Topics covered include:

- What is good design?
- How do we take advantage of good design?
- How do we choose the right projects?
- How important is an effective process?
- How do we encourage strong teamwork and effective communication?
- How can effective market segmentation and positioning help?
- How do we involve users and customers?
- How do we write an effective specification?
- How do we value early Industrial Design input?
- How can effective market segmentation and positioning help?
- How do we involve users and customers?
- How do we reduce risks through prototyping?
- What is design for X?

What is good design?

GOOD DESIGN characteristics

SIAPA YANG MERANCANG DAN MENGEMBANGKAN PRODUK?

PRODUK SUKSES = PEMASARAN + PERANCANGAN + MANUFAKTUR
DURASI DAN BIAYA PENGEMBANGAN PRODUK

Karakteristik 5 Jenis Produk

1. Volume Produksi Per Tahun
2. Umur Penjualan
3. Jumlah Komponen Khas Produk
4. Tim Pengembang Internal
5. Tim Pengembang Eksternal
6. Biaya Pengembangan
7. Investasi Produksi

Contoh: Obeng, Sepatu Roda, Printer, Mobil, Pesawat Boeing

Tantangan Pengembangan Produk

1. Trade-offs (Bahan Pesawat Terbang)
2. Dinamika (Pengambilan Keputusan dalam Lingkungan yang Berubah-Ubah)
3. Detail (Cl: Baut dan Mur)
4. Tekanan Waktu
5. Faktor Ekonomi (Investasi besar dan harus disukai konsumen)

Permasalahan dalam Merancang Produk:

1. Kurangnya Pemahaman terhadap Tim
2. Konsistensi terhadap Sasaran Proyek Keseluruhan
3. Kekurangan Sumber Daya
4. Representasi yang kurang bagik dari berbagai anggota tim yang berasal dari berbagai disiplin ilmu

Phase Pembuatan Produk Baru

Phase 0
Perencanaan

Phase 1
Pengembangan Konsep

Phase 2
Perancangan Tingkat Sistem

Phase 3
Perancangan Rinci

Phase 4
Pembuatan Produk

Phase 5
Peluncuran Produk

Aktivitas Identifikasi Kebutuhan Pelanggan

1. Mengumpulkan data mentah dari pelanggan
2. Menginterpretasikan data mentah menjadi kebutuhan pelanggan
3. Mengorganisasi kebutuhan menjadi beberapa hierarki, yaitu kebutuhan primer, sekunder, dan jika diperlukan tertier
4. Menetapkan rederat kepentingan setiap kebutuhan
5. Menganalisis hasil dan proses

Lima Tahap Identifikasi

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4. Menetapkan rederat kepentingan setiap kebutuhan
5. Menganalisis hasil dan proses
Pernyataan misi

- Deskripsi produk
- Sasaran bisnis produk (kapan diluncurkan, margin kotor brp?, perebutan pangsa pasar kapan?
- Pasar utama
- Pasar sekunder
- Asumsi
- Pihak yang terkait

Mengumpulkan data dari pelanggan

- Menciptakan jalur informasi yang berkualitas dari pelanggan, melalui
  1. Wawancara
  2. Kelompok fokus
  3. Observasi produk pada saat digunakan
  4. Surveu tertulis

Seni menampilkan data kebutuhan pelanggan

- Kapan dan mengapa anda menggunakan produk ini?
- Ceritakan pengalaman menarik anda ketika menggunakan produk ini
- Apa yang anda sukai dari produk ini?
- Apa yang tidak anda sukai dari produk yang sekarang?
- Hal-hal apa yang anda pertimbangkan ketika membeli produk ini?
- Apa perbaikan yang ingin anda lakukan terhadap produk ini?

Wawancara yang efektif

- Biarkan wawancara mengalir apa adanya
- Gunakan alat visual atau alat peraga
- Hindari hipotesa awal tentang teknologi produk
- Biarkan pelanggan mendemonstrasikan produk atau tugas-tugas tertentu yang berhubungan dengan produk
- Amati informasi non verbal

IMPORTANT Principles

- Successful design depends on the performance of a number of Key Design Activities. A distinction is made between those activities related to the actual design of the product and those related to the management of the process. Many companies view the product design and development process purely as a control mechanism with many of the key design-related activities being poorly executed.
The concepts of process maturity and capability maturity are increasingly being applied to various aspects of product development, both as a means of assessment and as part of a framework for improvement. Although 'maturity' can be defined in a number of ways, it usually implies the adoption of 'good practice' within a framework which encourages repeatable outcomes. Here, we define it as follows:

“The degree to which processes and activities are executed following 'good practice' principles and are defined, managed, and repeatable.”

