your city. And leading civic minded, socially just, democratic efforts to accomplish these goals and bringing in expertise from outside of municipal governments and outside of engineering and computer science departments at universities. Inviting in this plurality of voices and plurality of knowledges from the outside, I think is really key.

I think also, and this is a big one, and one that usually doesn't come across within the dominant discourses at all, or the vendor driven models, is to carefully evaluate and consider whether digital technologies are needed at all. And thinking intentionally about what technologies are needed, not just which ones are available. And this goes with data as well, trying to think about what are ethical ways of managing data, of gathering data? And what data do we actually need to address the issues and problems and questions that we have, that we've come up with in line with and in discussion with our citizenry.

Another one I was thinking about, was to forefront ethics and equity, and to forefront trust and collaboration, and co creation communication and connection, rather than efficiency and optimisation as key priorities. And hopefully, in thinking about all these things, will build more inclusive and democratic ways of managing the city and urban governments. But also, giving more agency, stewardship and ownership of the city, and the right to intervene in making decisions to populations that maybe have previously felt excluded, and that have a lot to contribute for the benefit not just of their own communities, but the city as a whole.

Some of them may be more practical than others. But I think these are different shifts in the way that we think about smart city development, that should be fore fronted and not left to the margins. I also think that maybe from what I've seen, and this is not across the board, but some European and Scandinavian efforts in smaller cities are more intentional about civic engagement, participation and co-creation than what we've seen elsewhere. I if you are looking for some examples, to really look towards cities in these regions that have adopted living labs approaches or approaches that are a bit more democratic than what we've seen in these larger scale, more complex efforts in East Asia, let's say, or smart from the start cities, or retrofitting cities on a massive scale that we see in the US.

Looking at smaller projects that have been successful or have deemed successful by not just public officials, but by community members that have seen real beneficial effects and outcomes, is something to pay more attention to. And I think often these are small projects, and not Metropolitan wide projects. I think paying attention to the successes on a smaller scale is actually very, very important to.

**GUY BAETEN** - Germaine Halegoua highlights the need to understand the social context, and to examine the relationship of that context with technology. She underlines the importance of engaging with grassroots initiatives, and thinking about the most vulnerable and marginalised populations, and the risks and benefits that they might experience.

She invites us to examine power structures and social hierarchies in relation to the technologies, and to forefront ethics, equity, trust and collaboration, rather than efficiency and optimisation.

And she raises a point that we believe is very valuable and should be considered in every discussion about smart city projects: are digital technologies needed at all?

Andrew Karvonen has studied laboratories as a vehicle to introduce smart solutions in cities. We asked him what city officials could learn from the insights of his research.

**ANDREW KARVONEN** - I've done quite a bit of work on urban experiments, and laboratories and urban living laboratories - lots of different words- they all mean a lot of the same kind of things. But they provide a space for different urban stakeholders to try to innovate outside of the normal modes of governance. And so they are really an opportunity to take some risks. They tend to be short term, they are funded externally, oftentimes from a separate budget.

They are very exciting. It's something that that city officials can use to promote their city as an innovative place. And a lot of times it's connected to smart. You know, the new technology. They want to try driverless shuttles; they want to try a new mode of solid waste management. So, you can use an experiment, you have the potential to fail and the opportunity to embrace risks. It's a nice way for stakeholders, and particularly for municipal governments, to try something new outside of the norm.

So, you can see there are some obvious connections there to smart cities in the whole digitalisation agenda.

One of the challenges that a lot of times local authorities have with experiments, is that you can go and conduct the experiment, you can collect data from the experiment, but then it never goes anywhere. They say, "Well, that was really interesting, we found a new way to reduce energy consumption," and then it never scales up.

One of the things that I would encourage local authorities to do is to think about that from the start of the project. What do you want to do with the results when you get done? The purpose is not to create findings from the experiment, it's to take those findings, and to change government and governance processes. And that is the real trick.

Experiments are not easy to do. There are all kinds of negotiating that have to take place. But local authorities have the ability to bend rules, they have the ability to try new things, because they are at the local authority, that's the name of them. So I think there are some opportunities there.

But it is more about, not the experiment itself, but what you do with the findings of the experiment. And I think that's something that we're still trying to work on. And we need to work together, both academics and local authorities need to work together to try to figure out how to do that upscaling or replication. Sometimes they call that rolling out. How do you go beyond the experiment? And we haven't quite figured it out yet.

