VIRTUAL PRODUCT DEVELOPMENT
-Solution for China's Automobile Industry

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Abstract: The automobile industry has been witnessed transformed in recent years, leading automakers and their new competitors in developing countries face more fierce competitive markets. Virtual product development (VPD) are regarded as important approach to improve quality, cost/value and timeliness, in this article, the history, current and trend of solutions for automobile product process will be firstly studied, followed by a comparison between German and Chinese automobile industry. The VPD actuality in their respective automobile enterprises will be illustrated with examples such as DaimlerChrysler, First Automobile Works, Beiqi Fotor Motor, etc.. As conclusion some suggestions about VPD strategy to China's automakers will be offered.

Key words: Automobile industry, Virtual product development, CAD, CAE, CAM

1. INTRODUCTION

When many industries face the weakness and resulting uncertainty in the highly interdependent global economy, the automobile industry is also at a crossroads. On the one hand, the auto industries of developing countries have been transformed by trade and investment liberalisation policies and the global expansion of the auto industry. Governments' active promoters of the auto industry through investment incentives, local content regulations and tariffs, have brought up a new wave of automakers, which stands poised to make competitive leaps. For example in China there are domestic automakers such as First Automobile Works (FAW), Dongfong Motors and
Shanghai Automotive Industry Group (SAIC). On the other hand, in the mature, affluent markets, several of the largest established automakers and their affiliates have acutely felt that they must struggle to cope with an oversupply environment, especially while demand has to take off in emerging markets such as China and India, where huge manufacturing and assembly investments have been made. Therefore these large developing countries – notably China, India, Mexico etc. with a sizeable, growing middle-class – represent huge potential demand for private vehicular transportation, both low-cost production sites and the last remaining battlefields for automakers [1].

In such fierce competitive markets, achieving and sustaining competitive differentiation is the foremost challenge for automotive primacy and their new competitors. Virtual product development is regarded as very important approach to improve product quality, cost/value and timeliness, which are three fundamentals of competitive differentiation.

In the past decade, strategy of virtual product development (VPD) has been carefully defined to improve the product creation processes both in leading automakers and their new competitors in developing countries. There are certainly many differences between them, because of the regional, historical and culture factors. In order to offer some suggestions about VPD strategy to China’s automakers, the history, current and trend of tools solutions for automobile product process will be studied. As an exemplar, virtual product development process in DaimlerChrysler will be in-depth illustrated., which followed by the study about VPD actuality in First Automobile Works, Beiqi Fotor Motor to give an overview about the VPD current status in China’s automobile enterprises.

2. SOLUTIONS FOR AUTOMOBILE PRODUCT PROCESS - HISTORY, CURRENT, TREND

2.1 History

Car and aerospace industry are always the most important motivation of computer aided product development.

Before the digital revolution of the late 70's, the realization of the designer's styling concepts, the definition of body sheet metal, and the design and construction of stamping and assembly tooling relied entirely on physical models, which cost time, are very expensive, inaccurate and unrepeatable [2].