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Methodology for the implementation of the Model-based Definition approach*

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Abstract

Traditionally, 2D drawings were considered as the fundamental and only authority documents responsible for defining, communicating and distributing the product to its multidisciplinary consumers. Today, mostly the aerospace and automobile industries are taking full advantage of using solid modeling during the product development process to reduce costs and product conceptualization time, thus increasing productivity and competitiveness. However, the need to generate, validate, release, manage, maintain and store the product definition through the use of engineering drawings hasn't been completely eliminated. The Model-based Definition (MBD) concept represents a new trend in Computer-aided Design (CAD). Its purpose is to integrate drawing annotations directly into the model, therefore obviating the need to generate engineering drawings. In that sense, moving from 2D drawings to 3D MBD can be considered as an alternative to continue reducing time-to-market and improve product quality. The objective of this paper is to propose a working methodology that will focus on the important aspects, considerations and implications that should be taken into account when moving from 2D engineering drawings to 3D Model-based Definition.

Key words: Model-based Definition, engineering drawings, CAD, product development process, productivity and competitiveness.

1 Introduction

Traditionally, drawings are used for communication in industry because they are the clearest way to tell someone what to make and how to make it [1]. It is a way to communicate complexity in a comprehensible and effective manner due to visual abstraction [2]. Drawings disseminate the product definition to its multi-disciplinary consumers.

Technology and customer requirements are now driving product complexity with an ever-increasing number of parts. As a consequence, the need to generate more drawings is constantly increasing. Industries realized that generating engineering drawings has become an expensive and time-consuming activity. In a study made by Her [3] in a small military industry, the generation of engineering drawings can take an average of 39 hours per

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