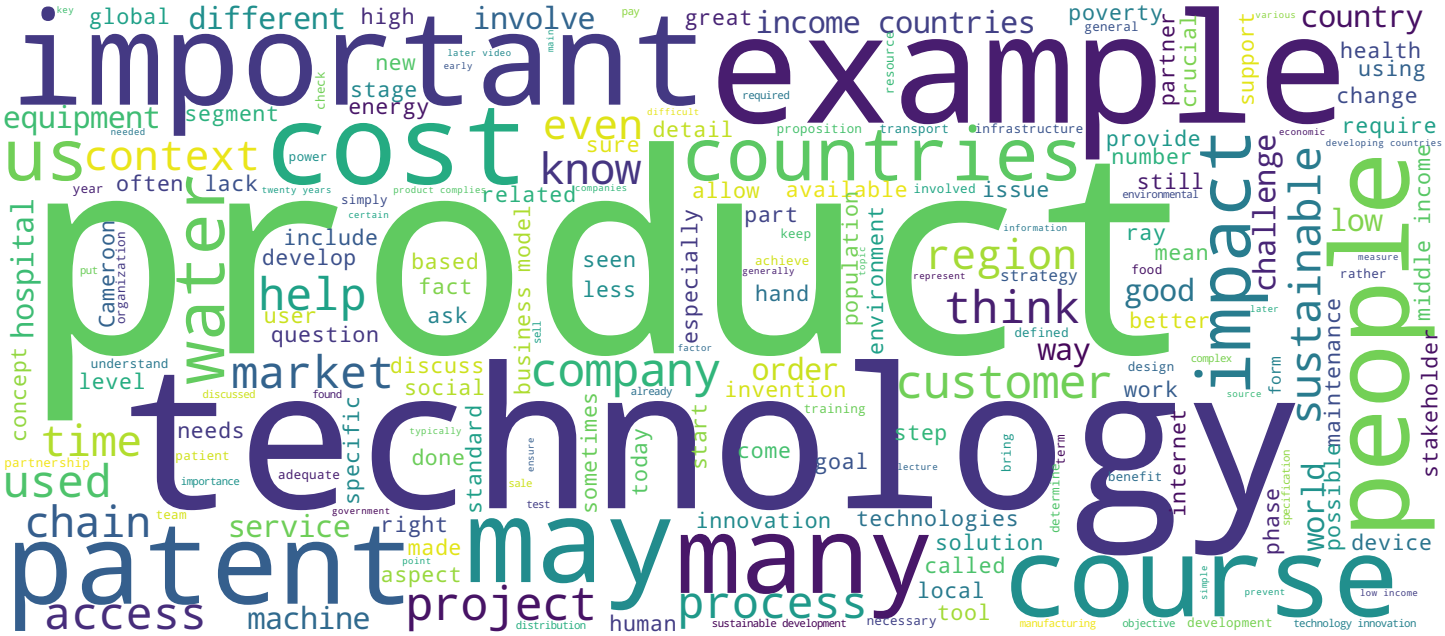


Search MOOC

Video

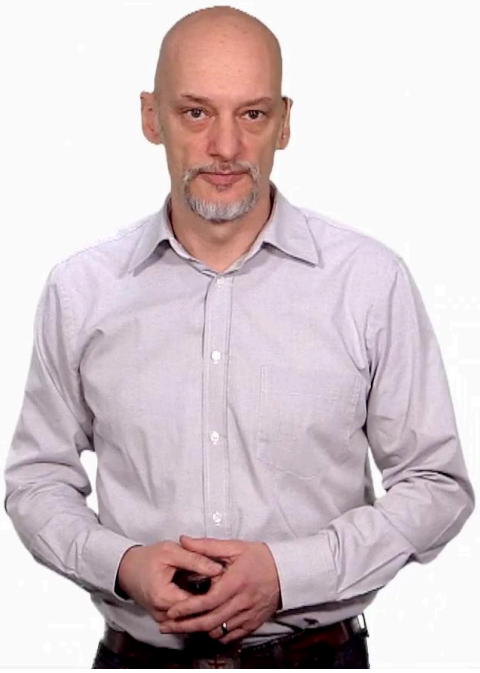
Hello! The first activity in the product value chain is to imagine and develop the product. As discussed in the overview, our purpose is not to give you a course on R&D project management, but rather to bring up a few key strategic topics that are especially relevant in the context of this MOOC. These topics are: The needs assessment by which we strive to clearly understand what is the current situation of our technology in the context we are considering. This will allow us to determine if we need a complete redesign of the technology, or a mere evolution of something existing. Then the definition of the product specifications is absolutely crucial and we will explain what kind of topics should be included. Once we have our basic specifications, we need to think in terms of partnerships, who do we need to partner with in order to develop our solutions, can we bring in some strategic partners who could help us accelerate our process. Another key subject is the one related to industry standards and regulations applicable to our product. They will need to be clearly identified early on. Then we have to consider the angle of intellectual property, such as patents trademarks and copyrights. And finally there is the user experience of the product. Design is important in all markets and this should not be neglected here either. Let us look into these different topics.

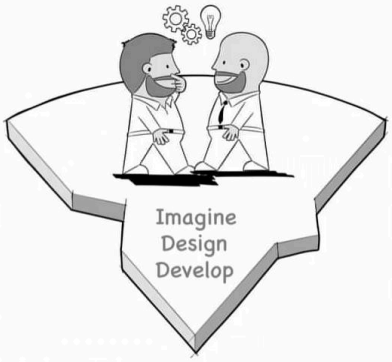
Notes

Summary

0m 20s

Imagine/Design/Develop: Assessment & specs





Needs assessment

Technology Innovation for Sustainable Development

The first step is to analyze the need for the product. What are the current technologies that are being used, if there is no technology solution available at all, what are the alternatives or substitutes that people have found in our target context? We need to honestly define what are the pros and cons of existing solutions. This requires a close collaboration with the people who we are