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Overcoming the Current Crunch in NPD Resources

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Keywords:
Portfolio management, resource allocation, resource deficiencies, pipeline gridlock and new product strategy
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The Problem

The resource crunch is a crippling disease sweeping the new product development (NPD) landscape. The significant gap between resources required and NPD resources available has resulted in many negative consequences: projects taking too long to market, under-performing new product projects, and development portfolios that contain too many low value projects.

Look at the facts: New product development performance is substandard in most firms. An estimated 75% of development programs fail commercially [1], while approximately 55% of businesses confess that their product development effort has failed to meet its sales and profit objectives [2]. Equally disturbing is the opportunity costs of product innovation - the missed opportunities. Simply put, far too high a proportion of resources are spent on mediocre and small projects - tweaks, enhancements, fixes, modifications - that yield low returns to the company [3].

Why New Products Fail To Perform

Many reasons for new product failures have been uncovered over the years. These include well-known and recurring themes such as a lack of market information, a failure to listen to the voice of the customer, poor up-front pre-development homework, unstable product definition, poor quality of execution of key NPD tasks, and even poorly structured, ineffectual project teams [4]. And numerous remedies have been proposed to deal with these deficiencies [5]. In spite of the remedies, however, new products continue to under-perform.

A closer examination of the many reasons for failure, coupled with results from recent benchmarking studies, shows that many of these problems and failure modes are themselves intertwined, and are traceable to a much more fundamental cause, namely major resource deficiencies in key areas [6].

For example, poor quality of execution and leaving out important tasks, such as voice-of-customer work, is often not so much due to ignorance or a lack of willingness: it’s more often because of a lack of time and people. As one senior project leader declared: “We don’t deliberately set out to do a bad job on projects. But with seven major projects underway, on top of an already busy ‘day job’, I’m being set up for failure ... there just isn’t enough time to do what needs to be done to ensure that these projects are executed the way they should be ... and so I cut corners.”

This project leader is not alone in her concern. Surveys and benchmarking studies reveal that the NPD resource deficiency is perverse and widespread. Consider the evidence:

A lack of focus and inadequate resources surfaced as the number one weakness in businesses’ new product development efforts in a major APQC benchmarking study (American Productivity and Quality Center): project teams working on too many projects or not sufficiently focused on NPD work.
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And a lack of resources devoted to NPD across all functions was the number three most serious deficiency: only a minority of businesses indicated that sufficient resources were available to project teams to do a quality job in NPD [7]. The weakest areas were Marketing resources (47% of businesses were very weak here) followed by Manufacturing/Operations resources for NPD (29% of businesses very weak).

Best performing businesses, however, were much more resource rich for NPD than were the Worst Performers; and Best Performers had project teams that were much more focused and dedicated to NPD.

These results confirm an earlier study, where resource deficiencies in all areas — R&D, Marketing, Sales and Operations — were identified as significantly and seriously deficient when it came to NPD [8].

Further, adequate resources devoted to new product development was one of the three strongest drivers of new product performance. Indeed, the strongest single driver of the most commonly-used performance metric, namely percentage of sales from new products, was how much the business spent on R&D (as a percentage of sales).

Resource Deficiencies Lead to Many Ailments

A lack of new product resources leads to many common ailments in product innovation efforts (Exhibit 1). See how many your business suffers from:

1. Quality of execution suffers:
   Corners are cut, as project teams try to meet timelines with minimal resources. Thus, essential market studies are truncated, upfront homework is short-circuited, the field

Exhibit 1: A lack of NPD resources has many negative consequences, ultimately resulting in low NPD profitability.
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trials are overly accelerated, and launch plans are thrown together and under-resourced. The results are predictable: the new product underperforms financially.

Research into NPD practices reveals poor quality of execution of project tasks from idea right through to launch. Consider the data in Exhibit 2, which shows mean quality of execution (0-10 ratings) for a large sample of successful versus unsuccessful new products. The average score is a dismal 5.8 out of 10 – hardly stellar quality of execution [4,9].

Poor quality of execution ultimately results in serious new product costs. First, success rates suffer: There is a strong connection between quality of execution of key tasks and new product success, while studies of new product failures invariably point to missed activities or poorly executed actions as the culprits! [9, ch. 2,3]. Then there’s the hidden cost of rework or “fix and repair” work: most often, activities done in haste or poorly executed come back to haunt the project team, and end up taking twice as long via rework, as the project team gets caught in an almost endless “build-test-fix” spiral.

