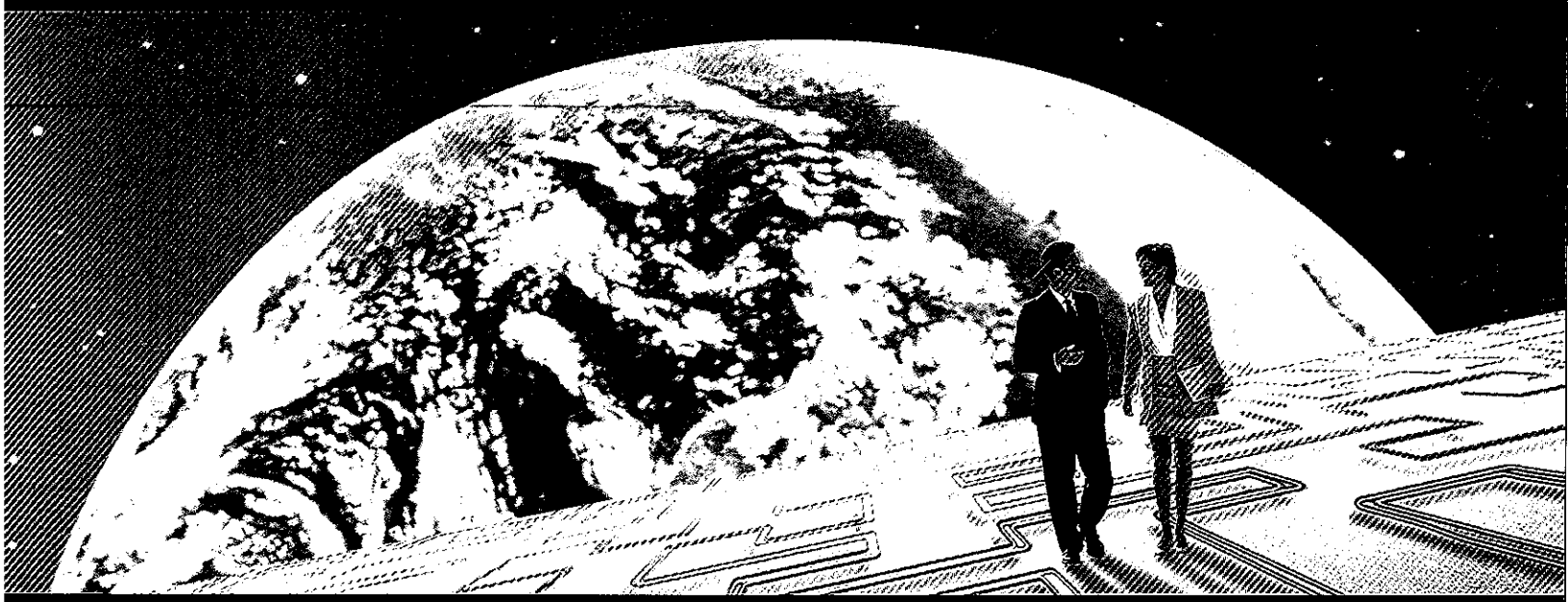
PEPPERDINE UNIVERSITY



THE GRAZIADIO SCHOOL OF BUSINESS AND MANAGEMENT

MSTM

MASTER OF SCIENCE IN TECHNOLOGY MANAGEMENT

DEAN'S MESSAGE

In a world characterized by rapid change and intense global competition, the need to effectively manage technological innovations in the marketplace and in our business organizations has become a necessity to survival and success.

Since its inception nearly a decade ago, the Master of Science in Technology Management program has impacted the global business arena, with graduates holding executive positions in locations such as China, Japan, Puerto Rico, Switzerland, Denmark, Taiwan, and Indonesia.

While developing the program, we have built strategic alliances with outstanding business leaders and business schools around the world to ensure the continuing competitiveness of our graduates and the businesses they lead.

We welcome your interest and invite you to become better acquainted with our faculty, students, and successful alumni who are leading organizations of every size on every continent. As a graduate, you will join alumni who have already found that the MSTM program experience has prepared them to more fully meet the competitive challenges they face in managing innovation and technology in the context of new business development and establishing competitive positions in the global marketplace.

OTIS W. BASKIN
DEAN

DIRECTOR'S MESSAGE

We are living in the age of technology and knowledge. The major task of today's manager is the creation and timely implementation of technology in the corporation to create value for the customer and profit for the shareholders. Technological innovation in product, process, and service is at the center of the quest for competitive advantage by companies in all industries.

Technological innovation and the creation of knowledge leading to profitable operations do not happen automatically, no matter how creative the men and women in the organization. To realize its goals, the company requires leaders who understand how to manage change in a world where rapid technological change is becoming the normal environment in which the manager must operate. In addition, global concerns must be integrated with national issues with regard to technology acquisition, markets, products, manufacturing, and employees.

The Master of Science in Technology Management (MSTM) degree was created in 1989 to educate and train managers to deal effectively with the challenges inherent in creating and implementing technology, producing competitive advantage leading to financial success.

The MSTM program is designed for managers who need and recognize the importance of this education but do not want to interrupt their careers. It is a rigorous, challenging, and practical program with strong emphasis on global perspectives and issues, people skills, and the operational implementation of technology.

If you are up to the challenges of the MSTM program, we welcome you to join us and position yourself for success in the future.

SEYMOUR SIEGEL
DIRECTOR

THE MANAGEMENT OF TECHNOLOGY: THE KEY TO COMPETITIVENESS

All industries have rapidly become technology-intensive, and the need to integrate technology across traditional functions of the firm has become paramount, whether the firm produces technological products or utilizes technology to reduce costs or increase services. In today's world, a company is either producing or using technology or both.

Technological innovation and new business development have been the hallmark of American industrial progress. In recent years, however, countries such as Japan have achieved a significant competitive advantage through the more effective management of technological advancement. The traditional business management paradigms have proven inadequate for the new technological age and are giving way to an enhanced set of principles that enables managers and organizations to meet these challenges. Managers who recognize the role that technology plays in their company's competitive future will be positioned to seize the initiative and compete more effectively in an increasingly competitive global environment. The environment is marked by a rapidly evolving and globally dispersed technology base.

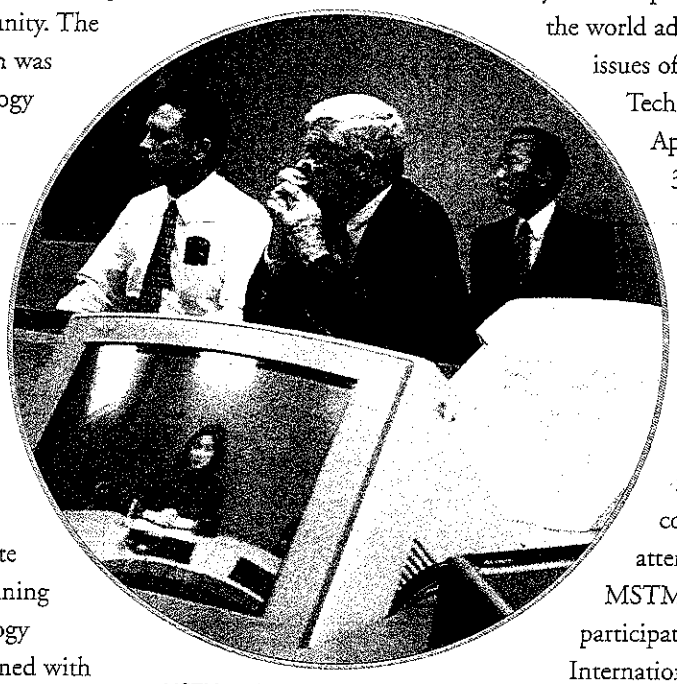
The major challenges faced by today's managers include:

1. How to integrate technology into the overall strategic objectives of the firm.
2. How to get into and out of technologies faster and more efficiently.
3. How to assess and evaluate technology more effectively.
4. How to best accomplish technology transfer.
5. How to reduce new product development time.
6. How to manage large, complex, and interdisciplinary or interorganizational projects and systems.
7. How to manage the organization's internal use of technology.
8. How to leverage the effectiveness of technical professionals.
9. How to use technology to creatively develop new business.

MSTM visit to Matsushita Electric in Japan

Developing programs that emphasize the practical application of knowledge has been the hallmark of Pepperdine University's George L. Graziadio School of Business and Management. The school was a pioneer in establishing innovative executive MBA programs and remains a leader in executive education today. A constant interaction with leaders of companies from diverse industries has focused the energies of the faculty on teaching the most advanced concepts in a way which makes them immediately applicable in the workplace.

The Master of Science in Technology Management (MSTM) degree program at Pepperdine University was started in 1989 to serve California's technology-driven business community. The MSTM program was the first technology management program established in the Western United States. During the past decade, no business school in California has provided executive graduate management training to more technology managers concerned with understanding the impact of technology on competitive advantage than Pepperdine's Graziadio School of Business and Management. Through its executive-level programs, it has developed impressive credentials by providing skills to hundreds of managers in technology-producing as well as technology-implementing companies.



MSTM students examine the role of video-teleconferencing in today's business.

