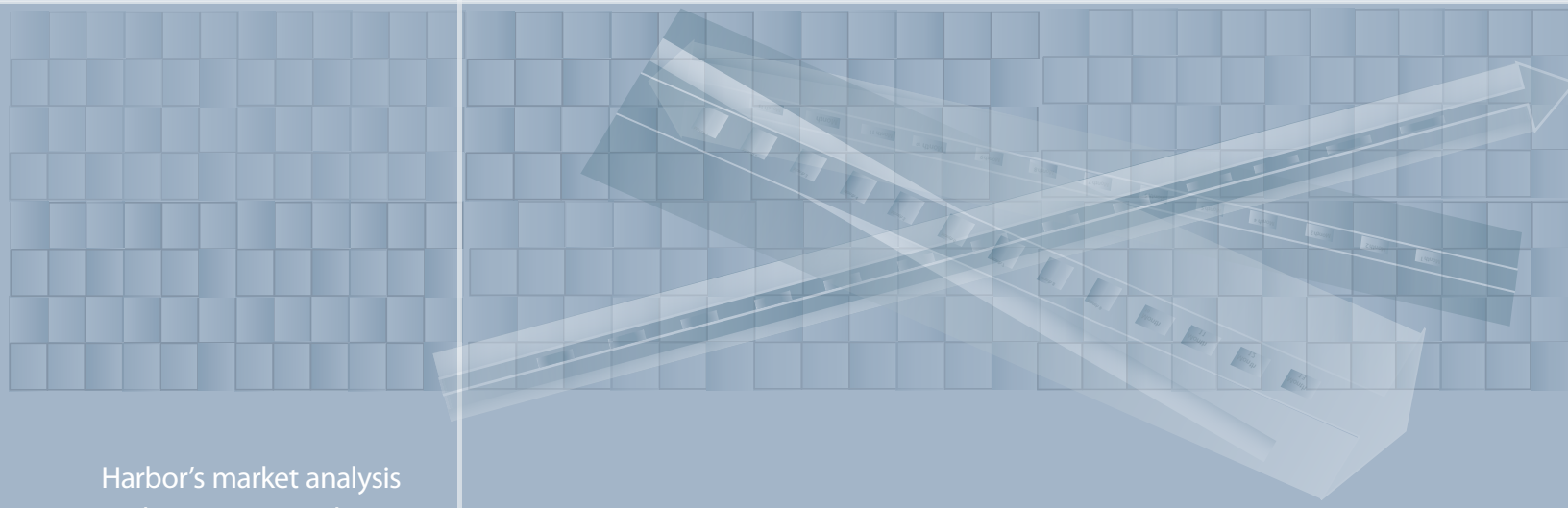
Report Overview

PERVASIVE INTERNET & SMART SERVICES MARKET FORECAST



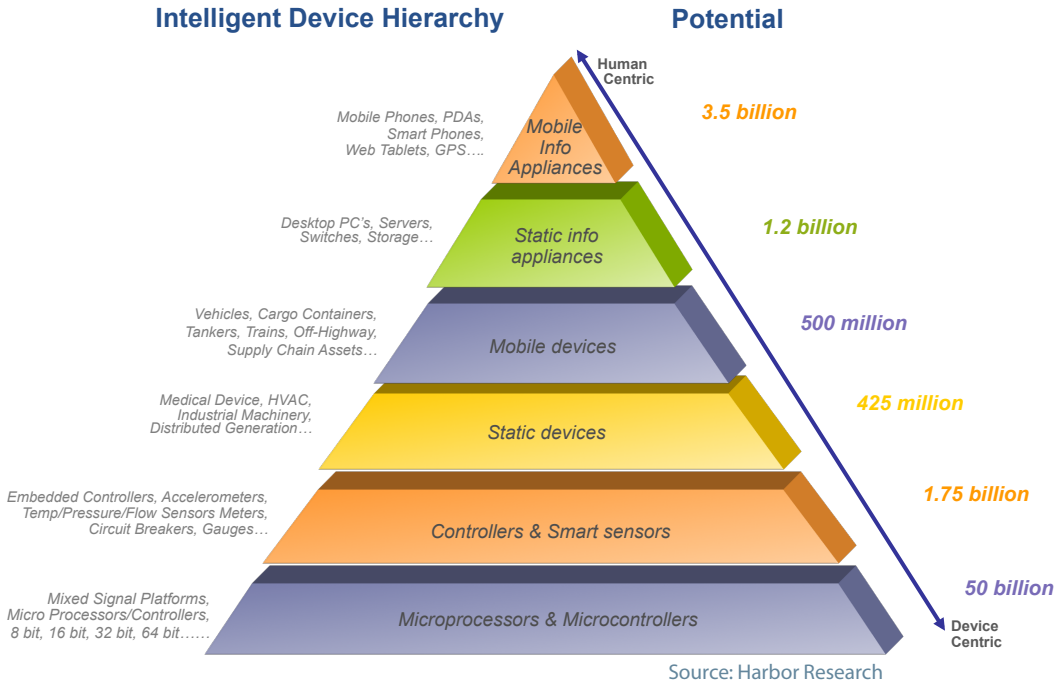
Harbor's market analysis and report on machine-to-machine (M2M) and intelligent device networking covers the complete range of wired and wireless technologies across all regions worldwide within eight key market venues. Our analysis also covers higher level network applications and managed services revenues enabled by intelligent device networking.

