September 1996

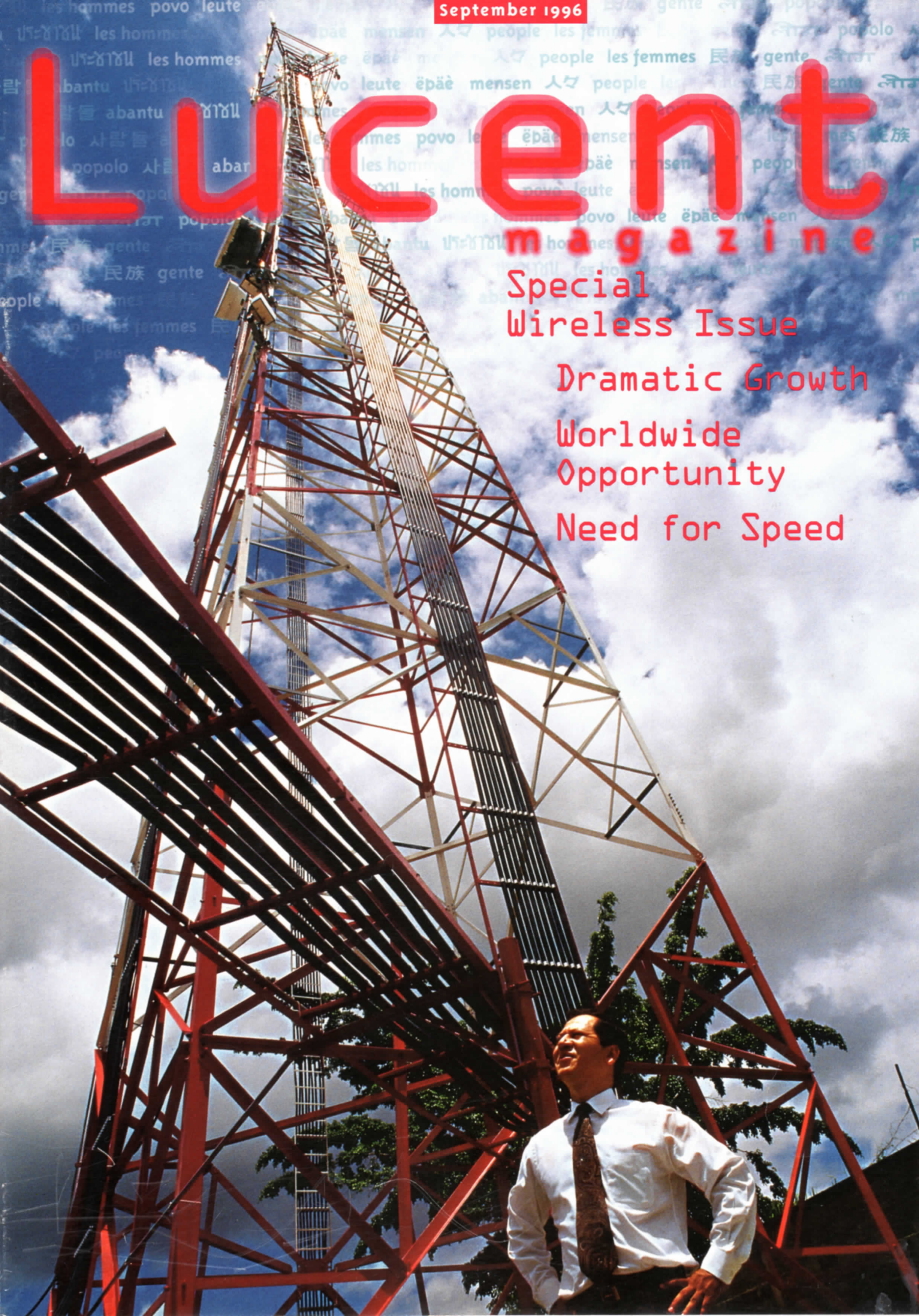
Lucent magazine

Special Wireless Issue

Dramatic Growth

Worldwide Opportunity

Need for Speed



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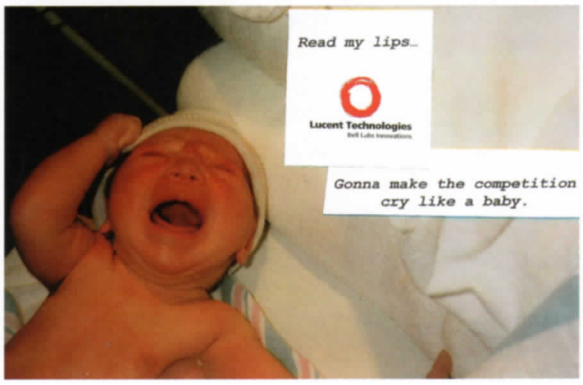


Oh, Baby, Love Those Stickers!

Great job on the premiere issue of Lucent Magazine. And thanks for the Lucent stickers. I've enclosed a snapshot of where I placed one sticker.

Thought you might appreciate how I've been inspired recently by the excitement of being a part of this new company and the birth of my son, Ryan Christopher. The picture tells the story — about two minutes after delivery on June 8.

Mike Castillo, Dallas

Watch Those Words

I was pleased to see the second issue of Lucent Magazine (July/August). Communication is important and we've certainly "hit the ground running" with this publication. However, two items trouble me with respect to the long-awaited Mission/Values statement found in this issue.

First, the headline said "Honey, We Shrunk the Values." Although not intentional, this could be interpreted as meaning we've reduced our level of values. Secondly, and more importantly, I see that value #3 says "respect for the contributions of each person." When did we move from respecting each other individually (like the AT&T value "respect for the individual") to respecting only the "contributions" of people? I don't need a company value statement to know how to treat my associates, but I know that a company value statement is necessary and useful. However, this wording (especially value #3) may not be what was intended.

Art Leyenberger, Warren, N.J.

Glowing With Light

I enjoy reading the new Lucent Magazine. I just received the second issue and find it very informative. In these ever-changing times, I think I can speak for most all Lucent employees and say, "We need all the information we can get."

One question: If the word "Lucent" means marked with clarity, why is the word "Lucent" on the cover blurry?

Matt Hass, Naperville, Ill.

A Geography Lesson

It's a shame and a disappointment to see you list several non-Russian cities under Russia on Page 9 of the July/August Lucent Magazine. Almaty, Kiev and Vilnius never were in Russia, although they were in the Soviet Union (which was not synonymous with Russia). Please list them under their appropriate respective countries: Almaty — Kazakhstan; Kiev — Ukraine; Vilnius — Lithuania. And, by the way, the current officially adopted transliterated spelling for Kiev is "Kyiv."

George Shevchuk, Murray Hill, N.J.

[Thanks for pointing this out. Also, Toronto and Montreal, Canada; Hsinchu, Taiwan; Bangalore, India; Cario, Egypt; Abu Dhabi, United Arab Emirates; and Qingdao, China; should have been included. And, the correct spellings are Brondby, Denmark, and Worcester, Mass.-Editor]

Who Is That Lucent Guy?

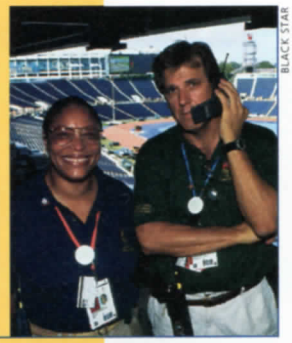
I enjoyed the July/August issue — visually appealing, interesting articles and not too many pages. Regarding the "Lucent guy," how about giving us a name, a face and a short bio in the next issue?

Lewis Fischman, Whippany, N.J.

[Dave Shaver, Lucent's vice president of advertising and brand management, responds: The "Lucent guy" is a metaphor for all of us. The actual voice belongs to a professional actor. We chose his voice to set the right tone for our advertising. Since we did not choose the actor as a spokesperson, we've intentionally kept him anonymous.]

Contents

On the cover:
Gary Argueta, a Network Systems sales manager, stands beside one of the towers that are part of Lucent's wireless business in South America.


BLACK STAR

Lucent Magazine
September 1996
Vol. 1, Issue 3

Published for the people of Lucent Technologies Inc.

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We welcome your letters and ideas for articles.

Please note that all letters will be considered as having been submitted for publication. The editors reserve the right to edit all letters for length and clarity. Opinions expressed in letters and articles do not necessarily reflect the views of Lucent Technologies Inc. management.

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Printed on recycled paper using vegetable-based inks.

Lucent Technologies
Bell Labs Innovations

There's Nothing Like Being There

By the time Sharon Henderson arrived, Olympic Stadium was already a massive, empty 80,000-seat bowl in downtown Atlanta. What it needed in the few short weeks before capacity crowds would pour in for the Olympic Track and Field events, was a top-notch communications system, built literally from the ground up.

"Our customer, the Atlanta Committee for the Olympic Games (ACOG), had a heavy list of demands," said Henderson, an Atlanta-based manager with Business Communications Systems (BCS). As a process consultant, Henderson's immediate job was to ensure that ACOG's needs would be fulfilled as quickly as possible. "With the hectic pace, I think what they were looking for most was a feeling of confidence that Lucent Technologies heard them and would respond effectively."

