

Talk Group



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ENGINEERING COMPANY

Specialists in Public Safety Communications

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Vol. 3 No. 1

©May 2004

ADCOMM Turns 25!

—Joe Blaschka, Jr., P.E.

A quarter century. Seems like a long time but yet it seems like only yesterday. Hard to believe I started the company when I was five and still had hair! How did ADCOMM get started? I have often been asked over the years. For this issue, we decided to reflect on the past 25 years, assuming we can remember back that far! I promise no stories about going to school uphill.... in the snow....both ways.

ADCOMM was started from my desire to get back into communications engineering. I was working for Teltone, a local eastside company, as a design assurance engineer (basically quality control for engineering designs). I was responsible for regulatory compliance as the FCC Part 68 and Part 15 rules were just coming into play for telephone equipment. It is hard to believe but before then you could not own your own telephone. Previously, I worked for Motorola in the Bellevue office supporting telephone companies, railroads, and airlines. Communications engineering was something I had always wanted to do but it was difficult finding a job in the Seattle area during that time. There were a lot of small companies making products affected by the new FCC Part 68 and Part 15 rules. They needed technical support and Teltone was going through a reduction in force. It looked like a good time to have Teltone become a client and ADCOMM Engineering was born. One of my first projects was helping Puget Sound Instruments, Inc. (PSI) improve the design of a line of marine PA systems. Another was helping Zetron to design a new telephone interface for their paging terminal when they were still located in an Issaquah strip mall. One of my early "keeno" projects was working with Thomson CSF, who was trying to enter the U.S. telephone system market with their electronic key system. I went to Paris to teach them a class about the U.S. telephone system. I also designed several RF-related products for remote control and remote meter reading.

I was just getting going when I saw Dick Quantz at a conference who had retired from the Washington State Patrol (WSP) a few years earlier as their deputy chief in charge of technical services. I had met Dick earlier when I worked for Motorola. The WSP had mandatory retirement at age 60 and he was still kicking and want to do some consulting. Our first public safety job was with King County performing a county-wide radio system review. The fee was \$10,000! Times have changed. Our first dispatch center a couple of years later was the City of Bellevue dispatch in the basement of Fire Station No. 3 where they are still located today. It is hard to believe we have done over 40 dispatch centers since that time. I saw Dick a couple of days ago. He is still doing well and is working on finishing his house. It is hard to believe he is 86 this year.

Success is made by hiring good people, giving them room to grow, and allowing them to think for themselves. ADCOMM is a composite of those people both past and present. Each contributing something along the way. Some of them you might remember...Karen Clark was my administrative assistant for about 10 years before she moved and became more involved with her job at a large wireless company. Bob O'Brien had previously worked with the WSP and the City of Portland. Bob is mostly retired now but still does some work for ADCOMM. He enjoys playing golf and spending time with his grandkids. Jim Carefoot, who I worked with at Teltone, had great insights into looking at things from different angles and is a great artist. He is currently in Arizona working for Textron. Al Sandner helped work on dispatch centers in Whatcom, Skagit, and Island counties. Al had a great telephone system background and had been the director at SIRCOM in Jerome, Idaho. Al is currently the eastern Oregon district manager for Century Telephone. Judy Howell was with General Telephone when she came to work with ADCOMM. Judy has extensive telephone system experience and helped implement several 9-1-1 systems in Washington. Judy is currently working in the midwest for a large telephone company and is still working with horses. Of course, I can't forget about Brad who worked for me as an intern one summer and is now my son-in-law. He now works for Motorola Cellular. My daughter says she married her Dad!

Right now we have a great team with Joel Harrington, Mark Nelson, Dean Hane, Tom Manley, and Sue Seefeld. Jim DeRosier still works for us part-time. At this point, we have over 125 years of combined experience. It is a team I am proud to work with and am humbled by their great strengths.

