

Competitive Technical Intelligence at Trade Shows and Professional Meetings

Jay Paap

Collecting competitive technical intelligence (CTI) at trade shows and conferences yields important intelligence to support technical managers and others involved in new product development. In this environment, the activity must be properly focused and the special challenges (and benefits) of working with the technical staff recognized and addressed.

Competitive technical intelligence requires special consideration not because its specific collection and analysis tools are fundamentally different than in other areas of trade show intelligence; they are not. CTI warrants a separate chapter because of three main factors:

- The potential value of competitive technical intelligence is diminished by too narrowly defining what it covers.
- The complex and technically sophisticated subject matter is inadequately understood because of a reluctance to use technical staff for direct collection and assessment.
- The inherent risks of involving technical staff in sensitive collection activities are not sufficiently understood.

This chapter focuses on each of these three areas to illustrate the ways in which competitive technical intelligence differs from the more traditional trade show intelligence efforts. Additionally, it provides guidelines for managing CTI activities before, during, and after a trade show or professional meeting.

THE RELEVANCE OF COMPETITIVE TECHNICAL INTELLIGENCE AT TRADE SHOWS

A common misconception is that competitive technical intelligence is useful only at true “techie” events: engineering and science meetings, university or government programs highlighting next-generation technologies, and so on. Nothing could be further from the truth. CTI applies to any trade show and for any industry with an interest in developing innovative new processes, products, or services.

Of course, competitive technical intelligence applies to high-technology events such as COMDEX, or programs focused on advanced materials, nanotechnology, chemicals, and pharmaceuticals. Technology plays a major role in these industries. However, I have also participated in or helped plan CTI collection projects at consumer and industrial products shows such as hardware, food products, detergent, automotive equipment, and household and industrial cleaning supplies. Without technology, no company can innovate, and CTI covers the full spectrum of intelligence required to support innovation. Almost all trade shows and professional meetings provide a rich environment to collect competitive technical information.

Competitive technical intelligence often takes place in different settings than traditional trade show intelligence. Many of the venues for collecting CTI are relatively small technical meetings. These meetings focus more on presentations of development challenges and accomplishments than on exhibit booths. While the scale and format may differ, the basic guidelines of effective trade show intelligence still apply to these meetings. The smaller size provides fewer opportunities for interaction with competitors, but the nature of the program supplies deeper and more revealing interactions.

To help clear up the misconception that competitive technical intelligence is just for the technologists in organizations, let's step back and look more closely at what CTI is and the implications for developing key intelligence topics (KITs) for trade show collection.

COMPETITIVE TECHNICAL INTELLIGENCE DEFINED

Competitive technical intelligence is more than intelligence on technology. It is about any intelligence employed by technical and nontechnical managers (such as market researchers) to support decisions about the use of technology. Its organized approach ensures that technical decisions are based on the best available information, consistent with legal, ethical, and resource constraints. In short, CTI enables managers to anticipate the following:

- Competitors' intentions
- Competitive technologies
- The drivers of innovation

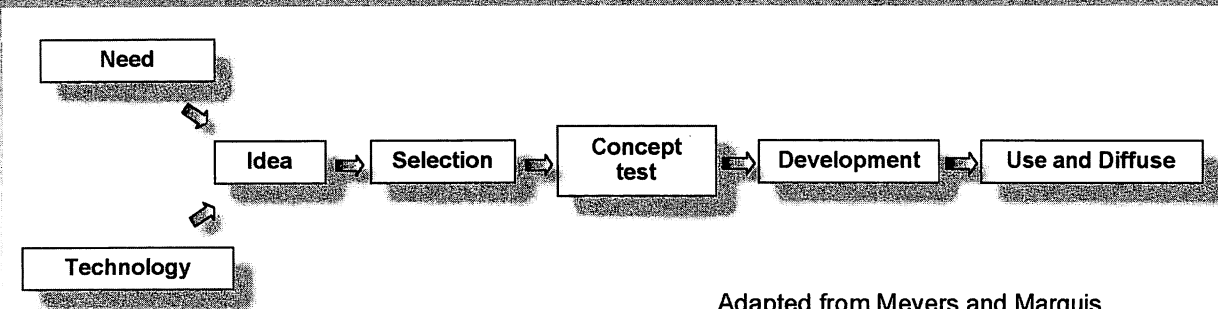
Competitive technical intelligence at conferences and trade shows is nothing more than the focused collection of these three types of intelligence to support an organization's process, product, and service development efforts, especially the more innovative initiatives for which anticipating future competitive, technical, and marketing forces is critical to the organization's success.

