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# **Digital Innovation: Building a Data and Technology Plan for the 21<sup>st</sup> Century**

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# SUMMARY

## QUESTION: HOW CAN NEW YORK CITY BUILD A COGENT, ROBUST AND EQUITY-FOCUSED DIGITAL INNOVATION PLAN AND INFRASTRUCTURE?

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### WHY IMPORTANT:

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1. *The pandemic shows us how crucial the virtual world is for accessing education, employment opportunities, and vital services.*
  2. *From an economic development perspective, there is little chance employers can thrive without a reliable network. Thus, cogent, robust and equity focused digital strategy is critical for future city life and economic livelihood.*
  3. *Digital innovation has become the building block for more fair, equitable, and efficiently delivered municipal services. Absence of city data and technology can hamper program access to the most vulnerable New Yorkers, hobble economic development, and will increasingly stall other innovation efforts.*
  4. *A new digital innovation plan and infrastructure should connect the assets and institutions the city already has within city limits. This will save the city money, while boosting services.*
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### RECOMMENDATIONS:

1. *Create a Deputy Mayor of Technology Transformation*
2. *Restructure the primary digital agencies*
3. *Draft a digital transformation plan*
4. *Conduct a Partnership Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis*
5. *Establish Memoranda of Understanding's with Institutional Partners*
6. *Identify Routines and Process Points*



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## CONSTRAINTS:

1. *Making this digital transformation plan and infrastructure come to life demands executive leadership that only the next mayor can provide, as well as an expectation and requirement that individual agencies craft the details which is difficult to coordinate.*
  2. *The next mayor and team may be unable to connect existing city assets and institutions within the city limits.*
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## OVERVIEW

New York City has a long and well-deserved reputation as an innovative trailblazer. This is due partly to its large size, capacity, and a talent-rich municipal workforce. But, when it comes to data and technology, the City's track record is less impressive. New York is home to a number of standout initiatives, but, taken as a whole, is not seen as the field leader it should be. With the critical importance of broadband access and the conversion of most all services to digital platforms, this is an area that must improve – and fast. As a complementary set of recommendations from Cornell Tech states, “despite some notable achievements over the years...city technology is slow to evolve, costs too much and underperforms in many respects.”<sup>1</sup>

This is not all that surprising as a few individual agencies have garnered significant attention, but, for all the isolated success, New York simply lacks a citywide strategy. This absence is more than an oversight. It hampers program access for the most vulnerable New Yorkers, hobbles economic development, and will increasingly stall other innovation efforts.

To assess where New York is and needs to go, we have reviewed hundreds of articles about contemporary municipal innovation with a keen focus on data and technology

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<sup>1</sup> Rohit Aggarwala, Michael Bloomberg, Victoria Woo, Rebecca Lassman, Adrian Silver, Phillip Ellison, Matt Stempeck, and Michael Samuelian, “Rebooting NYC: An Urban Tech Agenda for the Next Administration: Draft for Discussion,” *Jacobs Institute at Cornell Tech*, May 2021, <https://cpb-us-w2.wpmucdn.com/sites.coecis.cornell.edu/dist/4/371/files/2021/05/Rebooting-NYC-1.pdf>.



specifically. And, we conducted an intensive set of focus group interviews with ten tech nonprofit leaders and officials who served Mayor Bloomberg and Mayor de Blasio. We also leaned heavily on the more fine-grain detailed mayoral agenda published by Cornell Tech, entitled *Rebooting NYC*. The universal consensus is that New York needs a digital strategy and an operational plan to support it.

Digital innovation is no longer a nice to have; it is THE building block for more fair, equitable and efficiently delivered municipal services. Living through the pandemic has shown us all how crucial the virtual world is for accessing education, employment opportunities, and vital services. And, from an economic development perspective, there is little chance employers can thrive without a reliable network. The impact on residents cannot be overstated. We can no longer apply for rental assistance, enroll our children in school, or apply for basic permits without effectively engaging digitally with City Hall.

Of course, there are many services that are and should be administered physically, such as sanitation and in-class instruction. But a cogent, robust, and equity-focused digital strategy is critical for future city life and economic livelihood. One official noted, “there is a physical and a virtual world, and New York just does not have a sense, orientation, or strategy when it comes to the digital reality that we live in now.” Another official noted, “the fact is we just have not fully [and forcefully] established a digital [infrastructure] and plan for the entire city — it hasn’t been built yet and it needs to be.”

