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EBU5608 Product Development and Management

Topic 7 – Identify Customer Needs

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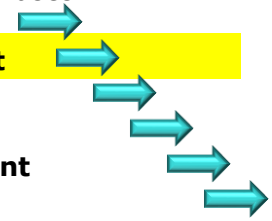
A generic product development process

- Product development **starts** with planning and **concludes** with product launch
- A generic product development process can be used as an example
- The process has six distinct phases
  - 0. **Planning**
  - 1. **Concept development**
  - 2. **System-level design**
  - 3. **Detail design**
  - 4. **Testing and refinement**
  - 5. **Production ramp-up**



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Today Agenda

- Phase 1 – Concept Development
  - Step 1 – Identify Customer Needs

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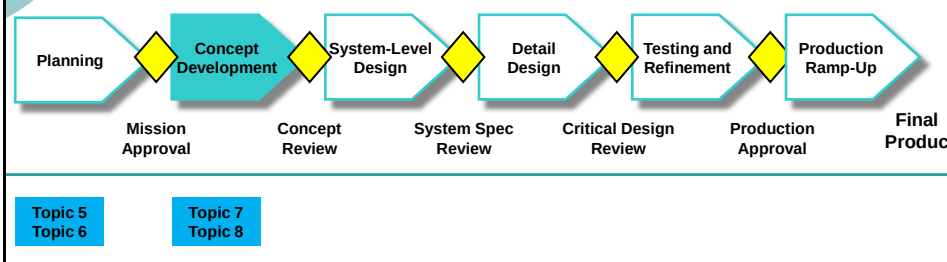
A generic product development process (cont.)

- At the end of each phase, there is an outcome



Source: Product Design and Development, Karl T Ulrich and Steven D Eppinger, International Edition (3rd) McGraw-Hill, 2012, page 14

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Concept Development

- The **needs** of the target market are identified
- **Alternative** product concepts are generated and evaluated
  - A **concept** is a **description** of the form, function and features of a product
- One or more concepts are selected for further **development** and **testing**
- **Evaluation** and **screening criteria** are used to aid in the **selection**
- Usually accompanied by a set of **specifications**, an **analysis** of competitive products and an economic **justification** for the project

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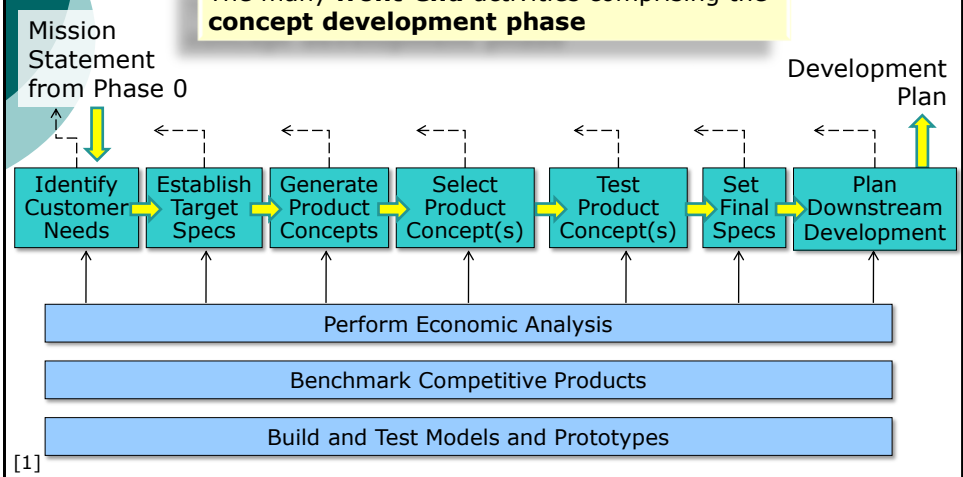
Phase 1 – Concept Development

The many **front-end** activities comprising the **concept development phase**



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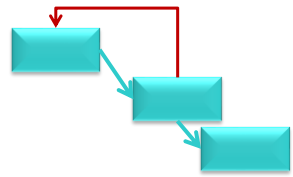
Phase 1 – Concept Development (cont.)

