Strategic Alliances by Defense Contractors
in an Era of Industry Consolidation

by

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Submitted to the Alfred P. Sloan School of Management and the School of
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ABSTRACT

In-depth interviews and case analyses were performed to classify and evaluate alliance formation in
a major defense company. The industry associated with national defense has experienced dramatic
change over the past decade in terms of reduced government spending levels and extensive
consolidation. These events, combined with a rapid pace of technological advancement and
innovation are reshaping the defense industry. Alliances with partner companies may play a
distinctive role in defense company strategies to acquire new technologies, enter global markets and
gain competitive advantage. To assess the role of alliances in a defense company, personal
interviews were conducted with company program managers, vice presidents and a prior CEO of
Detel Corporation (pseudonym), a firm with multi-billion dollar annual revenues. Evaluations of
sixteen alliances determined the conditions for formation, management involvement, objectives,
partner company size, current markets, and degrees of success or failure.

The results highlighted the importance of CEO and senior level management involvement in
initiating and implementing the alliance. In cases of fast paced technology companies, alliances
with smaller firms were generally easier for this major defense company to establish and develop
into strategic long-term relationships than with large technology firms. The large commercial
technology firms are reluctant to form strong alliances with defense companies as manufacturing
scale via defense market entry limits partner value. Smaller technology firm alliances are a
superior source to obtain new technology quickly, often at less cost than internal developments.
Careful selection of partners from the United States and foreign countries has potential of entry
into new global defense and government markets. Alliances with competitors are possible but
require significant levels of management attention.

Alliances with firms whose dominant business is in commercial markets will become the norm for
defense companies. They will provide access to innovative technologies and processes as well as
continuing the movement towards a more homogenous commercial/defense marketplace.

Thesis Supervisor: Edward B. Roberts

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Introduction

The end of the Cold War has dramatically affected the size and structure of the United States defense industry. The repercussions of decreased defense spending, declining sales and abundant capacity have prompted many defense industry businesses to consolidate. Since the early 1990s, consolidations have resulted in reductions in contractors of fixed wing aircraft from 8 to 2; tactical missile contractors dropped from 13 to 3; expendable launch vehicles from 6 to 2; satellite development and manufacturing from 8 to 5. In fact, since 1990, the number of contractors declined in 10 of 12 major defense markets relevant to national security.\(^1\) The defense industry was well aware of the Defense Department’s (DoD) policy of national defense reductions, as DoD has encouraged the consolidation of facilities and elimination of excess industrial capacity. The intent of the DoD policy was to have a controlled reduction of the national security posture while retaining a competitive and financially viable defense industrial infrastructure. In the perspective of DoD, it was preferable to have a few strong, financially sound contractors supporting national security than a large number of weak, financially fragile ones.

Issues facing the defense industry during this contraction have included how to maintain growth, remain competitive, promote technological innovation and achieve a reasonable level of prosperity. With fewer defense dollars flowing, industry programs to promote internal research and development became highly focused on specific program ‘win’ strategies. Flexibility to explore technological innovation became more limited.
Widely dispersed centers of excellence resulting from merger and consolidation of businesses with overlapping functional areas solved excess capacity problems but introduced management challenges to coordinate and schedule product transitions between research and development to manufacturing. Integration of businesses resulting from industry consolidations is not accomplished over-night. One methodology to overcome the lengthy list of complex management issues resulting from industry consolidation is the expanded utilization of alliances.

This paper will investigate the motivations of the defense industry to expand the use of alliances to meet business objectives. In some cases, the alliances\textsuperscript{2} are strategic in nature – that is, they are structured to establish goals for potential entry or diversification into new industries. In other cases, the alliance may be more operationally oriented to improve the performance of the business through expansion of product lines or filling the gaps of technologies that are prohibitively expensive to build in-house. The study will open with a discussion of the downsizing spiral of the Department of Defense, including budget reductions and consolidations. With the downsizing of DoD in context, the resulting defense industry consolidations will be portrayed to understand the reduced playing field of competitors.

The core domain of this paper is to determine how a major defense contractor exploits alliances to offset the defense drawdown and keeps pace with the rapid growth of technology. In doing so, a telecommunications group of a large, multi-billion dollar

defense industry company will be evaluated. For ease of reading, the company will be identified as "Detel Corporation". The company has been active in the merger and acquisition of other firms throughout the 1990s as the defense industry consolidated into fewer and fewer major players. In the defense industry consolidation process, the merger and acquisition arena is one in which you either acquire, or ‘be acquired’.

The case study of Detel Corporation will document the role of alliances in the telecommunications segment of defense acquisitions. The investigation included face-to-face interviews of both project managers, group and division managers as well as corporate leadership. The interviews resulted in evaluation of alliances encompassing projects from commercial and defense sectors in a global business arena. Objectives of the investigation include:

- Understanding of the role the alliances played in achieving Detel’s business strategy
- Motivations for the creation of each alliance
- Role of core competencies in formation of alliances
- Roles of management
- Role of relationships to achieving long-term alliance benefits
- Tangible versus intangible benefits of alliances
- Meshing or discontinuities of corporate cultures
- Critical factors for success or failure of alliances

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Chapter 1 – Defense Industry Consolidation

The past decade has been a time of dramatic change and consolidation in the United States defense industry. The end of the Cold War, with the resulting decline in defense spending, has led to dramatic changes for industries dependent on national security related contracts. Since 1990, there has been a reduction of prime contractors in 10 of 12 major defense markets identified as important to national security. Sectors of industrial preparedness includes such technology intensive markets as tactical missiles, fixed wing aircraft, expendable launch vehicles, satellites, surface ships, tactical wheeled vehicles, tracked combat vehicles, strategic missiles, torpedoes, and rotary wing aircraft.3 This contraction of industrial capability was precipitated by several factors, with budget reductions being a dominant reality.

Budget Reductions

As seen in table 1 below, Department of Defense procurement funding levels have been reduced in real terms in six of the last eight years. Overall, Pentagon procurement spending between 1987 and 1998 has declined by 61 percent. The drop in spending reduced contractor revenues and increased slack capacity. Likewise, the investment in defense research and development (RDT&E) has also been reduced in six of the last eight years.

3 United States General Accounting Office, Testimony of David E. Cooper, Associate Director before the Subcommittee on Acquisition and Technology, Committee on Armed Services, U.S. Senate. Defense Industry Consolidation, Competitive Effects of Mergers and Acquisitions, as noted in GAO/T-NSIAD-98-112, Appendix 1, pg. 6, March 4, 1998.
Table 1
Department of Defense – Budget Authority by Appropriation (dollars in millions)\(^4\)
Current Dollars (FY=Fiscal Year)

<table>
<thead>
<tr>
<th></th>
<th>FY 92</th>
<th>FY 93</th>
<th>FY94</th>
<th>FY95</th>
<th>FY96</th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>62.952</td>
<td>52.789</td>
<td>44.141</td>
<td>43.572</td>
<td>42.420</td>
<td>42.932</td>
<td>44.823</td>
<td>48.706</td>
</tr>
<tr>
<td>% Real Growth</td>
<td>-14.2</td>
<td>-17.8</td>
<td>-17.9</td>
<td>-3.0</td>
<td>-4.3</td>
<td>-0.4</td>
<td>2.8</td>
<td>6.9</td>
</tr>
<tr>
<td>RDT&amp;E</td>
<td>36.623</td>
<td>37.974</td>
<td>34.567</td>
<td>34.522</td>
<td>34.972</td>
<td>36.404</td>
<td>36.600</td>
<td>36.079</td>
</tr>
<tr>
<td>% Real Growth</td>
<td>-1.4</td>
<td>1.6</td>
<td>-10.8</td>
<td>-2.1</td>
<td>-0.6</td>
<td>2.3</td>
<td>-1.1</td>
<td>-3.1</td>
</tr>
</tbody>
</table>

The downturn in defense spending was a driving force in consolidation of the defense industries as will be seen in subsequent sections of this paper. Though changes have occurred in reaction to such budget reductions and lack of growth, there is little reason for future optimism. The Defense Department planning process routinely prepares a strategy and analytical projections of budget requirements in terms of a Five Year Defense Plan (FYDP). The FYDP is adjusted annually and evaluated by defense contractors as indications of growth, further contraction or constant levels of defense expenditures. The defense industry continues to have cause for alarm as projections of defense spending are not anticipated to grow. As seen in Table 2 below, projections between 1998 and 1999 resulted in reductions of over $16 billion in overall procurement and $500 million in R&D funding, both as measured in current dollars. Inflationary effects obviously worsen these impacts. Despite an era of high rates of technological innovation and technology advancements, projected research and development funding for defense purposes remains relatively unchanged over the next five years.

Table 2
DoD 1998 and 1999 Five Year Defense Plans, by Appropriation Account

<table>
<thead>
<tr>
<th>Account</th>
<th>FYDP</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>1998</td>
<td>50.7</td>
<td>57.0</td>
<td>60.7</td>
<td>68.3</td>
<td>68.0</td>
<td>304.7</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>48.7</td>
<td>54.1</td>
<td>61.3</td>
<td>60.7</td>
<td>63.5</td>
<td>288.3</td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>-2.0</td>
<td>-2.9</td>
<td>0.6</td>
<td>-7.7</td>
<td>-4.5</td>
<td>-16.4</td>
</tr>
<tr>
<td>RDT&amp;E</td>
<td>1998</td>
<td>35.0</td>
<td>33.4</td>
<td>32.9</td>
<td>34.2</td>
<td>35.8</td>
<td>171.4</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>36.1</td>
<td>33.9</td>
<td>33.0</td>
<td>33.5</td>
<td>34.3</td>
<td>170.9</td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>1.0</td>
<td>0.5</td>
<td>0.1</td>
<td>-0.7</td>
<td>-1.5</td>
<td>-0.5</td>
</tr>
</tbody>
</table>

Industry Consolidations in the Defense Market Sectors

Defense markets have contracted in response to the budget reductions portrayed in Tables 1 and 2 above. In recent years, over 50 major mergers and consolidations have taken place in the defense industry. DoD has encouraged consolidation by authorizing restructuring costs to be reimbursed to industry companies. These costs have included severance pay for laid off workers and related plant closure expenses.

The industry consolidation has resulted in the market sectors depicted in Table 3. The consolidation into larger, more efficient defense suppliers does have the advantage of singleness of purpose but at the expense of competition. As noted by Charles Kaman, CEO of Kaman Corporation, this perhaps is not such as serious dilemma in that, “In an expanding economy you need competition. But defense is not an expanding economy, it’s a contracting economy and contracting fast. So, regardless of whether it’s better or worse, good or bad, or what, it is going to happen so you’d better get with it.”

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Table 3
Defense Industry Consolidation in the 1990s

<table>
<thead>
<tr>
<th>Sector</th>
<th>Reduction in Contractors</th>
<th>1990 Contractors</th>
<th>1998 Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Wing Aircraft</td>
<td>8 to 2</td>
<td>Boeing                           General Dynamics</td>
<td>Boeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grumman                           Lockheed</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LTV-Aircraft                       McDonnell Douglas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Northrop                           Rockwell</td>
<td></td>
</tr>
<tr>
<td>Expendable launch</td>
<td>6 to 2</td>
<td>Boeing                           General Dynamics</td>
<td>Boeing</td>
</tr>
<tr>
<td>vehicles</td>
<td></td>
<td>Lockheed                           Lockheed</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Martin Marietta                    McDonnell Douglas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rockwell                           Rockwell</td>
<td></td>
</tr>
<tr>
<td>Satellites</td>
<td>8 to 5</td>
<td>Boeing                           General Electric</td>
<td>Boeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hughes                             Lockheed</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loral                              Martin Marietta</td>
<td>Hughes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TRW                                Rockwell</td>
<td>Loral Space Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TRW</td>
</tr>
</tbody>
</table>

Note: Appendix 1 provides a comprehensive list of the 10 major segments of national security industry and the resulting consolidations.

Effects of Consolidations on Industry and DoD

The effects to both industry and DoD from the consolidation of companies have varied with both positive and negative impacts. Typical results of the consolidation process have included:

- The Lockheed merger with Martin Marietta in 1995 was predicted to result in Defense Department savings of $6.00 for every dollar spent for company restructuring costs. The dominant cause for the savings is from corporate efficiencies and reduced personnel from overlapping structures. Total savings will result in $2.6 billion after reimbursing $405 million.⁷

- The referenced Lockheed /Martin Marietta merger resulted in a loss of 7,049 jobs, 3,629 fewer than originally anticipated.

- Reduced defense spending have increasing company pressures to limit internal R&D expenditures. This may hinder the innovation process or slow the introduction of new technologies in military systems. More emphasis will be placed on upgrades or modifications to existing products.

- The objective for the consolidated large defense enterprises is to fully integrate into multi-functional, multi-discipline firms able to compete for a broad range of products and defense services. This may be a significant management challenge with each acquired company coming with its own culture. The management must integrate while focusing on cost-control, and yet instill a company-wide doctrine for innovation and entrepreneurial spirit. Morale may be in disarray and perhaps thousands of employees are undergoing the trauma of change.

- The consolidation has placed enormous pressure on an industry to perform equivalently to comparable commercial companies. As stated to Morgan Stanley analyst Pierre Chao “The most telling measure (of competitiveness and return) will be the win rates of these larger companies – almost everything else is irrelevant.”

- Competition may be diminished as companies merge into a small number of industry corporate giants. Size alone will dictate a degree of stability in a low-growth procurement budget era.

- The mega industrial firms will be more able to work on simultaneous programs than any smaller competitors.

- The extended budgets cover longer periods of time with the Defense Department desiring an industry with financial stability to survive budget instabilities or reduced levels of periodic return.

- On the matter of economies of scale, lower unit costs through extended periods of time for production provide attractive opportunities to enter export markets or

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compete globally with a diversified product line. This will enable expanded interest by global firms to enter joint ventures with foreign partners.

