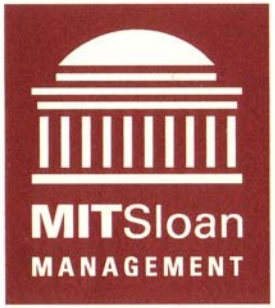

Massachusetts Institute of Technology

Sloan School of Management

This is to acknowledge that

Roger P. G. Thijs

has completed the program

Managing Technical Professionals & Organizations

Cambridge, Massachusetts

December 12-13, 2007

David C. Schmittlein, Dean

About the Program

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Organizations that are designed and managed for doing the same things well repetitively, as in manufacturing, are not particularly appropriate for doing something well once, as in R&D. Running a technical organization presents a unique set of management problems. How do you motivate and reward technical professionals to maximize their performance? How do you create an organizational structure that will contribute to success, not inhibit it? How do you deal with creative individual contributors, project teams, and innovative professionals?

This unique two-day program focuses on issues critical to the effective management of technical professionals and cross-functional teams. Its principles and strategies can be applied in any organization where research, development, engineering or computer-related technology developments need to take place in a timely, effective, and successful manner.

I. Making Technical Organizations Work: On Corporate Culture, Technology Transfer, and Effective Reward Systems

A. Transferring Technology Between and Within Organizations

One of the biggest problems technical managers face is establishing communication networks between and within organizations to facilitate the transfer of technology and information among technical professionals. What are the common communication barriers experienced by so many projects, product teams, and organizations? What are the three things you can do to enhance technology transfer and keep the organization up-to-date on key technologies that underlie your business? In this segment you will learn:

- how to identify those aspects of your organization's culture that may be responsible for suboptimal results
- about the crucial role that technology "gatekeepers" play in bringing knowledge into the organization, improving communication and coordination between projects and their supporting staff, and keeping people abreast of outside developments
- how to identify gatekeepers; why it's inadvisable to formally appoint them
- how to utilize internal expertise more effectively
- how to move knowledge from one part of the organization to another

B. Developing Effective Reward and Incentive Systems for Technical Professionals

The inherent dilemma in attempting to reward and motivate technical professionals is that incentives which appeal to others – i.e., taking on management responsibilities or the prestige of job titles – may be less important than working on the applications of their technology. Many organizations have tried to adopt a "dual ladder" approach which can move engineers, scientists, and professional specialists up the technical ladder, parallel to the management ladder. It's a good idea, but it doesn't always work.

"This was a stimulating, interactive, and exciting program. Professionals in the technology management areas are encouraged to attend."
Musa Ghannam, Vice President, Schering-Plough Corporation

"Important concepts related to managing technical organizations anchored in case studies and analysis."
Michael Foerst, Assistant Vice President, Information Services, Missouri Employers Mutual Insurance

This segment addresses the two problems inherent in this system – as well as the three most commonly created by management. What you should know about better ways to deal with intrinsic motivation vs. extrinsic reward. How to create incentive systems that will keep technical professionals motivated by giving them interesting work without forcing them into obsolescence. How to keep technical promotions from being interpreted not as rewards but as signals that the recipient is not good enough to be a manager. Plus, techniques for better integrating newly hired engineers and scientists into the organization.

II. Managing Performance and Productivity in Technical Organizations

C. Creating A Highly Motivating Professional Work Environment

How do you better communicate with, inspire, and guide technical professionals to create a more highly motivating work environment? What can you do about the sources of tension that exist between organizational and professional demands? As you attempt to leverage the effective contribution of your technical organization, what you must understand about:

- the relationship between innovation, motivation, change, and uncertainty
- how you can reduce uncertainty in a way that allows you to introduce change effectively
- the difference between uncertainty and risk
- getting the organization to be productive under stress
- how to surface problems early on

How you can use information to resolve differences within the technical organization, define criteria for decision making, and help people understand their roles in projects.

What management should know about integrating technical professionals into organizations and teams more effectively, the way teams work, the keys to developing high-performing creative teams, how your approach to motivation must change over time, and the three stages of job longevity (and in which stage the technical organization will maximize productivity).

