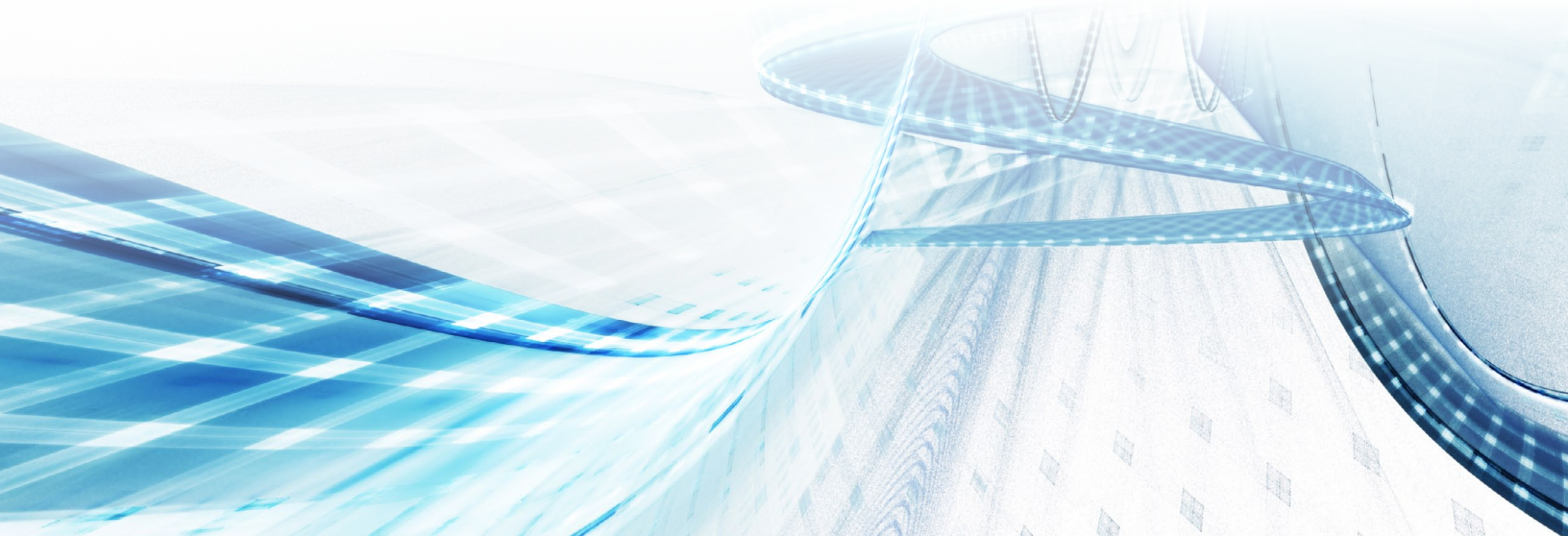
Overcoming Portfolio Inertia and Portfolio Entropy

The Complex Challenge of Improving New Product Development

The forces of portfolio inertia and portfolio entropy have obvious and significant influence misdirecting new product development efforts. By recognizing these forces, managers gain understanding of cause and effect of circumstances, and more importantly, gain clarity to recourse and actions. Portfolio inertia is characterized as emanating from three source categories: practices and processes, behavior and culture, and product life cycle. Portfolio entropy is described as the spread from project to project of uncertainty, risk and resource misallocation. The insightfulness of portfolio inertia and entropy diagnostics is particularly powerful when coupled with the analysis of an organization's portfolio management capability maturity. This approach is both practical and robust, helping managers tackle the enormously large value proposition of new product development portfolio management.



The forces misdirecting a new product development portfolio are both substantial and constantly at work. To portfolio managers, there is nothing new in this statement. What is new, however, is a diagnostic approach that leads to a strong understanding of these forces and to a meaningful recourse to offset the negative push. The forces affect every new product development portfolio. For the purpose of improving product development, I refer to the forces as "portfolio inertia" and "portfolio entropy."

The notions of inertia and entropy in business have been around for some time[i]. But what we now know is that applying them to product strategy and new product development can be very insightful. By recognizing how business inertia and entropy push on a portfolio, managers can gain understanding of cause and effect of circumstances, and more importantly, gain clarity to recourse and actions.

Most students learn the basic principles of inertia and entropy in one science class or another. Inertia is the property which states that all masses have a resistance to change. Consider what happens when, while driving your car, you push hard on the brakes. The car slows down, yet your body wants to continue moving forward. That's inertia. It is because of inertia that we have seatbelt laws. As we will see, organizational practices, leadership behavior and customer dynamics contribute directly to portfolio inertia, working against the intent of the portfolio and greatly impeding desired product line advances.

Entropy, the second law of thermodynamics, says that energy disperses or spreads if it is not hindered from doing so. Stated otherwise, the law of entropy declares that the state of disorder always increases. Just like the transmission of disorder from atom to atom, or from molecule to molecule which occurs when no countervailing force is present, we see portfolio entropy drive disorder across the portfolio from resource to resource, and project to project. Allowing new projects to start, shifting resources to put out fires, confronting functional bottlenecks, discovering technical failures, and having key personnel take-leave, are just a few of the contributors of portfolio entropy. They all add to the spread of disorder that portfolio managers must address.

"... by recognizing how business inertia and entropy push on a portfolio, managers can gain understanding of cause and effect of circumstances..."

