## List 2 & 3

1) What objectives should be addressed by the innovation strategy (of a firm)? How can one ensure the effective implementation of these objectives? What are according to you the most important managerial challenges in this respect?

2) Innovation strategies differ across industries and firms. What are, according to you, some major contingencies to take into account when defining an appropriate innovation strategy? Argue briefly why.

A **contingency** (=toevalligheid) is something that can happen, but that generally is not anticipated. Planning for contingencies often requires a more imaginative approach, because contingencies are inherently not obvious. Large organizations, such as governments, are often criticized for not planning for contingencies because the construction of plans to deal with contingencies often involves thinking outside the box.

First, a summary of different methodologies to predict or to avoid possible contingencies towards the future.

**Dealing with contingencies:**

Understanding your value chain/value constellation (= How to make money?)

- In which industries should we compete? (= industry attractiveness)
    - Barriers to entry (patents, brands, capacity)
    - Market structure (market share, concentration)
    - Vertical bargaining power (firm size, financial resources)
- How should we compete? (= competitive advantage)
    - Cost advantage (process technology, plant size, input access)
    - Differentiation advantage (brands, product technology, market and service capability)

Industry analysis

- Porter analysis
    - Industry rivalry
        - Concentration, competitor diversity, product differentiation, excess capacity, exit barriers and cost conditions
    - Supplier (power)
        - Price sensitivity (cost, product differentiation and competition)
        - Bargaining power (relative size, concentration, switching costs, info availability, forward/backward integration)
    - Customer (power)
        - Price sensitivity (cost, product differentiation and competition)
        - Bargaining power (relative size, concentration, switching costs, info availability, forward/backward integration)
    - Potential entrants
        - Economies of scale, absolute cost advantages, capital requirements, product differentiation, access to distribution channels, governmental and legal barriers
    - Substitutes and Complements
        - Buyer propability to substitute/complement, price performance (in relation to life-cycle)

Segmentation analysis

SWOT analysis

- Strengths (internal)
- Weaknesses (internal)
- Opportunities (external)
- Threats (external)

Resource analysis

- Financial resources
    - Debt equity ratio, net cash, credit rating
- Physical resources

    - Value of fixed assets, scale of plants, sophistication of plants and infrastructure
- Human resources
    - Educational, technical, professional quality, pay rates
- Technological resources
    - Number and quality patents, R&D inputs, licenses
- Reputation
    - Brand position and name, repeat orders, product performance

Innovation strategies differ across industries and firms. What are, according to you, some **major contingencies** to take into account **when defining** an appropriate innovation strategy? Argue briefly why.

Some major contingencies, based on the above prediction models.

**Not understanding your value chain**
When innovating, it is very important to also think of the crucial question: Is it possible to make money? A possible danger is that a lot of resources have been put into an innovation, but this cannot be converted into actual profits. Therefore, it is advised to think about the industry attractiveness and the competitive advantage of your product, in advance. An industry is more attractive, when it has the possibility to create entry barriers with patents, brands or strong bargaining power. In advance it is possible to analyze the industry, market structure elements are crucial in knowing if your competitors have strong market shares.
Secondly, to compete it is best to have a cost advantage or differentiation advantage. The first strategy is based on the process technology, plant size or input access. And the second strategy is based on brand marketing, product technology and market and service capability.

**Industry factors**
It is very important to fully be aware of the industry your product will or is in. There are numerous different threats such as better competitors, strong suppliers, low bargaining power, different customer demands, possible entrants and substitutes. Therefore it is interesting to examine the five forces, defined by Porter.
**First**ly, industry rivalry depends on elements such as concentration, competitor diversity, product differentiation, excess capacity, exit barriers and cost conditions. A **second** force is supplier power, important is to measure how sensitive the price is and what the bargaining power is. Sensitivity depends on what the cost elements are, if there is the possibility of product differentiation and on how severe the competition is. Bargaining power depends on the relative size of the purchase, the market concentration, switching costs and integration possibilities. **Third**ly, customer suppliers depends on the same elements as supplier power. Potential entry is the **fourth** force, depending on how easy the industry is to enter. Factors that influence this force are economies of scale, absolute cost advantage, capital requirements, product differentiation, access to distribution channels, governmental and legal barriers.
**Finally**, it is important to forecast the danger of possible substitutes.

