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Testimony of Daniel Schwarz
On Behalf of the New York Civil Liberties Union
Before the New York City Council Committee on Technology
Regarding the Oversight of LinkNYC

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The New York Civil Liberties Union (“NYCLU”) respectfully submits the following testimony regarding the oversight of LinkNYC. The NYCLU, the New York affiliate of the American Civil Liberties Union, is a not-for-profit, non-partisan organization with eight offices throughout the state and more than 180,000 members and supporters. The NYCLU’s mission is to defend and promote the fundamental principles, rights, and values embodied in the Bill of Rights, the U.S. Constitution, and the Constitution of the State of New York. The NYCLU works to expand the right to privacy, increase the control individuals have over their personal information, and ensure civil liberties are enhanced rather than compromised by technological innovation.

LinkNYC, the public WiFi kiosks, run by a consortium of companies including Alphabet (*Google*) subsidiary Sidewalk Labs, has after nine years of operation still not disclosed a detailed list of the thirty sensors included in the kiosks nor how LinkNYC uses the personal information it collects in its ad-driven business model.¹ Further, the severely overdue and fairly limited audit by the Office of Technology and Innovation (OTI) of LinkNYC found several violations of its privacy policy. And despite littering the streets with thousands of sensors, the project has also failed to deliver on its promise to improve New Yorkers' access to the internet and close the digital divide, as kiosks are primarily located in more affluent neighborhoods² and do not offer

¹ Ava Kofman, *Are New York’s Free LinkNYC Internet Kiosks Tracking Your Movements?*, THE INTERCEPT (2018), <https://theintercept.com/2018/09/08/linknyc-free-wifi-kiosks/>.

² See *LinkNYC*, NYC DOITT, <https://www1.nyc.gov/site/doitt/initiatives/linknyc.page>; see also Annie McDonough, *DoITT head Jessica Tisch’s hard line against LinkNYC vendor*, CITY & STATE, Mar. 4, 2020, <https://www.cityandstateny.com/articles/policy/technology/doitt-headjessica-tischs-hard-line-against-linknyc-vendor.html> (“CityBridge has failed to install 537 promised LinkNYC kiosks – many of which were set to be built in outer boroughs, which suffer[] from a dearth of the kiosks, which provide free WiFi, telephone and device charging services. CityBridge has not installed a single kiosk since the fall of 2018[.]”).

the speed and reliability of a broadband connection. Instead of centering community needs, privacy, transparency, and civil liberties protections as base-level requirements, they were unfortunately treated as an after-thought.

“Hypertargeting in the physical world”

From the very beginning of LinkNYC in 2014, transparency and privacy protections were treated as an afterthought and not given the needed attention. In response to NYCLU’s concerns, the initial privacy policy was amended in 2017, yet has remained unchanged since. The privacy policy still contains unspecific, ambiguous language, left open to interpretation, and raises many questions particularly in light of the technological capabilities and the vendor’s advertisement targeting claims.

Each kiosk is equipped with multiple technologies, including WiFi, Bluetooth, NFC, video cameras, and many sensors, that can facilitate the tracking of people or devices and other data. Taken together at scale at the city level, they allow for vast surveillance powers. It is important to note that the remote technologies allow for the possibility to track pedestrians or devices whether they affirmatively connect to the network or not. Such unwitting data leakage and collection can occur through wireless technologies, such as WiFi and Bluetooth, which emit unique device identifiers when looking for and pinging nearby connections and devices.

And let’s be clear, these surveillance aspects are not by accident but are instead core features of the business model which, according to Intersection, promises advertisers highly detailed “audience insights” and allows for “hypertargeting in the physical world.” Intersection describes further that “[d]evices connected to WiFi, app-sensing beacons, NFC interactions, and third party data sources can all be anonymously overlaid and aggregated to understand real-time, geospatial audience segmentation.” How this is implemented, and which third party data sources are tapped into remains unclear. The vendor materials continue:

Ads on LinkNYC will respond to the audience nearby much like ads online, showing the right ad to the right people at the right time wherever they are. These data sources also can deliver real-time analytics and a pipeline to programmatic buying.