A key component of the successful master's degree program in technology management is the recognition of the need for managers to think globally and to understand that the company is a portfolio of technologies that provides value to the customer. Understanding the international ramifications of these insights is a major focus of the program. Students have a number of opportunities to examine first-hand how companies in Europe and Asia manage technological processes and innovation. Since the first MSTM class graduated in 1991, program graduates have been making an impact in the global business arena, taking executive positions in locations such as China, Japan, Taiwan, Indonesia, the Philippines, Puerto Rico, Switzerland, and Denmark.

The MSTM program organized and hosted the Third International Forum on Technology Management in Santa Monica, California. Seventy invited speakers from around the world addressed the issues of "Managing Technology Globally." Approximately 300 participants representing leading high-technology firms, universities, and government agencies from more than 30 countries were in attendance. The MSTM program participates in the International Forum on Technology Management series and is continuing in an active role with future forums. Students in the MSTM program have attended these forums which have been held in Paris, France; Berlin, Germany; Helsinki, Finland; Amsterdam, Holland; in addition to Santa Monica, California. As a result of their exposure to the global business community during the program, some MSTM graduates have been invited speakers at international forums in recognition of their expertise in the field of technology management.

Faculty members in The Graziadio School of Business and Management have been involved in a number of joint research projects with Asian and European business schools, many of them relating to the management of technology.

Managers who recognize the role that technology plays in their company's competitive future will be positioned to seize the initiative and compete more effectively in an increasingly competitive global environment.

MSTM'S FOCUS ON TECHNOLOGY MANAGEMENT

TECHNOLOGY MANAGEMENT FOR THE EXPERIENCED MANAGER

PROGRAM OBJECTIVES

In order to prepare managers to anticipate technology change and effectively compete in the international, technology-driven business environment, this program has set the following objectives: (1) to provide perspectives, concepts, and tools to anticipate the opportunities and challenges presented by accelerating international technological change; (2) to provide managers from different functional areas with a shared understanding of the nature and process of technological innovation; (3) to develop a common business language that will assist functional managers to enhance technological innovation in their organization; (4) to explore elements of cross-cultural management and to experience these issues during field trips abroad; (5) to understand marketing and financial aspects of technological innovation within the framework of a global economy; (6) to examine the linkages between technology and business strategies in creating competitive advantage; and (7) to understand the latest concepts associated with business development.

Professor Seymour Siegel discusses alliances with Professor Jim Murray of Heriot-Watt University, Scotland.

CLASS COMPOSITION AND SCHEDULE

A typical class will be limited to a maximum of 25 participants representing marketing, finance, operations, human resources, and R&D functions from a wide variety of organizations. This small class size provides a seminar-like atmosphere that encourages individual participation, group discussions, and the exchange of knowledge and experience. The members of the class will stay together throughout the program to enhance the management team-building and learning process.

The program is offered over a five-trimester period (20 months), with classes scheduled every third weekend from 2:00 p.m. to 10:00 p.m. on Friday and 8:30 a.m. to 5:00 p.m. on Saturday. Considerable outside preparation is required for each weekend session.

In between classroom time, students communicate among themselves and with the faculty utilizing leading-edge electronic on-line methodology as well as engage in group meetings when needed.

In addition to the formal course work, there are a number of additional required opportunities for integration and interaction. These include a four-day, live-in Effective Management Workshop; two field trips abroad; a weekend Management Computer Simulation Workshop; completion of a Technology Management Project; and other specialized seminars as may be prescribed by the Technology Management Program Committee.

EFFECTIVE MANAGEMENT WORKSHOP

The Technology Management program begins with a four-day, live-in Effective Management Workshop. The objectives of this workshop are to:

- Introduce the extraordinary impact of technology upon all dimensions of the organization—an impact that takes place within the context of constantly shifting domestic and international social, economic, political, and market forces.

MSTM students visit Hyundai Shipping in Korea

- Review the entire program and develop working relationships with faculty and other key resources.

- Introduce special research methodologies and learning approaches that require a balance between logic and intuition.

- Build a learning team by focusing on self-understanding and interpersonal communication. During this process, the privacy and individuality of the students will be respected and valued. However, students are expected to be willing to examine and learn from their own behavior and the behavior of others in the class.

MANAGEMENT COMPUTER SIMULATION WORKSHOP

All members of the class and their professors participate in a weekend Management Computer Simulation Workshop. Teams, assisted by computers, compete against one another in a realistic, real-time, dynamic business environment. This workshop is designed to provide an opportunity for students to integrate, apply, and enhance their newly acquired managerial skills and knowledge.

INTERNATIONAL FIELD TRIPS

In order to obtain firsthand knowledge on technology topics and techniques as viewed and practiced internationally, each technology management class takes two international field trips during the program. The field trips are scheduled for selected locations overseas. The participants attend local university lectures, meet with industry and government representatives, and visit scientific and industrial facilities that exhibit the latest in technology developments. Through the opportunity to meet and discuss competitive business issues with their counterparts abroad, MSTM students are exposed to varied concepts in the area of technology management as effectively employed in different parts of the world.

The field trips are conducted in Trimesters III and IV. An MSTM program professor accompanies the class to coordinate the learning activities.

Opportunities for students to integrate, apply, and enhance their newly acquired managerial skills and knowledge are provided throughout the program.

TECHNOLOGY MANAGEMENT PROJECT

The Technology Management Project is a written strategic or implementation plan for a technology-oriented project that will be of significant benefit to the participant's organization. MSTM faculty advise each student individually on the project definition, relevance, and methodology. It is expected that the scope and quality of the project will demonstrate the participant's mastery of the technology management concepts, topics, and issues covered in the MSTM program. Past projects have had a notable impact on both the students and their companies.

WORKSHOPS AND FIELD TRIPS

COURSE DESCRIPTIONS

TRIMESTER I: HUMAN AND CULTURAL ISSUES IN TECHNOLOGY MANAGEMENT

In an era influenced increasingly by advancing technology, world markets, and global economics, human and cultural factors are becoming even more significant to enlightened leadership. In this trimester, participants explore these issues by first developing a collaborative learning team. This learning team, using a general systems orientation, examines the myriad of subsystems that are related to managing people and performance in multicultural environments. Diplomatic and business sources who are expert in diverse cultural areas will be invited discussants. Principles and tools to create innovative, high-performing work environments that are sensitive to cultural dynamics are applied to student organizations. Readings, computer-interactive cases, experiential exercises, and hands-on research serve as vehicles to link theory and management practice.

MSTM student explains U.S. technology management style to visiting executives from Scotland.

MSTM 650: Leading People in Innovation and Change (4)

Concentration on the human issues in initiating and coping with technological and other changes is the focus of this course. Creating a corporate culture for innovations, managing professional technologies, building effective project teams, assimilating technological change, and initiating and implementing strategic alliances in environments where growth may be driven by either internal or external forces are explored. This course includes transitional issues—both in terms of moving from one technology to another and in moving from one organizational life cycle stage to another.

MSTM 651: Managing Organizations in Multicultural Environments (4)

As the world of management becomes even more dynamic, complex, and competitive, it is critical that organizations become increasingly effective in adapting to multicultural functioning. The capability for leading a technologically driven international organization demands an understanding of, and facility in, many diverse cultures. One's own cultural values and habits must be examined in juxtaposition to the cultural expectations and taboos of other environments. Initiating and growing new ventures, both internal and external to the organization, are explored through action research in domestic and cross-cultural contexts.

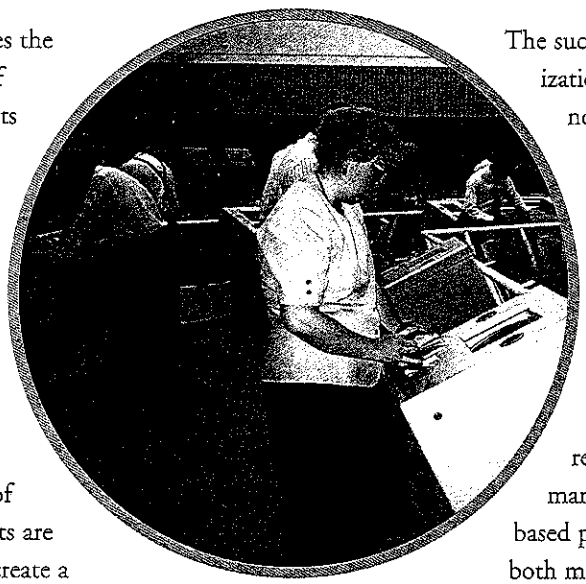
TRIMESTER II: IMPACT OF SCIENCE AND TECHNOLOGY

The trimester focuses on the impact of scientific and technological developments on society in general and the business

environment in particular. The emphasis will be on the relationship between business strategy and technological strategy. The nature of the invention-innovation-diffusion process and the role that R&D and other methods of technology acquisitions play in the development of new products, processes, markets, and organizations also will be examined.

MSTM 652: Understanding the Process and Impact of Science (4)

This course introduces the history and process of scientific developments in order to understand the nature of technological convergence, synergy, and discontinuities in the context of the present time. A number of key areas of scientific developments are reviewed in order to create a framework for assessing future technology applications. Specialized topics from areas such as information technology, bioengineering, and the material sciences are discussed. The impact of science and technology on business, technological strategies, and society is examined in relation to developing competitive advantages for businesses as well as for national and international research and development policies.



MSTM students assess new technological developments during an industry visit.

