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WORLDWIDE CAD TRENDS 2016



The Business Advantage Group - the IT, software and telecom industry research specialist, announced its Worldwide CAD Trends 2016 Survey, specific to Concurrent Engineering. The survey results are based on responses from CAD users, Designers, Engineers, Professionals including managers and senior executives.

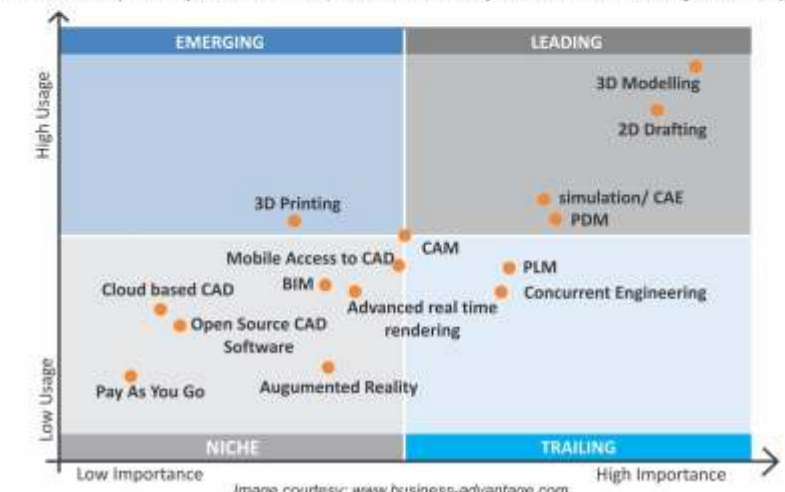
Concurrent Engineering was incompatibility with existing systems which is obviously a prerequisite for multiple users working on a single model real-time.

The top 10 leading software tools by market share are listed below. The highest market share for a single software solution is just 12% and there is no clear market leader, although from a vendor point of view Autodesk leads with 5 of the top 10 software solutions!

- + Design Review 12% (17% of Autodesk users also use Design Review)
- + Vault 11% (16% of Autodesk users also use Vault)
- + Navisworks 11% (mainly in AEC at 21%, 15% of Autodesk users also use Navisworks)
- + Windchill 8% (mainly in manufacturing at 12%, 42% of PTC CAD users also use Windchill)
- + A360 8% (mainly in AEC at 12%, 11% of Autodesk users also use A360)
- + Teamcenter 7% (mainly in manufacturing at 14%, 42% of Siemens CAD users also use Teamcenter)
- + ProjectWise 4% (mainly in AEC at 7%, 38% of Bentley users also use ProjectWise)
- + Buzzsaw 5% (7% of Autodesk and 6% of PTC users also use Buzzsaw)
- + Enterprise PDM 4% (mainly in Manufacturing at 6%, 12% of Dassault users also use Enterprise PDM)
- + ProjectWise 4% (mainly in AEC at 7%, 38% of Bentley users also use ProjectWise)

Concurrent engineering, also known as simultaneous engineering, is a method of designing and developing products, in which the different stages run simultaneously, rather than consecutively. It decreases product development time and also the time to market, leading to improved productivity and reduced costs. For Concurrent Engineering the growth predicted in the 2015 report did not materialize – usage has remained flat (19%-18%) through 2015. Users continue to rate its Importance highly – it is the 6th most important CAD trend from the survey. However users continue to predict growth – 33% this year (from 18% to 24% usage) and 72% within 5 years (from 18% to 31%).

Awareness of Concurrent Engineering is 52% in large companies, 45% in medium sized companies and 39% in small companies. Similarly, Usage is highest in North America (21%) compared to EMEA (16%) or APAC (14%). The leading reason given for not using



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PDM and PLM Systems Triggering CAD's Engineering Efficiency

With CAD technology taking over product design and processing in most of the industries, CAD data has become a key component. Security, access and efficient integration of CAD data is one of the primary concerns for industries that use CAD technology for product design and development. Efficient management of CAD data supports a wide range of downstream processes such as virtual prototyping, work instructions as well as technical publications.

PDM and PLM are the terms that come into picture when there arrived a need to store and process CAD data when CAD/ CAM was new and the drawings were required to be put somewhere. Storing the CAD/ CAM information was a bit challenge as it was mandatory to put together all the product data at a single location. This laid the seeds for Product data Management (PDM) in the mid 80's.

Another term that relates to CAD data management is Product Lifecycle Management (PLM). The PLM concept deals with the product entire lifecycle management. It encapsulates the complete process of a product development- right from building the concepts- to prototyping phase- to the manufacturing phase.

Difference between PDM and PLM

PLM can be said as the evolutionary process for Product Data Management (PDM). PDM is a file-based system that is used to manage data for 3D models of physical objects. The PDM system efficiently manages file data and relationships by Creating, Editing or moving



them. On the other hand, PLM is a database system for managing products and processes comprising of all disciplines such as Product Management, Product Design, Production, Quality, Marketing, Test Engineering, etc. PLM ensures a complete, approved and locked-down product configuration.