These central capabilities make it plainly clear how this advertisement model is fundamentally different from prior advertisement billboards at a phone booth or bus stop. Each of the thousands of kiosks continuously collects unknown amounts of data which are aggregated, analyzed, and further processed or shared. Claims of anonymization are worth little without full transparency and independent auditing of how they are implemented and how collected data is leveraged for targeting specific audiences. Given the myriad ways of combining the data with other datasets re-identification is trivial. And the high density of LinkNYC kiosks across the City can result in detailed location information about people’s commutes, habits, and associations.

Hyper-targeting in the physical world

What differentiates LinkNYC from any other real world digital network is its connection to audience insights. Devices connected to Wi-Fi, app-sensing beacons, NFC interactions and third party data sources can all be anonymously overlaid and aggregated to understand real-time, geospatial audience segmentation.

Ads on LinkNYC will respond to the audience nearby much like ads online, showing the right ad to the right people at the right time wherever they are. These data sources also can deliver real-time analytics and a pipeline to programmatic buying.



Figure 1: Slide from Intersection, LinkNYC: Pioneering the Responsive City Revolution.

Nonetheless, according to the City, the advertising business model failed and LinkNYC faced bankruptcy. The City agreed to amend the franchise agreement in 2021, switching to a mixed financial model from ad and 5G cell service revenue, and instead of receiving 50% of revenue, only 8% revenue will go to NYC. However, Intersection continues to present the project as highly lucrative in its presentations: for example, a presentation to the City of Los Angeles disclosed that LinkNYC created a revenue of \$69 million in 2019.³ It should also be noted that Intersection purchased the largest municipal advertising company in North America, Titan Outdoor LLC.

In order for the public to clearly assess the situation, *CityBridge* and *Intersection* must be fully transparent about their business model. We need answers about what data are collected, how they are combined, for what purpose, and how they are integrated with other ad services.

³ Intersection, Technical Proposal, Sidewalk and Transit Amenities Program, p. 28, https://streetsla.lacity.org/sites/default/files/intesection_streetsla_rfp_technical_020821_electronic_redacted5.31.22_%281%29_reducedsize.pdf

We need a comprehensive list of the hardware, and the software needs to be independently audited. Public infrastructure, especially public technology deployed in such fashion across all of New York City can only be sustainable with full democratic oversight. Even City officials tasked with the oversight have apparently no understanding of the technology. Shockingly, OTI Chief Operating Officer McGrath, who testified at the most recent oversight hearing in May 2022 was not even aware of the sensors included in every LinkNYC kiosk and did not know about their Bluetooth capabilities – which, as *Figure 1* illustrates, has been central to Intersection’s advertisement claims to prospective clients from the very start.

This ignorance towards the true capabilities is telling. OTI (and DoITT before) has not upheld its much-needed oversight role. When pressed regarding audits, COO McGrath disclosed that OTI had just conducted an audit which “can be released.” His statements regarding LinkNYC raised serious doubts about the scope and rigor of this audit, and it would take many months and repeated outside pressure for OTI to finally release this audit.

OTI – KPMG Audit Found Violations of Privacy Policy

The LinkNYC audit was conducted by KPMG from July to December 2021 and was finally released in January 2023⁴ – without any announcement, let alone placement on the main LinkNYC website or the LinkNYC project page on OTI’s website. Instead, it was quietly added to OTI’s reports page in non-chronological order further hindering its discovery by the public.⁵

Although limited in scope, the audit still shows concerning violations of LinkNYC’s privacy policy. In light of aforementioned privacy risks exacerbated by Intersection’s targeted advertisement offerings, the most troubling finding highlights CityBridge’s neglect to anonymize MAC addresses of user devices as stated in their privacy policy and the franchise agreement (PF-01). It is unclear whether OTI or KPMG examined how MAC addresses could be used for tracking and for Intersection’s stated advertising goals of “hypertargeting the physical world.”