MSTM 653: Managing the Technology Development and Acquisition Process (4)

This course focuses on technology acquisition functions as key elements in the formulation and implementation of the organization's strategic plan. Topics include: R&D management, internal technology assessments, the external acquisition of technology, and domestic and international technology transfer. Particular attention is placed on the management of developing technology capabilities from both internal and external sources and the interface between the R&D, marketing, and operations functions in the organization.

TRIMESTER III: COMMERCIALIZING TECHNOLOGY DEVELOPMENTS

The successful commercialization of technology is not only a function of the technology itself, but also the matching of the technology to the marketplace as well as the effective management of limited financial resources. The marketing of technology-based products is affected by both market uncertainty and technological performance. Consequently, technology products often have a short product life cycle. This means that the customers view technology-based products as high risk. Further challenge is introduced by the need to effect these changes in a global environment in which the term "domestic economy" may no longer have any meaning.

Development of technology-based products requires significant financial resources which means that managing these products demands focusing on cash flow of the business unit. To successfully introduce new technology-based products into the market requires effective financial management.

It is widely recognized that economic benefits accrue to those nations and organizations which achieve productivity leadership through the effective application and management of technology.

MSTM 656: Bringing Technologies to Market (4)

This course explores the balancing of market-driven and technology-driven approaches, researching appropriate markets and estimating sales potential, and anticipating changes in consumer expectations and behavior. All students develop a marketing plan for technology-based production giving special consideration to the design, testing, and modification of flexible implementation programs in order to anticipate and successfully overcome competitive responses. Emphasis is placed on exploiting technology's contributions throughout the value chain in product design, pricing, promotion, and distribution.

The MSTM classroom experience is enhanced by the exchange of ideas between executive students from diverse industries.

MSTM 657: Acquiring and Managing Resources (4)

This course examines the financial assets required, payoffs, and risks for technological investments. The capital structure of technology firms and sources of funding for technology ventures are explored. The acquisition of capital in international financial markets, managing currency exchange fluctuations, and capital movements within and between countries are discussed. Current topics such as the development and structuring of strategic financial alliances and projecting the effects of management actions on stock values and capital structures are introduced.

TRIMESTER IV: IMPROVING PRODUCTIVITY THROUGH TECHNOLOGY

It is widely recognized that economic benefits accrue to those nations and organizations that achieve productivity leadership through the effective application and management of technology. The focus of this trimester is the examination of information technologies and management techniques that have a potential for creating significant productivity improvements within the organization's value chain. In-class case discussions will be enriched via a field trip to technological ventures being commercialized abroad.

MSTM 654: Managing Information Technology (4)

Information Technology (IT) continues to expand its impact on all phases of business. This course is designed to develop a conceptual understanding of how to manage this technology by: (1) identifying strategic IT opportunities, (2) understanding the critical issues in implementing IT applications, and (3) evaluating emerging areas such as electronic commerce. Class sessions focus on intensive case discussions and written analyses.

MSTM 655: Managing Manufacturing and Service Processes (4)

As industry continues to adapt to global competitive pressures, traditional processes must be redesigned. This course analyzes the basic concepts of the manufacturing and service value chains and how they can be re-engineered to compete successfully in this new environment.

TRIMESTER V: STRATEGIC ROLE OF TECHNOLOGY

The theme of this trimester is the role of technology and innovation in the formulation and implementation of the organization's strategic thrust. The emphasis is on the integration of technology into the vision, mission, and management of a dynamic and competitive organization. Business cases, resource speakers, and current strategic issues are utilized to explore the many potential roles of technology in the organization.

MSTM 658: Strategic Management of Technology (4)

Formulating and implementing strategy for any business is an intensely creative and innovative task. The focus of this course is to give students practice identifying strong and weak strategies as well as formulating strategies for new business opportunities. Strategy is examined from various perspectives, including new venture strategies, strategies for international business, as well as strategies for rejuvenating mature businesses. A recurring course theme is the role of leadership, entrepreneurial management, and corporate governance in formulating and implementing strategy.

MSTM 659: Technology Management Project (4)

This course provides students with an opportunity to prepare and present an integrated technology-oriented business project of significant importance to their organization utilizing the concepts, topics, and methods learned during the program. The project may be strategic or operational in nature, as approved by the course professor. The student also will have a project advisor as appropriate for the project subject.

MSTM 699: Graduate Directed Studies

Directed study is based on guided reading and independent study, supervised by one member of the faculty.

CALENDAR

The MSTM program is delivered in Southern California and Northern California. The program in Southern California starts in September, and the Northern California program starts in January. The five-trimester, 40-unit MSTM program is scheduled to meet once every third weekend.

Pepperdine University conducts a year-round schedule called the trimester plan. Similar to the semester system, the academic year is divided into three equal 15-week periods of study instead of two with a summer session. Trimester units have the same value as semester units. The school year is divided into the following trimesters:

CALENDAR

Business cards exchanged during a dinner in Osaka, Japan

FALL TRIMESTER
Beginning early in September, ending in mid-December

WINTER TRIMESTER
Beginning early in January, ending in mid-April

SPRING TRIMESTER
Beginning in late April, ending in early August

In an era influenced increasingly by advancing technology, world markets, and global economics, human and cultural factors are becoming even more significant to enlightened leadership.

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Master of Science in Technology Management (MSTM)

The Master of Science in Technology Management degree program is designed for experienced managers to compete successfully in our technology-driven global economy. This program addresses the challenges executives face in the strategic management of innovation and technology, placing strong emphasis on global perspectives, people skills, operational implementation of technology, and new business development. Classes meet every third weekend for 20 months. For additional information, call 310/568-5730.

EVENING PROGRAMS FOR WORKING PROFESSIONALS

Master of Business Administration (MBA)

The Master of Business Administration program prepares students with at least two years of work experience for general management responsibilities. Attention is given to the integration of functional skills (marketing, finance, operations, etc.) with strategies for the effective development and use of human resources. The 48-unit program (12 four-unit courses) may be completed in two years. Call 310/568-5555 for additional information.

Bachelor of Science in Management (BSM)

Designed for students with at least 50 transferable semester units from a regionally accredited college or university, the Bachelor of Science in Management degree is excellent preparation for general management responsibilities and the pursuit of a graduate degree. The 60-unit program, made up of 12 five-unit courses, can be completed in two years. Students must complete a total of 128 acceptable college units to graduate. Call 310/568-5555 for more information.

FULL-TIME PROGRAMS

Master of Business Administration (MBA) - Malibu

The Master of Business Administration program at the Malibu campus is a full-time program that emphasizes international business, finance, and marketing in either a three or four-trimester curriculum depending on the student's educational background. This small and selective residential management program provides a community atmosphere and encourages team building while promoting practical experience through group projects. Call 310/456-4858 for more information.

Master of International Business (MIB)

The Master of International Business program prepares students for entering the international marketplace. The full-time, 56-unit MIB program is offered on the Malibu campus for the first year and is completed with eight months study, including an internship, in a foreign country. Cultural and language studies are integrated into the business curriculum. For additional information, call 310/456-4858.

Joint Juris Doctor and Master of Business Administration (Joint JD and MBA)

The Graziadio School of Business and Management in conjunction with the School of Law offers a four-year joint Juris Doctor and Master of Business Administration program. The joint program at Malibu comprises 130 units: 82 units of law courses and 48 units of business courses. The application process requires satisfying the admission requirements for both schools. Contact the School of Law at 310/456-4631 and The Graziadio School of Business and Management at 310/456-4858 for more information.

For additional information regarding the Master of Science in Technology Management program, call 310/568-5730, FAX 310/568-2376.

This brochure is intended to serve as an introduction to the Pepperdine University Master of Science in Technology Management degree program. It does not contain comprehensive coverage of University policies. Each student should obtain and read The George L. Graziadio School of Business and Management catalog.

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Pepperdine University is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC). P.O. Box 9990 • Mills College • Oakland, CA 94613-0990 Phone: 510/632-5000

MSTM DIRECTOR

Seymour Siegel, Ph.D.

Director of Technology Management Program and Professor of Technology Management. B.S., Brooklyn College; M.S., Ph.D., Harvard University. Dr. Siegel has significant management experience in industry and academia. Prior to joining Pepperdine University, he served as associate vice chancellor, research programs, for the University of California, Los Angeles; as director, exploratory research, and manager, chemical and physical sciences, for Occidental Research Corporation; and as director of the chemistry and physics laboratory at The Aerospace Corporation. His areas of accomplishment include technological marketing; research and development; technology transfer, acquisitions, and implementation; and technology strategy development. Dr. Siegel has lectured in Russia, The Netherlands, and other European countries.

MSTM FACULTY

Charles D. Kerns, Ph.D.

Adjunct Professor of Behavioral Science. B.S., Frostburg State University; M.B.A., Pepperdine University; Ph.D., University of Maryland. Dr. Kerns has more than 25 years of business and management experience across a variety of industries, including starting several companies and serving as a director of a large and complex health care services organization. He has served on the chairman's advisory board of The Executive Committee (TEC), a leading organization in executive education and development. Dr. Kerns serves as CEO of Corperformance Inc., a company that implements performance-based management systems to help businesses improve profits, productivity, service, and workforce satisfaction. As a skilled agent of organizational change, he has implemented these systems in over 50 companies to accelerate their growth. Dr. Kerns is licensed in California as a psychologist. He has been published in *INC., Opportunity,* and Tom Peters' *Fast Forward.*

Charles A. Morrissey, Ph.D.