2. Some vital activities simply don’t get done at all:
Lacking the time or people, key activities simply are left out as project teams scramble to meet launch dates. For example:
Market studies, so often cited as fundamental to success, are noticeable for their absence in too many projects. One study reveled that market research was simply not done at all in about 75 percent of NPD projects [9, p. 33].

Exhibit 2: Quality-of-Execution across many NPD activities from Initial Screening thru to Market Launch is sub-standard. Note that execution quality is significantly higher for successful vs. failure projects.

Source: [8]
Vital up-front homework doesn't get done. Rather projects are moved from early concept right into the Development phase with little attempt to obtain the facts and get the product definition right. The front-end homework has been dismally rated in various benchmarking studies.

As one frustrated executive put it:
“We’re so busy just getting the projects done – marching to a timeline – that we don't have the time for any of this important up-front work. We have a ‘heads down’ rather than a ‘heads up’ mentality” [6].

3. Cycle time or time-to-market lengthens:
With not enough resources to handle the many projects in the pipeline, queues begin to build. The “time to get things done” is not so much execution time, it's waiting or queuing time – waiting for people to get around to doing the work. And thus time-to-market suffers.

Time-to-market (or project cycle time) is comprised of three components:

- Execution time – the actual time it takes the project team to undertake the task (assuming a dedicated effort, and quality of execution)

- Waiting time – this is analogous to WIP or “work in process” in production – the time a project spends waiting for people to work on it (usually because they’re busy doing something else) or waiting for an approval from someone outside the core team (e.g., resource owners)

- Rework time – the time required to do things over again because they were poorly or hastily done the first time.

Our estimate is that in many businesses, the combined Waiting Time and Rework Time is 30-50% of the project cycle time. Put another way, cycle times could be reduced substantially if the waiting time and rework time were eliminated.

4. A lack of game-changers:

New product failures and being late or slow to market are the measurable costs of poor or untimely execution, often brought on by insufficient resources. A far greater cost is unmeasurable, because it's an opportunity cost. How many projects are simply not done due to a lack of resources? Given a limited resource base, human nature dictates that it be spent on lower risk initiatives that don't cost very much. As one executive put it:

“My business has a limited R&D budget. I can’t afford to risk a major percentage of that budget on a handful of big projects. I've got to hedge my bets here, and pick the smaller and lower risk ones. Besides, many of these smaller projects have to be done – they're needed to respond to a customer request or to keep the product line up-to-date. If I had a larger R&D budget, then I might tackle some more venturesome projects …” [6].

Lacking the resources to do an effective job, technical and marketing executives start to favor smaller, easier-to-do and faster projects. We call these the “low hanging fruit” projects. The trouble is they're also low value to the company. While it's desirable to have some of these easy/fast projects in one’s portfolio of projects, when the entire portfolio is dominated by such low-value projects to the detriment of significant developments and breakthrough new products, then the long term viability of the business’s new product program, and indeed the business itself, is in jeopardy.
Additionally, most businesses have immediate development needs: projects that must be done in order to keep the product line up-to-date, respond to a major customer’s request, or simply fix a problem. These “must do” or urgent projects always exist. But lacking adequate development resources, often these must do projects end up taking the lion’s share of the limited resources. The end result is a very unbalanced portfolio – too many tweaks, modifications and fixes – and a lack of projects that promise significant growth and profitability [3].

The immediate result is the lack of blockbuster or game-changer projects in the pipeline. Indeed, businesses rated their portfolio of active projects to be of “modest value” in a recent portfolio study, with 45 percent of respondents confessing to low value projects in their development portfolios, and 69 percent indicating a poorly balanced portfolio of projects [3].

5. The active projects are “dumbed down”:
Another occasional result of resource deficiencies is that projects are “dumbed down” or de-scoped. One frustrated head of a technical group summarized it this way:

“Design engineers are savvy people. They’ve figured out that if the goal is to do more new product projects with the same or fewer resources, then something’s got to give. Heroic efforts can only compensate for the gap for so long. So they make the projects simpler: they de-scope the project, and de-feature the product... they simply don’t build in all the [product] features and functionality that they know they should. The end result is that they deliver a product that’s somewhat less than superior” [6].

And so de-scoping and de- featuring takes its toll on potentially great new products.

