Innovative Development Associates

White Paper

Nine Metrics for Delivering Software Products that Customers Want

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A recent survey on *Product Planning Practices in the Software Industry* revealed that more than 30 percent of new software products are judged to be unsuccessful from a business standpoint. Software companies participating in the study were asked to rank the keys to achieving product development success (see Figure 1). By a wide margin, they ranked "*early understanding of customer needs*" as the most critical factor.

Understanding the customer's needs requires effective gathering, organizing and processing of their requirements. This article presents recommendations that can help ensure the success of efforts in this area, and be used to measure commitment to the fuzzy front-end. Metrics which support these useful practices are also provided and summarized in Figure 2. (Laura: in my opinion the term "fuzzy front end" is a reasonably well known term with meaning to people involved w/ Product development.)

Factors Important to Software Product Success	
Factor	*% Ranking 1st or 2nd*
Early understanding of customer needs	71%
Alignment with Business Strategy	47%
Precise Market Segmentation and Targeting	28%
Top Management Support	23%
Product Development Process Discipline	15%
Understanding of Competitor Offerings	10%
Technology Leadership	7%

Source: "*Product Planning Practices in the Software Industry*"

Watch the Clock

Most software companies intuitively know the importance of up-front analysis of customer needs and competitive offerings. Finding the time to commit to this activity, however, can pose a considerable challenge. Managing time more effectively starts with measuring the time currently being spent on this effort.

First establish a baseline to measure the level of effort currently expended in front-end product planning and investigation. This can be done by examining your last three major development projects. Determine the percentage of time that all functional areas (marketing, product planning, development etc.) spent collecting, , prioritizing, and organizing customer requirements. Typically, for new products, at least 10 percent of overall product development resources should be spent on building customer and competitive understanding. Products aimed at newer, emerging markets

should show higher levels of effort in this area than maintenance projects or those targeting existing customers.

Monitor the time spent on understanding the customer to measure any correlation between the level of effort and the ability of products to achieve a high sales ramp-up. As you become more aware of monitoring your customer understanding efforts, begin to note how it is apportioned across the development cycle. Best results will be achieved by continuously harvesting customer inputs through planned, ongoing interactions, heavily weighted toward the front-end. Aim for a ratio of three days talking to customers, prior to the start of full-scale development, for every day spent on customer research after development starts.

Selected "Front End" Metrics	
Metric	*Target Value*
1. Time spent on customer /competitor research as % of total project effort	10%
2. Ratio of Customer research activity prior to start of Full scale development vs. after	3:1
3. % of developers who influence end user functionality who have visited a customer in the last 12 months	>50%; growing to 100% within 18 months
4. # of customer to be included in a customer visit program	> 12
5. % of Customer Visit time to be be spent talking vs. listening to customers	<85% listening
6. Number of market intelligence methods used regularly and effectively	6 or 7 for customer research 3 for oompetitve analysis
7. % of customer research efforts aimed at current customers	<60% current customers 10% competitors customers
8. Requirements stability	1-2% changes per month < 15% of changes in latter third of cycle
9. Time to first customer reviewed prototype	Sooner than the average of past projects; continually improving

Figure 2. Source Innovative Development Associates

Let Developers Talk to Customers

Customers often have a hard time clearly expressing needs. Instead, they regurgitate solutions seen in competitor's demos or related to their most recent problem. To improve the quality of feedback, remember that "what is asked is as important as who is asked, is as important as how it is asked, when they're asked, who does the asking and what is done with the information."

Although last, "who asks and what is done with the information" is certainly not least, and often is the most important segment. Marketing doesn't have the only ears, nor should they. No matter how effective, a marketing professional isn't designing or building the product. It is difficult to truly deliver an understanding of what a customer needs second-hand. That is why many best-in-class software companies are placing an increased emphasis on putting their development teams in direct contact with customers.

Track how often your software developers have substantive contact with customers. Our survey showed that typically only 20 percent of developers have visited a customer site in the last year, and 49 percent have talked on the phone with a customer in the same period. To track the customer-contact metric, start by creating a baseline for your organization from which to establish a clear target for the percentage of developers and development managers who have had at least one substantive customer contact in the last year. Regardless of the starting point and the size of the development staff, work toward 100 percent participation within the next 18 months for all development personnel.

