

1. *Develop* an opportunity statement for a new product.
2. *Evaluate* an opportunity.
3. *Develop* a product development mission statement.
4. *Gather* raw customer needs data from a group of potential customers
5. *Translate* the raw customer needs data into an identified customer needs.
6. *Translate* customer needs into target specifications.
7. *Define* the value proposition of your NP and the business model

## Foreword

### The NPD

Is the sequence of steps or activities which an enterprise employs to identify, conceive, design develop, produce, and commercialize a product.

Marketing, design and manufacturing functions play key roles,

### Duration and Cost of Product Development

Very few products can be developed in less than one year, although market forces are reducing the allowable time to develop a successful product. Depending on the complexity and potential sales lifetime of the product, a development project can cost \$100,000, \$1,000,000 or even \$1,000,000,000 and can last up to 10 years.

	Stanley Tools Jobmaster Screwdriver	Rollerblade In-line skate	HP DeskJet Printer	Volkswagen New Beetle	Boeing 777	Your Project?
Annual Production Volume						
Sales Lifetime						

Sales Price						
Number of Parts						
Lines of code						
Development Time						
Internal Team						
External Team						
Development Cost						
Production Investment						

**Exercise** In the right column in the above table, estimate the size and scope of the product development effort for the project you are currently contemplating for the Challenge Project:

### Phase 0 (ch 3) Assessing the situation and sensing the gaps

1. Opportunity statement/charter
2. Exploring existing products/solutions serving similar needs and pinpointing the most promising ones
3. Opportunity selection
4. Identifying sectors and objects that might inspire your search
5. Mission statement

#### 1. How to write an opportunity statement/charter:

The first step and, arguably the most difficult step, is identifying opportunities.

- it is a 1- or 2-sentence description of a product or market opportunity
- it should not imply the use of any particular technology

- it should not imply a specific product concept

**Opportunity is about what, not how**

- Bad Example (because it includes a solution): The product opportunity is to build a pen interface that enables layout engineers to select and position components more quickly than is possible with a mouse.

Good Example: The product opportunity is to reduce the time required for a layout engineer to position the complete set of components on a printed circuit board.

**The first step** is to write down your problem or the current state. Don't worry too much about quality at this point – simply making a start is significant.

"I have to drive three hours to go to work everyday, which makes me feel very tired"

Next, expand on your problem by asking the following questions:

- who does it affect / does not affect.
- what does it effect / does not affect.
- how does it effect / does not affect.
- when is it a problem / is not a problem.
- where is it a problem / is not a problem.
- Why is it a problem/is not a problem

Now, re-write your problem statement based on those answers.

"I feel very tired and frustrated, especially when I have to travel during traffic-jam hours: I get angry and have headhacheduring week-ends, too"

**The Second step** is the same as the first, but focuses on the Desired or Future State.

"I wish I could feel energetic during the week-ends"

**The Third Step** is to combine your revised Problem or Current State and your desired Future State into a single statement.

"I wish I could work without using the car and feel energetic all the week!"

This might take a couple of attempts but stick with it. Finally, review your new problem statement against the following criteria:

- Focused on only one Problem.
- One or two sentences long.
- Does not suggest a Solution.

You should now have a concise and well balanced **Problem Statement**.

Another example of an opportunity statement:

*"Create a simple bedside device that displays internet weather forecasts so you can see what the weather will be when you wake up in the morning."*

## 2. Where to look for opportunities?

---

**Discontinuities, Trends and Convergence.** Where do entrepreneurs find the opportunities?

**Discontinuities.** Byers suggests that one way to find opportunities is to look for *discontinuities* in culture, society or markets. Some examples of these sources of opportunity are listed in Table 2.2.

**TABLE 2.2 Sources of discontinuities.**

Society	Technology	Markets
■ Aging society	■ Innovation	■ Deregulation
■ Lifelong education	■ Disruptive technologies	■ Supply chain disruption
■ Food and population	■ New knowledge	■ Globalization
■ Regulation		

**Trends.** Trends in technologies and demographics can lead to large opportunities. The successful entrepreneur keeps an eye on trends in technologies and demographics and seeks opportunities that are responsive to these trends. Byers (Table 2.4) lists important social and cultural changes in demographics that are likely to be sources of opportunities in the future:

**TABLE 2.4 Social and cultural trends that will create opportunities.**

■ Aging of the baby-boom generation	■ Changing role of religious organizations
■ Increasing diversity of the people of the United States (e.g., Latino population)	■ Changing role of women in society
■ Two-working-parent families	■ Pervasive influence of media—television, DVDs, Internet
■ Rising middle class of developing nations	

**Convergence!** Convergence of technologies or industries (i.e. merging of technologies or industries once thought to be separate) is another key source of opportunities. Recent examples of convergence:

- Halal and product traceability
- .....

### 3. Opportunity Selection

An attractive opportunity is one that is profitable to a new venture and valuable to the customers. Byers (Table 2.3) lists the following 5 characteristics of an attractive opportunity.

**TABLE 2.3 Five characteristics of an attractive opportunity.**

■ Timely—a current need or problem	■ Profitable—the customer will pay for the solution and allow the enterprise to profit
■ Solvable—a problem that can be solved in the near future with accessible resource	■ Context—a favorable regulatory and industry situation
■ Important—the customer deems the problem or need important	

The characteristics in Table 2.3 should serve as a “go” vs. “no go” filter to weed out unattractive opportunities. Simply put, the successful entrepreneur seeks timely, solvable, important problems with a favorable context that can lead to profitability!

### 4. Identifying sectors and objects that might inspire your search

Diverging activity

### **The Mission Statement**

Once the project has been approved, but before substantial resources have been spent, the *core team* should meet again to complete pre-project planning activities. The output of these meetings should be a detailed mission statement.

The product vision statement is useful for keeping the team focused on the overall goal or vision of the new product. It does not, however, go into any specifics as to how the team is going to get there. To provide clearer guidance to the product development team, a *mission statement* should be crafted which includes the following:

- **A brief, one-sentence description of the product** (i.e. Opportunity Statement)–
- **Key business goals** –
- **Target markets for the product** –
- **Assumptions and constraints** –
  - People–
  - Manufacturing –
  - Service –
  - Environmental issues –
- **Stakeholders** –

## Mission Statement: Cordless Screwdriver Project

### Product Description:

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

### Key business goals:

- Product introduced in fourth quarter of 2002
- 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-hydrate rechargeable battery technology

