



Technology Commercialization

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Introduction

An effective and comprehensive technology transfer process is critical to the health and vitality of research organizations and crucial to successful technology commercialization. Without it, there is limited exploitation of innovative ideas, little tangible return on the research investment, and minimal benefit to the customer. Technology transfer is a dynamic and amorphous process taking place in an environment of technical and business risks, shrinking budgets, narrow development windows, exploding technical performance and ever shortening product cycles. It involves repeated attempts to match potential technology-based solutions to a range of dynamic and emerging customer needs. Technology transfer is an open minded and synergistic calculus for applying promising technologies to satisfy customer requirements resulting in valuable new products. Simply, technology commercialization is the process by which we introduce technology into the marketplace.

Technology Origin

Formal research and development activities are the traditional sources of technology. Technology oriented services and consulting companies and individuals are emerging sources of technologies which, if identified and properly guided may lead to profitable products. Sometimes, technologies emerge directly from specific, targeted research and other times through experimentation. Isolating the most economically promising paths to commercializing a specific technology is a highly customized and iterative process. The key to its successful conclusion requires the application of a number of disciplines compatible with tailored business and legal strategies to successfully transform viable technology into profitable customer product.

The ideas and principles expressed in this document are directed toward the commercial technology transfer environment to create products with positive benefit-to-cost ratios and significant perceived values to the well-targeted customers. This means mean profit in the commercial context. As the needs of government and the commercial sector continue to converge, government decisions regarding technologies will be more heavily influenced by the technology's compatibility for commercialization.

The Process

Technology development is not predictable and the requirement generation process is equally flawed because the edges of the technology transfer equation are soft and ambiguous. Precise matches between the raw technology and a viable product are infrequent where the transfer is an intuitive and trivial handoff. Usually, the matches are inexact where the technology characteristics are not well aligned with the originally projected customer needs. Refinements to the technology guided by this process will deliver the most viable product which must be affordable, match the needs and coincident with the demand. The technology must also be consistent with the customer's level of technical sophistication and performance expectation.

The technology commercialization process is the application of select combinations and sequencing of commercialization assessment techniques. These techniques are combined to create a focused, multistage and iterative process to evaluate, categorize, assess and propose follow-on strategies assessment and corrections to the commercialization process.

This process requires evaluating the technology from a technical viewpoint while comparing it to competing and near-term technologies and near-substitute products as well as the trends and maturity of available or near-available commercial technology and product development; the status of intellectual property of the technology and its attendant commercial significance; the status of technology exposure and position in the transfer cycle; the technical and commercial climates for the further development or exploitation of the technology; the strength, depth, vitality and sustainability of the addressable market; and the determination of best partners/licensees and a realistic economic analysis to assess and hopefully substantiate business viability.

The product of these events focus the technology transfer management process toward critical decisions about how and if the technology commercialization should be pursued to reduce the spectrum of business opportunities to a selected, targeted application. Technology commercialization involves the application and orchestration of numerous analytical, business and legal strategies, such as:

- Intellectual Property Audit;
- IDE5A (Identify, Document, Expose, Explore, Embrace, Exploit, Evolve and Apply) iterative positional model;
- Triad analysis and Idea Box processes for the creation and evaluation of multiple product/customer/application value propositions;
- SWOT (Strengths, Weaknesses, Opportunity, Threats) analysis on the most promising value propositions;
- SSSS (Superiority, Security, Substantiation and Strategic match) analyses;
- Partner/licensee Assessment;
- Financial ROI, IRR, and break-even feasibility analyses;
- Development of sound and advantageous business partnering strategies; and
- Development of legal vehicles to protect intellectual property rights and economic interests.

These assessments force the technology commercialization process toward product

applications having those desirable attributes to successfully and economically compete in the marketplace. In addition to refining technical attributes and adhering to financial constraints, decisions on the strategy for commercialization may also include considerations for partnering, joint cooperative development, cost-sharing contract, joint ventures, CRADAs, cooperative agreement, facilitation agreements, and MOUs, as well as licensing arrangements. The most appropriate strategy may include actively marketing specific technologies, approaching candidate companies, manufacturing, direct marketing, marketing through available channels and licensing approaches.

Summary

Navigating the road to successful technology commercialization is a challenging adventure. However disappointing, not all meritorious ideas or technologies are destined to be successfully commercialized. Inventors, researchers, and technology managers must appreciate the intensity of the commercial environment to gain meaningful perspective of the business considerations which must be integrated in the technology-driven development to increase the potential for successful commercialization.