Make Customer Visits Count

There are various successful methods for collecting the customer's voice. However, our survey showed that cross-functional Customer Visits are one of the most popular and valuable research

methods in the software industry. It led the list of new techniques which companies would be adopting in the next six months. Advantages cited include the ability to:
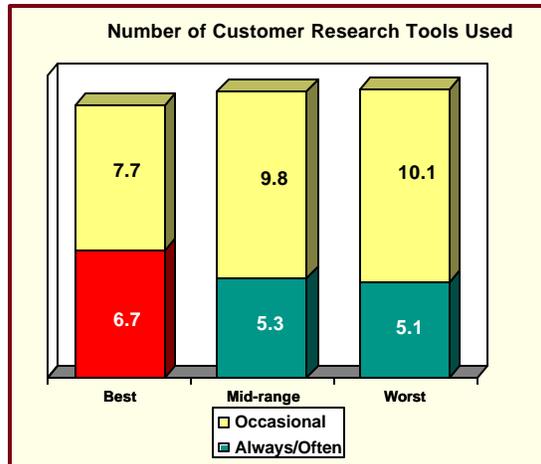
?? Engage customers face-to-face in a sustained manner

?? Obtain a maximum range and diversity of input

?? Get and a clear, complete story about one important customer organization

Unfortunately, Customer Visits are also among the most often misused methods. Two key metrics can be used to guide improvements in your customer visit program. Inevitably, the question is raised concerning how many customers need to be visited. Researchers at MIT have determined that 70 to 75 percent of the available product needs input can be obtained from a series of 12 customer visits. Experts recommend a dozen visits as the lower bound. In reality, even large organizations often have a hard time justifying 12 visits, so a target of between 6 and 12 well focussed visits becomes a le necessary compromise.

The second metric deals with conducting the visit itself. Customer visits often take on the character of a sales call. Precious time is often spent defending past efforts or explaining exciting new product concepts and technologies. Customer visits are for learning not selling, and should be focussed on obtaining insight and exploring. They should be explicitly managed to gather information *from* the customer, not give it out. After each visit, assess the time allotted to the customer during the visit, with a goal of at least 85 percent customer input.

Expanding Your Toolbox

Customer visits are only one tool in the effective product planner's toolbox. Methods such as customer satisfaction surveys, extended user observation, customer advisory boards, usability labs and customer enhancement lists, are all useful parts of a balanced program. Competitive Web searches, win-loss analysis and competitive analysis labs are all beneficial for gauging the strength of competitors' offerings. Together, these methods, along with such tools as Quality Function Deployment, provide the foundation for a reasonably complete product definition methodology.

Number of Customer Research Tools Used

	Best	Mid-range	Worst
Occasional	7.7	9.8	10.1
Always/Often	6.7	5.3	5.1

□ Occasional
■ Always/Often

Source: *"Product Planning Practices in the Software Industry"*

But how many tools can and should an organization deploy? Does the number of tools applied relate to success with product development? Is it better to use a few tools consistently, or have a wide variety of intelligence gathering approaches that are used sporadically? Based on response to Culpepper's *Product Planning Practices* study, the most successful product development companies tend to use the same number of intelligence gathering tools but use more of them regularly (See Figure 3). They don't dabble. The methods they use are applied consistently and effectively, or not at all.

Best–in- class companies regularly use six or seven customer research methods and three competitive analysis methods.

Learning from the Other Side

One of the great traps in planning products is falling in love with a few current customers and severely limiting your sources of market input. One Midwest software company, after becoming married to the inputs of one multibillion-dollar current client, eventually found its products were overly tuned and lacked the ability to win in the broader marketplace. For high-tech products, it is crucial to fulfill the "whole product" needs of a group of reference accounts.

Most software companies develop products to penetrate new markets and achieve incremental sales. This requires aiming your listening devices at current customers, defected customers, lost business and even competitors' customers. Culpepper's study rated talking to the competition's customers as the single most underrated source of product and feature ideas.

Competitors' customers bring an entirely different perspective to a product planning discussion. Not only can it be difficult to arrange discussions with these customers about their future needs, but care is required when processing their input. Often they can be enamored with the competition and lead you quickly to their unique view of a solution..

Conversely, customers who have purchased a competitive solution often look at the problem differently and value a different set of benefits and product attributes. This perspective can help a development team frame an entirely new value proposition for the new product.

