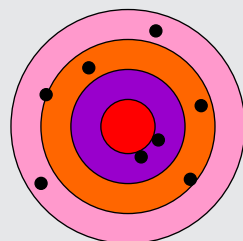
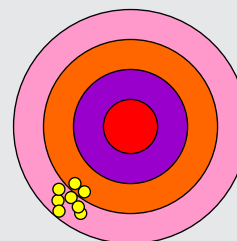




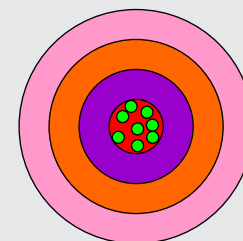
## 01 Accuracy and Repeatability



Neither accurate or repeatable



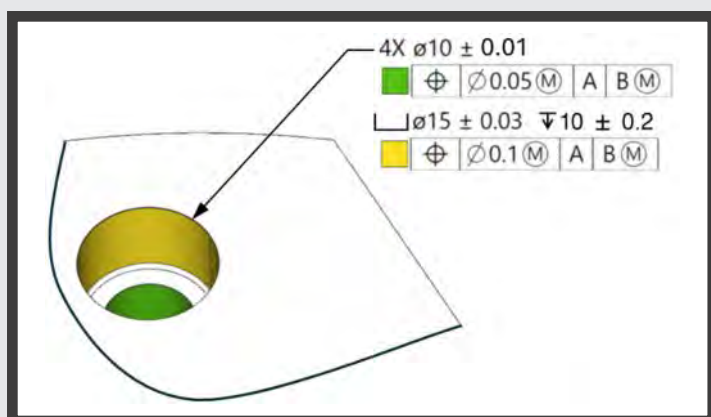
Not accurate but repeatable



Accurate and repeatable

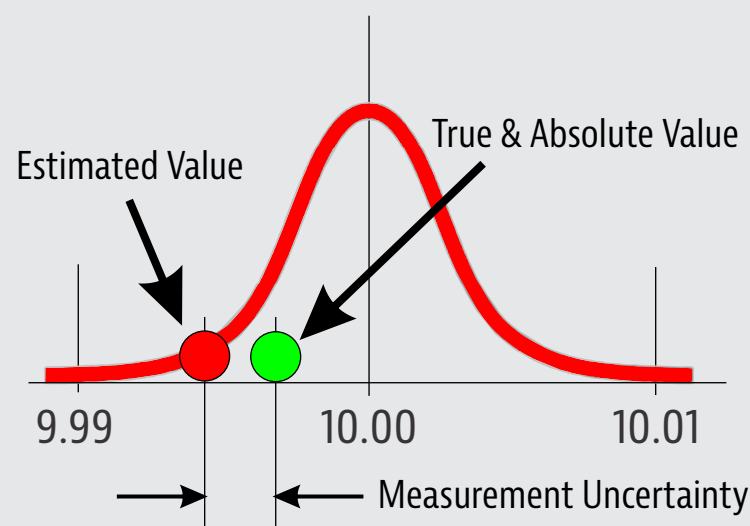
A result is called **valid** if it is both accurate and repeatable.

## 02 Is accurate and repeatable enough to make confident decisions?

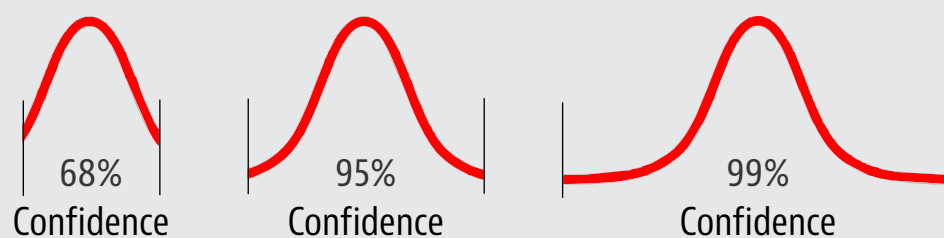


**Our decision:**  
A 10 mm bore with a +/- 0.010 mm tolerance

## 03 Every measured value is an estimate of the true and absolute value. The "goodness" of this estimate determines the uncertainty of measurement and how much confidence we can have in our measured value.

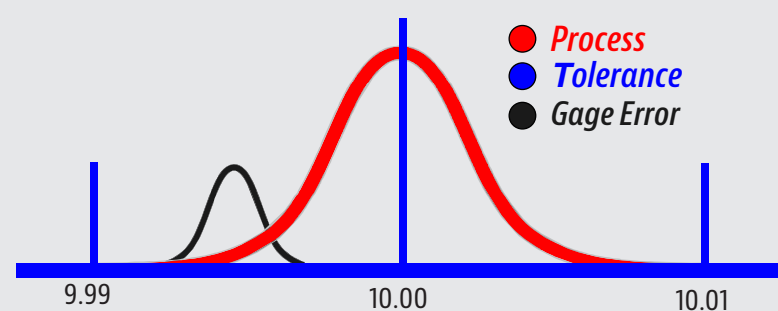


## 04 We describe the "goodness" of our measured estimate with a confidence interval that defines how much risk we can accept.



"95 times out of 100 the true value falls inside my confidence interval"

We have identified our feature, its nominals, tolerances, and our desired confidence level. Next is identifying the measurement system to be used. To do that we need to define our Tolerance to Uncertainty Ratio (TUR).



4:1 TUR, 25%, is the practical standard used for our example

Our measurement device needs to prove itself capable to:  
 $0.02 * 0.25 = 0.005 \text{ mm at } U95 \text{ (95\% Confidence Interval)}$