trying to help as well as other stakeholders. After having analyzed the market situation, we will be able to come up with innovative solutions that may, or may not involve a complete redesign of the technology. The solution may simply consist of a smart and different use of some existing technology, or it may involve a profoundly disruptive innovation. This is a strategic decision, because if you have to completely redesign the technology, both the risks and the efforts will be much higher. On the other hand, the impact may also be much more important.

Notes

Summary

1m 55s

Imagine/Design/Develop: Specifications

- Technical characteristics
- Performance
- Applicable standards
- Product risk assessment
- Quality level

Technology Innovation for Sustainable Development

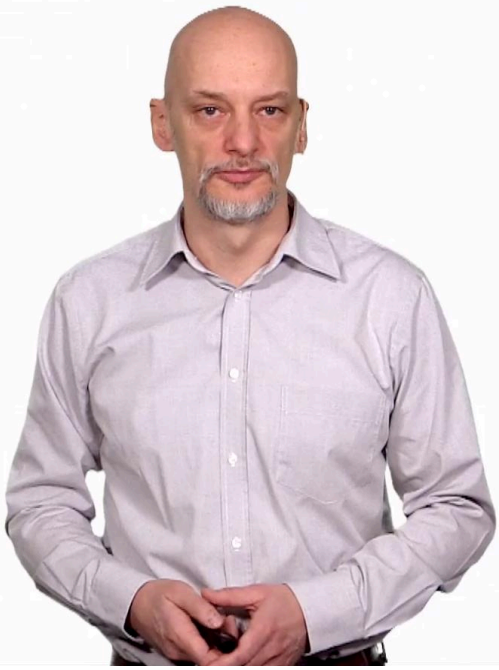
It is important to capture the results of the needs assessment in the form of written specifications. What is important is that these specifications need to be quantitative and measurable. For example, saying that a water treatment system must have the highest possible output is not good enough. We must be able to describe the output in quantitative terms, for example, the pump must be able to deliver 100L per hour. Specifications don't just capture technical characteristics, but many other aspects that will depend also on the other segments of the product value chain. Specifications will typically include the following rubrics, but there might be many others, depending on the industry: Technical characteristic which capture key technical elements of your product, Performance characteristics, which are closely related to the customer needs. Applicable standards and regulatory requirements and we will come back to this particular topic. Product risks, very often safety of persons may depend on the product, which means that we will have to conduct a product risk evaluation. Quality level, obviously, we would like to provide solutions that are ultra durable, however this comes with a cost and there has to be a trade off.