COMPETITIVE TECHNICAL INTELLIGENCE AND INNOVATION

Understanding the nature of innovation and the underlying dynamics of how technology-based innovations occur is critical to focusing the CTI collection effort. Meyers and Marquis' (1969) seminal article on industrial innovation presented a model of innovation based on a Sloan School (Massachusetts Institute of Technology) study of several hundred industrial innovations that occurred over several decades prior to the article's publication.

Figure 1

The Model of Innovation



Adapted from Meyers and Marquis
Successful Industrial Innovation, 1969.

Many authors have expanded or refined the model. Probably the best known are Robert Cooper and Edward Roberts. Cooper (1983) drew on the last part of the model as the basis for his Stage Gate® process. Roberts (1988) presented an expanded flow chart complete with feedback loops in his often-cited retrospective article on the nature of technology management. However, the simplicity of the original model makes it an easier framework to understand and use. It has proven effective in working with both technical and nontechnical staff involved in focusing competitive technical intelligence (see Figure 1). Innovation begins with the connection between a need and the technology to address that need. These combine to form an idea, which in turn is screened, tested, developed, scaled up, and then used and diffused. The interplay between new and old needs and new and old technologies creates the “dynamics of innovation.”

Innovation is more than coming up with patents or other types of novel ideas. An idea is not an innovation until it is both developed and used. This requires an understanding of the competitive environment where the idea transforms into a valued product or service. Thus, an organization’s desire to become more innovative, or to assess the innovative potential of current and potential competitors, requires developing intelligence related to the entire innovation process: drivers, technologies, and the competitive environment.

USING THE MODEL OF INNOVATION TO FOCUS COLLECTION

The innovation model identifies areas on which to focus innovation-related key intelligence topics. Specifically, this chapter looks at the three major elements of the innovation process (competitors, technologies, and drivers) and outlines the intelligence topics that logically result from them.

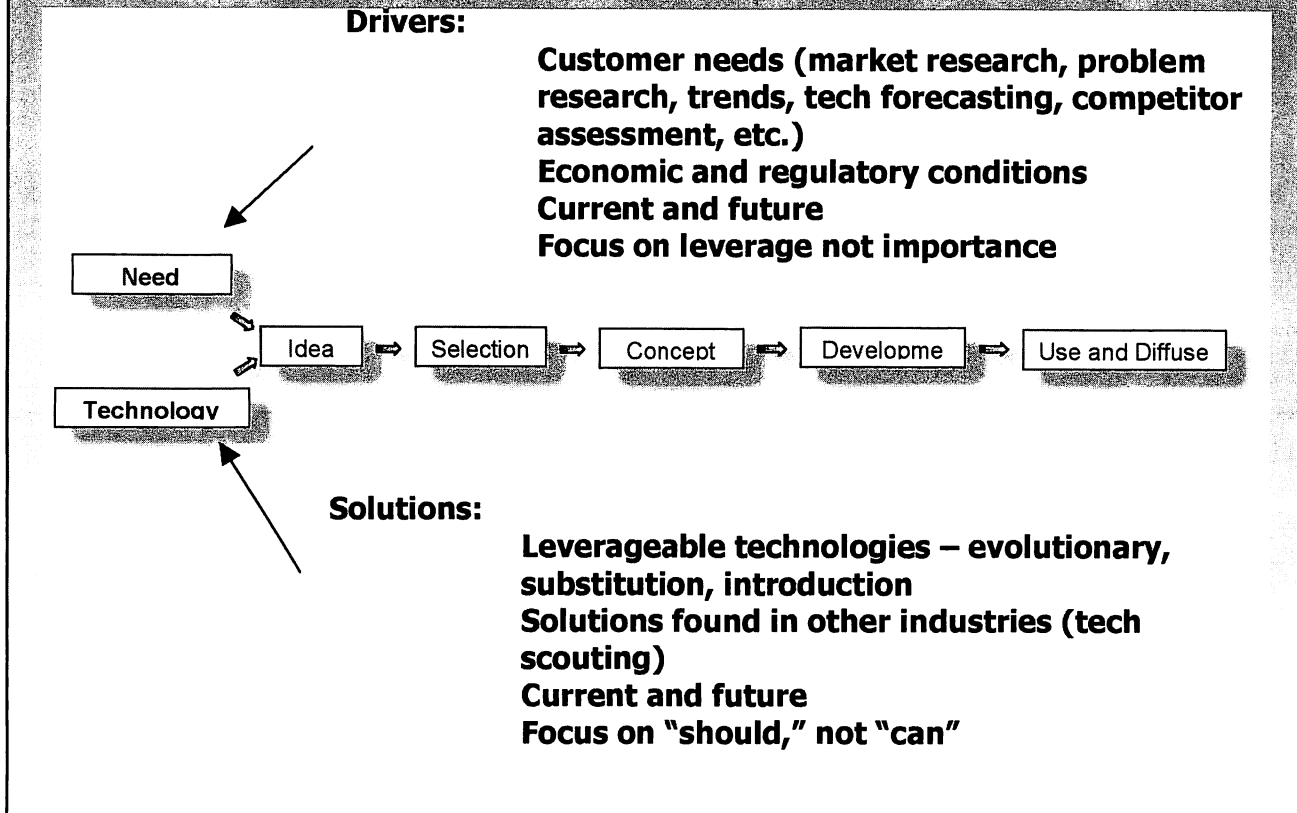
The purpose of this review is not to suggest developing KITs for each of these areas. Rather, groups preparing for trade shows should consider each of the questions below and reflect on whether a related KIT provides them insights into how they can make better decisions about their development programs.