Significance to Product Development

The challenge that we confront is that portfolio inertia and entropy can notably impede overall product development productivity. All product line roadmaps and the portfolios of projects that carry them out are influenced by these forces. I say this to make the point that inertia and entropy are present not just in your portfolio, but also in your competitor's portfolio. Like the joke that asks how fast do you have to run to escape a bear (faster than guy running next to you), organizations need to achieve a capability to overcome portfolio inertia and portfolio entropy that is superior to that of each competitor's capability.

The significance of overcoming portfolio entropy and inertia is summed up in a simple value proposition. Those organizations that do it outperform those that don't. Inadequately addressing these forces with respect to product development can lead to absolute failure. Need proof? Consider the bankruptcies in the last

904) 373-5428 • Info@adept-plm.com

several years at General Motors, Nortel, Tribune Group, Global Crossing, and Smurfit-Stone. No doubt, the competitive playing field of inertia and entropy can be complex and dynamic. However, in product development portfolio management we have no choice but to understand that portfolio inertia and portfolio entropy are ever present and must be addressed continually.

"... Inertia and entropy are present not just in your portfolio, but also in your competitor's portfolio."

Indeed, the biggest risk to product line strategies is not the direct challenge of a competitor's offering. Rather it is the inability to overcome the forces of organizational inertia and entropy when trying to develop products, whether in response to new competitive offerings or to completely outflank a competitor.

Fortunately, managers and leaders can win the game against inertia and entropy by building and maturing portfolio management and product line planning capabilities. This may include embracing purposeful front end innovation, mitigating irrational decision-making, and aligning coherent and smart product line guidelines and roadmaps with substantive business strategies. I know this is no small task, but read on. There are several principles and actions that shed light on this powerful topic.

Portfolio Inertia

Understanding the sources of portfolio inertia is very helpful when trying to get your arms around the topic of new product development portfolio management. Because the sources are distinctly different, the recourse or offsetting force to each will also be different. This becomes obvious as you recognize and analyze each. Using logic and based on my experience with many organizations seeking to establish portfolio, and more importantly gain benefit from portfolio management, I have found that inertia sources fall into one of three groups:

1. Practices and Processes;
2. Behaviors; and
3. Product Life Cycles.

Some explanation of each is in order.

Inertia of Practices and Processes

Any organization moving forward with new product development portfolio management is doing so because they have multiple projects underway and probably have established many practices and processes. For example, I would expect the organization to have a project selection practice, no matter how smart the practice might be. Somehow funds or resources need to be released for new projects to startup. It would also be common to see a staged or phase development process in place, no matter the level of discipline it brings to the organizations.

From an analysts' point of view, what's interesting is that some practices and processes seem benign and mundane. These practices are generally accepted as normal and go on day-to-day. Such characteristics are indicative of sources of inertia. There are many practices and processes that fall into this category. But to explore the notion of portfolio inertia, consider two that pop up often: forecasting and financial evaluations.

In the early 2004, I had the opportunity to work with a large chemical that had a brilliant strategy of securing very low cost feedstock to produce several commodity polymers. It was truly an enviable position, but price competition was fierce and margins were on a steady decline. In response, the company wanted to add value (and margin) to their offering by developing

more specialty-like polymers that were an extension of their key polymer platforms. The challenge they correctly identified was to match specific customer needs with new polymer attributes (molecular weight, polymer chain distributions, rheology, etc.). This was no easy task. But they achieved it by developing a deep relationship with one customer for each development, and by working diligently to meet that customer's needs. In product development jargon, this is called "design-to-order" product development, i.e., the development of one product for one customer.

The inertia of the approach was not apparent to me until I was provided a set of historic forecasts for comparison against actual sales. It turned out that the actual sales results were consistently running at 40-50% of forecasts. How could that be when the company clearly was able to meet the customer's needs?

Upon probing this question it became clear that product managers who were responsible for the forecast were using a very interesting practice. They were simply taking projected sales to the customer with whom they were working and multiplying it by 2 to 2.5. Their thinking was that the market demand from all customers, other than the one they were working with, would be 2 to 2.5 that of the targeted customer. Somebody had used these multipliers in the past and, not to rock the boat, they kept the practice and used it going forward.

The inertia of jumping from design-to-order to market oriented product strategy and simply using a multiplier for forecasting was quite notable. Because not all projects in the portfolio were design-to-order, those that were always appeared much more attractive financially than others. This induced portfolio decisions that misdirected resources to the design-to-order projects. Not only were investments erroneous, but other more attractive opportunities were probably being lost. Portfolio inertia, we see, can be costly.

The example illuminates how a simple, routine practice created a potent negative force on the portfolio. However, the recourse was equally simple. The practice needed to be eliminated. Instead, multiple customer / market-oriented voice of the customer research needed to be conducted, along with intelligent market diffusion estimates and validations.

Table 1: Practices Contributing to Inertia

Sources of inertia may be due to default practices in lieu of disciplined practices. Inertia can be driven by practices in:

- Screening, project selection
- Front end concept generation
- Product planning
- Stage-gate, gate criteria
- Forecasting and diffusion models
- Financial calculation methods
- Project Management and Teaming
- Design methods
- Market research & Voice of Customer

Some other practices and processes that often contribute to portfolio inertia are shared in Table 1. When I discuss these with managers given responsibility for analyzing and reporting out on product development portfolios, they learn that not only can these practices and processes induce inertia, but that they are outside their domain of management. Portfolio Managers do not tend to have control over such things as forecasting methods. This is true because most portfolio managers are functionally oriented, perhaps reporting to marketing or engineering or R&D. In the last several years we've seen more PMOs (Project Management Offices) take responsibility for portfolio analysis and reporting, presumably because it is the resource and project management side of new product development that concerns the organization. Nonetheless, these sources of inertia remain outside their ability to address directly. We'll come back to this as we lay out mechanisms to offset and control portfolio inertia.

