

PORTFOLIO DECISION MAKING: A FRAMEWORK & OVERVIEW

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Definition, Benefits and Enabling Tools

In a presentation earlier this year, Boeing Commercial Airplanes's Ben Almojuela offered the following succinct definition: portfolio management is *"a dynamic decision process in which a set of active new product and R&D projects is regularly evaluated, prioritized, and selected based on the goal of obtaining the greatest possible value from the organization's limited resources."*

According to this definition, portfolio management is composed of the following six elements:

- *Project evaluation*
- *Resource allocation across projects*
- *Corporate resource allocation*
- *Strategizing*
- *Project prioritization and*
- *Project selection*

The same speaker also outlined the benefits of portfolio management in ten key areas:

- *Timing - Ensures that products and technology are delivered to market at the target time.*
- *Projects - Defines projects or sets of projects to address scenarios on the roadmaps in accordance with strategic concepts. Focused on projects and project attributes that affect portfolio management outcomes.*
- *Resources - Aligns resources, work statement and resultant risk levels. Resource allocation is a major goal.*
- *Planning - Critical to long-range planning and execution of plans. Creates a framework and helps collect data for further planning activities.*
- *Decisions - Makes tactical (execution of the strategy) decisions. Strongly influences strategic decisions. Decision-making systems embedded in the process.*
- *Communication and Collaboration - Imposes a common nomenclature for stakeholders to support critical decision-making. Facilitates structured discussions and dialogs.*
- *Synergy - Critical macro-process for bringing ideas all the way to market. Strong synergy with project management and technology planning.*
- *Strategy - Uses strategy-related criteria to facilitate decision-making and aligning product & technology development with corporate & product strategy.*
- *Risk - Addresses risk in terms of multiple scenarios for product developments. Risk is explicitly evaluated at each stage of gated process within portfolio development.*
- *Alignment - Aligns work statement, resources for each project or set of projects within the portfolio. Aligns development with decision-making process.*

Almojuela also identifies the following tools for enabling portfolio management:

- *Relational databases*

- Tools based on scoring models, from QFD to other software. Scoring models and checklists best represent benefit measurement techniques
- Probabilistic financial models
- Behavioral approach (Delphi methods and others)
- Advanced techniques: mathematical optimization procedures and Project Analysis and Support System

A Maturity Model for Portfolio Management

Another portfolio management framework created by consultancy The Adept Group divides portfolio and pipeline management, as an overall capability, into process component groupings: Mix Management, Throughput Management, Measures/Methods, Software/Data, NPD Process, Top management (skills and behaviors), and Implementation Focus. In this model, each of these component groupings breaks out into process components; for example, the components grouping "Mix Management" is comprised of the components project selection criteria, mix

criteria, strategic buckets, project impact deficiencies and mix optimization analysis.

A 2002 study by the Adept Group found that, "Different (portfolio/pipeline) process components tend to be of greater or lesser importance toward accruing benefit from Pipeline and Portfolio Management, depending on where the organization is in its implementation."

Components of Implementation and Their Grouping	
Component Grouping	Component
Mix Management	Project Selection Criteria Mix Criteria Strategic Buckets Project Impact Dependencies Mix Optimization Analysis
Throughput Management	Project Management Foundation Project Prioritization Resources to Project Assignments Resource Use Forecasts Critical Chain
Measures / Methods	Metrics Financial Priority Listing Risk Assessment
Software / Data	Data Handling View Creation Software Enterprise System
NPD Processes	Portfolio Objects being Managed Stage-gate redesign Front-end concept generation Product line mapping
Top Management	Top Management Involvement Top Management Proficiency Top Management Focus
Implementation Focus	Organizational Challenges Implementation Team Focus

Source: The Adept Group

In other words, although all component groupings are addressed at the various stages of portfolio/pipeline management implementations, certain "significant turning points" become more important at the different stages of implementation.

This spiral level model of portfolio/pipeline management implementation, as the researchers call it, identifies which processes are among the most critical over time, as the implementation matures. This model represents the beginnings of what could be described as a maturity model for portfolio/pipeline management.

Benchmarks for Portfolio Management: Practice Usage and Performance

In addition to generating the spiral level model, the same study also provides data regarding the impact of portfolio management on product development performance. In the study, respondents were asked to rate, on a scale from zero to ten, their agreement ("0=strongly agree; 5=neutral; 10=strongly disagree") with statements intended to gauge the impact of portfolio management on performance, including such factors as Time-to-Market (TTM), development efficiency and overall strategic impact (market share, total sales, competitive advantage, etc.).

With respect to strategic impact, more than three-quarters of the respondents rated the effect of portfolio management toward the higher end of the scale (between "5" and "10," inclusive). The influence of portfolio management on TTM was less clear with about 40 percent of respondents rating it as between "0" and "4," approximately 40 percent rating the impact as between "6" and "10," with the remaining 20 percent having a neutral opinion.

