
Roadmapping Continuous Innovation

by

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Innovation occurs when an enterprise creates or transfers economic value. Adding new value is the strongest form of innovation, while transferring value is a weaker form. Successful innovation management places distinct and significant requirements on the enterprise that are highly dependent on the form of innovation and the degree to which the enterprise seeks to manage external innovation. Embracing a formal, IT-supported, roadmapping process is required for building a competency in continuous innovation management.

Enterprises are turning their attention to the topic of innovation: seeking how to become more innovative and how to formalize innovation-related processes. In a recent article by the Gartner Group, Kathy Harris states “active management of innovation will become a required competency for all enterprises during the 2002 to 2007 planning horizon.”¹

If innovation is going to be a required core competency, it is important to understand innovation and how to successfully manage it. This paper builds on the research of the Gartner Group and develops a framework to understand how an enterprise can become a successful manager of innovation.

Innovation

Innovation is simply the introduction of something new into the marketplace. Innovation can be the introduction of a new product or service, or even a new process. One way to think about innovation is by dividing it into two classes, weak innovation and strong innovation, based on its economic impact.

The effect of innovation is the creation or transfer of economic value. Creating new value is the strongest form of innovation, while transferring value is a weaker form.

Strong innovation occurs when an enterprise creates economic value. In other words, the innovation creates markets that never before existed. In the strongest form, it creates an entirely new industry. Strong innovation often results from discontinuous advances, or leaps, in technology. Examples of this form of innovation include the invention of the automobile, aircraft, radio, television, computer and Internet.

In contrast, weak innovation occurs when an enterprise introduces something that results in a transfer of economic value. In this case, the innovation does not create new

¹ “Innovation: Management Process or Unmanageable Events?” AV-15-0808, Gartner Group

value for the market, but it redistributes value among suppliers, competitors, substitutes or consumers. Examples include the introduction of a better product or the reduction in production or service delivery costs. The weak form of innovation is usually incremental and evolutionary in nature; thus being less disruptive than stronger forms. The majority of innovation that is driven by competitive forces is of the weak form.

Form of Innovation	Definition	Market Impact
Weak	Value transferred.	Changes in existing market – products/services, competition, technologies, suppliers, partners, and required competencies.
Strong	Value created.	Development of a new market - new products/services, competitors, technologies, suppliers, partners, and required competencies.

Figure 1. Definition of Innovation Forms Based on Economic Impact

Innovation Management

In the broadest sense, *innovation management* is the process by which an enterprise captures value by introducing innovation and adopting the innovations of others.

The Gartner Group classifies innovation as internal and external, where internal innovation is enterprise-initiated, and external innovation is that initiated by others. Sources of external innovation include competitors, partners, suppliers, regulators, new entrants, substitutes, and others. An important aspect of external innovation is that, depending on the source, it could either threaten the enterprise or create new opportunity for the enterprise. At a minimum, enterprises must respond to external innovation to maintain a competitive position. In a recent paper, Harris concludes that “leading enterprises will have a dual focus: embrace the innovations of others and drive the marketplace with their own innovations.”²

In the broadest sense, innovation management is the process by which an enterprise captures value by introducing innovation and adopting the innovations of others.

At times, the innovator does not capture the value of the innovation. Therefore, *successful innovation management* occurs when an enterprise captures the value related to internal and/or external innovations. As one can imagine, successful innovation management places significant requirements on the enterprise that are highly dependent on the form of innovation and the degree to which the enterprise seeks to manage external innovation.

² “Innovation: Management Process or Unmanageable Events? ”, AV-15-0808, Gartner Group

Successful Innovation Managers

So, what is required of an enterprise to be a successful innovation manager? To answer this question, we can define four types of innovation based on the form of innovation (weak or strong) and the source of innovation (internal or external). This approach leads to four distinct types of innovation managers - each successful in capturing value. The four types of successful innovation managers defined here are Leaders, Competitors, Opportunists and Adopters.

Leader The leader is a strong innovator, an exceptionally forward-thinking enterprise capable of envisioning and creating a market. The leader possesses a unique set of skills capable of creating economic value. The leader invests heavily in R&D activities and maintains an internal innovation focus. Leaders succeed in capturing value through a well-planned strategy that involves creating new markets and protecting the value created through patents and trade secrets.

