

Current Statistics & Future Projections

WizeBit Research Team

Future Projections regarding Home Automation

Smart Home vs. Home Automation. "Smart home" is a broad term covering a substantial number of connected gadgets, systems and appliances that perform a wide variety of different functions. "Home automation" is slightly less broad, referring specifically to devices in your home that can be programmed to function automatically. In years past, those automations were fairly basic -- lamp timers, programmable thermostats and so on. Currently, some of the most popular categories in home automation include lamp timers, light bulbs, switches, home security, door locks, cameras and climate control. This list, however, has been changing rapidly due to the recent sprawl of smart home technology directed toward mainstream consumers.

According to the new market research report, "Home Automation System Market by Protocol and Technology (Network and Wireless), Product (Lighting, Security and Access Control, HVAC and Entertainment Control), Software and Algorithm (Behavioral and Proactive), and Geography - Global Forecast to 2022," the home automation system market was valued at USD 39.93 billion in 2016 and is expected to reach USD 79.57 billion by 2022, at a CAGR of 11.3% during the forecast period.

Early buyers will receive 10% customization on reports.

The home automation system market is driven by such factors as the significantly growing IoT market, cost reduction measures enabled by home automation systems, the presence of a large number of manufacturers expanding their product portfolios and the increasing importance of home monitoring from remote locations.

Entertainment control expected to be the largest market during the forecast period.

The entertainment control market is anticipated to hold the largest share among different products in the home automation system market. The growth of the audio, volume and multimedia room controls is driven by the convenience offered by these controls for managing and controlling the entertainment systems in a house. Lighting control is expected to be the second-largest market for home automation systems during the forecast period. Lighting accounts for one of the largest electrical loads in homes. Hence, lighting controllers play a vital role in reducing the electricity consumption within the household, along with offering comfort to users.

Market for proactive segment to grow at the highest rate between 2017 and 2022.

The market for the proactive software and algorithm segment is expected to grow at a high rate in the forecast period due to their ability to perform a comparative analysis of the energy usage patterns based on the time of day, historical data and weather conditions.

North America expected to dominate the home automation system market between 2017 and 2022.

North America is home to some of the prominent companies in the global home automation system market, including Honeywell International Inc. (U.S.), Acuity Brands, Inc. (U.S.), Johnson Controls Inc. (U.S.), United Technologies Corporation (U.S.) and Crestron Electronics, Inc. (U.S.). The demand for domestic energy management systems and the growing trend of green homes have contributed significantly toward the growth of this market. The number of smart homes in North America, especially the in U.S., is much higher than that in any other region of the world. This market is expected to grow at a steady pace during the forecast period. Major players involved in the home automation system market include Legrand, Ingersoll-Rand PLC, Schneider Electric SE, Honeywell International Inc., ABB Ltd., Control4 Corporation, Crestron Electronics, Inc., Johnson Controls, Inc., and Siemens AG.

Top Impacting Factors

The factors that impact the global home automation market include development of innovative and energy efficient automated systems, growth in the IoT market, increase in importance of home monitoring from remote locations, rise in consumer awareness related to availability of smart home devices such as automated security and lighting systems, as well as stringent government regulations. The adoption of home automation systems is increasing, owing to development of the construction industry and increase in demand for energy efficiency in smart homes and buildings. The home automation industry is dominated by remote control solutions.

Increase in Electricity Prices

The rise in electricity prices globally has increased the operating budget for house owners. Residential buildings and hospitality facilities are major end users of the home automation market. The increasing prices of commodities, such as coal, significantly heighten the cost for generating electricity and, in turn, increase the end-user electricity cost. The adoption of home automation helps end users to reduce their usage, thereby decreasing their electricity expenditure (*e.g.*, lighting, security and HVAC systems).

Government Regulations

Stringent regulations are implemented by regulatory agencies with the aim of making electricity consumption more efficiently. Various regulations are imposed by authorities,

including China's five-year plan targets for energy efficiency projects and European 2020 energy targets to reach net-zero energy consumption in public and private buildings. These regulations are anticipated to boost the growth in adoption of smart automated controls during the forecast period.

Increase in Awareness Among Consumers

Home and building owners are becoming more aware of the effectiveness of automated controls in their premises. Intelligent lighting controls, automated HVAC controls and smart security systems provide efficient utilization of home controls with reduced consumption of electricity. Buildings owners are focusing on green initiatives to minimize overall CO₂ emissions. This increasing awareness is one of the significant factors that boost the adoption of automated controls globally.

Technological Advancements

Advancements in technologies and improved connectivity solutions have increased the adoption of home automation controls globally. With the advent of various wireless technologies such as ZigBee and Bluetooth, installation of automated control systems has been simplified. Different standards for home automated controls such as EnOcean and Z-wave have increased the adaptability of different components with each other. Further advancements of these automation systems are expected to fuel their adoption across different end user segments.

