UNIVERSITY OF APPLIED SOCIAL SCIENCES

Product Lifecycle Management

Project „Joint Degree Study programme „Technology and Innovation Management“ preparation and implementation“
No. VP1-2.2-ŠMM-07-K-02-087

Chapter 1.
What is Product Life Cycle? (I)

- Different marketing strategies -which will be used in that system- should be applied according to the product, environment, competitor, the company’s position. All products have a short term or long term life and new life cycle starts from when this life ended up. That cycle includes five steps.

What is Product Life Cycle? (II)

- Product Life Cycle Management (PLM) addresses the full life cycles of products, from conception until disposal. The first call was made in 2000 by IBM. The most important starting point for PLM is the launch of the new concept above traditional cost-quality - the process of supply triangle.

What is Product Life Cycle? (III)

- PLM includes that a product of all the engineering, manufacturing and information of maintenance, digital media store, check.PLM starts from the creation of a product and finishes with re - transformation of product. At the same time this system can offer the products to different user profiles. The creation of the product determines largely what can be done with the product in the later life cycle phases.

The aim of PLM

- PLM always tries to reduce loss of energy, materials, work force. So, PLM brings together very professional engineering disciplines. Because of that different groups, these losses can be optimized and also PLM contributes to a new generation of lean thinking. PLM use two strategies to make a real result. These are efficiency and innovation.

Main Components and Figures of PLM

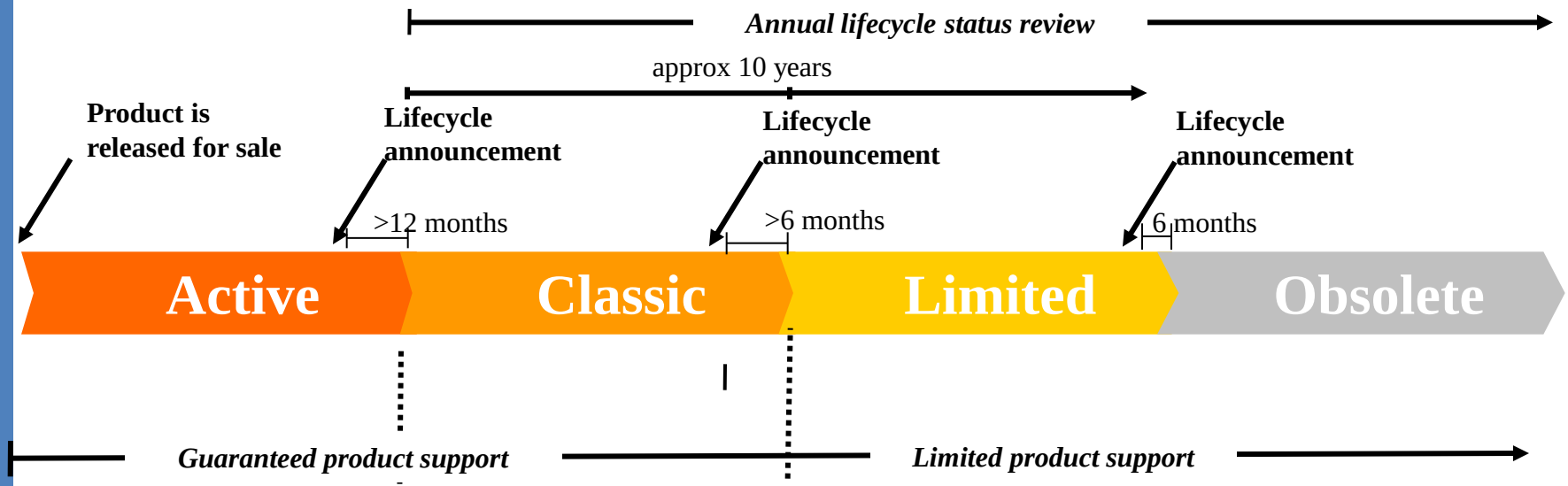
The Main Components:

- Data management: It enables appropriate stage for management. It provides information about product features, bills of material, data distribution, project structure.
- Program and project management: It's about the process of developing a product. It gives information on planning, management and checking.
- Cooperation: It supports project management and it relies on WEB standards which are based on XML(Extensible Markup Language)
- Quality management: It provides an integrated quality management for each sector.
- Management of corporate assets: It directs equipment and physical assets

The Main Figures of PLM

- Introduction (from conception to disposal)
- Product life cycle management process
- Business (the money dimension)
- Heart beat of changes (the time dimension)
- Complexity (huge number of configurations)
- Conclusion

LCM Phases (I)



Active	= standard development, production and sale.
Classic	= maintenance phase of the product: availability is guaranteed for replacing in existing plants.
Limited	= spare parts are available. The production of the CB's whole range is not guaranteed and the technical support is limited.
Obsolete parts	= technical support is no more guaranteed. The production of the CB's whole range has ended but spare might be available. Retrofit solutions are available.

LCM Phases (II)

Active development and promotion phase

- Product has been released for sale
- Actively promoted
- Product is actively sold
- Product is actively maintained with enhanced through R&D or product improvements
- Fully supported of after sales network

Product maintenance phase

- No further enhancements
- Product is no longer actively Promoted, =>12month advance notice through sales channel
- Product will be phase out
- It is still available for sale - mainly for spares and expansions of existing systems, supply under frame agreements, in case of space constrains, required functionality not yet covered by the new product, license agreements
- Price may increase (e.g. due to lower volume, vendor component costs, etc.)

Primarily service support

- The manufacture of spare parts and accessories is guaranteed
- new apparatus availability may continue, but is not guaranteed
- increasing use of refurbished apparatus or retrofitting kits
- no new development to replace obsolete components
- Technical support (field service, phone support, etc) continues, but may diminish over time with decreasing installed base

Obsolete phase

- ABB cannot guarantee availability of product support for technical reasons or within reasonable costs.
- No longer manufactured as a complete product; only component spares, refurbished apparatus, retrofit and/or revamping solutions available

Customer support over the lifecycle and beyond

Availability of service offerings is subject to local market conditions.

Lifecycle Services

Start-up

- Selection
- Installation
- Commissioning

Operate and maintain

- Training & e-Learning
- Technical Support & remote service
- Parts & repair
- Maintenance

Rebuild or replace

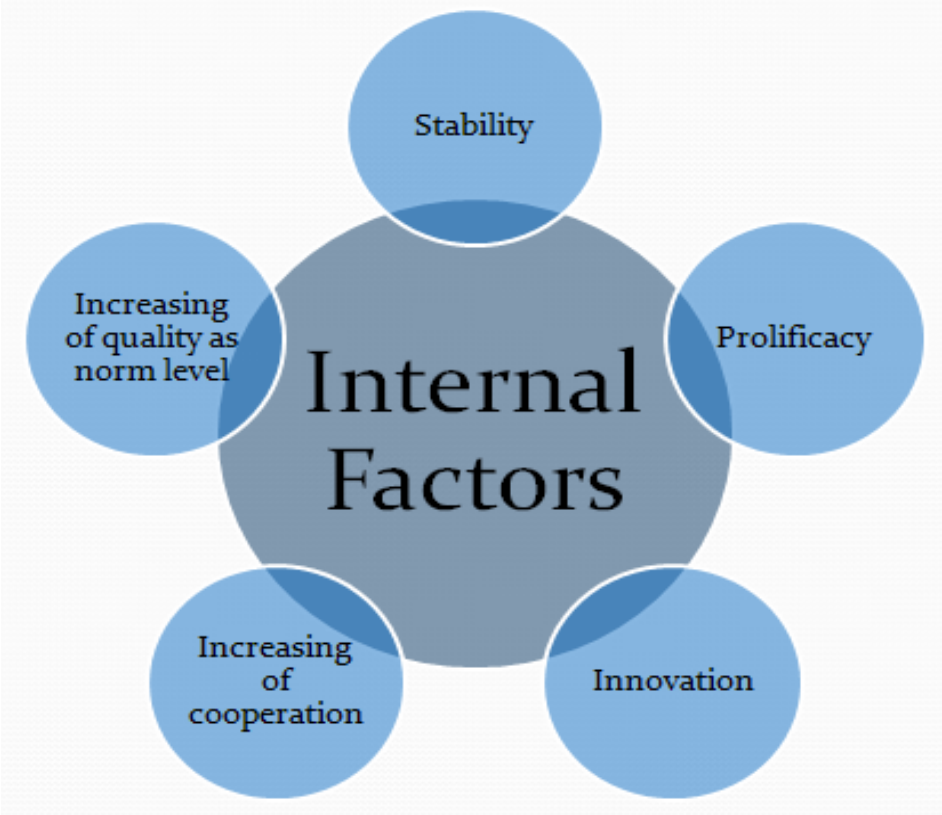
- Retrofit
- Replace & recycling

Which factors have an impact on PLM?

External Factors

- ✓ Scale: Companies want to grow continuously.
- ✓ Complexity: The diversity of product increases because of product and the process of production.
- ✓ Time of cycle: It's important for competition.
- ✓ Lean production: It's about using less energy and material.
- ✓ Global competition: The competition has increased significantly.
- ✓ The arrangements made by governments and international agreements: It's about environmental degradation, work and arrangement of job security.

Internal factors of PLM



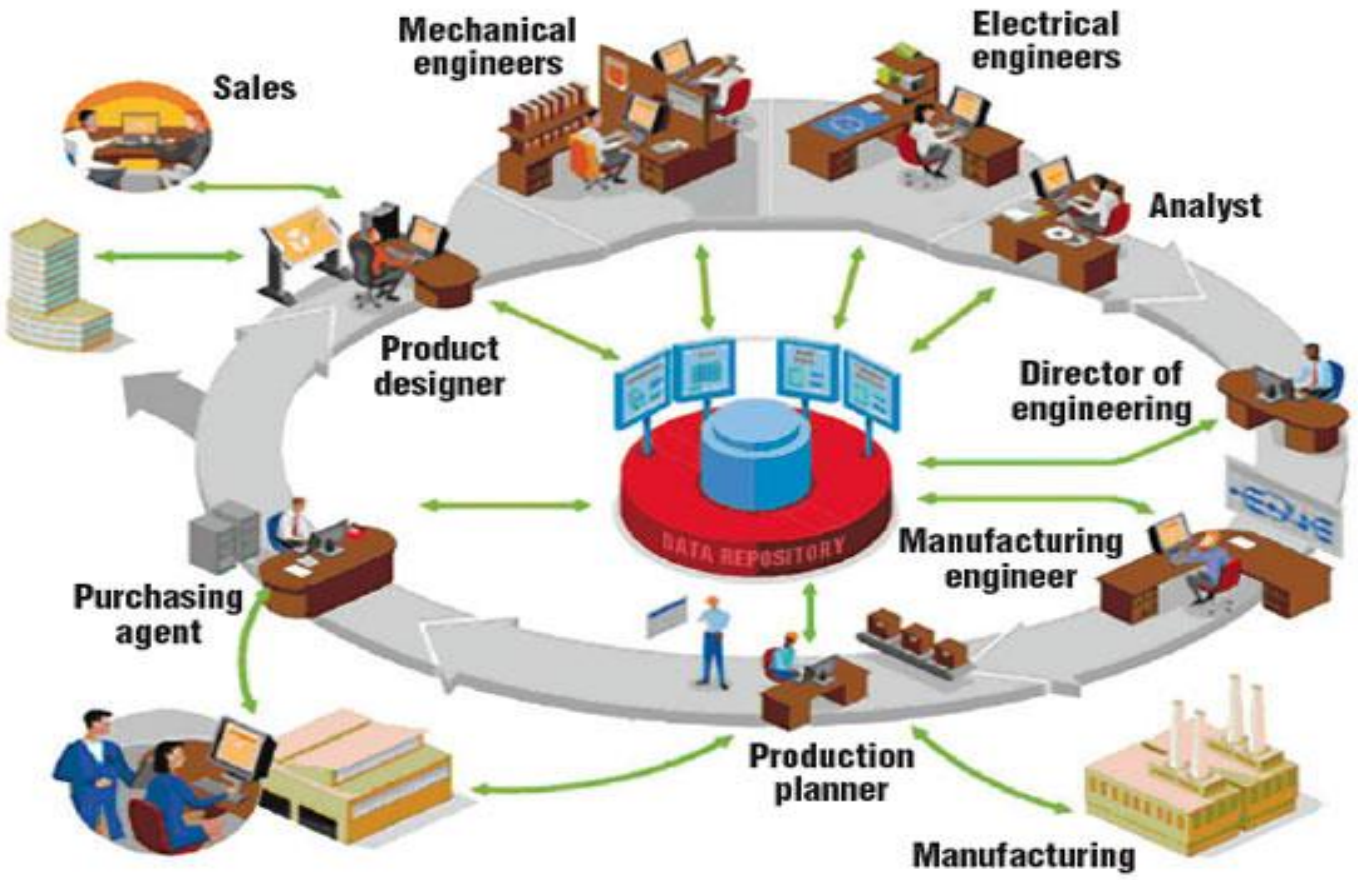
What are the sub-softwares?

- Product Portfolio Management (PPM)
- Computer Aided Design / Engineering / Manufacturing (CAx)
- Product Data Management (PDM)
- Manufacturing Process Management (MPM)
- Digital Manufacturing (DM)

What are the solutions of PLM?

- PLM Solutions are organs. It has been developed for the improvement of organization by IT(Information Technology)
- Work to rely on customer
- Responding quickly to changing market conditions
- Shortening the duration of the market to offer new products
- Workflow that allows optimization of product
- Reduction in the cost of prototype
- Continuous innovation process and implement new technologies effectively
- Reduction of waste
- Being in closer contact with customers and suppliers

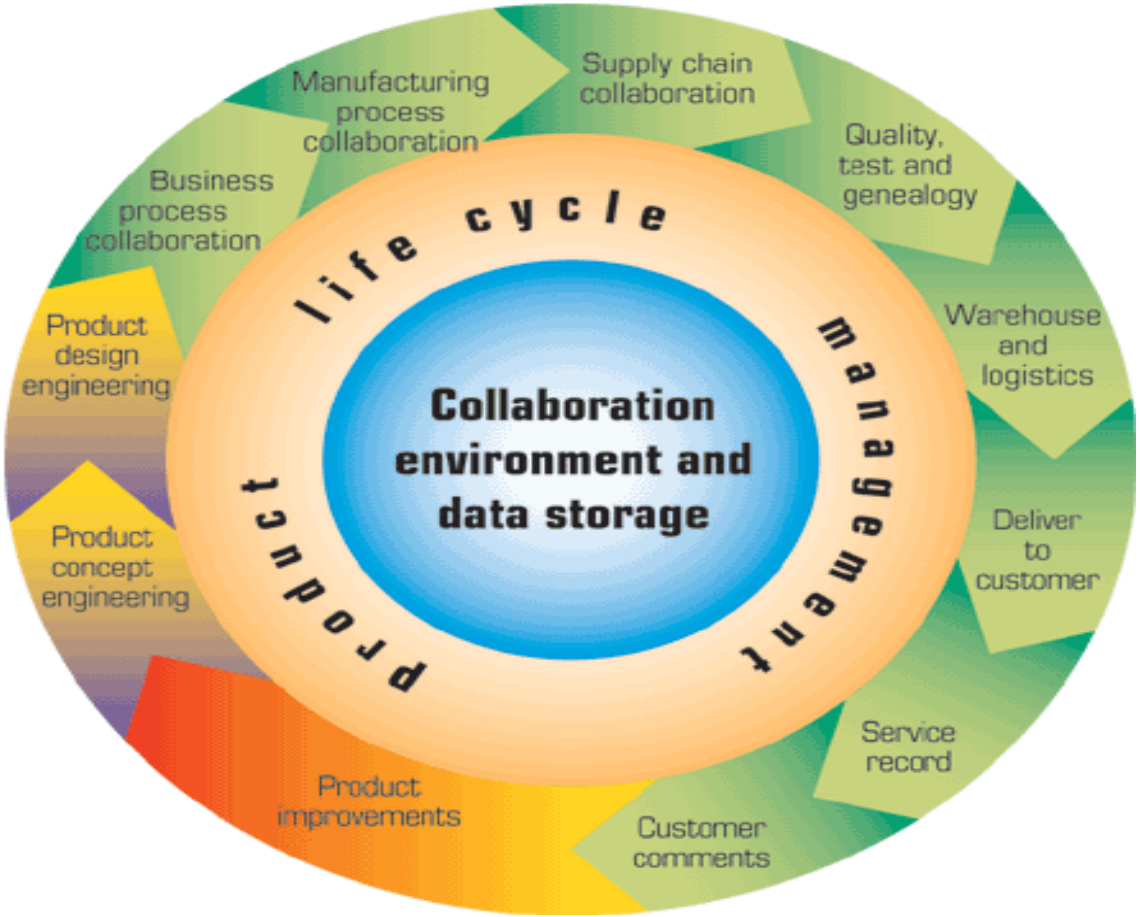
Current Information Model of PLM



What are the advantages of this software?

