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**THE COUNCIL OF THE CITY OF NEW YORK**

##### BRIEFING PAPER OF THE INFRASTRUCTURE DIVISION

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**COMMITTEE ON TECHNOLOGY**

Hon. Jennifer Gutiérrez, *Chair*

**August 10, 2022**

**Oversight: “Failure of NYCs Technological Response Under Critical Demand”**

1. **Introduction**

On August 10, 2022, the Committee on Technology, chaired by Council Member Jennifer Gutiérrez, will hold an oversight hearing on *Failures of NYCs Technological Response Under Critical Demand.* Witnesses invited to testify include representatives from the New York City Office of Technology and Innovation (“OTI”) (formerly the Department of Information Technology and Communication (“DOITT”)), as well as advocacy groups and organizations, other interested stakeholders, and members of the public.

1. **Background on OTI**

OTI was designated as such this year by Mayor Eric Adams’ Executive Order No. 3, which also clarified that OTI has authority and oversight with respect to all New York City (“City”) information technology, information security, information privacy and telecommunications; and that OTI shall exercise all the powers conferred upon it by Chapter 48 of the City Charter.[[1]](#footnote-2)

Chapter 48 of the City Charter outlines OTI’s powers, which include but are not limited to the power to:

* plan, formulate, coordinate, and advance information technology policies for the City;
* develop, maintain, and implement a long-range telecommunications strategy;
* participate in developing, maintaining, and implementing a long-range computer systems strategy and data communications strategy;
* assist in providing interagency coordination on matters related to data communications activities and interfacing of computers;
* provide appropriate, reliable, cost-effective, and responsive computer and **data** **communications services to agencies** that require such services by purchasing and maintaining hardware, software, and such other goods and services as may be necessary to effectively discharge the powers and duties of OTI;
* **provide assistance to agencies** in meeting their data processing and data communications objectives;
* **provide agencies** using or proposing to use OTI’s services with **technical assistance** in determining feasibility and resource requirements;
* simplify access to shared information, reduce communication costs, and provide access to multiple computer systems by connecting computers and terminals of various City agencies;
* plan and provide telecommunications coordination in support of disaster recovery; and
* ensure security for data and other information handled by OTI.[[2]](#footnote-3)

Furthermore, pursuant to Executive Order No. 3, “In carrying out its duties, the Office of Technology and Innovation shall coordinate with and oversee the Offices of Cyber Command, Data Analytics, and Information Privacy, all within the Office of Technology and Innovation.”[[3]](#footnote-4) Pursuant to the Executive Order, OTI is the lead agency in the development, coordination, and implementation of the City’s information technology, information security, information privacy and telecommunication matters.[[4]](#footnote-5)

1. **Examples of City Websites and Applications**

The City and its agencies create and maintain a number of websites and mobile applications, either independently or through third-party vendors. These websites and applications are part of the City’s relationship with its residents, and are some of the primary ways through which the City delivers and manages its services. For instance, NYC 311 has both a dedicated website and mobile application through which users can submit service requests and obtain essential information.[[5]](#footnote-6) Additional examples include specialized web portals such as the City Department of Building’s (“DOB”) *DOB NOW[[6]](#footnote-7)* and Department of Housing Preservation and Development’s (“HPD”) *Housing Connect[[7]](#footnote-8)* through which they administer permit application processes and the affordable housing lottery application system, respectively.[[8]](#footnote-9) Essentially, City agencies use their websites and mobile applications to facilitate a variety of public services, creating a technological presence that can take the form of information hubs, application portals, public service announcement bulletins, and virtual government aid delivery.

