

WINTERGREEN RESEARCH, INC.

**Top Ten Telecommunications and Communications
Market Opportunities, Strategies, and Forecasts, 2005 to 2010**

Top Ten Telecommunications and Communications



Picture by Susie Eustis

MOUNTAINS OF OPPORTUNITY

**WinterGreen Research, Inc.
Lexington, Massachusetts**

www.wintergreenresearch.com

REPORT # SH29821380

374 PAGES

136 TABLES AND FIGURES

2005

\$2,800

CHECK OUT THESE KEY TOPICS

TOP TEN TELECOMMUNICATIONS EQUIPMENT PROVIDER MARKET FORECASTS
TELECOMMUNICATION MARKET INDEX 2000 TO 2004
Increasing Average Revenue Per User

Wireless Networks

Impact of Competition

Market Growth Dynamics

MULTIMEDIA MARKETS

WEB SERVICES

MARKET MAKERS

MARKETING GLOBALLY

INTERNET TRAFFIC

IP TELEPHONY SERVICE SOLUTIONS

STRATEGIES TO IMPROVE PERFORMANCE

DEMAND FOR TOTAL SOLUTIONS

CUSTOMER FINANCING ARRANGEMENTS

CONVERGED VOICE AND DATA NETWORKS

OPPORTUNITY ABOUNDS

WinterGreen Research, Inc.

Lexington, Massachusetts

www.wintergreenresearch.com

Top Ten Telecommunications and Communications Market Opportunities, Strategies, and Forecasts, 2005 to 2010

The top ten telecommunications markets have shifted to become communications markets. This is the result of convergence of voice and data networks to digital transport of voice, video, and data signals on the same network. Transport over existing TDM infrastructure is being replaced with transport over IP infrastructure.

The move to digital signal transport has brought significant diversity to the markets. Companies that failed to embrace new technology have had significant market declines, like Lucent and Nortel. Other companies have moved to achieve dominance in a particular arena. Alcatel dominates digital subscriber loop technology (DSL). Fujitsu dominates the Sonet markets, increasing the value of those.

Cisco has continued to push the Ethernet and IP standard adding voice and applications capability on top of the routers and switches, giving those systems more value in the market and making them communications equipment, that extend beyond Internet equipment.

Nokia, Motorola, and Ericsson continue to bring style and increased functionality to the wireless markets, creating growth and new demand. Fujitsu has been developing the capability of WiMAX 802.16 fixed wireless standard, creating the opportunity to develop fixed wireless metro markets. These comments illustrate the variety evolving in communications markets. Each market participant has found a way to achieve differentiation in the new communications equipment markets.

Huawei from China has developed as a strong market presence, creating the opportunity to achieve the level of global market participant. The low cost of and high quality of the Huawei communications equipment is challenging every other market participant to move up the value stack to provide more functionality for customers.

Worldwide telecommunications and communications equipment market forecasts, shipments in dollars analysis indicate strong growth in very large existing markets. Markets at \$197.6 billion in 2005 are anticipated to reach \$446.9 billion by 2010. The top ten telecommunications equipment provider markets at \$166 billion in 2004 are forecast to reach \$381 billion by 2010.

Companies Profiled

Market Leaders

Nokia
Motorola
Siemens

Market Participants

Alcatel
Cisco Systems
Fujitsu
Intel
NEC
Samsung

Avaya
Ericsson
Huawei Technologies
Lucent Technologies
Nortel
UT Starcom

Top Ten Telecommunications and Communications Strategies and Forecasts, 2005- 2010

REPORT METHODOLOGY

THIS IS THE *TWO-HUNDRED AND THIRTY-SIXTH* REPORT IN A SERIES OF MARKET RESEARCH REPORTS THAT PROVIDE FORECASTS IN COMMUNICATIONS, TELECOMMUNICATIONS, THE INTERNET, COMPUTER, SOFTWARE, TELEPHONE EQUIPMENT, HEALTH EQUIPMENT, AND ENERGY. THE PROJECT LEADERS TAKE DIRECT RESPONSIBILITY FOR WRITING AND PREPARING EACH REPORT. THEY HAVE SIGNIFICANT EXPERIENCE PREPARING INDUSTRY STUDIES. FORECASTS ARE BASED ON PRIMARY RESEARCH AND PROPRIETARY DATA BASES. FORECASTS REFLECT ANALYSIS OF THE MARKET TRENDS IN THE SEGMENT AND RELATED SEGMENTS. UNIT AND DOLLAR SHIPMENTS ARE ANALYZED THROUGH CONSIDERATION OF DOLLAR VOLUME OF EACH MARKET PARTICIPATION IN THE SEGMENT. INSTALLED BASE ANALYSIS AND UNIT ANALYSIS IS BASED ON INTERVIEWS AND AN INFORMATION SEARCH. MARKET SHARE ANALYSIS INCLUDES CONVERSATIONS WITH KEY CUSTOMERS OF PRODUCTS, INDUSTRY SEGMENT LEADERS, MARKETING DIRECTORS, DISTRIBUTORS, LEADING MARKET PARTICIPANTS, OPINION LEADERS, AND COMPANIES SEEKING TO DEVELOP MEASURABLE MARKET SHARE. OVER 200 IN DEPTH INTERVIEWS ARE CONDUCTED FOR EACH REPORT WITH A BROAD RANGE OF KEY PARTICIPANTS AND INDUSTRY LEADERS IN THE MARKET SEGMENT. WE ESTABLISH ACCURATE MARKET FORECASTS BASED ON ECONOMIC AND MARKET CONDITIONS AS A BASE. USE INPUT/OUTPUT RATIOS, FLOW CHARTS, AND OTHER ECONOMIC METHODS TO QUANTIFY DATA. USE IN-HOUSE ANALYSTS WHO MEET STRINGENT QUALITY STANDARDS. INTERVIEWING KEY INDUSTRY PARTICIPANTS, EXPERTS AND END-USERS. OUR RESEARCH INCLUDES ACCESS TO LARGE PROPRIETARY DATABASES. LITERATURE SEARCH INCLUDES ANALYSIS OF TRADE PUBLICATIONS, GOVERNMENT REPORTS, AND CORPORATE LITERATURE.

