Technology Management and Competitive Intelligence: Strategies for a Changing World

Those responsible for investing in technologies must understand what others are doing and how it might affect them:

- What advances are being made in our core technologies?

- What capabilities do our opponents have and how might they use them against us?

- Which of our key technologies are maturing and what will replace them?

- Are we about to be blind-sided?

- Who is working on technologies that could benefit us, and how might we access them?

- In short, where do we need to focus our technology investments?

The importance of finding accurate and timely answers to these questions is critical. If you miss a technical advance you may forever miss the opportunity to exploit it, or forfeit by default your position in the marketplace. If you invest in the wrong technologies, or at the wrong time, your investment is unlikely to be recovered.

Until recently, actionable information on competitive technology was relatively easy to acquire. Advances in a given field were concentrated in a few technical communities, with the members well known to each other. Through informal networks members knew what others were doing.

Today, however, these close knit communities have expanded across national and industry boundaries. The technology dominance of the United States and a handful of Western European countries is giving way to a truly global technology marketplace. New competitors routinely emerge from other industries as firms seek to diversify into new markets. Informal networks are no longer sufficient.

As a result, more formal techniques are being used to identify and assess technology developments.

Companies often respond by merely expanding their libraries and adding databases on patents and research papers. Unfortunately, brute force data gathering and compilation of massive databases leads to information overload as often as it provides insight. Programs must be set up that enable firms to stay on top of relevant technological advances in ways that optimize management time rather than overwhelm it.

Much of my consulting work in the last two decades has been in helping firms establish such programs and in providing them competitive intelligence to support their technology and product development efforts. Successful technology intelligence efforts tend to have three elements in common:

- A clear purpose

- Focus on high impact technologies

- Use of multiple techniques.

Purpose. Attempts to gather everything that might relate to a technology of interest can lead to high costs, long delays, and the inability to make sense of what is found. The idea is to "think and gather," rather than "gather and think."

Work closely with the users to identify the specific purposes of the intelligence gathering activity, thus increasing the probability that the results will be valued and used. What decisions will be affected by the information? What is now known? What needs to be learned or confirmed? When is the information needed, and in what detail?

Focus. There are often a large number of technologies of potential interest. The challenge is to focus on a relatively small number of the most important ones. One approach is to integrate technical, market and competitive information using Customer Focused Technology Planning. CFTP analysis helps identify which technologies currently have the greatest impact on your products or processes, and provides clues to which new

technologies are likely to be important in the future. (For further information see "CFTP: An Overview," by Jay Paap)

Sources of Technical Intelligence

Proximity

	Direct	Indirect
Personal	Personal networks Sponsored research Visits Trade Shows Venture capitalists Universities Entrepreneurial firms . . .	Gatekeepers Consultants Editors Expert panels Suppliers/vendors Analysts Retired executives . . .
Impersonal	Patents Patent citations Literature searches Reverse engineering Marketing material Annual reports, 10Ks World Wide Web Ads for staff . . .	Industry surveys Trade journals Associations Government records UN reports Local newspapers World Wide Web Buyers guides . . .

Character is the row axis (Personal / Impersonal).

Multiple Techniques. No single collection technique is right for all situations, each has its advantages and disadvantages. Firms need to consider a number of different approaches, being sensitive to the purpose of the intelligence gathering, and the time and resources available.

The Table above identifies several techniques for tracking technology. They are organized by their Character (personal or impersonal) and their Proximity (directly from the technology developer or indirectly from a another source).

The *impersonal techniques* are probably the most common, since the information is relatively easy and inexpensive to collect. Unfortunately, such information cannot be tailored to specific needs, and is often not current.

Probably the most reliable and timely method of gathering technical intelligence is through the *direct personal techniques*. However, these can be time consuming, particularly if you don't have trained resources. Personal contacts must also be handled carefully to avoid accusations of industrial espionage and exposure of the true interest of the inquiring firm.

For these reasons, professional information consultants are often commissioned to do the intelligence gathering. Such *indirect sources* can also be useful in filtering out extraneous information, although some firms prefer to gather the information themselves to avoid losing details filtered out by experts.

A Search Strategy. One approach to intelligence gathering is to use a three pronged strategy. First use the impersonal sources to identify which individuals and firms are likely to be the best sources of information. This review also provides an introduction to the vocabulary and the key issues in the industry.

Next, contact the direct sources and interview them to collect current and focused information. After initial hypotheses are developed about events and trends, test them with industry experts. Avoid talking to experts initially, as their preconceived models often constrain your thinking and limit the inquiry. Focus, collect, and test - a three step approach to the efficient gathering of timely intelligence.

Conclusion. Good decisions depend upon good information. By following the above guidelines (clear purpose, focus on key technologies, and use of multiple techniques), firms are finding that they can effectively gather the competitive intelligence needed to manage their technology and avoid costly surprises.

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