Strategic Alignment: From Attention to Execution

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ABSTRACT

The most important roles of strategic management concern about the right “attention” and the right “execution.” Based on this idea, the research question of this study is “How to align the strategy of a company to new product development?” This paper will focus on the longitudinal deployment of strategy and try to provide a solid methodology of strategic alignment to penetrate the multiple management levels of a company. Based on Ansoff’s gap analysis model of strategic management, roadmapping techniques of management of technology and Work Breakdown Structure of project management, a Strategic Alignment Model for New Product Development (SAM-NPD) is proposed in this study. A Six-Echelon model, including industry, market, product, technology, intellectual property and cost structure analyses, is also developed for guiding the implementation of the SAM-NPD model. Finally, the successful application of this methodology to develop a project for the re-host of a full scope training simulator of a nuclear power plant in Taiwan is illustrated.

Keywords: strategic management; strategic alignment model for new product development; SAM-NPD; six-echelon model

INTRODUCTION

The success of a business, in the long run, depends on the ability to base its strategies and processes on the products it makes. Betz (2003) pointed out that the business and technology strategy provides the foundation for the sustainable development of a business. The challenge of a strategic planning process to integrate technology and business strategy is to match technology push to market pull. The technology roadmap of a business usually tries to express the integration of technology strategy with business strategy at the business level in a current business and product-line. A NPD map is particularly useful for the long-term product development process.

Since the product life cycle is becoming shorter, the competition is focused on speed and inventory cost down. Furthermore, build-to-order (BTO) and configure-to-order (CTO) have become common tools for differentiation. The production model is also shifting from mass production to mass customization. In the Internet era, mass customization is a good solution for winning market competition. Therefore the NPD project has become a very challenging task in the management practice. The methodology of strategic planning has been advancing, but it is still not so easy to integrate with tactical activities, e.g. project management. To achieve “attention” and “execution,” a management model for penetrating through different management levels and bringing together all the efforts, i.e. “alignment”, is essential. Based on this idea, the research question of this study is “How to align the company strategy to new product development?”

LITERATURE REVIEW

Strategic Management and Roadmap

Strategic thinking in an industrial context has been developed from the 1950s onwards, which concerns understanding strategy as important as developing strategies for a business. According to Britannica, strategy is “In contrast to tactics, strategy's components include a long-range view, the preparation of resources, and planning for the use of those resources before, during, and after an action.” The phrase “before an action” means strategic planning. The purpose of strategic planning is to change the response time, to integrate the organization, and to affect the control function.
Ansoff (1965) developed the “gap analysis” concept which is still being widely used today. In Ansoff’s model specifically stresses two concepts: “gap analysis” and “synergy.” Gap analysis is designed to evaluate the “difference (gap) between the current position of the firm and its objectives.” An organization chooses the strategy that “substantially closes the gap.” And the gap reducing actions shape the business strategy or roadmap. Synergy refers to the idea that a firm must seek the “product-market posture with a combined performance that is greater than the sum of its parts.”

In daily life, road maps serve as a tool that provides essential understanding, proximity, direction, and some degree of certainty in travel planning. A “technology roadmap,” defined by Kurokawa et al. (2003), is used to portray a larger context for technology development or usage. A more detailed definition is given by Galvin (1998): “A ‘roadmap’ is an extended look at the future of a chosen field of inquiry composed from the collective knowledge and imagination of the brightest drivers of change in that field.” To address the purpose and benefit of roadmaps, “Roadmaps communicate visions, attract resources from business and government, stimulate investigations, and monitor progress. They become the inventory of possibilities for a particular field.”

Garcia et al. (1997) developed a technology roadmapping process for effective technology planning to identify and develop the technologies required to meet the Sandia National Laboratory mission. In their process, the identification of the product and the critical system requirements and targets is the initial step for the development of a technology roadmap. To differentiate roadmap from roadmapping, Kappel et al. (2001) defines ‘roadmap’ as the document which includes all kinds of forward-looking documents, and defines “roadmapping” as the activity that seeks to exploit the trends underlying technology. Kappel et al. (2001) proposed taxonomy to address the definitional hurdle. They are, namely, science/technology roadmap, industry roadmap, product-technology roadmap and product roadmap. The purpose of “science/technology roadmap” is to better understand the future by identifying specific trends and generating accurate forecasts. When a forecast is within industrial context, the result is an “industry roadmap.” For specific product plans that are combined with marketplace and technology trends the resulting “product technology roadmaps” highlight the links between product generations and successive technology generations. The last category is the “product roadmap,” which articulates a direction and schedule for product evolution to communicate with customers and internal audiences.