**GUY BAETEN**- So, you don't have the answer either? How to scale up would have been my follow up question. When we talk to municipalities, they always mention that the

**“One of the things that I would encourage local authorities to do is to think about that from the start of the project. What do you want to do with the results when you get done? “**

scaling up moment, is the moment where the experiment remains an experiment, so do you have any advice?

**ANDREW KARVONEN** - It would be interesting to have a larger discussion on this, maybe this goes outside of the scope of this project. But my feeling is that we are moving away from long term planning. Long term planning was about planning for the next two decades, or for the next 50 years or 100 years. And now what planning is really about is the short-term experiments. We are creating this sort of city of permanent experiments. And I'm very worried about that.

But it seems that if local authorities are not given the remit to actually plan long term planning, 20th century type long term planning, 21st century is short term actions. And so you just go from one experiment to the next experiment. So, it is really about going back and saying, "we're planners, we do long term governance work", and getting that commitment.

I have a lot of sympathy for local authorities, they have less budget, they have less people to do these kinds of things. Now you have less technical expertise with respect to smart cities. So, it feels like we're moving towards this sort of short-termism and less towards long term planning. In some ways we could say experiments are a bad thing, and we should stop doing those, and we should go back to doing long term planning, instead. And I could completely see why we should be doing that. So that might be one thing, stop doing experiments.

**CHIARA VALLI** - Andrew Karvonen is sympathetic to the challenges of being a local authority and understands why short-termism has been gaining terrain in local planning. But he calls to readopt long term planning and define clear objectives in the experiments done in the Urban Laboratories.

Bianca Wiley has a unique and broad view of smart cities programs. Bianca Wiley is not an academic. She is an open government advocate, with a background in the tech sector, who has participated in the design and delivery of public consultation programs. She is also widely known for being one of the leaders of the activism group [#BlockSidewalk](#) in Toronto.

With all that experience, she has specific and punctual recommendations that touch upon topics of data security, dependency and accountability. We asked her: What are the lessons that cities can learn from the Sidewalk Labs proposal for Toronto?

**BIANCA WILEY** - The number one lesson for sure, is that the biggest vulnerability in cities and governments with technology is procurement. Easy answer for me. We currently have procurement set up in a way that issues relating to accountability can shift from the public to the private. And when that happens, there is nothing to stop it.

In Toronto, tomorrow morning, lawyers paid with public funds could write the exact same Request for Proposal that was written in 2017, put it to market, ask a corporate actor to define the governance for data in a neighbourhood, and it would be legal. Because as far as I have been able to tell, that was not illegal. That should terrify people.

And the problem is, when we talk about legal vacuums, the people who oversee procurement - I'm dealing with another one of these right now - they can say that every single step of the process that was followed is legal. Because the slippage of rights that occur through software are not understood by the legal professionals in charge of public tendering. That is the number one problem which makes it quite simple to figure out what to do about it. But that for me, far and away, easiest issue. And that's an issue of privatisation by accident, in ways that I don't even know if the tendering body understands the depth of the accountability problems they're creating. And we do not have a legal construct to contain that problem. So, everybody should slow down on tendering right now. Because the marginal gain versus the loss, they are not comparable to each other. It's the government privatising itself through software and being unaware in some of the circumstances, of the depth of that problem. And you cannot outsource government accountability. And they are putting accountability it into places that are protected by patent, trade secrets and international trade law. They're putting government accountability into systems that are protected globally through trade law. So, you tell me how this is happening right now? This is part of why I continue to do the work I do. I don't even understand how this is able to be happening.

**GUY BAETEN**- Some of our city officials who were participating in the focus groups, were expressing their frustration with the fact that these smart city providers come up with solutions for problems cities may not even have. So there seems to be this discrepancy between the problem's cities have, which are real, which can be social, which can be many things. And the very peculiar set of technical solutions that are on offer from Siemens or Cisco, or whatever. And they did not really know how to deal with this. So, what is your opinion about that?

**BIANCA WILEY**- The question here keeps coming back to these public administration questions. Why can't they not buy? I know many city officials that their inbox and their voicemail is flooded with corporate representatives who want to pitch them things. And I don't even want to know the amount of publicly funded time being spent as an audience to this stuff. I don't even want to know. If I go through that freedom of information request trail, I know that I'm going to be far too angry to find out.

