Information Technology & Telecommunications

2017 Annual Report on Implementation of Next Generation 9-1-1 in NYC

Pursuant to Local Law 78 of 2016

City of New York
Department of Information Technology & Telecommunications
Anne Roest, Commissioner

NYC Next Generation 9-1-1

2017 Annual Report

Table of Contents

1.0 Introduction

New York City's 9-1-1 system is the largest and most complex emergency communications system in the country, receiving more than 10 million calls each year. To enhance the public's access to this critical service, in 2014 the Administration began developing a long-term strategy for implementing a Next Generation 9-1-1 (NG9-1-1) system, which would allow for the seamless transfer of digital information from the public to NYC's 9-1-1 system. Administration and Agency executives recognized that widespread adoption of rapidly advancing technologies like text, video, Voice over Internet Protocol (VoIP), and the saturation of high-speed broadband access have changed expectations for how people communicate, not only with each other but with their government, including 9-1-1 services.

Improvements to the 9-1-1 system's core infrastructure are needed to support these new demands and capabilities, in New York and across the country. To this end, the Department of Information Technology & Telecommunications (DoITT) is collaborating with the Fire Department City of New York (FDNY) and the New York City Police Department (NYPD) to plan for the migration to a NG9-1-1 system, technically ensuring NYC's continuing provision of a world class 9-1-1 call taking operation for decades to come, while continuing to provide essential, uninterrupted emergency response services.

1.1 Background on Next Generation 9-1-1

In order for people to move from older, analog telephone landlines to current cellular phone technology, thereby enabling text, video and data transfers, mobile carriers have had to build out an entirely new digital infrastructure, separate from their copper-based legacy networks. And in order to offer 9-1-1 users these same features, 9-1-1 systems across the country must make the same transition to an all-digital network infrastructure.

NG9-1-1 provides the ability to accept multimedia data (e.g. text, photographs and video) and improves interoperability, call routing, Public Safety Answering Center (PSAC) call overflow, and caller location accuracy. NG9-1-1 also strengthens system resiliency and reliability, as well as increases opportunities to achieve fiscal and operational efficiencies through cost-sharing arrangements.

The federal government and the State of New York recognize the importance of NG9-1-1. Congress, the Federal Communications Commission (FCC), the United States Department of Transportation (US DOT), and the New York State Department of Homeland Security and Emergency Services (DHSES) have all initiated efforts to advance NG9-1-1 at national and state levels. NYC continues to support, monitor and participate in this dialogue, as appropriate.

1.2 Business Need and Technical Benefits

The current 9-1-1 system is based on architecture and technologies that are well over 35 years old. The system was designed to support calls for landline phones installed at fixed locations. To support calls from wireless phones, and more recently calls from Voice over Internet Protocol (VoIP) phones, accommodations were made to the current 9-1-1 system. However, the National

Emergency Number Association (NENA), which acts as the 9-1-1 standards body for North America, has developed standards for NG9-1-1, which NYC is following in the development of its own NG9-1-1 Program.

The primary technical benefits of NG9-1-1 include the following:

1. Enhanced support for all communications devices currently capable and/or required to provide 9-1-1 service (i.e., faster call setup time, quicker delivery to call taker);
2. Support for future communications devices and services that may provide 9-1-1 service (i.e., text to 9-1-1, transmission of incident data, photos, and video)
3. Improved system quality, accuracy, and efficiency (i.e., passing information gathered during the initial interaction ~~to~~ with other public safety personnel when 9-1-1 calls are transferred);
4. Increased cost-effectiveness of the system through the use of commercially available, off the shelf products. (i.e., computer servers and network elements such as firewalls and routers); and,
5. Enhanced system supportability and maintainability through the elimination of out of date products and technologies.

Of these technical benefits, enhanced supportability and maintainability is, by far, the most critical driver of the program. By moving to a NG9-1-1 system, NYC will position itself to more effectively and efficiently respond to 9-1-1 calls for years to come.