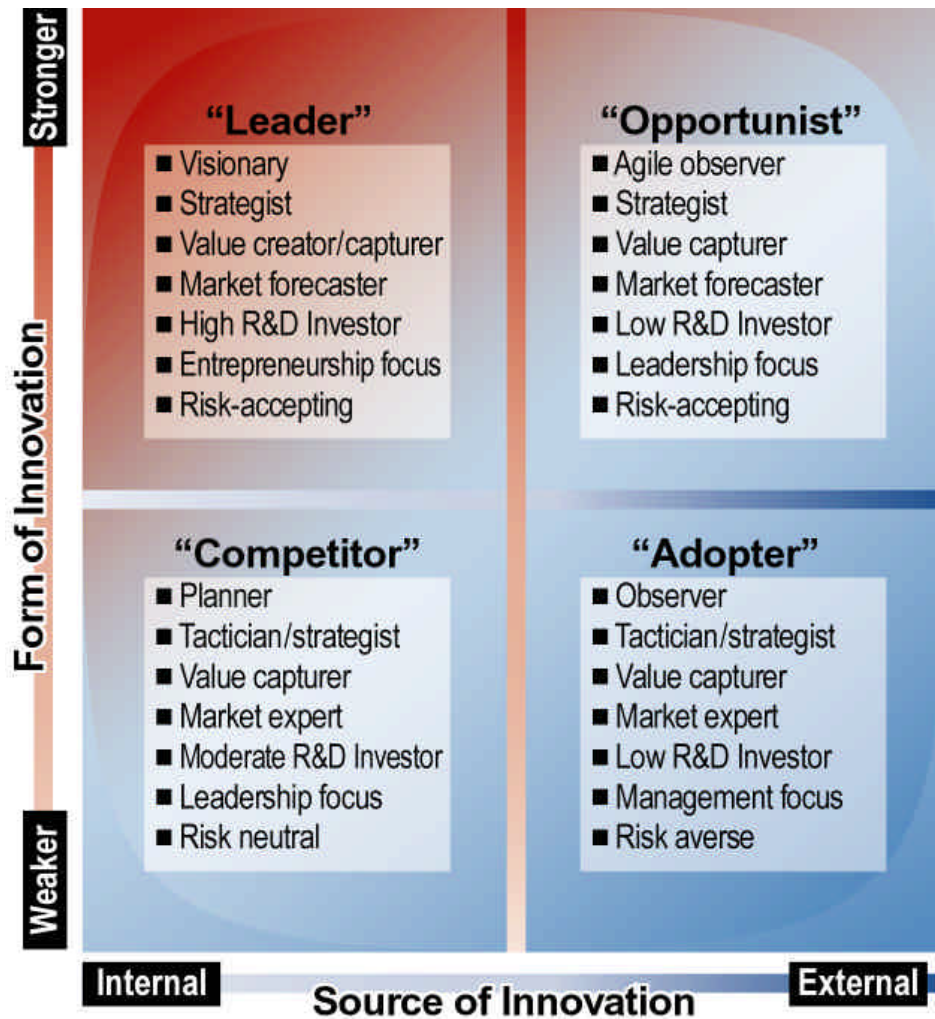


Figure 2: Four Types of Successful Innovation Managers and Their Competencies

Competitor The competitor produces weak forms of innovation that improve its competitive position in established markets and captures value for its shareholders. The competitor invests moderately in R&D activities and, like the leader, maintains an internal innovation focus. Competitive strategies available to the competitor include product differentiation, focus and cost leadership.

Successful innovation managers are those enterprises that capture value from internal and/or external innovations.

Opportunist The opportunist identifies strong external innovation and captures its value. Aspiring leaders that create value, yet do not harvest the value, fall prey to the opportunist. Like the leader, the opportunist succeeds in capturing the value through a well-planned strategy. The opportunist does not invest heavily in basic research, though may invest moderately on development. Opportunists are more agile than leaders, possessing a unique ability to re-engineer themselves as necessary. Opportunists may embrace a strategy to out-focus the leader in critical market segments.