Machine-To-Machine (M2M) & Intelligent Device Communications & Managed Services Opportunities 2009-2013

Harbor Research, Inc.
SAN FRANCISCO | ZURICH

Overview

"Machine-to-Machine (M2M)", "Ubiquitous Computing" and "Pervasive Internet" are all terms that point to the advent of enabling technologies for networking products and devices. Visionary product manufacturers and service companies are already using embedded computing and networking technologies to deliver smart, remotely monitorable goods that will support entirely new modes of customer-interaction and service delivery. The resulting asset visibility and customer intimacy represent huge new revenue opportunities across the entire life-cycle of products. The emergence of the Pervasive Internet is unleashing an age of continuous "always-on" connectivity in which every connected product turns its manufacturer into a new kind of service business we have named "Smart Services."



Source: Harbor Research

Many observers believe this will drive the largest organic growth opportunity in the history of business. What follows is an overview of our analysis of machine-to-machine (M2M), intelligent device communications and managed services opportunities from 2009-2013. The report covers a comprehensive range of wireless and wired technologies globally across eight key market venues. The research also forecasts network applications and managed services through 2013 as well as addressing the business models being deployed in the market.

STUDY STRUCTURE & KEY QUESTIONS ADDRESSED

Harbor's Pervasive Internet and Smart Services Market Forecast presents rigorous coverage of eight key market venues and related customer segments, application groups and over 300 specific device and machine types central to M2M market development.

Our analysis and research addresses the following fundamental questions:

- What key forces are impacting adoption of M2M and conneted product solutions?
- What devices and applications are driving intelligent device networking?
- What are the business models manifest in each major vertical market and venue?
- What is the size and growth rate of the opportunity?
- What managed services opportunities are developing by vertical market?
- Which enabling technologies are gaining ground?
- How will software architecture and tools evolve over the next several years?
- Which technologies are being deployed by individual regions?
- What issues and hurdles are there in the market impacting adoption of Smart Services?

