GLOBAL REAL-TIME LOCATION SYSTEMS (RTLS) MARKET

By Product (Tags, Sensors, Software), Technology (Wi-Fi, RFID, Infrared, Ultrasound, UWB, Zigbee), Application, Industry Vertical (Healthcare, Logistics, Manufacturing, Retail) & Geography (2013-2020)
MarketsandMarkets is a global market research and consulting company based in the U.S. We publish strategically analyzed market research reports and serve as a business intelligence partner to Fortune 500 companies across the world. MarketsandMarkets also provides multi-client reports, company profiles, databases, and custom research services.

MarketsandMarkets covers thirteen industry verticals, including advanced materials, automotives and transportation, banking and financial services, biotechnology, chemicals, consumer goods, energy and power, food and beverages, industrial automation, medical devices, pharmaceuticals, semiconductor and electronics, and telecommunications and IT.

Copyright © 2014 MarketsandMarkets
All Rights Reserved. This document contains highly confidential information and is the sole property of MarketsandMarkets. No part of it may be circulated, copied, quoted, or otherwise reproduced without the approval of MarketsandMarkets.
1 INTRODUCTION

1.1 MARKETS COVERED

This report primarily encompasses the overall RTLS market on the basis of the major products, technologies, applications, industry verticals, and geographical analysis. Each classification is further segmented into various sub-categories. For instance, technologies’ segment is further segregated into RFID technology, Wi-Fi, Ultrasonic, Infrared, Zigbee, and others (Ultra Wide Band, GPS, and proprietary technologies).

The following tree chart provides an overview of the overall market classification of RTLS:

![RTLS Market Segmentation Diagram]

Source: MarketsandMarkets Analysis
2 EXECUTIVE SUMMARY

RTLS is defined as a solution that comprises of devices such as tags/badges implemented on asset/personnel that periodically transmit their location information in real time to the readers/sensors, for efficient tracking of an enterprise’s assets or personnel. The reader communicates with the tag by using radio waves and other wireless technologies; collects and processes tag signals and sends them to the middleware (application software platform) that analyses and correlates the data to give the exact location in real time. The hardware requirement in a RTLS implementation varies as per the nature of application. RTLS system mainly comprises of three products segments; including hardware, software, and services. The hardware consists of tags, location sensors, readers or interrogators; software includes location engine, middleware or application software; and RTLS services include installation, maintenance and other professional services. Among all the product segments, RTLS hardware accounts for the largest market share in terms of the total market revenue from RTLS solutions. Combined technology RTLS tags and integration of sensors within the tags are some of the technological advancements that are driving the RTLS hardware market. However, RTLS software segment is projected to be the fastest growing product segment, mainly, due to the rising new applications of RTLS in different industry verticals and demand for customized software platforms as per the client’s requirements are the major trends in the software market.

The global RTLS market is growing at a tremendous rate, with an increase in the number of vendors and rising awareness about the benefits provided by RTLS solutions. The overall market was worth $XX million in the year 2012, and is poised to grow at a CAGR of XX% from 2013 to 2020, to reach $XX million in 2020. The global market comprises of five major market segments, namely Product, Technology, Application, Industry Vertical, and Geography. The strong impact of employing RTLS has resulted in—cost saving in hospitals and other industries, enhanced workflow management, staff safety & security, high productivity, and operational efficiency; all of which are assumed to be the major drivers fuelling the growth of RTLS solutions worldwide.
# TABLE 1

**RTLS MARKET VALUE, BY TECHNOLOGY, 2013-2020 ($MILLION)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RFID</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Wi-Fi</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Infrared</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Zigbee</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>UWB</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Others</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>Total</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>

Source: MarketsandMarkets Analysis

The overall RTLS market by technology is estimated to reach $XX million by 2020; from its latest value worth $XX million in 2013, at a CAGR of XX% from 2013 to 2020. Among all the wireless technologies, Wi-Fi technology held the largest share in 2012, worth $XX million. This market is expected to reach $XX million by 2020, at an estimated CAGR of XX% from 2013 to 2020. The Wi-Fi based RTLS hardware has a major benefit over other proprietary technologies such as RFID, Zigbee, and others; that is, this type of RTLS solution utilizes the existing Wi-Fi infrastructure of an enterprise, which results in cost & time savings. Active RFID technology accounted for the second largest revenue share, and it is expected to grow at a CAGR of XX%, reaching $XX million in 2020. Wi-Fi systems are more popular in healthcare environments, whereas RFID is mainly being employed in industrial environments for asset & personnel tracking applications; and both these technologies hold a very promising future in the coming years, also. However, UWB based RTLS hardware market is projected to be the fastest growing market, with the highest CAGR of XX% from 2013 to 2020, and is expected to rise from its
market value worth $XX million in 2013 to $XX million by 2020; mainly due to the high accuracy and precision offered by this technology, especially, in hospital environments.