YOU MUST HAVE THIS STUDY

Top Ten Telecommunications and Communications Market Opportunities, Strategies, and Forecasts, 2005 to 2010

Table of Contents

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS EXECUTIVE SUMMARY

| | |
|--|-------------|
| TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS EXECUTIVE SUMMARY | ES-1 |
| Top Ten Telecommunications Company Market Driving Forces | ES-1 |
| Telecommunications Market Index 2000 to 2004 | ES-5 |
| Top Ten Telecommunications Equipment Provider Market Forecasts | ES-7 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS MARKET DESCRIPTION AND MARKET DYNAMICS

| | |
|--|------------|
| 1. TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS MARKET DESCRIPTION AND MARKET DYNAMICS | 1-1 |
| 1.1 Increasing Average Revenue Per User (ARPU) | 1-1 |
| 1.1.1 Improved Quality Of Service | 1-1 |
| 1.1.2 Reduced Capital And Operational Costs | 1-2 |
| 1.1.3 Enhanced Operability | 1-3 |
| 1.2 Impact of Competition | 1-5 |
| 1.3 Market Growth Dynamics | 1-7 |
| 1.4 Converged Voice And Data Networks | 1-9 |
| 1.5 Wireless Networks | 1-10 |
| 1.5.1 New Generation Of Wireless Systems | 1-14 |
| 1.5.2 Provides Flexibility | 1-15 |
| 1.5.3 User Experience | 1-15 |
| 1.5.4 Protects Investments | 1-15 |
| 1.5.5 Increases Efficiency | 1-16 |
| 1.5.6 Integrated Management Tools | 1-18 |
| 1.5.7 Cost-Effective Capacity And Coverage | 1-18 |
| 1.6 Multimedia Markets | 1-19 |
| 1.7 IP Telephony Service Solutions | 1-21 |
| 1.8 Web Services | 1-21 |
| 1.9 Strategies To Improve Performance | 1-22 |
| 1.10 Customer Financing Arrangements | 1-25 |
| 1.11 Market Makers | 1-26 |
| 1.12 Demand For Total Solutions | 1-31 |
| 1.13 Marketing Globally | 1-32 |
| 1.14 Internet Traffic | 1-34 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS MARKET SHARES AND MARKET FORECASTS

| | |
|--|------------|
| 2. TOP TEN TELECOMMUNICATIONS COMPANY MARKET SHARES AND MARKETS FORECASTS | 2-1 |
| 2.1 Top Ten Telecommunications Company Market Driving Forces | 2-1 |
| 2.2 Top 10 Telecommunications Provider Shipments | 2-4 |
| 2.3 Top Ten Telecommunications and Communications Equipment Segment Analysis | 2-10 |

| | | |
|--------|---|------|
| 2.4 | Worldwide Telecommunications and Communications Equipment Market Forecasts, Shipments | 2-15 |
| 2.4.1 | Top Ten Telecommunications Equipment Provider Market Forecasts | 2-18 |
| 2.5 | Top Ten Telecommunications Equipment Provider Market Shares | 2-19 |
| 2.5.1 | Top Ten Telecommunications Service Provider Core Infrastructure Equipment Market Shares | 2-23 |
| 2.5.2 | Top Ten Telecommunications Service Provider IP Equipment Market Shares | 2-25 |
| 2.5.3 | Top Ten Telecommunications Enterprise Equipment Market Shares | 2-26 |
| 2.5.4 | Top Ten Telecommunications Wireless Infrastructure Equipment Market Shares | 2-28 |
| 2.5.5 | Top Ten Telecommunications Wireless Handset Market Shares | 2-29 |
| 2.6 | Top Ten Telecommunications Provider Equipment Market Shares | 2-31 |
| 2.6.1 | Nokia | 2-31 |
| 2.6.2 | Motorola | 2-33 |
| 2.6.3 | Siemens | 2-34 |
| 2.6.4 | Alcatel | 2-36 |
| 2.6.5 | NEC | 2-37 |
| 2.6.6 | Ericsson | 2-39 |
| 2.6.7 | Nortel | 2-40 |
| 2.6.8 | Cisco | 2-42 |
| 2.6.9 | Lucent | 2-43 |
| 2.6.10 | Fujitsu | 2-45 |
| 2.6.11 | Huawei | 2-46 |
| 2.6.12 | Avaya | 2-48 |
| 2.7 | Top Ten Telecommunications Provider Equipment Regional Market Shares | 2-49 |
| 2.7.1 | Nokia | 2-49 |
| 2.7.2 | Motorola | 2-51 |
| 2.7.3 | Siemens | 2-52 |
| 2.7.4 | Alcatel | 2-54 |
| 2.7.5 | NEC | 2-55 |
| 2.7.6 | Ericsson | 2-57 |
| 2.7.7 | Nortel | 2-58 |
| 2.7.8 | Cisco | 2-60 |
| 2.7.9 | Lucent | 2-61 |
| 2.7.10 | Fujitsu | 2-63 |
| 2.7.11 | Huawei | 2-64 |
| 2.7.12 | Avaya | 2-66 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS PRODUCT DESCRIPTION

| | |
|---|------------|
| 3. TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS PRODUCT DESCRIPTION | 3-1 |
| 3.1 Nokia Communications Products | 3-1 |
| 3.1.1 Nokia Mobile Devices | 3-1 |
| 3.1.2 Nokia Multimedia In 2004 | 3-2 |
| 3.1.3 Nokia 3G WCDMA Smartphone | 3-3 |
| 3.1.4 Nokia Enterprise Solutions In 2004 | 3-3 |
| 3.1.5 Nokia Network Security Gateways | 3-4 |
| 3.1.6 Nokia Secure Access System | 3-4 |
| 3.1.7 Nokia Network Infrastructure | 3-4 |
| 3.1.8 Nokia Push To Talk | 3-5 |
| 3.1.9 Nokia MSC Server System | 3-5 |
| 3.2 Motorola | 3-5 |
| 3.2.1 Motorola Product Strategy | 3-5 |
| 3.2.2 Motorola Wireless Handsets | 3-6 |

