



WINNER

1999 R&D 100 Awards Winner

PREDICT—A New Approach to Product Development

Features

PREDICT (Performance and Reliability Evaluation with Diverse Information Combination and Tracking) is a method of estimating the performance or reliability of a product when test data are scarce or unavailable. PREDICT accomplishes this by (1) documenting and exploiting the expert knowledge of a company's designers, engineers, and scientists; (2) folding uncertainties about the product's expected performance into its calculations; and (3) mathematically combining expert knowledge and uncertainty with a wide variety of existing "hard" data. Hard data includes information such as performance results of similar products, test data from components of the product in question, and output from computer models of the product. As a "product" itself, PREDICT consists of customized training, a reference book, and sample tools (worksheets, mathematical formulas, computer codes) that users are taught to adapt to their particular situation.

Applications

PREDICT is designed (1) to estimate the performance of products while they are still concepts, that is, early enough to provide guidance for design changes before the expense of prototyping, and (2) to forecast the future performance of existing systems that cannot be tested but that must be guaranteed to perform as required when they are needed.

Benefits

For analytically predicting performance, PREDICT provides the following benefits:

- Captures and exploits a company's greatest asset—the expert knowledge of its employees
- Prevents costly manufacturing surprises and product recalls
- Provides guidance for prototype testing, resource allocation, and design and process changes
- Monitors product/system performance through changes
- Reveals and clarifies interactions in the system
- Develops a formal record of knowledge to guide future product development