The Changed Industry

By 1999 the consolidation of the United States defense industry has reached a point of stability. A cold war era has been replaced by a smaller government defense infrastructure. A smaller, consolidated defense industry has been established. Financial savings have been realized. Mega-sized defense industrial companies have been formed, largely through the process of Pentagon-encouraged merger and acquisitions. The pace of large mega-mergers is probably at an end with the recently rejected merger of Lockheed-Martin and Northrop Grumman. The defense industry is now at a point of integrating and managing these companies to achieve efficiency and economies of scale and scope.

Management in this newly formed defense industry faces a multitude of problems. These include:

- Remain competitive
- Maintain and increase rates of return for equity holders
- Do not lose market share
- Increase revenues
- Increase margins and profits
- Integrate very large companies with large numbers of employees
- Recognize and build on core competencies
- Integrate potentially divergent cultures
- Maintain and build morale of the new integrated company
- Grow the business
- Prosper
- Encourage an entrepreneurial spirit throughout the company
- Motivate innovation and revolutionary change
- Increase productivity
- Achieve higher levels of efficiency throughout the company
- Prepare for reductions in jobs and resultant layoffs – do it professionally and with personal dignity
- Eliminate overlapping functional areas from the merged companies
- Encourage entry into new markets where opportunities exist.
- “Think global”

Management of these new defense companies face challenges which are unique to their industry. Reduced defense spending may limit internal R&D projects. Competitive pressures and consolidation of overlapping functional divisions results in pressure to reduce cost by staffing reductions. Consideration must be made of skills and competencies to be retained as in-house functions or as outsource candidates for alliance partnerships. Ventures with partners may produce manufacturing savings, gain entry into new markets, reduce product costs, and gain new innovative technologies. On the other hand, alliances consume large amounts of time to manage cultural differences, identify goals, and generally manage the execution of the agreement. Alliances may create a new competitor for the company. Whether short term operationally oriented, or long term strategic alliances, defense firms must understand the nature of their business and the potential risks of alliances. Prior to the alliance study of Detel Corporation in subsequent chapters, a review of alliance structures and risks will be presented. This will provide a basis for consideration of the Detel survey.
Chapter 2
Alliances — What Are They? Why Have Them?

The Nature of Alliances

An alliance is a term that may have a wide range of meanings to the reader. Authors in the field of study analyzing the influences of interfirm collaborations vary in their interpretations. Some have broad connotations while others are restrictive. In the terms of Jordan Lewis, a strategic alliance relates to a relationship between firms who cooperate to attain benefit when compared to a market transaction. In terms according to Porter, alliances encompass a variety of potential arrangements, but above all, they provide a way of expanding scope without growing the firm. Their focus should be to perform value activities or team to share value-oriented activities. These relationships may be informal where the firms cooperate without binding agreements. If there is an increasing degree of specific shared risk; the firms will transition to a more formal arena of equity-based alliances. Depending on the structure, there may be common ownership, as in joint ventures with shared control.

Other perceptions of alliances consider them as linkages or interfirm relationships, but regardless of their titles, all involve coalitions between partners, at either national or global levels, and cover a wide and flexible range of functions and activities. Alliances, as noted by Roberts, may be categorized as ‘strategic’ or ‘operational’ in nature. Strategic alliances are generally more goals oriented with longer term objectives such as new market

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9 Lewis, J. D., Partnerships for Profit — Structuring and Managing Strategic Alliances, New York, The Free Press. 1990, Pg. 1. 5.
11 Roberts, E.B., class lecture and notes of MIT/Sloan Course 15.369, Corporate Strategies for Managing Research, Development and Engineering, April 21, 1999.
entry or diversification. Operational alliances are inclined to be more focused on improving the business performance in the short term. This may include closing gaps in a technology portfolio or expanding into new geographic market.

Alliances and all the variants, both contractual and non-contractual may be viewed as a portfolio of choices available to the manager. The more difficult task of exercising the right aspects of the portfolio is to select the correct option to enhance the value of the firm and provide the best opportunities for continued growth, both short and long term. One might ask why the manager of today’s technology-based firms — commercial or defense — feels pressure in making the right decisions for the best form of alliance partner? In a sense, a fast paced race is taking place. Technologies are changing rapidly. Companies are consolidating, merging and integrating, while developing or searching for innovative technologies being developed by competitors or complementary firms. Alliances serve as an essential element in locating the right complement of technologies, innovation and new products to remain competitive.

Three aspects of this race require adept management skill to recognize a company’s shortfalls and strengths, and match these with the just-right solutions of interfirm collaborations. The first point is the complexity and pace of the information based industry. Few companies possess the depth and skills to encompass all the various technologies required for product development of complex systems. Consolidated defense industry firms with dispersed functional divisions are challenged to cohesively integrate into coordinated, horizontally integrated business units. Despite their vast technology base, much of the information-based age we are currently experiencing comes from
commercial industrial firms, some with very specialized technology skills and resources. Few defense firms have the scope of technologies to encompass or compete across a wide range of fast paced commercial firms. On the other hand, few commercial firms can consider entry into defense markets with a lack of scope to integrate multiple technologies.

The second aspect of this alliance-based race is that companies, including the new defense industry firms, are no longer designed in a vertical orientation. Industry has become more global and is highly network oriented. Systems engineering, product design, manufacturing and life cycle support must be seamlessly integrated with complementary applications. For example, a defense contractor responsible to develop a military command and control system may have multiple applications being developed by various internal divisions and outsourced alliance partners. In the current environment, it is unlikely that this single defense contractor will encompass all skills and resources to integrate a wide range of complementary applications. This might include –

- commercial internet
- tactical internet
- military legacy switching systems
- commercial communications systems interfaces – satellite, fiber, radio relay
- military communications systems interfaces – military satellite, fiber and radio relay
- commercial and military telephones, data devices, and security systems
- systems interfaces to other nation telecommunications systems

The system design parameters and interfaces demonstrate the impractical nature of attaining all skills and resources within a single vertically integrated firm. Alliances, in the

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form of interfirm collaborations, are the likely solutions to such a technology intensive system. The designs will be coming from various partners, which emphasize the need for interfirm alliances to be seamless networks of communication. Further, the actual intended product design will also be a seamless integrated system.

The third aspect of alliance collaborations is the degree of uncertainty that exists in the technology based information industry. The pace of innovation is fast and does not appear to be slowing. Open systems architectures do enable the introduction or trial of innovations without dramatic system design changes. The formation of alliances allows this process of information innovation to proceed and enables firms to blend complementary strengths. The sharing of complementary knowledge between firms enables both firms to grow in their knowledge base of technologies and innovative ideas.

Rationales for Alliances

*Positive Tension:* As consolidated defense industry firms integrate, and prepare to execute revised business strategies, the role and context of alliances becomes a significant theme. The consideration of alliances should commence with several basic questions in reaching a product development strategy —

- Should we be performing this? In this matter, a manager considers the core competencies of the firm. What are our shortfalls? — manufacturing; component design; systems design; logistics support. This basic question must be answered to begin to assess the in-house or outsource issue.
- Should we consider another firm to help or perform a particular function? This again, is the essence of understanding your own core competencies and whether another firm can complement your core competencies and add value to the enterprise.
• What is our role if we decide to share and collaborate with an outside firm? How will we manage and relate to this outside collaboration?

• If, in fact, we do determine a shortfall in our core competencies that point to an advantage to form a collaborative alliance, are we jeopardizing our existing core strengths?

• If we deem an outside collaboration has potential of improving the competitive advantage of the firm, how fast do we need to move?

• How does this collaboration provide the firms with flexibility? If interfirm collaborative partners are to gain from this relationship, both should target to become or maintain the quick, innovative, flexible, responsive attitude of an entrepreneurial start-up firm.

It is this type of thinking, as noted by Yoshino and Rangan\textsuperscript{13}, which forces a firm to consider the strategic intent of their business. Where do they want to be in the future? What relationships are essential to gain a competitive advantage? This process, if thoroughly pursued may open imaginative options through joint efforts and enable partners to gain scope in their businesses. Beyond maintaining pace with a fast moving technology base, the process of rethinking the options will increase the level of positive “tension” in the firm. This tension alone may provide the stimulus in stale company environments for productive consideration of alternative collaborative relationships. The pure process of forming a collaborative alliance relationship rewards the firms with a spirit of entrepreneurial change.

\textsuperscript{13} Through the interview process, Yoshino and Rangan focused on the real-world managers and what drove them to reconsider supposedly “sacrosanct” conditions of continuing to do things the same way as they had done in the past. I have expanded their list to encompass questions beyond the basic “why” and “why someone else”.
**Competitive Advantage:** As firms consider the decision process of entering alliance relationships, they must consider their own value chains. Figure 1 depicts a sample defense industry company value chain.

*Figure 1: Defense Industry Firm Value Chain*

- Company Infrastructure (corporate, support services, matrix operations, facilities)
- Human Resource Management
- Product Development (including technology)
- Procurement & Acquisition Services

As noted by Michael Porter\(^4\), the value chain activities have varying degrees of margin they contribute to the firm. The competitive success is based on maintaining a competitive advantage in one or more of the value activities. This is perhaps one of the more difficult processes for firms to consider revealing to any outside partners. The discussions will provide insight into the value-oriented activities of the firm. The most common process is to engage in arms-length subcontract agreements where little or no discussion takes place regarding areas which will increase product values. Despite the relatively specialized products in the defense industry, the concept of understanding the value chain and the

sources of adding value for competitive advantage remain the same as those in the commercial products environment. A competitive advantage in the defense products industry requires managers to be able to recognize alliance opportunities and form collaborative relationships with combinations of products, subsystems or other resources that deliver enhanced products to customers and hence increased value to the firm.

*Increased Firm Prosperity:* Though the forming of interfirm alliances for strategic advantage seems worthy, the prospect of enhancing the firm’s overall financial condition is also a strong objective. Shareholders expect actions taken by management will lead to growth and economic prosperity. While it has not been proven that a direct relationship exists between strategic alliance partnering and economic prosperity, interesting empirical research has been performed which does reveal relationships to R&D cooperation resulting in higher rates of profit. In Hagedoorn and Schakenraad, studies\(^\text{15}\) were performed of partnering between companies involved in joint ventures, joint R&D, and equity investment as well as mergers & acquisitions. The data involved three sectors – information technologies and electronics, mechanical engineering and petrochemicals. The information technologies included fields of microelectronics, computers, industrial automation, telecommunications, instrumentation, consumer electronics and heavy electrical equipments. The range of companies encompassed Europe, America and Japan.

The measurement process determined the degree of activity in patent applications with a relationship to innovativeness. The results do not generate straightforward relations between strategic technology partnering and company performance. The analysis by

Schakenraad and Hagedoorn does provide what they refer to as "...improve our understanding of the effects of strategic technology alliances" as follows:

- Firms who attract technology through their alliances and concentrate on R&D cooperation have exhibited higher rates of profit
- Firm size has reflected the degree which firms actively seek and find external opportunities in strategic partnerships. [This appears reasonable as larger firms will require a broader range of technologies to encompass complex multi-functional systems.]
- the linkages between a firm’s R&D strategic alliances and the level of patent activity reflect economic performance.

In terms of the new defense industry, it is interesting to note that remaining firm sizes have become very large. Patent activity for the three largest defense industry firms (Lockheed Martin, Boeing and Raytheon) falls within the top one-third of all issued patents in 1998\(^{16}\). Consistent with Schakenraad and Hagedoorn results, it is not proven that large defense sector firms can directly produce prosperity with their utilization of outside alliance partners. Study results reinforce management decisions to maintain intensive levels of R&D, while encouraging innovation and research resulting in patent activity.

**Growing Core Competencies and Enhancing Company Knowledge:** Core competencies are those critical skills or knowledge that enable a firm to differentiate itself from its competitors and simultaneously develop new products. In alliances, a firm must be alert to protect its core competencies, which are the heart of the company’s ability to prosper and grow. There also exists the opportunity to augment existing core competencies or build

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new core competencies for the firm via alliance partners. While it may sound trivial to enter an alliance to build a new competence, remember that core competencies are not for sale\textsuperscript{17} on the open market. The process in play is that of learning between alliance partners. New skills and knowledge can be learned from partners, followed by internalizing within the firm. This process builds a knowledge base for the firm and enables growth into new markets or businesses.

Knowledge transfer between alliance partners is one of those intangible factors, difficult to measure yet perhaps with the greatest potential to innovate and develop profitable new products. Badaracco presents an interesting comparison of the types of alliance knowledge growth\textsuperscript{18}. Knowledge for the evaluation of alliances can be ‘migratory’ which transfers between individuals and organizations. The migratory nature is routinely a product, a formula, machines or information. Knowledge in strategic alliances may also be ‘embedded’ as defined by Badaracco, which tends to be more complex. The embedded nature of knowledge is more specialized in a relationship between individuals or groups. It encompasses the norms, attitudes, and decision processes that result in high performance organizations that are usually industry leaders. In non-threatening, non-competitive alliances, the embedded knowledge environment is the target for strategic success. The complexity of achieving a level of learning in interfirm alliances is a manager’s dilemma. If a firm is primarily trying to catch up with competitors, buy schedule time or defend its market, then product oriented link alliances will meet the expectations and provide the processes to achieve the goals.

On the other hand, if a firm is attempting to extend its capabilities or build core competencies, then an alliance to create new knowledge is preferable. The risk increases, however, in such embedded knowledge relationships as leaks of core competencies are increased.

