Fifth APEC SME Business Network Promotion Forum

SMEs’ Business Creation through Academia-Industry Cooperation

09:00–17:30, Tuesday, 19 November 2002
Big Palette Fukushima (Convention Hall)

Organizer Japan External Trade Organization (JETRO)
Co-organizers Fukushima Prefectural Government
Fukushima International Economic Exchange Advancement Council
Supporters Small and Medium Enterprise Agency, Ministry of Economy, Trade and Industry
Tohoku Bureau, Ministry of Economy, Trade and Industry
Japan Small and Medium Enterprise Corporation (JASMEC)
Japan Chamber of Commerce & Industry
The Federation of Fukushima Chamber of Commerce and Industry
Fukushima Federation of Commerce & Industry
Fukushima Prefectural Federation of Small Business Association
Tohoku District of Japan Junior Chamber Inc., Fukushima Bloc Council
Fukushima Center for Industrial Promotion
Koriyama Area Technopolis Promotion Organization
Research Institute of Engineering, College of Engineering, Nihon University
Introduction

The APEC SME Business Network Promotion Program implemented by the Japan External Trade Organization (JETRO) aims to promote mutual understanding and business exchange among small and medium-size enterprises (SMEs) in the APEC region, and achieve the creation of new business chances and industrial vitalization. Japan proposed the program at the Fifth APEC SME Ministerial Meeting in Kuala Lumpur, Malaysia in September 1998, and was approved as Japan’s APEC project. FY2002 will be the fifth occasion for the program to take place.

As Japan continues to struggle with longstanding economic difficulties, business creation of SMEs has been hailed as a key to revitalizing the Japanese economy. Academia-industry cooperation is an extremely promising strategy for facilitating the development of competitive technologies, as well as creating and promoting new business, particularly by SMEs with limited resources. Academia and business, as well as the government, are now closely examining opportunities for promoting such cooperation.

Based on such circumstances, JETRO, as part of encouraging SMEs as well as universities and research institutions to create new business through academia-industry cooperation from a global point of view, held the Fifth APEC SME Business Network Promotion Forum: SMEs’ Business Creation through Academia-Industry Cooperation in Koriyama City, Fukushima Prefecture, Japan, in November 2002. SME and academic leaders were invited to the forum as presenters from six economies (China, Korea, Malaysia, Singapore, U.S.A. and Japan). The participants gave not only presentations on specific examples of academia-industry cooperation toward business creation in their economies, but also actively discussed the points of success and challenges of these efforts.

This report is audio-typing of the presentations and discussions in the Forum. We hope that it will be of some help for SMEs in the APEC region in their attempts toward business creation through academia-industry cooperation.

Finally, we would like to extend our deepest appreciation to all those involved for their cooperation in the successful holding of the Forum.

Economic Development Assistance Department
Japan External Trade Organization (JETRO)

January 2003
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Outline of the Forum

Date: 09:00–17:30, Tuesday, 19 November 2002
Venue: Big Palette Fukushima (Convention Hall)
Number of Persons Attending: 203

Program

09:00 Opening Address
Masato Akazawa Executive Vice President, JETRO
Remarks
Eisaku Sato Governor
Fukushima Prefectural Government

09:15 Keynote Speech
“My Theory of Ventures: Reasons for Academia-Industry Cooperation”
Kazuhiko Nishi President of Suma Gakuen

10:15 Break

10:30 Presentations
“Current State of Academia-Industry Cooperation / Case Studies”
Coordinator:
Tetsuhiko Ikegami President, The University of Aizu

Presenters:
U.S.A. Chris Constantinou Professor, Stanford University
Gerald W. Timm CSO (Chief Scientific Officer), Endocare, Inc.

Singapore Lee Loke Chong Deputy Executive Director,
Singapore Institute of Manufacturing Technology (SIMTech)
Lee Boon Leng Vice-President, MicroFab Technology (S) Pte Ltd.

Malaysia Tan Sin Leng Associate Professor, Multimedia University
Jeffrey Phang CEO, IT Driven DotCom Sdn Bhd

Japan Shinzo Enomoto Professor, Chiba Institute of Technology
Tatsuya Niwa Executive Advisor, Miyagi Kogyo Co., Ltd.

12:00 Break

13:00 Presentations

Presenters:
Japan Shigeaki Tsunoyama Professor, The University of Aizu
Yoshibumi Kawauchi Senior Managing Director,
Aizu F-COM Co., Ltd.
Sadao Omata Professor, Nihon University
15:00 Break

15:15 Discussion
“Toward Business Creation through Academia-Industry Cooperation”

17:30 Closing

18:00 Reception

Others

1. Surveys
Reports by the presenters from academia, concerning the current status of academia-industry cooperation in their respective economies as well as case studies by JETRO overseas offices were compiled and distributed as reference material at the Forum.

2. Information Corner for Academia-Industry Cooperation
At the Forum venue, 13 presentation counters from universities and supporting institutions engaged in academia-industry cooperation were set up and information was provided on their technology and support systems, which help to promote academia-industry cooperation.

3. Collaboration with the APEC SME and New Business Support Workshop
The APEC SME and New Business Support Workshop, another Japan-sponsored APEC project designed for policy-makers in the region to share knowledge and know-how to seek more effective support measures for SMEs and new businesses, was also held timed with the implementation of Forum (Theme: SMEs’ Business Creation through Academia-Industry Cooperation). By attending the Forum, workshop participants had the opportunity to listen to real experiences of SMEs engaging in academia-industry cooperation and exchange opinions with presenters and participating enterprises at the Forum.
(See Appendix for participants list.)
Opening Address

Masato Akazawa (Executive Vice President, JETRO)

It is my honor to deliver the opening address at the Fifth APEC SME Business Network Promotion Forum. I would like to extend my thanks to all our guests for their participation.

This Forum was proposed by the Government of Japan at the Fifth APEC SME Ministerial Meeting held in Malaysia in 1998 and was officially approved as an APEC project of Japan. Japan External Trade Organization (JETRO) is the organization in charge of implementing this project. The Forum has been held four times so far, always in Tokyo. Presently Japan’s economy is in an unprecedented crisis. In order to find our way out of it, we must first of all take measures for industrial revival and revitalization of the local economies. Thanks to the collective efforts of all engaged in this project, including the Fukushima Prefectural Government, this, the 5th Forum is the first one to be held not in Tokyo, but in Fukushima. The Fukushima Prefectural Government in particular kindly agreed to co-host the event and has been supporting us immensely from the initial preparation stages onward. I would like to extend my deepest gratitude to Governor Eisaku Sato, who is here today despite his busy schedule. Thank you very much.

One of the most important challenges that Japan faces today is how to survive in the present severe economic conditions. In order to solve this problem, it is of vital importance to reinforce the competitiveness of the industry. Against this backdrop, JETRO considers as a matter of great importance the creation of a new type of businesses, including the one that develops internationally, and industries through academia-industry cooperation, taking into consideration not only domestic cooperation between academia and industry, but also academia-industry cooperation between Japan and foreign economies. With this idea in mind, we chose as a theme of this year’s Forum the issue of “SMEs’ Business Creation through Academia-Industry Cooperation.”

Academia-industry cooperation has been drawing much attention recently. For example, the First Summit Meeting for Collaboration among Industry, University, and Government was held in November last year by the Cabinet Office, Keidanren (Japan Federation of Economic Organizations, currently Nippon Keidanren (Japanese Business Federation)), and the Science Council of Japan. At the Summit Meeting, all sides acknowledged that until then, the cooperation between academic, industry, and government in Japan had not fully advanced, but in order to reinforce the industrial competitiveness of Japan there was an urgent need to drastically promote this cooperation. This Summit Meeting was followed by a series of regional academia-industry cooperation summits held all over Japan, from Okinawa to Hokkaido. In this Tohoku area, I understand that the Tohoku Summit Meeting for Collaboration among Industry, University, and Government was held in Sendai in January of this year and gathered about 440 representatives from industrial and academic circles and from the local governments. In addition, the Second Summit Meeting for Collaboration among
Industry, University, and Government started in Tokyo just yesterday. Thus the academia-industry cooperation initiative has been advancing on an all-national scale, with focus on utilization of the potential of universities for the sake of Japan’s economy.

Participants from SMEs are the main focus of today’s forum. I invite all participants to participate actively in the discussion. It will make us very happy if this forum helps all of you, who are facing extremely hard economic conditions, to acquire some knowledge and understanding in regard to the realities of business creation through academia-industry cooperation within the APEC, and to consider establishing cooperative relations with universities and other academic institutions, which possess ample technological seeds.

Mr. Kazuhiko Nishi, President of Suma Gakuen, will deliver the keynote speech today. As all of you know, Mr. Nishi together with Bill Gates of Microsoft participated in the development of the IBM computer, and also took part in the development of Windows. After that, Mr. Nishi founded the ASCII Corporation. We expect that Mr. Nishi will refer to his experience of starting up a business and as he delivers a stimulating speech on the subject of revitalization of enterprises.

At this year’s Forum we have invited for participation ten academic representatives and managers of SMEs per each of the five economies in the APEC. We will learn specific examples of successful initiatives undertaken by SMEs from each respective economy for the establishing of academia-industry cooperation toward business creation. Furthermore, we have invited some academic representatives and managers of SMEs, from and outside of Fukushima Prefecture, who will speak on present approaches to academia-industry cooperation in Japan. In addition, we have asked Mr. Tetsuhiko Ikegami, President of the University of Aizu, to be coordinator of today’s presentations. I shall take this occasion to express my deepest gratitude to all of them. Presentations will also be made by representatives of the Small and Medium Enterprise Agency at the Ministry of Economy, Trade and Industry, of the Japan Small and Medium Enterprise Cooperation, and of the Japan Chambers of Commerce and Industry, as well as by numerous economic organizations in Fukushima Prefecture, including the Federation of Fukushima Chambers of Commerce and Industry. We will also hear a presentation by a representative of the Research Institute of Technology at the College of Engineering, Nihon University. I shall take this occasion to express my deepest gratitude to all the presenters.

I would like to finish my opening address by wishing that for all of you who have gathered here today, this Forum will prove helpful for your future management strategies and international business development.
【Remarks】

Eisaku Sato (Governor, Fukushima Prefectural Government)

It is a great honor for me to speak at the opening of the Fifth APEC SME Business Network Promotion Forum. First I would like to extend my deepest gratitude to all representatives of the APEC economies, and the industrial and the academic circles, as well as the government institutions, for your participation in the Forum. This is the first time a city different from Tokyo is hosting this Forum, so I would like to express again my gratitude to those people who cooperated to hold the Forum in Fukushima Prefecture and to bid a warm welcome to all participants.

In the present severe economic conditions, the development of information technologies (IT) and the advance of globalization is causing substantial changes in the environment for the domestic and international business activities. Under such circumstances, we consider the advancement of new industry and technology creation through cooperation among academia, industry, and government, and the promotion of industry from an international point of view as important factors for achieving sustainable development and maintaining the growth of Fukushima Prefecture in the future. Toward this end, under the Fukushima Prefecture Basic Policies for Science and Technology formulated in March this year with the fundamental objective of revitalizing the local economy through technological innovation for the creation of new industries, currently we are advancing the Project for the Formation of Intellectual Clusters in Fukushima Prefecture. This Project is aimed at the creation of new projects and venture enterprise that supports the local economy through utilization of academic intellectual resources of universities for research and development programs for medical and welfare apparatus. Therefore, the fact that Fukushima is the first local venue where this Forum established the objective of the promotion of industrial exchange within the APEC and internationalization of SMEs and new business creation is of extreme significance to us.

Today, we have invited representatives of various universities and managers of SMEs from the five APEC economies and from Japan to present their approaches in new business creation through academia-industry cooperation. Therefore, I will be very happy if this Forum turns into a wonderful opportunity for all of you to get acquainted with some case studies of academia-industry cooperation in each country, as well as to deepen the mutual exchange, and to apply the experience in the creation of new business opportunities in the future. I hope that this Forum will further deepen your understanding of the importance of academia-industry cooperation and will assist in achieving substantial results in the field of international exchange and business creation.

Finally, I would like to wish all participants good health and successful work. Thank you.
Profile of Speakers

Keynote Speech
My Theory of Ventures: Reasons for Academia-Industry Cooperation

Kazuhiko Nishi
President of Suma Gakuen
Professor in Information Studies
Professor of the Department of Arts and Information, Shobi University
Visiting Professor of the Massachusetts Institute of Technology
Founder of ASCII Corporation

Profile
Kazuhiko Nishi participated in the development of IBM computers together with Bill Gates of Microsoft Corporation and engaged in the research and development of MS-DOS, and Windows. He subsequently developed the handheld PC and MSX PC, and was awarded with the New Product Prize by the Nikkan Kogyo Shimbun, Ltd., for his development of an MPEG encoder. In founding ASCII Corporation, he became the youngest company president in Japan to have achieved annual sales of 30 billion yen in the publishing and software business. He developed the unique publishing business that specializes for the first time in Japan in personal computing with the launch of the monthly PC magazine, the “Monthly ASCII.” He then published the “Weekly ASCII,” which became the first weekly PC magazine in Japan that sold 300,000 copies a month.

Activities
He has been teaching practical business management at such universities as the graduate school of Saitama University and Miyagi University, making the most of his experiences as a venture capitalist. He is also researching a multi-lingual translation machine for the United Nations University, Institute of Advanced Studies (UNU/IAS) and is working on a project in cooperation with research institutes from 13 countries to develop automated translation of the official languages of the 189 members of the United Nations. In addition, he is conducting research at the Media Laboratory of the Massachusetts Institute of Technology on how to support the dissemination of information in developing economies, as well as research and experimentation on the realization and demonstration of ultra-low-cost computers, satellite bases and electronic money.

Coordinator

Tetsuhiko Ikegami
Dr. of Engineering
President, The University of Aizu
Trustee, National Institute of Advanced Industrial Science and Technology
Special Advisor of the Council for Science and Technology Policy, Cabinet Office
Member, Council for Science and Technology, Ministry of Education, Culture, Sports, Science and Technology

Profile
Tetsuhiko Ikegami, after receiving his Ph.D, from the Graduate School of Science and Engineering of Tokyo Institute of Technology, and working as an assistant researcher at the institute, joined Nippon Telegraph and Telephone Corporation (NTT), where he served as a senior vice president and Head of Basic Research Laboratories, before being appointed President of NTT Advanced Technology Corporation (NTT-AT). Since 2001 he has been serving as the president of the University of Aizu. In 1994 he was appointed Chairman of the Institute of Electrical and Electronics Engineering and Laser and Electro-optics Society of the United States (IEEE/LEOS). He is the recipient of the Achievement Award of the Institute of Electronics, Information and Communication Engineers, the Special Contribution Prize of the IEEE/LEOS, and the IEEE Millennium Medal.