See below for more examples of websites and applications associated with the City and its agencies:

* Websites:
	+ *myschools.nyc*, a portal for City public high school applications run by the City Department of Education (“DOE”);
	+ *NYC Open Data*, the City’s public dataset repository managed by the Mayor’s Office of Data Analytics, OTI, and third-party vendor Socrata;
	+ *Vax4NYC*, the City’s vaccine appointment scheduler run by the Department of Health and Mental Hygiene (“DOHMH”);
	+ *NYC Event Permits*, an online permit portal that allows for account-sharing between the City’s Department of Parks & Recreation, Mayor’s Office of Media and Entertainment, and Street Activity Permit Office; and
	+ *ACCESS HRA*, an online web and mobile platform that hosts the City’s social services like Supplemental Nutritional Assistance Program (“SNAP”) benefits, managed by the City’s Human Resources Administration (“HRA”)/Department of Social Services.[[9]](#footnote-10)
* Mobile Applications:
	+ *NYC ACCESS HRA*, the mobile application version of the ACCESS HRA website with HRA as the listed developer (for Android mobile operating system) and DOITT as the listed developer (for Apple mobile operating system);
	+ *Ready NYC*, which allows users to store information for an emergency plan like emergency contacts and meeting places, with the City as the listed developers (for Android mobile operating system) and DOITT as the listed developer (for Apple mobile operating system);
	+ *DYCD docUP*, a mobile application that allows for secure user uploaded documentation to support applications for Department of Youth & Community Development (“DYCD”) programs, with DYCD as the listed developer (for Android mobile operating system) and DOITT as the listed developer (for Apple mobile operating system).[[10]](#footnote-11)

As evidenced by the examples of websites and mobile applications listed above, the City and its agencies regularly interface with City residents through technology. Furthermore, this online government presence has grown to be one of the primary ways through which New Yorkers can access City services, especially since the COVID-19 pandemic compelled many agencies to find ways to deliver their services online.[[11]](#footnote-12)

1. **City Website and Application Issues**

The City increasingly provides service delivery primarily through its websites and mobile applications. Unfortunately, many of the City’s online tools have fallen short of proper usability and functionality and have received much criticism from the public for a variety of issues, including buggy software, unintuitive user interfaces, slow loading times and operations, and crashes.[[12]](#footnote-13) In application stores, the City’s mobile applications have many reviews in which users cite obstacles such as multiple login and sign-up prompts, redirections to mobile websites (that offer non-optimized mobile website experiences), frequent application freezes and crashes, broken or missing application functions, and unfriendly user design.[[13]](#footnote-14)

*Historical Performance and Access Issues*

A number of issues have historically affected the City’s websites and applications. Faulty rollout processes, poor outreach, and improper preparations have affected New Yorkers before, like when funeral directors were stranded by DOHMH’s failed upgrades to its online birth and death certificate system in 2017.[[14]](#footnote-15) The new system implemented by DOHMH failed to generate online death certificates, causing delays in funerals and burials and forcing funeral directors to scramble to collect handwritten certificates.[[15]](#footnote-16)

Another technological transition caused citywide issues in 2018 and 2019, when the City’s public high school directory was shifted from a paper guide that consisted of 630 pages to an online portal with an accompanying thinner paper pamphlet.[[16]](#footnote-17) Beyond raising questions of equity due to differing levels of technological access and familiarity throughout the City population, the new MySchools High School Directory presented challenges in usability and function, with many users reporting slow processes, missing or inaccurate student information, and unintuitive user design even a year after the MySchools rollout in 2018.[[17]](#footnote-18) Importantly, there was a lack of proper outreach and communication relating to the transition from paper to online, with counselors and families not receiving any news on the specifics of MySchools until September and October 2019 despite school application deadlines being on December3, 2019.[[18]](#footnote-19) With respect to the City’s administration of its summer free meals program for anyone under the age of 18 in 2019, the City’s publication of limited and inaccurate information online and technical problems with resource generation by mobile text also caused issues for New Yorkers seeking to utilize the program.[[19]](#footnote-20)