For differentiation, Lee et al. (2005) identified two levels of roadmap, namely, management roadmap and technology roadmap. The purpose of the management roadmap is primarily for strategic management, and usually results in the form of different projects to be carried out. From the management viewpoint, the things, or the projects, can be expected to be done, because they are under control. So the nature of management roadmap is deterministic. On the other hand, the technology roadmap is usually an input to the management roadmapping process. Technology forecasting is usually the main theme of the technology roadmap. In forecasting, technology evolution is the things that will be expected to happen, which means that the nature of technology roadmap is probabilistic or even stochastic. Base on the organizational view, there are four positions of roadmap, namely, the corporate roadmap, the strategic business unit (SBU) roadmap and the functional roadmap, which are analogous to the management strategy/roadmap. While the fourth roadmap, the technology roadmap, is usually related to production and R&D functions.

For the formation and execution of a complex system NPD project, the alignment of the management roadmap and the technology roadmap is very essential.

**Strategic Alignment**

As the environment is continually changing, it is necessary for strategic planning to change accordingly to maintain a “balance” or “fit” with the external environment. Pun (2004) surveyed the distinction between content (i.e. what the decisions and actions are) and process (i.e. how those decisions and actions come about) of a strategy (Barnes, 2001; Dangayach et al., 2001). In Pun’s survey, the content-related literature stresses issues of competitive priorities, which includes cost, quality, delivery speed and dependability, flexibility and innovation aspects. On the other hand, a process is a pattern or procedure in which a strategy is developed and implemented (Dangayach et al., 2001; Pettigrew, 1992). It relates to the mechanisms for the development and subsequent deployment of the strategic plan (O’Regan et al., 2002). Barnes (2001) argued that firms should determine the content and the process of their strategies in the light of
their position in the industry and their objectives, opportunities and resources. Hardy (1996) thought much of the business literature had been preoccupied with finding more sophisticated techniques to formulate better strategies. But business success depends not only on finding the right strategy, but also ensuring it materialization in the form of a pattern of appropriate strategic actions.

Brockhoff (1998) pointed out that empirical research had shown that R&D contributes relatively more to conventional output measures, usually on capital, of firms, and might therefore be expanded to broader measures. However, whether its strategic direction should be aligned with that of other business functions is still not clear. To evaluate the relative importance of management of technology (MOT) problems in NPD involving advanced technologies, Scott (1998) had completed a DELPHI Questionnaire study and ‘Strategic Planning for Technology Products’ was identified as the top priority issue, as perceived by MOT expert participants in industry and academia. To clarify the nature and dimensions of the top problem, Scott (2001) completed a follow-up DELPHI study. The two most important of these sub-problems are ‘Linking Technology Strategic Planning to Corporate Strategic Planning’, and ‘Linking R&D Strategic Planning to Business Unit Product Development Planning’. Scott named them as ‘the linkage problem’. The ultimate goal of alignment is business performance.

Kaplan and Norton (1996) suggested that financial measures be supplemented with additional ones that reflect customer satisfaction, internal business processes, and the ability to learn and grow. Their Balanced Scorecard (BSC) reflects intent to keep score of a set of items that maintain a balance “between short- and long-term objectives, between financial and non-financial measures, between lagging and leading indicators, and between internal and external performance perspectives.” To explore integrated performance measurement systems that capture financial and non-financial performance, Bremsler et al. (2004) presents a framework to integrate the Stage-Gate approach to R&D management with the BSC to link a firm’s resource commitments to these activities and the firm’s strategic objectives. Cooper et al. (2001) contends that portfolio management for product innovation is critical to new product success. There is consensus that the effective implementation of cross-functional teams is critical to new product success. Holland et al. (2000) suggested that the critical success factors for cross-functional teamwork in NPD include strategic alignment between functions, a climate supportive of teamwork and team-based accountability. It is universally accepted that companies should try to align their R&D activities with their business objectives, but achieving this alignment is notoriously difficult in practice.

