COMMENTS OF THE SURVEILLANCE RESISTANCE LAB
New York City Council
Committee on Technology

Hearing: "Oversight – LinkNYC: Deployment of 5G Infrastructure and Wi-Fi Connectivity across the City"

June 7, 2023

Ed Vogel, Senior Policy Researcher, Surveillance Resistance Lab

Introduction
By notice published on May 25, 2023, the New York City Council Committee on Technology requests public testimony on the topic of "Oversight – LinkNYC: Deployment of 5G Infrastructure and Wi-Fi Connectivity across the City."

Pursuant to the Committee on Technology's notice, the Surveillance Resistance Lab (the Lab) submits these comments as an organization focused on how government use of technological solutions impacts democracy and equity. The Lab has major concerns regarding how the LinkNYC program has failed to meet its promises of equitably delivering high quality WiFi to all New York residents.

This history of LinkNYC illustrates that the cost of free WiFi was the cultivation of a data mining and surveillance infrastructure throughout NYC. As a function of its use, LinkNYC extracts data from its users for the primary purpose of selling it to advertisers for highly tailored, "context aware" advertising, offsetting the cost of its installation. By contracting with a consortium of companies to deliver this as a solution to the digital divide, the City chose to have the private sector respond to a structural inequity, a problem that market-based solutions are not equipped to fix. Rather than equitably addressing the digital divide, the LinkNYC business model created another problem: infrastructure that relies on surveilling our communities to survive.[1] This model violates our civil rights and liberties and has the potential to facilitate further criminalization of New York's communities who are most acutely experiencing the worst of these digital inequities. LinkNYC epitomizes what the City loses if we do not consider the risks to civil and human rights at the core of digital infrastructure roll-out. At the foundation of LinkNYC is a structural failure in how the program was designed.

The program is a case study in the challenges the City faces when transparency and accountability are not guiding the design, development, and implementation of large-scale technological solutions. The Lab is committed to working with the City to ensure that technological solutions do not become police and corporate surveillance tools which exacerbate inequality.

Background
Announced in 2014 by then Mayor de Blasio, LinkNYC was framed as a program to deliver free WiFi to New York City's residents without access. LinkNYC would replace the City's technologically outdated

---

[1] https://www.link.nyc/privacy-policy.html#info_collect

payphone infrastructure with kiosks for accessing WiFi, making calls, and charging devices, among other uses. All of this was promised to be free of charge to users and as a revenue generator for the City, as a way of addressing the digital divide which plagued the City, but also at "no-cost to taxpayers" as the program would be entirely funded through advertising revenues. Through a competitive bid process, CityBridge, which is a consortium of companies, was chosen to develop and implement the LinkNYC program.[2] The program launched in 2016 with a goal of installing between 7,500 - 10,000 kiosks and promised to generate more than $500 million in revenue for the City. While all of the data that the kiosks collected would be owned by CityBridge, the Mayor's office promised that the program would provide the "most user-centric privacy policy of any public WiFi network."[3] To date, more than 2,000 LinkNYC kiosks and towers in total have been installed across the City's boroughs.[4]

Concerns and Controversies
While seemingly well-intentioned, controversy has plagued the program, exposing its structural flaws. Within weeks of the debut of the first kiosk, the New York Civil Liberties Union (NYCLU) and the Electronic Frontier Foundation[5] raised concerns regarding the volume of data that LinkNYC could gather and the lack of clear data retention schedules for this data. NYCLU warned that the City was willingly participating in the corporate development of a massive database of user data which held all of the same problems of other large corporate databases—the possibility for data breaches of sensitive information and invasive surveillance by law enforcement like the New York Police Department.[6] At the time, LinkNYC's privacy policy did not contain explicit language regarding data sharing with the police. Despite these concerns, the City continued its partnership with CityBridge.

In 2017, one of the companies in CityBridge's corporate consortium, Intersection, was in the news for raising $150 million in financing in order to expand free WiFi services into more cities across the world. While LinkNYC was still in the initial phase of rolling out kiosks, investors felt confident in the model's ability to collect enough data to make the context-aware advertising revenue structure sustainable. Prior to this infusion of funds, earlier investors in Intersection included Sidewalk Labs, a company owned by Google. Sidewalk Labs designed a failed proposal for a sensor-laden data collecting area in Toronto which it abandoned after facing much opposition.[7]

