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## ICMR Center for Management Research

# BMW'S Innovation Strategies

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*"The future will come on its own, progress will not."*

*"The truth is that innovation is a key element for BMW's success in the premium market and one of the key motivations to buy a BMW."*

**- BMW Group, at the OCI Award Presentation, in October 2002.**

## ON THE WINNING EDGE

In October 2002, the world-renowned automobile manufacturer from Germany, BMW Group AG (BMW) was awarded the 'Outstanding Corporate Innovator (OCI)' title for 2002, by the Product Development & Management Association (PDMA). [1] This award was given for BMW's 'demonstrated exceptional skill in constantly creating and capturing value, through its innovations and development of new products'.

Commenting on BMW's selection for the award, the Chairman of the OCI Awards Selection Committee said that the company had shown a strong strategic commitment to innovation. The award came as a major recognition of the company's decision to let innovation be the driving force for its product development process throughout the late 1990s. Industry observers expected this development to further help BMW establish itself as one of the leading players in the premium segment of the global automobile market.

According to analysts, BMW's innovation management system, developed in the late 1990s was the main reason behind the company winning the OCI title. This innovation management system enabled BMW to exploit various path breaking technological innovations, right from the idea generation stage to the market introduction stage. This system enabled BMW to develop a continuous stream of new products and brands. Company sources admitted that by focusing on new product development practices using the innovation approach, BMW successfully withstood competitive pressures and held on to its market position.

## BACKGROUND NOTE

The Munich (Germany) based Bayerische Motoren Werke AG (BMW) was founded, as an aero-engine manufacturing company in 1917. After World War I, the company faced problems due to the severe restrictions that were placed on the aircraft construction business in the country. BMW then decided to move into the production of motorcycles and passenger cars.

The company undertook a series of acquisitions and joint ventures with various motorcycle and car companies. In 1923, the company launched its first motorcycle model, BMW R32. In the early 1920s, when the government eased the restrictions, on the business, BMW once again entered the aircraft construction business. However, the company continued to focus on the automobile business.

[1] PDMA is a US-based not-for-profit organization that works towards improving the effectiveness of companies/people involved in developing and managing new products (goods and services). PDMA gives the OCI Award to recognize the efforts undertaken by companies in successfully developing new products.

During the 1920s, BMW strengthened its competitive position in the German automobile market, by producing small and efficient vehicles. The company launched its first car model 'Dixi' in 1929, followed by BMW 315/1 and BMW 319/1 in 1934. In 1936, BMW introduced its first sports car model, the 238. Its lightweight construction, outstanding aerodynamics, high performance and elegance helped the 238 become a major success in international motor racing events. Soon, BMW's reputation as a company manufacturing elegant, prestigious and superior performance automobiles began to spread outside Germany as well.

Until the 1950s, BMW concentrated only on a limited number of models. The focus then was more on expanding operations to other parts of Europe, outside Germany. In 1956, the company introduced a new model, the BMW 507 roadster, equipped with a powerful 3.2 litre, 8-cylinder and lightweight metal engine with an output of 150 bhp. This unique model not only became extremely popular in Germany, but also became one of the most popular vehicles in the automobile world.

In the late 1950s, despite BMW's sustained efforts to emerge as a manufacturer of prestigious vehicles, the company came to the brink of bankruptcy on account of the decline in the motorcycle market. The company soon faced a takeover bid from Mercedes, another leading German automobile company. With the help of an industrial financier, Herbert Quandt (Quandt), BMW was able to thwart this takeover bid. Quandt acquired a majority of BMW's shares and initiated a restructuring exercise to bring the company back on track. The success of BMW 700, a small car, launched in 1959, came as the much-needed boost to the company. BMW soon regained its position in the market.

As a part of the restructuring initiative, BMW focused on developing sports sedans[2] – leading to the launch of the first of 'New Range' BMWs in 1961. The company began to consolidate its position in the market, with a focused marketing strategy. Greater emphasis was placed on advertisement and sales support. This, combined with an emphasis on improving engineering and performance related aspects, enabled BMW to create its own special place in the luxury automobile segment.

