Published by BEARCOM
Wireless Worldwide

Today's Wireless World™

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Winter 2007

From Frog to Prince: A City Transforms Its Communications

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Today's Wireless World™

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Published by BEARCOM® Wireless Worldwide

Winter 2007

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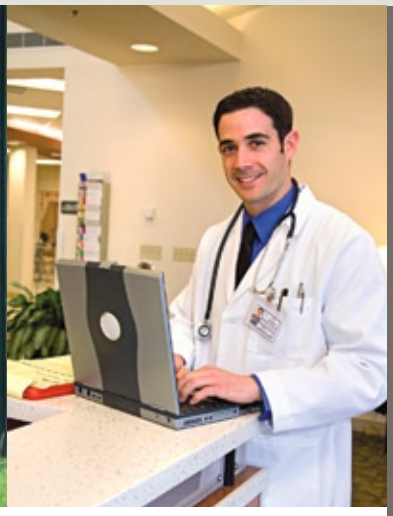
"To be happy in this world, first you need a cell phone, and then you need an airplane. Then you're truly wireless."

Ted Turner

Ted Turner is an American media mogul and philanthropist. He is probably best known as the founder of CNN and WTBS, as well as for his $1billion pledge to the United Nations.



In addition to publishing *Today's Wireless World*, BearCom sells, rents, and services a broad line of quality wireless communications products and designs and implements complete mobility solutions. Thousands of organizations around the world depend on BearCom to help keep them connected... everywhere, all the time.

OPENING THOUGHTS:

Wireless Communications: The Ultimate Change Factor

By John Watson and Jerry Denham

Peruse the pages of our second issue of *Today's Wireless World,* and you are sure to get a sense of how wireless technology is dramatically changing the way businesses and other entities operate.

For example, those benefits really hit home when school district personnel, as highlighted in "Today's Schoolhouse: No Shortage of Communications Options," take advantage of the technology imbued in two-way radios to thwart potential criminal activity.

Then there's the story that details how wireless technology is enabling the private sector's rush toward developing new capabilities around space flight. As Ian Murphy, Director of Public Relations for the X PRIZE Foundation, candidly says, "I don't know how we could do this without wireless technology."

Yet another example comes in the municipal sector, where the City of Galt upgraded an inefficient communications system that had served to isolate the Department of Public Works from the dozens of agencies and departments that need to interact with its employees. The benefits of such improvements have ranged from improved economic efficiencies to potentially saving lives. Shortly after the New Year, Galt saw this firsthand when a shooter was reported to be firing indiscriminately at 2:00 a.m. Moments later, the suspect was apprehended.

We have added a new section called the Final Word, where we give various experts the opportunity to talk about trends in the wireless communications industry. In this issue, Chris Lougee, Vice President for Icom America, talks about two very powerful trends that are ushering in a new age of wireless technology. Specifically, he writes about the growth of privately owned communication networks and the shift from analog technology to digital.

This issue of *Today's Wireless World* is rife with other examples. And in coming issues, we will continue to be an information source that highlights how leaders and innovators like you are using wireless technology to realize similar benefits.

Come join BearCom and *Today's Wireless World* on this enlightening journey. ●

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COVER STORY:

From Frog to Prince: A City Transforms Its Communications

By Holt Hackney

Dave Tucker is not a prophet. But when the Director of Public Works for the City of Galt, California, asked Dave to begin pushing for a seamless wireless network over which the local government and other related agencies could communicate, his timing could not have been better.

In early January 2007, the U.S. Department of Homeland Security (DHS) released its scorecard assessments of interoperable communications capabilities in 75 urban and metropolitan areas nationwide. "The 9/11 Commission identified interoperable communications as a major challenge, and many communities listened by taking the sometimes difficult steps necessary to close communication gaps among first responders," said DHS Secretary Michael Chertoff. "Their experience proves that basic interoperability at the command level is achievable. We're committed to making this a priority in every major urban area, and we'll continue to push for closing these gaps by the end of 2008."

After identifying interoperability as a major priority, Chertoff elaborated on its value with the following definition: "Simply put, it's the ability of first-response agencies—whether they be fire, police, or emergency medical services—to communicate with each other during an emergency or a disaster. This means having radios that can talk to each other. But it also means having established operating procedures for communication and clear lines of authority."

Urban and metropolitan areas that remain behind in the area of interoperable communications would do well to give Dave Tucker a call. The City of Galt's recently deployed network is a shining example of what Chertoff wants—a network that seamlessly links everything from the U.S. Coast Guard to the local fire department. If a disaster strikes in or near Galt, all federal, state, and local agencies in proximity to the city can now react in a coordinated fashion.

The City of Galt's solution was created and implemented by BearCom, which utilized a network of best-of-breed communications partners, including Icom two-way radios and a Telex interoperability system, to give the city a cutting-edge solution.

In Dire Need of an Upgrade

While Tucker appreciates the fact that the City of Galt now has a model solution in the eyes of the DHS, he initially had a more localized rationale for overhauling the network for the Public Works Department, which provides engineering, transportation, and utilities services to the citizens of Galt. "In the Public Works Department, we were relying on old hand-me-down VHF radios that were 20-plus years old," said Tucker. "They weren't compatible with the radios being used

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The Telex interoperability system utilized in the City of Galt installation has already proven invaluable in enabling the various city departments to communicate with each other more quickly, easily, and efficiently.

Municipalities like the City of Galt are realizing that embracing interoperability can not only save money, but lives as well. The ability to integrate such capabilities has become more affordable than ever.

"We had only three weeks to get it done," said Tim Holt, the General Manager of BearCom's San Francisco branch, adding, "and because of our strong relationships with Icom and Telex, we delivered as promised."

"BearCom also reprogrammed countless existing wireless devices, as well as integrated a number of new devices from Icom, a leading two-way radio manufacturer."

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by other agencies or departments, such as the Police Department. Obviously, it was difficult to talk one another, which led to inefficiencies and mistakes. And there was a lot of duplication of effort. We needed a way to work directly with them on various projects as well as in emergency situations."

