



Water Resource Management

Add a great sub-head title here



Geospatial Applications

- Precise Survey & Mapping Applications
 - Irrigation- Drain, Canals, Ponds
 - Aquifer- Location
 - Drainage – Elevation and route survey
 - Flood control and Survey to quantify flood risk. Investigating water ingress routes into sites, buildings and basements.
 - Navigation- Precise
- Erosion and sediment control
- Discharge and dilution of water, wastewater, outfalls etc. for reliable modelling
- Determination of water balance of a region
- Land cover, vegetation density etc.



Survey data for Water Distribution

Trimble Technology





Requirement

- High accuracy survey for Pipe Network modelling
- GIS Data collection for distribution Network
- Update & Maintenance on existing Data
- Easier to capture data
- Integration of Survey data with GIS Platform





Challenges

- Affordable Technology
- Accurate Data
- Common platform for Survey & GIS Data
- Maintenance of paper data and digital data





Trimble Catalyst DA2 GNSS receiver

**Brand new engine at the heart of the
Catalyst positioning service**



Key DA2 Features

iOS & Android



Bluetooth
Delivery



Versatile



Lightweight

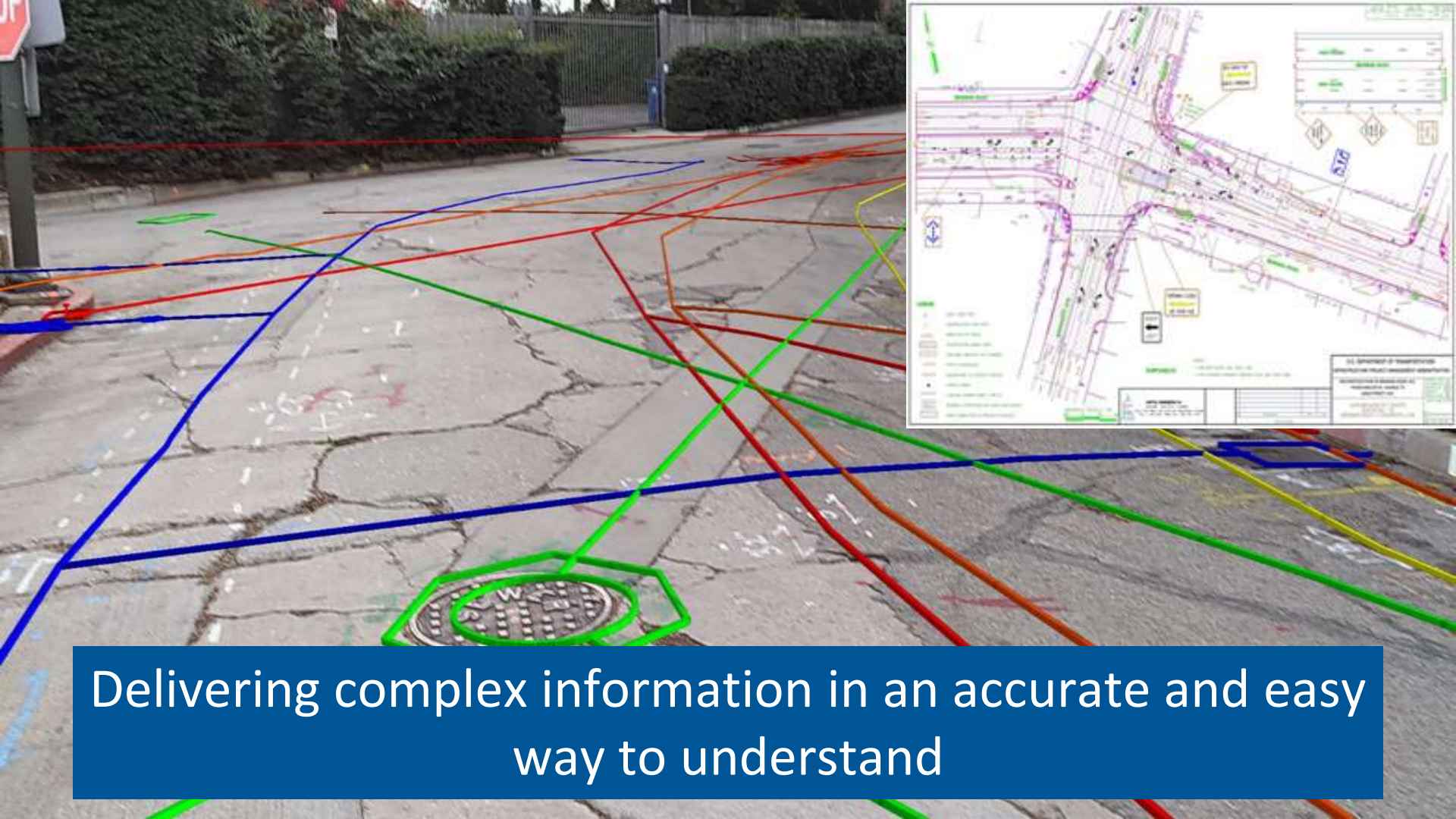


ProPoint
Technology



Catalyst
Positioning





Delivering complex information in an accurate and easy way to understand



Different Applications

River Bodies



Elevation Survey



River Profile



Bathymetry Survey

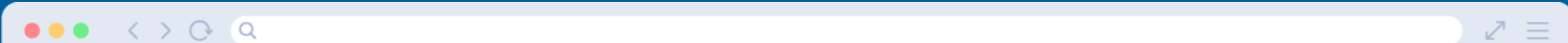


Flood Control



Streambed Survey





In the City Stream Watch program the MVCA monitors urban streams, measuring a wide variety of data every 50 m (160 ft). Results are recorded in TerraFlex on the Juno handheld, and displayed and shared with colleagues via a Web interface.



The MVCA is responsible for 4,400 km² (1,700 mi²) of watershed area for the Mississippi and Carp rivers.

Trimble Solutions:

• **Trimble TerraFlex mobile app**
Flexible software for mobile data collection