Klein et al. (1998) observed that the rise of the core competence framework had been very helpful in creating and legitimizing, a language in which issues of technical competence and R&D strengths can be followed through to their consequences for competitive advantage. Companies have started to express their R&D priorities explicitly in terms of core competencies. Kearns et al. (2003) contended that the understanding of how knowledge sharing in the alignment process contributes to the creation of superior organizational strategies. Birou et al. (1997, 1998) developed an integrative strategic framework utilizing the product life cycle as a “common strategic denominator” to integrate different functional strategies into a holistic business strategy. Hertenstein et al. (2000) discovered the basis for cost estimates often differs between the design and manufacturing phases of development. As a practical matter, they urged managers to adopt a clear, uniform approach to these estimates.

In the context of strategy alignment and information strategy, Henderson & Venkatraman (1993) developed a Strategic Alignment Model (SAM) that identifies four components for strategic business alignment, namely, business strategy, information technology (IT) strategy, organizational infrastructure and processes, and IT infrastructure and processes. Henderson & Venkatraman (1993) thought the overall strategic alignment process is initiated from the top strategic goals. On the other hand, from the bottom-up thinking, Luftman et al. (1996) expanded the research to identify enablers and inhibitors to alignment within organizations. Their research confirms that the major enablers and/or inhibitors to alignment relate to communication and support between business and technology management. In their argument, the organization and IT infrastructures of operational level are also the sources of business strategy and/or IT strategy. However, in all their cases, they concerned the integration of strategies relating to the business and it’s IT/IS and the organization transformation.

Labovitz & Rosansky (1997) thought the first place of any organization is: “The main thing is to keep the main thing the main thing.” Labovitz & Rosansky (1997) contended the necessity of having people throughout a company be
authentically aligned with the strategy and future of the business. The goal is to keep centered and focused around a few objectives, to keep an organizational culture of shared purpose that will lead to the accomplishment of some central goals. Labovitz & Rosansky (1997) proposed that alignment relies on two essential dimensions: vertical and horizontal. The vertical axis is concerned with the organization, its capabilities, its resources and people, and its strategy. The horizontal axis, on the other hand, is the processes the organization utilizes to create what the donor most values. Alignment implies a same direction and a shared purpose allowing for the integration of all capabilities and resources around that central purpose.

Kaplan & Norton (2006) defined the alignment process as “…whenever plans are changed at the enterprise or business unit level, executives likely need to realign the organization with the new direction”. They argued that an organization can measure and manage the degree of alignment, and hence the synergy, being achieved across the enterprise. Organizations that master this process can create competitive advantages that are difficult to dislodge.

In short, the strategic management can be expressed by the following formula:

**Strategic Management = Attention + Execution ; where the “+” sign represents “alignment”**

### A STRATEGIC ALIGNMENT MODEL FOR NEW PRODUCT DEVELOPMENT

NPD has been considered a challenging task to management practice. Especially in recent years, how to connect the works of NPD engineers, in a collaborative design environment, to the economic objectives of a company has received more management attention. This complexity is usually caused by the lack of a proper management framework. In most practices, the emphases are usually on the budget and the schedule of a NPD project. This implies that NPD engineers may not be aware of the overall strategic objectives of the company, and so they cannot recognize the cause and effect interactions that their resolutions may have in the company. Furthermore, the NPD engineers usually do not have adequate feedback information about their work. So an alignment model is essential for linking the NPD activities to the management system of a company in order to provide a clearer context for the overall management. In the current highly competing environment, a fast NPD process is the key to win the market share. Since the focus of management is still human, they always play an important role in the process. Aligning people to strategy is critical to the success of a business. By connecting the business strategies to the works of NPD engineers will make a company focus more clearly.

The chief executive officer shall pay more attention to the core competence of the company to sustain the business. However, since resources are limited, the focus of management is to formulate strategies and to assign resources to obtain their values in the most effective and efficient way, which can also be called the attention economy. Most of the time, several projects are initiated to implement the company strategies. So the management of projects, from planning to implementation, has become the daily routine of most companies.

In the highly dynamic environment, the business strategy should be deployed to every level of an organization to obtain the synergy. For penetrating the management levels, especially the NPD, we propose a Strategic Alignment Model for New Product Development (SAM-NPD) which is depicted in Figure 1, where management roadmap, technology roadmap, NPD, market segment, and core competence are all aligned together. The SAM-NPD focuses not only on the “attention” but also on the “execution.” It is based on Ansoff’s gap analysis model of strategic management, the roadmapping techniques of MOT and the project management techniques. Through product roadmap, the strategic thinking of core competence, platform architecture and market (Meyer et al. 2002) is aligned with customer demands.

