Olympic Proportions

Atlanta Games Will Make Largest Use Of Radios Ever

BY CHUCK GYSI, N2DUP, EDITOR

The 1996 Olympic Games in Atlanta taking place from July 19 through August 4 will be the largest radio-frequency (RF) event ever held.

About 200 countries will be represented by 10,000 athletes at the Games and the Atlanta metropolitan area is expecting two million to five million visitors during the event. There will be extensive use of fiberoptics, land mobile two-way radios, cellular phones, pagers and various other RF devices for security, commercial, public and individual communications.

However, on the same note, much of the two-way communications during the Olympics will, for the first time, be carried on digital trunked systems. At past large-scale events, the Federal Communications Commission has temporarily allocated unused UHF TV spectrum for communications during events such as Olympic Games and political conventions. This time, there will be something new on the air.

Don't expect to be able to monitor much of the Olympic-related communications if you live in Georgia or you plan to bring a scanner. Digital communications cannot be monitored on a standard analog scanner. At best, static is all you will hear.

Motorola System

Motorola Inc., a sponsor of the Centennial Olympic Games, has been active at various levels of Olympic sponsorship since 1972, and has been a primary catalyst in the development of wireless communications for the Olympic movement. The heart of Motorola's contribution to the 1996 Olympic Games is embodied in a state-of-the-art, digital two-way radio network. It will be the largest, most sophisticated two-way radio network ever employed at an athletic event.

The Olympic Games network is designed to meet the extensive communications needs of the tens of thousands of staff and volunteers who are responsible for security, event management, transportation and countless other concerns. The backbone two-way radio system will be supplemented with Motorola pagers, cellular phones, computer modems and secure two-way communications equipment for use during the 271 events.

Motorola was responsible for the design, installation and maintenance of the digital two-way radio communications network. It includes sophisticated, two-way radio systems utilizing Motorola's ASTRO and iDEN digital technologies. Reportedly more than 10,000 portable and mobile radios; 6,000 pagers; 1,500 cellular phones; 1,500 computer modems; and secure two-way communications equipment will be supporting the Games—the largest peacetime event in the 20th century.

"The Centennial Olympic Games will require an unprecedented range of wireless technology," Merle L. Gilmore, president and general manager of Motorola's Land Mobile Products Sector and executive vice president of Motorola Inc., said in a prepared statement. "In 1972, we equipped a handful of coaches and staff with two-way radios. Today, we are meeting the needs of more than 70,000 people involved in organizing and staging the 1996 Olympic Games."

While clarifying the Atlanta Committee for the Olympic Games' communications needs, Motorola also determined that, in addition to being extremely efficient, the network also would have to interoperate with local public-safety agencies. Such interoperability capabilities will allow ACOG to interact with law-enforcement and emergency response forces at every venue of Olympic competition.

How It Works

One of the biggest problems facing system planners was the lack of radio frequencies in the Atlanta metro area. Because there were only 92 frequencies available, the network had to be efficient enough to provide for heavy demand, especially within the Olympic Ring, a 3-mile radius area in the city where 65 percent of the 37 venues are located. The remaining events will occur throughout the state and across the Southeast. A network had to be designed to accommodate operations in both the metro area and the remote venues.

The essential systems operating in the network are Motorola SMARTNET II digital trunked simulcast systems. A six-site simulcast system will serve the extended metro Atlanta area. Another two-site simulcast system will operate throughout the Olympic Ring. A stand-alone system will be installed in the Olympic Village at the Georgia Institute of Technology to coordinate on-site logistics and operations.

The simulcast systems, although independent, will be tied together through Motorola's SmartZone technology for full, wide-area connectivity. For example, a user in Stone Mountain Park, 16 miles away, will be able to speak with a user at the Olympic Stadium.

In more remote locations, stand-alone radio systems will serve the needs of each venue outside of the metro Atlanta area. Finally, two Motorola Advanced Systems Communications Trailers (MASCOT) will provide transportable trunked radio systems for maximum flexibility to handle communications at various locations prior to and during the Games. After the competition has started, the MASCOT systems will take up positions in Stone Mountain

Radio Savers

Without communications technology, the Olympic Cauldron at the 1984 Olympic Games in Los Angeles might never have been lit.

"A television cameraman accidentally had dislodged the fuel line for the Cauldron at the top of the L.A. Coliseum," Chuck Jackson, Motorola's program manager for the 1984 Olympic Games, recalled. "This happened about an hour and a half before the Opening Ceremony. We paged a technician who was about a mile away at the time. He hurried over, repaired the line, and the Opening Ceremony went off without a hitch."

The example illustrates how communications technology often goes unnoticed. Because the technician could be reached via wireless communications, only a few people even knew of the need to call for a repair. If the repair hadn't been made, however, more than half the world's population would have known of one cameraman's mistake.