6. The project team’s morale suffers:
Inadequate resources also impacts on the project team. Faster time-to-market and cycle time reduction are paramount themes in many businesses. But lacking the necessary personnel and their time commitments from functional bosses, the project team is stretched. Deadlines are missed, pressure mounts, people are blamed, and team morale starts to deteriorate. Crawford identified team morale problems as one result of an over-emphasis on cycle time reduction; we continue to see much evidence of morale problems, brought on by a combination of too few resources and time pressures [11]:

In one business we investigated, so bad was the morale of project teams that no one wanted to be on future teams. Being put on a product development team was viewed as a punishment. The reason: there was so much time pressure on these teams to accomplish the impossible, and so few resources to do the work, that teams were destined to fail. And they were being chastised by management [6].

If these ailments beset your new product programs – poor quality of execution and missing key activities, such a voice of customer studies; too long to get to market; too many trivial, low value projects and a lack of game-changer projects in your portfolio; de-scoped and de-featured products; and morale problems – perhaps the culprit is not so much unwilling or unable project teams or a lack of a sense of urgency or effort. The underlying cause is far more likely to be too many projects for the limited resources available: the current resource crunch! And the problem appears to be getting worse, as firms try to develop even more new products with the same or fewer resources.
The Underlying Cause: Make the Numbers!

The resource crunch has many sources, but a fundamental one over the last decade is a preoccupation with short term profitability, driven largely by the financial community. To meet short term financial goals, business unit management was caught in a dilemma: They could do what was good for the business for the longer term, or resort to short term maneuvers - cost cuts and resource freezes - in order to achieve the immediate goals set by corporate headquarters. As one exasperated business unit general manager declared, and this is typical:

“I grew the business – both top line and bottom line – by 20% last year. But I’m being ‘punished’ by Corporate [head office] for doing this. To achieve this growth, I had to increase operating costs - we hired more technical people - and so my operating ratios suffered. I’m being measured and incented all wrong! [6].

Another business unit executive put it more bluntly: “Unless it contributes to this quarter’s bottom line results, don’t do it!”, as he urged his people to focus strictly on near term results and commit nothing to the longer term [6].

And so the seeds of the current resource crunch in product development were sown. For a few years the formula worked: some slack was removed and the remaining people worked a bit harder and faster. But after a decade of this “make the numbers” thinking, the true costs became evident.

The resource cuts or deficiencies are apparent in every department. In technical groups – R&D or Design Engineering – people are spread across too many projects. It’s not uncommon for a technical person to be working on three or four significant development projects simultaneously, and at the same time, handling a variety of small technical tasks, such as customer requests and trouble shooting in the plant. Marketing appears even worse hit:

In one smaller business unit of a major corporation, the Marketing person declared that he was on eight major development projects; but that his day-to-day marketing job took 60% of his time. Do the math: 20 days in a month and 40% of his time on projects - that’s eight days, or one day per project. It came as no surprise to hear that in none of the projects was there anything resembling a full scale market study or voice of customer research – how could there be with only one day per project per month of Marketing time! [6].

Other support functions are not immune to these resource deficiencies when it comes to new product projects. Too often we hear that securing support from process, operations or manufacturing engineers for product development projects is next to impossible. And so the “transfer-to-the-plant” phase resembles more “throwing it over the wall” rather than a smooth transition, while manufacturability issues, so important early in the life of a new product project, are not dealt with. Finally the sales force is so focused on today’s results in financially-driven businesses that their time is not available for new product projects, even when it is realized that these projects promise to yield tomorrow’s bread-winners for the sales force! The results are predictable: Without early sales force involvement, getting commitments to sales forecasts is difficult, and support for the launch by the Field is lacking - the launch is plagued by lack of people and time.
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A Second Reason for the Resource Crunch: Too Many Projects

The other side of the resource crunch is trying to do too many projects for the limited resources available: a lack of focus. One benchmarking study reveals that 44 percent of firms studied confess to trying to cram too many projects into development; indeed the term “pipeline gridlock” was used by some managers to describe the situation in their businesses [3].

Nine Lame Excuses for Not Killing Development Projects

Why are there so many projects – too many for the resources available? Our research reveals numerous reasons, most of them poor excuses, for an inability to prune the new product portfolio [6]:

1. Pressure to get anything to market: Some senior management admit to a reluctance to kill projects because they desperately need to get something - anything - to market (often due to the way the senior person is measured).

2. Sunk cost reasoning: Here the argument is: “We've spent so much on this project ... we can't kill it now”. Many people have trouble cutting their losses, especially after major expenditures.