Activities
He has contributed to research into optical communications technologies, in particular semiconductor lasers and their improvement and enhancing their durability. His current interests range from nano-technology to information technology (IT) and he is playing an active role as a fellow of IEEE, the Optical Society of America (OSA) and the Institute of Electronics, Information and Communication Engineers. He also served as a member of the formulating committee for the Science and Technology Basic Plan, and in his role as a promoter of academia-industry-government cooperation, he was a major force behind the creation of the Project for Formation of Intellectual Clusters in Fukushima Prefecture. In particular, he has ample opinions on regional development through human resources development and new technologies, based on his own rich experiences.
U.S.A.

U.S.A. is said to be the origin of academia-industry cooperation. It is also said that one of the supporting factors for its economic boom during the 1990s was the academia-industry cooperation, which was activated by the enactment of the Bayh-Dole Act. With technology transfers from universities, venture companies sprout up particularly in the IT and bio sectors. They played a significant role in job creation and also brought about various innovations. Silicon Valley, the birthplace of many prestigious high-tech ventures, remains the focus of world attention as a model for new business creation.

Chris Constantinou
Professor, Stanford University

【Profile】Christos E. Constantinou was born in Limassol, Cyprus. After completion of his undergraduate education in Electrical Engineering in London, he moved to California where he obtained his Ph.D. in Biomedical Engineering at Stanford University. He then joined the Department of Surgery (Urology) and is currently a professor. His basic research interests include a) influence of testosterone and estrogen on micturition reflexes, b) effect of hormones on the biomechanics of urogenital tissues, c) upper and lower urinary tract pharmacology, and d) biomedical engineering, while his clinical interests are a) devices for the conservative treatment of incontinence, b) MRI and ultrasound imaging and imaging processing, and c) urodynamics.

He established the first urodynamics laboratory at Stanford where routine clinical evaluations of bladder and urethral function were carried out. Outside the university he is interested in the promotion of technological innovations by the government/industry collaborations as well as by university and industry.

【Activities】During the last 30 years he was privileged to have had the support of research scholars and postdoctoral fellows from Japan, Korea, Germany, Denmark, Greece and many other countries who worked in his labs at Stanford. The largest number of scholars originates from Japan. He visited Akita for the first time in 1975 and since then he has been a frequent guest lecturer in many Japanese cities. During the last year he spent more than 9 months of sabbatical in Fukushima and Koriyama collaborating with colleagues who have in the past carried out basic research at Stanford in his laboratories.

Gerald W. Timm
CSO (Chief Scientific Officer), Endocare, Inc.

【Profile】Gerald W. Timm is a scientist, inventor and entrepreneur who has repeatedly created value for investors in the urological device industry as a co-founder of Mentor Corporation and American Medical Systems and a founder of Dacomed Corporation and Timm Medical Technologies. Upon completion of his doctoral dissertation in engineering, he joined the faculty of Neurology at the University of Minnesota Medical School where he conducted research on the neurological aspects of genito-urinary disorders. This led to the development of technological solutions to urinary incontinence and erectile disorders and to the subsequent formation of the companies mentioned above. He has been part of several academic-industrial cooperative arrangements.

【Activities】Endocare, Inc., a leading medical device company with 150 employees, develops, manufactures and markets urological healthcare products and technologies. The company’s focus is on the diagnosis and treatment of prostate cancer and benign prostate hyperplasia. It is also developing innovative stent technologies designed to provide relief for prostate patients. In February 2002, the company expanded its urological product offerings by acquiring Timm Medical Technologies, Inc.
Singapore

Singapore promotes a policy to transform its economy from a “hub of commerce” to a “knowledge-based” and “innovation-driven” economy, in order to avoid the hollowing out of industry caused by the transfer of production bases to other economies by multinational companies seeking to reduce costs. In particular, for SMEs, which are the foundation of the industrial economy, support systems are being enhanced through such programs as the “Local Industry Upgrading Programme” and the “Technology for Enterprise Capability Upgrading Program,” and efforts are also being made in cooperation with multinational and large corporations and universities and research institutions. Universities and research institutions have traditionally been actively involved in cooperation with industry and recently have seen an increasing number of examples of successful cooperation with SMEs.

Lee Loke Chong
Deputy Executive Director, Singapore Institute of Manufacturing Technology (SIMTech)

Profile
Lee Loke Chong is currently Deputy Executive Director (Research) as well as Director of Research Liaison Office, Singapore Institute of Manufacturing Technology (SIMTech). Prior to this appointment, he spent thirteen years with the Department of Mechanical and Production Engineering, National University of Singapore (NUS), where apart from teaching and research, he carried out consultancy projects for the industry. He has published over 100 papers in journals, books and conferences.

He obtained his BEng (1st Class Honours) from the University of Malaysia. After a brief spell with a heavy equipment company and an M&E consulting firm, he obtained his M.Sc. (with distinction) and Ph.D. from the Imperial College of Science and Technology, University of London. He then did some post-doctoral work at the Cranfield University before assuming his academic position at NUS. His research interests are in Electro-Discharge Machining, Metal Machining, Manufacturing Management and Technology Management. He has participated in a number of projects with the Asian Productivity Organisation on technology development and transfer. He sits on a number of committees in precision engineering, aerospace and marine technologies. He has chaired several international conferences in Precision Engineering.

Activities
SIMTech is Singapore’s national applied R&D institute in manufacturing technology. It was formed in 1993 to enhance the competitiveness of Singapore’s industries through the generation and application of advanced manufacturing technology. To date, it has completed more than 600 projects for 400 companies, an affirmation of its success in collaboration with industries.

Lee Boon Leng
Vice-President, MicroFab Technology (S) Pte Ltd.

Profile
Lee Boon Leng is currently the Vice-President of Sales & Marketing and Technology Development in MicroFab Technology (S) Pte Ltd, a wafer bumping subsidiary of Ellipsiz Limited. Ellipsiz is a public-listed company in Singapore that provides engineering and advanced packaging solutions to the semiconductor industry in Asia.

He joined Ellipsiz in 1995 from TECH Semiconductor as a Business Manager in the Equipment Division and then was later tasked to set up MicroFab Technology by developing its own wafer bumping technology and brings it into commercialization. Today, MicroFab Technology has passed through the journey of technology development, customers’ qualifications and is in full production at its ISO9002 and QS9000 certified facility serving global customers that have advanced IC packaging requirements. His current portfolio of worldwide sales & marketing has sales offices in U.S.A., Europe, Japan and Asia-Pacific reporting to him. He is also responsible for mapping out the technology directions and roadmap of the company and ensures its timely rollout to meet the ever-changing industry needs.

Activities
He obtained a Bachelor and Master degrees in Electrical Engineering from the University of Arkansas, U.S.A., in 1990 and 1992 respectively and has been in the forefront of the semiconductor industry the last ten years. As a reservist, he holds the rank of Captain in the Singapore Armed Forces.
Malaysia

Malaysia promotes a policy of transforming its economy into a knowledge-based economy (K-economy) by establishing such facilities as the Multimedia Super Corridor (MSC). Its efforts towards the promotion of academia-industry cooperation started in 1990 with the formulation of an action plan by the government. In an environment in which multinational companies are seeking cheaper labor force, supporting measures has been developed with the aim of fostering SMEs with international competitiveness by high technical expertise. Academia-industry cooperation by SMEs is one of the major issues and the government created measures such as the establishment of science parks and development of relevant legislations including amendments to the education act to promote curriculums that incorporate voices and opinions from the industry circle.

Tan Sin Leng
Associate Professor, Multimedia University

【Profile】 Tan Sin Leng received his B.Sc. from National Taiwan University, M.Sc. from Ottawa University, and Ph.D. from University of Illinois. He joined University of Malaya in 1974. In 1999, he joined Multimedia University as an associate professor. Field of specialization includes Mathematics Analysis and Geometry. Since January 2002, he assumes Head of Business Development Unit in Multimedia University where he promotes the university e-management system to small and medium companies in Malaysia. He also promotes collaboration between Multimedia University and some overseas institutions including Arthur C. Clarke Institute of Modern Technologies in Sri Lanka.

【Activities】 Multimedia University, a private university formerly known as Universiti Telekom (Unitele), takes the role of supporting the growth and success of the MSC project. Since early 2002, the University has been working with IT Driven DotCom to form a partnership to better serve the country by providing various competency courses for the working professionals.

Jeffrey Phang
CEO, IT Driven DotCom Sdn Bhd

【Profile】 Jeffrey Phang holds a Master Degree in Computing from De Montfort University in United Kingdom. He is also a Fellow member of the Association of Chartered Certified Accountants (UK) and the Association of International Accountants (UK). He created the Competency-Matrix for knowledge workers. This new methodology provides a structured pathway for traditional workers to transform themselves into a new generation of IT-driven knowledge workers. Training modules from the Competency-Matrix are endorsed and moderated by the Multimedia University. He is currently active in training and in consulting with companies to transform themselves into an adaptive and knowledge driven companies. He is a content facilitator for www.k-workers.net a website dedicated to the development of Malaysian knowledge workers.

【Activities】 IT-Driven DotCom is a company that specializes in training, development and research on K-economy issues. The company also initiated the K-Readiness national survey, which is endorsed by the Malaysian National IT Council and supported by various government agencies and trade organizations.
Japan

Shinzo Enomoto
Professor, Chiba Institute of Technology

**Profile**  Shinzo Enomoto received his Ph.D. in Engineering after completing his doctorate in industrial chemistry at the Graduate School of Science and Technology of Chiba University. He has served as a member of the International Strategic Research Committee in Fabricated Materials Industry, as an executive committee member of the International Conference on Precision Engineering of the Japan Society for Precision Engineering (JSPE), a technical adviser to Chiba Prefecture, and at the Singapore National Production Technology Research Institute. His current positions include a director of the Society of Project Management (SPM), a provisional committee member for the Evaluation of Technology of the Ministry of Economy, Trade and Industry, a “techno-doctor” of the Chiba Prefectural Industry Vitalization Center, and a representative of Singapore TWO.

**Activities**  He specializes in the engineering in general, particularly technology, life sciences and information sciences, and projects to manage these fields. He is involved in academia-industry cooperation with the aim of invigorating businesses through regional technology development. Some examples of the research in academia-industry cooperation include the development of “fish collagen” to help the anti-aging of skin, and which also prevents osteoporosis and arthritis.

Tatsuya Niwa
Executive Advisor, Miyagi Kogyo Co., Ltd.

**Profile**  Tatsuya Niwa graduated from the Faculty of Economics of Hitotsubashi University and joined Miyagi Kogyo Co., Ltd. (a footwear production company) in 1969. From 1989 he served as the President of the company and in 2001 became executive adviser. In collaboration with Professor Kazuo Hokkirigawa of Yamagata University (currently a professor of Tohoku University), he has developed “slip-proof shoes”, using “rice bran”, and within the prefecture and the Tohoku region this invention has been well received.

**Activities**  An oil manufacturer of Yamagata Prefecture, who had been troubled because rice bran that had been used as feed was losing its position to imported feed, turned to Professor Hokkirigawa of Yamagata University for an effective use for rice bran (Prof. Hokkirigawa specializes in friction research), and with the advanced technology of Miyagi Kogyo Company Ltd., he was successful in developing a special type of shoe sole. With its long experience in SME management, Miyagi Kogyo’s motto is to develop products from the consumer viewpoint and considers academia-industry-government cooperation as an important means of development of regional industries.
Shigeaki Tsunoyama
Professor, The University of Aizu

【Profile】Shigeaki Tsunoyama graduated from the Department of Physics of the School of Science of the University of Tokyo, and received his Ph.D. in Engineering from the Faculty of Engineering of the same university. After joining the research institute of the Nippon Atomic Industry Group Co., Ltd., he moved to the United States for joint research with General Electric on two-phase flow, and in 1985 was the recipient of the Atomic Energy Society of Japan Technical Prize. After having served as Technical Supervisor in the Atomic Energy Business Division of Toshiba Corporation, as a part-time lecturer at the School of Engineering of the University of Tokyo, and as a fellow of ATEL Corporation, in 2002 he was appointed a full-time Professor at the University-Business Innovation Center of the University of Aizu. He is also currently serving as a member of the Examining Committee for the Coordination Funds for Promoting Science and Technology at the Ministry of Education, Culture, Sports, Science and Technology.

【Activities】The University of Aizu is the first university in Japan to have specialized in computers (school of computer science and engineering) with the objective of nurturing computer scientists. The university’s University-Business Innovation Center is a core institution for academia-industry cooperation that aims to promote joint research with the private sector and support technology in regional industries. He has rich knowledge and experience over the course of many years as a cutting-edge engineer in the private sector and was invited to become a full-time Professor at the University-Business Innovation Center of the University of Aizu in order to promote academia-industry cooperation.

Yoshibumi Kawauchi
Senior Managing Director, Aizu F-COM Co., Ltd.

【Profile】Yoshibumi Kawauchi graduated from the Department of Economics of the Faculty of Economics of Tohoku Gakuin University and joined Fukushima Facom Center Co., Ltd. (currently F-Com Co. Ltd.). After serving as an executive director for the company, he was appointed senior managing director upon the establishment of Aizu F-Com in 1999. Responsible for planning, designing, development and operation of computer systems, he is advancing in-house development of business package software towards the creation of new markets. He developed in 2001 a new learning system for people with intellectual disabilities, called “F-TALK system,” in cooperation with Professor Nikolay Milenkov of the University of Aizu.

【Activities】Aizu F-Com Co., Ltd. is an IT-related company that manufactures and sells systems integration (planning, designing, development and operation of computer systems, and sales of system devices), and in-house-developed package software (e.g. Elderly Health Care Recipients System and the Ticket Issuance System). F-Com also participates in the Joint Research Project for Demonstration of Intellectual Clusters in Fukushima Prefecture and is currently seeking new business development in the medical and welfare markets.
Sadao Omata  
Professor, Nihon University

**Profile**  
Sadao Omata completed his master’s degree at the Department of Electrical Engineering at the College of Engineering of Nihon University, and received his Ph.D. in Engineering. From 1992 to 1993 he was a visiting researcher at the Faculty of Medicine of Umeå University in Sweden, followed by a time as a visiting researcher at the School of Medicine of Stanford University in the United States of America. His field of specialization is medical engineering and applied electronic engineering. He has written approximately 100 papers and published 12 books (including jointly authored volumes) and has served on various committees and councils. In 1997 he received the Nikkei-BP Technology Award for “Development of a Palpation Probe for Endoscopic Surgery.”

**Activities**  
He drew up a plan for a hospital for research and was directly involved in the establishment in April 2002 of the Worldwide Research Center for Advanced Engineering and Technology (NEWCAT) of the College of Engineering of Nihon University, which is equipped, for the first time in Japan, with a medical operation room for research within an engineering-related university. Over the past ten years, he has been involved in joint research with 20 medical-related universities in Japan and overseas concerning the development of new examination and treatment equipment. In addition, from his early days, he has contributed to the development of regional industry as a researcher who is supporting R&D in SMEs. He has played a leading position and as such has made a great contribution in facilitating academia-industry cooperation.

