

IE301 Product Design and innovation

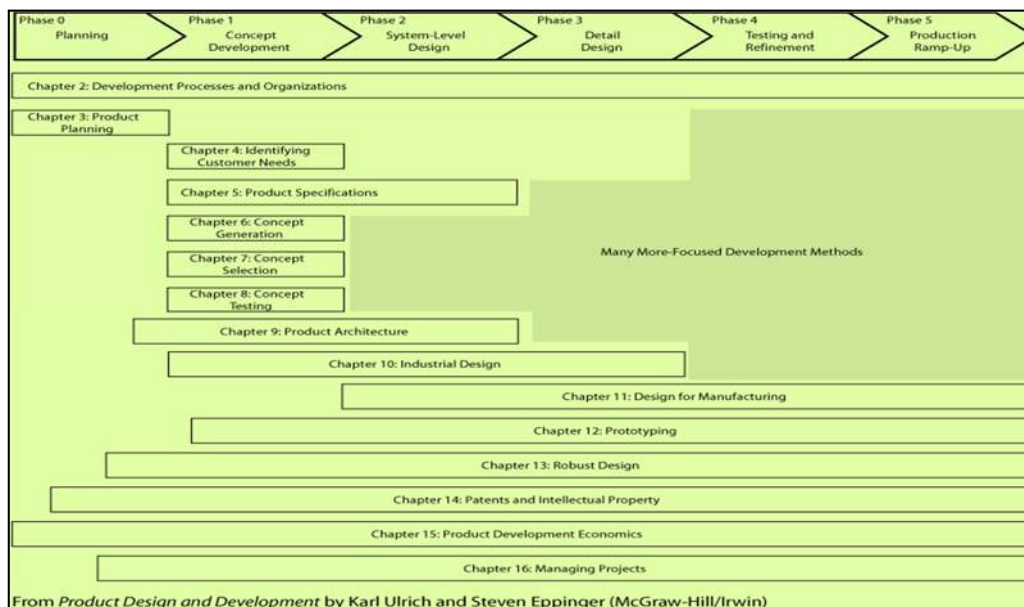
Exercise (1) [product development process and planning]

Introduction to product development

1- Create a set of scatter charts by plotting each of the rows in Exhibit shown below against the development cost row. For each one, explain why there is or is not any correlation.

	Stanley Tools Jobmaster Screwdriver	Rollerblade In-Line Skate	Hewlett-Packard DeskJet Printer	Volkswagen New Beetle Automobile	Boeing 777 Airplane
Annual production volume	100,000 units/year	100,000 units/year	4 million units/year	100,000 units/year	50 units/year
Sales lifetime	40 years	3 years	2 years	6 years	30 years
Sales price	\$3	\$200	\$300	\$17,000	\$130 million
Number of unique parts (part numbers)	3 parts	35 parts	200 parts	10,000 parts	130,000 parts
Development time	1 year	2 years	1.5 years	3.5 years	4.5 years
Internal development team (peak size)	3 people	5 people	100 people	800 people	6,800 people
External development team (peak size)	3 people	10 people	75 people	800 people	10,000 people
Development cost	\$150,000	\$750,000	\$50 million	\$400 million	\$3 billion
Production investment	\$150,000	\$1 million	\$25 million	\$500 million	\$3 billion

- 2- Develop Data similar to the above Exhibit for several products (i.e. Apple Macintosh PowerBook Computers, Nokia Mobile Telephones, Ford Sport/Utility Vehicles, Gillette Razors, OXO Good Grips Kitchen Gadgets)
- 3- Estimate what fraction of the price of a pocket calculator is required to cover the cost of developing the product. To do this you might start by estimating the information needed to fill out Exhibit above for the pocket calculator.
- 4- Each of the chapters listed in Exhibit below presents a method for a portion of the product development process. For each one, consider what types of skills and expertise might be required. Can you make an argument for staffing the development team from start to finish with individuals possessing all of these skills and areas of expertise



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Development process and organization

- 5- *Diagram a process for planning and cooking a family dinner. Does your process resemble the generic product development process? Is cooking dinner analogous to a market-pull, technology-push, process-intensive, or customization process?*
- 6- *Diagram a process for planning and producing hair cream. Does your process resemble the generic product development process? Is hair cream analogous to a market-pull, technology-push, process-intensive, or customization process?*
- 7- *Define a process for finding a job. For what types of endeavors does a well defined process enhance performance?*
- 8- *Sketch the organization (in some appropriate graphical representation) of a consulting firm that develops new products for clients on a project-by-project basis. Assume that the individuals in the firm represent all of the different functions required to develop a new product. Would this organization most likely be aligned with functions, be aligned by projects, or be a hybrid?*
- 9- *Is there an analogy between a university and a product development organization? Is a university a functional, project or hybrid organization? Give an example of IE department.*
- 10- *What is the product development organization for students engaged in projects as part of a product development class?*
- 11- *Is it possible for some members of a product development organization to be organized functionally, while others are organized by project? If so, which members of the team would be the most likely candidates for the functional organization?*

Product planning

- 12- *Conduct a search using the Internet or published corporate annual reports to identify the corporate strategy of a company in which you might be interested in investing. Learn about the firm's product lines and its newest products. How do these products support the corporate strategy? What types of projects would you expect to see in the product plan?*
- 13- *Create a product-technology roadmap illustrating the availability of technologies for a class of products you understand well, such as personal computers.*
- 14- *Develop a mission statement for clipper nail*
- 15- *Develop a mission statement for ball pen*
- 16- *Illustrate S curve for two products showing how might a portfolio of development projects be able to be developed.*
- 17- *How might a portfolio of development projects differ if the firm believes a particular product technology is currently at position A or B on the technology S-curve shown below?*