- Phase 1 is also known as the "**front-end process**"
- This phase is very rarely sequential, with many **iterations** happening through the front-end activities and **overlap** between them
- At almost any stage, **new information** may become available or **results learned** which can cause the team to step back to **repeat** an earlier activity before proceeding



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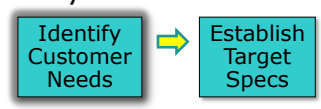
Phase 1 – Concept Development
Identifying customer needs [1]

The **first activity** involved in the concept development process is **identifying customer needs**

- Goal is to **understand** customers **needs**
- Then to effectively **communicate** them to the development team
- The **output** of this step is:
  - **Customer need statements** organised in a hierarchical list, with **importance** weightings for many or all of the needs



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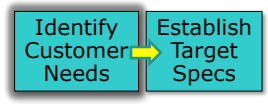
Phase 1 – Concept Development - **Identifying customer needs**

There are 5 steps to this process:

1. Gather raw data from customers
2. Interpret the raw data in terms of customer needs
3. Organize the needs into a hierarchy of needs
4. Establish the relative importance of the needs
5. Reflect on the results and the process



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Role of market research

- High **failure rates** for NPD
  - Over **60%** of new products fail **before** entering the market
  - Out of the remaining 40% that do enter the market, 40% fail to make a profit and are withdrawn
- Products do not mainly fail because of technical shortcomings, but due to absence of market demand
- **Timely** and **reliable** knowledge about customer **preferences** is most important
  - Such data is obtained from **market research**

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Market Research for NPD

- **Market Research** is
  - the function that links the consumer, customer and public to the marketer through **information** – information used
    - to identify and define marketing **opportunities** and **problems**;
    - to generate, refine and evaluate marketing **actions**;
    - to monitor marketing **performance**;
    - to improve **understanding** of the marketing process

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When to use market research

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Identifying customer needs

1. Gather Raw Data

Data Collection
- Primary
- Secondary
- Qualitative
- Quantitative

2. Interpret the needs of customers

3. Organize the needs into hierarchies

4. Establish the relative importance of the needs

5. Reflect on the results and the process

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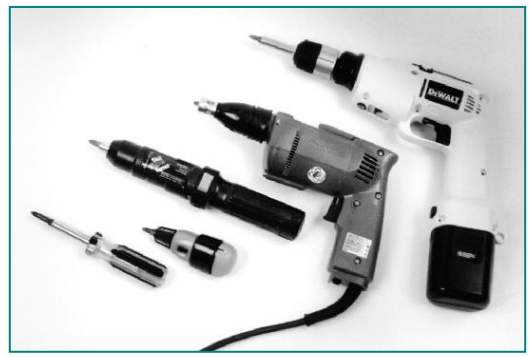
Cordless Screwdriver



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Mission Statement

Example: Screwdriver Project

Product Description
- A hand-held, power-assisted device for installing threaded fasteners

Key Business Goals
- Product introduced in 4th Q of 2000
- 50% gross margin
- 10% share of cordless screwdriver market by 2004

Primary Market
- Do-it-yourself consumer

Secondary Markets
- Casual consumer
- Light-duty professional

Assumptions
- Hand-held
- Power assisted
- Nickel-metal-hydride rechargeable battery technology

Stakeholders
- User
- Retailer
- Sales force
- Service center
- Production
- Legal department

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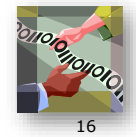
Step 1. Gather raw data

- Collection of **primary/secondary data**
- **Primary** data: comes from direct contact with customers, buyers, users or other actors within the marketing system
- **Secondary** data: not collected directly by their user, nor are they specific to the user
  - e.g existing general reports on a particular market
  - although **easy** and **cheap** to obtain, have **limited value**
- Data may be qualitative and/or quantitative
- Marketing studies often start with a **review** of **secondary** data. This can form a basis for **designing** and **carrying** out the more difficult and expensive **primary** data collection



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Customer selection matrix for the Cordless Screwdriver project

	Lead Users	Users	Retailer or Sales Outlet	Service Centers
Homeowner (occasional use)	0	5	2	3
Handy person (frequent use)	3	10		
Professional (heavy-duty use)	3	2	2	

*** Lead users** are customers who experience needs months or years ahead: (1) they are often able to articulate their emerging needs, because they have had to struggle with the inadequacies of existing products, and (2) they may have already invented solutions to meet their needs.