904) 373-5428 • Info@adept-plm.com

Inertia of Behaviors

Several decades ago I took courses in organizational behavior as part of an MBA curriculum. I must admit that at the time I did not grasp the enormity of impact that behaviors have on performance. In product development, the behaviors of individual contributors, team leaders, functional managers and business executives all matter. When discussing the topic, many people wish to jump to the all-encompassing title of "culture" to capture all organizational influences. However, for understanding and developing recourse to resultant inertia, culture may be defined simply as the summation of all behaviors. Just like the adage of eating an elephant one bite at a time rather than swallowing the elephant whole, we will see, in product development, it is easier to change one behavior at a time than it is to push on the whole culture.

"... if everyone is happy it is a surefire indication that the portfolio is less than optimal or that people really don't give a flip."

One of the more frustrating behaviors I have encountered seems to emanate from a wholesome value seen worldwide: that of "super niceness." In business, it is the in-person behavior of never being critical of someone else. This does not mean the critical thoughts are not present, or that they won't be expressed after a meeting, or when a key person is not present. Rather, with this behavior, critique of the performance or the judgment of individuals is off limits except in private settings.

I am reminded of James McNerney's comments when he took over as 3M's CEO in 2001, after years of experience at GE and McKinsey & Company.[ii] He pointed out that "Minnesota Nice" was his biggest obstacle. While 3M had enormous talent in driving innovation, it was the inertia of niceness that was making sound decision-making difficult. As McNerney summed up his challenge as "there is only one of me and ten thousand of them," referring to 3M's employee count. A hero to many investors, McNerney orchestrated a complete transformation of 3M. Today, McNerney is the CEO of Boeing.

While it is true that not all organizations exhibit super niceness, it is also true that it is a common cause of notable portfolio inertia. This is because of the ever-present first corollary to niceness: resolution to problems and challenges is sought through consensus. It seems that evaluation of portfolio choices comes down to "does the decision about the challenge or problem make everybody happy?" Unfortunately, if everyone is happy it is a surefire indication that the portfolio is less than optimal or that people really don't give a flip.

The inability of some management teams to make decisions or, more specifically, to make rational portfolio choices is what creates significant behavioral inertia. This causes irrational resource allocation and distraction from a strategic goal.[iii] No doubt this can be exhaustively frustrating to any portfolio manager, and the recourse is both obvious and very difficult. Portfolio Managers need to build proficiency toward portfolio decision-making among their top managers. The real challenge is to do so when few of the top managers would admit inexperience and request training. It requires a kind of just-in-time, or in-process training approach.

The learning-as-we-go approach is tough in itself. But reality makes it even more difficult. This is because the usual starting point to

904) 373-5428 • Info@adept-plm.com

tackle the irrationality of this behavioral inertia is with data that is of poor quality. Indeed, poor data is the starting point of all new portfolio management initiatives. Completeness of data, certainty of values and timeliness are all problematic. Unfortunately, portfolio managers consistently find themselves in a position of using poor data to generate needed metrics, analyses, alternative scenarios and reports which are the rational foundations to portfolio management.

Overcoming portfolio inertia with poor data is like taking on a black-diamond ski slope when you are only able to snow plow your way down the hill. Few portfolio managers look forward to doing this the first time, never mind many times a year. Once again, the recourse to the inertia is straight-forward. The data must be improved. But addressing this challenge requires a response that is beyond a portfolio manager's domain of control. This, we see, is a common theme for overcoming portfolio inertia. Somehow, the whole of the organization, not just the portfolio manager, needs to tackle the data quality challenge.

Inertia of Product Life Cycles

When working with clients I will frequently go to a flip pad and draw a generic looking product life cycle curve (see Figure 1). It always amazes me that everyone already knows what it is and that many people can quickly cite the stages of life, most often represented as introduction, growth, maturity and decline. The diffusion of the product life cycle concept into business thinking since its introduction in the 1950's is testimony to both its simplicity and insightfulness. However, most managers do not gain the depth of usefulness that product life cycle analyses provide when related to portfolio inertia.

The inertia from product life cycles comes about because organizations tend to build up skills and capabilities, structure themselves, lean out capacity and rationalize assets specific to the platforms that drive the product offerings. This is particularly notable for companies with the majority of platforms in maturity or decline stages. Here we see product life cycle inertia take hold by yielding new product offerings that stay very near to home. Because of inertia, creating new platforms is very difficult. The consequence is an abundance of incremental extensions, or enhancement and cost-reductions on existing products. In product strategy, this can be dangerous. If new platforms or new business models are brought to market by competitors, the response is often to double down on the leaned out approach in order to lower costs further.

The default, inertia-driven product strategy of always lowering costs and price is what one might refer to as the "boiling frog" strategy.