During the 1970s and 1980s, the company expanded its operations to the US, Asia and Australia. By then, it had positioned itself as a trendy and reliable brand. Owning a BMW had reportedly become a personal statement and the car was perceived as being more stylish than the other major German brands, Volkswagen and Mercedes. The company's production and sales steadily increased during this period. By the 1980s, BMW had emerged as a serious competitor to Mercedes in the premium car business.

However, BMW's sales performance in the US market was far below its expectations, keeping in mind the potential of the market. Following this, in 1989, BMW appointed Karl Gerlinger (Gerlinger), who was known to be a 'master marketer,' to lead the marketing division. Under the leadership of Gerlinger, the company embarked on a new marketing drive to help improve its business in the US. In 1991, BMW sold 53,000 automobile units, with its revenues from the US operations touching $18.6 billion. In 1992, BMW's sales in the US further increased to 66,000 units. In the same year, the company announced that it would build its first automobile plant outside Germany, in Spartanburg, South Carolina (US).

In 1992, for the first time, BMW succeeded in outselling Mercedes in Europe. In order to sustain its growth, BMW decided to expand its capacity and reach. This led to the acquisition of the British automobile group Rover in 1994. The Rover Group was a leader in the four-wheel drive segment in Britain and produced vehicles for the mass market. This acquisition increased BMW's production capacity by 3% to 503,526 units in 1995.

[2] A sedan is a closed, four-door passenger car, equipped with a separate trunk. It usually looks 'boxy' as its rear doors are full sized.

The Spartanburg plant started commercial production in 1995. In the same year, BMW launched its new series of cars, with advanced technology and sophisticated styling, called 5 Series. The company positioned these cars as products with elegance, dynamic performance and safety. In 1995, BMW launched the Z3 Roadster as well.

During the mid 1990s, BMW realized the need to restructure its product line as the customer trends in the US (by now one of its major markets) were changing. Customers had come to prefer small engine sizes that consumed less fuel and caused less pollution. They also began to prefer small cars to big ones as finding parking space was becoming increasingly difficult in major urban areas.

Keeping this in mind, BMW shifted its focus to developing smaller and medium size models. In the mid 1990s, with these plans, the company launched a small car, 'the Compact.' In 1997, with the launch of 316g Compact and 518g touring versions, BMW became the first European manufacturer to offer cars which ran on natural gas.

By the late 1990s, BMW was earning high returns in its aero-engine business and its motorcycle business. Through the decades, BMW diversified into many other businesses such as BMW Financial Services, Bavaria Wirtschaftsagentur and Softlab.[3] Other businesses included Bavaria-Lloyd Reicburo (tourist services for BMW employees), BETEK Bar-und Energietechnik (construction planning and co-ordination services) and Kontron Electronik (computer assisted products and services for automobile industry).

By the 1990s, the company had operations in many parts of the world, with Germany, the US and the UK being its major markets. During the period, BMW witnessed a rapid growth in its automobile business, and thereby, in its revenues and profits as well. In the mid 1990s, BMW's international sales organization comprised of 35 sales companies, 180 importers and more than 6,000 dealers. By 1997, BMW plants were manufacturing more than 1.2 million vehicles (including motorcycles) annually and the company was ranked 69$^{th}$ among the Fortune Global 500 companies. In 1998, the revenues amounted to €32.28 billion[4] as compared to €15.97 billion in 1992. The net profit in 1998 was €462 million as compared to €116 million in 1992.

BMW had a system of linked development facilities, worldwide. The BMW Research and Engineering Center in Munich [Forschungs-und Innovationszentrum (FIZ) R&D Center] functioned as the main R&D center. The Landshut Innovation and Technology Center (LITZ) was another major R&D hub of the company. BMW also ran three other research facilities in the US, namely, the Palo Alto Technology Office (PATYO), BMW Designworks and Oxnard Testing Facility (all in California).[5]

Through the 1980s and 1990s, BMW emphasized heavily on R&D, making it a core element in its corporate strategy. However, despite its efforts to excel on the technological front, BMW ran into quality problems many a times. The 3 Series models, launched in the early 1990s, had significant quality problems. During this period, the company's customers began to complain that there was not much difference between the models launched by BMW during the 1990s. The German press, reportedly criticized BMW's models as 'one sausage, three different lengths', implying that all BMW models looked alike.