Motorola's communications equipment also has given athletes a competitive edge. At the XIV Olympic Winter Games in Sarajevo, U.S. downhill racer Steve Mahre had just completed his run down the twisting mountain course, which was growing icier and more hazardous after days of practice and competition.

Using a Motorola portable radio, he contacted his twin brother Phil at the top of the mountain, and "talked" him down the mountain, warning him about the spots to avoid.

Park and Conyers, Ga., to cover road running and mountain-biking events, which may require flexible mobile communications coverage.

For the intricate task of event management, each venue will be able to accommodate 13 to 20 different groups of individuals, or "talkgroups" as they are known as on trunked systems. With an anticipated 300 users per venue and heavy interaction amongst groups, the Olympic Games wireless communications network will have to effectively accommodate heavy traffic.

When the network was fully tested and shipped, ACOG and Motorola prepared the infrastructure installation sites. Overall, three wireless communications towers and six equipment shelters were constructed for the network, supporting network controllers, 250 repeaters and ancillary equipment such as antennas and transmission lines. The tower construction was completed in January. The remaining equipment storage sites and remaining infrastructure components were completed in February, with final testing of all sites in April.
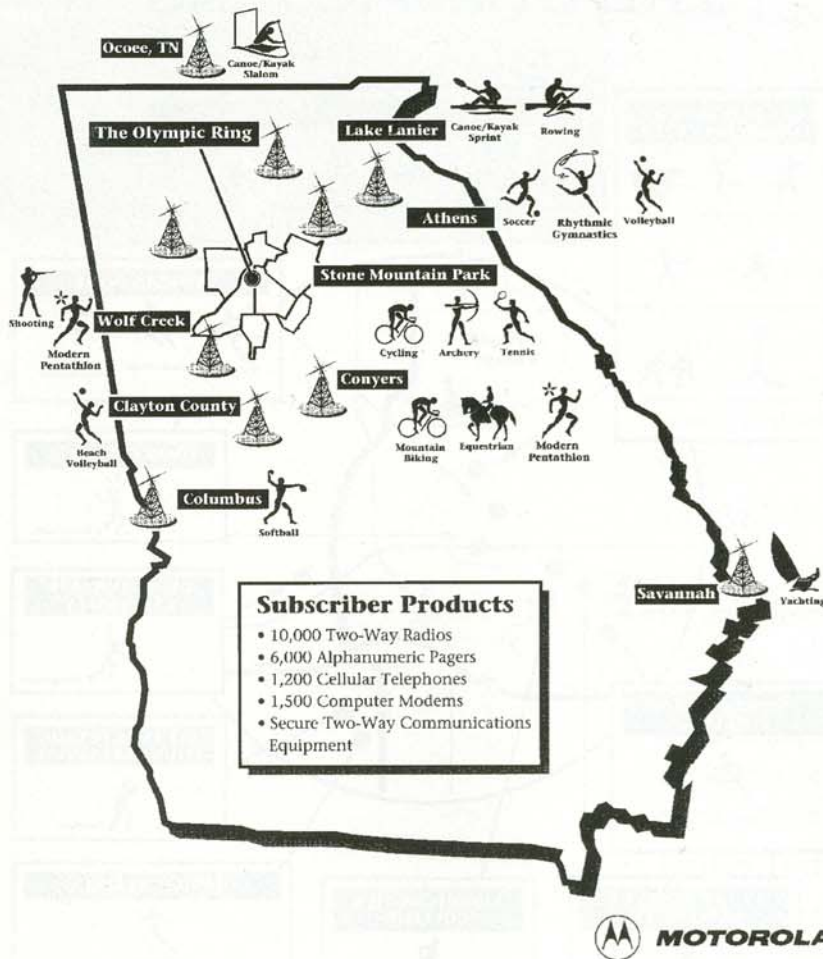
Other Devices

In addition to the cutting-edge digital two-way radio network and 10,000 mobile and portable radios, Motorola is incorporating other advanced communications technologies into the overall Centennial Olympic Games communications effort. The company also will supply alphanumeric pagers and cellular phones.

Included among these communications technologies is Motorola's Integrated Dispatch Enhanced Network (iDEN), which incorporates four communications services (voice dispatch, full-duplex telephone interconnect, text messaging and future data capabilities) into one network—operating on one device. For the Games, its wide-area capability was an ideal solution for meeting the needs of the Olympic family transportation system.

The cellular phones and pagers will be used throughout the Games, meeting the diverse communications needs of each event venue. These responsibilities will in-

CENTENNIAL OLYMPIC GAMES WIRELESS COMMUNICATIONS NETWORK

Subscriber Products
- 10,000 Two-Way Radios
- 6,000 Alphanumeric Pagers
- 1,200 Cellular Telephones
- 1,500 Computer Modems
- Secure Two-Way Communications Equipment

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clude security and transportation, as well as event-management needs such as medical support, event scoring and timing, judging, and food and beverage services.