KITS RELATED TO THE “FUZZY FRONT END”

The first area where competitive technical intelligence can inform decision-makers is in what many refer to as “the fuzzy front end” (see Figure 2). Information on the drivers of innovation (current and past customer or consumer needs, regulatory requirements, etc.) is linked to current or emerging technologies that might best address those needs.

Figure 2

CTI and the Fuzzy Front End



One aspect of customer needs is particularly important when attempting to anticipate the key drivers of technology. It is not sufficient to seek the “voice of the customer” and give customers just what they ask for. “Voice of the customer” should be replaced with “mind of the customer.” Firms should go beyond customer requests and attempt to profile the underlying needs that give rise to those requests.

Further, it is not enough to know which needs are the most important. Innovation is not driven by addressing the most important needs, but by addressing the highest leverage needs. Leverage is the extent to which change in a product or service leads to a shift in usage or purchase patterns.

Competitive technical intelligence supports innovation when it can identify the biggest drivers, the customers’ strongest needs, and anticipate when a former driver is likely to be replaced with a new one. This last action occurs most often when a former driver becomes fulfilled and loses its leverage, and a less important need emerges as a new driver. Occasionally the circumstances surrounding the use of a firm’s product change and new needs emerge, such as the need for security of computer storage, which did not exist before the rise of the internet. (See Paap, 2004, for an in-depth treatment of this topic.)