III. Sustaining Innovation and High Performance

D. Managing & Leading Creative Individual Contributors

What our research shows about optimal strategies for managing and motivating creative individual contributors, both in a team environment and one-on-one. How to overcome the unique problems associated with managing the performance and productivity of individual technical professionals. What you can do to enhance their creative performance. How you can successfully move technical professionals into leadership roles and ensure that:

- they are not intimidating
- they communicate effectively with other functional areas
- they understand what a manager is supposed to do

"*. . . very relevant subject content applicable to real-world management questions.*"
Arun Gaur, Manager, Stability/Quality Control, ImClone Systems, Inc.

"*A program which all CEOs should be required to attend.*"
Ellis Hiltz, Managing Director, Deputy CIO, IXIS Capital Markets, Inc.

Plus, four strategies for managing creative mavericks.

E. Maximizing the Technical Productivity and Vitality of Teams

An examination of the strategies you can use to maintain and enhance creative behavior in teams. What you should avoid doing at all costs. How to maintain the creative tension that is required to sustain innovation in the team and the organization. Two techniques you can employ to get evolutionary vs. revolutionary breakthroughs. What you should understand about the characteristics of high performing teams. How to maintain a team's performance over time, especially if the team becomes increasingly stable and insular. How to manage "wild ducks." What you can do to prevent teams from:

- aging too quickly
- impeding creative individual members
- becoming obsolete

IV. Structuring the Technical Organization

F. Creating the Most Effective Organizational Structure for Managing Research, Development, & Engineering

What you should understand about the four dimensions of organizational structure and basic organizational forms, and how to combine them to create a matrix organization. How you can better manage project groups in a matrix structure, and the three most critical problems you must overcome to do it. You'll also learn:

- what impact the duration of a project assignment has on performance
- how to deal with the loss of power of department heads in a matrix reorganization
- how to determine the balance of power between department and project heads

G. Creating the Most Effective Physical Structure for Supporting Innovation

Studies by MIT researchers have shown that the physical configuration of an organization's facilities has an important impact on communications, coordination, and project success.

In this session, you'll learn about the effects of architectural structure on communications and how to determine if your facilities are suppressing innovation. You'll also explore:

- the interaction of physical and organizational location
- how you can position individuals and groups in ways that will either promote or inhibit communication
- how to create optimum interaction patterns and collaboration among groups and individuals
- what you can do to minimize the impact of an inadequate physical plant
- the role of new communication and networking technologies in overcoming physical separation
- when you must have face-to-face interaction for your project to have any chance of success

Program Faculty

Thomas J. Allen

Thomas J. Allen is Howard W. Johnson Professor of Management at MIT's Sloan School of Management as well as a Professor of Engineering Systems in MIT's Engineering Systems Division. He is also a MacVicar Faculty Fellow at the Sloan School, Co-director of the Program on the Pharmaceutical Industry, and Co-director of the Leaders for Manufacturing and System Design and Management Programs.

Professor Allen is a specialist in organizational psychology and management. He has studied the interaction of organizational structure and behavior, the role of technological gatekeepers in technology transfer, the influence of architectural layout on human communications behavior, international technology transfer, reward systems for technical professionals, the impact of organizational structure on project performance, and the problem-solving process in research. He has begun long-term research targeting the pharmaceutical industry, addressing principally the issue of project management.

Professor Allen holds a B.S. degree in Physics from Upsala College, an S.M. degree in Electrical Engineering and Management from MIT, as well as a Ph.D. in Management from MIT.

