

**37208-ENG - LABORATORY  
DIGITAL INNOVATION AND  
MANAGEMENT (DIM) – DIM  
LAB**

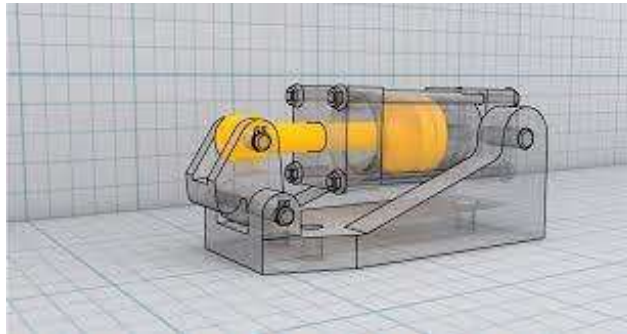
Davide Hahn

05/03/2025

**Introduction to new product  
development and product strategy**

# Agenda

- What is product strategy and why does it matter?
- What is new product development and why does it matter?
- New product development objectives and challenges
- Phases of new product development
- Overview of the PBLs' contents
- PBLs guidelines



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# Inside the collapse of Dyson's electric car dream

It started with a dream in 1993 and ended due to economic uncertainty in 2019. This is how Dyson's attempt to compete with Tesla foundered



# What is Product Strategy (PS) and why does it matter?

- The PS describes how a **product serves the company strategy** in terms of target market and value created for that market.
- The PS ensures the alignment between new product development (NPD) and the company strategy.
- Example? The Blue Ocean Strategy is based on developing new products that break the value-cost trade-off





Ford recalls thousands of trucks due to crash risk: What to know

**GROUND**

# A COMPLETE TIMELINE OF THE BOEING 737 MAX DISASTER

Ever since the model took the skies, the aircraft manufacturer has faced hard questions about the safety of their planes

TECH

## Samsung Galaxy Fold review: broken dream

The future is still very fragile

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# What is New Product Development (NPD) and why does it matter?

- A product is a physical artifact sold by an enterprise to its customers
- **NPD is the process** beginning with the perception of a market opportunity and ending in the production, sale, and delivery of a new product
- Quickly develop new products that satisfy customers' needs in a cost-effective way and are aligned to company strategy is key to firm success
- Example: the Honda effect



# NPD objectives

## NPD performance

- Product quality
- Product cost
- Development time
- Development cost
- ...

## Strategic Objectives

- Differentiation
- Cost leadership
- Blue Ocean
- ...

## Firm Performance

- Profitability
- Growth
- Environmental
- ...

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# The saga of Apple's bad butterfly MacBook keyboards is finally over



/ In Apple's product lineup, at least



# Coming Apart While Scaling Up – Adoption of Logics and the Fragmentation of Organizational Identity in Science-Based Ventures

Peter Kalum Schou 

First published: 10 January 2023 | <https://doi.org/10.1111/joms.12908> | Citations: 3