Despite Intersection's ability to raise substantial capital for expansion, LinkNYC hit snags in meeting the initiative's contracted promises. In March 2018, *Politico* reported that LinkNYC had installed about 1,800 kiosks with a goal of installing 4,500 by mid-2019. Additionally, most of the kiosks weren't installed in the City's neighborhoods that lacked adequate access to the internet, an early indicator that LinkNYC was not primarily focused on addressing the digital divide.[8]

---

[2] https://www.theverge.com/2020/3/5/21166057/linknyc-wifi-free-kiosk-google-new-york-sidewalk-labs-payments-revenue

[3] https://observer.com/2016/02/de-blasio-unveils-linknyc-wifi-kiosks-with-promises-to-protect-privacy/

[4] https://www.link.nyc/find-a-link.html

[5] https://www.eff.org/deeplinks/2017/09/linknyc-improves-privacy-policy-yet-problems-remain

[6] https://www.aclu.org/press-releases/nyclu-citys-public-wi-fi-raises-privacy-concerns

[7] https://www.technologyreview.com/2022/06/29/1054005/toronto-kill-the-smart-city/s

[8] https://www.politico.com/states/new-york/albany/story/2020/03/03/city-hall-calls-google-backed-linknyc-consortium-delinquent-1264966

Then, in May 2018, an undergraduate student at the New York City College of Technology stumbled upon CityBridge's public library for LinkNYC on GitHub, a platform used to share and develop source code, among other uses. This student found that LinkNYC's code "collects user's longitude and latitude, as well as the user's browser type, operating system, device type, device identifiers, and full URL clickstreams (including date and time) and aggregates this information into a database."[9] Based upon the student's research, LinkNYC's code would allow CityBridge to track users' locations and deliver advertisements in real-time, which was a violation of the program's privacy policy. As expected, LinkNYC denied that they were tracking users' locations in real-time but the *Intercept* did confirm with multiple technologists that the code had the potential to track precise locations, whether or not LinkNYC was tracking precise locations is another question.[10] In response, LinkNYC demanded that GitHub remove the copy of their code that the undergraduate student had made, calling it a copyright violation. LinkNYC continued its growth and expansion across New York, unabated.

April 2019 brought renewed concerns to LinkNYC in response to an arrest of a man who vandalized 42 of the kiosks across the city.[11] His arrest added public concern to what NYCLU and the undergraduate student had previously identified–the sheer volume of data that the kiosks were collecting about people. The footage recorded by the kiosks of the man smashing the kiosks' screens prompted questions about why the kiosks had cameras in the first place. As reported by the *Intercept*, cameras were added to the kiosks in 2017 and LinkNYC was retaining footage for seven days in order to improve the services of the program. With no public dialogue or warning, this new layer of surveillance was added and there was no mechanism to opt-out. At the public hearing on June 7th, 2023, CityBridge did state that cameras on the kiosks had been mostly turned off since 2020, which begs the question that if the cameras are turned off, should the cameras be removed from the kiosks in general. Over time, more information surfaced as to the extent to which these kiosks were amplifying the existing large surveillance apparatus in place across the city.

Later that year, it was reported that the program was not hitting its revenue targets. At the time, there were about 1,800 kiosks across the City and the program had seen a revenue shortfall of more than $21 million between 2015-2018 with expected losses both in 2019 and 2020. The City's contract with CityBridge should have been lucrative for the company as the terms were friendly to CityBridge.[12] Yet LinkNYC was not as profitable as CityBridge expected.[13] In March 2020, the *New York Post* reported that CityBridge had yet to pay more than $30 million that was owed from 2019 and had not made any payments towards the $43 million that was owed by June 30, 2020.[14] These early problems demonstrated that the program's revenue model threatened the integrity of the program in general. In 2020, the head of the City's Department of Information Technology and Telecommunications (DoITT) testified that the City was considering ending its contract for LinkNYC as the program was behind on deploying 537 kiosks and

---

[9] https://theintercept.com/2018/09/08/linknyc-free-wifi-kiosks/

[10] https://theintercept.com/2018/09/08/linknyc-free-wifi-kiosks/

[11] https://gothamist.com/news/yes-linknyc-kiosks-are-giant-data-harvesting-surveillance-cameras-obviously

[12] https://www.nyc.gov/assets/oti/downloads/pdf/linknyc-franchises/linknyc-public-communications-structure-franchise-agreement.pdf

[13] https://www.gothamgazette.com/city/8502-city-s-much-heralded-link-kiosks-not-generating-projected-revenue

