Capturx Case Study

Arizona Fusion Center

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Arizona Fusion Center Automates Data Collection for National Infrastructure Protection Plan with Capturx

Summary

Customer: Safeguarding 1.2m residents and critical infrastructure across 469 sqm.

Challenge: Ongoing data collection for local emergency planning and Homeland Security mandates.

Solution: Capturx solutions for integrating handwritten data on paper maps and forms into Office and ArcGIS.

Results: Immediate access to data while saving up to 25% of time without data re-entry, complex tools, or training.

Dedicated to "Make Phoenix the Safest Major City" in the United States. Phoenix is one of the fastest growing US cities, home to 1.2 million residents across 469 square miles. To keep those residents safe, the City of Phoenix employs a large force of approximately 2,600 Terrorism Liaison Officers, Police Officers, and Detectives, and more than 700 civilian support staff personnel. In addition to looking after daily security and safety needs, they are also on the front line of safeguarding Arizona's critical infrastructure in the event of an attack, natural disaster, or emergency.

A big part of helping prevent incidents and prepare effective emergency responses is access to quality information. The Arizona Fusion Center is constantly collecting and updating information about critical infrastructure and key resources, such as: essential facilities, utilities, transportation networks, and information systems. That data is used for both local emergency preparedness planning and for use with the Department of Homeland Security's National Infrastructure Protection Plan (NIPP). Highly trained Terrorism Liaison Officers and Police Officers have traditionally spent up to 25% of their time simply re-entering data that they have collected about critical infrastructure using paper forms. Since moving to Capturx Forms for Excel and digital pens, they are able to eliminate most of the data entry time, allowing them to spend more time assessing vulnerabilities and planning for future emergencies.

Situation

For many years, public safety agencies have collected and stored information on critical infrastructure to help with emergency management. Within the last decade, the Department of Homeland Security (DHS) has played a greater role in coordinating data tracking for the nation's critical infrastructure with the implementation of the National Infrastructure Protection Plan (NIPP). That nationwide vision requires comprehensive and up-to-date information tracking on all kinds of assets and situations to support better emergency preparedness and decision making.

Like many mandates from the Federal Government, the NIPP allows individual states to figure out the mechanics of satisfying the requirements. Traditionally most of this information has been collected on paper forms and maps, but there hadn't been a centralized repository for the data.

The Department of Homeland Security developed a comprehensive database called the Automated Critical Asset Management System (ACAMS), in order to support their Critical Infrastructure/Key Resource (CIKR) program. ACAMS solved the problem of how to automate the data workflow in a way that ensures that information is correctly received, validated, and disseminated following the NIPP processes.

ACAMS also includes other functionality for emergency response and management teams including Buffer Zone Management and a Rapid Assessment and Deployment tool (RAAD).

"You can use the pen to capture anything into an electronic form."

"Anyone can use it, they don't need to be tech savvy. I have a 5-minute class on how to collect ACAMS data with a digital pen."

GARY KENNEDY
Terrorism Liaison Officer
AZ Counter Terrorism
Information Center
Arizona Fusion Center

"The RAAD forms are now integrated into ACAMS and DHS has approved the data coming from the Capturx solution."

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Challenge

ACAMS is as good as the data inside the system. Terrorism Liaison Officers (TLOs) and Police Officers would survey buildings and surrounding areas and document their findings using paper forms and pens. When they returned to the office, they would manually enter the data into ACAMS. The data entry process would typically take 2 hours per person and it could take months before data was accessible in ACAMS.

In this case, the professionals doing the data collection are highly trained in making threat vulnerability assessments. Having them spend up to 25% of their time doing data-entry wasn't the most efficient use of their specialized skills. They also weren't necessarily trained as GIS analysts or Information System specialists.

In some cases, the data needs to be immediately available in ACAMS. For example, right before Super Bowl XLII, TLOs and Police had to unexpectedly deal with a good luck ritual of the New England Patriots, where they always change hotels on the Friday before Super Bowl Sunday. Officers were informed of the hotel shuffle on Tuesday, giving them only 3 days to gather new tactical information about the hotel and surrounding area. This would normally require a formal threat vulnerability assessment: work by the 12 TLOs, surveying the vicinity surrounding the hotel with as much as 60 pages of forms to complete and enter into ACAMS.