3. “We're almost there!”: When projects are mired in the development and test phases, and face tough technical obstacles, often the technical solution seems just months away: “just a little more time will solve the problem” begs the project team. The trouble is: the same refrain has been heard before, and still the technical solution remains elusive.

4. Executive “pet” projects: Senior people have their pet projects - projects they believe in and have committed to. If the project is killed, the executive loses face.

The problem is that executive pet projects have a poor track record: their failure rate is higher than the average project, in spite of all the support and attention [8, p. 97].

5. Nothing better to work on: The business is bankrupt of great new product ideas, so that there are no other projects waiting for the team to work on. One should always have a list of solid “projects on hold” waiting in the wings, and there are many methods to do this [12].

6. No killing mechanism: Many businesses confess to a lack of formal or effective Go/Kill decision points in their new products processes.

7. No portfolio management: In a gating process, decisions are made on individual projects one-at-a-time at gate reviews; but a more holistic view – looking at the entire portfolio of all projects – is missing [3].

8. Can’t say no to a key customer account: Still other businesses have become so customer driven and reactive that they cannot say no to any customer request, even frivolous or poorly thought-out ones.

9. Just difficult to say ‘no’: Finally, some senior people confess to an innate inability to “drown some puppies”. As one executive declared: “We never kill projects ... we just wound them!”

A Final Reason for the Resource Crunch: Overemphasis on Speed to Market

Many senior management have become “speed demons”, placing far too much emphasis on cycle time reduction and acceleration to market. The reasons for this over-emphasis on cycle time reduction can often be traced back to reason #1 above - the desire for fast profits and the way senior people are measured.
While reducing time to market is an admirable goal, there is also a dark side to project acceleration. Further, this over-emphasis on speed only exacerbates the resource crunch: As times-to-market are compressed, the rate of projects entering the pipeline increases, and so departments and project teams must handle even more projects per year. And the results are similar to those already cited: corners are cut, key activities are undertaken in haste, quality of execution suffers, projects are trivialized, and team morale suffers.

More words of warning about cycle time reduction: There is inconclusive evidence that excessive cycle time reduction is even a desirable goal across the board. For example, Griffith found no correlation between a project’s time-to-market and various success metrics [14]; while another study found far less than a one-to-one correlation (0.415) between profitability timeliness (measured by on-time performance and time efficiency) [15].

Some Solutions to the Resource Crunch Problem

The current resource crunch in NPD has many negative effects: poor quality of execution, long cycle times, under-performing projects, and poor team morale. Given the diverse set of reasons for this resource deficiency – ranging from trying to do too many projects through to a preoccupation with short term profitability – we offer three sets of solutions to the current resource crunch in NPD:

1. Strategic Solutions
2. Portfolio Management Solutions
3. Tactical Solutions.

1. Strategic Solutions:

A. When it comes to resources, recognize that not all businesses are the same

The emphasis on short term operating results has caused corporate headquarters to treat all business units much the same. Planners have lost sight of strategy and have become score-keepers instead: the short term

Exhibit 3: Develop a Strategic Planning Map for your business units. Not all businesses are the same, nor should their NPD resource allocations & metrics be the same.
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Numbers are all important. This is wrong. Some business units face limited prospects in product development, and thus few development resources should be allocated here. But others have many opportunities, yet are measured with the same yardstick, and have resources allocated the same way.

It's time to re-introduce a good dose of strategic thinking into your corporate planning exercise. Let's get back to the fundamentals of strategic planning, where differences among businesses and their opportunities were recognized. Recall the BCG (Boston Consulting Group) business unit portfolio model (Exhibit 3). This strategic model was a good model in its day: it classified business units as stars, cash cows, dogs and wildcats – and defined different NPD roles and goals for each business. This model made a lot of sense, so perhaps it's just time to dust it off and update it.

Here are some suggested updates:
The business units or businesses are still denoted by the various bubbles in Exhibit 3. However, instead of using Market Size as the vertical axis (this metric was too uni-dimensional in the original model [16]), use Market/Technology Attractiveness. This is an external metric that captures how attractive the market and technological possibilities are for each business, and includes specific measures such as market size, market growth and potential, competitive intensity, and slope of the technology S-curve [17].

And replace the conventional Market Share horizontal axis metric with the more robust Business Position measure. This is an internal metric that captures the strength of the business unit – what the business brings that suggest that it could be an effective competitor in this business area. This dimension includes market share but also strengths and core competencies relative to competitors (e.g., technological strength, manufacturing strengths, marketing strengths).

