

# ULTRASOUND MARKETS

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Trends, Industry Participants, Product Overviews and Market Drivers

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## 1. Overview

### 1.1 Statement of Report

This report describes the increasingly diversified market segment of the diagnostic imaging market sector called ultrasound. Ultrasound imaging currently includes prenatal ultrasonography, cardiac and cardiology-imaging ultrasound, and portable or handheld ultrasound—which some believe may one day fully replace the ubiquitous use of stethoscopes. Emerging market segments such as three-dimensional (3D) and now four-dimensional (4D) ultrasound are also examined in this study.

### 1.2 Scope of the Report

The main objectives of this analysis are to:

- Identify viable technology drivers through a comprehensive look at various platform technologies for ultrasound markets.
- Obtain a complete understanding of the chief ultrasound markets' tests—predictive, screening, prognostic, diagnostic and monitoring—from their basic principles to their applications.
- Discover feasible market opportunities by identifying high-growth applications in different areas, with a focus on the biggest and expanding markets.
- Focus on global industry development through an in-depth analysis of the major world markets for ultrasonography, including forecasts for growth.
- Establish the essentials of the ultrasound market including definitions, processes and trends.

Market figures regarding the current value of the ultrasound market are taken from the most recently available data of the global medical products industry. This examination covers the following categories of ultrasonography:

- Prenatal ultrasound.
- Cardiology-imaging ultrasound.
- Handheld ultrasound.
- Three-dimensional (3D) ultrasound.
- Four-dimensional (4D) ultrasound.

Analysis includes the use of charts and graphs measuring product growth and trends within the marketplace. In addition, a discussion of research into ultrasonography provides the reader with a deeper understanding of the possibilities for future treatment and avenues for possible R&D budgets. Company-specific information, including sales figures, product pipeline status and R&D trends, is provided throughout the report. The report will:

- Assess the ultrasound market drivers and bottlenecks, from the perspective of the medical and scientific communities.
- Discuss the potential benefits of the ultrasound market for various sectors of the medical and scientific community.
- Establish the current total market size and future growth of the ultrasound market and analyze the current size and growth of various segments.
- Provide current and forecasted market shares by company.
- Discuss profit/business opportunities by imaging segment.
- Provide strategic recommendations for near-term business opportunities.
- Assess current commercial uses of the ultrasonography market.
- Review the ultrasonography business models.

Ultrasound and other medical imaging products include hardware, software and supplies used to create, view and manage visual images of non-visible organs of the human body for purposes of research, diagnosis and guidance of noninvasive surgery. This study focuses on end-user markets including hospitals, research facilities, freestanding clinics, doctor's offices and equipment-leasing companies.

Ultrasound products usually are sold bundled as systems for creating or managing images. Systems include some or all of the following:

- Radiation source.
- Radiation detector.
- Patient table and gantry.
- Computers and displays.
- Robotic software.
- Image-acquisition software.
- Image-management software.
- Virtual-reality software.
- Computer-aided detection (CAD) software.

Supplies and accessories are discussed only if a significant aftermarket exists for them. This analysis focuses on companies that are actively developing and marketing ultrasound technologies. The reader should consult other TriMark Publications reports at <http://www.trimarkpublications.com> for a detailed discussion of the important individual market segments that are related to the ultrasound markets, such as picture archiving and communications systems (PACS).

The emphasis in this examination is on the ultrasound market segment in important worldwide markets such as the U.S., Japan and Europe. It focuses primarily on the hospital market segment and, separately, describes the instruments, reagents and supplies marketed by major companies in this segment. The analysis discusses the market size, growth rates and market components for instruments and reagents, controls and consumables used in ultrasound, with emphasis on contrast media and biopharmaceuticals used to enhance imaging resolution. This study reviews the market for ultrasound in the clinical hospital market. It defines the dollar volume of sales, both worldwide and in the U.S., of the market and analyzes the factors that influence the size and the growth of the market segments.