So, the question there becomes to me organisational. How do you protect your public mandate, in your staff's time, to do the things that you need to do operationally? And from a technology perspective, where I am highly concerned is, that we need to always go back about 30 years minimum, to this significant outsourcing of software as a service level, and Deloitte, Accenture, PwC outsourcing, to understand what is under public control at this moment. And I know that the undertaking of bringing that stuff back in is not attractive. There is no press release for that work. There is no easy defence in that work when you go to your budget committee. To say, "this much money do what? to take stuff back in?" But I don't think there is any other way out of this. And it may not require major intensive capital projects. But it certainly requires people's time to revisit how to take control of the governance piece of those systems, for requirements writing and move back into open sourcing some of these bits and pieces.

The beauty of software, which is different than hard infrastructure, is that you can set the rules. And this is why I'm going to keep returning to lawyers. Public bodies can set rules by

which software and other infrastructure have to abide, otherwise, they will not be able to be purchased or maintained by a government. Those are rules. And don't do this through standards bodies, because we don't have time and standards bodies are completely under corporate capture right now. The concept of a standard is super helpful because software can always be changed. And cities can set rules for how it has to work. So, they need to start to redline some of the things that they never outsource. And then they need to pick another colour and circle the stuff that needs to be brought back in, in order to apply technology to the things that all the staff who've worked in parks, in transit, in housing for decades know are the real problems. Because until you have control of these systems, you can't tell them what to do. You can, if you want to go through private contracting, revise them, no problem. I don't think that's an efficient way to do it. I mean, efficiency is a good thing to do if you're doing it for public interest.

So at the heart of this is, going back to the beginning, people in cities who work in cities know what their problems are. So, we need to find ways to instil the confidence in them to know that when they challenge something that is just a scam, that they'll be supported, that they will not be understood as being anti innovation or against progress or against technology, or whatever that's going to be.

So firstly, they need to know that they can critique things. And secondly, the translation piece of this work. I used to be a product manager, and in software, you have this thing you do where you write requirements. You describe what does the thing have to do. And this always goes back to investments in labour and humans and believing in expertise, because it will never be software that knows the complexity of cities ever, ever, ever, ever. It's humans, and humans and their stories, and their knowledge and their expertise. So, we need to respect the professionals working in cities. With the caveat that there's a lot of structural issues there. People who know their stuff, to sit in a room with people who understand technology requirements and say what they need, and have it translated into requirements. Those requirements need to be whether in tenders, or whether in revision orders for existing software. And then the software has to do what those people needed to do. That's it.

This is so frustrating to watch with cities because they have everything they need. What they don't need is this constant distraction. And what they don't need is to feel pressure to ingest all of this. Because at this point in time if you can't tell people, "Thank you for your call, I have no capacity for new procurement on your thermometers for social housing for the pandemic. Sorry, I'll talk to you next year, let's see where we are. "They need to be able to shut that down. They can't be spending days and weeks and months, you know, dancing around to the nonsenses coming in the door. At this point you have managers, you have unionised technology staff, do you want to make good use of their futures or not? Like you've got everything you need. So, I just have to wonder, do cities want to hire

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leadership that understand viscerally how software works, and are able to have staff to support those visions and bring this together as a good civic product manager would? Or do you want to keep hiring people who come from a commercial construct, who don't understand technology and their body, and they understand it as a sales thing? It's fine, too, if you want to do it, but you're missing out on how to solve your problem.

This fundamentally is about leadership. And this is also about people having confidence in people. And people wanting to make use of human expertise. That's it. There is no software that will ever know things like the people who already know those things. And it's hard at this point to look at grown adults and say really? like is this where we are with our public service, you have 1000s of unionised employees and you're trying to get rid of their jobs for something that doesn't work? Okay. It's that simple to me in some ways. We are having a leadership problem. Big time. And if you don't have people you trust, who understand how to harness the power of the stuff they have to do the things that should be done, you need to get new people working in your technology group. That's it.

**GUY BAETEN** - We also ask Bianca, what should the guiding principles be for the relation of cities with private smart city providers?

**BIANCA WILEY** - This is really important, because not everything has to be done in house or done as public software. That is not true. What is true is your question, which is, under what circumstances can private contracting be used? Can private software and products be used? So fundamentally, we need to be thinking about principles of *openness* here. Because the dependencies that are created through proprietary systems do not belong in the government. Full stop. They don't belong in the government.