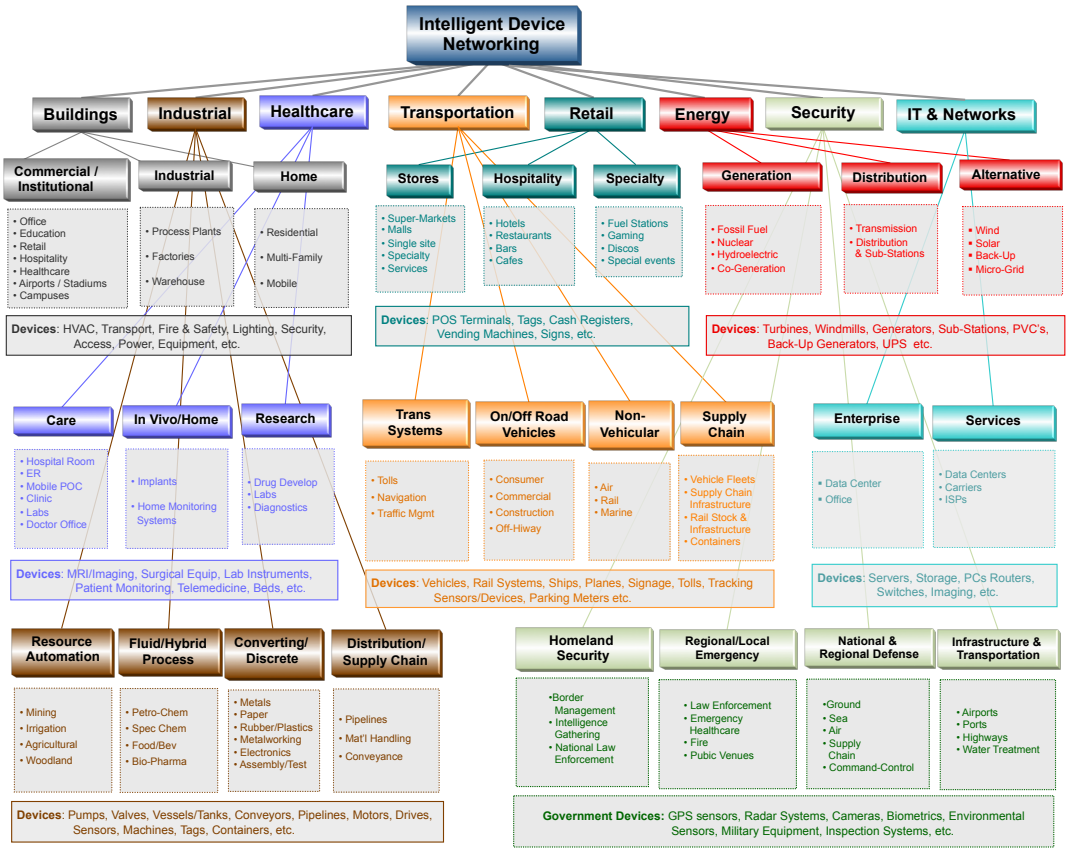
FORECAST SCOPE & COVERAGE

This report provides an analysis and forecast that includes all intelligently networked devices, covering both Fixed (Wireline) and Wireless technologies, including :

- Wireline: Industrial Ethernet
- Wireless LAN: Wi-Fi / WiMax
- Wireless WAN/Cellular: GSM/GPRS/EDGE, CDMA/EV-DO, 3G/4G, Satellite
- Wireless PAN: 6LoWPAN, Bluetooth, ZigBee (+ other 15.4), Ultra-Wideband, RFID

We believe that this holistic approach is now essential both for suppliers looking to maximize their returns in this market and for adopters/users to take account of the different options available to them.

Virtually any electric or electro-mechanical device has the capability of being monitored and managed over the Internet. The eight market "Venues" represent the key areas where Harbor Research believes M2M opportunities will develop in the coming years. Within each venue, these devices are organized into application segments (e.g. 'Hospitality' within the Retail Venue) and customer segments characterized by where they are used, what function they carry out, and the types of customers that occupy each venue (e.g. 'Hotels' within Hospitality). Device segments, in turn, are then viewed within customer and application segments (e.g. POS systems within the Retail Venue). Harbor Research's Venue Segmentation Map presents our organizing schema for analysis.



Source: Harbor Research, Inc.