| | | |
|--------|--|------|
| 3.2.3 | Motorola V3 Handset | 3-7 |
| 3.2.4 | Motorola MPx220 Handset | 3-8 |
| 3.2.5 | Motorola CDMA Network Solutions | 3-12 |
| 3.2.6 | Motorola Network Solutions Map | 3-13 |
| 3.2.7 | Motorola Internet Protocol - Base Station Controller (IP-BSC) | 3-14 |
| 3.2.8 | Motorola Mobile Broadband Solution GSM Network Equipment | 3-16 |
| 3.2.9 | Motorola Mobile Data Services | 3-17 |
| 3.2.10 | Motorola GSM Network Solutions | 3-18 |
| 3.3 | Siemens | 3-19 |
| 3.3.1 | Siemens GSM Networks | 3-20 |
| 3.3.2 | Siemens Surpass Softswitch | 3-20 |
| 3.3.3 | Siemens Hicom 300 H | 3-21 |
| 3.3.4 | Siemens HiPath 4000 | 3-23 |
| 3.3.5 | Siemens HiPath 5000 | 3-25 |
| 3.4 | Alcatel | 3-27 |
| 3.4.1 | Alcatel UMTS Radio Network | 3-27 |
| 3.4.2 | Alcatel Evolium 9100 Multistandard Base Station | 3-29 |
| 3.4.3 | Alcatel Mobile Phones | 3-30 |
| 3.4.4 | Alcatel DSL | 3-30 |
| 3.4.5 | Alcatel 3630 MainStreet Primary Rate Multiplexer | 3-32 |
| 3.4.6 | Alcatel 5020 Softswitch Platform | 3-33 |
| 3.4.7 | Alcatel OmniPCX Enterprise | 3-33 |
| 3.4.8 | OmniPCX Enterprise Summary Specifications | 3-35 |
| 3.5 | NEC | 3-48 |
| 3.5.1 | NEC NEAX 2000 IPS | 3-48 |
| 3.5.2 | NEC NEAX®2400 Internet Protocol eXchange (IPX) | 3-49 |
| 3.6 | Ericsson | 3-50 |
| 3.6.1 | Ericsson Circuit Core | 3-51 |
| 3.6.2 | Ericsson Packet Core | 3-52 |
| 3.6.3 | Ericsson IP Multimedia | 3-52 |
| 3.6.4 | Sony / Ericsson Wireless Handsets | 3-54 |
| 3.6.5 | Sony Ericsson Wireless Services For Machine-to-Machine Application Development | 3-55 |
| 3.6.6 | Sony Ericsson V800 | 3-56 |
| 3.7 | Nortel Service Provider Communications Equipment | 3-57 |
| 3.7.1 | Nortel Voice over IP (VoIP), Voice & Multimedia | 3-57 |
| 3.7.2 | Nortel Local VoIP Solution | 3-58 |
| 3.7.3 | Nortel Long Distance VoIP Solution | 3-59 |
| 3.7.4 | Nortel Cable VoIP Solution | 3-59 |
| 3.7.5 | Nortel Wireless VoIP Solution | 3-59 |
| 3.7.6 | Nortel Multimedia Communications | 3-60 |
| 3.7.7 | Nortel TDM Voice | 3-60 |
| 3.7.8 | Nortel Broadband | 3-60 |
| 3.7.9 | Nortel Broadband Access | 3-61 |
| 3.7.10 | Nortel Central Office-Based xDSL / Fiber To The Home | 3-61 |
| 3.7.11 | Nortel Edge Services | 3-62 |
| 3.7.12 | Nortel Metro Ethernet Services | 3-63 |
| 3.7.13 | Nortel Wireless Mesh Network Solutions | 3-66 |
| 3.7.14 | Nortel Wireless LAN Solution | 3-67 |
| 3.7.15 | Nortel Edge Solutions | 3-67 |
| 3.7.16 | Nortel Enterprise Systems | 3-67 |
| 3.7.17 | Nortel Meridian 1 Option 81C | 3-70 |
| 3.7.18 | Nortel Meridian SL-100 | 3-71 |

| | | |
|--------|---|-------|
| 3.7.19 | Nortel Succession 3.0 | 3-73 |
| 3.8 | Cisco WiFi | 3-76 |
| 3.8.1 | Cisco Wireless Technology WiFi Deployment | 3-77 |
| 3.8.2 | Pre-paid WLAN Services | 3-77 |
| 3.8.3 | Cisco Aironet WiFi Enabled Universities | 3-79 |
| 3.8.4 | Cisco and Intel Wi-Fi Technology | 3-80 |
| 3.8.5 | Cisco WiFi Technology for Cities | 3-81 |
| 3.8.6 | Cisco WiFi Technology For Airports | 3-82 |
| 3.8.7 | Cisco Metropolitan Mobile Networks Wireless Technology | 3-83 |
| 3.8.8 | Closed-Circuit Television (CCTV) System Replacement | 3-84 |
| 3.8.9 | Cisco Metropolitan Mobile Networks Wireless Technology in London | 3-85 |
| 3.8.10 | Cisco Aironet® 1200 Series WiFi Hotspots at Service Stations | 3-88 |
| 3.8.11 | Cisco WiFi Client Solutions | 3-89 |
| 3.9 | Lucent Product Set | 3-95 |
| 3.9.1 | Lucent Integrated Network Solutions | 3-95 |
| 3.9.2 | Lucent Voice Networking Products | 3-96 |
| 3.9.3 | Lucent Softswitch Software | 3-97 |
| 3.9.4 | Lucent Central Office Session Initiation Protocol (SIP) Card | 3-99 |
| 3.9.5 | Lucent / Telica VoIP Solutions | 3-99 |
| 3.9.6 | Lucent Messaging Software | 3-99 |
| 3.9.7 | Lucent Data and Network Management Products | 3-100 |
| 3.9.8 | Lucent Network Operations Software | 3-100 |
| 3.9.9 | Lucent MPLS | 3-101 |
| 3.9.10 | Lucent CBX 3500 Lucent CBX 3500 Multiservice Edge Switch | 3-101 |
| 3.9.11 | Lucent Optical Networking Products | 3-102 |
| 3.9.12 | Lucent Mobility Solutions | 3-103 |
| 3.9.13 | Lucent Spread-Spectrum Technologies | 3-104 |
| 3.9.14 | Lucent 3G | 3-105 |
| 3.9.15 | Lucent Base Stations | 3-107 |
| 3.9.16 | Lucent 5ESS®-2000 Wireless Switch | 3-107 |
| 3.9.17 | Lucent Operations And Maintenance Software | 3-108 |
| 3.10 | Fujitsu | 3-108 |
| 3.10.1 | Fujitsu FLASHWAVE 7420 platform | 3-108 |
| 3.10.2 | Fujitsu North American SONET | 3-110 |
| 3.10.3 | Fujitsu WiMAX | 3-111 |
| 3.10.4 | Fujitsu WiMAX Chip | 3-112 |
| 3.11 | Huawei | 3-113 |
| 3.12 | Avaya Enterprise Communications Products | 3-114 |
| 3.12.1 | Avaya™ DEFINITY® Servers | 3-117 |
| 3.12.2 | Avaya DEFINITY One™ Communications Server | 3-118 |
| 3.12.3 | Avaya MultiVantage Software with an Avaya DEFINITY® Server CSI and Avaya™ CMC1 Media Gateway | 3-118 |
| 3.12.4 | Avaya MultiVantage Software with an Avaya DEFINITY® Server SI and Avaya™ SCC1 Media Gateway or an Avaya™ MCC1 Media Gateway | 3-118 |
| 3.12.5 | Avaya MultiVantage Software with an Avaya DEFINITY® Server R and Avaya SCC1 Media Gateway or an Avaya MCC1 Media Gateway | 3-119 |