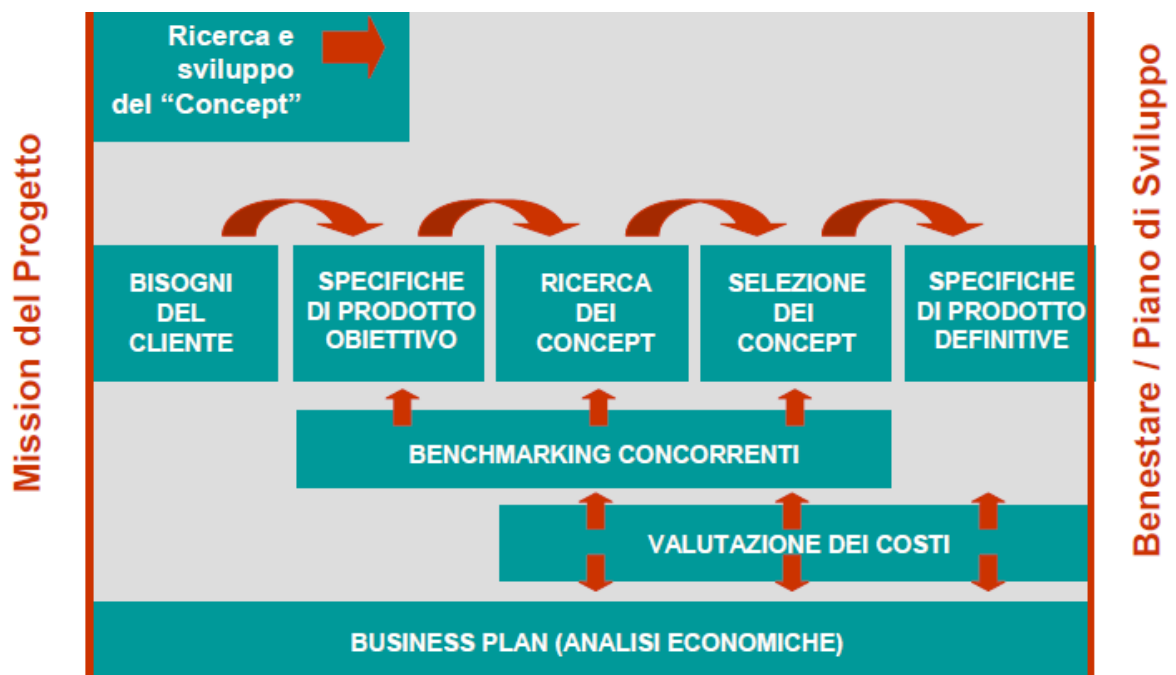
### Stakeholders:

- User
- Retailer
- Sales force
- Service Center
- Production
- Legal Department

## Phase 0.a (ch4) Project Planning

The product planning process takes place before a product development project is formally approved and before any substantial resources have been expended on a project.

1. Macro segmentation (Abell): it deals with the definition of the market of reference (which one and how big)
2. Internal environment analysis
3. SWOT
4. Pre-project planning development (IF-What exercise: actions, timelines, resources, milestones, outputs)



Fonte: MR&D Institute



SVILUPPO DEL CONCEPT: TESTA / CODA DELLO SVILUPPO  
DI UN NUOVO PRODOTTO

CREATIVITA',  
INNOVAZIONE E DESIGN

	OBIETTIVO	OUTPUT
■ IDENTIFICARE I BISOGNI DEL CLIENTE	Capire i bisogni dei clienti target e condividerli all'interno del team di sviluppo.	Bisogni dei Clienti organizzati in scala gerarchica quantitativa
■ STABILIRE LE SPECIFICHE DI PRODOTTO OBIETTIVO	Tradurre i bisogni in termini tecnici misurabili e definire una prima specifica tecnica	Prima specifica tecnica di Prodotto
■ ANALIZZARE I PRODOTTI CONCORRENTI	Analisi dei prodotti concorrenti sia come performance che come posizionamento (Competitive Benchmarking)	Idee e suggerimenti per il nuovo Prodotto. Prezzo/Quantità/Posizionamento sul mercato
■ GENERARE I "CONCEPT" DI PRODOTTO	Ricerca dei "concept" di prodotto che possano soddisfare la specifica fascia	Possibili soluzioni di Prodotto
■ SELEZIONARE I "CONCEPT" DI PRODOTTO	Sceita del concept da sviluppare	Il concept del nuovo prodotto
■ AFFINARE LE SPECIFICHE DI PRODOTTO	Ristesura delle specifiche tecniche in funzione della scelta del concept	Specifica tecnica finale del nuovo prodotto
■ SVILUPPARE LE ANALISI ECONOMICHE	Valutazione dei costi di Sviluppo e di Processo di Marketing dell'elaborazione del Business Plan	Business Plan
■ PIANIFICARE LO SVILUPPO DEL PRODOTTO	Pianificazione dello Sviluppo: Obiettivi, Tempi e Responsabilità della Struttura	Stesura del "Contract Book" interno

Fonte: MR&D Institute

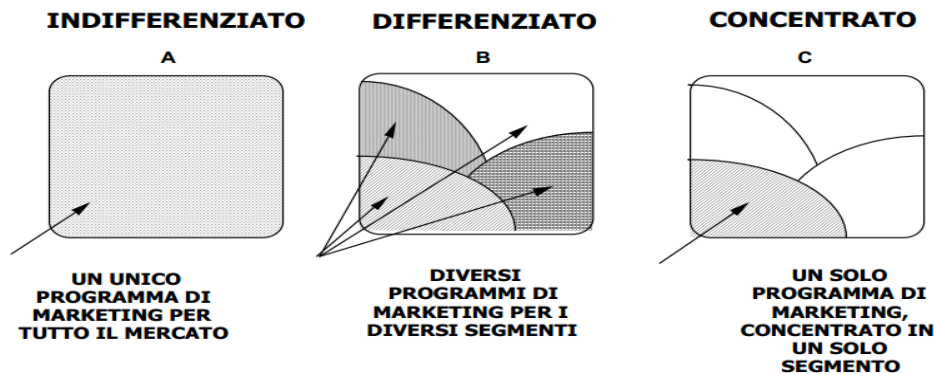
## Phase 1 (ch 5) Identifying customer needs

1. Micro segmentation (4 Ps) The needs of the customer (industrial versus consumer) and the shopping behaviors
2. Identifying customer needs (independent of any specific product we might develop + ask vs observe)

## 1. Micro segmentation



### Le strategie di marketing (1/2)



Non sempre e' possibile e/o conveniente agire su tutto il mercato in quanto:

- i mercati a volte sono troppo ampi oppure conviene strategicamente focalizzarsi su un segmento
- i clienti possono differire per diversi aspetti:
  - desideri/preferenze
  - risorse di cui dispongono
  - localizzazione geografica
  - atteggiamenti e abitudini d'acquisto



**Occorre suddividere il mercato in sottoinsiemi omogenei**

- **Segmentare**

Identificare classi di clienti (attuali e/o potenziali) aventi in comune certe caratteristiche che li rendono omogenei sotto l'aspetto della "sensibilità" ad alcune leve del programma di marketing.

- **Segmentazione**

*Processo di marketing* attraverso cui l'impresa suddivide un mercato in vari sottogruppi - con profili di domanda tra loro distinti, ma internamente omogenei - rispetto ai quali il management sviluppa piani specifici di marketing allo scopo di meglio soddisfarne le esigenze.

