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Indoor Location Market- Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028F Segmented By Technology (Tags, Nodes, Ultra-Wideband, Bluetooth, Wi-Fi, Visible Light Communication and Radiofrequency Identification), By Deployment Type (On-Premises and Cloud), By Components (Hardware, Software and Services), By Application (Remote Monitoring, Customer Experience Management, Inventory Management, Emergency Response Management, Sales and Marketing Optimization, Risk Management, Predictive Asset Analytics and Others), By Verticals (Hospitality, Retail, Transportation & Logistics, Entertainment, Public Buildings, Manufacturing and Others), By Region, By Competition

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Abstracts

The global indoor location market is projected to experience substantial growth, with an expected increase from USD 9.3 billion in 2022 to USD 27.8 billion by 2028. This growth, corresponding to a compound annual growth rate (CAGR) of 21.4% during the forecast period, is primarily driven by the widespread adoption of smartphones and other connected devices equipped with GPS and other location-based technologies. These technologies enable precise indoor tracking of user locations. Furthermore, the unwavering support from government authorities in enhancing public safety, coupled

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with the integration of GPS technology in indoor locations, is anticipated to fuel the growth of the indoor location market throughout the forecast period. The rising adoption of GPS technologies, along with the increasing popularity of location-based service mobile applications, has also contributed to the demand for superior positioning technologies in recent years. Consequently, indoor location leverages the vulnerability of commonly available commercial GPS systems to determine efficient position location within various infrastructures.

Key Market Drivers:

The Significance of Simultaneous Localization and Mapping (SLAM):

The progress and effectiveness of indoor positioning systems are greatly influenced by Simultaneous Localization and Mapping (SLAM) techniques. SLAM combines computer vision, sensor fusion, and mapping algorithms to simultaneously map an unknown environment and estimate the observer's position within it. By leveraging data from multiple sensors, SLAM algorithms accurately track the user's location in real-time, even in complex indoor settings. These techniques create and update an environment map, incorporating new sensor data and estimating landmark positions. SLAM's visual and geometric understanding of the environment enables precise positioning and mapping, adapting to dynamic changes within indoor spaces. Integration with other indoor positioning technologies enhances the system's accuracy and reliability. Overall, SLAM techniques drive indoor positioning systems by improving accuracy, providing real-time mapping, adapting to dynamic environments, and facilitating robust and reliable indoor positioning.

Customer Adoption of Smartphones, Connected Devices, and Location-Based Apps:

The rapid proliferation of smartphones and the evolving mobile buying behavior of consumers are fueling the development of location-based services by both startups and established businesses. The implementation of indoor location technology has empowered merchants to enhance user experiences and enable seamless navigation within their premises. Interior location solutions empower enterprises to effectively engage with customers inside large indoor venues, bolstering brand presence, product visibility, partnerships, and other elements that strengthen customer relationships and drive sales. The availability of diverse technologies, such as Bluetooth Low Energy (BLE) and Wi-Fi, enables precise determination of an individual's location within a specific range. Airlines and airports can leverage beacons and geofencing technology to identify a user's presence within the airport and ascertain their floor level. Prior

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knowledge of a passenger's whereabouts enables more efficient and targeted communication, resulting in improved operational effectiveness.

Surging Popularity of Location-Enabled Services

The adoption of indoor location systems has witnessed substantial growth across various industries, including manufacturing, logistics, security, and sports. This surge in adoption can be attributed to several factors, including the widespread availability of affordable sensors and tags, improved sensing and connectivity capabilities of devices while preserving battery life, and the introduction of open ecosystems that afford organizations greater flexibility in their business models, independent of hardware or software dependencies.

Advancements in positioning technologies have significantly enhanced location positioning and navigation capabilities over the last decade. Moreover, the increasing popularity of location-based services, particularly on smartphones, has gained significant momentum in recent years. Consequently, leading retailers and luxury brands are increasingly prioritizing the optimization of their marketing strategies by embracing indoor location services to offer more exclusive deals to their loyal customers. This trend is poised to establish the retail industry as a major driving force in the years to come.

Escalating Number of Internet-Connected Devices

Advancements in positioning technologies have greatly enhanced location positioning and navigation capabilities in the past decade. Furthermore, the increasing popularity of location-based services, particularly on smartphones, has gained significant momentum in recent years. As a result, leading retailers and luxury brands are increasingly prioritizing the implementation of indoor location services to offer exclusive deals and enhance their marketing strategies for loyal customers. This shift is expected to make the retail industry a major driving force in the future of the indoor location market.

Key Market Challenges:

Lack of Uniform Standards, Interoperability, and System Compatibility:

End-users are faced with a wide range of available solutions; however, the integration of these solutions is challenged by the lack of universal standards. The incompatibility of various infrastructures and the absence of interoperability hinder end-users. Although

companies like Zebra Technologies, HID Global, and Inpixon offer indoor location solutions that support multiple protocols, most market competitors primarily focus on a single protocol. This results in a lack of interoperability among different indoor location solutions, except for a few vendors like Zebra Technologies, who provide multiple indoor location technologies supported by the same middleware.