SELECTED TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY ORGANIZATION AND STRATEGY

4. SELECTED TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY ORGANIZATION AND STRATEGY **4-1**

| | | |
|-----|--------------------------------|-----|
| 4.1 | Nokia Organizational Structure | 4-1 |
|-----|--------------------------------|-----|

| | | |
|-------|----------------------------|------|
| 4.2 | Motorola Strategy | 4-2 |
| 4.3 | Alcatel Organization | 4-5 |
| 4.4 | Lucent Strategy | 4-6 |
| 4.4.1 | Lucent Organization | 4-8 |
| 4.4.2 | Lucent Regional Strategy | 4-9 |
| 4.5 | Nortel Networks Segments | 4-10 |
| 4.5.1 | Nortel Strategy | 4-11 |
| 4.5.2 | Nortel Brand Transitioning | 4-13 |
| 4.6 | Avaya Operating Segments | 4-14 |
| 4.6.1 | Avaya Organization | 4-16 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY PROFILES

| | |
|--|------------|
| 5. TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY PROFILES | 5-1 |
| 5.1 Alcatel | 5-1 |
| 5.1.1 Alcatel Positioning | 5-4 |
| 5.1.2 Alcatel Market Issues | 5-5 |
| 5.1.3 Alcatel Multiservice Aggregation | 5-7 |
| 5.1.4 Alcatel Broadband Access | 5-8 |
| 5.1.5 Alcatel-To-End Communications Solutions | 5-9 |
| 5.1.6 Alcatel VND Division | 5-9 |
| 5.1.7 Alcatel Net Sales 2003 | 5-10 |
| 5.1.8 Alcatel Third Quarter 2004 Revenue | 5-11 |
| 5.1.9 Alcatel Fixed Communications | 5-14 |
| 5.1.10 Alcatel Mobile Communications | 5-15 |
| 5.1.11 Alcatel Private Communications | 5-16 |
| 5.1.12 Alcatel Third Quarter 2004 Regional Revenue | 5-17 |
| 5.1.13 Third Quarter 2003 Regional Revenue | 5-18 |
| 5.1.14 Alcatel Participation In Communications Network Equipment Markets | 5-20 |
| 5.1.15 Alcatel Metro DWDM | 5-21 |
| 5.1.16 Alcatel and Optics | 5-24 |
| 5.2 Avaya | 5-26 |
| 5.2.1 Avaya Customers | 5-30 |
| 5.2.2 Avaya Revenue 2004 | 5-31 |
| 5.2.3 Avaya Acquisitions | 5-33 |
| 5.3 Cisco Systems | 5-37 |
| 5.3.1 Cisco IP Communications | 5-37 |
| 5.3.2 Cisco Systems Second Quarter Fiscal Year 2005 Revenue | 5-38 |
| 5.3.3 Cisco IP Communications | 5-43 |
| 5.3.4 Cisco / Linksys | 5-43 |
| 5.3.5 Cisco / Linksys Broadband and Wireless Networking | 5-46 |
| 5.4 Ericsson | 5-49 |
| 5.4.1 Ericsson Revenue | 5-50 |
| 5.4.2 Ericsson Customers T-Mobile UMTS network | 5-52 |
| 5.4.3 Sony Ericsson Mobile Communications Revenue | 5-53 |
| 5.4.4 Sony Ericsson Mobile Communications Products | 5-54 |
| 5.4.5 Sony Ericsson Symbian | 5-55 |
| 5.5 Fujitsu | 5-55 |
| 5.5.1 Fujitsu Network Communications | 5-57 |
| 5.5.2 Fujitsu Considers WiMAX vs. 3G vs. Wi-Fi | 5-57 |
| 5.5.3 Fujitsu FLASHWAVE® 7500 Small System | 5-57 |
| 5.5.4 Fujitsu FASST Transition Solutions | 5-58 |
| 5.5.5 Fujitsu Microelectronics America | 5-58 |

WINTERGREEN RESEARCH, INC.