1.3 Reporting Requirements Under Local Law 78 of 2016

A copy of the Local Law 78 of 2016 is included at the end of this report. The relevant sections are noted below:

> "The term "Next Generation 9-1-1" (NG9-1-1) means an internet protocol based system that allows digital information, including voice, photos, videos, and text messages, to be transmitted from the public to emergency responders in accordance with any national 9-1-1 program standards or guidelines applicable pursuant to federal or state law.
>
> *By no later than six months after the end of each fiscal year (December 31st), the Commissioner of the Department of Information Technology and Telecommunication, in consultation with the Police Commissioner and Fire Commissioner, shall issue to the Mayor and the City Council, and make publicly available online, a report on the implementation of NG9-1-1 within the 9-1-1 emergency assistance system. Such report shall contain (i) a description of the current implementation plan, including planned next steps, (ii) a description of steps taken towards implementation since the prior report, (iii) a description of the feasibility of implementing a 9-1-1 text message transmission capability (Interim Text to 9-1-1 or TT9-1-1) before full implementation of NG9-1-1 and (iv) any other information the DoITT Commissioner deems relevant.*

Upon determining that NG9-1-1 has been fully implemented or that no further implementation will occur, the Commissioner shall issue to the Mayor and the City Council, and make publicly available online, a final report in accordance with the previous paragraph and no further reports shall be required. Such final report shall include a conspicuous statement that it is a final report."

In compliance with Local Law 78 of 2016, the first report was submitted December 2016.

2.0 NYC's Current Implementation Plans for Next Generation 9-1-1

New York City is planning an infrastructure upgrade of its 9-1-1 telecommunications network and the various subsystems that accept, route, and answer 9-1-1 calls so that it can reliably support any IP addressable device or service accessing 9-1-1, quickly and seamlessly connecting callers to police, fire or emergency medical personnel. NYC's NG9-1-1 solution will allow the City's public safety agencies to continue to provide high quality and responsive emergency services that those calling 9-1-1 depend upon.

2.1 Program Objectives

NYC's plan for NG9-1-1 is based on the following program objectives, listed in priority order:

1. Avoid any disruption to answering and processing of 9-1-1 calls.
2. Replace the systems that are at end of life prior to cessation of support.
3. Limit disruptions to the public safety agency operations of NYC's PSACs.
4. Provide a platform that allows PSAC call taking operations to evolve their methods and procedures at a pace chosen by the NYPD and FDNY.
5. Provide training for the NYPD, FDNY, and DoITT staff that will be interfacing with the new systems.
6. Plan and execute a public awareness campaign highlighting the benefits of the new system and the new features that will enhance the citizen experience of 9-1-1 services.
7. Provide a flexible platform that allows ancillary systems and stakeholder groups to evolve at their own pace.

2.2 High Level Scope

2.2.1 Replace the end of life components of the current 9-1-1 system

a. Replace the functionality of the current 9-1-1 call routing systems with NG9-1-1 call routing functionality.
b. Replace the current call handling systems at PSAC1 and PSAC2. These systems will be replaced with systems that can not only answer and process voice calls but handle native NG9-1-1 functionality (i.e., text, photo, video).
c. Replace the current network facilities that connect the Originating Service Providers (OSPs, a.k.a. "telcos", "carriers", and "telecom service providers") to the call routing systems and to the PSACs.

2.2.2 Interface to Computer Aided Dispatch and/or other public safety systems

a. Work with the NYPD and FDNY to ensure their systems can process the media delivered by a NG9-1-1 system.

2.2.3 Interconnect with 9-1-1 systems in neighboring jurisdictions

a. Work in parallel with New York State Department of Homeland Security and Emergency Services (DHSES) for interconnections with neighboring jurisdictions within New York State and with jurisdictions in neighboring states.

2.2.4 Provide interfaces to public safety agency ancillary systems

a. Provide an interface to the NG9-1-1 system with functionality materially the same or better than as is in place today.

2.2.5 Provide for the implementation of native NG9-1-1 capabilities, including:

a. Text to 9-1-1.
b. Data, photos and video.
c. Internet of Things - Allow for the future support of new communications devices, particularly those that address the needs of people with disabilities.
d. Provide training to all City staff that will be using and/or supporting the new systems.

2.2.6 Provide a platform that supports operational efficiencies

a. Provide a platform that supports operational changes identified by the NYPD and FDNY during the initiation and planning phases.
b. Provide a flexible platform that allows for future changes to accommodate police, fire or emergency medical operations.

In implementing the NG9-1-1 system, City Agencies, their employees, contractors and vendors will follow the established Citywide Information Security Policies and Standards.

2.3 Process and Methodology

This program will be delivered by procuring products and services from vendors that specialize in NG9-1-1 networks and systems in accordance with best practices and national standards established for NG9-1-1. The program will follow the business processes and management plans established under DoITT's Public Safety IT Program Management Office. DoITT will work collaboratively with the FDNY and the NYPD. FDNY and NYPD are the identified 9-1-1 Operational Subject Matter Experts and will provide functional Approval and Final System Acceptance.

Expected phases and the associated deliverables for each are as follows:

1. The Initiation Phase will:
    a. Assess high level requirements for a new system and create a straw-man target architecture, schedule, and implementation plan.

b. Issue a Request for Information (RFI) to solicit vendor feedback on the straw-man plan and to further inform the City's Request for Proposals (RFP) process.