- to simulate the developed model
- to design the product before the other companies
- to pull down the cost
- to save from time and energy
- to increase competitiveness in the world
- to create higher quality products.
- to launch new products in less time, at a lower cost.
- to understand what change really costs in terms of time and money
- to control your production processes and not let them control you.
- to increase profits and market share.

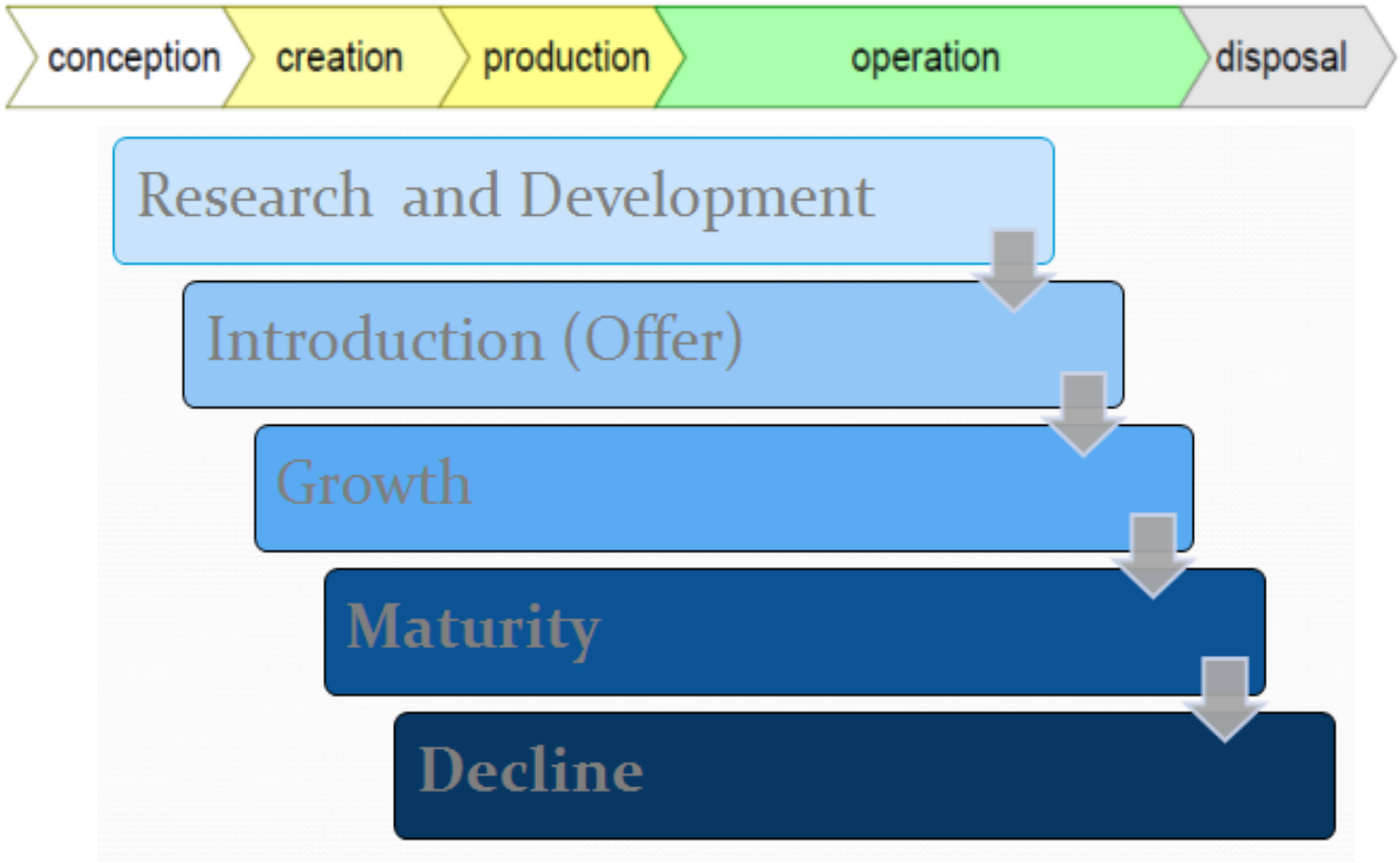
Collaboration environment and data storage of product lifecycle management



Research and Development

- In that level; Companies decide for cost of product and problems of service.%80 of product costs are determined at this stage. Products are designed, made a prototype and tested for needs of various users. The most appropriate marketing method is doing nothing about the product sales. Because; there is not a product yet.

Basic system of Product Lifecycle



Introduction (Offer)

In that level, large budgets must be separated for promotion because it is the first time of product – market meeting.

So word of mouth marketing is not possible even the product is so qualified. The size of the budget influences the length of product life cycle.

The new product does not produce profit due to costs of supply and promotion.

Growth

If the product is fit for market, companies can pass this level.

In that level, Companies begin to obtain revenue. The price of the product can be the same at the beginning or it can be change. The cost of marketing should be stable and also you have to invest for improving your product's features. Expansion of distribution lines reach to the new customers profile. After all that, rate of profit is going to pick-up.

Maturity

This level starts from the rate of sales decline.

Competition increases between sellers.

The rivals try to reduce prices while the cost of production is falling. In this way weak opponents pull out from the market.

Decline

In that level; the rate of sales reduces visibly. The reasons of decline are technological developments, opponents who gain experience and strong etc. At the end of this stage the companies need to know the idea of customers about product. Because they need that feedback system to improve their product.

Chapter 2. Product

- The Best Way to hold customers is to constantly figure out how to give them more or less.

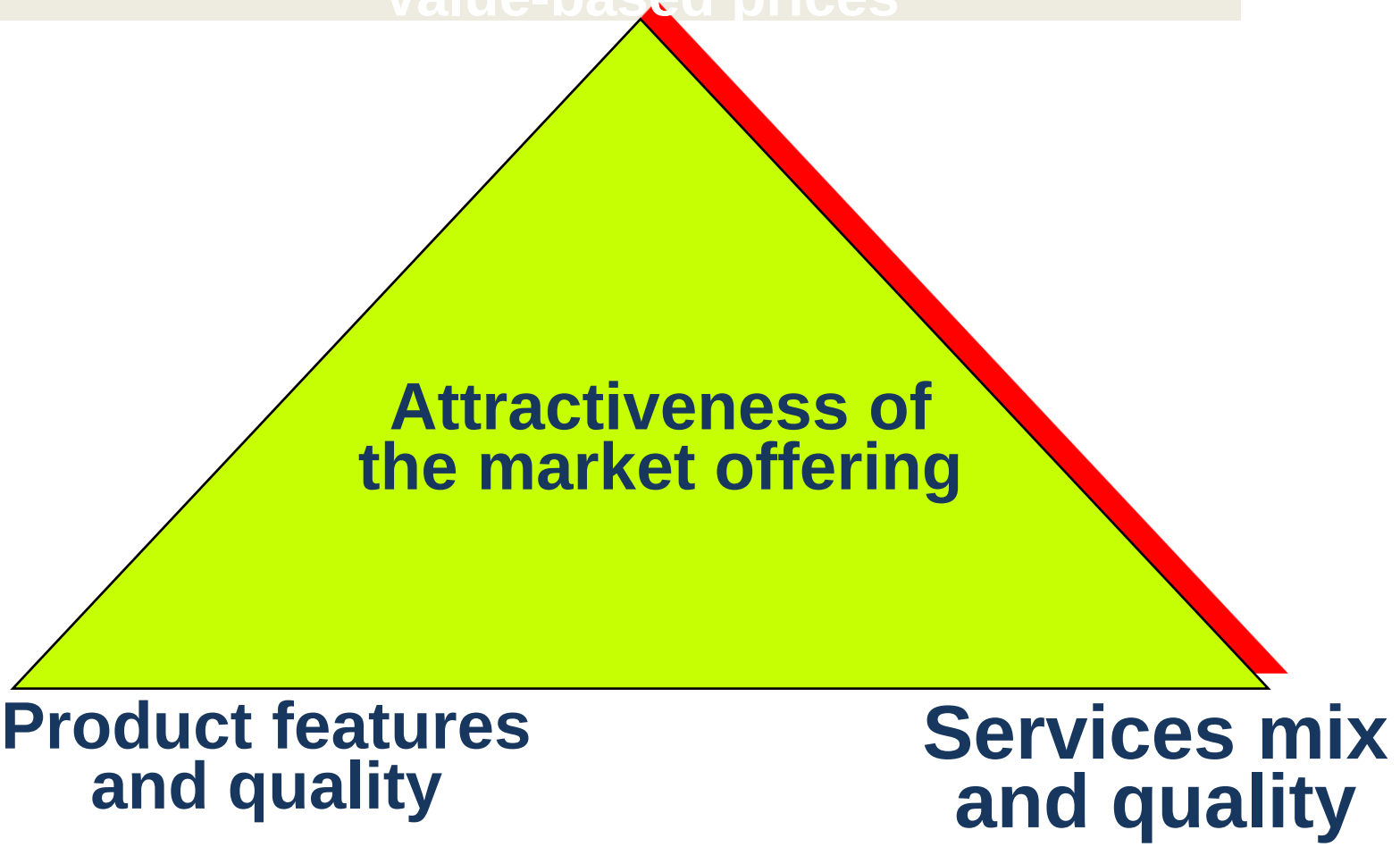
The learning objectives

- Product
- Product classification
- Product life-cycle strategies
- New-product Development
- Product-line decision
- Brands decisions

1. What is product?

- Anything that can be offered to a market for attention,acquisition,use,or consumption that might satisfy a want or need.

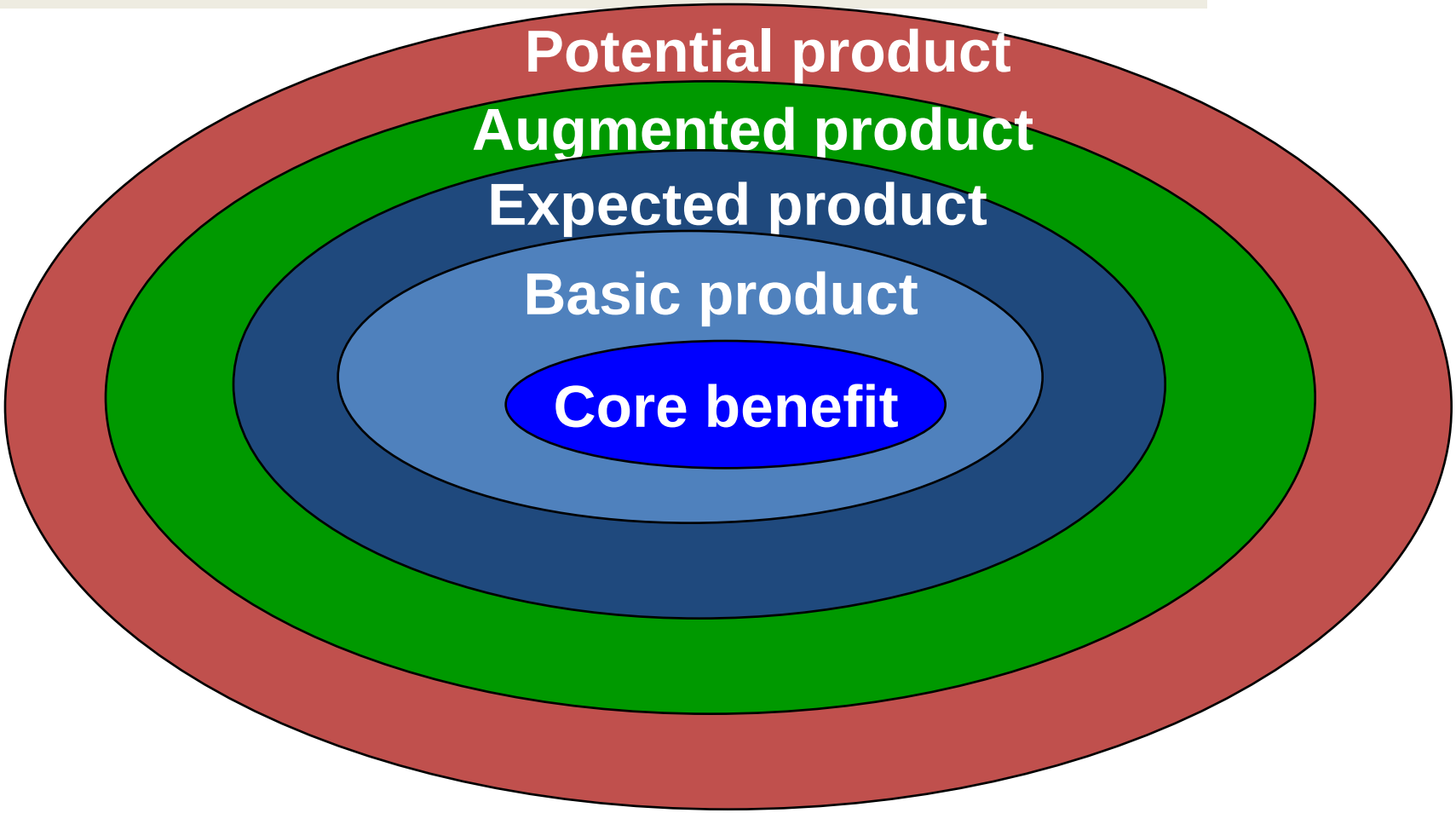
Components of the Market Offering



Service and Experience

- Service - Any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything.

