Digital Twin - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Digital Twin Market size is estimated at USD 19.09 billion in the current year. It is expected to reach USD 91.92 billion in five years, registering a CAGR of 36.94% during the forecast period.

To simplify the manufacturing process and offer a variety of innovative approaches for cutting costs, optimizing maintenance, monitoring assets, reducing downtime, and creating new linked products, technological twin solutions are expected to be transformed. The digital twin model, although familiar, has been entering manufacturing and other industries fast. Technologies such as IoT and cloud-based platforms have been significant drivers for the increased adoption of these solutions.

Key Highlights
-Digital twins incorporate big data, the Internet of Things (IoT), machine learning (ML), and artificial intelligence (AI) in Industry 4.0. They are predominantly used in the Industrial Internet of Things (IIoT), engineering, and manufacturing business space. In a world where the Internet of Things is used widely, digital twins have become more efficient and accessible to businesses. The manufacturers have estimated that around 40 % of the Internet of Things players are expected to integrate simulation platforms, systems, and capabilities for developing digital twins.
-The way companies deliver preventive maintenance for products and equipment in the field is also undergoing a transformation timed to be driven by data twins. To identify and fix malfunctions before they occur and set up service and maintenance plans to satisfy individual customer requirements, sensors incorporated in these machines have been transmitting performance information in real-time into a Digital Twin.
-To avoid these difficulties with 3D printing, the whole production process has been simulated using twinning technology. This technology can tell if there will be distortions and where they may occur in a 3D model, so it is possible to correct them. This can result in new models that are fully optimized to compensate for the discrepancies and obtain the best possible printing results.

-The market's growth is expected to be significantly hampered by the presence of traditional systems used in underdeveloped countries. Most of these legacy systems had already been developed but were primarily designed and built to function without connectivity. They cannot incorporate advanced sensor technology that offers real-time data, limiting the adoption of advanced technologies.

-The adoption rate of Industry 4.0 technologies, e.g., digital twins, is accelerating due to the COVID-19 pandemic and contributing to market growth. Governments worldwide have also explored the possibility of deploying a different smart city solution to improve urban resilience. For instance, the Singapore government recognized the importance of accelerating digitalization across industries. These factors are expected to drive the demand for these solutions.

Digital Twin Market Trends

Growth in IoT and Cloud-based Platforms to Drive the Market

- The Digital Twin solutions are expected to transform production processes and offer new ways to lower costs, optimize maintenance and asset management, reduce downtime, and create new connected products. Even though it's not new, digital twins are rapidly starting to enter the production and industrial sectors. Emerging technologies like the Internet of Things and cloud-based platforms are significant drivers for the rapid adoption of these solutions.

- All the leading cloud providers have recently implemented a significant digital twin capability. In construction and building management, Microsoft has released a digital twin ontology. In logistics and manufacturing, Google has launched a digital twin service. To simplify the digital twins of factories, industry equipment, and fleet vehicles, Amazon Web Services has launched Internet of Things TwinMaker and FleetWise. In addition, Nvidia has launched a metaverse for engineers on its partner network as an ad hoc subscription service.

- In addition, it is anticipated that the interaction of digital and biological worlds will change due to the IoT and digital twins as the Internet of Things is increasingly connecting and accessing intelligence in a physical world through digital twins almost identical to their physical counterparts. Additionally, the adoption of the Internet of Things is being stimulated by new applications, business models, and declining costs for equipment, resulting in a growing number of interconnected devices and endpoints worldwide. The massive IoT technologies NB-IoT and Cat-M1 continue to be rolled out globally.

- IoT is used everywhere, from industrial applications to emergency services, public transportation, public safety, city lighting, and smart city applications. Municipalities are moving to wireless communications offered by IoT due to low cost, greater efficiency, and resource reduction.

North America Holds Major Market Share

- Modern manufacturing facilities in the United States rely on new technologies and innovations to produce superior-quality products at low costs. The US industry plans to integrate digital twins into their processes to simplify and leverage more advanced insight, thanks to the early adoption of increasingly popular technologies such as IoT, Big Data, DevOps, or Mobility.

- The construction sector continues to be a major 2D industry relying on technology innovation, even though the manufacturing sector has begun adopting digital twin technologies. With 3D visual digital twin technology, off-site experts can access on-site views into the nitty-gritty of projects taking off where Google Street View ends.

- The Canadian manufacturing, construction, and automotive industries have adopted significant digital twin technologies. To measure the performance of such Physical Assets and identify where improvements could be made to achieve more favorable results, organizations within those sectors are using Digital Twin Technology.

- For instance, in November 2022, the project, AI-enabled Digital Twins for Automation of Regulatory Processes in the Built

Environment, was carried out in collaboration with four Canadian institutions nationwide by AECO Innovation Lab. The project supports innovation and Digital Transformation of the Architecture, Engineering, and Construction industries and related sectors within the public sector. This project examines how new ideas, digital tools, and technology can be used to improve and transform the approval process. In addition, it examines how Canada's regulators could use BIM and Digital twins to understand their decisions better.

Digital Twin Industry Overview

The digital twin market is fragmented with major players like ANSYS Inc., Cal-Tek SRL, Cityzenith Inc., General Electric Company, and IBM Corporation. Players in the market are adopting strategies such as partnerships and acquisitions to enhance their service offerings and gain sustainable competitive advantage.

In June 2023, Mevea announced delivering digital twins, simulation software, and training simulators to Siemens. Siemens integrates these solutions within its open and modular SIMOCRANE Remote Control Systems (RCOS) to remotely control all relevant crane types like STS, Cantilever ARMG, end loading ASC, and RTG. The digital twins are used in crane automation, software testing & development, and operator training.

In March 2023, ANSYS Inc. and L&T Technology Services Limited signed an MOU to establish the LTTS-Ansys Center of Excellence (CoE) for Digital Twin. The center will support LTTS in demonstrating industry use cases, developing future-facing solutions, and enabling its customers to optimize design, manufacturing, and supply chain processes. Ansys' Twin Builder solution will further allow LTTS to expand its market share in digital twin areas.

Additional Benefits:

 - The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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