

OVERVIEW  
BOSTON SEMINAR  
6-8 JUNE 2016

# One city, many timelines

How can we reconcile the  
different timeframes of the city?



LA FABRIQUE  
DE LA  
CITÉ

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# La Fabrique de la Cité: engaging on the cities of tomorrow

**L**a Fabrique de la Cité is a think tank on urban transitions and innovation.

With an international perspective, La Fabrique de la Cité reveals key trends and promotes pioneering initiatives by encouraging discussion between urban stakeholders.

As an observatory of urban development, La Fabrique de la Cité contributes to the creation of a vision shared by those who design, plan, build, manage, and inhabit the city.

La Fabrique de la Cité has developed relationships with research institutions in France and abroad and built an international ecosystem of urban planners, architects, elected officials, sociologists, economists, entrepreneurs, and innovators.

Recent partners include the Amsterdam Institute for Advanced Metropolitan Solutions (AMS), the Harvard Global Health Institute (HGHI), the MIT Mobile Experience Lab, the London School of Economics (LSE), and Sciences Po's Urban School.

*A non-profit organization, La Fabrique de la Cité is an endowment fund founded by VINCI.*



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# Reconciling the different timeframes of the city

La Fabrique de la Cité held its annual International Seminar in Boston from 6 to 8 June 2016. The theme: how do we reconcile the timeframes of the different urban stakeholders, while also responding to rapid change in urban usages and behaviors and to the long-term challenges cities face?

## ► The city as a place of converging timeframes

Cities are inhabited and shaped by a diverse range of stakeholders, whose pace of life and behaviors intersect, overlap, and sometimes conflict with one another. At times harmonious, at times chaotic, this coexistence is creating a new rapport to the various timeframes of city life. The long-term timeframes of political decision-making, research, and major urban infrastructure projects coexist with the citizen's individual timeframe (leisure time, work time, ...), driven by the use of digital usages and new mobility services, as well as the immediacy of real-time urban data.

Cities must now figure out how to bring these different timeframes together. And this challenge is substantial: how can cities respond to new expectations held by ever more

connected and civically-involved citizens, without turning away from the design and implementation of long-term policies vital to urban attractivity and sustainability?

There is no simple, obvious answer to this complex question, which is currently being reinvented by digital technologies and the stakeholders who promote them, from individual citizens to the new economy's vast, international platforms. No simple answer, but a firmly-held belief by La Fabrique de la Cité that the answer lies in cooperation and partnership. **Forming new types of partnerships focused primarily on citizens and their uses of the public space and urban services is, to us, at the heart of this convergence of timeframes.**

## ► Boston, a laboratory for innovation-driven urban mechanics

Boston not only fully understands this challenge, but is committed to embodying it through particularly innovative actions. Boston's status as one of the world's leading hubs for research and innovation is well-known: the Greater Boston area is home to no less than 54 higher education institutions, including prestigious universities such as Harvard, the MIT, Northeastern, and Boston University, and to over 4,000 startups in strategic industries such as education, finance, and biotechnology.

But the way Boston injects this innovation DNA into its public policies is lesser known. **The city is leading the way in the analysis and application of urban data**, which has become key to its urban regeneration policy. This expertise is also part of the city's historic heritage: Boston has always been committed to insightful measurement and self-assessment; it is no coincidence that the American Statistical Association was born in Boston in 1839.

In Boston, innovation is not just digital or technological; it is a global concept. Faced with the challenges of access to housing and worsening social inequality, the city is working to kick-start a broad initiative based on civic and social innovation.

The methods themselves are innovative: In Boston, the nature of a project is at least as important as its implementation, and citizens are always the core focus. For two decades, Boston has drawn on its residents' local expertise to build the city's future with them. *"We recognize that those of us who are in City Hall do not have the right answers. We aim to involve the community in every aspect of the planning process. We make inclusivity and equity key goals across all of our work"*, says Jascha Franklin-Hodge, Chief Information Officer for the City of Boston.

*"Boston is not just implementing an innovation policy; Boston is an innovation platform in its own right"*



*Cécile Maisonneuve,  
Chairman of La Fabrique de la Cité.*

**How can "city people" serve the "people's city", and how can functional urban mechanics become a reality?** This question is at the heart of the first part of this overview. Then, the second part explores **the resources authorities can use to work with citizens and improve their quality of life**. Lastly, it addresses the question of **the long-term timeframes and tensions at work**, beyond the visible workings of urban mechanics.

# Understanding Boston in 10 key dates

## ► 1630 :

Boston is founded, and named after the Lincolnshire hometown of its first governor, Thomas Dudley. Settler John Winthrop said of the new town, built on former Algonquin land, that it would be the Bible's exemplary "City upon a Hill".

## ► 1636 :

Harvard University, the first higher education institution of the future United States, is founded in the town of Cambridge, separated from Boston by the Charles River.

## ► 1776 :

The siege of Boston, which had marked the start of the American Revolutionary War, ends with George Washington and his troops forcing the British to withdraw by sea.

## ► 1847 :

37,000 Irish immigrants arrive in Boston, fleeing the Great Famine in Ireland.

## ► 1897 :

Official opening of the Boston Subway, North America's first underground railway, now known as "the T".

## ► The 1910s :

European immigration rises sharply; Boston's Italian community grows from 5,000 to 18,000 in the North End neighborhood alone.

## ► 1950-1980 :

Boston experiences a long period of demographic decline and loses almost half of its residents (from 800,000 in 1950 to 500,000 in 1980).

## ► 1993 :

Thomas M. Menino (Democrat) becomes Mayor of Boston. Reelected four times, he remained in office until 2014.

## ► 2010 :

Boston creates a "civic innovation lab": the Mayor's Office of New Urban Mechanics (MONUM).

## ► 2014 :

Martin J. Walsh (Democrat) succeeds Thomas M. Menino as Mayor and launches "Imagine Boston 2030", the first citywide planning program in 50 years.





# A Boston glossary

► **Big Dig** : nickname given to the Central Artery/Tunnel Project, which replaced the perpetually congested urban highway running through the city with a 3.5 mile tunnel. Designed in 1985 and completed in 2007, the Big Dig proved to be the most expensive road project in US history, at \$14.6 billion.

► **Greater Boston** : the Boston urban area,

which includes a large part of Massachusetts and extends as far as the neighboring states of New Hampshire and Rhode Island. With its 5.5 million residents, Greater Boston covers 1,420 square miles, as opposed to 90 square miles and a population of 656,000 for the City of Boston.

► **Eds & Meds** : nickname given to the higher education and healthcare sectors, cornerstones of the Boston economy. The Greater Boston area is home to 54 higher education institutions (including Harvard, the MIT, Northeastern, and Boston University), while the health industry accounts for 18.7% of all jobs in Boston.



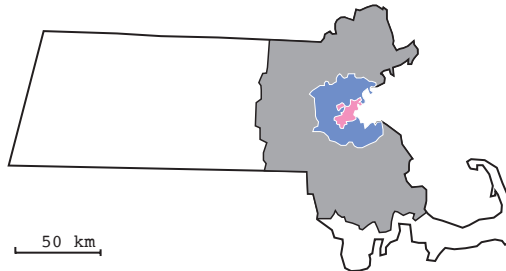
**Boston**  
656,000 inhabitants  
232 km<sup>2</sup>