A rugged handheld computer with GNSS

Learn more at:
trimblamghere.com/terraflex

Experience Location



Ontario, Canada

FASTER, MORE ACCURATE, AND...LESS SOGGY

Aquatic monitoring teams abandon pen and paper in favor of mobile online forms and workflows.

Overview

Monitoring teams at the Mississippi Valley Conservation Authority (MVCA) strove to collect accurate data with pen and paper, but their water-based working conditions proved challenging. A data collection app especially designed for mobile workers provides workflows that prevent errors, improve accuracy, and increase efficiency.

CHALLENGE

The Mississippi Valley Conservation Authority (MVCA) manages the Mississippi and Carp river watersheds in Ontario, Canada. Its mission is to balance the needs of watershed users with the needs of the environment—they safeguard drinking water, protect local ecosystems and private property and support conservation-based recreational activities. In total the MVCA is responsible for 4,400 km² (1,700 mi²) of watershed area.

The MVCA regularly monitors their streamlines and water quality—teams gather information on water clarity and pH levels, fish species and numbers, vegetation density, and more. Their usual observations then inform management decisions. Their work is often physical and challenging as wading water gear they must scramble up and down banks and wade into flowing water.

Recording results with pen and paper in this environment is problematic and error-prone. So when presented with the opportunity to adopt a rugged and efficient technology solution—the Trimble® TerraFlex® mobile app on a Trimble Juno® handheld—the MVCA welcomed it. MVCA Information Technology Supervisor, Alex Broadbent said, "When colleagues at a local authority shared how it (TerraFlex) had helped them, we immediately recognized a need ourselves."

SOLUTION

The MVCA now employs TerraFlex on two ongoing projects: water quality monitoring, and information gathering prior to development along water courses.