At this point, we have done hundreds of radio system projects covering a wide variety of technologies for clients ranging from small counties to the largest metropolitan areas in the Northwest. I am looking forward to another 25 years of ever-advancing technology and the ever-increasing challenge of "Bridging the Gap between Operations and Technology®." The biggest thank you goes to all our clients who over the years have helped to make ADCOMM Engineering what it is. It is your faith in our work and our people that keep us going. We are proud to be of service to those who provide the life-line of communications to our public safety personnel on the front lines.



Thinking About ...

1979 – Charlie Brown is President and AMPS is a Reality

Submitted by Mark Nelson

25 years ago Charles L. Brown was appointed chairman of AT&T and was the man who made the decision to dismantle the Bell System. When Brown became chairman, the Bell System was the largest company in the world and the U.S. telephone system provided a quality of service that was unmatched.

In 1979, an anti-trust case filed by the U.S. government against AT&T was pending, the U.S. Congress was focused on increasing regulation, and many companies were competing with AT&T and its subsidiaries and were using the courts as a lever against the Bell System.

Throughout 1979, many steps were taken to break apart AT&T as a national company. Divestiture of the company occurred in 1984.

1979 was also a significant year for AT&T for another reason. It was in January 1979 that AT&T published The Bell System Technical Journal dedicated to advanced mobile phone service, or AMPS as it soon was called by many in the industry.

AMPS was a concept identified by Bell Labs in 1947, developed in the following years, and field tested in Chicago starting in July 1978. The AMPS test system consisted of ten radio sites covering more than 20,000 square miles. By December 1978, the system was ready for the service trial phase and paying customers, who would also be required to provide feedback to Bell Labs.

Five American companies competed to furnish the first 135 mobile telephones that were used for the equipment test. Oki, a Japanese company, won the business for \$500,000.

For the service trial phase, AT&T procured an additional 1,000 mobile telephones from OKI and ordered from E.F. Johnson and Motorola slightly more than 2,000 telephones, with the order split between the two companies.

The first cellular mobile phones were configured with trunk-mounted radio equipment and a handset and keypad mounted in the passenger compartment.

In order to provide the desired system quality, Bell Labs specifications required diversity receive systems and each vehicle was equipped with two antennas. Glass-mount antennas for this application had not been invented and each vehicle required two holes drilled in the roof. For those who did not want a roof-mount antenna, elevated feed antenna were available, which were mounted on the fender and would place the active antenna element above the roof of the car.

Antennas were manufactured to Bell Labs specifications. The base of the antenna was shaped like the Bell System logo. Hands-free and speaker phone technology was not available, and the handset display was a single line that showed the dialed digits.

The switching system for the developmental system was a modified analog electronic telephone switch that occupied an entire floor of a telephone central office.

When AT&T divested the local operating companies in 1984, the AMPS business went with the divested companies. One reason for this decision is that AMPS was considered insignificant and AT&T believed that in 10 years there would be less than 1 million customers. AT&T was wrong and by 1991 there were more than 1.5 million customers

Realizing the business opportunity it had divested, in 1994 AT&T purchased McCaw Cellular for \$11.5 billion and was back in the mobile phone business. McCaw's 1993 revenue was \$2.2 billion.

After another 10 years, in 2004, AT&T sold its wireless business to Cingular for \$41 billion.

AT&T's former chairman, Charles Brown, died in November 2003. The technology that he divested to the Bell Operating Companies because it was not expected to grow, will likely bring Cingular \$32 billion in initial revenue from 46 million customers.

One has to wonder if Charlie Brown ever realized that the decisions he made in 1979 would mean—like his namesake of comic strip fame—that his team would never win the game.