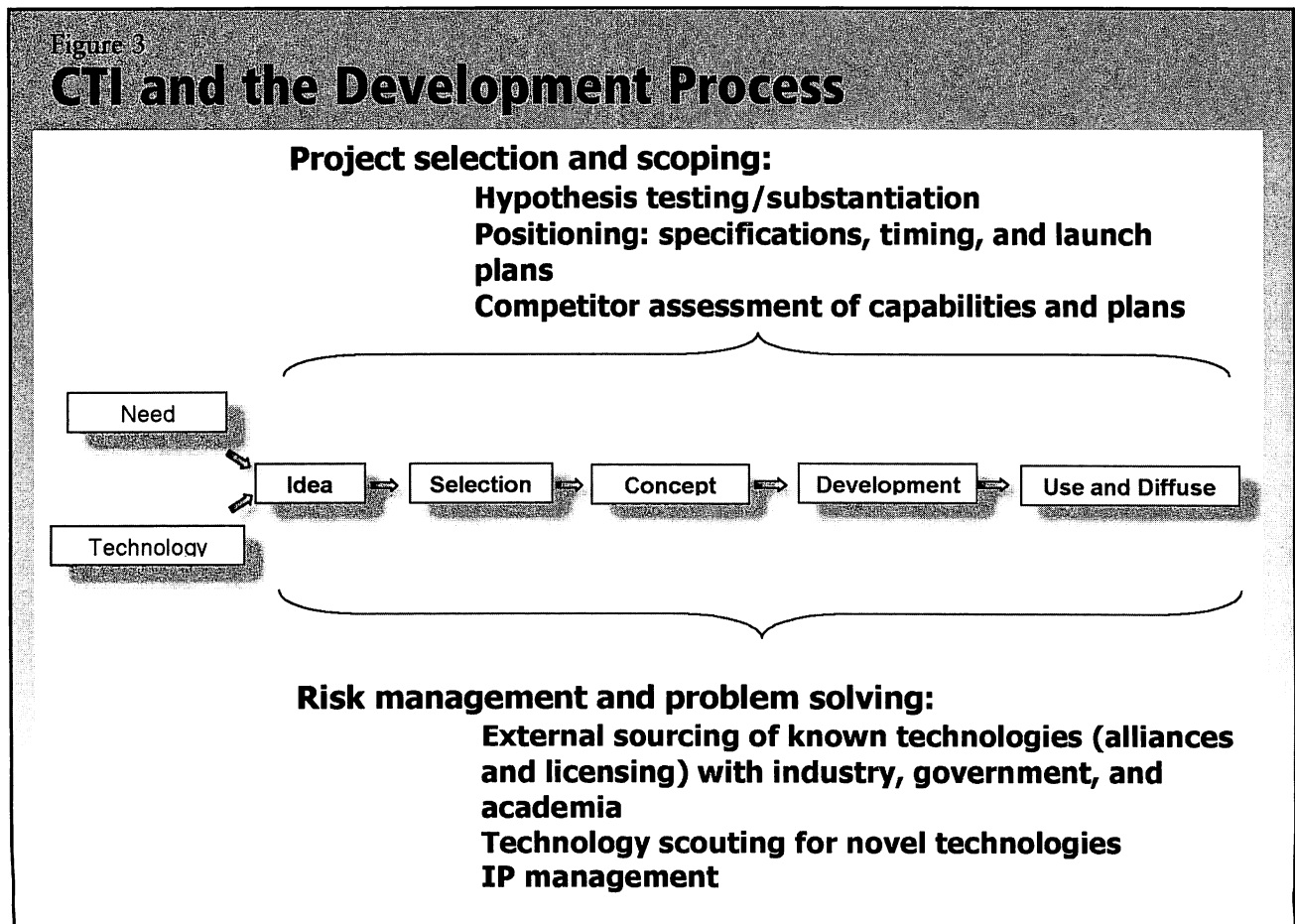
Driver-related KITs

You can develop driver-related KITs by asking each of the following questions and determining the relevance of the answer to your situation:

- What motivates or might motivate your customers to use your product or service? The goal is to try to understand the mind of the customer, not just the voice.
- Which of the needs now serve as drivers? Are they the ones customers most want improved?
- At what point will “enough be enough” and the current driver be replaced by another less important need, but the one customers most want improved (the new driver)?
- What changes in the usage patterns or work environment of your customers are likely to give rise to new needs and drivers? Consider new technologies they might adopt, changes in regulations, and so forth.

Example: Several decades ago, the announcement by Burlington Industries about the expected launch of wash-and-wear fabrics gave Whirlpool the intelligence it needed to redesign its washing machines to meet the future needs of its customers, who would eventually want special washing cycles for these new fabrics. Whirlpool’s recognition of this future driver before it was mentioned by customers gave it a two-year lead over its competition.

The fuzzy front end also involves the search for new technologies. New technologies are not adopted simply because they are new, but because the old technologies fail to provide the changes required by the current driver. Start with the drivers (current and emerging) and assess the ability of existing technology to meet customer demands.



Do not limit the search to what is currently accessible to the firm. Searches should cover other industries (technology scouting) and sources that might appear beyond the reach of the firm. Competitive technical intelligence identifies what is needed, what is possible, what is likely, who is active in the area, and the costs and risks of acquiring or not acquiring the technology. Management then makes the decision regarding the pursuit of new technologies.

Technology-related KITs

You can develop technology-related KITs by asking each of the following questions and determining if the answer is relevant:

- When will the current technology become mature? That is, when will it no longer make the changes customers want in their key drivers? This may indicate pressure for new technologies.
- How well does the current technology allow you to make changes in features likely to be the next drivers? If poorly, then there will be pressure for new technologies.
- What other applications or industries address similar needs? Whose technologies might be adaptable to your own? This provides clues about technologies that can be adapted to jump-start developments for your customers.

Example: Presentations by a competitor's corporate research scientist at a consumer products show described a novel new material the competitor was exploring. Reflection on the implications if the material were to become commercially viable led the observing firm to develop an early-warning KIT to closely monitor the development and to provide advance notice about when it might be used. This intelligence helped justify the firm's developing alternative technologies that provided enhanced functionality in its product and helped blunt the impact of the competitor's work when it was finally launched eight years later.

KITs RELATED TO PROJECT SELECTION AND DEVELOPMENT

Once you identify the ideas for innovative products and services, competitive technical intelligence has an ongoing role in supporting the selection and development of ideas. During the project selection and scouting process, CTI can test hypotheses regarding the readiness of the market for something new. It can also position the project's specifications, timing, and launch plans needed to develop a competitive product. By helping anticipate the probable competitors' capabilities and intentions, CTI can assist in developing launch plans that take their actions and reactions into account. It also scans the external environment in the context of internal issues, especially where technology is a factor.

Competitive technical intelligence also has a role in supporting the development process itself. It can find external technologies (acquired through acquisition, licensing, or alliances) to solve problems or manage risk. Technology scouting also identifies unexpected opportunities or development partners.

Competitor- and partner-related KITs

You can develop competitor- and partner-related KITs by asking each of the following questions and determining whether your answers are relevant:

- What technologies are our competitors investing in? What are their relative skills and capabilities?
- To what extent do our current technologies provide us a competitive advantage, based on proprietary position, skill, or investment barriers?
- What features do our products or services need to have to be competitive with competitors' anticipated offerings?
- How do we manage intellectual property (IP) rights? What IP do we have that should be protected? What IPs do our competitors have that we should position ourselves against?
- Who is working on the new technologies with whom we might partner? What alliances are being formed between them and our competitors?