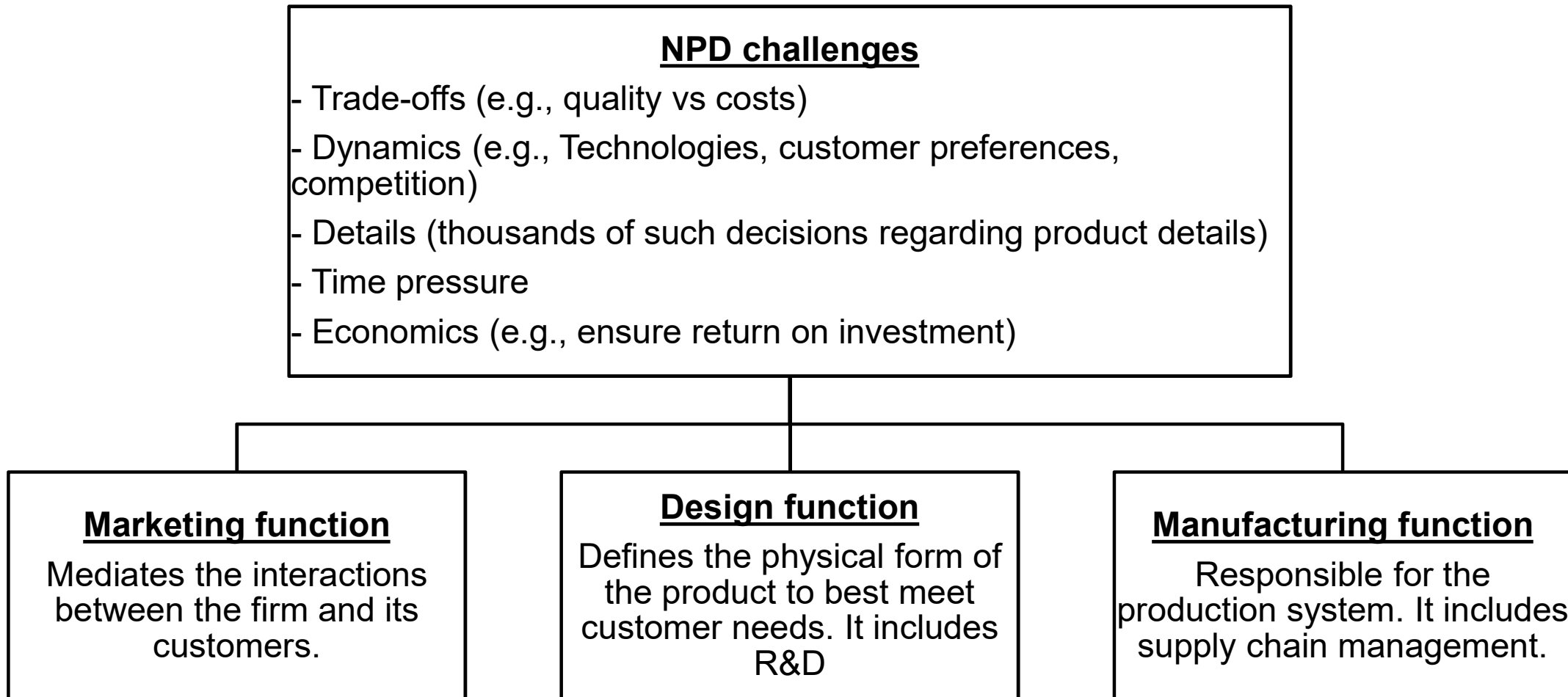
 SECTIONS

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## Abstract

When trying to commercialize, science-based ventures often face contradicting institutional logics. While stakeholders appreciate scientific ability, they also increasingly demand concessions to a commercial logic focusing on efficiency and profit. To satisfy stakeholders, science-based ventures must adapt their organizational identity to include the commercial logic. The study investigates this challenge, relying on a 24-month in-depth study of a venture in the photonics industry. Based on the findings, I developed a process model that outlines how the logics shift from compatibility to incompatibility during the adoption process, thereby causing the organizational identity to fragment. The paper contributes to research streams on organizational identity processes, dynamics of institutional logics in organizations, and scaling of science-based ventures.