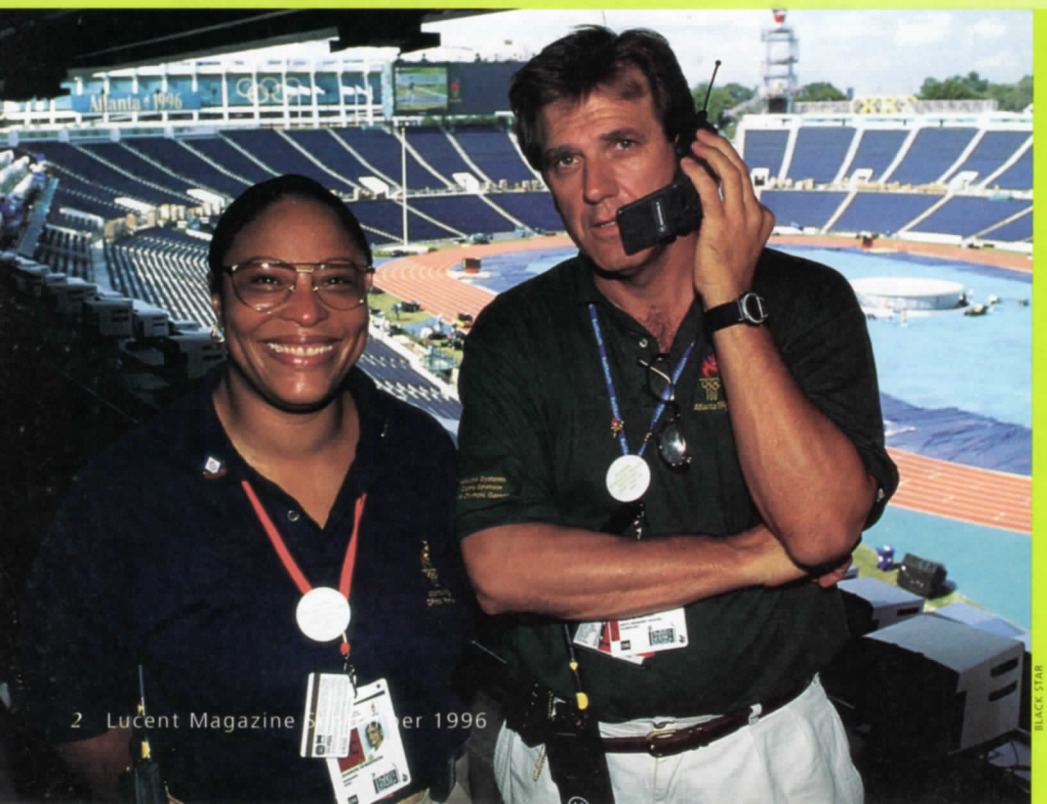
Henderson moved on-site to make the stadium her "home." Her frequent face-to-face meetings with ACOG helped to quickly address concerns and answer questions when changes in plans were required. "As liaison between headquarters and the field, we work to get things done for the customer while also meeting our corporate objectives," said Henderson.

Installing over 800 phones throughout the stadium and equipping the sets with *Intuity* AUDIX and *Transtalk* required coordinated efforts between the BCS technical staff and the wiring staff of Distribution Technologies, contracted to do the cabling at the venue. ACOG customized the communications system even as work progressed. "We faced constant schedule changes based on construction, access to specific parts of the stadium, and customer demands," said Henderson. "The Lucent team needed to be flexible, especially when our customer would change their mind on their own plans."

Terry Suttles, program manager for ACOG, credits Henderson and the Lucent team with its tenacity. "As the customer, we felt right from the start that someone from Lucent needed to be here at the stadium."

Henderson agrees. "My epiphany came the day Terry and I looked down on the field from a box on the press level. We were talking about what needed to be done and down below, the track and field semi-finals were playing out. Seeing it first-hand helps you appreciate the customer perspective. As we watched Michael Johnson win, I began feeling very much a part of a team that would help bring this excitement to the world."

"Sharon and her team are very dedicated people," said Suttles. "As a customer, we appreciate it. But we also expect it. I think we'd all agree that you can't focus on customers too much." – *Carl Rachel*



BLACK STAR

Olympic Stadium became Sharon Henderson's "home" as she met daily with ACOG Program Manager Terry Suttles to oversee installation of the communications system at the venue.

BLACK STAR

Naval Salute Goes to Technician

When the nation's top sailor, Admiral Jeremy Boorda, left his Pentagon office last May in the mid-afternoon to go home, no one could have known the tragedy that was to follow. A few hours later, the Pentagon and the nation were stunned to learn that Boorda, the chief of naval operations, had committed suicide.

Arrangements had to be made that same afternoon. Hundreds of naval staff had to be called. Cheryl Van Gurp, telecommunications service control officer for the chief of Naval Operations, knew she needed some help from a technician to quickly set up additional telephones to accept the hundreds of calls that would be coming and to make memorial service arrangements. Van Gurp requested that Business Communications Systems' Mark Stevens, a customer systems technician, step up to the task.

And step he did. In one afternoon, Stevens, who is responsible for the Navy's top brass, set up a small "crisis" center in the Pentagon's Arlington, Va., office with additional phones and fax machines for naval personnel to receive and make calls. Stevens canvassed several offices, asking if anyone had extra telephones and telephone lines that he could "borrow." "I robbed Peter to pay Paul," said Stevens. "There was no time to call in the local phone company. I will never say 'no, it can't be done,' to a customer."

Director Navy Staff
Washington, D.C. 20350-2000

24 May 1996

Dear Mr. Stevens,

I want to take this opportunity to express my gratitude for the exemplary service you provided in preparation for Admiral Boorda's Memorial Service.

Thanks to your efforts the service was an unprecedented success.

Again, thank you for your support and a job "WELL DONE!"

Sincerely,

J. S. MOBLEY
Rear Admiral, U.S. Navy

Mr. Mark Stevens
AT&T Lucent Technologies
Pentagon
Washington, D.C. 20350

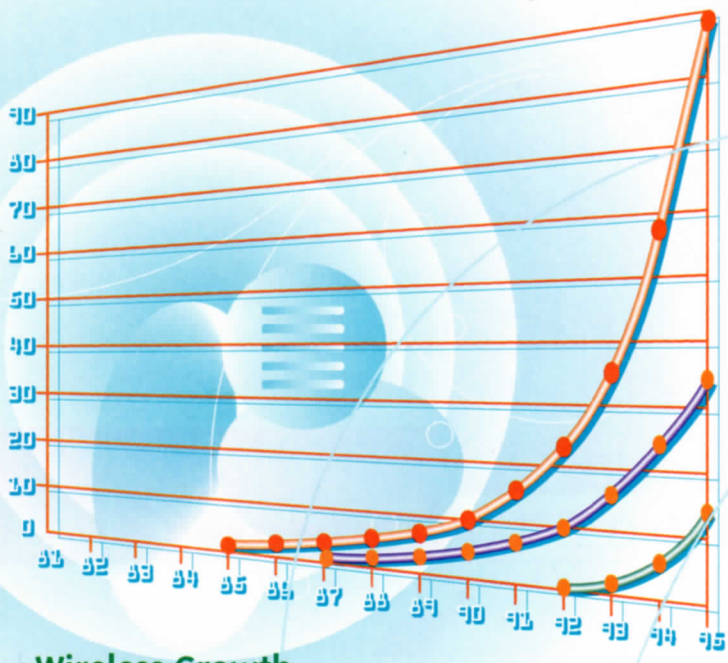
Van Gurp affirmed Stevens' yeoman-like work ethic. "He goes out of his way to help our customers. He's always there to answer questions and to do what needs to be done with as little interruption as possible," said Van Gurp.

The memorial ceremony proceeded as planned, and Stevens' extra efforts did not go unnoticed. Admiral Joseph Mobley took the time to write a special thank-you note in appreciation for his quick response —- a rare gesture, according to Van Gurp and Stevens' coach, Joe Harper.

"Normally when someone does anything, it's generally thought that they're just doing their job, but Mark pulled things together so quickly, that the admiral sent the letter," said Van Gurp.

Some would say Stevens not only served his company, but also his country. Stevens, who is one of 18 technicians assigned to the Pentagon headquarters, sees it more simply. "I'm just glad I had the opportunity to serve." –*Robyn Roberts*

Look, Ma, No Wires



Wireless Growth
1985-1995

- World Cellular Subscribers
- USA AMPS Subscribers
- World GSM Subscribers

"People enjoy untethered communications, and the numbers of them willing to pay for that freedom are growing every day."

Tammy Parker, Inside Wireless

Plain old telephone service, that mainstay of the telephone business that everyone refers to as POTS, is going wireless. Because it's so expensive and time-consuming to install copper wire, service providers building new communications infrastructures or extending current ones are turning to wireless technology. Noemy Wachtel, strategist in Lucent's Network Wireless Systems organization, projects that local-access providers worldwide will quadruple their spending on fixed-wireless infrastructure over the next two years — to $4 billion.

Herschel Shosteck, the widely quoted head of Herschel Shosteck Associates, Ltd., sees wireless subscriber growth continuing to expand by 40 percent per year. That's for wireless calling of all kinds — for the vast mobile-calling market as well as emerging fixed-wireless calling.

The market for wireless equipment is growing almost as fast — by 33 percent per year. Estimates that Lucent Technologies shared with the financial community assert that a fifth of the total growth in markets served by Lucent Technologies in the years ahead will be in wireless technology, as world subscribership triples again by 2001. More than 300 million people will be making wireless calls.

Clearly, Lucent Technologies loves the wireless market.

What the analysts tell us....

Wireless market analysts believe Lucent is right to pursue the wireless market. We asked analysts to interpret some of the forces behind the heart-pounding growth of wireless in the '90s. Here's one thing they tell their clients (who include our customers): Lucent Technologies has great products, strong support and financing for customers, and dominance in North America — but faces strong and clear-eyed competitors in vital international markets.

"There's no reason to think that double-digit wireless growth isn't sustainable over a decade at least, especially internationally," says Peter Bernstein of Infonautics Consulting. "Some countries give wireless communications a higher priority than plumbing."

