

PAGING

Equipment & Services

Driving Applications for Internet, Electronic Commerce, & Other

Forecasts of U.S. and Global Markets to 2001

Paging markets support both voice and data mobile communications in a low cost manner. Paging provides low cost access to landline telecommunications for mobile workers. Paging supports wireless data transfer in a secure manner. Paging is positioned to support transmission of transaction data for electronic commerce.

Market growth from paging is a result of the following factors:

- A continuing shift towards a service-based economy
- Increasing mobility of workers and the population at large
- Increasing awareness of the benefits of mobile communications among companies and the population at large
- The relatively high cost of two-way mobile communications, such as cellular telephone services
- Introduction of new or enhanced paging services, including nationwide paging capability
- Continuing improvements in the performance of paging equipment
- Significant price/performance improvements in paging services
- **Growth of paging markets is occurring as the technology is positioned as providing mobile workers with low cost access to landline telecommunications**
- **Paging transmission of data has been stimulated by use of the Internet to transmit e-mail**

THE STUDY ADDRESSES:

- **Market strategies for participating in evolving voice and data paging market segments**
- **Strategic positioning of paging equipment providers**
- **Market directions and strategic market alliances**
- **Risk/reward scenarios -- access to existing customer bases**
- **Strategies for success**

You NEED This Study

COMPANIES PROFILED

AIRTOUCH	NOKIA
ALCATEL	NORTEL
AMERICAN PAGING	NTT DOCOMO GROUP
ARCH COMMUNICATIONS	OMNIPOINT
GROUP	OPENPORT
BEIJING SPIDER NETWORK	PACIFIC BELL MOBILE
SYSTEMS INTEGRATED LTD.	PAGENET
BEEPER COMMUNICATIONS	PHILIPS
BEIJING TIAN WEI	RACOM PRODUCTS
BELL ATLANTIC PAGING	RADIOSPOOR
BROADVISION	REAL TIME STRATEGIES, (RTS)
BROOKTROUT TECHNOLOGY	REDSTONE NETWORK
CELLNET	SERVICES
CIRRUS LOGIC	SAMSUNG
CONDUCTUS	SIEMENS
DIALOGIC	SPEC
DIGITAL LINK	SHANGHAI SHENG XIN
ERICSSON	SYMONTEC
GLENAYRE TECHNOLOGIES	SWISSPHONE TELECOM
HARRIS & JEFFRIES	TATA
IBM / LOTUS	TECNOMEN
INFOTEK	TELEDATA
KUNMING HANGKE	TELE DANMARK MOBIL A/S
COMMUNICATION	TELEFÓNICA MÓVILES
LOGIPHONE GROUP	TELEPHONE AND DATA
LUCENT	SYSTEMS
MITSUBISHI	TRIPLE P TELEMATICS
MOTOROLA	UNWIRED PLANET
MOBILEONE	W.L. PRITCHARD
NEC AMERICA	WIND RIVER SYSTEMS
NETCENTRIC	XPEDITE

REPORT OUTLINE

EXECUTIVE SUMMARY	The market pyramid
1. MARKET DEFINITION	Cellular
Overview	U.S.
Paging access	Latin America
Impact of Internet	Europe
Wireless market penetration	Asia Pacific
Impact of broadband	Internet paging
Market driven solutions	Small businesses
Technology	Large business
Arch Communications group	Market shares
Marketing	3. PAGING PRODUCTS
2. MARKET FORECASTS	OVERVIEW

PAGERS

- Motorola one way paging
- Motorola two way paging
- NEC9000-d3
- Philips
- Nexus Telecommunications
- Glenayre Technologies

BASE STATIONS

- Motorola
- Nokia
- Glenayre
- Tecnomen

PROTOCOL CONVERSION

- Unipage / Motorola
- Ericsson
- Tecnomen
- Glenayre
- Real Time Strategies
- Conductus
- Tecnomen

SERVICES

- Pagenet
- Arch
- Airtouch
- American Paging
- Nokia/Pacific Bell mobile services
- Skytel
- Brazil
- Kuwait
- Singtel
- Lucent Technologies
- Portuguese PTT
- Italian PTT

4. PAGING TECHNOLOGY

Networks

Two way paging

Protocols

- Transmitter control
- Analog trunk protocols
- The tap digital input protocol
- Telocator data protocol (tdp)
- Inter-system and intra-system protocols
- Gateways
- Tnpp industry standard
- Tnpp protocol
- Telocator interswitch paging protocol (TIPP)
- Pocsag
- Glenayre data link module (DLM)
- Spectrum ericsson dlh protocol
- Motorola golay format
- Mark iv/v/vi formats
- Swedish mbs format
- Radio data system (rds) format
- European radio message standard (ERMES) Format

5. PAGING COMPANY PROFILES

6. PAGING MARKETING STRATEGIES

COMPETITIVE ADVANTAGE

PRODUCT ARCHITECTURE

Modular value added products

Language interfaces

Range of models

Brand advantage

Global logistics

Internet messaging

Internet fax services

Nokia

7. DATA APPLICATIONS

LIST OF TABLES AND FIGURES

FORECASTS 1996-2001

- Equipment Market Shares for 1996
- Services Market Shares for 1996
- U.S. Markets
- Global Markets
- Shipments in Millions of Dollars

2. MARKET FORECASTS

- Market opportunities
- Market growth factors
- Market description
- Remote Access
- Work from home markets
- Cellular
- Internet subscribers
- Wireless Fax
- Paging market forecasts

- Base station market forecasts
- Paging subscriber market forecasts
- Factors contributing to growth
- Nokia installations for paging

3. PAGING PRODUCTS

- Motorola paging features
- Philips paging features
- Nokia nmt 450/900 base stations
- Glenayre paging products

4. PAGING TECHNOLOGY

- Two way pager response types
- Selected paging protocol groups and functions
- Special paging services
- TAP protocol phases

REPORT METHODOLOGY

This is the twenty-third in a series of market forecasts of Internet data communications, telecommunications, and information services. The project leaders have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases. In-

depth interviews are conducted with a broad range of key participants in the market.