

DESIGN & ENGINEERING

Design & Market

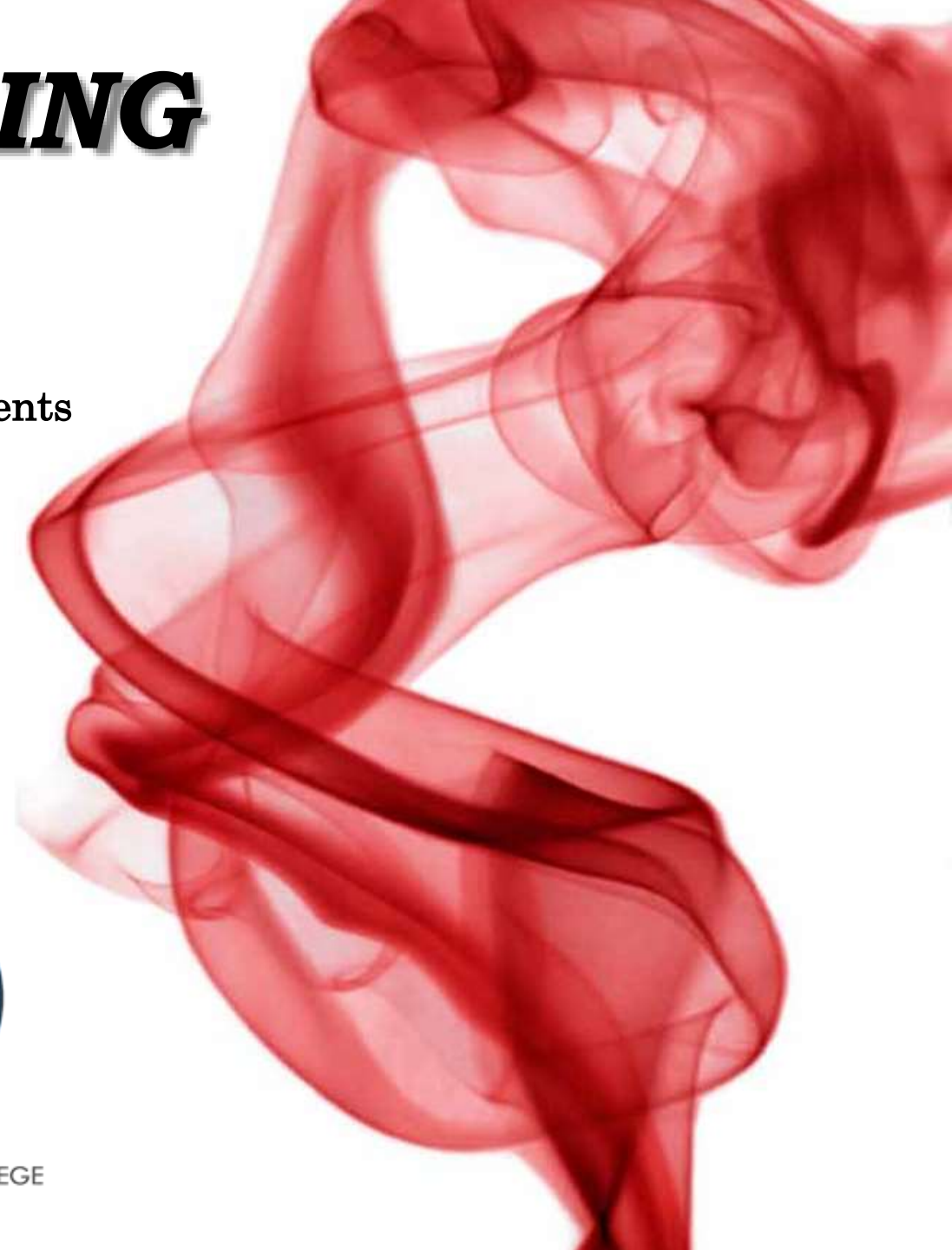
Need Identification, Problem Statements, Customer Requirements
Customer Survey