Rental Radios

Realizing the increase in wireless communications traffic during the Olympic Games, Motorola expanded its two-way radio rental communications network in Atlanta. Motorola will offer two-way radio coverage to coordinate transportation and logistics for other Olympic sponsors, the media, as well as Olympic Games contractors and suppliers.

A 900-MHz trunked radio system will offer excellent portable and mobile coverage in downtown Atlanta. In the more remote areas outside of metro Atlanta, 800-MHz trunked radio coverage will be available. Additionally, Motorola will offer its iDEN network, its wide-area capability an ideal solution for meeting the transportation needs of organizations.

Paging

In addition, Motorola set up its ReFLEX 25 wireless messaging system at the Games through MobileComm's Wireless Press Room. Motorola's Tango pager was being considered for use by members of the press because it allows the user to send a response to messages received.

MobileComm, a subsidiary of BellSouth Mobility, will put an additional 20,000 pagers on line for Olympics use, including 2,500 loaned to the Olympic Committee.

Many of the 15,000 media representatives covering the Games will receive their messaging on the narrowband personal communications services (PCS) spectrum acquired by BellSouth to provide event results to laptop and handheld computers and devices. The PCS band covers a 50-kHz channel (930.450 to 930.500) paired with a 12.5-kHz return channel (901.775 MHz) for two-way messaging. Events data will be available in four languages

Cellular Boost

Because of the shortage of radio frequencies for all the games activities, cellular phone use is being encouraged. And to accommodate an increase in the number of phones being brought into the Atlanta area, BellSouth Mobility Inc. invested more than $77 million to install additional cell sites, as well as boosting paging, wireless messaging and mobile data services.

BellSouth said it expects 25,000 roaming customers on its cellular network each day during the Games, as well as an additional 15,000 rental cellular phones per day. To meet the increased use, BellSouth upgraded its call-carrying capacity in some areas up to 700 percent of current ability. It expects to provide an additional one mil-

Olympians Get Pagers

To help Team USA members stay in touch with the important people in their lives during the 1996 Centennial Olympic Games in Atlanta, Motorola created a special limited-edition top-of-the-line alphanumeric pager. Motorola will give every U.S. Olympic athlete an OlymPager, a palm-sized pager that will enable them to receive full-text messages—anytime, anywhere—from coaches, teammates, family and friends.
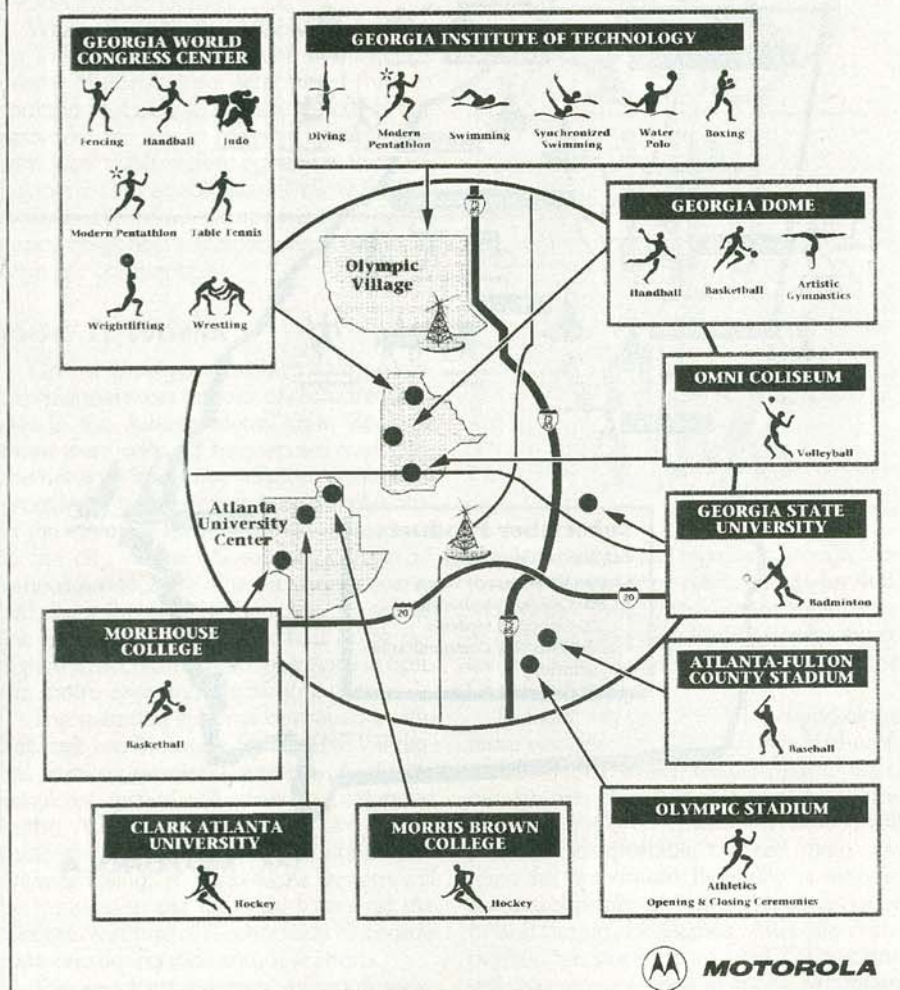
Motorola also has a limited number of these official OlymPagers for consumers.