Five Product Levels



Levels of Product

- Core product
- Actual product
- Augmented product

Core product

- Core benefit or service

Actual product

- Quality level
- Features
- Design
- Package
- Brand name

Augmented product

- Installation
- After-sale service
- Warranty
- Delivery and credit
- Attached benefit

2. Product classifications

- Consumer products
- Industrial product
- Organizations, persons, places, and ideas

Consumer product

- Convenience products
- Shopping products
- Specialty
- unsought

Consumer-Goods Classification

Convenience Products

Buy frequently & immediately
> Low priced
> Many purchase locations
> Includes:
- Staple goods
- Impulse goods
- Emergency goods

Shopping Products

Buy less frequently
> Gather product information
> Fewer purchase locations
> Compare for:
- Suitability & Quality
- Price & Style

Specialty Products

Special purchase efforts
> Unique characteristics
> Brand identification
> Few purchase locations

Unsought Products

New innovations
> Products consumers don't want to think about.
>Require much advertising & personal selling

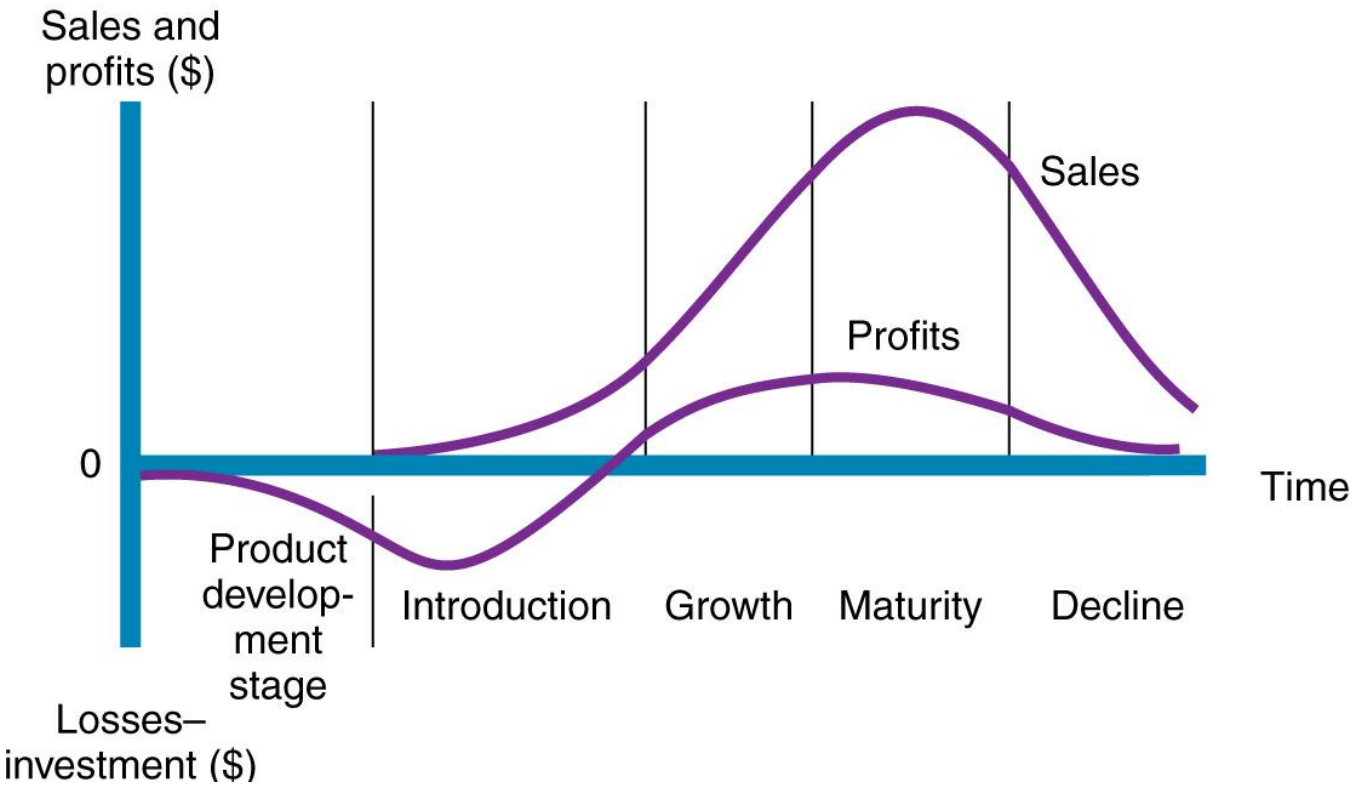
Industrial Product

- Material and parts
- Capital items
- Supplies and services

Chapter 3. Product Life Cycles (PLC)

- The course of a product’s sale and profit over it lifetime.It involves five distinct stages:product development,introduction,growth,maturity,and decline.

Product Life Cycle Phases



Product Life-Cycle Strategies

- The product life cycle concept can be applied to a:
  - Product class (soft drinks)
  - Product form (diet colas)
  - Brand (Diet Dr. Pepper)
    - Using the PLC to forecast brand performance or to develop marketing strategies is problematic

Product Life-Cycle Strategies

PLC Stages

- ***Product development***
- *Introduction*
- *Growth*
- *Maturity*
- *Decline*

- Begins when the company develops a new-product idea
- Sales are zero
- Investment costs are high
- Profits are negative

Product Life-Cycle Strategies

PLC Stages

- *Product development*
- ***Introduction***
- *Growth*
- *Maturity*
- *Decline*

- Low sales
- High cost per customer acquired
- Negative profits
- Innovators are targeted
- Little competition

Marketing Strategies: Introduction Stage

- *Product* – Offer a basic product
- *Price* – Use cost-plus basis to set
- *Distribution* – Build selective distribution
- *Advertising* – Build awareness among early adopters and dealers/resellers
- *Sales Promotion* – Heavy expenditures to create trial

Product Life-Cycle Strategies

PLC Stages

- *Product development*
- *Introduction*
- ***Growth***
- *Maturity*
- *Decline*

- Rapidly rising sales
- Average cost per customer
- Rising profits
- Early adopters are targeted
- Growing competition

Marketing Strategies: Growth Stage

- *Product* – Offer product extensions, service, warranty
- *Price* – Penetration pricing
- *Distribution* – Build intensive distribution
- *Advertising* – Build awareness and interest in the mass market
- *Sales Promotion* – Reduce expenditures to take advantage of consumer demand

Product Life-Cycle Strategies

PLC Stages

- *Product development*
- *Introduction*
- *Growth*
- ***Maturity***
- *Decline*

- Sales peak
- Low cost per customer
- High profits
- Middle majority are targeted
- Competition begins to decline

Marketing Strategies: Maturity Stage

- *Product* – Diversify brand and models
- *Price* – Set to match or beat competition
- *Distribution* – Build more intensive distribution
- *Advertising* – Stress brand differences and benefits
- *Sales Promotion* – Increase to encourage brand switching

Product Life-Cycle Strategies

PLC Stages

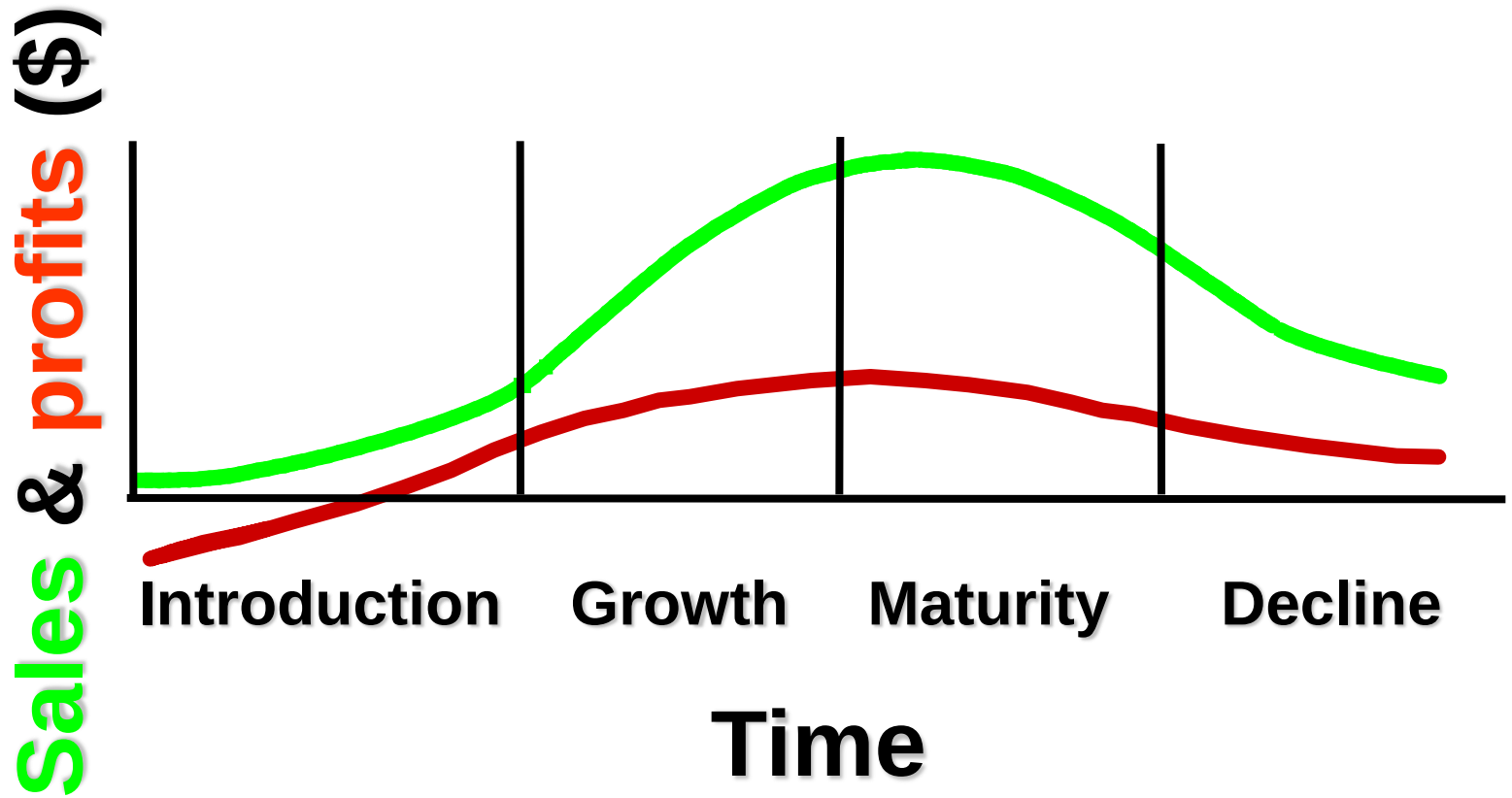
- *Product development*
- *Introduction*
- *Growth*
- *Maturity*
- ***Decline***

- Declining sales
- Low cost per customer
- Declining profits
- Laggards are targeted
- Declining competition

Marketing Strategies: Decline Stage

- *Product* – Phase out weak items
- *Price* – Cut price
- *Distribution* – Use selective distribution: phase out unprofitable outlets
- *Advertising* – Reduce to level needed to retain hard-core loyalists
- *Sales Promotion* – Reduce to minimal level

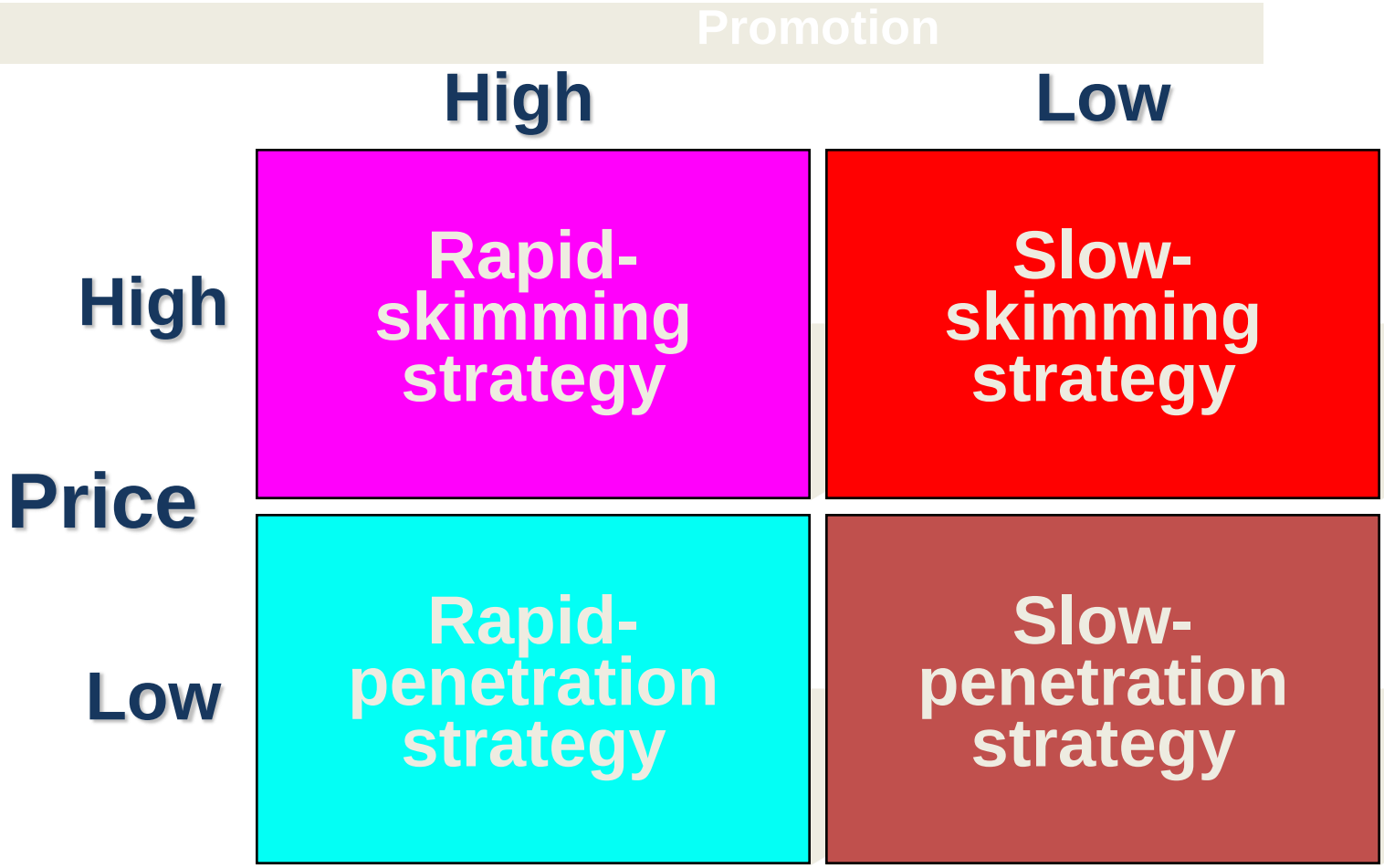
Sales & Profit Life Cycles



Introduction stage

- The product life-cycle stage in which the new product is first distributed and made available for purchase.

