AIAG
Automotive Industry Action Group

D-24

Guideline for Combining 3-D Models and 2-D CAD Documentation

SASIG
strategic automotive product data standards industry group

A Joint Publication

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Published by:
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APPROVAL STATUS

The AIAG Collaborative Engineering Product Development Steering Committee and designated stakeholders approved this document for publication on July 12, 2006.

FOREWORD

The automotive industry has increased the use of 3D CAD systems, beginning with the development stage and moving toward manufacturing and customer support. The combined or assembled 3D models created by these systems are commonly referred to as “digital mockups.”

Traditionally, 2D drawings have been the distribution medium used in manufacturing. Standards and practices have been well established and universally adopted. Design education is readily available at industrial high schools and universities with engineering faculties.

Although 3D models are becoming more commonly used and widely accepted, there are no standards, resulting in various problems being experienced within the automotive industry. And unlike 2D drawings, educational institutions do not consistently provide coursework on creating and reading 3D models.

The ISO (International Organization for Standardization) and the ASME (American Society of Mechanical Engineers) groups are engaged in activities that will standardize drawings using 3D. In July 2003, ASME published *Digital Product Definition Data Practices*, which defines the indication of geometrical tolerance in 3D models. At the same time, ISO was in the final stages of releasing its own version of this standard.

The Digital Visualization Workgroup (DEV) in the Strategic Automotive Product Data Standards Industry Group (SASIG) began a project to establish standards for combining 3D models and 2D drawings. The results of this project are hereby published in this document: *Guidelines for Combining 3D Models and 2D CAD Documentation, V. 1*.

The guidelines have been tailored to the current circumstances of SASIG and will be revised as the need arises.

Also, there are plans to issue *Standards for 3D Annotated Models*, in 2007. This document will deal in more depth with 3D annotated models.

ACKNOWLEDGEMENTS

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INTRODUCTION

These guidelines define standardized practices for creating and defining 3D models by organizing and consolidating the current drawing and usage methods of the members of SASIG.

Accordingly, this document has been developed for practical use as a guideline for designers and engineers in the automotive industry. While the focus remains on the 3D models, their interaction with 2D drawings has also been addressed.

When using these guidelines, refer to the ISO Standards on *Technical Drawings* for the basic standards for 2D drawings. And when indicating geometrical tolerances of 3D models, refer to the ASME Y14.41 document *Digital Product Definition Data Practices*.