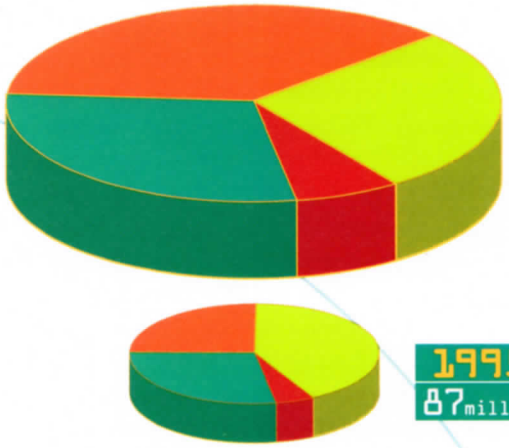
Truly international

In the United States, the advent of personal communications services (PCS) will drive a new round of growth based on the advantages of emerging digital wireless technology. PCS will expand the range of wireless services beyond cellular calling. Carriers who want to supply the PCS market have plunked down $14 billion to snap up new wireless spectrum that will enable far more wireless calling, paging, faxing and imaging — even video messaging and personal digital assistants.

In the next five years, PCS will attract 15 million new users — whereas it took 10 years for today's cellular market to grow that large. That's how the Personal Communications Industry Association sizes the emerging digital market.

Internationally, growth is and will remain even steeper: "Faster than 25 percent per year," says Yankee Group vice president for wireless research, Mark Lowenstein. "Huge countries like China and India are committed to wireless, yet market penetration is still under 1 percent." Countries such as Hungary and Indonesia are signing up for 200,000-user fixed-wireless network extensions noted above — no fiber, no copper, yet widespread low-cost communications throughout their nations.

Lowenstein notes Lucent Technologies is not as well-known internationally as its competitors. "Lucent's 1996 goal of 50-percent growth in international markets is possible to achieve," he says.



Growth by Region 1995-2001

- Europe, Middle East, Africa 28%-29%
- Asia/Pacific 25%-37%
- North America 42%-27%
- Latin America and Caribbean 5%-7%

Technologies and standards

As it spreads across the geographical map, Lucent Technologies already dominates the technology map. We have analog AMPS technology deployed in Asia, especially Korea, and North America. But the future lies with digital carrier signals, which come in several flavors. Lucent Technologies offers CDMA, committed for the huge PCS networks of Sprint Spectrum and PrimeCo; TDMA, the choice of AT&T Wireless; and GSM, common in Europe and growing fast, far and wide. In the past three years, GSM took digital technology from no market share to almost 17-percent penetration, according to the May 1996 EMC World Cellular Report.

"Till further notice, all three are growth markets," notes Bernstein. It's important for Lucent Technologies not to be "religious" about any one, Lowenstein says — but to be neutral and truly help each customer to the right solution. Herschel Shosteck points to a duality in the market. "A lot of growth will be there for companies willing to push low-cost POTS technology. In developing regions, customers will pay to talk but can't support advanced features. Carriers are buying plain-vanilla."

Vendor-financing, in which Lucent Technologies shares some of the capital risk with the carrier we sell to, is a vital form of customer support, analysts believe. "Sprint is a good risk," says Lowenstein. But Bernstein says the bidders for PCS spectrum include companies that won't make it. "Shakeout hasn't happened in wireless before," he adds. "You need to pick customers carefully — then help ensure they succeed."

Carriers internationally may need even more innovative financing. Shosteck says Lucent's "more flexible" competitors are taking equity positions in nascent carriers, and even accepting commodities such as oil in compensation.

Analysts agree Lucent's *5ESS*-2000 switching system — the traffic manager behind the wireless base stations — is a key to Lucent's ability to support wireless operators. They call it "the demonstrable leader as a wireless platform"... "unchallenged, including in software"... and "high-featured, high-function, multi-technology." On the other hand, cautions Shosteck, many of the burgeoning carriers in developing countries can't afford to buy advanced capabilities.

Synergy

Industry observers — and customers — all want Lucent Technologies to show value that's greater than the sum of its impressive parts.

What would Lucent-style synergy look like to our customers in the wireless market? "Synergy would mean really understanding end-user demand and offering what it takes to meet that demand," says Bernstein. "It would mean helping carriers, who may not be good at market and demand analysis, get the solution right the first time."

o – *Blanchard Hiatt*

The wireless pie will be bigger in 2001 when subscribership is likely to increase to nearly 334 million.

"I Just Called (Wirelessly) To Say I Love You"

Stevie Wonder had it almost right, at least as far as Americans are concerned. But, while one of the top reasons U.S. cellular phone users pick up their wireless phone is to say "I love you," they're calling in even greater numbers to break the news they're going to be late.

According to a recent survey made by the Hong Kong branch of the Gallup organization, the chief reasons people value cellular calls differ around the globe. In Hong Kong, for instance, two of the most frequent uses of cell phones are to make appointments and close deals. Other major reasons for cellular calls that made the worldwide survey are to get roadside assistance, ask directions, check on the kids, and turn idle minutes into productive time.

Key wireless customers we serve

Business Communications Systems
American Express of Australia
Bank One
Barphone
Good Samaritan Hospital
Home Depot
Saudi Arabia
Nabisco
Ryder Trucks

Consumer Products
AT&T Wireless Services

Microelectronics Group
Ericsson
Lucent Technologies
Mitsubishi
Motorola
Nokia
NEC
Siemens

Network Systems
AT&T Wireless Services
Bell Atlantic NYNEX Mobile Systems
BellSouth Mobility
Cellular Communications Network (Celcom)
Centennial Cellular Corporation
Clearnet Communications Inc.
CODETEL
Comcast Cellular Communications Inc.
Compania de Telefonos del Interior (CTI)
Cox California PCS Inc.
DeTe Mobile
Escotel Mobile Communications Ltd.
Global TeleSystems Group Inc.
GTE Mobilnet
Instituto Costarricense de Electricidad (ICE)
Komunikasi Selular Indonesia (Komselindo)
Korea Mobile Telecom
Ministry of Post, Telegraph and Telephone of Saudi Arabia
Nippon Ido Tsushin Corp. (Ido)
North American Wireless Inc.
Oneonta Telephone Company
PacTel
PCS PrimeCo
Pilipino Telephone Corporation (Piltel)
PT Telkom
SNET Cellular Inc.
Sprint Spectrum
SPT Telecom s.p.
Telepar
Tele2000
U.S. Intelco Wireless

Lucent's Wireless Wins

When Lucent Technologies says it's a world leader in providing wireless solutions, that's no brag, it's fact. Here are some of the key wireless wins behind our claim.

Lucent Technologies has been selected to supply network equipment and software for the biggest Personal Communications Services (PCS) industry markets — firmly establishing itself as a leader among PCS infrastructure vendors in the United States. Lucent's customers include service providers with the largest number of potential subscribers — Sprint Spectrum, AT&T Wireless Services and PCS PrimeCo. Network Systems is supplying and installing Code Division Multiple Access (CDMA) PCS equipment and software for 60 percent of Sprint Spectrum's national markets, six of PCS PrimeCo's 11 major markets, and 10 of AT&T Wireless Services' 21 Time Division Multiple Access (TDMA) PCS markets.

Recently, Network Systems received a contract worth up to $800 million from the Kingdom of Saudi Arabia to add another 300,000 subscriber lines to Saudi's national Global System for Mobile Communications (GSM) cellular network. The agreement was an expansion of an earlier $4 billion contract — the largest telecommunications contract awarded outside the United States — to supply GSM cellular lines and 1.5 million telephone lines.

AT&T Wireless Services awarded Lucent Technologies a contract worth more than $300 million to supply more than one million digital cellular telephones. The phones will be designed and manufactured by Consumer Products' Global Wireless Products Group.

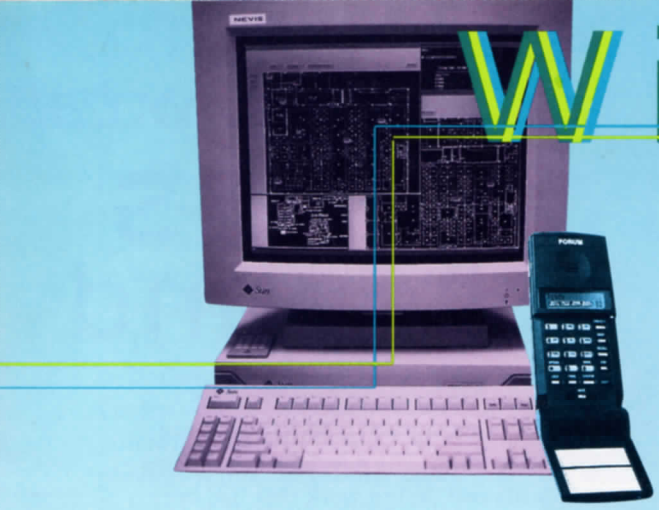
The Global Wireless Products Group is part of Consumer Products' new strategy to begin producing all of its digital cellular telephones in-house by the end of the year. To achieve that goal, the wireless group recently moved integrated teams of design engineers, marketing people and business managers into a new design and production center in Piscataway, N.J. There, the teams will produce TDMA and CDMA cellular phones based on common design platforms and built to a customer's order.

Recent wins by Business Communications Systems (BCS) show how businesses around the world are integrating wireless communications into their office buildings. Temasek Polytechnic University in Singapore and American Express in Australia both selected BCS' *FORUM* Personal Communications Manager System. Home Depot in New Jersey selected BCS' *DEFINITY* Wireless Business System. Nabisco in New Jersey purchased the *Transtalk* 9000 Digital Wireless System. All of the wireless solutions are part of BCS' *FreeWorks* family of wireless business systems.

Key customers around the world — including other Lucent Technologies businesses — signed major contracts for wireless components with the Microelectronics Group. Microelectronics' DSP 1620 chip was selected by world-leading infrastructure providers for use in their next-generation GSM base stations and by Lucent's own world-leader, Network Systems, for its next-generation TDMA base station. Microelectronics also received design wins for the *Sceptre* GSM chip-set from several large GSM terminal manufacturers in the Asia/Pacific region, and Consumer Products will use Microelectronics' baseband components in its CDMA and TDMA cellular telephones. -*Ollie Hartsfield*

Wireless

Products We Offer



Business Communications Systems

Transtalk 9000 Digital Wireless System — provides multi-line, single-zone wireless coverage inside an office building, up to 500,000 square feet.