Yasuo Tamanoi  
President, P&M Co., Ltd.

**Profile**  
Yasuo Tasmania, after working for Rhythm Watch Co. Ltd., and Rhythm Machines Co., Ltd., established P&M Co., Ltd. in 1998, with the aim of creating a development-based company that would manufacture products reflecting the consumers' needs and would continue to advance. Through joint research with the College of Engineering of Nihon University (Professor Sadao Omata), a small-size, high-density, cylinder-type linear actuator was developed. Being an expert in nano-technology, he holds many patents and is constantly being commissioned by large corporations to conduct research on experimental components.

**Activities**  
P&M Co., Ltd., is one of the few high-precision SMEs that specialize in machinery equipment for metal processing, the development, designing and production of components and parts for such machinery. It also engages in cutting processing by machining center, wire EDM (electrical discharge machining) through the manufacture of high-precision wire EDM machines and grinding processing through CNC high-precision flat grinders. In particular, P&M has an established reputation in metal processing that requires highly-advanced technologies, and in the design and manufacture of rationalization tools.
China

From the early 1980s, the Chinese government has actively been supporting academia-industry cooperation with the aim of integrating R&D and production in order to develop the economy. The Zhongguancun Science Park, which is known as the “Silicon Valley in China,” is a global intellectual area in which there is a concentration of 68 universities, including Peking University and Tsinghua University, 213 research institutes and more than 8,000 domestic and overseas companies. This park is producing more and more high-tech venture companies, mainly in the IT sector. The trends for academia-industry cooperation for which this park is a model are now spreading across China as a whole and are supporting technology innovation in China.

Chen Hongbo
Deputy Director, Tsinghua University Science Park Development Center

【Profile】Chen Hongbo graduated from Tsinghua University, and then earned a Master in Engineering from Asian Institute of Technology in Thailand. He taught at the Tsinghua University as a lecturer, and served as General Secretary of the Governor of Shanxi Province. He worked in T.M. Group of Companies in Bangkok from 1992–1995 and in NEC Australia from 1996–2001. In 2001 he became Deputy Director of the Tsinghua University Science Park Development Center, and mainly responsible for International Affairs. He is in charge of the setup of the International Business Incubator in the Park recently.

【Activities】Tsinghua University proposed to set up Tsinghua Science Park in 1993 in order to accelerate the industrialization of scientific & technological achievements and to serving function. Beijing Municipal Government approved the proposition 1994. It offers space and services for incubating high-tech startups, accelerating research and development activities, cultivating entrepreneurs and commercializing scientific achievements.

Ye Bin
CEO, V2 Technology Inc.

【Profile】Ye Bin graduated and earned Master of Electronic Engineering from Tsinghua University. He then took part in the 2nd Business Plan Competition of Tsinghua University in May 1999 and received “Excellent Award.” Seizing the opportunity, he then founded V2 Technology, Inc. He was awarded “Star of Startups” by Tsinghua Science Park in 2002.

【Activities】V2 Technology Inc. became one of the first group of incubates in Tsinghua Pioneer Park in August 1999. The company, with 30 employees, develops software that focuses on advanced real time voice, video and data communication over the Internet. From 1999–2000, several venture capital firms including AsiaTech Ventures and PCCW Hong Kong Telecom invested the company with investment over US$ 1.2 million. One of the company’s products, V2 Communicator, has been the most popular Internet telephony software among Chinese users.
Korea

In Korea, academia-industry cooperation has been promoted based on the recognition that it is necessary to promote the development of advanced technology through amalgamating the management skills of companies with the technological prowess of universities in order to maintain international competitiveness in the 21st century. For example, the central government and local governments have jointly established the Korea Association of Small Business Innovation Research with a fund to support the independent cooperation systems for technology development between SMEs and universities. While a number of challenges remain such as the lack of awareness at universities and lack of human exchanges between universities and companies, international cooperation is gradually appearing, such as the establishment of a joint research institute by Hanyang University, Fudan University in Shanghai, and a private company.

Kwack Kae Dal
Professor, Hanyang University

【Profile】Kae Dal Kwack received the B.S. and M.S. degrees in electronic engineering from Hanyang University in Seoul, Korea, 1974 and 1976, respectively. And D.E.A. and Dr. degrees in electronic engineering from Institute National Polytechnique in Toulouse, France, 1979 and 1980, respectively. Since 1981, he has been with the Department of Electronic Engineering of Hanyang University where he is currently a professor.

【Activities】His current research interests include analog circuit design, memory design, display driver circuit design and ESD (Electro Static Discharge) circuit simulation. This year, he made an agreement with Fudan University (Department of Microelectronics in Shanghai, China) for establishment of Joint S.C research center in order to have collaborative research relationship between the two economies. He has been a secretary-general of IEEE (Institute of Electrical and Electronics Engineers) Seoul Section since 2001. He has been the head of Hanyang-Fudan University Semiconductor Design Laboratory.

Chung Young Wook
Vice-President, Moditech Co., Ltd.

【Profile】Chung Young Wook majored in business administration in Hosei University in Japan and joined HYUN Commercial Company as a member of Sales and Marketing Department in 1995. After coming back to Korea in 1999, he joined JISAN Trading Company as a president of branch office in Japan. He has then taken the position of Vice-President in Moditech Co., Ltd. in 2001. At present, he is making effort with the President in company’s management and extending its overseas business.

【Activities】Embedded System, Bluetooth and Embedded Linux solution are the main business projects. Moditech has finished to develop stack and profiles for several applications already and currently is developing some application solution with various microprocessors. In consortium with some universities and related companies, some Bluetooth projects are under processing. Moditech is a member of the Bluetooth Industry Council.
Kazuhiko Nishi (President of Suma Gakuen)

The theme of my speech today is venture business and academia-industry cooperation. I understand that I was picked as today’s speaker primarily because of my uncommon background. I was an engineer in my 20s, designing a personal computer at Microsoft. After returning to Japan in my 30s, I went into editing a magazine for computers, the development of software and then semiconductors. In my 40s, I obtained a doctorate and started teaching at a university. Now, I stay in the United States for a week each month, and for the rest of the month I teach at a university and a high school in Japan. Currently, I am working on a plan to establish a junior high school with computer education at the core of its curriculum.

First of all, I would like to talk about what a venture is. I think a venture has nothing to do with the size of a company but represents the state of affairs or the frame of mind of that company. We are now in a recession in Japan. When we consider why and how mature companies, large, small or medium-size companies alike, are slipping into a business slump during the recession, there is one standard way to describe these companies. I think they are thinking only about “what products will likely sell well now?” In this top-down, one-way communication, they are imposing company orders on employees in total disregard of their individual abilities, characteristics, and qualifications. Simply put, there is absolutely no dialogue with employees. No dialogue means no harmony, and everybody is put under a stressful situation, which makes it impossible to draw out the strong abilities of individual employees and leads to an utter waste of energy.

The pitfall for a big business or the mistake a big business tends to make is its inability to adapt to the changing times because it takes considerable time to bring an idea of a new product into actual production and marketing. Charles Darwin in his evolution theory said, “The surviving species was not the large, strong or omnipresent species but the species that could respond to the changes.” Thus, big businesses that cannot respond to the rapid changes in the world around them will find themselves in dire straits. Even when they are absolutely sure their new products will sell well, other companies will copy them and put similar products on the market a year or two later. So, I think the only way they can survive is to become pioneering companies that can constantly create new things every time their products are imitated by others. Most companies develop products by considering what sort of products will be in strong demand and what products users are expecting to find. But new venture businesses should be thinking about what they can do to “develop new products to satisfy the needs of consumers” by taking advantage of their expertise and strength. I think this is the venture-business way of thinking.

I would like to go right into the very nature of a venture business. Roughly, I think, there are three things that make a venture business a true venture.

The first thing is whether the theme of that venture business is top quality by world-class standards, in other words, whether it can pursue and sharpen its expertise by continuing to do what it likes to do and what it is good at doing, and whether it is fully confident about competing with other companies or other people. The second thing is that you should love what you do at the venture business. If you love that work, you naturally work long hours. It is the question of whether you can skillfully manage these long
and intensive hours of work and whether you can enjoy long hours of work. The last thing is that just to keep working does not ensure the sustainability of work. A venture business rarely succeeds in a year.

Before the creation of a venture business, there is a period of paying your dues for two, three, or five years, and only after this period comes a successful launch of a new business. So, you must not only keep working but also get a recharge. You need to give yourself the energy to open up a new chapter. I think the lack of any of these three things almost ensures a failure of a venture business. Now, let me expound on each of the three things.

The first is the pursuit of expertise. This means clarifying the strength of your own venture. For example, the changeover from analog to digital does not make your company distinctive. At present, all Japanese home electronics, audio and video equipment manufacturers are going digital. But going digital alone only means following the crowd and obscures the corporate image of individual companies. What is important, I think, is to clearly underscore the strength of your own company and maintain the posture of further sharpening that strength. In other words, when you sound the charge, you should know your stuff, the way to use those weapons, supplies, and food, and it is also necessary to know your own weaknesses.

So, as I said earlier, if you keep asking yourself, “What can we do?”, “Does that product sell?”, “What is needed to let that sector grow?”, “What needs to be taken care of?”, and “What else should we be doing?”, you do not have to worry about being imitated by other companies or overtaken by other companies. You can achieve great performance with little effort for a subject you are good at, but you cannot turn in a good performance on a subject you are not so good at unless you put in considerable efforts. There is no time to invest time and funds on efforts, because many other companies are frantically competing in similar fields.

For example, not to be content with the changeover from analog to digital, you need to cope with digitalization in your own unique way and thoroughly gain mastery of it. There was a Japanese TV show called “The Iron Chef.” I believe a venture business must turn itself into “The Iron Chef.” Then, the world is convinced and consumers place high expectations on that company, while the company offers dreams to meet consumers’ expectations. In short, I think the era when all we have to do is to provide excellent products to consumers is over. Consumers are not buying things only for their good quality or for cheap prices. This is clearly being demonstrated by the latest business slump. Companies that have been selling cheap products with good quality are no longer enjoying strong sales. What are selling now, it seems to me, are products that offer dreams on top of quality, and that make users feel happy by buying them. Products of that sort of taste are selling well. Thus, companies must pursue to become groups of specialists.

In other words, companies must transform themselves from generalists into specialists. Until now, Japanese companies have found the virtue of corporate management in overcoming their weaknesses. From now on, however, we must further develop and master areas of business we are good at, leaving weak spots to others. We can enjoy the time spent on doing what we are good at. By doing so, you can avoid a buildup of stress. And your growth will immediately lead to the growth of your company, and consequently to the growth of society as a whole. Therefore, it is crucial to exactly understand the strength of your own company and your own employees, and let that strength grow even stronger and let individual employees transform themselves from generalists into specialists.
What is needed next is the division of roles and the definition of those roles for these specialists. If the division of roles is mishandled, the ball passed would fall onto the floor, through the gap between one responsibility and another. The ball may come back rebounding, but if it is a glass test tube that drops, it would break apart. If it is computer software, a bug would stall the entire system. So, for the smooth functioning of the company, management should adequately define the division of roles among specialists so that they have a little overlapping of responsibilities to ensure the passing of results without fail.

Regarding the second point of time management, I believe the essence of entrepreneurship lies in meeting the challenge in the field of strength of your business. If you try hard and sharpen your competitiveness in the field of strength, the world turns its attention to you. Time passes so quickly when you are dealing with the field of strength. You are amusing yourself in tackling targets in the field of strength. On the other hand, time passes very slowly if you have to deal with the area of weakness, and you have to spur yourself to redouble and treble your efforts in doing so. All of us are given the equal time of 24 hours a day and how to use this time will decide the outcome. For example, those who are good at languages find studying languages interesting. But those who are not good at languages have to make determined efforts to learn languages. I think entrepreneurs need to learn about time. Most of us cannot shake off the previous habit of using our time. In this time of change, the concept of time is also changing and we cannot afford sticking to the old way of using our time. By setting our sight on the future, it is important that we gather information beforehand on products that are likely to sell well and on how they are likely to sell. Learn and get the full picture, and then put efforts into the field of strength.

The third thing has to do with the recharge of energy. In a time of rapid change, positive thinking brings fascinating and challenging opportunities. But negative thinking brings only anxieties. Can our company survive? Is our company falling behind the times? We never know what’s going to happen next. We could step into either of two totally different worlds, the world full of dreams and hope and the world of dismay. If we can look at a past failure in a positive light, we can say we had a valuable experience and we learned a lot from that experience. But if we look at the past failure in a negative light, all we have is anxiety that the same thing could happen again. So, we could have either possibilities or fears. If you look at your employees in a positive light and try to draw out their potential, you come to find good qualities in your employees, despite some bad ones, and feel gratitude toward them. But if you look at them in a negative light, all you get is anger and dissatisfaction that nobody has can-do spirit and your company has no competent employees. Negative thinking saps the energy of the mind, leads to a negative way of management, and creates a company that cannot grow. And these negative developments will make you all the more negative toward everything and cause you to repeat negative things. This is unhappiness of your own making.

Now, let us consider what will make a venture business successful. I will talk about the short-term strategy, the medium-term strategy, and the long-term strategy. The short-term strategy is just to sell products as long as they are selling, whether your products are being imitated or you have to imitate products of other companies. The medium-term strategy is to churn out a lot of new products to establish the corporate image: “That company is generating new stuff constantly.” In my view, there are many companies that are following these two strategies. The most difficult thing to do is the constant transformation of your company at your own initiative under a long-term strategy. Without totally
denying the way your company was in the past, you have to make constant efforts to change your own company. Keeping up with such efforts is the long-term strategy, the strategy to survive the changing times by changing yourself. Then, what qualifications are necessary for employees of such an evolving company? Until now, employees have been too preoccupied with doing their utmost to meet the company’s expectations of them and have been unable to realize their own merits. The important management approach from now on is to make them feel more self-confident and let them have full reign of their own individual abilities.

I think there is only one thing we have to do to overcome this recession. Ideas abound on how to do that, including spending more money and creating new businesses. However, in my view, the only solution to tackling the basic part of the problem is the revitalization of individuals. Because individuals create businesses, these businesses create companies, and companies create the economy. Thus, in order to revitalize the economy, we have to revitalize companies. In order to revitalize companies, we have to revitalize businesses. In order to revitalize businesses, we have to revitalize individuals. The conclusion is as simple as this. In short, we have to let individuals be all that they can be.