FIGURE 2

RTLS MARKET VALUE, BY GEOGRAPHY, 2013 ($MILLION)

Source: MarketsandMarkets Analysis

In the global scenario of the RTLS market, Americas accounted for the largest revenue share worth $XX million in 2013, and is estimated to grow at the highest CAGR of XX% from 2013 to 2020. The strong growth rate of RTLS solution in Americas is mainly driven by the advantages provided by RTLS such as cost savings, enhanced quality of care and better work flow management. Presently, ‘healthcare’ is the major growth vertical in this region; however, ‘industrial manufacturing’, with regards to the future, is projected to be the fastest growing market with numerous opportunities to capture. Europe held the second largest market share, and recorded market revenue worth $XX million in 2013, and is expected to grow at a CAGR of XX% in the forecast period from 2013 to 2020. The RTLS market growth in this region as well as in the developed countries, such as the U.S., is expected to transpire from the adoption of new RTLS technologies; such as UWB and Zigbee. In 2013, APAC generated market revenue worth $XX million, and is estimated to grow at an impressive CAGR of XX% from 2013 to 2020; highest among all the geographic regions.
3  COVER STORY

3.1  INTRODUCTION

In this report, the cover story segment comprises primary interviews with industry experts who belong to core RTLS market and related industries including RTLS/RFID hardware suppliers, software providers, service providers, distributors, solution providers, technology developers, and standards & certification organizations, and so on. All the primary sources were interviewed to obtain and verify critical qualitative & quantitative information as well as to assess the future prospects. The percentage shares, splits, and breakdowns were determined using secondary sources and verified through these primary interviews with industry experts. Some of the major data points obtained from the primary interviews include:

- Overall market segmentation, breakdown, and value chain of the RTLS market
- Technical details of the RTLS solutions
- Major market players in the global RTLS market
- Technological landscape, industry trends, and market dynamics
- Estimated growth rates regarding RTLS products, technologies, applications, and so on
- Industry experts’ opinions, suggestions, and thoughts on the global RTLS market

3.2  KEY FINDINGS

The major key findings gained from the primary interviews with leading industry players include:

- Businesses have started to understand the importance of real time visibility in their assets, personnel or operations to make smarter and more critical decisions with the help of accurate and real-time location data
• Major drivers for the growth of the RTLS market include location services awareness, high industrial growth, escalating RTLS applications, and technological advancements. Lack of awareness and economic slowdown are the restraining factors for the future growth of the RTLS market

• Security & safety concerns across various industries such as government & defense, aerospace, mining, oil and gas, prisons, and research centers are triggering the RTLS market growth. Patient safety in hospitals is also driving the higher demand for RTLS in health care

• The key growth verticals for RTLS include industrial manufacturing, healthcare, logistics, and government; however, process industries, sports, retail, and livestock management offers tremendous opportunities for the RTLS vendors

• Among all, Wi-Fi technology holds the largest market share mainly due to the quickly expanding Wi-Fi footprint in different industries. However, UWB, zigbee offers incredible growth potential in future because of the advantages offered by them over Wi-Fi such as high accuracy, long battery life, fast update rate, and so on

• Companies such as BeSpoon (France) firmly believes that IR-UWB is the ideal candidate to power the future RTLS solution as an affordable and ubiquitous solution

• Another growing trend is the use of hybrid/combined technologies to support advanced RTLS applications such as automating mobile medical equipment maintenance and management. For instance, the combination of Wi-Fi with “Gen2IR and Low Frequency RF” in the RTLS solution facilitates advanced asset management

• Presently, the Americas has a higher adoption of RTLS based solutions in diverse industries, especially in the North America region. However, South America is expected to be the fastest growing market for RTLS solutions. Europe is, currently, growing by employing new and innovative technologies such as UWB and Zigbee

• APAC sees growth across industries including manufacturing & logistics. Also, in ROW, the growth of RTLS in South Africa will remain slow but it clearly has an opportunity to leapfrog ‘legacy’ technologies and to adopt RTLS
4 RTLS MARKET OVERVIEW

4.1 MARKET DYNAMICS

4.1.1 MARKET DRIVERS

4.1.1.1 Escalating applications in numerous industry sectors act as a catalyst for the RTLS market’s growth

The ever-growing need for high operational excellence, increased resource utilization, and enhanced productivity in an enterprise, for a sustainable future, has led to the adoption of RTLS solutions. The main reason for the growing demand of such advanced asset tracking solutions are its benefits; such as the reduced capital expenditure that is provided by these systems. RTLS solutions do not just track assets and personnel; they also offer the enterprises, the opportunity, to manage their assets for a higher productivity.