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[3] The financial services division supports the group's sales of cars and motorcycles with a wide range of leasing and loan financing options, ranging from installments to full service leasing. Bavaria Wirtschaftsagentur offered insurance services to the Group across the world. It offered insurance for the car and motorcycle business, on behalf of its financial services division and also arranged insurance for their customers, employees and other corporate clients. Softlab offered software and other IT services to corporate clients worldwide in the banking, insurance, telecommunications and automobile industries.

[4] Exchange rate as on August 28, 2003: $1.0986 = 1 €.

[5] PATYO functioned as a research hub that helped BMW capitalize on the latest technology innovations that were utilized in adding value to its products. The DesignWorks studio helped in transforming the innovative ideas into end designs. The Oxnard Testing Facility supported the innovation process through its Workshop Center, which enabled prototype testing.

The quality problems and changing market dynamics made it imperative for the company to focus on product efficiencies, constantly generate new product/component ideas, and launch new and upgraded products. However, the company realized that most of the new ideas generated were not getting the required attention in the innovation division. These ideas sometimes got delayed in the existing innovation process. The company then decided to restructure its innovation process and create a well-integrated and focused, innovation process. The primary goals of this exercise were to reduce the time to market new products and components to meet changing customer requirements.

## BMW'S INNOVATION MANAGEMENT MODEL

Industry observers have noted that the key to BMW's success was in its ability to nurture new ideas, short list the potential ones and process them till the end stage through an integrated innovation process. The realization that a lack of infrastructure or resources to explore and exploit numerous new ideas generated was hampering BMW's new product development activities, was the first step towards devising its new innovation management model.

In late 1997, the company roped in Business Innovation Consortium (BIC), a US based consulting firm that specialized in innovation management, to conduct a critical assessment of its innovation processes. BIC confirmed BMW's doubt that though many new ideas were circulating in the company, its innovation processes failed in selecting the best ideas and in allocating appropriate resources. According to the analysts, BMW's innovation related policies then, made it virtually impossible to find the best ideas and lead them to commercialization quickly.

BIC found that various BMW divisions involved in component development were overtaxed, trying to manage more than 1,200 innovations at a time, all of which demanded changes to be made to the production process. BIC also noticed that since each BMW division pursued its own innovation projects without co-ordinating with other divisions, it sometimes resulted in clash of objectives between their respective innovation projects. This lack of co-ordination among various divisions also made it difficult to prioritize the innovations.

The assessment results clearly indicated the need for restructuring the innovation process. BMW focused on creating winning innovations with short cycle time and wanted to attain sustainable growth in the automobile business. The restructuring was also aimed at integrating the innovation process into BMW's core business strategy plan, so that specific customer areas could be better dealt with.

By early 1998, BMW had created a well-defined innovation management process. This new process focused on three major areas: unique selling propositions for each car to be launched, breakthrough innovations, and concept cars to convey brand image at automobile shows.

The innovation management process or the New Product/Process Development (NPD) process of BMW was aimed at systematic channeling of potential innovations to actual product development stage. The NPD process ensured a creative environment in the company, where the employees were encouraged to generate ideas or to add value to the existing ideas. The NPD process was divided into three parts: Innovation Research, Innovation Management and Innovation Transfer (Refer Table I).