Globalization: Globalization and alliances are two terms, when joined, that present very unique and challenging problems for the defense industry manager. With a smaller defense market, the search for new markets and opportunities leads to a global perspective. It may be the only game in town when compared with the shrinking U.S. defense market. While it is evident that a global interfirm alliance provides a quick entry into a foreign market, many other aspects of global alliances lack such simplicity. The evidence of market entry advantage is plentiful. The global aircraft engine market has placed significant pressures on manufacturers with slow-downs in global aircraft orders – both military and civilian. As noted by Doz and Hamel, the General Electric/SNECMA alliance\(^{19}\) provided General Electric instant access to the French government and European aircraft industries. Value was created in both firms by the very formation of the alliance with expanded markets, scale, and scope. The alternative of market entry by acquisition of SNECMA would have been time consuming, and probably politically impractical. Co-production arrangements would also have lacked adequate commitment by General Electric to share technology and gain the trust of their partners and government representatives.

As also noted by Doz and Hamel, global alliances may provide opportunities for foreign market entries while simultaneously providing a barrier to competitors entering your own

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market. In the case of an alliance between Deutsche Telecom and France Telecom, the objective was to place a barrier to British Telecom entry into the opened French and German telecommunications markets. Simultaneously such an alliance built a formidable competitor to the United States giants – AT&T and MCI/Worldcom. To raise the stakes, the Deutsche/French Telecom alliance purchased a 20% stake in Sprint, enabling instant market entry into North America. Individually, neither company had the strength to be a competitive force in the North American market, but via the alliance, and smart equity purchasing, they were able to tilt the competitive balance in their favor.

A strong, but accurate observation by Kenichi Ohmae\(^\text{20}\) claims that “…globalization mandates alliances – makes them absolutely essential to a firm’s strategy.” Such agreements may cause discomfort by the management of both firms. The obstacles are significant with both cultural and political barriers. Further, to maximize effectiveness, the alliance must endeavor to find areas of mutual value enhancement to facilitate exchange of knowledge and achieve a learning atmosphere. As seen by the examples above (GE/SNECMA and Deutsche-French Telecom with Sprint), value was recognized easily. While a manager may know this, it may be overwhelmingly difficult to achieve. Such a trust-oriented environment, while a normal circumstance within a nation’s borders places extreme pressure across borders when core competencies and competitive advantage are in the balance.

Such tension is compounded for defense industry executives, as they must aggressively look beyond their borders for military sales opportunities. Alliances with

firms across national borders place even more strain as national security considerations constrain the transfer of technologies and processes.

Beyond the issues above, control is equally difficult to resolve in global alliances. These collaborative agreements mean sharing of management responsibility. Simple contract relationships, joint ventures and the like, do not exhibit the dilemma of control negotiation that presents itself in strategic alliances.

If one considers the predicament faced by managers in public or private sectors, alliances converge to being a necessity, or as Ohmae reflects, "...not just a fad or a fashion...". The rationale behind such a claim is straightforward – customers in most of the developed world have increasingly been exposed to common information and lifestyles. The desires to achieve similar standards of living with a set of common or similar products has increased to the point that convergence of consumer needs, expectations and preferences has occurred. With the complexity of global market entry, cultural and political barriers, it is sound strategy to enter these potentially hazardous circumstances with a partner and not risk the ‘go it alone’ approach.

The Forms of Alliances

As noted above, alliances take many forms, some contractual, some in the form of equity agreements. A convenient methodology of the range of alliance options available to the defense contractor of today is presented below in Table 4. This portfolio of

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21 Kenichi Ohmae’s perspective of alliances is a strong one – that globalization drives companies to alliances – as essential vehicles to achieve customer-oriented value. As a prior Director of McKinsey’s office in Tokyo, he had the insight of global alliances and cultures from the Japanese perspective of the Europe/North America/Japan triad. Customer oriented value is applicable to public or private sectors as noted in terms of international convergence of customer needs and preferences.
alliances is consistent with that by Yoshino and Rangan\textsuperscript{22} though there may be variations of joint ventures within subsidiaries of very large global organizations.

**Table 4: A Range of Interfirm Alliances**

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**Range of Strategic Alliances**

**Strategic and Operational Alliances**

At the center of an alliance is a link between two or more firms, which serves to grow the effectiveness of business strategies. The relationship may provide a range of tradeable products or services such as technology, individual knowledge skills or deliverable

hardware/software. In terms as defined by Yoshino and Rangan, alliances must possess the following characteristics at a minimum and must be exhibited simultaneously:

- The two or more firms that unite to pursue an agreed-upon set of goals remain independent after the formation of the alliance.
- The partnering firms share the benefits of the alliance. Control over the efforts to perform the assigned tasks is a shared responsibility.
- The partnered firms must contribute on a continuing basis in strategic areas that both parties agree to – areas may include technology, products, or others.

When comparing the wide range of alliance definitions, it is important to remember that mergers, acquisitions and takeovers are not alliances. A critical consideration when attempting to define or evaluate an interfirm relationship is the recognition of a long-term mutual dependence. Firms in other than such a mutual relationship are not viewed as being engaged in a strategic alliance. Strategic alliances also demonstrate a degree of reciprocal sharing of strengths, information and common advantages. This results in a mutual concern for each other's future success. The firms in strategic alliances must also ensure a consistent level of management involvement with attention to long-term relationships to achieve mutual and individual firm strategic objectives.

Why the Alliance? — Why Not Acquire?

The short answer to this question from the Defense Department is – there is enough consolidation, merger and acquisition for now. In the current wave of defense consolidations, mergers and acquisitions have been occurring at a rapid pace. Further consolidations may jeopardize competition. In 1993, the Pentagon essentially told the

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defense contracting industry that the Defense Department no longer could afford all of them, that no effort would be made to artificially sustain the weakest firms, and all were encouraged to consolidate among themselves where it fit from a business perspective. That encouragement and dialog has continued until recently. Concerns regarding marginal levels of competition have started to appear. United States Congressional concerns with reduced levels of competition initiated a General Accounting Office study with results being unclear but identifying additional actions available to the Pentagon to reinforce and expand competition. Additional recommended actions include:

- provide funding for alternative technologies to meet the defense needs;
- devise strategies to compete various approaches and missions – meaning to use different weapon systems to accomplish the intended objective;
- require major defense contractors to use open systems architectures in their design processes;
- require sub-tier competition as a contract award evaluation criterion;
- explore opportunities to meet military needs through greater utilization of international or global partners.

The message in such a report is a signal to the defense industry is to take heed of political concerns regarding further consolidation. To reinforce the message, in March 1998, the United States Justice Department rendered its intention to contest the proposed $11.6 billion merger of Lockheed Martin with Northrop Grumman. The Justice Department filing of legal action to block the merger, based on the recommendation of the Defense Department, commenced in March 1998. The concerns for this merger included

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the undermining of competition, an increase in government costs and the jeopardizing of national security. The message to the defense industry clearly conveys that further industry consolidation is not viewed favorably.

With further major acquisitions being unlikely, the advantages of interfirm alliances become more attractive. When compared to the Merger and Acquisition environment, alliances are surely quicker to form. They are also less risky to execute when compared with potential government intervention and approval cycles. From a purely financial perspective, the alliance environment requires less cash, and may avoid complex integration and culture clashes with merged organizations. Though the alliance formation does present risks of requiring new methods of control, unique management skills and different resources, there is ample evidence that the alliance environment today is superior to that of the merger and acquisition process of defense businesses. We will address the advantages and disadvantages of alliances in more detail in future chapters.

**Alliances — They’re Good, but Always a Word of Caution**

Despite the good news of alliances – global market entry, core competency growth, potential profit growth, competitive advantage and others – there’s always room for careful consideration of the risks. In the process of gathering information from a major defense contractor, Detel Corporation, for this report, several negative points of view emerged which reflect the cautious atmosphere regarding the forming of interfirm collaborations:

- Why risk divulging core competencies in technology fields to outside firms under any circumstances?
• With the depth of the organization, the potential gain by an alliance partner of insight into critical technologies that provide competitive advantage is always greater than that which we might gain.

• If a firm already possesses most of the technologies used in telecommunications, command and control military applications – we must be competitive – why go outside?

• If there is something lacking, then just go acquire the firm. It’s too time consuming to enter a collaboration and it’s even harder to put together the right people who want to achieve a level of knowledge and learning between firms.

With the above perceptions, defense firms have significant internal barriers to overcome biases to recognize the advantages of alliances, which will provide long term growth and prosperity.

Some experts in the study of alliances go beyond caution and view the interfirm collaboration processes as not worth the effort. For a more balanced view of the up and down sides of alliances, firms must remember —

• Alliances always require significant investments in coordination, reaching common goals, and being prepared to share profits.

• In some opinions, alliances lead to mediocrity and detract from a firm’s initiatives to self-improve and upgrade. Management may become so consumed with ‘making the deal’ that they become dependent and rely on the alliance for the winning combination.

• Management must always consider its strategy in case of unforeseen changes in its partner’s dedication to the alliance. This comes down to entering the agreement in trust but retaining a fall-back position and knowing your options with clear definition of the triggers to move to an optional strategy.
• Control or governance must be resolved before entering an alliance. Depending on the
culture of the firms and personalities of the alliance leaders, control can consume the
collaboration process into a tug of war for authority.

• Any hint of rivalry in interfim collaboration will act as a barrier to aligning strategic
interests. As pointed out by Doz and Hamel, introduction of rivalry will fuel mistrust
and certainly surface any hidden agendas.27

• If the alliance lacks connection of a reciprocal relationship, there cannot be mutual
reliability for each of the collaborative partners. As noted by Lewis, this critical
interdependence will lead to mutual vulnerability when a reliable relationship fails to
exist. In the venue of collaborative alliances, trust is the critical link in successful
relationships.

The Defense Industry — Change, Consolidation and Use of Alliances

So we have seen a dramatic downturn in defense spending. The Defense
Department has gotten smaller by several hundred thousand employees. The size of the
armed forces is smaller. The global environment is very different with very different
threats. The national security systems leverage the advantage provided by United States
technology and depend on it to give a defensive edge versus our adversaries. Defense
systems are gaining strategic advantage by being an ‘information based’ force. The defense
industry has transformed itself. There are fewer firms, but merger and acquisition
activity has resulted in small number of very large, potent companies who focus their
efforts to maximize share of defense system acquisitions. Industry is anticipating national

security public expenditures of $450 billion over the next five years for procurement and R&D activities.

What is the management of today's defense industry doing? It is my hypothesis that the newly organized defense firms are expanding the usage of alliances with other companies. The alliances are being used to keep pace with technology, gain market entry, and innovate. This expansion of interfirm collaboration is taking place despite the extensive capabilities of merged mega-companies. The consolidation process of mergers and acquisitions have resulted in a few very large firms — Lockheed Martin ($26.2 B in 1997 annual sales revenues), Boeing ($56.1B in 1997 annual sales revenues) and Raytheon ($13.7B in 1997 annual sales revenues). Firms of this size have functional areas that cover many aspects of high technology. They have robust internal R&D programs, yet they are continuing to form interfirm collaborations. One can ask why these large, dynamic firms are continuing to use interfirm collaborations with such vast resources available. The multi-dimensional analysis of collaboration between firms (Coombs, Richards, Saviotti and Walsh) best captures the range of answers to this dilemma.

Within an evolutionary economic framework, the trend of increased collaboration is explained mainly as a consequence of escalating R&D costs, the risks of radical technological change in a period of economic and financial instability, the growing pressure of competitiveness within an increasingly globalized economy, and the importance of synergies, complementarities and interactions between a variety of scientific and technological fields.

In other terms, the pace of industry is technologically fast, economically complex and competitive on a global basis. In the defense sector, as we have seen, managers are faced with a multitude of other problems as well — integration after consolidation and a diminishing source of customer funding. To remain viable, defense firms must consider expanded markets for their products, both commercial and global. Their search for markets must also include alternatives for commercialized products as well as global military markets.

The defense firm of today must emphasize a high level of innovation. Stale products lacking innovative ideas will quickly challenge the viability of technologically based companies. The innovations may encompass a wide range of disciplines, from technology development to manufacturing. In defense firms, despite the downturn in defense spending, technology continues to evolve at a rapid pace, requiring imaginative ideas to flow from what might otherwise be lethargic, bureaucratic organizations. The forming of alliances with fast-paced firms outside of the company is one avenue to overcome the drags on a large firm’s ability to be entrepreneurial. As noted by Yoshina and Rangan30, “...alliances allow firms to recast entrepreneurially their competitive strategies in response to globalization.”

Alliances in the New Defense Industry

In the following chapter, we will explore how a telecommunications systems group in Detel Corporation has approached the utilization of alliances. Despite a significant scope of functional areas, the group analyzed has confirmed a trend to use interfirm

alliances. At the corporate level, Merger and Acquisition activities have been aggressive over the past few years with increases in acquired company revenues approaching several billion dollars annually leading to a significant management challenge to integrate diverse corporate cultures into a single operating plan.

The information in the previous chapters has depicted a quantitative view of the downsizing of the national security programs, followed by a literature review of the nature of alliances with their recognized advantages and cautions. The following chapter will present a set of data gathered by the interview of project managers, group vice presidents, and other senior executives. The hypotheses being evaluated are:

- Trust at the individual level is a significant factor in maintaining long term alliance relationships. Such alliances tend to grow to enhance learning and knowledge for both alliance players.
- Interfirm alliances with defense companies provide a degree of opportunity for global market entry.
- Both partners in strategic alliances must find mutual and approximate equality in value or the relationship will become vulnerable.
- While alliances can enhance or grow core competencies, failure to find equivalent value jeopardizes the agreement.

The interviews will present data which will be mapped to a set of findings in the concluding chapter.
Chapter 3
Case Descriptions — Alliances with a Defense Industry
Telecommunications Group

The Alliances of Detel Corporation

The following chapter provides a series of mini-case descriptions of alliances formed by a telecommunications group of a major defense company. The company, for the purposes of this report is identified as "Detel Corporation". The Detel Systems Sector has annual revenues of multi-billions of dollars. Personal interviews were held with project managers, vice presidents and corporate leaders of Detel. Each of the interviews is summarized in subsequent sections of this chapter. The emphasis of the interviews was to pursue and understand the interfirm alliances which have been established. Though few actual failures exist in the Detel portfolio of alliances, degrees of success vary and will be researched to identify potential circumstances for such conditions.

