# Smart cities: The challenges of building a future-ready workforce

A *Cities Today* report with North American local government CIOs

in partnership with

verizon

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CitiesToday
Institute

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# Foreword

The most critical components of any 'smart city' project are people – that includes the visions of mayors and managers and the capacity of city innovation leaders to implement those visions while remaining consistent with laws, civic norms and residents' expectations.

If we do this well, residents will trust local governments to continue to build a society in which every person can live up to their potential. If we do this poorly, residents will reject the government and replace it.

Our goal as civic innovators is to drive systems and collaborations that improve quality of life, employment security, safety and shared experiences for all. Where technology can help with these aims, we use it.

With this in mind, it's clear that a critical task for local governments is to attract, train and retain a talented workforce within City Hall. Excellence at every level, from the Mayor to frontline workers and interns, allows cities to rapidly identify and deploy solutions that meet residents' needs most effectively. Nowadays, this often requires a baseline understanding of technology beyond what was expected of previous generations of government workers.

Attracting these people is more difficult in a tech-centric economy where private-sector opportunities abound, and as the global economy becomes more closely intertwined across regions and systems.

Complete Streets policies, for example, require collaboration between the Public Works, Water, Electric Utility and Planning departments, as well as input from community leaders and businesses. Talented people will have the choice to work on such projects either as a government employee or an employee of one of the private firms that are located there.

Oliver Hendry has done a magnificent job in this report of gaining insights from global city leaders to understand the civic workforce challenges and identify some replicable tools which can be used to help establish this critical foundation in communities across the globe.

The report explores common perceptions about cities and the competition with the private sector, and identifies both the complexity of the challenge and the opportunity that cities can seize to set themselves apart.

It also looks at internal government operations as well as legal and procedural hurdles and identifies training resources that have been validated in Cities Today Institute (CTI) member communities.

This is the first of a series of CTI reports which will synthesise the output from our City Leadership Forums (CLF), backed with additional in-depth research. This and future reports aim to capture the wisdom from our discussions around topics which are fundamental to our communities.

This report is based on discussions at our CLF in New Orleans last year, which took place just before most of the world shut down due to COVID-19, and a series of digital roundtables we have held since. It comes as the world tackles the ongoing health crisis and the effects of parallel and compounding crises, including social unrest, intense climate events and the unfurling economic shocks from the pandemic.

This context illustrates the need for government to evolve at a rapid rate. Public health systems that seemed effective for years crumbled in New York under the weight of the pandemic. The United States' lack of true equity and justice under the law demands that we change how local government functions.

Some policies must certainly change but this alone is not enough. We must also ensure equal access to opportunity through our education, training, housing and job placement policies and change cultural norms.

Changing cultural norms will be the hardest shift and these challenges will drive the next evolution in local government. They will require a holistic, inclusive vision and innovative implementation strategies.

Attracting talented people to City Hall to serve their community is a critical task. This report offers some insights on how to achieve it. ●


**Bob Bennett**
**Chair of the Cities Today Institute**

# Technology alone can't make cities smarter. It takes diverse, skilled, motivated people

**By Michelle Quadt, Director of Public Sector Strategy, Verizon**


**Michelle Quadt**
Director of Public Sector Strategy, Verizon

verizon

> *"What is a city, but the people; true the people are the city*
>
> **William Shakespeare**
> Coriolanus Act III

Thanks to the wealth of exciting technology fuelling smart cities, it's easy to lose sight of a critical fact – people make smart cities a reality. As cities evolve, they're going to need to be able to attract, retain and inspire young diverse talent who can bring valuable skills and innovative ideas to bear on urban challenges. To thrive, cities must ask some hard questions about strengthening their workforces.

**How are you going to attract next-gen talent?**

Attracting the next generation to the public sector can seem difficult, given that private sector jobs can be more lucrative. But cities have a real advantage. Younger people are more than just tech-savvy digital natives. They're part of a purpose-driven generation that wants to know that their work has an impact on their community – and the larger world. They may be willing to forego the private sector if they know they're making a difference.

That said, they also expect to be able to make change happen quickly. Cities that want to attract younger talent are going to have to be able to make decisions more quickly and accelerate processes. In addition, the country is becoming more diverse, so new diversity and inclusion practices must evolve in order to capture the economic and innovation opportunities created by a diverse workforce.

In short, the old ways of working will need to change.


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**Are you rewarding your current workforce for thinking differently?**
New talent is just part of the challenge. You also need to invest in your current staff as well. Developing internal talent via training and other opportunities is critical. But you also need to incentivise the willingness of your staff to question the way things have always been done, to highlight roadblocks, and to lead new initiatives.

**Can you reach beyond your city for the right people?**
Talented people don't always have to be sitting in your offices. That's one of the lessons that the pandemic taught all organisations, public and private. Now that working remotely is a much more accepted option, is your city willing to tap into talented groups of people who aren't living within the city boundaries? They may be living across the country, but willing to use their skills to make a difference in your city. Bringing them on-board means breaking down some inherently parochial ways of thinking about city employees.

**Does your city have digital-savvy leadership?**
This change needs to start at the top, with leaders who understand the transformational power of digital solutions and data analytics. For example, does your city have a chief analytics officer – or someone who's thinking about how to leverage all your data to create smarter operations? And do you have the right senior roles in place, with people who can put these analytics to work to make smarter decisions and reduce the cost to operate your city?

**Can you leverage partnerships with the private sector?**
There is a wealth of private sector knowledge that can help your city succeed with transformational initiatives. While public-private partnerships can offer tremendous potential, they also require careful consideration, particularly when they involve sharing your data with a private organisation. Who owns the data? How will it be used? How can private sector organisations benefit from helping your city make smarter decisions? Clearly, there are a lot of issues that need to be resolved before any partnership begins. But keeping your city open to these partnerships ensures that you're benefitting from a broad pool of expertise.

**Are you making the right investments?**
Your city may want to be innovative and to create a smart city, but turning that desire into reality means taking a step back and asking what investments you need to make in people – throughout your city – to make this effort successful. After all, attracting, developing, and keeping talented people on your team comes down to investing time, attention and funds. And funding is a perennial challenge for most municipalities.

As I write this introduction, many cities are taking a close look at the $2 trillion infrastructure bill and exploring how they might use these investments to digitally transform the way they're operating and serving their citizens in an equitable manner. But as you move ahead, keep in mind that smart cities aren't just about hard infrastructure. They require the right people, with the right skills, in the right roles.

Yes, people are the city – and having the best people in place can make real change happen. ●

# Introduction

> **Data-driven digital transformation has the potential to both increase or reduce inequity across income, gender and race boundaries**

Innovation is a natural drive of human beings. From the original settlements to the rise of metropolises, humans have sought to make their lives more convenient and rewarding, and in turn, have supported the processes and individuals that will help them achieve this. From the unprecedented innovations of the Romans through to the mechanisation of the Industrial Revolution and now to the Digital Age, technology has evolved to provide citizens with a higher standard of living

But such evolution is not inevitable; and that is why certain cities, under strong, forward-thinking leadership, have encountered periods of immense innovation growth while others have plateaued. The cities that act as the pioneers of innovation are looking to learn from others, not least their citizens, and to use this knowledge to provide specific and original solutions.

The best solutions bring together community ecosystems to meet citizens' needs more efficiently and effectively. Data is also playing an ever-more significant role in quantifying and qualifying citizen service delivery, and as such is at the helm of most innovation projects within cities. As a result, a city's data stewards – be it the Chief Information or Innovation Officer (CIO), Chief Technology Officer (CTO), Chief Digital or Chief Data Officer – will be at the fore of innovation, which will diffuse into almost all city government departments.