- **Misurabilità:** deve essere possibile misurare la dimensione e il potere di acquisto dei segmenti.
  - **Accessibilità:** possibilità reale di raggiungere il segmento con azioni di marketing.
  - **Omogeneità:** interna al segmento rispetto ad una o più caratteristiche (descrittori); eterogeneità rispetto ad altri segmenti.
  - **Importanza:** dimensione del segmento tale da giustificare un'azione di marketing mirata.
  - **Durata:** possibilità di sfruttare il segmento per un certo periodo di tempo.
- 
- Attraverso la macro-segmentazione si è individuato il mix di segmenti di prodotto-tecnologia-mercati definendo, quindi, i confini dell'area di business di riferimento.
  - Occorre, inoltre, effettuare una segmentazione a livello "micro" focalizzandosi su variabili riguardanti il cliente.
  - In particolare, ci si focalizzerà su:
    - Variabili di segmentazione
    - Processi e approcci operativi di segmentazione.
  - Infatti, esistono molti criteri, ma non sempre sono efficaci per mettere in luce le diversità di comportamento/esigenze dei clienti  
Occorre che essi risultino significativi per il prodotto/servizio considerato (ad es.: il colore degli occhi può essere significativo per il trucco per gli occhi ma non per gli acquisti di apparecchiature antincendio).
- 
- Occorre identificare delle **basi di segmentazione**, ovvero caratteristiche dei clienti che si correlano significativamente con le differenze nelle preferenze e nella risposta di marketing.
  - Tali variabili devono portare all'identificazione di segmenti con le caratteristiche evidenziate (misurabilità, accessibilità, omogeneità, importanza).
  - Esistono due principali approcci:
    - Segmentazione per **prodotti**
    - Segmentazione per **clienti**:
      - Mercato industriale
      - Mercato consumer



### Esempio di segmentazione dei prodotti

Mercato delle Acque Minerali	
▪ Gassata	520 Mln litri (52%)
▪ Naturale	380 Mln litri (38%)
▪ Effervescente	100 Mln litri (10%)
<b>Totale</b>	<b>1000 Mln litri (100%)</b>

Mercato dei Veicoli Industriali	
▪ Fino a 5 tonnellate	67.000
▪ Da 5 a 15 tonnellate	38.000
▪ Da 15 a 30 tonnellate	15.000
▪ Oltre 30 tonnellate	21.000
<b>Totale</b>	<b>141.000</b>

(Nota: i valori riportati sono di fantasia)



### I limiti della segmentazione per prodotto: un esempio

Stesso prodotto ma caratteristiche dei clienti e dell'acquisto completamente diverse

	CASO A	CASO B
<b>Che cosa comprano</b> (comportamento di consumo "apparente")	▪ PANDA	▪ PANDA
<b>Chi sono</b> (profilo degli utenti)	▪ Moglie di un proprietario di vettura medio-grande ▪ Età 38 anni ▪ Reddito medio/alto	▪ Impiegato giovane ▪ Single ▪ Reddito medio/basso
<b>Come usano il prodotto</b>	▪ Bassa/nulla conoscenza "tecnica" del prodotto ▪ Seconda vettura di famiglia ▪ Uso cittadino	▪ Media conoscenza "tecnica" del prodotto ▪ Prima motorizzazione ▪ Uso misto
<b>Come acquistano il prodotto</b>	▪ Decisione congiunta marito/moglie e fortemente determinata dal marito ("esperto") ▪ Alternative considerate: Micra	▪ Decisione autonoma con influenza opinioni di amici e parenti ▪ Alternative considerate: Fiat Regata usata
<b>Che cosa cercano nel prodotto</b>	▪ Manovrabilità ▪ Assistenza tecnica facilmente reperibile	▪ Basso costo ▪ Affidabilità



## La segmentazione per clienti

- I criteri più efficaci di segmentazione sono quelli che permettono di isolare esigenze e comportamenti omogenei dei clienti, che possono, perciò, venire soddisfatti meglio con approcci “ad hoc”.
- Esistono tre principali approcci alla segmentazione per clienti:
  - segmentazione per caratteristiche dei clienti
  - segmentazione per comportamenti dei clienti
  - segmentazione per esigenze dei clienti
- Inoltre al loro interno occorre distinguere la tipologia di mercato di riferimento, in particolare:
  - mercati dei beni di consumo
  - mercati business-to-business.



### Segmentazione per caratteristiche dei clienti (1/2)

Sono criteri “descrittivi” di caratteristiche “strutturali” che connotano i clienti (segmentazione “descrittiva”)

#### Mercati dei beni di consumo

Tipo di caratteristiche	Esempi dei criteri di segmentazione
<b>Geografiche</b>	<ul style="list-style-type: none"><li>• <b>Area geografica:</b> Nord, Centro, Sud...</li><li>• <b>Regioni:</b> Piemonte, Sicilia, Umbria....</li><li>• <b>Paesi:</b> Italia, Francia, USA....</li><li>• <b>Dimensione del centro:</b> fino a 5000 ab., 5-10000,...</li><li>• <b>Tipo di insediamento:</b> grande città, città medio piccole, centri rurali....</li></ul>
<b>Socio-demografiche</b>	<ul style="list-style-type: none"><li>• <b>Sesso:</b> Maschi, femmine</li><li>• <b>Età:</b> fino a 12 anni, 12-18, 18-25, 25-35, 35-50,...</li><li>• <b>Dimensione famiglia:</b> 1, 2, 3, 4, 5 e più</li><li>• <b>Stadio del ciclo di vita delle famiglie:</b> giovani soli, coppie giovani senza figli, coppie giovani con figli &gt; 5 anni, coppie mature con figli/senza figli, anziani soli...</li><li>• <b>Reddito:</b> fino a 15 mli, 15-30, 30-60, 60-100, 100-200, ecc.</li><li>• <b>Occupazione:</b> dipendente/autonomo, operaio, agricoltore, impiegato, dirigente, insegnante, ecc</li><li>• <b>Classe sociale:</b> superiore, medio-alta, media, medio-bassa,...</li><li>• <b>Religione:</b> cattolica, protestante, musulmana, ebraica...</li><li>• <b>Utilizzo di altri prodotti:</b> automobile, motocicletta, motoscafo (p. es. per i consumatori di benzina)</li></ul>
<b>Psicografiche</b>	<ul style="list-style-type: none"><li>• <b>Personalità:</b> dominante, gregaria, ambiziosa...</li><li>• <b>Stile di vita:</b> innovatori, conservatori, emergenti, affluenti...</li></ul>