Associate Professor of Information Systems. A.B., Colby College; M.B.A., Harvard University; Ph.D., Claremont Graduate School. Dr. Morrissey has extensive experience in the management of high-technology ventures, primarily in the computer and software industry. After concentrating on mergers and acquisitions in the business equipment industry, he founded a company that pioneered the development of instructional software, later acquired by Houghton Mifflin for its Electronic Publishing Division. Dr. Morrissey was a principal in three other pioneering computer/software ventures. He currently serves as an interim chief executive officer and director in emerging high-technology ventures. His primary focus is business strategy with an emphasis on the impact of technology on the implementation process.

Robert Ronstadt, D.B.A.

Professor of Entrepreneurship. B.A., University of California, Berkeley; M.A., University of Oregon; D.B.A., Harvard University. Dr. Ronstadt has pursued related careers as a chief executive officer, author, researcher, and teacher over the past 25 years. He has experience with business planning, raising capital, financial management of new enterprises, and managing new product research and development. In 1986 he left his tenured position at Babson College in Wellesley, Massachusetts, to gain experience as the lead entrepreneur of Lord Publishing, Inc., a producer of business books and software. He developed *Ronstadt's Financials,* an award-winning software package for new and smaller businesses. Dr. Ronstadt has authored several books, including *Entrepreneurial Finance, Entrepreneurship: Text, Cases and Notes,* and *R&D Abroad by U.S. Multinationals.* He has been published in the *Harvard Business Review, Success* magazine, the *Journal of Business Venturing,* and *Entrepreneurship: Theory and Practice.*

W. Bradley Zehner, II, Ph.D.

Assistant Professor of Business Strategy, B.A., University of California, Riverside; M.A., Pepperdine University; M.S., M.B.A., University of Southern California; Ph.D., Claremont Graduate School. Dr. Zehner has more than 25 years of marketing, sales, strategic planning, and management experience. He served as president of Zetec, a global strategy and marketing consulting organization for technology-based firms. Previously he was president, worldwide sales, for the John Brown Machinery Group directing marketing and sales activities for eight companies throughout the world. He was also vice president of strategic planning for the 26 companies comprising John Brown PLC Industrial Products Sector.

University Administration

David Davenport
President

Charles B. Runnels, Jr.
Chancellor

Steven S. Lemley
Provost

Andrew K. Benton
Executive Vice President

Lawrence D. Hornbaker
Executive Vice Chancellor

Otis W. Baskin
Dean
The Graziadio School
of Business and Management

Nancy Magnusson Fagan
Dean
Graduate School of Education and Psychology

Ronald F. Phillips
Dean
School of Law
Vice Chancellor

James R. Wilburn
Inaugural Dean
School of Public Policy

John F. Wilson
Dean
Seaver College of Letters,
Arts, and Sciences

PEPPERDINE UNIVERSITY
THE GRAZIADIO SCHOOL
of Business and Management

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7th INTERNATIONAL FORUM ON TECHNOLOGY MANAGEMENT

Kyoto International Conference Hall, Kyoto, Japan, 3-7 November 1997

CHALLENGES FOR THE 21ST CENTURY - NETWORKING EAST AND WEST

FORUM CHAIRMAN: **Dr Tsuneo Nakahara,** Executive Advisor to the CEO, Sumitomo Electric Industries, Japan

KEYNOTE SPEAKERS: **Dr Yukio Mizuno** Executive Advisor, NEC, Japan

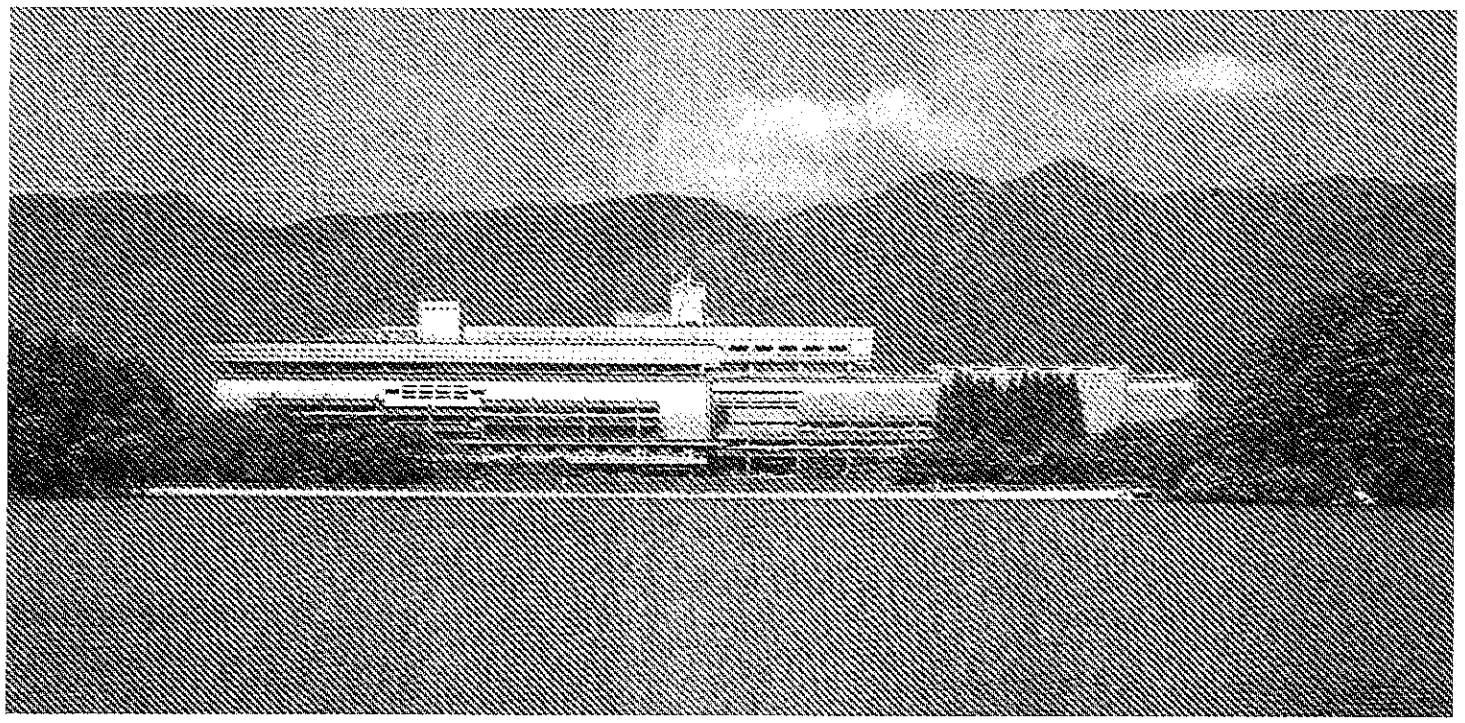
Dr Hyung-Sup Choi, President, The Korean Federation of Science and Technology Societies, Korea

Koji Omi, Member of the House of Representatives, Japan

Larry Ellison, ORACLE, USA *(To be confirmed)*

Kaj Lindén, Senior Vice President Technology, Nokia Group, Finland

HOSTED BY: **Japan Society for Science Policy and Research Management**
JUPITER Consortium Ltd



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WHY YOU SHOULD ATTEND

The Forum will offer an excellent opportunity to network effectively with people from around the world interested in the challenges presented to the successful management of technology in the 21st Century. It will allow people to debate and compare the complex issues involved in applying best practice in organisations which are interacting increasingly those companies from other countries, continents and cultures.

- **Learn** from internationally acclaimed experts who already have experience of the advantages and benefits of networking successfully between East and West
- **Evaluate** the technologies, tools, practices and experiences which are being used by innovative companies to develop successful East/West alliances and networks
- **Understand** how the new era of mega-competition will necessitate great changes in working practices
- **Discuss** the implications of the challenges presented by the Global Information Society and how these can be turned to your company's advantage.

CHALLENGES FOR THE 21ST CENTURY - NETWORKING EAST AND WEST

This Forum is the 7th in the series and will identify current and emerging areas of interest in Technology Management. It will concentrate upon three main themes which will illustrate some issues that may arise as companies address the challenges meeting them as they progress into the 21st Century:

Technology Policy and Strategy

- What are some of the main challenges that companies will face in the next few years? What policies should companies adopt in order to meet these challenges and what are the strategies best suited to implementing these policies successfully?

Technology Management in the 21st Century

- Excellent Management of Technology is going to be one of the key success factors in developing mutually beneficial networks between Eastern and Western companies. What tools and techniques are available to help companies succeed in this mission?

Education and Training Systems

- The human capital of an organisation is arguably its most important asset. Education and training systems are essential to develop the people within a company and the concept of lifelong learning is becoming the norm in many organisations. What can we learn from our colleagues in other companies and cultures about successful systems for Technology Management education and training?

THE INTERNATIONAL FORUMS

The series of International Forums on Technology Management was founded in 1989, when the first was held in Brussels. The objective of the forums is to provide ample opportunity for managers from technology-intensive companies to exchange views and ideas about the management of technology and technical innovations. This is achieved by plenary and parallel sessions on themes identified by the organising committee; the emphasis being very much on interaction and discussion, rather than on publications.