The report discusses activity and trends in the hospital markets and examines in detail the trends that have stimulated this market. This analysis also comments in detail on the patterns of information processing in the ultrasound markets. All of the companies known to be marketing, manufacturing or developing ultrasound in the U.S. and worldwide are surveyed. Leading companies are discussed in depth with a section on the history of the company, its product line, business and marketing analysis and a subjective commentary on the position of the company in its market.

### **1.3 Methodology**

The information in this report is based on interviews with sales and marketing professionals of companies in the ultrasound market. People from virtually every company mentioned in this report were queried, some several times, about their companies' products and marketing strategies as well as their overall thoughts about their industry segment. Information was also obtained from interviews with founders, CEOs and vice presidents of some of the companies discussed in the report. The structures of the hospital laboratories and patient facilities were derived from interviews with laboratory directors and technologists working in these areas.

Sources of information for the study were trade association publications and meetings, product brochures and catalogs, and company literature. Where the companies under discussion were publicly held, an examination of the annual reports, 10k filings and financial reports were used as the basis of the data reported. Important data sources include the Health for All Database of the World Health Organization, data published by the statistical office of the European Communities (Eurostat), as well as various health data from the United Nations and the Organization for Economic Cooperation and Development. Where possible and practicable, the most recent data available have been used.

The author of this report has an M.D. with a specialty in clinical radiology. The senior editor is a doctoral-level clinical scientist with a Ph.D. in biochemistry. He has over 30 years of experience in laboratory testing and instrument- and reagent-development technology, as well as extensive experience in senior-level positions in biotech and medical service companies.

Some of the statistical information was taken from Biotechnology Associates' databases and from TriMark's private data stores. The information set forth in this study was obtained from sources that we believe to be reliable, but we do not guarantee the accuracy, adequacy or completeness of any information contained herein or the results obtained by the use of such information.

Key information from the business literature was used as a basis to conduct dialogue with and obtain expert opinion from market professionals with regard to commercial potential and market sizes. Senior managers from major company players were interviewed for part of the information in this report.

The information in this report is also based on direct experience with sales and marketing professionals of companies in the point of care instruments and reagents market. People from many companies mentioned in this report were questioned about their companies' products and marketing strategies as well as their overall thoughts about their industry segment. The structure of the laboratory facilities was derived from familiarity with scientists and technologists working in these areas.

### ***Primary Sources***

TriMark collects information from hundreds of Database Tables and many comprehensive multi-client research projects and Sector Snapshots that we publish annually. We extract relevant data and analytics from TriMark's research of the past three years as part of this data collection. We also extract qualified data feeds from e-questionnaire responses and primary research responses for this compilation.

### ***Secondary Sources***

TriMark uses research publications, journals, magazines, newspapers, newsletters, industry reports, investment research reports, trade and industry association reports, government-affiliated trade releases and other published information as part of our secondary research materials. The information is then analyzed and translated by the Industry Research Group into a TriMark study. The Editorial Group reviews the complete package with product and market forecasts, critical industry trends, threats and opportunities, competitive strategies and market share determinations. The report's conclusions are verified through intensive interviewing of top-ranking companies in the industry.

### ***TriMark Publications Report Research and Data Acquisition Structure***

The general sequence of research and analysis activity prior to the publication of every report includes the following items:

- Completing an extensive secondary research effort on an important market sector, including gathering all relevant information from corporate reporting, publicly available databases, proprietary databases, direct meetings, and personal interviews with key personnel.
- Formulating a study outline with the assigned writer, including important items:
  - Market and product segment grouping and evaluating their relative significance.
  - Key competitors' evaluations including their relative positions in the business and other relevant facts to prioritize diligence levels and assist in designing a primary research strategy.
  - End-user research to evaluate analytical significance in market estimation.
  - Supply chain research and analysis to identify any factors affecting the market.
  - New technology platforms and cutting edge applications.
- Identifying the key technology and market trends that drive or affect these markets. Assessing the regional significance for each product and market segment for proper emphasis of further regional/national primary and secondary research.

- Launching a combination of primary research activities including two levels of questionnaires, executive-direct focused, company-specific, and region-specific communications to qualified and experienced senior executives worldwide.
- Completing a confirmatory primary research assessment of the report's findings with the assistance of Expert Panel Partners from the industry being analyzed.