**Boston Metropolitan Area**  
2,200,000 inhabitants  
1 469 km<sup>2</sup>



**Greater Boston**  
5,500,000 inhabitants  
3 680 km<sup>2</sup>





# Key neighborhoods and figures

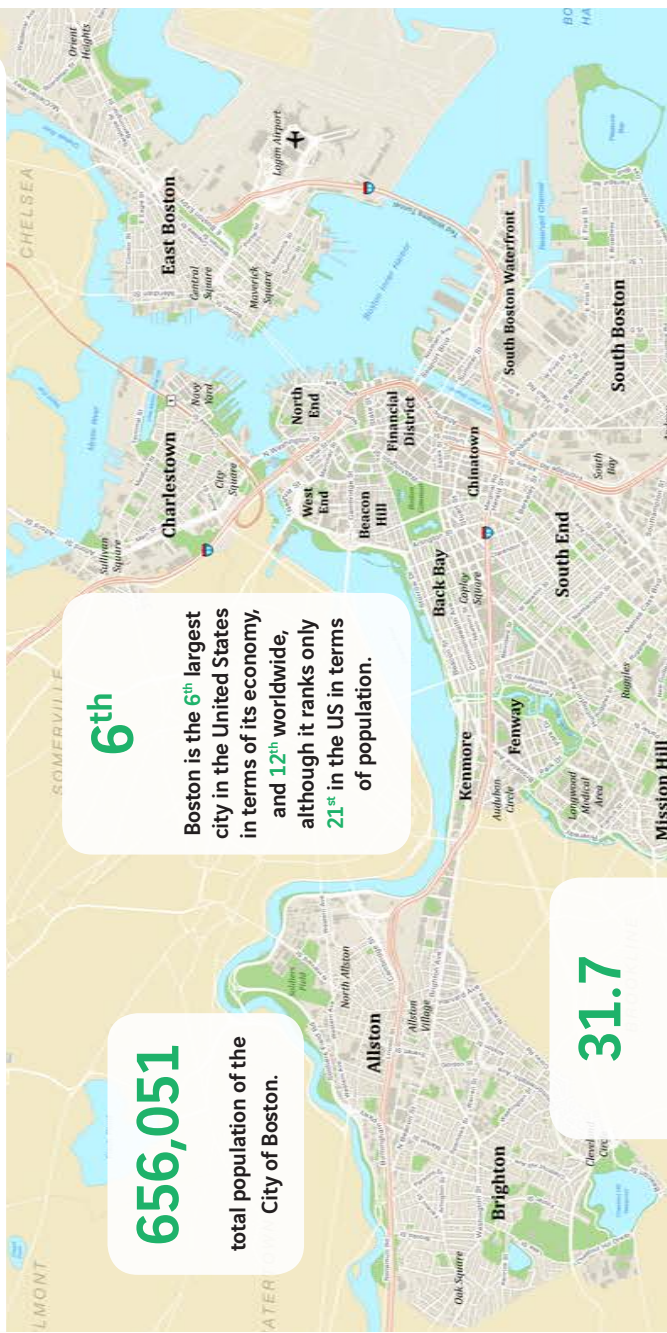
**656,051**

total population of the  
City of Boston.

**6<sup>th</sup>**

Boston is the **6<sup>th</sup>** largest  
city in the United States  
in terms of its economy,  
and **12<sup>th</sup>** worldwide,  
although it ranks only  
**21<sup>st</sup>** in the US in terms  
of population.

**31.7**



the average age of a  
Bostonian resident.  
One-third of Bostonians  
are aged 20 to 34.

**\$56,902**

average annual income of a  
Boston household in 2014; the  
median income is **\$54,485**.  
**21.6%** of Bostonians and **30%**  
of families with children have  
incomes below the poverty  
line (set at \$15,379 for a two-  
person household).

**91,000**

number of new city  
residents expected  
before 2030.





Martin Walsh, Mayor of Boston, and Young Bostonians © City of Boston - Flickr - [www.boston.gov](http://www.boston.gov)

# Refocusing on the citizen's timeframe

Residents are using the urban space in increasingly diverse ways, under the combined effects of the digital age and evolving lifestyles. To understand the new expectations held by their inhabitants, cities must provide citizens with new ways of expressing their aspirations. To respond to these expectations, they must experiment and innovate.

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*"The rise of digital communications technology and big data give us incredible new opportunities to connect with our residents and to work with them to improve quality of life in Boston."*

*Jascha Franklin-Hodge, Chief Information Officer for the City of Boston.*

# “City people serving the people’s city”

The days of vertical decision-making are over. To ensure that residents are onboard with its actions, the City of Boston is creating more and more opportunities for citizens to express their views and to get involved in designing the resources they need.

## ► Facilitating civic innovation

### ► The Mayor’s Office of New Urban Mechanics

Upon his election in 1993, Thomas Menino, who would remain Boston’s Mayor for the next 21 years, was nicknamed “the Urban Mechanic” by The Boston Globe, a reference to his minute attention to street problems, alleged to imply a lack of global perspective. But this citizen-centered approach would prove its efficiency, and ultimately led to the 2011 creation of the Mayor’s Office of New Urban Mechanics (MONUM), an experimental laboratory for urban solutions and the direct embodiment of this pragmatic take on urban governance.

**MONUM reports directly to the Mayor, and its mission is to “invent the municipal services of tomorrow”,** in the words of Director and Co-founder Nigel Jacob. To achieve this,

MONUM was awarded complete freedom to identify, design, test, and roll out innovative projects on urban form, economic development, education, and citizen involvement.

*“We, in government, often get trapped into building the things that we can build and that we know how to build. We need to move beyond that and to build the things that people want and/or need”,* remarks Nigel Jacob. *“The first (step) was for us all on the team to become designers and for all of us to think in terms of how to orient everything we do through the people of Boston.”*

### ► The Department of Innovation and Technology (DoIT)

An emphasis on citizen involvement and a culture of innovation are traits that MONUM shares with Boston’s Department of Innovation and Technology, or DoIT. Headed by Chief Information Officer Jascha Franklin-Hodge, the **DoIT uses digital communication technologies**

to explore new avenues for citizen participation and to better understand the aspirations and fears of its residents. "We, as government decision makers, need to be able to empathize with the people that we serve. We need to hear their stories and to hear about the local concerns", says Jascha Franklin-Hodge.

The DoIT is also responsible for leading and coordinating the city's dynamic open data policy, thus promoting transparency. Additionally, the DoIT uses urban data to improve the performance of city services, thereby injecting innovation into the services delivered to citizens.

### ► Building closer bonds between the city and its citizens

#### ► A personified municipality

The development of digital resources has allowed Boston to breathe new life into the relations between citizens and municipal workers. In 2011, Boston introduced the City Worker app, a complement to its BOS:311 service, and one of MONUM's only internally-focused programs. Just as BOS:311 allows residents to report issues involving roads and public spaces while displaying the name and photo of the city worker in charge, City Worker gives city employees direct access to the maintenance task management interface. They can now open, close, and reassign a case on-site and in real-time. As a result, City Hall public works department managers now have a more accurate overview of resources on the ground, while city workers are more responsive and enjoy a more positive image among the citizens they serve.

City Worker "has totally changed the way we think about the autonomy of the frontline staff", says Nigel Jacob. "In many ways, City Worker has had a bigger effect on the city culture than the app that is focused on residents."



# Imagine Boston 2030

Helping citizens invent their city's future

Launched in 2014 by Mayor Martin Walsh, "Imagine Boston 2030" aims to involve Bostonians in an ambitious program to revitalize their city by 2030. Working closely with City Hall, citizens are consulted on issues as diverse as transportation, housing, public spaces, the environment, and public health. The project itself is structured around four key issues: quality of life and access to housing, inclusive economic growth, adaptation to climate change, and greater investment in public infrastructures and public spaces. To encourage citizen participation, "Imagine Boston 2030" uses social media, open houses, and the digital mapping platform coUrbanize. The process led to the publication in summer 2016 of a strategic vision plan for 2030.



© Roger - Flickr

### ► Millennials

An initial survey of BOS:311 user profiles conducted by City Hall revealed that most of the app's active users were homeowners, and that young Bostonians were strongly under-represented. In response to this observation, the City is now working to encourage the younger generation to get involved in civic life. The City launched the Youth Lead the Change participatory budgeting program, which gives young citizens the opportunity to allocate \$1 million to projects they consider essential to the improvement of urban quality of life (see inset on page 17). The ONEin3 platform, another initiative aimed at young Bostonians, facilitates dialogue between city governance and young people, and connects 20-34 year-olds with the resources their city can offer.

### ► Imagine Boston 2030

The Imagine Boston 2030 program (see inset on page 15) is another discussion forum open to citizens. For two years, Boston gathered input from Bostonians to provide direction for the city's medium-term urban regeneration program. The "Housing Innovation Lab" (see inset on page 41), founded by MONUM, also draws on citizen expertise to identify solutions to the thorny issue of middle-class housing access in a city striving to maintain an affordable housing stock in spite of increasing rents.

*"The traditional way that government works, at least in this country, is to build these very long term plans and then deploy these things. They typically are very expensive, but they start to fail as you roll them out.*

*We realized that if we want to drive innovation, we cannot work in the same way."*



*Nigel Jacob,  
Director and Co-founder, Mayor's Office of New Urban  
Mechanics (MONUM).*





# Youth Lead the Change

Putting urban governance in the hands of young people

In 2014, Mayor Martin Walsh launched the Youth Lead the Change participatory budgeting program, which gives young Bostonians the opportunity to allocate a \$1 million budget (1% of the city budget). *"One in three Bostonians is 18 to 32 years old. If we are leaving out almost that many people in the decision making process, that is not democracy"*, stresses Nigel Jacob, Director of the Mayor's Office of New Urban Mechanics. Although all

are free to submit their ideas for public consideration, only those aged 12 to 25 work hand-in-hand with experts and urban planners to select the most promising ideas and transform them into viable projects. Similarly, only young people are allowed to vote for the projects that will share the million-dollar funding. The 2016 winners include creating a job-seeker app for young Bostonians, installing recycling bins in the underprivileged neighborhood of Roxbury, introducing facilities for disabled youths in several parks, and installing security cameras in parks young people consider unsafe. Security, community, and public spaces are at the heart of the 2016 edition, stressing the need to strengthen the bond between young Bostonians and their city.



Martin Walsh, Mayor of Boston, with Youth Lead the Change. © City of Boston - Flickr - www.boston.gov

# The city as an innovation laboratory

Offering new urban services despite significant budgetary constraints is a challenge to which Boston has successfully responded, using small-scale urban experiments.