The majority of alliances evaluated are still in play. The emphasis is not on the alliance partners and the companies involved, but the relationships, motivations, and impacts the partnerships are having on such things as innovation, competitive advantage, new market entries and achievement of new or strengthened core competencies. With a consolidated defense industry, the Detel alliance portfolio will be evaluated for identifying the proportion of alliances which are strategic in nature versus those focused on near-term operational results. Can Detel move quickly in a technology driven market to achieve the intended goals of strategic alliance collaborations?
The Organization

Detel organizational structure is depicted in figure 2. Detel is shown to have multiple business units operating on a global basis in primarily the defense business. As a major player in defense programs, the firm has been an active participant in the previously discussed defense industry consolidation. Through the process of Merger and Acquisition, the company increased annual revenues to a significant multi billion dollar level. The process of integrating acquired activities is complete though some conflicts in competing business segments still remain. Detel’s defense communications programs include
operating units distributed across North America. The communications division encompasses a variety of military products including Air Force, Navy and Army telecommunications systems including mobile, satellite and fixed configurations.

The Case Discussion

In the subsequent sections case descriptions are presented. Interviews were performed with a range of personnel in Detel including program managers, Group Vice Presidents, Division Executive Vice Presidents and the previous CEO with direct involvement in specific alliance formations. The structure of each case is to present the general context of the alliance formation – what motivated the alliance and any unique conditions that led to its being formed. In each case, data were obtained regarding Detel management involvement in both formation and management of the alliance. Alliance partners are identified as to whether they are competitive, commercial or defense oriented businesses. Of particular interest is the identification of the alliances with large and small companies. As a defense firm, particular attention is paid to how Detel is gaining access to technologies via alliances with fast paced technology innovation firms. To complement specific alliance case descriptions, interviews with corporate and sector level executives are also provided. Case descriptions of context and outcomes/status primarily reflect the observations of individuals in Detel. Closing remarks at the conclusion of each case reflect the author’s views of the positive or negative aspects of the alliance.
Case 1 —

*The Context:*

In this 1996 alliance three companies were involved in forming a strategic teaming alliance. All are upper tier of the consolidated defense industry. All have some overlapping competencies in defense telecommunications and regularly compete. Detel reached agreements with two firms, both of whom compete with each other and with Detel. Various teaming relationships were formed to target new Air Force aerospace projects. Both competitors lacked core competency in ground terminal and related mission control software and systems engineering. Detel formed distinct project teams with both satellite vendors, protected by appropriate firewalls.

*Outcomes/Status:*

This appears to be a straightforward arms-length subcontract teaming agreement, the strategy from the perspective of the Detel business manager does present several lessons regarding potential for strategic alliances with either firm —

- Detel and the two alliance partners compete in other markets. The norm in such circumstances is to avoid alliances that may risk compromise of strategic intent or core competencies. The arms-length subcontract relationship is the most likely alliance structure to be used.

- As competitors, full and open discussion did not occur. Meetings were attended, specifications reviewed and systems developed/tested. Discussion beyond the defined limits was carefully monitored by program managers. In general terms, a way of describing the relationship is *Mutual Cautious Trust*. Neither of the partnering firms
could see any potential for increasing the value of their firms via a mutual exchange of more privileged information or strategic intent.

Over the course of the relationship, technical discussions have continued and system architectures developed to support the proposal process. Detel has a professional relationship with both competitors and will be a subcontractor to both firms who intend to submit proposals as prime contractors. Care has been taken to control staff access to the alliance partners as a protection against unnecessary compromise of ground system core competencies.

One particular strategy in play for this case is the necessity for Detel to become an alliance partner to both prime contractors. Should Detel management attempt to form a closer, more strategic deal, a concern exists for the other competitor to acquire a ground system competitor in an attempt to build a core competency for direct competition. The management perspective is to perform well for either of the partners, knowing that one will have a winning proposal. This strategy, while limiting possible entry into a strategic alliance, is a guaranteed level of business as one or the other proposal will win. In such cases, the Detel philosophy is to treat each competitor fairly; rigidly protect core competency being proposed; try to keep both competitors content to avoid capital expenditures to acquire and build strong direct competition; do quality work for both proposals to maintain fair playing field; and control communications.

Case 2 —

The Context:

In some cases alliances with competitors may exist over long periods of time. In 1983 Detel formed an informal relationship with another defense company. Both firms at
that time were engaged in defense communications programs for the U.S. military forces. Both firms competed in various markets though not directly in the same communications products. The Detel management team recognized the potential to team in non-competitive areas. In the formation of such an informal agreement, the teaming ensured that both firms preferred to propose a complementary technology rather than enter a head-to-head competition. The initial management level discussions were centered on markets where the companies did not directly compete but could leverage their core competencies in strategic alliances. Detel management buy-in was cautious. The agreement was initially an informal network of general defense business exchange. With the building of some trust between program management, a more technical dialog evolved with agreements for joint R&D and eventually sub-contracting. As time has passed and the inter-firm relationship has become more structured, the original intent between the companies has eroded. A more competitive atmosphere has developed with reduced levels of technical interchange in areas considered closer to core competencies.

Outcomes/Status:

- The long term strategic alliance commenced as an informal technical network, and survived for 5 to 7 years due to the early management discussions to team in complementary technologies.

- Long term collaborations led to increased levels of business teaming through a building of management trust.

- A long term preferred partnership benefited Detel as a strong technical relationship increased the competitive advantage. The teaming between leaders in space and ground systems has resulted in a winning combination for defense contracts.
Several observations are possible with rationales beyond the basic alliance. Though the alliance remains in place and teaming continues, the degree of collaboration has decreased and an operational alliance is more descriptive focused on specific product deliveries.

The context of the defense industry at different points in time may have a bearing on alliance relationships. The more structured relationship is explainable. In this case major national defense spending was taking place in the mid to early 1980s. During the height of cold war expenditures, there was more than adequate defense spending available for all defense contractors, including Detel. With an abundance of projects and defense spending, Detel and its competitors could afford some risk to enter relationships. Such was the case in 1983 when this alliance commenced. Initially, the value to Detel was to have a channel of communications between program managers and vice presidents. Factual and rumor information could be accumulated from such conversations to ensure an accurate assessment of the industry. Information regarding competitors and defense programs could be compared with other sources to put together a better strategic business opportunity picture.

As years passed, the alliance proceeded with an increasing level of participation and technical exchange. This continued until the early 1990s. It was not by accident that the alliance became less productive. Outside influences may be the culprit:

- The downturn in defense spending heightened competitive awareness of Detel and its alliance partner. Cautions were emphasized to protect core competencies and ensure no help was given to even non-direct competitors. With fewer defense programs and
spending, alliance relationships that jeopardized competitive advantage became expendable.

- With the downturn in defense spending, defense industry consolidation commenced. As Detel and its alliance partner made multi billion dollar acquisitions, both became more competitive in additional products and markets. With increased direct competition, the alliance, though still in place becomes an arms-length agreement.

The cautions regarding alliances with competitors remains valid. While such agreements are possible, management attention to the relationship must be aware of evolving conditions, even those from outside sources. In this case, world political events played a role in the evolution of a long term alliance. Management control must always be in place to throttle the pace and content of such alliances.

Case 3 —

The Context:

In this case, Detel entered a licensing agreement with a small technology firm in the midwest. The partner was in the business of radio transceivers. Surveys of other Detel product lines indicated non-competitive radio transceiver subsystems to compete in national and global aviation markets. The next generation defense and government markets for aviation control require state of the art transceivers. Competition will require an advanced transceiver at lowest cost to win. The following issues were considered:

- Within the Detel division, a core competency exists in digital mobile radio design and manufacturing. Despite this capability, an alliance to license a new technology product solved several issues:
  - It saved time versus modifying or updating an existing product line
- With advanced technology products, parts counts were minimized and provided a manufacturing cost savings.

- Using a commercial products alliance partner ensured a purely commercial product with adequate performance but avoiding military performance pitfalls.

- No matter the source of the radio, corporate priorities have been set to maintain a core competency in manufacturing. A decision to outsource for advanced technology radios will be complex due to an internal requirement for manufacturing. Alliance partnerships may be more difficult to negotiate with such a parcelled deal.

In the process of evaluating internal development versus outsourcing or alliance relationships, Detel identified a small mid-western vendor. The companies do not compete which made discussions regarding strategic alliances more productive. The technology in the transceiver was elegant, reliable, manufacturable and cost-effective. The deal-clincher was that the partner was in need of immediate financial support and desired a collaborative relationship with a major defense firm. Detel Corporation expands market opportunities for its partner.

Outcomes/Status:

- The licensing form of this operational alliance provided equal measures of increased value to both firms. Detel gained a state of the art transceiver at lower cost than internal alternatives and increased competitive advantage to pursue the aviation control opportunities – nationally and globally. The partner firm gained access to financial capital as well as the potential of new markets for companion products licensed to Detel.
• In the view of program personnel, the outsourcing of manufacturing could have the potential of further reducing the cost and future profit margins on sales but was not seriously considered due to internal directives. The potential of further cost savings by outsourcing of this transceiver would lead to enhanced competitive advantage.

The transceiver alliance demonstrated the value of capital resources of large firms. Detel, a multi billion dollar defense company was able to provide the necessary financial resources that many small firms require. The licensing alliance allowed Detel management to protect the internal manufacturing competency desired by corporate leadership. The Detel alliance also provided market access to a small technology firm and gained competitive advantage for new Detel technical proposals more quickly than internal development processes.

Case 4 —

The Context:

In this alliance Detel Corporation partnered with a small European company. The relationship was formed with Detel’s defined goals being:

• Gain entry into the European aviation control market.

• Simultaneously strengthen a technical area of simulation and air traffic processor software systems.

The goals of the European firm were:

• Align itself with a U.S. firm for potential expanded markets

• Gain financial resources of a large firm to support R&D projects

• Expand its market for software development, a core competency of the company

• Gain access to complementary technologies
- Strengthen competitive advantage against other European rivals

The context of the firms prior to the forming of this alliance were:

- Detel and its European partner are part of a small number of companies pursuing the air traffic control market. The market is difficult with significant government involvement – both national and state/local levels. It is very difficult to retain proprietary information as information flow is fast and free throughout industry.

- Detel acquired a competitor but has experienced internal conflicts as integration has not gone smoothly – slow to resolve responsibilities issues.

- Detel determined that its simulation and flight processor technologies could be strengthened to build competitive advantage – especially in competition with foreign firms

- Entry into foreign markets (Europe, Africa and former Soviet republics) is not effective. Access to government representatives is limited, time consuming and is costly with paid government liaisons and representatives.

The primary objective for Detel was to strengthen competency in air traffic flight simulators and route processing. Building or expanding core competencies is time consuming, expensive and limited by available qualified technical staffing. A strategy to outsource for gaining competitive advantage with a European partner received approval from the CEO.

The alliance commenced as a simple teaming agreement to pursue a European national air traffic control system. The European firm performed well and was a good match for Detel.
Outcomes/Status:

- Initial teaming agreement now includes joint ventures and expanded roles for Detel and its alliance partner.
- Technical staffs exhibit higher levels of trust. With trust, the alliance becomes more strategic in nature.
- Program Managers are critical to success of the alliance – they control culture clashes and resolve conflicts.
- Market entry has been achieved for both firms. A carefully discussed strategy by both companies occurred at the beginning of the alliance to agree on markets. Marketing area designations protect the European firm while others were exclusive for Detel. Both firms propose integrated systems with complements of partner equipments. This strategy was sound as it enabled market entry in politically sensitive areas with a strengthened technical proposal.
- The alliance strengthened both firms. The European firm gained knowledge of radio and radar systems while Detel grew competency in air flight processing and simulation.
- CEO support reinforced the alliance. Program staff in both companies recognized high level support and expectations to succeed were enhanced.
- The alliance saved money and time for the US firm. Software development expertise in the United States is a critical technology with increasing costs and limited labor pool. The European firm had depth in software development and development costs were much lower.

The Detel alliance with a global partner was executed with correct levels of management involvement. The CEO buy-in built confidence on both sides of the alliance.
Experienced management decisions to proceed slowly following careful negotiations of market areas, scope and communications assured higher probability of success. The slow approach allowed time to overcome any culture differences and build trust and relationships between the teams. Experienced management is overwhelmingly important in such alliances.

Case 5 —

The Context:

Note: This case reflects a discussion of a failed merger and acquisition. Author comments at the conclusion of the case reflect an alliance strategy alternative.

In this agreement, Detel recognized an expanding group of technologies related to telecommunications hubs, routers and switching systems. Detel telecommunications group and corporate goals developed the following strategy:

- Expand and diversify the company into technologies related to hubs, routers and switching systems, in response to explicit recommendations from the business units.
- Internal investment to build a core competency in these technologies was prohibitively expensive. Base of qualified personnel was doubtful. The pace of technology in these areas was too fast to establish an internal capability.

Detel decided to build a capability in hubs, routers and switches via the merger and acquisition process. It performed a survey to assess the companies with these core technologies. Acquisition of a highly ranked commercial firm was completed at a multi-hundred million dollar cost.
Outcomes/Status:

- The cultures of a defense industry firm and a commercial high tech firm are very different and were not addressed adequately in the acquisition process.
- Detel was slow in decision making. This increased friction between the merged firms.
- The pace of technology and innovation of the commercial firm outpaced Detel.
- Friction inhibited communications and collaboration.
- Detel did not establish clear objectives and goals for the acquired firm.
- The M&A was a failure and the commercial firm was sold off at a loss of $55M

The Strategic Alliance Question:

Though this relationship was not a strategic alliance, its failure via the merger and acquisition process raises questions as to potential alternative strategies.

