



iQuest and Kepware Deliver Augmented Reality Technology to the Plant Floor

The Customer

As a provider of Process Automation services and solutions, iQuest, Inc. develops applications that employ panels, automated equipment, drives, PLCs, HMI, database, Web, network, and custom components. With over 15 years of industry experience, the company delivers turnkey processes for unique customer specifications, helps design and implement customized control systems, and provides expert consulting and engineering support services for existing systems.

"In any industry that relies on automation, efficiency is the name of the game; otherwise, humans would still be building cars or filling medicine bottles," said Bob Meads, Founder and CEO of iQuest. "At iQuest, we understand the essential need for streamlined operations and strive to help our customers operate at the peak of productivity."

The Challenge

iQuest customers can and do calculate the value of efficiency in dollars saved, and one of the most detrimental effects to their bottom line is production downtime. Typically, iQuest customers calculate plant or production line downtime at \$1,000 to \$40,000 per minute, so keeping machines working—or quickly repairing them when they fail—is of the utmost importance. Every second of downtime represents significant revenue loss.

In most facilities, production and maintenance professionals are tasked with the upkeep and repair of automated machinery. Those individuals have traditionally relied on a number of disparate resources to monitor and diagnose machinery errors, including operational data, schematics, technical resources, and URLs associated with the equipment process. Gathering and interpreting information from these various resources often resulted in extended downtime before diagnosis and repair. To streamline the process, iQuest developed iQagent, an iOS application that provides an Augmented Reality view of the Plant floor. iQagent "recognizes" the equipment or process area in the users vicinity (using QR Codes) and displays relevant process data, document links and resources right on the iPad or iPhone display. The iOS platform was chosen for its highly intuitive user interfaces, deep market penetration, superior security standards, and ability to support a mobile (and often geographically divided) technical workforce. By instantly presenting all available diagnostic information in a highly digestible format in a centralized location, iQagent equips plant professionals to make faster and more accurate decisions.



Organization:

iQuest is a complete provider of process automation services and solutions, specializing in automation solutions that employ Panels and automated equipment, Drives, PLCs, HMI, Database, Web, network and custom components.

Industry:

Industrial Automation

Solution:

KEPServerEX®

Organization Impact & Benefits

- Provides an augmented reality view of the plant
- Allows user to view process data anywhere
- Communicates with iQagent Server over wireless or cellular connections
- Offers snapshot or screen recording
- Manages videos and snapshots with the File Manager
- Wirelessly streams iQagent's display to any HD device using Apple TV and Airplay technology

Furthermore, most plant floors consist of hundreds—if not thousands—of different machines that are often from a variety of vendors and speak their own “language”, or protocol. iQuest needed its application equipped to instantly communicate with any machine in any plant, regardless of the supported protocol. For this, iQuest turned to Kepware Technologies to integrate their immense collection of device and client drivers and broad support of the OPC standard.

The Approach

After an exhaustive selection process, iQuest identified Kepware's KEPServerEX as the ideal solution to support iQagent's interface with customer machinery. “When comparing Kepware to other major names in Industrial Automation communications, none provided such a comprehensive library of supported native and open communication standards,” said Meads. Engineered to support the OPC standard and over 150 different protocols, KEPServerEX allows iQagent to interact with virtually any piece of machinery within any industrial plant environment.

“In the Industrial Automation industry, there is no standard language for communications, like the widely known HTTP standard that you see on the Internet,” said Meads. “So you can imagine how difficult it could be to get one application to connect to and communicate with disparate devices in an environment as diverse and complex as an industrial plant floor. With Kepware, it just worked.”



The Results

Through its ability to instantly communicate with any piece of machinery, iQagent allows field technicians, production maintenance, repair professionals, and others to gather, view, and access all data associated with a machine by simply scanning the device's QR code. Users can also utilize a menu to retrieve any data, anywhere they have a connection to the plant network. When combined with KEPServerEX's ability to provide live machine process data, the application quickly turns any plant floor into an efficient, data-rich environment. iQagent's anytime, anywhere access to any machine's live, historical, or resource data builds an encompassing and concise augmented reality view of the plant floor.



iQagent can also help improve collaborative support with offsite technicians or experts. With its patented Holistic Data Display and Recording feature, iQagent allows onsite line technicians to capture live video of issues on the iPad or iPhone display. Technicians can overlay that video—including audio—with live data from the machine's HMI or PLC, schematics, parts lists, and user annotations directly on the screen. The resulting mp4 video can then be emailed to offsite support for quick analysis and problem resolution, thus allowing remote personnel to support repair as if they were onsite.

Finally, the iQagent application further streamlines upkeep and repair by eliminating the need to locate technical manuals. With a simple QR scan, it instantly provides technicians with all supporting documentation for any piece of plant machinery.

iQagent is currently in use on a number of customers' plant floors. Notably, one of the industry's largest automotive producers and one of the largest healthcare product developers are currently using the application in a production environment. Initial results regarding time-saving and increased efficiency are significant, and overall feedback has been extremely positive.

Kepware's KEPServerEX has allowed iQagent to communicate with any industrial machine, to instantly consolidate all the resources and data necessary to significantly streamline upkeep and repairs, and to reduce revenue loss resulting from downtime.

About Kepware Technologies

Kepware Technologies is a private software development company headquartered in Portland, Maine. Kepware provides a portfolio of software solutions to help businesses connect diverse automation devices and software applications. From plant floor to wellsite to windfarm, Kepware serves a wide range of customers in a variety of international vertical markets including Manufacturing, Oil & Gas, Building Automation, Power Distribution, and more. Established in 1995 and now distributed in more than 100 countries, Kepware's software solutions help thousands of businesses improve operations and decision making.

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