# WITH TRIMBLE CATALYST MOBILE DATA CAPTURE, CITY OF CENTENNIAL EFFICIENTLY PROVES GIS ACCURACY

Using Trimble's software defined receiver for mobile devices, Colorado city collects and verifies data for park serving 107,000 residents.

by Gareth Gibson



A iming to be a model small government, Colorado's City of Centennial actively seeks technology to streamline processes and provide better data. With an opportunity to test a new mobile service for location accuracy and data verification, the city's Geographic Information Systems (GIS) specialist gathered 50 data points for public works assets at the city's crown jewel, Centennial Center Park.

## Challenge

Accurate and up-to-date mapping of systems and assets is critical for local governments and utilities to

contend with aging infrastructure, weather events and increasingly high customer expectations. When problems arise, municipalities and utility providers must quickly and accurately locate utilities to provide the best possible response for residents.

The City of Centennial since 2008 has partnered with global engineering company CH2M to manage its public works ranging from traffic engineering to fiber optic cable to snow removal. The successful publicprivate partnership, often cited as a model of small government, puts a

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# **PRODUCT WATCH**

premium on efficient processes.

Incorporated in 2001, the city began with a clean slate and a desire to create a place of pride for its residents. Focused on a small government, the city partnered with other agencies and the private sector for most of its services, including public works. Since bringing on CH2M to assist with day-to-day public works operations, Centennial has demonstrated the benefits of a public-private partnership, including a flexible system to adjust service quantities based on changing priorities and demands.

It takes good data to maintain that flexibility and efficiency. When CH2M's senior geographic information system (GIS) specialist, John Londo, considered options for upgrading the city's paper and PDF infrastructure maps, he turned to online GIS and mobile applications to capture data in the field.

In the past, users like Londo needed specialized hardware solutions or handheld receivers for their own devices to pinpoint locations to achieve better than typical locationenabled five meters of accuracy.

As part of an early adopter program, Londo was invited to test centimeterlevel mapping accuracy on a mobile device using Trimble Catalyst, a software-defined Global Navigation Satellite System (GNSS) receiver for Android devices, integrated with Esri's Collector for ArcGIS app for field data collection.

Trimble Catalyst is revolutionary technology made possible by the increasing processing power of mobile devices and innovative software that replicates the work of a dedicated hardware receiver.

It is an innovation that dovetails with Bring Your Own Device (BYOD) activity in the field and the ability to gather and verify positions quickly on personal smartphones, enabling more mapping and GIS professionals



Figure 1. Centennial Center Park

in the utility space to rely on personal mobile devices for information gathering.

#### Solution

Londo took the combined Trimble Catalyst with Esri's Collector for ArcGIS system for a test drive at Centennial Center Park, which was designed to provide year-round family friendly enjoyment with a playground, splash pad, amphitheater, plaza and two shelters, all equipped with electricity.

Using Trimble Catalyst on an Android tablet connected to the plug-and-play Catalyst DA1 antenna on a pole, Londo collected about 50 data points for streetlights, hardscaping, electric junction boxes, and other public works assets across the 11-acre park.

By integrating with a wide range of applications and providing a dualfrequency, multi-constellation receiver picking up signals from the DA1, Trimble Catalyst made it possible for Londo to collect data points that were then added to Collector for ArcGIS field software, a collaborative solution for the creation of maps, scenes, layers, analytics and data.

The antenna's small size also makes it easy to store and use on demand, while the Trimble Catalyst subscription gives users the flexibility to choose the level of accuracy to suit their application needs from meter level to centimeters.

# The DA1 antenna is the piece that plugs into your phone or tablet and allows you to have that high accuracy.

John Londo Senior GIS specialist, CH2M

"In the past, you would go and shoot a bunch of stuff and think, yes, that looked good, but what you were seeing were the points on a blank screen with no reference data," he said. This sometimes led to discovering assets that weren't correctly shot in the field. "Now, while we're out there, we can see everything we need to verify data quality on-the-fly, and can say, 'ok, we missed this manhole cover there or this valve there.""

For utilities and municipalities, comprehensive digital site maps are invaluable when facing a challenging operating environment that makes accurate and up-to-date mapping of systems and assets more critical than ever.

Previously, public works employees or utility workers might use their smart phones to determine the location of certain assets, but positioning accuracy was limited to meters. Today, using Trimble Catalyst with a DA1 antenna and their Android devices, field workers can determine how close they are to an asset within centimeters.

### Results

For public works and utility professionals, Trimble Catalyst's high-accuracy, on-demand Positioning-as-a-Service is convenient, scalable and, most importantly, can be delivered straight to select Android-based handhelds, smartphones and tablets via state-of-the-art antenna technology.

This flexible access to powerful GNSS technology also allows a wider variety of public works and utility workers to collect and verify the GIS data needed for municipalities to make efficient and informed decisions.

Londo estimates the solution of Trimble Catalyst and Collector for ArcGIS saves about two hours of processing time after a day of collecting data. Because the system displays reliable accuracy estimates while in the field, it is easy to make sure features aren't missed that would force a return to the site. The ability to see and prove accuracy in the field through reference data also adds efficiency to the process, Londo said.

"I haven't been able to do that with a GeoXH, or a handheld unit," he said. "That was the big part I noticed."

By comparison, using professional mapping equipment comes with a much higher cost and isn't always practical. "It's a separate technology solution used for a very specific task," Londo says. "You can't make a phone call on it. You can't text on it.

All it does is capture those points." By contrast, using Trimble Catalyst and Collector for ArcGIS, the crew could gather accurate, verifiable data with a minimal investment.

"If it was just Catalyst by itself, I'd say it's a definite cost saving and it's easy to use," Londo says, "but as a bonus, it also works flawlessly with the Collector for ArcGIS app. The interaction of the two together is the biggest selling point."

Since trying Trimble Catalyst with Collector for ArcGIS, Londo has used the system to verify fiber optic cable and electrical boxes, and he plans to use it more frequently in water and wastewater settings as he manages GIS for other projects in New Mexico, Florida and Georgia.

"With utilities, water and wastewater, assets are constantly getting buried in the sand or weeds, so Catalyst would have a broad application," Londo said, "and you can't get higher accuracy for a better price."

## **Trimble Catalyst in India**

The central government of India has taken on many significant initiatives to build and enhance rural and urban infrastructure. The initiatives comprise three major segments: physical, social and environmental. The attention in the rural segment is more directed toward land



Figure 2. Trimble Catalyst DA1 antenna

modernisation, village-level broadband connectivity, rural electrification, rural road and rail connectivity, and health and hygiene. These require enormous amounts of spatial data collection, processing and management across various stages of program implementation.

A scalable, cost effective, open, workflow-integrated and precise data capture tool/solution will enhance the significance of survey and GIS components in these mission-critical programs.

Trimble Catalyst, along with an appropriate subscription-based workflow software, is being positioned as the solution for these large-scale flagship programs. Some of the initial work with Trimble Catalyst in India is expected to turn into pilot implementations soon, which will pave the way for mass deployment.



Figure 3. Trimble Catalyst in the field