Chapter 16
Smart Connected Digital Products and IoT Platform With the Digital Twin

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ABSTRACT

A digital illustration of a novel prevalence of a physical product helps one to gain larger insight into that product's state performance and behavior digital twin, which is an unequivocal advanced copy of an item, method, or control. This living model creates a thread between the physical and digital worlds. A model of a physical object—a 'twin'—enables you to observe its standing, diagnose problems, and take a look at solutions remotely. It's a dynamic virtual illustration of a tool that is unendingly fed with knowledge from embedded sensors and packages. This provides associate degree correct period of time standing of the physical device. Digital twins drive innovation and performance and offer development technicians prognostic analytics that give firms the flexibility to boost client expertise.

DOI: 10.4018/978-1-7998-3970-5.ch016

INTRODUCTION

Digital Twin conception constitutes the joining of the visible and also the analogues world wherever each mechanical item can get an energetic computerized outline. All though the merchandise improvement life cycle, right from the planning section to the preparation section, organizations will have a whole digital foot print of their product. These 'connected digital things' generate knowledge in real time, and this helps businesses in the higher analyze and predict the issues ahead or provide early warnings, stop time period, develop new opportunities and even arrange higher product for the longer term at lower prices by victimization simulations. These can have a bigger impact on delivering a higher client expertise in business furthermore. Digital Twins which contain net of Things are key in trade and are preponderantly utilized in the commercial net of Things, engineering, and business organization area (Stark et al., 2017). The widespread reach and usage of the web of Things have created the Digital Twins cheaper and accessible for the business world.

A digital twin might be a powerful advanced model of an item, procedure, or person, that breaks down existing business framework information joined with certifiable information. Be that as it may, the value extends past the one advanced model of Associate in Nursing in addition to Associate in Nursing a supporting part of an association's computerized change activities.

Next-Generation Digital Twins

There is a unit innovative and rising technology spanning the digital twin stack making tangible business price for sensible connected product and sensible connected operations use cases. However, every sort differs in some variety of practicality, complexity, integration and technologies. The additional technology systems additional, the 'fuller' the dual becomes, making a digital thread, that adds challenges and opportunities for enterprise adopters and technology suppliers alike. Elementary technologies up-through rising ones span the physical and digital realms and alter progressively valuable digital twin outcomes (Stark et al., 2017).

THE DIGITAL THREAD

The digital twin partly separates the virtual and real parts of the system. However to mirror the work, the virtual and real got to be connected. This can be wherever the digital thread comes in. The digital thread could be an assortment of digital communications that integrates and drives fashionable style, producing, and products support processes, as well as product and method definitions that begin in style engineering and flow through the complete production chain (Boschert, S., & Rosen, R, 2016). Information flows embrace quality needs and compliance, specifications, take a look at results, maintenance schedules, and more, and conjointly embrace feedback loops like lessons learned and planned versus actual process results.

The digital thread serves the digital twin, serving to take care of its model and supply effective information feeds. In turn, the digital twin sits at the intersection of the digital threads and ensures information sets area unit organized and contextualized. Together, this kind of material required for associate degree business four production model (Boschert & Rosen, 2016).