GZA SEEKS TO STAY AHEAD IN COMPETITIVE MARKET WITH EFFICIENT COLLECTION, EVALUATION AND DISPLAY OF ENVIRONMENTAL INFORMATION

*Don Goldberg and Bill Zoino founded **GZA** in 1964 as a soils and foundations specialty consultant, and the company has grown to a major multi-disciplinary, employee-owned firm that focuses on environmental, geotechnical, ecological, water, and construction management services. With a staff of more than 650 people in 30 offices in the New England, Mid-Atlantic and Great Lakes regions of the United States, GZA has completed over 100,000 projects for a wide array of public and private clients for the past 56 years and counting. GZA is an employee-owned firm with gross revenues exceeding $100 million annually.*

Paul Malagrifa, Chief Information Officer. Mr. Malagrifa oversees management of all GZA information systems, software development, applications, technology infrastructure, hardware, IT risk management, and plans and implements strategic IT initiatives to facilitate and enhance the digital transformation and growth of GZA's business. Prior to joining GZA, Mr. Malagrifa was a leader of Schneider Electric's enterprise IT organization and spent 20 years with Harvard University's Campus Services organization in roles from staff electrical engineer to Managing Director of the Campus Services Technology and Logistics group.

EBJ: What trends have you noticed in the environmental instrumentation market?

Malagrifa: Environmental instrumentation data collection has historically been a manual process. The market is now trending towards automation of field sensors which has the benefits of increased monitoring frequency, superior data quality, and streamlined data analysis. The future will likely include integration between automated sensors and engineering analysis software. The result is timely and informed decision making, significant cost savings to all stakeholders, and accelerated project completions. It's early to evaluate the long-term effects the pandemic has had on the market, but likely it will speed up the adoption of remote technology as owners and engineers look to increase workflow efficiency and operate leaner.

EBJ: In which ways are you incorporating the following into your Environmental Services?

Information Technology: Traditional IT is about delivering robust and reliable infrastructure to promote easy and effective use of technology tools. This objective has become even more important as entire companies move from office environments to remote working situations. This places a significant strain on staff and systems, which is not sustainable in the long term. There is also a realization that many companies are not going to return fully to conventional office work paradigms, which means a long-term solution to this resource and system challenge will need to be developed.

Geospatial Systems: GZA has a long history of successfully employing geospatial technology to support and deliver services on environmental sector projects. The volume of data, complexity and regulatory requirements of these projects require us to rely on a robust technology like GIS to manage workflows, execute myriad tasks, and deliver services.

Along with desktop applications, a dedicated enterprise geospatial platform is employed as both a system of record/ truth and a system of engagement. Enterprise GIS plays a key role on all aspects of projects and is integrated with other applications, authoritative data sources and other types of information management solutions. This is especially true in the areas of field operations and data collection, analytics, data review, workflow and process modeling, visualization, collaboration, and communication.

Geospatial systems built on **Esri** industry-leading technology enables our workforce to share content securely throughout the organization. This occurs over the web and out to mobile devices, often in near real-time, thereby making information actionable supporting data-driven decisions. To support this collaboration both internally and externally facing configurable and customized web and mobile GIS applications are routinely developed and deployed.

During the current COVID-19 pandemic, Enterprise GIS has proven to be invaluable in facilitating collaboration and communication among project teams and stakeholders helping us stay on track, and continue to offer our services virtually uninterrupted, even as more people work from home or in a more restrictive environment.

Over the coming year leveraging geospatial capabilities for interactive design and planning, real-time monitoring support, and constituent engagement services continue to be areas of particular importance and a priority.

Application Development: With the widespread availability and customizability of data management and analysis software, our need for large-scale application development is minimal. Applications are developed for specific data analysis tasks using commercially available tools such as Microsoft Power Apps, R, and Python.

Data collection is also handled using customizable applications from Esri and EarthSoft.

Sensor & Monitoring Systems: Automated sensor data collection and cloud-based platform visualization is a critical part of our daily workflow. The types of sensors we deploy include air quality, water quality, water elevation, noise, vibration, and process instruments. Having meaningful sensor data available remotely allows us to make informed decisions in near real-time and better serve our clients. We deploy project web sites with IOT dashboards for many of our clients to easily see and monitor data from incoming sensors and devices.