Ralph Katz

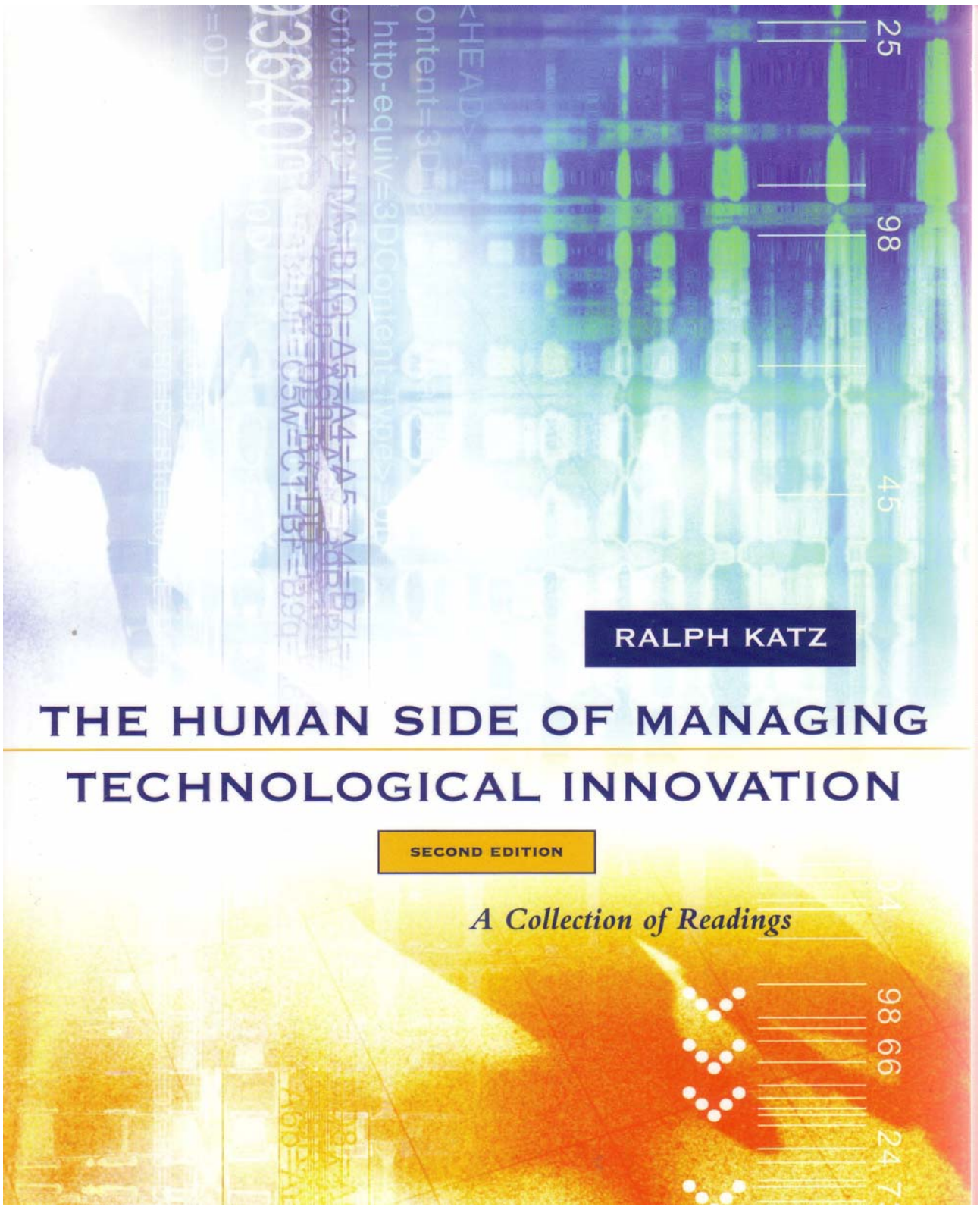
Ralph Katz is Professor of Management in Northeastern University's College of Business Administration and Principal Research Associate at MIT's Sloan School of Management. For more than 30 years, Professor Katz has been carrying out extensive management research, education, and consulting on technology-based innovation with a particular interest in the management and motivation of technical professionals and high performing groups and project teams.

He has conducted numerous workshops and seminars on Research, Development, and Engineering management topics for technical staff professionals, managers, and senior executives in many organizations both within and outside the U.S. He also has worked with many well-known companies to improve their management of technology practices and innovation processes. The National Academy of Management awarded Dr. Katz the 'New Concept Award' for his significant contribution to the field of organizational behavior. His journal publications have also received several 'Best Paper' awards.