Respondents were more sanguine about the effect of portfolio management on the efficiency of new product development, with a clear preference for the higher ends of the scale. The results suggest that firms are beginning to see the results of portfolio management internally, but were yet to see clear benefits in terms of result metrics such as TTM and market share growth. However, the researchers report that companies with a greater expertise at portfolio and pipeline management (those at higher spiral levels) report significantly greater gains in strategic impact as compared with those companies at lower portfolio management maturity levels.

A study cited by Scott Edgett of the Product Development Institute in a 2005 conference presentation showed large gaps between the best and worst performers with respect to portfolio management practices. For instance, 65.5 percent of the "best performers" identified by the study affirmed that resource breakdowns reflect their business strategy, versus only 8 percent of the worst performers. Similarly, 41 percent of the best performers claimed they did "a good job of ranking/prioritizing projects," as opposed to only 12 percent of the worst performers.

Surprisingly, however, portfolio management was still only a "formal and systematic" process among a minority of firms, with only 31 percent of the "best performers" reporting that they had such a process in place. A formal and systematic portfolio management process was in place at only 21.2 percent of "average performers" and only 3.8 percent of the "worst performers." If this sample is representative, then the research indicates that more than two-thirds of even the best new product development performers do not yet have a systematic and formal portfolio management process.

Benchmarks for Portfolio Management: Pipeline Yield

Benchmarks are also available for the yield of the product/project pipeline - the percentage of projects going into the pipeline that are ultimately approved for development. A biennial series

of studies conducted by Goldense Group Inc. (GGI) divided product selection processes into two major types: those in which there is a single top management meeting for a go/no-go decision, and more complex processes where there is at least one additional screening before the final approval decision is made. Said GGI president Brad Goldense, in an interview with KS, *"GGI's research shows that there is an average of three products in every project...at development approval. By the time it launches, one of those three [products] has fallen out of the project such that it's an average of two products per project at launch."*

The GGI research also shows that those companies which had a two-step selection process killed more projects pre-approval than those companies which had a one-step process. Says Goldense, *"A two-step product selection process at the front end of Robert Cooper's Stage-Gate®...results in a more realistic loading of the pipeline and therefore a portfolio that is more attainable."*

The findings suggest, says Goldense, that the product portfolio and the project portfolio are two distinct yet dynamically related portfolios. Goldense would add to the list a technical portfolio and an Intellectual Property (IP) portfolio, each of which is owned by a different group and which requires related but somewhat different skills to manage. Generally, when product developers speak of "portfolio management" they mean the portfolio of either products or projects, and the two are oftentimes not distinguished from one another. Although the technical and IP portfolios are beyond the scope of the present overview, Goldense reminds product developers that the product and project portfolios are but one half of portfolio management taken at the corporate level.

Essentials for Portfolio Decision Making

In addition to the benchmarks derived from GGI research, Goldense also had a viewpoint on the topic of populating the pipeline with the best possible projects. First, Goldense advises product development managers to make sure the portfolio is aligned with corporate strategy. If the company's fundamental identity is as an innovator, then the portfolio must reflect that identity and the metrics that support that portfolio must also encourage and support innovative product development. A firm may think of itself as an innovator, and yet its portfolio of products and the metrics by which that portfolio is measured may not at all reflect a focus on innovation. The portfolio must match the firm's identity and if there is a mismatch, then either the portfolio or the strategy must change.

Goldense also observes that companies have differing core competencies with respect to executing small or large projects. Some may be expert, for example, at handling complex projects with long timelines, but are less capable with respect to getting a fast-following product through the pipeline and out the door. Goldense advises product developers to align their portfolio with *"their internal competencies relative to execution."* In other words, the portfolio must reflect the core competencies of the organization with respect to the size of projects it is best suited to execute.

A pitfall of portfolio management, Goldense suggests, is what he terms "portfolio filler," products which are in the portfolio mainly so that the sales force can assure the customer that a complete solution is available. The problem with this, says Goldense, is that *"a third or more of those [portfolio fillers] have no ROI and the opportunity cost for executing that last one-third [represents potentially]...another product family that you could introduce."* The products in the portfolio should be based on sound business considerations rather than on the need to interact smoothly with, perhaps, one or two customers.

Goldense summarizes his viewpoint regarding portfolio decision-making as follows:

- o *Align the portfolio around core strategy*
- o *Regulate the size of the product family as far as it relates to the number of projects needed to realize that product family*
- o *"Look with discernment at the tail end of the product family because there is usually little ROI and if you choose to [develop that product it] takes away from revenues and profits from other products that would be more mainstream."* ^{KS}

Sources:

[1] Exploring Synergies Between Strategic Roadmapping and Portfolio Management, Ben Almojuela, presented at the conference Product Pipeline and Portfolio Management: Balancing Priorities with Capacity, The Management Roundtable, April 26, 2005.

[2] The Current State Of Portfolio And Pipeline Management Implementations, Product Development Best Practices Report, September 2002.

[3] Strategic Alignment of Portfolio Management, Dr. Scott J. Edgett, presented at the conference Product Pipeline and Portfolio Management: Balancing Priorities with Capacity, The Management Roundtable, April 26, 2005.

[4] Knowledge Source interview with Brad Goldense, Goldense Group Inc., October 28, 2005.