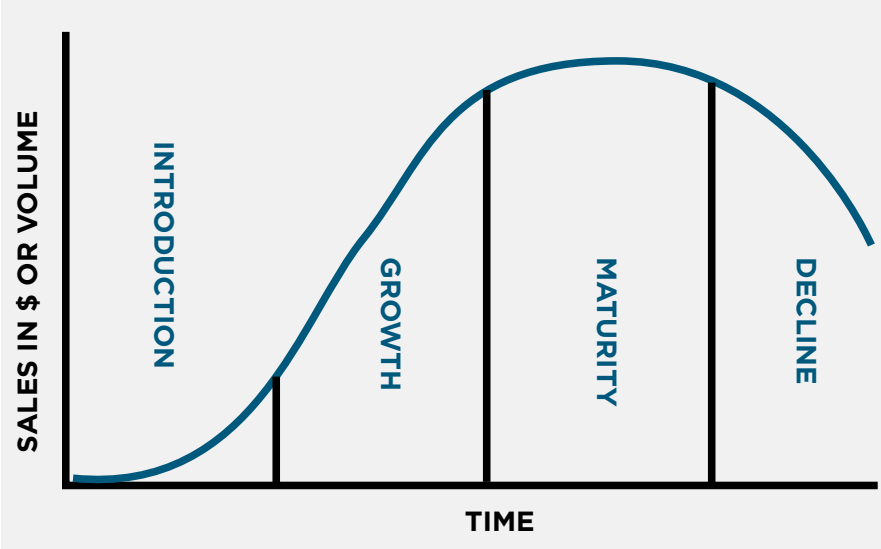


Figure 1: Product Life Cycle

904) 373-5428 • Info@adept-plm.com

Folklore states that when a frog is put into room temperature water and then heat is slowly added to the water, the frog won't jump out of the pot. Rather, the frog will stay in place and slowly boil to death. If, on the other hand, the frog is introduced directly to warm water, it will jump like crazy. Inertia, just like the slowly heated water, can induce a product line to be stuck in a death spiral. I presume this is also an unpleasant situation in which to be employed since salaries are constrained and growth opportunities are absent.

"Inertia can keep the product line stuck in its own death spiral. "

The notion of product life cycle inertia applies not only to products and their platforms in mature and decline stages, but also to those in introduction and growth stages. Organizations tend to shape themselves specific to the dominant life cycle state of their product offerings. Nonetheless, a key principle in product development portfolio management is that the mix of projects in the portfolio should match the desired strategy of the product line, instead of the default strategy induced by the inertia of the life cycle stage.

In the often observed situation where product life cycle inertia takes hold, the recourse is to address it directly with smart mix management. This requires understanding what the desired product strategy is and then to reflect the strategy through mix management policies or criteria. In other words, portfolio managers need to create countervailing forces to enable correct portfolio choices and actions. The trouble is that this inertia is also impossible for portfolio managers to address by themselves.

Declaring mix criteria without top management involvement is, in fact, declaring the strategy without asking those responsible. Portfolio managers would be ill-advised to do that. Instead, the recourse is to gain management's involvement in setting the mix criteria or guidelines. This calls for some give and take. Portfolio managers need to give mix criteria alternatives, while taking feedback from management as to their interpretation of product strategy.

My experience is that establishing meaningful mix criteria can, at best, take many months to accomplish when done without help. Outside consultants, like those of us with a few grey hairs, can speed the experience. Our role is to muster greater management attention and facilitate deeper, more insightful dialogue directed at creating portfolio mix criteria and policies. The purpose of course is to overcome inertia by aligning choices and actions with product strategy.

Overcoming portfolio inertia is an organization-wide challenge, not limited to the portfolio manager or to the project management office. By its very nature, portfolio inertia involves cross-organizational practices, processes, behaviors and strategy influences. Just like inertia pushes an aircraft carrier forward as it tries to turn, so too does the inertia of the organization misdirect the portfolio of new product development projects. One way or another, top management needs to be involved in order to offset this powerful negative force.

Portfolio Entropy

The consequence of entropy becomes easily observable simply by adding the dimension of time to any product development portfolio. Most portfolios are set up to share a limited number of resources across all projects. Admit a new project to the portfolio without launching one, and, more likely than not, some project will lose resources. In fact, because all projects can be linked to all other projects through

904) 373-5428 • Info@adept-plm.com

constrained resources (i.e., people with discrete skills), disturbances and uncertainties on one will almost always radiate to other projects, following the basic law of entropy.

Because new product development projects are chock full of risk and uncertainty, entropy exhibited by the spread of resource misdirection across the portfolio is inevitable over time. While poor project management and shifting resource assignments can greatly increase portfolio entropy, the lack of logic regarding projects starts can also be a potent source of entropy. This was made clear to me recently.

During a visit to a client in Silicon Valley, I was fascinated by the effect on traffic queues of stop lights at the entrance to the freeway. By controlling the cadence of vehicles entering the freeway, everybody avoids unnecessary bottlenecks and arrive at their destinations sooner. Within a few short hours after experiencing this terrific example of queue management, I was in front of a management team of a very rapidly growing high tech firm with current sales over $2 billion. Upon opening the dialogue, their first stated challenge was trying to figure out how to gain greater flow-through of projects. We focused on this in our discussion. After some back and forth questions and answers it became apparent, that just like the traffic congestion problem relieved to which I had observed the traffic light recourse, the company was experiencing a congestion of projects. In this case, the first effect of entropy was that the more projects they added, the harder it became to launch existing projects. Clearly, because they had only a finite set of resources, they needed to control the entry of projects into their development pipeline. While this was interesting and relevant, the second effect of entropy, one that was more troublesome, took some analysis to figure out.