The Arizona Fusion Center realized that they needed a better way to collect and process data for both general threat vulnerability and for rapid assessments. Mobile computers for data collection were an option, but cumbersome equipment was another concern. Carrying laptops or tablets with high end GIS software and databases throughout the course of a day is cumbersome due to size, weight, fragility, and battery life. PDAs presented their own challenges since the keyhole view was difficult for viewing building plans and GPS signals typically weren't available indoors.

Solution

To automate and speed up the collection of critical infrastructure data into ACAMS and GIS, they elected Capturx Forms for Excel and Capturx for ArcGIS. Capturx enables teams to collect information on paper forms and maps using a digital pen, which scans the information and integrates it directly back into Office and ArcGIS.

Using Capturx Forms for Excel, the team leveraged its existing set of RAAD or IAV forms, enabling them to be completed using a digital pen. The forms are printed using office printers with ordinary paper. Capturx creates a digital watermark for each form enabling it to be recognized with a digital pen. As the digital pen writes in ink – it also scans and stores the information on each form. The highly skilled TLOs can continue the reliable process of collecting data with pen and paper in the field. When TLOs return to the office, they can simply connect their pens to their PCs and get immediate access to the collected data. The team can access both scans of the original handwriting and the handwriting converted to text for import into ACAMS. They also rely on ArcGIS to help coordinate emergency planning and operations. The Arizona Fusion Center is the hub of emergency operations for the 51 city agencies in Phoenix. During incidents, emergency responders need a quick way to collect information about fast-changing conditions and share them across agencies. As that information is often collected on paper maps in the field, they turned to Capturx for ArcGIS to automate geodatabase updates with data handwritten on paper maps.

During emergencies, teams need immediate access to data about conditions in the field to make well-informed decisions. Sending data on paper is time consuming and teams do not want to fuss with cumbersome mobile computing equipment during emergencies. The delay in getting information off paper and into a back-end database was slowing the flow of information and creating a perceived safety issue. Capturx for ArcGIS works with existing GIS data, enabling paper maps and building plans to be printed directly from ArcGIS with unique digital watermarks for use with digital pens. The TLO or Police Officer writes on the paper map using the digital pen, which creates both a handwritten copy and digital copy stored on the pen's memory. Each stroke of the pen on the paper map can create a new feature or annotation which is geospatially referenced and ready to be automatically added to the geodatabase. Once the pen is docked into its USB port on a PC or laptop, the field data automatically appears in ArcGIS. No new technology to learn or data to re-enter.

Benefits

Improve efficiency by up to 25%
With Capturx, the Terrorism Liaison Officers and Police Officers no longer have to transcribe all of the information from paper –saving valuable time and lowering costs. A typical deployment takes 12 TLOs and Police Officers per site, collecting RAAD/IAV intelligence for up to 12 hours. Since the two hours of input into ACAMS and GIS per officer has been eliminated, they are saving 24 hours per site survey. This great time savings allows the department to more efficiently deploy resources and collect data on more resources with their existing team of TLOs.

Faster access to more accurate data helps protect lives and property
Once the information is collected with Capturx, it can be made immediately available to all 51 departments and to the DHS through the central geodatabase and ACAMS system. By eliminating data transcription, they have not only improved the flow of information, but have also minimized the chance of transcription errors being introduced. As a result, overall data quality has increased; uncertainties about information have decreased; and better action plans have been created.

Works the way they work
Although the speed and efficiency of data collection have been revolutionized, Capturx did not require radical changes to the simple data collection process.
Teams could simply use the tried and true method of filling out forms with a pen and marking up large format paper maps. The digital pen is durable, easy to carry, and the data upload can be performed by nearly anyone.

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 uploading to other central systems where it can be shared across multiple agencies. Capturx also has the added benefit of creating a hard copy backup of everything that is collected. Unlike mobile computers, Capturx requires little training, support, or learning of complex new software. At the same time, the Capturx digital pen can be lost or destroyed without losing the original data – which remains intact on the paper.

Future Plans

For the future, the Arizona Fusion Center plans to expand the use of Capturx beyond the Arizona Terrorism Liaison Officers to include the Gang task force, Crime Analysts, Critical Infrastructure Analysts, and as many other analysts within the 51 agencies that take interest. There are also plans in the works for the Arizona Department of Public Safety to purchase additional kits for the "All Hazards" approach, an approach advocated by DHS to plan for anything ranging from terrorist attacks to natural disaster. These additional kits will be strategically positioned around the state of Arizona.