Revitalization means the maximization of their potential. There are many ways to do that. One way is the full development of specialized expertise, and the other is the pursuit of spiritual or economic richness. They may be represented by ideas such as the quality of life and other incentives. Affluence in terms of time available may also be one of them. The Japanese term “kyoso” currently has the three meanings: competition, cooperation, and collaboration for jointly creating something. I think the kyoso in all these senses can help revitalize individuals. I personally believe that the first thing I mentioned, the development of specialized expertise, is the core of the revitalization of individuals, which can lead to immediate results in a very short period of time. There are two aspects to this. One is a high degree of sophistication of expertise, and the other is the pursuit of spiritual or economic richness. They may be represented by ideas such as the quality of life and other incentives. Affluence in terms of time available may also be one of them. The Japanese term “kyoso” currently has the three meanings: competition, cooperation, and collaboration for jointly creating something. I think the kyoso in all these senses can help revitalize individuals. I personally believe that the first thing I mentioned, the development of specialized expertise, is the core of the revitalization of individuals, which can lead to immediate results in a very short period of time. There are two aspects to this. One is a high degree of sophistication of expertise, which I have been talking about for some time. But if this goes too far, we produce a “senmon baka,” or “an expert who knows nothing else but his expertise.”

When I was running my own company, I had about 1,000 employees. When I asked the human resources department to list up “those who know nothing else but their own expertise,” they produced a list of about 50 names, chosen from a workforce of about 1,000. Maybe, “senmon baka” is not the appropriate term to use, but after an examination of the list, I came to realize that the problem with those people who had gone too far in their specialized expertise was that they had no opportunity to learn about the protocol that has to be established in dealing with other people. They are capable of learning, if you take time to teach them thoroughly, but previously, they never had a chance to learn the protocol of business, common sense in business, or common sense in human communication. Without learning these things, they were able to graduate from universities, join the company, and stay there for 10 years before realizing this problem. So, I think we need both specialized expertise and human qualities. If individuals who have both of these things are put under an adequate environment, their potential will likely be fired up spontaneously to allow them to take on major projects. We have too many restrictions around us in our present society. There is an atmosphere of “can’t do” and “impossible” that could suffocate our potential. Even very young individuals full of vitality may forget about their own potential once they step into the real world and breathe this air of containment.

What was behind the postwar success of Japan? Now, Japan is agonizing. But who could have imagined a Japan that had been able to achieve one of the world’s largest economies 56 years after the
end of the war and 50 years after the signing of the San Francisco Peace Treaty? Perhaps nobody ever expected Japan to achieve the economic growth that it actually had. Today, Japan is in the midst of a recession. There should be reasons for this. Right after the end of the war, the air of society in the defeated nation imposed no restrictions on behavior of individuals. With no constraining laws yet in place, there was the atmosphere of freedom that helped people feel they could do anything they wanted. That allowed each and every one of the Japanese people to give full play to their potential. All this helped propel Japan to become one of the world’s top countries, or the second largest economy in terms of GNP, half that of the United States, notwithstanding the current recession. Looking back on that sort of freedom Japan experienced after the war, we come to realize the problems with the present-day Japan that was defeated in an economic war and is now suffering from the recession. In our minds, we no longer have that sense of freedom found in Japan immediately after the end of the war. Instead, we now have a self-restraining mindset, always telling ourselves “we cannot do this,” “we should not be doing that,” “this should not be done,” or “doing this will violate the law.” This sort of mindset is the biggest constraint on the venture spirit, and that is the problem.

I see no limits to human capacity. I believe limits are there only when we set limits on our own. Likewise, there are no limits to the success of life. Everything stops rolling when we set limits ourselves. There is absolutely no difference in cost between thinking that “we cannot do” and thinking “we must do” or thinking “we want to do.” We need to recognize that we are free to do anything in our own heads. It would cost nothing to change things that we think we cannot do into things that we think we want to do. We need to switch over from the line of thinking that we “must” do something. We must shift from the way of thinking that we must do something to the attitude that it may be better to do something, we can expect so many good things by doing something, and we want to do something. We should not set limits on our own potential. We have to think about how we can establish this mentality.

There is the term “shinnen” in Japanese. We may call it “believe” or “believe in.” Having “shinnen” or holding personal beliefs is essential to generating future possibilities and creativity. The “shin” of “shinnen” means belief, and “nen” is written as the mind of the present. So, having “shinnen” means, I think, believing in your mind of the present. Then, what should we believe in? I think we should believe in the reservoir of rich imagination and potential within ourselves. I believe the extent with which each engineer or each corporate manager can believe in this will determine the extent to which their abilities can be drawn out.

Next, let us ponder creativity. I define creativity as “sensitivity to the future.” In other words, creativity is the power to feel the future, to feel what products will sell in the future, and what will be needed in the future. Producing many things that do not sell or developing a string of useless technologies has nothing to do with creativity. In order to sharpen this sensitivity to feeling the future, we should first sharpen the sensitivity to feeling the present. What does feeling the present mean? I think it means “emotion.” People who are under constant stress feel little “emotion.” When I was running my company, I was always worried about money and had to go to banks every day. As I walked to home one day, I happened to notice the cherry blossoms around me. I did not realize the cherry blossoms were in full bloom until I happened to walk under the cherry trees. When you are gripped by stress, you sometimes do not feel anything. Conversely, when you are moved by something, you feel healed and do not feel stress. Encephalologists are now conducting research into the science of emotion. Here, I would
like to check on you with six questions:

“Have you been moved recently by the kindness of others?”
“Have you been touched by a movie or drama?”
“Have you been touched by objects of art like paintings?”
“Have you been moved by some kind of design?”
“Have you been thrilled by the amazing mechanism of the human body?”
“Have you been moved by life itself?”

If any of you here said yes to all these six questions, you are very relaxed, the rare stock to find in this recession period. If your answers were no to all of the questions, you should go home and have a good sleep. If you have about four yes answers, then you can assure yourself that you are normal. By being moved by something, you get some insight into the future.

Summing up the first half of this speech, I say that a venture business requires leadership. What then is leadership? Leadership does not mean you have a loud voice, big authority or power, or a chunk of money. Leadership means the “ability to solve problems.” In short, it is the power of imagination. Leadership is having vision for the future. I think many grownups are too anxious about the past and the future. Take a vehicle, for example. Usually, of a tankful of gasoline of 100 liters, we use 40 liters complaining about the past and another 40 liters worrying about the future, using only 20 liters for driving the present. Children do not get tired because they do not burden their brains. I thought up this story of 40 liters, 40 liters, and 20 liters after talking with my daughter. About 10 years ago, my daughter said to me, “You come home and always say you are very tired, complaining about what had already happened. And you also say you never know what’s going to happen tomorrow. You should quit saying these things.” Then, I asked my daughter how she was coping. She told me that “the only time I think about tomorrow is the day before a school excursion. Other than that, I only think about today.” She was probably in the second grade at the time. I then realized that if I quit complaining about the past and focus on the present, I can use an additional 40 liters for the present for a total of 60 liters, three times more energy can be put into the present. If I also stop worrying about the future, a further additional 60 liters can be utilized for the present. That way, I can spend each day with energy five times as powerful as I previously had.

I think it is the present that can change the future, focusing our energy on the present can change the future, and the sequences of the present form the past and at the same time shape the future. Well, thus far, I explained my basic stance toward venture businesses. Now, I would like to talk about how the government, or the APEC, through this kind of forum, can promote the venture system.

I think the venture system is an American invention. Not only venture businesses themselves, but the combination of venture businesses, venture capital, and the initial public offering (IPO) is the invention of the Americans. And this venture capital helped the spawning of new companies. The group of these newly born companies changed the industrial structure, absorbed domestic labor force, and gave a boost to the country’s international competitiveness. This mechanism for social change seems necessary in any country. Proactive adoption of the venture system, one of the largest and best social systems of the 20th century invented by the Americans, provides various countries with a means of achieving economic
prosperity. Among big businesses, some can survive but others go bust. Needs of the world determine this natural selection and there is nothing we can do about that; it may be a necessary process. But new companies and venture businesses grow to become middle-standing companies by reeducating and absorbing human resources of those companies that went bankrupt or could not survive. The wonderful thing about the venture system is the mechanism that allows the continuous generation of these processes.

It may be contrary to the government’s expectations but when individuals launch venture businesses, they are not doing so “for the sake of the nation’s industry.” We have what they call lifetime earnings. Lifetime earnings are proportionate to academic backgrounds. As the education you receive goes higher, the more you earn during your lifetime. So, people do not start working after high school but go on to universities, and some go further on to master’s courses and doctoral courses at graduate schools. Even after all these efforts, you still get only about ¥300 million, even if you save up every yen you earn without spending any after you find jobs and until you die. Under the current economic conditions, lifetime earnings may be a little less than the amount I mentioned. This income of over ¥300 million is what you can earn lawfully. There may be many ways to earn money unlawfully. If I talk about them, this symposium would be about organized crime instead of venture business, so, I won’t do that. The only way to earn a lot of money lawfully is through equities. You purchase equity stocks at low costs, obtain stock options, and sell stock holdings at higher prices. In order to realize capital gains, you have to either go public through IPOs or transfer equity stakes. I would like to reconfirm at this point that these are the principal incentives for very talented and able people to go into venture businesses.

Venture businesses may look cushy and you may be attracted to the venture spirit. But the bottom line about venture businesses is to gain the best return in your lifetime. The only way you can earn money far beyond the maximum you can hope for as salaried workers is to be successful with venture businesses. You do not have to be a founder of a venture business. You stay around the founder and obtain the status of quasi-founder, so to speak, to acquire big monetary gains. We must recognize that that is the only reality there is about venture businesses.

I personally think the global success of the United States owes to the expansion of the venture IPO market with the cool realization that the energy of venture businesses stems from expectations of huge capital gains. In particular, the successes of the U.S. biotechnology, personal computer, and Internet-related industries under the Clinton Administration in the first half of the 1990s were made possible mainly by the huge energy of talented people who were motivated by stock incentives. It would be no exaggeration to say that a cluster of successful venture companies that were born around Stanford University have been motivated by such incentives.

This brings us to academia-industry cooperation, today’s second theme. I thought about the reasons why we need academia-industry cooperation now for the promotion of venture businesses. When I consider how to bring individuals’ abilities into play, I have to ask if the corporate structure really provides an adequate environment in which to do that. With a little bit of soul searching, I believe cooperation between universities and venture businesses will serve as a major trigger or motivation for individuals within corporations to grow beyond their current limitations.

First of all, let me talk about the difference between launching a new business and developing that business as a viable enterprise, or between “management of business” and “management of business
creation.” We often hear people say that “that guy is pretty good at starting up a new business but just cannot manage to let it grow.” At the other end, we also hear people say that “that guy is utterly incapable of doing anything new, but seems good at following orders that allow businesses to grow.” In my view, those who are capable of doing only one of the two things described above are not fit for venture business. To run a successful venture, you should quit playing the lead part. A successful manager of a venture business is the one that is capable of managing both of them and can make the two different skills compatible. The industry approach to academia-industry cooperation is always the same. The three-step logic goes like this: First, “Can well sell it?”, second, “Can we make it?” and third, “Can we make money?” The industry sector’s stance must not be technology-centered but management-oriented.

The business school ranking, based on a survey by the Nihon Keizai Shimbun, lists such names as Harvard, Stanford, and Pennsylvania. Business schools teach you the skills of corporate management. They teach business administration, not economics. The problem with business schools in Japan is that universities have business schools in line with the department of economics, not business administration. Universities in the United States do not draw the line between science and arts for undergraduate schools. They offer master’s of business administration courses above undergraduate schools and expect an enrollment of students with working experiences. MBA courses are not offered in line with the department of economics. Business schools are positioned more like technical colleges to educate specialists in business administration. They are not graduate schools or ordinary master’s courses. Students graduate with the degree of the master’s of business administration. To be a scholar, you must move on and take a doctorate of business administration course.

Last Sunday, I went to the Edo-Tokyo Museum to see an exhibition on Sony and Honda, both successful venture businesses Japan can be proud of. The founders of both Sony and Honda had backgrounds in science education. In the case of Honda, an individual with an educational background in arts supported business management. At Sony, several founders with science education backgrounds jointly supported management. At both companies, the top executives, or presidents, were the genuine engineers. I call them here “otaku,” – nerd or geek – but these otaku presidents asked somebody else to look after the business management in their place. Mr. Ibuka at Sony and Mr. Honda were not the type who did not know anything about business administration, according to what I hear from people who used to work with them.

We are now in the Internet age, and the bottom line on the development of IT, in my view, is economy with time. Now that we have the Internet, the machine that can save time, on one hand, the major theme for us going forward is how to utilize time freed up by the Internet. The Internet makes it easier to look up information, send mail, and communicate, all of which in turn make it easier to set up new businesses. This is going to change our approach to work. Instead of being pressed by work, we are going after work. Extra time made available by IT will help give us more imagination and insight. I now would like to talk about the potential of distance education using the Internet. With the use of Internet-based distance education, I expect universities to develop as the places of re-education of professional people in their 30s, 40s, and 50s, wide open to society at large and not limited to students in their 20s. This is also significant in that it may offer great potential for academia-industry cooperation.

Distance education started with education and teleconferences using television broadcasting and
satellite broadcasting technologies. In Japan, it began with such services as one-on-one education using videophones, offered by English conversation class operator NOVA. I expect to see rapid growth in such areas as online conferences and e-learning. In addition to sounds and video images, IT offers additional functions such as the presentation of reference materials and the use of applications software. This has been made possible by broadband access to the Internet and the sophistication of PC technology. Because of software that can handle both audio and video data, we can now transmit sounds, video images, and various other data at low costs for their integrated utilization. Digitalized distance and simultaneous education, and virtual classrooms can now become major tools to promote academia-industry cooperation because we do not need any physical classroom facilities to accommodate students, however rapidly the number of enrollees increase. Of course, we need servers. But most servers currently installed at universities can handle these tasks. There is no cost associated with actually showing up in classrooms at universities. And we save on the cost of commuting to universities by Shinkansen bullet trains or buses.

Beyond the issue of cost, the most important thing is that we can save time required to go to a university. If we have to actually go to a university, it takes 30 to 45 minutes one way. This means we need to spend one and a half hours or even two hours a day just going to school, on top of the time needed for commuting to work. Now, we can spend these two hours sitting in front of the PC and learning. The easiest way to produce contents is to digitize lectures. A variety of software is available for testing while monitoring the extent of understanding, such as the voices of lecturers, interactive sounds, teaching materials, and applications. If we digitally record the process of real-time lectures and replay it on demand, we have instant access to the lectures regardless of time. Students can not only save time required for actually going to universities, but also can study at the most convenient time.

People who have jobs can take university lessons after they come home at night, or get up early in the morning to study before going to work. This will make a very big difference. I would like to expound on this by dividing it into three different areas. One is real-time classroom learning, or the conventional way of having lessons. The second is real-time virtual classroom learning and the third is non-real-time virtual classroom learning. Real-time and non-real-time can be substituted with synchronous and asynchronous, respectively. Asynchronous learning is also called self-learning, and active discussion is now under way about the effectiveness and appropriateness of self-learning in respective educational processes. We all recognize the merits and demerits of real-time classroom learning, real-time virtual classroom learning, and non-real-time classroom learning. All three have their own pluses and minuses, and different methods can be effective depending on the stage of education. For lifelong learning and vocational learning, I think non-real-time self-learning is important because it allows us to learn while working. We can try this out real-time as practice or practical training.