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Step 1. Gather raw data - primary data methodologies

- **Interviews**: One or more development team members discuss with a single customer
  - Advantage: interaction with customer

- **Focus groups**: A moderator facilitates a two-hour discussion with a group of 8 or 12 customers
  - Advantage: systematic, retrievable
  - Disadvantage: costly, time-consuming, not as effective as interviews

- **Observing** the product in use
  - Advantage: effective
  - Disadvantage: not structured, not systematic,

- **Surveys**: direct mail or web-based questionnaires;

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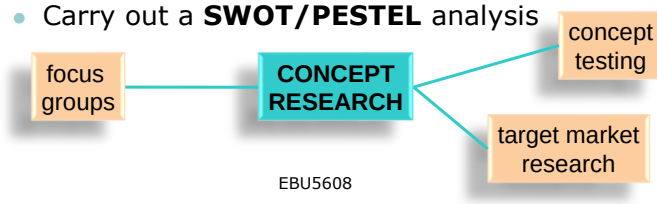
Concept Research

- Concept research will gather **data** in the target market to
  - Develop decision making **strategies**
  - Examine **existing** market segments
  - Understand shopping **habits**
  - Understand the **customers' view** of the products available
  - Look at customers' **beliefs/expectations**
  - Analyse current **buying patterns**
  - Carry out a **SWOT/PESTEL** analysis



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Step 2. Interpret raw data in terms of customer needs

- The data gathered in Step 1 then has to be used to express the customers' needs in terms of what the product has to do, **not** in terms of how it might do
- Use **positive**, not **negative** phrasing
- Express the needs as **attributes** of the product

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Step 2. Interpret raw data - a coffee machine

Needs	Attributes
I like my coffee strong, my wife likes hers weak	*Machine must have variable coffee strength*
I hate it when the coffee drips on the worktop	*Machine must have drip stop*
We always use the dishwasher for cleaning	*Must be able to put the non-electric parts in a dishwasher*
I hate spare power cord lying on the worktop	*Must have good cord management*

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Five Guidelines for Writing Needs Statements

Guideline	Customer Statement	Need Statement-Wrong	Need Statement-Right
What Not How	"Why don't you put protective shields around the battery contacts?"	The screwdriver battery contacts are covered by a plastic sliding door.	The screwdriver battery is protected from accidental shorting.
Specificity	"I drop my screwdriver all the time."	The screwdriver is rugged.	The screwdriver operates normally after repeated dropping.
Positive Not Negative	"It doesn't matter if it's raining, I still need to work outside on Saturdays."	The screwdriver is not disabled by the rain.	The screwdriver operates normally in the rain.
Attribute of the Product	"I'd like to charge my battery from my cigarette lighter."	An automobile cigarette lighter adapter can charge the screwdriver battery.	The screwdriver battery can be charged from an automobile cigarette lighter.
Avoid "Must" and "Should	"I hate it when I don't know how much juice is left in the batteries of my cordless tools."	The screwdriver should provide an indication of the energy level of the battery.	The screwdriver provides an indication of the energy level of the battery.