Tucker found the means to a solution when then City of Galt Police Chief Douglas Matthews told him about a grant offered by the Federal Communications Commission (FCC) and the DHS. Together, public works and police officials decided that the Public Works Department, because it had "the most need," would lead the effort to secure the funds. "We weren't even on the network, so we couldn't communicate with the Police or Parks Department over the radio. We also couldn't monitor what was being said," added Tucker.

Tucker applied for the FCC/DHS grant in the spring of 2005, and within a year received word that Galt had been awarded the grant.

Selecting the Right Wireless Solutions Provider

In June 2006, the City of Galt sent out a request for proposal (RFP) to more than a dozen communication solutions providers and clearinghouses. Five Galt agencies attended the pre-bid conference. "Our engineers looked at BearCom's proposal and felt it was very competitive," said Tucker. So in September 2006, Galt awarded the contract to BearCom, but with a caveat– BearCom had to complete the project very quickly. "We had only three weeks to get it done," said Tim Holt, the General Manager of BearCom's San Francisco branch, adding, "and because of our strong relationships with Icom and Telex, we delivered as promised."

Fortunately for BearCom, the company had a roster of reliable partners that were eager to participate in the cutting-edge project. One of the first objectives was to work with partner Dacom to find an appropriate gateway computer system that could accommodate various systems. Enter the Telex interoperability system. BearCom also reprogrammed countless existing wireless devices, as well as integrated a number of new devices from Icom, a leading two-way radio manufacturer.

Leveraging the Latest Technologies

The Telex interoperability system, part of the deployment orchestrated by BearCom, is a communications gateway that can patch together the two-way radios of different agencies and departments in case of an emergency. It allows the user to control the incident, as he or she can listen to only the channels necessary and can more closely manage the situation. Another feature of the system that Galt officials appreciate is the ability to digitally record all activity on the radios. If there is an accident that involves multiple departments and agencies, the Telex system provides the City with a "hard record" of the incident.

The Icom two-way radios were another very important component of the solution. The specific models that were chosen are submersible, solving a problem with which the city had been dealing for some

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Galt city officials are now able to use their Icom two-way radios for a variety of purposes, including crowd management at local events, which at times can require coordination of fire, police, and other emergency personnel.

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time. If you were a Galt police officer, can you imagine not being able to use your radio when you are directing traffic in the rain?

Putting It to the Test

Amazingly, given the broad scope and short timeline for the project, when the system was first tested, it worked fine. Tucker said, "We're now able to talk to everyone from the Galt Police Department to the California Department of Forestry, Emergency Services, Sacramento City and County, the Marine channels (U.S. Coast Guard) that operate up and down Sacramento River, the Auburn CHP, the Stockton CHP… the list goes on and on. In general, we can communicate with just about everybody in the area involved with law enforcement and public safety."

In fact, the system has already been challenged. At 2:00 a.m. on a dark night in January, the Police Department got a call-in report that a person was randomly shooting at objects. There were only two police officers on duty at the time, so they called for assistance from everyone in the surrounding areas. They couldn't have done that easily without the Icom two-way radios and Telex interoperability system.

And while convenience is certainly a factor, Tucker believes the Public Works Department and others also will run more efficiently, saving Galt taxpayers countless dollars. More importantly, the solution could save lives in the face of an emergency. "From a strategic standpoint, this was paramount for area-wide emergencies," said Tucker. "Being able to communicate with a command center in such an event and participate in addressing a crisis situation is truly what this is all about." ●

Holt Hackney is Managing Editor for Today's Wireless World magazine.

"...enhancements to existing technologies, such as EV-DO Revision A, 'will dominate the mobile broadband arena in the short term.'"

"HSPA and EV-DO will be more than acceptable for most users, giving them the speed and flexibility they want to use their fixed Internet applications on the move."

Sara Harris
Senior Industry Analyst
Strategy Analytics

PRODUCT REVIEW (Mobile Broadband Cards):

At the Right Place and Time with EV-DO Revision A Technology

By Holt Hackney

A research firm's recent prediction that there will be more than 500 million mobile broadband (Internet anywhere) users by 2010 was no surprise to one global telecommunications company, which has been preparing all along for growing demand. Sprint Nextel appears to be perfectly positioned to capitalize on this trend with its EV-DO Revision A wireless technology.

Strategy Analytics, a global research and consulting firm, wrote last fall in a report, "Beyond 3G: Looking for True Mobile Broadband," that enhancements to existing technologies, such as EV-DO Revision A, "will dominate the mobile broadband arena in the short term."

"We're not likely to see technologies like mobile WiMAX, or indeed anything else, really take off until the next decade," said Sara Harris, Senior Industry Analyst at Strategy Analytics and author of the report. "However, HSPA and EV-DO will be more than acceptable for most users, giving them the speed and flexibility they want to use their fixed Internet applications on the move."

Sprint Nextel, which is also a leader in providing cellular and broadband services, is situated to benefit from this expected outcome. Last fall, it announced that it was upgrading the Sprint Power Vision Network, the nation's largest wireless broadband network covering more than 164 million people, with the faster EV-DO Revision A technology. The initial deployment is occurring in 21 markets nationally, with coverage expected to reach more than 40 million users. By the third quarter of 2007, the Power Vision Network is expected to be completely upgraded to the faster EV-DO Revision A.

Benefiting from these technological advancements will be not only individual users, but business customers as well. Kathy Walker, Chief Network Officer for Sprint Nextel, said the upgraded network gives her company "the fastest wireless broadband network in the country, (allowing us) to deliver a mobile broadband experience to our customers that no other carrier can provide." And as the technology is rolled out, customers will be able to use the upgraded network for applications such as all-IP video telephony, high-performance push-to-talk (walkie-talkie) service, multi-user video conferencing, and video streaming of both content and live Web cams as they become available.