For education at undergraduate or graduate schools, real-time learning has to be maintained to keep the conventional way of education. On the other hand, it will become increasingly necessary to supplement conventional education through non-real-time self-learning. Harvard University is offering master’s and doctoral courses through e-learning. But only one or two of the 100 enrollees actually obtain a master’s degree. Though that is the reality of e-learning courses, Harvard is accepting 100 students because it needs the revenue from enrollment fees to spend on equipment and facilities at the university. At present, nobody has ever obtained a doctorate through e-learning. In a sense, we now have
the opportunity to get enrolled with a U.S. university that is normally pretty hard to enter. The question of being able to graduate or not aside, if we enrolled with e-learning courses, we can still claim we went to Harvard. Real-time learning helps raise the ratio of course completion to around 80%. The ratio of completion drops to only 50% when students are allowed to study whenever they feel like it. It means about 50% of students drop out if they are allowed to choose the time and manner of studying. But when learning hours are fixed and roll calls are made, 80% of students can finish the learning courses. So, we know real-time learning still has something to offer. In the future, it will be of importance to devise a variety of combinations of real-time and non-real-time learning.

Next, I would like to talk about the model of academia-industry cooperation. My conclusions on the subject of academia-industry cooperation can be found on this page. First, the nuance of research rooms at universities is more like the professor’s office or chair, than a laboratory. The research room of the professor itself is a window to deal with enterprises, or for its social participation. The research room is not only a place of research and learning, but also where the mentality of the professor needs to be changed to become more oriented toward social participation. The research room itself should try out for a venture business. If the research room builds strong connections and joins hands with venture businesses, they can surely count on government support. This kind of collaboration should enormously enhance the potential for development of viable venture businesses and at the same time gives the research room a greater opportunity to raise funds necessary for research activities.

The second point has to do with expanded personnel exchanges between universities and enterprises. Specifically, corporate employees with five or ten years’ working experiences should go back to graduate schools to obtain master’s or doctoral degrees. Graduate schools for their parts need to get ready to accept corporate warriors. They need to prepare the adequate learning environment for corporate employees, such as through e-learning and practical training lessons offered between 5 p.m. and 8 p.m. In exchange, graduate school students should be given an opportunity of practical training and learning at enterprises. This interactive exchange of personnel can be expected to help better identify subjects for research and production and also help enhance the quality of goods being produced. Both can benefit from these arrangements. Universities will have access to a greater pool of funds, while companies can expect to put better-quality products on the market.

The third and most important thing, in my personal view, is the enhancement of the quality of success of a venture business. I think this is the most necessary component for the future, more than the first point, the research room of the professor serving as a window for dealing with enterprises, or the second point, interactive personnel exchanges to help venture businesses to become successful.

I have several friends who became extremely wealthy because of successful venture businesses. But a successful venture business does not automatically ensure a higher quality of life for those who succeed. I will not name them, but I feel that many successful venture business founders tend to lose track of a true sense of happiness. I do not see any meaning in corporate success if it is achieved at the expense of humanity. Therefore, I would like to emphasize the need for universities to teach the quality of success backed by rich humanity. There is no point in preaching this 100 times after someone has reaped a vast amount of cash. I think we need to teach students that the success of life cannot be measured by the money they can earn. Professors can repeat this message many times while they are still poor university students. People cannot change once they become rich and secure high social positions. Many of them
would no longer lend their ear to this kind of message or would do so only for a short period. This is the fact of life. 

Lastly, this is a message to those who are planning to launch into the world of venture business. Here is my idea about preparations for the start up of a venture business. I started my enterprise while in school and also found a job with an American company in the United States when I was still young. If you want to start a venture business, the first thing you should do is to find a job with a company in the industry you are planning to venture into in the future. You should keep that job for at least five years, make a lot of friends there, and try to understand the specialized field broadly and deeply, not narrowly and deeply. You need to know your area of specialization as broadly and deeply as possible and also understand how the world is shaped as widely and shallowly as possible. If you are an engineer, you need to learn business administration. Unfortunately, we cannot ask students of business administration to become engineers. Then, you need to save up money that can carry you through a period of about three years and also seek your family’s understanding to win them over to your side. You need to be well prepared to convince your wife and your parents to the extent that they are willing to offer whatever assistance they can provide to you.

Carl von Clausewitz, the 19th century military strategist, wrote a book, “On War.” In that book, Clausewitz said the most important thing needed to win a battle in a war is the mental strength of the top leader. In business, the management skills of top executives and the confidence, pride, can-do spirit, and corporate loyalty of individual employees are all important indeed. Yet, the mental strength of top executives is of paramount importance. If applied to venture businesses, the most important thing is the mental strength of a leader who holds up the banner of a venture business. Then, what is this mental strength? I think it is the firm determination of a leader that “I am going to create a company of my own some day” and “I am going to be a big success some day.” I think the approach to a venture business is the trinary process. In addition to the choices that you start up a new company or you decide against doing so, there is the last and third option: You want to go ahead but choose not to go ahead for the moment. The only thing you need then, is making decision.

Finally, I gave some thought to the problem of “the future of work.” This is not something limited only to venture businesses but the common theme applicable to all venture-like companies. Most of us are working under much stress for a living, for families, or for employer companies. In my view, those who enjoy work as something that makes their life meaningful are still a minority. But I expect them to be a majority in the future. If we lose any leeway in our mind, we also lose leeway in our life and feel always pressed by work. When we come to think about it by going back to basics, our future society would hit the ceiling sooner or later if work remained stressful because stress is not something we can enjoy. We cannot expect to develop our abilities by doing what we do not like. Then, companies do not grow, and the society as a whole does not grow. But if we do something we can enjoy, we do not fail to enhance our abilities and grow. For example, look at video games children are playing and some hobbies for adults. They are able to manage those difficult things because they have the passion for doing them. I think the pleasure of doing things they like does the job of spurring them to learn.

So, in the future, if our attitude toward work changes, the world will also change. If a majority of people come to enjoy their work, it will be a wonderful development. In order to realize that, we need to do some rethinking, society as a whole needs to do some rethinking, and social institutions need to go
through realistic reforms. We now have educational programs designed to enhance vocational abilities and raise productivity by as much as 30%, as well as software for time management. But we do not yet have an educational program that is geared to go deep down to the basic human ability to focus on what we enjoy doing. I think we really need to develop an educational program to make our work enjoyable.

I think we need to do some rethinking about social evaluation, shifting away from money making to enjoyable work; and people who are leading a happy life should deserve social acclaim. If we are enjoying our work, profits will follow. Then, what is enjoyable work? I think it means getting things done by making the most of our given time and responsibilities. Responsibilities, power, and the size of companies that individuals work for vary. So, within the given scope, making the most of our given time and responsibilities should define enjoyable work in the future.

Today, I spoke about venture businesses, why universities should get involved in venture businesses for the input of some human aspects, and the future of work from that perspective. I would like to thank the secretariat staffs, who organized this forum for giving me this opportunity. Thank you very much.
【Questions and Answers】

Questioner

You pointed out that the founding presidents of both Sony and Honda had backgrounds of science education. My question is whether you think people with educational backgrounds of arts are incapable of launching venture businesses. I was reading the biography of Rockefeller yesterday, and he had said that a company president does not have to be a scientist and the president can always hire scientists he needs. So, I think people with educational backgrounds of arts are capable of establishing venture businesses. Could you clarify your opinion on this?

Kazuhiko Nishi

It is a very good question. As you pointed out, people with educational backgrounds of arts can always hire qualified engineers. But the fact that you can hire qualified engineers is different from whether you can really launch a venture business. Maybe, it works in such fields as steel making, finance, or oil business. However, I still think it is a very tough endeavor to hire scientists or engineers who have the world’s only ideas and expertise of their own, and foster those seeds to grow into viable venture businesses. I am not thinking about blasting some hits myself. When I think about so many engineers who could have had their day if only they had received adequate education about business administration, I strongly feel that what we most need to do now is to provide engineers who have backgrounds of science education with education on business administration.

At Waseda University, my alma mater, the department of industrial administration and management systems engineering accepts students with the lowest of high school grade deviation values among all the departments of the university. The department of physics and the department of architecture have the highest deviation values. I think some students choose the department of industrial administration and management because it has the lowest hurdle to clear to enter Waseda University. I apologize for saying this to any of you here who happened to graduate from that department.

The point I want to make is that some engineers tend to take business administration lightly. We have to teach engineers that this should not be so and change their mentality so that they pay greater attention to management issues. I think this is one prescription that should help revitalize Japanese industry. It may also be an interesting idea to offer courses to those with educational backgrounds of arts to teach them how to find golden boys from among engineers with education backgrounds of science. This may be the subject best left to successful business managers with educational backgrounds of arts. So, I am not saying people with educational backgrounds of arts are incapable of starting up venture businesses. What I wanted to say is that what we can do immediately, or possibilities and opportunities we seem to have lost for the moment, may be found in areas I just mentioned.

Questioner

I would appreciate if you could tell us how children are doing in the United States. I have two daughters, a first grader and a fourth grader. The other day, I went to their primary school, which has a total of about 200 students. In classrooms, there were 20 desktop computers and about a dozen notebook computers. But schoolteachers cannot create homepages. Then, I had an opportunity to take part in a
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forum on academia-industry cooperation sponsored by Fukushima University. There, I had doubts, that maybe Japanese universities are not teaching students even the basics about how to use computers. I feel we need to change things from the stage of primary schools, and unless we do that, advanced discussions at these forums would be meaningless. Looking at my own daughters, I cannot help but feel anxiety about the situation in Japan, particularly in comparison with such economies as Korea and China. I am most interested in the situation in the United States.

Kazuhiko Nishi

My daughter did not go to an American school, so I am not so familiar with computer education in the American school system. If I am wrong in what I am going to say from now, I would like to ask later speakers in advance to correct me. Things can vary greatly from school to school. But I assume the greatest difference in computer education is stemming from education policies of respective state governments. I heard that in one state, all students in the seventh grade and above have access to their own PCs at school. I think most schools probably think they could provide all students with PCs if the price came down to $500 apiece.

But the PC price has not yet declined to $500. Microsoft is offering the X-Box game machine. This machine can be used as a PC if the Windows operating system is installed. But Windows cannot be installed now because it is only a game machine. But this is only a matter of time, and we are going to see the $500 laptop computer pretty soon. When the $500 laptop computer comes on the market, we will usher in the one-man one-PC era and using a computer will be just part of our everyday life.

But, we have to be aware that there probably is a downside to the use of computers. Japanese will become less capable of writing Chinese characters. There are two types of languages, written language and spoken language. But I think we are now witnessing the emergence of a third category, which is “type-written language” or “mail language”, used in writing e-mail messages via cell phones. This mail language includes a variety of face marks using ASCII characters. Children these days are exchanging smiling or crying face marks by e-mail. I have great interest in monitoring the future evolution of this third category of language. Concerning the oft-repeated subject of the potential impact of the use of computers on the brain, the latest concern is not about the use of computers in general, but a potentially adverse effect of playing videogames on the normal development of the brain. I read one research paper that claims that when we play videogames, we intensively use only the brain stem while not using the frontal lobe and this could sever the channel between the old brain and the neocortex of the new brain. I think this raises a very important question. We need to examine whether it is advisable to let children start using computers so soon. I personally think it is undoubtedly harmful to play videogames in early childhood.

I think we need to consider conducting fundamental research into that part of computer technology. In the land of videogames, Japanese companies command a considerable share in the global videogame market. Sony and Nintendo are the top leaders, followed by Microsoft of the United States. Given this picture, Japan’s attitude toward early education on computer technology is likely to emerge as a theme of great significance. If we come up with a decision that goes against early education and early use of computers, it would also affect the future of game makers as an export industry. So, we need to be very careful in our approach to the issue. Yet, this is a very interesting subject.
Questioner
You said that people who are fit to launch venture businesses are those that are capable of both starting new things and expanding new businesses and that people who are capable of doing only one of these two things should keep away. If so, is it possible for these single-capability people to acquire the other capability through education? If those single-capability people still want to go into venture businesses, what would be your advice to them when they start their companies?

Kazuhiko Nishi
The first thing they should be doing is to stick firmly to the notion of “we can do it.” Once a venture business is launched, it is like an airplane taking off. The airplane would crash if it ran out of jet fuel. A company would be in a miserable situation if it ran out of working capital. So, the company cannot stop running once it gets started. What you have to do before getting started is to firmly believe that “I can do it.” While convincing yourself of “I can do it,” you should carefully consider in which of the two areas you have greater strength and then sharpen that strength of yours in the chosen area. If you are good at creating new things, then you have to hire someone who can develop the business administration side of the venture. But if you take the hands-off stance after hiring the business manager, I think you could not avoid an eventual failure. So, you need to get involved in both sides of the venture business. The first thing you have to do is to believe “I can do it.”

An article in the Nihon Keizai Shimbun once described me as someone who failed to achieve the growth of the venture business I started. But I did expand the venture’s revenue to ¥50 billion. Perhaps the booming economy helped, but it also means I was capable of doing both things. In the current recession, I am teaching, writing books, and running consultancy. But, however hard you try, the most a single person can earn is no more than about 100 million a year. We can expect to earn an annual income of ¥10 billion, ¥20 billion, and ¥30 billion only when a lot of people get together to conduct business. We have to admit that group power is really great. So, we absolutely need the well-balanced two skills of launching a new venture and growing that venture larger. There is another approach of learning by mistake, but this should be avoided by all means. Whenever you make a mistake, you get hurt in the right hand and then in the left hand. So, the best way to go about it is to keep someone who has gone through the process of making all these mistakes beside you and let him teach you. Maybe, you should first find a job at some company and ascertain if you have the potential to grow. You also have to know the difference between knowledge and information. Information is something you just know, and information becomes knowledge only when you personally experience what information tells you. You need to store up the knowledge you have acquired through your own experiences.
【Presentation】Morning session

Moderator

Now we move on to the presentation session. The coordinator of today’s presentation and discussion session will be Dr. Tetsuhiko Ikegami, President of the University of Aizu, which locates here in Fukushima Prefecture. After serving as a senior vice president and the head of Basic Research Laboratories of Nippon Telegraph and Telephone Corporation (NTT), Dr. Ikegami was appointed president of NTT Advanced Technology Corporation (NTT-AT). Since 2001 he has been serving as president of the University of Aizu. He is also serving as a fellow of the Institute of Electrical and Electronics Engineering (IEEE) and the Institute of Electronics, Information and Communication Engineers. He also served as a member of the formulating committee for the Science and Technology Basic Plan, and in his role as a promoter of academia-industry-government cooperation, he was a major force behind the creation of the Project for Formation of Intellectual Clusters in Fukushima Prefecture.