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Step 2. Interpret raw data - a screwdriver (SD)

Question/Prompt	Customer Statement	Interpreted Need
Typical uses	I need to drive screws fast, faster than by hand.	The SD drives screws faster than by hand.
	I sometimes do duct work; use sheet metal screws.	The SD drives sheet metal screws into metal duct work.
	A lot of electrical; switch covers, outlets, fans, kitchen appliances.	The SD can be used for screws on electrical devices.
Likes—current tool	I like the pistol grip; it feels the best.	The SD is comfortable to grip.
	I like the magnetized tip.	The SD tip retains the screw before it is driven.
Dislikes—current tool	I don't like it when the tip slips off the screw.	The SD tip remains aligned with the screw head without slipping.
	I would like to be able to lock it so I can use it with a dead battery.	The user can apply torque manually to the SD to drive a screw. (!)
	Can't drive screws into hard wood.	The SD can drive screws into hard wood.
	Sometimes I strip tough screws.	The SD does not strip screw heads.
Suggested improvements	An attachment to allow me to reach down skinny holes.	The SD can access screws at the end of deep, narrow holes.
	A point so I can scrape paint off of screws.	The SD allows the user to work with screws that have been painted over.
	Would be nice if it could punch a pilot hole.	The SD can be used to create a pilot hole. (!)

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Step 3. Organize the needs into a hierarchy

- **Structure** the needs into
  - **Must-haves** – "*I wont buy without*"
  - **Delighters** – "*What an unexpected treat*"
  - **Linear Satisfiers** – "*The more the merrier*"
  - **Neutrals** – "*No big deal*"
- This is the **Kano** classification
- Consumer needs can be very **elusive**
- **Intuitions** are often wrong

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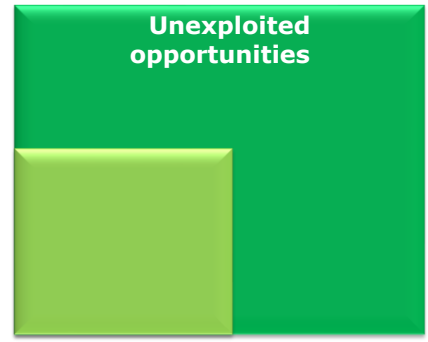
Customers and their needs

- Consumers may or may not be able to articulate their **needs**
- Consumers may or may not know what will **satisfy** them

Unarticulated

NEEDS

Articulated



The key to **successful** market research for new product development comes from an **understanding** of what customers **value** and not simply from asking them to submit their **own solutions**

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Organised List of Customer Needs

The SD provides plenty of power to drive screws.
* The SD maintains power for several hours of heavy use.
** The SD can drive screws into hardwood.
The SD drives sheet metal screws into metal ductwork.
*** The SD drives screws faster than by hand.

The SD makes it easy to start a screw.
* The SD retains the screw before it is driven.
!* The SD can be used to create a pilot hole.

The SD works with a variety of screws.
** The SD can turn philips, torx, socket, and hex head screws.
** The SD can turn many sizes of screws.

The SD can access most screws.
The SD can be maneuvered in tight areas.
** The SD can access screws at the end of deep, narrow holes.

The SD turns screws that are in poor condition.
The SD can be used to remove grease and dirt from screws.
The SD allows the user to work with painted screws.

The SD feels good in the user's hand.
*** The SD is comfortable when the user pushes on it.
*** The SD is comfortable when the user resists twisting.
* The SD is balanced in the user's hand.
! The SD is equally easy to use in right or left hands.
The SD weight is just right.
The SD is warm to touch in cold weather.
The SD remains comfortable when left in the sun.

The SD is easy to control while turning screws.
*** The user can easily push on the SD.
*** The user can easily resist the SD twisting.
The SD can be locked "on."
!** The SD speed can be controlled by the user while turning a screw.
* The SD remains aligned with the screw head without slipping.
** The user can easily see where the screw is.
* The SD does not strip screw heads.
* The SD is easily reversible.

The SD is easy to set-up and use.
* The SD is easy to turn on.
* The SD prevents inadvertent switching off.
* The user can set the maximum torque of the SD.
!* The SD provides ready access to bits or accessories.
* The SD can be attached to the user for temporary storage.

The SD power is convenient.
* The SD is easy to recharge.
The SD can be used while recharging.
*** The SD recharges quickly.
The SD batteries are ready to use when new.
!** The user can apply torque manually to the SD to drive a screw.

The SD lasts a long time.
** The SD tip survives heavy use.
The SD can be hammered.
* The SD can be dropped from a ladder without damage.