| | | |
|--------|---|-------|
| 5.5.6 | Fujitsu Network Communications Inc. | 5-58 |
| 5.5.7 | Fujitsu Revenue | 5-59 |
| 5.5.8 | Fujitsu Business Segment Results | 5-60 |
| 5.6 | Huawei Technologies | 5-62 |
| 5.7 | Intel | 5-66 |
| 5.7.1 | Intel Communications Wi-Fi Company Investment | 5-72 |
| 5.8 | Lucent Technologies | 5-74 |
| 5.8.1 | Lucent Technologies Maximize Service Revenues | 5-75 |
| 5.8.2 | Lucent Technologies Systems | 5-75 |
| 5.8.3 | Lucent Bell Labs | 5-76 |
| 5.9 | Motorola | 5-86 |
| 5.9.1 | Motorola Revenue | 5-87 |
| 5.10 | NEC | 5-91 |
| 5.10.1 | NEC IT And Networking Technologies | 5-93 |
| 5.10.2 | NEC Network Solutions Business | 5-97 |
| 5.10.3 | NEC Internet Broadband Network Positioning | 5-98 |
| 5.11 | Nokia | 5-98 |
| 5.11.1 | Nokia Revenue | 5-100 |
| 5.11.2 | Nokia Infrastructure Sales | 5-103 |
| 5.11.3 | Nokia Mobile Phones In The Fourth Quarter 2004 | 5-104 |
| 5.11.4 | Nokia Multimedia In The Fourth Quarter 2004 | 5-105 |
| 5.11.5 | Nokia Enterprise Solutions In The Fourth Quarter 2004 | 5-106 |
| 5.12 | Nortel | 5-108 |
| 5.12.1 | Nortel VoIP Network Elements | 5-113 |
| 5.12.2 | Nortel VoIP Enabling Technologies | 5-113 |
| 5.12.3 | Nortel ATM (Asynchronous Transfer Mode) | 5-114 |
| 5.12.4 | Nortel Networking And Communication Services And Infrastructure | 5-115 |
| 5.12.5 | Nortel Network Elements | 5-119 |
| 5.12.6 | Nortel Enabling Technologies | 5-119 |
| 5.12.7 | Nortel ATM (Asynchronous Transfer Mode) | 5-120 |
| 5.13 | Samsung | 5-120 |
| 5.14 | Siemens | 5-122 |
| 5.14.1 | Siemens Business Services | 5-122 |
| 5.14.2 | Siemens Research and Development | 5-123 |
| 5.14.3 | Siemens Information and Communication Networks | 5-123 |
| 5.14.4 | Siemens Information and Communication Mobile Group | 5-124 |
| 5.15 | UT Starcom | 5-125 |
| 5.15.1 | UTStarcom Third Quarter 2004 Revenue | 5-126 |
| 5.15.2 | Key UTStarcom Customer Wins | 5-127 |
| 5.15.3 | UTStarcom Global Technology | 5-128 |
| 5.15.4 | UTStarcom Sarbanes-Oxley | 5-128 |

List of Tables and Figures**TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS EXECUTIVE SUMMARY**

| | |
|--|------|
| Table ES-1 Customization Of Telecommunications Infrastructure Equipment | ES-3 |
| Figure ES-2 Indexed Sales of Selected Leading Telecommunications Equipment Suppliers, 2000-2004 | ES-7 |
| Figure ES-3 Worldwide Top Ten Telecommunications and Communications Equipment Company Market Forecasts, Shipments, Dollars, 2005-2010 | ES-8 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS MARKET DESCRIPTION AND MARKET DYNAMICS

| | |
|---|------|
| Table 1-1 Network Systems Functions | 1-4 |
| Table 1-2 Telecommunications Market Shifts | 1-6 |
| Table 1-3 Change In Telecommunications Equipment Markets | 1-8 |
| Table 1-4 Response To Change In Telecommunications Equipment Markets | 1-9 |
| Table 1-5 Service Provider Build-Out Of The Next Generation 3G Systems | 1-11 |
| Table 1-6 Factors Impacting Build-Out Of 3G Wireless Infrastructure | 1-12 |
| Table 1-7 Factors Impacting Implementation Of 3G Wireless | 1-13 |
| Table 1-8 Wireless IP Network Benefits | 1-17 |
| Table 1-9 Key Benefits Of Multimedia Solutions | 1-20 |
| Table 1-10 Strategies To Improve Telecommunication Equipment Company Performance | 1-23 |
| Table 1-11 Top Ten Telecommunication Providers As Market Makers | 1-28 |
| Table 1-12 Top Ten Telecommunications Equipment Provider Market Strategies | 1-29 |
| Table 1-13 Top Ten Telecommunications Equipment Provider Strategies To Adapt To Changing Markets | 1-30 |
| Table 1-14 Marketing Globally | 1-33 |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS MARKET SHARES AND MARKET FORECASTS

| | |
|---|-----|
| Table 2-1 Customization Of Telecommunications Infrastructure Equipment | 2-3 |
| Figure 2-2 Top 10 Telecommunications Provider Shipments, 2000-2004 | 2-5 |

| | |
|--|------|
| Table 2-3 | 2-6 |
| Top Ten Communications Equipment Provider Shipments and Services, 2000-2004 | |
| Figure 2-4 | 2-7 |
| Indexed Sales of Leading Telecommunications Equipment Suppliers, 1993-2004 | |
| Figure 2-5 | 2-9 |
| Indexed Sales of Selected Leading Telecommunications Equipment Suppliers, 2000-2004 | |
| Table 2-6 | 2-10 |
| Selected communications Company shipments, 1993-2004 | |
| Figure 2-7 | 2-11 |
| Worldwide Top Ten Telecommunications and Communications Equipment Company Market Segments, Shipments, Dollars, 2004 | |
| Figure 2-8 | 2-12 |
| Worldwide Top Ten Telecommunications and Communications Wireless Equipment Company Market Segments, 2004 | |
| Figure 2-9 | 2-13 |
| Worldwide Top Ten Telecommunications and Communications Equipment Market Segments, 2004 | |
| Figure 2-10 | 2-14 |
| Worldwide Top Ten Telecommunications and Communications Equipment Company Service Provider Core Infrastructure, Access, and Transmission Shipments, Dollars, 2004 | |
| Table 2-11 | 2-15 |
| Worldwide Top Ten Telecommunications and Communications Wireless Handsets, Wireless Infrastructure, Wireline, and Enterprise Telecommunications Shipment Forecast By Segment, Dollars, 2005-2010 | |
| Figure 2-12 | 2-16 |
| Worldwide Top Ten Telecommunications and Communications Equipment Market Forecasts, Shipments, Dollars, 2005-2010 | |
| Table 2-13 | 2-17 |
| Worldwide Telecommunications and Communications Wireless Handsets, Wireless Infrastructure, Wireline, and Enterprise Telecommunications Shipment Forecast By Segment, Dollars, 2005-2010 | |
| Figure 2-14 | 2-19 |
| Worldwide Top Ten Telecommunications and Communications Equipment Company Market Forecasts, Shipments, Dollars, 2005-2010 | |
| Table 2-15 | 2-19 |
| Worldwide Telecommunications and Communications Wireless Handsets, Wireless Infrastructure, Wireline, and Enterprise Telecommunications Shipment Forecast By Segment, Dollars, 2005-2010 | |
| Figure 2-16 | 2-20 |
| Top Ten Telecommunications and Communications Equipment Provider Market Shares, 2004 | |
| Table 2-17 | 2-21 |
| Worldwide Top Ten Telecommunications and Communications Equipment Provider Shipments By Segment, Percent, 2004 | |
| Table 2-18 | 2-22 |
| Worldwide Top Ten Telecommunications and Communications Equipment Provider Shipments By Segment, Dollars, 2004 | |
| Figure 2-19 | 2-24 |
| Worldwide Top Ten Service Provider Telecommunications and Communications Equipment Provider Market Segments, 2004 | |
| Figure 2-20 | 2-25 |
| Worldwide Service Provider Top Ten IP Telecommunications and Communications Equipment Provider Market Segments, 2004 | |
| Figure 2-21 | 2-27 |
| Worldwide Enterprise Top Ten IP Telecommunications and Communications Equipment Provider Market Segments, 2004 | |

