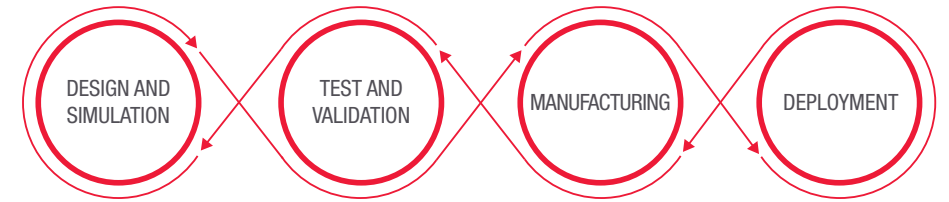


# Avoid Test Error



Apply the science of measurement (metrology) to improve product quality across your life cycle.



## What?

Test error is in all measurements and can be reduced.

Test error = true value – measured value

- True value = weight = device under test (DUT)
- Measured value = scale output = DUT test results

Testing DUTs ensures that you meet design specifications. Some DUTs pass and some fail.

All measurements have error. The measured value plus and minus the test error limits (measurement uncertainty, or MU) determines the risk of making an incorrect pass and fail decision. However, because of MU, defective products sometimes pass (false pass), and good products sometimes fail (false fail). False-pass and false-fail results impact cost and schedule. You can reduce false passes and false fails.

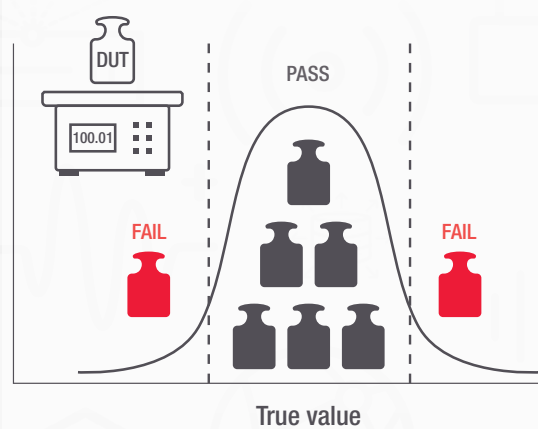


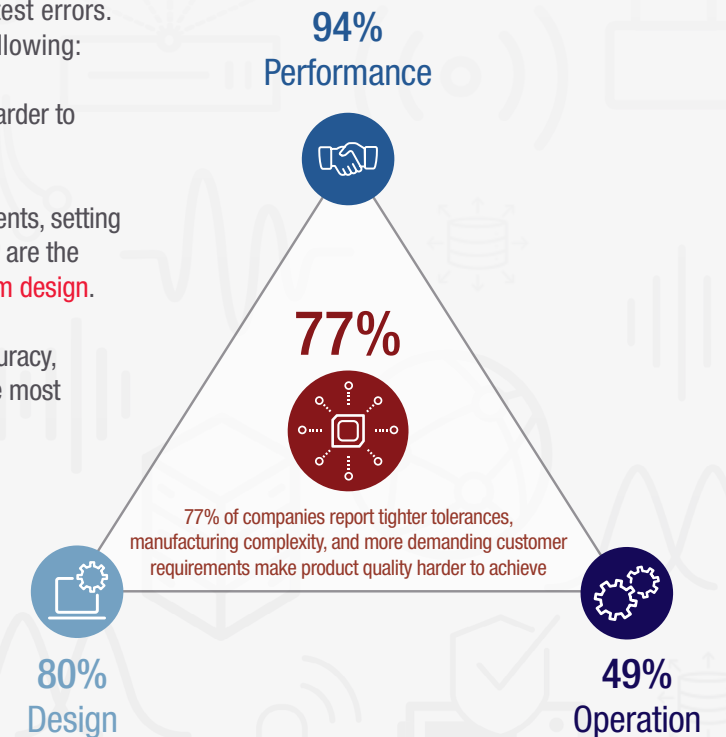
Figure 1. Normalized population distribution of true value of weight

## Why care?

Test error impacts product quality and profit.

Accurate test equipment, measurement, and fast technical resolution can also reduce test errors. Companies surveyed reported<sup>1</sup> the following:

- **77%** reported product quality is harder to achieve.
- **80%** reported customer requirements, setting test limits, and tolerance stack-up are the most critical aspects of **test system design**.
- **94%** reported test equipment accuracy, reliability, and repeatability are the most critical aspects of **test system performance**.
- **49%** reported environmental factors such as temperature and dust are the most critical factors in **optimizing test system operation**.



<sup>1</sup> Dimensional Research on Test Trends. December 2018.