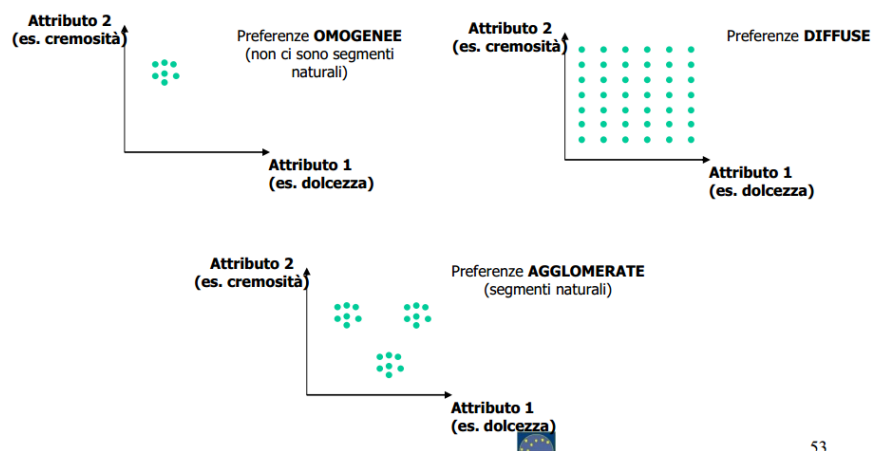


## Segmentazione per caratteristiche dei clienti (2/2)

### Mercati dei beni industriali

Tipo di caratteristiche	Esempi dei criteri di segmentazione
<b>Geografiche</b>	<ul style="list-style-type: none"> <li><b>Area geografica:</b> Nord, Centro, Sud...</li> <li><b>Regioni:</b> Piemonte, Sicilia, Umbria....</li> <li><b>Paesi:</b> Italia, Francia, USA....</li> <li><b>Tipo di localizzazione:</b> in zona industrializzata/non industrializzata...</li> </ul>
<b>Profilo di attività</b>	<ul style="list-style-type: none"> <li><b>Dimensione aziendale:</b> fino a 10 dipendenti, 10-50, 50-100, 100-1000, ....</li> <li><b>Tipo di attività:</b> industria manifatturiera, agricola, di servizi</li> <li><b>Settore di attività:</b> elettrodomestici, autoveicoli, alimentari, chimica fine, arredamento, informatica ...</li> <li><b>Tipologia di gestione:</b> imprenditoriale, manageriale...</li> <li><b>Modalità operative:</b> tipo di tecnologie utilizzate, grado di accentramento/decentramento decisionale</li> <li>...</li> </ul>

### Esempio di segmentazione basata sulle preferenze (gelato)







## Segmentazione per comportamenti dei clienti (2/2)

### Mercati dei beni industriali

Tipo di caratteristiche	Esempi dei criteri di segmentazione
<b>Modalità del processo d'acquisto</b>	<ul style="list-style-type: none"> <li>▪ <b>Lotti di acquisto:</b> grandi, medi, piccoli...</li> <li>▪ <b>Complessità della procedura d'acquisto:</b> elevata, bassa...</li> <li>▪ <b>Da chi acquista:</b> grossista, produttore, broker...</li> <li>▪ <b>Fedeltà al fornitore:</b> alta, media, bassa</li> <li>▪ ...</li> </ul>
<b>Modalità di utilizzo del prodotto</b>	<ul style="list-style-type: none"> <li>▪ <b>Volume di consumo del prodotto:</b> alto, medio, basso</li> <li>▪ <b>Tipo di applicazione del prodotto:</b> componente del motore, additivo nel processo industriale, elemento di fissaggio del prodotto</li> <li>▪ ...</li> </ul>



### Esempi di segmentazione per comportamenti dei clienti

Mercato delle Automobili	
	% degli automobilisti
<b>Basso utilizzo</b> ( < 10.000km/anno)	15%
<b>Medio-basso</b> (10-20.000 km/anno)	38%
<b>Medio-alto</b> (20-35.000 km/anno)	30%
<b>Alto</b> (35-50.000 km/anno)	10%
<b>Molto alto</b> ( > 50.000 km/anno)	7%
<b>Totale</b>	<b>100%</b>

Mercato delle materie plastiche Hi-tech	
	% delle aziende utilizzatrici
<b>Lotti d'acquisto piccoli</b>	25%
<b>Lotti d'acquisto medi</b>	70%
<b>Lotti d'acquisto grandi</b>	5%
<b>Totale</b>	<b>100%</b>

(Nota: i valori riportati sono di fantasia)





## Segmentazione per esigenze dei clienti (1/2)

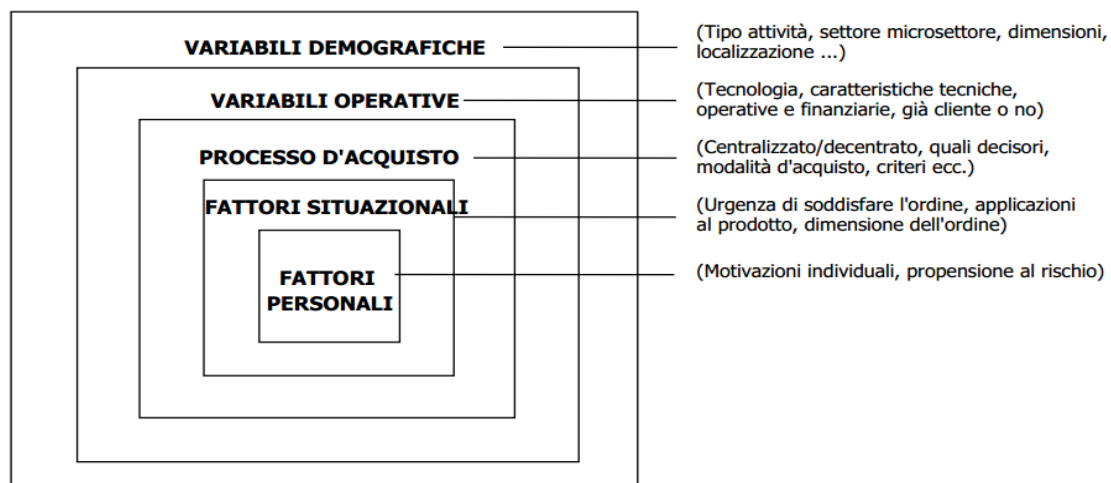
- Si tratta di criteri che tendono a mettere in evidenza le aspettative e i benefici che i clienti ricercano o si aspettano nel prodotto o servizio considerato. Sono, quindi, più vicini alle reali esigenze dei clienti (che possono non corrispondere ai comportamenti effettivi poiché i clienti possono adottare comportamenti “di compromesso”, accontentandosi di quanto è possibile trovare sul mercato). Hanno, quindi, un valore predittivo più elevato ma sono normalmente anche i più difficili da adottare. (“*Benefit segmentation*”)

### Mercati dei beni di consumo

Tipi di esigenze dei clienti	Esempi dei criteri di segmentazione
<b>Benefici ricercati dai clienti</b>	<ul style="list-style-type: none"> <li>Risparmio di tempo</li> <li>Prezzo</li> <li>Varietà di scelta</li> </ul>
	<b>Supermercati</b>
	<ul style="list-style-type: none"> <li>Livello di comfort</li> <li>Prezzo</li> <li>Livello di servizio</li> <li>Sicurezza</li> <li>Tipo di garanzie</li> <li>Affidabilità del prodotto</li> </ul>
	<b>Automobili</b>
	<ul style="list-style-type: none"> <li>Igiene</li> <li>Estetica</li> <li>Gradevolezza</li> <li>Prezzo</li> <li>...</li> </ul>
	<b>Dentifrici</b>



## Approccio multifase, “nested approach”



- Procedura che analizza in successione cinque classi differenti di basi di segmentazione.
- Passando dagli strati esterni a quelli interni del modello, le variabili di segmentazione cambiano in termini di visibilità, permanenza e specificità.





