What is Design for X?

Design for X (DFX) is an approach to engineering and design that focuses on a primary variable of a product or process, and narrows in on the design activities that will influence that trait or feature as the desired outcome of a project.
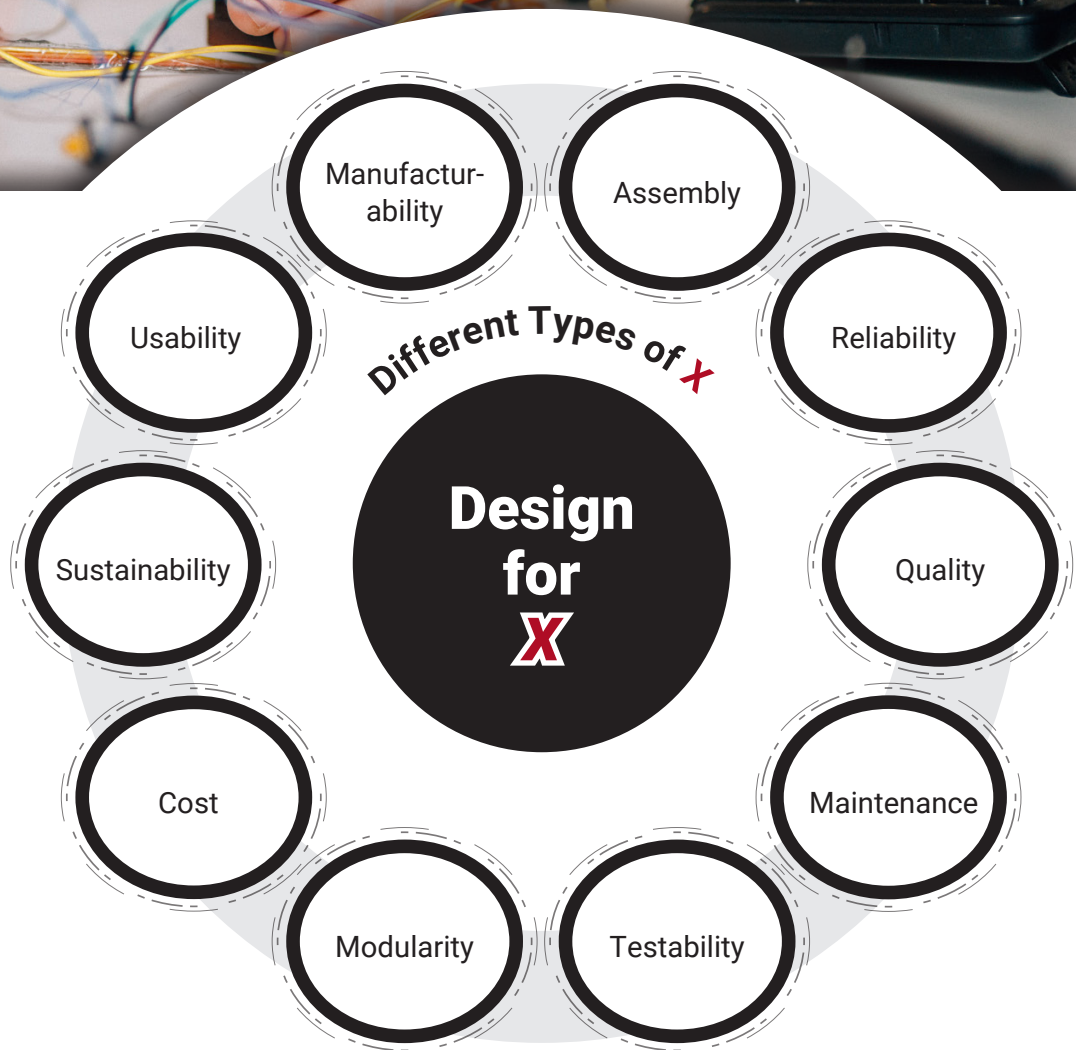
DFX Focus Areas

DFX represents a holistic approach to product development that optimizes the design against multiple objectives. There are many different types of **X**, each one targeted toward a unique objective.

DFX Insights

The goal of DFX is to focus attention on the variable and/or feature of interest capable of creating the desired outcome.

In most instances, the variable **X** is not the only avenue that could be chosen for evaluation and re-design.

Complex products or systems often have several variables that can be adjusted to result in overall improved performance, reduced cost, etc.

Different Types of **X**

Design for **X**

- Manufactur-ability
- Assembly
- Reliability
- Quality
- Maintenance
- Testability
- Modularity
- Cost
- Sustainability
- Usability

Strategic Implementation of Design for X

DFX is most impactful when implemented early and used as part of a business's overall strategy.

DFX is often employed late in the product development or implementation stage in an attempt to combat market shifts, hardware shortages, performance issues, etc. However, DFX is a more powerful tool if used as part of a broader strategical approach to developing product or process differentiation up front.
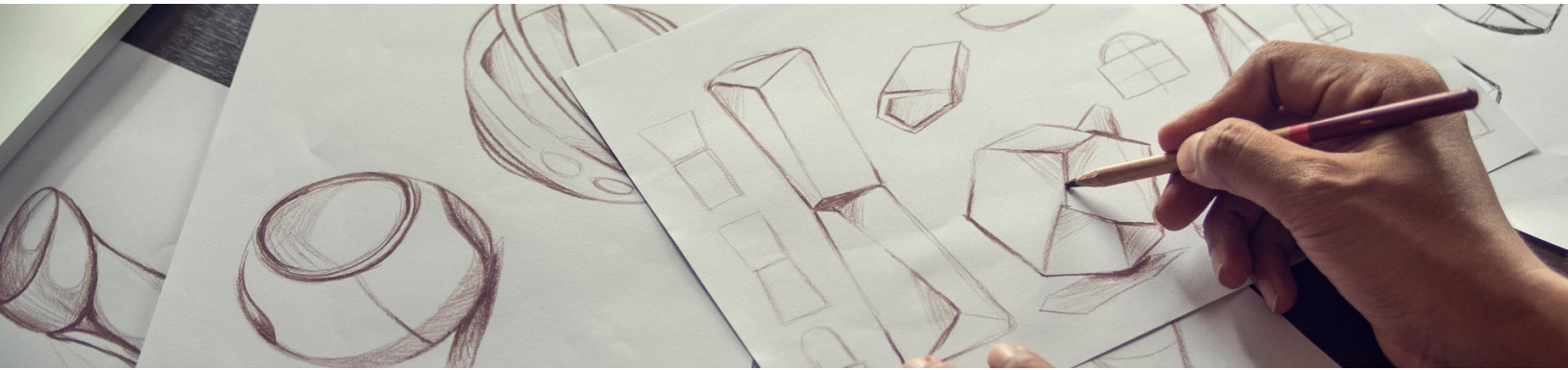
Comparing Traditional Engineering and DFX

Traditional engineering is a process that focuses on meeting functional requirements with multiple iterations, while Design for X optimizes product design by considering key factors from the outset.

Traditional Engineering	Design for X
Addresses design considerations as they arise during the development process	Addresses issues proactively by implementing design considerations early
Aims to create effective solutions that meet performance specifications	Develops a solution based on optimizing the entire design process
Employs a variety of components to satisfy overall technical requirements	Standardizes components, hardware, tools, etc. for ease of sourcing and assembly