**Internal and External threats**

In advance, it is advisable to now your strengths and weaknesses of your innovation Put a strong focus on the stronger point of your innovation, develop these further and try to have them a competitive advantage. On other hand, it is crucial to be critical towards the weaknesses of your innovation. For example, your product can be very successful, but you do not have the capacity to meet this exponential growth.

There are also opportunities and threats from competitors. Threats can for example be: a very successful marketing campaign or a strong cost advantage. Also possible entry or substitutes is important to mention as a threat. For opportunities it is a danger that you forgo a profitable opportunity, for example a successful niche.

**Not enough resources**
When innovating this will be a process in time. As seen in the typical innovation S-curve, a lot of resources are inputted in the begin with relatively low innovation improvements. Further in time this

technology will accumulate and as a result the innovation performance will raise. Possible danger in this process is having not enough resources.
At first, it is crucial to have the necessary funding with own capital or capital from other parties. The amount of financial resources is limited when there is a too high debt ratio, therefore own capital can be important.
Not only financial, also physical resources are essential. For example, scale of plants, sophistication of plant and infrastructure. In addition, human resources are also a key element to think about when defining an appropriate innovation strategy. If the current staff does not have enough education or experience, perhaps new employees or extra training should be necessary. Other important resources are technological, e.g. number and quality patent, R&D inputs and licenses. Finally, reputation can also be part of your resources. When defining it is important to compare the current and the future brand position and name. Included in this resource is also the quality of the product performance.

## Versie 2:

Wanneer een **innovatiestrategie** gedefinieerd wordt, is het zeer belangrijk dat deze strategie **past in de algemene strategie van het bedrijf**. De strategie moet de bestaande producten en processen van de onderneming ondersteunen en ontwikkelen. De innovatiestrategie moet ook toelaten om nieuwe producten en processen te creëren en het competentievermogen te verhogen.

Bovendien moeten er beslissingen genomen worden op volgende niveau' s:
**Strategisch niveau**: Hoe moet de technologische portfolio samengesteld zijn om de opgestelde doelstellingen te bereiken?
**Organisatie niveau**: Bv, welke structuurvormen ondersteunen de gekozen innovatiestrategie het best? (functionele, project of matrixstructuur)
**Productieniveau**: Bv, de make-or-buy beslissing
**Personeelsniveau**: Welke functies moeten we toewijzen om onze doelstellingen te kunnen bereiken? Bv, gebruik van 'gatekeepers' die een brug vormen naar informatie vanuit de buitenwereld.
**Marketing**: Bv, Hoeveel promotie-activiteiten moeten er nog worden georganiseerd, heeft het bedrijf al een zekere marktmacht wat betreft het product?

Het is heel belangrijk om de doelstellingen van het innovatieproces te linken aan de algemene strategische doelstellingen van het bedrijf en uiteindelijk naar de wensen van de klant toe. Op die manier kan een duurzaam voordeel ten opzichte van concurrenten bekomen worden eenmaal het nieuwe product een vaste waarde heeft verworven bij de klant.De management inspanningen mogen zich hierbij niet enkel concentreren op het R&D-niveau maar moeten belang hechten aan alle spelers in de innovatieve organisatie.
Niet alleen de strategie van het bedrijf zelf speel hier een rol, maar ook de industrie zelf is van belang. Er moet een **samenhang** zijn tussen de **industrie en de innovatiestrategie** van het bedrijf. Het goed begrijpen van de **value chain** van het bedrijf is essentieel. Tot de value chain behoren zowel de verschillende afdelingen van het bedrijf, de leveranciers als de klanten. De innovatiestrategie moet met al deze factoren rekening houden. Een **industry analysis** is ook een niet onmisbaar element voor het definiëren van de innovatiestrategie. Een industry analysis is voor het eerst beschreven door Porter. Deze analyse houdt een analyse van de interne rivaliteit, leveranciers, klanten, potentiële nieuwkomers en substituten in. Deze actoren kunnen een invloed uitoefenen op de organisatie en zelfs een bedreiging vormen. Door het uitvoeren van een **SWOT analyse** komt de organisatie te weten wat haar strenghts, weaknesses, opportunities en threats zijn. De strenghts en weaknesses spelen zich intern af en de opportunities en threats extern. Het **funnel** concept stelt dat er verschillende fasen zijn vooraleer een nieuw product op de markt komt. Er wordt gestart met een idee. Dit idee moet overeenstemmen met de strategie en de beschikbare bronnen. Indien dit het geval is komen we in de eerste fase terecht en wordt het concept document goedgekeurd en een subteam aangesteld. In de eerste fase wordt de vraag gesteld of het product zinvol is vanuit het standpunt van marketing, finance en het technische aspect. Indien positief wordt het concept goedgekleurd en een heel team aangesteld en belanden we in de tweede fase. Wanneer het product ontwikkeld kan worden met het beschikbare budget en het tegen het vereiste kosten en volume geproduceerd kan worden, wordt het prototype goedgekeurd en wordt er overgegaan naar de derde fase. Als het geverifieerd en gevalideerd wordt en de productiedoelstellingen bereikt heeft dan wordt de volledige productie goedgekeurd en komen we in de vierde fase. In deze laatste fase wordt er nagegaan of het product voldoet aan de veiligheidseisen, doeltreffendheid en de business targets. Is dit ook in orde dan is het gereed ter verkoop. Het grote voordeel van zo'n aanpak is dit het risico aanzienlijk verminderd wordt.

