PM-1

Automotive Project Management Guide
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FOREWORD

This guide was produced through the efforts of the Automotive Industry Action Group’s (AIAG) Project Management Project Team.

The purpose of this guide is to improve the automotive product development process. Specifically, it acts as a guide to integrate the Project Management Institute’s (PMI) comprehensive Project Management Body of Knowledge (PMBOK) into the phases defined in the Chrysler, Ford, and General Motors Advanced Product Quality Planning and Control Plan (APQP). The intended user of this guide is the automotive industry as a whole; particularly, manufacturers and their supply chain for both parts and processes. This guide is intended to describe the implementation of project management and the processes for managing product development. It does not require a specific organizational structure or the title Project Manager to be effective.

Much work has been done relative to improving the performance of the automotive product development process. Current contributions including the likes of APQP, QS-9000, PPAP, etc., stand at the front of the line of many. Until now, project management concepts, processes, tools, techniques, and practices have been mentioned; but only as enablers. This guide compiles the PMBOK project management processes into a stand-alone and comprehensive document for use by the automotive industry.

Project management, while very mature in many diverse industries, is now finding new applications in the automotive industry. Significant among those applications is the product development process. Today, some industry visionaries see the automotive product development process as multiple projects to be managed and improved with the doctrine of classic project management techniques. Previously, automotive project management was defined as: tracking, scheduling, a job title, the Critical Path Method, the structure of an organization, usage of project management software or some other characterization. All of these are necessary, but none by itself is complete.

In all instances of the automotive product development process today, projects are being managed. To say otherwise is a mistake. This guide presents a comprehensive set of concepts and processes for the purpose of common understanding. Organizations which have successfully implemented project management began first by assessing where they were versus what needed to be done. Circumstances considered included implications resulting from new or revised policies and procedures, tools and equipment, roles and responsibilities, as well as organizational experience and skill.
This text provides guidance to enable the better understanding of needs and processes which are mutually beneficial. Product development teams may wish to use only a portion or all of the processes described in this guide. Specific interpretation, infrastructure and practice are left up to the individual organization within the industry. This guide defines project management and its underlying component processes and terminology, and then applies them to the context of an automotive product development process as described in the APQP. Specific methodologies like the Critical Path Method or any other computer assisted technology are excluded.

Implementing the project management processes found in this guide will improve performance in the automotive product development process. Furthermore, continuous, disciplined practice and rigorous integration will assure continued success.

The figures and concepts discussed in Sections 1.2, 1.3, 2.0 and various other areas of this document contain references directly from *A Guide to the Project Management Body of Knowledge (PMBOK)*, March 1996. These items will be identified throughout the document with a superscript (\(^1\)) which refers the reader to Appendix A - References. These items have been reprinted with permission of the Project Management Institute, 130 South State Road, Upper Darby, PA 19082, a worldwide organization of advancing the state-of-the-art in project management.

The figures and concepts discussed in section 3.0 are referenced directly from the Advanced Product Quality Planning and Control Plan (APQP). These figures will be identified throughout the document with a superscript (\(^2\)) which refers the reader to Appendix A - References. These items are reprinted with permission from the Chrysler, Ford and General Motors Supplier Quality Requirements Task Force.
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1.0 INTRODUCTION

The purpose of this guide is to illustrate and communicate to automotive manufacturers and suppliers the terminology, processes, and techniques for successfully implementing Project Management. This document explains the benefits of project management: efficiently utilize resources, communicate, and exceed the needs of customers. The contents are intended as guidelines for quality implementation of any business process associated with automotive product design, development, validation, and manufacture.

The manner in which projects are executed directly impacts the competitiveness of the automotive manufacturer and/or supplier. The cumulative effects of how these projects are managed also affects the productivity, costs, and quality within the automotive supply chain.

1.1 BENEFITS OF PROJECT MANAGEMENT

This is an age where companies succeed by providing high levels of customer satisfaction, value, and service at a competitive price, utilizing technology and the skills of a highly trained work force. The key to sustaining the competitive advantage is an organization's ability to utilize future projections, while having the agility to adjust, act, and execute actions required to satisfy the customer's needs. Project management's tools and techniques, more then just a planning guide or milestone chart, facilitate organizations to pull (team) together, communicate, analyze, learn, and effectively execute the activities required by the customer.