Adopter Adopters seeks external innovations that they can adopt. The adopter focuses on applying weak forms of innovation to serve existing markets to create a competitive advantage. As with the competitor, strategies available to the adopter include product differentiation, focus and cost leadership.

Figure 2 illustrates the competency domains for each of the four types of successful innovation managers. While they may share certain competencies and behaviors, each possesses a unique combination.

Innovation Dynamics

This framework presents firms successful in one form/source domain. In reality, firms are not likely to maintain only one focus. Instead, these firms will respond to competitive forces. When a leader introduces strong innovation, we might expect the following:

- 1) Opportunists enter, sharing the leader's market
- 2) Competitors enter, improving the leader's innovation
- 3) Adopters enter, increasing capacity

Since continuous strong innovation is difficult to maintain, it is unlikely that most leaders will be successful in pursuing a strategy of producing strong innovation only. Instead, as the market matures, leaders may find themselves becoming competitors in the markets they have created. That is, they will pursue weak forms of innovation to maintain competitive advantage. Moreover, they are likely to benefit further by being an adopter of others' innovations. Therefore, leaders often need to consider whether to become a competitor and/or adopter, or divest and focus on creating new markets.

Firms often serve many markets, and hence, may be a leader in one and a competitor or adopter in others. Pursuing multiple roles requires different competencies in different businesses. Hence, successful managers need to manage internal and external innovations in complex market environments. This requires the management of many types of information as shown in Figure 3.

