



Better Emergency Response with Capturx for ArcGIS

Capturx helps first responders immediately share field conditions during Emergency Operations Terrorism Exercises

Like most cities, the City of Nashua relies on GIS systems to help track and coordinate a range of city services, assets, and activities. Data is collected through activities across the city and then centrally stored and analyzed in ArcGIS. Nashua was an early adopter of Capturx for ArcGIS, because it enables teams to collect information easily on paper maps with a digital pen, which automatically integrates the data into ArcGIS. City teams are able to quickly collect and share field data without the time, cost, and hassle of handling and re-entering data on paper.

When the directors of the Nashua Emergency Operations Center (EOC) learned of the Capturx solution, they decided that it would play a key role in their homeland security planning and upcoming exercise. The exercise involved more than 20 agencies and 100 people from city, county, and state departments. Past exercises revealed that their data collection processes were error-prone and inefficient, with key data not flowing to all stakeholders. By using Capturx, the cross-functional team was able to collect data quickly, send it wirelessly to the EOC, and have it displayed to every agency in near real-time.

Situation: First Responder Terrorism Exercise

Emergency preparedness is something that the City of Nashua takes seriously. This particular training exercise was a simulation of a coordinated terrorist attack which included explosives, fires, and hostages. To make the exercise as real as possible, the city assembled agencies from the city, county, state and neighboring jurisdiction. Police, fire, SWAT, IT, health, the Red Cross, ambulance services, education, and other groups all participated in a coordinated effort to control the situation.

To accurately portray the unpredictability of such an event, planners of the terrorist exercise ensured that information on the ground changed quickly and continuously. It was critical that the changing information be captured, documented, and disseminated as often and as fast as it changed. The EOC is the central coordination point but its physical location, two miles from the incident, introduced challenges to the amassing and sharing of time sensitive information.

Challenges: Slow and Error-prone Data Flow

In previous drills, the flow of information from the field to the EOC proved chal-

Summary

Customer: City of Nashua, GIS Department

Situation: First Responder Terrorism Exercise

Challenge: Slow and error-prone data flow from first responders to the Emergency Operations Center.

Solution: Capturx for ArcGIS deployed in operations trailer; critical data updates immediately aggregated and sent to Emergency Operations Center.

Results: Field teams easily collect GIS data; quickly share with EOC to improve decision making.

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GIS Manager
City of Nashua, NH

lenging. A common scenario would have responders at the scene provide situational updates to the corresponding departmental staff at the EOC through a conversation over the phone or radio network. Verbal updates would then be documented on maps or forms. In order to provide the update to the other departments at the EOC, the entire group would gather around a small flip chart for impromptu updates as the situation warranted.

With 30 to 40 departments represented at the EOC, key stakeholders would often not be present for the ad hoc updates. The verbal relay of visual map information was also prone to error, which further hindered accurate and timely information sharing. The flow of data from the field to the EOC and back needs to be timely, easy to understand, and accessible to all that need it.

Solution: Deployment of Capturx for ArcGIS

To improve information flow from the field, the City of Nashua selected Capturx for ArcGIS to collect field intelligence and quickly deliver it to the EOC.

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The basic data capture process with Capturx is tried and true. Teams print maps on ordinary paper through ArcGIS, which they take into the field to record important information about fast-changing situations. They mark up the maps using ink, as they do today. There’s no new complicated equipment to buy, learn or support.

The difference is that the teams are using Capturx software with digital pens. The Capturx add-in within ArcGIS prints each map with an imperceptible digital watermark which can be read by a digital pen. As the team member writes on the map, the digital pen records the ink strokes and their relationship to the map data based upon the digital watermark. Teams can simply annotate maps or even use the legend to create new map features.

For example, teams can select roadblocks or checkpoints from a legend and draw them on their paper maps. Once the pen is docked into its USB port on a PC or laptop, the field data automatically appears in ArcGIS. Notes can appear as ordinary handwriting on maps. New features, such as roadblocks or checkpoints, can be automatically added to the geodatabase.

“I can create a PDF out of it, (the map and the data collected) and if I need to send it to the State Police or the FBI, I can do that immediately without having to worry about how to send that flipchart paper map that he’s marked up with a highlighter.”

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GIS Manager
City of Nashua, NH

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Results

Faster and better decision-making

As a result of using Capturx, the extended Nashua team was able to get immediate access to the right information, in the right format. Teams were able to quickly get information into ArcGIS where it could be displayed on the big board in the right format and in the right contexts for all groups to see. They saw the information just as the team member collected it in the field. There was no guessing or miscommunication through verbal relay. They were also able to see it within ArcGIS – so teams could immediately manipulate it and create different views and simulations:

“I can let [the first responder] draw on that map, and then when I dock the pen, it’s going to show up on the screen in front of the Emergency Operations Center, projected to be 5 feet by 6 feet, and everybody in the room is going to be able to see it.”

Works the way they work

The team was able to automate data collection with Capturx without any changes to their workflow or having to buy, support, or train teams for mobile computers. Teams print maps on ordinary paper in the same way they do today. The pen is easy to carry and durable for variable field conditions.

With the natural pen interface and direct integration into industry leading applications, virtually any team member can begin using it right away. The pen captures every stroke of information that is marked on the map or written on the form. Once the pen is docked to the computer, the data is instantly available for editing or upload to other central systems like those used in Emergency Operation Centers.

The rechargeable battery allows field use for up to ten days with a single charge. Unlike mobile computers, there is no boot up time and teams always get automatic paper back-up copies of all data collected in the field. There is no new technology to learn or data to send, verbally relay, or manually re-enter.

Immediate ROI

Any emergency preparedness exercise is fundamentally a learning experience. Teams learn how to prepare, how to collaborate effectively, and how to put their response plans into action quickly and efficiently. There is little time to learn complicated new technologies or troubleshoot mobile computer issues in the field.

The City of Nashua’s Emergency Operations Center was able to achieve new levels of data accuracy and response with significantly faster access to field information compared to having information conveyed verbally over the phone or radio and recreated in the EOC.

The city was able to improve decision-making without investing in complicated training, devices, or putting a burden on their IT department.

Future Plans

Based on their initial success with Capturx, the city of Nashua is planning on expanding how they use Capturx in emergency response situations.

Ahead of future exercises, Nashua will use Capturx to help with team tactical planning. Rather than grouping the tactical team around a clip board and a standard letter size sheet of paper, the data will be captured with the digital pen and then immediately displayed using the large screen monitor located on the side of the command vehicle. The tactical team will be able to easily see the status of the situation and receive instructions on executing the tactical plan.

After future exercises, Nashua will use Capturx to speed up collection and analysis of the activity logs which are recorded on paper for all calls and activities. Today, these handwritten logs are re-typed into computers after events for future reference and analysis. With Capturx Forms for Excel, Nashua will be able to immediately digitize activity logs as they are handwritten on standard paper forms in the existing workflow.

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With Capturx for ArcGIS, the City of Nashua is better prepared to respond to emergencies – whether manmade or natural disaster. First responders can quickly and reliably capture information from the scene of events using pen and paper without complicated training, support, or computers to get in the way. Since the data is automatically digitized and integrated into the native back-end systems – the Emergency Operations Center gets faster access and the right context to make better decisions.

“We’re extremely pleased with Capturx for ArcGIS, it’s easy to use, saves us time and money and most importantly – assists us in making the right decision at the right time.”

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GIS Manager
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