Notes

Summary

3m 06s

Imagine/Design/Develop: Specifications



- Technical characteristics
- Performance
- Applicable standards
- Product risk assessment
- Quality level
- Production means

Technology Innovation for Sustainable Development

Assessing customer's expectation or comparing existing solutions might provide useful information about the quality level to be achieved. Production means, prior to any development it is important that we think about how and where to manufacture the product. We will review that in more detail in a later video.

Notes

Summary

4m 46s

Imagine/Design/Develop: Specifications II

- Target price
- Packaging / distribution
- Support use / maintenance
- Product evolution
- Discontinuation / recycling

Technology Innovation for Sustainable Development

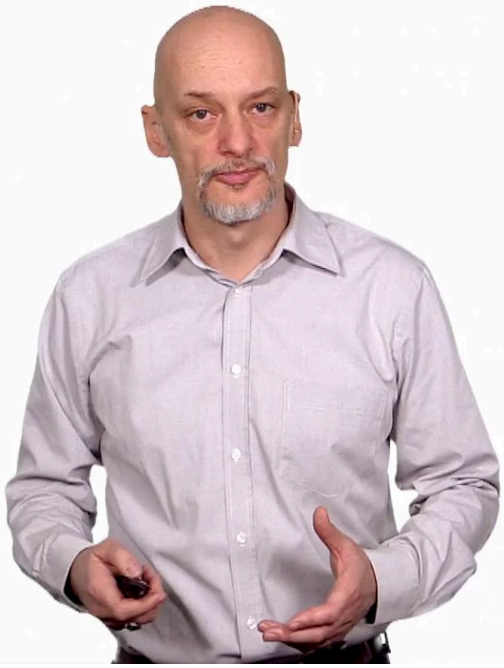
Target price. Target price must be coherent with the market expectations, while still allowing your company to be sustainable. We will see how to achieve this balance in a later video. Packaging and distribution. We must specify how we will package and ship the product. This is linked to the distribute segment that we will see in a later video as well. Support use and especially maintenance. It is important to know how we will support the use of our product, for example, by defining which maintenance activities are necessary. As the goal is to maximize impact, it would be great to be able to minimize the need for maintenance and spare parts. We will see that in detail in the last segment of the value chain. Product evolution. Most of the products will evolve in the course of time because of changes in the technology and in the market. Some of these changes can be anticipated in the design so that a product will be easily up-gradable if need be. We should make sure to think about about our product as a platform for future evolution. Discontinuations and recycling. Sooner or later our product will be worn out or obsolete and it will need to be phased out.

Notes

Summary

5m 12s

Imagine/Design/Develop: Specifications II



- Target price
- Packaging / distribution
- Support use / maintenance
- Product evolution
- Discontinuation / recycling
- Verification

Technology Innovation for Sustainable Development

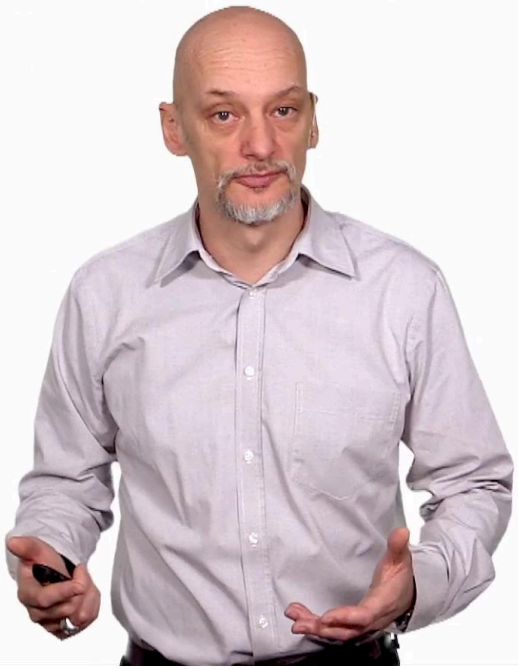
The question of how our product will be recycled is very crucial because we don't want to create harm to humans or to the environment. And finally we have verification. We must think of how we will make sure that our product complies with what has been specified in the previous points. If a specification is not very viable it is not adequate. There are many rubrics in this list but it is still not exhaustive, but our hope is that it helps you ask yourself the right questions.

