Verification & validation

Best practice spotlight

As designs change, it's important to verify how alterations will impact performance.

Will your designs meet requirements?

A thorough verification and validation process will guarantee that your products meet requirements that customers have specified – including 2D/3D mechanical CAD drawings and models, electrical schematics, and software codes.

Manufacturers need to track the model and geometric information against customer specifications and evaluate performance requirements (e.g., structural, vibration, durability, heat, and motion performance) long before products actually get to market. What's more, as designs change, it's important to verify how alterations will impact performance.

Early identification means design problems get addressed before they become problems in the field. And problems do occur: in 2010 there were 136 automotive recall campaigns in the United States alone, affecting 17.2 million vehicles.[1] Fortunately, digital simulation can dramatically reduce reliance on costly physical tests, requiring them only for final validation.

Does your verification and validation process follow these five proven steps?

1. Identify testing methods by which the requirements are validated.
2. Secure facilities and resources to develop models, run simulations and build prototypes.
3. Prepare test cases and test configurations that translate requirements into loads and constraints that can be digitally and/or physically measured.
4. Execute tests (digital or physical) across all functional domains.
5. Document results, reporting on the satisfaction of requirements and specifications, correlations between simulation and physical tests, and recommendations for failed conditions.

Leading product development teams meet customer expectations by predicting and accommodating real-world conditions, optimizing designs accordingly, and then sharing the results with those that established the requirements. Core to their verification and validation activities are:

- Consistency and credibility in simulation activities
- Application of associative simulation and design
- Use of a collaborative simulation environment
- Digital mockups and front-loaded simulations

Does your company use solutions that allow engineers to virtually test product performance, select optimized designs based on customer and engineering requirements, and make results available to everyone?

To learn more about verification and validation, visit:
PTC.com/solutions/processes/verification-validation

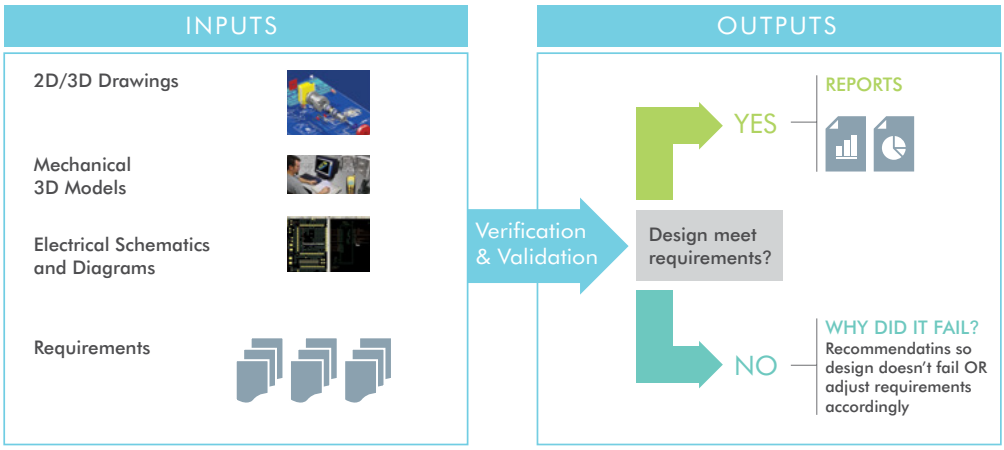

Figure 1: Process of validating that designs meet performance requirements and are verified through digital or physical means using certified or approved methods, progressing from components to assemblies and systems.

[1]Matt Degen, "Was 2010 the Worst Year for Auto Recalls?," *The Orange County Register*, December 29, 2010.

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