Advanced Visualization & Modeling: Our design and visualization technology professionals work closely with our engineers, scientists, and data managers to produce specialized, project-specific, visually based technical solutions for our project teams and clients. This effort involves a broad range of CAD, BIM, GIS, and data management technologies.

Visual models assist clients and teams to understand complex data, and in particular, 3D models help us make sense of real-world occurrences and situations we can't easily perceive in 2D. We have developed a data driven platform approach to building complex 3D geologic models to share them with stakeholders and clients in a timely manner.

We do many types of visualizations, as well as provide our clients with cross-sections/fence diagrams, contaminant plumes, and other resulting visual end products from our model designs.

EBJ: How are you are using the cloud?

Malagrifa: Storing data in the cloud allows us to provide highly secure access to dashboards and data visualizations like maps, tables, and charts for both internal and external stakeholders. Some common dashboard types are high-volume monitoring data, remediation progress, and operational metrics.

EBJ: Have you changed the way in which you bill clients with new technology incorporated into your operations?

Malagrifa: We are evaluating other billing models to deliver greater value for our customers.

EBJ: Technology has been a great tool during the pandemic. But relationships can suffer as a part of isolation. Employees and clients are crucial for our businesses. What type of activities are you performing now to keep good relationships with clients? What activities have worked to keep a positive team spirit now that colleagues have not seen each other for months?

Malagrifa: Since transitioning our office staff to working remotely and further refining our health and safety protocols for field efforts, we've continued to support clients and projects without interruption. GZA is a diverse firm and provides "essential services" on utility, infrastructure and environmental projects throughout the United States so we can continue our work.

To assist clients with the challenges of COVID-19, we built a COVID-19 Resource Response Center to provide industrial hygiene and project management expertise, expedited pathways to project kickoffs, regulatory updates, and internal playbooks and field guides to assist clients in developing their own documentation.

We're staying in touch with communications that are relevant and informative for our clients; using webinars, videoconferencing, social media, and a broad spectrum of channels to assure clients of our support.

Internally, office managers have been reaching out to their staff and checking-in with them regularly. They are also holding more frequent remote meetings. We encourage the use of Microsoft Teams and video calls so employees can see each other. At both the corporate and office levels, there have been more communications to update everyone on the company's performance.

We strive to proceed as "business-as-usual", albeit remote, for our training programs. We have maintained our almost weekly training programs throughout the pandemic and held our annual project management training.

In addition, GZA offices have done a variety of things at the local level to help keep employees connected. Some offices have held trivia nights; others have scheduled on- or off-site socially distanced meetings. There has been increased participation in charitable efforts such as collecting essential goods or school supplies for people impacted in the communities and staff have volunteered for river and litter clean-up activities. There have even been seasonal activities like a remote pumpkin carving contest and sending Halloween goody bags to employees' children.

EBJ: What drivers are having a big effect on the environmental information systems market?

Malagrifa: Competition is a key driver, because the more efficiently we can collect and evaluate data, the better our work product can be. Our clients expect automation and rapid, large-scale data interpretations that would not be possible without database systems. Data dashboards and instant access are becoming a part of everyday life, from banking to online shopping. Some clients are ready to have the same real-time experience with their environmental data, and it is important that we can fulfill that need.

EBJ: How are regulatory trends or public agency requirements impacting environmental information markets?

Malagrifa: Just as we are constantly evolving our technology and environmental systems, our federal and state agencies are increasing their capabilities. Many regulators require data to be electronically submitted to their environmental information systems, and these capabilities are continuously increasing. When our systems are aligned, it is simple to move data back and forth as needed. This also makes it easy to exchange data between firms, which is very common in environmental work. Another certainty of regulatory requirements is constant change, and as new numerical criteria are proposed, modified, and codified, we can quickly compare existing data sets to see how our project will be affected.

EBJ: Which are the capabilities you look for the most on environmental information systems before you incorporate them into your practice? Why are these capabilities so important to your organization and the type of work that you do?

Malagrifa: We have many types of projects with differing technology and data analysis needs, so we need flexible systems. It is more efficient to use a few systems with extensive capabilities. Other benefits of larger systems include increased security and attention to data governance. Multiple small systems reduce efficiencies and can lead to many discordant data sets. ¤

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