DEFINITY Cellular Business System — includes a phone that can be used inside an office building or on the road; gives users the same calling features from their cellular handset that they get from a corded desk telephone.

DEFINITY Wireless Business System — a wireless system for large buildings and office campuses.

FORUM Personal Communications Manager — a wireless system for large office complexes in international markets, based on the international CT2 standard.

WiSE (Wireless Systems Engineering) Expert Design System — a computer-aided design program that customizes the BCS wireless systems to the customer's premises.

Consumer Products

Consumer Products' wireless terminals are based on common platform designs and can be built-to-order in various configurations, according to individual customer need. For instance, the Digital Portable Telephone 6720 can be used with both analog and digital cellular service and can be configured for CDMA or TDMA standards.

Microelectronics Group

Provides state-of-the-art solutions that enable wireless communications across all major cellular and personal communications services (PCS) standards. Offers microelectronics wireless solutions for cellular telephones, pagers, answering machines, mobile radios, cellular base stations and wireless network equipment. Solutions include:

DSPs (Digital Signal Processors) — chips that perform speech compression, filtering, error correction and other functions in digital cellular phones, modems, pagers, base stations and other wireless products.

CSPs (Conversion Signal Processors) — chips that convert signals between RF chips and DSP chips.

RF (radio frequency) devices — chips that transmit and receive signals between the baseband chips (DSPs and CSPs) and the antenna.

Speech transcoders — software that takes speech and compresses it to maximize the capacity of the wireless system.

Physical Layer Engine — software that takes data in its most compressed form (from DSP) and converts the data into radio transmission signals.

Data Services Support — software that allows the transmission of data rather than speech, like a modem.

Indoor power systems — completely assembled, wired and tested power systems consisting of rectifiers, fuses, circuit breakers, batteries and AC generator sets for all CDMA and TDMA standard wireless solutions.

Outdoor power systems — completely assembled, wired and tested cabinet power systems consisting of rectifiers, fuses, circuit breakers, batteries and DC generators for all CDMA and TDMA standard wireless solutions.

Lasers, transmitters, detectors and receivers — devices that transmit and receive optical signals in support of analog radio frequency and digital-based wireless systems.

Network Systems

AUTOPLEX System 1000 Product Family — a common modular platform that incorporates one or all of CDMA (Code Division Multiple Access), TDMA (Time Division Multiple Access), CDPD (Cellular Digital Packet Data) and analog technologies. Key elements of the *AUTOPLEX* System 1000 product family include:

- Series II cell sites, minicells and microcells
- Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) minicells
- The *5ESS*-2000 Switch
- Integrated Management Tools for best-in-class operational efficiency
- Professional Services

PCS infrastructure equipment — enables service providers to offer reliable, cost-effective wireless service to end users. Lucent's PCS offer includes:

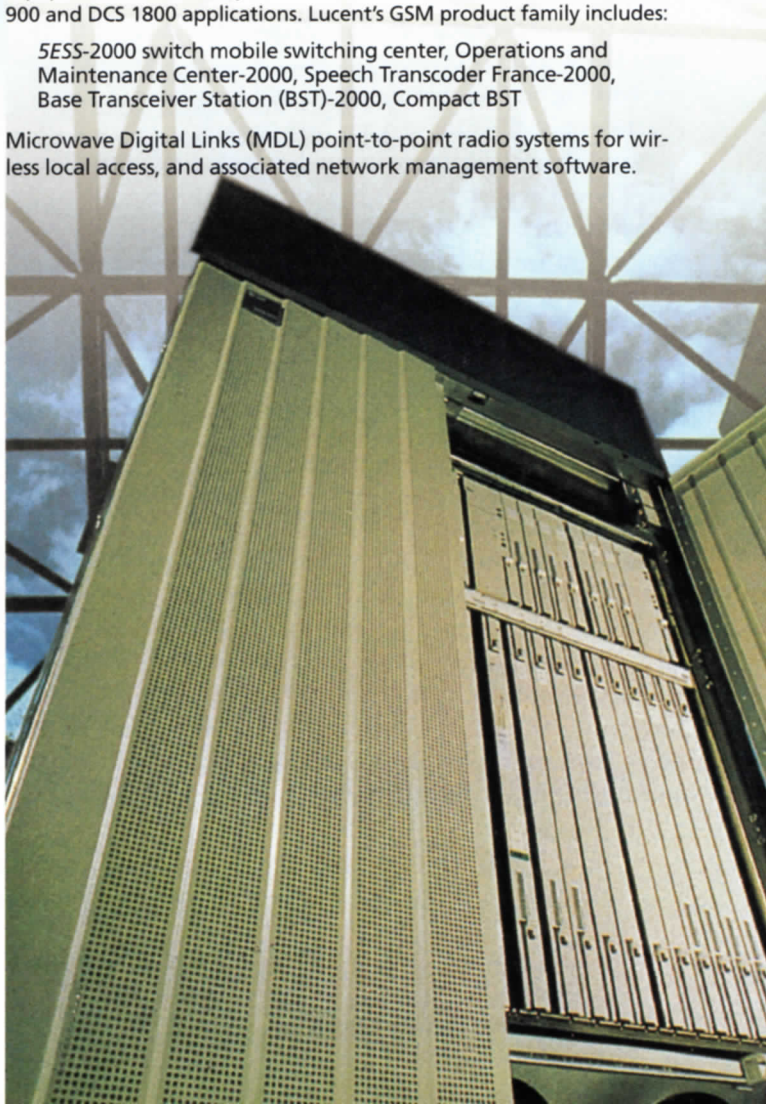
- PCS CDMA Minicell, PCS for CATV (cable TV), PCS TDMA Minicell.

Wireless Local Loop — the Wireless Subscriber System, a wireless systems for local access networks. The *Airloop* Fixed Wireless System uses CDMA technology to deliver telephone and data services from the central office to consumers and businesses. The Swing Fixed Wireless System based on the Digital Enhanced Cordless Telecommunications (DECT) standard, and the Integrated Radio Telecommunications (IRT) modular integrating system based on TDMA and, optionally, DECT standards. The systems also include associated network management software.

Equipment for Global System for Mobile Communications (GSM) 900 and DCS 1800 applications. Lucent's GSM product family includes:

- *5ESS*-2000 switch mobile switching center, Operations and Maintenance Center-2000, Speech Transcoder France-2000, Base Transceiver Station (BST)-2000, Compact BST

Microwave Digital Links (MDL) point-to-point radio systems for wirless local access, and associated network management software.



Arun Netravali, Bell Laboratories, vice president, Research

Research Fuels Wireless Advances

Wireless technology is a vital part of Bell Labs research. As Vice President of Research Arun Netravali explains, it is "one of our core networking technologies, and an extremely important arena. Bell Labs research is fueling advances in wireless communications that will change the way we live and work."

Research in wireless is closely supporting customers including Business Communications Systems, Network Systems, Microelectronics Group and Consumer Products, working on projects like wireless base stations, wireless phones, radio wave propagation and bandwidth. Researcher Sanjay Kasturia, for example, wears dual hats: In addition to heading up the Wireless Technology Research department, he manages forward-looking work on handsets in Consumer Products.

On the components side, Paul Mankiewich and his team from the Wireless Components and Packaging Research Lab are working on thin film inductors and capacitors as a cost-effective noise filter for wireless base stations.

An additional challenge in wireless is dealing with a limited amount of spectrum with essentially unlimited customer demand. To serve more with less, the wireless lab is working on a specially designed "steerable" antenna that allows you to direct radio beams where they are needed. The first use will be for fixed wireless loop to provide advanced telephony services in developing countries, as part of a long-term research effort to replace copper with radio frequencies.

In the United States, wireless issues are becoming more focused on Internet and alternate access. Rich Gitlin, vice president of Communications Sciences Research, observes that today's air interfaces — Code Division Multiple Access, Time Division Multiple Access and Global System for Mobile Communications — will likely evolve into future standards that support reliable transmission of packet voice and data. The goal is to enable seamless communications from indoors to outdoors, with multimedia applications at your fingertips. "Overall, the biggest theme in wireless research is being transparent to where you are, having access to people and sharing resources with them," said Gitlin. o *–Loren Talley*

New Lab

Wireless Demand

Bell Laboratories has formed a new Wireless Research Lab to strengthen research's alliance with operating units. The new lab consolidates wireless components and design work that had been done in two divisions. It is headed by director Rich Howard, who previously was the director of the Silicon Electronics Research Laboratory.

"Our goal is to deliver the value of a solid scientific and engineering research base to Lucent's current and future wireless businesses," Howard said. "The idea is to take important pieces of wireless technology and, by focusing on common platforms, make them available in a cost-efficient manner in as many places as possible across the company."

The new lab comprises departments from the Communications Systems Lab, the Communications Sciences Research Division, and the Wireless Components Lab from the Physical Sciences Research Division.

Rich Gitlin, Communications Sciences Research vice president, said, "this is a soup-to-nuts operation that covers everything from components to signal processing to the management of wireless networks. With an array of expertise in the lab, we can accelerate the innovation process by moving technology out of the lab and into products at a much faster pace."

Projects contributed to the new lab from his organization include novel communications devices; digital and analog circuit design; novel air interfaces; signal processing; channel management; wireless voice and data systems, and systems that model and predict wireless coverage.

From the Physical Sciences Division comes advanced packaging, low-cost antennas, RF (radio frequency) com-

BLACK STAR

(from left) Rich Gitlin, Rich Howard and Bill Brinkman lead the new wireless research lab, which was created to help move wireless technology out of the lab and into development.