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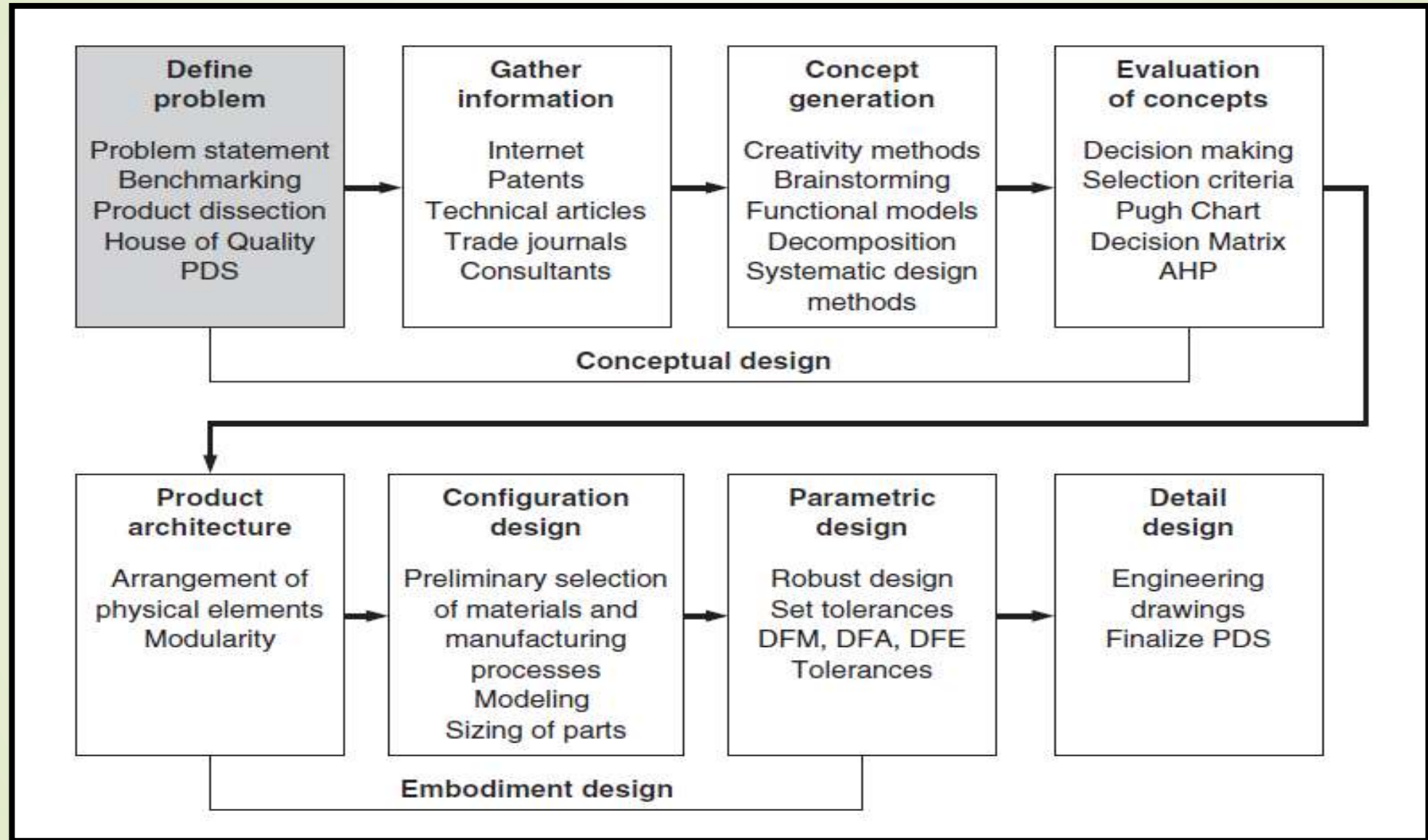
MEA ENGINEERING COLLEGE
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Product Development Process



Need Identification & Problem Statement

- Finding an idea for a design requires designer to identify the needs himself, another person, or a group of people. The act of looking at the world around you to identify these needs is called **need finding**.
- To help you find an idea for your design project:
 - Create a list of all the things that annoy or bother the people around you. Record this bug list in your [Design Notebook](#).
 - [Mind Map](#) possible design problems, ideas, or areas of interest to you.
- Once you have found an idea for your engineering project, describe the problem by writing a **problem statement**. Your problem statement must answer three questions:
 - **What** is the problem or need?
 - **Who** has the problem or need?
 - **Why** is it important to solve?