EV-DO Revision A coverage in most markets will initially be concentrated in airports and business districts where wireless data demand is highest and will be expanded to include Sprint Nextel's entire market footprint. Overall, by the end of 2006, Sprint Nextel had reached more than 200 million people in 220 major metropolitan areas across the U.S. with mobile broadband data services (including both EV-DO Revisions 0 and A) with its Power Vision Network.

Using the Right Device

Sprint Nextel also has recognized the importance of expanding its Revision A-capable device portfolio. Shortly after the launch announcement, the company communicated the availability of its first mobile broadband USB modem—the Ovation U720 by Novatel Wireless. This device plugs into the USB port of any compatible notebook computer and allows customers to connect through the Sprint Power Vision Network to wirelessly access audio, video, and data applications. The Novatel device joins three previously announced EV-DO Revision A-compatible connection cards: the Pantech PX-500, Sierra 595, and

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Novatel S720, which are designed for operation with compatible notebooks with Type II PCMCIA slots and the Linksys wireless G-router for mobile broadband access.

Carrie MacGillivray, an analyst with the Boston-based telecommunications research firm Yankee Group, recently said that EV-DO technology will have immediate ramifications for transportation companies, which need extended coverage to use business applications for fleet tracking and communication with their vehicles. EV-DO also can be very effective when using high-quality video and for synchronizing large amounts of data between mobile devices and central systems. A typical use will be mobile transactions involving an ERP (enterprise resource planning) system.

Another application, cited recently by MacGillivray, is in the construction industry, where supervisors at construction sites can send images or video back to corporate headquarters to aid in quick decision making. And in the healthcare industry, emergency medical technicians in ambulances are able to relay video of a patient in need of urgent attention to a doctor to help in diagnosis.

"We're already seeing tremendous interest in this technology and its ability to make key applications more readily available to the business user," said John Czapko, Vice President of Sales for BearCom, one of Sprint Nextel's largest dealers nationwide. "We're excited to be partnered with Sprint Nextel and to be able to facilitate the growing use of this powerful technology."

Local Market Coverage

Upgraded EV-DO Revision A coverage in the 10 new markets initially include major airports, downtown business districts, and major transportation corridors where wireless data demand is highest. Coverage will soon expand to Sprint Nextel's entire market footprint. Following

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Sprint Nextel offers a variety of mobile broadband cards from Novatel and Pantech, including a new device that plugs into any USB port.

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are coverage highlights for each of the newly launched markets:

- **Baltimore:** Baltimore/Washington International Thurgood Marshall Airport, downtown Baltimore, and the Interstate 95 corridor from Washington, DC to Aberdeen
- **Denver:** Denver International Airport, downtown Denver, and parts of Fort Collins, Colorado Springs, and Greeley
- **Detroit:** Detroit Metropolitan Airport, downtown Detroit, and most of the metropolitan area from Monroe in the south to Port Huron in the north and Ann Arbor in the west, as well as parts of Lansing, Battle Creek, and Kalamazoo
- **Los Angeles:** Los Angeles International Airport, downtown Los Angeles, and in and around Irvine, Santa Ana (including John Wayne Airport), Palm Springs (including Palm Springs International Airport), Long Beach, Huntington Beach, Ontario, and Oceanside
- **New Jersey:** Newark International Airport, downtown Newark and Trenton, Interstate 95 corridor, Atlantic City, and including the New Jersey shore
- **New York:** LaGuardia and John F. Kennedy Airports, midtown and lower Manhattan, the Bronx, Queens, Brooklyn, and portions of Long Island (including Nassau County)
- **Philadelphia:** Philadelphia International Airport, downtown Philadelphia, south along Interstate 95 to Newark, Delaware, and in and around Norristown, Allentown, Bethlehem, Lancaster, and Reading
- **Providence:** T.F. Green Airport, downtown Providence to Woonsocket along Route 146, and the Interstate 95 corridor between Attleboro and Warwick
- **San Francisco Bay Area:** San Francisco International Airport, Oakland International Airport, San Jose International Airport, and the downtown areas of those cities, as well as along US-101 from San Francisco to Gilroy, along Interstate 880 from Oakland through San Jose, portions of all nine bay area counties, and portions of Santa Cruz, Monterey, and San Benito counties
- **Washington, DC:** Ronald Reagan National Airport, Dulles International Airport, downtown Washington, DC, west on Route 7 to Leesburg, Virginia, south on most of the Interstate 95 corridor to Stafford, Virginia, and east on Route 50 to Annapolis, most of the area along Interstate 270 to Frederick, Maryland, in and around Salisbury, Maryland, and along the Delaware shore south of Lewes

Additional information on Sprint Nextel's mobile broadband network, including maps showing current and future coverage and the latest access devices, can be found at powervision.sprint.com/mobilebroadband. Customers who already have purchased EV-DO Revision A-compatible devices may want to go to www.sprint.com/downloads to retrieve the software update and ensure their devices are functioning properly. ●

Holt Hackney is Managing Editor for Today's Wireless World magazine.

INDUSTRY SPOTLIGHT (K-12 Education):

Today's Schoolhouse: No Shortage of Communications Options

By Hugh Johnston

The stories are many. Only the places change. Whether you live in the inner city or rural America, the need in today's schoolhouses across the nation is the same—a safer, more connected environment for students, administrators, and faculty alike.

Take what happened several years ago on a playground in the Plano Independent School District (PISD) in Texas. The children were playing during recess when a teacher observed a suspicious man sitting in a parked vehicle. He appeared to be attempting to lure some of the children over to his car. The teacher, seeing what was happening, began to approach the car, and suddenly the man started his engine and drove off. More often than not, that would have been the end of things, but this teacher was carrying a two-way radio. She radioed the school office and had an administrative assistant call 911. Within minutes, authorities spotted the vehicle in question. Soon thereafter, the driver was in police custody.

Ken Bangs, Director of Police, Security, and Student Safety for PISD, was quoted as saying, "He was caught before he got out of the neighborhood. Did we dodge a bullet? I believe we did. These radios make a ton of difference."

