

# The Strategist's Role in Shortening Product Development

Donald G. Reinertsen and Preston G. Smith

*The authors detail how strategists can identify key areas for economic leverage in the development cycle and what can be done to exploit them.*

**M**any corporate strategists feel that the challenge of shortening product development cycles is unique to the realm of the operating manager. Product development is viewed either as a narrow tactical issue to be wrestled with by line management or as an organizational strength or weakness to be exploited by means of insightful strategies. This perspective can mislead strategists into believing that they have no role to play in shortening product development cycles—and this belief can become a self-fulfilling prophecy.

In contrast, when strategists truly understand the economic value of time, exactly where schedule acceleration is possible, and how to exploit these key leverage points, they can play a dramatic role in shortening development cycles. Ironically, it is at the beginning of the development cycle, precisely where the strategist has the greatest impact, that we find the most significant opportunities to accelerate product development.

To make sound business decisions about shortening development cycles, we must think clearly about time. Planners must avoid being misled by accounting systems that seduce them into believing that time is free. Also to be resisted is the view that speed is priceless, to be sought no matter what the cost. Instead, time should be viewed as something

with a specific value, to be bought when it can be obtained for less than this value, and not to be bought when it costs more than this value.

Our accounting systems mislead us because they attach no value to development speed. No balance sheet will show a fast development program as an asset, or a slow one as a liability.

While accounting systems quickly show the cost of accelerating a development cycle, the benefits remain unacknowledged for years. Though this is sound financial accounting, it is dangerously misleading from a management perspective. When dollars are valued more than time, we will constantly trade time for dollars. Schedules will slip at any opportunity to save money.

In fact, many businesses suffer from this dollar-oriented mindset. They frequently focus much more attention on the expense of development programs than on their schedule. Such a bias toward dollars draws management attention to the dollar-intensive back end of the development process and away from the time-intensive front end.

The solution does not lie in swinging to the other extreme. It is as wrong to overvalue time as it is to undervalue it. To the prudent businessperson, there are clearly prices at which schedule acceleration is too costly.

The alternative is straightforward. Construct a life cycle profit and loss

*Donald G. Reinertsen and Preston G. Smith, located in Redondo Beach, California, and West Hartford, Connecticut, respectively, concentrate on cycle time issues in product development. Their book, *Developing Products in Half the Time* (Van Nostrand Reinhold, 1991), explains the techniques used by operating managers and strategists to cut development cycles.*

### *Economic Analysis of a Development Program*

An economic analysis is valuable for two reasons. First, at the project level, it gives the team yardsticks to make day-to-day decisions both speedily and soundly. Rapid development depends on such quick decisions, and it is difficult to achieve speed when business decisions must be delegated upward to general management.

Second, at the business unit level, economic analysis provides a rational basis on which to allocate resources. In practice, development programs must compete for both personnel and financial resources with many other initiatives. It is far easier to allocate resources properly when the financial consequences are understood.

A powerful technique for doing this analysis is to create a baseline pro forma of the expected financial performance of a product over its entire life cycle. This pro forma is then recalculated for four variations: (1) a product introduction delay; (2) a development budget overrun; (3) a product cost overrun; and (4) a product performance shortfall. The profit differences between the base line and variations are

then converted into thumb rules for the project team.

For example, each percentage point increase in product cost might be worth \$500,000; each month of delay might be worth \$400,000; each percentage point increase in development budget might be worth \$10,000, etc. These thumb rules permit team members to quickly assess the economic consequences of their decisions.

It is best if team members are involved in developing the model, since such involvement promotes understanding and use. However, the model need not be complex to generate striking improvements over the way many companies make trade-offs on development programs. In fact, there is tremendous value in simplicity because the true benefit of modeling comes from its ability to influence decisions, not from its accuracy. Simple, comprehensive models seem to perform well because they are usable by the entire team. Techniques like discounted cash flow, on the other hand, are rarely useful because they seldom improve accuracy and substantially hinder comprehension.

statement for the product, assuming it is delivered on schedule. Then, create another profit and loss statement estimating what would happen if the product were delayed by six to twelve months. Calculate the difference between these two scenarios (the cost of delay) and express this difference in dollars per month. Such a financial yardstick is indispensable when seeking sound business decisions about time.