Example: An engineering services company was concerned about rumors that a larger competitor was taking an interest in an area of government-sponsored research it had previously ignored. At a major technical meeting, technical staff were assigned to sessions dealing with this new area to note the number of competitors attending and the questions they asked, and if possible to engage in conversations with them regarding their level of interest. The results, when coupled with other intelligence, confirmed the competitor's interest, and the company took steps to reposition its technology base to better compete.

CHALLENGES IN CTI COLLECTION AT TRADE SHOWS

When collecting competitive technical information at trade shows, the first step is to create the proper focus by developing key intelligence topics that reflect all aspects of innovation: drivers, technologies, and competitors. This is necessary, but not sufficient. The complexity of the subject matter and the nature of the technical staff who collect the intelligence are two additional dimensions you should consider.

While competitive technical intelligence is more than intelligence on technology, technology is still an important part of the assignment. This brings some interesting challenges to firms that do not have competitive intelligence staff with expertise in all of the firm's relevant technologies. Given the breadth of technologies in most firms, this is the norm, and they must tap into internal (and sometimes external) experts to add the depth they lack.

In their offices, competitive intelligence staff have time to access resources that help explain sophisticated concepts and put into context intelligence regarding cutting-edge or esoteric technical developments. But at conferences and trade shows, recognizing a new technology that is worth the company's attention and developing follow-on questions occurs in real time. There is no opportunity to consult with technical experts to interpret findings and refocus the collection effort. Using preconference briefings by experts, the competitive intelligence staff can learn what they should look for, but unless they have some related technical background themselves, that briefing is rarely sufficient.

Some firms have hired or developed competitive intelligence staff knowledgeable in each of their technical disciplines. This can work, but the overall cost may be high. One chemicals and materials firm explored the idea of hiring experts for each of its major technical families, but had difficulty justifying two dozen researchers and analysts to support the technical work of 600 scientists and engineers.

CTI USING WORLD-CLASS TECHNICAL STAFF

An approach better suited for many firms is leveraging the expertise of your technical staff through their direct involvement in the collection and assessment of competitive technical intelligence. Working with world-class scientists and engineers provides both unique opportunities and challenges for those managing the CTI program. Three areas in particular are worth a closer look:

- Technical expertise
- Professional networks
- Program participation

Technical expertise

When selecting the competitive technical intelligence team, pick individuals with a deep knowledge of and passion for their discipline. The technical staff can interpret complex concepts and follow technical discussions better than most general-purpose competitive intelligence professionals. But their technical excellence may blind them to new technical opportunities or the decline in importance of their current technical areas.

Implications: Use technical experts to collect intelligence; their insights are invaluable. But do not allow them to have full discretion in interpreting the importance of what they find. Insist that they identify all optional technological approaches they encounter, even those they believe are a waste of time. After the conference, you can review these “unimportant” technologies or product features, away from the biases of internal experts, to assess whether they are worth pursuing further.

Professional networks

Your organization’s technical staff members have developed extensive professional networks, since they are encouraged early in their careers to frequently talk to their colleagues. But many technical staffers hesitate to talk to their colleagues in a role they often perceive as spying at worst, and being disloyal to their professional relationships at best. In addition, it is often difficult to get them to talk to anyone but their old friends and colleagues.

Implications: Leverage the professional associations and networks to identify places to collect and people to collect from. The reluctance some feel can be difficult to overcome. During training, emphasize that this is not spying, rather a normal professional discussion with a focus. Train your technical experts in the concept of “give to get.” Make sure these experts go armed with “public but not publicized” tidbits that they can share with others to get the conversation going, and emphasize that you do not want them to collect confidential information. There is still plenty of room for sharing insights and context that will be valuable to your firm.

Clearly focused KITs and assignments that require going outside of their normal professional circles encourage discussions in new areas. Be sure that your preconference training emphasizes what internal information should be guarded and the proper role of indicators.

Table 1

CTI Conference Collection Action Plan

Preplanning:	Assemble conference attendees and those needing intelligence to review competitive intelligence techniques and legal and ethical guidelines (ideally from company counsel).
Executing:	<p>The <i>FISH</i> framework:</p> <p>Focus: Determine what information is needed.</p> <ul style="list-style-type: none"> • Assign responsibilities. • Develop strategies. <p>Investigate: Work hard at the conference.</p> <ul style="list-style-type: none"> • Look and listen. • Pay attention to indicators. • Review insights with others and refocus as needed. <p>Share: Determine what information you want to share.</p> <p>Hide: Determine what information should be safeguarded.</p> <ul style="list-style-type: none"> • Brief attendees on sensitive issues. • Role-play interactions to practice responses. • Review all presentation and display material. • Again – pay attention to indicators.
Reviewing:	On return, debrief with those needing intelligence – verbally to inform, integrate with other intelligence, and identify additional competitive intelligence questions.