2. The Planning Phase will:
   a. Develop RFPs to facilitate the procurement of the required products and services.
   b. Release the RFPs and facilitate a process that results in responses from qualified vendors for all products and services required.
   c. Select qualified vendors and negotiate contracts.

3. The Implementation Phase will:
   a. Validate vendor proposed design
   b. Install and test all individual NG9-1-1 system components.
   c. Integrate and test all sub-systems.
   d. Validate end-to-end functionality.
   e. Test system reliability, availability, resiliency, and capacity.
   f. Train all End Users on Use of the system.

4. Steady-state Operations will:
   a. Place the NG9-1-1 system into production.
   b. Conduct a lessons learned process culminating in the release of a final program report.

2.4 Progress Since Local Law 78 Passed & Next Steps

In collaboration with the NYPD and the FDNY, the methodology noted in section 2.3 above has been followed, and progress has been made, in both the Initiation and Planning phases, as noted below:

1. Initiation Phase:

   a. DoITT's NG9-1-1 Subject Matter Experts (SMEs) and 9-1-1 Telephony SMEs completed the development of high level requirements for a new system and created a straw-man target architecture, schedule, and implementation plan.
   b. To validate the draft procurement and implementation model, an RFI was publically released on January 27, 2016. Eighteen (18) highly qualified vendors responded to the RFI, further informing the City's plans for a NG9-1-1 system with information from experts across the industry on the benefits, challenges, risks and issues associated with migrating to NG9-1-1 platform.

2. Planning Phase:

   a. NYC's NG9-1-1 system is made up of three primary sub-systems: (1) the Emergency Services IP Network (ESInet), (2) Core Services (i.e. the Call Routing

Services) and (3) Call Handling (i.e., the Call Answering System). The overall system will be procured through two separate RFPs. The first RFP will be for a managed service for ESInet and Core Services (including Logging and Recording and Geographic Information System) and the second RFP will be for Call Handling product procurement.

b. The ESInet and Core Services RFP (including Logging and Recording and Geographic Information System) was completed and competitively bid. Progress to date includes:
   - Release of RFP occurred on June 13, 2017
   - Mandatory Pre-Proposal Conference held on June 26, 2017
   - Deadline for Submission of Questions from Proposers was July 7, 2017
   - Publication of RFP Q&A Addendum July 28, 2017
   - A sufficient number of responsive Proposals were received on September 21, 2017
   - Adjudication of received responses will continue into the first Quarter 2018
   - Anticipated Timeframe for Project Start early first Quarter of 2019

c. Development of the Call Handling RFP is well underway and is expected to be released in the second calendar quarter of 2018, with vendor(s) being targeted for selection by the end of the third calendar quarter of 2019.

d. DoITT, in collaboration with MOPD, have defined a role for a People with Disabilities SME to work with DoITT and the Agencies implement enhanced capabilities offered by NG9-1-1.

3. Implementation and Steady State Phases:

   a. These phases will take place from 2018 through 2022, with a fully functional NG9-1-1 system targeted for delivery by the calendar year end of 2022.[1]

3.0 Feasibility of Implementing an Interim Text to 9-1-1 Solution

DoITT has embarked on a program to enhance NYC's existing 9-1-1 system to include support for an Interim Text to 9-1-1 (TT9-1-1) service prior to implementation of the NG9-1-1 system. The Interim TT9-1-1 solution would utilize Short Message Service (SMS), a text messaging service component of phone, Web or mobile communications systems, that uses standardized communications protocols to allow fixed line or mobile phone devices to exchange short text messages.

This interim service would allow those who are unable to make a voice call but are able to text 9-1-1 (e.g., the Deaf community, the hearing and speech impaired, and crime victims unable to make a voice call) to more readily access 9-1-1, allowing for non-verbal communications with

[1] Implementation dates for NG9-11 are subject to change as a result of City of New York actual procurement timelines and the final contract negotiated with the selected vendor.

NYC's 9-1-1 call takers. Unlike Teletypewriters (TTY), Telecommunications Relay Services (TRS) and Video Relay Services (VRS), which are out of date and/or not broadly utilized, this solution will provide people who are unable to connect via existing voice services with greater access to 9-1-1 call takers.

3.1 Phased Approach to Deliver Interim TT9-1-1 Capabilities

A process similar to that outlined in 2.3 above is being used to implement an Interim TT9-1-1 System for NYC before a NG9-1-1 system is fully deployed. Since any solution will need to work with the existing 9-1-1 system provided by the City's contracted vendors, these firms along with third party vendors, are being engaged to provide this new functionality for the City of New York.