There is no right or wrong structure when it comes to establishing data-driven innovation in city government. Whether a city has an Office of Information Technology infusing data innovation departments, or it has a stove-piped Office of Innovation, the constant required for successful deployment is a champion who can successfully lobby and persuade, through tangible evidence, that data-driven innovation is serving citizens in a truly positive way.

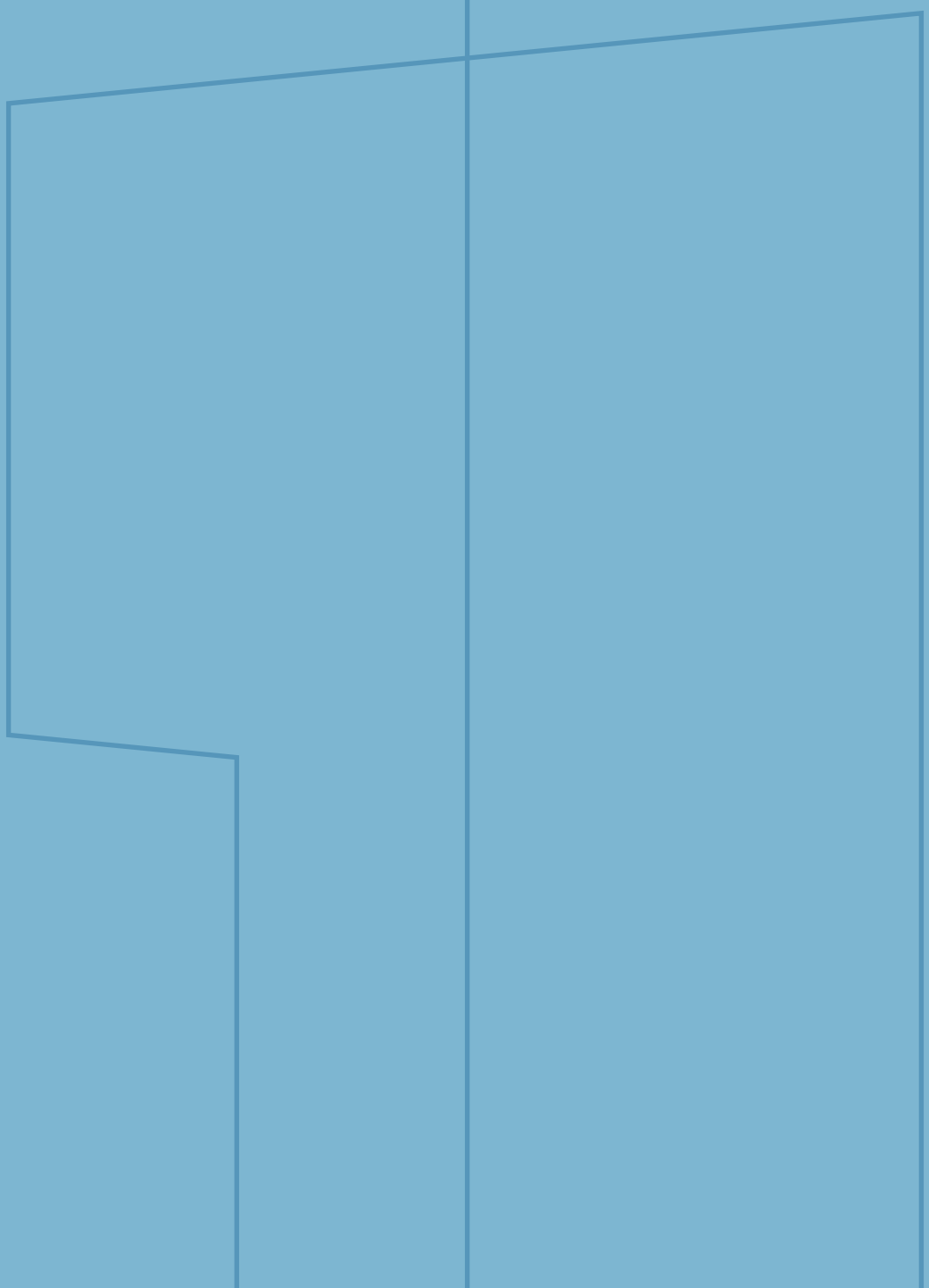
In a world where global climates are becoming increasingly volatile, it will be data that helps determine the infrastructures required to meet these dangers. And in a world where city population densities are increasing at unprecedented rates, it will be data that guides urban planners to meet the needs of citizens.

At the same time, we must acknowledge that data-driven digital transformation has the potential to both increase or reduce inequity across income, gender and race boundaries – cities must strive to make sure nobody is left behind.

As the responsibilities and challenges faced by city governments are multi-faceted and complex, it is not enough to simply expect success through a single torchbearer in city government; instead, there needs to be an immediate focus on developing a diverse, engaged tech-orientated workforce which can be the backbone for the innovation that our cities need. Without such teams, all too often we will see the realities of politics getting in the way of innovation when election cycles come around and other priorities arise.

This report aims to help city leaders push through the multiple and varied barriers to attracting a tech-savvy workforce, from public perception issues to the realities of legislative hurdles.

By analysing these issues and highlighting the solutions that some cities have used to address them, we hope that this report can help to serve as a guideline to workforce development in order to further city innovation. ●



# The challenges to workforce development in city innovation and technology departments

# The importance of public perception

Public perception is one of the key influencing factors when it comes to attracting and retaining tech talent. How innovative do people perceive the city government to be? This question is important when it comes to determining whether someone will be attracted to working for a city government, or whether, instead, they choose to pursue a career elsewhere, in the private or non-profit sectors, for example. Stephen Goldsmith, Professor of the Practice of Urban Policy and the Director of the Innovations in American Government Program at Harvard's Kennedy School, says that "people are attracted to cities, large and small, where the mayor and the city have a reputation for innovation and performance."

However, what we are also seeing is that the question of innovation in city government can be extended to the city itself, including its tech sector. How innovative does the public perceive the city as a whole to be?

The existence of a strong private sector-led ecosystem for innovation is a key driver in the success of the city government to attract talent both directly as employees but also through indirect means including public-private partnerships. It is why cities that feel they need to "catch up" are looking to first develop the wider tech business sector.

Throughout the interviews, it became apparent that there are three ways that cities tend to be viewed, and that these perceptions affect the city government's ability to attract and retain a tech workforce.

**Perception One: The municipality has a track record of innovation**

"Our city does not have a problem attracting people – because of our history of innovation," says Frank Martz, City Manager in Altamonte Springs.

If the city is renowned for its innovation, people coming up through the education system will be aware that innovation-centred roles are available in city government. Cities such as Altamonte Springs and Aurora have achieved this through a long history of innovation, often pre-dating the current management. Indeed, Aurora was the first city to implement electric streetlights in the late nineteenth century, while Altamonte Springs has a reputation for innovative water management and was the first city to introduce demand-responsive transportation in the 1990s.

As Goldsmith says, innovative city governments large or small can successfully attract talent. However, even these cities still face the same challenges of retention and empowerment of employees as described later in this report.

**Perception Two: The municipality has a mandate for innovation but awareness is low**

The second perception is that the city government is not innovative, when in fact it has a strong directive to be so and is actively trying to deliver on this.

