

Worldwide technology and
market developments 2002-2007

Future Mobile Handsets

This new study is essential for successful strategy planning in the worldwide handsets market. It offers comprehensive and objective analysis of key market issues and is unrivalled in its coverage of:

- Opportunities and challenges facing market players
- Extensive market forecasts by technology and region to 2007 including:
 - Handset shipments
 - Mobile subscribers
 - Worldwide mobile data users
 - New technologies such as Bluetooth and Java
- Handset and network technology and market roadmaps for 2002-2007
- Product positioning and market segmentation – how handset vendors are differentiating their products
- The User Interface – how new technologies will affect the user experience
- Evolving form factors
- Detailed profiles of industry leaders, including Nokia, Samsung and Sony Ericsson
- Updates on the progress of new entrants such as Sendo, Benq and Bird

Views on previous ARC Group Strategic reports:

'The best data on handsets that I have ever seen. They clearly have a very good understanding of all issues'.

Intel

'Time has proven that ARC forecasts on mobile handsets are the most reliable figures – far more realistic than those of many other analysts. An excellent piece of research'.

ImoneyNet

'I was very pleased with the entire content of the report, particularly the forecasts for the cellular market'.

ART



Part of Informa Telecoms Group

Customer Focus Key to 2.5G and 3G Success

Despite the turbulence of the past twelve months there is much for the handset industry to look forward to in 2002. For example, the range and volume of 2.5G handsets will finally expand and technologies such as Bluetooth and Java will emerge and compel users to upgrade their handsets.

Nevertheless, major challenges remain. Vendor differentiation is becoming increasingly complex due to growing technical standardisation and saturation in major markets. Consequently, branding and a heightened end user focus will become crucial for new entrants and major players. This is already apparent in application and lifestyle segment specific devices, such as messaging terminals or handsets for fashion conscious users. Therefore, handset vendors must carefully segment markets to understand needs and identify key segments for future growth.

Greater emphasis on end users heightens the importance of the user interface, with operating systems and microbrowsers becoming vital. However, technologies such as Bluetooth and Java will increase personalisation and interactivity. Combined with colour displays and innovations like voice recognition, the user experience in 2007 will be remarkably different from today.

Another major challenge is to avoid the delivery delays, which have plagued the

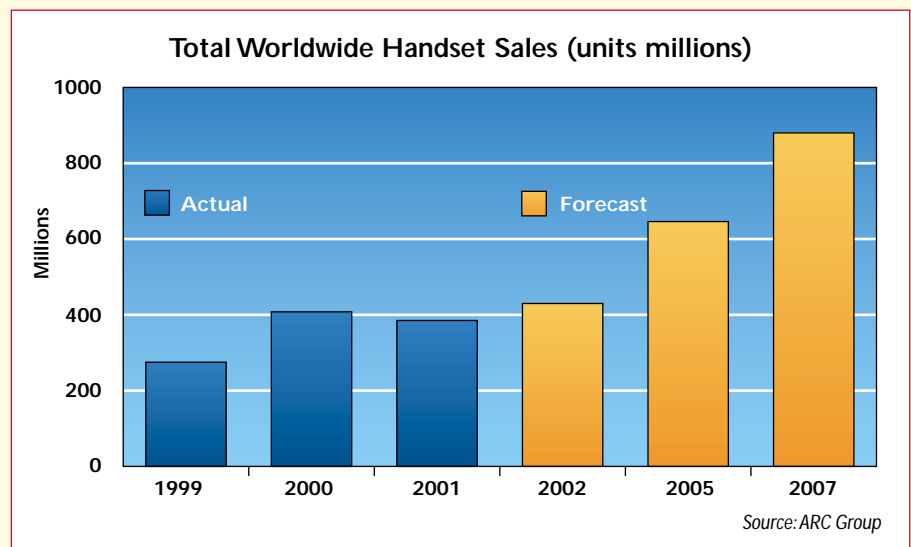
industry. Improving time to market will be key, be it through outsourcing, increasing usage of modules or improving supply chains. But this will be in addition to dramatically increasing functionality in 2.5G and 3G handsets, without greatly compromising price, form factor or battery life.

Given the breadth and complexity of the challenges, handset manufacturers, operators, component vendors and enabling technology suppliers need a clear assessment of the industry's future. **Future Mobile Handsets 2002-2007** provides a comprehensive analysis of regional

markets and technology evolution, with detailed forecasts for 2.5G and 3G handsets from 2002 to 2007.

Furthermore, technology and market roadmaps for the next five years and extensive market segmentation provide clear understanding of growth areas and facilitate strategy planning.

Future Mobile Handsets also provides in depth discussions of the industry's key issues, including vendor differentiation, CDMA and EDGE as routes to 3G, globalisation of Asian manufacturers, manufacturing trends and distribution and retail strategies.



Future Mobile Handsets also includes forecasts by technology and region to 2007

Report Contents

1. Executive Summary

2. An introduction to the Mobile Communications Industry

Overview of 2G, 2.5G & 3G mobile communications technologies and markets.