Longer Payback Period

A high installation cost for home automation systems lengthens the duration of the payback period, thus limiting the adoption of these controls in numerous regions. Decline in prices of components such as controlled devices, sensors and interface devices during the forecast period is expected to eventually reduce the payback time, thereby leading to a higher adoption in the near future.

Current Statistics regarding Automated Home Security. Future Projections regarding Automated Home Security

For many years, the home security market was predictable and even. For over a decade, home security has maintained a 25 percent penetration rate in U.S. households - mostly made up of an upper-class clientele. Recently, however, smart home innovations and the emerging Internet of Things have introduced an inevitable market shift. Mobile apps, Do-It-Yourself (DIY) solutions, Google's purchase of Nest Labs, Apple iHome and the entrance of big cable and telecom players into the market all portend an upending of the home security market. As the automated home environment evolves, home security is transitioning from being a complete,

discrete system into being one app among many in a multifunctional ecosystem. Established home security providers will feel pressure to strengthen and expand their position in home security in order to participate in a new market of the smart home of tomorrow.

Home security has held fairly steady at 20-25 percent market penetration over the years, and is expected to grow 2-3 percent annually through 2016. By contrast, the smart home market - which will include products for automated and remote control of energy, entertainment, health and lifestyle - is expected to grow by double-digits. A study by Parks & Associates forecasts that as soon as 2017, more than eleven million households will have some type of smart home controller, up from an estimated two million in 2013.

In its current state, the home security segment has an unmatched leader in ADT, which corners a fourth of the market. The other top players are Protection1, Monitronics and Vivant, which constitute the next nine percent. The remaining two-thirds of the market include bigger companies like Comcast Xfinity Home and Time Warner Cable IntelligentHome, along with a crowd of smaller regional players and DIY solutions. Until recently, there had not been much disruption in this market, and the established order was firmly in a position of dominance.

New Players and New Models Disrupt

What has complicated this landscape recently is a flurry of new competitors entering the market from all sides. There has been an increase in DIY solutions, such as Lowe's Iris, that are sold with varying levels of monitoring support or no monitoring at all. Telecom and cable companies have added security services to their portfolios with varying degrees of success. And lastly, mega corporations like Google, Microsoft and Apple are investing heavily in various aspects of home automation.

The U.S. smart security market will increase from nearly 3 million users in 2014 to over 22 million by 2020. Initially the vast majority of smart security users will be subscribers to a professionally installed solution, whether that service is offered from a traditional security provider or an emerging offering from a broadband service provider such as Comcast or AT&T.

The market for self-installed solutions, however, will grow rapidly over the forecast period and will account for over one-third of smart security users by 2020. Within the self-installed category, basic all-in-one self-installable home security appliances will undergo the greatest growth as these products progress from early stage life cycle to more mature products with the associated developed channel and marketing strategies. The total U.S. DIY home security hardware and services market will be a \$1.5 billion annual market by 2020.

The global sensor and device market for home security and automation is expected to grow from \$1.4bn in 2015 to \$4bn in 2019.

An Overview of the Home Security System Market

The rising number of security incidents has led to the adoption of increased safety measures among residential dwellings. As a result, the global home security system market is projected to grow at a remarkable rate of above 13% between 2015 and 2019. Advancement in technology and emergence of smart homes has led to the rise of integrated home security systems, which can be connected to smartphones and enable the monitoring of residences from remote locations.

With improvement in network infrastructure, broadband and internet penetration have increased, and consumers are increasingly opting for wireless and technologically advanced products to ensure more security for their families. Therefore, vendors are expanding their distribution channels and R&D expenditure to improve their product offerings and leverage the trend of home automation. As the trend toward home automation and smart homes grows, the market will gain traction.

Segmentation of the home security system market by product is set forth below.

- Electronic and smart locks
- Alarms
- Security cameras
- Security solutions
- DIY home security
- Sensors and detectors

In 2014, the security cameras segment of the global home security system market accounted for the highest contribution of close to 22%, and this trend is expected to continue over the next five years. Security cameras are embedded with features such as Wi-Fi connectivity, rechargeable and replaceable batteries, as well as accessibility on Android and iOS devices through apps.

Geographical Segmentation of the Home Security System Market

Americas

APAC

EMEA

With a market share of over 48% in 2014, the Americas dominated the home security system market, followed by Asia and Europe. Following the burgeoning trend toward smart homes and smart products, people are investing increasingly in smart home security products and solutions.

Current Statistics regarding Storage Demand. Future Projections regarding Storage Demand

The next generation data storage market has entered the growth phase and is expected to grow further in the coming years. The market is expected to be valued at USD 144.76 billion by 2022, at a CAGR of 16.76% between 2016 and 2022.