It is very tempting for cities faced with budgetary restrictions to sit back and repeat what has been successful in the past. To break free of this mindset, Boston enrolled the services of urban governance specialist Chris Osgood and former developer Nigel Jacob to co-found a unique department within City Hall: The Mayor's Office of New Urban Mechanics (MONUM). *"The central mission of the new urban mechanics is to be the city's R&D lab. We are the city's experimentalists"*, explains Nigel Jacob.

**A compact team, micro-projects with budgets of \$10,000 to \$20,000 (which Nigel Jacob compares to the city's budget for pencils), and a light structure give MONUM unprecedented agility.** The City has granted MONUM ample room for action, encouraging it to take calculated risks in order to drive innovation in urban planning, education, housing, and infrastructure. For larger, more ambitious projects, MONUM sometimes seeks additional funding from private foundations or leading universities.

By encouraging urban stakeholders (activists, academics, tech companies, etc.) to submit ideas or cooperate on projects, MONUM ensures that its initiatives are endorsed by citizens, all the

while building stronger links between City Hall and Boston's civic, economic, technological, and social innovation stakeholders.

## ► Exploration, experimentation, evaluation

MONUM applies the same proven methodology to all projects: Exploration, experimentation, evaluation. The "Three Es method" consists in **identifying the most innovative urban services projects, prototyping them quickly within a single street or neighborhood, and, depending on their effectiveness, cost and acceptance by the community, rolling them out on a larger scale.**

This iterative method, which relies on a trial and error method, is reminiscent of the lean startup model. It also requires open-mindedness, as when MONUM resorted to "ethnography" (Nigel Jacob) to break Bostonian middle-class down into four discrete categories, each with different housing and quality of life expectations, and each of them requiring tailored solutions.

The success of MONUM's experiments is proof of the relevance of its approach, and legitimizes the R&D methodology applied by this unique department. The example of this service that operates with the flexibility of a tech company can only encourage future innovation projects within City Hall.

## ► Encouraging step-by-step urban development

**Consistent with its civic innovation laboratory mindset, it is not unusual for the city to abandon unfinished projects if their popularity or scalability cannot be demonstrated, despite their potential.** *"We are looking at the results of the experiment and assessing whether this failed, in which case we try to shut it down. When the experiment works, our job now becomes one of working with that city department to scale up this new initiative. You do not get innovation without failure",* adds Nigel Jacob, whose mission also includes "bringing a culture of tolerance for failure to the government". This tolerance serves a step-by-step approach to urban development, one that is attentive to the concerns of citizens and to the use they make of the urban space.

But this realistic approach does not mean the city takes no interest in the way it presents its services. *"How you build is just as important as what you build",* says Nigel Jacob.

This belief is at the core of the Heart of the City program, which installed parking meters with handles that citizens could walk up to and grab. A computer sampled their heart rate, and played music in sync with it. However incidental this initiative may seem, it epitomizes the vision of Nigel Jacob and the City Hall team: **including citizens in the design of an urban service is an effective way to create a close relationship based on dialogue. The City of Boston has decided to associate citizens to projects from the very first design phase, an approach familiar to supporters of design thinking.**

## ► Urban Data meets Test-and-Learn

Boston has always been eager to measure and self-assess; it is therefore no coincidence that the American Statistical Association was



# The Chief of Streets

A new role to serve the streets of Boston

The position of Chief of Streets was created in 2015 to supervise and coordinate the Boston transportation and sanitation departments, and create an effective, sustainable, and equitable public transit network. With responsibility over 800 miles of roads and public spaces, the Chief of Streets is tasked with identifying new ways of harnessing data, technology, design, and entrepreneurship to provide innovative solutions that can improve mobility for pedestrians, cyclists, drivers, and public transport users. This original role is unique in the United States, and reflects Boston's deep commitment to innovation. Who better than Chris Osgood, co-founder of the Mayor's Office of New Urban Mechanics, to take on this new responsibility?



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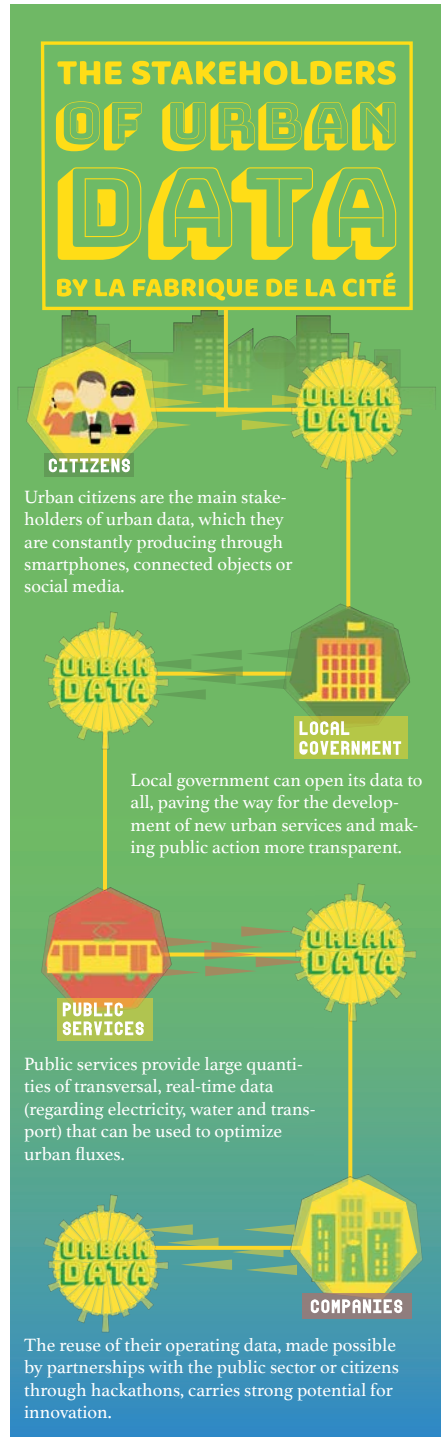
founded there in 1839. This appetite for quantification is manifest in the city's innovative use of urban data. *"We are thinking about data as this tool to do almost real-time experiments within the city. This is to make the city a laboratory and to measure the impact that that has, so that we can iterate and learn and ultimately improve quality of life for people. Instead of spending two years doing a traffic study about reconfiguring a roadway to prioritize public transit, what if we do that change in a month with some paint and some cones? Then we could use some of the data sources that we have to analyze whether or not that had the desired impact"*, explains Jascha Franklin-Hodge.

Boston's determination to use data to improve quality of life moved it to create Where's my school bus?, an app developed in collaboration with local driver unions, and which uses school bus GPS systems to create a geolocation service, giving parents real-time updates on the location of their child's bus.

*"Rather than simply voting for this person or that person, citizens can get directly involved in how things happen."*



Nigel Jacob,  
Director and Co-founder, Mayor's Office of New Urban  
Mechanics (MONUM).



# THE POTENTIAL OF URBAN DATA

BY LA FABRIQUE DE LA CITÉ



## VISUALIZATION



Data visualization translates originally complex data into a graphic form that is understandable and accessible to all.

## OPTIMIZATION



Urban data can help optimize existing urban infrastructure and services by limiting the allocation of new resources and identifying performance levers.

## DIACNOSIS



The analysis of urban data can foster real-time detection and reporting of issues which can then be solved through quick and appropriate responses.

## ACCOUNTABILITY



As part of their effort towards greater accountability, cities are implementing transparent and accessible performance dashboards by analyzing assembled data.

## ANTICIPATION



Analyzing urban data allows for the identification of new trends in urban usages, and, by using predictive algorithms, for the anticipation of citizens' future needs.

# THE CHALLENGES OF URBAN DATA

BY LA FABRIQUE DE LA CITÉ



## SECURITY AND CONFIDENTIALITY



The security and confidentiality of personal data are a central issue and are needed to ensure citizens can trust digital services. This relation of trust guarantees the durability of data exchange between users and services.



## EVALUATION



The results yielded by the release and reuse of urban data must be evaluated against the social and economic expectations raised by data.