Four Introductory Marketing Strategies



Growth stage

- The product life-cycle stage in which a product’s sales start climbing quickly.

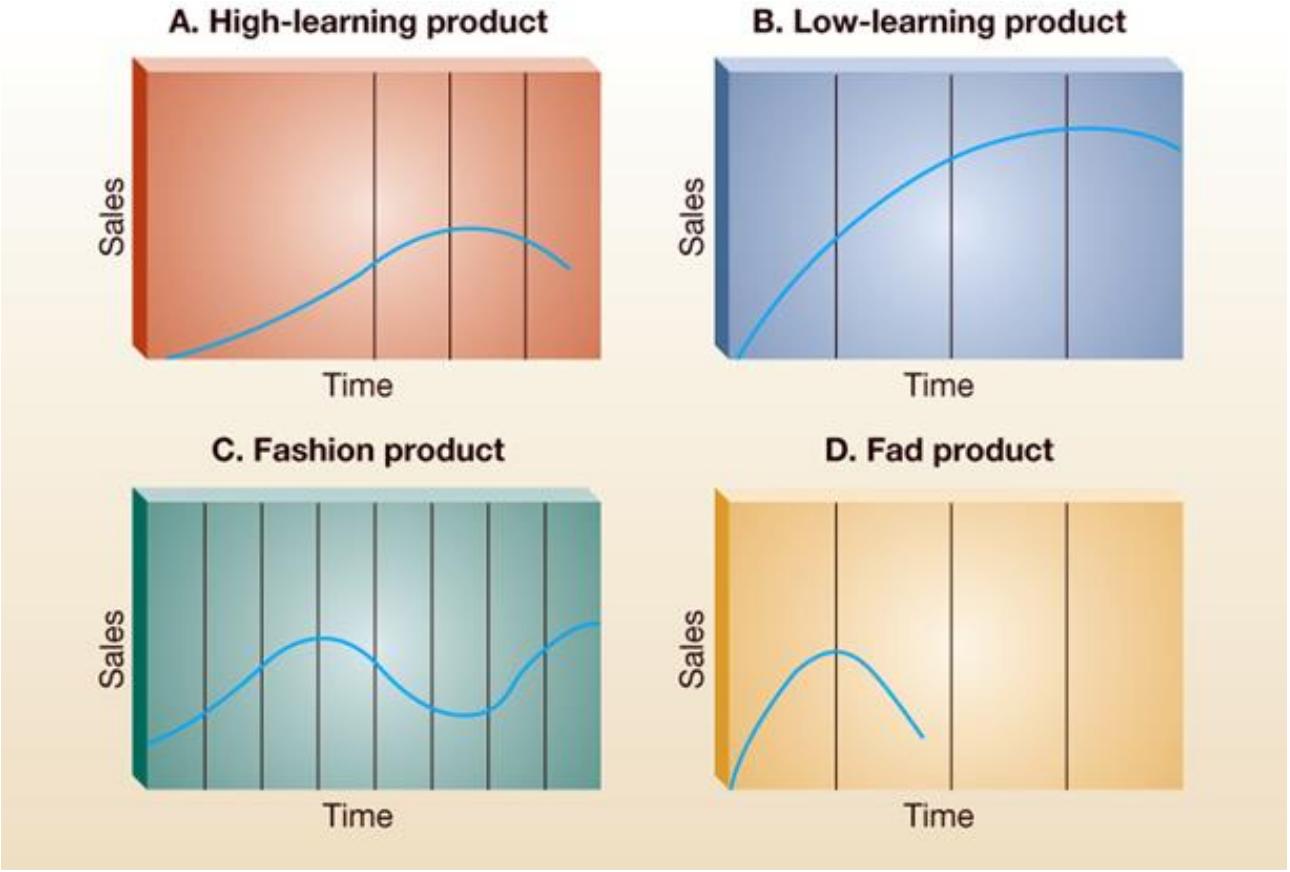
Maturity stage

- The stage in the product life cycle in which sales growth slows or levels off.
- Modify the market,the product,and the marketing mix.

Decline Stage

- The product life cycle stage in which a product’s sales decline

Alternative product life cycles



Discussion

- Please list the marketing objectives and strategies for each stage.
- 2.what strategic option are open to the marketers of products in the mature stage of the product life cycle?
- 3.which product life-cycle stage, if any,is the most important?which stage is riskiest?which stage appears to hold the greatest profit potential? Be certain to explain the thinking behind each of your answer.

Chapter 4.
New-product development

- Understand how companies find and develop new-product ideas.
- Learn the steps in the new-product development process.
- Know the stages of the product life cycle.
- Understand how marketing strategies change during the product's life cycle.

What is new product?

- Original products
- Product improvements
- Product modifications
- New brands that the firm develops through its own research and development efforts

Discussion Question

- **Why do products fail?**
- **See if you can identify the fatal flaw in the brands below and at right.**

Major stages in new product development

- Idea generation
- Idea screening
- Concept development and testing
- Marketing strategies
- Business analysis
- Product development
- Test marketing
- Commercialization

New Product Development Process

Probability of Success

Overall probability of success = Probability of technical completion X Probability of commercialization given technical completion X Probability of economic success given commercialization

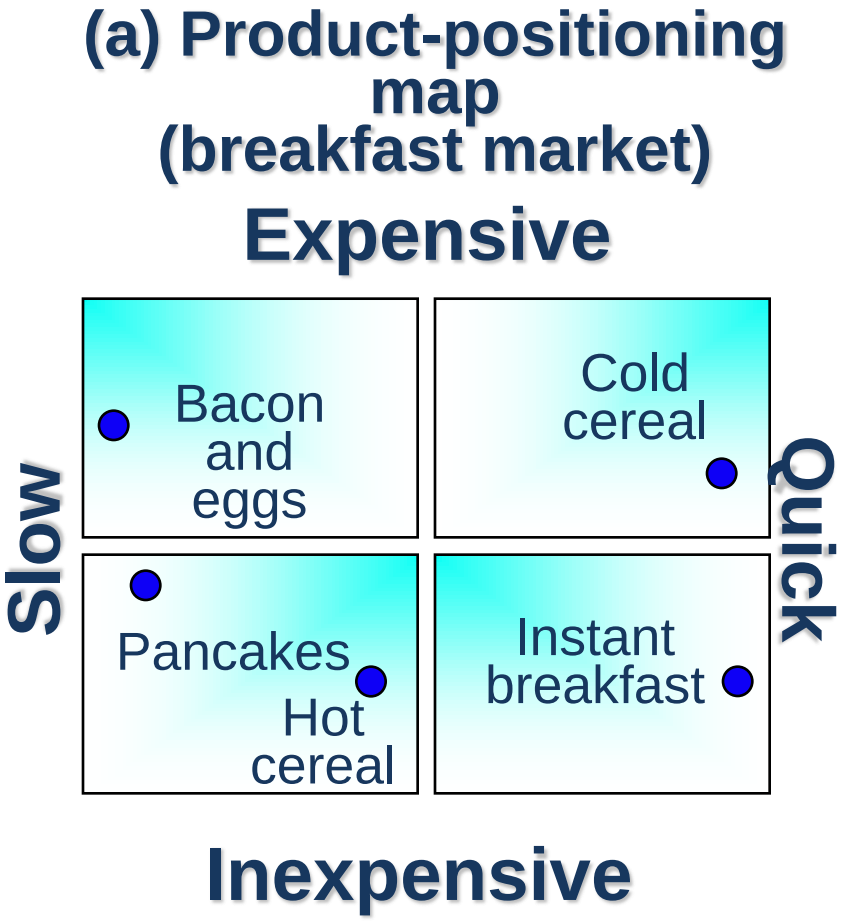
Concept Development & Testing

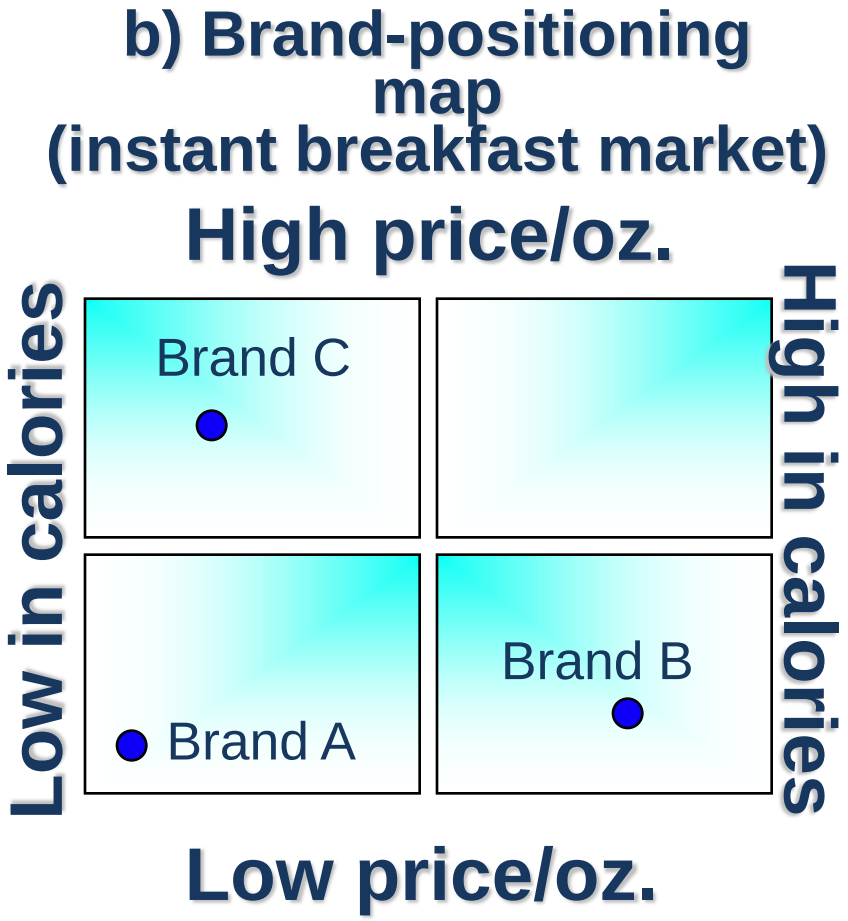
1. Develop Product Ideas into Alternative Product Concepts