■ Cellular Network Technologies Evolution

- Detailed network evolution roadmaps including AMPS, CDMA, GSM, PDC, TDMA, GPRS, 1XRTT, 1XEV and WCDMA
- 4G developments

■ Mobile subscriber forecasts by region and technology 2002-2007

- Regional replacement rates
- Outlook for prepaid

■ Wireless Internet Market Development

- Cellular data user forecasts for 2002-2007
- Timing and uptake of new applications around the world
- Successful revenue generating applications (e.g. games and messaging)
- Detailed forecasts for mobile data volumes by region and technology to 2007

■ Regional analysis

- Overview of mobile communications market trends
- Fastest growing regions and countries for subscribers
- Top operator and subscriber numbers across the regions
- Regions examined are:
 - Asia Pacific
 - Japan
 - W Europe
 - E Europe
 - N America
 - Latin America
 - Africa/Middle East

3. Mobile Handset Marketplace

A review of the current mobile handset marketplace and anticipation of the market in 2007.

■ Handset unit sales and forecasts for 2002-2007

- Analysis of markets and forecasts to 2007 by region and selected key countries including Western and Eastern Europe, USA, Latin America, Africa/Middle East, Japan and Asia Pacific
- Analysis of 2002-2007 forecasts by technology (AMPS, CDMA, GSM, PDC, TDMA, GPRS, 1XRTT, 1XEV and WCDMA)

■ The Mobile Handset Value Chain

- Analysis of the evolving handset value chain and the challenges presented by a changing market
- The value chain in the future and the strategies required to maximise new opportunities
- The increasingly important role of third party developers and software providers

■ Analysis of key handset manufacturers' present situation and future strategies

- Profiles of leading players Nokia, Motorola, Sony Ericsson, Samsung and Siemens
- Review of new entrants in Asia and Europe
- Examining regional and global alliances and partnerships between players across the value chain in order to share technological and marketing experience
- Manufacturing and outsourcing strategies to optimise profitability

■ Consumer Handset Market Segmentation

- The development of lifestyle consumer segments in the handset market
- Classifying current and future segments and identifying the handset features and functionality required
- Highlighting the fastest growing segments today and in 2007
- Forecasts by segment from 2002 to 2007

4. Handset Functionality & Design Roadmap

Analysis of the technologies appearing in handsets up to 2007 and the resulting performance implications. Specific reference is made to the functionality of 2.5G and 3G handsets. Also investigates form factor and pricing trends.

■ Handset Roadmap 1999-2007

- When new technologies will first appear in handsets and when they will reach mass market penetration

■ New handset functionality and features

- The new features and technologies that will impact handsets over the next five years including:
 - Over The Air (OTA) downloads including a review of the MEXE specifications
 - The potential of Java, forecasts to 2007 and the ramifications for the handset
 - Synchronisation through initiatives such as SyncML
 - Bluetooth availability and its possibilities with forecasts to 2007
 - Enhanced and Multimedia Messaging Services (EMS and MMS)
 - Positioning technology (e.g. Cell ID, E-OTD, A-GPS)
 - Multimedia, including audio, imaging and video
 - Handset peripherals and accessories
 - Handset memory, back up and online data storage
- An examination of handset processing issues and trends along with processing industry initiatives to meet increased demands
- The power issues associated with the migration to 2.5G and 3G technologies and industry responses to increase efficiency. Includes a review of developing power sources such as clockwork, solar energy and fuel cells
- An overview of evolving display technologies and the increasing use of colour

■ Analysis of changing handset form factors and weights and the trends to expect up to 2007

■ A review of pricing and subsidy trends and how these will develop over the next five years

■ Current and future 2.5G terminal features, functionality, form factor and pricing

■ The features, functionality, form factor and pricing expected in 3G handsets

■ Beyond 3G terminals e.g. wearable communication devices

5. User Interface Roadmap

A review of current user interface (UI) trends and how the UI will evolve to become a key factor in determining customer choice and loyalty.

■ An introduction to UI issues including the potential role of Bluetooth and Java to enhance the user experience

■ Analysis of current standardisation initiatives (e.g. M-Services, MEXE, Nokia's Open Platform) and how each will impact the user interface by allowing customisation

■ Examination of the operating system market, with reviews of key player strategies, market shares and handset manufacturer support

■ A review of the microbrowser market including vendor support and market shares

■ The potential of new data input technologies to revolutionise the data services market including:

- Text input technologies
- Handwriting recognition
- Voice/speech recognition

■ Innovations in handset navigation and control

■ Enhancing the user experience by overcoming security concerns of mobile data services

■ UI roadmap 2002-2007

- Expected deployment of initiatives aimed at improving the user experience.

6. Handset Market Issues & Trends

Comprehensive analysis of the key issues affecting the handset market:

■ Vendor Differentiation:

- With increased standardisation (e.g. MEXE, M-Services), how will handset

vendors be able to differentiate themselves from their competitors? What are the key strategies to ensure success in the future? How have new entrants differentiated in a competitive market? Could current handset vendors become consumer electronics manufacturers?