Glen Cottick, Chief Innovation Officer, City of Winnipeg, notes that the government still has trouble engaging young, talented individuals even though "the reality internally is that we have a very strong innovation mandate." This scenario, by far the most common among the cities interviewed, requires a wide-scale engagement with citizens to illustrate the work being done and to make residents


**"People are attracted to cities, large and small, where the mayor and the city have a reputation for innovation and performance**

**Stephen Goldsmith**
Professor of the Practice of Urban Policy and the Director of the Innovations in American Government Program at Harvard's Kennedy School

and potential employees aware of the data-driven innovation within their city.

**Engaging young people**

Youth engagement is one of the most effective and influential ways to attract a pipeline of future workforce talent into cities. STEM education programmes can be used to raise awareness of the work of city government to school-aged children. Altamonte Springs' Project H20 Tx programme, for example, trains high-schoolers in various aspects of water management. It also offers licensing which provides work opportunities to those who cannot afford to go to college.

Chula Vista is "basically doing workforce development at an elementary school level" through its Innovation Station programme which teaches young children the basics of coding and robotics, explains Gary Halbert, recently retired City Manager for Chula Vista.

Working with college students through internships and work experience is another way in which cities can illustrate the opportunities to innovate to a crucial future workforce and familiarise them with the public sector.

Jane Nickles, Chief Information Officer, City of Greensboro, outlines how students from The University of North Carolina (UNC) at Greensboro help to manage the data lake for the Triad Region, and Greensboro also has internship programmes with the Morehead-Cain Scholars at UNC for Chapel Hill.

Heidi Norman, Acting Chief Information Officer, City of Pittsburgh, states: "Our interns do a lot of work for us – we lean very heavily on them." Pittsburgh brings in interns over the summer and part-time during the school year and Norman notes that several of these interns have gone on to work for the city.

Intern programmes are a good way of leveraging resources in areas which lack sufficient funding for full-time workers while giving valuable experience to students.

Michael Mayta, Chief Information Officer, City of Wichita, explains that when the city was unable to hire data architects permanently, it engaged with Wichita State University, and by doing so accomplished much of the work necessary without needing to hire additional employees.

The examples of Greensboro, Pittsburgh and Wichita illustrate how collaborations with local colleges not only introduce potential employees to the public sector, but also help to execute projects cost-efficiently.

**Community engagement**

Engaging and involving the wider public in data projects is at the crux of many cities' policies. This not only serves to further civic inclusion, but also demonstrates the exciting and innovative work opportunities that exist within city government. When discussing whether community engagement is an effective workforce development tool, Goldsmith states: "It is not only a model; I think it's critical."

Engagement can be tech-specific, where cities open

## Positioning cities as innovative employers

- Collaborate with school education programmes
- Tap into universities for support on data science projects
- Set up an internship programme
- Use open data to promote community engagement
- Test citizen data hackathons
- Partner with economic development boards
- Target college leavers and alumni


**“In order to galvanise citizens, it is necessary to make data “easy to find and to use and to understand”**

**Mark Wheeler**
Chief Information Officer
City of Philadelphia

up datasets or offer open innovation challenges to engage local and external providers to work with government. Or, as with participatory budgeting, government departments can reach out to directly canvass citizens’ views on project development or local plans.

At the centre of Philadelphia’s initiative is the idea of open data as a way of engaging the tech community. In order to galvanise citizens, it is necessary to make data “easy to find and to use and to understand,” says Mark Wheeler, Chief Information Officer, City of Philadelphia. The ambition is to explain to the public how the city’s tools are using open data, and to encourage individuals interested in data to do more in-depth work if they want. To aid this process, the city created online data catalogues and a series of iconographies to make things easier to use. Crucially, a level of consistency is provided through using the same base set of data.

A good example of engagement with data enthusiasts from within the community is the implementation of Philadelphia’s geographic information system (GIS) projects. Wheeler describes how the central GIS team is providing governance, training and engagement with its platforms in a bid “to de-stigmatise this technology.” Philadelphia’s mission is centred around using GIS not solely as mapping tools “but as communication, collaboration and analysis tools...to get people to stop thinking about points on the map.”

Within a couple of years, Philadelphia had produced a self-guided, government-supported training programme which encourages people to do their own work in the cloud-based GIS environment.

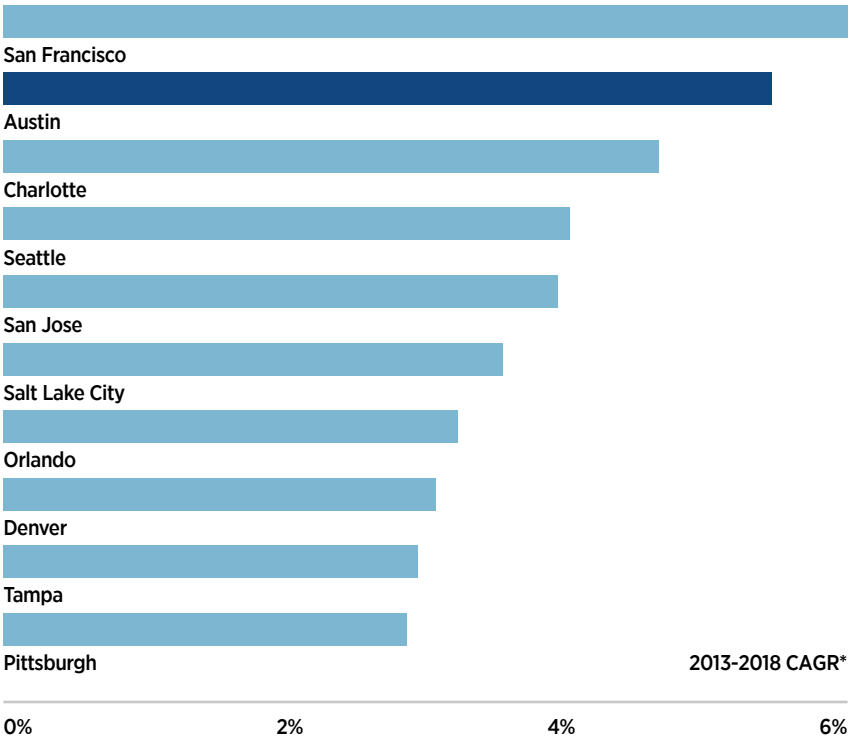
This use of open data to engage citizens is a point that has been stressed by others including Keith Hanson, Chief Technology Officer, City of Shreveport. Hanson notes that: “When we build something, we’re blasting it from the rooftops and giving it to the world and trying to find collaborators.”

Another effective method being used to engage citizens is to offer them an active say in the programmes that are being initiated. Melissa Bridges, Innovation and Performance Director, City of Little Rock, explains how the city’s Lights On programme has been particularly successful in giving the community a stake in local neighbourhood initiatives. The programme engaged citizens in a high-crime neighbourhood, allowing them to prioritise what they perceived to be key issues, and how the city might fix them. A lack of street lights was deemed to be having a detrimental effect on the community so Little Rock enacted a streetlight canvassing campaign involving volunteers and simple tools such as Google Maps, Citizen Connect and the 311 service.

Similarly, the City of Boston has set up its Youth Lead the Change programme with US$1 million of the city’s annual budget being made available for projects that young people have chosen through a process of community meetings and voting.

Wheeler in Philadelphia highlights the importance of the Citizen Planning Institute, which has helped “to empower local neighbourhood groups to work with the city and engage

## High-tech employment growth in US cities




*Compound Annual Growth Rate
Source: Moody's

around development projects." Through the use of data, citizens are now helping to develop their own neighbourhood plans and enact them in order to shape the community as they see fit. Central to this is the city's desire for residents to "build an understanding for the tools and the data," according to Wheeler.