The University of Aizu, where Dr. Ikegami serves as president, is the first university in Japan specialized in the field of computer science with the objective of cultivating computer scientists. The University Business Innovation Center of the University of Aizu is a core institution in the academia-industry cooperation, which aims at joint research with private-sector enterprises, as well as technological support for the local industry.

<Coordinator> Tetsuhiko Ikegami (President, The University of Aizu)

My name is Tetsuhiko Ikegami. I am president of the University of Aizu and will be the coordinator of today’s presentation session.

The fact that this Fifth APEC SME Business Network Promotion Forum is held not in Tokyo but in Koriyama is, in my opinion, of great significance. Actually, the Summit Meeting for Collaboration among Industry, University, and Government started in Tokyo yesterday with the Prime Minister Junichiro Koizumi and the newly appointed Minister of State for Science and Technology Policy Hiroyuki Hosoda, as well as the Minister of State for Science and Technology Policy Koji Omi in attendance. The participants in the Summit Meeting reached a consensus that academia-industry-government cooperation is indeed essential for reinforcing the competitiveness of Japan. Against such a backdrop, the promotion of science and technologies, to which until now the Government has paid less attention, on a regional level has been increasingly emphasized.

The regional areas of Japan, including Fukushima Prefecture, are facing some extremely big problems. Until now their dependency on public work projects has in a sense made their life rather easy, but presently such a system is collapsing and under those circumstances regional areas have reached a point where they must promote science and technology-driven industry. This point was asserted at the Summit Meeting opened yesterday as well. This is a rather challenging task and I would like to address all representatives of SMEs who are present here today in saying that, in my opinion, the future of Japan will depend on the works done by them. Speaking with the present situation in mind, I feel a sense of impending crisis in which Japan has no other choice but to promote industry, and therefore it will be of great assistance to us to receive your advices today.

So, I will open the presentation session. Firstly, I would like to invite Professor Chris Constantinou of
Stanford University, Silicon Valley, the United States of America. He is said to be the originator of academia-industry cooperation.

Professor Constantinou has served as a guest lecturer at many Japanese universities, and in the past 30 years has accepted numerous research scholars from various countries including Japan into his laboratory. Furthermore, he has visited Fukushima on several occasions to work in joint research projects with local enterprises.

Chris Constantinou (Professor, Stanford University)

I would like to say how pleased I am to be here in Koriyama again. This is my second time in this hall this year.

I am going to talk to you about business creation in academia and industry. I am going to talk about academia first. As other people have told you already, Silicon Valley is almost like another country. The people in Silicon Valley have become the model, and to be the model of anything is very important. It is also very dangerous because I would like you to hear what I have to say, but do not take it too seriously because it may have applied in the past, but it might not apply now. Nonetheless, Stanford is a university which has been in a small part of California, with very few people around it in the country for many years. It has developed into what is now a famous university and the responsibility that goes with a famous university.

We are going to talk about technology and technology transfer. The important thing is that there must be a purpose for technology, and with technology or any endeavor, the most important purpose, first of all, is that it benefits society. If it does not benefit society, then its value is diminished. From the university’s point of view, in developing technology, it has to generate the mechanism for income. It also has to refer to education and research. If there is no education, then the university has no place in it.

Now, historically, Stanford used to be a horse farm. Then it became a small university, and like most universities, it was an ivory tower, things were done in abstract and they were not done from the point of view of income. Then in the years immediately after the war, there was one man with a vision whose name was Terman—and everybody who is an engineer, especially an electric engineer, would know that this man had the vision that Silicon Valley would develop into a technological dynamite of the West Coast. His vision was that his good students, when they finished Stanford University, would move away and go some place else to work because there was no work for them around Stanford University. It was a farm, it was a small area, it was remote. There was no work for people who graduated from the university. So he wanted to develop within that area industry. He was a strong man; he reorganized the university and brought the whole process of developing industry into Silicon Valley.

The model for industry development at Stanford was the Office of Technology Licensing (OTL). Technology licensing meant that the faculty, the academia, when they came up with solutions, developed a system through which they could have those solutions facilitated through a program of technology transfer. That OTL program has become actually a worldwide standard in many cases. I was very pleased to see recently that even China is using that same idea of the program. So, until now, with the program of industry development, they have developed more than 450 million dollars in license and income. The non-DNA research is about 200 million. So you can see now that the future is really towards biotechnology. One of the ways that this program subsidizes new work is to channel that money
back to the university.

Now, we are talking of the university and talking of the university transfer of technology. It deals with students, publications, seminars, conferences and consulting. The important thing in consulting is industrial affiliation, sponsored research, owner’s cooperation programs, programs that work with industry and technology licensing at the end. Statistically, this sounds very good. But it is not always successful. Only one in four thousand applications throughout OTL become a big success. Thirty cases only have generated more than US$ 1 million. Thirty-nine cases in the last year brought more than 100,000. So in other words, the university is not always successful.

What is the volume in this setup? Five or six people a week go to the OTL and say, “I have this idea, I have that idea, I want to create a company, I want to start a venture.” Out of that, about one hundred and twenty or so a year become licensed. So how does the license system work, and that is important if you really want to operate the system. Out of the growth royalties that the university gets, 15 percent goes out to run the system. Then, of the rest of the money, one third of the money goes to the inventor, the other third goes to the department and the other third goes to the school. So everybody gets something out of that setup.

The Stanford culture is entrepreneurial. It really focuses on that issue. The fact that the university can do it is an advantage, rather than a small industry, because what if the industry does not have the resources? The university has the resources and they can have a go, they can have a try and see if this is going to work.

We have Cisco, we have Silicon Graphics, and all the other names that you now recognize perhaps as products. They are the kind of thing that has developed out of that cooperation system. So in startup companies, there is interest by many universities. I think now, in an age of globalization, Stanford does not work on its own. It really links with other universities, and that is why it is such a pleasure for me to be here to talk to other universities, not only within our area but also outside our area.

From the point of view of business creation, Stanford is still an educational institution and we say that the mission of educational institution is to develop the skills of the students, develop them, make them aware of advantages, competitiveness, and the regional and economic conditions. To do that, it does not rely on chance but it develops what is called the entrepreneurial network which means the net is networking between a number of different groups, business schools, law schools, engineering schools, medical schools and so on. So the university’s job is to get things started, to find the money. You get grants, endowments. That is important because the grants and endowments come from students who have been successful in industry, who have gone into ventures and now they are bringing their money back into Stanford and saying, “We will give something back to our institution.” This is a very important but long-term approach that the system ought to have, which is to propose pilot programs, literature, create clubs for students, create a mechanism of collaboration between students and faculty and between faculty and surrounding venture organizations.

These venture programs still relate to teaching and basically creating the environment for which that is done in research. For that there are obstacles: no money. What do we do? We look for other entrepreneurs, other people who have made money—the Government, the local government, national government, and that is really what Fukushima prefecture is doing here. For students, if we cannot find enough students, administry can find better students. We have the most disciplinary environment. For
teachers, that is very important; we need to organize the teaching of the various different groups of
the departments.

One of the important things in terms of teaching that is related here is that society has to still benefit,
and that is why we need to have a system, as I indicated at the beginning, that society has to have an
input into.

So this is really the end of my program. I would like to say here that at this stage of the Stanford
culture in promoting research collaboration, we have developed the program, which is, overall, not
leaving things to chance. And the final comment I have to say is that we have a program that makes the
students professional in being enterprising, not only in creating the product, or creating the idea, but
actually knowing how to manage that.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. That was a presentation from the aspect of one American university. Now,
after the presentation from the viewpoint of enterprise, if there is time, I will open the floor for questions.
Next, I would like to invite Mr. Gerald W. Timm. Mr. Timm is the chief scientific officer (CSO) of
Endocare Inc., a leading American medical device company which develops, manufactures, and sells
urological healthcare products and technologies. Today he will give a presentation on a medical device
designed to provide relief for prostate patients and which was developed in a joint research with the
University of Minnesota.

Gerald W. Timm (CSO (Chief Scientific Officer), Endocare, Inc.)

I am going to talk about a number of opportunities that I have had over the years to create value in the
medical device industry. I will talk a little bit about Minnesota. I come from Minnesota and we have a
group there called Medical Alley. We have in Minnesota about 500 companies that range in size from
startups with two, three or four people all the way up to Medtronic, which is the largest medical device
manufacturer in the world, as far as I know. They have probably an excess of 10,000 employees. So we
have quite a range of companies there. In many ways, Earl Bakken, who is the founder of Medtronic,
served as an inspiration to many young engineers there. Because we said, “Well, he is an engineer like
me. If he can start a company that is very successful then I can too.” And it did in fact inspire quite a
number of people to form companies in Minnesota.

I am going to talk today about my personal background and about some of the issues that we face
and that I faced in starting companies. I am going to include discussion about funding and how deals
can structured, and the different types of arrangements that we have had with academic institutions
along the way.

My personal background: I graduated from the University of Minnesota in electrical engineering, got
a doctorate in electrical engineering and went on to the medical school faculty after I finished my
doctorate in the department of neurology.

As I was working in research there, I noticed a number of my classmates started companies, and I
thought, “Well, that looks interesting,” and one of them in fact encouraged me to cooperate with another
group of individuals that were working in the laboratory at the time, and we co-founded Mentor
Corporation in 1969. There were three other individuals that started that company. Two of us were
engineers, one was a psychology major and one was a marketing major. So in answer to a question a
gentleman made earlier, “Do you have to be an engineer to start a company,” I would say, no. I think you can come from anywhere; it is just a question of having an idea that you really believe in.

Subsequent to this time, I helped found another company, American Medical Systems. In this case, there was only one engineer, me. There were two physicians who were involved with the business, and one was a classmate of mine from undergraduate school who had gone onto business school and just recently obtained MBA. Dacomed Corporation, I then started in 1980, and this one I started by myself. And I will talk a little bit about Timm Research Company, which I then started in 1997.

In terms of looking at opportunities for ideas that you want to move forward, there are number of items that you want to consider. The first is market attractiveness. It has to be an idea that has usefulness. Proprietary technology is very helpful if you have got something unique that helps with funding and with attracting people to come and share your vision. It is nice if you have got some technology that you can protect.

From an investment standpoint, you want to look at your return on investment capability, the ROI. Certainly, it has to be something that can be produced. One of the examples I will talk about is an example where we could not figure out how to produce it and subsequently another company did and I ultimately got the distribution rights for. The other part which I think is also very important is to have product champions, and that is other than the person who originally had the idea. I think it serves two purposes. One is that it shows that there is in fact a market potential for it, and the second thing is that it acts as a confirmation that your idea is not some wild idea, but that in fact it is practical and has practical utility.

I am not going to speak a lot about invention. I think most of you are familiar with inventions, but here is the basic premise for an invention that you can patent: I have been fortunate to have been awarded approximately 20 US patents together with international counterparts in anywhere from six to ten different countries. So if you multiply it out, I probably have 100 international patents that I have been able to get over the years. And it is interesting, I feel like I have paid a lot of tuition to attorneys. In many cases I should have become a patent attorney myself, with all the tuition that I have paid. But in any case, a very important part of any business in venture is to have some intellectual property that you can protect.

I am going to talk about four different case studies, four companies that as I mentioned I have been involved with starting, and some of them came out of universities and others used universities later in their career.

The first one that I am going to talk about is, when I was first on the faculty at the University of Minnesota, I was recruited as an electrical engineer to try to adopt cardiac pacemaker technology to urinary bladder control. That is what got me involved in the genital urinary system and we had developed an implantable electrical stimulator together with some unique electrodes. Together with two other gentlemen that were working in the laboratory and one other person, we formed the company Mentor Corporation. The initial intellectual property was owned by the University of Minnesota and a license was granted to Mentor which gave credibility to the public fundraising effort. Mentor raised money by going public very early in its career. It was in fact a very rapid way to raise some money to get the company going. Subsequently, the company purchased other intellectual property from various private and public entities and grew to become the company it is today which does about $250 million in sales and has employees mostly in the US but some outside the US as well.
The second example that I am going to talk about is where information that was in the public domain was used to form a private company. In this case, it was based on some research work that we had done in the University of Minnesota and had published the information. We developed a device called an artificial urinary sphincter, which was a device to help people restore urinary bladder control. We had done some basic research studies on the effects of pressure against tissue, and the effects of different materials when implanted into the body, and we developed some ways to—we call them fluid energy transfer devices—transfer energy using fluid as the energy medium from one place in the body to another. Subsequently, a number of these engineers, when they finished their graduate research work, would go to work at the company and work on perfecting the devices which have subsequently gone on to become quite popular. One that is probably better known even than the artificial urinary sphincter is a device we call an inflatable penile prostheses and that device is marketed internationally and is still the mainstay of American Medical Systems. The way that American Medical Systems did, at that time, and continues to interact with universities is to contract with the university to do various clinical studies, as the devices being developed and improved upon require clinical studies which are necessary to get various regulatory approvals for marketing the device. So the company would continue to contract with various university investigators to foster this ongoing development.

Another example is a product, the malleable penile prostheses, which is one that I invented actually when I was on the staff at American Medical Systems. At American Medical Systems, we could not figure out how to manufacture it on any kind of a quantity basis. But what happened in the meantime is a company in Germany figured out how to manufacture it. So we worked out a cross-licensing arrangement where American Medical Systems licensed the company in Germany to produce and market that device. I formed a company called Dacomed Corporation that set up the distribution rights for that product. We took that product to a number of university investigators and validated the product, that it in fact performed the way that we wanted it to and that it was reliable and a quality product. And that is what lead to the formation or really fueled the growth of that corporation. Subsequently, complimentary technology was purchased from another university as well, from Boston University, and a scientific advisory panel was used to foster that technology going forward.

The forth example is where we took a private company. Once I sold Dacomed to a public company, I started another company, Timm Research Company. And it grew by acquisition where we licensed some of the technology from earlier companies and then sought the opinion of various academic opinion leaders to support the technology, and new product investigations were then begun with an international investigational team and product improvements have continued for various incontinence and impotence products.

In summary, I think it is important in starting a company that you have a product that is differentiable from the market. It is nice if you can have some intellectual property to give yourself a defensible legal position. And clearly you need evidence of value of creation for fundraising purposes. As Dr. Constantinou mentioned, it has to be a benefit to society because there is a lot of competition for money out there, and if you do not have something that adds value, it is probably not going to succeed. Clearly, you need independent product champions with a strong academic affiliation because that gives credibility as an outside assessment of your idea and validates its acceptance into the market place.
<Coordinator> Tetsuhiko Ikegami

Thank you very much. We heard a lot about the academia-industry cooperation in the United States, as well as ventures such as startups, and I am left with an impression that the United States is indeed an advanced country that has achieved substantial growth in that field. In particular, the part about funding convinced me that we in Japan have a lot to learn. Now, I would like to open the floor for one question only.