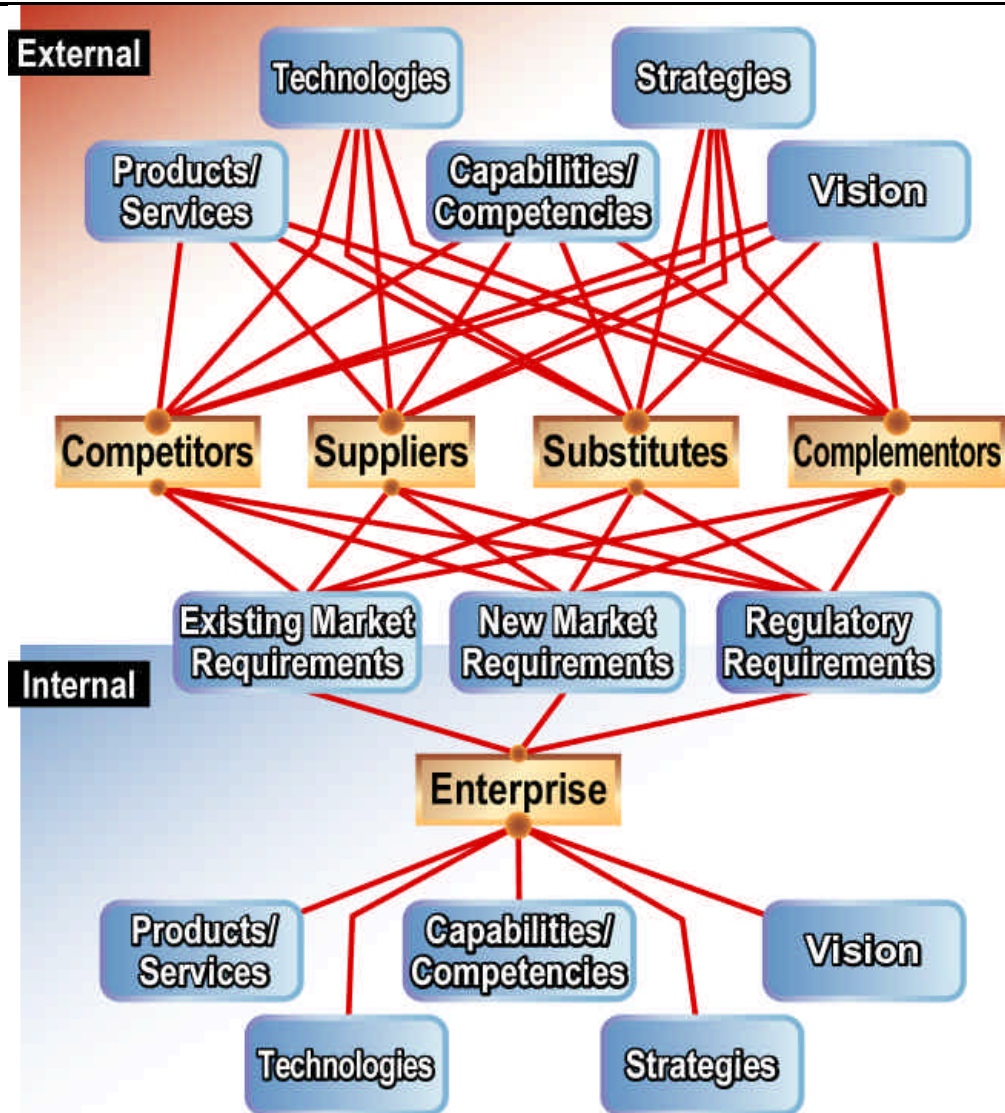


Figure 3. The Many Types of Internal and External Information

Developing a competency for innovation requires paying close attention to the environment in order to determine the relevance of internal and external innovation developments. Harris points out that “every enterprise needs a process to track innovations to determine: 1) their applicability to the business, and 2) if and when to implement.”³ In addition, to become a successful innovation manager requires close attention to the external forces to prevent others from ultimately capturing the value of the enterprise’s innovation.

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--K. Harris, Gartner Group

³ “Innovation: Management Process or Unmanageable Events? ”, AV-15-0808, Gartner Group

Tracking these many types of information, while maintaining their contextual significance, is an overwhelming task without the right information technologies. Leading enterprises are addressing this issue through formal, information technology (IT) enabled roadmapping processes.

Roadmapping Internal and External Innovation

Roadmapping is the process of capturing information and knowledge for presentation on a timeline. This information and knowledge relates to business vision, objectives, strategies, market requirements, product or service plans, technology plans, and capability plans. Establishing a formal roadmapping process, accepted by the enterprise, provides the following benefits:

1) Effective knowledge management practice

Research conducted by the Gartner Group identified emerging practices that can contribute to the success of enterprise innovation programs⁴. At the top of the list was the practice of treating knowledge, information and people as strategic assets. An IT-enabled roadmapping process supports this best practice, meeting the objectives for a robust information strategy. Specifically, an IT-supported roadmapping process

- Provides the means by which key knowledge (expertise and content) can be identified, captured, and organized so that business objectives can be achieved.
- Provides broad and easy access to captured knowledge and information resources.
- Provides communication and collaboration capabilities so that people can use, share and easily convert tacit knowledge into explicit knowledge.

2) Focus on critical business objectives, issues, and strategies

Placing information and knowledge on a roadmap facilitates the analysis and communication of key strategic issues. Without a formal process by which information and knowledge are gathered and systematically organized, enterprises can easily become overwhelmed by the complexity of the environment. The result is a loss of focus on the key strategic issues and the information required to formulate an appropriate response. In the worst case, the enterprise resorts to a "lets-see-what-happens" approach, without a real strategy in place to guide its future decisions.

Roswell notes that "leading edge innovators have learned that rather than generating lots of ideas hoping some will be useful, they can derive more benefit from a targeted, event-driven process that will enable them to capture the best ideas related to a specific issue."⁵ By systematically roadmapping internal and

⁴ "Best Practices for Knowledge-Based Innovation", COM-15-2369, Gartner Group

⁵ "Focusing the Innovation Process", TG-15-0451, Gartner Group

external innovation, the enterprise can identify the need for innovation, or alternatively, test the relevance of an idea against business objectives within a complex environment.

3) *Increased capacity for continuous innovation*

Today's most forward-thinking enterprises seek to develop a capacity for *continuous innovation*. Gartner has published a considerable amount of research focusing on the enterprise's innovation value chain and the optimization of its performance. Young concludes that a "capacity for continuous innovation requires the integration of management processes".⁶ An IT-enabled roadmapping process provides integration at the information-sharing and decision-making levels. Integration at this level supports the firm's most important innovation management value chain activities that include vision development, strategy formulation, integrated business planning, and resource allocation decisions.