Star businesses merit more spending on R&D than the average business, and an aggressive NPD effort. A “harvest and/or divest” strategy is usually elected for Dog businesses; while Cash Cows see average or modest R&D spending, with NPD designed to keep the product line up-to-date. And Wildcats or Question-marks see selective R&D spending, depending on the magnitude of the opportunity and track-record to date.

B. For Star businesses, change the metrics!
Measuring all businesses with the same yardstick or metrics assumes that all businesses are the same: again, wrong! The metrics that are imposed cause senior management in each business to behave a certain way, and different senior management behavior is appropriate for different businesses. For example, the Star businesses should be treated as Stars and most important, be measured as Stars. Thus, instead of relying on traditional short term operating profits, apply more growth oriented metrics to gauge their performance, metrics such as:
- Percentage of sales from new products [18]
- Growth in revenue
- Growth in profits.

Note that these growth metrics may not be appropriate for every business unit – just for the designated ones. Here's an example:

At Air Products, each global business unit is assigned its own growth and profitability targets, depending upon the type of industry/markets that each is in, and the level of importance of the business to the corporation. This approach recognizes that each business unit is different, and as such, should have different targets set for it: each business unit thus sets its NPD strategy that matches its own unique business needs (instead of having one common goal across the whole corporation) [7].
C. Develop a product innovation and technology strategy (PITS) for the business

Most businesses have a business strategy, but what is missing is their *product innovation and technology strategy* [19]. Components of deal with goals as well as the resources to achieve these goals, and include:

- **New product goals** - for example, what proportion of your business’s sales will come from new products; or what percentage of your growth?
- **Strategic arenas** - the markets, product categories or technologies - where you’ll focus your new product efforts; your battlefields must be decided.
- **Attack plans** - how you plan to win at new products in each strategic arena.
- **Deployment** - how many NPD resources you plan to allocate to each arena or battlefield.

The issue of deployment is critical: strategy becomes real when you start spending money. Deployment is about resources and resource allocation for product development. And it must be part of your business’s strategy and PITS.

D. Ensure that new product resources are consistent with the business’s strategy and goals

Take a hard look at the business’s goals, strategy and product innovation strategy. If there are stretch growth goals, and the strategy is to expand dramatically via new products (as is typical in a Star business), then the resources must be in place. For example, since the metric “percent of revenue from new products” is driven by R&D spending [8], then NPD goals expressed in terms of sales from new products must be reflected in appropriate levels of R&D spending.

Next, translate these growth or sales goals into new product launches – how many, how big, and how often? Then translate these launches over time into resource requirements – this is the demand side (usually measured in FTEs or dollars).

Now look at the supply side. Undertake a *resource capacity analysis* - how many people are available to work on projects [5, Apr. 1999]. Be sure to subtract the time they must spend on day-to-day work just to keep the business going. This is the supply side.

Each time we undertake such a resource capacity analysis, a gap between demand (based on goals and strategy) and supply is identified. And the result is predictable: the goals won’t be achieved and the strategy will not be realized. Senior management then has three choices: set more realistic goals; or put the resources in place; or reallocate the existing resources!

E. Ring-fence the resources

If considerable resources are required for product development, consider *ring-fencing these resources*. That is, make them dedicated resources - dedicated full time to product development - rather than dividing them among many duties. These ring-fenced resources or “innovation group” includes technical people, but also marketing and production people, and their full time job is product development! Too often, when people are supposedly designated to product development efforts, their jobs are split and their “other duties” soon dominate. The result is that a relatively small percentage of the designated resources are in reality spent on product development!

2. Portfolio Management Solutions

A. Implement a formal Portfolio Management Process

One solution to the resource crunch is effective portfolio management. The argument is that the problem is not so much a lack of resources, but rather *how the resources are allocated*. Many firms have a solid new product gating process. They then piggyback a portfolio management decision method atop of their excellent gating process.

Important additions include:

- periodic portfolio review sessions to rank and prioritize projects, and to seek the right balance and mix of projects;
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- IT support to display the entire portfolio of projects; introducing resource allocation into project gate meetings; and
- linking project decisions to the business's strategy via strategic buckets [20].

