

# The Journey Is the Reward – Roadmapping, an Important Piece of Holistic Innovation and Technology Management

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In today's global competitive environment, innovation is becoming the dominating factor for assuring a company's differentiation and therefore competitiveness. In response to the global economic downturn, many companies performed drastic, often reactive and hasty, cost cutting initiatives in innovation and R&D departments. Such popular measures lead to competitive problems and disadvantages in the mid-term.

Companies in this situation, now have to ask themselves the following question regarding innovation and technology management: "How many and which innovation projects have to find their way back on to the development agenda and which ones can remain on hold?" The dilemma was to survive the crisis in the best possible manner, but now that the outlook is more positive, these companies still need to offer the right, differentiating product portfolio to the market to stay attractive.

The first step to answering the above-mentioned question, is to define and address changing customer, market and competitive requirements. Secondly, the selected actions have to be carried out in a way that allows for the required output to be realized. To focus and manage both, portfolio and processes, the innovation and development portfolio (the "what") as well as the development and technology management (the "how") have to be addressed.

The best way to address the future product portfolio is through a holistic innovation and development management that is in line with Lean Innovation R&D portfolios. The management is made up of five main steps as outlined in Figure 1. In order for innovations to be successful, they have to be aligned to the development strategy. Such a strategy considers components of the corporate strategy, business unit strategy, market strategy and product strategy. Idea management describes the areas where new product or technology ideas are tested towards their compliance with the development strategy.

Not all customer requirements or technological advances may fit the overall development strategy. Here the good ideas will be split from the bad ones. Only the good ideas will be channeled into the next phase. The next step, roadmapping, is most important prior to starting the development process and will be described in more detail in the following sections. When starting the actual development process, companies should always distinguish between specific customer projects and generic pre-projects. Additionally, traditional topics such as project management, performance measurements and knowledge management, play a vital role in the success from turning the initial idea into a viable product.

## Roadmapping: Targets that Are Unknown, Cannot Be Achieved

An inter-divisional and cross-functional examination of market and technology trends is a key factor to define and describe the targets for the evolution of an innovation and development portfolio (the "what"). Based on the results, planning the timeline and content of the portfolio and its respective technologies and innovations, has to be commonly defined and approved. An integrated and targeted communication to all participating departments is essential to guarantee sustainable implementation. In large development departments, the intense communication becomes even more important, since increasingly complex structures inhibit transparency and understanding of correlations and interdependencies.

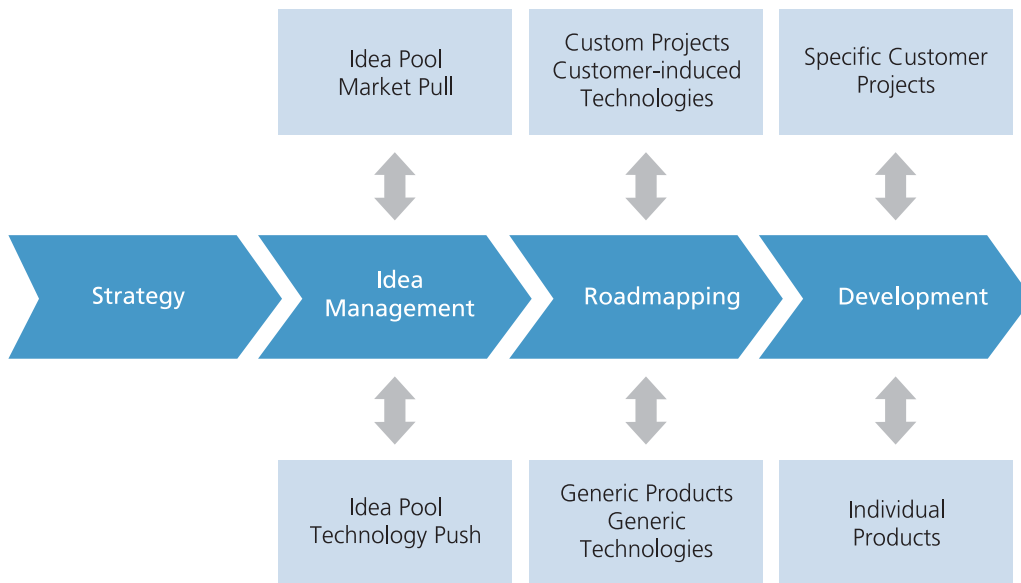


Figure 1: Components of Holistic Innovation and R&D Management

The product & technology roadmap is a methodological approach that has been proven in various projects. It helps to gain transparency and fulfill the above-mentioned requirements.