- The strategy for acquisition was not a good one. Cultures of the firms did not align. Goals and objectives were not clearly understood. The issues went beyond management decisions to acquire this firm.
- To gain a potential capability in hubs, routers and switches, consideration of an alliance may have been more appropriate. The conditions for a positive alliance appear promising.
  
  ➢ The firms did not directly compete.
  
  ➢ The defense firm could have gained insight and technologies without jeopardizing the commercial firm’s core competencies.
  
  ➢ The commercial firm could have gained scale and scope for its product lines – increased production orders and selective entry into the military market.
Case 6 —

The Context:

During the mid-1980s, the national defense build-up expanded at a rapid rate with high levels of expenditures. The pace of technology in commercial and military computers experienced frequent incremental increases in processor speeds, memory and storage capabilities. Detel needed to make strategic decisions to assess computer alternatives for applications to military product lines. Research for best-of-breed commercial computers identified the preferred approach as forming alliances in licensing of technologies.

Detel’s military computer products group identified a preferred commercial vendor for establishment of a strategic alliance. The sequence of formation of the collaboration and subsequent licensing included —

- Detel experience base existed with numerous military and commercial computer vendors. A network of professional contacts with a nearby computer company proved to be the link for formation of a licensing alliance.

- Though agreements were clear and desired, senior managers (VPs) evaluated the proposed alliance for several months. Through a personal relationship, the alliance proposal received Detel CEO review.

- A personal relationship had already existed between the CEOs of both firms. The firms did not compete and the CEOs quickly agreed to form the strategic alliance. With the CEO involvement, agreements were reached in a matter of days, overcoming months of intermediate management indecision.
• The strategic alliance was formed to license commercial products for conversion to military products. The licensing alliance is currently in the 12th year of a 20 year agreement.

_**Outcomes/Status:**_

• The CEO involvement was critical to break barriers and establish the agreements. CEOs also directly influenced the establishment of the alliance as a long term relationship, which provided confidence for technical staffs to collaborate openly.

• As Detel and the computer products firm did not compete directly, the relationship developed a collaborative dialog to explore areas of mutual strategic interest.

• The commercial computer firm gained scale of production orders for militarized computers. The defense firm developed a core competency in conversion of commercial products to military configurations.

• With military transition to more commercial products, computer sales growth was experienced based on defense confidence in militarized products.

• The strength of strategic alliance between the firms survived review in both companies by new CEOs. The alliance has grown to include transfer of advanced computer designs for similar licensing and conversion to military configurations.

_The CEO Perspective_

This case was expanded by interview of the CEO who originated this Detel alliance. A personal trust existed between the CEOs of Detel and the computer products firm. The friendship was easier as neither firm had competing products. The discussion of forming a strategic alliance was accomplished over a matter of hours rather than weeks or months. The CEOs already knew the other company and respected the capabilities and
anticipated both firms to be long term survivors. With this perspective, it was agreed that the licensing term should also be a long term relationship. 20 years was decided as the term.

While the licensing agreement has existed for 12 years and has survived new CEO reviews and computer firm acquisition, the rationale for the alliance duration may have been a bit of luck. Both CEOs were confident that the computer architecture was so strong that it would dominate the market for many years to come. It did not. While the product is sound, it failed to achieve expectations.

Detel’s military customera have remained committed to the militarized computer. Performance has proven exceptional. A companion benefit resulted in sales of commercial versions of the computer for military applications not requiring the ruggedized Detel configuration. The alliance remains profitable with Detel realizing several hundred million dollars in revenues and excellent profitability.

The personal involvement of CEOs breaks many barriers to alliance formation. It also ensures a commitment by all participants and facilitates collaborative discussions, which in this case resulted in strategic partnering for next generation computer licensing.

Case 7 —

The Context:

As a part of case 6 in an alliance for licensing a commercial computer for conversion to military configurations, a wide variation of input/output devices was found to exist. A large number of legacy devices exist in military applications including, fax, teletype, data devices, telephone switching systems and more. It was also determined that Detel’s manufacturing process could not meet schedules and design fluctuations
responsively. The strong collaborative environment between Detel and the commercial computer partner in case 6 led to a resolve that a commercial input/output technology firm as a partner would significantly reduce design, manufacturing and test time.

A third alliance partner was located in the form of a small high technology firm in California. The company competency is input/output computer products for a variety of computer platforms.

- The alliance was formed on a basis of personal relationships and discussions between program managers. Trust was a strong component of the alliance success.

- Detel’s motivations included rapid turn-around of input/output requirements into a specialized dense packaging. The input/output alliance partner possessed a core competency in this specialized packaging. The collaborative environment provided added value beyond pure commodity acquisitions.

- The input/output devices firm received value via the transfer of unique conduction cooling technologies from Detel. With this collaboration, expanded scope of products was realized with increased component densities.

- Collaboration between the companies was quick to commence due to the trust and “handshake” agreement between program managers.

- Increased sales have been realized by both firms due to rapid response to customer input/output requirements. Confidence was built with Detel customers by the input/output firm’s ability to turn around design changes overnight.

- During the phase of evaluating potential solutions to the input/output computer requirements, various functional segments of Detel proposed to solve the design and manufacturing problems with in-house capabilities. Detel computer products team
preferred the commercial alliance partner due to speed of service, quality and savings of time to build up a internal Detel capability. Despite manufacturing inability to meet computer products delivery schedules, positions remained firmly entrenched in opposition to this operational alliance. Management disagreements were resolved by CEO review and approval of the proposed new alliance. The lengthy Detel decision process jeopardized the commitments made by Detel computer products team management.

- The risks of losing alliance partners due to defense department and corporate contracting regulations jeopardizes small business alliances. Contracting departments encourage multiple bidding strategies which could end financial relationships formed by lengthy management discussions and commitments to small firms.

The relationships formed between Detel and the commercial input/output devices firm were the key to this successful alliance. The value gained by both Detel and the alliance partner in an operational relationship has developed into a strategic relationship.

Case 8 —

The Context:

As a large defense products firm, Detel has maintained an extensive manufacturing capability for many years. Detel manufacturing is also contending with high union labor costs. Major initiatives have been undertaken by Detel to leverage consolidations of acquired companies to achieve manufacturing efficiencies through new state of the art facilities in lower cost areas. Detel intends to maintain a core competency in manufacturing though cost savings have yet to be realized.
The Detel computer products group licensing of commercial computer products for design to ruggedized military applications requires printed circuit board and other manufacturing process support. Despite goals to retain manufacturing as an in-house function, an experienced management team in computer products researches all required manufacturing for potential savings through outsourcing. It was this process that identified another alliance partner for performing printed circuit board manufacturing.

As was the case with input/output design and manufacturing being outsourced to a small, fast paced competitive company, general purpose electronic board manufacturing has been outsourced to a small special purpose firm. The rationale for this operational alliance is to form a collaborative agreement with a quality leader in electronic manufacturing for cost and schedule competitive advantage.

Outcomes/Status:

The collaboration between the small manufacturing firm and the Detel computer products group has realized the following –

- The commercial firm has gained scale and scope to its core competency of electronic board manufacturing.
- Detel gained competitive advantage to its computer products by providing rapid turnaround of manufactured printed circuit boards with state of the art quality.
- The outsourced manufacturing has resulted in competition with Detel’s internal defense manufacturing organization as the outsourced cost structure is significantly lower than internal processes. Turnaround time is also shorter from the outsourced supplier.
• Formation of the alliance with the computer products group was formed with experienced management planning, dialog and trust.

Case 9 —

The Context:

Military telecommunications systems are, like commercial systems, bridging from a voice-oriented network to data networks. Prior military telecommunications systems were segmented into radio transceivers and telephone switching systems. Technology and architectural change in telecommunications has merged these systems into integrated programs. To be competitive, defense firms must expand their core competencies into data processing to include switches, routers and hubs. Prior attempts to attain this core competency through the merger and acquisition process was a failure (case 5). With a continuing need, the formation of alliances was considered as a strategy for competing to win a multiband military communications system contract. The primary military competitor retained a competitive advantage due to enhanced capabilities in commercial switch and router technologies.

Detel’s program manager established the following parameters for entry into an alliance:

• Preferred proven technology

• The commercial products must be current technology and keep pace with changes and innovation

• Be in the top three of the switching products industry
Outcomes/Status:

The alliance was established with a top tier commercial industry switching systems company with annual revenues twice that of Detel. Product deliveries are defined and deliveries are anticipated to be on-time. The alliance is professional but does not have a significant level of collaboration. The commercial firm gains some economy of scale with increased production quantities and entry into the military market. Detel has gained a leveling of the competitive playing field by way of a strong switching technology firm.

The Executive Perspective

This alliance between Detel and a commercial high technology firm was pursued in a follow-up interview with the Division Vice President. Though the alliance will likely deliver quality products for the intended military telecommunications products, there appears to be little likelihood for expanded strategic dialog. It is clear that Detel gains access to new telephone switching technologies, yet it is unclear that the commercial firm has an equivalent value gain from Detel. As a commercial technology firm, access to a military market is of marginal value to a large technology firm with high value products.

The Detel Executive Vice President provided the following observations of such alliances:

- This alliance was formed at the corporate level in response to bottom-up identification of the intended alliance partnership.

- Alliances at the corporate level are typically weak. It is difficult to structure a strong strategic alliance. Commercial firms (especially large technology oriented ones) do not see the value of strong ties to any particular firm, especially a defense firm such as Detel.
• The opportunities to influence the commercial products market with addition of Detel defense business is insignificant.

• Despite being a small market addition, commercial firms do not ignore Detel defense business. If they do not accept it, their competitors will.

• Entry into defense markets is easier through an existing defense contractor such as Detel.

• A loosely structured alliance with a large commercial products company has increased dialog between corporate and product team players. This communication link does result in early notification of any intended new commercial company product releases or discontinued products.

   The loose alliance structure with large technology based commercial firms is perhaps the best Detel can expect. Leverage by Detel is limited to offer more than market access. Lack of corporate level involvement will likely result in such alliances remaining as arms length subcontract agreements.

Case 10 —

The Context:

   Internet router technology has become another critical element of integrated military telecommunication systems. To fill this void in core capabilities of the military industry firm, commercial sources were investigated in a similar manner to switch elements. Again, finding a market leader with proven technology were criteria for the router partner. The selection criteria being met, a partner was selected, again, with limited management involvement. The agreement was an arms-length subcontract.
Detel corporate management again entered the discussions as this router technology firm to endeavor to form a strategic alliance. Though half the size of the telephone switching firm of case 9, alliances to such commercial firms is a desirable conduit for Detel access to fast paced technologies. The observations of the Detel Executive Vice President in case 9 also apply to this case. Strong alliance definition is not likely with fast paced commercial firms.

Detel desired technical collaboration to gain increased levels of router technology expertise which did not occur. Prior to corporate agreement for a loose strategic alliance, discussions with the router partner were limited in scope beyond the operational intent to deliver a router for military applications.

Outcomes/Status:

The alliance, though not a failure, has fallen short in achieving the potential objectives of collaboration and leveraging to grow an in-house technology for Detel. The formation and subsequent execution of the partnership faced a number of obstacles inhibiting success:

- The commercial router firm maintains a number of alliance relationships, including Detel competitors. Such alliances formed an instant barrier to potential collaborative discussions. Though Detel and the commercial router company do not compete, the alliance with a direct competitor will inhibit any intended growth in technical collaboration.

- The defense industry size does not offer adequate volume to achieve preferential treatment of technical inquiries. An arms-length agreement is the most likely operational alliance scenario.
• An early indicator of reluctance was seen in difficult negotiations and a demanded premium for market-leading products. This again reflects the limited leverage available to Detel.

Though corporate involvement was successful in achieving a limited scope strategic alliance, such agreements are typically weak. In such cases, Detel may wish to consider alternative lower-tier suppliers of commercial routers. Careful attention to technical competence and product quality is required but more value in the defense market access may be realized.

Case 11 —

The Context:

The military telecommunications market presents technical challenges to the defense contractor with a multitude of legacy systems being merged with new tactical internet technologies. The military transition to digitized network requires extensive baseband processing capabilities to accommodate the multitude of data sources. Detel concluded it needed an increased level of capability to be competitive with rival companies bidding for new military telecommunication systems. Group management, with division endorsement, preferred to build an internal competency. The baseband processing capability is a critical technology in the military transition to all-digital systems. Growth of this capability was determined as feasible but not within the time frames to compete for military programs. As an interim strategy, an alliance was determined as a practical solution to pursue imminent contracts. Detel identified a mid-sized company with less than $1 billion in annual revenues. The company is not a competitive threat and focuses
on commercial and non-military government communications programs. Digital signal processing is a core competency of the company.

Outcomes/Status:

The strategic alliance has exhibited the following characteristics:

- Value was created for the commercial signal processing company by expanded scope and scale of its products and engineering services.

- The alliance has provided knowledge growth to Detel’s team through an increasing level of competency in baseband processing. Progress has been slow and staffing has remained a problem with costs higher than anticipated.

- There has been positive dialog between technical staffs and the potential exists to expand the objectives of the alliance into strategic partnering for entering new markets.

- As Detel develops its internal core competency, the strategic alliance may be weakened as its dependencies upon its alliance partner’s knowledge is diminished.

Although there is some risk of weakening the alliance as Detel gains knowledge of baseband processing, the confirmation that growing competencies is slow and costly has been realized. It is doubtful that Detel will achieve its goals of self-sufficiency in baseband processing, as staff resources have been difficult to attract and retain. The operational alliance may well be reconsidered for more strategic goals.