**Roadmaps** zijn instrumenten die de strategieën van de afdelingen integreren met de algemene technologische strategie van een bedrijf. Ze linken de technologie met de afdeling door de product- en proces platformen te verbeteren en diversifiëren. Bovendien stimuleren ze de creatie van nieuwe businesses. Ze hebben dus een duale functie.

Bovendien is het belangrijk dat ondernemingen weten waar ze op de **S curve** zitten. Dit is misschien moeilijk te bepalen, maar toch belangrijk aangezien hierop de organisatie moet afgestemd worden.

Door de verschillende objectieven die een innovatiestrategie inhoudt, zijn er dikwijls duale en probleemgevende benodigdheden. Een innovatiestrategie kan **incremental of radical** zijn. **Flexible versus commitment, exploitation versus exploration, divergent versus convergent en path creation versus path dependence**.

Om te concluderen kan gezegd worden dat er dus enorm veel factoren een invloed hebben op het definiëren van de innovatiestrategie waardoor er dus **moeilijkheden** kunnen ontstaan.

3) What does the innovation strategy of a firm entail? Do you see a relationship with the overall corporate/competitive strategy of a firm? Why and how?

4) Why can it be beneficial for firms to cooperate with other organizations within the framework of R&D/innovation? Are (dis-)advantages alike for different types of partners?

5) While R&D alliances are becoming more important the last decades, failure rates (of alliances) are considerable. What are the major challenges one needs to address when engaging in an R&D alliance? What are crucial (managerial) points of attention in order to maximize the likelihood of success?

**R&D alliances**: is an alternative to in-house R&D whereby firms may gain access to complementary capabilities, reap economies of scale in R&D and shorten development time while spreading the risk and cost of such new developments.

**R&D alliances present unique collaboration challenges:**

*Sharing or transfer of knowledge over firm boundaries is required:*

Successful knowledge transfer is not assured, particularly where knowledge is tacit and complex. Given the substantial moral hazard problem, the need to preserve incentives to share such knowledge is required. Moral hazard problem: concerns over unintended transfer of knowledge to a partner and, ultimately, erosion of the value of a firm's knowledge resources may prevent the firm from contributing adequately to an alliance. The organizational form plays an important role in this aspect. Diversity in partners capabilities, makes knowledge transfer more difficult. The greater the diversity between the partners, the more difficult it becomes for a partners to pool the necessary resources to achieve the aims of an alliance.

*Transfer of organizationally embedded capabilities or resources:*

Partner characteristics have a strong influence on whether and how well the firms in an alliance learn form each other. For example, similarities in partner resources can improve alliance outcomes. Highly diverse partners capabilities my actually reduce the innovative benefits a firm gets from collaborative R&D, since firms can only absorb and integrate capabilities that are sufficiently similar to their own. However partners that are very similar may also experience reduced benefits from R&D collaboration. Schumpeter says: If innovation arises out of new combination of existing capabilities, then beyond a critical minimum level of R&D activities, the

addition of similar capabilities does not increase innovation. This is because possible next combinations of existing capabilities have been exhausted. Partners with diverse capabilities have more to learn from each other than partners with very similar capabilities do.