For example, consider a case in which six months of extra design effort would reduce a product's life-cycle cost by \$1 million. If it is determined that product introduction delay costs \$500,000 per month, this extra design effort should be avoided because six months of schedule delay would cost \$3 million.

Such an example sounds much too easy, until we realize that the question is unanswerable unless the cost of delay has been calculated. By attaching a financial value to time, we can make deci-

sions about accelerating development in a businesslike way. The quantification need not be precise to be strikingly superior to the guesswork that is generally used to make such decisions. Moreover, such quantification improves communications between functional departments and accelerates decision making.

---

### Find the Leverage Points

When the emphasis shifts from development dollars to schedule, two areas of unusual opportunity can be highlighted for the strategist who seeks to shorten development cycles. The first area could be called "predevelopment"—those activities that take place even before development engineers are assigned to a project. The second area, system or conceptual design, is typically the first ac-

**“Even in well-managed companies, half the potential development cycle time is frequently consumed before anyone even begins work.”**

tivity of the development process itself. Although the dollar expenditures in these areas are quite small, their impact on schedule and product performance is enormous.

First, consider predevelopment. Even in well-managed companies, half the potential development cycle time is frequently consumed before anyone even begins work. It is useful to think of development as being paced by the tick of a market clock, a clock that begins ticking at the earliest moment either you or your competitor could have begun development. This is in stark contrast to the more common attitude in which time is perceived to stand still until work begins on a project.

When development is measured with a market clock, long periods of indecision can frequently be found at the beginning of development programs. Bureaucratic controls safeguard development dollars until the arrival of the next planning cycle. New ideas face a formidable and time-consuming screening process. Even the most compelling opportunity may have to wait a year or more to get approved.

Furthermore, even after approval, the project sits idle until the right people become available for the project team. What is so striking about the predevelopment phase is that here schedule acceleration can be achieved virtually for free. The cheapest way to finish early is to start early.

Predevelopment is followed in importance by system design. In the most general sense, this is the process of determining the product's overall concept of operation, conceiving of subsystems, and defining how these subsystems will work together. These tasks must be performed for any type of product.

These seemingly technical decisions are crucial to the strategist because they determine the overall scope of the project, the degree of concurrency that can be achieved in the design process, the magnitude of the design task to be

accomplished in each subsystem, and often the very technology that will be used. All of these factors have tremendous impact on schedule. This impact is both direct and subtle.

For example, if technical risk is imprudently spread throughout the design, it generates an uncertainty that has a debilitating effect on the schedule. Furthermore, the size of the development team is typically determined during the system design phase. If these decisions are made well, development can be dramatically accelerated; if made poorly, the fastest development team may be incapable of introducing the product quickly.

Strategists should be interested in these two highly leveraged areas because these are exactly the areas that they are most likely to influence, whether consciously or inadvertently.

---

## Managing the Fuzzy Front End

But what exactly can strategists do to help rather than hinder rapid product development? What impact can they have on the crucial stages of predevelopment and system design? The following actions exploit opportunities found in these stages:

1. Install an express lane in the planning process;
2. Leave unused capacity in development budgets;
3. Discourage megaprojects;
4. Stay off the critical path;
5. Beware of phased review systems and development funnels;
6. Provide market-based divisional charters;
7. Encourage a clear mission for each product and product line.

The first area that can be influenced

by the strategist is the formality and flexibility of the planning and budgeting process. Business planning often starts three to nine months before the business year begins. Plans are frequently submitted allocating every dollar of available development resource to specific projects. Once submitted, these plans inch through the planning process. New product ideas cannot be added without seriously upsetting the system.

Practically speaking, this means that development resource commitments are frozen fifteen to twenty-one months in advance, and that a new idea must wait that long to obtain staffing. While such an approach may be appropriate for certain products, it is disastrous for a rapid development program.

Instead, consider installing an express lane to bypass the planning process and allocate resources even before a project is approved. Such an approach simply recognizes that different projects have different needs, and that a single "least common denominator" standard approach will invariably be a slow one. By allowing fast-track projects to progress in the open, instead of in a hidden "skunk works" mode, you can place the full resources of the organization behind a rapid development program.