# NPD «cross-functional» challenges



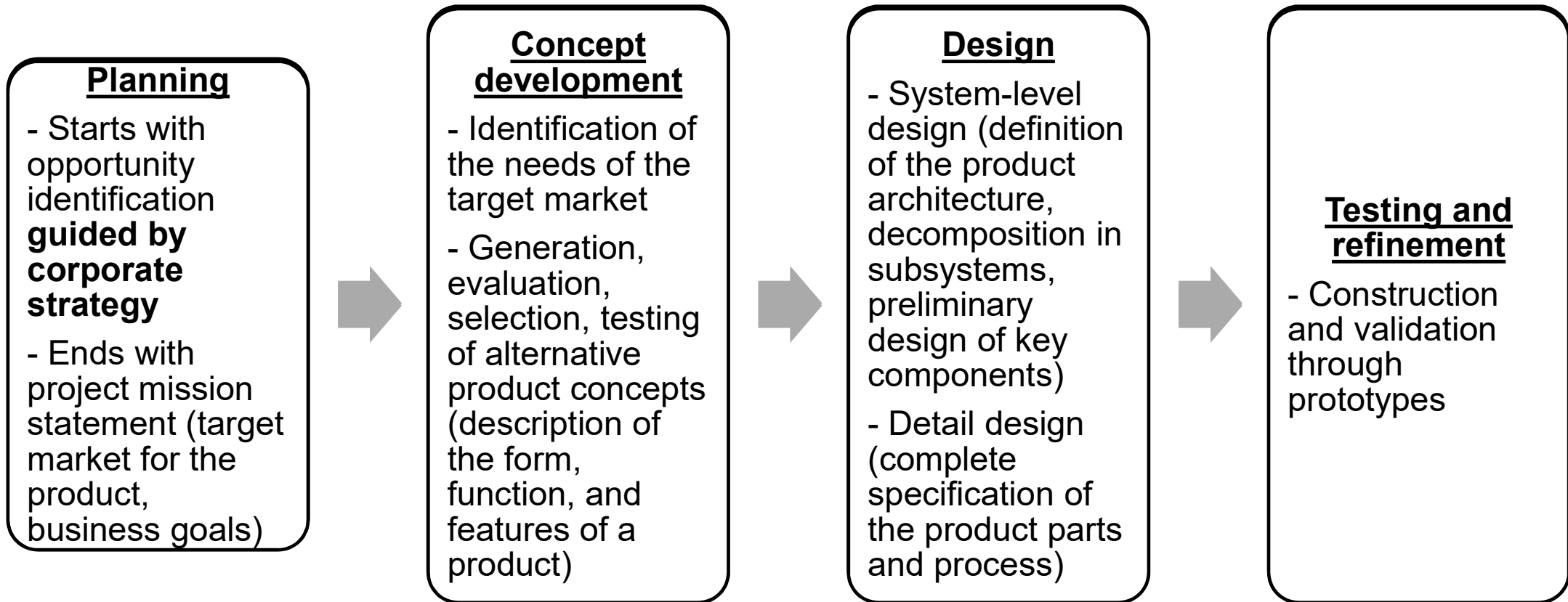
# NPD costs



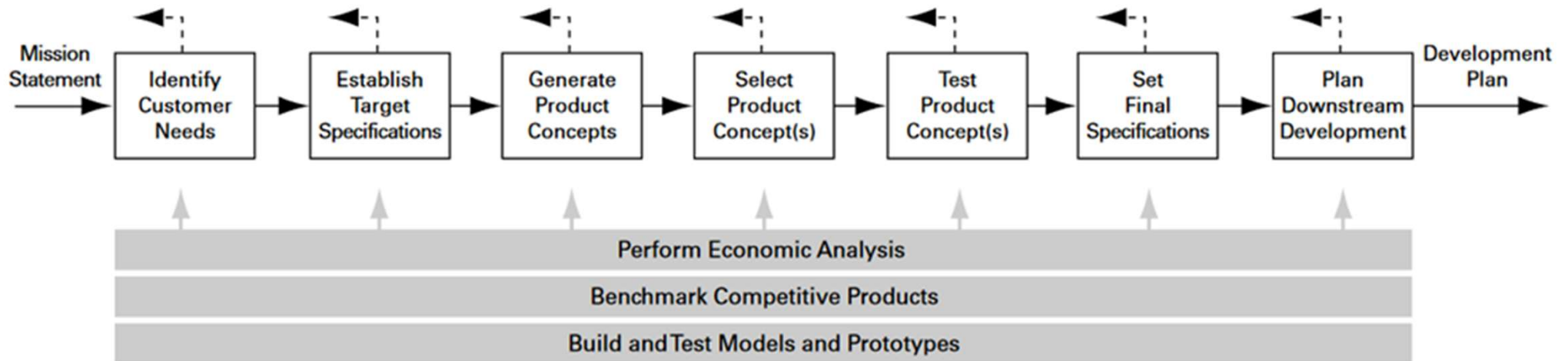
	Stanley Tools Jobmaster Screwdriver	Rollerblade In-Line Skate	Hewlett-Packard DeskJet Printer	Volkswagen New Beetle Automobile	Boeing 777 Airplane
<b>Annual production volume</b>	100,000 units/year	100,000 units/year	4 million units/year	100,000 units/year	50 units/year
<b>Sales lifetime</b>	40 years	3 years	2 years	6 years	30 years
<b>Sales price</b>	\$5	\$150	\$130	\$20,000	\$260 million
<b>Number of unique parts (part numbers)</b>	3 parts	35 parts	200 parts	10,000 parts	130,000 parts
<b>Development time</b>	1 year	2 years	1.5 years	3.5 years	4.5 years
<b>Internal development team (peak size)</b>	3 people	5 people	100 people	800 people	6,800 people
<b>External development team (peak size)</b>	3 people	10 people	75 people	800 people	10,000 people
<b>Development cost</b>	\$150,000	\$750,000	\$50 million	\$400 million	\$3 billion
<b>Production investment</b>	\$150,000	\$1 million	\$25 million	\$500 million	\$3 billion

Ulrich, K. T., & Eppinger, S. D. (2017). Product design and development (Vol. 4, pp. 1-3). Boston: McGraw-Hill higher education.

