Case Study

PRODUCT LIFECYCLE MANAGEMENT SYSTEMS IN INDUSTRY 4.0 – A CASE OF GERMANY

Keywords: *Product Lifecycle Management, Production, Athletic wear, Industry 4.0, Software.*

Background to Case Study

In the last 30 years, Product Life-cycle Management (PLM) has been significantly transformed from a simple drawing management system into a cornerstone of enterprise IT. Before the rise of Industry 4.0., product management was a paper-based process. However, the huge amount of data produced with the rise of IT technologies and the emergence of CAD created the need of a new management system. Product Data Management, which is considered the ancestor of PLM was introduced in the 1980s. Although PDM was revolutionary for its time, it remained insufficient as it created an information silo, unavailable to be shared. These issues changed with the rapid development of Industry 4.0.

As the manufacturing process became much more complex, with the rise of Internet connected devices, leading companies started to adopt PLM methods and systems in order to ensure increased product lifecycle coverage and stronger integration of processes across the entire value-added chain. Nowadays, PLM is more efficient than ever, providing a centralized cloud-based system. (Spiegel, 2017)

Introduction to the Case Study and it's growth within Industry 4.0.

Product lifecycle management is the process of monitoring and managing the entire life cycle of a product from its conception, to service and disposal. All products and services have certain life cycles. In industry, product lifecycle management (PLM) includes people, data, processes, and business systems and provides a product information backbone for companies and their extended enterprise.

The life cycle of the product refers to the period from the beginning of life to the end of life and its split up into nine major steps (see graph below). Each of the steps is of crucial importance for the design and development of a product.

It should also be stated that the lifecycle of a product changes continuously. These changes require continuous adjustments in the new data.

In today's challenging global market, people are looking for a way to use computer technology in order to solve complex problems in industry. PLM seeks to address these issues by minimizing the waste of information, resources and materials. The PLM system supports the product development process by integrating people, processes, data, tools and business systems and providing information about companies and their expanding businesses. (NTT Data, 2015)

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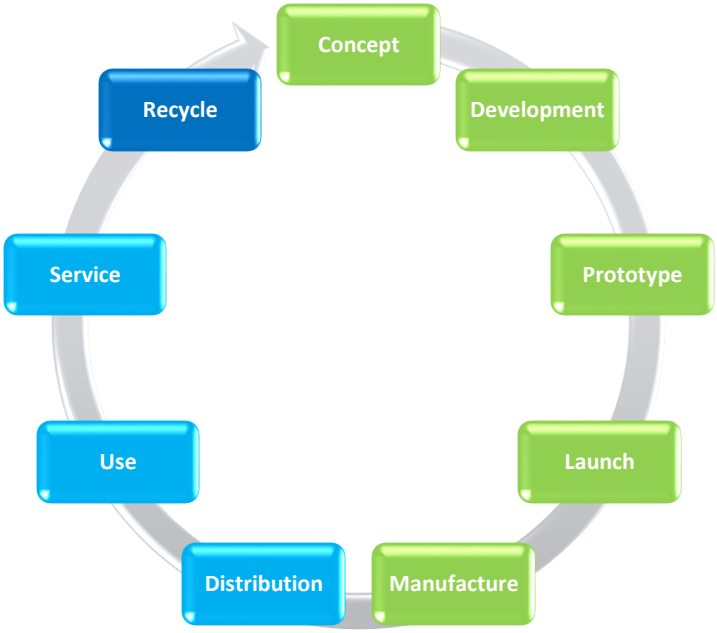
The Case Study and Industry 4.0 Elements: A Pictorial Overview

The following graph shows the Product Lifecycle Management process. PLM has three overarching stages: The Beginning of life which includes the initial conceptualization and development, the Middle of Life which is the post-manufacturing phase, when your product is distributed, used, and serviced and the End of Life which starts when users no longer have a need for the product.



©Source: Ultimate Product Life Cycle Management Guide, 2020

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The Element Explored within Industry 4.0 Application.	*Adidas is a German multinational company based in Herzogenaurach, Bavaria, which designs and manufactures shoes, clothing and accessories. As the company develops new products almost simultaneously in order to meet the needs of the consumers, it had to deal with a multitude of challenges. Islands of information meant that data could not be easily shared across groups, making it difficult for factories to collaborate and share product information. The lack of a single repository for materials management resulted in data integrity concerns and duplication of data entries while people were unable to easily move across divisions, decreasing productivity and efficiency.* *To deal with such issues, Adidas acquired the use of PTC's Windchill FlexPLM solution designed for the Retail, Footwear and Apparel industries. This web-based platform has successfully connected globally distributed teams through a simple yet complete user interface. More specifically, FlexPLM provides a single database for all product information and a single repository for material management. This development offers design and development efficiencies as well as the ability to easily collaborate with external partners in all geographical areas.* *With a strong PLM base, Adidas is now able to ensure the availability of products in the right size, color and high quality, as well as to provide technical innovation.* *Peter Burrows, CIO emeritus of the Adidas group stated that: "by implementing Windchill, we have designed new apparel and graphics and have them in manufacturing within 24 hours. That speed allows us to create demand and continually focus on high performance product innovation" ("PLM case study Adidas", 2020)*
Application Target Audience	*The results of the case-study are intended for use by SMEs, Enterprises and Entrepreneurs.*
Resources Used:	*- "A Brief History of PLM", by R. Spiegel. (2017). Available here.*

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	-"PLM as Enabler for Industry 4.0", by NTT Data. (2015) Available here. *- "Ultimate Product Life Cycle Management Guide", by Smartsheet. (2020). Available here* *- "PLM case study Adidas", by Concurrent-engineering. (2020). Available here*
Further Reading:	*- "Product Life Cycle Management in Industry 4.0", by S. Salimbeni. (2020). Available here.*

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