More and more business articles are being written boasting of improved time to market, improved customer relationships, reduced cost and quality improvements all due to professional project management. Additional articles are written on the steps and duration required to fully implement project management in an organization.

This is evidenced by the many articles being written today, such as the following excerpts:

“Getting the Job from Ford” Automotive Production January 1996 - Ford’s Tom Helzerman, Manager, Assembly Technology, Advanced Manufacturing Technology Development, talking to the annual meeting of the Robotic Industries Association, provides an answer as it pertains to the companies that will be selected as vendors for capital equipment.

“There are three factors in assuring that as a supplier the customer is your number one goal,” Helzerman says. “These are project management, project start-up, and long term performance.”
“From the Viper Pit Making A Dream A Reality” PM Network June 1993, by Roy Sjoberg, Executive Engineer Viper Program, James Royer Manager, Viper Engine and Charles M. Rightler, Program Timing, Chrysler Corporation

“Reduced lead time, more than anything else, should drive teams to program management, because defining and monitoring the critical path will be paramount to going from three years to two years. Three years may appear to be an achievement now, but it will not seem so great tomorrow because global competition is certainly not standing still. Project management is a valuable tool to manage the path to shorter lead time.”

“Making Beautiful Music With Program Management” Wards Auto World August 1996 by Tim Keenan

“By most accounts, however, program management (PM) is more than a buzzword. It’s the way automotive components and systems will be developed from now on, picking up where simultaneous and robust engineering leave off.” “Program managers are like orchestra conductors,” says Brett Healy, Director of Sales and Marketing at Webasto Sunroofs Inc. “They aren’t necessarily experts on any of the instruments, but know how to make beautiful music by bringing people together at the right time.”

1.2 DEFINITION OF PROJECT MANAGEMENT

This guide defines project management as follows:

Project management is the application of knowledge, skills, tools, and techniques to the completion of work activities in order to meet or exceed stakeholder needs and expectations. Meeting or exceeding stakeholder needs and expectations invariably involves balancing competing demands among:

- Scope, time, cost and quality
- Stakeholders with differing needs and expectations
- Identified requirements (needs) and unidentified requirements (exceptions) (PMBOK Guide 1996)

A project is defined as having a distinct starting point and an ending point or finish. It is performed by people using tools, usually both limited. It is planned, executed, and controlled. Projects are often unique, such as corresponding to a distinct model year or product, and may involve the extensive use of new technologies or require coordination between a diverse pool of people who work together for the purpose of obtaining a common goal.

Early project management methods were developed by DuPont in 1957 and later built upon by NASA, the U. S. Department of Defense and the utility and computer industries. The process was
later embraced by the building design and construction industry as an effective means to get and stay competitive. After all, anyone can build a vehicle, it is the team who can build it better, faster and cheaper who will prosper in this globally competitive environment. The same holds true for systems, subsystems and components. *Better, faster, and cheaper!* Project management processes, tools and techniques allow organizations to control costs and proactively identify problems and solutions on paper before they become actual crises with limited options. Project management allows stake-holders to evaluate options and determine the best way of meeting customer needs.

Project management is a systematic approach to initiating, planning, executing, controlling and closing. It is valuable because it guides the project team to address the critical questions:

- Who are the stakeholders?
- What are their requirements?
- Who needs to be involved?
- What needs to happen?
- Does everyone understand their role?
- Who needs what from whom?

The project management approach is increasingly finding its way not only into the engineering community of automotive design and development, but also the buying community, the accounting and finance staff, customer service, human resources, administrative support, and of course manufacturing and assembly.

1.3 THE GROWTH OF PROJECT MANAGEMENT

As the benefits of professional project management become evident, there is an increased interest and awareness in the subject matter of project management (PM). For example, over thirty colleges and universities now have Master & Ph.D. programs on PM.
Figure 1 illustrates the growth in enrollment in the Master of Project Management (MPM) course at Keller Graduate School of Management.

The Project Management Institute (PMI) as well as other project management groups worldwide, such as IPMA in Europe, have experienced significant growth in the last several years. PMI also has Special Interest Groups (SIG's) focusing on PM within specific industries. In 1997 the automotive project management SIG will conduct its 4th annual symposium. The first three years were sponsored by Chrysler, Ford and General Motors respectively.