Questioner

How do you determine the sharing of intellectual property right between the university and the enterprise? My question is to both presenters.

In other words, when an enterprise or a university develops an invention, and based on that invention a product is manufactured in academia-industry cooperation, to which side do the patent rights and the intellectual property rights and so on belong?

Gerald W. Timm

In America, the way the patent law reads is: an invention belongs to the inventor. So that is the first point. After that, it is a function of who does the inventor belong to? Usually, that is contracted for either by his corporation or by his university. If he is an employee of the university, typically, the patent would then belong to the university. If he is an employee of the corporation, typically, that invention would belong to the corporation. So it is really a function of who—if the inventor does the invention on his own, if he is in his own private little company, or he does it on his own time and it is not otherwise contracted for by his employment, it would be owned by the inventor.

<Coordinator> Tetsuhiko Ikegami

This issue differs substantially from one country to another. The U.S. follows the principle of first-to-invent, while Japan follows the principle of first-to-file. However, speaking about universities in Japan, the government is bringing forward a deliberation toward introducing as much as possible the American system of assigning rights to academic institutions. The reason for this is that if the institution does not own the rights then the maintenance of those rights will be very costly, but if the institution owns the rights then it might utilize them in an effective way. This is based on the U.S. Bayh-Dole Act.

Now, I would like to invite Mr. Lee Loke Chong, Deputy Executive Director of the Singapore Institute of Manufacturing Technology (SIMTech). SIMTech conducts research in the manufacturing field and is in charge of academia-industry cooperation in Singapore. Mr. Lee is teaching 13 years in the Department of Mechanical and Production Engineering of National University of Singapore (NUS). He is a specialist in Electro-Discharge Machining, Metal Machining, and Manufacturing Management. Mr. Lee is currently also the director of research at the liaison office at SIMTech.

Lee Loke Chong (Deputy Executive Director, Singapore Institute of Manufacturing Technology (SIMTech))

I will take a quick look at Singapore government policies and then I will run through the profiles of the SMEs, look at some of the instruments and the mechanisms that is being developed in Singapore. If you look at the academic industry collaborations and briefly through the problems, that is about the time that
I would have. I will then pass the podium over to my colleague, Lee Boon Leng, who will run through a case study in detail. In the paper, I have given three other case studies.

Economic policy. I think most of you might know that the Singapore government is very pro-business and proactive. In fact, I would call it a very economy-centric government. Everything revolves around the economy. We are definitely pushing for a knowledge-based, innovation-based economy. This would pervade to all the sectors in the industry, in the schools, in society and so on. We have also in Singapore coined a term, “technopreneurship,” which is a marriage between entrepreneurship and high tech. That is to underline that entrepreneurship by itself is not enough. You really have to be entrepreneurial in high-tech niches to be really successful. To help the schemes along, we have introduced more than 60 development programs, covering practically every aspect that you can think of—finance, technology, manpower, land and so on. Market is extremely important also if you are talking about new technology. We are also putting a lot of emphasis on intellectual property (IP) protection. If you are going into a new technology innovation, you have to make sure that you create an environment where IP are properly protected. Specific to the SMEs, we have also a Local Enterprise Upgrading Center, just to cater and to address their needs.

Our profiles of SMEs: Basically, in Singapore, SME is defined as any enterprise with fixed assets below 15 million Singapore dollars, and for the service sector, up to 200 employees. We have around 90,000 to 100,000 SMEs, and they are almost 92 percent of the total enterprises in Singapore. About one-third or 30,000 of the SMEs are manufacturing-related and they really provide about 50 percent of employment in Singapore.

We have a very active, very effective association for the SMEs called the Association of SME (ASME). It was formed in 1986 by a group of entrepreneurs. It really is very dynamic, very visible, and it has a mission of not only nurturing the SMEs in Singapore but helping them to move into the region and beyond. And it is, again, very pervasive. It looks at the young startups, it looks at women entrepreneurs. So it is a very comprehensive association.

National Strategy. We have SME 21, which has three major targets by the year 2010. One is productivity. SMEs always suffer from poor productivity. So we are trying to look at the doubling of their productivity. The other problem is that they are small. SMEs being small do not have critical mass, so we are also trying to make SMEs bigger and stronger. The other problem that SMEs have is really with computerization, so we put a lot of emphasis on equipping SMEs in Singapore with e-commerce.

More detailed SME 21 plan. It addresses different aspects and different sectors. It looks at innovation. SMEs should also be innovative, and not only depend on the bigger players. It should also be knowledge-based. We are definitely putting a lot of emphasis also on raising productivity.

So in looking at the nation-wide aspect, we are looking at entrepreneurship, we are looking at finance, which is always important for SMEs; market is something SMEs definitely need a lot of help with; manpower, now we are looking at how to nurture manpower for the SMEs because graduates tend to want to work in the bigger companies; e-commerce, as I mentioned earlier; and also to create a networking of SMEs, to create a sort of SME hub.

I would like to introduce you two programs roughly, one is the local industry-upgrading program. It is not a unique idea, but what is unique about it is the way it is run. Basically, it is a big brother concept, to get a big, mainly multinational company—it could be a big local company—to nurture a satellite of
smaller companies. Here, there is a mutual benefit: the big companies get reliable supply, the small companies get an infusion of technology and so on. What is different, I think, with the way we run it is that we really pay what we call the Luke manager in the big company or the multinational company. I think this is probably not done anywhere else.

Another idea that we have introduced very recently, in August of this year—in fact, in Singapore, change is a constant. The name of the program TEC-UP in the handouts has recently been changed to T-UP. How this works is that companies suffer perpetually from a lack of good manpower. With this program, we put researchers from the research institute into the companies. For this program, the company only needs to pay 30 percent of the salary of the researchers. This program normally would run for up to two years, at the end of which the researcher can decide to stay with the company or come back to the research institute.

To run through some of the things that are happening in the ivory tower: we have two main universities. The first university, the National University of Singapore (NUS), there is a dedicated office, the Industry and Technology Relations Office (INTRO), which pays a lot of attention to how the university can bring its resources out to the industry. So we will look at joint projects with companies, we will look at IP issues, and so on. And we also have another center called the Center for Enterprise. This looks more at the entrepreneurship angle of a business.

Then, for the other university, Nanyang Technological University (NTU), they have a similar organization, called the Innovation & Technology Transfer Center (ITTO). Again it works closely with industry and what is different with ITTO from INTRO is that it also incubates companies inside the university. At any one time, 20 companies are incubated.

Another unique feature is something they are calling Technogarage, which is to nurture students to be entrepreneurs and startup funds are given for the students to think of ideas and try to commercialize them. NTU also has the Technopreneur Center, very similar to the Enterprise Center in NUS. And the polytechnics are also getting into the act of working very closely with the industry.

Apart from the universities, we have research institutes which are dedicated institutes working mainly for the industry. There are basically 12 research institutes serving this purpose.

Looking at some of problems as have been mentioned, money is perpetually a problem for SMEs. But it is not only money; it is really technology that is also a problem. And the other limitation is really manpower resources. So you have to address, apart from the money issue, the technology issue, the know-how issue and also the manpower issue. You have to also somehow address the mindset of SMEs. They tend to be very risk-adverse and very short-term. They do not look into the mid and long-term, and they are always looking for something certain with ensured, guaranteed returns. The other thing that SMEs suffer from is that there are always incentive schemes that they are eligible to apply for but, unfortunately, unlike the big companies, they do not have the administrative machinery to apply for the funding. So that is the other problem that affects their cash flow.

I will stop at this point and let Lee Boon Leng take over on the case study.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Our next presenter is Mr. Lee Boon Leng, who was just introduced, will deliver his contribution from the side of enterprise. Mr. Lee participated in the establishment of
MicroFab Technology (S) Pte Ltd. He is in charge of the company’s sales offices in the U.S.A., Europe, Japan, and Asia-Pacific. He is also responsible for guiding technology directions and orientation of the company.

Lee Boon Leng (Vice-President, MicroFab Technology (S) Pte Ltd.)

I represent MicroFab Technology and, today, I am going to present a case study of how my company works with academia in Singapore and also how it has made use of the grants that the Singapore Government has offered to help SMEs like myself.

How we all started is that we were a very small company at the time. In 1996, my bosses, which actually is a main company called Ellipses, saw the vision that more and more integrated circuits (ICs) in the semiconductor industry, would change the packaging which is from the wire-bonding package into flip chip packaging. As to why, let me explain to you.

In the future, that means from now, we believe that more and more ICs will be packaged in what we call a “flip chip package,” which you can see is a science reduction. The market also shows that what we believe is true. In year 2001, which is last year, we believe that there were only 4,000 wafers to be flip chip packaged. But moving towards 2005, which is four years from now, there will be 16,000 wafers. Or rather, let me correct that, it should be 16 million wafers to be flip chip packaged. Based on this growth rate, there is a compound annual growth rate of at least 32 percent, year on year. Because of this finding, my boss wanted to start to do this business.

Another reason as to why this growth is so tremendous, a 32 percent year-to-year growth, is that—I am sure in Japan you can see—your handy phones, your digital cameras are getting smaller and smaller. How is that so? The electronics have not reduced, but actually the packaging of the electronics have reduced. If you assume that the wire-bonded package is 100 percent in area science, when it comes to flip chip packaging, the same IC can be packaged only occupying 11 percent of the space. That is why we can see now handy phones, digital cameras getting smaller and smaller, and computers getting smaller and smaller. This is the belief of why we think that the market will drive to us, that the flip-chip package is important.

Now, let me explain what is flip-chip packaging. Companies like NEC, Toshiba or Hitachi will fabricate the ICs on a wafer. A piece of wafer is like a pizza in science. Once they fabricate the ICs, companies like us, MicroFab Technology, will do a process called wafer bumping. Essentially, we are putting small bumps or solder bumps on the ICs. That is what my company does. Then, of course, after we do the wafer bumping, we will pass it to another company to do the cutting of the IC and packaging, to do the flip chip assembly. So this is the whole semi-conductor value chain where MicroFab only does the wafer bumping process.

Now, let me give you a history about how we started. As I said, my boss in 1996 wanted to start to develop wafer bumping. It was a new technology, we believed the market was there. But how would we start? Ellipses was a very small local company. To do this R&D, we needed money, definitely, that was for sure. R&D is not cheap, especially R&D in semi-conductors. We needed R&D partners. For a small company like us, we could not employ a lot of PhDs or doctorates to do the research. How would we get the R&D partners? Also, in our business, we needed to be in a clean room environment. How would we afford to build a clean room environment to do this technology? So we had to overcome all these factors.
as a small company to achieve our ultimate goal of having a technology.

What we did is that, fortunately, our Singapore Government is quite pro-business, like what my previous speaker said. The Government is pro-business and pro-economy. So in 1996, my boss went ahead to incorporate a company. Then in the next year, immediately, we got some money from the government. Converted into yen, it was 246 million yen from the Singapore Government to do R&D. But this money was still not enough as a small company. What we did is that we worked with Dr. Lee’s research institution, the academic site, to find partners to do this project together. So my company employed four R&D engineers together with Dr. Lee’s research institution of two PhD researchers. We worked together and tried to develop the technology.

Getting the infrastructure was easy. But we spent the next three years, everyday, developing the technology. So in 1997, 1998 and 1999, we almost worked everyday—my engineers and Dr. Lee’s researchers. Everyday we worked. And finally, in the year 2000, we thought that our technology developed was okay, we were ready to do mass production, open a factory or whatever. Again, how to open the factory? It was again about money. So we went out to find venture capitalists. I am sure venture capitalists are quite common in the US, but in Singapore, it is not so. But we were lucky and we managed to get 363 million yen of venture capitalist funding. With this money, together with the bank money that we borrowed, we set up this wafer bumping production facility in Singapore. Immediately that year, we achieved ISO9002 standard because in semi-conductor industry, you have to have a quality standard. If not, no customer will buy from you.

Moving onward, in 2001 and 2002, again we got a second government grant, R&D grant, to help us to move forward for future R&D. The second grant came out to 296 million yen from the Singapore Government. As of today, we have shipped a total of 25,000 wafers to our customers. Finally, this year, we achieved QS9000 certificate, which is a yet higher quality standard that our customers need us to have.

On the slide is the factory that we have today. It is a 50,000 square feet facility with Class 100 and Class 10K clean room, which you can see from the photograph is very clean. It is a semi-conductor industry company where we have what we call a bunny suit, where we gown up together, where particles are a concern to us. So building that infrastructure is not cheap. It is very expensive. And operating it is even more expensive.

A summary of our services that MicroFab Technology offers to the market is in your handout. I can further explain it to you on a one-to-one basis during the tea break or lunchtime.

To conclude my presentation, I want to explain what makes cooperation between industry and academics successful. There are four points that I would like to highlight. The first point is that before we start any R&D project together with academics and industry, we have to be committed, that the R&D effort is set forward in the beginning. The academics must agree to do what they will do and industry has to agree on what objectives and what milestones. Time is a factor in the commercial world. If you have good technology, but if it is two or three years behind time, it is of no use, it has no value. So that is why from the beginning we have to set the milestone and timeline.
Third, I think one gentleman just asked, who owns the IP? It is very important. Again, it is a joint
development. So, ultimately, after the development process, who owns it? We have to state the
ownership. Is it the company? Or is it academia? This needs to be defined right in the beginning so there
will be no dispute at the end of the day.

Of course the last point is that it is a joint development. With any achievement or any failure, both
parties have to take responsibility. So this is key. We should not point fingers at each other as to what can
be achieved or why it cannot be achieved. It is very important that both have an open heart to take up
responsibilities and share the achievements if you have a successful story to tell. I hope I did explain how
we have a successful partnership in Singapore between industry and academia. Thank you.

<Coordinator> Tetsuhiko Ikegami

How about the cash flow of your company now, or the prospects for the future?

Lee Boon Leng

Just to understand, my company is MicroFab Technology, we do wafer bumping. Actually, my parent
company is Ellipses. We have other businesses. So the profit from another division is helping our
company now to start the beginning and the cash flow problems. It is not easy. The wafer bumping
process takes a lot of money, especially now with the market downturn.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Now, I would like to open the floor for just one question. Any question? If
there are no questions, I would like to proceed with the presentations. Anyway the population of
Singapore is 3.5 million. As the population of Fukushima Prefecture is 2 million, my immediate
impression is we still have to make a little bit more effort. In addition, several issues were highlighted in
the presentations of the Singapore presenters, such as the problematic issue of the bureaucratic
inclination of the government, and later on I would like to discuss the issue of what we request of the
government and how to respond to bureaucracy, if there is any. Thank you very much.