Above all, do not allow individuals to roam the exhibit halls alone; adopt the buddy system. A colleague at the technical expert's side, especially if the colleague has competitive intelligence training, can keep the expert's ego in check and your secrets in place. This arrangement also makes for better collection: one person can think while the other talks, and every encounter generates two perspectives.

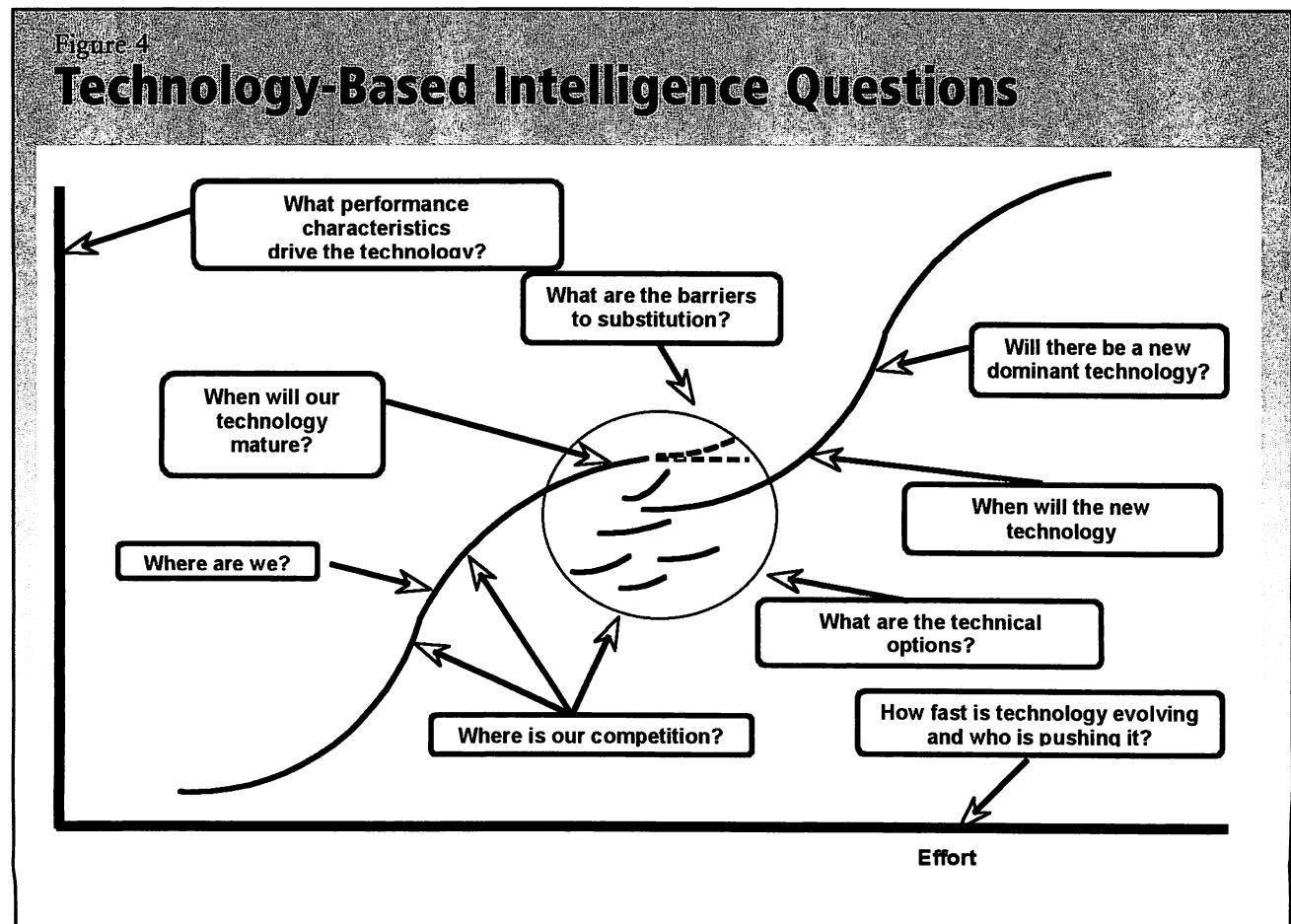
Program participation

Technical staff members have multiple opportunities for presenting at an event, from poster sessions to individual talks and panels. They can also help organize sessions or be moderators. An organizing role in the event provides access to ideas from all of those who want to speak, including those not selected to present. Having technical staff speaking at an event provides an opportunity to package the story you want to present about your firm and opens up new dialogues with other attendees who want to engage the speaker. However, the excitement of sharing their thoughts often leads to inadvertent disclosure of sensitive information, especially since speaking identifies them as subject experts.

