

Managing Innovation Portfolios

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Companion to the white paper:
Innovation Metrics
The Innovation Process and
How to Measure It

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Purpose

The purpose of an Innovation Portfolio is to manage the risk inherent in innovation while optimizing the results achieved by innovation investments. This is a process that must be done in the context of the specific market and technology position of a particular organization, so each Innovation Portfolio will be different.

This document describes a process recommended for Innovation Portfolio management, defined as a series of key concepts that may be implemented in steps.

The “Innovation Portfolio” Concept

The underlying principle of any portfolio is that risk and potential reward have to be considered in conjunction with one another. The concept of portfolio management for innovation is identical to portfolio management for any other form of investment. By allocating capital across a range of investments the goal is to obtain the best return while reducing risk. The key, as articulated in portfolio theory, is that the risks must be non-correlated, meaning that various investments must perform differently under any specific set of economic or business conditions.



Figure 1

The 9 Stages of the Innovation Process

While the process is shown as predominantly linear, in practice there are opportunities for learning and feedback throughout the process. In fact, the entire process is thoroughly iterative and loops over and

over on itself, as learning achieved in any single step influences all the other steps as well.

For a more detailed description of the Innovation Process please see the companion white paper, Innovation Metrics.

The particular challenge with innovation portfolios, however, is that the projects to be decided upon are not complete or mature, and so their future value is likely to be highly uncertain. Hence, the process of creating and managing these portfolios occurs in parallel with the process of innovation development.

The portfolio management process is one stage in the broader innovation process, an early-stage input to the strategically-managed sequence of activities.

At the early stages of the development of an idea, its future value is almost entirely a matter of speculation. As work is done to refine ideas to create business value, there is a lot of learning that goes into making the myriad design decisions that are inevitably needed. The innovation process as a whole therefore seeks to optimize the learning that is achieved, and to capture what has been learned for the benefit of the overall innovation process as well as the portfolio management process.

Innovation Portfolio Management

The process of preparing and managing Innovation Portfolios consists of these 5 steps:

- Step 1: Model the Key Strategic Factors in your industry
- Step 2: Define the characteristics or criteria to be considered.
- Step 3: Define the weighting of the characteristics and score for attractiveness.
- Step 4: Risk-Reward assessment and the ideal Innovation Portfolio.
- Step 5: Assess proposed new projects.

This process enables you to consider a wide range of important issues related to each potential innovation investment, and to do so in a reasonable sequence.

Step 1: Model the Key Strategic Factors in your industry

In every organization there should be an intimate link between strategy and innovation. The possibilities of strategy are informed by the possibilities of innovation, and innovation should be directed toward strategic targets, so the innovation management process begins by taking into account the key strategic issues that the organization faces.

The portfolio management process is the second of the nine steps in the overall innovation process. This makes sense, in that we identify our goals first, and then manage the process to achieve them.

Key strategic factors for your organization to consider could include:

1. The rate of change in our industry. When change is very fast it requires an approach to innovation that is built around speed to market.
 2. The innovation strength of our competitors. When competitors are strong innovators, we may have to increase our own capability to match their capacity.
 3. Specific initiatives our competitors are undertaking now. If they have announced their plans or projects then this may influence our choices.
 4. Our position in the industry (leader / follower / etc.). If we are a leader and intend to maintain our position, then we must be prepared to back up our position with investment.
 5. Our appetite for risk, one factor of which may be the strength of our balance sheet. If our organization is entirely risk averse then it will affect the types of projects we are willing to undertake.
- How fast digital technology will sweep over our industry. If digital technology is or will have a significant impact on us, then we'll have to invest to prepare.

There are many other factors that may be more pertinent to your organization. Innovation Leaders should prepare a complete list, and then choose a set of 5 - 10 that they feel are most important to focus on.

And then later on, when you begin any periodic review of your innovation portfolio, refer back to these factors to verify that they are still valid and still the most important overall strategic criteria to consider.