*The organization of the alliance activity:*
*Bilateral contact:* contract where the partners pool their capabilities for the purposes of collaborative R&D but do not form a separate legal identity for the alliance. It is a hierarchical organized system with less or no employee flow.
*Equity joint venture:* firms also pool capabilities but in this case a new entity is created. Within this organization there is an employee rotation an also the technical staff members have contact with the joint venture.
=> Sharing knowledge is easier with an alliance organized as an equity joint venture than within an alliance organized by bilateral contract because it is closer to a firm.

***What are crucial (managerial) points of attention in order to maximize the likelihood of success?***

As mentioned before to maximize the likelihood of success managers need to:

- Give incentives to share knowledge to the other partner to overcome the moral hazard problem.
- Have a moderate level of technological diversity: firms that differ moderately from their partners gain more from their collaborative R&D than firms with either very high or very low diversity.
- Have a flexible organization structure where employees and staff members can rotate so knowledge sharing becomes easier. It is better to have a equity joint venture than a bilateral contract.

6) What does the term ‘open innovation’ imply? What does it mean for defining and implementing an innovation strategy on the level of firms?

Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. (Chesbrough: “Not all the smart people work for you”)
In other words, it means that companies should use both external and internal ideas. Open innovation assumes that that internal ideas can also be taken to the market through external channels, outside the current businesses of the firm, to generate additional value. R&D should be considered as an open system.
→ external ideas and paths to the market are placed on the same level of importance as internal ideas and paths of the past.
Open innovation is opposed to vertical integration, where internal R&D activities lead to internally developed products that are distributed.

Open innovation implies that because of the wide range of information, companies cannot rely only on their own research and development. They have to buy or license information to stay ahead. (Wikipedia)

Do not confuse open innovation with open source methodology.
Equal= idea of greater external sources of information to create value

Difference= *open innovation considers the business model as the source of both value creation and value capture (which enables the organization to sustain its position in the value chain)

*open source shares the importance of value creation by the external resources but the role of value capture is denied.

Conclusion: **open innovation assumes that useful knowledge is widely distributed and that even the most capable R&D organizations must identify, connect to, and leverage external knowledge resources as a core process in innovation.**

Nowadays, a shift from the closed towards the open model is observed.

**Closed innovation model:** (derde laatste slide deel 2) Here, research projects are launched from the science and technology base of the firm. They progress through the process, and some projects are stopped, while others are selected for further work. Only a part of these chosen projects go through to the market. This process can be considered as a closed process *because projects can only enter in one way*, at the beginning, and can only exit in one way, by going into the market. Example: AT&T's Bell laboratories with in inwardly focused culture.
**Open innovation model:** projects can be launched from either internal or external technology sources, and new technology can enter into the process at various stages. Projects can go to the market in many ways, such as through outlicensing or a spin-off venture company or go to the market through the firm's own marketing and sales channels. The model is called open because there are many ways for ideas to flow into the process and many ways to flow into the market. Example: P&G, IBM,…

Implication for the defining and implementing of a firm's innovation strategy: there appear the be fewer economies of scale in R&D in a growing number of industries than there were a generation ago. This has implications for the organization of innovation. A more distributed environment, where organization of every size have potentially valuable technologies, firms would do well to make extensive use of external technologies. Though there is a variation in the use of external technologies in a firm's innovation process. This variation might be explained by the NIH (not invented here) syndrome. It is based on an attitude of xenophobia (vreemdelingenangst), so we can not trust it, because it is not from us, and it is therefore different from us.
More rational reasons for NOT using open innovation:
When projects are moving fast, project leaders seek to minimize the risk of unexpected outcomes in the project. These externally sourced technologies may greatly increase the perceived risk; (risk internal technology < risk external technology)
But when the project is successful and external technologies proved to be highly effective, project managers might infer from this experience that the firm does not need quite so many internal R&D staffing levels to accomplish the next project. So they hope that they can rely on external technology as well.
→ short term success of project to the long term detriment of internal R&D staffing levels and internal research funding.

Project teams bear responsibility when the project fail because they allowed it, and when the external technology was successful, the teams might jeopardize internal staffing levels in future. = risky situation.