# Phases of NPD (between strategy and design)

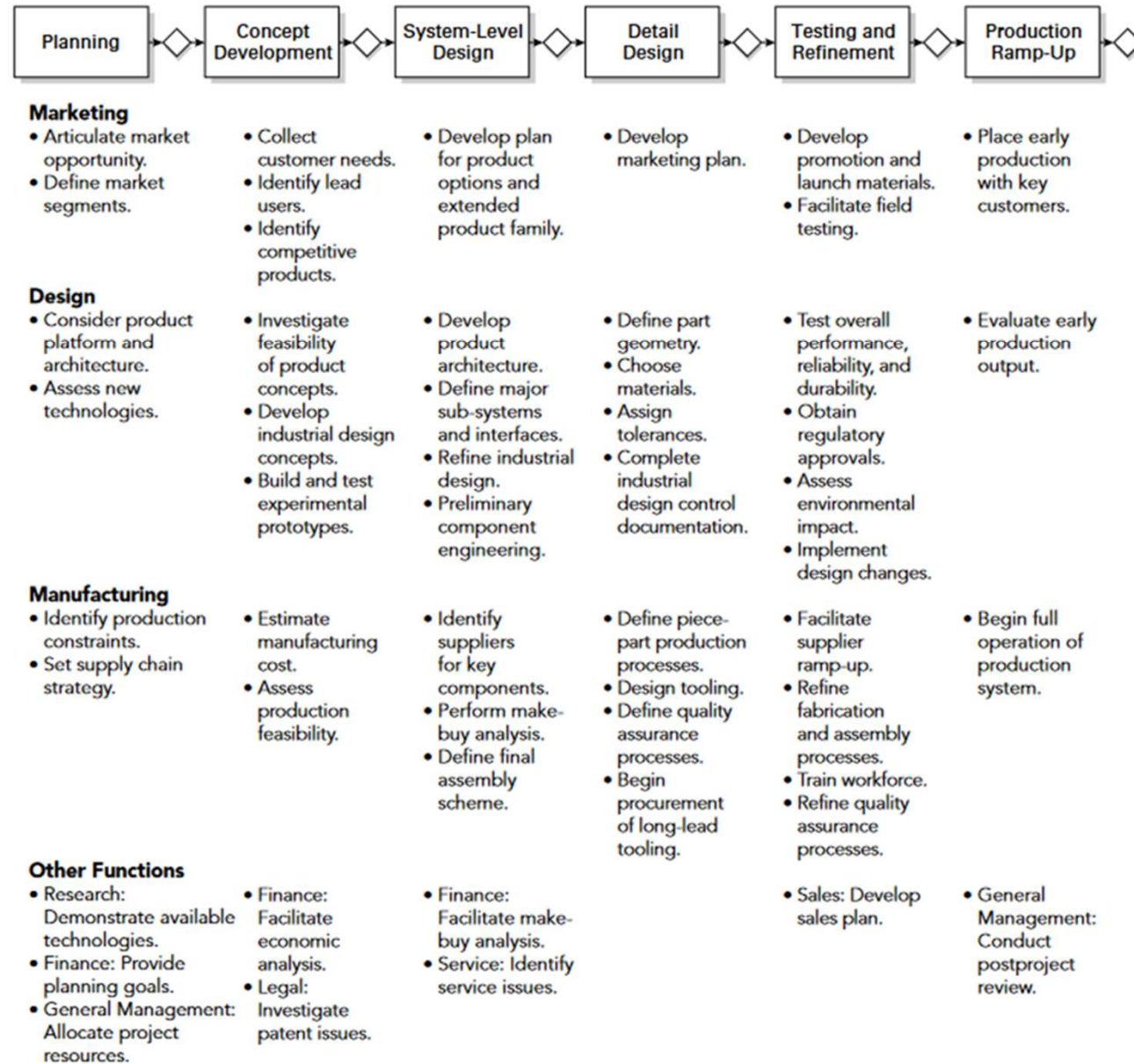


# «Zoom» on concept development



Ulrich, K. T., & Eppinger, S. D. (2017). Product design and development (Vol. 4, pp. 1-3). Boston: McGraw-Hill higher education.

# NPD and firm functions



Ulrich, K. T., & Eppinger, S. D. (2017). Product design and development (Vol. 4, pp. 1-3). Boston: McGraw-Hill higher education.