These key factors will also become the basis for Step 2.

Step 2: Define the characteristics or criteria to be considered.

The criteria that you will use to evaluate individual ideas and projects will depend on the strategic factors of the specific industries and markets that you compete in. Develop a list of the criteria that are important for you.

The following criteria *could* belong on your list, and there may be others as well:

1. Uniqueness
2. Probability of technical success
3. Probability of commercial success
4. R&D cost to completion or to next decision point
5. Time to completion or to next decision point
6. Intellectual property protection or ease for competitors to copy

7. Durability of competitive advantage
8. Innovation platform*

*An innovation platform is a basis on which other innovations can be developed, and may therefore be more desirable than a stand-alone innovation. For example, the core iPod technology concept is the basis of many different iPod devices. Another example is the Starbucks retail chain, which sells a wide variety of coffee products and other related and unrelated goods.

Your list could have any where from 5 to 15 criteria.

Step 3: Define the weighting of the characteristics and score for attractiveness.

Basic risk and reward are important assessments, and there are other characteristics that you will want to consider as well. Some of these will be more important in your evaluation than others. Hence, the table shown on the next page enables you to consider all the criteria you consider important, and to give extra weight to the characteristics you can place greater importance on without neglecting the aspects that matter less.

Each idea or project under consideration would be evaluated on the same weighting table so that score for each could be compared with the others.

Part of the value of a scoring system like this is that when you review the portfolio on a periodic basis, such as quarterly, you can reexamine the rating for every project to see if it has changed due to changes in the external environment or due to whatever has been learned in the innovation process itself since the last evaluation.

This way, projects that may suddenly gain or lose perceived value can be managed accordingly by adding or removing resources to accelerate results or, in the extreme, stop the work entirely.

Innovation Portfolio Evaluation	Idea or Project Name:		
Strategic Factors	Weight (1 - 5)	Rating (1 - 5)	Score (Weight x Rating)
1. Rate of change			
2. Innovation strength of our competitors			
3. Specific initiatives our competitors			
4. Our position in the industry			
5. Our appetite for risk			
6. Impact of digital technology			
Total			
Innovation Criteria	Weight (1 - 5)	Rating (1 - 5)	Score (Weight x Rating)
1. Uniqueness			
2. Probability of technical success (technical risk)			
3. Probability of commercial success (commercial risk)			
4. R&D cost to completion or to next decision point			
5. Time to completion or to next decision point			
6. Intellectual property protection or ease for competitors to copy			
7. Durability of competitive advantage			
8. Innovation platform (vs. stand-alone)			
Total			

Table 1
Strategic Factors and Innovation Criteria

Step 4: Risk-Reward assessment and the Ideal Innovation Portfolio

There are two different lenses to use to examine your ideal portfolio. The first concerns the balance between risk and reward, while the second concerns the balance between the four types of innovation.

The Risk-Reward Matrix

A 2x2 matrix provides a good framework for thinking about the balance between risk and reward. The model is self-evident - the lower-right quadrant is a dangerous place to hang out, the upper left is ideal.