The audit is heavily redacted and entire sections are missing from the published document, which makes it impossible to understand its full scope and the extent to which the system was examined. It is not clear what methodology and testing procedures were used by KPMG, and what level of access they received to the underlying software and systems. It does not appear that the auditors had access to or examined how the ad platform functions and what

⁴ See: OTI Cover Letter, <https://www.nyc.gov/assets/oti/downloads/pdf/reports/Cover-Letter-to-Release-of-Privacy-Audit.pdf>; KPMG LinkNYC Audit, Privacy Assessment, <https://www.nyc.gov/assets/oti/downloads/pdf/reports/LinkNYC-Audit-Report-Privacy-Section-of-March-2022-Redacted.pdf>; CityBridge Privacy Assessment Response, <https://www.nyc.gov/assets/oti/downloads/pdf/reports/12.16.22-OTI-CityBridge-Letter-re-Privacy-Audit-Remediation-Response.pdf>.

⁵ Reports - NYC Office of Technology and Innovation - OTI, <https://www.nyc.gov/content/oti/pages/reports>.

third party data is utilized to analyze, correlate, geolocate, and profile people. We are still left to guess how Intersection’s offer of “geospatial audience segmentation” looks in practice and how people’s data are leveraged in this process. In a presentation to the City of Los Angeles in 2021, they went into further detail stating they:

... can reliably deliver impressions from these desired audiences (i.e. ages 18 – 34, college graduates, high-income, or a profile combining all of these attributes) by leveraging demographic data and location-based information. Our wide range of assets ensures that we can satisfy nearly any advertiser’s demands for certain audiences, whether they be large or niche.

The audit also offers no insights on the sensors deployed in each kiosk.

A Sales Approach Rooted in Measurement and Data

We have a simple thesis about growing advertising revenue: if we can help advertisers better measure the success of their campaigns, they will spend more money with us. As a result, Intersection has invested heavily in providing enhanced campaign impact measurement for our clients. We have built out an entire measurement and analytics team that is committed to providing industry-leading data insights.

Intersection takes a data-driven approach to measurement to ensure that we are optimizing performance for marketing objectives. Every seller in the organization is trained to root proposals in data, not only to win against other out-of-home sales teams, but also to compete for non-

out-of-home dollars. There are three key elements to our sales strategy:

- 1 **Targeting.** We partner closely with advertisers to understand who they want to target and use a combination of first- and third-party data to identify the highest concentrations of those audiences.
- 2 **Execution.** Once we find the right locations, we use our expertise in digital and static product innovation to develop the highest-impact creative campaigns to influence the target audience and meet advertisers’ marketing objectives.
- 3 **Measurement.** We have a set of third-party partners to generate attribution metrics specific to

marketer needs — whether it be driving foot traffic to stores or showing a lift in app downloads.

Advertisers often come to us with a target audience in mind. Intersection can reliably deliver impressions from these desired audiences (i.e. ages 18 - 34, college graduates, high-income, or a profile combining all of these attributes) by leveraging demographic data and location-based information. Our wide range of assets ensures that we can satisfy nearly any advertiser’s demands for certain audiences, whether they be large or niche.

We approach each campaign, digital or static, by first understanding whether measurement fits the advertiser’s goals and specific campaign objectives. There are several objectives an advertiser may be seeking to accomplish,

from increasing brand awareness to driving physical store visits to creating greater online interaction and engagement. We define the customized criteria for success and the appropriate metrics to measure it by. Common metrics include:

- Customer NPS
- Brand lift / awareness
- Retail footfall
- Website visits and page views
- Customer registrations / leads
- App cost per install

Intersection is pioneering new measurement and attribution techniques to better articulate the value of our unique out-of-home assets. Our case design leads to best-in-class measurement capabilities that represent a competitive advantage to drive revenue across the StreetsLA network. During and

Figure 2: Intersection, Technical Proposal, Sidewalk and Transit Amenities Program.

Provide Privacy-Preserving, Net-Neutral Internet Access

Unsurprisingly, LinkNYC has not been successful in bridging the digital divide. It is not a real solution given its limited reach and inherent advertisement goal. On top of this, new deployments with emphasis on underserved neighborhoods under the equitable deployment mandate have been slow, and only a few kiosks were installed over the last two years. Instead, the City should no longer avoid its responsibility to provide privacy-preserving and net neutral internet access to all New Yorkers. The pandemic has highlighted how crucial internet connections are to participate in society.

