



## KCI Technologies – ProStar PointMan Solution







### Snapshot

**Company Name(s):** KCI Technologies, ProStar PointMan Solution

**Website(s):** <https://www.kci.com>; <https://www.prostarcorp.com>

**Area of Technology:** Locating, Mapping, Software

**Stakeholder Target Audience:** Designer , Facility Operator , Locator 

**Key terms /phrases:** data capture, field Sketch, GNSS, locating, software, subsurface utilities engineering (SUE) 

**Level of Production:**

*[technology is in full production and available for purchase]*

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### Synopsis

KCI adopted PointMan after conducting research into acquiring a system designed to effectively capture field sketches. Typically, field notes were either hand-drawn or CAD sketches, all based on visual field references. Best practices in Subsurface Utility Engineering (SUE) enables users to capture accurate GNSS locations and be able to capture accuracy and position metadata. The use of the custom data dictionary real-time data collection allows for quicker and reliable data capture as well as faster, more accurate record keeping, and helps clients reduce costs while giving a reliable data set with the ability to look through previous projects and compare data.

- ProStar and KCI implemented a modern cloud and mobile utility mapping solution to improve the collection, storage, and visualization of survey-grade utility location information, and to provide a real-time automated bi-directional exchange of data between the field data collection devices and KCI's existing GIS and CAD.
- The ProStar Solution consists of two tightly integrated software products – a desktop application called PointMan® that is on the cloud and used to manage and display the data, and a mobile data

collection and display application.

- KCI's field validation showed two main areas of improvement and efficiency: geospatial improvements including accuracy of one call data and reduction of construction delays; and cost reduction through fewer line strikes, ability to inform crews of real-time changes, and more.
- PointMan has increased KCI's field productivity by 1.5 hours to 7.5 hours of field productivity per day, yielding a potential productivity gain of \$7,800 over 6 months for each locate field crew.

### Introduction

This Case Study reviews KCI's implementation of a new utility mapping solution, utilizing existing hardware to see how the following workflows were resolved:

1. Utility mapping
2. Data Capture and Record Keeping
3. Field Sketches to Office Visualization

KCI is an engineering, planning, and construction firm with over 1,700 employees and 55 offices throughout the United States that offers multi-discipline services to transportation, water, utility, and facilities.

ProStar is a software development company specializing in developing patented cloud and mobile precision mapping solutions focused on the critical infrastructure industry.



KCI adopted PointMan after conducting research into acquiring a system designed to effectively capture field sketches. Typically, field notes were either hand-drawn or CAD sketches, all based on visual field references. Best practices in Subsurface Utility Engineering (SUE) entail the ability to capture accurate GNSS locations and be able to capture accuracy and position metadata.

Creating field sketches prior to PointMan took time; six hours of field work with an additional two hours of data analysis and recording. The use of the custom data dictionary in PointMan and real-time data collection within PointMan allows for quicker and reliable data capture as well as faster, more accurate

record keeping. PointMan has allowed an increase to 7 ½ hours of field productivity per day, which adds an additional 1 ½ hours field productivity to each field day. Over the course of a smaller 6-month project and a conservative estimate of 20 field days per month, an extra 1.5 hours to each field day's productivity gives 120 hours over 6 months. Using a contractor cost of \$65/hour for an experienced field technician and equipment could return a productivity gain of \$7,800 over the 6 months for each locate field crew.

The ability to look through previous projects and data and compare data with requirements for future projects helps clients reduce costs while giving a reliable dataset.



Figure 1 - Laptop displaying PointMan Pro (left), Vivax EM Locate tool (middle), Android phone displaying PointMan application

### Field data collection and utility mapping with a precise real time mobile application

ProStar and KCI implemented a modern cloud and mobile utility mapping solution to meet their requirements to improve the collection, storage, and visualization of utilities and to provide the ability to provide a real-time automated bi-directional exchange of data between the field data

collection devices and KCI's existing GIS and CAD. A key requirement was to support Subsurface Utility Engineering (SUE) and business practices and meet ASCE 38 data collection standards during construction and maintenance. The requirement was for the solution's mobile application to be compatible with a wide variety of survey data collection devices and GPS/GNSS receivers. The solution needed to be flexible enough to support client specific workflows, allow for



Figure 2 - Mobile device displaying PointMan with Trimble Catalyst (left), Field Worker using PointMan and Trimble Catalyst GPS

attributing and editing the data collected and displaying the data, and support the addition of data layers and attributes from various external source systems such as 811 call centers. Success criteria included ease of use, ability to integrate with existing systems, provide field data collection using survey quality data.

The ProStar Solution consists of two tightly integrated software products via secure REST APIs, a desktop application called PointMan® that is on the cloud and used to manage and display the data, and a mobile data collection and display application. PointMan provides the ability to communicate and share data in real-time. Data imported by PointMan can be displayed, searched, sorted, filtered, and shared on both desktop and mobile applications.

The ability to integrate high-end GNSS receivers enables clients to leverage existing hardware investments and allows them to seamlessly embed ProStar's software solutions within their organizations. PointMan includes tools and features for survey, photo, sketch, and form creation workflows.

During the implementation, a comparison of data quality, accuracy, and ease of use was made by running the ProStar data collection processes in parallel with Trimble hardware

and software solutions. Contractors and field workers were asked to use GPS/GNSS receivers and tablets to evaluate ProStar's PointMan software solutions to collect, store and visualize utility information. The project looked at the integration with multiple survey data collectors, real-time automated import/export of data, workflows, ease of use via field testing, attributing, and editing data, displaying data in CAD, and the addition of data layers.