| | |
|--|------|
| Figure 2-22 | 2-28 |
| Worldwide Wireless Infrastructure Top Ten Telecommunications and Communications Equipment Provider Market Segments, 2004 | |
| Figure 2-23 | 2-30 |
| Worldwide Wireless Handset Top Ten Telecommunications and Communications Equipment Provider Market Segments, 2004 | |
| Figure 2-24 | 2-32 |
| Nokia Communications Equipment Markets Segments, 2004 | |
| Table 2-25 | 2-32 |
| Nokia Shipments By Segments, Dollars, 2004 | |
| Figure 2-26 | 2-33 |
| Motorola Communications Equipment Markets Segments, 2004 | |
| Table 2-27 | 2-34 |
| Motorola Shipments By Segments, Dollars, 2004 | |
| Figure 2-28 | 2-35 |
| Siemens Communications Equipment Markets Segments, 2004 | |
| Table 2-29 | 2-35 |
| Siemens Shipments By Segments, Dollars, 2004 | |
| Figure 2-30 | 2-36 |
| Alcatel Communications Equipment Markets Segments, 2004 | |
| Table 2-31 | 2-37 |
| Alcatel Shipments By Segments, Dollars, 2004 | |
| Figure 2-32 | 2-38 |
| NEC Communications Equipment Markets Segments, 2004 | |
| Table 2-33 | 2-38 |
| NEC Shipments By Segments, Dollars, 2004 | |
| Figure 2-34 | 2-39 |
| Ericsson Communications Equipment Markets Segments, 2004 | |
| Table 2-35 | 2-40 |
| Ericsson Shipments By Segments, Dollars, 2004 | |
| Figure 2-36 | 2-41 |
| Nortel Communications Equipment Markets Segments, 2004 | |
| Table 2-37 | 2-41 |
| Nortel Shipments By Segments, Dollars, 2004 | |
| Figure 2-38 | 2-42 |
| Cisco Communications Equipment Markets Segments, 2004 | |
| Table 2-39 | 2-43 |
| Cisco Shipments By Segments, Dollars, 2004 | |
| Figure 2-40 | 2-44 |
| Lucent Communications Equipment Markets Segments, 2004 | |
| Table 2-41 | 2-44 |
| Lucent Shipments By Segments, Dollars, 2004 | |
| Figure 2-42 | 2-45 |
| Fujitsu Communications Equipment Markets Segments, 2004 | |
| Table 2-43 | 2-46 |
| Fujitsu Shipments By Segments, Dollars, 2004 | |
| Figure 2-44 | 2-47 |
| Huawei Communications Equipment Markets Segments, 2004 | |
| Table 2-45 | 2-47 |
| Huawei Shipments By Segments, Dollars, 2004 | |
| Figure 2-46 | 2-48 |
| Avaya Communications Equipment Markets Segments, 2004 | |

| | |
|---|------|
| Table 2-47 | 2-49 |
| Avaya Shipments By Segments, Dollars, 2004 | |
| Figure 2-48 | 2-50 |
| Nokia Communications Equipment Regional Markets, 2004 | |
| Table 2-49 | 2-50 |
| Nokia Shipments By Region, Dollars, 2004 | |
| Figure 2-50 | 2-51 |
| Motorola Communications Equipment Regional Markets, 2004 | |
| Table 2-51 | 2-52 |
| Motorola Shipments By Region, Dollars, 2004 | |
| Figure 2-52 | 2-53 |
| Siemens Regional Communications Equipment Market Participation, 2004 | |
| Table 2-53 | 2-53 |
| Siemens Shipments By Region, Dollars, 2004 | |
| Figure 2-54 | 2-54 |
| Alcatel Regional Communications Equipment Market Participation, 2004 | |
| Table 2-55 | 2-55 |
| Alcatel Shipments By Region, Dollars, 2004 | |
| Figure 2-56 | 2-56 |
| NEC Regional Communications Equipment Market Participation, 2004 | |
| Table 2-57 | 2-56 |
| NEC Shipments By Region, Dollars, 2004 | |
| Figure 2-58 | 2-57 |
| Ericsson Regional Communications Equipment Market Participation, 2004 | |
| Table 2-59 | 2-58 |
| Ericsson Shipments By Region, Dollars, 2004 | |
| Figure 2-60 | 2-59 |
| Nortel Regional Communications Equipment Market Participation, 2004 | |
| Table 2-61 | 2-59 |
| Nortel Shipments By Region, Dollars, 2004 | |
| Figure 2-62 | 2-60 |
| Cisco Regional Communications Equipment Market Participation, 2004 | |
| Table 2-63 | 2-61 |
| Cisco Shipments By Region, Dollars, 2004 | |
| Figure 2-64 | 2-62 |
| Lucent Regional Communications Equipment Market Participation, 2004 | |
| Table 2-65 | 2-62 |
| Lucent Shipments By Region, Dollars, 2004 | |
| Figure 2-66 | 2-63 |
| Fujitsu Regional Communications Equipment Market Participation, 2004 | |
| Table 2-67 | 2-64 |
| Fujitsu Shipments By Region, Dollars, 2004 | |
| Figure 2-68 | 2-65 |
| Huawei Regional Communications Equipment Market Participation, 2004 | |
| Table 2-69 | 2-65 |
| Huawei Shipments By Region, Dollars, 2004 | |
| Figure 2-70 | 2-66 |
| Avaya Communications Equipment Market Segments, 2004 | |
| Table 2-71 | 2-67 |
| Avaya Shipments By Region, Dollars, 2004 | |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS PRODUCT DESCRIPTION