Key Design Activities may be performed at a number of levels of maturity, and these have been organised in the form of a Design Maturity Model (DMM). The Design Maturity Model (DMM) defines four levels of maturity for each key design activity. Common issues for each activity include:

- What benefits are gained from the activity?
- Who is involved?
- When is the activity performed and when are different staff involved?
- What processes are followed and are they effective?
- What tools and methods are used?
- How is the activity performed - what level of expertise?

The characteristics of each key design activity are described for each of the four maturity levels, using short caption phrases plus a few bullet point descriptors. A summary of the captions for some of the key design activities is given in the tables below, followed by an example of a detailed grid for one of the design activities:

- Auditing design capability
- The Better Product Design workbook "Assessing and improving product design capability" contains audit tools.
- Product audit - takes the form of a product 'healthcheck', assessing product usability, performance, producibility, desirability, profitability and differentiation.
- Process audit - assesses the activity of 25 key design activities covering both design execution and design management.
- The audits can be completed by a single individual from the company, but are best performed as a group activity in a workshop setting. Ideally, the group should contain representatives from across the company, typically including Marketing, Engineering, Production and Customer support.
- The audits are intended to stimulate discussion about the performance of the company’s new product design and development system and to reach consensus on current and desired status. Opportunities for improvement are identified along with appropriate actions. A number of possible tools and techniques may also be suggested.

Well designed products are essential for ongoing business success.
- Recognize the importance of a holistic approach (functionality, performance, production, aesthetics, and ergonomics)
- Good fortune, good timing or indeed sheer hard work.
- However, to design innovative and winning products time after time requires a more reliable and structured approach. In many companies, 'good design' is often under-exploited or marginalised, with insufficient attention given to aesthetics, ergonomics or just design for manufacture. Aesthetic design may be undertaken by untrained engineers, industrial designers may be employed too late to make significant difference or products may be designed which are too costly to produce.
- Thus, to take advantage of good design, the following collection of 'guiding principles' have been identified as critical ingredients of success.
Early integration of specialist designers into the core team

It is unrealistic to have all of the required skills available in one company. A project may demand a human factors expert, stylistic input or software interface design skills. A team may need input from a specific scientific discipline such as optics or robotics. Strong teams recognise their weaknesses and understand when external support is required.

Strong design partnerships to fill competence and skill gaps

External specialists should be viewed as a central part of the design team. Strong partnerships with external designers is often a critical ingredient of success.

Choosing the right projects for investment of valuable resources

Few companies can afford to waste valuable time, money and skills developing a product which is not demanded by their customers or is to be sold in a shrinking market. An effective product strategy, linked closely to the overall business strategy is crucial to the selection of the right projects.

A shared design ‘vision’ based on clear market understanding

Having a shared vision of the product to be designed, bringing together marketing, industrial design, production and engineering perspectives is essential. This vision should be based on a clear understanding of the market, how it is segmented and where the opportunity is to be targeted. Where possible, this vision should be communicated simply in a single and shared product specification.

Maintaining the integrity of the design vision, from idea through to production

Sharing the vision at the outset of a product is not enough. The team should strive to maintain that vision throughout the project from idea through to production.

User and customer involvement throughout the design process

One of the most significant ingredients of success is the involvement of users and customers throughout the design process. Users can help generate valuable insights into future needs and wants and are the single most valuable source of information during product definition. User involvement during concept selection can help to reduce subjectivity in decision making. Finally, users should be involved in market testing and post launch reviews.

Encouragement of a creative culture and divergent search for ideas

Many companies hope to develop innovative and creative new products without providing an appropriate supporting environment. A key element of strong design teams is the ability to be divergent in the search for solutions to problems and a culture which supports play and creativity.

Early and frequent prototyping

Product design is recognised as having high inherent risks, with a combination of market, business and technical risks. Prototyping, model making, simulation, concept testing and evaluation is often a quick, cheap and effective way of exploring and reducing these risks. In many companies, the development of quick and relatively inexpensive prototypes is highly underutilised.

Equal consideration of the ‘tangible’ and ‘intangible’ product attributes

In technically driven companies, design teams tend to focus on performance and functionality - the ‘tangible’ product attributes - those that can be quantified and measured. Such teams often pay little attention to ‘intangible’ attributes, such as how the product will be used, where it will be used and who will use it, what it will look like and how it will feel. These intangible qualities tend to be subjective, difficult to specify and hard to measure but are critical in designing products which are useful, usable, desirable, producible and profitable. Indeed it is often these intangible qualities that lead to product differentiation.

Up front consideration of the downstream implications of design decisions

Ensuring that design for production principles should be considered as early as possible in the design process. In addition, other ‘downstream’ issues should be considered early, including distribution, point of sale, transport, usage and ultimately disposal.

Minimising complexity to the company, whilst maximising variety to customers

Products are often designed one at a time. Each product is different and has a different set of parts, assemblies and processes to other similar ones. Strong design teams consider issues of modularity early in the design process and where possible develop core platforms of technology which can be used in many products addressing different markets.