"From our long involvement with the U.S. Olympic Committee and the U.S. team, we know how stressful and unpredictable an athlete's schedule can be," Rob Pollack, director of marketing for Motorola's North American Paging Subscriber Division, said. "We developed this powerful text pager to meet the demanding communications requirements of the 1996 Olympic Games. For the first time, U.S. athletes always can be in touch, whether they're in the Olympic Village, watching fellow athletes compete, training for their own events or traveling between venues in Atlanta."

The OlymPager has a huge memory—30,000 total characters—and its 4-line, 80-character scrolling display will enable U.S. Olympians to receive detailed messages, while its user-friendly features will make it easy for athletes to access those messages.

The OlymPager's memory can hold the equivalent of 30 double-spaced pages of text. Its text and numeric message slots include storage for 19 personal messages, up to 510 personal and information service notebooks, and up to 15 information services. Individual messages can be approximately 300 words long. The pager's personal notebook is a special memory area for storing up to 255 important messages. Additional memory capability includes storage of up to 255 information service notebooks.

THE OLYMPIC RING

GEORGIA WORLD CONGRESS CENTER
Fencing Handball Judo Modern Pentathlon Table Tennis Weightlifting Wrestling

GEORGIA INSTITUTE OF TECHNOLOGY
Diving Modern Pentathlon Swimming Synchronized Swimming Water Polo Boxing

Olympic Village

GEORGIA DOME
Handball Basketball Artistic Gymnastics

OMNI COLISEUM
Volleyball

GEORGIA STATE UNIVERSITY
Badminton

Atlanta University Center

MOREHOUSE COLLEGE
Basketball

ATLANTA-FULTON COUNTY STADIUM
Baseball

CLARK ATLANTA UNIVERSITY
Hockey

MORRIS BROWN COLLEGE
Hockey

OLYMPIC STADIUM
Athletics Opening & Closing Ceremonies

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lion minutes of airtime per day during the event.

The expansion includes five new cell sites in Atlanta, as well as 105 new microcells. A total of 12 of those refrigerator-size microcells will be in use at the Olympic Stadium alone. In addition, 17 "Cells on Wheels" (COWs) will be available to service areas with temporary heavy call volume, such as the opening and closing ceremonies. A new TDMA digital cellular network also was built in Atlanta prior to the Games, effectively tripling a single analog channel's capacity.

Learning Curve

Now that the communications devices have been programmed, users are being taught how to operate them. During April and May, ACOG staffers who were designated communications technology "champions" were trained so they can in turn train the remaining network users. Motorola

also designed training videos for each particular communications device to provide users with easy-to-follow directions on how their communications devices perform, and how it can enhance users' effectiveness.

To complement the training and the video, each device has an accompanying "help" card with tips for easy device operation. A radio distribution center is located at each venue for additional backup and support. Controlled by the venue's radio communications manager, the center has spare parts for immediate replacement and a spare battery for every radio issued.

To support network operations, Motorola also has about 100 service technicians on site working with ACOG staff throughout the 17 days of the competition to manage network operations. In addition, system managers will monitor network activity around the clock and additional personnel will be on hand to lend technical support.

Security

One of largest operations during the Games will be security. Thousands of security officers will be provided by Borg-Warner Security Corp. and will be equipped with the Motorola equipment. More than 50 law enforcement agencies and organizations will share information and monitoring during the Games. In addition to highly trained police volunteers from around the world who are part of the Olympic Security Support Group, more than 10,000 military personnel will provide anti-terrorist experts under a U.S. military Olympic Joint Task Force.

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On the cover: Motorola
MASCOT Deployment Team,
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in Atlanta, Ga.
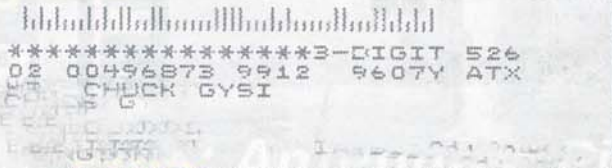
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