## Segmentazione per esigenze dei clienti (2/2)

### Mercati dei beni industriali

Tipi di esigenze dei clienti	Esempi dei criteri di segmentazione
<b>Benefici ricercati dai clienti</b>	<ul style="list-style-type: none"> <li>• Puntualità delle consegne</li> <li>• Rapidità delle consegne</li> <li>• Continuità di fornitura</li> <li>• Qualità del supporto tecnico</li> <li>• Certificazione del prodotto</li> <li>• Prezzo</li> <li>• Livello di personalizzazione dei prodotti o servizi</li> <li>• Tipi di garanzie</li> <li>• ...</li> </ul>

Uno schema di riferimento semplificato per definire, qualificare e caratterizzare un segmento

<b>PRODOTTO:</b> _____	<b>SEGMENTO:</b> _____
------------------------	------------------------

DIMENSIONI DEL SEGMENTO	
CARATTERISTICHE DEL CLIENTE	
TIPO DI UTILIZZO DEL PRODOTTO	
ENTITÀ DEGLI ACQUISTI/ANNO	
MODALITÀ DEL PROCESSO D'ACQUISTO	
RUOLI NEL PROCESSO D'ACQUISTO	
ESIGENZE PRINCIPALI DEL CLIENTE	
TENDENZE E SVILUPPI IN ATTO/ PREVEDIBILI	

(vedi caso Logistica con C-LOG)



## Analisi di attrattività

- Dopo aver definito, qualificato, stimato il mercato di riferimento, aver identificato i segmenti ed essersi confrontati con la concorrenza, occorre valutare l'attrattività di ogni segmento.
- L'attrattività di un segmento è legata alla dimensione, al tasso di crescita, alla profittabilità attesa.
- “La profittabilità attesa di un segmento è inversamente proporzionale al grado di competizione allargata” (Porter, 1987).
- Infine, dipende anche dagli obiettivi dell'impresa e dalle risorse e sforzi necessari messi in campo (programma ed investimenti di marketing) per ottenere profittabilità.

## 2. Identifying customer needs (independent of any specific product we might develop + ask vs observe)



### Case Study: The Cordless Screwdriver

A successful hand tool company wanted to get into the business of cordless screwdrivers.

*Result:* After spending a lot of money developing several prototypes, they discovered during field testing that every prototype had features that customers did not like.

*The problem:* The development team **did not know how to accurately identify customer needs.**

### Objectives of the Customer Needs Identification:

Here, we present a *comprehensive method* for identifying customer needs. The objectives of this method are as follows:

1. Ensure that a product is developed by focusing on customer needs.
2. Identify hidden needs as well as explicit needs.
3. Provide a fact base for justifying product *specifications*.
4. Create an archival record of the needs identification process.
5. Ensure that no critical need is left out.
6. Develop a common language of customer needs that all team members can understand: engineering, marketing, finance, etc.

Guideline	Customer Statement	Need Statement—Right	Need Statement—Wrong
"What" not "how"	"Why don't you put protective shields around the battery contacts?"	The screwdriver battery is protected from accidental shorting.	The screwdriver battery contacts are covered by a plastic sliding door.
Specificity	"I drop my screwdriver all the time."	The screwdriver operates normally after repeated dropping.	The screwdriver is rugged.
Positive not negative	"It doesn't matter if it's raining; I still need to work outside on Saturdays."	The screwdriver operates normally in the rain.	The screwdriver is not disabled by the rain.
An attribute of the product	"I'd like to charge my battery from my cigarette lighter."	The screwdriver battery can be charged from an automobile cigarette lighter.	An automobile cigarette lighter adapter can charge the screwdriver battery.
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 provides an indication of the energy level of the battery.	The screwdriver should provide an indication of the energy level of the battery.

Customer

What

How

The distinction between customer needs and product specs:

*Customer Needs – the language of the customer and independent of any specific product*

*Product Spec – the language of technical people (metrics and values), dependent on the product concept*

*Case Study:*

The output of phase 0 is the product *mission statement*.

For the cordless screwdriver project, the following mission statement was developed:



Mission Statement: Cordless Screwdriver Project	
<i>Product Description:</i>	<ul style="list-style-type: none"> <li>A hand-held, power-assisted device for installing threaded fasteners.</li> </ul>
<i>Key business goals:</i>	<ul style="list-style-type: none"> <li>Product introduced in fourth quarter of 2002</li> <li>50% gross margin</li> <li>10% share of cordless screwdriver market by 2004</li> </ul>

Primary Market:	<ul style="list-style-type: none"><li>• Do-it-yourself consumer</li></ul>
Secondary Markets:	<ul style="list-style-type: none"><li>• Casual consumer</li><li>• Light-duty professional</li></ul>
Assumptions:	<ul style="list-style-type: none"><li>• Hand-held</li><li>• Power-assisted</li><li>• Nickel-metal-hydride rechargeable battery technology</li></ul>
Stakeholders:	<ul style="list-style-type: none"><li>• User</li><li>• Retailer</li><li>• Sales force</li><li>• Service Center</li><li>• Production</li><li>• Legal Department</li></ul>

### Step 1. Gather Raw Data From Customers

The basic philosophy for developing quality products requires creating an *information channel* between the *customer* and the *development team*:

Three methods can be used to create this information channel:

1. *Interviews:*
2. *Focus Groups:*
3. *Observing the product in use:*

**Which method is best?**

**Eliciting Customer Needs Data.**

<https://dschool.stanford.edu/use-our-methods/>

### How about these question?

1. When and why do you use this product?
1. Walk us through a typical session of using this product.
2. What do you like about the product?
3. What do you dislike about the product?
4. What issues do you consider when purchasing this product?
5. What improvements would you make to this product?

