Emerging Technologies: From Tracking to Evaluation

Enterprises need to establish a strategic technology planning function to stay competitive. This also includes a more-sound evaluation framework for emerging technology projects.

What are the best practices in tracking, prioritizing and transferring emerging technologies?

The mission of strategic technology planning is broad, ranging from understanding business goals and market dynamics, to tracking technologies, assessing their impact on business goals and facilitating the whole process of technology introduction. In the Gartner emerging trends and technologies practice, we focus on the issues that particularly arise with emerging technologies.

Organizational Aspects

The strategic technology planning function is often placed within the IS organization. Sometimes, the departments responsible for strategic technology planning, called advanced technology groups, may also be placed in the business development organization. Regardless of where enterprises position strategic technology planning teams organizationally, this function is needed to establish strategical foresight to recognize and deal with disruptive trends. The risks of failing to have a strategic technology planning function may cause significant loss of business in today's increasingly competitive marketplaces.

A large percentage of Gartner's emerging trends and technologies practice is devoted to support enterprises with regard to this strategic technology planning function. Many aspects hinge on whether the strategic technology planning function should be part of the architecture/infrastructure team or be a separate group. Another important consideration is determining its role with respect to other groups, such as architecture, strategic planning, in-house consulting, business development, the business units and the development organization. In particular, the points of interaction, decision making and knowledge transfer are key to make business units
Typically, Type A enterprises (leading-edge technology adopters) prefer a distinct strategic technology planning group, whereas, less-aggressive enterprises — Type B (mainstream technology adopters) and Type C (conservative technology adopters) — frequently incorporate technology-planning activities in the same group as standards and architectures. However, these integrated groups often end up just evaluating products and cannot look into fundamentally new technologies and establishing strategic foresight.

**Technology Tracking and Evaluation**

Good technology planning hinges on several fundamental resources, such as information input. In particular, the quality of input (ranging from publications and conferences to consultants) into the technology planning process is often neglected. The Internet age may have enticed many people to think that information is free, but, often, free information can cost more than highly priced information. This is, in particular, due to opportunity costs of having to decide on outdated, biased or just plain wrong information. The majority of Gartner's research is dedicated to fill that gap and to provide unbiased information for the strategic planning function. Examples are: How mature are technologies? What regulation issues need to be considered? Are there obsolescence risks? What are the social adoption risks? The emerging trends and technologies practice is devoted to answering these questions for the emerging IT arenas (see "2002 Technology Radar Screen: Key Issues in Emerging IT").

One of Gartner's premier tools of technology watching is the Hype Cycle. It will continue to play an important role in informing executives of the underlying technology life cycles. Enterprises should not invest in a technology just because it's being hyped, nor should they ignore a technology just because almost everyone is frustrated with it.

Leveraging internal resources is important. Even in larger strategic technology planning groups (more than eight people), the range of relevant technologies to be understood is exceedingly large. To improve the quality of the technology screening, enterprises can divide the work across several groups and among interested individuals by assigning part-time responsibility for monitoring: 1) information sources (for example, e-mail-lists, magazines, conferences); 2) application areas (for example, customer relationship management, security, knowledge management, business intelligence); and 3)
technology areas (for example, Web services, portals, wireless, data mining and user interfaces).


One of the most-important functions of the strategic technology planning function is to support the project management and decision-making processes, ranging from idea capturing (through brainstorming and similar creativity sessions) to project formalization, project prioritization, piloting and, ultimately, transfer, including stopping pilots or whole projects.

Enterprises often choose ad hoc approaches to evaluate projects, which will typically suffer from tactical or personality-driven project decisions. Most enterprises too often only deploy a shallow scoring and ranking process, which will miss many issues that may later present major stumbling blocks (for example, regulations, adoption or obsolescence issues).

Gartner advises enterprises to use a more-detailed scorecard approach. This helps enterprises break down the evaluation into smaller units to minimize the risk of overlooking an important aspect.

1. **Benefits:** Enterprises need to consider not only the direct contributions to return on investment (for example, new or sustained revenue or cost savings), but also more intangible contributions to business goals (for example, shorter latencies through a real-time enterprise, increased agility utilizing improved enterprise architectures, improved marketing and branding, customer intimacy, product leadership and operational excellence). Opportunity costs are abstract costs that must be considered when a certain course of action is not executed, but the competition does execute it. For example, the lack of an Internet presence may be damaging to an enterprise's reputation, particularly if competitors have an Internet presence.

2. **Costs:** The typical components of costs that need to be considered here are costs of acquisition, development, integration, maintenance, staff and subsequent process changes.

3. **Risks:** Risks often can have nonadditive effects on the technology scoring exercise (if complexity or the risk of obsolescence is too high, the whole project can be questionable, even if all other categories score very well). As technology moves closer to human habits (communication, collaboration, shopping, entertainment, payment, authentication and fashion), social acceptance risks need to be increasingly considered. Social acceptance risks correlate highly with regulatory risks,
because technology enables processes that different nations might consider unethical or even illegal. Business models are likely to be changed by technologies (such as the Internet, wireless technologies or micropayments), opening the door to a new form of risk: namely, that of business models. Internet portals are a prime example of businesses struggling with current models. In addition, as systems’ boundaries increasingly blur, implementation risks will be lifted to new levels.

The scorecards of technology providers will be significantly more complex, including aspects such as addressable market sizes, product portfolio considerations, inventory costs, channel development, marketing issues, users’ adoption issues, market dynamics and IP protection. The overall benefit of such a scorecard approach is that it does not put too much structure on what needs to be a very creative dialogue between many different competence centers.

Establishing a more-objective technology screening and evaluation process will be key to best utilizing scarce resources. Feeding the elements of a more-detailed technology scorecard and supporting sound technology planning processes will be one of Gartner's key contributions for technology users, providers and investors alike.