The firm has to scan the external environment prior to initiating internal R&D work. If technology is available from outside, the firm uses it. The firm constrains internal R&D work to focusing on technologies that are not widely available, and/or those in which the firm possesses a core advantage, and seeks advantage from constructing better systems and solutions for its technologies. Open innovation may generate fewer spillovers. This means on the one hand, higher yield for R&D spending, encouraging the firm to sustain its commitment to R&D. On the other hand, the lack of spillovers from other firms may deprive (take away) the firm of organic growth opportunities for discovering future technologies.

Question? If projects move faster through the R&D system, does this result In more incremental innovations?

*Advantages* (slide van handboek):

- Higher development speed (because of the knowledge from other firms)
- Access to external technology sources
- Higher Flexibility: you acquire the technology early (high risk/small investment) or on later (lower risk but higher prices)
- The value of technologies can be determined by linking the innovations to your business model:
    - Insource the ¨technologies that may strengthen your business
    - Outsource the technologies that are not in line with your technology or product portfolio.

7) Christensen and Bower claimed that: “Every company that has tried to manage mainstream and disruptive business within a single organization failed” What are the arguments underlying this statement? Do you agree? Why (not)?

**What are the arguments underlying this statement?**

One of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change. They (Christensen and Bower) ask themselves why it is/how it comes that established companies that invest aggressively in the technologies necessary to retain their current customers but then fail to make the technological investments that customers of the future will demand. The fundamental reason is that they stay close to their customers. Customers wield (=uitoefenen) extraordinary power in directing a company’s investments. Het is logisch dat bedrijven naar hun customers luisteren/kijken naar wat hun customers willen. This is the way a well-managed company should operate. However, the current customers are reliably when it comes to assessing the potential of sustaining technologies but they are not reliably accurate when it comes to assessing the potential of disruptive technologies. So the incumbents are asking the wrong people. By listening to their current customers and giving them the product performance they were looking for, the incumbents were hurt in the end by the very technologies their customers led them to ignore. These companies were hurt because if you don’t step in in this new technology, another firm

will. This other firm serves this new technology to another segment of the market, they develop it in a niche. And at a certain period of time, this new technology will be crossing the old one. Because customers value improve at such a rapid rate that the new technology can later invade those established markets. Only at this point will mainstream customers want the technology. Unfortunately for the incumbents, by then it is often too late. And at that time the decision to not invest in the new technology will hit the incumbent back.

This maybe awkward because most established companies are consistently ahead of their industries in developing and commercializing as long as those technologies address the next-generation-performance needs of their customers. However, the industry's leaders are rarely in the forefront of commercializing new technologies that don't initially meet the functional demands of mainstream customers and appeal only to small or emerging markets. This is rational because it is almost impossible to diversify your resources between current customers and customers that seem insignificant or do not yet exist. In fact, the processes and incentives that companies use to keep focused on their main customers work so well that they blind those companies to important new technologies in emerging markets.
To remain at the top of their industries, managers must first be able to spot technologies that fall into this category. To pursue these technologies, managers must protect them from the processes and incentives that are geared to serving mainstream customers. Volgens Bower and Christensen the only way you can do this is by creating organizations that are completely independent of the mainstream business. Indien men dit allemaal bekijkt lijkt het mss wel logisch dat only a few companies, who where confronted with disruptive technologies, have been able to overcome the handicaps of size or succes.

**Do you agree? Why (not)?**
But it can be done. There are methods to spot and cultivate disruptive technologies but few firms (en dan vooral incumbents) have these processes in place to identify and track potentially disruptive technologies. Een bedrijf dat hierwel in geslaagd is, is Toyota. Toyota is an excellent counterexample of an incumbent player, who is successful in innovating with the new hybrid technology. Toyota is very active in the hybrid market and is successful in it. Zij zijn dus zowel succesvol met hun "gewone auto" met internal combustion engine als in de hybride technologie. Ik zou dus niet zover willen gaan als Bower en Christensen en zeggen dat het onmogelijk is om beiden te combineren. Ik volg meer de visie van Tushman. He argues that it is possible to explore and exploit at the same time (dit noemt men ambidexterity) and this enables firms to adapt over time. Dus ik denk ook dat het mogelijk is om zowel actief te zijn in the mainstream business als in een disruptive innovative business maar om hierin succesvol te zijn moet het bedrijf wel aan een paar voorwaarden voldoen.

1) Er moet een clear distinction zijn between the units. Dus een differentiation between the units but still in the same firm
2) Het bedrijf moet een strategische visie hebben die is afgesteld op deze verschillende markets die het bedijf aandoet
3) Ook het strategisch management moet hierop zijn afgesteld.