Following Brussels, the venues for the Forum have been: Paris (1991), Santa Monica (1992), Berlin (1993), Helsinki (1995) and Amsterdam (1996). The initial concept was indeed to rotate between Europe, Asia and North America, so it is especially pleasing to see the Forum taking place in Japan this year. In 1998, the Forum will be held in Grenoble and in 1999 in Minneapolis. The Forum co-founder is Georges Haour, Professor of Technology Management at IMD - International Institute for Management Development, Switzerland.

FORUM FORMAT

The 7th International Forum on Technology Management combines Keynote and Plenary speeches, Parallel, Papers and Case Study sessions:

- **Keynote and Plenary speakers** will discuss and debate strategic issues pertinent to the major Themes of the Forum.
- **Parallel Sessions** will expand on the themes under discussion exploring, in depth, current issues and practises. The Sessions will take different formats as appropriate to their topics.
- **Papers Sessions** will enable the presentation of academic papers, discussing the latestfindings relating to each of the Forum themes. The papers will be presented, in brief, in each session by the Chair/Discussant and the majority of the time allowed for debate and discussion.
- **Facts and Cases Sessions** allow industrially-based papers and case studies to be discussed in a workshop atmosphere. Authors will make a brief presentation of the main ideas and conclusions from the studies and the sessions will be opened to the floor to consider the implications and lessons to be learnt from these studies.

WHO SHOULD ATTEND

The Forum is essential for:

- senior managers in all sectors of industry, including both manufacturing and service companies
- senior researchers in the field
- practitioners and providers of Technology Management education and training.

The Forum will offer an excellent opportunity to network effectively with people from around the world interested in the Management of Technology and to debate and explore with them, the complex issues involved in applying best practice in their organisations.

Internet Discussion Group

Beginning in late September, the Forum will host a moderated discussion group on the Internet. You are invited to talk with some of the Forum presenters and other participants about the upcoming Forum topics. To subscribe, please send the following e-mail message - SUBSCRIBE

KEYNOTE ADDRESSES

Dr Tsuneo Nakahara, *Executive Advisor to the CEO, Sumitomo Electric Industries, Japan*

New Challenges for the Era of Mega-Competition

The borderless economy, based on democracy and liberal economy, is growing extensively and quickly towards the 21st Century with an acceleration of technological developments in the fields of advanced information and transportation systems.

The era of mega-competititon between groups networked by strategic alliances will follow soon after the era of competitiveness between nations. In the borderless economy, a global business system, networking East and West, must be established and operated effectively. At the same time, creations of new industries of innovation, through continued R&D efforts, are absolutely essential for global competitiveness.

The issues of population, energy, food and environment will become increasingly serious in the 21st century. In this sense, human creativity in innovation and inventions will enhance the quality of human life. Our Technology Management mission should be towards the creation of global alliances and networks.

Dr Tsuneo Nakahara joined Sumitomo Electric Industries Ltd in 1953 and by 1978 was Director and General Manager of the R&D Group. He was appointed Vice Chairman and Deputy CEO in 1991 and in 1996 he became Executive Adviser to the CEO.

Dr Nakahara is an IEEE Board Member and Special Assistant to the Minister of State for Science and Technology.

In 1994, Dr Nakahara was awarded the Blue Ribbon Medal by the Emperor of Japan for his contribution to the developments of optical fibre and related technologies.

Dr Yukio Mizuno, *Executive Advisor, NEC Corporation, Japan*

Challenges for the 21st Century: The Revolution in Computers & Communication - Towards a Global Information Society

Looking back at the history of our human race, we have three major technology innovations. The agricultural revolution that gave us the capability to store foods and then to eat them at any time, we can call this "food on demand"; the industrial revolution in the 18th Century, lets call this "energy and products on demand"; and now we have begun to enter the information revolution which will lead to "information and knowledge on demand".

Thus information becomes more and more important. With regard to NEC, it commenced, in 1977, "C&C" or integration of computers and communications to navigate NEC to the centre of an information society. Everybody in the world recognises that we are at the entrance of the C&C society of the Global Information Society (GIS). Multimedia and networking become dominant in the information world and information can be distributed through world-wide networks.

Dr Yukio Mizuno's work over the past 40 years has contributed greatly to the development of Japan's computer technology and to the promotion of the Japanese information processing industry. In 1978, he became Managing Director of NEC Toshiba Information Systems, a joint venture between the two companies, where he started the entirely new family of high performance computer systems, known as the ACOS series computers. In 1980 he joined NEC's Board of Directors, was appointed Senior Vice President in 1983, Executive Vice President in 1988 and Senior Vice President in 1991. He became Executive Advisor to the Chairman in 1994. In 1982 he won an official commendation from the Science and Technology Agency of Japan for meritorious service.

Dr Hyung-Sup Choi, *President, The Korean Federation of Science and Technology Societies, Korea*

Technology for National Development - the Korean Experience

Technology fulfils many roles in today's society. In developing countries, science and technology has come to be viewed as one of the most important means of achieving the aim of national development.

In presenting the Korean experience, Dr Choi will give most attention to the role of technology at the national level for development tasks. National government has a crucial role to play during the various stages of development with respect to the goals of development and the choice of technology selected for achieving the ends.

Initially, the Korean government opted for a formula of intensive policies and strategies for the development of science and technology policy with many innovative supporting measures. This was followed by concrete planning to execute these policies. In this plan, Korea adopted what might be called a three pronged approach, emphasising capability build-up, particularly manpower at various levels, accelerated introduction to foreign technologies and stimulation of R&D activities.

This paper deals with the approaches to technology development for industrialisation in the developing countries, from the particular viewpoint of institutional frameworks and their functions.

Dr Hyung-Sup Choi served as Director-General at the Atomic Energy Research Institute of Korea in 1962. This was followed by the Presidency of the Korea Institute of Science and Technology in 1966 and membership of the Presidential Council of Economic and Scientific Advisers. In 1971, he was appointed as a Minister of Science and Technology of the Republic of Korea, in which post he stayed until 1978. Dr Choi is also Advisor of the Research Institute of Industrial Science and Technology and a member of the National

Kaj Lindén, *Senior Vice President Technology, Nokia Group, Finland*

An European View on Managing R&D in the Growing Asian Telecom Business

In Asia, the government deregulation of the telecom market started in the late '80s. The first open markets were Malaysia and Hong Kong. Japan opened it's market as late as 1994 but there are still some markets in Asia which are closed and have a high price level and difficulties in offering a high quality of service.

Even though Asia woke up late to telecoms, they are catching up the US and Europe very fast. The latest announcement from the Malaysian Government on their commitment to the High Speed Data network - the so called "Malaysian Super Corridor Project" - is a leap into the new Information Society. The mobile communication technology is based upon the European experience in NMT, TACS and GSM, apart from the Japanese system. This presentation discusses the experience Nokia has had in transferring the technology to these markets in the past.

The targets of the new advanced internet applications and very high speed data networks are such that there will be a need for a new method of co-operation for mutual benefit. This new approach, which is described as the Global Approach, is discussed.

Kaj Lindén, has been Senior Vice President, Technology, for the Nokia Group since February 1994. Previously, he was Senior Vice President, R&D, Nokia Mobile Phones and Managing Director of Nokia Mobile Phones (UK) Ltd and Technophone Ltd. He joined Nokia in 1988 as Vice President Production, of what was then called Nokia-Mobira. Prior to that Mr Lindén held senior managerial positions in the design and production of digital telecommunication systems for Televa (today Nokia Telecommunications) and ITT/Alcatel in the United States, Belgium and Finland. Mr Lindén is also the Chairman of HLSG (High Level Strategy Group for ICT on European Information Infrastructure). HLSG has been formed by the Executives of European trade

PROGRAMME AT A GLANCE

MONDAY, 3 NOVEMBER 1997 PRE-FORUM WORKSHOP

09.00	**Technology Foresight for Creative Corporate Strategy** (Full day) **Prof Rias van Wyk,** *University of Cape Town, South Africa*
12.30	Luncheon
13.30	Workshop continues
17.00	Workshop ends

INDUSTRIAL VISIT

08.00	**Sumitomo Electric Industries**
17.00	**Visit ends**

17.30 **WELCOME RECEPTION**

TUESDAY, 4 NOVEMBER 1997

08.45 **Forum Opens and Chairman's Welcome**
Dr Tsuneo Nakahara, *Executive Advisor to the CEO, Sumitomo Electric Industries, Japan*

KEYNOTE ADDRESSES

Challenges for the 21st Century: The Revolution in Computers and Communication, Towards a Global Information Society
Dr Yukio Mizuno, *Executive Adviser, NEC Corporation, Japan*

09.50 **Technology for National Development - The Korean Experience**
Dr Hyung-Sup Choi, *President, The Korean Federation of Science and Technology Societies, Korea*

10.40 Coffee break

PARALLEL SESSIONS

10.55				
Innovation for Growth - East/West Perspectives Chair: Prof Georges Haour, *IMD, Switzerland*	**Evaluation of Technology Policy Chair: Prof Philippe Laredo,** *Ecole Supérieure des Mines, France*	**Technology Management for Service Industries Chair: Prof Ian Miles,** *PREST, University of Manchester, UK*	**Papers Session**	**Facts and Cases Session**

12.45 Luncheon

KEYNOTE ADDRESSES

14.00 **Larry Ellison,** *ORACLE, USA (To be confirmed)*

14.50 **The Present and Future Situation of Science and Technology Policy in Japan: Reforming Towards a Science and Technology Oriented Nation**
Koji Omi, *Member of the House of Representatives, Japan*