While these sorts of initiatives are primarily designed to help communities tackle local issues, city CIOs feel that a very positive by-product is that citizens are engaging with data and technology and this is being translated into a larger pool of tech-savvy individuals considering a role in city government.

To build on this, cities have developed programmes to nurture skills. Kimberly Walker LaGrue, Chief Information Officer, City of New Orleans, details the positive effects of Operation Spark, a local code training programme, while Nickles describes the regular hackathons hosted in Greensboro, as well as the city's involvement in Code for Greensboro, part of the Code for America programme. As well as equipping residents with better tech skills, Nickles explains that such groups and organisations are opportunities "to meet and connect with the tech community and make contacts" to reinforce the message that innovation is indeed at the forefront of the city's mandate.

This is the challenge facing the majority of cities questioned for this report – cities whose smart city roadmap may be in place, but whose population and potential talent pool is not aware of that.

**Perception Three: The municipality is not viewed as a tech innovator – because it isn't one**

For the third category, the challenge is greater still. Here, perception is actually the reality, reflecting the fact that in some cases, cities do lack an innovative edge. This often results in a 'brain drain' of talented workers moving elsewhere to find tech-based work.

Vivian Ekstrom, Sustainability Manager for Memphis County, highlights that "the background and history" of Memphis determines that it is not considered a prime city of work for tech talent. This is echoed by Sherry Schoonover, Deputy Director of Information and Technology, City of Topeka, who says that her city "doesn't have a tag of being innovative". As such, the public perception of the city means that many looking at a tech career don't even consider remaining in the city to work, let alone for the city government.

Many of the cities in this position are already running innovation programmes. Therefore the challenge is not simply highlighting the innovative work of the government but also modernising both the private and public sector to provide sufficient opportunities for tech talent.

Fundamental to this task is growing the private-sector technology industry in the city so that it begins to develop a reputation and provide jobs and training for residents. "We've got to grow the industry first so that people know that we have jobs, we have tech industry here,

and there's a place for them," explains LaGrue.

The New Orleans Business Alliance works on behalf of the city, and closely with the Office of Information Technology, on initiatives that will help build relationships with tech partners. DXC is the obvious example of this, and, while not without teething issues, the decision in 2017 to bring a corporate office to New Orleans will likely have a huge impact on the city's tech industry and reputation. As well as the obvious short-term increase in tech-oriented jobs, such a partnership will also create a long-term stream of future employees from the city. Through partnership with universities such as the University of New Orleans, and with incentives from the city government, DXC will continue to expand human capital in technology.

Another factor in developing the local tech sector is to take a regional approach. LaGrue explains how New Orleans works with the Louisiana Economic Development Group "to develop training and incentives to bring more technology companies and to retain technology talent in the city and the state."

Halbert is a keen advocate of this approach in Chula Vista, too, commenting that "it's important that we have these shining stars [of tech talent] throughout the region if we're going to be successful." Halbert added that the city is not looking to acquire people for city government to the detriment of relationships with both the private and public sector. It is these relationships that will help to continue to foster a reputation for innovation in the region and, in turn, provide the city government with an increased supply of skilled technology-oriented individuals.

Cities and communities, especially smaller ones, need to focus on "innovation capacity as a whole," according to Sokwoo Rhee, Associate Director for Cyber-Physical Systems (CPS) Innovation at the National Institute of Standards and Technology. Rhee explains that cities without an existing innovation capacity need to collaborate with the private sector and academia, and to acutely focus on sectors that show promise. Rhee gives the example of Austin, Texas, which over the past decade has shown exponential growth in several areas of technological innovation. He notes how the city leveraged the presence of major tech corporations to encourage a growing tech ecosystem which centred on expanding the local venture capital community.

Rhee also believes that cities and regions should leverage their pre-existing strengths when building innovation capacity. He gives the example of the agricultural industry in Indiana. By identifying the local industry capacity, the states and the cities are helping to foster innovation through academic institutions, such as Purdue University, which Rhee describes as "nerve centres to innovation." In tandem with non-profits, the region has sought to transform agriculture into being tech-led. While the universities and non-profits may be requisite for change, it is still the cities and communities that help to drive the direction of such programmes, and in turn they will benefit from increased innovation in the region, and a growing workforce of tech-savvy individuals.


**"We've got to grow the industry first so that people know that we have jobs, we have tech industry here, and there's a place for them**

**Kimberly LaGrue**
Chief Information Officer
New Orleans

**Another tactic cities have used to bring in tech talent is to try to lure back those who might have left the city in search of greener pastures for study or work**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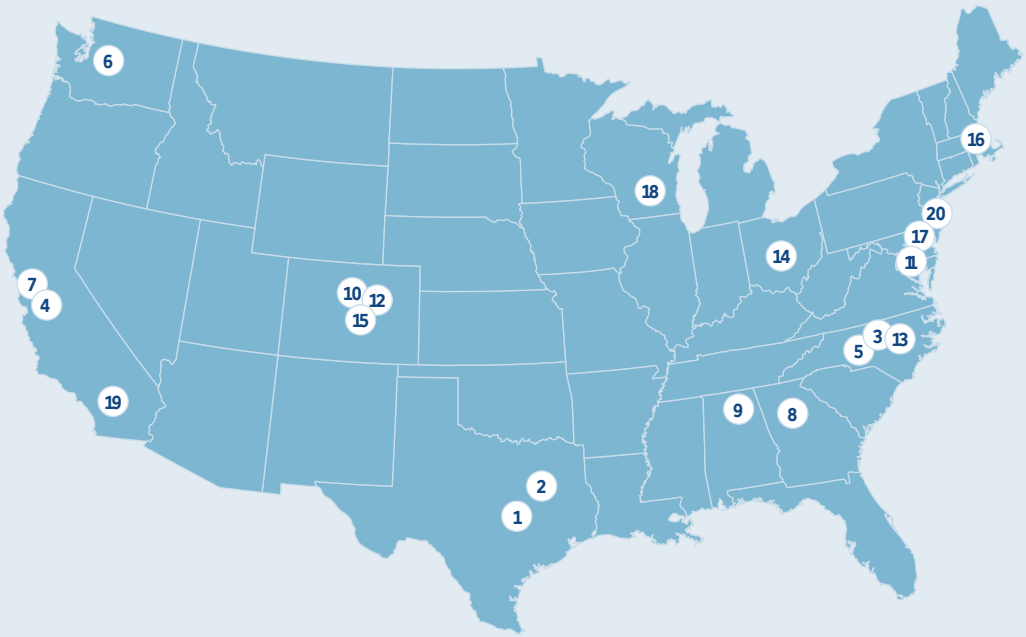
Another tactic cities have used to bring in tech talent is to try to lure back those who might have left the city in search of greener pastures for study or work. Terrance Smith, Director of the Innovation Team, City of Mobile, describes this as one of the city's best workforce development initiatives. Referring generally to education institutions such as the University of Alabama and University of Auburn, Smith says that often department heads or the mayor's office "reach out to those institutions to speak to the talent that left Mobile to go and be educated, and to let them know that they're welcome here."

The aim is to illustrate to those that have left the city for further education, and may have otherwise not considered returning, that progress is being made and opportunities exist for them at home.