8) What is meant by 'ambidextrous' organizational forms? What are its core characteristics? Why would one adopt such an organizational form? To what extent

does this approach differs from the ideas and solutions advanced by Bower & Christensen? If you would be CEO of a Fortune 500 company - within an industry in which innovation is important in order to stay competitive – which organizational form would you adopt? Why?

9) Design-driven innovation is recently being stressed as important to build a competitive advantage as a firm. Briefly explain some of the key ideas behind these developments. How should you reconcile these ideas with 'traditional' approaches towards R&D management (e.g. portfolio approaches)?
Consumenten willen vandaag de dag meer dan alleen maar producten met de gewenste functionaliteit, hoge kwaliteit en lage prijs. Klanten hebben ook aandacht voor de esthetische, symbolische en emotionele waarde van een product. Producten dienen psychologische voldoening te bieden die verder gaat dan de consumptie op zich.
Een voorbeeld is de Apple iMac die in 1998 op de markt is gekomen en die door zijn design deel is gaan uitmaken van het meubilair. Een ander voorbeeld is Swatch, dat in 1983 horloges heeft ontworpen die eveneens als juweel konden gedragen worden. Elke nieuwe collectie van een product kan gezien worden als een bijkomende innovatie aangezien aan het originele product telkens nieuwe esthetische veranderingen worden aangebracht.

Het verbeteren van de kwaliteit van een bestaand product door het design te veranderen overheen de tijd, kan een succesvolle marktstrategie zijn en zorgt ervoor dat het product blijft aansluiten bij steeds veranderende wensen van klanten.

Design driven innovation kan productinnovaties ondersteunen en kan een middel zijn om een duurzaam competitief voordeel te behalen. Dit wordt afgeleid uit het feit dat innovatie via design (in tegenstelling tot innovatie gedreven door technologie) minder risicovol is, minder duur en minder tijdrovend mbt de ontwikkeling. Zo is er hierbij geen nood aan hoog technologische capaciteiten die enkel op lange termijn kunnen ontwikkeld worden.
Er dient wel opgemerkt te worden dat er een link bestaat tussen technologische innovatie en design. Een nieuw materiaal zal immers aanleiding geven tot nieuwe vormgevingen. Maar anderzijds zal een design gedreven innovatie vaak ook gedreven worden door nieuwe technologische mogelijkheden zoals nieuwe innovatieve materialen.

Bovendien draagt design driven innovation bij tot een tegemoetkoming aan de eisen en wensen van klanten. Dit kan tot een competitief voordeel leiden aangezien klanten steeds meer een centrale rol gaan innemen binnen ondernemingen, klantenbinding vormt tegenwoordig een belangrijk strategisch wapen naar concurrenten toe. Marktgeoriënteerde bedrijven trachten superieure waarde te creëren voor de consument en het design van een product kan hiertoe bijdragen.

Succesvolle Italiaanse fabrikanten in design intensieve industrieën (bv Alessi) zijn erin geslaagd sociale behoeften te begrijpen en een systeem op te zetten om meer waarde te creëren voor de sociaal-culturele omgeving.

Porter heeft in zjjn boek 'competitive strategy' (1980) designactiviteiten gerelateerd aan de competitieve strategie van een onderneming. Hij stelt drie belangrijke

elementen van een competitieve strategie voor, met name: prijs, focus en differentiatie.
Een competitieve strategie die gebaseerd is op de prijs houdt in dat bij productontwikkeling en productdesign men gedreven wordt door het reduceren van de kosten. Focus verwijst naar het identificeren van een marktsegment waarin consumenten specifieke eisen hebben met betrekking tot het product. Het designproces is gericht op het aanbieden van de gewenste productkenmerken.

Met betrekking tot differentiatie zal het design van een product zich dienen te onderscheiden van dat van de concurrent, het unieke karakter van de designkenmerken is hierbij cruciaal.
Productdesign kan een manier zijn om te innoveren, de productportfolio continu te verbeteren en kan bijdragen tot het creëren van de identiteit van een product. Deze identiteit is belangrijk om de producten te onderscheiden van deze van de concurrenten, zodat de consumenten producten ontwikkeld door een bepaalde onderneming gaan herkennen. Zoals filmliefhebbers uitkijken naar een nieuwe film van een bepaalde regisseur, zullen consumenten uitkijken naar een nieuw product met een bepaald design van een specifieke onderneming.