**Example:** EXFO Engineering (winner of the PDMA's Outstanding Corporate Innovator Award in 2000; Product Development and Management Association) has implemented both a Stage-Gate™ and Portfolio Management process. The gates make Go/Kill decisions on individual projects. But four times per year, the business leadership team, chaired by the CEO, evaluates, ranks and prioritizes the complete slate of development projects during the Portfolio Review meeting. Any project at or beyond Gate 2 is included in this prioritization exercise [7].

**B. Use Strategic Buckets and prioritize your projects within buckets**

Consider setting up strategic buckets - envelopes of resources (dollars or person-days) but split by project type and market sector or business area. This strategic buckets exercise is a logical extension of defining your business's product innovation and technology strategy (Strategy item C above; see also Exhibit 4). Each “bucket” is allocated a finite set of resources - a “macro-allocation” of resources.

Next, and within each bucket, prioritize your projects, using an A,B,C categorization scheme:

- **Category A:** High priority projects - these receive maximum resources and are fully loaded; timelines and resources are sacred.
- **Category B:** Medium priority - resources are allocated to these, but may be reassigned, as A-priority projects demand more. To compensate for real-time resource adjustments, the timelines of B-projects may slip. Thus, the process is a self-regulating one.
- **Category C:** Lower priority - these go on hold; no resources are expended on these.

This is a “micro-allocation” of resources to specific projects.

Project prioritization can be achieved via a scorecard scoring system; or by force-ranking on multiple criteria (as does EXFO Engineering, below); or by ranking projects using the Productivity Index for each project (ratio of NPV/Cost Remaining) [10]. Whatever method you use, rank the projects within each bucket until out of resources for that bucket; those projects beyond the resource limit are designated C-projects.

Exhibit 4: The business's Product Innovation Strategy determines what the resource splits should be (Strategic Buckets). Go/Kill decisions are made on individual projects at Gates, but project ranking is done at Portfolio Reviews.
This portfolio procedure achieves three results: Top priority A projects receive the resources they need and are sped to market; a reasonable balance between numbers of projects and resources available is attained; and the spending breakdown mirrors the strategic priorities of the business via the strategic buckets:

EXFO example, continued: At the quarterly Portfolio Review, projects are force-ranked against each other on each of the following five criteria:
1. Confidence in the project team
2. Revenues (risk-adjusted) versus expenses (development and commercialization costs, including a technical risk factor) over a two-year period
3. Fit with the strategic plan (specific growth directions, with a weighting factor on each)
4. Profitability index (a return-on-investment ratio)
5. Availability of technical resources and commercial strengths.

The dogs or No Go projects are culled out and killed, and the end result is a prioritized list of worthy projects, ranked 1 to N. Resource requirements are summed down the project list until the resource limits are reached: those projects above the resource limit line are deemed Go and are resourced; and those below the line are placed on hold — no resources. In this way, management eliminates the dogs, forces the best projects to the top of the list, and ensures that the correct project-to-resource balance (pipeline gridlock is avoided).

C. Focus – do fewer but better NPD projects

Effective portfolio management also means doing the right number of projects – focusing resources on fewer projects but the right ones [10, ]. The goal of maximizing the value of the portfolio (above) must be achieved in light of resource constraints — ensuring that the right number of projects are undertaken for the limited development resources available.

It is better to undertake four projects and do them properly, rather than trying to do eight badly. This ability to properly focus has been shown to improve new product performance. For example, companies that achieve the right project-to-resource balance realize the best new product performance results, according to one study [3]. Here’s an example:

One major chemical company was suffering from too many projects. A thorough review of the list of 1000 active development projects revealed that many were mediocre – limited value to the company or lacking strategic impact. A brutal pruning exercise reduced the list to 250 projects. The result: time to market was cut in half within one year; and project execution improved dramatically [22].

Pruning the portfolio means making tough choices. A 75% pruning rate in the example above is extreme; our experience suggests that in the typical portfolio, roughly half the projects should be cut. Regardless of the percentage, however, management must learn to drown some puppies. However, drowning puppies is unpleasant for most managements: all projects look good; all are worthy or needed; and no one likes to kill any of them. The other tough issue, even if there is the will to kill, is which ones — which projects should be killed or put on hold?