**Table I: Steps in BMW's NPD Process**

| Innovation Research | Innovation Management | Innovation Transfer |
|---|---|---|
| * Global Technology Scouting<br>* Virtual Innovation Agency (VIA)<br>* Trend Analysis<br>* Coverage of external and internal invention sources | * Innovation Councils<br>* Evaluation and Selection<br>* Resource Allocation<br>* Monitoring and Reporting<br>* Annual Process | * Definitions of Vehicle Unique Selling Propositions (USP)<br>* Identification of Innovations Ready for Series Development<br>* Buy-in of Vehicle Projects |

*Source: www.pdma.org*

### *INNOVATION RESEARCH*

Innovation research involved identification of new technologies and ideas from across the world (global scouting). For this purpose, BMW had appointed associates at all the major technology centers in the world where tremendous progress was being achieved in the field of electronics. These associates sent regular reports to the company on the latest technology trends and innovations.

The reports were stored in the company's central Intranet database, called Technis, and were made available to all BMW associates. According to company sources, Technis not only helped the company's associates in gaining access to technological advancements across the world, it also provided the associates with good inputs to generate new ideas.

Apart from its associates, BMW also sought inputs from external sources such as individuals, Universities and other companies, with help of Virtual Innovation Agency (VIA), an Internet portal. This enabled others (individuals, universities or other companies) to contact BMW and send their innovation projects or ideas to the company. The VIA proved to be a great success, generating more than 1,000 ideas within one and a half years of its launch in 2001.

### *INNOVATION MANAGEMENT*

Innovation management refers to the management of the portfolio of innovations at BMW by weeding out weak ideas from the potentially successful, prioritizing the innovations and following them up to the Innovation Transfer stage. This stage required the largest number of people and consumed the greatest volume of resources as compared to other stages of the NPD.

An innovation strategy board (consisting of BMW board members, innovation managers and corporate strategists) had to decide the direction of innovations in the company, which was part of the company's overall business strategy. BMW focused on specific areas such as breakthrough innovations, premium branding, environment and social responsibility, and safety. The company focused on innovations in these specific areas, referred to as Innovation Fields (IFs). BMW's innovation model comprised of six Innovation Fields: Experience Dynamics; Convenience and Service; Safety and Security; Concept Cars and Experimental Vehicles; Esthetics and Value; and Environmental Acceptability.

A full-time manager (Innovation Field Manager, IFM) was appointed to manage each IF. Decision making at each IF was done by a panel of senior executives called the Innovation Field Council (IFC). Each IFC comprised of two or three members of the senior management, such as directors and senior managers.

BMW followed specific filtering criteria, in selecting potential ideas from the vast base of ideas that were generated. The VIA associates acted as the first filter, as they assessed the ideas received from various sources, registered them and reported them to the IFMs. Following this, a network of VIA associates and IFMs worked together to segregate the ideas and then sent the ideas to the appropriate Center of Competence (CoC) or the related functional division of an idea. CoC, in turn, analyzed the ideas and referred ideas that had some potential to related Innovation Field Councils (IFC). IFCs had the authority to accept or reject the ideas at this stage.

The innovation projects could be backed by individuals (such as line supervisor of a related field) or by related functional units. An individual or division that backed an idea was called the sponsor of that idea. If an idea forwarded by a CoC was accepted by IFC, the IFC signed an agreement with the sponsor of that idea. Ideas that were not accepted were stored in an idea repository for future use. Once the agreement was made, the ideas became innovation projects and the IFCs began market assessment of those projects. This stage was called the focus stage. From the focus stage through the implementation stage, each innovation project was filtered, on the basis of its supposed value, against the risk involved in commercializing the project.

An Innovation Steering Committee was established to guide the innovation process and to periodically review the progress of innovation projects under all IFCs. All the IFCs took part in the Steering Committee meetings, which enabled them to exchange information. This helped in building a cross-functionality between the IFCs, which was lacking in BMWs earlier innovation process. This cross-functionality enabled all major BMW divisions to share information, thus allowing them to focus on the overall interests of the company rather than only on the interests of their respective divisions.