**Documenting Customer Raw Data Statements.** Record the raw customer data statements in the middle column of the customer data template below:

<b>Customer:</b>	Bill Esposito	<b>Interviewer(s):</b>	Jonathan and Lisa
<b>Address:</b>	100 Memorial Drive	<b>Date:</b>	19 December 1999
<b>Telephone:</b>	Cambridge, MA 02139	<b>Currently uses:</b>	Craftsman Model A3
<b>Willing to do follow-up?</b>	617-864-1274	<b>Type of user:</b>	Building maintenance
<b>Yes</b>			
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. (I)	
	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. (I)	

Customer Data Template		
Development Project:		
Customer:	Interviewer(s):	
Address:	Date:	
Telephone:	Currently uses:	
Willing to do follow-up?	Type of user:	
<i>Question/Prompt</i>	<i>Customer Statement</i>	<i>Interpreted Need</i>
Typical uses		
Likes – current product		
Dislikes – current product		
Suggested Improvements		

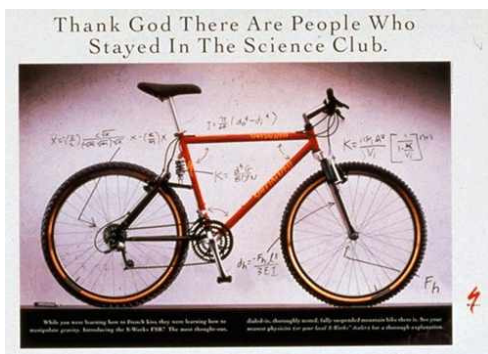
### Interpret Raw Data in Terms of Customer Needs

Each statement in column 2 of the Customer Data Template can be interpreted in many different possible needs. How do you come up with the best possible need from a given customer statement?

In addition to this rule, the following guidelines can be used for translation from a customer statement into a customer need:

Guideline	Customer Statement	Need Statement—Right	Need Statement—Wrong
"What" not "how"	"Why don't you put protective shields around the battery contacts?"	The screwdriver battery is protected from accidental shorting.	The screwdriver battery contacts are covered by a plastic sliding door.
Specificity	"I drop my screwdriver all the time."	The screwdriver operates normally after repeated dropping.	The screwdriver is rugged.
Positive not negative	"It doesn't matter if it's raining; I still need to work outside on Saturdays."	The screwdriver operates normally in the rain.	The screwdriver is not disabled by the rain.
An attribute of the product	"I'd like to charge my battery from my cigarette lighter."	The screwdriver battery can be charged from an automobile cigarette lighter.	An automobile cigarette lighter adapter can charge the screwdriver battery.
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 provides an indication of the energy level of the battery.	The screwdriver should provide an indication of the energy level of the battery.

### 3. Product specs definition (dependent on the concept we select to develop)



### Case Study: Specialized Suspension Fork

In the mid 90's, the Specialized bicycle company was interested in developing a new suspension fork for the recreational mountain bike cyclist. The company already produced a high-end suspension fork for racing cyclists who had less concern for cost or long-term durability (the attached figure is a 1993 advertisement for their first high-end bike with front and back suspension).

The company interviewed lead users (mountain bike racing cyclists), primary users (recreational cyclists on local trails) and other stakeholders (in-store dealers) to generate the following list of customer needs.

No		Need	Importance
1	The suspension	reduces vibration to the hands.	3
2	The suspension	allows easy traversal of difficult terrain.	2
3	The suspension	enables high-speed descents on bumpy trails.	5
7	The suspension	is lightweight.	4

8	The suspension	provides stiff mounting points for the brakes.	2
14	The suspension	is not contaminated by water.	5

Having generated a list of customer needs, the development team needed to:

- Translate subjective customer needs into precise target specifications
- Determine a measurement for success or failure of the development effort
- Determine whether their new product would capture a substantial share of the market.
- Resolve trade-offs such as cost and weight.

### Why are specifications important?

#### *Difference between Specifications and Needs*

Customer needs are helpful in developing a clear sense of the issues of interest to the customer; however, they provide little specific guidance about how to design and engineer a product. To guide the engineering development effort, we must develop *product specifications*.

#### *Product Specification (smartphone)*

- 
- 

#### *Metric*

#### *Value*

### What if a need cannot be easily translated into a metric?

### Target Specifications vs. Final Specifications

In an ideal world, a product development team would be able to generate a list of specs and build a product that meets those specs. However, this is rarely possible.

The process of generating specs is iterative, consisting of an initial set of *target specifications*, which are then refined into a set of *final specifications*.

### Establishing Target Specifications: 4-Step Process

Target specifications are established immediately after customer needs have been identified, but before any product concepts have been generated. As noted above, these target specs are what the development team *wants to aim for, without regard to any constraints at this point*.



Establishing target specs is a 3-step process:

1. Prepare the list of metrics
2. Collect competitive benchmarking
3. Set ideal and marginally acceptable target values

### Step 1: Preparing the List of Metrics

A good metric is one that reflects as directly as possible the degree to which a product satisfies a given customer need. Ideally, there would be only one metric for each need. In practice, this is rarely the case.

#### *Case Study: Specialized Suspension Fork List of Metrics*

The table below shows a list of 7 different metrics, along with the customer need that they address, their importance and the engineering units of the metric. The table is reproduced partially here.

Metric No.	Need Nos.	Metric	Imp.	Units
1	1, 3	Attenuation from dropout to handlebar at 10 Hz.	3	dB
2	2, 6	Spring preload	3	N
3	1, 3	Maximum value from the "Monster"	5	G
4	1, 3	Minimum descent time on test track	5	S
9	7	Total Mass	4	Kg
17	12	Instills pride	5	Subjective
19	14	Time in spray chamber without water entry	5	S

### The House of Quality

The House of Quality is a convenient way to represents the relationship between customer needs and metrics.

The rows in the matrix correspond to customer needs and the columns correspond to metrics. A mark in one of the cells of the matrix means that the need and the metric are related. The "roof" of the House of Quality is used to document trade offs between metrics.

Below is an example of a partial House of Quality for the suspension fork case study.

		Metric																									
		Need																									
1	Reduces vibration to the hands	●																									
2	Allows easy traversal of slow, difficult terrain		●																								
3	Enables high-speed descents on bumpy trails			●																							
4	Allows sensitivity adjustment				●																						
5	Preserves the steering characteristics of the bike					●																					
6	Remains rigid during hard cornering		●				●																				
7	Is lightweight							●																			
8	Provides stiff mounting points for the brakes								●																		
9	Fits a wide variety of bikes, wheels, and tires									●																	
10	Is easy to install										●																
11	Works with fenders											●															
12	Instills pride												●														
13	Is affordable for an amateur enthusiast													●													
14	Is not contaminated by water														●												
15	Is not contaminated by grunge															●											
16	Can be easily accessed for maintenance																●										
17	Allows easy replacement of worn parts																	●									
18	Can be maintained with readily available tools																		●								
19	Lasts a long time																			●							
20	Is safe in a crash																				●						

## Step 2: Collect the Competitive Assessment Data

The relationship of a new product to competitive products is paramount in determining commercial success. In this regard, the *target specifications* are the language that a team uses to assess the new product relative to existing products, both its own and competitors.

*Case Study: Competitive Benchmarking Chart for the Specialized Suspension Fork*

An example of a competitive benchmarking chart is included in Exhibit 5-6. A portion of this chart is included below.

