

Stories from the Street



Datacasting: Improving Video Streaming and Data Sharing for Public Safety

Public Safety Challenge

In an emergency, first responders need access to timely and relevant data to make informed decisions. Traditionally used networks are meant for voice communication and do not have the capacity to transmit large amounts of data, particularly video. Although voice communication is important, videos and images enhance situational awareness.

Traditional networks can also become overloaded or completely fail as the network becomes saturated by public use, leaving public safety agencies competing for the same network resources as the general public to send mission-critical information.

First Responders Group (FRG) Solution

Quickly and reliably sharing information between public safety officials can be a challenge, but it shouldn't be. Datacasting provides a solution for public safety users to quickly share secure data, including voice, text, files, images, and video to a select audience. Through its use, first responders have a reliable means to stay connected, maintain situational awareness, and access information they need.

On using traditional means of communications versus datacasting, LT. Bret Collier, Chief of Staff for the University of Houston Police Department said, *"Something always gets lost in translation. The advantage to this (using datacasting) is we can send video directly to the officers (and) they can look at an image and know exactly what they are looking at."*

Since datacasting uses existing public television infrastructure, it also provides an effective method to relieve traffic from traditional wireless infrastructure. Network congestion may cause other wireless services to fail, but datacasting's bandwidth is expandable and will continue to provide reliable support. Additionally, public television stations can reach 97% of the U.S. population today, including rural areas and territories, allowing this technology to be accessible almost anywhere in the country.

Testing the Technology

FRG and its partners, Johns Hopkins University Applied Physics Lab and SpectraRep, conducted several successful pilots, tests, and experiments in 2015 and 2016 in Houston, Texas; Chicago, Illinois; Washington, D.C.; and Boston, Massachusetts. The pilots demonstrated datacasting's ability to support public safety communications in an operational environment, as well as its ability to integrate with other communications systems.

Datacasting provides the ability to deliver secure, high-quality data and video to emergency services personnel. "Getting that 'eyes-on' look at a situation or specific location is a huge help to the first responders. Having that real-time, crucial video delivered reliably, lets the different teams know what they're heading for, and how to prepare for it."

—Jack Hanagriff of Houston's Office of Public Safety and Homeland Security



Homeland Security

Science and Technology

Our Technology in the Hands of First Responders

Since the successful testing, Houston has used the technology during the following large-scale events and emergency situation, and will continue to use it for its day-to-day operations and upcoming large-scale events:

Datacasting helped responders provide seamless security at the Republican Presidential Candidates' Debate

With many responder agencies involved in the security of such a large-scale event, seamless communication is vital. Through the use of datacasting, Houston easily bridged communication, shared content, and connected security cameras, functions previously not possible. With just a few quick clicks, all responder agencies involved shared their display screens with one another, a tremendous asset as each group's camera views significantly benefitted the others. Responders in the field and in emergency operations centers (EOC) also received live footage from on-scene helicopters, showing areas where crowds congregated and allowing officers to ensure everyone's safety.

"This software is giving us the ability to quickly and easily accommodate needs and fill capability gaps with minimal strain on our resources."

—Jack Hanagriff



Datacasting greatly increased situational awareness and the ability to monitor and mitigate potential safety issues at the 2016 NCAA Men's Final Four Basketball Tournament

With attendee totals nearing 75,000 daily, security for the events was paramount. Through the use of datacasting, public safety officials quickly and easily communicated by securely sending and streaming videos, text messages, and other files. Officials viewed live-streaming footage from security cameras located throughout the stadium and surrounding areas on their tablets and computers from wherever they were stationed. Officers in the field also captured and uploaded live footage as they monitored their locations to share with nearby officers and the EOC.



Datacasting helped quickly survey flooding due to heavy storms

During and after disasters such as flooding, the ability to quickly evaluate situations and send out the proper assistance required is critical. In April 2016, as severe storms and floods impacted the Houston area, the Houston Fire Department used a helicopter to survey flooded areas. Since the available helicopter did not have a camera on board, officials quickly solved the problem by using the datacasting smartphone app which allows users to capture, upload, and securely send live video footage and images from any location using a mobile device. The footage captured from the helicopter was easily shared with the EOC and city leaders to quickly evaluate the affected areas.

After using the tool to respond to the scene, Jack Hanagriff said, *"This software is giving us the ability to quickly and easily accommodate needs and fill capability gaps. A cop (me) and a fireman quickly pulled it off."*



Datacasting significantly helped enhance safety and security at the 2017 Chevron Marathon

As a moving event, a marathon can present challenges for those involved in maintaining everyone's safety and security. It can be difficult to relay situations and provide proper descriptions via traditional communications means, like radios. Datacasting provided a quick solution to the bike team on duty. Officials were able to safeguard the event and maintain situational awareness with all other public safety components involved by streaming live footage from their smartphones.

On the ease of using datacasting from a phone, "All you have to do is download the app, push a button and you can have an integral part in capturing critical information."— Rick Flanagan, Houston's Emergency Manager

Datacasting provided seamless coverage in areas that would not otherwise be available during Super Bowl LI

In a large scale event like the Super Bowl, the many public safety agencies involved need to be prepared for almost anything. Datacasting provided a means for seamless communication across the multiple agencies involved, allowing them to quickly and easily share video footage with the various operations centers and field units stationed throughout Houston. Throughout the weekend, datacasting was able to provide an alternate solution for providing coverage in areas where the limited fixed camera coverage onsite did not provide an optimal view of the situation. Often times if officials are unable to view areas from stationed cameras, they are required to send out large teams to scope out the areas. Datacasting allowed for smaller teams to dispatch and stream footage from the scenes for all other units to gain situational awareness, make quick decisions, and send the proper level of response needed.

Interested in Learning More?

FRG recently partnered with America's Public Television Stations (APTS) to develop a strategy to make datacasting available nationwide. As this strategy is formalized, additional information will be released on how datacasting can be available to responders and first responder agencies.

In the meantime, additional resources can be found on our program page: <https://www.dhs.gov/science-and-technology/voice-video-and-data-public-safety>.

For any questions, please email us at: First.Responder@HQ.DHS.GOV.