*Recent Performance and Access Issues*

The advent of the COVID-19 pandemic and its social distancing requirements meant the start of an unprecedented rollout of virtual City services, with agencies implementing novel online programs as well as transitioning preexisting programs to have more virtual capabilities. However, this new technological transition was accompanied by several complications plaguing many agencies’ efforts to provide virtual services. For example, in 2020, *ACCESS HRA* experienced several crashes and login errors as people tried to apply for social services like SNAP benefits and cash assistance.[[20]](#footnote-21) Similarly, DOE experienced a vast array of technical difficulties: in 2020, the remote learning platform TeachHub failed to work and crashed and Zoom links failed to open; uneven distribution of remote learning tools like tablets left 19,000 children in need without devices five weeks after schools closed in 2020 due to the pandemic; families participating in virtual summer school programs in 2020 were impacted by technical glitches and a lack of information on how to use the online tools, culminating in 23% of students never logging on; online COVID-19 screening tools crashed on the first-day-of-school from the high demand as students returned in 2021, forcing school personnel to resort to paper forms to clear students upon arrival; and earlier this year parents discovered a major glitch in the public school lottery system that allowed them to restart applications to receive more favorable lottery numbers.[[21]](#footnote-22)

There are many other examples of the City’s recent and current technological failings. Digital services offered by the New York City Housing Authority (“NYCHA”), DOB, and HPD also have issues. In May of this year, NYCHA experienced a computer glitch that sent thousands of Section 8 housing tenants erroneous letters that claimed their rental subsidies were terminated.[[22]](#footnote-23) In 2021, technology problems with *DOB NOW* (for example, issues loading pages, inability to receive updates in a timely manner, or the entire website being down for days) resulted in the delay of several building-related administrative processes, leading some people to create an online petition to draw attention to DOB’s technological issues.[[23]](#footnote-24) HPD’s *Housing Connect* portal has experienced outages over the past two years, putting affordable housing lottery applicants in limbo.[[24]](#footnote-25) In 2020, the City’s Office of the City Clerk experienced a slew of technical logjams and difficulties as it failed to register and issue virtual marriage certificates.[[25]](#footnote-26)

In 2021, the City’s COVID-19 vaccination rollout involved an online website that served as a discovery and registration tool for New Yorkers to find and register for vaccination appointments, but the website suffered from glitches, crashes, and arduous user experiences that led some New Yorkers to create their own alternative online tools from scratch.[[26]](#footnote-27) The Committee on Technology held a hearing jointly with the Committee on Health and the Committee on Aging on the issues relating to the City’s vaccine rollout; multiple witnesses testified on the litany of problems with the vaccine website and lamented the lack of technological leadership.[[27]](#footnote-28)

Importantly, the City, as recently as earlier this month, experienced technical problems with its online vaccination registration website as it conducted efforts to vaccinate against the ongoing monkeypox breakout, resulting in users expressing their frustrations with the website.[[28]](#footnote-29) The City had initially partnered with Affiliated Physicians to run the COVID-19 vaccination signup portal but experienced a number of repeated crashes during heavy demand.[[29]](#footnote-30) The City then chose MedRite as its contractor to run the monkeypox vaccination appointment and distribution program but experienced signup problems, so it reverted to using Affiliated Physicians, but technological errors persisted.[[30]](#footnote-31) Currently, the City appears to have settled on using an in-house system called Vax4NYC – that was actually created to address the glitches with the COVID-19 vaccine rollout – after calls came from the public to rely on Vax4NYC to address the monkeypox outbreak due to the failure of previous third-party vaccine signup partnerships.[[31]](#footnote-32)

*Examples of Specific Cybersecurity Issues*

Any operation that uses an internet connection is subject to a cyberattack, an attempt to gain illegal access to a computer or computer system for the purpose of causing damage or harm.[[32]](#footnote-33) The City’s agencies and services suffer cyberattacks that interrupt or shut down services. For example, in June 2021, the City Law Department suffered a hack that shut down its computer systems, preventing employees from accessing the agency’s internal system, files, and even individual work email accounts.[[33]](#footnote-34) This hack had a direct effect on the Law Department’s operations, causing delays in contract and court proceedings as employees waited to regain access to their work material.[[34]](#footnote-35) In April 2021, ParkMobile, a mobile application used by the City’s Department of Transportation to allow New Yorkers to make cashless payments to parking meters, suffered a data breach that involved stolen data, including customer email addresses, phone numbers, license plate numbers, and mailing addresses.[[35]](#footnote-36) In early 2021, the Metropolitan Transit Authority (“MTA”) suffered a cyberattack carried out by a group believed to have links to a foreign country, which exposed vulnerabilities in worker remote access technology even though this cyberattack did not actually involve the demanding of ransom, the affecting of transit functions, or the compromising of personal information.[[36]](#footnote-37)