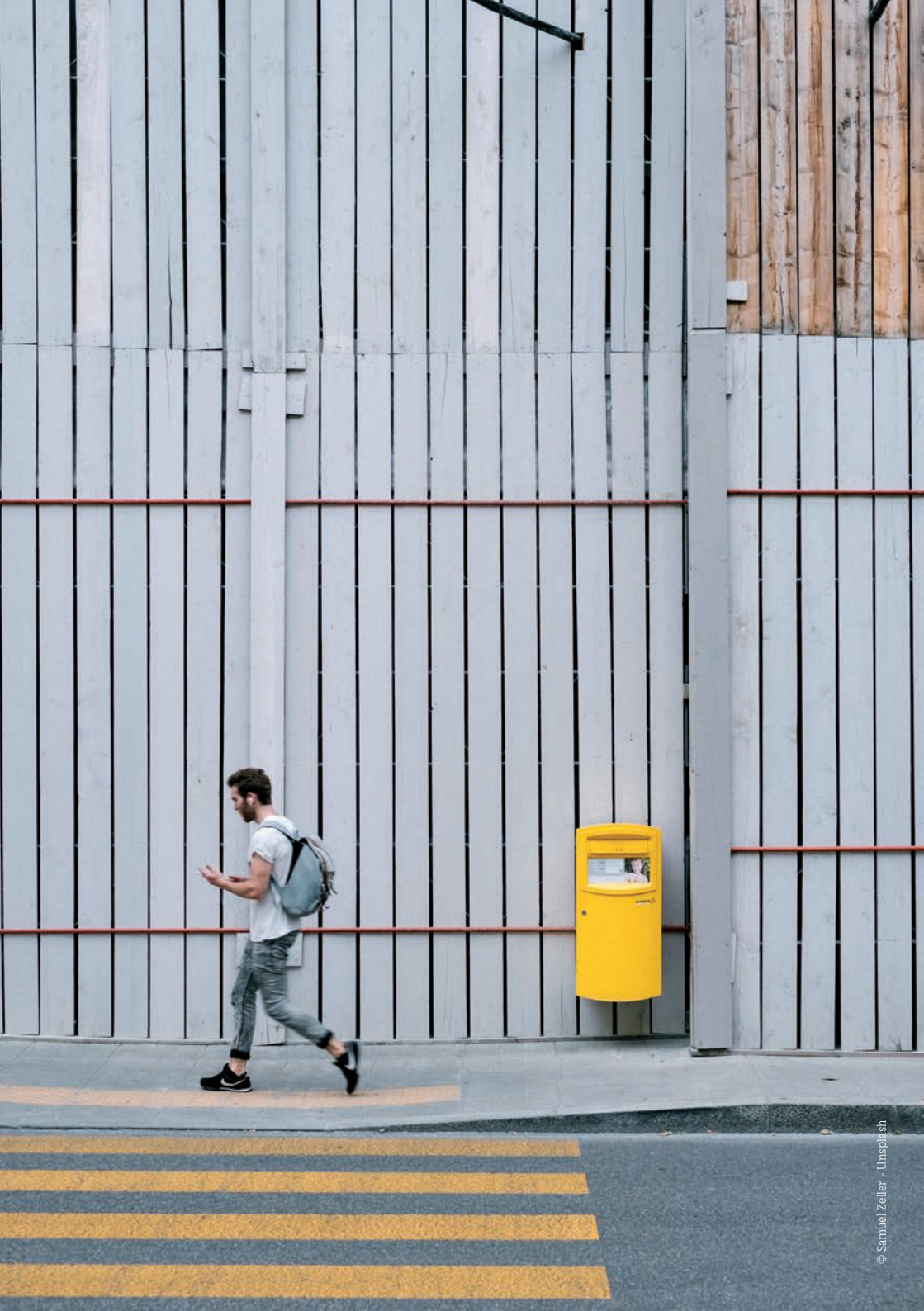


## DATA-SHARING



Better-shared governance and more symmetrical data-sharing are key to clarifying exchanges and recreating trust.





# Living with real-time data

The inherent immediacy and innumerable applications of data now allow cities to implement brand new ways to interact with citizens. New digital technologies, partnerships with collaborative economy stakeholders, and smart street furniture are all innovative solutions that can improve citizen quality of life in real-time.

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*"We are creating a "data-driven city". We do it every day no matter what we are doing. Moving forward with a data-driven city requires us to understand and to begin to manage that data."*

*David Block-Schachter, Chief Technology Officer, Massachusetts Bay Transportation Authority (MBTA).*

# “I want my data back!”

Urban data allows cities to measure their own performance and adjust public initiatives and measures accordingly, while also reporting on their actions in real-time. But cities must also guarantee the safety and proportionate use of the personal data generated by citizens.

Shortly after his election, in 2014, Mayor Martin Walsh signed the “Executive Order Relative to Open Data and Protected Data Sharing”, creating an obligation for all city agencies to release their data. City Hall proceeded to disclose large quantities of data to the public regarding areas as diverse as mobility, energy consumption, infrastructure and public space management, health, education, leisure, and community life.

As Boston’s Chief Information Officer (CIO) and Director of the Department of Innovation and Technology (DoIT), Jascha Franklin-Hodge is responsible for leading and coordinating the city’s open data policy, **which consists in using lessons drawn from the analyzed data to develop “inclusive-by-design” urban policies.** The DoIT uses technology to maintain permanent contact with residents, and works with them to improve quality of life in Boston.

## ► Evaluating the performance of public initiatives

The open data policy embraced by Boston also allows citizens to better understand public initiatives and evaluate them, ensuring transparency and accountability: *“We are doing a lot to increase data transparency and to help people understand the kinds of information that we are using to make decisions inside of City Hall”,* says Jascha Franklin-Hodge.

Data gathered by the city on traffic, pollution, etc., allows for the construction of a detailed performance evaluation grid, that rates the city’s performance against a set of pre-determined targets. This model is the foundation for “CityScore”, an online tool (see inset on page 27) that provides an array of real-time performance indicators for city services indexed against regularly re-evaluated quantified targets. CityScore is



consistent with the principles of open data: all of the datasets used to grade the various city services are disclosed to the public.

Even so, technology can never be an end in itself, and, as confirmed by Jascha Franklin-Hodge, will never replace other forms of dialogue with citizens: *"A process of public engagement will involve data more in the future, but we can never get away from the very important work of sitting down with our communities, listening to them and giving them tools to help design answers with us. This is rather than simply saying, 'This is what our spreadsheet says and that is what we are going to do'".*

### ► Developing predictive analysis tools

**Urban data paves the way to the development of predictive analysis tools, which can provide better foresight into potential issues.** By compiling and cross-referencing data on mobility, public space uses, or road

safety, the city can build predictive models to inform its decision-making. Frequent gathering of real-time urban data also allows the city to make more accurate, reliable, and customized recommendations, and purely and simply predict the future needs of its residents.

Boston has notably adopted this probabilistic approach to ensure food safety in the city's restaurants. Rather than inspect each restaurant annually, the city now focuses on those which, based on objective, quantifiable criteria, are most likely to violate sanitation standards. "Keeping it Fresh" is another, similar initiative; this competition encourages developers worldwide to work on an algorithm that will optimize the city's restaurant inspection process, using grades and comments submitted by Yelp users.

## Towards data-driven cities?

### Spotlight on Boston, Los Angeles, New York, Pittsburgh and Chicago

Discover this study and more on [www.lafabriquedelacite.com](http://www.lafabriquedelacite.com)



## ► Protecting citizen data

Although connected public facilities (traffic signals, roads, air quality sensors, etc.) generate valuable data insight, data generated by citizens themselves remains the single largest source of information at the urban scale. But this personal data, whether medical, educational, or legal, is extremely sensitive. The methods used to collect, process, and stock it require minute attention in order to assuage the fears of citizens who may be concerned about the way their personal data is being handled.

The City of Boston has already addressed this risk, as Jascha Franklin-Hodge explains: *"We think a lot about privacy. People do not want their information bouncing around between government servers. We use techniques to anonymize data in a way that has the least necessary amount of personally identifiable information. This often means no personally identifiable information is needed to deliver the benefit"*.

**City Hall is also careful to ensure that its data collection policy is completely impartial**, and works to ensure that the residents in wealthier neighborhoods are not the only ones using the city's digital tools. The digital divide remains a reality in North America, even in New York City, where one in four residents still do not have Internet access. To avoid exacerbating this divide, Boston's DoIT regularly conducts audits to ensure that the tools it offers are used in every part of the city.

*"We must be aware of the risks and constantly tracking ourselves to say, 'Is this fair? Is this equitable? Are we truly serving every person that we represent?'"* continues Jascha Franklin-Hodge. When the need arises, the DoIT verifies the relevance of its services to a neighborhood considered to be disadvantaged, and works towards identify new ways of encouraging local residents to use its resources.

*"Our hope is that data allows us to become more experimental and make more rapid iterations. We can use those new tools to increase the pace at which we work and to increase public engagement around that work."*



Jascha Franklin-Hodge,  
Chief Information Officer for the City of Boston.



# CityScore

A single indicator to monitor the city's actions

First introduced in 2015, CityScore pulls together all of Boston's key performance metrics into a single number representing the overall performance of the city on a daily basis. Designed to inform the Mayor and city managers about the overall health of the city in real-time, CityScore allows them to identify issues that require closer examination, and to measure the performance of city services against pre-determined targets. The metrics aggregated to produce CityScore are as

varied as energy consumption, criminality, pothole repairs, graffiti removal, garbage collection, traffic signal synchronisation, or the number of public library visitors.

A grade of 1 means that the city has reached its targets in all of these areas; a grade below 1 means that it is underperforming; and a grade above 1 means that it has exceeded its targets. CityScore allows for the concentration of a large quantity of information about different services into a single, easily understandable indicator. Although it doesn't provide explanations for under-performance, the value of CityScore (the first of its kind nationwide) lies in its ability to attract the attention of City Hall to specific issues that may require its vigilance.