### Results

KCI's field operations tested the ProStar solution on several commercial infrastructure projects in New York, Georgia, and Florida over a two-month period. The implementation was conducted primarily by the KCI field team on site with support from the ProStar onboarding team. The KCI field manager was set up as an admin and was able to configure and run the system from their field office as a trusted tester. From these projects, the client provided feedback on things that were set up, workflow, and configuration of the KCI environment.



KCI's field validation showed two main areas of improvement and efficiency:

### Geospatial Improvements

- Improve spatial accuracy of One Call data
- Accurate data reduces delays and costs for construction
- Better data quality identifies conflicts to limit catastrophic accidents, disruption of services, and project slowdowns
- Migration and sharing of data with GIS & CAD environments
- Use maps as a communication platform, presenting data across multiple departments
- Data reconciliation between GIS and One Call
- Better decision making and increased efficiency by interacting with data from the field

### Value And Cost Reduction

- Reduce line strikes and improve safety through visual layout and geospatial referencing of existing utilities
- Provide dynamic "Data Tables" and "e-forms" to improve data integrity and save time
- Keep project crews up to date and informed of changes in real-time.
- Real-time documentation of "as-found" and "as-built" utilities
- Point or line "Staking" - provides location, distance, accuracy and "cut or fill"
- Live editing and abandonment functions - User can edit in the field, eliminates the need for additional CAD work or red lines
- Provide a utility data base that can be provided to the client as a final as-build

### **Damage Prevention - 811 Location Services Process**

811 data sources are integrated with the ProStar Solution to gather information about the One Call tickets in the field with geospatially accurate photos and sketches. Clients can view contractor and owner tickets from a single source system to ensure that the area is clear.

**Clients can view contractor and owner tickets from a single source system to ensure that the area is clear.**

Several states including Colorado under Senate Bill 18-167; California with the establishment of the California Underground Facilities Safe Excavation Board, and Montana's Underground Facility Protection Program amongst others have required that all new subsurface utility installations must be digitally mapped, and this information be maintained by the utility and network owners. Colorado and Montana regulations specifically mandate survey grade precision on new as-builts. In addition, the regulations provide for the timely central reporting of incidents of damage which helps to understand why it occurred and what can be done to mitigate future strikes. The effectiveness of the legislated subsurface digital records in reducing damages will come from analyzing the information from this mandatory reporting.

All parties in the One Call process could benefit from the use of the ProStar solution. Field workers could see an accurate depiction of the one call ticket boundary in a desktop map and on mobile devices allowing them to visualize the location and extent of the dig in addition to work type, excavator, contact information, etc.



They see the dig site overlain on their assets in the map view and decide if the dig site proximity will dictate that they need to arrange for a locate technician.

For the locate technician, the system provides the ability to designate and map the precise location of the located assets and make the locate information available to the contractor.

To reduce the risk of line strikes due to accuracy limitations, many owners place 100+ foot buffers on each side of the centerline. In this instance, the scenario is that the owner receives locate notifications that are not needed but must still be responded to.

This includes the cost of staff reviewing and responding to each notification. The over-notification is when a locate technician is dispatched and finds that the asset location is correct and that the large buffer zone is not needed. In this case, the technician may perform the locate to justify the cost of the truck roll and submit the data so that the location of the record can be shown as conforming to the ASCE 38-02 QLB standard and the buffer zone for that asset location reduced.

The contractor can also be provided access to this information to ensure that they are aware of the status of all issued one call tickets to ensure that the work has been cleared via a "positive response."

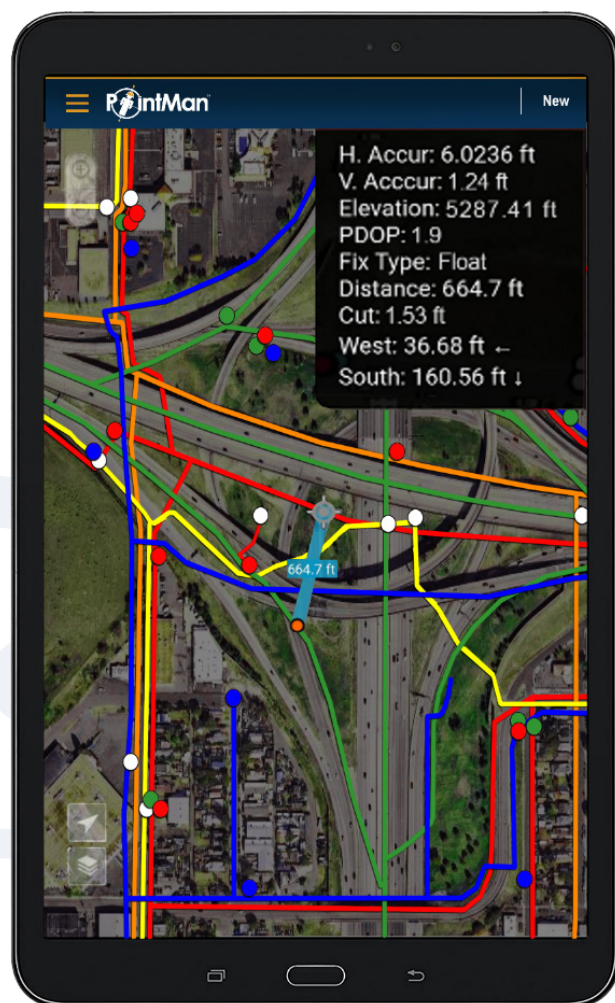


Figure 3 - One Call Location - Dig Site Overlaid with Utilities