To be clear, this is an area where New York has many built-in advantages that will enable us to excel. We have a rich and diverse set of tech-oriented universities that can provide needed data capacity and analysis; one of the most creative start-up communities in the world that can address new challenges with quick-turnaround prototypes; and a wide range of tech-oriented nonprofits that can advance programming in all five boroughs. Put another way, this is not a strategy about charting an entirely new course or building bright new shiny objects, but connecting the assets and institutions we already have within city limits. And, excelling in this area will save the City money, while boosting services. But, make no mistake, these are complex issues that must be taken on with focus, commitment, and patience. If done well, New York will once again be an innovation trailblazer for years to come.

What follows are a set of categories that together constitute a holistic data and tech strategy that will propel New York forward. Rather than one big recommendation you will instead read about a set of principles, examples and approaches that comprise a plan for the next wave of New York innovation. Making this plan come to life demands executive leadership that only the next mayor can provide.



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# NEW YORK NEEDS STRUCTURE

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## State of Affairs

Before any digital strategy can progress, New York needs an organizational overhaul. This is not about tinkering with the actual mechanics of agency operations, but clarifying basic mission, roles, and reporting arrangements. Put simply, New York needs a digital org chart.

Right now, it would be hard to imagine New York supporting a more confusing and misaligned arrangement of tech roles and responsibilities. There is little sense as to who reports to who and who is responsible for what. Take just one example, the commissioner of the Department of Information Technology and Telecommunications (DoITT) and the City's top tech official, the Chief Technology Officer (CTO), report to different deputy mayors. An even greater concern is the ever-multiplying number of job titles and offices. Since 2011, the City has added the following: Chief Digital Officer, Chief Technology Officer, Chief Analytics Officer, and Chief Privacy Officer. There are also a number of other high-profile, but fairly isolated efforts, including the Mayor's Office of Data Analytics; the Design Studio at the Mayor's Office for Economic Opportunity, which supports improvements in the area of equity and poverty reduction; and the NYC Cyber Command, which is its own agency overseeing digital security citywide. All the while DoITT, the City's largest data and tech department, has risen six-fold in staff size and taken on far more responsibility, including managing the 311 system and all tech-related franchises and license agreements.

Taken together, this new office and agency growth have led to the development of important new initiatives, but internal confusion has reached a peak level. More than that, the expansion of new positions and offices has served as a 'work around' the most dysfunctional aspects of municipal data and technology services.

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## Precedent

There are no examples of New York reorganizing its data and tech functions, as the field is still relatively new (DoITT itself was only formed in 1994 and most other agencies in just the last decade). But there is certainly precedent for New York tackling such a significant management rethink in other areas. Take the example of workforce development and job training. At the beginning of the Bloomberg



administration, employment training was seen as a priority and one that should be treated as an economic development function rather than a social service. The answer was to merge the former Department of Employment with the Department of Small Business Services. This had the benefit of workforce staff being more accountable and oriented to the private sector and reporting up to the Deputy Mayor for Economic Development. This one move led to a sea change in the field and boosted the reputation of employment programs in the eyes of local employers. Similar restructuring has occurred in areas of education and housing. Past organizational reform has proven that, while the size of city government in New York is enormous, a reorganization can make an impact. New organizational structure and mission — done thoughtfully and with purpose — can provide needed focus and transform services.

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## Recommendations

### *1. Appoint a Deputy Mayor for Technology*

New York needs a complete overhaul of its digital approach, culture, and operations. This means one person must be in charge and have a direct line to the mayor. Calling for a new deputy mayor is not a move to be taken lightly, but, based on numerous interviews with city leaders in the business and civic community, it is absolutely necessary.

One way to think of this role is as a big, but temporary move. This position is a bit like the period of time when New York needed a deputy mayor for “rebuilding” after 9/11. We need a deputy mayor to construct — for the first time — a digital culture and accompanying infrastructure citywide. The new deputy mayor will have several big responsibilities, from overseeing the architecture of all data and technology systems to negotiating with tech giants like Airbnb and Uber to ensure New York gets its fair shake.

When hiring for this position, we recommend someone with wide recognition in the technology field, but also someone who is well versed in change-management and organizational culture, as there are many institutional egos and administrative layers that will need to be brought together. To guide the search process, we drafted the following job responsibilities:

- Craft a vision: In conjunction with the mayor and a diverse set of New Yorkers, establish guiding data and technology vision and a set of principles for the City.
- Manage all direct technology reports: Manage all technology agency chiefs (the equivalent of CTOs or CIOs) and oversee a restructuring plan for the Department of Information Technology and Telecommunications.
- Change management: Ensure new principles are adopted throughout city government from the commissioner’s suite to the front of the line.