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# Big data, shared data: cities and new urban stakeholders

While they raise questions about the traditional division of roles in public life, new emerging stakeholders of the collaborative economy also give cities unprecedented access to a large volume of leverageable urban data.

**Robin Chase, Co-founder of Zipcar and Executive Chairman of Veniam, believes that our economy is currently being shaken by a far-reaching change born out of the convergence of three factors: excess capacity, a platform for participation, and the existence of digital stakeholders.** *"The key now is collaboration. More networked minds are smarter, creative, local, specialized, and customized than fewer proprietary minds inside your city, your company, or your country",* says Robin Chase.

This open cooperation logic particularly applies to collaborative economy companies and to all connected citizens. Together, they form a collective group open to anyone, which Robin Chase refers to as "the Peers", and which functions horizontally rather than vertically or hierarchically. Robin Chase believes this group is currently reinventing capitalism: *"Game-changers for cities are really all*

*digitally-based, because that transforms how we interact with our cities",* explains the author of Peers Inc.: How People and Platforms are Inventing the Collaborative Economy and Reinventing Capitalism (PublicAffairs, 2015). From Skype and MOOC (Massive Open Online Course) producers, to platform economy companies like Airbnb or Uber, the production of data by these participatory platforms is booming.

Public and private stakeholders are beginning to work together to develop optimized services based on the exchange and sharing of data. Boston is well aware that it only holds a small proportion of the existing data on the use of urban space, and conscious of the need to cooperate with other urban data producers from the private sector and civil society.

## ► Building on data generated by innovative platforms

Based on this observation, Boston has developed partnerships with Uber, the online transportation network company, and Waze, the company behind the world's largest community-based navigation app (see inset on page 29). Boston now provides Waze with data on emergency street or freeway closures so that users of the app can figure out alternative itineraries. This persuasive example of data exchange between public and private stakeholders makes it easier for City Hall to manage its road network, and reduces traffic congestion. Using Waze data to adjust traffic signal cycles has allowed Boston to reduce congestion by next to 20% at certain intersections.

The City has also entered into a partnership with car-sharing company Zipcar. Recognizing the importance of Zipcar's project, the City has granted its service the status of 'public good'. In practice, car-sharing considerably reduces not only traffic congestion, but also greenhouse gas emissions. The data provided by Zipcar has allowed Boston to gain a clearer understanding of its citizens' parking needs, a major challenge for future urban planning projects. The company regularly provides Boston with survey results regarding the number of cars sold as a result of its service, and the number of vehicles that would have been bought had its service not existed. Fewer cars in the city effectively reduces the need for parking spaces. One vehicle requires three parking spaces - one at work, one at home and one for leisure - so that every vehicle removed from the city frees up three parking spaces.

## ► New forms of public-private cooperation can generate tensions

The innovations born out of public-private partnerships can also generate conflicts ►



# Waze and the City of Boston

Working with the private sector to build the transport system of the future

How can a city guarantee a more efficient and flexible urban mobility service in spite of its ageing infrastructure? To address this challenge, the City of Boston entered into a 2015 partnership with Waze, the GPS-based mobile app acquired by Google, which uses data uploaded by its users to create a real-time overview of traffic. For the city, the aim of this partnership is to identify congested areas and manage traffic more effectively. Using the data generated by Boston's 400,000 Waze users, the city is now able to optimize the enforcement of double parking rules, broadcast information about road closures, manage its 550 traffic signal controlled intersections, and quantify the impact of its traffic policies and actions.



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► **and tensions, which cities are now trying to quantify and mitigate.** When it comes to new entrants in the mobility market, Robin Chase believes that rather than confronting these new stakeholders head on, cities have everything to gain from including them to their overall policies through properly balanced partnerships and preferential tax arrangements.

## ► 1. Seeking balance

How can cities and mobility stakeholders exchange data while balancing their respective interests? Boston is testing out partnerships with a number of stakeholders that have developed geolocalization algorithms and mass data collection systems. Some of these tests have proved conclusive, others less so, but all depend on the quality of data shared and, ultimately, the spirit in which digital platforms structure their partnerships with cities. **So far, the City of Boston has elected to build this type of partnership around a single criterion: the benefit to citizens, as the central focus for all stakeholders committing to this new type of alliance.** *"It's with this goal in mind that we use data to drive our decisions and engage with our public and private partners",* says Chris Osgood.

## ► 2. Finding new taxation models

The emergence of these new stakeholders raises fundamental questions that extend beyond the mere issue of data and challenge the entire balance of the current economic model. Often referred to as uberization, this effect generates stresses between traditional market stakeholders and new entrants. It is characterized by the emergence of new forms of employment: the decline of salaried employment, caused by the depressed post-financial crisis economy, is resulting in the rise of more precarious sources of individual income (self-employment, juggling part-time occupations, ...). These developments, in themselves, are

*"We want governments to create the rules needed for the future economy, not to insist on rules that worked on the past economy."*



*Robin Chase,  
Co-founder of Zipcar and  
Executive Chairman of Veniam.*

enough to justify a complete overhaul of current taxation mechanisms, designed for an age of quasi-universal salaried employment. For an example of how inefficient current forms of taxation are becoming, one need only think of the income earned by individuals who rent out their homes on Airbnb for several weeks per year.

And this is only the beginning: *"As we try to reinvent taxation, let us look forward more than four years, let us look forward five to ten years, when there will be a complete destruction of labor. Therefore, we have to stop taxing labor as we have in the past – it is disappearing",* argues Robin Chase. She goes one step further, by looking beyond the technological innovations we already see as disruptive: *"When I think about this future, what is interesting to be about autonomous vehicles is that they are the first mainstream reality of the future of automation that will take out way more jobs".*

Artificial intelligence, progress in robotics, and the increasing availability of 3D printing will only exacerbate the tension between the evolution of work and income sources the one hand, and the obsolescence of tax regulations on the other hand.

But automation has implications far beyond employment. *"All of your transportation revenue disappears",* continues Robin Chase. *"Gas taxes are gone. Your parking, speeding tickets, certifications, and parking garages are gone. Therefore, today, right now, we need to start making the taxation rules that will shape autonomous vehicles into the incentives and disincentives we want, so we need to require that they are clean."* **There is an urgent need for public stakeholders at national and local levels to begin considering ways to efficiently, fairly, and sustainably redistribute the value created by the platform economy and the income generated by new forms of employment.**

### ► 3. Creating a legal framework that favors innovation

The new forms of partnership mentioned by Robin Chase in *"Peers Inc: How People and Platforms Are Inventing the Collaborative Economy and Reinventing Capitalism"* (PublicAffairs, 2015) are essential for cities, which must innovate if they want to respond more effectively to their citizens' expectations. **The challenge for cities is to support and encourage these innovations through appropriate legislation that takes into account the transformational changes this new economy will bring.**

But the first reflex of public sector stakeholders is often to protect the "status quo companies" (Robin Chase) in response to the arrival, in all markets, of innovative companies with new business models increasingly embraced by the public. *"Because the digital*

*revolution is giving birth to a new economy, it is impossible to take full advantage of it by perpetuating models that reached maturity during the preceding period",* confirms Nicolas Colin in his book *La richesse des nations après la révolution numérique* "The Wealth of Nations after the Digital Revolution", (TerraNova, 2015).

This tension reveals itself in the protracted battle between several American cities and the on-demand transportation platform Uber. But beyond the individual examples of Uber and Airbnb, it is the entire economy that will ultimately be affected by this tension between status quo companies protected by laws and regulations that the legislator is reluctant to revisit, and the collaborative economy platforms that champion a more direct relationship between supply and demand.

**The need to make legislation an instrument of economic growth by transforming the regulatory and fiscal framework is becoming clearer by the day.** This is even more apparent at the urban level, where laws are already becoming a significant factor in economic attractivity. Intersection Chief Innovation Officer Colin O'Donnell agrees: *"We need regulations to keep people safe and protect people, but we also need to recognize that the speed of growth is increasing in that, if there is a hurdle that you have to jump over to make something happen in one city, they might miss out and people are going to go to another city to launch that new service, to launch their new business, or create a new product".* Cities must focus on welcoming and encouraging innovation by factoring the specificities and interests of these collaborative economy stakeholders into their regulations.

# Citizens as massive data-producers: let's speak about physical infrastructure

Smart street furniture, Wi-Fi roaming, crowdsourcing apps, ...  
Cities can rely on the expertise of digital economy stakeholders  
to encourage citizens to produce urban data.

Beyond the long-term prospective view, today's cities are a privileged space for real-time action, thanks to a wealth of immediately available information. Although private stakeholders' data on urban usages is highly valuable, the most enlightening, abundant urban data is still generated by citizens themselves. This data can help cities refine their knowledge of urban usages and unlock their potential for innovation.