TerraFlex enables teams to create their own data-collection forms, with each form containing fields for features and conditions. "That's the great thing about TerraFlex—it's very flexible!" Broadbent said. "We've built online forms to predetermine certain required information fields: who is the crew, date and time, water quality parameters and other notes."

For example, in the City Stream Watch program the MVCA is seeking to understand the effects of water quality in urban areas. Taking a sample every 50 m (160 ft) in urban streams, teams record water conditions such as clarity versus murkiness, pH levels, the presence of oxygen, and water temperature. In TerraFlex they can also record the accurate location of features and take geo-referenced digital photos tied to each location.

TerraFlex runs on a variety of devices, but MVCA chose the Trimble Juno handheld due to its ruggedness for outdoor use. "The Juno is a solid piece of equipment," said Broadbent. "It's water-resistant

for the monitoring department, plus its GNSS capability gives us better location accuracy than a smartphone."

Collected data is transferred to the Cloud for access by colleagues such as those in MVCA's GIS team. Transfer takes place automatically—even if data has been collected while the team is offline, as soon as they are online again TerraFlex synchronizes the data.

RESULT

"We save hours of data processing per project," said Broadbent. "And the data is far more accurate."

Previously, errors were introduced to MVCA's monitoring data in three ways: when data was recorded in the field, when data was manually entered into an electronic database from paper records, and when GIS staff were interpreting and transcribing their field colleagues' notes. The TerraFlex workflow ensures data accuracy and makes the entire process much faster. Staff are also able to view and use data instantly.

The TerraFlex mobile app solution enables the MVCA to make better informed, faster decisions for management of the watershed, and enables them to balance the environment's needs with those of the area's population.

"We save hours of data processing per project. And the data is far more accurate."

Alex Broadbent, Information Technology Supervisor, MVCA



Case Studies

JAL JEEVAN MISSION

Topographical Survey for JJM

Abel is vastly experienced in the Jal Jeevan Mission Projects across India. Abel has surveyed more than 2,500 villages and 15,000 km of road in the last couple of years.



Karnataka JJM

Around 2500 villages had to be surveyed spread across 8 districts in Karnataka. The identification and locating of villages with reference to the JJM list of villages was a challenge.

The existing water infrastructure in the village had to be surveyed to identify the Mini Water Tanks, Borewells, Open Wells, Taps etc along with their respective storage capacities and pump capacities for borewells. Existing Multi Village Scheme had to be identified to explain the current source of OHTs. Existing Distribution Network was also mapped.

Creative Approaches

It was challenging to incorporate the existing water supply infrastructure of the villages. Field Coordinators were deployed to collect information from the relevant Waterman and PDOs.

- Road levels at 30m along with type and width of road was captured in the survey.
- Existing Pipeline network was surveyed along with the dia, age and material of pipeline.
- Details of Existing Over Head Tank was captured like Capacity, Condition, Staging Height, Location, Age and upstream source.
- Existing visible features like trees, Electric Poles, Manholes, Light Poles, Handpumps, Landmarks, Transformers were surveyed.
- Household details and existing service connections were collected from local waterman.

In-Village Water Supply



Case Studies

Case Study Sonbhadra Rural Water Supply



Coimbatore 24x7 Water Supply



Case Study JJM In-village Scheme



Sonbhadra Rural Water Supply

Topographical Road Survey - 10,000 km

Using the world's most advanced Trimble GNSS Systems, a total of 10000km of roads were surveyed in a span of 4 months covering more than 7000 sq.km. of Area.

Block level survey for more than 200 locations were completed with the highest accuracy along river cross sections at Intake locations.

Thank You

Pallav Mathur

Pallav_Mathur@trimble.com

THANK YOU

GRAZIE VINAKA
ERIMA KASIH

THANK YOU TAKK
merci

감사합니다
다

謝謝
謝謝

ありがとう