- Standard setting: Design citywide data standards and establish an accountability mechanism so they are widely adopted.
- Guaranteed universal access: Identify the myriad ways in which New Yorkers are not accessing services digitally and devise strategies that can overcome these barriers. Manage a universal broadband strategy and oversee the millions in federal funds dedicated to support that effort.
- Manage private sector negotiations and contracts: This is a wide area that includes revising New York’s vendor contracting system, managing and improving all franchise agreements, and establishing new protocols and strategies for regulating and working with tech incumbents (e.g., Uber and Bird) and start-up enterprises alike.
- Support a tech-based economic plan: Jointly develop an economic development tech plan with the deputy mayor for economic development and serve as an advocate for the tech community in all jobs-oriented negotiations.

## 2. Restructure the Primary Digital Agencies

On a parallel track, the new mayor and deputy mayor will need to engineer a significant restructuring of the existing technology agencies. Effective technology deployment demands consistency, partnership, and clarity of purpose. Right now, New York possesses few those traits.

To do this, we recommend reviewing the Cornell Tech recommendations in the detail-rich *Rebooting NYC* report. As a complement to those restructuring recommendations, we urge the next mayor to:

- **Reform and restructure DoITT**: Having just one agency focused on the City’s hardware and software needs is critically important. The good news is DoITT was established to do that work and it should continue to do so. Unfortunately, it has taken on a myriad of other responsibilities and its staff count has spiked six-fold in the past 20 years. The agency should be pared back to its core functions while also soliciting input to improve those functions going forward.
- **Establish genuine CTOs at every agency**: All agencies have someone broadly in charge of IT responsible for backend and workaday tech needs — a position typically thought of as a “Chief Information Officer (CIO).” But many agencies do not have a “Chief Technology Officer (CTO)” — an official leading digital transformation, improvement, and resident engagement. Every agency needs an empowered CTO to serve as an agency-wide champion and liaison and report to the new deputy mayor. Such a CTO needs to have the authority to negotiate with external stakeholders and relevant assistant commissioners to ensure all aspects of technology are of a high-quality and broadly accessible.
- **Establish a citywide digital service unit**: New York needs a central unit staffed with high-talent designers to help individual agencies improve existing





services and advance creative new approaches. This is an approach that has been pioneered at the federal level through the U.S. Digital Services and a program called 18F. Luckily, New York already has a model effort based at the Mayor's Office for Economic Opportunity, the NYC Service Design Studio. This small team is focused on services citywide that connect to poverty and economic mobility, mainly assisting human service agencies, but can be better resourced and its methodologies incorporated into more domains.

- **Report digital progress to city council:** It is an annual rite of passage for agency commissioners to prep and present in front of city council during budget season. The department chiefs defend budget requests and agency performance by way of tense councilmember probing. We recommend a similar set of briefings around digital services. Agency CTOs (and/or CIOs) should present annually on individual plans, reforms, and spending. This will have the benefit of providing accountability, council input, and transparency to what will surely be significant reform. We recommend organizing the briefings around key principles such as access, equity, efficiency, and cost.

### *3. Draft a Digital Innovation Transformation Plan*

Similar to PlaNYC and other master urban plans, the new deputy mayor should lead and then be held accountable for a citywide digital plan. This is something that many cities now have: well-designed and publicized documents that clearly state digital priorities, goals, values, and reform plans.

To be clear, an effective digital plan does not get into the minutia of what operational improvements are needed. It is more a vision document, a reference point for city agencies and New Yorkers alike. The plan is a clarion call with the full-throated support of the mayor, with the expectation that individual agencies will craft the details.

The good news is the City has been awash in such plans over the past decade. Many of them are quite good, and reviewing these reports should be the starting point. In fact, there is every reason to believe that a transformation plan for the City will not look all that different from past efforts. The Bloomberg administration issued a series of digital master plans. In 2013, BetaNYC issued the People's Roadmap, which provides a community resident-oriented set of recommendations. In 2016, the de Blasio administration released the NYC Digital Playbook, an equity-focused effort led by the then-Chief Digital Officer, with support from Bennett Midland and the Public Policy Lab. And, the current CTO issued an Internet Master Plan.

The issue is that past plans have lacked one of the following key elements: full support from the mayor; a clear transformation agenda, and/or input from a diverse set of New Yorkers, including the most vulnerable and digitally unconnected.





To effectively compose a comprehensive citywide digital plan, a varied body must be convened to represent the disparate perspectives of a city as diverse as New York. The effort, led by the new deputy mayor for technology, should engage in the following process:

- **Document review:** Begin by reviewing and assessing all major plans produced by and for New York City government over the past fifteen years.
- **Set open hours for input:** Establish temporary neighborhood drop-in centers throughout the city that allow citizens to provide informal feedback and suggestions (something Atlanta recently did to great effect with its master plan revisions).
- **Agency audit:** Consult with agencies to determine the greatest pain points that preclude tech creativity and reform.
- **Equity audit:** A focus group and service journey process should be designed to identify technology access challenges faced by vulnerable populations (e.g., immigrants, people with disabilities, low-income New Yorkers). A group like the Public Policy Lab or the Government Alliance on Race and Equity could assist with this process.