Looking Back 25 Years

Submitted by Joel Harrington

Looking back 25 years, I can think of many communications technology enhancements that have improved the lives of dispatchers,



first responders, and radio users in the field. There are numerous complex state and local government systems in service today and the numbers are growing. It is becoming difficult for the average technician to “master everything” in today's complex radio environment. Gone are the days when a technician could “cannibalize” their Motorola Micor or General Electric Mastr II mobile radio to keep the single county-wide repeater in operation. If your technician does not have the latest training, computer, software, and test equipment, he or she may be unable to service your radio system to optimum performance.

I was recently reminded of some equipment that I installed and serviced 25 years ago that is still in operation today. Some public safety and public service agencies cannot say they didn't get their money's worth! Systems being installed today will probably not have the life cycle enjoyed in years past. Spare parts are already becoming a serious issue for systems installed less than 5 years ago.

It is amazing to see all of the features packed into today's portable radios and cellular phones. Channel and talkgroup capacities on radios have gone from a handful of channels to many hundreds. I know of a few agencies that find 250+ channels or talkgroups are not enough in a single radio. With this challenge, many agencies are finding it more difficult to have wireless interoperability communications today than years ago. September 11th brought attention to interoperability communications problems in a big way. Unfortunately, the average citizen still believes that police, fire, medical and public works can all talk to one another.

Radio coverage continues to be a challenge today as it was 25 years ago. Cellular phone coverage has given a new meaning to por-

table radio coverage. A system operator must be prepared to provide a new level of radio coverage performance to meet the expectations of complex radio users.

The last 25 years in the radio communications field has been a great ride for me. I look forward to the next 25 years and all of the wonders of technology that are around the corner.

25 Years Ago

Submitted by Tom Manley

25 years. It feels like it has raced by. Then, when I look back, it is...foggy, distant. Fortunately, good things appear out of the fog first, such as my wedding 25 years ago. But that is another story.

What was I working on back then? It was little to do with radios, mostly. Like so many others, I was involved in developing microprocessors (μ Ps) for instrumentation, control systems, monitoring and recording systems, medical instruments...whatever happened to be close at hand, it seemed. It was an exciting, frustrating, exhausting wave of activity that was pretty darn interesting.

In 1979, μ Ps were finally coming into their own. 8-bit μ Ps, something with some real horsepower, had begun to mature a few years earlier with the Intel 8080 (ca. 1974). I remember buying two over-the-counter (at Radar Electric, I think) for something like \$400 apiece. Took my breath away. Look what you can get in a computer today for \$400 even ignoring inflation! By 1979, 16-bit μ Ps like the Motorola 6809 and 68000 and the Zilog Z8000 hit the streets. The Personal Computer (and Bill Gates) was right around the corner. In that year, I was adapting μ Ps to the task of optically scanning logs to compute the optimum cut in a saw-mill. Some other applications got more esoteric, like the Electric Piezometer. Ask me about it.

The closest I came to radio work back then was a radio remote control system for underground coal mining machines. Digital data over a UHF link, space diversity antennas, and ultimately the electro-hydraulic control of some truly peculiar machines: miners, roof bolters, and more. I had the joy of testing some of these systems underground; I was introduced to remotely maneuvering a 20-ton contraption in a coal seam less than 48 inches high.

Time marches on. These various applications now fall under the rubric "embedded" applications. The assimilation has pro-

gressed to the point that my toothbrush even has a μ P! And the washer, toaster, VCR, thermostat (at night, I hear them talking to each other, I swear!).

The radio industry is not immune. Computing hardware is so pervasive and cheap that software now rules the day. On the horizon is Software Defined Radio (SDR). One size fits all! One hardware platform configurable for differing communication standards, frequencies, applications, and features and it can all be done with over-the-air software! Although you may detect the faint odor of snake oil, pieces of it already exist. Look at my palm-sized, tri-band ham portable, for instance.

And then there is VoIP (Voice over Internet Protocol). The ubiquitous Internet Protocol is invading the radio realm as well. It has promise as a means of communicating over very large areas, addressing interoperability issues, scanning, logging. Think of your radio in place of your PC.

25 years...what a long, strange trip it's been!