2. Concept Testing - Test the Product Concepts with Groups of Target Customers

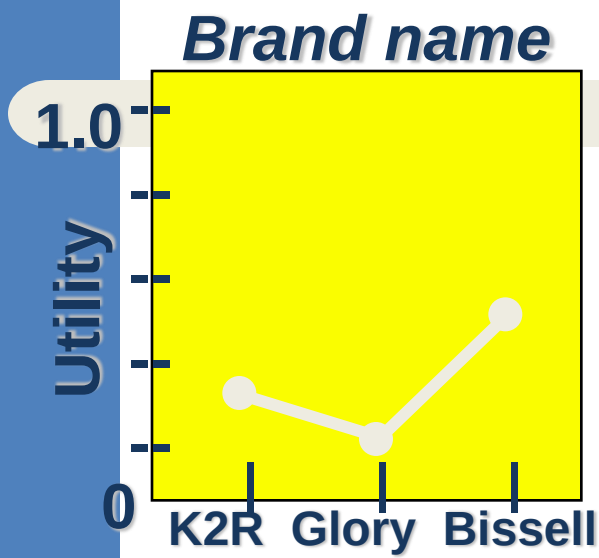
3. Choose the Best One

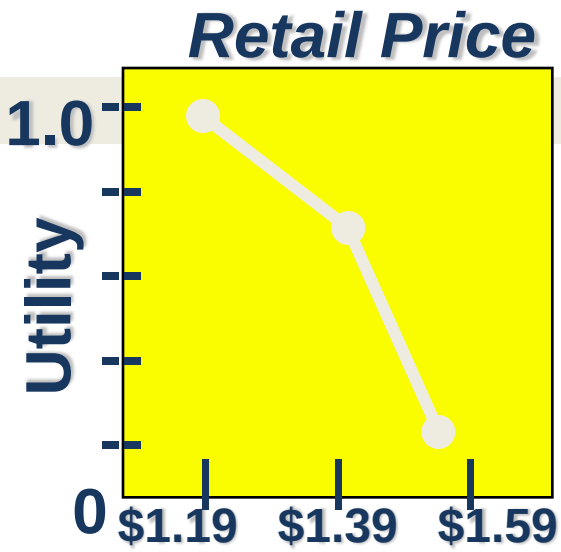
Product & Brand Positioning

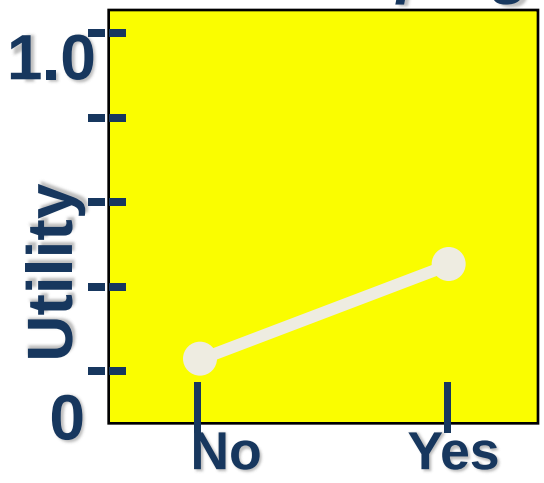




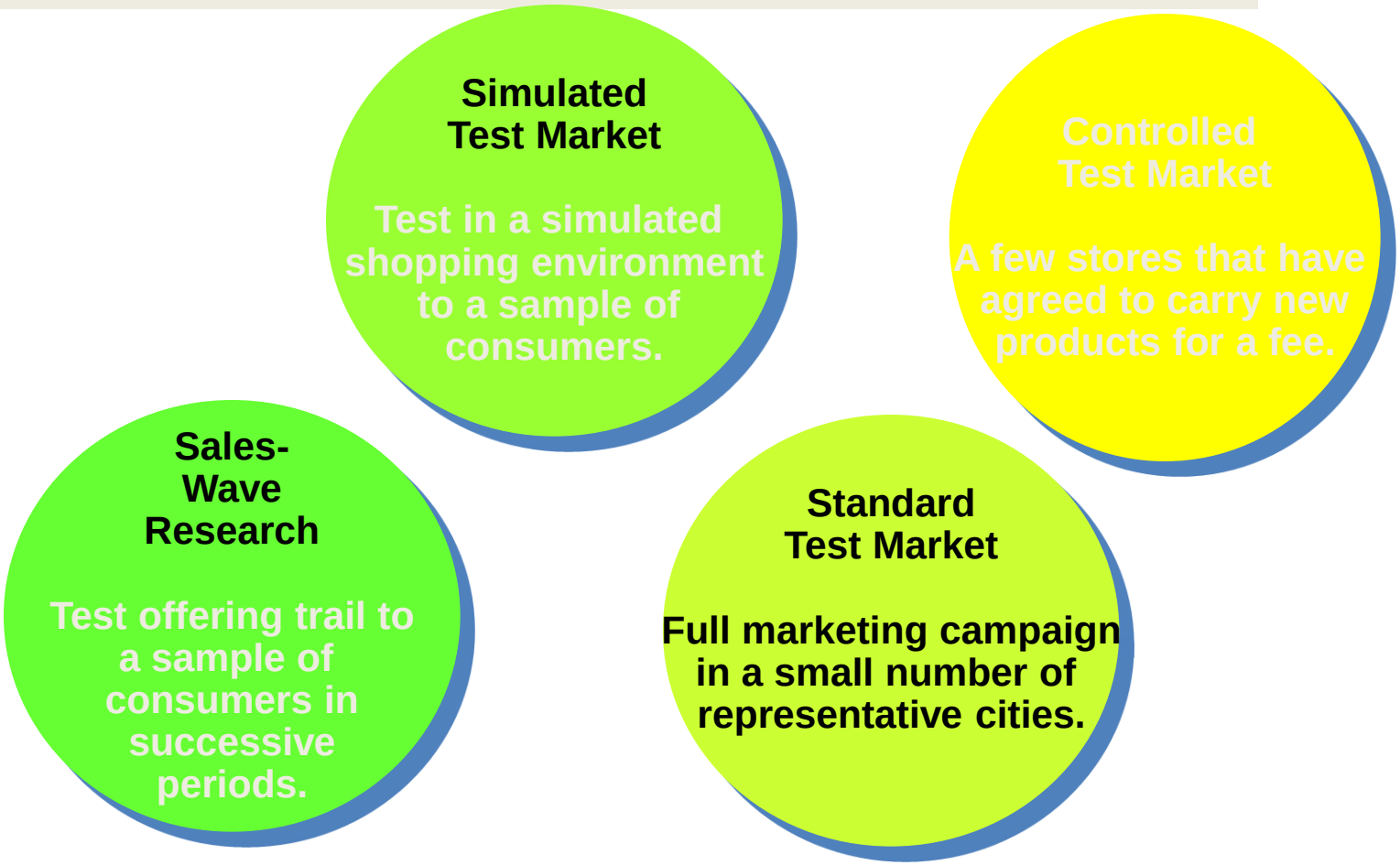
Conjoint Analysis



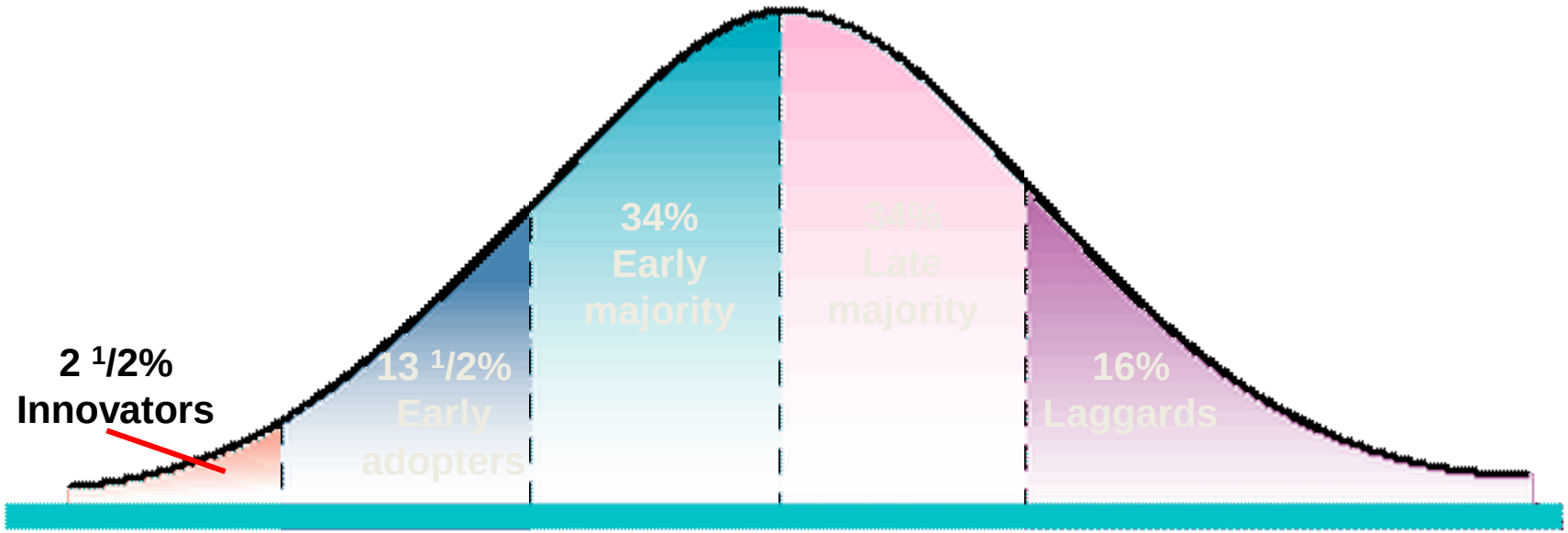




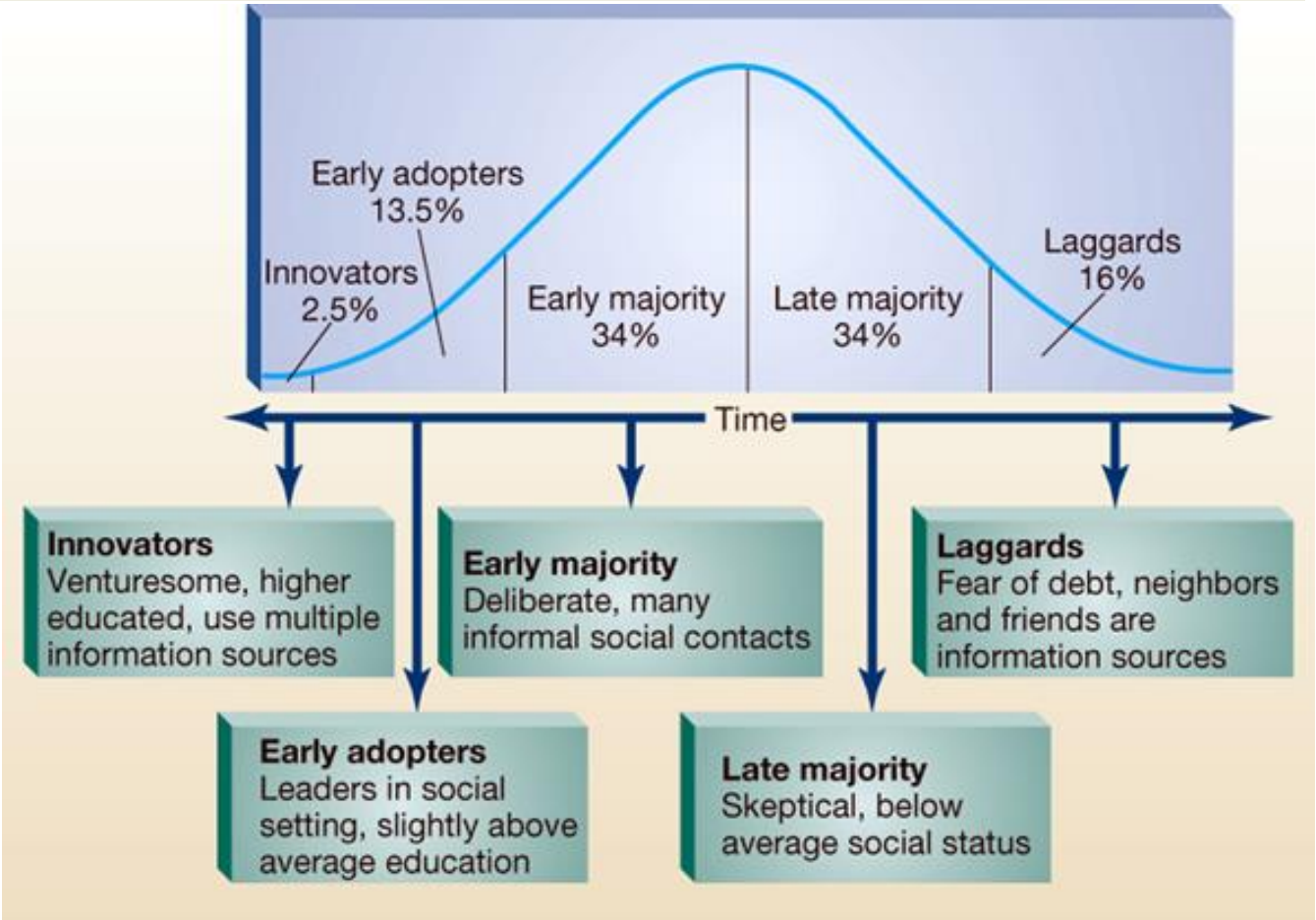
Consumer-Goods Market Testing



Adopter Categorization of the Basis of Relative Time of Adoption of Innovations



Five categories and profiles of product adopters



Chapter 5. Product-line decision

- Product mix
- Product-line analysis
- Product –line length

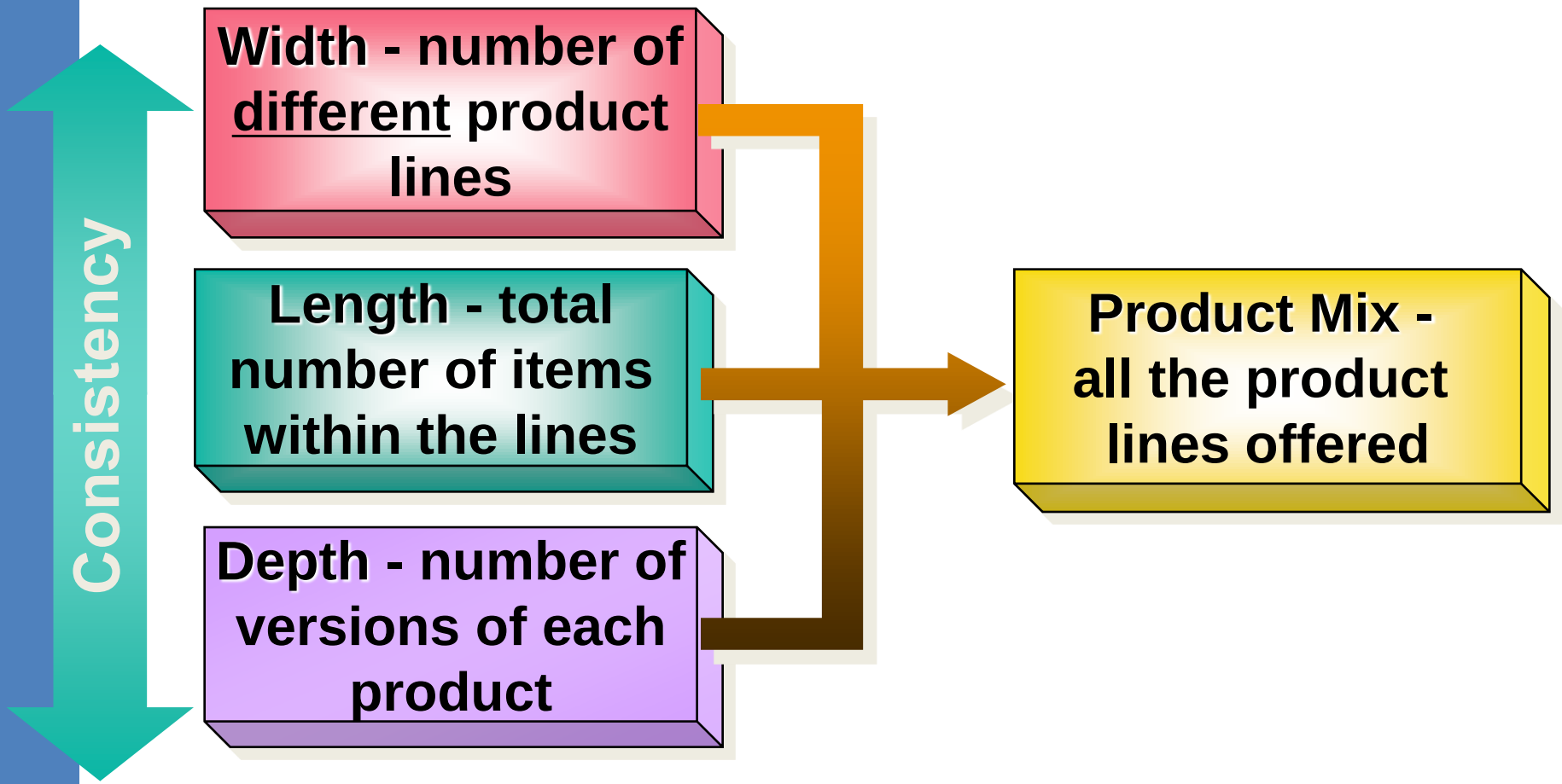
Product mix(assortment) (I)

- The set of all products and items that a particular seller offers for sale.
- A company’s product mix has a certain width,length,depth, and consistency.

Product mix(assortment) (II)

- Width:how many different product lines.
- Length:the total number of items.
- Depth:how many variants are offered of each product in the line.
- Consistency:how closely related the various product lines are in end use,production requirement,distribution channels, or some other way.

