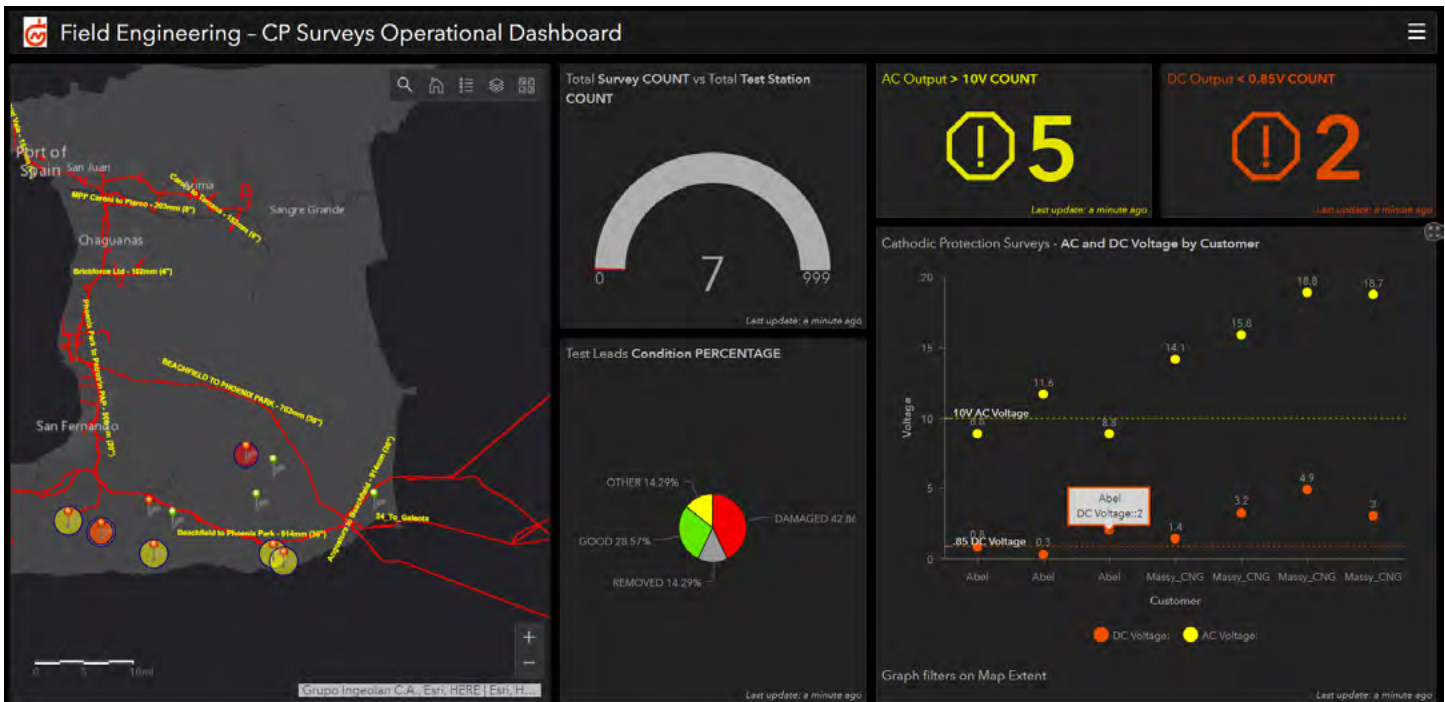


DATA & DASHBOARDS

LEVERAGING GIS TECHNOLOGY FOR SMART REPORTING





EXAMPLE OF OPERATIONS DASHBOARD

In the year 2020, millions of people around the globe became familiar with this image - a stark black world map with splotches of red and a tally counter showing a deadly virus on the move. This was a dashboard developed by a Johns Hopkins PhD student to track the progress of the novel coronavirus.

It was a resource of universal interest during the pandemic, but the dashboard was particularly valuable to governments and their advisors, who were relying on its real-time data to guide decisions about border closures, internal shutdowns and public safety measures. Thanks to this dashboard and its data, many countries, including Trinidad and Tobago, had sufficient information to act quickly and avoid worst-case public health scenarios.

