



## Market Insight Report Reprint

# Industrial IoT revenue expected to nearly double through 2025; data generation to triple

April 29 2021

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Revenue estimates from 451 Research's Industrial IoT Market Monitor incorporate the up-front cost of hardware and operating systems, ongoing spending on application and security software, and estimated device management and services spending.

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## Introduction

According to the latest 451 Research Industrial IoT Market Monitor, the number of IIoT devices will nearly double by 2025, increasing from 86.7 million in 2020 to 152 million, a CAGR of 12%. Revenue associated with these devices is expected to increase at a CAGR of 13% from \$16.3bn to just under \$30bn in 2025, and the data being generated is expected to increase at a 24% CAGR from 244 million terabytes to 725 million terabytes. Our revenue estimates incorporate the up-front cost of hardware and operating systems, ongoing spending on application and security software, and estimated device management and services spending.

### THE 451 TAKE

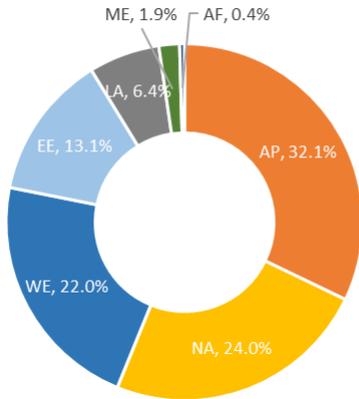
Industry is a complex environment. Newer automation technologies are more richly IoT-enabled, as can be seen from the data generation in areas such as Asia-Pacific, which has a higher adoption of modern industrial robotics. Discrete manufacturing tends to have more greenfield deployments than the continuous-process industries, and we see areas such as machinery, transportation, computer and electronic equipment as having the most significant share of IIoT revenue. This is also notable in that the devices being manufactured are more likely to be IoT-enabled, and some of those products will cycle back into being part of other manufacturing processes. Germany's industrial heartland, with government support, spawned the formation of the Industrie 4.0 plan back in 2011, and we see the high share of IoT deployment and automation that Europe now has based on those seeds. The global adoption of the concept has become known as Industry 4.0. The COVID-19 pandemic has shifted momentum toward more remote connectivity and control in industry, and to the importance of people in the processes. IoT is a major infrastructure component in the digital transformation of industry, alongside AI, and we are seeing IoT deployments move from data plumbing to the foundation of digital twins and digital threads.

## Global Industrial IoT

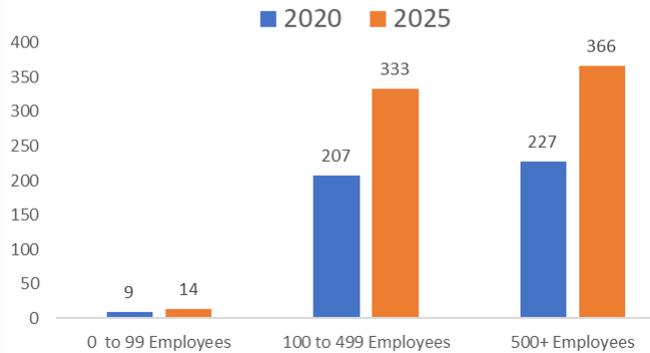
Europe accounted for the largest share of global IoT devices at 35% in 2020 (combining Western Europe at 22% and Eastern Europe at 13% of global share), followed by Asia-Pacific at 32% and North America at 24%. However, North America led in overall average IIoT devices per establishment (78) in 2020, and is expected to increase to 126 by 2025. Within industrial establishments of 500-plus employees in North America, the average number of IoT devices per establishment across all segments was 227 in 2020, and this is expected to increase to 365 IoT devices per establishment by 2025. When analyzing across industrial subsegments in North America, within establishments of 500-plus employees, electrical equipment, appliance and component manufacturing led across all segments with an average of 1,105 IoT devices per establishment in 2020, and is expected to grow to 1,775 IoT devices per establishment by 2025.

**Figure 1: Regional IIoT Share and Devices per Establishment**

Industrial IoT Devices 2020 Regional % Share



North America Average Industrial IoT Devices per Establishment by Company Size



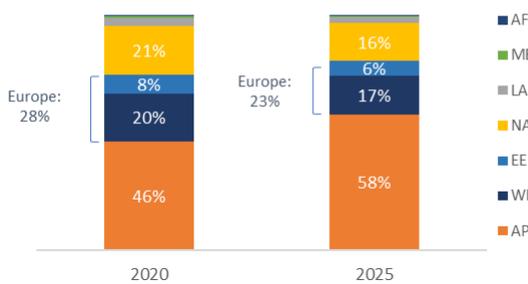
Source: 451 Research's Industrial IoT Market Monitor

## Industrial IoT data generation

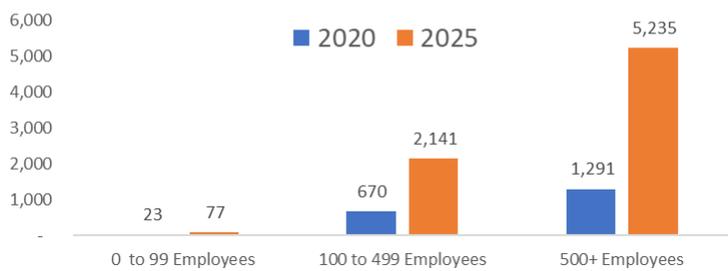
Asia-Pacific accounted for over 46% of total data generation globally in 2020, and it is expected to account for 58% by 2025, growing at a 30% CAGR during this period. This is mainly due to the region's lead in deploying modern industrial robots. When analyzing Asia-Pacific establishments of 500-plus employees, average IoT data generation per establishment is expected to quadruple from 1,291 terabytes in 2020 to 5,235 terabytes in 2025. Within this group, the mining and quarrying segment is expected have the largest average (76,319 terabytes) of data generated per establishment by 2025, over five times the 2020 average.