Measure the proportion of your customer research efforts aimed at current customers, prospects/new markets, and competitors' customers, both on individual projects and on an aggregate basis. No more than 50 to 60 percent of your efforts should focus on current customers, and at least 10 percent of your efforts should be aimed at in-depth discussions with loyal customers of target competitors.

Track Requirements Changes

As shown in Figure 4, one of the leading causes of design changes and subsequently schedule overruns is late discovery of requirements. The purpose of customer contact is to nail down the product's design goals as early as possible.

To test the effectiveness of your requirements gathering efforts:

?? Track the number of changes and additions to your requirements documents (aim for no more than 1 to 2 percent of requirements changes per project month).

?? Work to cluster changes early in the development cycle, avoiding the latter phases when the cost to make a change can be 20 to 100 times greater.

Causes of Product Development Delay

Cause	Percent
Poor Definition of Product Requirements	71%
Technical Uncertainty	58%
Lack of Sr. Mgt. Support	42%
Lack of Resources	42%
Poor Project Management	29%
Other	20%

Source: California Management Review; *Accelerating the Development of Technology Based New Products"*

?? Profile how requirements changes or additions occur over the development life cycle; if more than 20 percent of modifications occur in the latter third of the development cycle the requirements process is probably out of control.

?? Measure the number of "TBDs" in your requirements document, shooting for less than 15 percent with a preferable value of 5 percent.
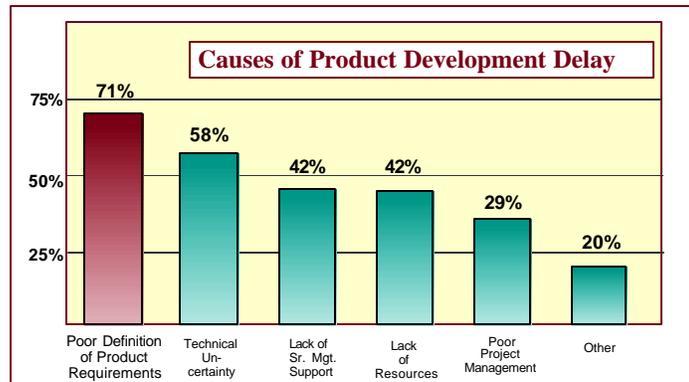
Time to Prototype

Researchers at MIT studying effective methods of innovation have concluded that one of the most important leading indicators of product success is reducing the "time to prototype." Users can provide much clearer feedback and clearer reactions to a solution by actually seeing and even using it. This is particularly true in the world of software products where interaction is a major part of the solution.

The earlier that feedback can be obtained, the greater the probability of building user inspiration into the product and reducing the timeframe to nurture glowing reference endorsements and ultimately a

market buzz for the product. Culpepper's study revealed that 23 percent of participating software firms use rapid prototypes as an integral part of their product development process.

To reduce the "time to prototype," examine a set of recent projects to determine the actual elapsed time between project approval and the opportunity for users to be exposed to the product's concept. The prototype can be, worst case, a basic definition of requirements which are discussed with users, a paper prototype which describes user scenarios and user screens, or an actual functioning though limited prototype of the future system. Target getting a useful prototype of some type in front of some customers in the first third of the development cycle. Then continue to move the prototype further upstream while also improving prototyping methods. In addition to prototyping the product, work to also prototype your selling message early. Test it to see how well it works on customers. Do they relate well to the needs, benefits and solution?

Balancing the Scorecard

Metrics play a key role in improvement initiatives by focussing management attention on important issues and setting concrete improvement targets. Typically software product development metrics programs concentrate on technical or project management issues such as development productivity, defect levels, milestone achievements and schedule slip rates. However, software companies interested in improving their ability to produce exciting compelling products often can benefit from a set of well formed metrics that gauge their growing commitment to building an early understanding of customer needs.

Broadening the view of metrics to include customer focus activities such as percentage of effort devoted to customer research, customer contact by a cross section of the development team, and reducing 'time to prototype' can turn the cliché of " listening to the customer" into an actionable effective set of product development practices that have clear impact on the ability to *plan products that sell.*

Joseph Kormos is author of **Product Planning Practices in the Software Industry**, *and* **Planning Software Products That Sell** *both published by Culpepper and Associates. He is also Director of the* **Product-MASTERS Collaborative.** *His consulting firm,* **Innovative Development Associates**, *helps high tech companies benchmark and improve product development processes to boost the payoff from their R&D investment. For more information or to order the book contact 513-683-1911 or www.inndev.com.*