A degree of creativity is needed to best capture those leaving college and considering their next steps. Steven Strauss, Professor at Princeton's Woodrow Wilson School, very clearly articulated in his presentation at the City Leadership Forum that cities ought to be fully adept at timing their recruitment drives to match the schedules and timelines of students. His comments were made about Princeton, but the basic premise of having strong ties with the right contacts at local universities, and leveraging these relationships to promote city government, are relevant for every city in the country. Norman also discussed Pittsburgh's practice of hiring adjunct professors to city government when they are available. This, in turn, helps to create a pipeline of students who have knowledge of city government from their professor, and the requisite links to facilitate the hiring processes.

Municipalities also reach for the city alumni card to try and bring locals back to their city when they have left for work elsewhere. New Orleans' LaGrue states that in addition to being focused on retaining local college graduates, the state "is recruiting people from Louisiana who have left for other tech jobs – getting them to come back." ●

## Top 20 Best Tech Cities for IT Jobs




01. Austin, Texas
02. Dallas, Texas
03. Raleigh, North Carolina
04. San Jose, California
05. Charlotte, North Carolina
06. Seattle, Washington
07. San Francisco, California
08. Atlanta, Georgia
09. Huntsville, Alabama
10. Denver, Colorado
11. Washington, DC
12. Boulder, Colorado
13. Durham-Chapel Hill, North Carolina
14. Columbus, Ohio
15. Colorado Springs, Colorado
16. Boston, Massachusetts
17. Baltimore, Maryland
18. Madison, Wisconsin
19. San Diego, California
20. Trenton, New Jersey

Source: CompTIA Tech Town Index (2020)

Rankings like the above contribute to the perception of which cities are tech hubs in the US

# Competing with the private sector

The efforts of cities to lure people back highlights the competition that regionally, and sometimes nationally, the private sector poses but that competition can also be within the city itself. As noted in the previous section, there are numerous benefits to city government having strong working relationships with the local private sector, including helping to develop the local talent pool and enhancing the tech-status of the city. However, a city's tech sector prowess can often correlate with a drain of human capital which otherwise might be minded to work for city government. Cottick summarises this when he says that the success of tech companies in the Winnipeg area is "fantastic for our locale and our economy, but it's horrific from a municipal IT recruitment perspective." The question, therefore, is how can city governments leverage the work they are doing to prevent a diversion of talent to the private sector?

One opportunity that was raised by Frank Martz, City Manager in Altamonte Springs, on salary competition is "counter-cyclical recruiting". As Martz stated during the City Leadership Forum, the realities are that for various reasons the city cannot compete with private sector pay cheques when the economy is strong. However, when the economy is in a downturn the discrepancy is narrowed significantly. Not only will the labour supply perhaps increase in difficult periods, but those who couldn't justify the loss of income for a career in the public sector might then have their heads turned. Martz noted that "those people who were making $180,000 in the good times, made $100,000 with us in the recession." In Martz's experience, it has proved an effective way of hiring highly skilled tech talent.

Another element of competition has been the flexible work arrangements which tech companies can offer their employees. Even before COVID-19, remote working and flex-working was an increasing phenomenon in the private sector, especially for tech-orientated roles. Since it hasn't typically offered similar working conditions, the public sector is at risk of reducing its available workforce even further. With substantial discrepancies in private and public sector salaries, the impetus should be on creating a working environment that incentivises the very brightest minds to work for city governments, and to want to stay there once they have started.

The recent COVID-19 crisis has highlighted the fact that such working environments are not simply "nice-to-haves", but actually work in practice. The trend of remote working will continue long beyond the end of the crisis, and it is incumbent on cities to embrace this if they are serious about attracting and retaining talent.

City leaders and IT directors must adapt working practices to attract top talent and to modernise their working structures and capabilities in tandem.

Wheeler discusses how Philadelphia has managed to utilise the significant numbers of non-civil service staff to begin work from home with flex work practices. The practicalities of it rely upon pre-determined conditions – for instance, specific days to work from home are chosen, and meetings, presentations and conferences remain compulsory. These ideas are being experimented with and refined after the impact of COVID-19, and Wheeler aims to have teams working outside of the offices


© City of Winnipeg

**"The success of tech companies in the Winnipeg area is "fantastic for our locale and our economy, but it's horrific from a municipal IT recruitment perspective"**

**Glen Cottick**
Chief Information Officer
City of Winnipeg

## How can cities compete with private sector employers?

- Flexible and remote working
- Counter-cyclical recruiting
- Outcome-focused management
- "Make a difference" narrative
- Tell the 'innovation story'


© City of Pittsburgh

**"Pittsburgh has succeeded in bringing interns on full-time among those people who are interested in making a real difference in the lives of citizens in their community"**

**Heidi Norman**
Acting Chief Information Officer
City of Pittsburgh

for longer periods. This model is something that can be reproduced by other cities, and centres upon proving that targets and outcomes can be met with a workforce not based in central offices.

Mayta, who has successfully managed to implement such schemes in Wichita, puts this success down to his resolve to "run the department on outcomes, as opposed to how much time is being spent in a seat." Hanson says being mission-driven is key in drawing top tech talent into the city. Policies such as work from home and flex-work also help to change the perception of the talent pool to view city government as an innovative place to work.

Implementing these changes, however, is far more complex than simply wishing it. Even after the pandemic, there is an intrinsic political battle that some IT and innovation leaders face in shifting away from the "bricks and mortar mentality".

### Leveraging the public sector narrative

While salary and flexible working arrangements may be hard for the public sector to match, appealing to people who want to feel like they're making a difference is one area where cities can compete. Most city leaders interviewed for this report state that they have had the most success in attracting and retaining talented individuals across all levels when they hire those who in the words of Schoonover, are "socially driven" by the notion of public service and helping people around them.

Goldsmith says that people "want to work in local government because that's the place where there is most direct service to individuals, where they can make the most difference." Norman agrees saying that Pittsburgh has succeeded in bringing interns on full-time because among them are "people who are interested in making a real difference in the lives of citizens in their community." City government is at a distinct advantage, not just when competing for talent against the private sector, but also with respect to the federal and state governments, because it is the place where socially driven individuals perceive they can make the most tangible difference.

How, then, can this factor be stressed and utilised most effectively?

Some cities are seeking to build a strong narrative through outreach. "We really need to tell stories about what we're doing on the innovation side and the data side and what difference we're making," says Schoonover.

One interesting area is focusing on how, for example, tech and innovation can help rid the city of its opioid and crime problems. By honing in on issues that are tangible and emotive, it is hoped that the allure for tech talent towards public service may be even greater. Wheeler refers to Philadelphia's city-wide focus on waste and plastic reduction which, while not designed as a recruitment policy, demonstrates Philadelphia's bid to become greener and more sustainable, which resonates with potential employees. This is even more poignant in the current social climate where young people are demonstrating increasing concern about issues such as climate change. Mayta states that: "For the younger generation it's important to have the ability to do something that matters." ●

# Working within government structures

Government structures, in particular navigating union-based issues, can also prove a barrier in acquiring and retaining talent at all levels of city government. Key obstacles include the "very specific salary bands" and, as Cottick puts it: "The structure, and by structure I mean limitations, on what we can do with other benefits." Schoonover states that one of the "key challenges we run into is that we have seven union contracts". While unions' involvement in training and talent management can be of great benefit to cities, their presence can also prevent them attracting the very best individuals, and then stunt their development in turn.

There are some fundamental flaws and inefficiencies in hiring processes in city government. One relates to the cycles of recruitment which make it difficult to hire the right people in a time-efficient manner. Hanson highlights that the length of time that new roles appear internally and then externally affects how quick it is to hire people. He says: "It's easily two to three months to get someone in the door if you don't find somebody straight away." This is a common issue that is compounded by the lack of flexibility that city governments have in their hiring requirements.