Bangs never doubted that the increased use of two-way radios would pay big dividends. This incident was just more proof. Bringing more security personnel onto school grounds and educating teachers and administrators in the usage of today's technology had always been paramount in his thinking for creating safer environments for students and staff, particularly in Plano, a suburban Dallas district with about 48,000 students. Staying in touch with everyone from isolated locations on the various campuses, such as playgrounds, portable classrooms, and athletic fields, was an absolute necessity.

Bangs is hardly alone in this area. Russell Tedesco, Director of Security for Prince George's County Public Schools in Maryland also has strong convictions about using wireless communications to enhance safety. "Two-way radios are a necessity on school campuses today. Our administrators, security teams, the head secretary, building engineers, and building supervisors all have them. And teachers who are on recess duty outside are also given radios."

Lack of good two-way communication has always left classrooms vulnerable in the event of trouble, according to the complaints of many teachers. Extending the reach and providing greater protection—especially in larger facilities or on campuses with numerous buildings—should be a more common practice in schools.

In April 2005, Motorola introduced new technology that added benefits and features to campus coverage. Two-way radio users now have a digital option that provides one-to-one private calling, enhanced coverage, improved battery life, and clearer audio. According to a Motorola spokesperson, "Digital now allows people to communicate one-to-one directly with another user, providing them with new levels of privacy and instant communication unattainable with analog radios. Additionally, users can better direct their group communications through the digital one-to-many private group call feature."

These digital on-site radios are priced affordably and offer educational organizations an easy-to-use communication solution right out of the box. They are available for sale from Motorola-authorized two-way radio dealers such as BearCom, which offers a complete line of wireless products and solutions nationwide.

Tracking and monitoring activity within the campus environment is not the only concern of school administrators. Adding global positioning system (GPS) technology to their school bus operations is now state of the art and offers several options. But many school systems are facing a dilemma related to GPS: whether to use two-way radios or cellular phones, or increase the size of transmitting facilities.

Lynn Hower, Director of Transportation for Ft. Wayne, Indiana Community Schools, made her decision based on geography. "We like cellular," she said. "Our district is big enough that we would have had to add radio towers." Though more expensive over the long haul, the tracking system Howe selected is worth the money due to the number of out-of-town and out-of-district trips her buses make. "In this day and age and with the possibility of a bus being hijacked, not having spent that money, and having that scenario pop up…"

But therein begs another consideration. For decades, many school districts nationwide have used line-of-sight radio towers for coordinating communications between dispatch and bus drivers. The

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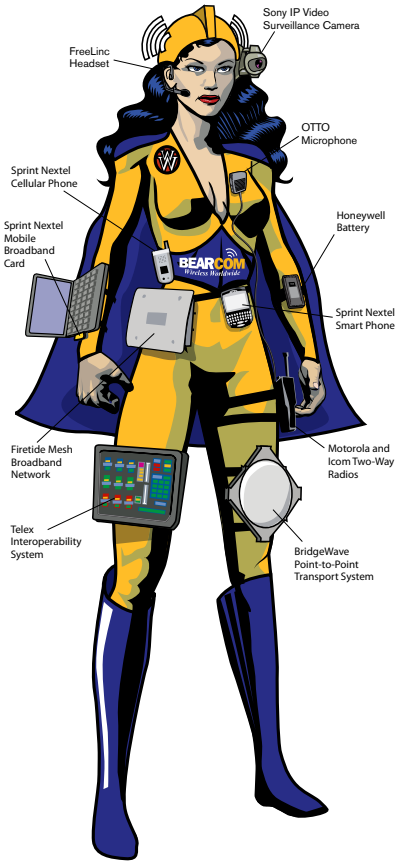

Meg A. Hertz, the Chief Technology Officer at BearCom, provides innovative wireless solutions to BearCom customers every day. But when a communications problem requires superhuman powers, Meg becomes Wireless Woman–and always saves the day!

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infrastructure is already there, so why not put it to increased use and save costs? Dave Pettine at GPS provider Everyday Wireless has an answer to that question, explaining, "Voice radios are not built for high-volume data demands of real-time GPS (satellite) tracking. So it seems in this case that the cell phone option is the best, or so one would think."

But first things first. What kind of GPS reporting does a school district require? Do routing and maintenance software have to be integrated? What events are to be tracked–the number of stops the bus makes or the number of times the stop arm is deployed? Maybe, most importantly, how far away do the buses travel on regular route services and special activity trips?

Brad Bishop, Chief Operating Officer for GPS hardware provider Synovia, sums it up. "In our experience, the cellular networks are more reliable, provide more real-time coverage, and offer flexibility with future options like student tracking." He adds, "The primary benefits are coverage and simplicity." Bishop goes on to say that by using a major carrier like Sprint Nextel, school districts can track their entire fleet in real time, regardless of local or field trips. Plus, there is no infrastructure to maintain. No longer will schools have to dedicate a significant amount of their budgets to radio tower repair, base station repair, and RF (radio frequency) requirements.

Conventional thinking aside, Everyday Wireless offers an alternative to the radio towers versus the cellular phone options. The company, based in Concord, Massachusetts, employs a dedicated UHF two-way radio GPS transmission system for managing district bus activity. Customers still have to pay for additional FCC frequency licenses and additional towers, but they don't have to piggyback off the district's existing voice infrastructure. Instead, separate antennas are erected at the same location as the district's existing radio towers. According to Pettine of Everyday Wireless, "We can operate 400 buses on one radio frequency–much higher than the 30 to 175 buses per frequency we have seen on piggyback systems," adding, "There's too much noise and chatter, and there's no way you can get real-time GPS data flowing across." ●

Hugh Johnston is Technical Support Manager for BearCom.

The Adventures of Wireless Woman™

DID YOU KNOW?

Motorola: From the Boot to the RAZR

By Kristin Kirkham

When you describe the look of today's mobile communications devices, two words typically come to mind—sleek and cool. Times certainly have changed.

