



Design for Manufacturing, Assembly, and Reliability

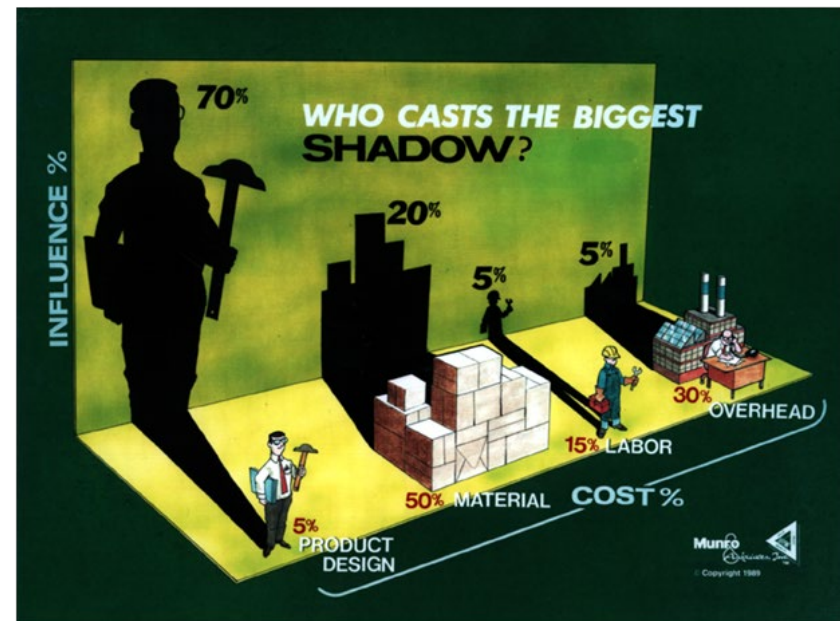
Module 3 Crosscutting Introduction

Motivation

Why is this module is important?

- Now that you have a detailed design that comprises a bill of materials (BOM) and a bill of process (BOP), it is time to refine your plan
- Decisions made at this point in the process will determine the overall cost and quality of your product

You don't want to get this wrong!



Crosscutting Introduction

Module 3 Outline

- What this module covers
- Why this is important



The Right Design Decisions

Materials and cost



- Businesses that get the cost equation wrong will fail
 - **Module 3A** provides tools to help you determine the investment and product cost implications of alternative decisions
 - It is important to understand the cost implications of the alternative decisions you are making as you scale your product

- Poor materials-selection decisions can break your product
 - **Module 3B** gives an overview of materials and their associated properties
 - It is critical that you understand the different kinds of materials that are available and the properties that will help you determine if these materials will meet your design requirements
 - This module also covers the interaction between the design, materials, and manufacturing processes (if you do this wrong, you derail your development efforts)

The Right Design Decisions

Manufacturing



- The manufacturing process will determine the quality and cost of your product
 - **Module 3C** provides the capabilities, costs, and investments necessary for alternative manufacturing processes
 - While the market, design, and materials will determine which manufacturing process you use, the selection of that process will also affect some aspects of the design and cost

- Product designs must be tailored to the proposed production process to ensure that products are made at high quality and low cost
 - **Module 3D** provides tools to help you improve your design for **manufacturing and assembly** (DFMA)
 - **Design for manufacturing** (DFM) can ensure that you don't have to make costly changes in your design at later stages
 - **Design for assembly** (DFA) guidelines help you reduce the number of parts, and decrease assembly time and cost

The Right Design Decisions

Reliability and performance



- Ensuring that your design decisions translate into long-lasting products is critical for business success
 - **Module 3E** covers tools you'll need to ensure that constituent components and the overall product are reliable and meet customer needs and requirements
 - **Module 3F** introduces how to design and fabricate electronic components that meet customer needs and provide robust performance

No customer wants the product they have purchased to fail, ever, much less, prematurely

List Of Terms

In glossary

- Bill of materials (BOM)
- Bill of process (BOP)
- Design for manufacturing and assembly (DFMA)
- Design for manufacturing (DFM)
- Design for assembly (DFA)