Many who are familiar with my work know that I commonly start client engagements by analyzing portfolio data. This is just fundamental diagnostic work. In the case of this high tech company, I was given a spreadsheet of data on about 50 projects that were underway.[iv] The data were typical, inclusive of fields on NPV (net present value), stage of development, FTEs (the full time equivalent of people employed on the project), and target market segment for each project.

One of the first analysis charts I try to create is what I refer to as a "Cumulative Frontier" of the portfolio. This chart reveals the relationship between the gain and the spend attributed to each project. Consider for example two projects with equal NPV's of, say, $10 million. But the cash outlay or "spend" to achieve the NPV for these projects may be very different, say $2 million on the first and $15 million on the second. The ratio of gain-to-spend, referred to as the "New Product Index" or NPI, on the first project would be 5.0, whereas the same ratio on the second project would be 0.67. The NPI ratio is an assessment of each product's "bang for the buck."

In our case, for the spend variable I used FTEs, that is the Full Time Equivalent number of resources assigned to each project. After sorting all of the products in descending order of their NPI's, the analysis continues by calculating a cumulative NPV (gain) and a cumulative FTE (spend).[v] For the first product with the largest NPI, the cumulative NPV is that project's NPV. The cumulative NPV for the second project in this sort order is the summation of the first and the second, and so forth. In exactly the same way, the cumulative FTEs would add FTE's in the same sort order. The plot of the portfolio's cumulative frontier is seen in Figure 2. In this case, the client team judged 6 of the 50 as absolute must do projects regardless of investment return, and I therefore removed then from the analysis. The remaining 44 were plotted.

904) 373-5428 • Info@adept-plm.com

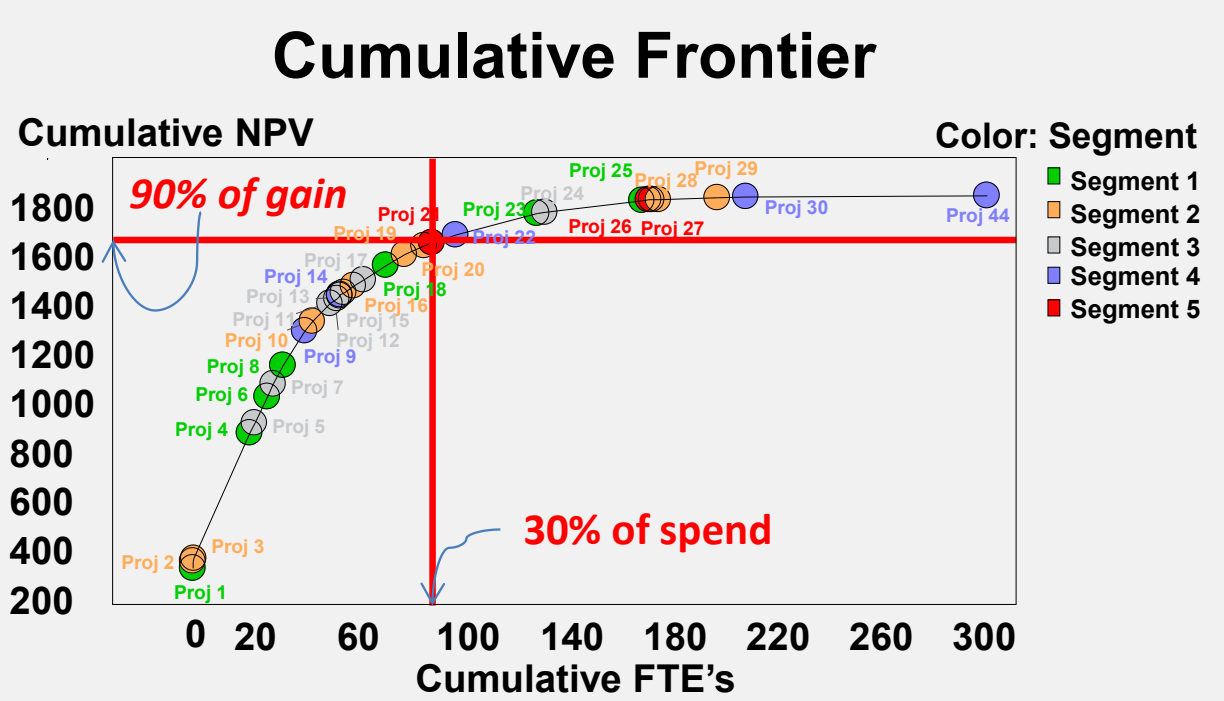


Figure 2: Cumulative Frontier of portfolio of projects

Notice how the curve levels off with respect to the Y axis (cumulative NPV). This suggests that the tail end projects contribute little if any to NPV. At the same time, these tail end projects spread out rapidly on the X axis (consumption of FTEs). In this case, the analysis shows that the high tech firm could, if they wished, recognize 90% of total NPV with only 30% of the FTE resources! The question arises as to why these tail end projects are in the portfolio. And the answer is because of entropy.