## ► Encouraging citizens to share urban data

Aware of the pool of actionable data generated by its citizens, Boston has designed a number of crowdsourcing apps. Citizen Connect allows Bostonians to report any problem they come across in public spaces. Similarly, the "Vision Zero Program", which aims to eliminate fatal accidents on the streets of Boston, provides the public with a

Safety Concerns Map, showing the most dangerous intersections and asking the public for layout improvement suggestions.

## ► Adapting the network to the use of digital tools

At a time when a growing number of transactions, and communications take place over the Internet, users now expect Internet access in public spaces and transport. A significant challenge, even in a megalopolis like New York, where one in four residents still does not have access to high-speed broadband.

**Private investors are rushing to this niche market.** Veniam, a company co-founded by Robin Chase, equips vehicles with boxes that include a phone service and a Wi-Fi connection, a project currently tested out in Porto, where 600 vehicles, including all public buses, are outfitted with the device, and share a large



mass of data with city authorities. Since its launch, Veniam has logged over 4 million Internet sessions.

Similarly, Google has invested in LinkNYC, a project run by Intersection, recently acquired by Sidewalk Labs. In partnership with the City of New York, Intersection has replaced phone booths with new street furniture featuring digital screens and superfast Wi-Fi, which New Yorkers can use to place free calls or surf the web while charging their phones. These 10,000 terminals provide the city with fast, extensive coverage, in yet another example of a city receiving valuable data from the private sector: "We are generating a ton of data from Wi-Fi traffic as well as from sensors and we can use this data to help the city make better decisions and deliver better services", explains Intersection Chief Innovation Officer Colin O'Donnell.

The average download speed of a US Internet connection is 40 mbps: "It is sufficient for today's technology, today's content, and what we use the Internet for, but it is really limiting growth", says Colin O'Donnell, at a time when the UN recognizes Internet access as a human right while bandwidth consumption is doubling every year. **Colin O'Donnell believes that Internet speed directly affects technological innovation.** "At the time, nobody had imagined what a YouTube could be, because it was just impossible to think about until there was this bandwidth. What history has shown is that any time there is available bandwidth, we will fill it up and make use of it through new innovations. We want to make New York City a test lab, where people will develop high bandwidth applications that require connectivity. They will have no data caps", he explains.

In addition to a source of data, this partnership is a new revenue stream for New York: "We have guaranteed the city an enormous amount of revenue over the next decade, USD 0.5 billion in revenue for the city, based on advertising.

*Since it is self-funded, it survives budget cuts and election cycles and becomes a permanent part of the city. (...) Once you put out something like a free Wi-Fi public service, citizens latch onto it and do not want to let go",* says Colin O'Donnell. This innovation also provides the city with a new way of communicating and interacting with its residents and visitors.

*"It is not just about providing the fastest service that is going to engage and attract technology companies and young millennials; it is also using that same infrastructure and some of the revenue that is generated to provide new digital services to the underserved and to close the digital divide."*



Colin O'Donnell,  
Chief Innovation Officer at Intersection.

# IMAGINE | BOSTON 2030



# Heading to 2030: the long-term route to urban transformation

An optimized use of urban data and increased citizen involvement in the decision-making process can help cities respond more effectively to the long-term challenges of urban mobility, social and economic inequality, and climate change. An opportunity to reconcile the short-term evolution of urban usages with cities' long-term future.

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*"Making a smarter use of existing infrastructure is part of the solution. Knowing that we can make more out of what already exists, what kind of business case can we build? How can we fill those gaps?"*

*Arjan van Timmeren, Scientific Director, Amsterdam Institute for Advanced Metropolitan Solutions (AMS).*

# A re-f(o)unded mobility for a sustainable urban shape

Cities face a larger challenge still than the flow of data: the flow of citizens. From transportation on demand to forming new partnerships with the private sector and preparing for the arrival of autonomous vehicles, numerous solutions are emerging, and inventing tomorrow's urban mobility.

## ► Infrastructure obsolescence and the funding gap

Today, the USA's infrastructure investment is essentially the same as it was at the end of the Second World War. After a slight recovery in the early 2000s, the 2008 financial crisis put a decisive stop to any upward trend, says Cécile Maisonneuve, Chairman of La Fabrique de la Cité. Sidney Florey, North American Director of Business Development for VINCI Concessions, shares this opinion: *"If we do not change, in 2045, the very transportation systems that powered our country to rise are now instead going to drag us down"*, as the US infrastructure funding gap is expected to rise from \$91 billion annually to \$110 billion per year in 2025.

At a time when the US public sector's funding ability is significantly weakened, Boston itself faces a considerable challenge if it wishes to maintain and upgrade its transportation infrastructures and develop new ones to support future demographic and economic growth.

Other American cities, such as Washington D.C., share this concern: *"It is a big challenge to balance the ongoing maintenance and state of good repair that the residents and people who live and work in the district want with a desire for new investment and how we balance those needs"*, stresses Amanda Stout, Special Assistant for Economic Development at the District Department of Transportation in D.C. (DDoT).

How can cities improve mobility despite their inability to make the investments required to update existing infrastructures, to say nothing of building new ones? **Boston is addressing this question by pursuing new forms of cooperation with the private sector and by using data to improve mobility and user experience at a lower cost.**

## ► Offering alternatives to car-centric mobility

*"The American urban civilization is an automobile civilization"*, says Cécile Maisonneuve. This



# Go Boston 2030

When citizens envision the future of mobility

Involving citizens in the creation of a reliable and accessible transportation system that encourages economic growth, fairness, and urban resilience: such is the mission of Go Boston 2030, an initiative launched by City Hall in 2015. This 18-month public consultation period generated 3,700 responses and led to the formulation of a mobility action plan based on four futures. The first, Go Local, calls for transportation to become faster and more comfortable, alongside investment to make the streets

of Boston safer, more accessible, and more attractive to pedestrians and cyclists. Go Crosstown aims to connect areas of the city currently underserved by public transportation to those neighborhoods with the greatest concentration of job opportunities by extending the bus network, improving cyclist infrastructure, and promoting car-sharing. Go Regional plans to connect Boston to the surrounding communities, starting with its closest neighbors, Brookline, Cambridge, and Somerville, through joint management of mobility projects (bike share schemes, etc.). Lastly, Go Tech sets out to build collaborative relationships with the new stakeholders of the digital economy and to use technology and smartphone-generated user data as the basis for designing an innovative public transit network that fulfils the expectations of citizens.



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applies to Boston, a city traversed from 1959 on by an elevated six-lane freeway known as the Central Artery. Originally designed for 75,000 cars, the Central Artery was used by 200,000 per day by 1990, resulting in quasi-permanent congestion, and cost Boston's drivers \$500 million every year.

To remedy this state of affairs, Boston launched "the Big Dig", a \$14 billion project which replaced the Central Artery with a 3½ mile tunnel. Still, Boston remains one of the most congested cities in the country. Yet although 40% of Bostonians still drive to work, **cars may no longer be the most relevant response to their mobility needs**, particularly as Boston's jobs are highly concentrated in the city center. **Boston must now encourage a new mobility model, less focused on cars**, a priority echoed by Chris Osgood: "A big challenge for us is to cut the number of people who drive alone by half by 2030. We must boost the number of transit riders and the number of people who feel comfortable riding their bike to work".

### ► Reinventing urban mobility based on citizens' input and expectations

**As a starting point to the reinvention of its urban mobility model, Boston spent several months gathering resident suggestions regarding the projects they believe should be implemented as a priority before 2030.** This consultation resulted in the launch of the "GoBoston 2030" program (see inset on page 37), which, in the words of Boston's Chief of Streets Chris Osgood, "will guide the city's future investments".

Another potential solution for improving mobility is the use of urban data. As part of its strategy to upgrade and optimize its public transit system, the MBTA launched a "Performance Dashboard" in March 2016, a resource that provides a visual summary of network performance and reliability, as well as data on the number of users and

passenger satisfaction. Additionally, the MBTA uses its fare system to collect data on user mobility and itineraries, data which it believes will come in handy in future projects.

### ► Transport On Demand (TOD) and new mobility stakeholders

In order to deal with the obsolescence of its network, the MBTA has opted to complement its offer with a set of transport on demand solutions developed by the private sector. "The forces are

*"It is not that the technology is actually the answer to (our infrastructure challenges), but that it allows us to evaluate a whole set of alternatives against each other".*



David Block-Schachter,  
Chief Technology Officer for the Massachusetts  
Bay Transportation Authority (MBTA).

residents. The forces are the interest in a better way of more safely and more reliably moving around the city, something which we want to honor and address as civil servants. It's something which tech companies and transportation companies are interested in responding to as part of their business model", says Chris Osgood. This goal underlies the MBTA's partnership with startup company Bridj, which has created an on-demand bus service (see inset on page 39).