Thirty-four years ago, after Motorola technologists emerged from a meeting with the design concept for the world's first commercially available cellular phone, a far different description was used. "We called it a shoe phone, because it sort of looked a little bit like a boot," recalled Rudy Krolopp, Motorola's Industrial Design Director at the time.

While it may have appeared clunky, the functionality is what mattered. And by making the technological leap, Motorola had given society an entree into untold conveniences and efficiencies. But then, that's nothing new for Motorola.

Since it was founded in 1928, Motorola has been committed to innovation in communications and electronics. The company produced its first Motorola-branded car radio in 1930, followed soon after by radios for public safety officers. In 1940, Motorola developed and manufactured its first handheld radio—the Handie-Talkie portable two-way radio—which became an icon on World War II battlefronts.

The company introduced ever more modern two-way radios from the 1940s through the 1960s, mostly for public safety and businesses. Even then, Motorola had a mobility mindset and was dedicated to making communication available where and how people needed it. This included outer space, where Motorola equipment was used in 1969 to transmit from the Moon the first words uttered by man.

In the 1970s, Motorola engineers began researching cellular technology in earnest. They soon recognized its potential. And their vision went far beyond car-based phone technology. "When you park your car and leave, you can't use your mobile (car phone), but you can take your portable with you," Martin Cooper, a leader in early cellular development at Motorola, has said.

The company's idea was a big one. It would involve not only creating a portable wireless phone but also building the infrastructure to support it. The Motorola team had to prove to the FCC that a cellular system could be compatible with portable phones. So Cooper called on Rudy Krolopp and his team to design the exterior of the phone. Their challenge was to make the electronics small enough to fit into the boot-shaped handset that Krolopp's team had designed. Fortunately, because of Motorola's prodigious experience in the wake of two-way radios and semiconductors, they already had much of the basic electronics necessary to complete the project. And the rest, as they say, is history, up to and including the RAZR, arguably the most innovative cellular phone on the market today.

"Motorola has a heritage of innovation," said Eric Schuster, Researcher at Motorola Heritage Services and Archives. "It's something the company embraces and certainly factors into the loyalty of our customers. They recognize that looking for new ways to benefit them and society as a whole is taken very seriously here at Motorola." ●

Kristin Kirkham is Marketing & Technical Writer for BearCom.

Wireless communications technology is a facilitator for many organizations such as the X PRIZE Foundation, whose mission is to bring about radical breakthroughs in space and technology for the benefit of humanity. That technology is on full display when the Foundation hosts the X PRIZE Cup, which draws thousands of spectators.

WIRELESS LIFESTYLE (X PRIZE Cup):

The Future of Space Flight Linked to Advances in Wireless Technology

By Brent Bisnar

Sequestered in a van some 100 yards from his rocket-powered hovercraft, John Carmack fiddled with his notebook computer, sending a wireless signal that instructed the spacecraft to launch and then land precisely on the six-foot square slab of concrete.

Thousands of spectators attending the Wirefly X PRIZE Cup in Las Cruces, New Mexico, watched in rapt silence.

The future was now for Carmack and his team, Armadillo Aerospace, as well as those sitting in the stands. They had all come to the desert as part of an annual pilgrimage of rocket enthusiasts. But odds are all would go home disappointed were it not for wireless technology and its strategic deployment during the event.

"I don't know how we could do this without it (wireless technology)," said Ian Murphy, Director of Public Relations for the X PRIZE Foundation, an educational, non-profit prize institute whose mission is to bring about radical breakthroughs in space and technology for the benefit of humanity. "There are so many areas where we must have reliable communications for this event to be a success. One of the realities in the space business is that everything happens in a matter of seconds. Reports must come in from all points, whether it's flight operations, the FAA (the event actually takes place at an airport), video production, engineering, or other points that are necessary to have a good launch."

Two of the necessary ingredients in the recipe for success for the X PRIZE Cup are the two-way radios from Motorola and the integration and rental services of BearCom. The combination of leading-edge technology and event management know-how of both NASA and the X PRIZE Foundation, which runs the Cup, is proving to be a mutually beneficial relationship.

Dan Stroud, known nationally for his connection to the Master Blaster series on the SciFi Channel, is part of the Tripoli Rocketry Association, which had come to the X PRIZE Cup for educational and entertainment purposes. Stroud described to *Today's Wireless World* the bizarre scene leading up to and including the launch of a rocket. "Messages over the radio were flying fast and furious on seven different channels, all at the same time, as last-second decisions were made," said Stroud. "People around the launch pad were working at a near-panic pace. The primary issue driving the complexity was the very nature of the vehicles, which had to conform to a myriad of safety guidelines and be launched within a narrow corridor of time. Sixteen radio channels are required for all the communications–one for each subdivision within the complex orchestration."

Stroud described a scene where a young man, Art Houg (the head of one of several of the Tripoli teams launching rockets for the event), was "up to his

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neck in issues beyond his control." And then there was Pat Gordzelik, who had four radios strapped to him, one for each division with which he had to maintain constant communication.

"Pat's a colorful, take-charge kind of guy with a sharp mind. That's why he's not only on the Tripoli Board of Directors but is the go-to guy for all of Tripoli's rocket-related operations during the event."

"At this tense moment, it was amazing he could decipher which message was from whom, as the radios blared between flight operations on channel 14, Tripoli rocketry on channel 9, logistics on channel 15, and flight dynamics on channel 13, which was the link to the FAA team and the engineers running up-to-the-minute computer flight analysis on the project," said Stroud. "Additionally, he had up-to-the-second communications going back and forth between the show's production staff, its camera crews, and the documentary film crews."

Stroud went on to describe a wireless communication from the FAA and the engineers concerning a slight wind shift which required yet another half degree in launch angle adjustment to the launch pad. "At the same time, the clock was ticking down to the no-go cut-off time just minutes away. The radio messages never stopped. Then flight operations called on channel 14 and said the flight was scrubbed. The team was crushed. Pat called back and asked Dick Embry to plead for sanity and a chance to get the flight off, trying to reason with the nervousness of all the various groups."