It turns out that the product development process at this company was set up to accept any project desired by one or more key managers and which can be argued to have a positive NPV. Because of the significant resource consumption of these low NPI ratio projects, the radiated entropy on other projects was noticeable. Obviously, portfolio entropy was a contributing factor to the high tech company's pain of poor project throughput. Here, the remedy to the accumulated entropy is underway and includes terminating a number of projects, shifting resources to high priority projects and establishing smarter screening and selection practices.

The recourse to portfolio entropy typically falls in one of three categories of actions: cutting projects, increasing resources, and/or improving resource allocation support systems. Of the three approaches, only cutting projects will have immediate impact. While it may seem Draconian, a common first step in dealing with portfolio entropy is what I refer to as "portfolio triage." Here, one third or more of the projects underway may be terminated. Next, the freed up resources can be shifted to the remaining projects in a manner that accelerates value realization or to front end projects to help generate better opportunities. Portfolio triage may appear to be overly harsh, but over time, entropy can introduce so much misguided resource allocation into the portfolio, portfolio triage is the only merciful, smart action which puts things back on track quickly.

Let me be clear. It is impossible to eliminate portfolio entropy. To do this, my conclusion

904) 373-5428 • Info@adept-plm.com

is that we would have to eliminate dimensions of time, and its first derivative, change. Rather, the correct approach is to create control mechanisms that enable oversight and induce countervailing actions.

After beating my head about this challenge for many clients over many years, I have concluded that, ultimately, organizations need to embrace an integrated system (software support) if they wish to respond quickly to the negative force of portfolio entropy. The paradox is that implementing software systems in support of portfolio management can itself introduce that other force, inertia. It turns out that the mere act of trying to offset one negative force can introduce an equal or worse negative force. A course forward must be chosen that minimizes the summation of both the continually increasing entropy and the introduced inertia. I will address this challenge later, as I lay out a game plan for building capability and maturity, and orchestrating the needed organizational change.

Portfolio Management, Product Strategy and Business Strategy

There has been much written about "execution" being an important component of strategy.[vi] One might argue, though, that the commonly used phrase "strategy execution" is redundant. But the phrase does reveal the importance that the summation of all actions and decisions is the actual strategy of a firm, for better or worse. Product development portfolio management, of which oversight is often delegated to a mid-level management caretaker, should not be confused with the overarching tenant of business strategy. But we are left with the question: What is the relationship and interplay among product development portfolio management, product strategy and business strategy?

"...it is policy guidance and managed alignment that enables organizations to prevent inertia and entropy from taking control."

For some, the relationship is very clear. But for others it is not. The difficulty lies not in the academic side of describing these key business components, but rather in the fact that for many organizations the components simply do not exist, or if they do, they are very weak. Figure 3 shares the full architecture of product development[vii], a state which most organizations have yet to create. In this architecture, the hierarchy is that portfolio management provides policy and decision support to product strategy, which in turn provides policy and guidance in support of business strategy. The kicker here is that if the higher level component is absent or weak, then the subservient component is without focus. Similarly, if inertia and entropy misguide the focus of a subservient component, then the higher level component will be ineffectual.

To drive this point home with clients, I will frequently conduct a group exercise with a team of managers. The team is divided into three groups. One group I purposely staff with the lowest level managers in the room, another group with the highest level managers and a third with those in the middle. I ask the high level group to focus on the company's major competitor, requesting them to write down the actions and decisions that they have observed from this competitor over the last two years. Then based on these actions and decisions, articulate what they see as the competitor's strategy. The middle team is assigned the second leading competitor and asked to do the same. The low level managers I

904) 373-5428 • Info@adept-plm.com

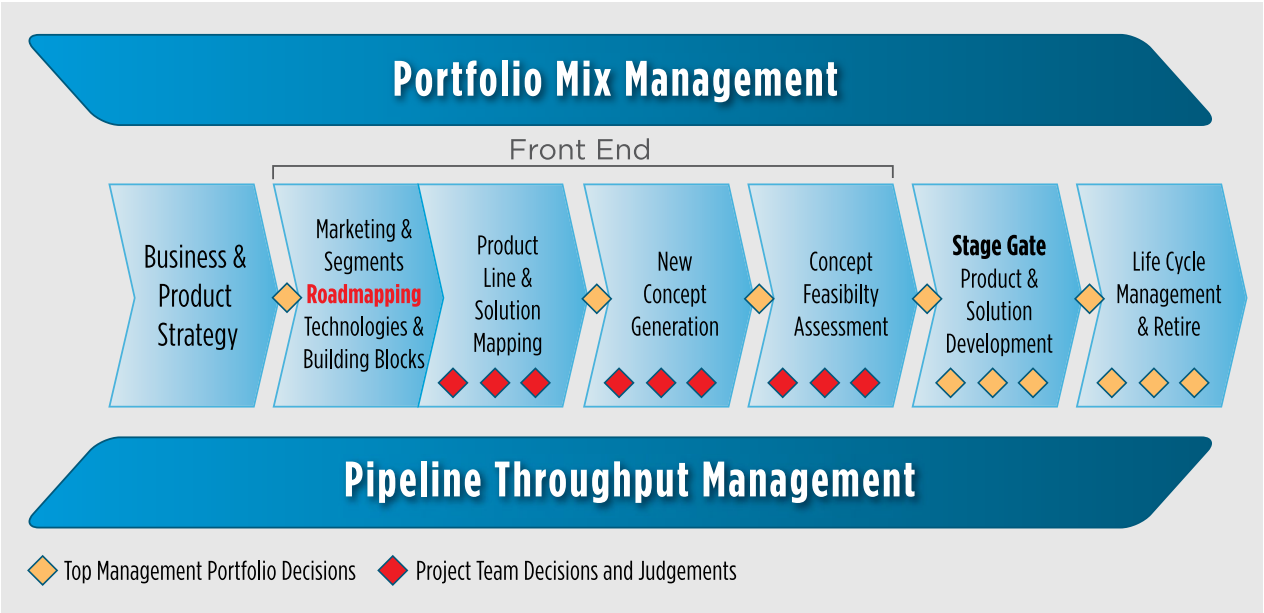


Figure 3: Full architecture of processes in support of new product development.

ask to do the same, not for the competitors, but for the company itself.