Commenting on the advantage of cross functionality in BMW's innovation process, a senior executive at BMW said, "In the 'old days' we had up to a thousand innovation projects within the individual departments all focusing on their own projects only and all suffering from inadequate funds and manpower. Today, our new system allows us to control and channel our resources much more efficiently. We now concentrate on roughly 100 projects, which the councils regard as most promising."[6]

To get attain manpower or funds for their innovation projects, the sponsoring individuals or functional divisions were required to fill in an Innovation Sheet (IS), in which they had to list out the basic parameters involved in that specific innovation project. For instance, the possible market risk or technological or safety-relevant risks associated with innovation projects had to be mentioned in the IS. Apart from this, information regarding the expected investment required for the project, estimates of production costs, and a comparison between the cost of development and anticipated profits, was to be provided in the IS.

Thus, the IS primarily included technical project description, competition, market and customer assessment, strategic impact and financial estimates. The IS was expected to remind the engineers to take into account the overall, general conditions surrounding the projects before deciding to sponsor them. Once a sponsor submitted the IS, the responsible IFC took control of that project and categorized the projects, in terms of its priority. BMW devised a prioritization process under which the innovation projects were ranked under four categories that included Potential, Must, Top and Breakthrough innovations (Refer Table II).

**Table II**

**Prioritization of Innovations at BMW**

| |
|---|
| Individual projects were categorized under four categories: These are as follows:<br>-- **Potential Innovations**: All innovation projects, which have the potential for commercialization.<br>-- **Must Innovations**: Innovation projects that the company was forced to develop under new laws and regulations, increased competition or other contracts.<br>-- **Top Innovations**: Innovation projects that ensured an USP, a strategic advantage or one that resulted in new brands<br>-- **Breakthrough Innovations**: Innovation projects that ensured state-of-art end products, trendsetters, ensured outstanding customer value or that could turn out to be benchmarks. |

*Source: www.pdma.org*

Following prioritization, IFCs drew up the price-estimates and financing limits on the projects and allocated resources. Once resources were allocated, sponsors formed project teams headed by a project manager and started working on the project. The manpower and financial resources varied based on the priority levels. The company followed a variable reporting system based on the priority levels; guidelines for reporting on innovation projects depended on their priority levels. For example, the innovation team was required to report the number of breakthrough innovations

[6] www.pdma.org, BMW Group OCI Award October 16, 2002.

to the BMW board much before than other innovation projects. This was because such breakthrough innovations involved high expenditures and strategic significance, and the board needed time to reach a decision on such matters.

All innovations projects were consolidated into a single project program after prioritizing. This project program was reviewed by BMW annually (See Exhibit I & II for the annual cycle of BMW's Innovation Management Process and Innovation Discipline of the company).

Apart from the annual review, BMW also conducted periodic reviews of its innovation programs, which helped the company re-orient the course of ongoing projects, based on changes in its strategy or new insights gained by the company into the costs or risks involved in those projects. The innovation management process for a new project normally took 6-8 weeks for competitors.

***INNOVATION TRANSFER***

The final stage in the innovation management process was innovation transfer. This stage ensured the smooth flow of the projects from research and pre-development stages to the development stage. This stage was primarily aimed at transferring the innovation project in the pre-development stage, to its respective vehicle project managers, who carried on the actual development work.

Innovation transfer was a comprehensive process and usually it took several months to complete. This was so because the stage was characterized by extensive negotiations between the vehicle project managers and the project managers. As the project managers were restricted by budget allocations made by IFCs, they had to convince the vehicle project managers to limit the costs of developing the end product within the budget allotted to them.

The innovation transfer stage was aimed at assessing the risks involved in the project and minimizing them. At this stage, the project value was assessed on the basis of cost, time and quality, popularly known as the 'Project Triangle'. These three factors had to be weighed against one another to ascertain the actual value of the project. On the basis of risk and market assessments, risky projects were aborted at this stage. This enabled the company to avoid subsequent problems and mistakes before commercialization. The innovation transfer stage culminated with the transfer of innovation projects to the actual development stage.[7]

## THE RESULTS

By 2002, BMW had made innovation an integral part of its product development process. The company had significantly decreased the 'time-to-market' new products and linked its revenues to the introduction of leading-edge products.