Responds to

ponents and circuits, MM (millimeter)-wave data links and specialized materials. The lab will report to both Gitlin and Bill Brinkman, Physical Sciences vice president.

The new wireless lab is expected to be instrumental in adding to Lucent's profit potential — and that potential goes well beyond cell phones. While the cellular phone industry is thriving, wireless in all its forms is exploding around the world. In particular, access is a hot issue, as the idea of running a wireless link to the home is becoming more feasible.

The new lab will support the current generation wireless transmission standards, including IS-95 Code Division Multiple Access (CDMA) and IS-136 Time Division Multiple Access (TDMA), as well as Global Systems for Mobile Communications (GSM). It also will continue engineering work on wireless base stations, wireless data networking, cordless phones, as well as the components, signal processing algorithms and design tools essential to produce these products.

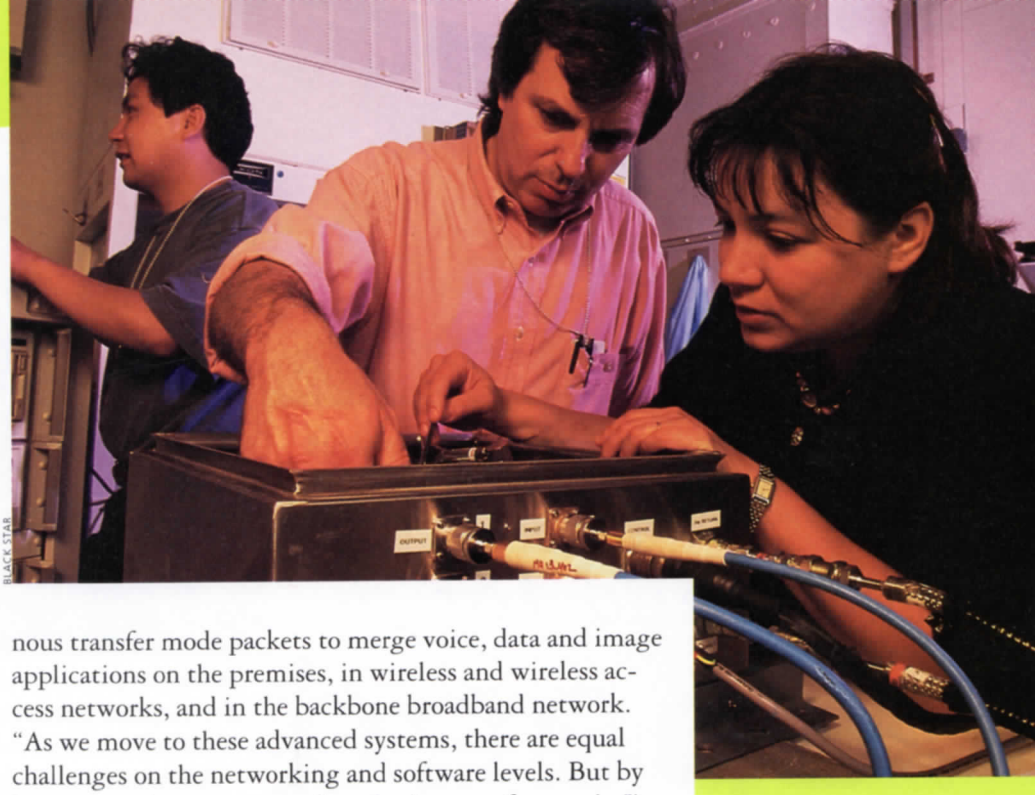
Down the road, as wireless graduates from analog to digital protocols, the new lab will also emphasize the fixed wireless local loop, which serves as an alternative to copper.

The third-generation wireless products will likely use asynchronous transfer mode packets to merge voice, data and image applications on the premises, in wireless and wireless access networks, and in the backbone broadband network. "As we move to these advanced systems, there are equal challenges on the networking and software levels. But by having people on our team from both areas of research, I'm confident that we can greatly benefit the wireless business units," Gitlin said.

The lab is also extending efforts outside the United States, with a first-of-its kind Bell Labs research operation that was established in 1993 in Utrecht, The Netherlands. Headed by A.S. Krishnakumar, the department is concentrating on data networking and next-generation wireless access, while keeping abreast of emerging standards for global markets.

"Before a technology can be commercialized — especially in wireless communications, standards must be set to guarantee that our products will be accepted in other countries," explains Krishnakumar, whose department members participate on several standards bodies that help define new technologies and determine how they will be developed.

Additional forward-looking work at the lab includes a high-speed wireless modem and techniques to converge voice, video and data for future wireless products. Recent accomplishments: The Utrecht team altered a current modem product and made it four to five times faster using the same bandwidth. The technology is expected to be available in products in the near future. In addition, the department has developed a technique to integrate real-time traffic over current wireless modems. The system will be trialed with Carnegie-Mellon University for its campus-wide network. o *-Loren Talley*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In the Wireless Components and Packaging Research department, Paul Polakos (center) works on filters for wireless base stations with Elida de Obaldia (right) and Xiang Ma.

As we move to these advanced systems, there are equal challenges on the networking and software levels.

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Karsten Purper working on wireless hardware at the GSM production center in Nuremberg, Germany.

The Need for Speed

In the world of product design and manufacturing, the name of the game is speed. Getting products from concept, through production, and out to customers — fast — is how you play to win. Especially in the rapidly evolving wireless industry. Our wireless customers need to get to market quickly to keep up with demand and establish their market position.

"The aggressive growth in demand in the wireless marketplace and rapid technological advances are driving the need to approach wireless equipment production differently," said Jim Brewington, president, product realization organization, Network Systems.

For several wireless units within Lucent Technologies, that different approach has meant bringing together design engineers, production technicians and marketing staff under one roof to see the product through from start to finish.

In 1989, business leaders at Microelectronics Group's Power Systems facility in Mesquite, Texas, knew they would have to accelerate their time-to-market to meet customer demand. Power Systems supplies the power equipment for wireless and wired telecommunications systems. They reorganized the business, built a new facility inside their factory, and created teams of the design, manufacturing and marketing people.

The new wireless design and production centers in Consumer Products and Network Systems were created from day one with this cross-functional team approach in mind. At Consumer Products' wireless center in Piscataway, N.J., digital cellular terminals are manufactured 50 feet away from the laboratories and cubicles where design engineers, marketing people and business managers sit. A similar physical setup exists at Network Systems' wireless design and production center in Mt. Olive, N.J., which makes PCS (personal communications services) CDMA (code division multiple access) minicells. There, production technicians participate in design revisions and the designers share the responsibility for production targets. At all three facilities, cross-functional teams see a product through from concept to the customer's door. "Employees feel more ownership of the product," said Lynn Mercer, director of Network Systems' wireless design and production center in Mt. Olive.

The effect is improved communications and great productivity. "The flow of information has improved dramatically," said Lew Chakrin, vice president, Wireless Products Group, Consumer Products. "A meeting can be called in a matter of moments, simply by calling over one's shoulder to other product team members. It doesn't sound like a big deal, but when you live it and see it in action, you understand it's a significant advantage."

One advantage that's easy to see is the faster production cycle time. If there's a problem on the production assembly

(Below, upper photo) Jim Duris (left) and Thomas Ruggiari keeping track of production at Network Systems' design and production center in Mt. Olive, N.J.

(Below, lower photo) Specialists John Lewis (left) and Wanda Bruer and Manufacturing Manager Jim Underwood discuss a project at the Microelectronics Group Power Systems design and production facility in Mesquite, Texas.

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Where We Make Our Wireless Equipment

John Sohn, a member of technical staff, helps out at Consumer Products' design and production center in Piscataway, N.J.

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line, the designers are right there to see the problem and find a solution in real time. The marketing staff brings input from the customer directly to the production floor. At Power Systems, that real-time communication has helped reduce time-to-market by threefold and keeps quality high, said Mike Cassidy, director of quality.

Reducing time to market also means reducing costs to customers. "The more time a product spends in the factory, the more the product costs," said Chakrin.

Not all facilities within Lucent have moved their design, production and marketing functions under one roof. But there is a definite trend within the company toward the cross-functional team approach to getting products to market faster. At Business Communications Systems, for instance, the design and production of its wireless *Forum* Personal Communications Manager happens in different parts of the world. But the employees from each location work together as a virtual team, viewing the project as a whole. The same holds true in Europe, where Lucent's GSM production facilities in Nuremberg work closely with the design and marketing center in Swindon, United Kingdom.

As the cross-functional approach evolves, the collaboration between design, production and marketing may extend to other functions as well. Adding software developers and materials suppliers to the production teams is a natural next step, according to Network Systems' Lynn Mercer and Power Systems' Mike Cassidy.

Whatever the permutations, one thing is clear: As long as the name of the game is speed, Lucent will be looking for new, faster ways to get products into the hands of customers.

o - *Ollie Hartsfield*

Business Communications Systems

- **Denport North (Denver)**
  Makes *FORUM* Personal Communications Manager base stations and controllers, and the *DEFINITY* wireless radio controllers.
- **Denport South (Shreveport, La.)**
  Makes the *Transtalk* 9000 wireless system, and the *DEFINITY* Wireless Business Systems handsets and base stations.
- **Lucent Technologies Wireless, Ltd. (Winchester, United Kingdom)**
  Designs and builds radio boards, and assembles base stations.

