

# Intrapreneurship Management

Concepts, Methods, and Software for Managing  
Technological Innovation in Organizations

**RAINER HASENAUER**

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# **Intrapreneurship Management**

Concepts, Methods, and Software for Managing  
Technological Innovation in Organizations

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*We dedicate this book to our better halves, Gudrun and Evelyn, who not only endured but also heartily supported the long development of the book.*

Rainer and Oliver

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## About the Authors



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## Preface

Since being coined in the 1970s, Intrapreneurship, or Internal Innovation in an organization, has gained increasing recognition, with the awareness that most people work for organizations, and internal innovations in organizations have been responsible for the majority of Innovations in both technology and management methods. However, there have not been many practical books on intrapreneurship development and management. Through a series of professional and personal meetings over the years, we both recognize the opportunity to use our extensive experience and knowledge in the development and management as well as the various readiness assessments of internal innovation projects to make a useful contribution to fill this important void. With the support of IEEE Press, especially through Gerald (Gus) Gaynor, Vice President of Publication of IEEE's Technology and Engineering Management Society, and Dr. Tariq Samad, Founding Editor of Wiley/IEEE Press Book Series on Technology Management, Innovation, and Leadership, we received permission to develop this book with Wiley Science-IEEE Press. With more than 150 video and personal meetings over the span of 3 years and the generous support of many contributors, we have finally completed the book. By integrating diverse concepts on understanding human nature and organizational culture and combining them with practical methods for creative problem solving and productive team building, as well as a proven Intrapreneurship readiness assessment methodology and software, we hope that this book will provide not only theoretical perspectives but also useful tools to both an organization and an aspiring Intrapreneur as well as academicians and students interested in intrapreneurship development and management.

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**Matthew Schlegel**, Principal of Schlegel Consulting ([www.evolutionaryteams.com](http://www.evolutionaryteams.com)) and a best-selling author committed to developing highly effective, style-diverse teams, is a major contributor to the applications of the Enneagram to productive Innovation Team building and creative problem-solving for the book.

**D. Daniel Sheu, Ph.D.**, Professor Emeritus for Industrial Engineering at National Tsing-Hua University in Taiwan, founder of the International Society of Innovation Methods, and a renowned expert on TRIZ (Russian acronym for the Theory of Inventive Problem-Solving), has authored 13 books and over 200 professional papers on TRIZ and other innovation methods and applications and conducted TRIZ and other innovation method training around the world. He is a major contributor to the applications of TRIZ to creative problem-solving for the book.

**Michael Gold**, a specialist in consumer psychological assessment and an intrapreneur during a 30-year career at the former Stanford Research Institute (now SRI International), following 8 years of development-engineering experience in Silicon Valley, has made valuable contributions to the book in reviewing its contents on Intrapreneurship, human needs and wants, and providing information on the cultural history of SRI.



# 1

## Introduction and Overview

The purpose of this book is to provide practical concepts, methods, tools, and software for developing and managing Internal Innovators, or Intrapreneurs, in organizations, as well as for academicians and students of Intrapreneurship Management. In this introductory chapter, we will first develop a simple yet comprehensive definition of innovation that emphasizes implementation and impact. We will then discuss the basic differences between the Innovator who develops and implements an innovation as an Entrepreneur and an Intrapreneur, or Internal Entrepreneur in an existing organization, and the special importance of Intrapreneurship and its management not only for organizations but also for society as a whole in the 21<sup>st</sup> century, which is the basic motivation for this book. We will next summarize the focus, approaches, emphases, and major contributions of the book to the study of Intrapreneurship Management. Finally, we will present an overview of the organization of the remaining chapters of the book.

### 1.1 Innovation: A Simple Yet Comprehensive Definition

Innovation is a term with many definitions. For example, the Merriam-Webster dictionary [1] defines innovation as a new idea, method, or device. Another authoritative source, the Organization for Economic and Cooperation and Development (OECD), provides a more detailed definition [2]: “An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.”

However, both of these widely accepted definitions have their limitations. The dictionary definition fails to distinguish innovation from invention, which is also a

new idea, method, or device. On the other hand, the OECD definition is too restrictive, as innovation is more than just products, processes, or methods. There are important theoretical innovations such as Newtonian laws and evolutionary theory that have greatly improved our understanding and management of the physical environment. There are also philosophical and ideological innovations like Confucianism, democracy, and Marxism that have fundamentally influenced our sociopolitical systems. Furthermore, there are innovations in literature and the arts that have significantly broadened our enjoyment and appreciation of creativity.