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# Overview of the PBLs

1. PBL 1: Planning and product strategy (Team 1, 19<sup>th</sup> March)
2. PBL 2: Opportunity identification and customers' needs (Team 2, 26<sup>th</sup> March)
3. PBL 3: Concept generation (Team 3, 2<sup>nd</sup> April)
4. PBL 4: Concept selection and testing (Team 4, 9<sup>th</sup> April)
5. PBL 5: Design and economics (Team 5, 16<sup>th</sup> April)



# PBL 1: Planning and product strategy

## Product strategy

- High-level plan describing the goals the firm pursues with NPD
- Defines the vision for a product and how that vision will be realized



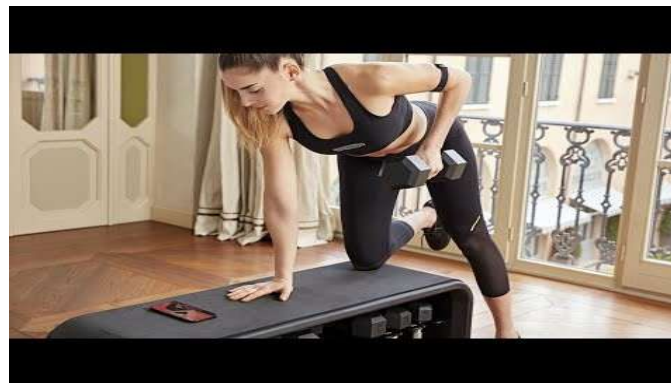
## Planning

- Periodic process that considers the portfolio of NPD based on firm strategy
- Defines a mission statement for each NPD project (business goals, target markets, benefits)



## Portfolio of NPD projects

- Balance between breakthrough products, new platforms, derivatives, and current product support





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## PBL 2: Opportunity identification and customers' needs

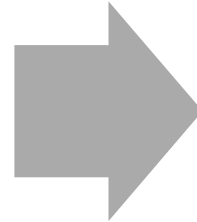
- First stage of concept development: generate large number of opportunities and filter them on the basis of customers' needs and firm's product strategy
- An opportunity is an idea for a new product in terms of
  - a newly sensed need
  - a newly discovered technology
  - rough match between a need and a possible solution
- Important: focus on the needs not on the solution to leave the development team with maximum flexibility



# PBL 3: Concept generation

## Product specifications

- Defines what the product has to do on the basis of customers' needs
- Bridge between customers and development team
- Defined (both) before (and after) knowing constraints and managing trade-offs



## Concept generation

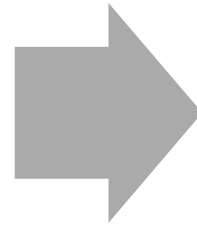
- Approximate description of how the product will satisfy the customer needs
- Usually expressed as a sketch or as a rough three-dimensional model accompanied by a brief textual description



# PBL 4: Concept selection and testing

## Concept selection

- Evaluation of concepts with respect to customer needs
- Comparison of the relative strengths and weaknesses of the concepts
- Structured concept selection involves screening and scoring processes

