

# Techniques for Rapid Military Vehicle Development: Part 1 Suspension

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## **Abstract:**

This presentation demonstrates radical changes that have been made in the traditional product development process and engineering of military vehicles. A high performance development process is necessary to enable challenging functional performance and to reduce time to both quality and profit.

Several practical techniques that leverage the solid modeling, simulation and design exploration of the Pro/engineer environment will be presented. These techniques will demonstrate:

- How to identify the vehicle available volume based on transportability and mobility requirements.
- How from a set of hard points, defined in Excel, to drive the suspension component's solid models (Pro/E), the kinematic models (MDO), the FEA models (MECHANICA and ANSYS WB) and the vehicle Dynamics model (ADAMS CAR).
- How to evaluate the range of articulation angles for bushings and ball joints.
- How to locate the inner tire rod for the suspension's optimum characteristics.
- How to assess the driver's ride quality (absorbed power) using MDO.
- How to find the relative space claim envelope of a set of moving components with respect to a simultaneously moving component.