Implications: Encourage people to participate in the event, especially in leadership roles. Impress upon them the need to use their participation as a way to collect intelligence. Be sure people have adequate training on counterintelligence and always travel in pairs.

MANAGING THE CONFERENCE COLLECTION EFFORT

Table 1 outlines the basic steps involved in planning, executing, and following up a competitive technical intelligence initiative at trade shows. This framework also prepares your technical staff to gain the most from visits to customers, suppliers, competitors, or potential partners — essentially anywhere a coordinated and planned collection effort involving other firms is warranted.



Most of these basic steps do not significantly differ from other types of trade show intelligence: brief collectors on basic competitive intelligence and the legal and ethical guidelines affecting the effort; focus before attending; assign responsibilities; debrief as soon as possible. Three specific areas deserve some special attention for CTI collection assignments:

- Preconference planning
- Managing the attendees
- Postconference activities

PRECONFERENCE PLANNING

Invite all involved in the conference effort

Invite all individuals who will be attending the event: technical managers requiring intelligence to support their projects or planning, and business managers involved in new product and business development. The latter can identify the competitive environment forces likely to affect new technology demand and the success of your firm's initiatives. If your company has parallel conference collection efforts directed by the business intelligence staff, coordinate the two teams to support each other. Remember, the existence of a business intelligence effort does not restrict the competitive technical intelligence team from exploring these issues, since supporting technical decisions often requires a different collection approach.

Focus on developing frameworks

The innovation process charts (Figures 1 through 3) and the associated example KITs discussed earlier focus attention on the full range of issues addressed at the event. Another tool to build on the innovation model is the Technology Profile Chart (Figure 4). This chart is particularly useful in helping managers identify potential competitive technical intelligence questions. It uses the technology maturity curve to suggest 10 questions that are helpful to position a technology's importance:

1. What is driving the technology?
2. How fast is the technology developing?
3. Who is pushing it?
4. Where are we relative to the competition?
5. When is the technology likely to mature, and at what level?
6. When it matures, what are the alternatives that might replace current technology?
7. What alternative technologies are our competitors investigating?
8. Is there likely to be a dominant new technology?
9. What are the barriers to acceptance and use of a new technology?
10. When might the new technology become economically viable?

Sidebar 1

An example of the use of indicators

At a recent CTI review session, one company was assessing the probable readiness of a new technology that a competitor had been working for almost 10 years. If someone from the competitor's firm were asked whether the technology was ready to be used in their products, the question would go unanswered. However, the target firm had been generous with providing indicators of its ability and intentions.

The competitor firm's technical staff had presented several papers at professional meetings over the previous decade. The first few were by scientists from corporate research, the next by development staff for business unit R&D, and the last by an engineer from one of the firm's plants. The location of the effort in the firm was clear just based on the titles of those presenting the papers.

At the last meeting, the competitor's presenter was observed having extended conversations with a vendor for equipment necessary to introduce the material in its operations. This seemed to indicate that the equipment purchase was either under consideration or had been done — an indicator of the possible timing of the technology's introduction.

For technical staff new to intelligence, perhaps the most important concept to learn is the concept of indicators. These are discrete pieces of seemingly innocent information that, when combined with other publicly available information, lead to significant insights about the bigger picture (see Sidebar 1).

Brief the technical staff assisting the competitive technical intelligence effort on both the offensive and defensive aspects of indicators. Have the technical staff look for small clues indicating the answer, which are easier to gather than attempting to answer outright the larger question assigned to them.

Similarly, impress upon the technical staff how competitors can use their seemingly innocent comments on a small aspect of a technical or product effort to develop indicators that reveal your sensitive activities and plans. Few technical staff knowingly divulge sensitive intelligence about what they are working on. But most feel comfortable in discussing isolated parts that appear harmless. Understanding indicators helps limit the damage.

CONFERENCE ACTIVITIES

Most of the general intelligence collection rules and guidelines for events apply to competitive technical intelligence as well: focus on specific needs, make assignments, act legally and ethically, develop skills in human source collection, keep eyes open for nonverbal clues, and so forth. Three issues deserve additional comment: keeping technical collectors focused on areas of greatest importance, practicing good counterintelligence, and going beyond interactions when collecting intelligence.

Focusing on areas of greatest importance

A good first step is holding pre-session meetings to identify issues of interest and make collection assignments. However, constantly review the pre-event game plan in light of the experiences at the event and revise the competitive technical intelligence objectives as needed. The following guidelines can help keep the effort focused.

Hold frequent meetings

Meet at least once a day (ideally twice a day) to review with the team what has been learned, who is finding it, and where it comes from. Some technical staff never overcome their reluctance to collect targeted intelligence from their professional colleagues, but they can ask colleagues from Company X about what they have heard from Company Y. If all else fails, reassign these collectors to different targets.