In the early 2000s, BMW began to restructure its business. It focused on strengthening its position as the market leader in the premium segment of automobiles across the world. In line with this, it adopted a product offensive strategy which aimed at flooding the automobile market with new launches (i.e. a new product every three months). BMW increased its R&D expenditure by 53% to support this strategy. Some of the new cars launched as a part of this strategy were Mini One, Mini Cooper, new BMW 3 Series Compact, new BMW 7 Series and Z4 Roadster. By 2002, BMW had overtaken Mercedes and stood second in the premium segment of the US automobile market, next only to Lexus.

The company attributed the ability to launch brands continuously to its innovation management system, which considerably reduced the time between idea-generation and final product development, to one third of the time taken before. Complaints regarding quality also came down

[7] According to BMW sources, it was able to successfully develop and implement the above model largely because of the R&D centers, FIZ, LITZ and the California Innovation Triangle (CIT), formed by coordinating the operations of PATYO, DesignWorks and The Oxnard Testing Facility.

drastically, as the company was able to come up with immediate solutions to problems, on account of the new innovation process model. Commenting on this aspect, a *BusinessWeek* article said, "BMW's brand image is tied tightly to such innovation."[8]

Apart from solving quality problems, BMW also succeeded in increasing the use of technology in its products. Breakthrough technology innovations at BMW included i-Drive, a digital system that enabled drivers to control 270 features on the dash board and on BMW Online, an in-vehicle communications system, which enabled online access to various Internet sites. Another breakthrough innovation of BMW was 'Active Steering,' which controlled the position of the front wheels exactly according to the driver's wish, thus offering high comfort and driving pleasure to the driver.

BMW posted an increase in revenues by 9.9% to $49.5 billion during fiscal 2002. The company's profits during the same period amounted to $2.36 billion, an increase of 8.3% over fiscal 2001. BMW was expected to have exceeded the sales of Lexus in the first four months of 2003. BMW expected this momentum to continue and to soon emerge as the leader in the premium segment.

To quote Helmut Panke, the CEO of BMW, "We do not rest on our laurels. We will not accept the position of No. 2."[9] Analysts felt that with the uniquely designed innovation model in place and the support of its production facilities and marketing strategies, it might not be hard for BMW to become the market leader in the near future.

## QUESTIONS FOR DISCUSSION:

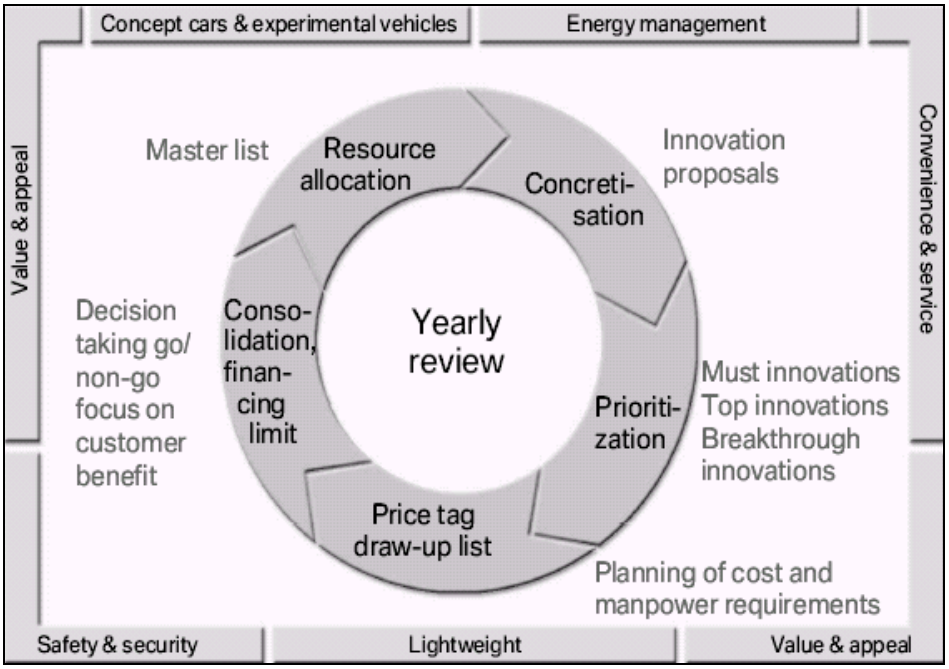
1. Examine the growth of the BMW Group over the decades and critically evaluate the circumstances that necessitated a change in the innovation processes that were being followed at the automobile venture.
2. Analyze and describe the features of the new innovation process at BMW. What do you think are the major advantages of the new innovation process? Why? Are the advantages sustainable? Has the model influenced the corporate strategy in securing leadership position?
3. Comment on the results of the new innovation process at BMW. Why do you think organizations need to focus on effectively managing their innovation processes? What kind of companies need to focus more on such issues? Why?