Consumer Products

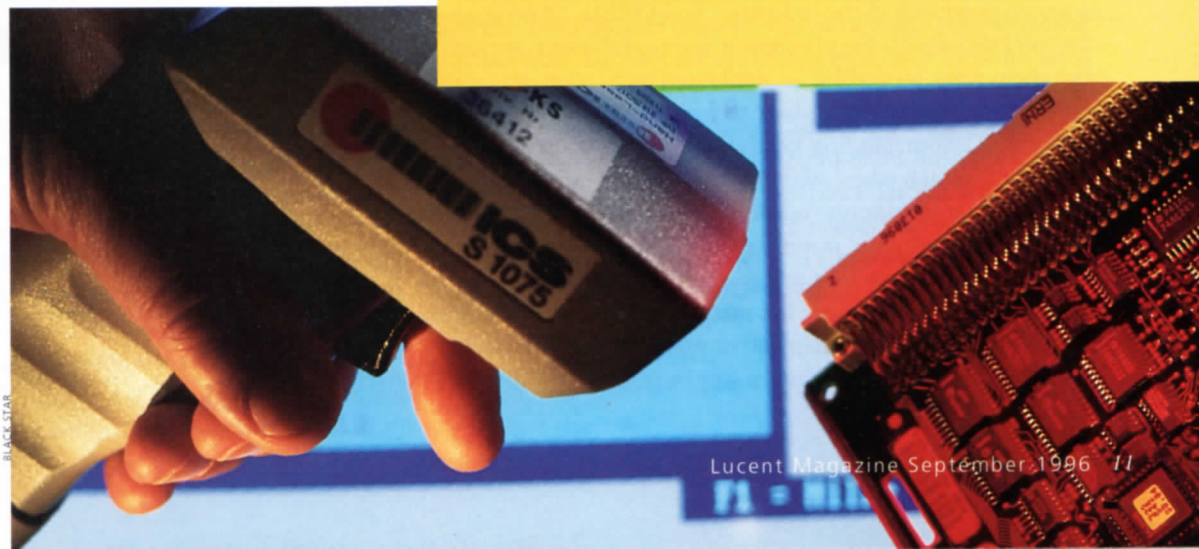
- **Wireless Technology and Production Center (Piscataway, N.J.)**
  Designs, manufactures, sells, distributes and provides customer service for cellular and PCS digital handsets based on CDMA and TDMA cellular standards.Facilities include research laboratories, marketing, business management, sales and customer support staff.

Microelectronics Group

- **Allentown Facility (Allentown, Pa.)**
  Makes digital signal processors (DSPs), radio frequency (RF) chips, and conversion signal processors (CSPs) used in cellular terminals and network equipment.
- **Reading Facility (Reading, Pa.)**
  Makes RF chips used in cellular equipment, lasers, transmitters, detectors, and receivers used to transmit and receive wireless signals.
- **Orlando Facility (Orlando, Fla.)**
  Currently makes DSPs. Will make RF chips in the future.
- **Mesquite Facility (Mesquite, Texas)**
  Makes power systems for wireless network equipment. Became the first American-based manufacturing company to win the Deming Prize for quality, in 1994.
- **Madrid Facility (Madrid, Spain)**
  Makes DSPs for cellular terminals and network equipment.

Network Systems

- **Columbus Works (Columbus, Ohio)**
  Makes Network Systems' cellular and Personal Communications Services (PCS) CDMA and TDMA minicells, GSM cellular network equipment, the Network Systems' *Airloop*, and the Japan Common Amplifier.
- **Product Realization Center (Mt. Olive, N.J.)**
  Designs and manufactures PCS CDMA minicells, PCS CDMA Minicell Growth Cabinets and Series II PCS Growth Modules.
- **GSM Production Center (Nuremberg, Germany)**
  Makes GSM base stations and base station controllers.
- **TRT (Rouen, France)**
  Makes Integrated Rural Telephony (IRT) systems, MDL — a point-to-point microwave system, and the SWING wireless system.



Wireless equipment being assembled at Lucent Technologies' Nuremberg production center.

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International Markets Hungry for Wireless Systems

With half of the world still waiting to make its first phone call, installing wireless networks is an attractive option to global network operators. As president of Lucent Technologies' International Regions and Professional Services, Bill O'Shea has the complex task of leading our international wireless strategy. According to O'Shea, to profitably grow every aspect of our international business — wireless included — we must focus on significant relationships with critical customers, deliver knowledge-based value to customers, and leverage our world-leading technology in high-growth areas.

And wireless is high-growth indeed. The International Telecommunication Union (ITU) estimates that the number of cellular subscribers in the world grew approximately 57 percent in 1995. Internationally, wireless networks offer service providers an avenue to quickly bring services on line, allowing them to generate revenue faster. According to O'Shea, not only are there opportunities to sell and install wireless systems that are based on all of the interface standards, but there are rising international possibilities to sell systems based on the Code Division Multiple Access (CDMA) in addition to the well-established Global System for Mobile Communications (GSM). And, he says, Lucent Technologies is keen to market its expertise in fixed wireless loop, and the corresponding software for all wireless systems.

Supporting wireless standards

One of Lucent's strongest competitive advantages is its ability to provide wireless networks based on the major wireless standards — GSM, CDMA, AMPS (Advanced Mobile Phone Service) and TDMA (Time Division Multiple Access).

"We have one of the most comprehensive wireless communications portfolios in the industry," said O'Shea. "And once a customer decides on the platform it wants and needs, we can offer them what we do best — deploying large scale networks and showing our customers how to operate and maintain their networks. The outstanding flexibility and reliability of our *5ESS*-2000 switch when used as a mobile switching center offers Lucent a significant competitive advantage."

Lucent Technologies' international contracts are proof of its customers' confidence in it as a wireless systems infrastructure supplier. The company has installed wireless communications systems in more than 40 countries around the world. In July '96, Lucent Technologies was awarded an $800 million expansion contract to upgrade Saudi Arabia's GSM wireless network, and has deployed one of the largest AMPS networks in Korea.

Lucent installed a nationwide wireless network in Argentina in a matter of months. The Argentina installation is the company's largest cellular contract in South America, covering an area with a population of 22 million people. The contract — which included mobile switching centers, cell sites and associated wireless software and interface equipment — is worth more than $250 million.

With half of the international market using GSM — a European standard for digital communications that is being adopted in some other parts of the world — it has become a key growth target for Lucent Technologies. The marriage of PKI's radio technology with Lucent Technologies' premier switching and deployment capabilities has produced a solid GSM offer for new networks and for upgrades and expansions of existing networks. Lucent Technologies also has gained a stronger presence in two of the largest European nations — France and Germany. In Germany, more than 2,500 Lucent

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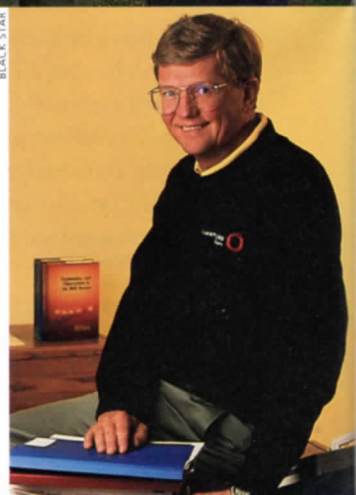

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(Above, from left) Dick Snyder, director; Kate Roe, product marketing associate; Farid Firouzbakht, technical manager, and Geraldine Pike, Chief Financial Officer Organization, are among the first group of Lucent Technologies employees to occupy the new GSM Center of Excellence in Swindon, United Kingdom. The new facility is for developing and marketing GSM wireless network equipment in central and western Europe, the Middle East, Africa and the Asia/Pacific region.

(Right) Bill O'Shea, president, International Regions and Professional Services, Lucent Technologies.

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Lucent's International contracts are proof of its customers' confidence

Workers in New Delhi, India, construct a new facility for Escotel, one of Lucent Technologies' newest wireless customers. Escotel recently awarded a $107 million contract to Lucent Technologies to build a wireless communications network in India.

Technologies GSM base stations are operating at peak performance levels in the DeTe Mobile GSM network, one of the largest GSM networks in the world. And, in a vote of confidence and satisfaction, DeTe Mobile in July awarded Lucent Technologies a significant expansion contract worth more than $20 million.

CDMA is another key growth area for wireless communications internationally. Lucent Technologies was an early deployer of CDMA, and Bell Laboratories is one of the leading patent holders in the industry. CDMA is a North American standard, and is expected to be adopted in many countries throughout the world. Lucent was picked by Centennial Cellular Corporation in Puerto Rico to supply equipment for its new Personal Communications Services network; while in Indonesia, PT Komunikasi Selular Indonesia inaugurated a trial CDMA network using Lucent Technologies' wireless equipment.

Fixed wireless loop, another key growth area for wireless, quickly and economically connects central offices to homes or businesses using fixed wireless equipment, rather than traditional copper wire loop. The systems can provide the same basic and enhanced voice and data features as wired local loop networks. Lucent Technologies currently has a number of trials operating around the world.

The Microelectronics Group recently introduced a Bell Laboratories-designed high-density microchip — or Application Specific Integrated Circuit (ASIC) — that can cancel "echo" in voice communications sometimes heard during international calls. Lucent Technologies will incorporate this chip into its next generation echo cancellers now under development.

Lucent Technologies recently brought the freedom of wireless technology to its international business customers with the introduction of its Personal Communications Manager — a multi-line, multi-zone wireless communications system for businesses serving up to 500 end users and covering the equivalent of a 42-story high-rise building. Users carry a flip phone handset that provides all the functions of their usual desk phone — conferencing, transfer, hold, access to voice mail. This product is based on CT2 technology and is sold in Asia/Pacific and Latin America where CT2 technology is the standard. Similar systems are in development for the other major wireless technologies around the globe. This system was recently introduced in Mexico, Chile and Argentina, and has been available in Hong Kong, Singapore, Malaysia and Indonesia for a year now.

What lies ahead

"Right now the main requirement of wireless communications is spectrum, which is limited," said O'Shea. "But I'm confident that Lucent Technologies will make the technological breakthroughs necessary to help our customers accommodate the future demand for wireless communications."