Given the limitations of traditional definitions, we offer a simple yet comprehensive definition:

*Innovation is an idea implemented with significant impact.*

This definition emphasizes that an idea, whether new or existing, is the starting point for innovation. However, an idea alone is not enough to qualify as innovation. The idea must be implemented in a way that achieves significant impact through widespread and/or long-lasting acceptance by final adopters, which is often a complex and challenging process. The emphasis on implementation and impact is the key differentiator between our definition and conventional ones. It also highlights a significant challenge of innovation: to achieve significant impact, large investments of effort are often required to understand market needs, build team, seek support, develop product, and attract adopters, while these investments carry major risks that they may not yield the desired results. This challenge is often recognized but not fully appreciated by many potential innovators, leading to discouraging early failures. The central objective of innovation management is to effectively address this challenge.

Moreover, the idea to be implemented need not be limited to new or improved products, processes, or methods, although they are the main focus of this book. It can also be a new concept or a newly uncovered concept for the innovator, organization, or adopter. For instance, the integration of economic benefit with ecologic and societal benefits as the value framework adopted in this book is an innovation that recognizes new values for all innovation participants. The development and expanding adoption of Environmental, Social, and Governance (ESG) scores for investment strategy is one form of implementing this conceptual innovation.

Innovations may be implemented through various means including market mechanisms and voluntary choices by individual adopters, as well as mandatory government regulations, such as automobile emission control. The differences in implementation can affect the effective management of the innovation process. Nevertheless, in a democracy, government regulations may be viewed as collective choices made through a political market mechanism.

Finally, the effectiveness of an innovation is measured by its impact, which varies in magnitude and duration. There are many measures of magnitude, including

the number of adopters, the integrated value of the innovation, and other tangible or intangible benefits to the Innovator or the adopter. The duration of an innovation measures whether its impact is transitory or long-lasting. The total impact or effectiveness of an innovation can be measured by integrating its magnitude over time. As impact can be tangible or intangible and innovations are generally evolving and cumulative, quantifying the impact of a single innovation is an important yet often difficult task.

## 1.2 Special Importance of Intrapreneurship Management

It is widely acknowledged that innovation has been the driving force behind human civilization. Following major breakthroughs in information, communications, and biomedical technologies, along with the rapidly rising global trend of high-tech startups, innovations, particularly those in technology and management methods, have generated unprecedented interest worldwide since the 1970s. Today, practically all major organizations, including governments, corporations, and educational institutions, are actively promoting the importance of innovation, motivated by its much-observed impacts on economic productivity and competitiveness, as well as employment opportunities. There is a popular belief that future innovations, if well managed, can provide solutions not only to many economic problems but also to sociopolitical difficulties around the world.

However, despite the attention and glamour, innovators as Entrepreneurs who develop and implement innovations through the founding of independent organizations are still a small minority of the workforce, mainly because of their necessary yet uncommon personality traits of extraordinary risk-taking, determination, and persistence.

On the other hand, most people work for existing organizations, including those rising from startups. At the same time, all organizations need innovation to survive and thrive. By sheer numbers, most innovations have been and will continue to be developed by innovators within organizations, or Intrapreneurs. In fact, an in-depth analysis of the top 30 innovations between 1989 and 2009 [3] shows that, although many Entrepreneurs provided seminal ideas, out of the 30 top innovations, 22 were initially conceived and 23 were fully developed by Intrapreneurs in existing organizations, and 16 achieved full impact through Intrapreneurs in competitor organizations.

Nevertheless, because Intrapreneurs are largely unsung heroes, their contributions have not attracted widespread public attention. Moreover, different from the intrinsically self-starting Entrepreneurs, Intrapreneurs generally need to be developed and managed in an organization. This development and management process is highly interactive and complex between the managers and employees of the

organization. As a result, available business and technical literature lacks comprehensive and in-depth studies of the important but seemingly less tractable subject of how to effectively develop and manage Intrapreneurs or Intrapreneurship Management in an organization. Yet the importance of Intrapreneurship Management has become even more critical given the unprecedented changes in the 21<sup>st</sup> century in socioeconomic conditions, human aspirations, technological growth, and the physical environment, which pose major challenges and demand new thinking about innovation management in an organization. This special importance of effective Intrapreneurship Management has been the basic motivation for this book.

### **1.3 Focus, Approaches, Emphases, Theme, and Major Contributions of the Book**

Focusing on developing and managing Intrapreneurs in 21<sup>st</sup> century organizations, this book primarily addresses innovations in technology, products (goods or services), and management methods that are implemented through market mechanisms based on individual choices or through government policies and regulations, with generally accepted measures of economic, ecologic, and societal impacts.

The book uses an integrated systems analysis approach to study the innovation process, especially in an organization, and develops a joint investment perspective to balance and align the values and risks of each innovation participant, including Intrapreneur, Internal Supporter, and Final Adopter, for investing time, effort, financial and other resources to develop and implement an innovative product for significant impact. The book further develops a new perspective on human needs and wants as the basis for assessing these investment values and risks through an integrated economic–ecological–equity (EEE) value framework.