#### 1.4 Executive Summary

There are relatively few global players in the ultrasound market. Siemens' Ultrasound Division is the leading ultrasound company in the U.S., followed by Philips Medical Systems and GE Healthcare. The ranking comes from information gathered by Biotechnology Associates regarding total U.S. medical-ultrasound revenues. Siemens' flagship Sequoia ultrasound platform increased, making it the top-selling ultrasound system in the U.S. for many years in a row. Siemens is committed to using acoustic mastery to expand ultrasound beyond its traditional role. The ACUSON S2000™ ultrasound system is a perfect case in point. The first in next generation of ultrasound products, the ACUSON S2000 system is ready to accept silicon transducers and features Virtual Touch™ tissue imaging, the world's first and only implementation of acoustic radiation force impulse (ARFI) strain imaging. With knowledge-based workflow efficiencies and highly tuned ergonomics, the ACUSON S2000 system delivers the broadest range of innovative clinical applications. The ACUSON S2000 system uses Siemens best-in-class proprietary micro-pinless (MP) transducer connector technology, optimized for high-frequency imaging, and delivers superb 2D, 3D, Doppler and 4D imaging for the most demanding applications. Experience never before seen detail during examinations and leverage industry-leading imaging

Siemens introducing the most versatile portfolio of transducers on the market today designed to optimize clinical workflow. The company's ultrasound offers a wide range of innovative transducers that set the industry benchmark for ergonomics and extend the diagnostic capabilities of ultrasound. The patented technologies of its advanced transducer design accommodate the broadest range of examinations and applications offering unparalleled clinical flexibility and value. Siemens offers complete solutions in all areas of imaging with application specific transducers and settings. Siemens has ultra high frequency transducers with its unique core acoustic technologies and state-of-the-art design; provide exceptional detail of complex pathological masses and subtle lesions in examinations.

The ACUSON S2000 also includes Advanced SieClear™ spatial compounding with Dynamic TCE™ tissue-contrast enhancement. Spatial compounding reduces acoustic noise by generating several frames of data with independent information and averaging those frames with the help of speckle patterns. It provides better detail and contrast resolution through more precise anatomical border definition, notably the carotid intima-media boundary. The ultra-high frequency 18L6 HD transducer incorporates twice the elements with half the spacing to improve slice thickness, image uniformity, and contrast resolution. Its unique core acoustic technologies and state-of-the-art design provides precise details of complex masses and subtle lesions.

Siemens Medical Solutions' Ultrasound Division also introduced the 5.0 release of its ACUSON Antares™ ultrasound platform. The 5.0 release offers powerful innovations in five clinical application areas, including breast and obstetrics and gynecology (OB/GYN) imaging. Siemens' eSie Touch™ elasticity imaging technology includes a speed-of-sound adaptation designed for fatty breast imaging, and bundles with Siemens' Advanced SieClear™ spatial compounding, which provides an industry-leading 13 lines of sight applied at greater steering angles, as well as Dynamic TCE™ tissue-contrast enhancement technology providing speckle reduction and motion correction. For OB/GYN applications, the Antares 5.0 release offers Advanced fourSight™ technology, a comprehensive suite of acquisition, rendering and post-processing tools, and syngo® Auto OB Measurements, to streamline and improve workflow. Amnioscopic rendering is another key innovation—this unique surface-rendering technique developed by Siemens Corporate Research provides stunningly realistic and detailed views of the fetus, enabling greater diagnostic confidence in 3D and 4D imaging. Other ultrasound-segment prime competitors are Agilent Technologies; ATL Ultrasound; Aloka Co., Ltd.; Medison Co., Ltd. and Toshiba America Medical Systems. GE Medical Systems' VoiceScan on its Logiq 9 ultrasound scanner is a voice-activated control feature that allows physicians and sonographers to control system functions by voice command alone. By talking into a wireless headset, physicians and sonographers can interact with the Logiq 9 scanner and have it perform more than 150 actions.