The drivers for this market are the increasing volume of digital data, increasing proliferation of devices (*e.g.*, smartphones, laptops, tablets) and growth of the Internet of Things market. The major restraint for this market is the lack of data security in cloud and server-based services.

The market for cloud storage is expected to grow at the highest CAGR during the forecast period. The major factors driving the next generation data storage market for cloud storage systems include increasing demand for hybrid cloud storage, growing need for enterprise mobility and ease of deployment of cloud storage solutions.

The next generation data storage technology market is segmented by technology, by applications and by region. Next generation data storage technology market segmentation by technology is divided into cloud-based disaster recovery, all-flash storage arrays, hybrid array, holographic data storage and Heat Assisted Magnetic Recording (HAMR). The growing technologies will help to store, secure and recover substantial volumes of data. Hybrid array and all-flash array are popular storage techniques.

Next generation data storage technology market segmentation by application is divided into big data storage service, cloud-based storage service, enterprise based storage service and others. The growing data analytics for big data have created substantial requirements for next generation data storage systems to perform efficient storing and rapid searching of necessary data.

The global next generation data storage technology market is segmented into seven major regions - North America, Western Europe, Asia Pacific Excluding Japan (APEJ), Japan, Eastern Europe, Latin America and the Middle East and Africa.

The global market for the cloud storage industry was valued at \$21,175 million in 2015, and is estimated to grow at a CAGR of 24.8% to reach \$97,415 million by 2022. Growth in demand for low cost data storage, backup and data protection augments the growth of the cloud storage market among several user groups including small, medium and large enterprises.

Current Statistics regarding Mining in the World of Blockchain. Future Projections regarding Mining in the World of Blockchain

The cryptocurrency mining sector is composed of the following principal activities:

- Mining hardware manufacturing: design and building of specialized mining equipment (*e.g.*, ASICs)
- Self-mining: miners running their own equipment to find valid blocks

- Cloud mining services: services that rent out hashing power to customers
- Remote hosting services: services that host and maintain customer-owned mining equipment
- Mining pool: structure that combines computational resources from multiple miners to increase the frequency and likelihood of finding a valid block; rewards are shared among participants
- Small miners: registered companies active in the mining industry, but operating with limited scale; individual miners operating as sole proprietors
- Large miners: mining organizations that engage in medium-to-large scale mining operations and occupy a significant position in the industry

Governance and Operations

- 70% of large miners rate their influence on protocol development as high or very high, compared to 51% of small miners
- Scaling cryptocurrency transaction capacity is cited by small and large miners alike as a significant concern
- 82% of large miners perform multiple mining value chain activities (*e.g.*, pool operator, hardware manufacturing)
- 27% of large miners engage in three or more value chain activities, while all small miners specialise in a single activity
- Nearly three-quarters of all major mining pools are based in just two countries: 58% of mining pools with greater than 1% of the total bitcoin hash rate are based in China, followed by the U.S. with 16%
- Mining pools are seeking to attract international users: all mining pools with greater than 1% of the total bitcoin hash rate offer an English language version of their website, and 63% have two or more language versions available

Regulation / Policy

- Only a small minority of miners believe that the negative environmental externalities from Proof of Work mining are not an important issue; large miners in particular are aware of the environmental impact of their activities
- Overall, miners are not particularly concerned at present about legal and regulatory risk factors
- Regional differences can be observed with regard to how miners perceive the current regulatory environment: more than half of the miners based in Asia-Pacific do not report any significant impact from regulation but would like to have more regulatory clarity, while the majority of North American and European miners seem to be satisfied with existing regulations (or the lack thereof). Tighter regulation to create barriers to mining and/or cryptocurrency adoption as well as increased taxation of mining profits are considered the highest regulatory risks by both small and large miners
- Small and large miners prefer cryptocurrency to be treated as a commodity over currency for tax purposes, although a considerable proportion of miners are indifferent
- The vast majority of both small and large miners believe cryptocurrencies should be exempt from VAT

Risk Management and Challenges

- Small and individual miners are concerned that mining fees will not be able to compensate for decreasing block rewards in the long run; data shows that the proportion of transaction fees as a percentage of total bitcoin mining revenues have significantly increased in 2016, and are projected to reach 10% at the end of 2017.
- Small miners are generally more concerned about operational risk factors than large miners
- The biggest concern for large miners is the fierce competition amongst miners of the same cryptocurrency, while small miners are most concerned by sudden large cryptocurrency price drops
- Total bitcoin mining revenues in 2016 have increased compared to 2015 despite the July 2016 bitcoin block reward halving
- Miners are worried about the centralization of hashing power as well as the centralisation of hashing power in a particular geographical area
- Centralization of mining hardware manufacturing in particular geographical areas is not a major concern

The largest pools include AntPool, F2Pool, and BitFury, with AntPool alone controlling over 19% of all mining. Most mining pools are located in China, constituting more than 70% of total Bitcoin mining. China manufactures the most cryptocurrency mining equipment and leverages the country's cheap electricity prices.