[14] https://nypost.com/2020/03/03/de-blasios-tech-czar-rips-google-linked-group-for-wifi-kiosks-delays/

owed the City $75 million, per the terms of the contract. While the Department representative stated that the City's "patience was up,"[15] the contract remained, LinkNYC persisted, and continued its slow but steady expansion. Despite these persistent problems, there was a demonstrated desire for public WiFi as it was reported in 2020 that more than 8.7 million people had used LinkNYC since the program launched.[16]

In July 2021, the New York State Comptroller released their multi-year audit of LinkNYC and found the initiative, "to a great extent," did not meet its objectives.[17] It is worth quoting in full the Comptroller's findings: "DoITT did not sufficiently monitor, oversee, and enforce the Consortium's compliance with the Agreement terms, including the collection of almost $70 million due to the City from the Consortium; that the required number of Links were installed according to the specified distribution schedules and equitably distributed in the five boroughs; that Links were activated by the stipulated time frames; that a Gigabit Center was established in each of the five boroughs; and that liquidated damages were assessed and collected for late activation. Our audit identified significant shortfalls, in terms of both revenue to the City and services, that occurred as a result."[18] According to the State Comptroller, LinkNYC's failures were not isolated only to the company but also the lack of proper oversight provided by the Department of Information Technology and Telecommunications. This raises another set of concerns regarding the structural failures of the LinkNYC initiative as it relates to the possibilities and limits of proper and effective oversight.

Following the New York State Comptroller's audit, the New York City Office of Technology and Innovation (OTI), formerly DoITT, issued their own audit as part of their oversight of LinkNYC. In contrast to the concerns raised by the State Comptroller, OTI's cover letter discussing the audit[19] offers little in terms of concerns regarding LinkNYC.[20] However, one major concern found by KPMG, the firm who conducted the audit on behalf of the OTI, was that "CityBridge does not anonymize the MAC address of user devices as stated in the Privacy Policy and Franchise agreement."[21] The MAC address is one of several unique identifiers that a device like a smartphone has. The fact that LinkNYC kiosks collected MAC addresses in the first place, even if the addresses were anonymized, is a major privacy concern. Failing to anonymize these addresses sacrifices any privacy that users may have as whatever data is compiled through LinkNYC can be directly tied to a device and a person. This is a heightened concern for anyone who is from a historically criminalized community, as this data can facilitate NYPD's surveillance of individuals and communities. Additionally, while KPMG reported this issue in the

---

[15] https://www.thecity.nyc/2020/3/3/21210474/city-hall-may-pull-plug-on-linknyc-owner-over-missing-kiosks-and-75m-owed

[16] https://www.timeout.com/newyork/news/nycs-linknyc-kiosks-have-racked-up-millions-in-debt-030420#:~:text=That%20being%20said%2C%20a%20rep,the%20wi%2Dfi%20to%20date.

[17] https://www.osc.state.ny.us/files/state-agencies/audits/pdf/sga-2021-19n5.pdf, 8

[18] https://www.osc.state.ny.us/files/state-agencies/audits/pdf/sga-2021-19n5.pdf, 1

[19] https://www.nyc.gov/assets/oti/downloads/pdf/reports/LinkNYC-Audit-Report-Privacy-Section-of-March-2022_Redacted.pdf

[20] From OTI's cover letter reporting on KPMG's audit: "The results indicated that CityBridge appeared to have largely complied with the terms of the privacy provisions of the franchise agreement. Additionally, there was no evidence found to suggest either inappropriate collection or usage of Personal Identifiable Information (PII) or that CityBridge shared PII with third parties and/or law enforcement beyond what is permitted by the Franchise Agreement."

[21]https://www.nyc.gov/assets/oti/downloads/pdf/reports/LinkNYC-Audit-Report-Privacy-Section-of-March-2022_Redacted.pdf

company's assessment, the OTI makes no note of it and arguably downplays any concerns in the Office's cover letter. This feeds into the question raised by the State Comptroller regarding oversight failures with LinkNYC and further confirms the structural problems at the core of this program.

At the May 3, 2022 Committee on Technology oversight hearing on LinkNYC,[22] Nick Colvin, CEO of CityBridge, testified and initially could not state the total number of sensors on each kiosk.[23] *Vice* later reported, for the first time, that each kiosk has roughly thirty sensors collecting a variety of information, including environmental data, at all times.[24] This revelation exposed that the promise of "free" WiFi came at a cost to the user. While free WiFi was CityBridge's pitch, their business model is to collect personal, visual, passive, and other data on NYC communities in order to earn advertising revenues to fund this project. By relying on this profit model, CityBridge constructed an infrastructure that violates civil liberties and rights as a function of this service provision.