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## NEW YORK NEEDS PARTNERS

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### State of Affairs

No city can effectively advance data and technology services without support from outside collaborators. Partners are needed to help store, manage, and ensure the confidentiality of the rapidly growing amount of big (administrative) data; expand broadband and digital literacy for all New Yorkers; and pilot new digital service improvements.

New York possesses a wealth of institutions and companies that can address these exact needs. But the City has never articulated an engagement strategy, nor clarified the strengths and limitations each potential partner possesses. The result is a lot of activity, but nothing close to the benefit the City should be receiving from its partners. As one former official noted, “We need partners to deliver clear objectives rather than simply doing stuff together or allowing partners to do their thing where they can.” New York needs to distinguish between collaborations that are temporary, lightweight, random, and one-offs, and those that are true long-term partnerships with concrete goals and accountability measures in place.



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## Precedent

While not organized as a clear strategy, New York is home to a wide range of standout tech collaboratives.

When it comes to university partnerships, few locales compare in terms of scale and experimentation. The Applied Sciences Competition led by the Bloomberg administration resulted in a new engineering campus on Roosevelt Island and major K-12 partnerships with city schools. As part of the same competition, NYU established the Center for Urban Science + Progress, which is centered around a memorandum of understanding (MOU) data partnership agreement with the City. And, the City University of New York (CUNY) provides tech skill development to students and working adults in all five boroughs.

New York is also home to a number of dynamic tech-oriented nonprofit partnerships. BetaNYC provides data training programs for residents, including customized classes for community boards and other civic organizations. Blue Ridge Labs at Robin Hood steadily turns out high impact nonprofit and for-profit technology-based start-ups focused on the needs of low-income residents. The Public Policy Lab has become a leader in human-centered policy design and has worked closely with multiple city agencies to restructure programs and draft citizen informed plans. Civic Hall is a unique facilitator of tech activists, companies, and start-ups looking for a neutral space to develop new ideas. And, Tech:NYC is an effective convenor of private sector players who want to interface with and support the City.

And, the City has a track record of engaging the private sector to develop new service improvements. For several years, the Economic Development Corporation sponsored the BigApps competition, which matched entrepreneurs with government data challenges. More recently, the Partnership for New York City established the Transit Tech Lab that pairs agency needs with local companies to prototype digital transportation solutions.

Taken together there is no shortage of useful city collaboratives. What's missing is a strategy guiding partnership efforts at a high level. Take just one example: BetaNYC is an effective nonprofit that has long provided digital assistance to community boards, yet there is no city official or agency that has come out and said: "we need community boards to be digitally equipped and BetaNYC will be our designated vehicle to make this happen." Without this clarity, stated objectives, and accompanying resources, New York will continue to host a string of useful, but stunted collaboratives. Put another way, New York has many scattered partnerships that *help* address its greatest challenges, when it could have partnerships that *so/ve* them. What's needed is a thorough assessment of existing needs, potential partners, and a game plan so the whole is greater — much greater — than the sum of its parts.



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## Recommendations

### *1. Conduct a Partnership SWOT Analysis*

We recommend working with a neutral organization to conduct a comprehensive assessment of partnership opportunities throughout the five boroughs. The assessment should be guided and bounded by just a few major priority areas, such as big data analysis, service experimentation and improvement, education and workforce development.

### *2. Establish MOUs with Institutional Partners*

The most critical step in any civic partnership is committing to it! Doing this necessitates an agreement that is codified — through an MOU, contract, or other binding document. There is no set template for the document, but it must be clear, concrete, and public. Such an MOU clarifies the benefits that should accrue to both parties and possess some measure of accountability. New York is no stranger to such arrangements. The City developed fairly effective MOUs with Cornell and NYU as part of the Applied Sciences Competition. Those MOUs survived two mayoral administrations and have led to both institutions sticking to the originally determined contours of university/city engagement.

### *3. Identify Routines and Process Points*

The final—and no less crucial—element of effective partnership is a commitment to routines. Once goals and arrangements have been set, there must be an agreed upon mechanism for ongoing communication and actual work. Engagement must include both senior and administrative leaders. One arrangement that could work is the mayor meeting biannually with university presidents, top business leaders and nonprofit executives to discuss partnership activity and areas for improvement. At the same time, an annual administrative summit could be held with agency commissioners, deans and program directors. Each of these efforts could be facilitated by a neutral enterprise such as a local philanthropy to ensure that all sides are actively and fully participating.