While they waited for an answer, Stroud said the team continued to work. "The FAA's team at the pad was measuring the flight angle yet again. They determined it was marginal. The entire Tripoli group continued to try and tweak the pad, ever so gently, with the live rocket, its armed electronics, and Art himself still at it up in the air."

It would pay off.

The call came in: "If you can get it off the pad in eight minutes, it's a go. You have permission to fly." The Tripoli rocketeers readied the rocket. "The broadcast count over the speakers started at minus 20 seconds," said Stroud. "The audience joined in. In fact, they nearly drowned out the sound system. It was like an ever-growing crescendo all the way to the

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The Motorola two-way radios that the X PRIZE Foundation rented from BearCom for the X PRIZE Cup proved to be critical to the success of the event. More information is available online at www.xprizecup.com.

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countdown… five, four, three, two, one… ignition!"

Stroud continued, "The rocket ignited, and immediately a roar could be heard as it thundered toward the sky. Up and up it went, leaving behind a sleek white streak. The audience was going wild. Even after the motor cut off, it continued upward at a breakneck pace."

Stroud is appreciative that wireless technology exists, as it makes it possible for people to successfully pursue their passion about rocketry. "This event could not have happened without the two-way radios and their strategic deployment in a very complex environment," Stroud said. "Progressive companies like Motorola and BearCom are helping to pave the way for the next era of space flight by enabling private enterprise." ●

Brent Bisnar is Executive Vice President for BearCom.

The X PRIZE Foundation at a Glance

The X PRIZE Foundation is rooted to history.

The advancement of aircraft technology between 1905 and 1935 was stimulated by hundreds of aviation prizes. According to the X-PRIZE Foundation, one of the best-known prizes was the Orteig Prize, a $25,000 purse offered by hotel magnate Raymond Orteig to the first person to fly non-stop between New York and Paris. In 1927, Charles Lindbergh won the prize and became famous in the process.

The Orteig Prize stimulated nine different attempts to cross the Atlantic. Collectively, the teams spent $400,000 to win the $25,000 purse and arguably spawned today's $250 billion aviation industry. The lesson that Lindbergh and the Spirit of St. Louis Organization taught–that a small, professional team could outperform large, government-style efforts–was not lost on America.

The X PRIZE Foundation, a 501(c)(3) non-profit educational organization, was founded to create a similar change in the public's expectation of space flight.

What's next for the X PRIZE Foundation? It announced in February the registration dates for the $2 million Northrop Grumman Lunar Lander Challenge, which will require a vehicle to simulate trips between the moon's surface and lunar orbit.

The Foundation also has launched the $10 million Archon X PRIZE for Genomics. Created to revolutionize the medical world, the cash prize offers a multi-million-dollar incentive to develop technology that can successfully map 100 human genomes in 10 days.

SUCCESS STORY (Encore Productions):

Bringing Convenience and Efficiency to the Event Production Industry

By Brent Bisnar

The Customer

Encore Productions is a full-service production company with a broad array of in-house core business support services. Founded in 1988, Encore specializes in the creation, production, and staging of results-oriented presentations and events. The company offers a unique gathering of customer-driven, multi-talented business communication and entertainment professionals. Its reputation is built on supporting and playing a part in the success of its many clients, which has helped make it one of the fastest-growing production companies in the world.

The Challenge

In the 1990s, Encore spent a lot of time processing orders for the various suppliers of equipment for the events it managed. For example, the company used fax machines as the primary means of communication, which was inconvenient at best. And the sluggish delivery of data through those devices made Encore and other event production companies like it grossly inefficient. "If I charged a quarter for every time someone sent me a fax back in those days, I'd be rich right now," said Troy Askew, a Senior Account Executive and manager with Encore. But Askew knew there had to be a better way. He was aware of BearCom's reputation and decided to give the wireless solutions provider a call to see if BearCom could help Encore communicate more efficiently and cost-effectively.

The Solution

BearCom quickly responded and resolved the situation with both a wireless communications plan and the appropriate wireless devices, including the rental of Motorola two-way radios and Sprint Nextel push-to-talk cellular phones for many of Encore's events. Encore's trade show department quickly learned that it could depend on this equipment to keep it connected at all times to other Encore departments and the company's clients.

The Results

Askew said that his team has benefited mightily from wireless communications devices since working with BearCom. Two-way radios and push-to-talk phones have not only saved Encore time, they also allow for the immediate resolution of pressing issues. "These days, mobile communication is vital to the success of my business. And it's a lot more attractive for us to rent the devices," said Askew, noting benefits in the areas of price, value, and style. "Of course the other part of that equation is that BearCom has been fantastic to work with," he said. "It has been an easy, hassle-free relationship. Most importantly, my clients love BearCom, and they ask for them by name on many projects." ●

Brent Bisnar is Executive Vice President for BearCom.

"...BearCom has been fantastic to work with. It has been an easy, hassle-free relationship."

Troy Askew
Senior Account Executive
Encore Productions

Encore Productions was named Producer of the Year for three consecutive years by the International Communications Industries Association and has been the recipient of dozens of industry awards for excellence in video production and corporate theatre. Encore's client roster includes many Fortune 500 companies—high tech, manufacturing, consumer, and associations.