[8] www.businessweek.com, 'BMW,' June 09, 2003.

[9] *BusinessWeek*, BMW, June 9, 2003.

## Exhibit I

**Annual Cycle of BMW's Innovation Management Process**




The cycle began with the concretization of ideas under the relevant IFs. After the ideas were accepted by the relevant IFCs, they were prioritized under four categories viz. potential innovations, must innovations, top innovations and breakthrough innovations. The next stage was drawing a cost and manpower requirement plan for that specific innovation project. This was followed by evaluating costs and manpower requirements involved in the project based on its expected returns, and deciding whether to proceed or not to proceed further with that project. This stage also involved the fixing of a financial limit for every project. The final stage dealt with preparing the master list of innovation projects and allocation of resources to those project teams.

*Source: www.pdma.org*

## Exhibit II

**Innovation Discipline at BMW**

-- Strict schedules (time boxes) should be followed to ensure focus and timeliness.

-- All departments, likely to be significantly affected by a particular innovation, should be involved at the earliest step of the process.

-- A responsible, committed sponsor should take accountability for each step: a Business Innovation executive, followed by a Business Unit sponsor (e.g., a line manager).

-- Exit criteria should be explicitly applied to determine whether an idea progresses, dies, or hibernates.

*Source: www.cbi.cgey.com*

## Additional Readings & References:


1. **BMW Launches into 2000 with More Technology & Value,** www.autoweb.com, January 17, 2000.
2. **BMW Group Continues to Invest in Product Offensive: Increase in Sales in the First Quarter,** www.autointell-news.com, March 28, 2001.
3. Mayer Andrew, **Innovation is Accelerating in Automotive Electronics,** www.synopsys.com, November 2001.
4. **BMW's Panke Still Sees FY Earnings, Sales Higher than 2001,** www.ananova.com, July 10, 2002.
5. **BMW: Driven by Design,** www.fastcompany.com, September 2002.
6. **Recognition for Innovation at BMW,** www.automotriz.net, October 21-27, 2002.
7. **10th Anniversary for the BMW Group in Spartanburg,** www.autointell.com, November 20, 2002.
8. **The BMW Group Cultivates Worldwide "Passion for Innovation" in Product Development,** Visions Magazine, January 2003 Issue.
9. **BMW Group Continues Product and Market Offensive,** www.swindon-pressings.co.uk, May 15, 2003.
10. **BMW,** www.businessweek.com, June 9, 2003.
11. Sutherland David, Hartmann Jochen and Seidel Markus, **From Roadmap to Roadway: Managing Innovation at BMW,** Center for Business Innovation Journal, Issue 8.
12. www.bmw.com
13. www.bmwgroup.com
14. www.bmwnation.com
15. www.easternbmw.co.uk
16. www.ctvalley.org
17. www.autoworld.com
18. www.auto.com
19. www.pdma.org
20. www.innovationresource.com
21. www.hoovers.com
22. www.bicnow.com
23. www.motor-talk.de
24. www.uk.biz.yahoo.com


## Related Case Studies:

1. Nokia: Fostering Innovation, Reference No: 403-040-1.
2. Tetra Pak's Packaging Innovations.