LaGrue notes that while numerous programmes are creating a good talent pool, rigid qualification requirements prevent some talented individuals being hired. Much of this comes down to the inability of IT and innovation leadership to alter job descriptions to match the dynamic, technological environment. Keith Hanson says in Shreveport it took around six months with mayoral support to change the job requirements for certain roles by allowing for relevant experience to equate to conventional college degrees but it at least provided better access to talented tech-minded individuals.

**Empowering employees**

A problem posed by the rigidity of city regulations and union influence is that there is little opportunity for star employees to rise through the pay scales and job roles in the time that they might in the private sector. Norman perceives a key issue to be that "the career pathway is incredibly slow in terms of moving either into a more senior technical role or moving up into management." In many cities, the challenges are not only to attract talent but to empower employees to stay there.

Goldsmith believes that even if there are difficulties with government job structures in attracting people, it is crucial to empower employees, of all levels of experience if you are going to retain them. "People go to work for government because they want to make a difference. If they go to work for a government and they can't make a difference, then they're going to leave."

The worst thing cities can do, according to Goldsmith, is to "bring in young people who are very energetic and idealistic, and assign them inside a bureaucracy of multiple layers where they end up doing commodity work and not making a difference." So, it is the responsibility of leaders within the city to empower their workforce and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>
> **Keith Hanson**
> Chief Technology Officer
> City of Shreveport

allow them to retain a sense of change-making agency despite difficult government structures and competition from other employers.

While the key tenets of trust, authority and support are eminently possible with strong leadership, there will be times when the brightest talent may still feel their innovation capacity is underutilised in the operational realities of city government. Rhee suggests that one solution might be to "find a way for those talents and workforces to interact with non-governmental entities such as industry and academia, in a much more flexible way." Through the medium of public-private partnerships, the most innovative minds have an extra source of fulfilment that might not otherwise be fully realised in the public sector.

There are federal programmes in place such as, the Presidential Innovation Fellows, which can be emulated at a city level. San Francisco is a good example of a well-implemented programme which has succeeded in creating city government-led projects in partnership with private enterprises. To facilitate this programme, the city has both hired in certain innovators, as well as used some of the existing workforce. Indeed, the one-year contracts in place for such employees are not dictated by some of the typical rules of city government. Contracts can be renewed after a year, left to expire, or some members of the programme will choose to become a permanent employee of the city.

It would be fair to say that such an innovation programme can be more easily created by larger cities where budgets are greater but even for smaller cities, Rhee suggests there could be a model for channelling existing city employees to public-private projects which not only would help to extend innovation capacity, but would keep key talents engaged and stimulated within city government. In essence, it is a tactical re-structuring within existing boundaries.

Cities would not necessarily need to create a new programme or new budget, but simply change the trajectory of a small number of employees. By working within existing structures, it is possible for cities to push an innovation agenda and retain talented individuals. ●

## Challenges to retaining city stars

- Fixed salary bands
- Inefficient hiring processes
- Rigid job descriptions
- Inflexible qualification requirements
- Slow career progression

Opposite: San Francisco has set up a programme for city employees to work in tandem with private sector representatives on government-led projects

# Beyond city limits

The policy of city employees having to live within city limits was something that many cities interviewed for this report stated as a hindrance to their workforce development. It has different implications for different cities, but one of the effects of this policy is the reduction of the talent pool available for managers across the city, especially within the realms of IT and digital innovation. The reasons for this are two-fold. First, it fundamentally reduces the number of people available that can be hired. For families especially it is often not feasible to relocate when partners have jobs and children are at school. The second reason is that the expectations of IT-related roles have changed drastically in recent times, and spurred on by habits in the private sector, the notion of working from home and flexible hours has become a reality, and it is a reality that cities cannot match due to this restrictive policy of working within city limits.


For smaller cities such as Topeka and Pittsburgh, a large part of the problem is that it simply reduces the number of people who can work for the city. With populations of 125,000 and 300,000 respectively, both cities have found this policy to be detrimental to attracting top minds. Schoonover bemoans the real difficulties that Topeka faces in competing with neighbouring cities such as Lawrence and Kansas City. Norman also feels that keeping graduate talent within Pittsburgh is a big challenge in an increasingly mobile age. It is not simply the private sector and nearby cities that are attracting potential employees in Pittsburgh, but she is actually "competing in IT with the Bay Area and with Seattle for those new graduates."

Where the requirement to live within city boundaries is most problematic, though, is when it comes to hiring mid-career level individuals. Those with problem-solving and leadership skills are very attractive to the private sector. Wheeler acknowledges that the policy poses an issue for Philadelphia because it is located within the dynamic corridor between Washington D.C. and New York. In his opinion, many people considering a role in the Philadelphia city government would most likely be willing to commit to a commute of sorts to continue living where they wish to. This alludes to what Wheeler describes as "the 1950s mentality of hiring the principal breadwinner."

This report discussed earlier how for many cities it is important to create an identity, a narrative and a culture of innovation to bolster long-term workforce development and there is an argument that city employees need to reside there as part of this.

The feeling among IT directors and Chief Information Officers interviewed for this report is that this needs to be balanced with the high specialist skill-level that is required to execute certain projects and the competition with the private sector which makes these people hard to acquire. ●

# Training and resources

The amount of money invested by cities in training for their workforce on smart cities can act as an indicator as to how these projects rank as priorities within government and equally as a deterrent to attracting and retaining talented employees. According to some CIOs, the lack of tangible investment in smart cities training has led to members of the workforce leaving to work for other city governments that are more likely to invest in their development.

Furthermore, CIOs and CTOs interviewed for this report, including from cities which have strong smart cities programmes, acknowledged that little to no budget is allocated towards specific data-centred training for new members of staff. That is why much of the focus on the report has been placed on how cities can use public-private partnerships and community engagement as ways not only to attract future employees but to develop the skills of their existing teams.

In city government where budgets are usually stretched, one of the common themes is that whilst training for specific positions is integral, a key mission is to see how groups of people can be trained concurrently in a way that utilises resources most efficiently.

The most common form of training is the use of online resources to improve the skills of experienced staff. Online forums and training provide cities with a way of educating the workforce in a budget-friendly way that does not require travel and accommodation expenses. When asked about Little Rock's training direction, Bridges says that almost everything she has leveraged has been through free resources. This is the reality for many cities in the nascent stages of developing smart city programmes, but it is also important for cities with larger budgets. Online training allows for a degree of flexibility and fluidity in the training processes and workforce development, and, not insignificantly, helps to foster relationships with public sector equivalents and potential private sector collaborators. Mayta notes that in Wichita's case: "Most of what we can get is online, we have a lot of discussions, and it is more of a free-flow."

Another form of budget-conscious training that offers city technology and innovation leaders a valuable resource are networks such as the Public Technology Institute and the Bloomberg Harvard City Leadership Initiative. By actively engaging in the meetings and resources offered through these organisations, cities can share and accrue best practice knowledge. For some cities such as Mobile and Little Rock, Bloomberg funding is almost entirely responsible for facilitating smart cities training. This report was compiled by interviewing cities in the US who had attended knowledge-sharing meetings of the Cities Today Institute.