Metric No.	Need Nos.	Metric	Imp.	Units	ST Tritrack	Maniray 2	Rox Tahx Quadra	Rox Tahx Ti21
1	1,3	Attenuation from dropout to	3	dB	8	15	10	15

		handlebar at 10 Hz						
2	2,6	Spring preload	3	N	550	760	500	710
3	1,3	Maximum value from the Monster	5	g	3.6	3.2	3.7	3.3
4	1,3	Minimum descent time on test track	5	s	13	11.3	12.6	11.2
9	7	Total mass	4	kg	1.409	1.385	1.409	1.364
18	13	Unit manufacturing cost	5	US\$	65	105	85	115
19	14	Time in spray chamber without water entry	5	s	1300	2900	>3600	>3600

### Step 3: Set Ideal and Marginally Acceptable Target Values for Each Metric

Once all of the competitive assessment data is taken, the team then puts together the target values for each metric. This list contains two types of target values:

#### Case Study: Target Specification Chart for the Specialized Suspension Fork

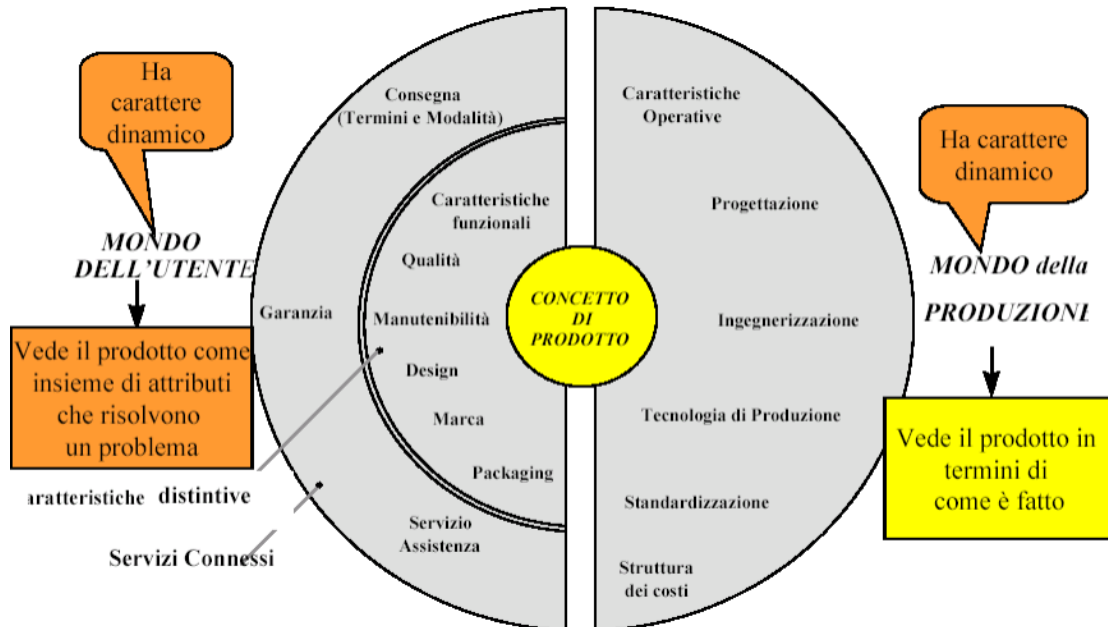
Exhibit 5-8 (reproduced partially below) shows the Target Spec Chart for the Specialized suspension fork project. Note that both the marginal and ideal values of each metric are included.

Metric No.	Need Nos.	Metric	Imp.	Units	Marginal Value	Ideal Value
1	1,3	Attenuation from dropout to handlebar at 10 Hz	3	dB	>10	>15
2	2,6	Spring preload	3	N	480-800	650-700
3	1,3	Maximum value from the Monster	5	g	< 3.5	<3.2
4	1,3	Minimum descent time on test track	5	s	< 13.0	< 11.0
9	7	Total mass	4	kg	< 1.4	< 1.1
18	13	Unit manufacturing cost	5	US\$	< 65	< 65
19	14	Time in spray chamber without water entry	5	s	> 2300	> 3600

Note: The goal of this step in the product development process is to establish the *boundaries* of the *competitively viable product space*.

At this point in the development process, the team hopes that the product will meet some of the ideal target specs, but should also be confident that a product can be commercially viable even if it exhibits one or more marginally acceptable metric values.

## Ph-- Concept generation (ch 7)



**Product concept= how the product will satisfy customer's needs**

Usually, less than 5% of budget and 15% of development time

Ulrich uses the "sub-problem" identification approach

It is a divergent phase → generate ideas

Lead users

Experts

Patents

Benchmark

Within the company

Idea generation tools:

Brainstorming

Scamper

## Concetto di prodotto

Non si tratta di una semplice scheda tecnica, il concetto di prodotto rende operativa la nozione di prodotto, intesa come paniere di caratteristiche o attributi.

**Il concetto di prodotto definisce quindi il prodotto-mercato di riferimento all'interno del quale posizionare il futuro prodotto**

Le idee che superano la selezione devono essere tradotte in concetti di prodotto (concept). Un concept di prodotto consiste in una versione elaborata dell'idea, espressa come paniere di caratteristiche e attributi percepibili dal consumatore.

Esso deve pertanto specificare

- (a) la promessa fatta dal nuovo prodotto,
- (b) le sue caratteristiche fisiche e percettive e
- (c) il gruppo di utenti a cui si rivolge.

Una definizione chiara e precisa del concetto di prodotto è importante sotto diversi aspetti:

## Ph-- Concept selection (ch 8)

1. Define what criteria to follow (es. Customer's need, wild ideas....)

2. Define methods:

Involve the customer for feedback

Product champion

Intuition

Prototype and test

## Ph concept testing (ch 9)

1. Define the purpose of the testing
2. Choose population
3. Choose tools to survey
4. Communicate the concept ( verbal, sketch, rendering, storyboarding, video, look like models, working prototypes)
5. Measure customer response (in terms of purchase intent)
6. Interpret results

## The Value Proposition

Value is the worth, importance or usefulness to a customer. In business terms, value is the worth in monetary terms of the social and economic benefits that a customer receives from paying for a product or services. The *value proposition* is what defines the company to the customer. Most value propositions can be described by using the five key values summarized in Table 3.6 of Byers:

**TABLE 3.6 Five values offered to a customer.**

1. <b>Product:</b>	Performance, quality, features, brand, selection, search, easy to use, safe
2. <b>Price:</b>	Fair, visible, consistent, reasonable
3. <b>Access:</b>	Convenient, location, nearby, at-hand, easy to find, in a reasonable time
4. <b>Service:</b>	Ordering, delivery, return, check-out
5. <b>Experience:</b>	Emotional, respect, ambiance, fun, intimacy, relationships, community

Crawford and Matthews (2001) suggest that a successful venture is one that is dominant in one of the above values, it must differentiate itself in a second value and it must meet the industry norms in the remaining three values. Considering a rating of 1 to 5, for example, the project should have a score of 5, 4, 3, 3, 3.