Case 12 —

The Context:

Delivery schedule versus outsourcing is a consistent tradeoff in defense industry firms. In the case of a multiband communications terminal, availability of specially
designed power supplies posed significant schedule risk to program execution. Detel’s internal corporate engineering organization included a highly credible power supply group, however, its manufacturing organization was unable to commit to the power supply delivery schedule. Following a search for competent outsourcing firms, a standard subcontract was established with a small high technology power supply firm. The attractiveness of the firm was a very low price, and commitment to delivery schedule.

Outcomes/Status:

Although the power supply vendor may have been willing to enter a more than an arms-length subcontract, little collaboration was taking place between the companies. Technical problems existed within months of the contract being signed. The power supply company soon became defocused from the task as costs mounted. Technical problems were not being resolved. Despite Detel involvement, progress was at a standstill. To focus on the problems required Detel engineering resources to be applied to the subcontractor’s facility. These were the same corporate engineering resources who would have performed the power supply design as an in-house project. The design issues were resolved and deliveries made, though late and over original costs. Several observations regarding this alliance —

- A personal managerial relationship was not evident until problems developed. A trusted association between managerial levels failed to materialize.
- Criteria to enter this strategic alliance were based primarily on schedule and cost considerations. There was no evidence that standards for entering an alliance were in place as an aide to identifying collaborative partners with a probability of success.
• Failure to recognize the apparent competitive situation in power supplies posed a barrier when technical obstacles arose. Though the small power supply firm was no threat to the large defense firm, at the lower level of technical engineering competitiveness, a collaborative relationship was not likely to occur.

• The alliance was formed primarily on cost and schedule advantages. What was lacking was a rating as to technical competence versus the intended defense application.

Note: Cases 13 through 16, which will be discussed next were managed by the same program manager. Of note are the criteria stated by the manager before entering into any alliance. The criteria include:

• For success, any strategic alliance should be with firms that do not directly compete with your firm.

• A management level relationship must exist. Management on both sides of the alliance must follow-through with commitments. While it is recognized that an actual contract, when signed, will be binding by law, the trusted counterpart will significantly reduce the chances of ever reaching a disagreement that requires legal intervention.

• Form alliances with firms who are industry leaders. Detel must understand why the prospective partner firm is an industry leader. The firm must be a technical leader but also a leader in the way its business is executed.

• The products and/or services from the alliance partner must be 1st in quality and 1st in reputation.
It became clear in the interviews that each of this program manager's alliances were based on the above rules and reflected a clear strategic importance which benefited both partners in the alliance.

Case 13 —

The Context:

With a set of guidelines established as criteria for entering any strategic alliance, a more cohesive strategy was possible that established sound collaborative alliances to enter new markets and enhance the competitive advantage of current products. In this case, Detel possessed a core competency in military signal processing modulator/demodulators (modems) for communications systems. While a criterion for alliance formations encouraged situations where the companies do not compete, careful evaluation of all alternatives for alliance partnering identified common technologies in non-competitive products:

- Global markets were alternatives to offset reductions in defense business.
- Global markets in telecommunications might encompass both civil government and foreign military sales.
- While it may be unwise to form alliances with military modem manufacturers, commercial modem manufacturers may provide an market entry method for global markets.

To provide an enhanced military product, a strategic alliance was formed with a commercial modem manufacturer. The formation of the alliance met the primary condition that a strong personal bond exist at the management level. Personal relationships between management enabled candid discussions for both near term and long
term alliances. The commercial modem manufacturer maintained an advantage with a large commercial market reducing manufacturing costs. The strategic alliance enabled joint R&D to enhance existing military communications systems with modem subsystems for connections to commercial networks. This dual-use concept not only may be of value to existing military customers but also to potential foreign governments as potential new customers. In many cases, communications systems have assimilated into multi-use platforms to access either military or commercial networks. This single platform is more attractive to customers as economies of scale and scope result in reduced system costs with superior capabilities.

In line with the criteria for forming alliances, the commercial modem company possessed existing global commercial market access which enabled a defense product introduction to be of value to both firms. With a basis of trust, open dialog was possible to explore the multiple opportunities that such an alliance could bring to both companies. While both firms recognized the other’s core competencies, neither was compromised.

Outcomes Status:

The strategic alliance was formed and initial projects included the joint R&D project to integrate a commercial modem product into a defense telecommunications terminal. This early step, with continuous management dialog, enabled engineering teams to form collaborative relationships to work through numerous integration issues. The focused single effort enabled everyone associated with the project to only worry the immediate project. Future growth and ideas emanated from the technical collaboration process.
Beyond the collaboration and company alliance advantages, the relationships resulted in the following:

- Both firms easily found value in the strategic alliance –
  - Entry into global military and foreign government markets benefited both companies.
  - Neither company was placed in a position of direct competition.
  - The commercial firm gained economies of scale through increased production orders.
  - The defense firm learned more about commercial practices and how to bridge interfaces into commercial communications systems.

- The capability of providing dual-use products was accomplished quickly. The time to learn and build a commercial modem capability in-house was prohibitively expensive and time consuming.

- Through management trust, the collaborative spirit built a competitive advantage for both companies in pursuit of global markets. Future joint teaming is anticipated as marketing departments also embrace the relationship in pursuit of future work.

Case 14 —

The Context:

Another benefit of taking the time to evaluate business strategy in the context of possible strategic alliances was demonstrated in the formation of a collaborative agreement encompassing system engineering and satellite network control. Again, considering potential entry into global markets with products that have a dual use, military and civil
government, Detel initiated a partnership with an exclusively commercial company. Careful planning was necessary as system engineering is a Detel core competency focused on military products and technologies for national defense applications. A strategic alliance partner may also have a core competency in system engineering but is non-competitive in exclusively commercial markets.

An alliance with firms in non-competing system engineering strengths is unique and should have a high degree of value to both firms as system engineering teams typically possess broad insights of technology trends and networks on a large scale. To enable such commercial and military system engineering teams to work together in a collaborative environment may open more ideas for potential new business opportunities.

To enter foreign markets with telecommunications systems capable of commercial connections requires a partnership with firms who meet the criteria of being in non-competing markets, managerial trust-based relationships and a reputation for 1st in quality and business.

An alliance was formed to focus on technology exchange, system engineering and global satellite communications network management. The partnering was initiated through contact with professional colleagues who had long-standing technical relationships. With the absence of competitive markets, product engineering teams and systems engineers were able to build strong relationships and achieve levels of knowledge based alliances.

Outcomes Status:

The alliance has built value for both firms. Detel has learned commercial communications systems techniques which may be applicable to defense networks and
build product value for national defense customers. An example rests in the commercial
techniques for network control which have become highly automated, and motivated to
save cost. Application of techniques to military networks may evolve to joint R&D by
both firms in a collaborative effort. Likewise, through such a process, the commercial
firm is learning military techniques which may enhance network privacy or resistance to
interference. The bottom line – both firms have gained knowledge and insight in a non-
competitive environment.

The commercial firm has a more global orientation to its business. Its customers
are global in nature and has led it to team in foreign markets with products and systems
engineering. The relationship has been successful with jobs won in Europe and proposals
in process in more areas.

Case 15 —

The Context:

Despite best laid plans, not all strategic alliances are assured to be successes. In
this case, Detel considered entrance into European markets, with objectives to propose
telecommunications systems that encompassed military and civil government requirements.
As has been noted in various cases and literature, the formation of a strategic alliance with
a partner in the country of interest saves money and opens doors of access to key
government staff. Detel envisioned that the alliance could originally be formed as an
arms-length subcontract, with a goal of entering joint R&D collaborations in
telecommunications switching equipments. Despite having personal relationships between
managers, the activities between inter-European firms who were considering merger and
acquisitions is not a common area of investigation. Before the alliance could be built into
a strong relationship of collaborative exchange, Detel's principal competitor acquired the alliance partner.

Outcomes/Status:

The alliance was disbanded due to the acquisition of the partner. Caution must be exercised in all strategic alliances but even more so with partners from other countries. Exit strategies and proprietary information must be considered before release or protected from competitors engaging in acquisition activities.

Case 16 —

The Context:

The process of considering strategies to enter global telecommunications markets with partners from the commercial segment has the potential of matching strengths of military and commercial technologies for proposals to national governments and foreign military organizations. In this case, Detel recognized opportunities to form strategic alliances with commercial space communications firms —

- Management level relationships existed to facilitate frictionless dialog. Discussions between the firms were funneled through individuals with long term rapport and trust. With the competitive areas in other business segments, this personal dialog was critical to success to enter a strategic alliance.
- The companies involved competed in other segments but these divisions focused on distinctly military and commercial markets.
- Both companies possessed core competencies in frequency bands that were non competitive. While the commercial firm could not sell commercial customers access
to military bands, Detel could provide leased commercial telecommunications access to military customers.

- The commercial satellite communications firm actively markets and provides turn-key satellite systems to many nations on a global basis. The potential for offering dual-use satellite systems for both civil government and military applications builds a stronger team with competitive advantage for marketing and sales.

**Outcomes/Status:**

A successful strategic alliance has been formed. The targeted markets encompass countries considering or expanding their national telecommunications infrastructure. The strength of the alliance is a ‘total system’ concept that can deliver satellites on-orbit with capabilities to provide communications channels to government agencies, civilian and military operations. The total system concept enables a family of ground systems to provide fixed terminal links, mobile terminals and more rugged military applications. Military systems may be configured with government commercial channel units to ensure seamless linkages. Both companies have unique core competencies in complementary technologies. Although some caution exists in sharing core data, as both companies are significant players and compete in other segments, the alliance shows promise of gaining competitive advantage for both companies as well as providing global market entry for Detel.

**Case Considerations:**

The previous mini-case discussions have presented a variety of strategic alliances in a single telecommunications group of a major defense industry firm. In the chapter to follow, the cases will be evaluated to identify the underlying reasons or possible rationales
for achievements or shortfalls. In many cases, the perspective of long or short term objectives plays a major role in determining potential to deliver financial gain to the company. In some cases, creative managers used the alliance as a process to generate pressure or competition to internal organizations. In others, the strategic alliance provided a compromise to overcome barriers of contracting which may have broken down management level commitments. The case interviews reveal a use of strategic alliances that conform with predicted outcomes as we described in Chapter 2. The more subtle results of strategic alliances indicate creative management initiatives that encompass both short-term and long-term objectives for growth and profits.
Chapter 4
Alliances – Results, Analysis and Conclusions

The survey of alliances presented previously portrays a range of partnerships between Detel Corporation and other firms, encompassing defense, government and commercial markets. Partners included companies with annual sales varying from a few million to in excess of $30 billion. The objective of this section is to assess the information available from the alliance cases. In this summary the alliances are assessed to determine degree of success or failure, management roles, duration or stability, competitive advantage, and whether they are primarily operational or strategic in nature.

Measures of the Alliance Relationship – In this section, each case will be gauged against a set of criteria to identify those areas in which Detel exhibits strengths in achieving and maintaining a successful alliance partnership.

Comparative Analysis – This review will map across the cases, comparing partner size, comparative advantages, and primary markets of the alliance partners. This review will provide insights as to potential trends of Detel in partner selection criteria and strategy to date with a range of company sizes.

Alliance Relationship Measures

Alliance Partner Criteria - When considering a set of alliances, management is presented with a range of factors to consider as entry parameters. These factors include:

- Will the combination of partners strengthen the companies? In new or global markets?
- Are the companies compatible? Can there be trust between the firms and individuals?
- Is there reason for each company to have a commitment to the alliance? Will they place necessary resources behind it to ensure success?
- Do the companies match up culturally?
• Does the agreement have the potential to provide comparative advantages to each participant?

• Will the agreement reach a level where the firms may gain competitive advantage against their competitors as a result of the strength of the alliance?

• Does the alliance ‘fit’ with each of the alliance partner’s goals, strategies or objectives? Is the flow of communications open enough to mutually explore and define each partner’s interests and objectives within bounds of protecting proprietary information?

• To learn and build stronger alliance will require a collaborative exchange of information and knowledge with a strong degree of trust. Is there a personal relationship with a level of trust between the alliance management teams?

Recognize that assessments of the above criteria in alliance partner examination results in a range of answers from strong to weak (Lewis\textsuperscript{31}). For example, an alliance may be a success based on delivery of a specific product, but it may have missed opportunities for longer term strategic growth due to short-term perspectives or inadequate management communications. While these criteria provide a guide for assessing the effectiveness of a strategic alliance, they also are relevant when management considers the entry options for establishment and execution of alliances.

**Measures of a Strategic Alliance Relationship\textsuperscript{32}**

<table>
<thead>
<tr>
<th>Stronger</th>
<th>Weaker</th>
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<tbody>
<tr>
<td><strong>Communications</strong></td>
<td></td>
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<tr>
<td>Issues are raised early</td>
<td>We discuss issues but perhaps not until they are more critical</td>
</tr>
<tr>
<td>There are extensive informal and formal communications</td>
<td>Communications are limited and more structured formal events</td>
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Trust
When we say it, you can count on follow-through

Outlook
Both firms explore new opportunities as leading to potential new markets or competitive advantage over competitors

Acceptance
Actions taken by both firms reflect we value each other
Both sides are really working to accept differing company cultures
The teams and individual staffs work well together and are motivated to achieve mutual objectives

Alliance Structure
The companies really are a good fit. Our dialog is frank, honest and clearly shows willingness to compromise
The relationship is growing and is fundamentally strong.