4) *Focus on vision and core competencies*

Young reports that enterprises attempting to systematize their innovation value chain often "fail to focus their creative capacity around their unique organizational strengths...It is the unique, organizational context -- the business vision, values, strategy, culture and competencies -- that are difficult to copy. They, in conjunction with the innovation value chain, create truly lasting competitive advantage."⁷ Enterprises can roadmap these unique organizational strengths and establish their relationship to their innovation value chain. As changes in the environment develop, gaps in competencies, strategies and the enterprise's vision become evident, and the effect on the enterprise's innovation value chain can be assessed.

5) *Improved decision-making quality and accountability*

A key benefit of roadmapping is establishing time-based scenarios that can be communicated, tested for reasonableness and re-evaluated as new information is available. This time-based nature supports decision-based strategy formulation. As events and scenarios driven by the environment are roadmapped, critical business decisions and their timing become evident. For each decision, alternatives can be identified, and strategies developed using decision analysis techniques.

The extent to which the roadmapping process is IT-supported greatly affects an enterprise's ability to identify and organize information critical to a particular decision. Further, integrating this process with the formal strategic decision-making process enhances the enterprise's ability to not only track decisions, but understand more fully the factors influencing them. This improves accountability and the knowledge base for lessons learned.

⁶ "A Scorecard to Assess Enterprise Innovation Capabilities", DF-15-1868, Gartner Group

⁷ "Reaping Value From Knowledge and Innovation", SPA12-8169, Gartner Group

The extent to which the roadmapping process is IT-supported greatly affects an enterprise's ability to identify and organize decision-critical information.

Conclusion

Roadmapping will become a required competency of successful innovation managers. Enterprises that master it will be capable of systematically capturing the value of internal and external innovations. Leading enterprises are rapidly moving to formal, IT-supported, roadmapping processes. Those that deploy them across the enterprise, making roadmapping an integral part of their innovation value chain and culture, will gain a sustainable competitive advantage.

The Roadmapping Process

Roadmapping is the process of capturing information and knowledge on a timeline. This information and knowledge relates to business vision, objectives, strategies, market requirements, product or service plans, technology plans, and capability (people, process, tools) plans. Roadmaps are comprised of the following components: a theme, a timeline, time-based elements, and links between these elements.

*Each roadmap has a **theme**. Common roadmap themes include: vision, strategy, market, products/services, competing products/services, technology, capabilities (people, processes, tools) and intellectual property. The roadmap's **timeline** should reflect the planning horizon. To be of strategic value, this period is typically equal to two or three product life cycles. **Time-based elements** represent the availability of a technology, product, market or a decision point. For a roadmap with a product theme, the elements would be the various products in a business area.*

*A **relational link** may exist between elements. These links are of one of two types: intra-roadmap links or inter-roadmap links. **Intra-roadmap links** relate elements on a roadmap. For a product roadmap, if there is a plan for one product to branch out to two products with different features or capabilities, one may choose to show this lineage through a link. **Inter-roadmap links** relate elements of different roadmaps. These links establish relationships between technologies, products, markets and strategies to focus the company on the critical innovation management issues.*

*The **roadmapping process** begins with an assessment of the current state of the environment, to which any known information concerning the future is added. This includes verified information regarding market requirements, competitor product and service plans, planned changes in regulations and external technologies.*

*Once information has been identified, it needs to be captured and organized through the placement on the appropriate roadmap. Often, the timing of the **event** may not be certain. Nevertheless, placing this information in the time domain is extremely important, in that it forces the enterprise to consider its implications. Assessing potential future states is a necessary step in the management of both internal and external innovation. The concepts of **scenarios** and scenario planning apply to roadmapping. If the timing of an event, such as a new competing product introduction, has a great degree of uncertainty, two or more scenarios may be mapped. The key is to capture the knowledge and information that impact the enterprise, so that it can be used in formulating **strategic plans** and **business decisions**.*

About the author: Joseph M. Stopper has worked as a technology planner for two Fortune 500 firms. He holds advanced degrees in aerospace engineering and is a graduate of the Yale School of Management. For more information on innovation roadmapping best practices, contact The Learning Trust on the Internet at <http://www.learningtrust.com>.