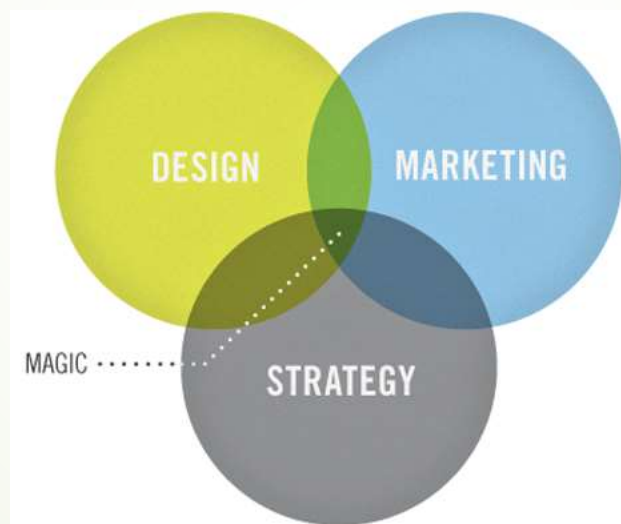
Problem Statements

- Students need an easier way to lock their lockers at school, because combination locks are hard to unlock and often get jammed.
- School students facing health issue due to heavy weight on their shoulders while travelling to school with school bag and lunch box.
- Teachers need a better way to erase chalkboards, because erasers are messy and don't remove all of the chalk.



Market Survey

Entrepreneurs specialize at creating innovative ideas for new products and services, but **ideas that sound good on paper are not always good in practice.** Determining what consumers want and designing products and services that fulfil those wants is essential to the success of a business. Businesses use market surveys to gather information that aids in market research.



Market research describes the gathering and analysis of market data, such as consumer preferences, trends in market prices and the presence of competing products.

Why Market survey ?

- ❖ Market surveys help businesses make better decisions about the types of products and services they offer
- ❖ Provide business managers with insight about their target customers
- ❖ Surveys can help entrepreneurs assess the viability of new ideas
- ❖ Help to realise market interest for new products
- ❖ Give ideas about competing products in market
- ❖ Price fixing

Quantitative Market Survey is about getting the hard measures of a market - market share, how many people think... , how many people saw our advertising, how many people would buy



Qualitative Market Survey is about the softer issues exploring why people do things or think the way they do. These types of survey are usually complementary - you might explore the reasons why people buy in quality, then measure how important these reasons are in quant

Different types of Market Surveys

➤ 1 – Market Investigation Surveys

What is the size and market share of the current market? Discover vital information about the growth of your market and where you stand against the competition

➤ 2 – Market & Customer Profiling Surveys

Find out who your customers are...and also who are NOT your customers. Why are some people not customers of your service or product?

➤ 3 –Purchasing Tracking Surveys

Find out more information about customers at various stages of the purchasing process and what is their opinions and experiences so far? With this information you can also find out if and when the customer may re-purchase your product or service.

➤ 4 – Customer Motivation Surveys

What makes a customer go from hearing about a product or service, to being interested? And then, most importantly, what makes them go from being interested to actually purchasing? Customer motivation to move from interest in the product to actual purchase. Customer motivations is key to understanding customer purchases and loyalty.

➤ 5 – Customer Expectations (& Attitudes) Surveys

Does your product or service meet your customer expectations? How do the attitudes formed by your customer about your product, service or company as a whole enable you to improve advertising, customer purchases and loyalty?

➤ **6 – Customer Retention Surveys**

Explore the extent of consumer attitudes about your product, service or company. This is particularly poignant for any higher priced consumer goods or specialized service which required a lengthy decision and purchasing process.

➤ **7 – New Product Concept Analysis Surveys**

Gather screening opinions and attitudes towards new product concepts. Discover potential consumers preferences, dislikes and chances or making a purchase if the concept was to take form.

➤ **8 – New Product Demand Surveys**

Calculate approximately how much demand there is for new products or services.

➤ **9 – Habits and Uses Surveys**

Understanding usage situations, including how, when, where and why the product is used.

➤ **10 – Product Fulfilment Surveys**

Are expectations produced by advertising, packaging, and product appearance fulfilled?

