

ADVANCED APPLICATIONS OF PLM SOLUTIONS IN DATA CENTER INFRASTRUCTURE PLANNING AND DELIVERY

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ABSTRACT

Product Lifecycle Management (PLM) solutions are increasingly being applied to streamline the complex processes involved in data center infrastructure planning and delivery. This paper explores the advanced applications of PLM in optimizing the design, construction, and operational phases of data centers. By integrating PLM tools with data center infrastructure management (DCIM) systems, organizations can enhance project planning, reduce time-to-market, and improve resource allocation. PLM facilitates the comprehensive management of hardware and software assets throughout their lifecycle, ensuring that all components are aligned with evolving business requirements and technological advancements.

The application of PLM solutions in data center infrastructure offers several key benefits, including improved collaboration among cross-functional teams, better tracking of equipment lifecycle performance, and enhanced visibility into supply chain logistics. This approach not only helps in mitigating risks related to equipment failure but also supports regulatory compliance and sustainability efforts by enabling detailed tracking of energy consumption and carbon footprints. Moreover, the use of digital twins, a prominent feature of advanced PLM systems, allows for real-time simulation and predictive maintenance, significantly enhancing operational efficiency.

As data centers continue to evolve to meet the growing demand for cloud services, AI, and IoT, the role of PLM in managing the intricacies of infrastructure deployment becomes even more critical. This study highlights how PLM-driven methodologies can revolutionize data center planning, making them more adaptable, efficient, and future-proof in a rapidly changing technological landscape.

KEYWORDS: *Product Lifecycle Management (PLM), Data Center Infrastructure, Data Center Planning, Lifecycle Management, Digital Twins, Infrastructure Optimization, Operational Efficiency, Predictive Maintenance, Supply Chain Visibility, Regulatory Compliance, Sustainability In Data Centers*

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