| | |
|---|------|
| Table 3-1 | 3-8 |
| MOTO RAZR V3 Phone Features | |
| Table 3-2 | 3-9 |
| Motorola MPx220 Handset Features | |
| Table 3-3 | 3-11 |
| Motorola Mobile Telephone features | |
| Table 3-4 | 3-15 |
| Motorola's IP-BSC Features: | |
| Table 3-5 | 3-22 |
| Siemens Hicom 300 H Features | |
| Table 3-6 | 3-24 |
| Siemens HiPath 4000 Features | |
| Table 3-7 | 3-26 |
| Siemens HiPath 5000 Benefits | |
| Table 3-8 | 3-34 |
| Alcatel OmniPCX Enterprise Features and Benefits | |
| Table 3-9 | 3-35 |
| Alcatel Omni PCX Software and Hardware | |
| Table 3-10 | 3-36 |
| Alcatel Features | |
| Table 3-11 | 3-38 |
| Alcatel Reflexes Phones Advanced Services | |
| Table 3-12 | 3-40 |
| Alcatel ISDN services | |
| Table 3-13 | 3-41 |
| Alcatel Manager-Assistant Team Features | |
| Table 3-14 | 3-42 |
| Alcatel Teamwork Configuration Features | |
| Table 3-15 | 3-43 |
| Alcatel Standard Telephone Features | |
| Table 3-16 | 3-45 |
| Alcatel OmniPCX Enterprise Regular Telephone Services | |
| Table 3-17 | 3-47 |
| Security | |
| Table 3-18 | 3-51 |
| Ericsson Mobile Core Network Components | |
| Table 3-19 | 3-53 |
| Benefits of Ericsson IP Multimedia strategy | |
| Table 3-20 | 3-58 |
| Nortel Voice over IP Positioning | |
| Table 3-21 | 3-64 |
| Nortel Metro Ethernet Key Features & Benefits: | |
| Table 3-22 | 3-68 |
| Nortel Communication Server Key Features | |
| Table 3-23 | 3-69 |
| Nortel Communication Server Key Functions | |
| Table 3-24 | 3-71 |
| Nortel Meridian 1 Option 81C Features and Benefits | |
| Table 3-25 | 3-72 |
| Nortel Meridian SL-100 Features and Benefits | |

WINTERGREEN RESEARCH, INC.

| | |
|---|-------|
| Table 3-26 | 3-73 |
| Nortel Succession 3.0 Features and Benefits | |
| Table 3-27 | 3-76 |
| Succession 3.0 Features and Benefits | |
| Table 3-28 | 3-91 |
| Cisco / Intel Strategic Alliance Partners | |
| Table 3-29 | 3-93 |
| Features of the Cisco WiFi | |
| Table 3-30 | 3-115 |
| Avaya Product Categories | |
| Table 3-31 | 3-116 |
| Avaya End-to-end portfolio of service offerings | |

SELECTED TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY ORGANIZATION AND STRATEGY

| | |
|-------------------------------------|------|
| Table 4-1 | 4-2 |
| Nokia Organizational Structure | |
| Table 4-2 | 4-3 |
| Motorola Response To Key Challenges | |
| Table 4-3 | 4-4 |
| Motorola Strategy | |
| Table 4-4 | 4-11 |
| Nortel Strategic Plan Components | |

TOP TEN TELECOMMUNICATIONS AND COMMUNICATIONS COMPANY PROFILES

| | |
|--|-------|
| Table 5-1 | 5-5 |
| Alcatel Market Issues | |
| Table 5-2 | 5-6 |
| Alcatel Positioning To Address Carrier Issues | |
| Table 5-3 | 5-7 |
| Alcatel Strategic Network Focus | |
| Table 5-4 | 5-8 |
| Alcatel Data Networks Positioning | |
| Table 5-5 | 5-23 |
| Alcatel Metro DWDM Positioning | |
| Table 5-6 | 5-25 |
| Alcatel Terrestrial Optical Networking Strategy | |
| Table 5-7 | 5-27 |
| Avaya Product Offerings | |
| Table 5-8 | 5-29 |
| Avaya Product Portfolio | |
| Table 5-9 | 5-45 |
| Cisco / Linksys Business Use Of Products To Enhance Productivity | |
| Table 5-10 | 5-68 |
| Intel Wireless Hotspot Installations | |
| Table 5-11 | 5-112 |
| Nortel Voice Over IP Benefits | |
| Table 5-12 | 5-114 |
| Nortel Voice Over IP VoIP Technologies | |

Table 5-13
Nortel Voice Over IP Benefits

5-118

ABOUT THE COMPANY

WINTERGREEN RESEARCH, HAS A UNIQUE RESEARCH STRATEGY THAT RELATES TO IDENTIFYING MARKET TRENDS THROUGH READING AND INTERVIEWING OPINION LEADERS. BY READING THE ELECTRONIC EQUIVALENT OF 40 FEET OF PAPER, WINTERGREEN RESEARCH SENIOR ANALYSTS CAN LEARN A LOT MORE ABOUT MARKETS, A LOT FASTER THAN CAN BE LEARNED THROUGH EXPENSIVE SURVEYS AND FOCUS GROUPS. THINKING ABOUT MARKET TRENDS IS A HIGH PRIORITY AT WINTERGREEN RESEARCH. AS WITH ALL RESEARCH, THE VALUE PROPOSITION FOR COMPETITIVE ANALYSIS COMES FROM INTELLECTUAL INPUT.