Methods of Market Survey

- ❑ Offline questionnaire
- ❑ Online questionnaire
- ❑ Telephonic interview
- ❑ Direct interview with costumers
- ❑ Costumers feed back collection
- ❑ Obtaining sales data from executives and merchants

Market Plan

Market surveys helps to establish good marketing plan and it should contain following information's:

- Evaluation of market segments, with clear explanation of reasons for choosing the target market
- Identify competitive products
- Identify early product adopters
- Clear understanding of benefits of product to customers
- Estimation of the market size in terms of dollars and units sold, and market share
- Determine the breadth of the product line, and number of product variants
- Estimation of product life
- Determine the product volume/price relationships
- Complete financial plan including time to market, ten-year projection of costs and income

A white 3D printer is shown on a light-colored surface. Inside the printer's open door, an orange rocket-shaped object is being printed on the build platform. To the right of the printer, a hand holds a small green Eiffel Tower model. In the foreground, there are several other 3D printed items: a blue piggy bank, a teal vase, a green dinosaur head, and some yellow and red rings. The background is a plain grey wall.

Assume your team going to design a 3D-Printer.
How you can execute a market survey to collect relevant information's?

Who be your focus groups ?
Is this data useful to design a 3D-Printer ? How?

The Customer



"one that purchases a product or service"

"anyone who receives or uses what an individual or organization provides"

Customer is not always an End User

The product under development defines the range of customers that a design team must consider. Remember that the term customer implies that the person is engaging in more than just a one-time transaction. Every great company strives to convert each new buyer into a customer for life by delivering quality products and services.

HAPPINESS

30

LOYALTY

SATISFACTION

CUSTOMER
Requirements

MOTIVATION

BUSINESS

PARTNERSHIP

CONFIDENCE

UNDERSTANDING

Performance

Performance deals with what the design should do when it is completed and in operation. Design teams do not blindly adopt the customer requirements set determined thus far. However, that set is the foundation used by the design team. factors may include requirements by internal customers or manufacturing or large retail distributors.



Quality

Quality is a complex characteristic with many aspects and definitions. A good definition of quality for the design team is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.



Elements of Quality

Features: Those characteristics that supplement a product's basic functions. Features are frequently used to customize or personalize a product to the customer's taste.

Reliability: The probability of a product failing or malfunctioning within a specified time period.

Durability: A measure of the amount of use one gets from a product before it breaks down and replacement is preferable to continued repair. Durability is a measure of product life. Durability and reliability are closely related.

Serviceability:

Serviceability: Ease and time to repair after breakdown. Other issues are courtesy and competence of repair personnel and cost and ease of repair.

Perceived quality: This dimension generally is associated with reputation. Advertising helps to develop this dimension of quality, but it is basically the quality of similar products previously produced by the manufacturer that influences reputation.



Cost

Cost pertains to all monetary aspects of the design. It is a paramount consideration of the design team. When all other customer requirements are roughly equal, cost determines most customers' buying decisions. From the design team's point of view, cost is a result of many design decisions and must often be used to make trade-offs among features and deadlines.



Conformance

The degree to which a product's design and operating characteristics meet both customer expectations and established standards. These standards include industry standards and safety and environmental standards.



Aesthetics & Ergonomics



How a product looks, feels, sounds, tastes, and smells. The customer response in this dimension is a matter of personal judgment and individual preference. This area of design is chiefly the domain of the industrial designer, who is more an artist than an engineer. An important technical issue that affects aesthetics is ergonomics, how well the design fits the human user.

Design Attributes/Customer Requirements

Expecters:

These are the basic attributes that one would expect to see in the product, i.e., standard features. Expecters are frequently easy to measure and are used often in benchmarking.

Spokens:

These are the specific features that customers say they want in the product. Because the customer defines the product in terms of these attributes, the designer must be willing to provide them to satisfy the customer.

Unspokens:

These are product attributes the customer does not generally talk about, but they remain important to him or her. They cannot be ignored. They may be attributes the customer simply forgot to mention or was unwilling to talk about or simply does not realize he or she wants. It takes great skill on the part of the design team to identify the unspoken requirements.

Exciters:

Often called delighters, these are product features that make the product unique and distinguish it from the competition. Note that the absence of an exciter will not make customers unhappy, since they do not know what is missing

List out the customer requirements
of a TV Remote.



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