15.40 Tea break

PARALLEL SESSIONS

Knowledge Management Chair: Dr Cor de Feyter, *FT&S Consultancy, The Netherlands*	**How to Maximise the Effectiveness of R&D Assets Chair: Dr Seiichi Takayanagi,** *Toshiba Co, Japan*	**Business Cases for Electronic Commerce Chair: Prof Dolly Samson,** *Weber State University, USA*	**Papers Session**	**Facts and Cases Session**

17.55 Forum adjourns

WEDNESDAY, 5 NOVEMBER 1997

CHAIRMAN'S ADDRESS

09.00 **New Challenges for the Era of Mega-Competition**
Dr Tsuneo Nakahara, *Executive Advisor to the CEO, Sumitomo Electric Industries, Japan*

KEYNOTE ADDRESS

09.50 **An European View on Managing R&D in the Growing Asian Telecom Business**
Kaj Lindén, *Senior Vice President Technology, Nokia Group, Finland*

10.40 Coffee break

PARALLEL SESSIONS

10.55				
Appropriate Key Concepts for R&D Management Chair: Prof Ryo Hirasawa, *University of Tokyo, Japan*	**SMEs and Regional Policy to Foster Technical Innovation Chair: Dr Elias Carayannis,** *George Washington University, USA*	**Forming Global Alliances and Network Organisations Chair: Drs Frans van de Ven,** *KPMG, The Netherlands*	**Papers Session**	**Facts and Cases Session**

PARALLEL SESSIONS					
14.00	**Appropriate Key Concepts for R&D Management** *Continued*	**Innovators Session - Research Management** **Chair: Dr Yutaka Kuwahara,** *Hitachi Europe, UK*	**East/West Technology Transfer and Co-operation** **Chair: Radboud Molijn,** *Japan Insite BV, The Netherlands*	**Papers Session**	**Facts and Cases Session**
15.50	Tea break				
PARALLEL SESSIONS					
16.05	**Appropriate Key Concepts for R&D Management** *Continued*	**Innovators Session - Research Management** *Continued*	**A new Paradigm on S&T Policy in Terms of Emergence for New Knowledge and Innovation** **Chair: Prof Kinji Gonda,** *Tokai University, Japan*	**Papers Session**	**Facts and Cases Session**
17.55	Forum adjourns				
	GALA DINNER - Dr Tsuneo Nakahara *will give a brief welcoming address*				

THURSDAY, 6 NOVEMBER 1997

PARALLEL SESSIONS					
08.30	**Towards Sustainability** **Chair:** **Dr Jacqueline Aloisi de Larderel,** *United Nations Environmental Programme, France*	**MoT Education - International Trends** **Co-Chairs: Dr John Vines,** *APESMA, Australia* and **Dr Avram Bar-Cohen,** *CDTL, University of Minnesota, USA*	**Management of Innovation in Complex Systems** **Chair: Prof Kumiko Miyazaki,** *Tokyo Institute of Technology, Japan*	**Papers Session**	**Facts and Cases Session**
10.20	Coffee break				
PARALLEL SESSIONS					
10.35	**Company of the Future** **Chair: Dr H-G Danielmeyer,** *Technical University of Munich, Germany*	**Tools and Techniques for Technology Management: Practice and Theory** **Co-Chairs: Prof Mike Gregory** and **Dr David Probert** *Manufacturing and Management Division, Cambridge University, UK*	**Management of Innovation in Complex Systems** *Continued*	**Papers Session**	**Facts and Cases Session**
12.25	**Forum Conclusions, Summary and Future Prospects - Prof Ryo Hirasawa,** *University of Tokyo, Japan*				
12.45	Forum Closes				

OPTIONAL INDUSTRIAL VISITS		
14.00	Toray Industries Inc	Kyoto Research Park

FRIDAY, 7 NOVEMBER 1997

Day	Takeda and Matsushita	Ritsumeikan University and IBM	Kao, Shima Seiki and Noritsu Koki	Association of Broadband - ISDN - Businesschance and Culture Creation and Sharp Research Lab

MONDAY, 10 NOVEMBER 1997

Day	NEC Central Research Institute and	Tsukuba Research Complex

PARALLEL SESSIONS - TOPICS AND ISSUES

TUESDAY, 4 NOVEMBER 1997

10.55 hours

Innovation for Growth - East/West Perspectives

Chair: Prof Georges Haour, *Faculty Member, International Institute for Management Development, Switzerland*

In our fast-paced world of hyper-competition, technological development is a powerful ingredient of new business development in the firm. In this session, two examples, taken from widely different innovation systems, one from Europe and one from Japan, will be presented. They contrast the various ways of achieving a company's growth by integrating fully technology into a new business idea that actually results in creating or developing market opportunities in a profitable way.

Evaluation of Technology Policy

Chair: Prof Philippe Laredo, *Ecole Nationale Supérieure des Mines, France*

The objective of this session is to share experiences about the development of evaluation activities. It addresses two complementary dimensions. The first dimension focuses on the reported impacts on firms. A second set of issues corresponds to the evaluation process and its insertion into the political debate and the policy decision making process.

Technology Management for Service Industries

Chair: Prof Ian Miles, *Director, PREST, University of Manchester, UK*

Service industries have been neglected in discussions of research, innovation and technology management.

Services of different kinds vary considerably among themselves. However, our working hypothesis is that they also possess certain distinctive features which mean that they cannot be assumed to simply follow the Technology Management patterns common in manufacturing and extractive sectors.

This session will explore the validity of this hypothesis and the factors underlying it. A second hypothesis which will be explored is that the situation is changing, this being partly a result of deliberate strategies being adopted on the part of service firms and those concerned with their performance. This session will also capture something of

16.05 hours

Knowledge Management

Chair: Dr Cor de Feyter, *Director, FT&S Consultancy, The Netherlands*

Firms and institutions are in the process of reorganising around competencies, to be developed and maintained for competitiveness through knowledge-intensive work. Routine jobs should be replaced by a type of work directed at improving effectiveness and innovation through exchange of knowledge and experience among knowledge workers. As the supply of knowledge increases continuously, knowledge can only be applied with the required effectiveness if organised around strategic priorities, business opportunities and key competences.

The traditional separation between development and use of knowledge should come to an end; the interaction between work processes and learning processes is the essence of the knowledge-intensive economy. The session provides practical contributions of firms who made progress with knowledge management.

How to Maximise the Effectiveness of R&D Assets

Chair: Dr Seiichi Takayanagi, *Senior Advisor (former Senior Executive VP) Toshiba Co, Japan*

Notwithstanding the increasing significance of a careful assessment of the profitability of R&D assets under current uncertain business circumstances, insufficient efforts have been undertaken to develop corresponding practical modelling.

The session will identify the cross points between the practical, empirical and theoretical approaches to the subject.

Business Cases for Electronic Commerce

Chair: Prof Dolly Samson, *Chair, Department of Information Systems and Technologies, Weber State University, USA*

This session features businesses that are using the Internet for both customer and business-to-business transactions. Increased access, reduced telecommunications barriers, growing consumer confidence and global reach make the Internet a viable medium for conducting business. However, many organisations have yet to develop a business rationale for venturing into cyberspace.

Here, you will gain insights on a successful practices and strategies to add value through the Internet and Electronic Commerce.

WEDNESDAY, 5 NOVEMBER 1997

10.55 hours

Appropriate Key Concepts for R&D Management

Chair: Prof Ryo Hirasawa, *University of Toko, Japan*

Recently, new management principles, ideas and concepts have been presented by executives, scholars and consultants, which are interesting and worth using. These include core competence, lean, agile, time-base, concurrent, interactive, network, synergy, symbiotic, human dynamics, capability, knowledge creation and other descriptors. In this session, R&D directors select those principles and/or concepts which are most suited to their own R&D management systems. We will receive case reports on key concepts and discuss how they are actually operated. Presenters will be selected from companies such as Toshiba, Samsung, ABB, NEC, AT&T, IBM, Sony, Nissan, Ford, Daimler-Benz, Kao, Toray, Sunkyong and Dupont.

SMEs and Regional Policy to Foster Technical Innovation

Chair: Dr Elias Carayannis, *Management of Science, Technology and Innovation, George Washington University, USA*

The role of technology entrepreneurship in technology commercialisation and regional economic development is examined and in particular, the role of SMEs as engines of economic growth along with specific pol-icies and practices to foster entrepreneurship.

Forming Global Alliances and Network Organisations

Chair: Drs Frans van de Ven, *Industrial Consultant, KPMG, The Netherlands*

The profile of the Company of the Future is emerging. We see that companies find new competitive space and build businesses outside their business column; new surprising combinations of technology areas arise; configurations between companies change into active networks; transcultural collaboration becomes more rule than exception; learning organisations are better equipped to master the coming changes; responsibility is felt for quality of life (green design, robust products and processes). Companies of the future are capable of bringing all these requirements to work. This session, will focus on the sharp increase of strategic alliances and networks between companies.

Motives to ally will be explored and will debate the issue of autonomous development of a company via acquisitions or growth via strategic alliances; the advantages and dis-advantages of each approach; experiences with collaborations between East and West analysed.