**Boston is currently looking at the potential use of autonomous vehicles to open up certain neighborhoods and promote car-sharing.** But the effects of these vehicles on cities are still unclear: while some highlight decreased accident risks, others raise legitimate questions about the risk of reintroducing congestion and urban sprawl. For Boston, it is thus crucial to test out this innovation: *"Driverless vehicles offer a formidable opportunity, but we have to be careful to ensure that this utopia does not become a dystopia. Before we go in that direction, we must fully define the physical environment in which we want this mobility offer to operate, and identify precisely the problems that this technology should allow us to solve"*, says Jascha Franklin-Hodge.

Behind the example of autonomous vehicles lies the ongoing invention of a new model for collaboration between cities and new highly disruptive stakeholders. **"We are interested in exploring how we partner with people that are disrupting transportation right now, largely through new technology and new business models. This means that we can shape that disruption around the goals that our residents are most interested in"**, explains Chris Osgood.



## Bridj

### Complementing public transportation with transportation on demand

Founded in 2014, startup Bridj has created an on-demand shuttle bus system serving several Boston neighborhoods, with the aim of closing loopholes in the MBTA network. Users of the system use a dedicated mobile app to indicate the start and finish points of their desired journey, and are offered a choice of fixed bus stops close to their route. The system relieves the strain on the busiest routes and reduces vehicle traffic, while also addressing the 'last mile' problem (time required to walk home from a train station or bus stop, for example). While Bridj's application to replace the MBTA's night service is currently under consideration, the city does not necessarily subscribe to the idea of a 100% on-demand service. Bridj is just one segment of Boston's public transit offer, and City Hall is open to the idea of involving private sector providers to expand its range of multimodal transportation options.



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# Beyond smartness: the equitable city

How can cities remain attractive and maintain dynamic growth without fostering inequality? Boston must focus on solving this challenging equation, or it might just become a two-tier city, warns David Luberoff, Senior Project Advisor, Radcliffe Institute for Advanced Study's Boston Area Research Initiative, Harvard University.

Third on the top 10 list of venture capital destinations, Boston was on the receiving end of 8% of all VC funding worldwide in 2012. According to David Luberoff, "The region is absolutely booming and is one of the most affluent". To a twenty-year period of development, Boston adds a tradition of innovation - a talent inherited directly from its past as a politically ambitious pioneer town - apparent in its many universities.

**This culture of innovation goes a long way in explaining the attractivity of Boston, which has seen its population increase significantly over the last two decades, driving a huge expansion in the demand for housing.** "We are now entering the third great building boom in the history of Boston", explains Jascha Franklin-Hodge, as the city expects 91,000 new residents by 2030.

**The flipside to this growth is inequality: In January 2016, the Brookings Institution named Boston the most unequal city in the US.** 30% of households with children earn incomes below the poverty line, at a time when the cost of housing is taking off: the average rent for a two-bedroom apartment in 2015 was \$2,602 per month, 42% higher than in 2009.

**These inequalities are taking a toll on the middle class, a group that has become City Hall's priority target in terms of housing.** "On the one hand, we have lots of luxury market rate housing, and a lot of publicly-subsidized housing. However, if you are a middle income earner, you can afford less than 18% of the houses in this city", says Nigel Jacob, Director of MONUM. "Our economic growth and success is part of what is helping to drive this growth in inequality", says Jascha Franklin-Hodge. Faced with these facts, the city is implementing a proactive policy to counter the eviction of the middle classes due to rising rents, an effort spearheaded by MONUM and the Housing Innovation Lab (see inset on page 41).

In order to house future residents, Boston plans to build 53,000 new homes before 2030, 20,000 of which are already in development. An opportunity for the city to shape its housing stock and ensure that it is accessible to the middle class. "Our hope is that by encouraging development, we will increase the supply and be able to stabilize pricing for housing", explains Jascha Franklin-Hodge.





# The Housing Innovation Lab

Inventing tomorrow's housing

Launched in 2015, the Housing Innovation Lab was developed out of a partnership between the Mayor's Office of New Urban Mechanics (MONUM) and the Department of Neighborhood Development. As Boston prepares for the arrival of 91,000 more residents by 2030, the Housing Innovation

Lab pursues innovative solutions to facilitate access to housing, using design thinking and innovation to cut construction costs, facilitate home ownership, and figure out ways for the city to maintain a housing stock that is affordable to middle class Bostonians, for whom finding a home in the city can be a challenge. The Lab has developed partnerships with real estate developers, designers, architects, and educators, and directly interacts with citizens to better understand their expectations. In return, the Lab prototypes modular housing solutions, new construction methods, and collaborative housing projects. The initiative has received \$1.35 million in funding from the Bloomberg Philanthropies Foundation.



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## ► Supporting entrepreneurship in underprivileged neighborhoods

The footprint of economic inequality is apparent within the city itself, with a striking contrast between affluent neighborhoods like Beacon Hill and underprivileged ones like Mattapan or Roxbury. *"Boston is surrounded by a series of older industrial cities. These are the places that are struggling the most today. They share the same social fabric as the rest of Boston, but without the innovative neighborhoods of downtown",* explains David Luberoff.

It is in these underprivileged neighborhoods that the City of Boston is working to stimulate entrepreneurship by developing new facilities for entrepreneurs. Examples include the Roxbury Innovation Center (see inset on page 43), founded in 2015 to support the local business and startup community and facilitate access to capital. *"We believe in the Connect, Start, Grow model, so we are here to connect entrepreneurs to the resources that they need to help them start their companies and then to help them grow their companies",* explains Alessandra Brown, Director of the Roxbury Innovation Center.

The City aims to replicate the pilot experiment now underway in Roxbury in other underprivileged neighborhoods, as part of the Neighborhood Innovation District Program. *"Mayor Walsh's goal is to create an innovation corridor and to extend this innovation ecosystem into Roxbury, Dorchester and Mattapan",* confirms Alessandra Brown.

## ► Building denser housing

Based on the reurbanization of the downtown area, the concentration of jobs at the heart of the city, and the decline in automobile use, Boston has decided to prioritize the construction of denser housing units.

This approach has proved successful as part of the South Boston regeneration plan, and is an effective response to the aspirations of a new generation of citizens: the millennials. *"People no longer want to own cars and they do not expect to have five bedroom houses. They are interested in much smaller, denser living conditions. What we are trying to do here is to create new zoning and policy regulations that allow for smaller footprints",* explains Nigel Jacob. Other initiatives include a density bonus introduced by City Hall to reward developers committed to building higher-density housing, and the increased use of community land trusts, which allow communities of owners to collaborate on land administration and thus control housing prices.

*"By assisting the growth of entrepreneurship and helping people sustain themselves in their small business endeavors, we hope to give them the ability to stay in the community and not feel they are being pushed out as price points start to increase."*



Alessandra Brown,  
Director, Roxbury Innovation Center.



# The Roxbury Innovation Center

Fostering entrepreneurship in an underprivileged neighborhood

At the beginning of the 20<sup>th</sup> century, central Roxbury's Dudley Square was the commercial heart of Boston. Its decline began in the 1960s and 1970s, when it lost its economic vitality, its train station, and a significant part of its population. But the arrival of Mayor Thomas Menino kick-started the regeneration of Roxbury, a project continued by Mayor Martin

Walsh. The foundation of the Roxbury Innovation Center is an integral part of this regeneration project. Designed to support the local economy by energizing the local business fabric, this civic innovation center occupies the former Ferdinand building, one of Boston's architectural jewels. *"Our primary mission is to help with the economic development for the neighborhood of Roxbury. One of the ways we believe that would best be accomplished is through entrepreneurship"*, explains Alessandra Brown, Director of the Roxbury Innovation Center. To do this, the Center provides entrepreneurs with workspaces and a full program of events, from training courses and hackathons to workshop sessions like the Learn Lab Workshops which provides digital resource training in partnership with Microsoft.



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# To be resilient, or not to be

The cities most exposed to the effects of climate change must become more resilient by redefining urban planning and development and raising citizen awareness of climate risks.

**As a coastal city, Boston is the fourth most vulnerable to climate change in the USA, and the 12th most at risk in the world, with \$55 billion in assets exposed to a “century flood”.**

*“If Hurricane Sandy had hit here 12 hours later, all of these places would have been under water, including the Innovation District, the waterfront and the airport. It would have hit the innovation economy particularly hard”,* explains David Luberoff. Boston, which turned away from the ocean following the crisis its seaport experienced, must now cope with the risk posed by climate change and rising sea levels.

The need for Boston to become a resilient city has led the city to appoint a Chief Resilience Officer. Funded by the Rockefeller Foundation’s 100 Resilient Cities program, this two-year appointment will guide Boston’s efforts to increase its resistance to high-impact events, such as floods, infrastructure failures, and acts of terrorism, and longer-term tensions, such as racial and economic inequality, housing access barriers, and employment issues.

## ► Making resilience an integral part of urban planning

This resilience imperative is now integral to all architectural projects in Boston, and nowhere more so than the South Boston Waterfront (see inset on page 45), which is particularly exposed to the effects of rising sea levels.