Product Mix


Width - number of different product lines
Length - total number of items within the lines
Depth - number of versions of each product
Consistency
Product Mix - all the product lines offered

Product-line analysis

- Sales and profit
- Market profile

Product-Line Length

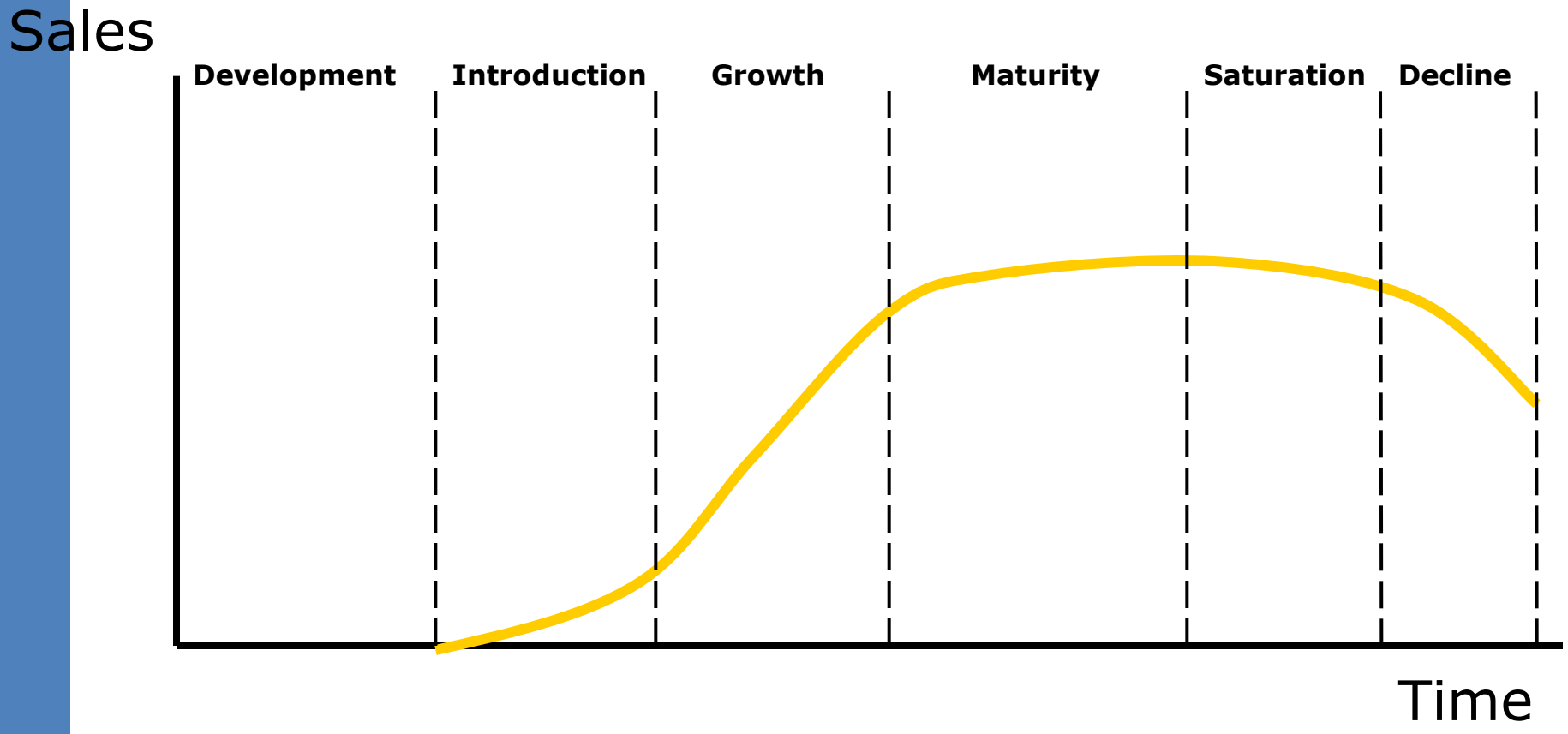
- Line Stretching
  - Downmarket
  - Upmarket
  - Two-way
- Line Filling
- Line Modernization
- Line Featuring & Line Pruning

Line stretching

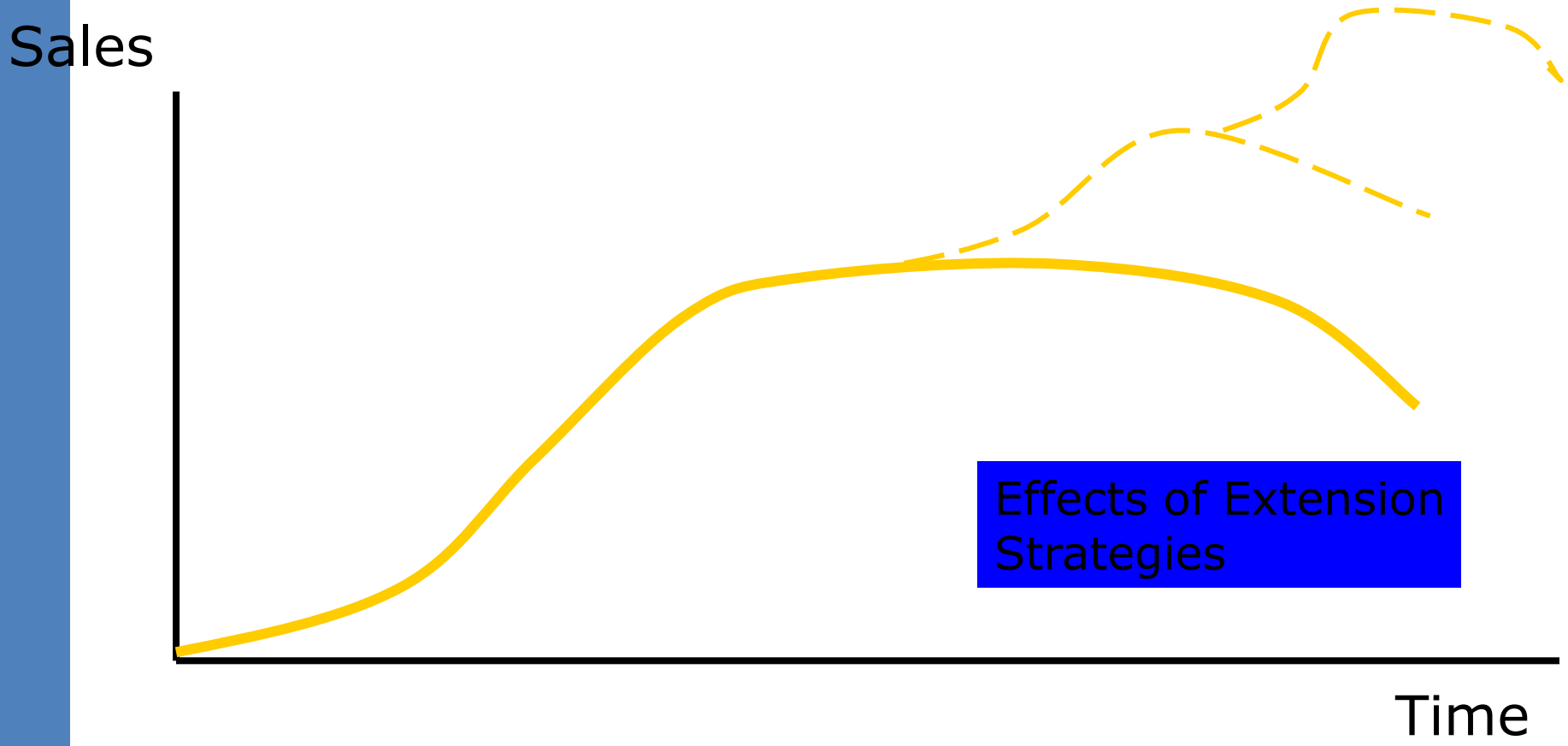
- Downmarket stretch
- Upmarket stretch
- Two-way stretch

Two-Way Product-Line Stretch: Marriott Hotels

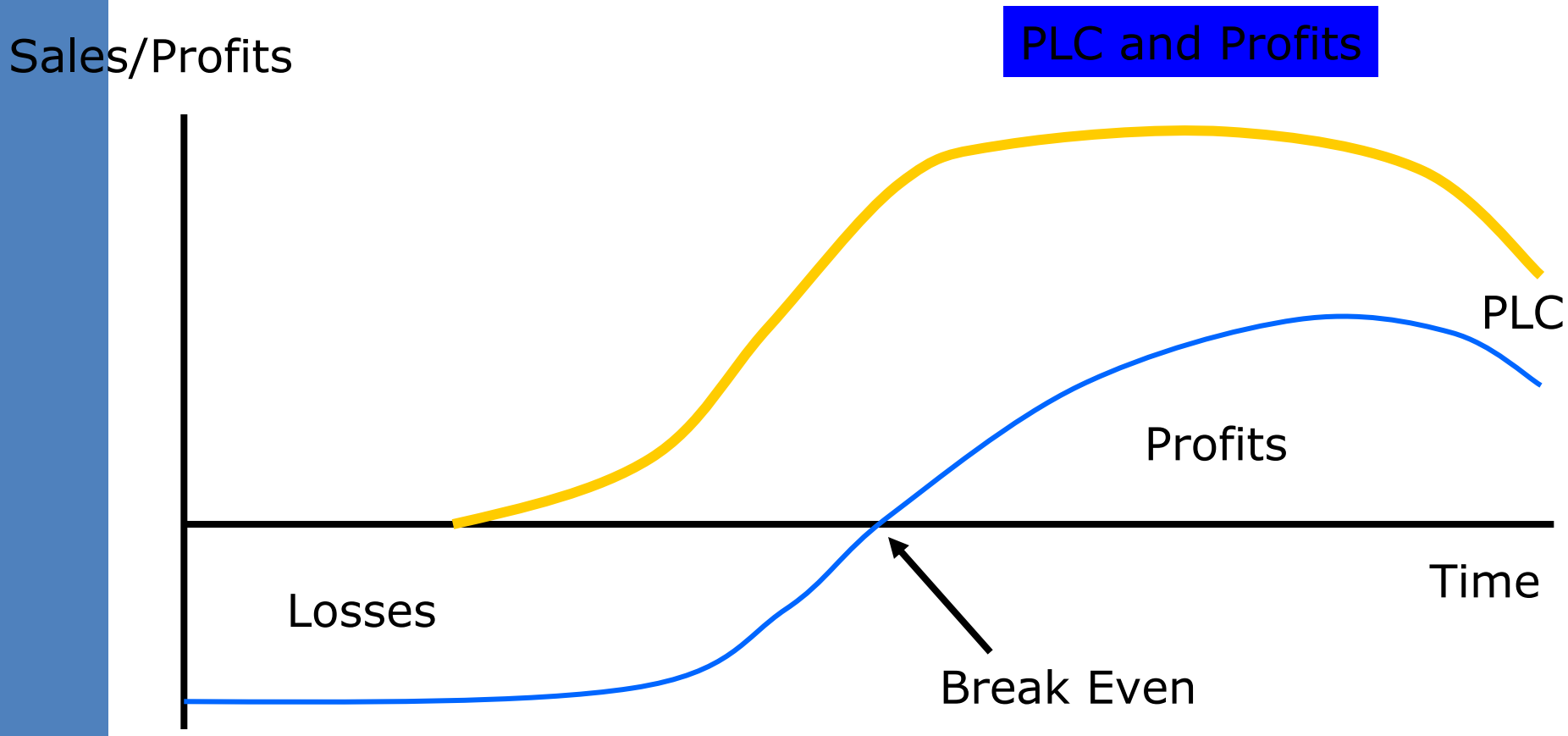
Chapter 7. Product Life Cycles and the Boston Matrix (I)



Product Life Cycles and the Boston Matrix (II)



Product Life Cycles and the Boston Matrix (III)



The Boston Matrix (I)

- A means of analysing the product portfolio and informing decision making about possible marketing strategies
- Developed by the Boston Consulting Group – a business strategy and marketing consultancy in 1968
- Links growth rate, market share and cash flow

The Boston Matrix (II)

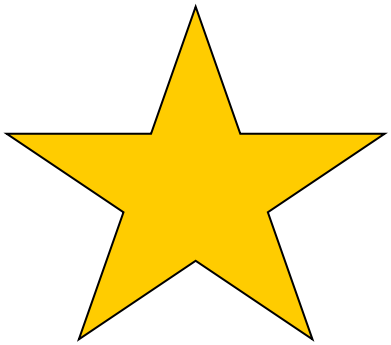
Problem Children 	Stars 
Dogs 	Cash Cows 

Market Share

Low → High

Stars

- Products in markets experiencing high growth rates with a high or increasing share of the market
- Potential for high revenue growth



Cash Cows:

- High market share
- Low growth markets – maturity stage of PLC
- Low cost support
- High cash revenue – positive cash flows

Dogs:

- Products in a low growth market
- Have low or declining market share (decline stage of PLC)
- Associated with negative cash flow
- May require large sums of money to support

Problem Child:

- Products having a low market share in a high growth market
- Need money spent to develop them
- May produce negative cash flow
- Potential for the future?

The Boston Matrix

- **Implications:**
- **Dogs:**
  - Are they worth persevering with?
  - How much are they costing?
  - Could they be revived in some way?
  - How much would it cost to continue to support such products?
  - How much would it cost to remove from the market?

The Boston Matrix

- **Implications:**
- **Problem Children:**
  - What are the chances of these products securing a hold
    in the market?
  - How much will it cost to promote them to a stronger position?
  - Is it worth it?

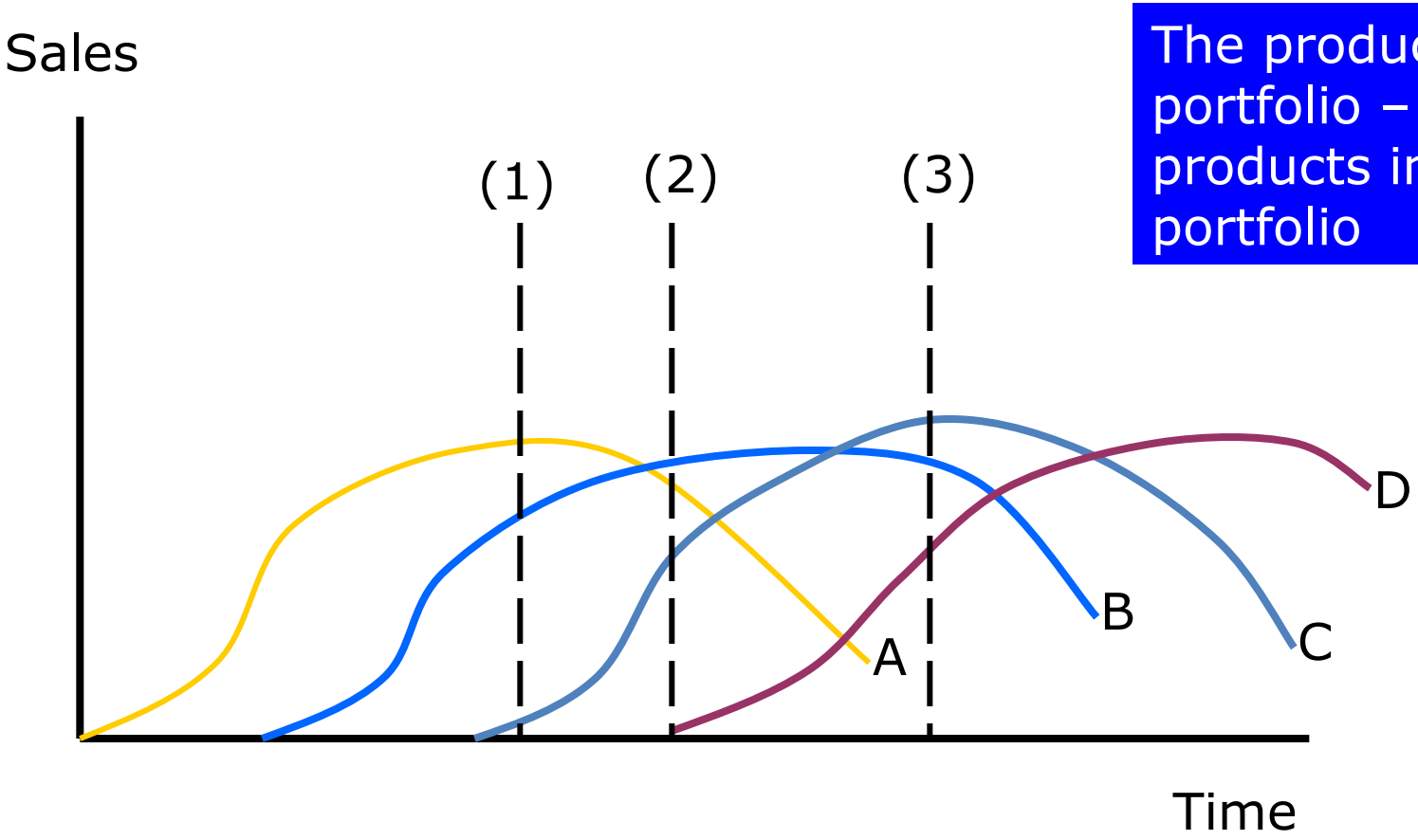
The Boston Matrix

- **Implications:**
- **Stars:**
  - Huge potential
  - May have been expensive to develop
  - Worth spending money to promote
  - Consider the extent of their product life cycle in decision making

The Boston Matrix

- **Implications:**
- **Cash Cows:**
  - Cheap to promote
  - Generate large amounts of cash – use for further R&D?
  - Costs of developing and promoting have largely gone
  - Need to monitor their performance – the long term?
  - At the maturity stage of the PLC?