*Third-Party Vendor Performance, Access, and Cybersecurity Issues*

The City’s third-party vendors can and do suffer from the aforementioned problems that affect digital services, like buggy software, online glitches, poor user functionality, and cyberattacks. To make matters worse, because in the case of third-party vendor service delivery the City does not directly administer these digital services, New Yorkers are often without recourse when there is complete interruption of service, like in January 2022 when education technology vendor Illuminate Education experienced a cyberattack that resulted in its digital tool to track City students’ grades and attendance failing to work.[[37]](#footnote-38)

Often, the third-party vendors contracted by the City are not exclusively partnered with the City, holding contracts with other entities and municipalities. This expanded clientele means that these third-party vendors are more enticing targets for bad actors, as one successful cyberattack can affect multiple establishments.[[38]](#footnote-39) The third-party vendor’s large client base also means that cyberattacks do not have to explicitly target the City or its agencies in order to disrupt City digital services. Consider the example of Kronos Private Cloud, also known as Kronos. Kronos is a workforce management software used by millions of employers, including City employers.[[39]](#footnote-40) After a successful ransomware attack, which involves a malicious software that requires the victim to pay a ransom to access their now-encrypted files, knocked Kronos offline in December 2021, tens of thousands of workers – including 20,000 MTA workers – could not properly receive their paychecks due to the software service interruption.[[40]](#footnote-41) Another example: Illuminate Education, mentioned above, provides software used by both the City and Los Angeles’s school districts; it suffered a 2022 cyberattack that shut down many important City school services.[[41]](#footnote-42) The personal information of around 820,000 current and former City students were also exposed in this cyberattack, including students’ names, birthdays, gender, socioeconomic status, and some academic information.[[42]](#footnote-43) Crucially, this one attack on Illuminate Education meant a disruption of services for dozens of City schools and represents just how important technological resiliency is for the proper delivery of the City’s public services.

1. **Consequences and Implications of Access, Performance, and Cybersecurity Issues**

*Prior and Current Mayoral Priorities*

The incumbent and potential benefits of quality digital government are obvious, to the point where City administrations consistently focus on providing digital service initiatives and increasing connectivity for the City’s population. For instance, former Mayor Bill de Blasio’s OneNYC 2050 blueprint emphasized virtual public service improvements and expansions that highlighted the City’s websites and mobile applications.[[43]](#footnote-44) The current mayoral Administration also places importance on digital service delivery, as Mayor Adams publicly announced in April 2022 his plan to have OTI launch an in-house, unified City portal, currently known as “MyCity,” by late 2022 that would provide New Yorkers with a “one-stop shop” for all their City service needs, including the provision of application processes for City benefits, services, and permits.[[44]](#footnote-45)

As the City becomes increasingly connected and New Yorkers become even more reliant on proper digital access to obtain government services, the consequences and implications of faulty and poorly executed government digital services will become even more apparent and crippling for City residents and staff.

*Interrupted City Services*

Faulty software and improper technological procedures and preparations can result in interrupted City services. Having more permit approvals, bill payments, and government aid applications hinging on the functionality and usability of the City’s digital programs means that interrupted services can make existing City procedures much more difficult for New Yorkers to navigate. As evidenced by the delays caused by the City’s software upgrades for its funeral homes and school portals, as well as by interruptions to aid delivery processes and the making of vaccination appointments, New Yorkers are impacted in a real-life way by these technological failures. Deadlines are a concern, as well; faulty software can result in New Yorkers failing to meet requirements like successfully submitting aid applications and paying violations on time.

