

Digital Acceleration and Operational Excellence with Industry 4.0

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Received date: August 03, 2021, Manuscript No. IPACSIT-22-14340; **Editor assigned date:** August 09, 2022, PreQC No. IPACSIT-22-14340 (PQ); **Reviewed date:** August 16, 2022, QC No IPACSIT-22-14340; **Revised date:** August 23, 2022, Manuscript No. IPACSIT-22-14340(R); **Published date:** August 30, 2022, DOI: 10.36648/ 2349-3917.10.8.143

Citation: Pillai S (2022) Digital Acceleration and Operational Excellence with Industry 4.0 . Am J Compt Sci Inform Technol Vol. 10 Iss No.8:143

Description

The process of Engineering, Procurement And Construction Management (EPCM)/ project execution uses vast amount of diversified technical information from multiple entities and software applications/ platforms. A means to seamlessly integrate the various sources of data, including licensor data and display this information on a real time basis is envisaged. Intelligent systems enables the business through information and technology with necessary IT infrastructure/ Operations Technology (OT), makes it easier to separate IT from the rest of the business applications, for successful implementation to drive operational excellence , quality, efficiency, capture all data (Big Data) and hence productivity/business excellence, aligning with Industry 4.0 standard. A new approach was needed that addresses plant engineering and operations in light of new productivity-enhancing technologies that go beyond today's plant design solutions. The typical problems with the engineering (3D DATA Management Integrated system) implementation were caused by having isolated process within the EPCM businesses. A process-based solution to the implementation was tried out on the recent projects for the successful delivery. This solution included integration with the licensor data (Smart plant P&ID) process, proper hardware / software infrastructure, and data management tools (Oracle/ fox pro/ Access/ visual basic) and SAP procedures. This solution reduced database-related problems and led to a more effective design process. This approach also extends beyond current plant design stage to plant life cycle for maintenance and operations.

Customer Centric Collection of Technology Capabilities and Components

It was planned to develop a system that improves integration of project information sources based on the 3D-design model, with the objective of implementing DaaS (Data as a service enabler), Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) to drive operational efficiency by innovative and integrated IT technologies to lower costs, given the robust IT infrastructure, the company had at the regional centres. It has also to be reviewed in the context of outsourcing (onsite/offshore) business models, may be a BPO or a KPO engagement model with asset integrity management. The IT platform is built on services-based principles and architecture. (hardware customised for software applications. (the standard

hardware may be too slow for the CPU /GPU- graphics intensive solutions). The goal is to create an interoperable set of services that can be brought together to create applications, apps and workflows. This creates a customer centric collection of technology capabilities and components that form a multi-purpose application platform. 1. Workforce Productivity 2. Material Costs 3. Asset Costs 4. Energy Costs 5. Cost of Quality 6. Safety and Compliance Costs. The new business technology platform need to cover the risk (cyber security) and effectively implement the security controls to balance between exposing information to exploit digital business. Successfully building a digital business technology strategy will depend on an organizations ability to define the approach to integration that allows for maximum flexibility to support dynamic and sustainable business model/requirements. Business intelligence includes reporting, dashboards and analytics of back-office and core system data. These tools are used for capturing historical data /reporting leading to better decision making (predictive as well). Operational Technology (OT) systems though not part of the traditional IT systems, control and monitor equipment and assets. The IT organization has traditionally supported these systems, and need to modernize or replace them in order to create a services-based platform (IOT). This task of renovating the core information systems is the first initiative for journey towards a digital business model.

Gateway to Analytics, Asset Integrity Management and Storage Capabilities

The information systems platform will often be dominated by major strategic vendors (SAP, ERP. PLM, AIM, DCS/PLC/ESD) However, organizations are often looking at optimizing and augmenting with other providers or custom-made in house applications/solutions to accelerate the ability to change. Despite this single vendor approach and its products, it is important, different processes to be integrated/supported and updated/changed in the internal infrastructure systems, also with capabilities and services from the other platforms (customer experience, IIoT, data and analytics). This is a key enabler in supporting the transformation of digital business. Data from assets provide valuable use cases such as optimization of assets and insight on usage for predictive analysis. This platform can be used as a gateway to analytics, asset integrity management and storage capabilities that exist in the data and analytics platform. Another option is to do data

monitoring, storage, analytics and algorithms in the IIoT platform. This environment augments and further extends data-centric approach by introducing additional engineering data to all 3D plant design objects viz. equipment's, instruments, structural, speciality items etc., managed within the 3D plant model. This approach also extends beyond current plant design stage to plant life cycle for maintenance and operations (asset integrity management). Recent trends in production industries are always talking about Energy Efficiency (OEE), reduction in Energy Consumption, Reduction in CO₂ which contribute to Global Warming, achieving zero downtime and optimize asset utilization. Improving Energy Efficiency, we need to know how much energy has been consumed. Monitoring the current consumption of the Motor via Smart Devices connected to

equipment viz. rotating –Pump, compressors, blowers, package units etc. With fourth industrial revolution (4.0), rapid changes in the nature of business over the last decade, use of information technology, extent of automation and customer expectations; the need for incorporation of innovative, efficient and seamlessly integrated technologies has risen drastically. This needs more attention, particularly when executing projects globally. It is imperative that we continuously upgrade skills and technology. Technology being the key to deliver customized solution, scalable computing solutions backed up by a robust IT infrastructure to service multiple engineering centres across various geographical locations for customer convenience & cost reduction, Virtualization, open sourcing, cloud technology; supportive of green computing, were planned and implemented.