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# New York City's New 911 System Goes Down Four Times
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After limping along for decades on an aging 911 Computer-Aided Dispatch (CAD) system, New York City finally commissioned a new, state-of-the-art 911 system as part of the Bloomberg Administration's USD $2 billion upgrade of the city's emergency communications infrastructure. The new 911 system underwent extensive testing prior to its inauguration, but this did not prevent it from failing four times in its first three days of operation during late May, 2013.

## A New 911 System After Forty Years

Back in the early 1970s, New York City installed a then state-of-the-art CAD system to handle its 911 emergencies. The system was a green-screen, mainframe-based system that was a modification of an airline reservation system.

Time passed, and 9/11 happened. NYC realized that it needed to make major improvements to its emergency communications system and initiated a USD $2 billion program to do this. The plans included a new $630 million call center to combine the operations of police, fire, and medical dispatchers and additional funds for an upgraded 911 system to route emergency calls to the dispatchers. The disaster caused by Hurricane Sandy intensified the need for these upgrades.

Alabama-based Intergraph was selected in 2008 and was awarded a USD $73 million contract to provide the new web-based 911 system. The Intergraph 911 system is an existing product that is used by 2,500 agencies around the world.

The system is designed to immediately record the location of the emergency caller based on the land-line number or mobile GPS coordinates. It recommends the deployment of resources based on incident location and vehicle location, unit type, drive time, officer skills and availabilites, and other information.

The system taps into state and local databases to check for arrest warrants and prior calls from the calling location. It creates interactive maps for the dispatchers. The maps show subways, schools, and other landmarks. In a year or so, plans call for the system to support digital dispatch and to provide automatic vehicle location to aid the dispatchers in deploying emergency services. Ultimately, all dispatch information will be sent to the city's police cars.

The Intergraph system is able to interoperate with other 911 systems in the region. It is designed to ease the city's migration to the next-generation 911 (NG-911) systems that will use VoIP (Voice over Internet

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Protocol) for much of the city's communications, thus relieving a good deal of traffic from the city's land mobile-radio network.

Intergraph began extensive testing of NYC's new 911 system in late 2012. The system was tested for six months, and almost 5,000 employees were trained. The system finally went live on Wednesday, May 29, 2013, at 3:15 AM EST.

## Infant Mortality

The system didn't last long. Just a half day after its inauguration, it crashed. And then crashed again – and again – and again. It crashed four times in just a little over two days. So much for exhaustive testing.

### The First Outage

At 4:21 PM on May 29th, just a half-day after its commissioning, the system unexpectedly went down in the city's primary call center in downtown Brooklyn. The computers at the call center shut down, and hundreds of screens went dark along with satellite terminals in other rooms where dispatchers listen to police and EMS (Emergency Medical Service) radios to determine where to send emergency responders.

The outage shut down the links between the 911 call operators and the dispatchers. The dispatchers figure out which precinct or neighborhood is involved in the emergency and which units to assign to the response.

All calls coming in were answered, but the call operators had to scribble the emergency information on paper slips and hand them to runners, who ran the slips to dispatchers in the NYPD (New York Police Department) and to EMS radio rooms.

The outage lasted for sixteen minutes. One longtime NYPD phone operator described those sixteen minutes as pure pandemonium, as there were not enough runners to keep up with the call volume.

### The Second Outage

Intergraph teams worked through the night to determine the cause of the outage. They finally fixed the system at 3 AM. Or did they?

The next morning, Thursday, May 30th, the system crashed again. This time it was down for six minutes, and the runners were put back into service.

### The Third Outage

That afternoon, the 911 system went down again, this time for thirty minutes. Intermittent outages were experienced for the next hour. The runners were back in force.

### The Fourth Outage

The next evening, May 31st, at 7:00 PM, another outage greeted the call operators, this time for a half hour. However, in this event, an FDNY (Fire Department of New York) spokesperson said that the outage was not caused by a system error. Rather, it was a human error. Someone had mistakenly powered down a server, and this caused all of the dispatch computers to crash.

## The Writing on the Wall

New York City's upgraded 911 system experienced problems from the start. The contract was initially awarded to HP in 2002 for a total of USD $47 million. Reportedly, HP did not deliver a system to the

satisfaction of the city's contract managers; and the contract was cancelled. HP returned USD $30 million in settlement. The contract was re-awarded to Intergraph for USD $73 million in 2008.

Intergraph was investigated as part of the contractual process by the New York Department of Investigation. Disturbingly, the department issued clear "caution" warnings concerning Intergraph based on prior experience.

In 2004, Intergraph rolled out a new 911 system for the San Jose, California, police and fire departments. The system had so many problems that a grand jury was convened to investigate the system and Intergraph. The grand jury issued a scathing report mirroring the problems later experienced by New York City. The system totally broke down in the first few days of operation. Dispatch workstation computers and mobile computers crashed. The call operators had to dispatch emergency responders with pencil and paper.

In 2007, following the installation of a new 911 dispatch system in Nassau County, New York, complaints surged of similar problems. Nassau County is in New York City's own backyard.

Obviously, these warnings went unheeded; and New York City paid the price.

## Summary

It seems that this project suffered from several faults. First and foremost has to be inadequate testing. Perhaps the city should have paid more attention to the previous Intergraph failures that its Department of Investigation had uncovered. This could have focused testing attention on areas in the product that had proven to be weak in the past.

There is also the question of redundancy. A 911 system is certainly a mission-critical system deserving an availability of four or five 9s (just minutes of downtime per year). Where was the redundancy that would keep the system operating during these component failures?

A major error – true for any upgrade – was in not maintaining a path to return to the original known, working system if problems occurred. There should have been a way to keep the original system operational and on standby so that 911 operators and dispatchers could return to that system and use it until the new system had undergone further testing in the areas of failure. As of this writing, there have been no reported failures for two weeks. Is that enough to establish faith in the new system to the extent that the original system can be decommissioned? I think not.

Fortunately, the city had the ultimate backup – manual operation. According to the city administration, no one was ever in danger of being denied care by New York City's emergency services.

## Acknowledgement

Material for this article was taken from the following sources:

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NYC's 911 System Crashes for 4th time in 3 Days: Sources, *NBC New York*; May 31, 2013.
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