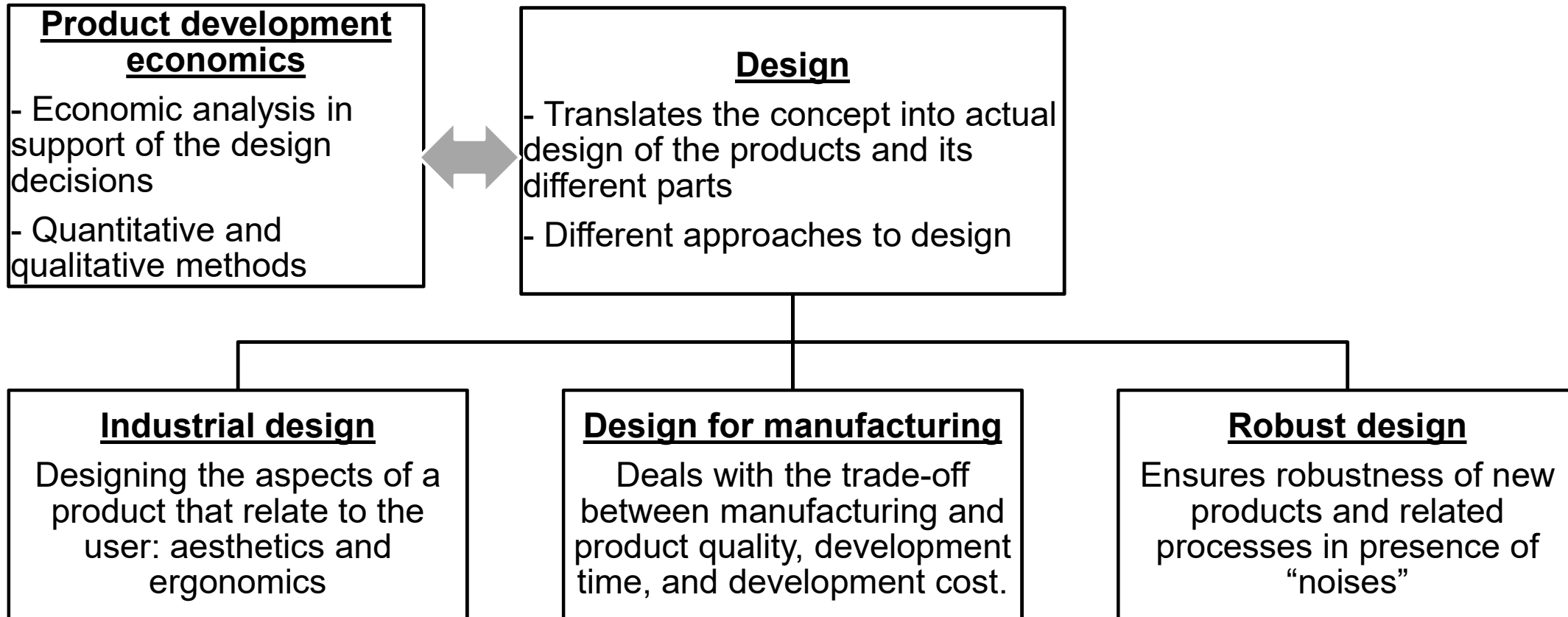


## Concept testing

- Solicits a response from the target market regarding few selected concepts
- Used to improve a concept and estimate the sales potential of the product
- Often uses prototypes (i.e., an approximation of the product along one or more dimensions of interest)
- Digital technologies have reduced cost and time for creating prototypes



# PBL 5: Design and economics



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## Why PBL in an NPD Lab?

- **Problem-Based Learning (PBL)** is a **student-centered approach** where learners actively explore and apply foundational concepts rather than passively absorbing information.
- Through the **flipped classroom model PBL** shifts teaching from passive lectures to **active engagement**, with students discussing concepts within teams (during preparation) and across teams (during class presentations).
- This **interactive approach bridges theory and practice**, preparing students for hands-on learning in the Lab phases of PW.
- In this course, **PBL and the flipped classroom create a structured path from theory to practice**: students first engage critically with foundational NPD concepts, then apply them in labs to develop a real new product through iterative prototyping and problem-solving.

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## PBLs guidelines (1/3)

- Inputs are shared by the faculty with the team 2 weeks before the lecture (shared with the team leader through google drive folder)
- Readings
  - Textbook
  - Scientific papers
  - Tools and frameworks (e.g., NPV, scoring of concepts)
  - Business cases
  - Examples (PBLs and PWs) from last year
- Teams are encouraged to look for additional readings from sources such as
  - Library (textbooks)
  - Scopus (scientific papers)
  - Accredited websites such as Product Development and Management Association, Board of Innovation, User Experience Professionals Association (tools and frameworks)
  - Case repositories such as Sage and HBR (business cases)



## PBLs guidelines (2/3)

- Expected outputs (from the team to the class)
  - PPT presentation to the faculty ([davide.hahn@unibg.it](mailto:davide.hahn@unibg.it)) by 1 PM the monday before the PBL
- Suggestion for breakdown of PBL schedule
  - Around 15-20': overview of the topic (textbook and scientific papers)
  - Around 10-15': tools and frameworks
  - Around 5-10': business cases
  - Around 5-10': class Q&A (more details in the next slide)
  - Around 15-20': feedback/integration from the faculty
- Creative presentation methods (e.g., games) are highly appreciated
- We suggest alternating harmoniously theory and practice within each PBL



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## PBLs guidelines (3/3)

- Interaction (with the class) is highly appreciated
- Each presenting team will prepare 10 multiple-choice questions (4 alternative answers) regarding the PBL to be answered by the other attending teams using Slido or similar apps
- 10' time to answer the 10 questions
- Each attending team will receive:
  - 1 point for each correct answer
  - -0.25 points for each wrong answer
- Which team will gain more points?

