Product Tolerance Representation:

Critical Requirements for Product/Process Interoperability

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GD&T: Critical... and Overlooked

- Missing: a true semantic GD&T representation in CAD/PLM products

- Why is this needed?
  - For proper part tolerancing
  - For interoperability with downstream applications

- Good standards allow for the creation of software tools that solve universally held problems
Cost of a Design Error
Interoperability is Key

**Incomplete and Ambiguous Product Definition**

**Drawing-Based**

**Model-Based**

Complete & Unambiguous Shape Definition

Solid Model

Incomplete & Ambiguous Non-Shape Attributes
(e.g., Tolerances, General Property Attributes)
New Possibilities for Software Innovation

Augment Product Tolerance Information for Downstream Applications

- 2-D Part Representation
- Solid Model
- Toleranced Solid Model
- CMM Part Program Generation
- Other Applications:
  - Tolerance Analysis
  - Assembly Analysis
  - Process Planning
    - Manufacturing
    - Measurement
  - Measurement Results Analysis
- NC Toolpath Generation