

## KCI COMMITS TO INNOVATION STRATEGY: ACQUIRES LASER SCANNING FIRM LANDAIR

*KCI is a 100-percent employee-owned engineering, consulting and construction firm serving clients throughout the United States. Their multi-disciplined service offerings allow them to provide exceptional turnkey expertise to federal, state and local government agencies, as well as institutional and private-sector clients. Operating out of more than 40 offices in 17 states and the District of Columbia, KCI's team of more than 1,400 professionals offer technical expertise in transportation, resource management, environmental, telecommunications, utilities, facilities, and construction. Over the last decade, KCI has grown dramatically, more than doubling the size of their team, their top line sales, and bottom line net operating income. This growth has been achieved through a combination of organic growth and strategic acquisitions. KCI has completed one or two acquisitions each calendar year since 2012.*

*KCI CEO/President Nate Beil, PE, DWRE, joined KCI Technologies Inc. in 1988. Within four years, he started the company's Water Resources Division, which became one of KCI's top-performing business units. From 1995 to 2001, Nate served as head of KCI's Environmental Group, and in 2001 he was promoted to manager of the firm's Mid-Atlantic region. He has served as president of KCI since 2006, and assumed the role of CEO in 2018.*

*Thomas Sprehe, PE, BCEE, is a Senior Vice President and Director of Innovation and Technology. He joined KCI in 1997, assuming the role of vice president and head of the environmental division. In 2002, he was promoted to senior vice president and named manager of KCI's environmental market, which includes the firm's water, wastewater, solid waste and geotechnical engineering, hazardous waste and environmental compliance, and industrial hygiene practices. In 2017, Tom took on the role of director of innovation and technology.*

**EBJ: You acquired LandAir Surveying a little over a year ago. Can you give us an overview about LandAir Surveying and the technologies that you acquired?**

KCI: Founded in 2001 by President and CEO H. Tate Jones, PLS, LandAir began as a traditional surveying company but quickly embraced the ongoing technological evolution occurring within the industry. In 2005, the firm began offering laser scanning and has since grown in capabilities and reputation to be considered among the top 3-D laser scanning firms in the country. Their team offered an array of geospatial services, including aerial mapping, helicopter and fixed wing LiDAR (Light Detection and Ranging), terrestrial laser scanning, drone data capture, aerial photography, building information modeling (BIM) and virtual construction services.

**EBJ: Can you provide an overview of the type of demand that this type of technologies have on an industry level?**

KCI: LiDAR, laser scanning and unmanned aerial systems (drones) dramatically improve the quality of visual inspection, engineering and construction monitoring while reducing the overall cost of these services. Liability reduction is a major driver for 3-D modeling, as construction interferences may be significantly reduced. In construction, 3-D modeling allows for efficient pre-fabrication of components prior to installation in the field, as well as providing an essential tool for future asset management of those components by the owner.

Applying these technologies to service areas that had been performed using conventional methodologies is having significant impacts by reducing labor costs and

improving efficiencies. They reduce the need for manpower while improving deliverables through applied technology.

In many ways, KCI has had to generate demand for the services through education and improved service. By introducing these technologies and then proving their efficiency, we have seen demand grow significantly to the point where our clients ask for these services. KCI is currently under contract with a state department of transportation to survey intersections for the documentation and improvement of Americans with Disabilities Act (ADA) compliance. By using laser scanning, we were able to reduce required manpower, deliver the work three times as fast as conventional methods, and provide more detailed information – a point cloud of each location. This improvement in service led the client to assign the firm another two years of work.

**EBJ: Has the acquisition had an impact in KCI's overall profits?**

KCI: Yes. The acquisition of LandAir and implementing their technological approaches has directly led to increased profitability in our Southeast and South Atlantic Region Survey Practices, which doubled their budget during the 2018 calendar year. Demonstrating how these technologies enhance our current work has also led directly to additional backlog with existing clients.