The Product Life Cycle and the Boston Matrix (I)



The product portfolio – four products in the portfolio

The Product Life Cycle and the Boston Matrix (II)

- Importance of maintaining a balance of products in the portfolio at different stages of the PLC – Boston Matrix helps with the analysis
- 1) 'A' is at maturity stage – cash cow. Generates funds for the development of 'D'
- (2) Cash from 'B' used to support 'C' through growth stage and to launch 'D'. 'A' now possibly a dog?
- (3) Cash from 'C' used to support growth of 'D' and possibly to finance extension strategy for 'B'?

Managing the product life cycle

- **Modifying the Product**
  - **Product Modification**
- **Modifying the Market**
  - **Market Modification**
    - **Finding New Users**
    - **Increasing Use**
    - **Creating New Use Situations**

Managing the product life cycle

- **Repositioning the Product**
  - **Product Repositioning**
  - **Reacting to a Competitor's Position**
  - **Catching a Rising Trend**
  - **Changing the Value Offered**
    - **Trading Up**
    - **Trading Down**
    - **Downsizing**

Concept Check

1. What does “creating new use situations” mean in managing a product’s life cycle?

A: Finding new uses or applications for an existing product.

Concept Check

2. Explain the difference between trading up and trading down in repositioning.

A: Trading up involves adding value to the product (or line) through additional features or higher-quality materials. Trading down involves reducing the number of features, quality, or price, or downsizing—reducing the content of packages without changing package size and maintaining or increasing the package price.

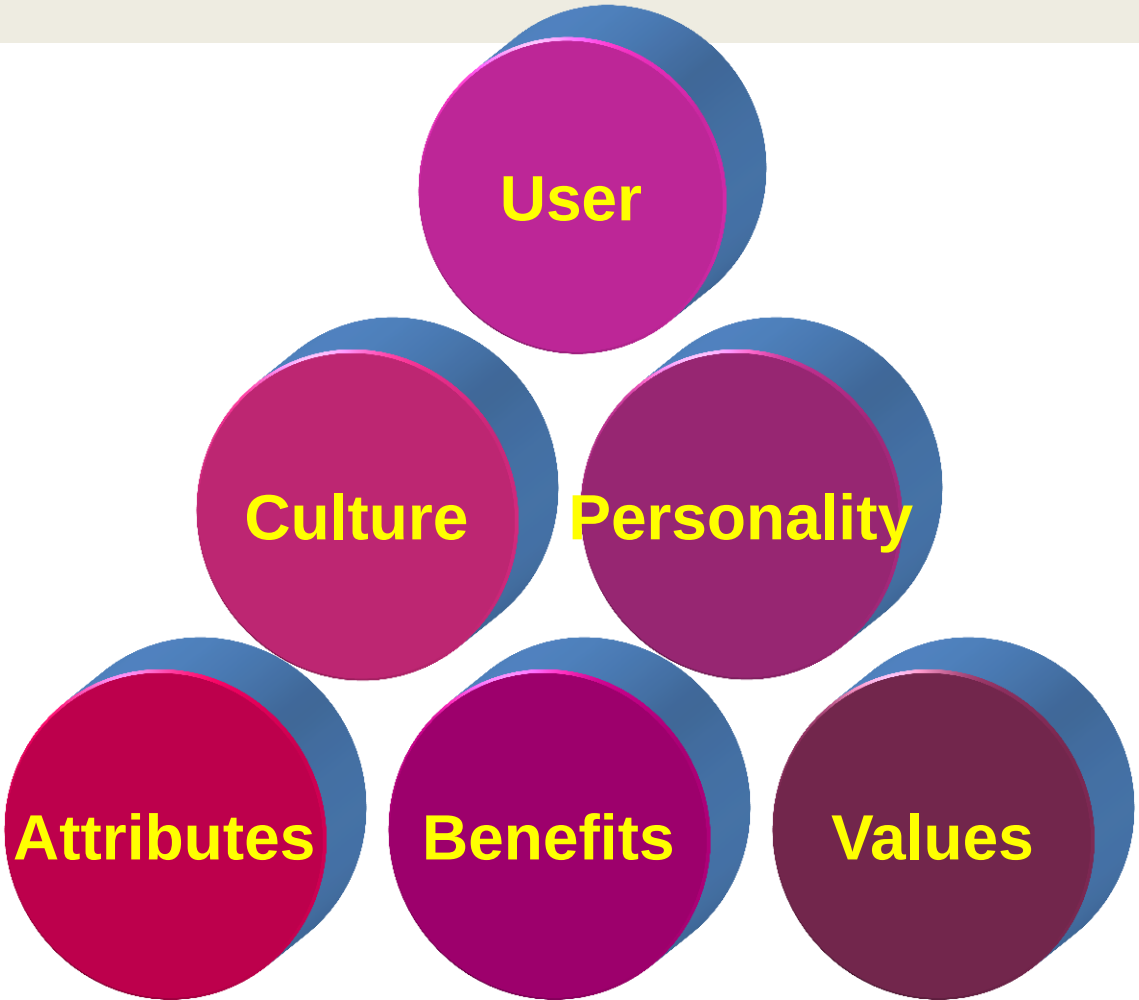
Chapter 7. Brand Decision

- What is brand?
- Band decision

What is brand?

- Brand is a name,term,sign,symbol,or design,or a combination of them,intended to identify the goods or services of one seller or group of sellers and differentiate them from those of competitors.

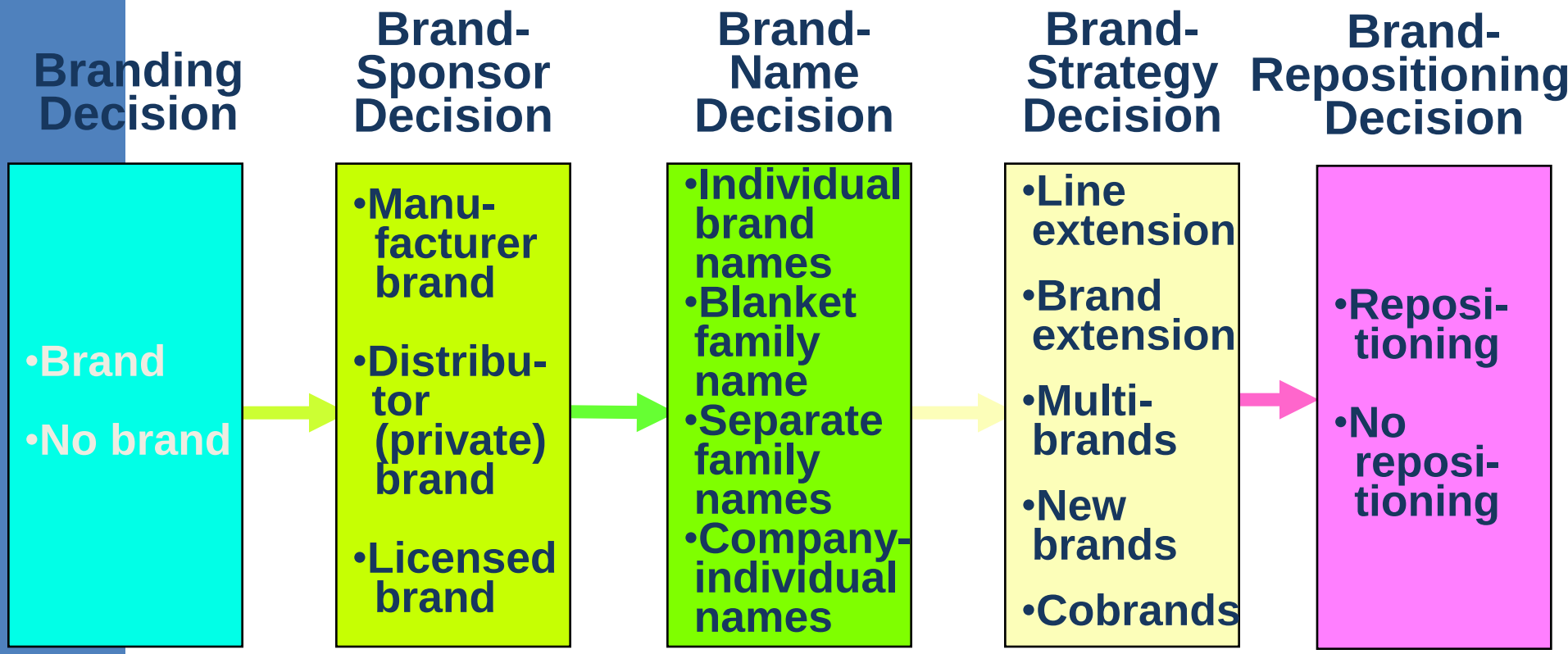
What is a Brand?



Discussion

- What is difference between product and brand?
- How to define the line cycle of a brand?

An Overview of Branding Decisions



Brand decision

- 1.to brand or not to brand?
- 2.brand-sponsor decision
- 3.Brand-name decision
- 4.brand-strategy decision
- 5.brand-reposition decision

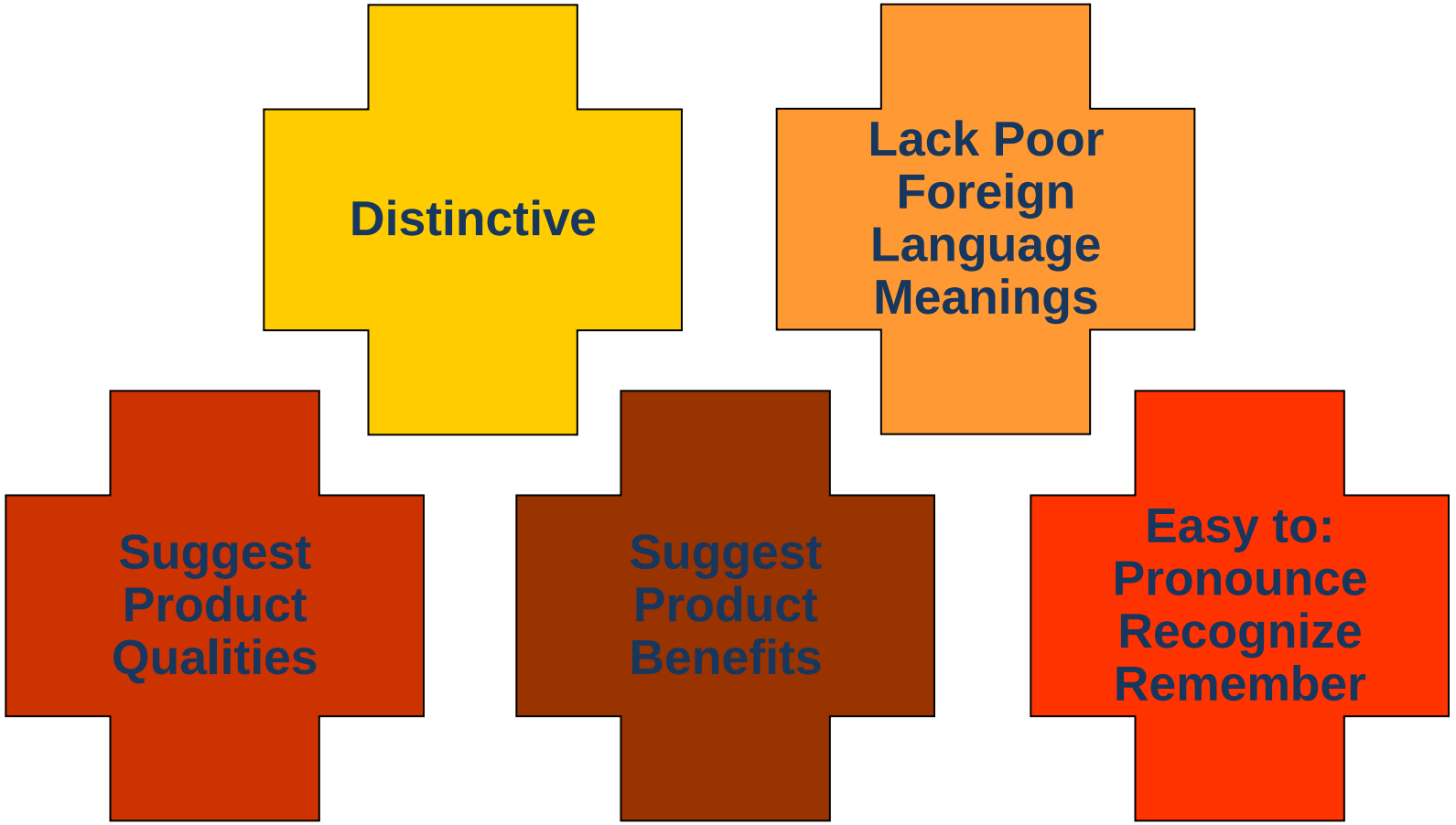
Brand-sponsor decision

- Manufacturer brand
- Distributor brand
- Licensed brand

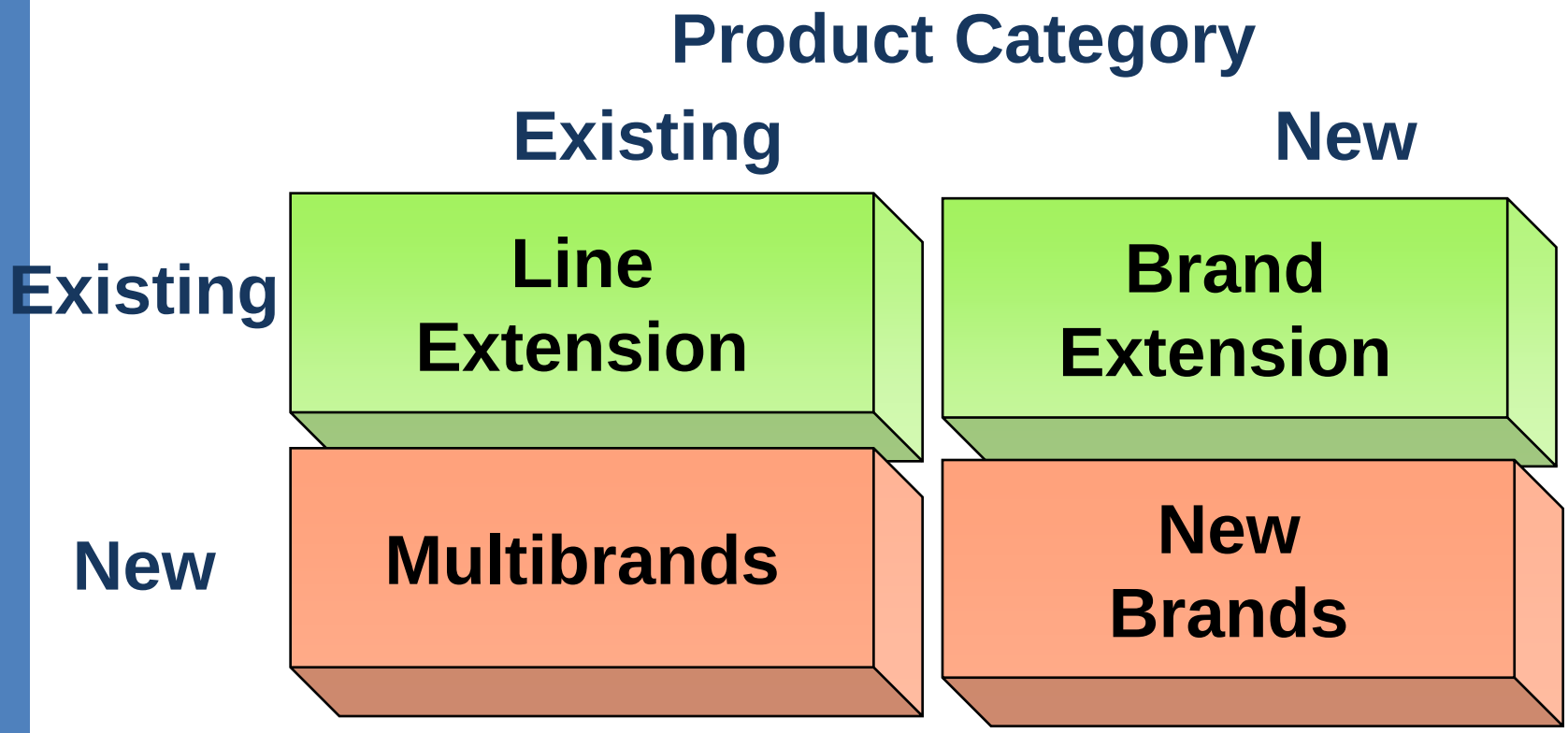
Brand-name decision

- Individual
- Blanket family
- Separated family
- Company-individual family

Good Brand Names:



Brand Strategies



Brand-strategy decision

- Line extensions
- Brand extensions
- New brands
- cobrands

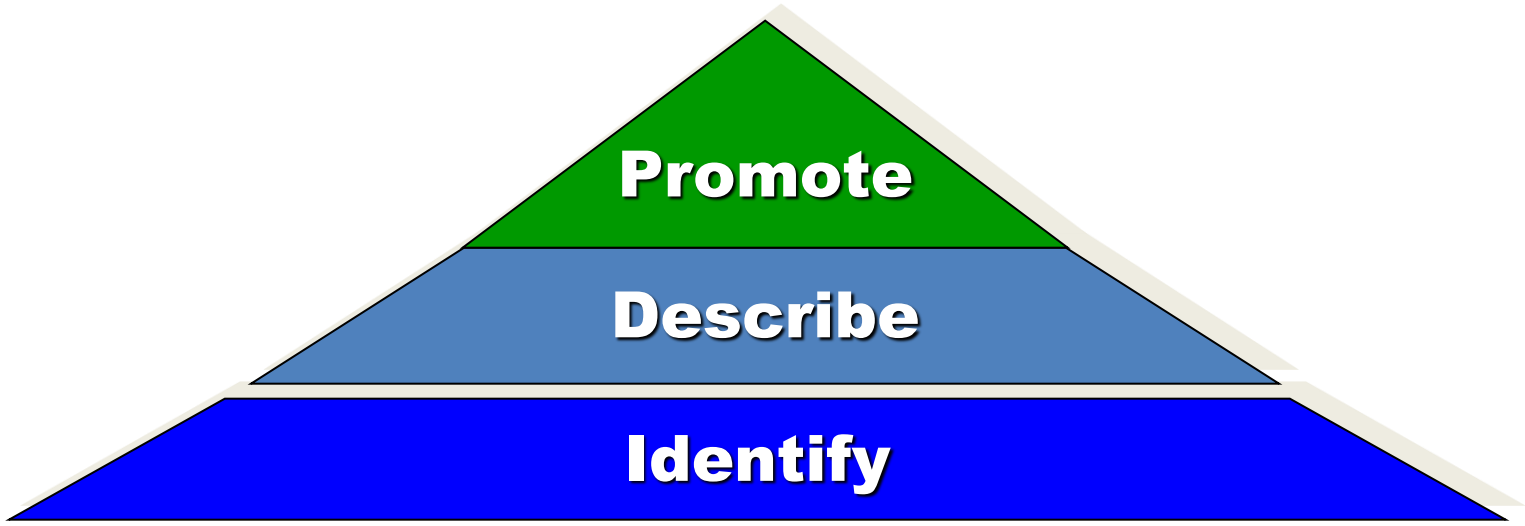
Brand-reposition decision

- Reposition
- No reposition

Why Package Crucial as a Marketing Tool

- Self-service
- Consumer affluence
- Company & brand image
- Opportunity for innovation

Labels



Chapter 8. Product Lifecycle Management: Ideation and Innovation

The Knowledge Economy is being eclipsed by ***the Creativity Economy.***

The new core competence is **Creativity**. It isn't just about math and science anymore. It's about creativity, imagination, and, above all, innovation. The knowledge is being commoditized.

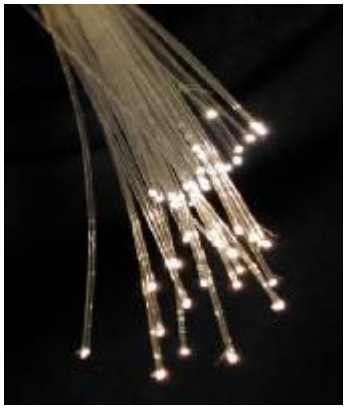
The U.S. is the leader in the Creativity Economy - for the moment.

Creativity Economy

The new forms of innovation driving Creativity Economy forward are based on an intimate understanding of consumer culture - the ability to determine what people want even before they can articulate it.

Innovation “Definition”

“The successful exploitation of ideas, into new products, processes, services or business practices” (DTI Innovation Unit)



- “It is about people creating value by implementing new ideas” (Innovation Network)

http://www.principalvoices.com/business.html

http://www.thinksmart.com/mission/dna/

Components of Successful Innovation

- A "people dependent", collaborative skill involving
  - scouting the future
  - generating new ideas
  - choosing the best
  - rapidly and effectively implementing and
  - then learning the lessons from successes and failures
  - in order to begin again

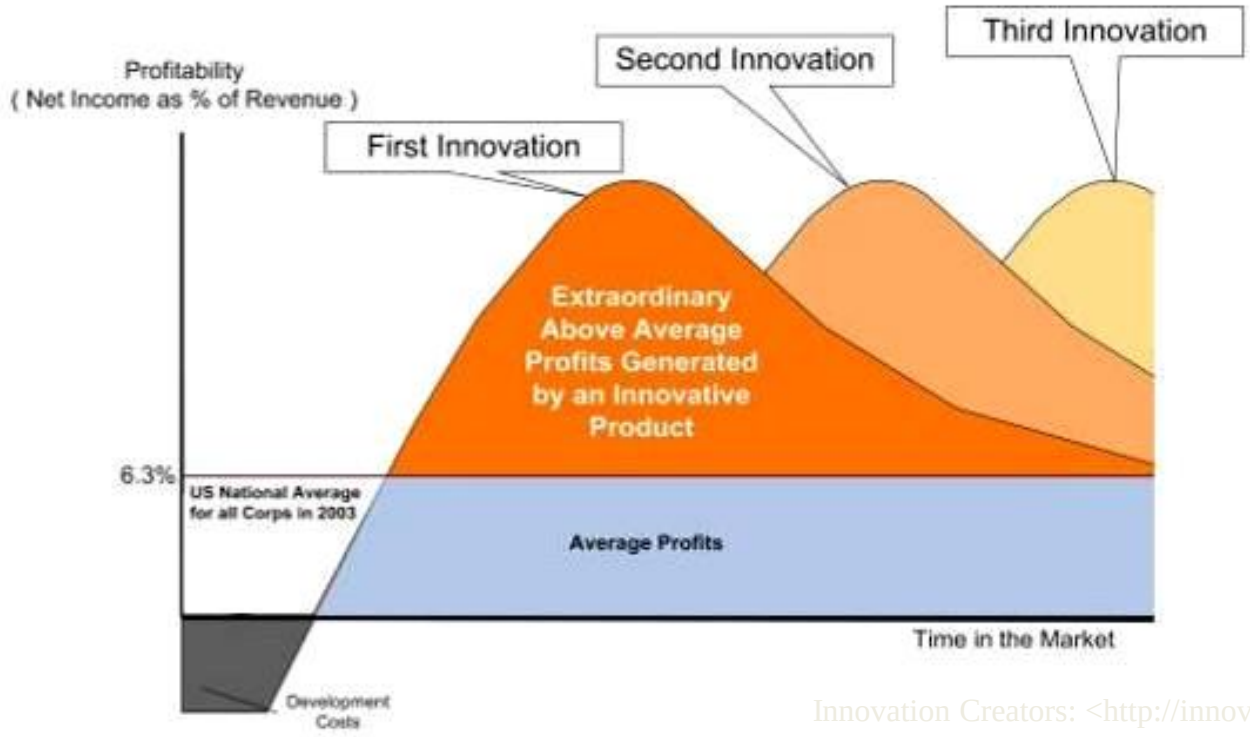
Enabling Innovative Organizations (EIO): <http://www.mindman.net/innovation/index.asp>.

The Importance of Being First-to-Market

- Being first in any market category is going to give you the edge – being the leader comes from being first.
- It's much easier to get into the mind of consumers first that try to convince people you have a better product.

Cycle of Innovation

Repeating innovation is critical to sustaining above average long term profits.



Innovation Creators: <http://innovationcreators.com/wp/?p=8>.

Global Innovation Opportunities

- The Internet and high-speed data networks offer solutions to typical innovation problems:
  - creativity management
  - new product development
  - product life cycle management
  - enabling organizations to tackle the daily challenges of innovation

http://www.urenio.org/2005/12/01/intelligent-innovation/

Building Innovation as a Capability

- Critical success factors in building Innovation as a capability within the Organization:
  - Leadership and Followership
  - Climate and Environment
  - Structured Idea Management Process that gathers ideas from Employees, Customers and Supply Chain Partners

http://www.mindman.net/innovation/index.asp

People Drive Innovation

- Revolutionary Thought Leaders
- Revolutionary Thinking Seminar
- Free to Win
- Coaching

http://www.mindman.net/innovation/index.asp

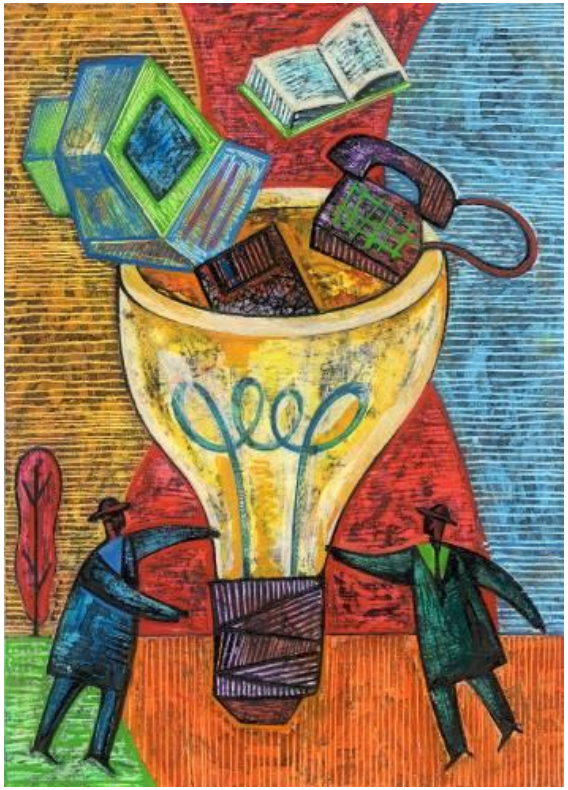
Multidisciplinary Teams

- Multidisciplinary teams are the heart of any innovation method.
- Quite simply, great work is accomplished by "**Hot Teams**".
- Teams include people from various disciplines:
  - Human Factors
  - Mechanical/Electrical Engineering
  - Manufacturing
  - Healthcare
  - Business Factors
  - Kid-Centric Design
  - Industrial Design
  - Environments
  - Interaction Design
  - Software Engineering

http://www.ideo.com/about/index.asp?x=1&y=1

Climate and Environment

- Creating compelling visions
- Ideation and Creativity sessions
- Innovation Recognition Program
- Positive Reinforcement System
- Consulting



http://www.mindman.net/innovation/index.asp

Innovation Method

- Observation
- Brainstorming
- Prototyping
- Implementation

http://www.ideo.com/about/index.asp?x=3&y=1

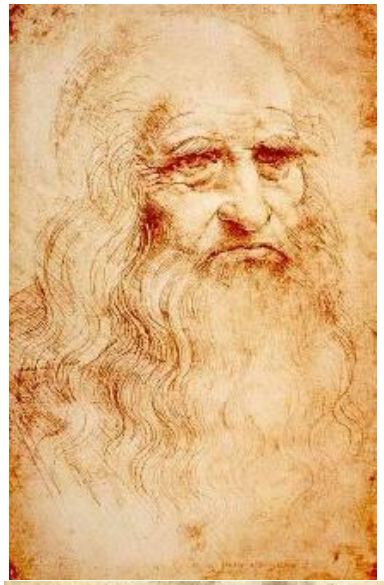
Observation

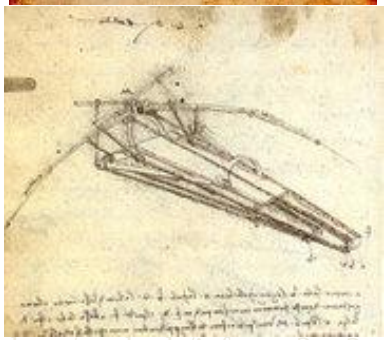
- User observations are the starting point for every design program.
- Designers are seasoned observers of people and how they interact wi the world.
- The users are engaged throughou the design process to evaluate the desirability of new ideas and possible solutions.

http://www.ideo.com/about/methods/info.asp?x=1

Brainstorming

- ”The best way to get a good idea is to get a lot of ideas." - Linus Pauling
- "Be Visual. Defer judgment. Encourage Wild Ideas. Build on the Ideas of Others. Go for Quantity. One Conversation at a Time. Stay Focused on the Topic.“
- Brainstorming is not just a good idea but an inexhaustible source of inspiration and fresh thinking.





http://www.ideo.com/about/methods/info.asp?x=2

Prototyping

- Prototyping is the language of innovation.
- Prototyping is problem-solving in three dimensions. One can prototype just about anything — a new product or service, a website or a new space.

http://www.ideo.com/about/methods/info.asp?x=3

Implementation

- Implementation completes the cycle of ideation to drive the concept to its final form.
- All the possibilities have been evaluated, the prototypes validated and refined, and what's left is to *do it.*
- The project team performs detailed design and engineering, chooses manufacturing partners if necessary, and works with the client to perform a timely and successful launch.

http://www.ideo.com/about/methods/info.asp?x=4

THE END