Miners get rewarded with 25 new Bitcoins per new block in return for adding a new block to the Bitcoin blockchain. A new block is generated approximately every 10 minutes, resulting in a total of 1.3 million Bitcoins or \$845 million per year at current valuation. The cost of verifying transactions is the capital cost to buy miners, the power consumption of running the hardware, plus operating expenses to keep the operation running. The more computational power employed to perform the "hashing", the larger the share of the total reward that goes to the miner. To stabilize the block creation rate at one block about every 10 minutes, the network self adjusts the difficulty of the hashing calculations. As a result, the frequency of creating new Bitcoins remains the same, irrespective as to whether there are 100 or 100,000 miners.

During the past 24 months, the network's total hash rate has grown exponentially. Despite increased hashing device efficiency (from GPU based mining to 28nm ASIC based mining), the global power required for mining-devices has grown 147 times in the past year alone. The power that supports the current Bitcoin network is estimated to be 250-500MW³, and will double or could even triple during the next 12 months just from one hardware manufacturer alone. Cooling energy, the power required to keep mining devices and mining farms cool, is estimated to account for an additional 30-50% on power consumption globally.

Current Statistics regarding Internet of Things. Future Projections regarding Internet of Things.

- Bain predicts that, by 2020, annual revenues could exceed \$470B for the IoT vendors selling associated hardware, software and comprehensive solutions.
- McKinsey estimates the total IoT market size in 2015 was up to \$900M, growing to \$3.7B in 2020 attaining a 32.6% CAGR.
- The Internet of Things has a potential economic impact of \$2.7T to \$6.2T until 2025.
- General Electric predicts that investment in the Industrial Internet of Things is expected to top \$60T during the next 15 years.
- IHS forecasts that the IoT market will grow from an installed base of 15.4 billion devices in 2015 to 30.7 billion devices in 2020 and 75.4 billion in 2025.
- Forrester predicts fleet management in transportation; security and surveillance applications in government; inventory and warehouse management applications in retail; and industrial asset management in primary manufacturing will be the four hottest areas for IoT growth. Forrester also found that enterprises are more likely than smaller companies to use IoT. 23% of global enterprise respondents use IoT, but only about 14% of small and medium-size business respondents do. For example, Lufthansa Airlines is using real-time aircraft, airport and weather sensor data to improve on-time performance and optimize operations.
- Global spending on IoT technology-based products and services by enterprises is predicted to reach \$120B in 2016, growing to \$253B in 2021, attaining a 16% CAGR. IoT Technology Services spending alone is expected to grow at 17% CAGR over the next five years to reach \$143 Billion in 2021. At 20% CAGR, Asia is projected to grow at the highest rate contributing to ~35% of total spend by 2021.
- Gartner predicts 6.4 billion connected things will be in use worldwide in 2016, up 30% from 2015, and will reach 20.8 billion by 2020. In 2016, 5.5 million new things were connected every day.
- IDC predicts global IoT revenue will reach \$7.065B by 2020 from \$2.712B in 2015, attaining a CAGR of 21.11%. IDC predicts the installed base of IoT units to grow at a 17.5% CAGR over the forecast period to 28.1 billion in 2020.
- The number of B2B IoT connections will increase to 5.4 billion by 2020, according to Verizon, attaining a 28% CAGR from the forecast base year of 2014. Enterprises will lead all sectors with the number of installed IoT devices.

- Internet of Things sensors and devices are expected to exceed mobile phones as the largest category of connected devices in 2018, growing at a 23% CAGR from 2015 to 2021. Ericsson predicts that there will be a total of approximately 28 billion connected devices worldwide by 2021, with nearly 16 billion related to IoT.
- The worldwide market for IoT platforms reached \$298M in 2015 with an estimated CAGR of 33%, predicted to reach \$1.6B in 2021. PTC is the IoT platform market leader with 18% market share, reporting revenue of \$53M in 2015, up from \$5.2M in 2014.
- The global industrial Internet of Things market is projected to reach \$123.8B by 2021; the market is forecast to grow at a CAGR of 21% through 2016 to 2021.
- Nearly \$6T will be spent on IoT solutions over the next five years. In total, Business Insider forecasts that there will be 34 billion devices connected to the Internet by 2020, up from 10 billion in 2015. IoT devices will account for 24 billion, while traditional computing devices (*e.g.*, smartphones, tablets, smartwatches) will account for 10 billion.