In time, different industries are becoming more aware of the benefits obtained from tracking, monitoring, and analyzing the exact location as well as the movement of their assets. Some of these benefits include streamlined operations, workflow optimization, and increased productivity. In the near future, RTLS solutions are expected to penetrate different sectors such as the industry manufacturing, consumer products, and others to become a mainstream technology for tracking and locating solution vendors. With the increasing awareness regarding the advantages of automatic asset tracking and management, RTLS solutions market is projected to grow at a tremendous growth rate over the next few years, as many new industries are expected to adopt this technology.

Some of the major application areas where the growth perspectives and opportunities for the RTLS solutions lie are mentioned below:
**TABLE 2**

**RTLS: MAJOR APPLICATIONS**

<table>
<thead>
<tr>
<th>Industry Segment</th>
<th>Application</th>
<th>RTLS advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare</td>
<td>Asset tracking, staff safety, drug monitoring, patient safety &amp; inventory</td>
<td>Improved operations, high patient satisfaction, less drug counterfeiting &amp;</td>
</tr>
<tr>
<td></td>
<td>management</td>
<td>improved patient &amp; staff security</td>
</tr>
<tr>
<td>Industrial manufacturing</td>
<td>Tracking components and equipment, inventory management, staff safety &amp;</td>
<td>Streamlined operations, improved safety, and time and cost saving</td>
</tr>
<tr>
<td></td>
<td>security</td>
<td></td>
</tr>
<tr>
<td>Security / Safety</td>
<td>Tracking employees, patients &amp; personnel in hazardous environments such as</td>
<td>Increased worker safety &amp; site management</td>
</tr>
<tr>
<td></td>
<td>mining and oil &amp; gas industries</td>
<td></td>
</tr>
<tr>
<td>Sports &amp; leisure</td>
<td>Tracking of athletes, measurement of lap times on sport grounds, equipment</td>
<td>Improved safety, and highly précised decisions by tracking things such as</td>
</tr>
<tr>
<td></td>
<td>safety</td>
<td>football and athletes in sport activities</td>
</tr>
<tr>
<td>Retail industry</td>
<td>Inventory tracking and management</td>
<td>Improved supply chain &amp; loss/theft management, and better understanding of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>customer behavior</td>
</tr>
<tr>
<td>Defense</td>
<td>Track personnel and equipment (containers, weapons).</td>
<td>Better management of crucial equipment &amp; improved personnel safety</td>
</tr>
<tr>
<td>Farming / Live stock</td>
<td>Track livestock &amp; inventory management</td>
<td>Improved livestock management, safety of environment and endangered species, and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>livestock behavior research</td>
</tr>
<tr>
<td>Logistics &amp; transportation</td>
<td>Postal/delivery tracking, container/inventory tracking, and management</td>
<td>Workflow automation, streamlined operations, improved safety of valuable assets,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and time and cost saving</td>
</tr>
<tr>
<td>Industry Segment</td>
<td>Application</td>
<td>RTLS advantages</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Education &amp; correctional facilities</td>
<td>Tracking and management of staff &amp; personnel at places such as prisons, education institutions &amp; R&amp;D Labs</td>
<td>Improved security &amp; safety, facilitate high level of control and management.</td>
</tr>
<tr>
<td>Environmental sensing and monitoring</td>
<td>Asset tracking and management with the help of different sensors such as temperature sensors, pressure sensors, and others</td>
<td>Real-time data collection, better levels of worker and site safety, and improved safety, control &amp; management</td>
</tr>
</tbody>
</table>

Source: MarketsandMarkets Analysis
5  RTLS MARKET BY PRODUCT

5.1  HARDWARE

The overall RTLS hardware market comprises RTLS tags and other hardware (location, readers/sensors and so on). This market is estimated to grow from its market value worth $XX million in 2013 up to $XX million by 2020, at a CAGR of XX%, from 2013 to 2020. The ever growing technological advancements in RTLS hardware, especially, tags/badges including sensor integration (temperature, motion & humidity sensors) and standalone tags/badges are the major drivers for the growth of RTLS tags, worldwide. The market revenue generated by RTLS tags based on the different wireless technologies is estimated to reach XX million in 2020, at a CAGR of XX% from 2013 to 2020. The increasing use of RTLS in different industries such as healthcare, industrial manufacturing, logistics, defense, and retail is expected to further scale up the market of the RTLS hardware, globally. The “other” RTLS hardware market is projected to grow from its market value worth $XX million in 2013 to up to $XX million in 2020, at a CAGR of XX%. from 2013 to 2020.
The hardware section in RTLS market consists of tags, readers, location sensors, and other related hardware components as discussed below.