3.2 Progress Since Local Law 78 Passed & Next Steps

In collaboration with NYPD and FDNY, the methodology noted in 2.3 above has been followed and progress has been made in both the Initiation and Planning phases as noted below:

1. Initiation Phase:
   a. Requirements, system architecture and implementation plan were developed with the NYPD and FDNY for an Interim TT9-1-1 system. These were reviewed with existing 9-1-1 vendors and their subcontractors.

2. Planning Phase:
   a. Requirements are now finalized with the NYPD and FDNY and Change Orders were released to provide TT9-1-1 capabilities, using the existing contract vehicles with NYC's current 9-1-1 vendors.
   b. Change Orders were registered by the NYC Comptroller and DoITT is now in the Implementation Phase.

3. Implementation and Steady State Phases:
   In addition to requisite procurement steps above, implementation dates have been established in accordance with:
      a. NYPD and FDNY operational readiness for this new service, e.g., documented TT9-1-1 procedures, call taker training, etc.
      b. Completion of testing of vendor solution in DoITT's System Development Environment (currently underway) and completion of required construction and acceptance in PSAC 2 and PSAC 1 (currently underway).
      c. A public awareness campaign to communicate an important message to NYC 9-1-1 users -- "*Call if you can, only text if you can't.*"
      d. It is expected that NYC will become "text enabled" before the end of the 2nd Quarter of 2018.

4.0 Program Governance

This Annual Report on NYC Next Generation 9-1-1 Implementation was prepared by the Department of Information Technology & Telecommunications in consultation and collaboration with the New York City Police Department and the Fire Department City of New York. These agency partners are the same participants in DoITT's integrated Public Safety IT Program Management Office, governed by the multi-agency Public Safety IT Steering Committee of Agency executives.

5.0 NYC Local Law 78 of 2016

LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2016

No. 78

Introduced by Council Members Cumbo, Levine, Gibson, Mendez, Eugene, Koo, Koslowitz, Rose, Rosenthal, Rodriguez, Kallos, Williams, Torres, Cornegy, Van Bramer, Cohen, Richards, Gentile, Mealy, Dromm, Vacca, Grodenchik, Dickens, Greenfield, Lander, Vallone, Levin, Menchaca, Ulrich and Borelli.

A LOCAL LAW

To amend the administrative code of the city of New York, in relation to reporting on the implementation of next generation 911.

Be it enacted by the Council as follows:

Section 1. Chapter 1 of title 10 of the administrative code of the city of New York is amended by adding a new section 10-173 to read as follows:

§ 10-173 Next generation 911. a. As used in this section, the following terms have the following meanings:

Commissioner. The term "commissioner" means the commissioner of information technology and telecommunications.

Next Generation 911. The term "next generation 911" means an internet protocol based system that allows digital information, including voice, photos, videos, and text messages, to be transmitted from the public to emergency responders in accordance with any national 911 program standards or guidelines applicable pursuant to federal or state law.

b. By no later than six months after the end of each fiscal year, the commissioner, in consultation with the police commissioner and fire commissioner, shall issue to the mayor and the

council, and make publicly available online, a report on the implementation of next generation 911 within the 911 emergency assistance system. Such report shall contain (i) a description of the current implementation plan, including planned next steps, (ii) a description of steps taken towards implementation since the prior report, (iii) a description of the feasibility of implementing a 911 text message transmission capability before full implementation of next generation 911 and (iv) any other information the commissioner deems relevant.

c. Upon determining that next generation 911 has been fully implemented or that no further implementation will occur, the commissioner shall issue to the mayor and the council, and make publicly available online, a final report under subdivision b of this section and no further reports shall be required. Such final report shall include a conspicuous statement that it is a final report pursuant to this subdivision.

§ 2. This local law takes effect immediately and is deemed repealed six months after the final report required by subdivision c of section 10-173 of the administrative code of the city of New York, as added by this local law, is issued.

THE CITY OF NEW YORK, OFFICE OF THE CITY CLERK, s.s.:

I hereby certify that the foregoing is a true copy of a local law of The City of New York, passed by the Council on June 21, 2016 and approved by the Mayor on June 28, 2016.

MICHAEL M. McSWEENEY, City Clerk, Clerk of the Council.

CERTIFICATION OF CORPORATION COUNSEL

I hereby certify that the form of the enclosed local law (Local Law No. 78 of 2016, Council Int. No. 868-A of 2015) to be filed with the Secretary of State contains the correct text of the local law passed by the New York City Council and approved by the Mayor.

STEPHEN LOUIS, Acting Corporation Counsel

2