Notes

Summary

6m 47s

Imagine/Design/Develop: Partnerships



- From *not invented here* to *proudly found elsewhere*
- Bring-in diversity!
- Partner with
  Institutions,
  Companies,
  NGOs,
  Individuals…

Technology Innovation for Sustainable Development

Our next strategic topic is partnerships. This is of course a very valid question in all of the product value chains segments. But we decided to insist on it, especially in this one, as it is where it is often overlooked. Inventors like to do things themselves, and this is fine as long as we are not missing an opportunity to be more efficient. Projects could often be accelerated if we were able to overcome the infamous "not invented here" syndrome. Procter & Gamble has famously tried to correct this very human behavior by promoting the motto: "Proudly found elsewhere". We should never refrain from partnering in the interest of our objective, because an efficient product development partnership can make you avoid years of painstaking work. We have also repeatedly insisted on the importance of collaborating with local partners and across disciplines. There is hardly any moment when it is more important than in the early phases of a project. We need to ask ourselves who could be a good partner? It could be an institution, a company, an NGO or simply an individual.

Notes

Summary

7m 28s

Imagine/Design/Develop: Standards

ISO: International Standards Organization

IEC: International Electrical Commission

CE mark CE

Technology Innovation for Sustainable Development

Another important topic is related to standards and regulations. Getting into details would take another MOOC. Broadly speaking, a standard is a set of rules which define a preconceived way to design or test some product. Standards are generally developed by organizations such as the International Standards Organization or the ISO, or the International Electrical Commission or IEC. The application of standards is generally voluntary, but can become mandatory if adopted by a government through legislation. In Europe and some other places, products are required to beat the CE mark, formally this indicates that the product complies with the European legislation for that category of products. This does not necessarily mean that the product complies to all technical standards existing for that product category, but certainly to some of them. We will need to check for our target country or region what the legal requirements are for our product. This can sometimes be time consuming and expensive, especially when the countries define their own rules to protect their local industries. Another challenge is that the standards have evolved with the progress made in industrialized countries and may not be well adapted to the situation in low and middle income countries.

Notes

Summary

8m 52s

Imagine/Design/Develop: Standards

ISO: International Standards Organization

IEC: International Electrical Commission

CE mark CE

Could you legally sell it in the EU or US?

Technology Innovation for Sustainable Development

Now we would like to discuss a crucial ethical issue. It is not because some low income countries have loopholes in their legislation that we should neglect the compliance with key standards for our product. We don't want to develop poor technologies for poor countries. In spite of the challenge, we strongly believe that every human being deserves the same level of product quality safety and effectiveness. We need to resist the temptation of making short-cuts and neglecting relevant standards, even if it makes the project much more difficult. We give you a simple rule to know if you have achieved a sufficient level of safety and effectiveness. Would you be allowed to sell your technology in an industrialized country? If the answer is yes, then you're fine. Our best advice is to have a good discussion with people who know this subject early on in your project. Also, a lot of relevant information can be found on the internet. For example, on the website of the IEC.