### TABLE 3

**ADVANTAGES/DISADVANTAGES OF ACTIVE RFID AND PASSIVE RFID TAGS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Active RFID</th>
<th>Passive RFID</th>
</tr>
</thead>
</table>
| **Advantages** | • The range of active RFID is large and it can vary from a few meters to more than 100 meters, depending on the technology used  
• The internal battery of an active RFID allows greater functionality and real time tracking of assets | • The range of passive RFID is very less, that is from 3 to 5 meters  
• Passive RFID tags are simple in manufacturing and functionality than active RFID  
• Passive RFID tags are very cheaper and small in size because there is no battery; and less infrastructure is required for tracking the assets |
| **Disadvantages** | • An active RFID requires battery power, which limits its lifetime and increases maintenance cost  
• Active RFID tags are much more expensive than passive RFID tags  
• Active RFID tags are larger in size because of the internal battery and this may restrict their use in some applications | • The range of passive RFID is less as compared to active RFID and not suitable for real time tracking of assets  
• Communication is limited in presence of a metal and liquid |

Source: MarketsandMarkets Analysis
6 RTLS MARKET BY APPLICATION

6.1 INTRODUCTION

RTLS solutions are real-time location tracking systems that enable enterprises to identify, track, and manage their key assets such as equipment, tools, containers, personnel/staff, WIP items, animals, and many more—by placing a tag on them. The tags affixed to the asset periodically send signals to the readers or location sensors by utilizing wireless technologies such as RF signals, Wi-Fi, Infrared, Ultrasound, Zigbee and others. These readers then communicate with the middleware (software) platform which analyzes the data received and provides useful information that improves the operational efficiency in an enterprise.

There are wide variety of RTLS applications in the healthcare and industrial sectors, offering benefits such as par level management, inventory management, asset utilization, shrinkage control, and preventive maintenance; thus, helping in the rapid return of investment. Some of the major applications covered in this chapter include asset tracking & management, personnel & staff tracking, patient tracking, staff safety & work flow automation, and others (environment sensing & monitoring) as shown in the diagram below.

FIGURE 4

RTLS: MAJOR APPLICATION AREAS

Source: MarketsandMarkets Analysis
7 RTLS MARKET BY INDUSTRY VERTICAL

7.1 INTRODUCTION

FIGURE 5

RTLS MARKET: BY INDUSTRY VERTICAL

Source: MarketsandMarkets Analysis
8 RTLS MARKET BY GEOGRAPHY

8.1 INTRODUCTION

8.1.1 MAJOR RTLS PROVIDERS IN DIFFERENT GEOGRAPHIES

The market growth life cycle of RTLS depicts the level of penetration/adoption of RTLS based solutions and the RTLS technologies across different geographical regions, namely Americas, Europe, APAC, and ROW. As shown in the above graph, Americas is in the later growth stage.
because RTLS is well known in this region; however, the future growth in this region is expected to come from the new emerging technologies such as UWB and Zigbee. However, the U.S. government is taking initiatives to increase the adoption of RTLS in industrial manufacturing applications. Europe is expected to grow at a healthy CAGR but less than the Americas, majorly, due to the demand of emerging technologies as well as increased government support & funding. The RTLS market in APAC and RoW is still in its nascent stages; however, in the coming years, these regions are expected to be the fastest growing markets with a huge potential for RTLS. Among developing regions, China, India, Japan, and South Africa are estimated to be the largest contributors to the RTLS market in the coming years. The main reasons behind the growing demand of RTLS solutions in developing countries such as China and India include the high level of industrial growth, increasing awareness regarding RTLS benefits, and government support/funding.
Disclaimer: MarketsandMarkets strategic analysis services are limited publications containing valuable market information provided to a select group of customers in response to orders. Our customers acknowledge, when ordering, that MarketsandMarkets strategic analysis services are for our customers’ internal use and not for general publication or disclosure to third parties. Quantitative market information is based primarily on interviews and therefore, is subject to fluctuation.

MarketsandMarkets does not endorse any vendor, product or service depicted in its research publications. MarketsandMarkets strategic analysis publications consist of the opinions of MarketsandMarkets' research and should not be construed as statements of fact. MarketsandMarkets disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

MarketsandMarkets takes no responsibility for any incorrect information supplied to us by manufacturers or users.

All trademarks, copyrights and other forms of intellectual property belong to their respective owners and may be protected by copyright. Under no circumstance may any of these be reproduced in any form without the prior written agreement of their owner.

No part of this strategic analysis service may be given, lent, resold or disclosed to non-customers without written permission.

Reproduction and/or transmission in any form and by any means including photocopying, mechanical, electronic, recording or otherwise, without the permission of the publisher is prohibited.