And again, this is where sometimes things get a little bit hard to believe. In governments, you have to have democratic accountability for a decision that gets made. Which means, if you're using decision making software in the provision of a public service, and you cannot get into the code that explains how the decision is being made, you have a problem. The problem that I'm describing exists everywhere right now, it is not that this isn't already happening, it is already happening.

The problem is, there's no easy redress for the public for those kinds of harms. Right now, government should be fearful of strategic litigation. Because right now, t a resident has nowhere to go when software is being used in a harmful way in a public decision making. This is what I'm trying to describe with the problem we have with procurement, and the issue we have in democracy with the use of software. We are well down a bad road, but half of the time, people don't even know that they are being harmed.

I can talk to you about software right now that is being used to profile candidates for labour opportunities in governments. My "hair stands on end", when people describe to me the profiling that's being used in order to make decisions about opportunities for people with public money. And the difference right now is that when you are discriminated against in a non-digital context, if you go into a job interview, and you have

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a problem, there is a trail of what happened between the humans to hold the person who might have created harm accountable in our legal system. We do not have the same thing right now in our digital systems. Which should be like “hair standing on end” problem.

The issue is broadly about justice. And the people being harmed are not the people who have time to run around filing complaints or strategic litigation, or anything else for that matter. So, we actually have an ethical public service problem right now. Because if you are a technology professional working in a city, and you don't understand the fact that digital rights slippage is occurring through tendering, you need to accelerate your learning on that problem, because this will come back eventually. Hopefully. But at the same time tons of injustice occur. And it doesn't make it right because no one's coming after you for it.

So, to answer your question, accountability has to be protected by making sure that the systems are ideally open, if possible. Systems where you have open source you can see how things are working, which is good for accountability. And it is also good for interoperability, so you don't get stuck with a vendor who's been doing bad things to you for decades, and the only way to solve it is asking them to do more bad things to you because you don't know how to even manage the system anymore.

Openness is critical when possible. I know that hinges on openness, you need to find cities that are willing to get into a 10-year plan. And if you want to hinge this into things like [Mazzucato's work on mission-based thinking](#) or the power of public procurement, you have to set the rules for what needs to get built. That's what governments can do right now with billions of dollars. It's really powerful. But the market isn't there, so this is going to require a medium-term commitment. Openness, openness, openness, big time. With principles, accountability for how things work, and making sure things have to be interoperable, so you don't create any dependencies. You can set the kinds of principles, which is to say, you're going to build a system, and do pair programming with someone in house, so in three years, the municipality will be running it, and in three years, the company is not anymore, but you can call the company if you have a very large problem that you don't understand. You should be building capacity concurrent new things being brought in. There is no way that those things should be managed by a third party in perpetuity, you got to stop doing that.

There is a lot of issues in here that are much more about how you would set up *contracting and procurement*. These are requirements that you write. The requirements around how the systems have to function, should have to do with openness. The requirements around contracting should do with bringing expertise in house, with mandatory training elements, so that these things do not become a dependency. Lack of technical dependency can be written into requirements for contracting.

**“The requirements around how the systems have to function, should have to do with openness. The requirements around contracting should do with bringing expertise in house, with mandatory training elements, so that these things do not become a dependency. Lack of technical dependency can be written into requirements for contracting.”**

We can have things around accountability, transparency, supporting democracy, but we have had those for a while. And we've had a 18-wheeler truck driving through this principle. I don't think we are in a good time for principles anymore. I think we need to get highly granular into contracting terms. And we need to look at the known issues. And the known issues relate to dependencies on vendors. Software makers are intentional in making it difficult to change their products, and I am not sure how many cities are aware of this.

An undiscussed problem right now is that so many cities are scared of getting sued when they get into these contracts. And they should be, because that's exactly how this stuff gets written. I don't want us to feel like we're starting on some fresh page here. We are down in a significant problem. We have to think less about net new, and more about transformational contracting. How do we get ourselves out of some of the issues that we're in today in terms of dependencies and building stuff out? I know that I speak to this with too much of a North American context, I don't think Europe's as far down this road in trouble. Which is good. In terms of other countries, I can't speak to as well. But from my vantage point in North America, this is a really significant problem. So, those are some fundamentals. But I really believe it's a case-by-case basis of any new contract or any new tendering idea.