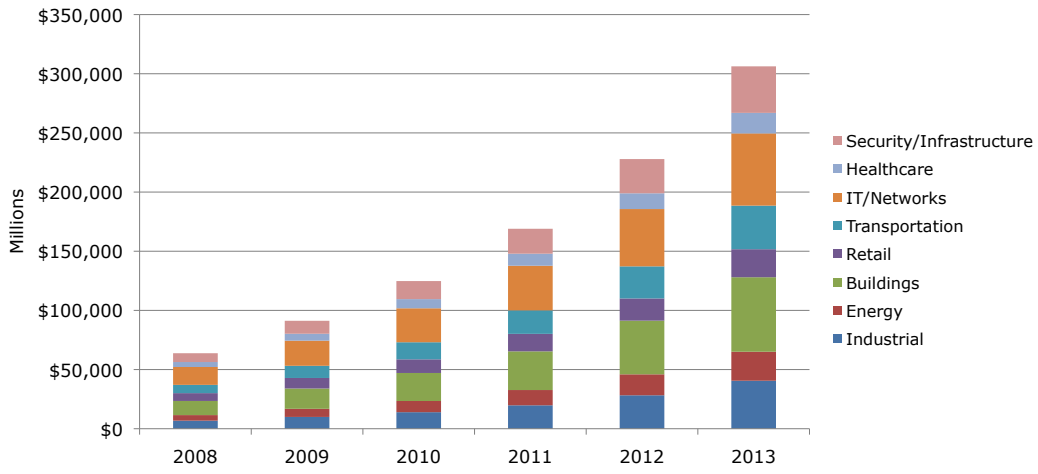
There is no one single industry upon which the Pervasive Internet and Smart Services technology market is dependent. Instead the market will be fueled by a wide range of applications that require varied products, connectivity and support. Leading companies in the service and manufacturing industries are looking at the Pervasive Internet and Smart Services for near term adoption because of compelling economic and ROI potential.

Historically, much of the focus of players in M2M and Smart Services market development has been on developing and lowering the cost of the technologies. Based on our analy-

sis and forecasts, it is evident that the technologies for connected solutions are now maturing and experiencing more robust and predictable growth.

We expect the opportunity to begin shifting away from simple enablement towards value added managed services opportunities, including monitoring, data-analysis, and value-added services. Based on all the knowledge gathered about supplier progress, technol-

Exhibit: Value-Added Application Services By Venue



Source: Harbor Research, Inc.

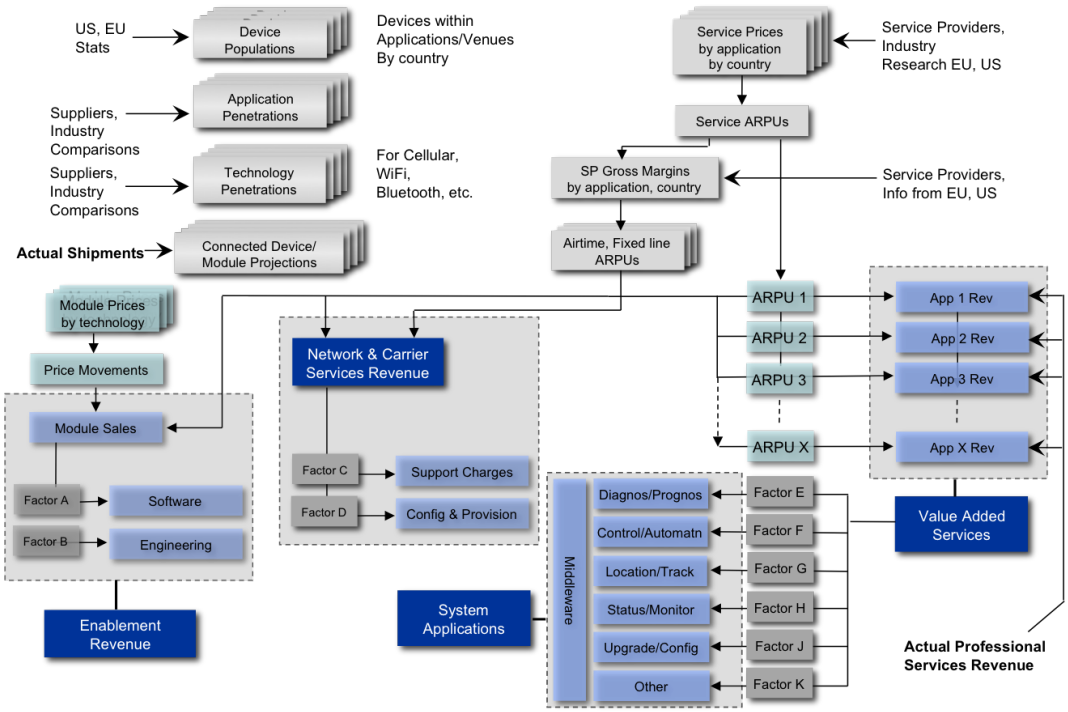
ogy, and customer adoption, there are several major trends which have wide-reaching implications. We strongly believe these forces will deeply affect business strategy and customer relationships in the near term. Some examples of trends driving this change:

- Technology improvements will continue to make it cheaper and easier to implement connectivity solutions in everyday devices: communications options will increase, have greater bandwidth, and be cheaper (free Internet access).
- Cross network integration (i.e. integration of connected device data across WAN, LAN, PAN) will have a compounding impact on demand and the scale opportunities.
- During the next few years, end users will emerge as a force and place greater emphasis on solutions that readily integrate with enterprise systems, innovative solution design and more effective service and support.
- Demand for adaptability, agility and features will grow. Innovation in product and systems design will be heavily rewarded. Customers will creatively apply and integrate technology in their work and personal lives to unimaginable levels.
- Customers will require a tailored experience from service providers, driving a movement towards "a market segment of one." Not only do customers expect suppliers to anticipate their specific needs, they will want suppliers to project an experience for them.

FORECAST METHODOLOGY

Harbor combines a comprehensive top-down and bottom-up approach to ensure the most accurate forecast possible. The figure below outlines our methodology:

Exhibit: Forecast Model and Methodology



Device populations have been determined from government and industry statistics on output and installed base across the wide range of devices monitored. Data for over 300 device categories in Harbor's eight key Venues have been researched in this way in order to cover all areas where Harbor sees potential Pervasive Internet and Smart Services opportunities.

Networking penetration of these device populations has been assessed from Harbor's own estimates, based on input received from device suppliers and industry comparisons across device segments. At the same time, device categories have also been assessed for the alternative technologies that might be used to network connect them. This approach seeks to minimize the potential for double counting of devices using different connection technologies. The results of these assessments have then been cross-checked against actual connection module shipment data received from module suppliers, device suppliers and some distributors.

- Enablement revenue is derived from a combination of the connection module shipments, their average selling price and the costs for Hardware, Software and Engineering.
- Network and Carrier Services Revenue is derived from the installed base of modules actually connected rather than those shipped and the Average Revenue Per Device (ARPD). In turn, ARPD has been determined for each application as a percentage of Managed Services revenue applicable for each application.
- Managed Services revenue is derived by applying an average monthly service charge factor to device populations, based on individual venue and customer segment considerations derived from industry interviews.

Ultimately, we integrate our forecast and findings into our analysis of business models, channels to market and customer buying behavior - both at the OEM stage of the value and delivery chain as well as in the context of end customer segments.

This phenomenon The Pervasive Internet and Smart Services have far-reaching effects the likes of which have never before been seen in business or our everyday lives. The Internet versions 1.0 and 2.0 had broad implications on how people and businesses interact with computers and other new information devices, but did not necessarily change every aspect of our lives. Intelligent device networking represents version 3.0 of the Internet, and it will be felt in everything that we touch and do. No matter who you are, what industry, or what job function, this wave of change will be inescapable.

About Harbor Research

Harbor Research has more than twenty years of experience providing strategic consulting and research services to product manufacturers, services organizations and core technology clients. Harbor's strategy and business development work is organized around emergent and disruptive opportunities, with a unique focus on the impact of the Pervasive Internet—the use of the Internet to accomplish global device networking that will revolutionize business by unleashing entirely new modes of system optimization, customer relationships, and service delivery - what we call "Smart Services." Harbor Research has built extended relationships with larger multi-line companies including ABB, General Electric, Danaher, Eaton, Emerson, Hewlett Packard, Honeywell, Siemens, and IBM as well as with a broad array of emergent start-ups and pre-IPO technology ventures.

Contacts:

Jonathan Berman
Senior Analyst
415.615.9400 X17

Mark Ritorto
Senior Analyst
415.615.9400 X21

Harbor Research, Inc.
US - San Francisco: 415.615.9400
Europe - Zurich +41 435 000 15
Email: info@harborresearch.com
Website: www.harborresearch.com