Some of the ingredients of a successful pruning exercise include:
- The will to kill — management that is committed to making the tough choices.
- A killing mechanism — either in the form of tough, rigorous gates as part of a systematic new product process; or periodic portfolio reviews and project ranking sessions; or both.
- Robust and visible Go/Kill criteria — criteria that are used to rate and rank projects against each other (hint: financial criteria alone are probably not enough [10]; rather, consider approaches mentioned above in item B).
Data integrity – all the portfolio project selection tools are worthless if the data are wrong. The last point – data integrity – brings us full circle (bottom half of Exhibit 1). With too many projects in the portfolio, project teams are thinly stretched. Thus, discretionary activities – the up-front homework, voice of customer work, market assessment – are cut out or undertaken in haste. This leads to poor data on projects – market size, expected sales, product costs, and NPVs are pure guesses – and so the Go/Kill decision process is flawed. Management is stymied, has great difficulty rating, ranking and prioritizing projects, so they don’t. And the company ends up with too many projects. It’s a vicious downward spiral.

3. Tactical Solutions

A. Understand current resource deployment – the “what is”
Often the current deployment of resources – people and their time – is not well understood by senior management. People appear busy, but it’s not clear what they’re working on, or what they’re busy doing. This is especially true in technical groups:

In one major materials company, the business unit president declared in frustration: “I spend over $50 million on R&D, but don’t have a clue where the money is going. Can someone please enlighten me!” Within months, a resource deployment information system had been installed – one that tracked where people spend their time, and displayed the results in a convenient pie chart format [6].

How resources are currently deployed must be tracked by person and by specific project (a second facet of resource capacity analysis, introduced above [5, Apr. 1999]). This means people and person days by project. But the data must be truthful, and not disguised by politically-motivated management. Ideally this resource tracking should go beyond just the Engineering or R&D group: marketing people’s time is not free!

Once the data are collected, it is relatively easy to show the appropriate displays and breakdowns in a convenient format for senior management. Breakdowns are typically by project types, by markets, by industry sectors, and by technology areas (Exhibit 5).
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Usually this resource breakdown exercise – the “what is” – provides some new insights. For example, management discovers that far too high a proportion is going to smaller, lower value projects. Then management can take steps to readdress the imbalance, devoting a higher portion to genuine new product development.

B. Require project teams to specify not only timelines but also resource requirements

Effective new product processes require that the project team develop a Project Plan for the next stage of their project as a deliverable to each gate. Timelines with milestones are usually the format. As part of this Project Plan, ensure that the project team specifies clearly their resource requirements. Some tips:

When specifying resource needs, make sure that the project team spells this out not only in terms of people or FTEs, but also indicate person-months of work per person or department: this places a finite limit on resources for that project.

Next, insist that functional managers – the gatekeepers – approve not only the people, but also their person-months to be spent on the project.

In this way the project leader not only gains project approval at the gate reviews, but secures the people resources – people and person-months of work – to progress their project and to do a quality and timely job. And there is also a check on resource over-commitment: once individuals are committed to one project, their time cannot be double-counted and parceled out to other projects.

C. Adopt a true team approach to handle resource gaps

Team members ought to be able to “play each other's positions” in order to fill in for missing or busy players. For example, the entire project team should do the voice of customer interviews and the competitive analysis, not just the Sales and Marketing people on the team: Obtaining market information is far too important a task to be left solely to the Marketing people. Adopting a true team approach requires that the entire team be held accountable for all facets of the project (and not each team member only responsible for his functional piece of the project – a silo mentality). It also requires some team training. HP, for example, has provided training to engineers to enable them to do customer site visits to better understand customer needs [23].

Deal with the Resource Crunch

The resource crunch – either resource deficiencies or misallocated resources – is a pervasive problem in new product development. And it is the root cause for much of what ails product innovation: long times to market, underperforming projects and weak launches, missed opportunities, and too many small projects. While your company may seek to enhance your new product performance through a variety of techniques and solutions, unless you deal with the resource issue head on – perhaps via some of the strategic, tactical or portfolio management suggestions offered above – then much of your improvement efforts will be in vain: you cannot win the game without players on the field!

- End -
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References & Notes:


6 Most of the conclusions regarding NPD problems and causes are based on several benchmarking studies cited (endnotes 2,3,7,8); but an additional and rich source of information, particularly the anecdotal information which lead to more insight into the problem and possible solutions, is the results of “problem detection sessions” held in over 100 businesses over the last two years (methodology is based on ProBE – see endnote 9, Appendix A).


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   more effective.” Research-Technology Management, 2000, 43, 2, pp. 18-33.
22 Source of example: IRI roundtable discussion as part of portfolio management study, reported in endnote 3.
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