There are of course other forms of development which require investment from cities. Norman describes the pattern of meeting with various managers within the city government to determine which out-of-office training and conferences will be most beneficial. These discussions take place under the basic premise of how to leverage budget dollars most effectively


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**"Most of what we can get is online, we have a lot of discussions, and it is more of a free-flow**

**Michael Mayta**
Chief Information Officer
City of Wichita


**“The challenge and opportunity in the digital world is to be inclusive in the outreach to communities**

**Stephen Goldsmith**
Professor of the Practice of Urban Policy and the Director of the Innovations in American Government Program at Harvard’s Kennedy School

from a skill-set standpoint, but also which forms of training can be useful for numerous members of staff simultaneously. Often these training sessions are hosted by private sector partners as an enabler of public-private partnerships. Nickles details how Greensboro sends IT and innovation workers to different private sector companies dependent on their remit. For instance, they would likely send network engineers to Cisco, whilst they might choose to send systems engineers to Microsoft.

Cities are also developing internal programmes. Philadelphia has been running its Innovation Academy – similar in set-up to Denver’s PEAK Academy – since 2015, as a way to train employees in creative problem-solving, communications and advocating for new ideas to guide their respective departments. The Academy includes a combination of broad-based and specific cohorts, including one which is centred on the Office of Information Technology’s need to gather a team for its upcoming digital transformation project.

This Innovation Academy draws inspiration from cities’ increasing need to focus on process and change management. Philadelphia’s CIO, Mark Wheeler, has implemented an 80:20 guideline, whereby technology will only solve 80 percent of issues, whilst process and change management will be responsible for the other 20 percent. As well as the Innovation Academy, Philadelphia has partnered with a local university to create a two-day-per-month course over six months designed to get project managers and IT directors aligned with process management expectations.

This prioritisation is being mirrored in Altamonte Springs, where Martz notes that the crux of training in smart cities areas is focused on internal management development programmes, and that “teaching people about data is the second phase.” Rather than being blinkered by technology, Martz is focusing on broadening the management potential of the city government, in particular middle managers. Several other innovation leaders, generally from larger cities, mentioned that process improvement is a key objective in their training ambitions.

Beyond process and change management, IT and innovation directors across US cities are also having to consider how they can facilitate the re-training of internal staff in alignment with new technologies and the advent of automation.

Norman in Pittsburgh highlights the difficulties in re-training the existing workforce to adapt to automation, and the necessity to work closely with unions regarding the re-skilling and expectations of the workforce. For many employees, it is an uncomfortable experience which is unfamiliar, and so a certain degree of “hand-holding” is required to get some of the workforce up to the levels expected. All of this, though, can be achieved if department leaders clearly outline a reasonable time-frame, and offer sufficient support to ensure that workers do not feel like they are being side-lined and replaced by technology.

This was a particular point of discussion at the City Leadership Forum in New Orleans, where Steven Strauss, visiting professor at the Woodrow Wilson School of

## Up-skilling on a budget

- Tap free online resources
- Join collaborative networks
- Organise private sector placements
- Set up internal academies
- Launch retraining programmes
- Target development for underserved populations

Princeton University, explained the realities of automation, and the demographics it is likely to affect. It is all too easy for technology to expand inequity, both through access and through its implications. Strauss explained that the advent of automation will disproportionately affect minorities, especially African-Americans and Hispanics. This is something that city governments must be aware of and look to ensure that the benefits of innovation do not purely aid the most privileged.

As Goldsmith says: "The challenge and opportunity in the digital world is to be inclusive in the outreach to communities" and this applies as much to workforce development as access to services.

Strauss also highlighted that there is an irrefutable correlation between family income and college attendance, and that intergenerational mobility in the US is very low.

As a result, some cities are emphasising soft skills rather than qualification-based hiring policies. LaGrue cites the Strive NOLA programme in New Orleans, developed by the city's Workforce Development Office to ready under-served populations for the job market. Those who participate in the programme will often be fed into technology opportunities in the public or private sector. LaGrue explains that they have graduated fifteen cohorts in the last three years and that the city has also worked to move other roadblocks in the way of new employment, for instance through its Returning Citizens Programme where the city is seeking to facilitate opportunities for felons returning to the workplace.

By directing workforce development programmes towards under-served areas of society, city governments can help develop a talent pool. If citizens believe that the government respects them, trusts them and values their opinion, then they will be responsive to policy, even the more contentious ones. Furthermore, if citizens admire how city government operates, they will be more inclined to consider seeking roles within the administration themselves. ●

# Case Study: The Data Science Federation, Los Angeles

In 2017 Los Angeles launched the Data Science Federation (DSF) as a collaboration between the city and local colleges and universities. It partners city departments with academic institutions on a project basis to solve some of the city's challenges through data-driven innovation.

It is a fantastic example of how partnerships between city departments and educational institutions can not only help to solve complex issues, but also aid the workforce development goals of a city. To date, the DSF has launched over 40 projects and set in motion the prospects for a diverse future talent pool for LA. It was the winner of the Governance and Finance Award at the 2019 Smart City Expo in Barcelona.

**Birth of the DSF**

The DSF is the brainchild of Jeanne Holm, former Deputy Chief Information Officer and Chief Data Officer of Los Angeles, who was promoted to Deputy Mayor for Budget and Innovation in November last year. Holm, who has been a professor at UCLA for over 20 years, conceived the Federation as a means of tackling multiple different challenges in one collaborative initiative.

The first of these was the growing demand from young people to make a difference. "I noticed a trend in my classes where students, especially this generation of students, really want to have an impact quickly in the workplace," says Holm. The notion of social consciousness among young people and the expectation to make a difference, regardless of seniority, is something that city governments can work to their advantage in seeking to attract young talent.

The second issue that the Federation sought to tackle was the education of the existing city workforce. Holm calls it "the need to educate some of our older workforce on some of the newer techniques of data science." In the era of digital transformation, one of the major issues facing cities today is how re-train their existing workforce so that they can deploy technologies to improve effectiveness and efficiency.

A third challenge was that Los Angeles was facing the prospect of a disproportionate amount of pending retirements among city employees. An estimated 18,000-20,000 employees, approximately 40 percent of the workforce, are due to retire in a four to five-year period. Therefore, Holm recognised that from a practical standpoint, the city needed to ramp-up its workforce capabilities and provide a stream of incoming talent to city government.

**Putting data to work**

At the crux of the Data Science Federation is the goal of using data to solve real and complex issues that the city is facing so the driving force behind which projects take flight are the city departments themselves.

Holm states that it is down to departments to come up with project ideas "which they feel would probably be better informed by data, even if they don't have the data or don't know how to do it."

Holm and a colleague from the Data Science team in LA form the backbone of internal management of the DSF, and they work with the city departments to craft ideas into data-based projects for their partners to undertake. They issue a call for proposals each year and work on


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**"I noticed a trend in my classes where students, especially this generation of students, really want to have an impact quickly in the workplace**

**Jeanne Holm**
Deputy Mayor for Budget and Innovation
Los Angeles

**A great focus is placed on engaging all departments across the city, and Holm and her team actively reach out to those who might not have participated as much**

them over two months, trying to organise nascent ideas into formal proposals that they feel can be accomplished.

A great focus is placed on engaging all departments across the city, and Holm and her team actively reach out to those who might not have participated as much. An example of this is the zoo in LA. Having not participated, Holm says they "doubled down and had some long conversations about different ideas, and now they're doing three projects." This illustrates that even the departments that don't have an IT focus are beginning to understand how data can better inform their operational needs.

To establish a working model for the DSF, the city needed to partner with universities and colleges across the region that would be willing to work on the data projects in conjunction with the city. The Federation now has 18 active participants and is made up mainly of universities and community colleges, but the team also works with high-school programmes.