Chapter 6: Evolving Business Models For Smart Services

Chapter 7: Opportunities, Obstacles and Conclusions

Appendices

EXHIBITS

- Total Devices Shipped by Technology: Worldwide
- Total Devices Shipped by Region: Worldwide
- Total Device Revenue by Technology: Worldwide
- Total Device Revenue by Region: Worldwide
- Total Devices Shipped by Venue: Worldwide
- Total Device Revenue by Venue: Worldwide
- Wireline Devices Shipped by Venue: Worldwide
- Wireline Devices Revenue by Venue: Worldwide
- Wireline Devices Shipped by Venue: N. America
- Wireline Devices Revenue by Venue: N. America
- Wireline Devices Shipped by Venue: W. Europe
- Wireline Devices Revenue by Venue: W. Europe
- Wireline Devices Shipped by Venue: AsiaPac
- Wireline Devices Revenue by Venue: AsiaPac
- Wireline Devices Shipped by Venue: ROW
- Wireline Devices Revenue by Venue: ROW
- WWAN Devices Shipped by Type: Worldwide
- WWAN Devices Revenue by Type: Worldwide
- WWAN Devices Shipped by Venue: Worldwide
- WWAN Devices Revenue by Venue: Worldwide
- WWAN Devices Shipped by Venue: N. America
- WWAN Devices Revenue by Venue: N. America
- WWAN Devices Shipped by Venue: W. Europe
- WWAN Devices Revenue by Venue: W. Europe
- WWAN Devices Shipped by Venue: AsiaPac
- WWAN Devices Revenue by Venue: AsiaPac
- WWAN Devices Shipped by Venue: ROW
- WWAN Devices Revenue by Venue: ROW
- WLAN Devices Shipped by Venue: Worldwide
- WLAN Devices Revenue by Venue: Worldwide
- WLAN Devices Shipped by Venue: N. America
- WLAN Devices Revenue by Venue: N. America
- WLAN Devices Shipped by Venue: W. Europe
- WLAN Devices Revenue by Venue: W. Europe
- WLAN Devices Shipped by Venue: AsiaPac
- WLAN Devices Revenue by Venue: AsiaPac
- WLAN Devices Shipped by Venue: ROW
- WLAN Devices Revenue by Venue: ROW
- WPAN Devices Shipped by Type: Worldwide
- WPAN Devices Revenue by Type: Worldwide
- WPAN Devices Shipped by Venue: Worldwide
- WPAN Devices Revenue by Venue: Worldwide
- WPAN Devices Shipped by Venue: N. America
- WPAN Devices Revenue by Venue: N. America
- WPAN Devices Shipped by Venue: W. Europe
- WPAN Devices Revenue by Venue: W. Europe
- WPAN Devices Shipped by Venue: AsiaPac
- WPAN Devices Revenue by Venue: AsiaPac
- WPAN Devices Shipped by Venue: ROW
- WPAN Devices Revenue by Venue: ROW
- Network Services Revenue by Venue: Worldwide
- Network Services Revenue by Venue: N. America
- Network Services Revenue by Venue: W. Europe
- Network Services Revenue by Venue: AsiaPac
- Network Services Revenue by Venue: ROW
- Managed Services Revenue by Venue: Worldwide
- Managed Services Revenue by Venue: N. America
- Managed Services Revenue by Venue: W. Europe
- Managed Services Revenue by Venue: AsiaPac
- Managed Services Revenue by Venue: ROW
- Revenue Streams: Worldwide
- Comparison of Service Elements
- Enablement Revenue Streams: Worldwide
- Network Services Revenues: Worldwide
- System Applications Revenues: Worldwide
- Value-Added Services Revenue: Worldwide
- Revenue Streams Rev Industrial: Worldwide
- Value-Added Services for Industrial: Worldwide
- Revenue Streams for Energy: Worldwide
- Value-Added Services Rev Energy: Worldwide
- Revenue Streams for Buildings: Worldwide
- Value-Added Services Rev Buildings: Worldwide
- Revenue Streams for Retail: Worldwide
- Value-Added Services Rev Retail: Worldwide
- Revenue Streams for Transportation: Worldwide
- Value-Added Services Rev Transport: Worldwide
- Revenue Streams for Medical: Worldwide
- Value-Added Services Rev Medical: Worldwide
- Revenue Streams Security: Worldwide
- Value-Added Services Rev Security: Worldwide
- Revenue Streams for IT/Nets : Worldwide
- Value-Added Services Rev IT/Nets: Worldwide