Market segmentation describes the division of a market into homogeneous groups, each of which will respond differently to marketing initiatives. It is thus a useful tool for understanding what distinct groups of customers want. Each group, or “segment”, can then be targeted individually. The “product-technology roadmap” can be used to choose the right technology for a product and to shape the future of a company. And the “product roadmap” can provide the information about the market position of a product in the future, which can help determine the right platform and the associated timeline to introduce the product to the market.
Derivatives of the product platform, the product families of a company may address one or more of the market segments. Each product family has its own common architecture, which usually changes from generation to generation. Within these shared architectures is the combination of major subsystems and interfaces that provide the essential functionality of the products. Product variations are made by the application of new technology or new services to the subsystems and their interfaces in the base architecture. The underlying building blocks for the common architecture, its subsystems and their interfaces, are the core technologies and business processes, which become the core competencies of a company (Meyer et al. 2002).

**The 6-Echelon Model**

For facilitating the detailed planning and execution of the SAM-NPD implementation, we proposes a 6-Echelon Model (Figure 2), including industry structure analysis, market structure analysis, product structure analysis, technology structure analysis, intellectual property structure analysis and cost structure analysis, as the guiding architecture.

From the industry structure analysis, using the industry roadmap, a company can catch up the main stream of industry development and properly position itself in the value chain.

By using the market structure analysis, with product-technology roadmap and product roadmap, the market segmentation and customer demands can be known and the product family can be planned. When new technologies are being introduced to the market and crossing the chasm, the technology roadmap provides a useful framework and explains how it can be done.

Through the product structure analysis, which is associated with market segment and product family, the niche of the mass customization paradigm can be achieved by the research and development of the product platform and its associated processes and production planning. In the project strategic analysis phase, the products – technologies matrix can be used to identify the driving or driven technologies of the product families, these technologies will have the potential to become core technologies or even core capabilities.
Energy, matter (material) and information are considered basic concepts in a mechanical design problem (Pahl and Bitz, 1996). It is the flow of these three concepts that concerns design engineers (Otto and Wood, 2001). Using the basic law of energy, material and information flow, the technology structure is analyzed to get the insight of the technology requirements and the niche technology. For analyzing the posture of the technology deployment and technology valuation, the patent map is one of the tools to obtain the competition status of the technology. Then the make-or-buy decision for components or technologies and the product pricing policy can be made by the support of the cost structure analysis.

The NPD project management

In the NPD project planning phase (before project acquisition), the manager’s responsibility is to make it clear, with the customer, about the deliverables/products and the associated milestones and budget. After the acquisition of the project, the manager’s responsibility is to organize activities and their associated schedule to get the work done within the cost constrain. Based on the market segmentation analysis, each product roadmap will have its associated schedule to meet the delivery time for the market. In order to fulfill the delivery time, a backward scheduling approach need to be applied to determine the sequence of the activities for developing the product.

Work Breakdown Structure (WBS) is a common management practice for the development of commercial product projects. However, in the workplace, the focus of design coordination is usually on the collaboration of entities, however the more important aspect is the collaboration of minds of different people involved in the process. Therefore, the Product-oriented WBS (P-WBS) can be used to define entities, and the Activity-oriented WBS (A-WBS) can be applied to deal with the collaboration of minds. P-WBS can be used to define the entity structure and also highlights the key corporate capability which can deliver value to the customer and the business. But each part of the product structure will require human involvement to get it done. So, one has to organize human activities to produce the elements in the product structure. The activities might include design analysis, procurement and testing. There are a lot of people involved. Therefore, an A-WBS should be used to coordinate the works of project team members.

By identifying the fundamental nature of project planning and execution, Lee et el. (2005) suggested an integrated method for WBS planning, including P-WBS and A-WBS. The technology roadmapping can be used to transform a P-WBS into an A-WBS. There are many roadmapping techniques, one example is depicted in Figure 3.
Figure 3: An example of the technology roadmapping technique

A RE-HOST PROJECT FOR A FULL SCOPE SIMULATOR OF A NUCLEAR POWER PLANT

A simulator is usually used to mimic the behavior of complex processes, systems, components and equipment when it requires more accurate prediction of the real time behavior of dynamic functions including physical processes, visual images, sight and sound. A nuclear power plant (NPP) training simulator can provide a trainee with the experiences to handle system malfunctions and emergencies which would not often happen in a real plant. It can compress the time for learning the required tasks. It can also change the sequence of tasks to maximize the training efficiency. Furthermore, it can provide guidance and stimulus support to the trainee in the form of prompts and feed-backs. The cost and training effectiveness of a simulator is increased with fidelity, which is the degree of realism with which a simulator can represent a real plant.