Holm highlights three ways in which the partnerships can work:

1. First, a specific university or college and the relevant class work to achieve a project within a semester or quarter, dependent on the term structure. "We craft that into a ten-week data science project that could be done by students and professors at our amazing local universities, and we have so many in Los Angeles," explains Holm. There is a flexibility in the way that projects are assigned, although Holm recognises there were "teething issues" in the beginning. Now they have become effective at scoping projects which generally conclude at the end of the semester; but if there is a particularly complex idea, they will form two projects out of it. An example of this was an analysis of affordable housing in which the first project consisted of the data collection and analysis, and the second focused on visualising the data through a dashboard.

2. A second structure sees city departments work with students who have particular passions around areas of research, and are often working towards a master's degree or PhD. They can individually choose projects and essentially serve as an intern to city departments.

3. Finally, there is the summer programme in partnership with the Chamber of Commerce which focuses on low-income neighbourhoods. Inclusivity and diversity are key tenets of the programme and the structure brings this to the fore. The requirements are that individuals come from a low-income neighbourhood and are enrolled in any university, college or community college in the LA area.

**Funding**

Holm and her team do not receive any for-profit sponsorship to run the programme, and she has established a way to ensure that it runs at no additional cost to the city other than utilising its existing resources. After initially offering small stipends to universities, the bureaucratic difficulties of doing

so outweighed the benefits, and the DSF has managed to develop a structure that brings support and funding to universities in other ways.

The DSF provides the data for the projects as well as overviews and plans. Importantly, it also provides project leaders both from the relevant city department as well as from the data science team to ensure there is the necessary support. The university also has access to the city's data analytics infrastructure. Not only is almost everything done open source, but the city also helps with the provision of cloud hosting free of charge.

Holm notes that the city is "very aggressive with grant opportunities with universities." It has been able to get out approximately US$1.5-2 million to university partners based on projects it has submitted. An example of this was a grant for machine learning and computer vision from the Toyota Mobility Foundation.

Holm says that the city tries "to build even deeper collaboration and funding" beyond the projects being done. This at its core helps to develop the mutually beneficial relationship between cites and academic institutions.

Crucial to the effective governance of the DSF was the establishment of data agreements between the city and the universities. "Getting the legal frameworks in place early on is important," comments Holm.

In many cases, the projects require students to handle sensitive data and Holm says the agreements were put in place by the city attorney and the legal departments at the universities in a relatively painless process.

Ten percent of DSF students end up working for LA's city government

There is the occasional case in which difficulties arise – Holm gives a predictive analysis on homelessness as an example.

However, the fact that a considerable proportion of projects focus on open data means that this is kept to a minimum. Key to avoiding conflict has been maintaining open channels of communications and dialogue, and, if necessary, undertaking a specific case review.

## Expanding the DSF

One indicator of the success of the DSF was the expansion of the programme in 2019 to a local regional network of 88 other cities. This consortium of cities and, by proxy, academic partners, now extends from South California to Arizona.

The Federation set up the data-sharing agreements with each of the regional universities so that the uptake of projects from new cities has been as smooth as possible. The DSF has also assisted with the ideation process for new cities looking to engage in projects and helped to match them with a suitable local university. It is a careful balance. "We stay connected to make sure it succeeds, but we also don't want to get in the middle of directing how another city wants a project," explains Holm.

At the crux of the expansion of the DSF is diversity – not just in the students it engages but the cities as well. The cities that

**In 2020, 50 percent of the university professors with active projects are women, and 80 percent of the city leaders are women**

are involving themselves in the programme are generally in the 50,000-100,000-person range, and not all of them have experience implementing data science in government. Holm notes that whilst some may have a chief data officer or open data portals, the DSF is there to help them embed data science in their governance culture.

**Focus on equity and diversity**

When discussing the work of the DSF, Holm speaks with real passion and vigour about how hard LA is trying to tackle issues of inequity and lack of diversity – the structure of the programme reflects this.

A real focus is placed on not just tapping into top-tier universities like UCLA, but accessing all levels of universities, community colleges and in some instances, high schools. A great example of this is the work being done with Cal State, LA where around 95 percent of students come from LA, and the majority stay on in the area after graduation, but where much of the student population come from low-income backgrounds.

"We have an amazing set of professors there, and students with crazy amazing ideas and they've been so effective with DSF projects," adds Holm. This is evidenced by the fact that nearly US$900,000 of the US$1.6million in grant money has gone to Cal State. This money has contributed to the university building a new data science department with research labs and being able to take students on for projects.

Gender equity is another key issue that Holm and the DSF are keen to address, in line with the wider policies of Mayor Eric Garcetti. In its early stages, they realised that it was largely men proposing projects, and largely male professors relaying the projects. To combat this, they actively sought out female participants – and did so with resounding success.

In 2020, 50 percent of the university professors with active projects are women, and 80 percent of the city leaders are women. There is no rocket science behind this. The DSF simply realised it was not representative and sought to change this through active and thorough engagement.

**Results and impacts**

The DSF has helped to realise many goals from an operations and workforce development perspective:

- **Solving government issues through collaboration with no call for new budgets**
  Holm says that the results of numerous projects have been fantastic, and with the help of professors looking to be cutting edge, the classroom structure has seen students "come up with some very innovative techniques that we wouldn't have thought of as a city."

- **Educating the existing city workforce in data practices**
  Bringing current employees up to date with digital modernisation is another key objective, and doing so in concert with universities is an effective means. Holm notes that the programme educates in a way "that is co-learning, so there is no judging." A lot of data science techniques and tools, such as Tableau, for example, are not highly complex, and it is more a question of familiarisation than having a stream of qualifications. In this sense, large swathes of city government are obtaining data training in a manageable and sensitive way.

- **Augmenting the city talent pool**
  The effect the Federation has had on the city talent pool is already significant, and will only increase with time as the programme continues. Holm notes that about ten percent of students participating in DSF programmes end up working for city government – an astounding statistic. She says that "once they get a taste of how big an impact they can have as a young person, some people are just committed for life". Beyond simply familiarising students with the work the city does, LA has sought to make the


The programme focuses on not just tapping into top-tier universities such as UCLA

> **“We want to do it in a way that really emphasises equity so reaching out to not just universities but community colleges and even high-school programmes**

**Jeanne Holm**
Deputy Mayor for Budget and Innovation
Los Angeles

transition from student to city employee as simple as possible. Civil service tests can be taken in the Junior year, and results remain active upon graduation. In Holm’s words: “We get them into the process before they are even considering other work.”

- **Promoting equity in a digital age**

The drive for equity and inclusivity is fundamental. The DSF actively works with students and academic institutions of all backgrounds to break down the digital divide. The city now provides two free years of community college for high-school graduates – college enrolment increased by 40 percent as a result. As such more students from low-income backgrounds have the opportunity to join projects run by the Federation, and to find roles in the tech world which previously may have seemed impossible.

The DSF ties in much of the other work that Holm and the city of Los Angeles are engaged in towards inclusion. For example, the Find Your Future programme serves as an online job portal for young people aged 14-24 who are neither in education nor employment. The platform’s algorithms pair participants’ interests with career jobs that are close to home and require no further qualifications. The programme analyses a person’s life skills and provides them with a softer landing into roles with participant organisations.

The work at local government level will continue to reach deeper into communities to try and counter the inequity and lack of opportunity highlighted across 2020.

“We want to do it in a way that really emphasises equity so reaching out to not just universities but also community colleges and even high-school programmes,” says Holm.

Her efforts will not only help build stronger workforces but will leave a legacy of like-minded communities across the nation and shows how one city can drive societal change if others are prepared to listen. ●

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