

Introduction

Disclaimer:

- All images such as logos, photos, etc. used in this presentation are the property of their respective copyright owners and are used here for educational purposes only
- Some material adapted from: Ulrich & Eppinger, “Product Design and Development,” 4th edition

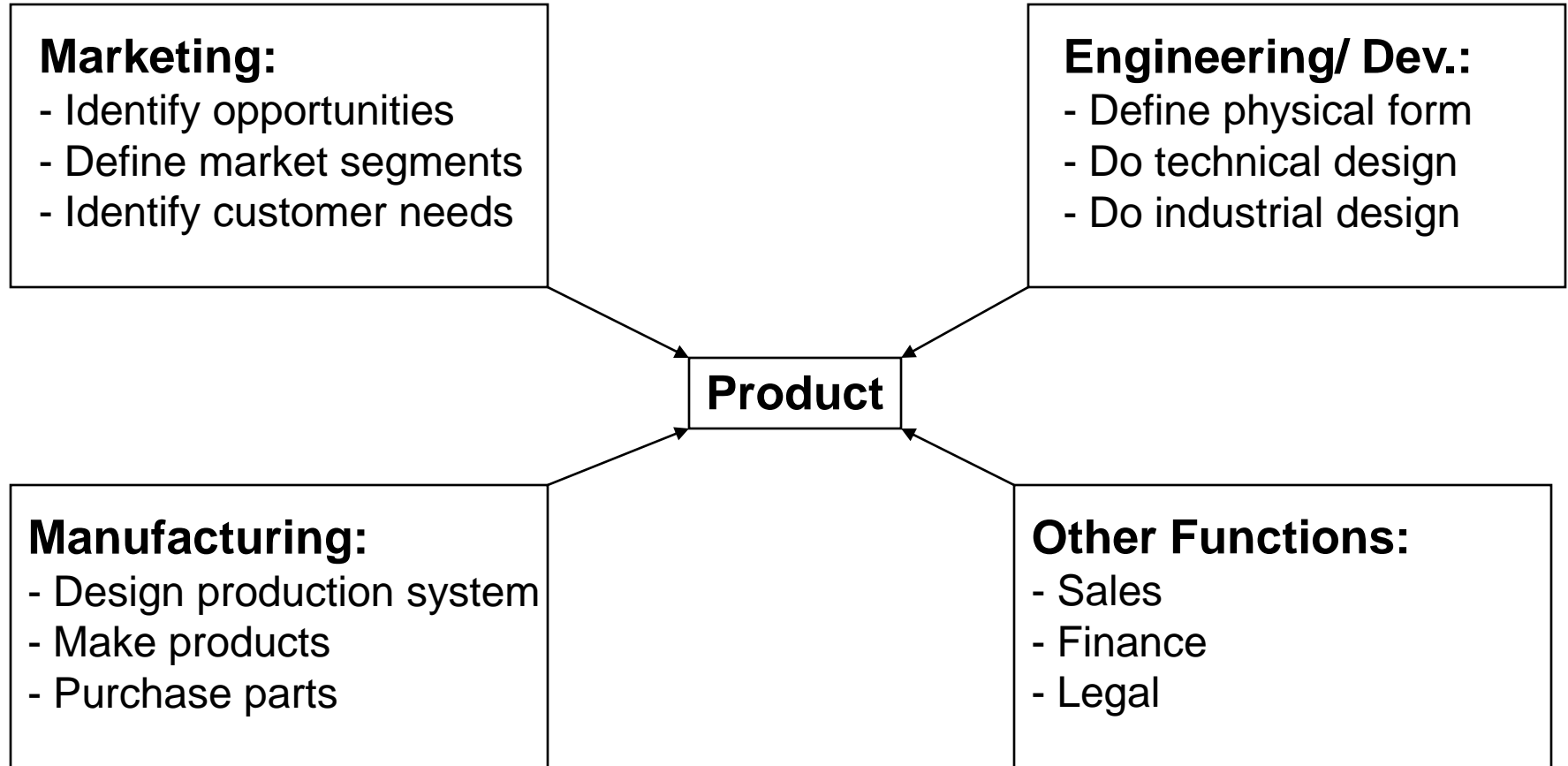
New Product Development: Definition

Term	Definition
Product	Something sold by organization to customers Can be “Product” or “Service”
Product Development	Set of activities to bring product to market Market opportunity → Product launch

New Product Development: Success Criteria

Success Criterion	Definition
Profit	Product revenue exceeds product cost Primary measurement in for-profit organizations
Product Quality	Performance: Ability to perform expected functions Finish, Reliability, Durability, Serviceability, Style
Product Cost	Capital cost: Cost of machinery, tooling Unit cost: Cost of producing each additional unit
Development Cost	Labor cost and prototype cost to create product Measures efficiency of development process
Development Time	Quickness of product team in delivering product Measures responsiveness to market demands
Development Capability	New skills learned to develop future products Potential new competitive advantages

New Product Development: Key Functions



Challenges in New Product Development Process

Challenge	Description
Trade-Offs	Cost vs. weight? Cost vs. performance? Tesla electric car; Lithium-ion batteries; \$109,000 Prius hybrid electric car; NiMH batteries; \$33,000
Market Dynamics	New technologies Competitor products Changing customer preferences
Details	1000s of details to resolve in new product Provide tool-less access to replace batteries? Is feature X worth 3 extra months of development?
Time Pressure	Additional development time can cost market share
Economics	Significant investment to develop new product Additional investment to market new product Product must be profitable to provide ROI

Tesla Roadster



Toyota Prius



Personal Pitfalls of New Product Development

Appeal	Description
No Autonomy	Meddling by upper management
Organizational Conflict	Functional (vs. project) organizational structure Project members might get pulled to other areas Worse yet: Matrix structures with 2 bosses
Low Resources	Lack of staff, Lack of skills Lack of money, Lack of equipment
No Collaboration	Over-emphasis on only one function, eg Engineering Little input from Marketing or Production

Organizational
Conflict



Personal Appeals of New Product Development

Appeal	Description
Act of Creation	Idea → Prototype → Market Success Few activities as creative
Societal Needs	New products can satisfy needs of society Great products can delight & even save lives
Team Diversity	Different perspectives from different team members Opportunity to broaden one's horizons
Team Energy	Focused, committed teams are exciting Working together to create something new

Artificial Heart:
Meeting Societal Needs



Team Energy