The SD is easy to store.
* The SD fits in a toolbox easily.
** The SD can be charged while in storage.
The SD resists corrosion when left outside or in damp places.
!* The SD maintains its charge after long periods of storage.
The SD maintains its charge when wet.

The SD prevents damage to the work.
* The SD prevents damage to the screw head.
The SD prevents scratching of finished surfaces.

The SD has a pleasant sound when in use.

The SD looks like a professional quality tool.

The SD is safe.
The SD can be used on electrical devices.
*** The SD does not cut the user's hands.

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Organised List of Customer Needs

The SD provides plenty of power to drive screws.

Secondary needs are indicated by the number of *'s, with *** denoting critically important needs

* The SD maintains power for several hours of heavy use.

** The SD can drive screws into hardwood.

The SD drives sheet metal screws into metal ductwork.

*** The SD drives screws faster than by hand.

The SD makes it easy to start a screw.

Latent needs are denoted by !.

* The SD retains the screw before it is driven.

!* The SD can be used to create a pilot hole.

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Step 4. Establish the relative importance of the needs

- Measuring **preference** is central to market research:
  - Do consumers prefer glass bottles or plastic bottles?
  - Would consumers pay 35p more for a plastic bottle?
  - What is 'more important' in yogurt: taste or texture?
  - What proportion of consumers would be willing to have the weight of their laptop increased by 50% in order to double the processing speed?
  - Would the customer's value of a feature justify the cost of producing it?

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A survey design for ranking customer needs

Cordless Screwdriver Survey

For each of the following cordless screwdriver features, please indicate on a scale of 1 to 5 how important the feature is to you. Please use the following scale:

1. Feature is undesirable. I would not consider a product with this feature.
2. Feature is not important, but I would not mind having it.
3. Feature would be nice to have, but is not necessary.
4. Feature is highly desirable, but I would consider a product without it.
5. Feature is critical. I would not consider a product without this feature.

Also indicate by checking the box to the right if you feel that the feature is unique, exciting, and/or unexpected.

Importance of feature on scale of 1 to 5	Check box if feature is unique, exciting, and/or unexpected.
_____ The screwdriver maintains power for several hours of heavy use.	❑
_____ The screwdriver can drive screws into hardwood.	❑
_____ The screwdriver speed can be controlled by the user while turning a screw.	❑
_____ The screwdriver has a pleasant sound when in use.	❑

And so forth.

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Step 5. Reflect on the results and the process

- No process is an **exact science**
- It is important to look back over the results and see how **effective** the process was
- Questions to ask include:
  - Have we interacted with all **important customers** in our target market?
  - Can we see the **latent needs** of customers beyond our current product range?
  - Can we **further involve** any of the customers in our product development?
  - Did we involve the right people in our **organisation**?
  - Can we **improve** our process?

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Key Benefits

- Ensuring that the product is focused on customer needs and that no critical customer need is forgotten;
- Developing a clear understanding among members of the development team of the needs of the customers in the target market;
- Developing a fact base to be used in generating concepts, selecting a product concept, and establishing product specifications;
- Creating an archival record of the needs phase of the development process.

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Summary

- **Phase 1 – Concept Development**
  - Step 1 – Identify Customer Needs
    1) Gather raw data from customers
    2) Interpret the raw data in terms of customer needs
    3) Organize the needs into a hierarchy of needs
    4) Establish the relative importance of the needs
    5) Reflect on the results and the process

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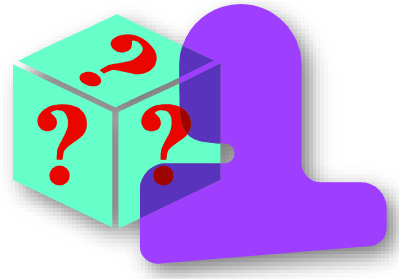
Questions?



Go to www.menti.com to post your questions

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Reading

- **Core Textbook** (Ulrich & Eppinger, 7th Edition)
  - Chapter 5. Identifying Customer Needs
    pages 77 - 93

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References

1. Core Textbook (Ulrich & Eppinger, 5th Edition), Chapter 5. Identifying Customer Needs

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