### A Methodological Approach to Product & Technology Roadmapping

Product & technology roadmaps offer a clear and comprehensive overview of current and planned products as well as the technology portfolio. Furthermore the required projects and developments with their underlying decisions, interdependencies and causalities are clearly visualized. As the name “roadmap” implies, it is a useful tool for the “steering” manager to navigate his company vehicle through a changing and foggy terrain. Not only does the roadmap enable the company to establish its current and future position, it also allows planning and visualizing intermediate steps and alternate scenarios to achieve these outlined goals. Hence the roadmap acts as an important tool to operationalize the company’s product and technology strategy.

Figure 2 shows a generic illustration of a technology roadmap that has been successfully applied in many of our consulting projects. Its main elements constitute the timeline, the different content levels (market, product, technology) and the links between the different objects visualized by bars.

The main benefit gained from the product & technology roadmap, is the creation of transparency and the platform for discussion and communication between departments. Since usually multiple departments such as R&D, production, sales, product management, etc. are involved, the product & technology roadmap can support cross-departmental, process-oriented thinking. Thereby the development process performance is increased. The result is a more effective and efficient product and technology planning process. In addition, the percentage of wrong decisions and the reaction times to changes in the competitive environment are reduced. The gained transparency enables the identification and evaluation of several actions for unforeseen changes. With an inter-divisional product & technology

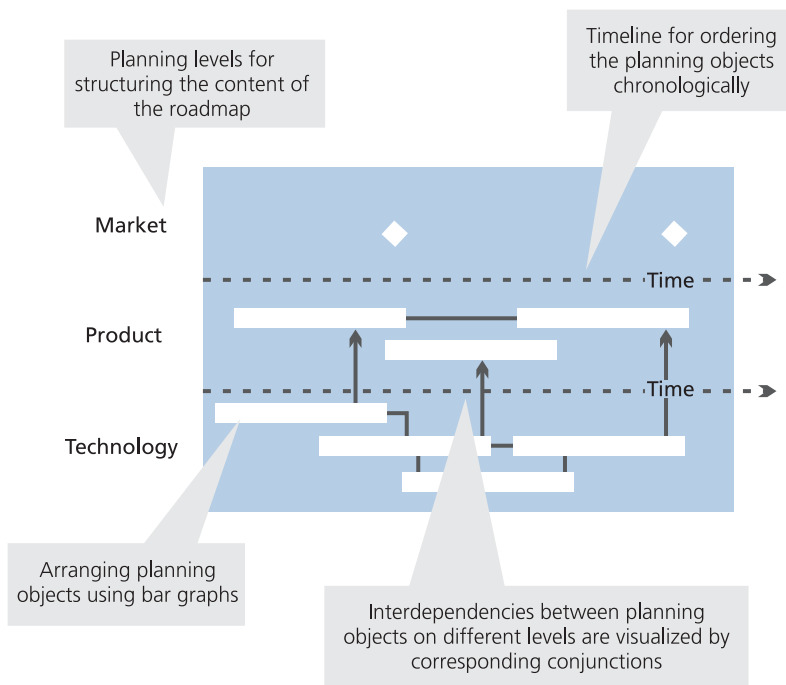


Figure 2: Elements of the Product & Technology Roadmap

roadmapping process in place, complex and difficult decisions regarding technology and innovation can be discussed in a focused and comprehensive manner. A focus on the right items is ensured and incorrect decisions can be avoided. But product & technology roadmapping does not replace the actual planning activities. Moreover, roadmapping coordinates existing plans and illustrates the results in a manner that facilitates discussion and communication of content. Thus the product & technology roadmap represents the core element of strategic development and technology planning.

### Success Factors of Product & Technology Roadmapping

While product & technology roadmapping has become an established tool, its implementation and usage often come with difficulties. Our project work and a multitude of expert interviews led to a list of successful and sustainable implementation practices of product and technology roadmaps.

**1. Cross-functional cooperation.** A key success factor is the close cooperation of all relevant departments of the company (R&D, procurement, production, marketing, etc.) during the initial creation of the roadmap. This enables a quick and easy identification of mistakes in planning and the prompt derivation of the right corrective actions. Furthermore it assures a high level of commitment of all involved departments.