Notes

Summary

10m 33s

Imagine/Design/Develop: Intellectual Property

- To patent or not to patent
- Geographic strategy

Technology Innovation for Sustainable Development

Another important topic is intellectual property protection. Here as well the subject would require another MOOC. I will not discuss trademarks or copyrights but concentrate on patents. Patents are intended as incentive to invent. A patent is a means by which the authorities grant the inventor a time limited exclusivity for the commercial exploitation of his or her invention. the process of filing and managing a patent is complex and support from a specialist is generally required. However, we have to carefully think about our strategy regarding patents before hand, because they are very expensive. Not only are the filing costs high, but there also many additional fees that will have to be paid all along the patents lifetime, which is limited to twenty years. Over it's lifetime a patent filed in a dozen countries can easily cost up to several hundred thousand dollars in total and this does not even include potential litigation. The costs must really be offset by the benefits obtained from the patents exclusivity rights. It is, thus, fundamental to ask yourself if a protection offered by a patent is worthwhile. Also, you will have to designate the countries in which you want to request protection for your invention.

Notes

Summary

11m 50s

Imagine/Design/Develop: Intellectual Property

- To patent or not to patent
- Geographic strategy
- Disclosure

Technology Innovation for Sustainable Development

Every additional country or region will increase costs. On the contrary, you may decide not to pursue any patent protection at all, and leave the invention open for everyone to use. There is a downside to this strategy, however. At a later stage you will perhaps want to involve investors and they usually like to see patents, because they are barriers to entry for your competitors, it is a way to keep your company competitive and sustainable, so there is a balance to be found. On the other hand, in case of infringement of your patent defending it against an an unfair competitor could cost you years of litigation, which could lead to bankruptcy. There is one additional important thing we need to keep in mind. Any public disclosure of an invention before it has been filed will prevent you from seeking patent protection. This public disclosure could be in the form of publication in a news paper, on the internet, or simply a poster placed in a public location. We have to be especially careful with our partners as they sometimes disclose things inadvertently. Conversely, if you do not want to patent your invention you should disclose it publicly, as otherwise someone could come along and file a patent on your invention, which he could then use against you.

Notes

Summary

13m 26s

Imagine/Design/Develop: Intellectual Property

- To patent or not to patent
- Geographic strategy
- Disclosure
- Defensive publishing
- Freedom to operate
- Bargaining tool

Technology Innovation for Sustainable Development

This tactic is called defensive publishing. As you may find out, your idea may have already been patented before. This could entitle someone else to prevent you from using your innovation or to claim payments or royalties. To anticipate this problem you need to assess your freedom to operate. An easy way to check if a patent is still enforced is to look at the so called priority date. If the date is over twenty years ago you're most probably fine. It could also be that the inventor has stopped paying the fees and the patent is no longer valid, even if it is less than twenty years old. It is also important to check if the filing was done in your target country or region. It could be that a specific patent has been filed in a high income country only because the patent owner did not consider the others as potentially interesting markets. There are searchable databases on the patents on the internet, which allow you to see if a specific patent is still active. Finally, we would like to insist on the value of a patent as a bargaining tool. If you own a patent it could be used to negotiate a partnership with an established company.

Notes

Summary

14m 59s

Imagine/Design/Develop: Intellectual Property

- To patent or not to patent
- Geographic strategy
- Disclosure
- Defensive publishing
- Freedom to operate
- Bargaining tool

Technology Innovation for Sustainable Development

In exchange for the right to use your invention that company could, for example, manufacture some products for you at a favorable price, or help you distribute you technology. There are many more possibilities of win-win partnerships which can be negotiated if you own the rights to a valuable invention.

Notes

Summary

16m 27s

The Value Chain: Design

Do a lot of testing!

Fail early, fail often, fail cheap!

Technology Innovation for Sustainable Development

Finally there is the user experience. Design is much more than the look of a product it is really about optimizing the interaction between the product and the user. It is not because a customer lives in a developing country that he or she is not sensitive to the look and feel of the product, quite the opposite, in fact. As we have already said in the past, we should put our future product in contact with our potential customers as soon as possible. As we are working with the product value chain tool, for instance, we should provide them with mock-ups or rough-and-ready prototypes and pay attention to their comments. Here, again, the aim is to identify potential miss-matches with our assumptions and adapt our product as early as possible. Remember, it is better to fail early to fail often, and to fail cheap, as failures at a later stage will have much more severe consequences. Goodbye.

Notes

Summary

16m 52s