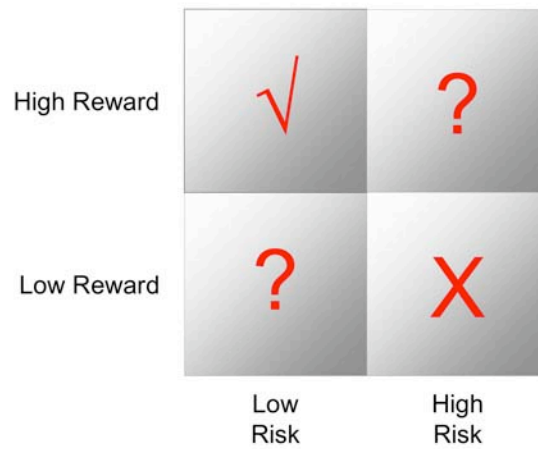


Figure 2
The Risk-Reward Matrix

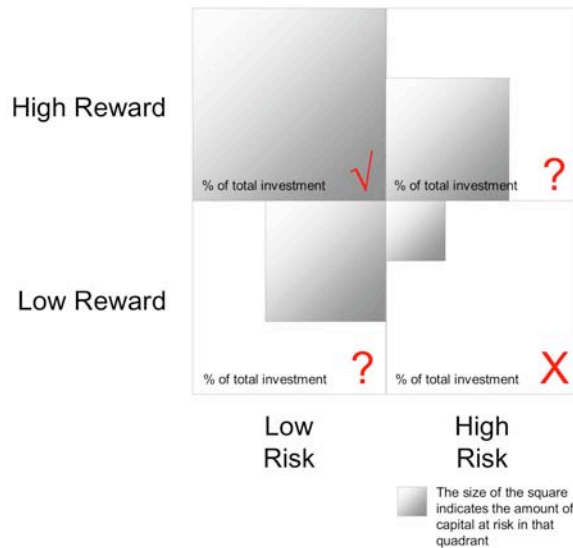


Figure 3
A Weighted Risk-Reward Matrix

On an ideal basis, how would you distribute your investment? Some projects, strategic goals, or initiatives that are mandatory may not fall in the upper left quadrant, and they may even be in the lower right. How can you mitigate those risks?

Now that you know what you're shooting for, you have established the necessary context to evaluate the projects that you're already working on.

First, use a matrix like the one above to assess each project that is in the current portfolio. This will of course be subjective, but that's OK. The point here is to hone your judgment and to engage in a constructive conversation with others about what constitutes suitable reward and acceptable risk, and where individual projects fall on the matrix.

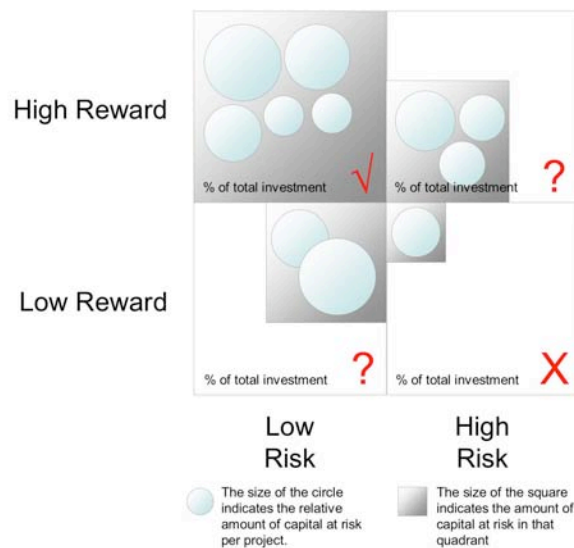


Figure 4
A Weighted Risk-Reward Matrix Showing Individual Projects

The next step is to identify the quantity of funds that are currently committed or being invested in each quadrant. Make a circle to represent each project in the portfolio, and position it in the relevant quadrant. This will show you the distribution of risk-reward across the entire portfolio, by project. Also, show the amount of investment in each quadrant by summing the individual projects and sizing the square accordingly. This will enable you to see at a glance how your portfolio is distributed, both by number of projects per quadrant and relative investment per quadrant.

The Four Types of Innovation

The next step is to consider the balance of investment across the four different types of innovation - breakthrough innovation, incremental innovation, business model innovation, and new venture innovation.