**EBJ: What was the main reason for this acquisition? What opportunities did KCI see prior to the acquisition? How have you been able to complement the services that you provide with these new technologies?**

KCI: LandAir was a nationally recognized industry leader in the use of mobile and terrestrial laser scanners for detailed data collection and development of existing condition models (BIM), and they had pioneered application of drone technology for safe, efficient and accurate acquisition of aerial photogrammetry. KCI has been

working to embrace laser scanning and 3-D modeling organically for several years prior to the acquisition; however, deployment of aerial drones for photography was relatively new for the firm. The LandAir team has helped KCI educate our project leaders on the benefits of these new technologies, introduce them to our diverse client base, and incorporate them into virtually every aspect of our business. From the design of structures such as bridges and buildings to inspecting utilities to performing natural resource assessments, the technologies that we've acquired have improved our service offerings and will continue to do so as we expand their use throughout KCI.

**EBJ: Why do you consider that the transaction was performed at the right time? How does it fit in your overall growth strategy?**

KCI: The timing fit into our strategic plan for geographic expansion. In addition, embracing new technology is critical to increasing both our technical expertise and our ability to efficiently deliver higher quality projects to our clients.

**EBJ: Change and integration is always challenging. Can you describe the approach that you took while integrating LAS?**

KCI: We had begun to utilize laser scanning and drones in-house before LAS joined the firm. Immediately following the acquisition, we began to integrate the technology throughout the company, which

### **KCI Acquires LandAir Surveying**

In August 2017 KCI acquired **LandAir Surveying (LAS)**, a Georgia-based consulting firm that is a recognized leader in utilization of advanced technology. LandAir offers a complete range of surveying services, with a unique specialization in terrestrial laser scanning and transportation surveying.

LandAir's staff of 27 now offers an array of geospatial services, including aerial mapping, helicopter and fixed wing LiDAR (Light Detection and Ranging), terrestrial laser scanning, drone data capture, aerial photography, building information modeling (BIM) and virtual construction services.

is an on-going evolutionary process. For instance, recently, we created a company-wide 'Drone Community', led by LandAir staff, to standardize procedures and share knowledge and drone resources across all technical practices.

As part of our integration plan, managers had to address several challenges:

- proper use and operation of un-manned aerial vehicles (UAVs), including training and licensing drone pilots
- standardizing the use of 3-D models and associated software
- managing large datasets.

Each involved a learning process that was then improved as we scaled the technology up to the corporate level.

**EBJ: You have in-house personnel devoted to technology related R&D, correct? Why did it make sense to acquire LAS instead of generating your own technologies?**

KCI: KCI utilizes both organic growth and acquisition strategies to improve and add new technologies. In 2017, KCI established a formal innovation and technology program to adopt and develop new technologies for future business development. As part of this process, we created a new position – Director of Innovation and Technology – to lead R&D efforts and monetize successful initiatives.

With regards to the acquisition, LAS was already well-established in the marketplace, was well-equipped, and already

employed many highly-trained surveyors and technicians. Their team had already completed the R&D on the technologies, such as analyzing different software and equipment, and confirmed both their effectiveness and profitability. As a firm with an established reputation in the field, LAS offered KCI a foundation with which to expand this segment of our business.

**EBJ: Have you performed other recent technology investments that have had or will have a great impact in the company?**

KCI: Several years ago, participants in KCI's Emerging Leaders Program proposed creation of an Innovation Incubator (i2) that would be used to fund development of innovation and technologies within the firm. This annual competition encourages employees of all levels to submit ideas for funding. This 'Shark Tank' type program has given technological champions the ability to advance their passions and ideas in several key areas, including machine learning, building information management systems, etc.

Our Director of Innovation and Technology, Tom Sprehe, oversees the i2 projects and ensures that a business case is fulfilled during their development. Some

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of the projects involve improvements to internal processes, such as project tracking databases, and others involve adaptation of new technologies to our profession. Examples include development and application of artificial intelligence and machine learning to utility surveys, and evaluation of new geophysical technologies to detect and map subsurface utilities and other underground anomalies. Development of new technology often includes creating or adapting software applications to facilitate data handling and analysis.