In the meantime, there are many major international market opportunities. In the Europe, Middle East and Africa regions, the PKI acquisition positions Lucent Technologies to capitalize on the many emerging GSM opportunities. In the Asia/Pacific region, Lucent Technologies was recently awarded a $107 million contract to install and maintain a GSM wireless network operated by Escotel in three states in India. Japan, with the second largest wireless market in the world, is adding 750,000 subscribers each month. Lucent Technologies is already a significant supplier of *5ESS* switches to Nippon Ido Tsushin Corporation (IDO). IDO uses the switches to test its digital wireless network, as well as switch calls. In the Caribbean and Latin America market, deregulation of the telecommunications industry is creating opportunities aplenty.

While the world presents outstanding opportunities, Lucent Technologies can't be everywhere and do everything, O'Shea said. Lucent's efforts will aggressively focus on areas with the greatest prospects for growth and profitability. This means paying attention to serving key customers so we can generate repeat sales and larger equipment orders from significant international service providers. Lucent will focus on areas with competitive service providers and will concentrate on having a stronger presence and significant investment in key countries. ○ *-Yvonne Diaz Barabash*

PCS: Pretty Cool Stuff
And Lucent Can Do It All

It's hot, and we've got it.

It's PCS equipment — the things that make wireless Personal Communications Services work. Whatever equipment a network operator might need to get a PCS network up and running, whatever product a business customer or individual might want for high-quality wireless communications, we can provide it.

What is it?

PCS is the next generation in wireless communications. It works like cellular, but PCS operates at a higher frequency and is entirely digital. It has broadband capabilities for high-speed data transmission. It will be more attractive to customers because sound quality will be enhanced, conversations and data will be more secure, and additional services can be offered.

With analysts predicting that by the year 2000, half of all telephone calls will be wireless, companies are betting that PCS will boom. Having already invested $8 billion just to get Federal Communications Commission PCS licenses at auction, carriers are quickly signing contracts with PCS equipment makers.

"Lucent is clearly the market-share leader in contracts awarded by the first group of PCS licensees," said Scott Erickson, Network Wireless Systems' marketing vice president. We're now deploying networks for PCS PrimeCo in six of their 11 markets; we're working on 60 percent of Sprint Spectrum's markets; and we've got 50 percent of AT&T Wireless' business."

Total Solutions

Each Lucent operating unit is heavily involved in developing PCS products to suit whatever needs our customers have.

The core of our wireless PCS solution is the *5ESS*-2000 switch. Connected to it is a PCS Access Manager, communicating with PCS Minicells, which are base station cell sites.

Consumer Products handsets will be able to roam on analog cellular, digital cellular or PCS networks. "With five or six carriers in any given market, and 70 million PCS subscribers by the year 2001, there's tremendous growth potential for terminal devices," said Pete Skarzynski, Global Wireless Products Group vice president.

Microelectronics Group supplies PCS chips, owning a high percentage of the emerging narrowband market. The unit is also a major supplier of broadband platforms. "We have unique design and process technology for radio frequency that will provide good efficiencies and long talk time," said Rob Franzo, Microelectronics marketing director.

BCS is trialing the *DEFINITY* Wireless Business System, which will free office workers from their desks, and eventually allow them to use the same handset outside the building. "We currently lead in premises-based wireless markets and are confident that leadership will continue with our entire *Freeworks* line of mobility solutions," Barry Weinbaum, BCS general manager, Wireless and Mobility, said. – *Suzanne Sidhu*

Wireless Standards: Alphabet Soup?

In a world of multiple wireless standards, Lucent Technologies is keeping its focus on what customers want.

There are seven wireless standards in the U.S., and a debate is raging throughout the industry — with vendors and carriers lining up behind different standards. Some in the industry disagree about the technical merits of each of the standards, while others outside of the U.S. say standards coming from America are not suitable. However, Lucent's wireless experts say there is a lesson to be learned from the debate.

"It is not reasonable to expect one standard to be all things to all people. Each standard must be viewed in terms of the unique customer requirements it satisfies," said John Marinho, technology director for wireless standards development for Lucent.

Marinho said Lucent is poised to offer customers products with standards that will meet all of their needs. Still, he and others acknowledge that the wireless field is challenging.

"The trick is to design our product architecture in a way that allows us to build the variety of phones demanded by the marketplace off a single platform design," said Lew Chakrin, vice president and general manager, Global Wireless Products Group, Consumer Products.

Today, two competing standards have taken the lead in the U.S.: Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA). A third standard is Global System for Mobile Communications (GSM), which is a digital standard widely used in Europe.

All three standards convert voice signals into digital data, but send signals in different manners. TDMA sends signals over a single channel, while CDMA thinly spreads each signal out across a broad spectrum segment. Both CDMA and TDMA evolved from the cellular Advanced Mobile Phone Service standard, or AMPS, which is used mostly in the U.S., but has been adopted by over 50 countries. Lucent is the only infrastructure supplier that offers all major standards: CDMA, TDMA, GSM and AMPS. The company supports TDMA and CDMA in North America.

Outside the U.S., Lucent has supplied a wide variety of systems including AMPS in Korea and China, GSM in Malaysia, TDMA in the Philippines, GSM in Saudi Arabia and GSM in the United Arab Emirates.

"Clearly, we anticipate that the two dominant worldwide standards for wireless telecommunications will be digital AMPS and GSM. Lucent sees this as an opportunity to grow the global wireless market," said Marinho.

Nevertheless, Marinho echoed Consumer Products' strategy: "To manufacture whatever our customers want, no matter what wireless technology they choose." – *Robyn Roberts*

The Indiana Jones of Installers

Ron Barker can still see the bull. It was charging straight across a pasture toward his installation van. Barker lost no time hitting the gas pedal. "I was driving as fast as I could, trying to get away. He just caved the side of my door in."

Enraged mammals, as well as snakes and 'gators, mountain climbing and security checks, are all in a day's work for Barker. He wouldn't have it any other way.

"Every job's different. It's always an adventure," said Barker, who has installed switching systems for 35 years.

Installer. It's hardly up there in the annals of the great adventure jobs. But, for Barker and hundreds of employees like him who helped AT&T wire the United States and, increasingly, the world, the job has provided variety, challenge and, yes, excitement.

Like Barker, many signed on to Western Electric as teenagers fresh from high school and followed the job — the technology, the geography and the corporate twists and turns — to a satisfying lifelong career. Professional, modest, confident, can-do — installers created and inherited AT&T's Spirit of Service legacy. They are a special breed.

In many ways, Ron Barker's story is their story. Barker was 17 when he hired on to Western Electric in Cincinnati, Ohio. It was 1961, a time of Hula Hoops, beehive hairdos and plain black rotary dial phones. The '60s hot new switching technology was "crossbar," which was replacing "step-by-step" switching. Researchers were developing the cellular technology Barker would install three decades later.

The first day on the job, Barker learned the color code that identified all the wires in a cable. Today, that code remains the same. But lots of other things have gotten shorter, smaller or just plain different.

These days, installers enjoy much more freedom and do a lot more of their own engineering, he said. Installing a small switch, a job that once took weeks, now can be knocked out in a few days, so installers move around the country more. Parts are much smaller, eliminating the time-consuming and monotonous job of wirewrapping connections. "We used to have as many as 200,000 wirewrapped connections on a job. Now, if we have a dozen, that's a lot," Barker said. Perhaps the biggest change took place in the '80s with the switch from analog to digital technology.

Barker has constantly upgraded his skills. In 1976, he transferred from Cincinnati to Florida, where he gave an installer's viewpoint to Bell Labs people who were developing a splicing technique for fiber-optic cable. In the early '80s, when faster, higher-capacity fiber-optic cable began to replace copper wire, he was among the first to learn the new technology.

For the past six years, Barker has worked in Atlanta, installing the infrastructure that allows callers to use cellular, or wireless, phones. With the excitement preceding the 1996 Olympic games, Atlanta was hopping, Barker said.

BellSouth Mobility (BMI), a subsidiary of BellSouth, is Lucent's — and Barker's — customer. Anticipating 12 million visitors in July, BMI has understandably focused on increasing its wireless capacity. The activity boosted Lucent's normal number of Georgia installers from 265 to 400. The Network Systems' team has installed as many as 300 cell sites, Barker said.

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"One day we might be working downtown on top of an office building and the next day we might be on top of a mountain." - Ron Barker

"That's our job. We install *AUTOPLEX* 1000 cell sites all over," said Barker. Cell sites capture radio waves from a cellular caller's phone as the caller moves about. Then they route the call to the local telephone office that completes it. "We put it all together," Barker said. "We install circuit packs in cabinets, run cable between them, make connections. When we're done we power it up and hook it into a laptop to make sure everything works together. One day we might be working downtown on top of an office building and the next day we might be on top of a mountain."

As the Olympics drew closer, Barker's job got even more interesting. He and his crew underwent intense scrutiny to gain access to Olympic venues, such as Georgia Tech, where the athletes were being housed. Their mission was to install four cell sites. "We were 'sanitized' by the U.S. Army," he said. "We took everything out of our vehicle. It was X-rayed. They went over our bodies with a wand to make sure we weren't armed."

As Barker said, the job's an adventure. ○ *–Cathy Fee*

Caring, Giving, Volunteering

Leslie Tornese-Walsten and Bob Cherasaro serve dinner at the Morris County (N.J.) Shelter.

For Lucent Technologies, social responsibility means maintaining — or even exceeding — our traditions of giving, volunteering and caring.

"Lucent Technologies comes into existence with a long-standing tradition of social responsibility," said Deb Stahl, director of philanthropy. "We want to begin our history as an independent company by maintaining — or even exceeding — the world's expectations of us in the area of corporate citizenship."