The simulator of Taiwan NPP has been installed for more than ten years and the host computer system of the simulator is out of date, and some foreign vendors are even no longer existent. The maintainability is therefore seriously degraded. Since the personal computer (PC) technology has been advanced impressively in recent years, the development of the simulator host computer platform has been moved to a PC system. Since the PC industry in Taiwan has a well-developed infrastructure, it has a very positive effect on the development of the simulator computer system.

Alignment of oOrganization Strategy

A re-host project for a full scope simulator of a NPP was initiated by Taiwan Power Company (TPC). This project cost several million US dollars. The Institute of Nuclear Energy Research (INER) is a science and technology research institute of the Taiwan government. When INER received the TPC Request for Proposal, the first question was raised by the INER project manager, “Do we have the competency to go for this project?” At the same time, INER was scheduled to be transformed into a public corporation in the near future. The higher level executives were more concern on the question: “Does this project meet the INER vision?”

The development strategy of the INER organization was rescanned for the decision making. Based on the strategic planning result, the positioning of INER is identified to play an integration role for the industry. Since the simulator development assignment is also strongly dependent on the system integration, both technology and project management, bidding this project is on the right track of the INER strategy.

Industry Structure Analysis

From the industrial view, the design of a simulator has to integrate software and hardware technologies and the development of a good simulator system will enable an organization to dominate in the system simulation technologies and related technologies development. The scope of simulator applications includes education, engineering design, safety analysis and so on. In developing the product, it consists of the NPP, the fossil plant, the chemical process plant, the air plane, ship, satellite, education, military and other applications.
In the domestic simulator industry, there was a company in the business of the process plant simulator. In recent years, the STN ATALAS won the bid of the Taiwan YL NPP simulator and a partial system upgrade project of the Taiwan CS NPP simulator was done by GSE. INER has also completed several domestic NPP simulator partial upgrade projects. The major international competitors in this field include GSE (U.S.), DS&S (U.S.), STN ATALAS (German) and SIEMENS (German). Based on the value chain analysis (Fig. 4), the cost/benefit indicator of domestic vendors is better than foreign companies.

![Value Chain Diagram](image)

**Figure 4: The niche of synergy created by domestic vendors in the value chain**

**Market Structure Analysis**

To analyze the market posture, Table 1 was prepared to present the international simulator market posture.

<table>
<thead>
<tr>
<th></th>
<th>NT Installations</th>
<th>Unix Installations</th>
<th>Encore Installations</th>
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<tbody>
<tr>
<td><strong>US</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSE</td>
<td>28</td>
<td>GSE: 8</td>
<td>GSE:6</td>
</tr>
<tr>
<td>SAIC</td>
<td>2</td>
<td>CAE: 5</td>
<td>Westinghouse: 3</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>Other: 10</td>
<td>Other: 2</td>
</tr>
<tr>
<td><strong>sub total</strong></td>
<td>31</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
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<tr>
<td>GSE</td>
<td>4</td>
<td>GSE: 35</td>
<td>GSE: 4</td>
</tr>
<tr>
<td>SAIC</td>
<td>1</td>
<td>Thomson: 15</td>
<td>other: 5</td>
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<tr>
<td>Other</td>
<td></td>
<td>STN-Atlas: 5</td>
<td>Other: 6</td>
</tr>
<tr>
<td><strong>sub total</strong></td>
<td>5</td>
<td>61</td>
<td>9</td>
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<tr>
<td><strong>Pacific Basin area</strong></td>
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<tr>
<td>GSE</td>
<td>1</td>
<td>GSE: 3</td>
<td>GSE: 2</td>
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<td>In bidding</td>
<td></td>
<td>Westinghouse: 7</td>
<td>CAE: 1</td>
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<tr>
<td>Other</td>
<td></td>
<td>Other: 2</td>
<td>Westinghouse: 3</td>
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<tr>
<td><strong>sub total</strong></td>
<td>4</td>
<td>12</td>
<td>6</td>
</tr>
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</table>