Understanding
Both firms understand the critical interests of the other – they are a factor in addressing problems and solutions

Problems
There is a team approach to finding solutions to problems
Sitting down across the table works to find solutions to problems

The things we say may need approvals so there’s some risk in relying on them
The scope of the collaboration is limited as is the view to future mutual opportunities
There is a perspective of unequals at work in the alliance
Things haven’t improved – there is an uneasiness now as in the beginning
Despite meeting after meeting, the people still act like strangers

Our interests align in some areas but differ in others. We are sometimes unfairly exposed to excessive risk
Unless we see gains and bigger returns, the relationship is not worth the effort.
The other firm doesn’t understand our motivations and limits. They are non-issues when resolving differences

Solutions are difficult to resolve and hence we tend to suppress them until they become critical
Solutions are found but usually by having to concede defeat
**Alliance Relationship Assessments**

The following assesses each of the alliances previously discussed against the Lewis criteria.

| Case 1 | • Communications – limited – all *three* companies compete with each other  
• Trust – ‘Mutual cautious trust’  
• Outlook – May be new business by teaming but currently focused on very specific market opportunity  
• Acceptance – Company pride restricts viewing competitors as equals  
• Understanding – Focused on a very specific contract – outside of that boundary was of little interest  
• Alliance Structure – These competing firms don’t align well for collaborations.  
• Problems – They get solved but communications barriers do not bode well to anticipate and resolve issues quickly  |
<table>
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<tbody>
<tr>
<td>Conclusion: A strategic alliance with limited success. Competition was a continuing barrier.</td>
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</table>

| Case 2 | • Communications – longer term alliance and dialog openness has expanded.  
• Trust – Basis of alliance built trust through strategy to limit competing markets and products  
• Outlook – Key managers faced issue of competing markets at entry (1983) to the alliance. Solved the issue up front and led to collaboration  
• Acceptance – Respect by both players as *equals*. Reputable technical standards  
• Understanding – The longer the alliance exists, the better dialog exists to understand the strategic goals of both firms. Some risk that in new consolidated industry that feverish competition will overcome this condition.  
• Alliance Structure – In the defined areas of non-competitive products and engineering, the companies fit well.  
• Problems – With a long term relationship, problems tend to be solved quickly. Risk increases that consolidated industry with new M&A players will jeopardize the communications for rapid resolutions.  |
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<tbody>
<tr>
<td>Conclusion – A positive alliance based on management strategic planning at entry to overcome aspects of competition. Management level trust in communications has allowed continued relationship. Positive results followed.</td>
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| Case 3 | • Communications – Straightforward dialog  
• Trust – Open discussions allowed clear understanding of needs of both  |
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<th>Case 4</th>
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</table>
| **Communications** – Management control and involvement enabled flow of communications consistent with cultures of companies and nations.  
| **Trust** – The critical success factor in this alliance. Managers worked at level of open dialog and trust in verbal commitments.  
| **Outlook** – Strong alliance factor as both recognized value of future markets and competitive advantage over competitors.  
| **Acceptance** – Mutual respect for each other. Respect of culture by management key in this criterion.  
| **Understanding** – Different market targets by the firms were stated and protected based on mutual consent.  
| **Alliance Structure** – Companies fit well. Each needed the other’s competencies to merge into a single position of strength in competitive market.  
| **Problems** – Tight management control of the alliance ensured problems were surfaced and resolve.  

**Conclusion** – A powerful alliance that builds competitive advantage and potential for both companies to enter new global markets. Heavily dependent on entry strategy considerations, and managerial communications with trust commitments.

<table>
<thead>
<tr>
<th>Case 5</th>
</tr>
</thead>
</table>
| A case that falls outside the bounds of a strategic alliance. An attempted Merger and Acquisition to gain core competency that failed. An alternative strategy for this fast moving technology area would be consideration of a strategic alliance. With major cultural differences between commercial-based companies and defense industries, careful management attention would be required to form a collaborative partnership in this technology segment. Constant management involvement for dialog to overcome decision delays and problems would be essential.  

<table>
<thead>
<tr>
<th>Case 6</th>
</tr>
</thead>
</table>
| **Communications** – With the alliance formation at the CEO level, dialog was open, clearly understood and led to quick agreement.  
| **Trust** – Again, with CEOs making the agreement, trust was paramount. The secondary benefit is that CEO trust is transferrable to
| Case 7 | Communications – Experienced program management team ensures this happens.  
Trust – Critical in this alliance with a commercial products company. Defense firm bureaucracy moves too slowly requiring trust-based commitments to be seen through to completion. Again, program management ensures this happens.  
Outlook – Through trust based communications, companies can openly share ideas for new markets and product opportunities  
Acceptance – Managerial experience ensures that the large defense firm does not dominate the smaller commercial firm  
Understanding – The dialog between managers led to respect of competencies and sharing of critical technologies to build both firms into stronger positions.  
Alliance Structure – Both companies need each other; to share technologies and build competitive advantage. The key to this accomplishment is managerial control, dialog and trust.  
Problems – The open dialog and relationship ensure problems are minimal. Quickly resolved by management discussion.  
Conclusion – A knowledge-based successful strategic alliance. Entry level strategy considerations, experienced management and extensive trust enable this to succeed. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 8</td>
<td>Communications – Crisp understanding of product expectations and schedules built preferred supplier relationship</td>
</tr>
</tbody>
</table>
| Case 9 | Communications – Open professional dialog but focused on commercial products for Detel applications.  
| | Trust – Trust exists between the companies though collaboration is limited to the products for Detel telecommunication systems.  
| | Outlook – Opportunities exist for expanded alliance scope but commercial/defense company alignments do not promote expanded levels of collaboration.  
| | Acceptance – Both firms are significant players in their businesses of defense and commercial products. Both companies, at team and management levels respect each other as equals.  
| | Alliance Structure – The potential is limited as defense scale is inadequate to entice stronger alliance structure and expansion. Detel gains value from commercial technology.  
| | Understanding – Detel and its commercial partner recognize the limits of the alliance and realities of defense and commercial markets.  
| | Problems – Team resolutions for issues.  

**Conclusion** – The alliance between Detel and commercial digital switching firm is professional in nature though limited in scope. The defense market size limits expansion of the alliance though the commercial firm cannot afford to give up defense business to competitors. Corporate level general agreement for strategic alliance ensures availability of products and professional, honest dialog.

| Case 10 | Communications – The Detel to commercial router firm alliance is established at the corporate level but is limited in scope. The limitations and looseness of the partnership result in more formal lines of communications.  
| | Trust – Corporate involvement has built some trust via open dialog but defense/commercial technology misalignments keep the alliance at arms-length. Commercial router company alliances with Detel |
competitors also limits trust relationship.

- **Outlook** – Future opportunities may be limited, again, due to competitor alliances.

- **Acceptance** – Detel and the commercial router firm are respected leaders of technology and respect each other in their business markets. Teams enjoy the challenges of solving technical challenges and respect each other as equals.

- **Alliance Structure** – The corporate level strategic alliance is a loosely structured agreement and may be the best to be hoped for. The differences between Detel defense programs and fast paced commercial router products may not align for strong alliance relationships.

- **Understanding** – Through the process of corporate dialog, both companies understand the limitations of the alliance. Differences in culture, markets and products will limit future alliance expansion into broader products.

- **Problems** – Problems are resolved but in a structured process. Problems are focused on technical issues and urgency to solve the issue to move on to more significant issues by the commercial router company.

**Conclusion** – As with case 9, the alignment between a powerful commercial technology company and Detel will be limited at best. The pace and limited scope and scale of the defense business will constrain this alliance to arms-length subcontracts. The commercial router technology company will not defer the defense business to competitors. The existence of alliances with Detel’s principal competitor limits potential to achieve collaborative technology exchange.

**Case 11**

- **Communications** – Detel and this baseband processing company have developed a strong technical relationship and flow of information exhibits limited restrictions.

- **Trust** – Common technologies but in non-competing markets has enabled follow-through on commitments.

- **Outlook** – Detel and this alliance partner share telecommunications interests but in different markets, one being commercial and the other defense. Direct competition does not exist but opportunities for collaboration to enter new markets is being pursued.

- **Acceptance** – Both firms excel in their respective markets of defense and commercial telecommunications. Both respect each other’s expertise.

- **Alliance Structure** – The alignment of the companies to build core competencies while not competing has led to expanded scope of the alliance.

- **Understanding** – The mutual respect based on technical expertise has built a network of communications between the companies. Both
- Firms understand the limits and business objectives of the other.
- Problems – Open dialog solves problems at the team level.

**Conclusion** – Detel’s original objective was to form this operational alliance as a process to build an internal core competency in baseband processing. As predicted by the literature, growing technology-based core competencies is expensive and time consuming. Detel’s recognition of this has resulted in greater commitment to this alliance. The results are positive and a strong alliance has been formed which is expanding into a strategic alliance.

### Case 12
- Communications – Adequate and open dialog existed but technical issues dominated conversations.
- Trust – Management dialog prior to entry did not achieve commitment levels.
- Outlook – With technical problems experienced by commercial partner, alliance could not pursue new potential markets or collaborations.
- Acceptance – Became a superior/inferior perspective of the defense firm to commercial partner relationship.
- Alliance Structure – On the surface, the product vendor appeared to align well with the defense firm product lines. Technical challenges to deliver overwhelmed any potential growth.
- Understanding – Issues which spiraled into cost control problems resulted in barriers to understanding the limits of the alliance partner.
- Problems – Solutions required engineering technical support from the defense firm with additional capital. Resolutions were slow to be recognized and time consuming.

**Conclusion** – An alliance failure which originated at the point of entry. Managerial involvement to establish better understandings of limits and capabilities may have been able to recognize shortfalls in technical depth excessive risk. When problems arose, trust was lacking as well as well defined paths of communications.

### Case 13
- Communications – Sound managerial contacts established prior to entry and continued throughout the alliance. These contacts reinforced others to build solid open lines of dialog.
- Trust – Open, collaborative commitments by program management enabled future opportunities.
- Outlook – The scope of the alliance is expanding via managerial dialog and collaboration.
- Acceptance – Professional atmosphere of equals.
- Alliance Structure – Careful consideration of product and systems being complementary led to strong alliance.
- Understanding – Based on management trust and open communications. Critical interests were clearly defined and understood.
| Case 14 | Communications – The management team approach as in case 13. Careful planning and entry criteria ensured management dialog which passed down to teams.  
Trust – Commitments were met and in a timely manner.  
Outlook – The firms reached mutual agreement on scope which allowed focus on current projects and future opportunities.  
Acceptance – Both firms are strong technical firms with respect for each other’s strengths. Viewed as equals.  
Alliance Structure – Management recognition of potential technical alignments enabled companies to fit. Would have been impossible without experienced executives with strong technical backgrounds and strategic thinking.  
Understanding – Competencies and limitations were defined at the point of entry into the alliance. Market priorities – defense and commercial space systems being well defined eliminated potential problems.  
Problems – Issues usually intercepted before becoming problems due to engaged managers.  

| Case 15 | In this case, the criteria used in other cases did not have the opportunity to mature due to unanticipated acquisition of the alliance partner by a Detel competitor. The case is retained as an example of the risks in alliance formation.  
Communications – Within the boundaries of the specific alliance objectives, dialog was open and productive. Aspects of possible M&A activity was not a topic and likely prohibited by securities regulations.  
Trust – The alliance was terminated by the acquisition process before levels of commitment could be attained.  
Outlook – The opportunity to team for competitive advantage in global markets indicated this strategic alliance as a strong partnering.  
Acceptance – Culture differences and immaturity of the alliance resulted in limited contact between program teams.  
Alliance Structure – The companies are a good fit. Detel had a limited presence in European markets and did not compete with its European partner.  

Conclusion – A model of collaboration and business building of defense and commercial products. The key was experienced management who understood and explored strategies and identified the right partners willing to build coalition based on trust and mutual understanding.  

Conclusion – A strong alliance that has added value to both firms. Formation enabled by strong managers exhibiting strategic and tactical planning to recognize opportunities in such a collaboration.
- Understanding – The alliance required more time to ensure that both companies understood the other firm’s business priorities and core competencies.
- Problems – A good working relationship had been established within the management teams until the acquisition was completed.

Conclusion – Detel looked forward to a well-matched alliance with a European partner. Detel management was not aware of the impending acquisition in adequate time to avoid unnecessary discussions and pursuit of strategic objectives between the firms. Detel management efforts to define objectives and build communications and trust was founded on opportunities for entry into European markets. Companies must exhibit caution in going excessively fast in alliances with the risk of placing company strategic information in jeopardy to merger and acquisition activities.

Case 16
- Communications – Known management colleagues ensured open dialog throughout alliance formation.
- Trust – As large firms, one defense and one commercial, unique managerial trust based on long professional association built trust to form strong partnership.
- Outlook – Through management level contact, new opportunities could be explored without jeopardizing core business goals and strategies.
- Acceptance – Each firm, being a major player in its market – defense and commercial space telecommunications – was able to respect the other as equal. Heavily influenced by strong respect between program managers.
- Alliance Structure – The companies, in defense and commercial markets, recognized opportunities to enter global government and military markets as a stronger team together than separate.
- Understanding – Critical business interests of each partner were understood
- Problems – Problems are resolved promptly through across-the-table discussions

Conclusion – A strong alliance between large firms. Strong relationship at program management level ensured commitment and trust between firms.
Discussion of Conclusions

Detel has experienced a variety of alliances. From the Lewis criteria for measures of alliance relationships, several dominant themes surface as leading causes for success in alliance formations and implementation. They include:

- CEOs expedite strategic alliance formations. The agreement between CEOs immediately conveys commitment and trust. These are conveyed to all levels of management in both companies. Such strategic alliance formations save time, cutting through layers of mid-level management to reach an agreement. With the pressure of a CEO agreement in principal, mid-level managers experience pressure to finalize the details and resolve issues to avoid raising their issues to CEOs who have already reached agreement.

- Trust and open dialog between management is critical. Without it, opportunities to expand the scope and learning of both companies do not exist. Even in cases where the alliance partners are not perfectly aligned, management dialog and trust provides insight into other technologies and the related businesses.

- Experienced managers with a professional network of colleagues and personal contacts can build strong alliance partnerships. These discussions, leading to formation of strategic or operational alliances, save time and increase potential value to both firms. The technologies and innovation opportunities are identified for mutual collaboration through a process of trusted dialog.