That tradition certainly includes donation of corporate funds to worthwhile projects, and Stahl and her staff are hard at work creating the guidelines for the Lucent Technologies Foundation program that will roll out early next year. "For the remainder of 1996, we will operate in conjunction with the AT&T Foundation," Stahl said, "implementing the grants that are related to Lucent's business."

Lucent's tradition of social responsibility goes far beyond monetary donations. In fact, that tradition is deeply rooted, not in the funds the company earmarks for donation, but in the people who give their own money, their time and their energy to worthy projects every day. Some of its visible signs are our historical support of the United Way, the many individuals and teams who volunteer every day to help communities, and the work of the Telephone Pioneers of America.

"We want to recognize that good work," said Stahl, "because it is at the heart of Lucent's spirit of corporate citizenship."

"My job as a Big Brother is to be just that, a big brother, a role model and a friend."

Working One on One

Does giving up nine hours of free time every month sound like a great sacrifice? Joe Moyer of the Network Systems Management Technical Staff doesn't think so. He has been doing that and much more for nearly 12 years as an active volunteer for Big Brothers/Big Sisters of America in Columbus, Ohio. Currently, Moyer is a Big Brother to 15-year-old Justin Boster, also from Columbus.

"My job as a Big Brother is to be just that — a big brother, a role model and a friend," said Moyer. "I spend a lot of time with Justin. We like to go to soccer matches, video arcades and to the movies." As a Big Brother, Moyer is asked to spend three hours, three times a month with Justin, but he finds himself doing much more — about four hours a week. "Volunteering to be a Big Brother is very rewarding. It has its ups and downs, but I'm happy to do it," said Moyer. "People always talk about how great it is for the kids, but it also does a lot for the volunteers."

Joe Moyer and his "little brother," Justin Boster, Columbus, Ohio.

Help From the United Way

The people who run the Big Brothers/Big Sisters of America program spend some of their time soliciting funds, but they also depend on donations from individuals — donations that flow through the United Way to support thousands of charitable groups each year.

"Joe's volunteer work — and the work of thousands of other Lucent Technologies people — exemplifies social responsibility, one of Lucent's values," said Stahl. "As part of Lucent's values, social responsibility demonstrates our strong commitment to the communities where we work and live.

"Our United Way campaign captures the tradition of more than 100 years of community service when Lucent was the systems and technology component of AT&T," Stahl said, "and it fits Lucent today — a new company with a proud heritage, actively involved as a caring member of society."

The Team Approach

Like Joe Moyer, Leslie Tornese-Walsten, a Customer Service Center manager for Business Communications Systems in Parsippany, N.J., is also an active volunteer in her community. She and members of her work team serve meals at the Morris County (N.J.) Shelter the first Friday of every month. They are responsible for planning the menu, and shopping for, preparing and serving the food each month. During the summer months, Tornese-Walsten and her group use a barbecue pit donated by the cafeteria in her building to grill food for the shelter.

"Volunteering at the shelter is a lot of fun for us," said Tornese-Walsten. "The guests at the shelter are just like you and me, except they are going through some really hard times. The shelter helps them get back on their feet, and it's a great way for us to give back to our community and do some team-building as well."

The shelter for the homeless is another project funded by the United Way and will benefit from this year's campaign, as well as from volunteers who donate their time.

Global Day of Caring

"Lucent understands that the real charitable work is done by individuals like Joe Moyer and small teams like Leslie Tornese-Walsten and her co-workers," said Stahl. "To recognize and stimulate that spirit of volunteerism, the company is planning the Lucent Global Day of Caring on Oct. 5."

The Global Day of Caring is an initiative that celebrates volunteerism all over the world. On this day, Lucent people will have the opportunity to work as teams in community involvement activities that will set the stage for Lucent's new global community relations strategy. This initiative will also be strongly supported by the Lucent Pioneers. Some of the suggested Global Day of Caring activities include:

- Building playgrounds, painting maps on paved playgrounds, organizing book drives and wiring schools for Internet access.
- Volunteering at hospitals, health care facilities, senior citizen homes and shelters for homeless people and battered women.
- Organizing food, clothing, toy and book drives for orphanages.
- Planting trees in public places and cleaning up parks, riverways and highways.

"People like Joe and Leslie help Lucent become known as a socially responsible corporate citizen that cares about its communities," said Stahl. "Why not join them on the Global Day of Caring?"

Watch for more details about the Global Day of Caring and the United Way campaign in Lucent Technologies employee publications. ○ *–Noëlle Lusardi*

Pioneers:

Dedicated to Community Service

For 39 years, Don Poh of Catasauqua, Pa., worked as a Bell Labs senior technician at the Allentown (Pa.) Works. Now retired and a member of the Telephone Pioneers of America, Poh continues to represent Lucent Technologies in his community.

For the past five years, Poh has been using his free time to build wooden wheelchair ramps — ranging between eight and 51 feet long — for people with disabilities who are economically disadvantaged in the Lehigh Valley, Pa., area.

He collects aluminum can tabs and cashes them in to pay for the supplies needed to build these ramps. The tabs come in from thousands of people all over the U.S. — about 30,000 a month! To date, Poh has received more than six million tabs. Every 1,135 tabs are worth 40 cents, and the money collected so far has helped fund 19 ramps.

"We have a group of about 40 retired Pioneers who help build the ramps. Usually eight or nine of us work together at one time, and we make one large ramp and one small ramp a month," Poh said. "Right now, we have 12 people waiting for ramps. I take the measurements, draw out the plans, determine how much material we will need and then I have to get approval from the city to build.

"Building these ramps makes me feel great because I know that the money is going right where it's really needed."

The Telephone Pioneers of America, whether active or retired employees, have been dedicated to social responsibility since 1911, when the group was founded. Last year, AT&T/Lucent Pioneers gave 3.3 million hours of their time to community service. Known as life members, 62 percent of our retirees are Pioneers.

In the coming months, the group will split. Life members who receive their pension from Lucent Technologies will be members of the Lucent Pioneers, and those who receive their pension from AT&T will be AT&T Pioneers. For more information on Lucent's Telephone Pioneers, call 1-888-999-5877.

Don Poh (background), Cliff Kemmerer (right) and Jules Kovacs build a 27-foot wooden wheelchair ramp in Northampton, Pa.

What Lucent Means to My Community


BLACK STAR

Ruby Chu, reference librarian, Bell Labs, Lisle/Naperville, Ill.

"I think it's great that one of Lucent's values is a strong sense of social responsibility. At the Naperville/Lisle Campus, we truly live up to our responsibility to serve and enhance our community. In September, we will once again host a Special Olympics, and hundreds of employees will volunteer to provide an entire day of fun events and food for some of the physically challenged students in the community. I've also been serving on the Naperville Public Library Board for the past three years. I've found in my years of volunteer work that I have always received more than I've given and they are truly rewarding experiences."


ROBERTO ANGLES

Carlos Bue, general director, Consumer Products, Guadalajara, Mexico

"Lucent is one of the largest employers in our community with over 3,800 associates, but employment is not all that we offer Guadalajara. The government, local associations, other companies and people recognize Lucent as a leader that cares for its people and the environment. I am the president of the Electronics and Communications Chamber for the state. Our mission is to improve relations, quality of life and the environment for the community. I have also worked to promote and sponsor GuadalHispa, which is an association of Lucent employees who work to support local institutions for people with disabilities."


BLACK STAR

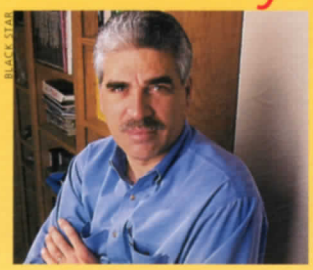
Mary Wills, diversity director, Business Communications Systems, Chicago

"As the diversity director for BCS, I see many Lucent associates involved in their communities. This involvement ranges from support of Habitat for Humanity, tutoring programs, creation of the computer lab for the Recovering the Gifted Child program in Chicago, to thousands of hours donated to school programs, battered women and children's shelters, and the homeless. Lucent has unleashed a formidable team of knowledgeable, talented and caring associates who are having a powerful impact on their communities and the world."


BLACK STAR

Oleta Himes, production specialist, Microelectronics Group, Mesquite, Texas

"Lucent sponsors an annual event in Mesquite called the Telephone Pioneers Sports Jamboree. I have been an active member on the Sports Jamboree committee for the past two years. The Jamboree is an Olympic-like contest for children with visual impairments or who are wheelchair bound and between the ages of 12 and 20. Children come from all over the country to participate."


BLACK STAR

Andy Todaro, account executive, Network Systems, Denver

"There is a real sense of community within Lucent. In Denver, we try to promote community involvement, like serving food at the mission on Thanksgiving. I'm the solicitation chairperson for our Children's Christmas Fund which has about 400 Lucent employees collect money throughout the year by having aluminum can drives, bake sales and other fund-raisers. With the money, we buy Christmas gifts and give them to the Denver Indian Center and several local orphanages. We raised $10,000 last year."

Frank Coleman, president & managing director of Lucent Technologies, South Africa, Johannesburg, South Africa

"We feel the most important thing Lucent can give our local community is commitment. We are committed to offering job opportunities and education and training, such as informal mentoring, to local South Africans. In June, we received the Gold Award from the Minister of Communications for contributing to the community and for our efforts to better position South Africans for opportunities in the electronics and telecommunications industries."


BLACK STAR

Bill Shafer, Customer Services Support Organization technician, Business Communications Systems, Denver

"Working to implement an elder care program for Lucent and AT&T employees in the metro-Denver area had personal meaning for me because I have an elderly mother who needs care. By working with the AT&T Family Care Development Fund, a joint fund with AT&T/Lucent and the Communications Workers of America and the International Brotherhood of Electrical Workers, we hosted an employee seminar on caring for older family members. We also hosted a one-day fair which introduced employees to elder care services in our area. Support groups are in the works too. I think this program will really help our employees and our community cope with this sensitive issue."