14.00 hours

Appropriate Key Concepts for R&D Management

Session continued

Innovators Session - Research Management

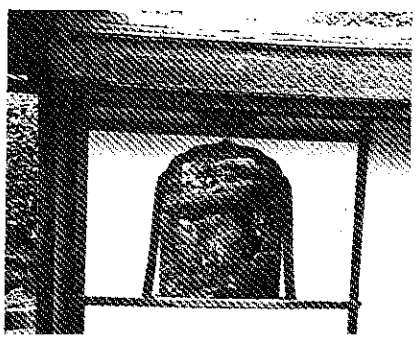
Chair: Dr Yutaka Kuwahara, *General Manager R&D, Hitachi Europe, UK*

This session aims to achieve a direct understanding through the presentations and discussions by very experienced researchers and R&D directors, of their actual research and management cases, which led to examples of the most innovative of R&D activities. In addition, the need for Global collaboration in networking East and West will be explored.

East/West Technology Transfer and Co-operation

Chair: Radboud Molijn, *Managing Director, Japan Insite BV, The Netherlands*

Japan has demonstrated the power of effective transfer and adaptation of technologies; it is now a substantial exporter of technologies. The rest of Asia is very rapidly intensifying technological exchanges within Asia, as well as between East and West. From the perspective of a technology broker located in Asia,s hub, Singapore, the discussion will draw on examples to focus on the success factors in effective leveraging technologies adapted from overseas sources.



16.05 hours

Appropriate Key Concepts for R&D Management

Session continued

Innovators Session - Research Management

Session continued

A new Paradigm on S&T Policy in Terms of Emergence for New Knowledge and Innovation

Chair: Prof Kinji Gonda, *Tokai University, Japan*

Recent studies on technological innovation have come to be focused on elucidating mechanisms of the emergence of new knowledge in RTD (Research and Technology Development) bodies rather then the mechanism of marketing processes. Arguments on knowledge creation in innovation processes have been concentrated on the role of tacit knowledge and humanistic communication among engineers and/or scientists in terms of emergence for new knowledge in individuals and/or organisations.
The competitiveness of industries in the 21st centuries depends upon the implicit knowledge which dominates the processes of concept design for development of a new product and/or new technology. The papers in this session, therefore, will be focused on the following topics in the framework of innovation and knowledge creation:

- Roles of implicit knowledge for the designing of a new concept
- Mechanisms of emergence for new knowledge in organisations
- Definitions and models on Innovation
- Social systems for continuous Innovation
- National and regional systems of innovation

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08.30 hours

Towards Sustainability

Chair: Dr Jacqueline Aloisi de Larderel, *Director, United Nations Environmental Programme, France*

Industry in advanced economies has made great strides in cleaning up sources of pollution. A further step is now to design-in proactively, products, processes and services that make us progress on the long march towards sustainable development. Examples will be given of Japan and Europe's industries implementing innovative solutions involving actors along the whole value chain.

MoT Education - International Trends

Co-Chairs: Dr John Vines, *APESMA, Australia* and **Dr Avram Bar-Cohen,** *CDTL, University of Minnesota, USA*

As we approach the 21st Century, education for Technology Management is gaining in stature, breadth, and geographical dispersion. Technology Management alumni are beginning to gain key positions in industry. Management of Technology programmes can be found at institutions in North and South America, Asia, Australia, the British Isles and Europe. And while Masters, degrees are the most common, Bachelor degrees have gained popularity and PhD degrees in Technology Management are under consideration at several institutions. This session will provide a forum for presentation and discussions of trends in MoT Education, including distance education, advanced educational technology, quality management focus and alumni evaluations. The session will close with an Open Forum discussion on the nascent MoT Educators Network.

Management of Innovation in Complex Systems

Chair: Prof Kumiko Miyazaki, *Associate Professor, Tokyo Institute of Technology, Japan*

There are design intensive, customised products and systems requiring collaborative work by a variety of actors, involving sophisticated system integration and project management skills, where users play a key role. They are often software embedded (eg telematic health care systems, telephone exchanges, digital cash machines, intelligent buildings, automated traffic systems etc). Papers on this topic, including empirical findings, case studies and theoretical work will be included in a double session.

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10.35 hours

Company of the Future

Chair: Dr H-G Danielmeyer, *Technical University of Munich, Germany*

The "Company of the Future" was the first project to be jointly funded by MITI and the EU. Its objective was to integrate management concepts from the finance, production and research functions as this was perceived as being a poor area of corporate management.

The initial concept was developed at the Portland conference in 1991, during discussions following the IBM crisis, as to how such a major, international company, could threaten to fail. The project therefore looked at the electronics industry, concentrating on four major companies and the representatives from two of those studied, Siemens and Hitachi, will co-chair this session. Also involved were the universities of Tokyo, Rome, Kiel and Mannheim.

The session will present the recently published report and consider ways in which improvements can be made in the integration of management concepts.

Tools and Techniques for Technology Management

Co-Chair: Prof Mike Gregory and **Dr David Probert,** *Manufacturing and Management Division, Cambridge University, UK*

This panel will explore the range of practical tools and techniques available for the management of technology, together with the supporting theory upon which the tools are (or are not) based.

There will be a numbers of presentations from both industrial and academic perspectives that will cover the key questions which practitioners face in manufacturing industry in managing technology. The tools and techniques which are required to address those questions will be explored, together with the links to a supporting body of theory.

A number of areas of interest will be highlighted for both the industrial and academic communities and drawn together in the final panel discussion:

- Overview of the key practitioner questions
- Assessment of the range of tools in current use
- Identification of theoretical weakness.

Management of Innovation in Complex Systems

Session continued

PRE-FORUM WORKSHOP

MONDAY, 3 NOVEMBER 1997

Technology Foresight for Creative Corporate Strategy

Prof Rias van Wyk, *University of Cape Town, South Africa*

Management boards need to know where they want to go. They require foresight.

Technology foresight is a part of the picture.

In this seminar, managers will learn how to acquire technology foresight and build it into their corporate strategies. They will learn how to scan the technological landscape for new opportunities and how to map, track and forecast technology. In short, they will learn strategic technology analysis.

Based on a successful track record in the USA, Europe and Singapore, this workshop covers the following themes:

- Wei Chi, grand strategy and the role of technology
- The techno-strategy planning cycle
- Conceptual frameworks of strategic technology analysis
- Scanning for landmark technologies
- Auditing for core competencies
- Formulating strategic intent.

The seminar will be run in a highly interactive format and will use a workbook and mini-cases.

Do attend and join the ranks of technology managers who distinguish themselves through their knowledge of strategic technology analysis.

GALA DINNER

This very special event has been arranged to offer an excellent environment to sustain the networking opportunities and development of new contacts which are such an important part of the Forum.

Japanese specialities will be offered at buffet tables set around the room and delegates will be free to move around from table to table as they wish.

A short speech of welcome will be given by the Forum Chairman, Dr Tsuneo Nakahara.

FORUM LOCATION

The International Forum will be held in the Kyoto International Conference Hall. This is a custom-built, state-of-the-art, conference location with excellent facilities. The contact details for the venue are: Takaraga-ike, Sakyo-ku, Kyoto 606, Japan. Tel: +81 75 705 1234 and Fax: +81 75 705 1100.

KYOTO

Kyoto, a city with 1,200 years of history, is the cultural soul of Japan. Nestled among low mountains, it is blessed with both natural beauty and a rich historical legacy. It is the ideal site for international conferences.

From its establishment as Japan,s capital in 794, until the Meiji Restoration in 1868, Kyoto flourished as the centre of culture in Japan. Kyoto is a magnificent city with fine examples of traditional arts and an abundance of shrines and temples, which give the city its distinct character. With nearly 1.5 million residents, Kyoto is a vibrant mixture of old and new. Many high-tech firms have grown in Kyoto and the city has 47 public and private colleges and universities. These significant intellectual resources combine with Kyoto's long history and

INDUSTRIAL VISITS

These tours are designed to provide Technology Management professionals from around the world with first-hand knowledge of Japan.

They have been especially designed to enhance the overall International Forum experience by providing an opportunity to visit the sites as well as hear presentations and to discuss with the people responsible for the projects which will develop the businesses in the future. Although the tours are priced separately to be as flexible as possible, they are an essential part of the learning and networking experience.

Please note: *There is a minimum number of 20 persons per tour and a maximum of 40 persons per tour.*

MONDAY, 3 NOVEMBER 1997

FULL DAY
Tour Code 31:
Sumitomo Electric Industries and the Mitsubishi Electric Corporation
9 hours

SEI has specially invited you to their works and laboratory, as it is a national holiday on 3 November. A two hour tour of the site will be followed by a four hour presentation and discussion with senior managers from SEI and the Mitsubishi Electric Corporation.

THURSDAY, 6 NOVEMBER 1997

AFTERNOON
Tour code 61 - Toray Industries, Inc
4 hours

Toray have several research institutes in the Kansai area and we will be visiting one of them. The visit will include a tour of the Toray Research Centre and a presentation by Dr Okamoto who invented the extremely thin fibres which are used for such fabrics as artificial deer skin, which is used for clothing. Dr Okamoto's presentation will be followed by a question and answer session and an opportunity to discuss Toray's management of core competency.

Tour code 62 - Kyoto Research Park
3 1/2 hours

The Research Park contains new venture businesses and incubation companies. Many types of industry are represented in the park. Representatives from the various companies will give an overview of the park from the user point-of-view and then three of the company sites will be visited. Delegates will be able to discuss the issues involved in the starting and growth phase of companies and in Research Park management.