- **Replacement Handset Markets:** Identifying replacement markets around the world. How does a replacement market differ from a new subscriber market? What challenges are to be overcome in a replacement market and what strategies should be adopted?
- **Globalisation of Asian Handset Manufacturers:** What opportunities and challenges await Asian manufacturers on

globalisation? What is the current reality of Asian globalisation?

- **Manufacturing Trends:** What are the benefits of outsourcing and just in time supply? How successful have outsourcing initiatives proven? How can manufacturing quality control be guaranteed with increasingly complex mobile handsets?
- **Distribution & Retail Strategies:** Are current handset inventory levels still dangerously high? What is the growth potential of the second hand market? What are Operators' retail strategies?
- **The Modules Market Place (Includes Wavcom Case Study):** Does the use of modules bring time to market benefits? What issues are associated with the use of modules?

How large will the modules market be in 2007?

- **Disposable Handsets (Includes Case Study):** What opportunities are available for disposable handsets? What challenges will the disposable handset market face?
- **EDGE Handset Availability:** What are the opportunities for EDGE handsets? When will EDGE handsets become available? What pricing can be expected for EDGE handsets?
- **CDMA 1x as a path to 3G:** How is CDMA 1x being deployed around the world? What handset lessons have been learned to date? What are the handset manufacturers' strategies for CDMA 1x?

New Topics in the 2002 Edition

As part of our continuing focus on the key issues, the 2002 edition of Future Mobile Handsets will cover new topics such as:

- User Interface Roadmap
- Vendor Differentiation
- Replacement Handset Markets
- Globalisation of Asian Handset Manufacturers
- Manufacturing Trends
- Distribution & Retail Strategies
- The Modules Market Place
- Disposable Handsets
- OTA Downloads
- Peripherals and Accessories
- Data Storage
- EMS & MMS

Market leaders including Nokia, Motorola, Sony Ericsson, Siemens and many more have provided input or are featured in the report.

This report is essential reading for:

Handset Vendors

Detailed mobile handset forecasts, technology and segmentation roadmaps enable you to plan for the future

Operators

Utilise handset feature roadmaps and availability projections to devise future revenue models

Component Manufacturers

Understand customer and competitor strategies and plan accordingly

Enabling Technology Providers

Identify and maximise the potential of new opportunities in the marketplace

Financial Business Analysts

Comprehensive market data allows reliable investments

Methodology

A top-quality, reliable and thorough industry assessment on current and future market developments made possible through:

- an extensive face-to-face and phone based interview programme with executives across the industry
- quantitative worldwide industry surveys conducted over a period of six months
- a network of analysts around the world
- access to first class industry databases
- in-house advanced forecasting models
- an in-depth technology understanding
- many years of experience in providing customers with the best possible strategic advisory support

Related ARC Group Reports

3G Technology, Markets and Business Strategies

Publication Date: September 2001

This technology and market based study provides a well balanced mix of expertise for planning a successful migration strategy. The report contains a wealth of strategic recommendations, technology roadmaps, case studies, 2.5 and 3G forecasts covering ARPU, revenues, service adoption, subscribers and handsets across all regions as well as analysis of issues such as QoS, roaming, billing and IP addressing.

Wireless Java – Handset and Application revenue Streams

Publication Date: November 2001

This report provides an independent and authoritative guide to Wireless Java technology and markets. Essential global market and forecast data are combined to provide an insight into the strategies and implementation options, which will maximise the revenue opportunities of this rapidly developing technology.

Bluetooth Personal Area Networks

Publication Date: November 2001

This comprehensive report provides an independent and authoritative guide to Personal Area Networking (PAN) activities. It combines the latest information on Bluetooth's transition from technology to successful commercial enabler, global market forecasts, and analysis to provide a meaningful insight for companies interested in exploiting the opportunities that Bluetooth has to offer.

EDGE

Publication Date: February 2002

In the wake of renewed interest and support for EDGE this new report investigates the shift in market perception relating to EDGE, its future role in markets throughout the world, deployment strategies for network operators, and handset and infrastructure vendors and worldwide forecasts for EDGE technology, including EDGE ARPU, subscribers and handsets.

Previous Mobile Handsets Report buyers include:

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Strategic Reports

ARC Group Strategic Reports are unparalleled in achieving a fine balance between technology and market issues and are highly valued for their superlative analysis and forecasts.

Recent reports include:

- Wireless Java
- Wireless Internet Platforms
- Mobile Entertainment
- Mobile Advertising
- 3G Technology, Markets and Business Strategies
- MVNO Strategies
- Bluetooth Personal Area Networks

Our core specialisations include:

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- Wireless Technologies and Infrastructure
- Digital Audio & Video Broadcasting
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- Interactive Broadband Consumer Applications
- Telematics & M2M
- Optical Communications & Optoelectronics
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