**“And decision-making accountability is the giant Caps Lock at the top of those principles.”**

I have one more process suggestion. Before you go to tender, you have to figure out which pieces should never go out to tender. I fundamentally believe some things should never go to tender. And the beauty of software systems is that you can keep a piece in house and contract 80% of it out. For example, digital identity. You've got companies jockeying to be the intermediary between residents and their products, and to remove the government in between. Those should be spaces where you have a prioritisation list. If there is a direct resident relationship be careful. Versus something that might be like an infrastructure or like a water management software system where that might not come into play. I think there's a bit of a tearing approach.

And I'm a bit all over the place here. But fundamentally, openness, interoperability, lack of dependency. These are the kinds of things. And decision-making accountability is the giant Caps Lock at the top of those principles. And redress. And how do you respond when something is not working the way it should be. Those kinds of things need to be driving this. And I didn't even say it: efficacy. How do you know the thing does the thing it needs to do? What are your measures there? And interestingly, city procurement is good at that. Historically where its strong is not getting into wasteful situations. So, it's a little bit confounding that where procurement is strong, it falls apart with technology.

**CHIARA VALLI** - Important and urgent matters raised by Bianca Wiley- She calls for an open government in order to protect accountability. And accountability as an element in democracy, and an element in justice. Bianca calls it an ethical public service problem. She underlines procurement as the biggest vulnerability that cities have in relation to technology. She urges cities to set the rules of procurement to get technology, and specifically software to make what cities and people need them to do.

We also asked Rob Kitchin what guiding principles cities and municipalities should develop in relation with smart city providers. And as Bianca Wiley, Rob Kitchin raises questions around governance and ethical principles. He proposes analysis around ethics of each data collection project.

**ROB KITCHIN** - I would get them to do like IPRs. I get them to look at things around intellectual property rights, never sign an NDA. No city should be signing an NDA with a company. A city should be able to tell its citizens exactly what the city is signed up for, any city who enters an NDA, that's a problem. And I know cities have done that. And it's a real issue.

I think all this stuff around ethics needs to be looked at. Dublin has started a process with companies, where they do an ethics checking exercise. It's a bit like the university ethics review, when you put in a project you look at what will happen with the data, in terms of what's collected, how its analysed, how it's processed, where it stores, the end of life stuff around when it will be destroyed, what can be done with it, all that kind of stuff. And what services and uses will report around the data. So, it's an ethics review thing of the relationship with the company. A company that's quite good at saying that is Transport for London. If you look at the Transport for London data policies it's really clear, there says for every single bit of data that it has: This is what data we collect. This is why we collect it. This is what we do with it. This is who we share it with. These are the rules that those companies we share it with have to abide by. This is where it's stored. This is this is when it's destroyed. So every bit of data has a end of life, which can be anything from 24 hours to seven years, but there's an end of life to everything. And these get the companies they're working with to stipulate that and to agree that they have to follow their procedures.

It is around that kind of stuff. Around good governance, around ethical principles that the city holds, that they forced companies to hold, because the city is negotiating these contracts on behalf of citizens. That is how they have that thing. They should be holding these companies to account around. There should be oversight, redress and penalties. I don't think necessarily cities are great at that. They're just firefighting; they are trying to do procurement; they are trying to deal with austerity; they're trying to deal with a lot of stuff. I do think that there needs to be a proper evaluation of whether the technology is useful. And whether it is actually going to solve a critical problem.

And this is a thing with t start-ups. They're producing things that are interesting, but their real utility is very low. Smart Lighting is a classic one of these. The real solution around city lighting, is that you change the light bulb to a LED and you reduce your energy bill by 70%. Whether you want to demo trim the lights or do fancy things with the lights, whether you want to be able to individually control all 50,000 lampposts in your city, is it really a sensible investment?

And also, is a time thing. I could invest my money into Smart Lighting now, knowing that the technology is going to change over the next five or 10 years, but I'll be locked into old technology. As a city, I'm not going to upgrade my lampposts every five years. And with a lot of this technology, you are investing into service contracts. The service contract is actually more valuable than the initial infrastructural investment. Do you want lampposts

to just turn on and off and reduce your energy bill by 70%? Or do you want a service contract that locks you into paying every year for servicing on every individual lampposts, which you're probably never going to individually control. Dublin has a couple of large Smart Lighting deployments. I think one of them is 800 lampposts. They have never ever individually controlled them. Basically, all they did was, they set the original settings at the beginning and left it. They don't go in and individually manage all these things, although they have the thing, and they have the service contract. They don't do it. Why would you?