FRIDAY, 7 NOVEMBER 1997

FULL DAY
Tour code 71 - Takeda and Matsushita
8 1/2 hours

Takeda Chemical Industries is the largest Pharmaceutical/Chemical Company in Japan. Both the bio-tech and organic production sites will be visited. The management system for the Research

After Takeda, the group will visit the Matsushita Electric Industrial Company in Osaka.

The visit will include the exhibition hall and a discussion of the management system. The visit will include information on various Matsushita products including highly advanced batteries, LCD, VCR, TV and vision technology, new media and home electronics.

Tour code 72 - Ritsumeikan University and IBM
8 1/2 hours

Situated in a new campus, the university has a large industrial/university collaboration centre. The IBM Yasu factory visit will include a presentation of the semiconductive devices. The factory also specialises in memory development. This will be an ideal opportunity to visit a large, integrated electronics manufacturing plant and witness Japanese factory management techniques at first hand.

Tour code 73 - Kao, Shima Seiki and Noritsu Koki
10 hours

Kao is the largest toiletries manufacturer in Japan. This site, in the Wakayama district, has two kinds of research laboratories and a factory for fine chemicals. The visit will demonstrate the totally integrated, computer controlled system for R&D, Manufacturing and Sales. Overseen from a Direction Room, the entire production process is monitored and controlled.

Shima Seiki, developed from a new venture company, produces computerised weaving machines. They have a large market share of their highly specialised field.

Noritsu Koki is a company specialising in computerised photographic development. Producing compact development labs, its customers include Kodak. The visit will demonstrate its production line and show how the company developed from a new venture business into its present size today.

Tour code 74 - Association of Broadb and - ISDN - Businesschance and Culture Creation and Sharp Central Research Laboratory
8 hours

Based in the Kansai Research Complex of Broadband - ISDN Businesschance and Culture Creation is a multi-media company/ Institute specialising in image communication using broadband wavebands.

The group will then visit the Sharp Central Research Lab and Works and discuss its management system with senior managers. Sharp has the largest share of the LCD market.

MONDAY , 10 NOVEMBER 1997

Tokyo Region
FULL DAY

Tour code 101 - NEC Central Research Institute and NISSAN Research Institute
10 hours

This visit to two Research Labs will explain R&D systems and the visitors will be able to discuss the issues surrounding the systems. There will be an opportunity to visit the production line at Nissan with its excellent assembly techniques.

Tour code 102 - Tsukuba Research Complex
12 hours

Tsukuba Science City is the biggest science city in Japan and represents a large concentration of major private and national research institutes as well as universities. The city actually hosts no fewer than 41 national research institutes and 139 private research laboratories, employing 7,200 researchers and 5,000 researchers respectively.
The visit will focus on the concept of technology fusion/synergy. The managing of technological clusters will be demonstrated. The group will visit three of the resident institutes:

- Tsukuba Advanced Research Centre (at the University of Tsukuba), an interdisciplinary centre
- Tsukuba Research Consortium and Stanray Electric Co, with collaborative facilities for the incubation of venture companies.
- Industrial Technology Fusion Institute (MITI-AIST) and Atom Technology Research Institute, is the newest MITI Research Institute.

SOCIAL AND CULTURAL TOURS

As well as the opportunity to visit local industries, for those delegates new to Japan or the Kansai area, there is the opportunity to visit some of the fascinating and unique temples in the area and to get a flavour of the local culture and history to round out the whole experience of attending the International Forum. All the tours are arranged through the Japan Travel Bureau.

Please note: *There is a minimum number for the Social and Cultural Tours of 20 persons per tour.*

THURSDAY, 6 NOVEMBER 1997

Tour code 63 - Costume Museum and Kyoto Handicraft Centre
3 1/2 hours

The Costume Museum displays traditional costumes from early times to the Meiji era. At the Kyoto Handicraft Centre, you will be able to see demonstrations by skilled local craftsmen, and of course, to select souvenirs of the visit.

FRIDAY, 7 NOVEMBER 1997 - FULL DAY

Tour code 75 - Kyoto Tour
8 1/2 hours

Highlights of the tour include:

- Nijo-jo Castle, built in an elaborate style in 1603 as the official residence of the first Tokugawa shogun, Leyasu
- Golden Pavilion, a gilded structure, originally a nobleman's villa
- Kyoto Imperial Palace, a former residence of the Imperial family. The enthronement of new Emperors and state ceremonies are still held here
- The Vermilion Heian-jingu Shrine, a magnificent structure strongly influenced by Chinese architecture built in 1895 to commemorate the 1100th anniversary of the founding of Kyoto
- Sanjusangen-do Temple and it's 1,001 impressive statues of Buddha was built in 1266 after the original was burnt down
- Kiyomizu-dera Temple, one of the most famous landmarks in the city, noted for its 164 feet high wooden verandas.

Tour code 76 - Kyoto and Nara Tour
9 1/2 hours

Highlights of the tour include:

- Nijo-jo Castle, built in an elaborate style in 1603 as the official residence of the first Tokugawa shogun, Leyasu
- Golden Pavilion, a gilded structure, originally a nobleman,s villa
- Kyoto Imperial Palace, a former residence of the Imperial family. The enthronement of new Emperors and state ceremonies are still held here
- A countryside drive to Nara, which has a large number of cultural relics
- Todai-ji Temple, in Nara, the worlds largest wooden building that houses a 50 feet high Buddha, one of the largest bronze images in the world
- The peaceful Deer Park, where many tame deer roam the grounds
- The vermilion hued Kasuga Taisha Shrine with its thousands of

SUPPORTING ORGANISATIONS

The Programme Committee wishes to express its grateful thanks to all those who have given their time in assisting with the development of this Forum. Such an event requires many months of advance planning and expert speakers must be identified in order that the presentations are of the highest quality. We are immensely grateful for the technical and financial support provided.

APESMA
Business Chance and Culture Creation
Cambridge University
Ecole Nationale Supérieure des Mines
FT&S Consultancy
George L Graziadio School of Business and Management, Pepperdine University
George Washington University
Groupe ESC Grenoble
Henley Management College
Hitachi Ltd
Hitachi Europe
IBM
Imperial College
Institute for Policy Science, Japan
International Institute for Management Development
Japan Insite
Japan Research Industry Association
JUPITER Consortium
Kao
Korea Industrial Technology Association
Korean Federation of Science and Technology Societies
KPMG
Kyoto Research Park
Manchester Business School
Matsushita Electric Industrial Co. Ltd
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Technical University of Munich
Tokai University
Tokyo Institute of Technology
Toray Industries
Toshiba
Tsukuba University
United Nations Environmental Programme
University of Cape Town
University of Minnesota
University of Tokyo

GENERAL INFORMATION

ENQUIRIES All enquiries regarding the International Forum should be directed to:

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LANGUAGE The language of the Forum is English. Simultaneous translation to and from Japanese will be available for all sessions held in the main hall including the Plenary/Keynote Sessions.

FEES The fees (see Registration Form) for attendance at the International Forum include:
Full documentation and Proceedings
Refreshment breaks
Welcome Reception.

ENROLMENT Bookings should be made as soon as possible as space is restricted and places will be allocated in order of receipt of completed registration forms and fees.

If you wish to pay in Pounds Sterling, US Dollars, by VISA or MasterCard please return your Registration Form to the Forum Office in the UK.

PAYMENT If you wish to pay in Yen, please return your Registration Form to the Committee Office in Japan.

Places at the International Forum can be reserved only after receipt of the fees. Payments may be made by:

- VISA or MasterCard (please complete the details on the Registration Form)
- Cheques in Pounds Sterling, or US Dollars, made payable to the JUPITER Consortium Limited
- Direct credit in Sterling or US Dollars to the JUPITER Consortium Limited bank account - Account Number 61116576 (Sterling), and 38350313 (US Dollars), Sort Code 40-44-46, Midland Bank plc, 42 High Street, Teddington, Middlesex, TW12 1JQ, United Kingdom.
- To pay in Japanese Yen, please make cheques payable to Dai Nanakai Kokusai. For direct transfer: Sanwa Bank, Komaba Branch (320), Account Number 3592733.

Please note that all transfer and bank charges must be paid by the sender.

PRE-REGISTRATION Participants may pre-register between 16.00 and 18.00 hours on Sunday, 2 November 1997 and between 07.30 and 18.00 hours on Monday, 3 November.

CANCELLATIONS Cancellations made prior to 19 September 1997, will be subject to a 30% administration charge. For cancellations made on or after this date, the fees are non-refundable. Substitutions will be accepted.

HOTEL ACCOMODATION A sufficient number of rooms have been reserved for Conference participants at hotels in Kyoto. Please complete the enclosed Hotel Registration form, clearly indicating the name of the hotel, the number and type of room desired. Your reservation is made upon receiving your completed form and deposit. Hotel assignment will be made upon a first-come, first-served basis. No reservations will be confirmed in the absence of the deposit.

Hotel information, costs and cancellation policies are to be found on the reverse of the Hotel Booking form.

In the event that any one of the advertised speakers is, for reasons outside the control of the event organisers, unable to attend the Forum, the organisers reserve the right, without notice, to make such alteration or substitution as they deem fit. Participants will have no claim against the organisers for such alteration or substitution