Increased Security and Control over Products and Processes

All design, engineering, product development, and manufacturing organizations have moved towards an automated solution to manage, utilize and leverage 3D CAD design data in the recent years. And for this, they need both PDM as well as a PLM solution for efficient data management and processing. In fact, all PLM systems use some form of PDM as the underlying data foundation on which they operate.

With more and more companies migrating from 2D to 3D CAD systems for their primary product development platform, PDM has grown to become one of the necessities for the manufacturers. The shift of product development through 3D CAD have produced many benefits such as,

- + Reduced Cycle Time
- + Quality Improvement
- + Cost Saving, and
- + Accelerated Innovation

Engineers are generating greater volumes of data by becoming more productive with a 3D system. These 3D files contain a varied collection of references, associations, and interrelationships that link them to other files such as operational parts, bills of materials, drawings, assemblies, multiple configurations, documentations, NC Programming, etc. This is the reason the engineers must have a reliable system to manage, preserve and safeguard these files and their respective links.

The use of 3D CAD no doubt increases the volume and complexity of product design data, and requires a capable PDM application to prevent data corruption, file overwriting, loss of data and costly data errors. PDM and PLM systems help product developers automate workflow process boosting the work productivity. This results in faster product time-to-market, shorter development cycles, reduces development costs and an efficient product design.

Efficient Data Processing

For organizations and manufacturers that need to design, produce, source and distribute products around the world, having a single source to manage all the information and processes is essential. PDM and PLM solutions are the way to achieve this. These systems have become a single source of truth to manage all aspects of the product development life cycle.

CAD professionals that work in the manufacturing sector are required to compete globally, push designs into the market quicker and perform more in a relatively less budget. In this competing economy, where every day and every dollar counts, PDM and PLM tools and technologies have become more valuable than ever.

Collaborative workflow and designs with PLM and PDM shortens R&D cycles, reduces design time, and gives professionals and firms a competitive edge. Some of the key benefits PDM and PLM solutions offer are:

1. Secure Data Management



PDM systems ensure secured data management for the organization. PDM systems efficiently capture and manage product information. This system makes sure that the information is delivered to the users throughout the product lifecycle in the correct context. The PDM systems handle file ownerships, version control, release status and revision management. PDM's security and administrative functionalities protect intellectual property rights through the project-based security, role management, and associated access privileges.

2. Shorter Time to Market



PLM shortens product development by centralizing control over data. This makes the design teams to work faster accelerating the transfer of design data to production. PLM solutions ensure faster product development and shorter time to market offering a competitive edge for the organizations.

3. Drive Innovation



PDM and PLM solutions allow companies that work in CAD to increase their level of innovation without compromising on their flexibility or agility. The product teams are able to work together regardless of their physical location to create the best solutions and final product designs. As there are many CAD tools that are dedicated to develop product designs, the PLM solutions are making it simpler to achieve industry standards.

4. Configuration Management

An efficient PDM system offers the visibility that is necessary to manage and present a complete Bill of Materials (BOM). This facilitates the alignment and synchronization of all the sources of the BOM data with lifecycle phases. These lifecycle visualizations offer sharing and on-demand representations of the product and its underlying assemblies and parts.

5. Increased Productivity

Organizations which do not have PLM system will experience a rapid rise in the industry standards and time efficiencies in product development once it is installed. The PLM systems eradicate time-consuming activities. PLM systems also cut down the processing errors or any associated reworks that are caused by using outdated technology.

6. Process Enablement

PDM systems help improve workflow and process capabilities. This helps both internal product teams and external partners to participate actively in the product development life cycle. The PDM systems can contribute to establish, manage and execute automated workflow-driven process for CAD tools.

Data Processing with CAD Tools

Efficient 3D CAD tools made manufacturing organizations to shift from 2D to 3D methods of product design and development. The organizations, thus needed an automated solution to manage, utilize and leverage 3D CAD design data. PDM solution, such as the SolidWorks Enterprise PDM has brought a complete change in the PDM paradigm by creating an efficient, easy to use, and affordable solution to meet the PDM needs of any mainstream product design and development organization.

CAD Professionals who benefit from the PDM system include project managers, sales people, engineers, quality assurance teams, and buyers. The PDM system allows companies to:

- + Quickly find the correct data
- + Reduce cycle time and improve Productivity
- + Reduce Development errors and costs
- + Meet business and Regulatory Requirements
- + Facilitate collaboration between global teams
- + Offer the visibility needed for informed business decision-making

Powerful PDM and PLM capabilities ensure that everyone accesses the correct information, maintaining the correct order and in the correct format. Use of these concepts avoids errors and eliminates unnecessary delays making information accessible anywhere supporting product development.