**Figure 2: IIoT Data Generation Regional Share and TB per Establishment**

Industrial IoT Data Generation Regional % Share



Asia Pacific Average Industrial IoT Data Generation (TB) per Establishment by Company Size

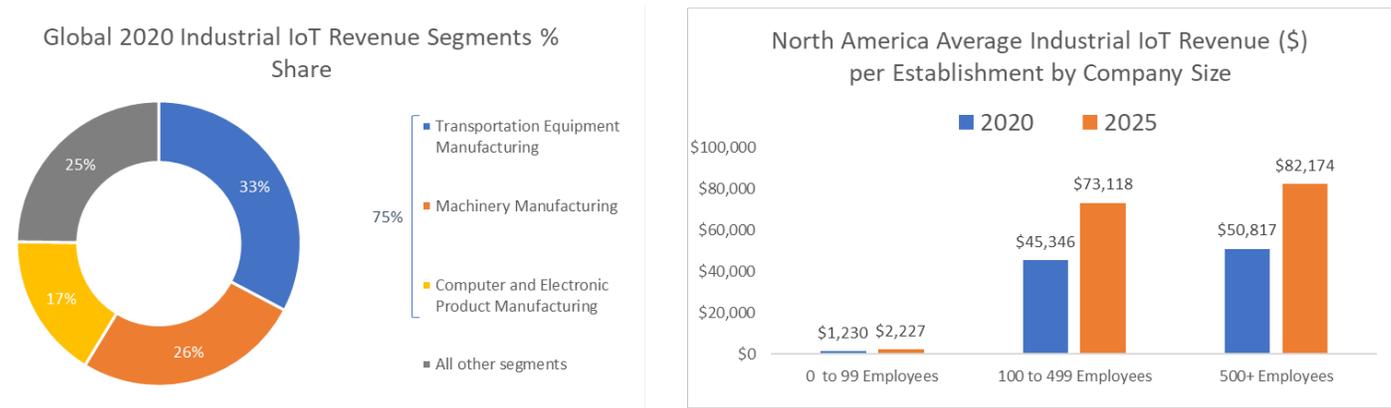


Source: 451 Research's Industrial IoT Market Monitor

## Discrete manufacturing

Transportation equipment manufacturing, machinery manufacturing, and computer and electronic product manufacturing represent the global top three subsegments and accounted for 75% of an estimated \$16.3bn in IIoT revenue in 2020. North America led the overall average IIoT revenue per establishment at \$16,847 in 2020, and this is expected to increase to \$27,326 in 2025. When analyzing North America by company size, establishments of 500-plus employees had an average IoT revenue of \$50,817 in 2020, and this is projected to grow to \$82,174 per establishment in 2025. When analyzing North American subsegments within the 500-plus employee group, transportation equipment manufacturing led the average IoT revenue per establishment at \$270,247 as of 2020; however, from 2023, electrical equipment, appliance and component manufacturing is projected to take the lead, reaching an average of \$433,600 in IoT revenue per establishment by 2025.

**Figure 3: IIoT Revenue**



Source: 451 Research's Industrial IoT Market Monitor

## Rigorous methodology

The industrial vertical represents a diverse ecosystem of companies with a range of facilities and configurations at varying degrees of IoT adoption. Our Industrial IoT analysis begins with an estimate of country-level industrial establishments by three main industrial segments (mining and quarrying, manufacturing, and construction) and 22 subsegments segmented by six company-size tiers. Based on survey results and feedback from market participants, an estimate of equipment deployed and level of IoT adoption per facility is developed based on the assumed average configuration of facilities across the size/type spectrum. From the connected devices figure, we estimate the costs associated with deploying and managing each device and the average daily data generation based on the use case and type of connected device.

The estimates and forecasts included encompass the estimated number and types of connected devices being deployed in industrial equipment across the specific segments. Our figures do not include the 'smart building' component (HVAC systems, smart elevators, intrusion-detection sensors, etc.) of the industrial facilities or the workforce connected devices. The revenue figures noted above represent the estimated spending on hardware that constitutes the forecasted connected devices/endpoints, in addition to the estimated spending on operating systems, security, management, other IoT applications and services. For example, we do not include the revenue generated through sale of robots, but rather the hardware components that make up the connected IoT devices within the robot, as well as the software, security and services required to operate it. IoT data generation in terabytes corresponds to the estimated data that is generated through IoT devices/endpoints, as opposed to the IoT data that is analyzed and processed.

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