

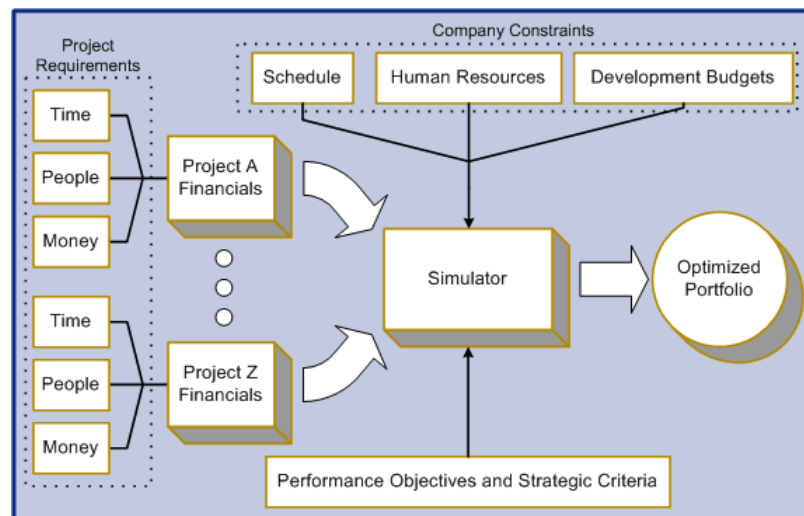
# Project Investment Portfolio Analysis & Planning

*A Critical Business Process Requires Effective Management Science and Robust Analytics*

## Leveraging Proven Financial Portfolio Practices

Whereas purchasing capital-market securities requires only an investment of money, project investments consume an organization's "primary" resources of time, people, and money. Product development and R&D projects are investments of a company's finite resources in "revenue-generating" programs (RGPs) and the "cost-center" co-investments (CCIs) on which RGPs depend. Project investment portfolios present an analogous capital-budgeting problem to that of financial portfolios, with the additional complexity that project portfolios include time-dependent investments of both human resources and capital.

Depending on the industry, companies may have limited types of "secondary" resources. For example, manufacturing companies will have manufacturing and quality-assurance testing capacities (in-house and/or outsourced), online businesses will have server bandwidth limitations and/or mass storage capacities, and pharmaceutical firms will have limited numbers of FDA approval cycles. Other resource requirements and capacities can be easily incorporated into the portfolio analysis problem formulation depicted in **Figure 1.** below, but the analysis will still be dominated by time, people, and money resource constraints.



**Figure 1.** Portfolio Analysis Problem Formulation

## Comprehending Decision-making Complexities

Whether your current process has been formalized or is ad-hoc, your company has a process for allocating its time, people, and money resources to product development and R&D projects. Independent of industry, the presence of the following four characteristics reveals a complex decision-making domain for which most companies do not have an effective business process nor robust analysis tools:

- **Human resource management complexity**
  - ⇒ There are many concurrent projects having schedule-dependent staffing requirements for a range of job skill sets that span a number of functional departments
- **Resource supply-demand deficit**
  - ⇒ There is a significantly greater number of in-progress and new candidate project investments than the number that can be simultaneously supported by the existing resource base
- **Inter-project relationships**
  - ⇒ Projects have inter-dependent technical content or time-related dependencies
  - ⇒ Projects may be mutually-exclusive alternatives or may be variants on a single project business case
- **Strategic constraints**
  - ⇒ Strategic portfolio investment criteria must be superimposed on the resource supply-demand situation

For more information, please contact us at:

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## Offering a Comprehensive Analysis & Planning Methodology

A means to rapidly evaluate all possible portfolio combinations of in-progress and new candidate project investments must include rigorous modeling of the following for each project:

- Business value creation, in terms of pro-forma financials and robust financial metrics
- Resource requirements by time period across relevant job classes and key development cost line items
- Inter-project dependencies and mutually-exclusive project relationships
- Strategic characteristics of each project

Combining a rigorous business-case model for project investments with the proper economic model for resource allocation, a structured, solvable problem formulation can be determined for a specific business operation. This model can be used to simulate the comprehensive set of optimal portfolio investment scenarios available to the management team. To support the managerial debate and decision-making process, the levers to explore "what-if" scenarios and compare alternative portfolio plans in real time are also required.

## Implementing a Robust Business Process

We work extensively with your cross-functional portfolio management team or program management office (PMO), to determine the appropriate operational model and project investment models for your organization. We support the data collection, data entry, and data validation for your project business cases. We train your finance, marketing, program management, and engineering management professionals to be effective portfolio analysts. Beyond the technical modeling and analysis techniques needed to identify optimal portfolio investment plans, we enable you to answer the "End-of-the-day General Manager Questions":

- How does a given plan's business performance compare to alternatives within our budget and headcount constraints? Are we capturing the value available to us, given our opportunities?
- How well aligned is the recommended plan with our strategic and market-related criteria? Are we "spending" our resources consistent with our strategic intentions?
- Given our organizational structure and human resource skill set capacities, how efficiently can we execute this plan? What resource bottlenecks exist in our development pipeline? When and where will we need to hire additional staff?
- What confidence do we have in the plan being executed on-time, on-budget, and with minimal incremental resource needs? How does this compare to the confidence in other possible plans?

## Innovating to Enable Breakthrough Capabilities

*"If you are looking to do BUSINESS management, you need to consider your business dynamics, strategic 'choice points', available tools, and strong partnerships with domain experts. PROXI provided us with a great, customized tool that fit our business complexities, and they worked hard to build a strong partnership and understanding of our business. Great software and a great partnership has lead to great Business Management!"*



**Michael Millman**  
Director R&D, Product Lab  
Hewlett-Packard Company, Inc.

*"PROXI's methodology is a wonderful combination of creativity, intellect, and hard-nosed application of financial portfolio theory. At the Haas School of Business, it is exactly the kind of management science innovation that we like to see put into practice. I suspect that for many managers, it will feel like projecting a two-dimensional thought process into a three or four-dimensional space."*



**Dean Richard Lyons**  
Sylvan Coleman Chair in Finance  
Haas School of Business  
University of California, Berkeley

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