Albeit it secondary, one purpose of the exercise is to build sensitivity to the fact that the actual strategy of a firm is the summation of all actions and decisions. The discussion with the top two groups usually generates great insights into competitive strategies. But the primary purpose of the exercise is from discussions with the lower level team. Here they struggle to not embarrass themselves in front of their boss or their boss's boss. The tension can be fun to play with when you are the facilitator. Invariably, though, we see that the low level group finds it difficult to define a strategy based on the actions and decisions with which they are all too familiar.

The group learning from the exercise shows that the lower one goes in the organization, the more likely it is that some desired strategy, whatever it might be, becomes more obscure. Without policy guidance or managed alignment of actions and decisions with a desired strategy, the resultant actual strategy may end up being way off the mark. In effect, it is policy guidance and managed alignment that enables organizations to prevent inertia and entropy from misdirecting resources and activities and extinguishing an intended strategy.

Full Architecture

There are several other business components that need to be included when addressing alignment of product development and product strategy with business strategy. These are the processes and practices of product line roadmapping, proactive concept identification and generation, project management and product management. Without this full set of components, alignment to business strategy is difficult at best. Put together, these components create a full architecture of processes and practices that enable the managers lower in the organization to carry out product development and product strategy aligned with business strategy.

Many managers start off their understanding about new product development portfolio management with the perception that it is the practice of managing that set of projects only within a staged or phased development process. This is obviously where inertia and entropy

904) 373-5428 • Info@adept-plm.com

have the most easily observable effect. But the challenge is that, without inclusion of the front end activities of product strategy roadmapping and concept generation, the forces of inertia and entropy will continue to cause the misguidance of resources and project prioritization.

Consider for example the case of the high tech firm with a cumulative frontier of projects revealing questionable use of resources for those projects at the tail of the curve. Without a roadmap and concept generation that delivers financially and strategically attractive projects into the development process, those projects under development will, often errantly, be presumed to be the best at hand.

"...high level companies almost always produce over twice the impact from the same resource investment as do low level companies."

Clearly smart management needs to build the capability for the management view to extend across roadmapping and concept generation (the front end), across the staged development process, and across management of products in the market (back end). Without policy guidance and management of the full architecture of product development, the forces of portfolio inertia and portfolio entropy will continue breaking the alignment of product development actions and decisions with overall business strategy.

Building Capability and Aligning Actions

The challenge of overcoming portfolio inertia and portfolio entropy is not one to be done by simply assigning a person to the task or buying a software package. It is, unfortunately, much bigger than that. The challenge is one of building capabilities, of changing and implementing processes, of learning new approaches to making portfolio choices and of flowing information and data into analysis and reporting in ways not done before. In a nutshell, overcoming portfolio inertia and entropy is about organizational change.

Several years ago I introduced a change model that is specific to product development portfolio management and based upon research of several hundred firms working to implement practices and processes.[viii] The model recommends that managers become aware of different capability levels in portfolio management. And, like all capability maturity models, it also suggests the best path forward is to build one capability level before racing ahead with the next. It calls for understanding and addressing each of the identified elements of portfolio management (mix criteria, risk assessment methods, project management skills, screening methods, sub processes, etc.) across each capability maturity level. In essence, the model seeks to mitigate entropy and inertia one capability level at a time.

Perhaps one of the most important findings from the capability maturity model work was that companies at higher levels of capability really do out-perform those at low levels of capabilities. In fact, high level companies almost always produce over twice the impact from the same resource investment as do low level companies. If product development is a cornerstone to a business strategy, improving by this amount is more than just significant, it is game changing. But the forces of inertia and entropy pushing against this potential are equally large.

904) 373-5428 • Info@adept-plm.com

Information Systems Support

As an example of dealing with the challenge of implementation, I would like to share insights gained with respect to implementing software and fully integrated systems in support of new product development. Previously, I mentioned that the paradox of implementing software is that while its purpose is to offset entropy, its implementation can be the cause of much inertia.

The recourse is to minimize this inertia by tracking software implementation to one capability maturity level at a time. This can be demanding on the software and its implementers. But that's the objective: to minimize entropy and inertia so as to enable policies, guidelines, decisions, choices and actions in support of a smart product strategy. All too often, I see companies embrace software packages simply for the benefits and functionality sold to them by vendors and consultants. These features, however, outstrip the capability of organization or require practices not in place. At face value, such sales points are attractive. Yet when introduced into the dynamics of an organization, the attractiveness quickly wears off and inertia sets in. Still, ultimately, software is necessary. The responsibility for how it gets implemented is squarely on the shoulders of an organization's leaders.