Dell'Era, C. & Verganti, R. (2007). Strategies and imitation of product languages. The Journal of Product Innovation Management, 24, 580-599.

Walsh, V. Roy, R. & Bruce, M. (1988). Competitive by design. Journal of Marketing Management, 4(2), 201-216

Bij een portfolio analyse van R&D projecten is het belangrijk om mogelijke competitieve voordelen te linken aan de behoeften van klanten. Vervolgens dienen deze klantenbehoeften te worden vertaald naar producten.
De link wordt gevormd door productdesign. Design driven innovation speelt op een flexibele manier in op de wensen van klanten en kan tot een competitief voordeel leiden.

**Versie 2:**
Example: Alessi and Target.
Alessi sells a kettle with a little plastic bird. Target wanted to imitate this kettle design and invited the engineer of Alessi to design a new line of products. Though prices of Target were lower, Alessi still sold large numbers.

Different because products it gives birth to represent a dramatic break from its predecessors. The is different from when it outsources to a design studio, which explores consumers needs by asking

Products that are radically different have longer commercial lives then other goods, because they consumers have fiercer expectations and a higher receptivity. The enjoy high margins, because they are dissimilar to the offerings of other competitors.(= design cluster advantage)

Key ideas of Lombardian process (Adapted to Alessi)
Phase 1: Absorb: Invest in connecting communities via art and design, search for new ideas

Example: Alessi went out of traditional to find new ideas → think out of the box and work independently ↔ IDEO which works with brainstorming in multidisciplinary teams.

Phase 2: Interpret: before presenting the groundbreaking products to the public, the ground itself had to be prepared, because the products were not demanded by consumer. This was realized by creating animation around these products

There were 11 coffee and tea prototypes but only 99 pieces would be sold. The prototypes were exhibited in a museum, a book was written about these prototypes, writers were invited to write about the exhibits and the project. By publicizing the prototype before the production of an actual product, the world would associate the products forever with the Alessi-brand and people would view each related product by other producers as an imitation.

Phase 3: Adress: Second round of exhibitions and publicity. There was almost no marketing because that was not the ideal medium to explain the product. Continuing talk and writing disseminated the knowledge of the product to a wider audience.

These products come with literature elaborating on how they came into existence and the qualities that make them special.

***How should you reconcile these ideas with 'traditional' approaches towards R&D management (e.g. portfolio approaches)?***

The companies create highly marketable products with distinctive design profiles. These companies do not follow either of the design industry's norms:

***'tech push'***: whereby an improvement in performance and functionality dictates a modification in design.

***'market pull'*:** whereby the design accommodates consumers' demand for new features or an up-to-date look.

***'open-innovation techniques'***: they do not in-license the patented discoveries of unaffiliated businesses or they do not out-license their own discoveries.

There are *free-floating professionals* as well as the expected artists and designers. Both immersion in a discourse (onderdompeling in een gesprek) and originality are prized.

**Versie 3:**

***Characteristics****:*

- Change in one's understanding of a product's meaning can lead to a change in its design and ultimately a change of its identity.
- one need not to be artistic to contribute to the design process
- any kind of consumer-goods company, located almost any where in the world could adopt the process

***Key Ideas by of the Lombardy three-phase process of design-innovation of a product:***

**Phase 1: Absorb**: Far in advance of contemporary fashion, the company need to capture the attention of the local entrepreneurs. These entrepreneurs meet a few times a year to discuss trends, styles, materials, and technology, and gathered at exhibitions they jointly sponsor. E.g. Allesi: once the participants received general direction, they worked independently. ⇔ Ideo processes where there is no brainstorming by multidisciplinary teams.

**Phase 2: Interpret**: Before you sell product to the people, you first need to let the people get familiar with the product. Via:

- exhibitions of prototypes which are produced in limited editions.
- Invite press to write about the products

**Phase 3: Address**: Shortly before and after you launch a model/product you give another exhibition round. Because advertising is not the ideal explanatory medium, it not very much used. The members of the design discourse need to spread the knowledge of the product to a wider audience by talking and writing about it.