Principles and Good Practices for “Smart City” Technologies

The highlighted issues around LinkNYC are emblematic of many “smart city” projects in New York City and elsewhere. Yet we have also seen some encouraging steps in the right direction and commend the City’s settlement regarding Verizon’s failed fiber rollout in under-resourced communities and for joining the Cities Coalition for Digital Rights and signing its Declaration in 2018.⁶ The Cities Coalition for Digital Rights builds on five primary principles: (1) Universal and equal access to the internet, and digital literacy; (2) Privacy, data protection, and security; (3) Transparency, accountability, and non-discrimination of data, content and algorithms; (4) Participatory democracy, diversity, and inclusion; and (5) Open and ethical digital service standards. These set crucial guidelines, yet, unfortunately, the City’s actions have fallen far short of these promises, and little has been done to implement these principles.

For “smart city” technologies to deliver on their goals and promises, we urge the City to center and implement these key principles:

- *Internet for All.* High-speed, privacy-preserving, and net-neutral broadband should be universally available and provided for free where needed.
- *Ban Discriminatory Technologies.* Enact bans on technologies that show discriminatory impact or threaten people’s fundamental rights.
- *Community Inclusion.* Impacted people need to have a seat at the table throughout the project’s lifecycle.
- *Restructuring Procurement.* The City’s procurement process must be more transparent and include sufficient information and details for public review.
- *Impact and Risk Assessments.* The City should require agencies to conduct publicly accessible Racial and Non-Discrimination Impact Assessments and Environmental Impact Assessments before acquiring new technologies and throughout their lifecycle.
- *Clear, Concise Privacy Protections and Policies.* Meaningful notice must include information about the data collection, purpose, limitations, access, sharing, storage, and deletion. It must be clear and prominent and be written in plain language at a simple reading level.
- *Privacy by Design.* The City and any involved party must work during all product stages to build privacy safeguards into “smart city” technologies.

⁶ Declaration of Cities Coalition for Digital Rights, https://citiesfordigitalrights.org/assets/Declaration_Cities_for_Digital_Rights.pdf.

- *Data Minimization.* Only collect the minimal data needed. Clear limits on initial collection of personal information. Data should not be generated, collected, analyzed, retained, transmitted, or aggregated excessively.
 - *Security and Encryption.* Data should be encrypted (in transit and at rest) and communications must be authenticated.
 - *Anonymize* data where possible.
 - *Minimal Retention.* Only keep data for as long as necessary.
 - The default way to give consent must be *Opt-In*, instead of *Opt-Out*. People should be in the position to decide how, when, and why their data is processed and with whom it is shared.
- *Data Ownership* must be with the individual where possible. People must have rights over their personal data, as well as data that is derived, inferred or predicted from their data, actions, and behavior.
 - *No Third-Party Access.* Clear limitations on the access, sharing, or selling of data. Information should not be accessible for law enforcement without a warrant. Ban the access by or sharing with federal agencies, including Immigration and Customs Enforcement.
 - *Open source and Open Standards.* Avoid proprietary solutions, vendor lock-ins, and long-term dependencies. Adopt initiatives like “Public Money, Public Code,” which requires publicly financed software developed for public use to share its source code. Standard, interoperable protocols are in general also more secure and better tested.
 - *Auditing and Reviewing Mechanisms.* All systems should be subject to independent, transparent review to ensure – and to assure the public – that such technologies are being used appropriately and treating personal information with the care required.
 - *Accountability and Liabilities.* New York City must enable both regulatory oversight, and a private right of action, to remedy any violations of New Yorker’s right to control their data.
 - *Equitable Access.* Ensure technologies serve people and communities in need, not companies’ shareholders.
 - *Public Education.* Improve digital literacy and privacy education in order to show New Yorkers how technology, whether used by governments or private companies, impacts their lives.

Conclusion

We thank the Committee for the opportunity to provide testimony. The Council has a crucial role to play in overseeing large-scale tech deployments like LinkNYC, setting much-needed guardrails, safeguarding New Yorkers' privacy interests and rights, and providing broadband access to all New Yorkers.