Consider Stepping Up

By bundling insightful diagnostics of inertia and entropy with the thoroughness of capability maturity assessment, organizations gain a thorough understanding of their circumstances. This is powerful because it sets up smart alignment and coordination of specific actions, as well as meaningful guidelines, evaluation criteria and policies for intelligent decision-making. The goal of this, of course, is to drive execution of a desired product strategy matched to business strategy.

The approach that organizations take to improve portfolio management and product development proficiency matters. Understanding and addressing portfolio inertia and portfolio entropy is critical to moving forward with a sound and meaningful approach. Consider stepping up to the task and/or enlisting the aid of a knowledgeable consultant. The value proposition for doing so is extraordinary.

[i] Inertia and entropy have been discussed over the years by many consultants and academics. Kudos must be called out to Professor Richard Rumelt of UCLA. Professor Rumelt articulated the notions of inertia and entropy brilliantly in his book entitled "Good Strategy/Bad Strategy: The Difference and Why it Matters"

[ii] The account of James McNerney is spelled out as fascinating background detail in the 2008 book "You Can't Order Change: Lessons From Jim McNerney's Turnaround at Boeing", by Peter Cohan

[iii] The field of microeconomics has an amusing open dialogue debating the merits of rational versus irrational decision-making. To read more on this topic as it relates to product development portfolio management, consider reading my short paper posted at: www.adept-plm.com/irrationalportoflio.htm

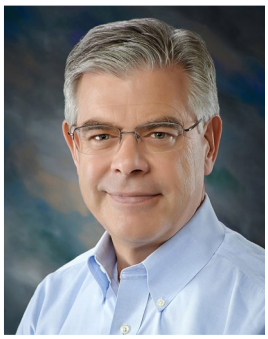
[iv] Exact data and names of projects were altered to avoid needing to execute non-disclosure agreements with all readers of this paper.

[v] The cumulative frontier chart should strive to eliminate all sunk costs, both from the outlay or spend as well as from gain values like NPV. There are valid arguments against the use of NPV because of lack of inclusion of "strategic" benefits other than financial. For our purposes, though, we wish to side step this discussion and share the concept of a cumulative frontier. A video explaining and demonstrating the cumulative frontier (along with two other charts) can be seen at: www.adept-plm.com/portview_demoVideo1.htm

[vi] Simply google "Strategy Execution" and you'll see an endless list of references. Bob Kaplan and David Norton (of Balanced Scorecard fame) argue the case for a premium on the execution side of strategy nicely in a 2008 Harvard Business Press Book entitled "Execution Premium: Linking Strategy to Operations for Competitive Advantage"

[vii] O'Connor, P. (2005) "The PDMA HandBook of New Product Development" Second Edition, Chapter 4, Wiley & Sons, Hoboken, NJ.

[viii] O'Connor, P. (2004) "The PDMA ToolBook 2 For Product Development" Chapter 17, Wiley & Sons, Hoboken, NJ.



Paul O'Connor
Founder and Managing Director, The Adept Group

Paul O'Connor has been a major force and a creative voice in the field of new product development (NPD) for 30+ years. During this time, he has developed and implemented a number of innovative approaches to creativity, innovation, and productivity in NPD and is a leading expert on product line roadmapping. He currently teaches a wide range of master courses and workshops and consults for a variety of clients across the globe.

Paul served as president of the Product Development and Management Association (PDMA), the leading advocate for best practices in NPD, from 1990 to 1992 and played a major role in shaping the development of the first certification test for professional recognition in product development. His writings have been published widely in peer-reviewed journals and business publications and was among the original contributors to PDMA's first Handbook of Product Development (1996) and has continued to contribute to other PDMA publications. Paul is a past contributing editor to R&D Magazine and his work has also appeared in the highly respected Journal of Product Innovation Management.

Paul founded The Adept Group – the world's leading consultancy in New Product Development and Innovation Management productivity – in 1984. With offices in the US and Asia, The Adept Group focuses solely on helping organizations radically improve the speed, efficiency, and strategic impact of new product development. The Adept Group offers facilitative consulting, software & enablers, and in-depth knowledge-sharing workshops.

adept

The Adept Group is the world's leading consultancy in New Product Development and Innovation Management productivity. We maintain offices in the US and Asia. Founded in 1984 by Paul O'Connor, The Adept Group focuses solely on helping organizations radically improve the speed, efficiency, and strategic impact of new product development. Adept delivers to clients significant and measurable improvements in product development and innovation management.

Through our in-depth client work, research, and publications, The Adept Group is widely recognized as a key contributor in the advancement of new product development process implementation, portfolio and project flow management, product line and platform roadmapping, and systems support. Our product development consulting engagements range from executive briefings to full process implementation. All engagements and services are tailored specifically to each client's needs.

The Adept Group provides a breadth of resources for product development organizations including workshops and seminars on critical topics. Additionally, Paul O'Connor, is a widely published author and speaker on a broad range of product development subjects.

The Adept Group provides software to support our client engagements, helping clients drive their new product development efforts more efficiently. As needed, we partner with other world-class consulting firms, services firm, and software providers to make sure that clients receive the best possible support for carrying out the right work, at the right time, and in the right way. All of our partnerships and alliances are purposed to enable delivery of greater benefits from new product development investments.

Clients engage The Adept Group for one purpose: to increase the productivity of new product development and innovation management investments and activities.

904) 373-5428
Contact: Paul O'Connor
paul.oconnor@adept-plm.com