Management of software development projects has been a recent focus of Alliance attention. This topic was addressed at the June SATM Conference, and our September Roundtable continued the discussions. Learnings from these forums are highlighted in this newsletter, along with some additional perspectives.

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How to Develop Winning Software Solutions
by Rick Norman and Bill Barnard

Efficient and effective software development is a very complicated activity at best. Whether you are a corporate IT professional trying to decide which application will yield the most value for your organization, or whether you are an independent software company manager deciding how to compete against other solutions in the marketplace, making correct decisions early in the software development process is crucial. Are you positioned well against the competition; do you know the features you're developing will win against the competition; are the technologies you're using the right ones? This paper describes a decision-making methodology that helps in answering these questions.

I. Introduction

A study in 1989 at Hewlett Packard indicated that of thirty-three factors negatively effecting project success, the top two were: lack of project definition, and lack of coordination across functional areas. Later experience at Hewlett Packard, Johnson & Johnson and other companies convinced the authors that those two issues often resulted from a lack of

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a well-defined understanding of the end user environment. By this we mean a complete, agreed-to understanding of the user requirements and the relative importance of those wants and needs based on how customers would choose to acquire the solution. Closer examination of the processes used to develop products supported this lack of requirement definition. Solution specifications were often based on what the development team "thought" the user wanted or even what the team thought the purchaser "should have." This opinionated approach exacerbated the second problem - a lack of coordination across functional areas. It wasn't that those areas were not "coordinated" as much as that there was a lack of precision in the understanding and agreement on what the user needs were, and how priorities should be set in serving those needs.

Many of the methods aimed at resolving these issues (concurrent engineering, phased review procedures, structured programming methods) helped with the coordination of activities, but were weak in the rigorous definition of requirements and user priorities. What was needed was a replicable process for understanding the requirements in a market, making decisions about entering the right segments, and then closely coupling the strategic decisions to serve a specific segment with a "value proposition" that will yield success in the marketplace. This "focusing effort" is needed well before the beginning of structured programming methods and phased development efforts. Most companies spend far too little time assuring that a precise understanding of this value proposition is clearly communicated to all functions responsible for delivering the solution. Further, it is not done early enough in the development process to assure good coordination of effort, and therefore, optimum development costs.

Quality Function Deployment (QFD) began to be used in North America in the late 1980s, as a way to focus effort on customer needs (the Voice of the Customer). The initial planning matrix in QFD is commonly called "the House of Quality" because of its shape and the fact that it is used to help translate customer needs into prioritized quality characteristics. But in early practice, QFD was not implemented effectively. Some early weaknesses included: brainstorming of the needs rather than actual discovery of needs, failure to effectively segment potential markets, thereby mixing differing customers' needs, and failure to account for all elements of value delivery, thereby missing opportunities for differentiation and breakthrough. Early emphasis was on assuring customer satisfaction with "product attributes" rather than understanding the broader value elements upon which customers make buying choices.

Bill Barnard began working on these weaknesses of early QFD work while a program manager at Hewlett Packard. He developed a framework, in the early 1990s, that he called Customer Integrated Decision Making. CIDM used the principles of QFD but integrated the elements needed to make it a more comprehensive product development decision-making methodology. CIDM integrated in-context customer visit methods, market segmentation techniques, choice-based value definitions, QFD and strategy deployment (Hoshin) methods. Used most often in early applications for strategy development, CIDM became an effective means to quickly focus the activity of broad development efforts on the highest priority target values.

II. Major Elements of CIDM in Establishing Adaptive Business Planning Systems

Some of the major elements that have been added to the CIDM methodology were the result of the practical experiences gained in well over 180 project implementations of CIDM/QFD, many of those in software projects. Early shortcomings of QFD were addressed with additional key tools and methods:

A. Teaming. Assures that a cross-functional team starts from the beginning, has clearly defined goals and measures of success, is actively supported by all sponsors, has effective tools and means for communication and archiving data.

B. Market Views. Establishes a common understanding of how customers segment themselves, uses a "benefits-sought" model, and distinguishes between profit segments and investment segments. Provides a more strategic view of customers at the team level.

C. In-context Customer Research. Involves all team members in customer visits, rigorous data reduction methods to build team knowledge, choice-based survey methods to understand buying behavior, synthesis methods to build strategic view of the details.
D. Actionable Target Values. Uses streamlined prioritizing methods to avoid getting bogged down in too much detail, summarizes data to set strategy in terms of activities to be performed, archives data to support development efforts, involves more of the organization in finalizing targets, and integration to business plans.

III. Other Key Elements of CIDM Contributing to Better Requirements Definition

As the number of CIDM applications has grown, there have been increased efforts to integrate the lessons

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learned with broader product development and strategy methods. This has resulted in a very robust and comprehensive decision-making system One example is the Value Delivery Attributes Test.

To accurately focus on customer choice behavior, it is important to test all Value Delivery Attributes. Value delivery is defined as all of the activities to provide benefit to the customer(s):

> Distribution
> Sales Administration
> Marketing
> The Solution itself
> Order Fulfillment
> Pre- and Post-Purchase Support
> Support Administration
> Enterprise Policy and Practice

In fact, our experience shows there can be as many as 251 tertiary level issues! The idea is to know enough about how customers make choices across this potential value chain so that we can be focused in the right areas of value delivery. "When we talk with a customer, we want to know whether the CIO has the same picture of the key issues that we have," says CIDM user, Jim Wilson of CINCOM Systems

IV. Decision-making Levels

For effective long-term competitiveness in complex markets, organizations must develop competencies in two major classes of decisions: the strategic class and the tactical class. Strategic decisions are those that will impact the organization for a long time, tactical decisions will impact the organization only for a short time. What is relatively "long" and "short" depends entirely on the organization and the nature of decisions being made. Strategic decisions can be thought of as addressing issues of "position;" (which markets should we be in?) whereas tactical decisions are concerned with issues of "delivery" (what should we offer each market?).

These different classes of decisions are both directly and indirectly related. We refer to them as the "management product" and the "company product." With CIDM, the same toolkit and approach are used with each.

V. Findings of Applying CIDM

Recent feedback from CIDM project leaders have included the following findings:

1 Better answers. The combination of cross-functional perspectives and rigorous focusing tools yields much more complete and concise definitions of products and strategy.
2 Trust, commitment. The sharing of the "customer experience" early, and the many hours of teamwork build a deeper sense of teaming.
3 Getting beyond opinions. The combining of the qualitative perspectives with the quantitative data helps remove personal opinions from the decision-making equation.
4 Team 'hears' customer views. The customer visit experience and the data reduction processes help establish a lasting vision of customer value.
5 Team sees customer paradigms. The synthesis processes help in providing "the big picture" as well as the detail.
6 Understand value of deliverables. The entire process allows for robust understanding of what "value delivery" means, which helps focus technology issues.
7 Creative context for solutions. The qualitative/quantitative understanding creates a knowledge base, which puts technology into perspective.
8 A long-lasting database of information that supports many projects. The structure and methods allow for subsequent access to valuable information.

VI. Conclusions

Adaptive Leadership builds a business culture around a knowledge base of focused customer needs data, then allows adaptation of technology strengths rapidly to make more informed decisions. The framework couples strategic decision-making with tactical decision-making. The goal is to allow teams to work more effectively together and to commit quickly to working on the attributes most valuable to customers. This is assured through rigorous methods that assure complete understanding of the users' value delivery focus and that "blueprint" strategy across the Key Value Choice Characteristics.

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