Sometimes I think these things are like shiny objects. And they seem appealing, and you invest in them, but do they really deliver? And what are your critical problems? your critical problems are probably things like infrastructure, maintenance, homelessness and housing. These technologies don't solve that. Because for the problems of deep structural inequality and lack of investment, the smart city technologies are sticking plaster.

To go back to the traffic control room is useful. Its a useful sticking plaster. But how you really solve the problem of congestion? you get people to walk, into the cycle and you put in public transport. You do not just try to keep optimising the road network. Smart city solution is a sticking plaster solution. It is not a long term, meaningful, sustainable, resilient solution. Cities have to question if they would be better off investing in public transport and cycling infrastructure, than in upgrading their intelligent transport system. The simple solution is to go with the intelligent transport system, because the other one involves societal change, and involves trying to nudge behaviour or change and do other kinds of thing.

Some reflexive thing around the level of meaningfulness of the technology is needed. Some level of reflection around, how is this going to change governmentality and governance? How is this going to change citizenship? Will these deepened spatial social inequalities? Is it serving all citizens? So, questions around fairness, equity, citizenship, justice, bias, all those kinds of things. And I would also put in oversight redress, systems that evaluate that, and actually systematically go through every project and say, are we are we satisfied that this will it actually really serve our citizens? as opposed to just creating a profit line for this company with technology that is a marginal benefit.

I think there's a lot of technology here that has a marginal benefit, and we would actually be better off in different solutions. We would be better off with solutions that are more based around community development, or policy, or fiscal intervention, targeted intervention. The traditional ways in which we've intervene. And also, none of these technologies work without that. This is one of the problems of technological solutionism. Your internal transport system also doesn't work without other transportation policy. It has to be a holistic thing of how the smart city fits into the wider context, framing and policy. It's not: this technology is going to fix it outside of all. Its where companies have the problem.

Things like homelessness apps just annoy me. You're not going to fix homelessness with an app. It's a deep structural inequality. It's mental health. It's domestic abuse. It is drug abuse. It is all sorts of stuff. It's dysfunctional housing markets. It's not going to be fixed with an app. And that's the kind of question you have to ask. Is this technology actually meaningfully going to address what we are looking at? Or is it a sticking plaster solution,

or just a bright shiny object that make it seem as if we're doing something, and really, we are not. And is it also binded us into these contracts and service contracts that create these crazy dependencies that lock us into solutions that won't work long term?

Sorry, that was a bit of a political rant. I probably should put code on it. At the same time, this technology is useful. My point is technology is useful. Like this laptop I'm talking to you now. It's useful. I can talk to you without being there. I can see you. It has a utility. It's finding the utility of technology at the level that the utility should be and not overselling it, where it's trying to address problems that is not really suitable for. I'm not like, don't use the technology. It's more like, have a think about whether you're using it sensibly, and whether you can maximise the benefits while minimising the pernicious effects, and actually being aware of what the pernicious effects are. Do an audit or do an exercise where you work through and think through, how could this technology play out. Will it deepen inequalities? Will it marginalise some groups? Will it actually address the problem we think is going to address?

**CHIARA VALLI** - Very valuable recommendations, indeed. We see these recommendations as an invitation to reflect deeper about issues that might not always be top priorities in the smart projects agenda, with all the pressures that cities face on shrinking funding and resources, ecological sustainability imperatives, economic growth, global competition, the messiness of daily work. So, in the implementation of projects and urban experiments, some underlying issues of inclusion and equality might get to the background. From the vantage point of the Social Sciences, the researchers invite cities to bring them back to the fore.

**GUY BAETEN** - Scholars made recommendations about inclusion and equality, such as: engaging in ongoing projects of local organisations, examining the relation of technology within the social context, and how technology can impact power structures and social hierarchies.

We also got recommendations about the relationship with the private market: First, to develop a common language with the tech industry. Second, to adopt a more nuanced version of the possibilities that the technology can do for us. Third, to think about power structures. Fourth, to engage in long term planning. Fifth, to set the rules for procurement, avoid dependencies and lockouts. Sixth, to implement ethic analysis around smart city projects.

But perhaps the most important point is to question whether the technology really is necessary in the first place, and if it really is going to help solving a critical problem.

**CHIARA VALLI** - Thank you for staying with us all the way to our next and final module. In the next conversation, the topic will be post-pandemic futures: what is the future of smart cities and the consequences of the Covid 19 pandemic crisis?

## REFERENCES

Mazzucato, M. (2018). The Entrepreneurial State: Mariana Mazzucato.