This relates directly to the second area: You can't allocate resources that you don't have. Be sure you have some excess development capacity. Instead of pushing the engineering department to use every last man-hour on planned projects, approve plans that fence off uncommitted resources for emergent projects that need a fast start. Underutilized development capacity is an asset because it permits new projects to move swiftly through the system. Overloaded organizations have large backlogs and slow development cycles. In some cases, even as little as 5 to 10 percent in uncommitted capacity can make an important difference in development speed.

The third area of opportunity is the strategist's ability to influence the scope

of projects. Many organizations favor projects that attempt to do too much. Such "megaprojects" entail greater risk than an approach which favors smaller steps (incremental innovation). Megaprojects will naturally require more extensive review and screening because their success or failure has great importance to the company. They require more market research because they aim for a target that is further into the future.

Megaprojects invariably demand extensive review before they can be authorized, and such review takes time. Instead, consider taking smaller, low-risk steps that can safely start even before approval is granted.

A fourth area of opportunity is improving the way projects are monitored and controlled. Strategists and top managers must be particularly careful because too often development teams either stop design work to prepare for management reviews or mark time waiting for management approval to begin the next phase of the development process. In such cases, the decisions of managers and strategists have become critical path activities for the development program.

It is not unusual for senior management review sessions to be rescheduled as more urgent requirements snatch away time that had been reserved to review development programs. It is more effective to push the locus of control down to the team level and keep all higher-level reviews off the critical path. The project should march forward whether these reviews take place or not, and the reviews should be as informal as possible to allow development teams to concentrate on development instead of reporting.

Some managers argue that these reviews actually serve to motivate the team by creating a deadline toward which to work. In reality, if motivation depends on such devices, the team's motivation problem should be acknowl-

**“Consider installing an express lane to bypass the planning process and allocate resources even before a project is approved.”**

edged and explicitly addressed. There are more effective ways to motivate a team than by preparing status reports and presentations.

A fifth area that can be influenced by strategists is the overly rigid use of phased development systems. It is not unusual to find that such systems contribute to development delays. These systems view a product as a single entity, progressing from conceptual design to detailed design to prototype to pilot production and finally to production. They frequently prevent any part of the product from being prototyped until all parts of the product have completed both conceptual and detailed design.

Such rigidity can gravely affect a schedule. Any designer would argue that the individual parts of the product can, and should, spend different lengths of time in a phase. Parts that finish a phase early should be pushed forward to ensure that their activities never have the opportunity to get onto the project's critical path.

---

## Make Tough Choices Early

The classic concept of a development funnel is often associated with phased development systems. Organizations that use such an approach start many projects at the top of the funnel and by progressively weeding and pruning them permit only a handful of winners to drop out of the funnel. This is a powerful technique for controlling technical risk, but it typically results in painfully slow development. It usually burdens a handful of people with many low-urgency exploratory projects.

Most projects sit idle until they acquire a burning urgency as they approach the bottom of the funnel. Suddenly, they warrant round-the-clock effort when management decides that it "cannot meet plan without this product."

A more successful approach is to make the funnel more like a pipe. This

is done by making tough choices at the front end of the process instead of deferring these choices until later. A smaller portfolio of projects results in a better matching of workload and capacity, thereby dramatically reducing development queues and idle time. Furthermore, it generates greater commitment from team members because they know they are working on critical projects. Its main disadvantage is that it requires early and thoughtful commitment by management, sometimes on the basis of very imperfect data.

The sixth opportunity lies in providing a market-based, rather than a technology-based, divisional charter. This enhances development speed because most delays in specifying a product arise from a weak understanding of the target market. They occur far less frequently due to a poor understanding of technology. A market-based charter allows a division to become more expert in its target market, and this expertise can help shorten development cycles.

The final area of opportunity consists of providing a clear overall mission for each product and product line. Product planning groups and development teams are frequently tempted to describe products solely with a laundry list of features. This can cause them to neglect providing a clear overall mission for the product. Such a mission permits a team to make sure-footed decisions in the many areas that are left unaddressed in even the best of specifications. When the mission statement is omitted, these often subjective questions are resolved slowly, delaying development progress.

As seen from the previous examples, not all the activities that influence the speed of product development are in the exclusive domain of the operating manager. Interestingly, the activities that occur at the beginning of the product development cycle have exceptional returns in relation to their cost; these activities are precisely where the strategist can have the greatest influence. ■