As you learn information at the event, you discover new intelligence questions to pursue. Also, several original questions may no longer be worth your attention, either because you found enough information about them or determined that they are no longer important. This situation is particularly common when you deal with the forces behind innovation: the emergence of new drivers or new technologies that cannot be fully anticipated prior to the conference.

Interact with staff in the office

Have frequent interactions with the technical staff back home. Given the breadth of most companies' technical base and the sophistication required to assess the importance of technical information, the event team rarely has the depth to fully appreciate the importance of all their findings, even when the team is made up of world-class scientists. Many firms recognize this and conduct virtual meetings of their event team with technical and business development staff around the world. Through regular electronic debriefs to targeted technical and business managers, the team manager solicits reactions to what they are finding and suggestions on what additional intelligence to collect. These reactions and suggestions are then shared at the daily team debriefs to help focus the collection plan.

Practicing good counterintelligence

One of the main strengths of using technical staff to collect intelligence is also the biggest challenge: they like to talk. Solid training on the basics of competitive intelligence and the techniques used by others to question or elicit intelligence can help minimize information leaks. (See the Nolan chapter on elicitation.)

Avoid telling your technical people to refrain from talking to their professional colleagues about work-related topics. When you tell people to not talk and they do, it undermines another critical role of counterintelligence: detecting an information leak. When an information exposure is known, actions can be taken to assess the impact and minimize its negative consequences. When warned not to talk, individuals find it much harder to admit divulging compromising intelligence.

If anyone from your company is presenting at this event, have their material screened by the larger group after they understand the ways in which intelligence can be collected. For example, in one firm, this review identified an apparently innocent slide showing research results that gave clues to sensitive process information. This slide was deleted.

Using all your senses

While the collection emphasis is on listening to talks and conversations, you can gain a wealth of intelligence by simply looking and touching. For example, if a competitor increased the technical staff attending this event, it can indicate the competitor's increased interest or activities in the event's topic. Noticing which sessions competitors select to attend, booths they visit, and people they talk to can give clues to their areas of interest. Holding a new material to feel its weight and texture can often tell more about its properties than a specification sheet. The message: absorb everything of possible interest.

POSTCONFERENCE DEBRIEF

As soon as possible after the conference, have the team meet with those individuals who can use the intelligence to discuss what they found. While some firms' culture strongly supports writing detailed trip reports, most attendees find this a burden and resent their participation in the entire competitive technical intelligence activity owing to this requirement. In addition, unless they personally use the intelligence collected, the team members may not understand the importance of what they collected and how it is applied to decision-making. This personal, interactive meeting puts the external environmental findings into the context of internal issues.

Follow these three rules regarding debriefs:

- Hold them quickly, before the team forgets what they saw and heard.
- Keep them informal with lots of give and take so those who need the intelligence can shape the discussion to the details most relevant to them.
- Make them rewarding to the conference attendees by having them talk and be appreciated. Use the "reporter" model, in which the decision-makers who need the intelligence question those who collected it.

Those attending a conference or trade show will come back with more than their personal observations. They will have attendee lists, presentation copies, and collateral material from competitor, suppliers, and customer booths. Tag this material with the name of the person who retrieved it, where it came from, and any additional comments or observations on the material's utility. Then fold this information into the overall competitive technical intelligence assessment effort to complement intelligence collected from other sources.

The team often returns with as many questions as they left with — ideally, different questions. Capture these and use them to focus further collection efforts. Technical staff typically don't like loose ends, and they may feel that they should have done more to find all the answers. Treat new questions as desirable outcomes, not failures. Thank the team both for contributing insights and for focusing future intelligence collection efforts through the new questions they bring back.

SUMMARY

In many respects, competitive technical intelligence collection is just like any other intelligence collection and assessment effort at conferences and trade shows. The differences are the frameworks used to focus the collection (such as the Innovation Model and Technology Profile Chart), the technical sophistication of the topic, and the nature of the technical staff. If these special features of CTI are recognized and the implications folded into the planning, collection, and assessment stages of the process, CTI can help uncover important insights regarding the positioning of your technology and new products.

References

- Cooper, Robert G. (1983). "A process model for industrial new product development," *IEEE Transactions on Engineering Management*, EM-30, February, pp2-11.
- Meyers, S., and Marquis, Donald G. (1969). *Successful Industrial Innovation*. National Science Foundation, Washington, DC.
- Paap, Jay, and Katz, Ralph (2004). "Anticipating disruptive innovation," *Research Technology Management*, 47(5), September. pp 13-22.
- Roberts, Edward B. (1988). "Managing invention and innovation: what we've learned." *Research-Technology Management*, January/February, pp11-29.