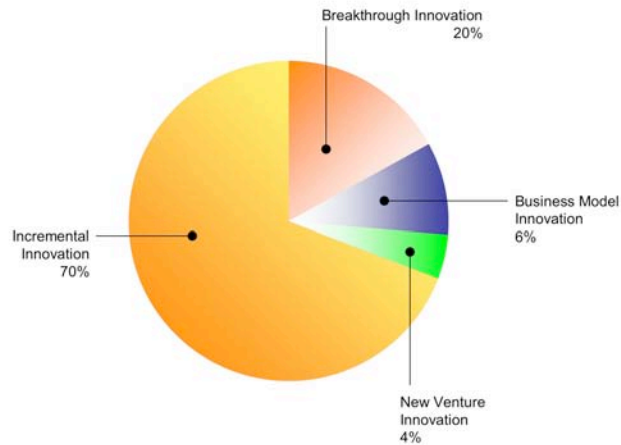


Figure 5

An Innovation Portfolio with Projects Across All Four Types of Innovation

This figure shows a hypothetical portfolio with the majority of overall investment in Incremental innovations, and the balance distributed across the other three types.

Step 5: Assess proposed new projects.

Now you're ready to prepare evaluations of all proposed *new* investments. The description here assumes that this will be done in a collaborative setting, involving a group of people who ideally represent many different elements of the organization, and who therefore can provide input from many different points of view.

The actual decisions about go forward or not going forward may reside with individual managers or small teams, but the input of a larger group should help to make the best possible decisions.

An Innovation Champion should play the role as facilitator for this process. The facilitator not there to comment on the merit of the ideas, but rather to help guide the process so that it is efficient for all participants, fair for all participants, and optimally productive for the organization. (This is a key role for an innovation champion.) The facilitator should introduce everyone to the process you will use, and present the ground rules.

The facilitator should make sure that this is the participants are expecting, and ask if there are other specific innovation or creativity issues or challenges that they face at

work that they also want to discuss. If so, you can possibly build some exercises or discussion around these. You may also want to defer the other conversations. Either way, be explicit about it so that people know what to expect.

Share with the participants the principles you will be using to model the portfolio (per the matrices above, or however you adapt the matrix concept to your own organization).

For each idea under consideration, the idea manager or idea owner should present an overview of the elements of the idea.

They can bring with them an already-completed data sheet describing the project, along with Table 1. This person should know already about the portfolio model, and they should state their opinion about where their project belongs - in terms of type of innovation and quadrant on the risk/reward matrix for that type. And they should be prepared to talk about how fast it can go through the funnel, from idea (or wherever it is now) to completion.

The participants would then discuss the information presented and decide if they agree with the ratings. It's not necessary for the group to reach consensus on this - healthy disagreement about the future value of an idea is normal and natural.

1. Does the group agree with the placement on portfolio?
2. What about the placement on the funnel?
3. Does the group agree with the owner's assessment of risk?
4. How does the project contribute to the Ideal overall Risk/Reward matrix? Is it an important contribution? Or is it too risky? Too slow? Not enough return?

All investments that are being seriously considered should then be located on the risk-reward matrix, and the totals recalculated to show you the new balance if the project were to go forward.

For each proposed idea, participants should contribute their creative ideas for modifications to the ideas, further research, etc.

Other factors to consider may include:

1. The timelines of the projects - will they deliver value at the right time in terms of market demand and the pace of competitive innovation?
2. Risk: Do we have the right balance of risk?
3. People: Are the right people running or contributing to the projects?

The Innovation Champion or others could also lead workshops for those with idea in development, to help them with the preparation of business plans, customer research, tacit knowledge research, etc.

A process such as this should take place with some regularity, both for updates and evaluation of ongoing ideas, and for evaluation and consideration of new ideas.

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Note on Innovation Metrics

Your efforts with respect to Portfolios should be consistent with the work that you do to design and implement an Innovation Metrics process. The composition of the Portfolio and the selection of metrics by which it will be evaluated are closely related to one another.

As noted above, for additional thoughts on metrics, please see the companion white paper,

Innovation Metrics
The Innovation Process and
How to Measure It

Available at www.innovationlabs.com/publications.html

Some of the concepts included here have been adapted from the book "Third Generation R&D" by Roussel, Saad, and Erickson, 1991. Chapter 6 is particularly helpful.

Your comments or suggestions about this white paper are welcomed.
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