The value of real-time data

NGC is not managing a global health crisis, but having access to real-time data is no less important in the management of high-risk energy

assets. To avoid system failures that could put life and property in jeopardy, NGC needs to constantly monitor its network, and act on information regarding potential hazards or risks. The reporting mechanism between field crews and line management must allow for swift and accurate transmission of data, especially when timely decisions must be made to avert danger or mitigate risk. Information received from the field should also be easily visualised and readily compared against historical or other types of data to map trends, track progress of works and identify areas for attention. Paper-based reporting tools are woefully inefficient at meeting these criteria. For this reason, the digitisation of data collection processes and data repositories figures prominently in NGC's short-term technology strategy.

NGC's Geospatial Information Services (GIS) Department has been working with internal customers to help realise this strategic goal.

They are using best-in-class tools to enable smarter and richer data capture and reporting through georeferenced smart forms and associated dashboards. To do this, the team is making use of applications within its in-house Esri software - the most powerful mapping and spatial analytics technology available today. Incidentally, this is the same technology that was used to create the now-famed Johns Hopkins COVID-19 dashboard.

The capability and reliability of this software have been demonstrated at the highest global level, and now it is being leveraged to bring reporting and data analytics at NGC up to world-class standards.

In practice

So what exactly does smart reporting look like in practice?

The new GISD-generated smart forms are basically digital versions of traditional paper forms, with embedded functionalities that enable

users to capture much more data and report up the line much quicker than was possible before. In the past, a technician in the field would need to document data on paper, then transcribe it into a report or static digital form in office, before submitting it to his or her supervisor. On a routine basis, data from all inspections and surveys would need to be compiled into summary reports for tracking and measurement against key performance indicators (KPIs). With smart forms, data captured in the field can be input directly into an interface on a tablet or mobile device, tagged with geospatial coordinates, supported with photos, and submitted immediately to management for real-time reporting. In addition, data from these forms is automatically aggregated into a dashboard, built to display in graphic format the curated statistics and trends that management wishes to keep track of for KPI reporting. This automated process offers many notable advantages over previous practice.

Consider this example of a Right of Way (ROW) surveillance team inspecting a remote segment of the ROW corridor. They notice some tilled land in proximity to NGC's buried pipeline. Using the new smart form, the team lead writes up the details of the discovery on his portable device, attaches a few photos to give a clearer idea of scale and scope, and sends off at once to his supervisor. The supervisor, in her office, receives the notification and opens the incoming field report. Since the form is georeferenced, she can automatically pinpoint the location of the ground disturbance, based on where the form originated. She sends a note to the Legal department to determine whose property lies adjacent so the individual could be contacted for further investigation. She then toggles to her dashboard and notices that two similar ground disturbance events were reported in the past three months, both within a few miles of the new one. She realises there may be a need

to remind persons of safety concerns around digging and farming near NGC's ROW, and contacts the Corporate Communications Division to discuss the issuance of a public advertisement.

While the series of actions in the foregoing scenario could certainly have been completed using the old reporting process, the immediacy with which a supervisor can now receive and compare data to make connections and prompt decisions means that asset integrity and public safety can be more expeditiously managed. If properly leveraged, smart reporting can greatly reduce the time between risk identification and risk mitigation. It, therefore, adds an important safety barrier to the Company's arsenal.

Integrating platforms

Perhaps one of the most useful features of smart forms and similar technological tools that are being introduced at NGC and its member companies is the capability of integration across platforms. Datasets captured on one platform can be merged and overlaid with data from another to allow for richer analysis and more efficient workflows.

Imagine during a valve inspection a team discovers one fitting that needs to be replaced. The faulty valve is the source of a considerable methane leak, as determined by the Company's newly acquired infrared camera. The team shoots off the report to management via a smart form. Using the form's georeferenced coordinates, the manager can pull up the facility's 3D as-built – recently rendered by the GISD – locate the faulty valve and its technical specifications, and activate a request with Procurement to source a replacement. In the background, the methane emissions data logged on the form is now live

EXAMPLE OF SMART FORM

on all the company dashboards that are tracking this information.

This kind of workflow integration is already possible based on the tools and services made available by the GISD. Already, quantifiable benefits have been derived in the form of man-hours saved on tasks, outsourcing costs eliminated and less human error. As the forms and dashboards are rolled out to more areas of the Company, greater efficiencies are expected.

In pursuit of excellence

The GISD is working hard to deploy these and other process-improving technologies across the organisation. In time, it may be possible to create a national GIS Centre of Excellence using NGC expertise, to offer similar services to companies across the country (think: state utilities or public-serving offices with notoriously inefficient processes).

With a driven team and constantly evolving technology, the GISD is quite capable of moving such a vision off paper. ■