Concerns Related to Data Security & Privacy:

Location-based data is highly sensitive information that requires utmost protection. However, a closer examination of Indoor Positioning Systems (IPS) reveals several concerns and apprehensions. Indoor location-based techniques find applications in various domains, including object tracking and people localization within specific areas. Given the significant amount of time people spend indoors, obtaining accurate indoor location information is crucial for both users and service providers. Technologies such as Wi-Fi, BLE, and RFID offer means to acquire indoor location information, necessitating careful consideration of data characteristics, security, and privacy. Fingerprinting has emerged as a recent technology deployed across various industries. Typically, mobile device users rely on service provider applications to access indoor positioning services. In such scenarios, users transmit their unique identifier (Media Access Control [MAC] address) to the server, enabling the service provider to retrieve user position-related information, thereby posing a serious threat to user privacy. These data leakage threats can significantly impede the widespread adoption of indoor location technologies.

Key Market Trends

Increasing Demand for RFID Tags in the Retail Industry

For retailers, meeting customer demands is of utmost importance. The ability to order a specific product online and have it shipped to a local store presents a mutually beneficial scenario. However, if a customer receives notification that their ordered product has been shipped but the store misplaces it, it can significantly disadvantage the retailer. RFID technology primarily utilizes passive tags for location-related information, offering a small detection radius without the need for an internal power source. The adoption of RFID tags is driven by their cost-effectiveness. This technology has the potential to revolutionize the retail industry, providing real-time insights into inventory for retailers, consumers, and brand owners, facilitating self-checkout, product information, and payment processes. The retail world is projected to widely adopt this technology, as demonstrated by Mammut Sports Group AG's integration of Smartrac

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Circus Flex NFC tags into select products. This integration enables consumers to access digital content through Mammut Connect, the brand's smartphone app. RFID empowers brands and retailers to enhance efficiency, unlocking new opportunities, insights, additional services, and personalized, immediate information.

Rising Emphasis on Consumer Preference and Consumer Behavior

The increasing emphasis on consumer preference and consumer behavior is driving the growth of the indoor location market. Businesses are increasingly seeking ways to personalize the customer experience and improve operational efficiency. The market has shifted from being seller-oriented to customer-oriented, with a heightened focus on customizing and personalizing products to meet specific customer needs and preferences. The demand for indoor location-based services has witnessed rapid growth due to advancements in technologies such as Big Data analytics and consumer behavior analytics. Consequently, the indoor location-based service market is expected to experience accelerated growth.

Segmental Insights

Insights on Deployment Type

The indoor location market is segmented into on-premises and cloud-based solutions based on deployment type. A cloud-based indoor location utilizes enterprise cloud technology and follows a web-based software as a service (SaaS) model. On the other hand, the on-premises type system is deployed on the native hardware and network of the business. Over the years, the on-premises location tracking infrastructure has experienced a decline, while the demand for cloud-based systems continues to grow significantly. This can be attributed to the enhanced flexibility, scalability, disaster recovery, and security offered by cloud-based indoor location solutions. Moreover, users benefit from automatic software updates without the need for additional capital expenditures, thereby improving technological competitiveness. As a result, the cloud-based indoor location market is poised to attract considerable attention and witness substantial growth.

Insights on Component Type

The indoor location market is classified into hardware, software, and services based on components. There are various methods of deploying an indoor location system and a wide range of technologies available for enterprises to choose from. However, the

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implementation of the indoor system requires three essential components: hardware, software, and services.

The hardware component consists of node components, networking devices, sensors, receivers, and transmitters. On the other hand, the software segment encompasses APIs that support the system's functionality and provide analytical insights. The design and implementation of indoor location systems require managed and professional services, which also contribute to the overall revenue of the indoor location market.

Regional Insights

The North America region has established itself as the leading player in the indoor location market, generating significant revenue in 2022. This dominance is projected to continue throughout the forecast period, thanks to the increasing penetration of smartphones and advancements in IoT technology within the region. North America not only excels in aircraft manufacturing, aerospace and marine navigation equipment production but also ranks as the second-largest market for tablets, smartphones, and in-vehicle navigation systems. Moreover, the region's growing investments in innovation and adoption of indoor location solutions serve as pivotal factors driving the growth of the indoor location market. Additionally, the rise in the number of indoor location companies across regions is expected to fuel market expansion.

Key Market Players

HID Global Corporation

HERE Global BV

STMicroelectronics N.V.

Sonitor Technologies AS

Zebra Technologies Corporation

Hewlett Packard Enterprise Development LP

Mist Systems Inc.

Broadcom, Inc.

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Cisco Systems, Inc.

Acuity Brands, Inc.

Report Scope:

In this report, the Global Indoor Location Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Global Indoor Location Market, By Technology:

Tags

Nodes

Ultra-Wideband

Bluetooth

Wi-Fi

Visible Light Communication

Radiofrequency Identification

Global Indoor Location Market, By Deployment Type:

On-Premises

Cloud

Global Indoor Location Market, By Components:

Hardware

Software

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Services

Global Indoor Location Market, By Application:

Remote Monitoring

Customer Experience Management

Inventory Management

Emergency Response Management

Sales and Marketing Optimization

Risk Management

Predictive Asset Analytics

Others

Global Indoor Location Market, By Verticals:

Hospitality

Retail

Transportation & Logistics

Entertainment

Public Buildings

Manufacturing

Others

Global Indoor Location Market, By Region:

North America

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Europe

South America

Middle East & Africa

Asia Pacific

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Indoor Location Market.

Available Customizations:

Global Indoor Location market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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