CALENDAR:

Upcoming Wireless Industry Events

By Elizabeth Wiseman

Wireless Technology & Security Conference
Washington, DC
March 7-8, 2007
events.fcw.com/event/wc07

Spring 2007 VON
San Jose, CA
March 19-22, 2007
www.von.com

Wireless World 2007
Sydney, Australia
March 20-21, 2007
www.wirelessworld2007.com

IWCE Expo
Las Vegas, NV
March 26-30, 2007
www.iwceexpo.com

CTIA Wireless 2007
Orlando, FL
March 27-29, 2007
www.ctiawireless.com

Gartner Wireless & Mobile Summit
London, England
April 17-18, 2007
www.gartner.com

Interop Las Vegas
Las Vegas, NV
May 20-25, 2007
www.interop.com/lasvegas

Mobile & Wireless World
Orlando, FL
May 21-23, 2007
www.mwwusa.com

World Wireless Congress
Menlo Park, CA
May 21-23, 2007
www.b3g.org

Wireless & Mobile Expo
Toronto, ON
July 17-18, 2007
wirelessandmobile.wowgao.com

AROUND THE WORLD:

Wireless News and Views

By Holt Hackney

European Cities Seek To Connect Everyone through Wi-Fi

"Bigger is better" may typically be an American concept. But the Europeans believe in it, too. Witness a recent decision by the Manchester City Council in England that approved the development of the largest Wi-Fi zone in all of Europe. Once built, the network will encompass 400 square miles. The logic behind the decision was impeccable—enable more citizens and local businesses to access the Internet.

Many cities in Europe, and in America for that matter, have small Wi-Fi zones that reach a very small percentage of the residents and a modest portion of the businesses. Manchester City Council's Digital Development Agency head Dave Carter recently told the UK-based *Computing Times* that the city wanted something that provides a majority of residents and businesses with "a basic level of free access to the Internet. And this is the best way to do it." Once deployed, users will have access to a 256 Kbps connection. The city also will offer a premium service that includes additional bandwidth services.

Carter said the goal of the project is to give local businesses the ability to get on the Internet cheaply. "There is a great opportunity here for businesses to use this service to do a lot more of their work and trading over the Internet," he told the publication. "We want to encourage those who, for expense and technology reasons, don't see it as an option to change their view and start using it innovatively in their companies."

Ovum analyst Eric Woods opined that "Manchester's idea for a pervasive, city-wide Wi-Fi zone could give businesses a very low entry point of expense for Internet connectivity. For smaller start-ups, it really will lower the bar to access to the Internet. It will allow businesses like small workshops—which don't currently see much use for the Internet—to get it and find ways in which it can benefit their business." ●

Motorola Christens New MOTODRIVEN Mobile Pavilion

When expanded to 86' long, 28' wide, and 13' high, the MOTODRIVEN Pavilion is hard to miss. But what may be even more eye-catching about Motorola's custom-designed and specially-modified Volvo tractor and semi-trailer is what's inside.

Motorola is using the rolling exhibition to highlight its technology-driven products and services in a hands-on, interactive environment. The trailer can hold up to 40 people at a time.

"The MOTODRIVEN Pavilion has been in the planning stages for months, and we're proud of the results," said Motorola's Mark Moon, Corporate Vice President, Networks & Enterprise, Government & Commercial Markets Division. "This gives us a sensational opportunity to showcase our latest products and technologies across the U.S. and Canada."

A nationwide tour is planned which includes scheduled events in Wisconsin, Iowa, Utah, Oregon, California, Texas, Georgia, Ohio, Maryland, New York, and Florida, with more stops to be added throughout the year. BearCom is Motorola's largest two-way radio dealer in the world and will feature the MOTODRIVEN Pavilion at open houses at several BearCom branches across the U.S. in 2007.

More information on the MOTODRIVEN Pavilion and its tour is available online at www.mototruckin.com. ●

Mobile Broadband Is Coming, Reasons Analyst

A well-respected analyst in the wireless space believes mobile broadband is going to become much more commonplace over the next few years.

Craig Mathias, a principal at Farpoint Group, outlined his case recently in a contributed article that appeared in *Computerworld* magazine. He cited technological advances that facilitated the use of small, battery-operated computing and communication devices that "fit quite nicely with the technology of cellular, but they fundamentally shifted the paradigm from provisioning a location, as is the basis of fixed wireless deployments, to provisioning an individual—and the era of personal wireless communications was born."

Mathias continued, "(As a result,) a rapidly increasing number of people use their cell phones as their primary or only phone, and Farpoint Group estimates this number will grow to 40 percent of cell phone users over the next 10 years." He added that "something very similar is happening in broadband. While mobile broadband access remains rare today due to the high cost of cellular-based services and the limited availability of metro-scale Wi-Fi services, it's going to become a lot more common over the next few years because that's what customers want. Just as we provision voice to a given individual, so should we also provision broadband data. And we now have the technology to do so."

EV-DO and HSDPA, two high-speed wireless data services, are available in this country today. WiBRO, the forerunner of mobile WiMAX, is up and running in Korea. Want more—even a lot more? NTT DoCoMo, the major wireless operator in Japan, recently announced that it had achieved speeds of 2.5 Gbit/second in tests of new 4G technologies. Others have reported throughput of 1 Gbit/second, and the recent formalization of EV-DO Rev C

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as UMB (ultra mobile broadband) with throughput of up to 280 Mbit/second is a shot across the bow of the good ship WiMAX, as well as an indication that truly mobile broadband is just around the corner. No more looking for a cable or DSL connection. No more being tied to a place for anything having to do with communications of any form.

"And while clearly a challenge to all that wire in the ground and strung on poles, this situation also does not bode well for the future of fixed wireless. While I expect that fixed WiMAX will have some impact on rural areas and particularly offshore venues and developing economies, even these markets are going to demand mobile broadband over time. Eventually, we won't think twice about having enormous throughput in the palms of our hands," noted Mathias. ●

BridgeWave Links Selected by TransAria to Create Highly-Available Network Backbone

BridgeWave Communications, the leading supplier of gigabit wireless links, announced recently that TransAria, a multi-state business network service provider, has adopted BridgeWave wireless links as its preferred solution for implementing diverse paths within its fiber backbone distribution network.

TransAria's network backbone is a hybrid of fiber-optic POPs and wireless distribution sites. TransAria uses BridgeWave full-rate gigabit Ethernet links to create connections between its fiber-optic sites, as well as to backhaul critical distribution sites into multiple fiber sites.

By creating diverse paths within the network backbone, TransAria's customers gain access to multiple fiber points of presence, ensuring continuous network availability even in the event of core network outages. High-capacity subscriber sites are also served directly by BridgeWave links, providing gigabit connectivity without the cost and delays of laying fiber.