- Do not overlook the opportunities which may be provided to form alliances based on the availability of internal capital in large firms. Capital is the resource that small firms
have the least. Careful evaluations may build a strong relationship with technologically cutting-edge firms based on confidence to invest in licensing of their products.

- Though they may be accomplished, alliances with direct competitors require managerial skill and cautious negotiations to recognize opportunities to leverage complementary products and technologies. Caution must be exercised to avoid compromise of strategic company goals. These alliances require continuous management attention to protect core competencies and strategic objectives.

- Alliances formed by managers with established entry criteria, strategic thinking and commitment to remain active on a day-to-day basis have high success rates.

- Managers with less experience may need mentoring to avoid pitfalls of alliance partner selections based on product and market reputation but lacking trusted managerial relationships. Though success may be realized in product delivery, untapped potential is missed for long term strategic alliance and collaboration.

- Learn through mistakes. In a technology-paced telecommunications environment, core competencies from commercial firms are not guaranteed via the route of merger and acquisition. Under these conditions, cultures will likely not align. Trial periods using alliances and technology collaborations are more likely to achieve stronger competitive advantages in telecommunication markets.

**Alliances Comparative Analysis**

The alliance interview cases of the defense industry firm also provides insight into the types of alliances being formed and how consolidated firms are reacting to the changed defense industry. A summary of the information from the cases is provided in Table 5:
Table 5 – Defense Industry Alliance Comparisons

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Alliance Partner Size</th>
<th>Business Markets Primary/Secondary</th>
<th>Level of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Large</td>
<td>Defense</td>
<td>Limited</td>
</tr>
<tr>
<td>2</td>
<td>Large</td>
<td>Defense</td>
<td>Limited</td>
</tr>
<tr>
<td>3</td>
<td>Small</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>Small</td>
<td>Govt &amp; Defense/Commercial (European)</td>
<td>Success</td>
</tr>
<tr>
<td>5*</td>
<td>Small</td>
<td>Commercial</td>
<td>Failure*</td>
</tr>
<tr>
<td>6</td>
<td>Large</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>7</td>
<td>Small</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>8</td>
<td>Small</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>9</td>
<td>Large</td>
<td>Commercial</td>
<td>Limited</td>
</tr>
<tr>
<td>10</td>
<td>Medium → Large</td>
<td>Commercial</td>
<td>Limited</td>
</tr>
<tr>
<td>11</td>
<td>Small → Medium</td>
<td>Commercial/Defense</td>
<td>Limited</td>
</tr>
<tr>
<td>12</td>
<td>Small</td>
<td>Commercial</td>
<td>Failure</td>
</tr>
<tr>
<td>13</td>
<td>Medium</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>14</td>
<td>Medium</td>
<td>Commercial</td>
<td>Success</td>
</tr>
<tr>
<td>15</td>
<td>Large</td>
<td>Commercial/Defense (European)</td>
<td>Failure**</td>
</tr>
<tr>
<td>16</td>
<td>Large</td>
<td>Commercial</td>
<td>Success</td>
</tr>
</tbody>
</table>

*Not an alliance – firm acquired and failed. Example of conditions when an alliance may have been a preferable alternative to acquisition.

** Failure due to unanticipated acquisition by competitor
<table>
<thead>
<tr>
<th>Case #</th>
<th>Defense Firm Advantages</th>
<th>Partner Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Core competencies in mission control &amp; ground systems</td>
<td>Military space systems</td>
</tr>
<tr>
<td>2</td>
<td>Systems engineering &amp; ground telecoms</td>
<td>Military space systems</td>
</tr>
<tr>
<td>3</td>
<td>Capital, defense and government markets</td>
<td>Advanced technology transceiver products</td>
</tr>
<tr>
<td>4</td>
<td>Capital, strength of large company, radar technologies</td>
<td>Global market entry/software development/simulations</td>
</tr>
<tr>
<td>5</td>
<td>Acquisition capital</td>
<td>Advanced commercial technologies hubs, routers &amp; switching</td>
</tr>
<tr>
<td>6</td>
<td>Military technologies, market access</td>
<td>Commercial computer technologies</td>
</tr>
<tr>
<td>7</td>
<td>Conduction technologies and military market access</td>
<td>I/O design and manufacturing</td>
</tr>
<tr>
<td>8</td>
<td>Military market access/capital</td>
<td>Commercial manufacturing of electronics – efficiency, quality and cost advantages</td>
</tr>
<tr>
<td>9</td>
<td>Entry into DoD markets / opportunity to influence military transition to data intensive networks</td>
<td>Keeping pace with fast moving technologies in data communications/</td>
</tr>
<tr>
<td>10</td>
<td>Entry into DoD markets</td>
<td>Market leader products in routers &amp; related data communications products</td>
</tr>
<tr>
<td>11</td>
<td>Entry into DoD markets</td>
<td>Advanced baseband data processing and commercial telecommunications markets</td>
</tr>
<tr>
<td>12</td>
<td>Strength of internal capital / opportunities to increase production sales in military markets</td>
<td>Claimed technical competency / small company commitment and flexibility</td>
</tr>
<tr>
<td>13</td>
<td>Expanded market opportunities for partner commercial products /</td>
<td>Existing network of global market customers / technically superior commercial product line</td>
</tr>
<tr>
<td>14</td>
<td>Technical expertise in military system engineering / access to military markets</td>
<td>Commercial system engineering and network management competencies / extensive global partners and customers</td>
</tr>
<tr>
<td>15</td>
<td>Multi band military telecommunications terminal products</td>
<td>European market entry / data network processing design</td>
</tr>
<tr>
<td>16</td>
<td>Military frequency band telecommunications terminals / military market entry</td>
<td>Global customer base for commercial space communication systems / foreign government access</td>
</tr>
</tbody>
</table>
Comparative Results

A dominant result from the data presented in Table 5 is the prevalent use of firms whose principal sales are in the commercial markets. This may be the result of two conditions – one being the loss of many military industry vendors as a result of the downsizing and consolidation of the defense industry. The other being a defense firm strategy to utilize the positive aspects of commercial industry firms. These include being more agile, especially in the case of small firms. The commercial industry firm may also possess more innovative technologies and processes.

A reinforcing view of this current phenomenon is addressed by Brown and Herzfeld, who point out that defense spending was an imperfect system in the past to encourage technology investment. Growth in procurement rules and regulations, standards and specifications tended to build two distinct industries – defense and commercial sectors. There was a perception to do business “the government way” which led to separate industries and sales. The unique government requirements forced special processes for handling small businesses, fraud, unique data, accounting, production, quality and management processes to meet federal standards. Failure to meet the requirements risked financial, civil and even criminal penalties.

In the cases discussed in this report, we are seeing the defense industry reaction to reform of the government acquisition system as well as movement towards a more homogenous commercial/defense marketplace.

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In case numbers 9 and 10, observe that the alliances with top tier market leaders in switching and routers were only moderately successful. Though products were delivered, further collaborations and technology or new market strategies were not realized. A look at the defense firm and partner advantages reveals the likely answer — besides the competitor alliance, the defense firm likely did not offer adequate comparative advantage to such high tech commercial firms. Alliances with large commercial technology firms are loosely structured as defense markets are not of adequate size to attract commercial fast paced technology companies. Strong strategic oriented alliances between such companies are not likely. Commercial firms are willing to add the defense scale to existing product productions but are unlikely to enter long-term strategic agreements. The case is different for smaller technology firms as the opportunity to enter military markets offers measurable increases to production levels and potential new research and development for new products to support defense systems. Operational and Strategic alliances between large defense firms and small technology firms are more likely to achieve higher levels of success than between large firms exclusively.

The formation of an alliance with a small technology firm (case number 12) is no guarantee of success nor does it relieve the defense firm of the obligation to carefully assess the small firm’s technological capabilities and leadership.

Clearly, alliances are a likely path to new market entries. Entry into foreign markets is costly, time consuming and frequently has a low probability of contract win. Carefully planning in selection of compatible alliance partners, both U.S. and foreign firms, is the fastest method of achieving globalization. Though foreign partners are the clear
winner for access to national government agencies, the defense firm must be cautious of merger and acquisition activity which may jeopardize the intended alliance with exposure of company information in the balance.

In case 5, the defense firm learned a lesson not repeated. In this instance, acquisition of a fast paced technology firm was not a route to instant core competencies. Cultural barriers and management issues were not resolved leading to this M&A failure. The use of alliances is the preferred strategy for enhancing technologies in the defense firm.

**Summary**

The building of national defense is a complex business. The industry has experienced profound change over a period of a decade. It has seen a dramatic decrease in federal funds being expended on national defense needs for new products. Simultaneously, the world has experienced an impressive increase in the pace of innovation of new technologies, especially in the area of digital communications. The defense industry of just a decade ago was significantly larger with a wide array of competing firms. In a smaller defense market, the industry has been encouraged to, and has, in fact, consolidated into a much smaller set of firms. Managers of these consolidated firms are faced with competing for fewer and fewer programs, integrating complex organizations and technologies while attempting to grasp new emerging technologies to develop products and remain competitive. Such new innovations and technologies are the basis of national defense policy to gain military advantage over adversaries.

A series of interviews within a large defense firm telecommunications group has revealed an increasing use of alliances to solve a variety of management objectives. The
alliances have proven to provide a method of entry into new markets, both in North America as well as on a global scale. Alliances with small firms have demonstrated a higher level of success as well as providing a source of innovative new technologies and setting a faster pace objective for the typically slower, more bureaucratic defense firm. Long term alliances are feasible, even in an era of fast paced technology change, and are rapidly formed when senior level executives, such as CEOs, are integral to the alliance decision.

Despite the positive results, alliances can and do fail. Successful alliances exhibit a high degree of managerial involvement in the process. Management discussion, long term associations with alliance counterparts and commitment based on trust are dominant criteria for alliance success. The more seasoned the manager, the more likely will the alliance be a successful. Experienced managers are also the source of facilitating strategic discussions with alliance partners to identify creative new business opportunities and collaborative projects for long term growth.

In a very different defense industry, alliances may be the opportunity to keep pace with new technologies and their introduction into new defense systems. The era of defense programs driving technological change has come to a close. A new era of capturing the pioneering commercial technologies for defense systems will be highlighted by portfolios of alliances between defense and commercial product industries.
Appendix 1
Defense Industry Consolidations

The consolidation of defense industries have resulted in fewer companies in selected defense markets. The Department of Defense monitors the consolidation of industry markets to ensure that certain capabilities to produce defense unique products continues to exist. Key market segments are identified below which reflect the 12 critical capabilities which are monitored. Two segments, submarines and ammunition are not included as these sectors have not experienced any changes.

### Prime Contractors in Defense Markets (1990-1998)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Reduction in Contractors</th>
<th>1990 contractors</th>
<th>1998 contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tactical missiles</td>
<td>13 to 3</td>
<td>Boeing, Ford Aerospace, General Dynamics, Hughes, Lockheed, Loral, LTV, Martin Marietta, McDonnell Douglas, Northrop, Raytheon, Rockwell, Texas Instruments</td>
<td>Boeing, Lockheed Martin, Raytheon</td>
</tr>
<tr>
<td>Fixed wing aircraft</td>
<td>8 to 2</td>
<td>Boeing, General Dynamics, Grumman, Lockheed, LTV-Aircraft, McDonnell Douglas, Rockwell</td>
<td>Boeing, Lockheed Martin</td>
</tr>
<tr>
<td>Expendable launch vehicles</td>
<td>6 to 2</td>
<td>Boeing, General Dynamics, Lockheed, Martin Marietta, McDonnell Douglas, Rockwell</td>
<td>Boeing, Lockheed Martin</td>
</tr>
<tr>
<td>Satellites</td>
<td>8 to 5</td>
<td>Boeing, General Electric, Hughes, Lockheed, Loral, Martin Marietta, TRW, Rockwell</td>
<td>Boeing, Lockheed Martin, Hughes, Loral Space Systems, TRW</td>
</tr>
<tr>
<td>Surface ships</td>
<td>8 to 5</td>
<td>Avondale, Bath Iron Works, Behtlehem Steel</td>
<td>Avondale, Bath Iron Works, Ingalls</td>
</tr>
<tr>
<td>Category</td>
<td>Range</td>
<td>Company 1</td>
<td>Company 2</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Tactical wheeled vehicles</td>
<td>6 to 4</td>
<td>Am General</td>
<td>NASSCO</td>
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<tr>
<td></td>
<td></td>
<td>BMY</td>
<td>Newport News</td>
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<td></td>
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<td>GM Canada</td>
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<td></td>
<td></td>
<td>Oskosh</td>
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<tr>
<td></td>
<td></td>
<td>Steward &amp; Stevenson</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teledyne Cont. Motors</td>
<td></td>
</tr>
<tr>
<td>Tracked combat vehicles</td>
<td>3 to 2</td>
<td>FMC</td>
<td>Am General</td>
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<tr>
<td></td>
<td></td>
<td>General Dynamics</td>
<td>GM Canada</td>
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<tr>
<td></td>
<td></td>
<td>Harsco (BMY)</td>
<td>Oskosh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Dynamics</td>
<td>Steward &amp; Stevenson</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UDLP</td>
<td></td>
</tr>
<tr>
<td>Strategic missiles</td>
<td>3 to 2</td>
<td>Boeing</td>
<td>Boeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lockheed</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Martin Marietta</td>
<td></td>
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<tr>
<td>Torpedoes</td>
<td>3 to 2</td>
<td>Alliant Tech Systems</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hughes</td>
<td>Raytheon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Westinghouse</td>
<td></td>
</tr>
<tr>
<td>Rotary wing aircraft</td>
<td>4 to 3</td>
<td>Boeing</td>
<td>Boeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bell Helicopters</td>
<td>Bell Helicopters</td>
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<td>Sikorsky</td>
<td>Sikorsky</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McDonnell Douglas</td>
<td></td>
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</table>