IT IS A LUXURY REALLY, AVAILABLE TO ONLY A VERY FEW PEOPLE, TO BE ABLE TO GATHER INFORMATION, LOTS OF INFORMATION FROM READING MASSIVE AMOUNTS OF CONTENT, AND THEN TRYING TO MAKE SENSE OF THAT CONTENT. THE ABILITY TO THINK ABOUT MARKET TRENDS IS ENHANCED BY DOING IT OVER AND OVER FOR MANY DIFFERENT MARKETS. THAT IS WHAT WINTERGREEN RESEARCH IS ALL ABOUT: READING AND THINKING IS AN ESSENTIAL ASPECT OF COMPETITIVE ANALYSIS. TALKING TO OPINION LEADERS IS THE THIRD ESSENTIAL ASPECT OF PRODUCING GOOD, RELIABLE DATA.

WINTERGREEN RESEARCH, FOUNDED IN 1985, PROVIDES STRATEGIC MARKET ASSESSMENTS IN TELECOMMUNICATIONS, COMMUNICATIONS EQUIPMENT, HEALTH CARE, INTERNET AND ADVANCED COMPUTER TECHNOLOGY. INDUSTRY REPORTS FOCUS ON OPPORTUNITIES THAT EXPAND EXISTING MARKETS OR DEVELOP MAJOR NEW MARKETS. THE REPORTS ASSESS NEW PRODUCT AND SERVICE POSITIONING STRATEGIES, NEW AND EVOLVING TECHNOLOGIES, AND TECHNOLOGICAL IMPACT ON PRODUCTS, SERVICES, AND MARKETS. MARKET SHARES ARE PROVIDED. LEADING MARKET PARTICIPANTS ARE PROFILED, AND THEIR MARKETING STRATEGIES, ACQUISITIONS, AND STRATEGIC ALLIANCES ARE DISCUSSED. THE PRINCIPALS OF WINTERGREEN RESEARCH HAVE BEEN INVOLVED IN ANALYSIS AND FORECASTING OF INTERNATIONAL BUSINESS OPPORTUNITIES IN TELECOMMUNICATIONS AND ADVANCED COMPUTER TECHNOLOGY MARKETS FOR OVER 30 YEARS.

ABOUT THE PRINCIPAL AUTHORS

ELLEN T. CURTISS, TECHNICAL DIRECTOR, CO-FOUNDER OF WINTERGREEN RESEARCH, CONDUCTS STRATEGIC AND MARKET ASSESSMENTS IN TECHNOLOGY -BASED INDUSTRIES. PREVIOUSLY SHE WAS A MEMBER OF THE STAFF OF ARTHUR D. LITTLE, INC., FOR 23 YEARS, MOST RECENTLY AS VICE PRESIDENT OF ARTHUR D. LITTLE DECISION RESOURCES, SPECIALIZING IN STRATEGIC PLANNING AND MARKET DEVELOPMENT SERVICES. SHE IS A GRADUATE OF BOSTON UNIVERSITY AND THE PROGRAM FOR MANAGEMENT DEVELOPMENT AT HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION. SHE IS THE AUTHOR OF RECENT STUDIES ON WORLDWIDE TELECOMMUNICATIONS MARKETS, THE TOP TEN INTERNET EQUIPMENT COMPANIES, THE TOP TEN CONTRACT MANUFACTURING COMPANIES, AND THE TOP TEN TELECOMMUNICATIONS MARKET ANALYSIS AND FORECASTS.

SUSAN EUSTIS, PRESIDENT, CO-FOUNDER OF WINTERGREEN RESEARCH, HAS DONE RESEARCH IN COMMUNICATIONS AND COMPUTER MARKETS AND APPLICATIONS. SHE HOLDS SEVERAL PATENTS IN MICROCOMPUTING AND PARALLEL PROCESSING. SHE HAS THE ORIGINAL PATENTS IN ELECTRONIC VOTING MACHINES. SHE HAS NEW PATENT APPLICATIONS IN FORMAT VARYING, MULTIPROCESSING, AND ELECTRONIC VOTING. SHE IS THE AUTHOR OF RECENT STUDIES OF THE REGIONAL BELL OPERATING COMPANIES' MARKETING STRATEGIES, INTERNET EQUIPMENT, BIOMETRICS, A STUDY OF INTERNET EQUIPMENT, WORLDWIDE TELECOMMUNICATIONS EQUIPMENT, TOP TEN TELECOMMUNICATIONS, DIGITAL LOOP CARRIER, WEB HOSTING, WEB SERVICES, AND APPLICATION INTEGRATION MARKETS. MS. EUSTIS IS A GRADUATE OF BARNARD COLLEGE.

WINTERGREEN RESEARCH, INC.

ORDER FORM

Return To: WinterGreen Research, Inc.
6 Raymond Street
Lexington, MA 02421 USA
Phone: (781) 863-5078 --- Fax: (781) 863-1235 or (781) 860-0897

PLEASE ENTER MY ORDER FOR:

**Top Ten Telecommunications and
Communications Market Opportunities,
Strategies, and Forecasts 2005-2010**

-ALL REPORTS ARE AVAILABLE IN EITHER PRINT OR PDF-

PDF

PRINT

___ ENCLOSED IS MY CHECK FOR \$2,800 FOR SINGLE COPY, \$3,800 FOR WEB SITE POSTING

___ PLEASE BILL MY COMPANY USING P.O. NUMBER _____

___ PLEASE CHARGE MY MASTERCARD/VISA/AMERICAN EXPRESS___

CARD NUMBER _____ EXP. DATE _____

If charging to a Credit card you may e-mail the order form, but not the card information

Fax or Call with credit card information - Do not send card number as e-mail - You may send the order as e-mail

___ ADDITIONAL COPIES, @ \$375 (EXTRA COPY PRICE IN EFFECT ONLY WITH INITIAL ORDER)

NAME _____ TITLE _____

SIGNATURE _____

COMPANY _____ DIVISION _____

-

ADDRESS _____

CITY _____ STATE /

ZIP _____

TELEPHONE _____

FAX _____

EMAIL _____

PLEASE NOTE: RESIDENTS OF MASSACHUSETTS AND CONNECTICUT MUST INCLUDE APPROPRIATE SALES TAX

SUBSCRIBERS OUTSIDE THE UNITED STATES MUST PROVIDE PREPAYMENT IN U.S. FUNDS

REPORT # SH29821380

374 PAGES

136 TABLES AND FIGURES

2005

\$2,800