As more digital tools become part of the City’s service delivery suite, the City needs to consider cross-platform and backwards compatibility for its online tools and platforms.

*Lack of Familiarity with New Technology*

Furthermore, equity and practicality become heightened concerns when considering that not every New Yorker has access to the latest technological upgrades and equipment, the knowledge to proficiently navigate them, or both.[[45]](#footnote-46) Relatedly, a February 2022 report released by the Joint Task Force to Get Nonprofits Paid on Time noted that while the City’s implementation of a new digital procurement management tool called PASSPort had helped streamline aspects of the procurement process, contracting staff at City agencies still relied on legacy systems, while others needed additional training in the software.[[46]](#footnote-47)

The City needs to consider carrying out sufficient public outreach to ensure proper training for the public and City staff in the tools the City chooses to implement.

*Citywide Cybersecurity Policies*

New York City Cyber Command (“NYC3”) is responsible for establishing and regularly updating cybersecurity policies and standards for City agencies and third-party vendors, as well as for regularly training appropriate City officers and employees on cybersecurity policies and standards and directing cybersecurity defense and response.[[47]](#footnote-48) In fact, NYC3 issued the following policies and standards, among other ones: Password Policy (issued in 2014), Multifactor Authentication (issued in 2019),[[48]](#footnote-49) Citywide Cybersecurity Program Policies (updated in 2019),[[49]](#footnote-50) Wireless Security Policy (issued in 2014),[[50]](#footnote-51) Personnel Security Policy (issued in 2014),[[51]](#footnote-52) Mobile Computing Device Security Policy (issued in 2016),[[52]](#footnote-53) CityWide Application Security (issued in 2018),[[53]](#footnote-54) and Citywide Cybersecurity Program Policies and Standards (updated in 2021).[[54]](#footnote-55)

However, many of the abovementioned policies and standards have not been updated since issuance, and there is no evidence as to whether the affected agencies have followed such policies and standards. As the City continues to administer services online and expand its digital footprint, proper precautions and procedures – such as robust privacy and data policies that are kept up-to-date and enforced – must be in place to ensure that New Yorkers are protected from the dangers accompanying virtual activity and can equitably access City services.

1. **Conclusion**

Increasingly, New Yorkers are adapting to digital services and infrastructure and are learning to interact with their City using digital means. The City’s ability to deliver services online is essential to its continuing recovery and prosperity in the face of pandemic recovery, climate change effects, and future public health emergencies.[[55]](#footnote-56) The City’s digital services capabilities to improve lives is substantial, but its recent track record leaves much to be desired.

The Committee on Technology is eager to learn how the City can best support New Yorkers as they navigate an increasingly digital society. The Committee on Technology looks forward to hearing testimony from the Administration, advocates, experts, and members of the public to better understand the scope of the City’s technological capacity, including its current capabilities, historical and recent issues, and future ambitions.

1. Mayoral Executive Order No. 3 of 2022, <https://www1.nyc.gov/office-of-the-mayor/news/003-002/executive-order-3>, §§ 1, 5. [↑](#footnote-ref-2)
2. New York City Charter, § 1072(a), (b), g), (h), (i)-(n) (emphases added). [↑](#footnote-ref-3)
3. Mayoral Executive Order No. 3 of 2022, § 5, <https://www1.nyc.gov/office-of-the-mayor/news/003-002/executive-order-3>. [↑](#footnote-ref-4)
4. *Id*. [↑](#footnote-ref-5)
5. NYC 311, available at: <https://portal.311.nyc.gov/>. [↑](#footnote-ref-6)
6. DOB Now, New York City Department of Buildings, available at: <https://www1.nyc.gov/site/buildings/industry/dob-now-build.page>. [↑](#footnote-ref-7)
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10. *See* Google Play Store, available at <https://play.google.com/store/search?q=nyc&c=apps&hl=en_US&gl=US>; and Apple App Store, available at <https://apps.apple.com/us/developer/department-of-information-technology-and-telecomm/id324897622>. [↑](#footnote-ref-11)
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