To get a picture of the domestic market, a product roadmap (Figure 6), covering almost 30 years, was prepared to depict the market posture of the Taiwan NPP simulator. The diamonds in the figure correspond to the capability of the foreign companies, and the circles represent the capability of INER. It is clear that INER has gradually dominated this market since 1990. This analysis of the market posture gave a positive feedback to the decision makers in INER: Yes, we have the competence to go for the project.
Product Structure Analysis

The second question was “How can we manage this complex system development project?” In other words, “How can we estimate the cost, schedule and human resources?” Based on discussions with the customer, TPC, and some potential vendors, a product structure analysis of the simulator hardware and software is depicted in Figure 6. The product analysis result is also used as the antecedent for the project P-WBS (Fig. 7).
The third question was raised in the P-WBS developing process, “How should we determine the make-or-buy policy for each product item?” One major technical issue of the existing system was the co-existence of two software simulation techniques, namely, the process-oriented program structure and the efficiency-oriented program structure. Their information technique features are compared and depicted in Figure 8. The information flow in the process-oriented structure is treated sequentially as fluid flow in a process plant, while the information flow in the efficiency-oriented structure is handled by a repetitive loop.

Through detailed analysis of these two software techniques, there were several options for the resolution of the system upgrade. Beside the technology concern, the business concern, i.e. the intellectual property and associated cost, is also important for the final decision of the new system configuration.

**Technology Structure Analysis**

For analyzing the intellectual property and the potential market, the NPP simulators technical requirements were analyzed in terms of software, hardware at the operation and maintenance levels. Furthermore, the system technology roadmap of the Taiwan domestic NPP simulators was compared to support the selection of the upgrade project system technology.

The make-or-buy decisions of the P-WBS items were further identified through the support of system technology roadmap. The final step is the negotiation with the potential IP vendors, and finally, the A approach, in Fig. 8, was selected as the major simulation technique of the upgrade project proposal.

**Intellectual Property Structure Analysis**

For analyzing the intellectual property and the potential market, the NPP simulators technical requirements were analyzed in terms of software, hardware at the operation and maintenance levels. Furthermore, the system technology roadmap of the Taiwan domestic NPP simulators was compared to support the selection of the upgrade project system technology.

The make-or-buy decisions of the P-WBS items were further identified through the support of system technology roadmap. The final step is the negotiation with the potential IP vendors, and finally, the A approach, in Fig. 8, was selected as the major simulation technique of the upgrade project proposal.

**Cost Structure Analysis**

In order to answer the make-or-buy question, a product-technology roadmap was developed, which was referred to the discussion and negotiation with the IP owners (vendors), to identify the major P-WBS items. By using the
technology roadmapping technique (Figure 3), the key performance indexes of several critical components were compared with potential competitors’ competences. For instance, the WBS item 1.1.3.2, the Real Time Simulation Platform, is a key software system, should INER develop it? Based on the forecast of technology evolution and market dynamics, this item was determined to purchase from the market. But the WBS items 1.1.2.1 I/O hardware and 1.1.2.2 I/O software are also critical to project success, by considering cost/benefit, INER decided to make it by itself. At this stage, the self-developed items and the outsourcing items were all identified. In Figure 7, the self-developed items are marked by rounded rectangles, and the outsourcing items are marked by regular rectangles. The P-WBS was ready, the final deliverable items were clear, and the associated milestones and human resources were all determined. Also, the budget estimation was done. An A-WBS file of the Microsoft Project software was then generated for the project control purpose.

After INER had applied the proposed methodology to its project planning, it got the contract and completed the project.

CONCLUSION

In the highly competing environment, a fast NPD process is the key to win the market. Connecting the business strategy to the NPD engineers will make the business focus more clearly. Henderson & Venkatraman’s strategic alignment model stresses the information technology’s application in company operational management. While Kaplan & Norton construct strategic alignment by transforming four performance dimensions to deploy cross-sectional operational management. This research focuses on the longitudinal deployment of strategy and a strategic alignment model for new product development is constructed.

The SAM-NPD is based on Ansoff’s gap analysis model of strategic management, the roadmapping techniques of MOT and the project management techniques with basic product components expressed in terms of P-WBS. The SAM-NPD is a reconciliation practice for strategic alignment, while the six-echelon model is a guiding architecture for facilitating detailed planning and execution. The SAM-NPD is trying to provide another thinking of strategic alignment to penetrate the multiple management levels of a company. The authors hope this study would provide a starting point of a new research agenda, which would highlight a linkage between strategic thinking and down-to-earth engineering actions and thus give more insight into alignment.

REFERENCES