Outside of the i2 program, KCI continues to adapt to and welcome new technologies and methodologies that allow our team to better serve our clients. These instances can be need-driven, accelerating the research, development and application timeline in order to deliver a required solution. Recently, KCI engineers incorporated mixed or augmented reality, using a Microsoft HoloLens, to develop 3-D BIM models for a utility substation. Conversely, our construction management team identified the need for a mobile e-construction suite and worked with our geospatial solutions and application development staff to create a mobile field services application, a cloud-based solution to improve construction management and inspection workflows and documentation.

**EBJ: What are other key technology solutions that KCI provides?**

KCI: In addition to those technologies mentioned previously (laser scanning, BIM, drones, machine learning, e-construction, and mixed reality), the multi-discipline KCI team offers our clients an array of technology-based services; including geographic information systems; geospatial solutions; mobile, desktop and web application development; and asset management, which are delivered throughout our various geographies and markets. Modeling, engineering and construction of natural resources, process engineering of water and wastewater treatment systems, design of sustainable buildings and electric vehicle infrastructure are other great examples of our technical service offerings.

**EBJ: How does KCI differentiate from competitors from the technology standpoint?**

KCI: We have always been a leader and early adopter in the creative implementation of technology, and we invest in our employees' development of skills necessary to implement new technologies. Often, the greatest opportunities exist in combining technologies such as aerial drones and LiDAR. We look to connect the dots in order to offer more value to our clients and better meet their needs.

**EBJ: Will you consider acquiring additional technology related companies?**

KCI: Absolutely! As technology advances across the spectrum of our services, we are always investigating growth opportunities that complement our existing lines of business, or offer new areas of expansion. We continue to invest in preparation to support autonomous transportation and the expansion of electric vehicles, so that we will be ready to provide the services needed into the future. Infrastructure resiliency as a remediation strategy for climate change is another area of focus, and we are actively seeking out both technologies and firms that can help us meet those needs.

**EBJ: How is technology shaping our industry? What trends have you noticed in the following areas:**

**1) SOFTWARE**

Software applications have become standard tools in the toolbox, and we are actively partnering with software developers, as well as developing in-house solutions that create internal efficiencies and support client requirements. Big data will continue to drive the need for cloud-based information management, as well as applications to facilitate processing large amounts of data efficiently.

**2) DRONES**

Though unmanned aerial vehicles (UAVs) are becoming the standard in our industry for both LiDAR and documentation, other unmanned remote sensing technologies, such as hyper-spectral and thermal imagery are being added to the payload to enhance the use of the platform. Aquatic and underwater drones are becoming increasingly used in water quality monitoring, security applications and

condition inspection.

**3) CYBERSECURITY**

Our increasing dependence upon computers in the face of malicious threats demands that we keep cybersecurity as a top priority. Our clients are starting to dictate data handling practices and procedures to which we must adhere.

**4) ROBOTIC PROCESS AUTOMATION (RPA)**

We believe that RPA along with artificial intelligence (AI) will reduce the dependence upon repetitive manual processing.

**EBJ: How do you think that tech services M&A is driving growth in the environmental industry?**

KCI: The ever increasing focus on sustainable solutions, protection of the environment and the intensifying effects of climate change are generating more demand for technological improvements in monitoring and modeling of environmental systems. As a driver of efficiency and added value, the increasing use of technology is a natural component of growth in the environmental industry.

Acquisitions, like that of LAS, offer specialized firms who have initiated and/or completed the detailed R&D phases, and only seek the capital and infrastructure needed to advance their innovations into the broader market.

**EBJ: Are you currently using technology as a way of diversifying KCI's revenue streams into a more recurring or subscription-based revenue as opposed to the traditional project based, "time for money" model?**

KCI: We are not doing that currently, for a number of reasons. We are watching the marketplace, and expect that new technological innovations will commoditize data handling and management services so that subscription-based revenue works. Our current service business model involves adding value through our experience and intelligence. A positive value proposition allows a client to feel comfortable that they've made a good deal, regardless of the revenue model for the consultant. ■