Professor Katz is the author of *The Human Side of Managing Technological Innovation* (Oxford University Press, 2nd edition, 2004) and *Managing Professionals in Innovative Organizations: A Collection of Readings* (Harper Business, 1988). In 2004, Katz's co-authored paper was selected as the Holland Award Winner for that year's most significant contribution published in the IRI-sponsored journal *Research-Technology Management.*

"Very energetic presenters, full of energy and fun . . . makes you re-think your position on how to manage people."
Mike Drucker, MIS Director, Children's Services Council of Palm Beach County

"Both the professors bring the wealth of their experience and hold your attention right through."
Avijit Chaudhuri, Account Manager, Insurance Practice, Cognizant Technology Solutions



RALPH KATZ

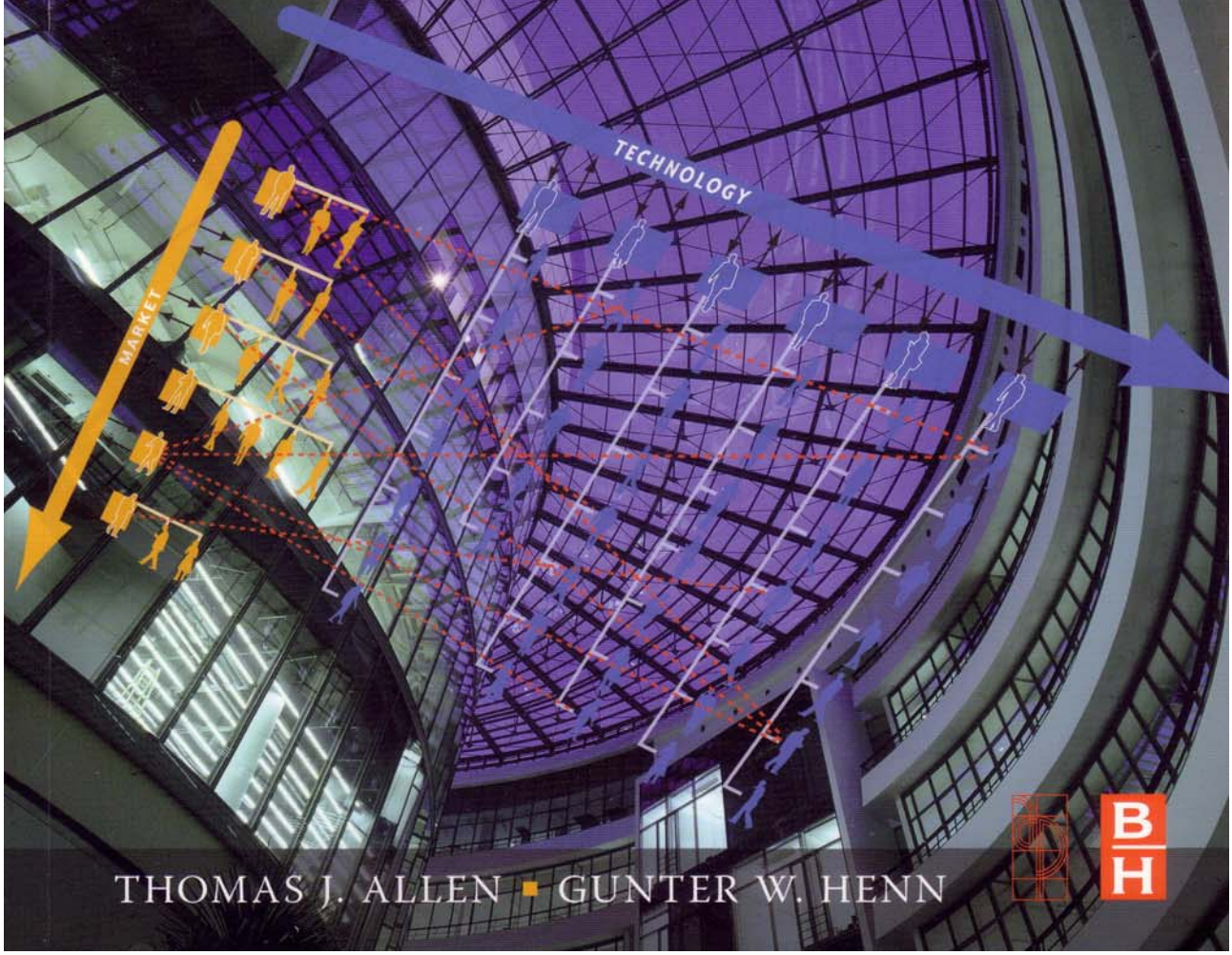
THE HUMAN SIDE OF MANAGING TECHNOLOGICAL INNOVATION

SECOND EDITION

A Collection of Readings

The Organization and Architecture of Innovation

Managing the Flow of Technology



THOMAS J. ALLEN ▪ GUNTER W. HENN

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