## Gmail's Value Proposition



Gmail is a free, search-based webmail service that includes 1,000 megabytes (1 gigabyte) of storage. The backbone of Gmail is a powerful Google search engine that quickly recalls any message an account owner has ever sent or received. That means there's no need to file messages in order to find them again. When Gmail displays an email, it automatically shows all the replies to that email as well, so users can view a message in the context of a conversation. There are no pop-ups or untargeted banner ads in Gmail, which places relevant text ads and links to related web pages adjacent to email messages.

## Dissecting the Gmail Value Proposition

### Promise

- Power and elegance of Google search, now applied to email

### Audience

- People who already use Google
- Power users who get lots of e-mail and need powerful search
- People who like convenience of web-based mail but hate its limitations

### Differentiation

- Google search engine technology
- Replies in context of conversation
- Virtually unlimited storage

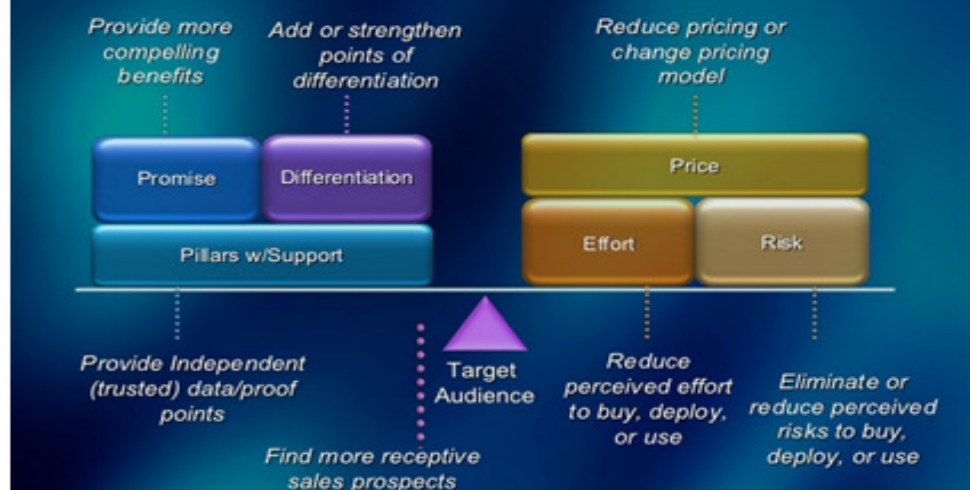
### Pillars

- 1 GB storage
- Google brand equity

### Price, Risk, and Effort

- Free, supported by advertisers
- But ads will be relevant to context, and unobtrusive

## Levers to strengthen value proposition





## From Value Proposition to Positioning

- Positioning is derived from the value proposition. It is the way you choose to communicate the *differentiated promise* to customers.
- Positioning focuses on outbound marketing & sales (what we say to customers) as opposed to inbound direction (what we need to communicate for engineering)
- Positioning guides development of messaging themes for marketing communications.

## Positioning as "taking hills": Volvo



1. Attributes: Baseline of positioning attributes is all of the attributes by which the audience views the market landscape in which all competitors hold a position.



2. Identify 'hilltops' that can be credibly owned by your brand. In the case of Volvo, the brand naturally owns safety, but needed to add another dimension, luxury, to compete against imports such as BMW and Lexus

Emotional Benefit:	Peace of Mind
Functional Benefit:	Protects My Family
Attributes	Safety Luxury
Features	Safety - Inflatable Side Curtains - Whiplash Protection Seats - Deformation Zones Luxury - Bi-Xenon Headlights - 8-way adjustable lumbar seats - Audio-Max stereo system

3. The positioning builds an emotional benefit around the combination of 'hilltop' attributes that yield a functional benefit. Features scroll up to the functional benefit

Examples of successful positioning:

Wal-Mart cost and customer value

Honda motor performance and miniaturization

### The Business Model

A **business model** is a set of planned assumptions about how a firm will create value for all its stakeholders. It can also be thought of as a framework that connects your technology to economic profits.

Alexander Osterwalder's model

### Il business model come strumento per l'innovazione di prodotto

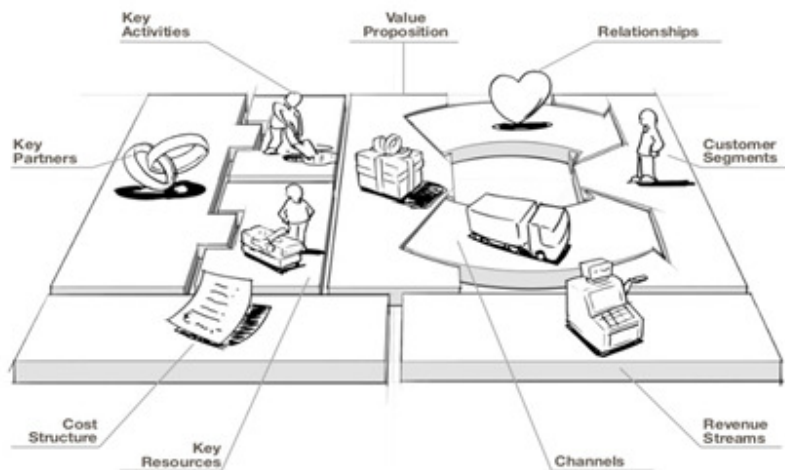


Image Credit: JAM Visual Thinking, Amsterdam (<http://www.jam-site.nl>)

Anno accademico 2013-2014

D.ssa Eva Teruzzi

1

## Business Model Canvas

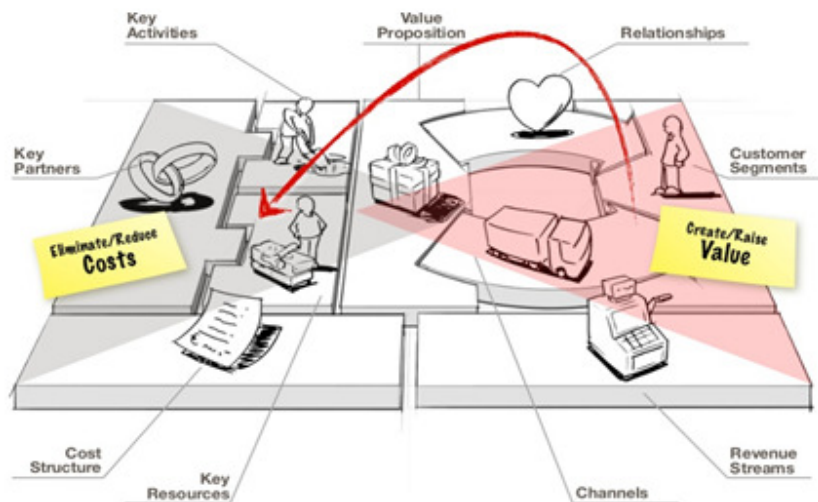


Image Credit: JAM Visual Thinking, Amsterdam (<http://www.jam-site.nl>)

D.sse Eva Teruzzi

79