South Boston’s Waterfront, which for many years was nothing more than a vast parking lot, is now a fast-developing innovation center, and a striking illustration of Boston’s broad understanding of the concept of resilience, climatic, social and economic. *“The Boston Redevelopment Authority, working with the community, undertook a two-year planning effort to really frame out what type of new district would evolve here. We developed the streetscape alignment, where open space would be located, the civic and cultural uses that would invigorate this area, building massing and setback. The intent was to create a 24/7 vibrant neighborhood, so ►*



# Living with Water and the South Boston Waterfront

Anticipating urban climate change

Once a flourishing industrial center in the 19th century, the South Boston Waterfront had, by the mid-20th century, become a vast wasteland used mainly as a parking lot. At the end of the 1990s, Boston's City Hall decided to leverage the unexploited potential of this area, the city's largest land reserve, through an ambitious redevelopment policy. The city drew on the local cultural energy and university ecosystem to transform the area into an innovation community. Business incubators, shared workspaces, and

an annual competition organized by MassChallenge (a non-profit organization that works as a startup accelerator) helped encourage cutting-edge companies and startups to choose the South Boston Waterfront as their preferred location. The initiative has proved highly successful, creating 5,000 jobs and attracting 250 startups, as well as the headquarters of Gillette, PricewaterhouseCoopers and - soon - General Electric. Eager to make the South Boston Waterfront more than just a daytime business district, the city has promoted a broad-based multiplicity of uses, by dividing up the space equally between housing, offices, retail, hotels and restaurants, and by promoting innovation through the District Hall center, which offers training programs and workspaces for entrepreneurs. The South Boston Waterfront's vulnerability to rising water levels makes it a perfect laboratory for climate resilience experiments. In 2015, Boston hosted its Living With Water competition over there, rewarding innovative solutions involving ecological improvement projects for riverbanks, flood-proof upper floors, easily adaptable architectural solutions, and other promising ideas.



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► *there was a requirement that at least 30% of new development be residential, another 30% or 40% be office or commercial space", says Chris Busch, Senior Waterfront Planner at the Boston Planning and Development Agency (formerly Boston Redevelopment Authority).*

**The city's urban planning and economic development agency is working with property developers and owners to guide the zoning process that determines the form, size, and density of urban projects, and that is increasingly governed by the imperative need for climate resilience.**

► **Showing the effects of climate change**

Boston is well aware of the need to inform citizens of the challenges raised by climate change and the risks faced by the city. Its Climate Ready Boston Program brings together public and private stakeholders, with support from the Green Ribbon Commission, a group of business, institutional, and civic leaders working to develop shared environmental protection strategies. Climate Ready Boston has, for the first time, provided the public with a clear demonstration of the effects of climate change and rising sea levels on the Boston region, using data visualizations presented at the Sea Change Boston exhibition (see map on page 47).

**By clearly explaining the climate risks faced by the city, Boston also wants to encourage solidarity and communication between residents in the event of a major climate disaster.**

*"We have seen with major storms such as Sandy and Katrina that communities which were better integrated and connected were better able to get back on their feet", explains Chris Busch. The City of Boston is conducting a major communications campaign via social media and working closely with the city's social centers to inform residents of what to do in case of an emergency.*

► **A new approach to design and construction**

Boston has begun working on various solutions (coastal revegetation, temporary dikes, floating buildings, dune restoration, etc.) to counter key vulnerabilities in neighborhoods most exposed to a major climate event.

*"Given that we really do not have the resources needed to build new tunnels or roads, we are looking at any and all means of accessibility, with a multimodal plan looking at a number of interventions over various timescales, such as expanding car share, bus share options and smart parking apps, so we are really throwing a lot of things out there and seeing what will work."*



*Chris Busch,  
Senior Waterfront Planner at the Boston Planning  
and Development Agency (BPDA).*

Boston's newest buildings already address these new imperatives. A standout example is the Spaulding Rehabilitation Hospital in the historic Charlestown Navy Yard, which Chris Busch describes as "a model of architectural resilience for the future". The most vulnerable hospital facilities are all located on the upper floors to avoid any risk of storm damage. The adjoining garden is designed to act as a buffer zone in the event of a flood. These measures are intended to allow the hospital to "be island-able over many days", continues Chris Busch, whose aim is to subject all future real estate projects in Boston to equally demanding specifications. In 2013, the Boston Redevelopment Authority compiled a Resiliency Checklist of criteria that any new architectural project must comply with. For any given location within the city, this checklist lists the vulnerabilities and climate risk mitigation measures to be taken into consideration.

But architecture is not the only lever used by the city to make its real estate stock more sustainable. As part of the Boston Industrial

Marine Park project (BIMP), the city is rolling out smart energy grids based on cold water heating, which can help limit emissions of carbon dioxide into the atmosphere.

Some may call into question the efficiency of Boston's response to climate change, which is pragmatic and reactive rather than ambitious. The resilience imperative is not exempt from the budgetary constraints the city currently faces. **While resilience initiatives are still largely driven by private sector stakeholders, cities have everything to gain, in terms of safeguarding their competitiveness, from offering proof of their preparedness in the face of these threats that every city, every country will face in the coming years.**



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## Conclusion

# From time... to space, or the return of public spaces

From the real-time world created by the digital revolution to long-term environmental challenges, our cities are places where we can experiment with the convergence of different timeframes - the immediate timeframe of the digital world, the short timeframe of citizens' daily lives, the medium-term timeframe of politics, and the long-term timeframe of infrastructures, social inequality, and climate change.

It is these different timeframes of the city that Boston reveals for us, and that it attempts to reconcile through innovation on every front, from urban data collection and analysis to increased interactions with citizens and experimental projects conducted in partnership with the private sector.

The exercise is a perilous one. These different timeframes do not necessarily align, and can even conflict with one another. **Major tensions are still at work: increasing social inequality, housing access problems, climate risks, ... But the emergence of new partnerships is reopening the game by creating new opportunities and resources for the city and its citizens:** this openness is introducing a shared

dynamic of change, at a time when fast-evolving urban usages are raising fears of chaotic urban transformation at a forced pace. "Evolution or revolution?": **this is the choice at hand, according to Robin Chase. But isn't this revolution already here, as cities are no longer controlled or planned primarily by public authorities, but are increasingly fashioned, paced, and served by new private sector and technology stakeholders, often with the full consent of citizens?**

Ultimately, we return to the question asked last year at the International Seminar hosted by La Fabrique de la Cité in Berlin: To what extent should urban policy be determined by citizens and their usages? Additional interrogations appear, opening up new topics for investigation: **Can existing urban infrastructures become platforms that support new urban services? How can we redefine taxation and social rules to make them fairer for all urban stakeholders? These are the questions that public decision makers must now grapple with in order to accompany the accelerated urban transformation and, ultimately, reinvent the public space.**

# Publications by La Fabrique de la Cité

## Overviews



● *Understanding behavioural changes to keep transforming cities*  
Berlin Seminar  
July 2015



● *What tools can be used to optimise the city?*  
Lisbon Seminar  
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● *How to create value for cities?*  
Stockholm Seminar  
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● *Building the shared city*  
Amsterdam Seminar  
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Nice Seminar  
November 2011



● *What is the place for public spaces in the city of the future?*  
Barcelona Seminar  
May 2011

## Studies

### ● *Designing Cities for Health*

by Michel Ladet (Sociovision) and Guillaume Malochet (La Fabrique de la Cité) – December 2015

### ● *Towards data-driven cities? Spotlight on New York, Chicago, Boston, Los Angeles and Pittsburgh*

coordinated by Guillaume Malochet and Alexandre Grassigny (La Fabrique de la Cité), with Blaise Mao and Laura Encinas (Usbek & Rica) - March 2015

### ● *The challenges of funding urban infrastructures*

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### ● *The Phoenix Cities*

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by a working group involving Dominique Bureau (Economic Council for Sustainable Development in the French Ecology Ministry), Remi Dorval (La Fabrique de la Cité), Alexandre Rojey (IFP Energies) and Claire Tutenuit (Entreprises pour Environnement), Alexandre Bouchet (E-CUBE Strategy Consultants) - August 2013

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## Notes

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From the real-time world created by the digital revolution to long-term environmental challenges, our cities are, more than ever, places where we can experiment with the convergence of different timeframes - the immediate timeframe of the digital world, the short timeframe of citizens' daily lives, the medium-term timeframe of politics, and the long-term timeframe of infrastructures, social inequality, and climate change.

How can we adapt to the new uses that citizens make of their cities, while also effectively responding to the long-term tensions inherent to the urban space?

Is it possible to reinvent the dialogue between the city and its residents by using digital tools and analyzing urban data?

These are the questions that the City of Boston - one of the world's leading innovation hubs - has been working to elucidate over the past years by testing out new urban planning and development strategies.

It is thus in the state capital of Massachusetts that La Fabrique de la Cité, a think tank on urban transitions and innovation, chose to hold its International Seminar on new urban trends on 6-8 June 2016. This overview presents the opportunities for action revealed by the various contributors to the event.

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