Partnering to Improve Patient-Provider Outcomes

A Micron/GeaCom, Inc. Case Study

An Industry-Wide Healthcare Emergency

In the United States alone, an estimated 250,000 people die each year due to medical errors,[1] which costs the U.S. up to $1 trillion annually.[2] In order to lower these numbers, there's been an industry-wide push to enable healthcare providers to gather more accurate information directly from their patients, allowing medical professionals to make better, data-driven decisions. As a result, it's become increasingly important for healthcare providers to be able to capture, store and analyze this patient data quickly and easily — requiring high-quality devices designed with high-quality memory and storage components.

GeaCom, Inc., and Phrazer

Based in Duluth, Minnesota, GeaCom, Inc., is dedicated to increasing access to quality healthcare through the development of innovative technology that incorporates communication theory — like communication and information theory empowered (CITE) methodologies — and cultural relevancy.

GeaCom, Inc., was established in 2007 to develop, manufacture and market a handheld medical care engagement system called Phrazer. The first of its kind, the Phrazer device uses CITE interactions to gather patient information, provide education and facilitate high-quality communication between patients and care providers of different languages and cultures. This new approach allows patients to immediately engage with their providers regardless of language, culture or literacy level — and it helps to deliver a seamless flow of more accurate information to the providers, resulting in more

meaningful conversations with patients about their care plans.

Phrazer also uses breakthrough techniques and technology that keep medical staff and patients safe from disease transfer and their medical records safe from cyber-attacks. Phrazer aims to reduce medical errors and creates a better experience for all involved, including the patient and care providers.

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>
> Mat Johnson, GeaCom, Inc. CEO and Founder

Need for Accurate, Timely Data Transfer

GeaCom, Inc., recognized that differences in language, literacy and culture could result in errors in medication and treatment, misdiagnosis or caregiver mistakes. They focused on the critical information that needs to be communicated efficiently to reduce suffering and potentially save lives.

After identifying what language a patient speaks, Phrazer displays culturally relevant doctors on its screen (via CITE interactions) to gather a patient's information, medical history, current symptoms and complaints. Phrazer also uses similar CITE interactions to provide education that incorporates teach-back to ensure patient understanding. The patient's information is then

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[1] http://www.npr.org/sections/health-shots/2016/05/03/476636183/death-certificates-undercount-toll-of-medical-errors

[2] https://www.myphrazer.com/assets/pdfs/Phrazer-Follow-up-White-Paper.pdf

summarized into the caregiver's native language and can be accessed on the device or transferred to a facility's electronic medical records (EMR) system. All of this digital information gathering and interactions between patient and provider require both accurate and efficient flow of data.

The Turning Point in Phrazer's Design

Rather than rely on someone else's hardware to run their life-critical content, GeaCom, Inc., chose to create their own hardware platform and began looking for the best suppliers to partner with.

Providers view patient information in the appropriate language via Phrazer.

While storage capacity was an integral part of Phrazer's design, GeaCom, Inc., didn't target SSDs in the beginning. But as device development continued, it became evident that Phrazer would need the increased storage capacity offered by SSDs, like those made by Micron Technology. GeaCom, Inc., saw Micron as an easy choice to partner with because of Micron's trusted and innovative leadership in storage technology. Micron is one of the few SSD manufacturers who also designs and manufactures NAND and other memory solutions, providing complete control of the build process from start to finish.

A Valued, Collaborative Storage Partnership

Not only did Micron have an ideal SSD storage solution, but they presented themselves as a partner who shared GeaCom, Inc.'s vision of using advanced technologies to better peoples' lives — and they could provide the excellent customer service and memory expertise essential for the Phrazer solution. "We were excited to contribute to GeaCom, Inc.'s mission, advancing the use of technology in the medical field," said Justin Sykes, Micron's general manager of client SSDs.

Micron's high level of service was key for GeaCom, Inc. Part of GeaCom, Inc.'s business model has always included leveraging value from partnerships and developing Phrazer collaboratively. "Micron understood our overall mission of increasing access to quality healthcare and reducing communication barriers, and they were committed to helping build our success by providing additional services that extend above and beyond the traditional buyer-seller relationship," says GeaCom, Inc.'s CEO and Founder, Mat Johnson.

The Ultimate Storage Solution: Micron's 512GB mSATA SSD

Micron's 512GB mSATA SSD met all of GeaCom, Inc.'s design requirements — delivering high performance and reliability, creating a better overall user experience and providing AES-256-bit encryption for data security. Mark Rice, Lead Electrical Engineer at GeaCom, Inc., notes that, "Micron's SSD is light and power-efficient. And with a high storage capacity and no moving parts, it's the ideal drive for a mobile application like Phrazer."

Leveraging Micron's Embedded Memory Expertise

In addition to SSDs, GeaCom, Inc., also needed to embed fast, small-form-factor memory into their systems, as well as a removable storage option. GeaCom, Inc., was able to work with Micron to leverage Micron's extensive embedded product portfolio while maintaining the fluidity of the design process. They chose Micron's small-form-factor, low-power, NAND-based MCP (8Gb SLC NAND + 4Gb LPDDR) — ideal for handheld battery-

operated devices — and Micron's 64GB microSD card, which enables data backup with encryption.

A Groundbreaking Final Product

Phrazer enables the collection and delivery of more accurate patient data. Furthermore, it's a tool for building trust that helps patients communicate more effectively with their doctor and get the care they need.

Phrazer is designed for the medical market of today and is equipped to conquer future market challenges. It uses novel hardware and strong software encryptions to keep private information secure.[3]

When GeaCom, Inc., launched Phrazer into the market, it earned several awards, including the global Edison Award as the best handheld or miniaturized device in the science and medical category.[4] They have since begun commercial sales, targeting hospitals, clinics and urgent care centers at the point of admissions. They are planning Phrazer's continued expansion into emergency rooms, first-response vehicles and other medical specialties.

Award-winning Phrazer enabled by Micron's advanced storage and memory.

GeaCom, Inc.'s choice to partner with Micron for Phrazer's storage and memory solutions shows how a trusted provider who is committed to leadership in driving innovative, high-quality memory and storage solutions is valued in industrial IoT verticals like healthcare.

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[3] https://www.myphrazer.com/assets/pdfs/Phrazer-Follow-up-White-Paper.pdf

[4] http://www.edisonawards.com/PressRelease/EdisonAwards_2011_WinnersCompleteFINAL.pdf

IQ Matters

Micron's Industrial Quotient (IQ)

Industrial Quotient (IQ) is all about making intelligent choices for your industrial product design that not only help you meet the functional product requirements, but ensure the long-term reliability and quality while keeping product life cycle management simple. Selecting the right memory and storage devices early in your design can help you lower the total life cycle cost of your product and deliver a better total cost of ownership to your customers.

In the new era of the Industrial Internet of Things (IIoT), for every dollar spent on an industrial device, over ten dollars will be spent on developing software and business services around it. Then it becomes even more critical to make the right design choices upfront and not let hardware field or life cycle issues get in the way of business performance.

Micron has been a trusted advisor to our industrial customers for over 25 years. We truly understand the unique needs of this market and have developed deep application-level expertise and a portfolio designed with application-tailored reliability, quality, performance and longevity in mind. Most importantly, we bring to the market a mindset to deliver sustainable value to our customers — because we firmly believe that *IQ matters* in our customers' success in IIoT.