**2. Company and situation-specific definition.** Each roadmap has to be defined in alignment to its specific purpose and circumstances, e.g. business area planning, make or buy decisions or technology application and development planning. A situation-specific illustration increases manageability and acceptability.

**3. Evaluation based on specific criteria.** The technology evaluation within the roadmap is also dependent upon company-specific constraints and targets. It is obvious that technology leaders have to apply other criteria for evaluation than followers. But the use of the same criteria and methods for evaluating along the whole process, from early detection to operational planning, across all departments is of major importance. Furthermore, financial planning and evaluation have to accompany the process from the beginning and get even more detailed over the course of time.

**4. Focus on roadmap illustration and process.** As long as the roadmap allows for the coordination of the content, e.g. market, product, technology, its layout can be chosen freely. The map's value is created by its content and not its illustration. The roadmapping process itself brings together the responsible persons from different departments and thereby encourages comprehensive discussion about the technology plan.

**5. Central process mapping – decentralized planning.** The roadmapping process has to be described including responsibilities and process participants. A successful approach is to control process ownership centrally and to delegate responsibility for the content of the roadmap to decentral functions. Despite this separation, roadmapping remains a central leadership task with a need for high level management attention.

**6. Orientation towards technological guiding principles.** Technological guiding principles are practical assistance in the roadmapping process. These guiding principles describe the general direction the company is heading to and build the basis for making decision throughout the roadmapping process.

**7. Employ internal and external expertise.** The technology roadmap is based upon two main pillars, internal knowledge from the involved departments of the company that is complemented by insights gained externally. Successful roadmapping relies on a focused interaction of the right experts and an open corporate culture.

**8. Accept the uncertain – think in alternatives.** One objective of roadmapping is to enable successful planning and flexibility to potential changes in uncertain situations. Flexibility is greatly supported by roadmaps as it facilitates the coordination between different departments. To facilitate a quick reaction time, multiple scenarios should be considered when creating the roadmap.

**9. No focus on IT implementation.** The market offers a vast range of different IT tools to generate roadmaps. These programs can help to structure the process, but do not represent the solution itself. Only the right experts can identify the interdependencies of the planning objects on different structural levels. This process can hardly be automated.

## Conclusion

Product & technology roadmapping is a central and extremely helpful component of holistic development and technology management. It offers a comprehensive overview of the current and planned products and the positioning of the portfolio in the market. Consequently, the required projects and developments as well as decisions, interdependencies and causalities are illustrated in a manner that allows easy cross-departmental communication and discussion. Thereby the roadmap greatly supports the often lacking operationalization of a company's overarching strategy.

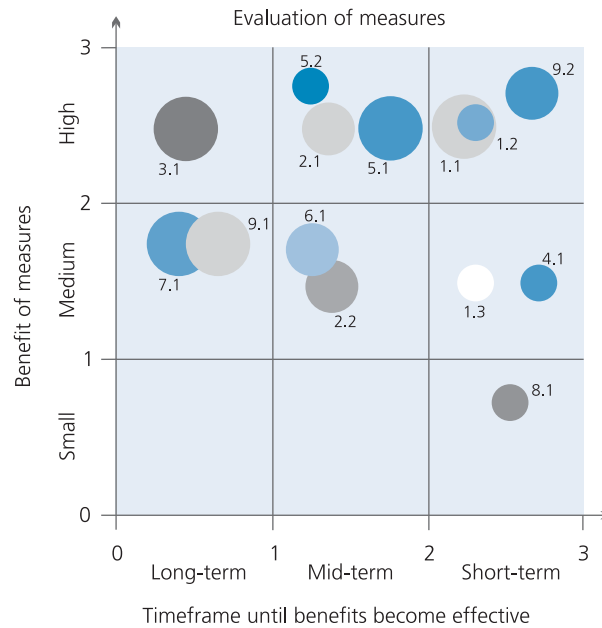


Figure 3: Evaluation of Portfolio and Prioritization of Measures of Different Implementation Options

The maturity level and the interaction of the different components, such as roadmapping and idea management, are systematically assessed during the audit of development and technology management. The improvement potential is derived from the results of the audit and different options and measures for implementation are developed. Figure 3 illustrates an evaluation portfolio of different measures dependent on their expected benefit, the timeframe until the benefits become effective and the calculated costs (cross section dimension).

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