Changes in Radio Industry

Submitted by Dean Hane

Just like the rest of our world, technology in the radio industry has changed dramatically in the last generation. It wasn't too long ago that portable radios were the size (and weight) of a large brick. They had a limited number of channels, they often did not scan, and it was a difficult process to change the frequencies in them. They had large Ni-Cad batteries that would develop memory and might be best used for controlling unruly patrons with a thump on the head. The mobile radios also had a story behind them that made things difficult. Usually the radio was so big that it had to be a two-piece unit in order to fit in the vehicle. Similar issues with the mobiles were also endured by the user with limited channels and functions. Some of the radios required so much power from the vehicle that the lights would dim when you pressed the microphone button.

Time has passed by and times have changed the radio industry. Users demanded better products with more features and functionality while manufacturers strived for creating a better product in order to sell more. One improvement was the frequency management of the radio. The channel was fixed based on a physical component—the channel element or crystal. This migrated to the PROM, which is a chip that is re-programmable. Today, we are using synthesized radios that allow the programming to take place via a laptop computer and is very flexible and fast. Some other changes we have seen in the industry are that radios are getting smaller, have much more

channel capacity, and have alphanumeric displays where we can now type in a channel name or see the battery status. Further, the feature set has improved with scanning, push-to-talk ID, emergency features, and even dual-band and multi-mode operations.

The computer industry has driven the radio industry to where we are today. No longer are the days of getting a screwdriver to "tweak" the radio. The technicians today only use the screwdriver to disassemble the unit. The laptop and programming software are the tools of today's profession. This in turn spawns a whole new platform for technical support including PC maintenance, software updates, and even virus protection. Additionally, this new technology forces an upgrade of technical training, tools, and test equipment. Many of today's technical people not only have to have radio backgrounds but also need certification in software and networking fundamentals.

Yes, the industry is moving at an amazing speed. There are new technologies now that include digital operations and voice and data on the same channel. Soon radios will be available that operate in all bands just by programming the software. The next generation of radio equipment should be very impressive so make sure to put your seatbelt on for the ride.

WITTY WORDS OF WISDOM—

"If I had to live my life again, I'd make the same mistakes, only sooner."

—Tallulah Bankhead

"I don't want to achieve immortality by being inducted into baseball's Hall of Fame. I want to achieve immortality by not dying."

—Leo Durocher



THE LAST BYTE

I watched my new little grandson, Jackson, looking around the hospital room when he was born on May 5th. I marveled at the wonderful creation. The birth of new life. Limitless possibilities. All new. No preconceptions. No biases. A vast future none of us can imagine. Seeing this through the eyes of a grandparent is different than as a parent. Maybe, it is being older. Maybe, not being caught up in the birth itself. I don't know. After three kids and now three grandkids, the new life seems all the more special. I know! It is because I can pay my kids back by spoiling their kids! How does that saying go? Do you know why grandparents and grandkids get along so well? They have a common enemy!

It is easy to get overwhelmed—wishing things would just stay the same...at least until we could get the last software revision loaded in before the next one comes

along! Life as it really is, is ever changing. Chief Sealth said "It is all about the journey." (Of course, he didn't have the gas prices we have today but I digress.) Every day brings us a plethora of new experiences. Not all pleasant but each fleeting. No one will last more than the present as they soon become a memory. Each an opportunity for learning. Each will ultimately be gone to be replaced by something new, something different. Would we really want a static life? Repeating the same experiences each day? Sounds like an episode from the Twilight Zone, assuming your old enough to remember the Twilight Zone.

Technology is much the same way. Can we really hold on to current technology in vain, hoping we will not have to learn something new? The experience of new technology will neither be all good nor all bad. All we know is it will change. Staring a new radio, computer, program, etc. in the face? Think of Jackson and all that faces him. Go along for the journey and enjoy the experience.

—Joe Blaschka, Jr., P.E.

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