"Network availability and scalability are critical requirements for our business customer base," explained Todd Graetz, CEO of TransAria. "We tried other gigabit radio products, but they failed to deliver a consistent level of hardware reliability and network availability. Our BridgeWave links have proven to be 100 percent reliable and have provided continuous service through rain, snow, sleet, and hail. We plan to expand our use of BridgeWave radios throughout our network over the coming year."

BridgeWave also recently celebrated the sale of its 1,000th gigabit radio, reaffirming its status as the industry leader in terms of selling gigabit radio links worldwide.

"This is a new market space and a challenging technology to master," said Amir Makleff, President and CEO of BridgeWave. "This milestone signifies both that gigabit wireless applications are entering the mainstream and that BridgeWave has successfully transitioned what was once considered a 'black art' into repeatable manufacturing processes. We … look forward to the day when we can announce our 10,000th radio sale." ●

Engineering Firm Establishes a Presence with Wireless Accessories

OTTO made its name as a manufacturer of switches and control grips during the first 40-plus years of its existence. It won't take nearly as long, however, for the company to establish an identity in the next market niche—accessories for two-way radios.

OTTO's David Weber told *Today's Wireless World* that the company's Communications Division plans to introduce 17 new products in 2007 and 2008 in several categories—wireless accessories; surveillance kits; lightweight and heavy-duty headsets; speaker microphones; and tactical, fire, and HAZMAT communications equipment. The star of the group, said Weber, will undoubtedly be the Storm Speaker microphone, a device that provides extraordinary clarity and flexibility for two-way radio users.

Weber noted that the Storm Speaker mic and many of the company's other two-way radio accessories are being embraced in a variety of markets. "We're very excited that this product, as well as our other new products, will continue to be accepted by organizations that rely on wireless technology," added Weber.

Frost & Sullivan Touts Top 10 Mobile and Wireless Predictions for 2007

Vice President and Chief Analyst for the Mobile & Wireless Communications Research practice at Frost & Sullivan released his top 10 predictions for 2007. Among the predictions of Dr. J. Gerry Purdy were:

- Mobile user interfaces will become personalized for each user.
- Municipal Wi-Fi networks will become available in most U.S. cities within five years.
- Location will become pervasive in mobile. (Frost & Sullivan suggests here, among other things, that "devices are going to become 'location aware.'" For example, "assisted GPS phones for GSM are expected to be introduced in mid-2007" and "navigation is seeing good early traction.")
- Mobile TV will transform from fantasy to reality.
- Mobile search is different from and offers more relevance than desktop search. (Frost & Sullivan points to new, innovative search technologies, such as "voice-to-text, e-mail search, and context search" as facilitating this trend.)
- Wireless advertising and promotions will become a large media market.
- Within three years, music phones will replace iPods as the primary choice for playing mobile music. ●

Holt Hackney is Managing Editor for Today's Wireless World magazine.

FINAL WORD:

Growth in Custom Networks, Digital Technology Create New Efficiencies

By Chris Lougee

The growth and continued innovation around wireless technology will be a bridge to a safer, more economically efficient world. We have seen this firsthand at Icom America, where we are monitoring two prevailing trends that are contributing to this desirable state.

First, there is a growing interest in privately owned systems. Driving forces behind this new trend are current events, such as Hurricane Katrina, the Big Brownout, or some other catastrophe, including a terrorist act or the potential failure of a power grid or cell phone network.

Earlier this year in Seattle, for example, we had a surprise windstorm. The power was down for almost two weeks in parts of the city. Most couldn't have anticipated a natural catastrophe like this. But really, anyone who is responsible for maintaining an open line of communication between employees or residents must be attuned to these kinds of possibilities. The bottom line is that any time you have a large group of people and you are responsible for their safety, you should have a hardened private communications system that is completely independent of the public system. This is the best way to ensure that you can coordinate a satisfactory emergency response and operate your organization in a manner that restores the public trust in a time of crisis.

Another driving force behind the interest in privately owned systems is economics. If you implement your own system, you get a payback on your investment after paying it off over three to five years. This is typically a more economically efficient way of doing things, especially compared with approaches offered by other telecommunications companies, where the cost to use their system can get very expensive.

Increasingly, people are relying on solution integrators such as BearCom to come in and design a custom system. The fact is, there is no off-the-shelf solution. The creation of a two-way radio network is part science and part black magic. It can be affected by buildings, foliage, weather, etc. It takes a partner like BearCom who understands these factors. We've worked with BearCom on numerous such projects and anticipate doing many more in the future, especially given how compelling the economic benefits of this can be.

This brings us to the second prevailing trend—the shift in wireless technology from analog to digital. Digital technology provides for more efficient use of RF radio spectrum and greater feature sets for the end user. Operators can place three to four times the previous number of users on a system, increasing the flexibility of the user's currently licensed spectrum. Not only is this more efficient for businesses, but it is also becoming more affordable for them.

There are an enormous number of wideband analog users who have been waiting to migrate to more advanced systems. The time is now. Digital radio technologies have breathed new life into the industry and opened up a world of possibilities for users of all kinds. ●

Chris Lougee is Vice President for Icom America.

Warning: This Ad Contains Strong Language.

In the wireless communications industry, BearCom has always had a **strong** reputation. We've been going **strong** for more than 25 years, but now we're sending an even **stronger** signal than before.

BearCom is committed to **strong** customer service, has **stronger** relationships with the leading manufacturers of wireless equipment, and has the **strongest** wireless product line in the world. If that weren't enough, we also have some of the **strongest** minds in the business, and our wireless experts number more than 400 **strong**. Simply put, we're **strong** medicine for all your wireless communications needs.

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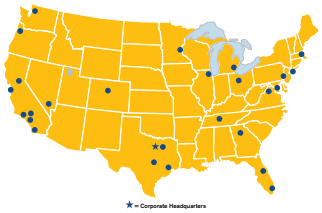

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