Finally, as it stands, LinkNYC's deployment continues to lag behind stated distribution schedules and goals for equal distribution in meeting the CityBridge's initial promises of addressing the digital divide. As reported at the June 7, 2023 hearing, the program has installed more than 2,000 kiosks and towers— well below the 7,000 that were scheduled to be installed by now— but these are installed primarily in the City's wealthier areas, including mostly in Manhattan.[25] At the same hearing, CityBridge stressed that a majority of the new 5G towers will be installed in areas most acutely experiencing the digital divide in order to address this past concern. The City and CityBridge have signed multiple amendments to the initial contract and have slowed the timeline for installation of kiosks as CityBridge consistently failed to meet goals named in each agreement.[26] Not only is the program behind schedule but it's also failing to meet its goals in terms of addressing structural inequities regarding internet access while growing New York City's already behemoth surveillance apparatus.

Amidst these controversies, Mayor Adams and Chief Technology Officer Fraser held a press conference on July 10, 2022 to debut LinkNYC's latest iteration, a thirty-two foot tall 5G tower in the Bronx. Focusing on the need to address the digital divide, the City's presentation did not highlight the significant concerns that have emerged from the implementation of LinkNYC.[27] While there are certainly strong opinions about the aesthetic value of this new tower, the primary concerns remain regarding the viability of LinkNYC to accomplish anything the City or CityBridge claim. The history of LinkNYC should raise concerns regarding the plans to now deploy 5G sensors across the City. With the new towers, WiFi will remain "free" but CityBridge will also draw revenues from cell service providers who will pay to install 5G cells into these towers. However, growing the 5G network through this program means that accessing

---

[22] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=5541021&GUID=280043BA-4189-4454-9287-44F61ED23426&Options=&Search=

[23] https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=5541021&GUID=280043BA-4189-4454-9287-44F61ED23426&Options=&Search=

[24] https://www.vice.com/en/article/epzmvj/privacy-advocates-say-nycs-fix-for-the-digital-divide-is-a-hyper-surveillance-mess

[25] https://www.vice.com/en/article/epzmvj/privacy-advocates-say-nycs-fix-for-the-digital-divide-is-a-hyper-surveillance-mess

[26] https://www.nyc.gov/content/oti/pages/franchises/linknyc-franchises

[27] https://www.nyc.gov/office-of-the-mayor/news/485-22/mayor-adams-cto-fraser-linknyc-first-link5g-kiosk-new-york-city#/0

the 5G network will require users to demonstrate that they already subscribe to a cellular provider.[28] This 5G service will only be available to people who are already paying for its service. While LinkNYC promised free internet for all New York City residents, this next phase of the program only promises 5G to those who can pay.

Recommendations

The history outlined demonstrates that at the core of the LinkNYC program is a structural issue. The digital divide is fundamentally about equity, and this must be a central concern to the City. Yet, LinkNYC raises significant questions about how public-private partnerships created to deliver a public good can fail to prioritize the public over profit. Can the City equitably address the digital divide without ensuring that residents do not become targets for further data mining and profit? Can we build the technological infrastructure that New York will need in the future without buttressing an already overwhelming surveillance apparatus of cameras and sensors which criminalize our neighbors, friends, and family? Can the City commit to designing and developing technological infrastructure that enhances rather than undermines democracy?

The controversial history of LinkNYC should be reason enough for the Committee on Technology to bring more transparency to the program and accountability regarding its extractive data mining profit structure. We are recommending that the Committee on Technology co-develop new mechanisms and processes with communities experiencing the digital divide to increase the transparency and accountability for technology-driven infrastructure projects. A first step could include more information around how LinkNYC collects data, including transparency on each sensor that is used, what data it collects, how CityBridge uses each type of data, and who else has access to the data that is collected. Ultimately, LinkNYC should promote democratic values and realistically close the digital divide without making New York residents subject to data mining nor worsening the City's already highly invasive surveillance system.

Until the Committee and City take these concerns seriously, LinkNYC will be another idea that fails to put the interest and needs of City residents above corporate interests.

We look forward to discussing these recommendations with the Committee on Technology. We hope you will reach out to our organization should you have any further questions.

Sincerely,

Ed Vogel
Senior Policy Researcher
Surveillance Resistance Lab

---

[28] https://www.vice.com/en/article/epzmvj/privacy-advocates-say-nycs-fix-for-the-digital-divide-is-a-hyper-surveillance-mess