For effective Intrapreneurship Management, the book focuses on the importance of marketing, which includes mutual marketing between Intrapreneur and Internal Supporter in an organization. The book develops a unified approach to marketing for motivating and committing Intrapreneurs, Internal Supporters, and Final Adopters to their joint investment in innovation development and implementation. Effective marketing forms the foundation for an innovation culture within an organization and provides the basis for widespread innovation adoption in the face of many external challenges. The book then presents major approaches to creative idea generation and problem-solving for innovation development in a productive organizational culture with complete understanding of the needs of the Final Adopter. Marketing and innovation are, therefore, the central themes of this book, in line with Peter Drucker's observation that "The business enterprise has two, and only two, basic functions: marketing and innovation." [4]

Since management is still largely an art, and creativity is far from a science, the emphasis of the book is on providing practical concepts and proven tools for effective innovation management and creative problem-solving for organizations. The book emphasizes not only new concepts, perspectives, and approaches but also in-depth analysis, replicable successful case studies from both global corporations and small to medium technology companies, useful discussion topics, and training exercises. It is important to note that most of the concepts introduced are qualitative, and the tools presented are mostly process-oriented, highly interactive, and experiential. As a result, expert-facilitated training exercises and continuous practices are essential to the successful learning and applications of the information provided in this book.

Combining the integrated system analysis approach with their extensive experiences as successful managers of innovations and experienced researchers of market behaviors, business psychology, and creativity methods, the authors methodically identify three key elements for effective Intrapreneurship Management: Organization, Market, and Technology Readiness. Studies of these key elements are then used to generate a set of questionnaires and checklists as the basis for assessing the overall Intrapreneurship Readiness of an organization and a specific innovation project.

These questionnaires and checklists have been used to extend a family of proven Innovation Readiness assessment software tools to the development of a module-based Intrapreneurship READINESS navigator (IRN<sup>®</sup>) software for Intrapreneurship Management. The book concludes with detailed descriptions of the IRN<sup>®</sup> software architecture and generic application examples. Again, this IRN<sup>®</sup> software is a living, learning tool that can be customized and adapted to the applications of different types of organizational structures and innovation projects.

Major contributions of the book include:

- A simple but comprehensive definition of innovation that emphasizes implementation and impact, a systematic analysis of the innovation process, and a common investment perspective for different innovation participants to be used for aligning the balances of their individual values and risks in investing in innovation development and implementation.
- A systematic methodology for analyzing the process of Intrapreneurship Management through the assessment of the readiness of three key elements: Organization, Market, and Technology of Internal Innovation encompassing the organization, the Innovation Team, and the innovative project and product.
- A holistic understanding of human values based on fundamental needs and wants that applies not only to motivations of individuals but also to organizations and societies and culminates in an integrated EEE value framework for evaluating the Organization, Market, and Technology Readiness for Intrapreneurship Development and Management.

- A unified approach to marketing, including the mutual marketing between Intrapreneur and Internal Supporter in an organization, is the basis for motivating innovation participants to jointly invest their time, effort, financial, and other resources in the implementation of products (goods or services) developed from a creative idea to achieve major impact.
- A systematic identification and analysis of the individual sets of key elements for the Organization, Market, and Technology Readiness of Intrapreneurship Management, and a collection of major proven tools for organizational culture formation, Innovation Team building, creative problem-solving, innovative product development, and marketing.
- A set of interactive questionnaires and checklists generated from the key element analysis and a decision tree framework as the basis for constructing the IRN<sup>®</sup> software for Intrapreneurship Development and Management.
- A collection of case studies of successful innovative organizations and detailed descriptions and application examples of the IRN<sup>®</sup> software.

In summary, the book is both a research monograph and a practical reference for developing effective Intrapreneurs to increase success probabilities and potential impacts of innovations in 21<sup>st</sup>-century organizations. It applies an integrated system analysis approach to study the motivations of and interactions among the major participants of Internal Innovation in an organization: Intrapreneur, Internal Supporter, and Final Adopter, and develops practical concepts, tools, and software for assessing and increasing both the individual and the combined Organization, Market, and Technology Readiness for Intrapreneurship Development and Management. Finally, the book serves to help Intrapreneur, Internal Supporter, and Adopter to effectively communicate, collaborate, and implement innovations to fulfill increasingly higher levels of needs and wants to further the advances of human civilization.

## 1.4 Overview of Book Organization

Following the introduction and overview in this chapter, Chapter 2 of the book outlines the general structure of Intrapreneurship or the Internal Innovation process in an organization as a dynamic interactive system of key elements, including establishing innovative culture, understanding Adopter's needs, generating/adapting creative ideas, building an Innovation Team, developing/testing/improving prototypes, seeking/providing support, refining innovation, and developing organizational and other strategic and operational functions. It then uses an integrated systems analysis approach to identify the interactions among the key elements and the participants of the innovation process: Intrapreneur as