***How should you reconcile these ideas with 'traditional' approaches towards R&D management (e.g. portfolio approaches)?***

Companies who do design driven innovation do not follow the design industry's norms:

- **Tech push:** whereby an improvement in performance and functionality means a modification in design.
- **Market pull:** The design accommodates the consumers' demand for new features and an up-to-date look.
- **Open innovation**: in-license the patented discoveries of unaffiliated businesses or inventors.

The firms R&D operation, for the most part, can be found neither inside the companies nor in interactions among them.

⇨ It comprises a free-floating community of architects, suppliers, photographers, …artist, designers. The members of the community are prized as much as for their immersion as for their originality.

In this they differ from products that result from a company that 1st outsources the R&D phase to a design studio like IDEO, which explores consumers needs by asking it directly to them what they want and by observing their behavior.

⇨ In contrast to the IDEO process, where is no brainstorming by multidisciplinary teams.

10) What are major options when designing the organizational structure in which R&D activities are embedded? Which option seems most effective? Why/under which conditions?

11) What roles are needed in order for innovation (new product development) processes to be effective? Which functions are critical? Why?
Research into the management of innovation has focused on the critical roles by people during the innovation process. The following roles are needed in order for innovation (new product development) processes to be effective:

- **Idea generators.** They provide the organisation with new, creative insights that help it to initiate projects and to solve the problems encountered during the projects. Idea generators may be scientists or technologists, but they can also be marketers or originate from the sales side of the firm or even among the company's management.

- **The entrepreneur or the product champion.** Idea originators are seldom efficient idea exploiters. Therefore, a second important role has emerged during the innovation process, namely the entrepreneur or the product champion. They advocate for change and innovation. They take up the ideas and attempt to turn them into good currency by commanding attention to them. Many studies have found the presence of a product champion to be a necessary prerequisite for innovative success.

- **The sponsor**: A third key role is the one of the sponsor. He usually is a more senior person who is neither doing the research nor championing the project. However, given his position in the organisation, he is able to command resources to support the effort, to provide encouragement, and to create a 'safe harbour' for the innovators. His presence is therefore often necessary to support the actions of idea generators and product champions.

- **The new business or venture manager**: A fourth key role is the new business or venture manager. The increasing importance of venture strategies has enabled the rise of the so-called internal ventures or intrapreneurship initiatives. Intrapreneurship attempts to stimulate entrepreneurial behaviour within the company by providing innovative professionals with the necessary freedom and means to 'start a business within their firm.' In order to co-ordinate these entrepreneurial efforts, the presence of a new venture manager becomes necessary. He supports the planning, scheduling, control and co-ordination of the new venture programs. This role, if present within the firm, is usually an assigned job in the organisation, contrary to the other roles that are incidental to an individual's specific tasks.

- **The gatekeeper**: Finally, a fifth role which needs close attention is the gatekeeper. The gatekeeper is a critical information link-pin who brings outside information into the project group. Gatekeepers join technical, market and manufacturing information to the potential technical users of that information. They may be in close contact with the external scientific-technological world of the organisation, e.g. through contacts with university researchers, or they may act as communication bridges between different technical groups within the firm. Their

role thus essentially is one of a ‘communication bridge’ both within the organisation and between the organisation and its external environment.

These **five critical functions** represent the various roles in an organisation that must be carried out for successful innovation to occur. They are critical from two points of view. First, each role is different or unique, demanding different skills. A deficiency in any one of the roles contributes to serious problems in the innovation effort. Second, each role tends to be carried out primarily by relatively few individuals, thereby making even more unique the critical role players. If anyone critical function-filler leaves, the problem of recruiting a replacement is very difficult.

- **A quality controller, an effective trainer and/or a technical statesman**: Beyond the five above, different business environments may also demand that additional roles be performed to assure innovation. For example, there could be a quality controller, who stresses high work standards in projects. Other roles relate more to organisational growth than to innovation. An effective trainer could absorb new engineers productively into the company. A technical statesman could value the ability of some engineers to generate a leadership technical reputation through authorship and presentation of advanced concepts.

Corporate venturing covers a range of mutually beneficial relationships between companies. Mostly, a larger company invests in a small company and so provides a supplementary source of finance, in order to stimulate innovation in and outside the company.

12) Over the last decades, communication and communication patterns have been a central focus of research within the field of technology and innovation management. Why this focus on communication? What are – according to you – some of the major points of attention? (limit your answer to three). Argue why.