Now, I would like to invite the representatives of Malaysia. Malaysia promotes a policy of
transforming its economy into a knowledge-based economy (K-economy) by establishing such facilities
as the well-known Multimedia Super Corridor (MSC). I would like to ask firstly, Mr. Tan Sin Leng,
Associate Professor of Multimedia University.

Tan Sin Leng (Associate Professor, Multimedia University)

I am from Multimedia University, which is a new university. We place great emphasis on forging goal
relations between the university, in particular, the academy and industry. The details of the content of my
presentation are in my write-up.

The Malaysian economy may be small, and it may be new to many of you, so let me briefly give you
some ideas on the country economy in the year 2003. The size of the economy in Malaysian money is
466.19 billion. In US dollars, it is roughly about 123 billion. It is a small economy, yet we contribute
many things to world business. For example, at the moment, I think we are the largest producer of palm
oil in the world. As you see, the recession is badly affecting our country. For the last two years, we have
not been doing very good. And this will give you an idea of the economy situation in Malaysia. We are
expecting a growth of 4.0 to 5.0% GDP, and hopefully we will do better next year.

As you can see in your handout, it looks like China is the only economy that is doing pretty well in this region. The estimate for this year is 7.5% but I read from the newspaper that the number can be even higher, it could be around 7.8%. So it looks like China is doing very well and the rest of the region is trying to catch up. So in Malaysia, we try very hard to increase export. And we are trying very hard to attract the multinational company to come to our country to set up new companies so that the country’s SMEs will be supporting them. Because in Malaysia the small and medium-size industries (SMI) contributed about 90 percent of the country’s manufacturing, in the years to come, we are hoping to boost our country economy by giving these SMEs some good incentives in terms of tax cut.

The country’s SMI are being coordinated and supported by SMIDEC or Small and Medium Industries Development Corporation of Malaysia. It was established in 1996. So SMIDEC tried to promote the development of SMI through the provision of advisory services, financial assistance, infrastructure facilities, and to help find market access and other support programs. So its functions are as follows: to provide technical support and advisory services for the enhancement of SMEs, to seek opportunities and to promote human resource development of the SMI, to undertake promotional activities for the growth of industry including participation in specific trade fairs, technology exhibitions, etc, and also to promote mutual cooperation among the industries, to act as a referral and dissemination center on information related to SMEs and to coordinate with other agencies on programs pertaining to the development of SMEs. In Malaysia, this is how we try to promote academy-industry cooperation. These are the normal things that we would think of doing.

We try to do something in the university in terms of consultation. The country set up many technology parks and there are many incubators associated with various universities in Malaysia. Also we have a Center for Commercialization and Technopreneur Development. These are the places where we try to start some startup companies. And the country has some skill-training centers and we are trying really hard to realign education to the needs of the industries. So we all have one example where the University of Multimedia is forming a joint venture to do something for the country.

Of course, we have problems doing all these in Malaysia. The problems are a lack of information to identify which university is suitable for cooperation in the case where there are some companies which have some ideas, the unwillingness of the universities to undertake research for SMEs as the financial return may not be that attractive, and lack of personnel to liaison with the university. There are some universities that may discourage academia from getting involved with consulting jobs, as they fear that that may affect their academic concentration. And lastly, there is a lack of R&D culture in SMEs in Malaysia. These are the problems and these are the challenges at the moment.

This is my example of where we have a very successful university and SME cooperation. The company name is called Persistence of Vision Private Limited. This is a joint venture between the university and a company called Double Vision. This is Malaysia’s first full-fledged, three-dimensional, long-form animation production house. This company is located inside the university. It has contracts with European companies and with other companies in the world, and also they develop their own characters. It provides opportunities for the university lecturers to communicate with this company, to help this company in development, and the company in turn provides all kinds of opportunities for the staff, for our graduates and also our students to do industrial training. The mutual benefit we get from
this joint venture is very good. That is all for my presentation.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Now, I would like to invite our next presenter, Mr. Jeffrey Phang, Chief Executive Officer (CEO) of IT Driven DotCom Sdn Bhd. He is actively working as an information systems consultant and provides information support for numerous companies. Currently, he is engaged eagerly in training and consulting with companies to transform them into knowledge-driven companies.

Jeffrey Phang (CEO, IT Driven DotCom Sdn Bhd)

I am giving the industrial perspective of academia-industry cooperation in Malaysia. Basically, I will be going through why our companies decided to begin academia-industrial cooperation. Then, the cooperation arrangements that we have come up with and highlight some points on what is important for successful cooperation and also failures, and our future outlook.

Our company deals with training and consultancy, mainly to SMEs, so we are in touch with a lot of trade associations and SMEs. Why did we decide to begin academia-industry cooperation? There are a tremendous amount of current economic challenges that we are facing, especially after the year 2000. Globalization has taken a lot of direct foreign investments from us, and we are also having a loss of competitiveness and productivity, and there is a new generation of a new workforce called knowledge workers.

When we look at ourselves under the ranking of global competitiveness, in 1996, we were number 23, then we went to 27, in 2000 we were 25, and in 2001 we went to number 29. So there is a really great concern that although we spend a lot of money on infrastructure on SMEs, we are still having this problem of losing competitiveness.

We turn to academia and say that in the knowledge economy, academia is supposed to help us out with knowledge. In 1990, there was a sudden government initiative to encourage academia to work closely with SMEs and industry. But for the next ten years, not very much has been done in the sense that industry supposed to contribute to curriculum design. So as a result, in 2002, we had a lot of unemployed graduates. Graduates that had completed their education, but could not fit into the industry. So what we did was we gave a graduates re-training scheme, and then the government started urging universities to work closely and understand the industry manpower needs.

We have just been coming out from the production economy. So our whole basis is a “make and sell” paradigm. Basically what we do is we offer training to industry, to trade associations, government agencies and all, and at the time of production economy where things are quite stable, we are quite okay. But as we move now to a “sense and response” paradigm, which is a knowledge-based economy, we find that our knowledge storehouse is not enough and we need desperately to work with universities and tap their huge budget and intellectual resource and knowledge resources. Basically we need that so that we can bring it back to the industry players.

The other thing that makes us go into industry-academia collaboration is the fact that our small SMEs can no longer depend on just themselves, so Company 1, Company 2, Company 3—they form themselves together into industry value chains, and as we move up the ladder to a national value chain, our government departments and also universities need to get involved because universities need to provide the kind of expertise and R&D that the SME cannot give. So there is a need for immediate skills
that we have to impart to the SMEs.

So how did we find the institute to cooperate in cooperation arrangements? It was not easy. We have spent a few years trying to identify the right institutions. What we found from our experience is that you need to identify “connected” universities because we have more than 20 universities in Malaysia and not all of them are sort of connected. When we say connected, we mean that the lecturers and faculties and all are close to the industry. We discovered two things: First, before we can have collaboration, the university itself must have up-to-date curriculum and must be relevant to the changing new economy. Second, that universities must be willing to work with the industry. So there are a lot of times when we go into a university and find that they have got no infrastructure and no department to liaison with us and that proved to be a difficulty. So you must be able to find a university that is willing.

Once you find a university, then the collaboration model is very important. We must come up with a business model that has actual profits going into the university and to the private sector as well. To institutionalize the collaboration is a very important element here. Then comes operationalizing the collaboration. In this case, we find that we keep on giving the industry needs to the university, and university itself will sometimes consult with the SMEs, and they will also pass on some technology that is available in the university which is useful to the SMEs but that the SMEs could not afford on their own to acquire. Subsequently, to this interaction, we found that universities begin to revise the curriculum and to actually be more responsive to the needs of industry. So you will find sometimes that they actually created new courses based on the feedback that was provided by industry.

We also found that with SME value chain participation, SMEs need to work together so that they can become stronger. There is a synergy by forming a value chain. And we found that universities actually are quite central to the value chain, and by their participation you can enhance SMEs. Of course universities themselves may be partners to a number of value chains and we are hoping that we can see that being achieved.

Companies, trade associations and government agencies represent the industry side. What we have is a competency matrix to actually link up the academia-industry collaborations. Here we are saying that it is quite possible that you have a brilliant engineer but the engineer may not have all the business skills involved, but time is moving too fast and we cannot get the engineer to go and take another financial course. So what we do is we identify 27 modules of competency—that takes only three or four days—and we impart that to people like engineers who are starting a company, so that they know exactly what is the local law, the local requirements, anything that is practical, that fits within our legal so that they can actually start to become real entrepreneurs. So we use this competency matrix as a model to work with universities and we intend to transform traditional workers into knowledge workers.

Now the academia-industry collaboration rests on this competency matrix, in our case, and we have got things for financial skills, IT skills and management skills. And what we have here is on management skills we have got things like marketing, finance and the rest of the other skills, so that a person that is very technical, who has an engineering degree, who has got an engineering idea, can quickly identify and learn those particular financial skills so that they can start working with their accountants or their tax consultants.

So normally what we do is we identify with the companies, trade associations and all, we do company training for them, we do competency testing for them, we analyze their training needs and align their
training needs to something called strategic training.

On the other hand, when there are new requirements and new challenges that are not met by the competency matrix, feedback is given to the universities and ad hoc consultancies and retainer consultancies are given by the university to the SMEs. Ultimately, this finds a change in the modules and we take out those irrelevant modules in the competency matrix and put in relevant ones. SMEs can just come in and pick and match whatever competencies they need to complete their transition into a knowledge-based company.

So that is how it actually operates. We sit down with academia quite often, we bring in the needs of the industry, we change some of the curriculum based on the needs of industry, and academia will tell us the academic resources that they have. Some of the things that they do not have, we will go to the government departments for. So with things like global marketing, we find that we actually need to work with academia, we need to work with the MATRADE, which is our external trade organization, and together we form the kind of precise curriculum that top managers need but cannot spend too much time to achieve. So in three, four days, they must be imparted with all this knowledge. So we use the competency matrix to do that.

What is important for successful academia-industry cooperation? First of all, your ability to identify the university with the right industry knowledge; second, a collaboration model that is self-financing; third, when industry needs are communicated and understood by universities; the exchange of staff is a good way of actually transferring knowledge; university-industry partnerships on certain projects; industry-relevant applied research; and industry contribution to the curriculum.

Some of the failures that we need to look at. There must be a business model, so if there is no business model, you could wind down interest. Long-term models verses short-term models. SMEs are thinking short term, and some of the solutions could be a bit more long-term. Sometimes, our universities are too well funded, so they are not in a hurry to actually meet the need of SMEs. Lack of industry suggestion and involvement in research topics is another problem. Placing value on applied research, not just a pure research part, is another area, research that we can use practically in SMEs’ environment. Then, the other thing is that there is no institutionalized platform on which academia and industry can meet each other.

So for the future outlook, we are hoping that universities will be able to identify those that are connected. So these are the ones that will come and work closely with industry. We have realized that if a university is not ready for collaboration, there is not very much we can do to change their stance until a bit later, which takes too long. For industry players, basically what we want to do is we have got a lot of research needs, and the research projects in the universities must be available for us so that we can identify where the results are and on what are they researching. In the case where they are researching on something incorrect, then what we will do is to give them feedback and say, “This is important to us.”

Then, of course, universities all have their specialty. We like to know which are the universities specializing in what area. If we can recognize what are the university’s specialties, then we would like to tap into the university knowledge. And all these things must be done without too much time and cost to SMEs, so we hope that, through all these individual collaboration, a national academia-industry collaboration website to be set up so that we can actually identify exactly who can work with which industry.
Then, of course, there must be a mechanism for academia-industry collaboration to be successful. There must be constant feedback on this model, whether it is working or not. And this feedback must not be just from academia’s side. We believe that industry feedback is quite important because right now, the measure of a good academic environment—the paradigms are all set by academia, so if we have a performance scoreboard of all national universities and how they are performing according to some industry paradigms, that would actually create an ideal academia-industry collaboration platform that is self-monitoring and that will ensure progress in academia-industry collaboration. Thank you very much for your attention.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. I have one question. You talked about using a competency matrix for linking up further the academia-industry cooperations, and as far as I remember, you mentioned that in the competency matrix you deal with 20 universities in Malaysia. But are you going to deal with Malaysian universities only, or are you going to deal with foreign universities as well?

Jeffrey Phang

In the competency matrix, we would like to actually deal with all universities. We had in fact started work with some universities, but after a few false starts, we knew we had wasted time. And from our perspective of industry, we realized that the first consideration that we have to make is that we have to only work with universities that are willing to work with us, willing to listen to industry. So that eliminated quite a lot of universities. Universities are operated on a budget, companies are operated on a profit, and so the time urgency is all very different. We have tried to corporatize universities and make them more income and profit-driven, but I think this is something that we are still working on.

So if you look at the final platform that we are trying to do, we are really saying that we want all the universities to be involved in this collaboration framework, and you will see that in the future, this platform will enable all universities to show what are their strengths and what is the focus of their research. Of course this will then let industry decide which research we want to capitalize on and which one we actually want to bring to the market. So, yes, we would like all universities to be involved, but implementation-wise, we will have to take only those that are willing to move ahead with industry.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Now, I would like to open the floor for just one question. Any question? If there are no questions now, questions can be raised during the discussion time at the end.

With this, I would like to close the morning session. We will resume the presentations after lunch.
<Coordinator> Tetsuhiko Ikegami

Let’s start the afternoon session. First, I would like to ask Professor Shinzo Enomoto at Chiba Institute of Technology. Professor Enomoto is conducting specialist research in the general engineering fields of technology, life science, information science, and management projects in these fields. Today, he will provide you with outlines and policy of academia-industry cooperation in Japan, university trends and other related issues arising from academia-industry cooperation in Japan.

Shinzo Enomoto (Professor, Chiba Institute of Technology)

Hello everyone. As introduced by the coordinator, I am Enomoto of Chiba Institute of Technology. My professional field is mechanical engineering, but recently I have shifted into project management. I would like to thank the staffs of JETRO, Fukushima Prefecture, and all those who have turned out today for this Forum. This morning, Professor Nishi described us a framework of how universities should be. I usually write rather qualitative paper on this subject, but here I would like to present my ideas of how universities should think through case study of my venture business.

Please allow me to talk about my professional background. I started out working for the prefecture and then took a job in the Government of Singapore. After working in Singapore, five years ago I came home to my alma mater, the Chiba Institute of Technology, on the occasion of newly establishing a unit for project management.

Project management is to effectively manage and administer engineers and technicians across a wide range of fields all together, in order to elicit positive outcomes to the client. In doing so, it is important to make effective use of the resources of the project, namely the people, goods, technology, information, communications, and financing, so that we can bring about just enough results, which is the goal of the client.

To give a small example, technical universities in Japan have until now been incubators for top-class engineers. If it was an orchestra, they would be the players. My department is rather an incubator for conductors; in other words, we are developing the businesses that combine or coordinate those players. Therefore, allow me to share the case study of business creation, in which I am engaged every day.

Looking at the chart in the handout, the top part shows conventional subsidized projects for technology development. What I would like to draw your attention is that administrative bodies – that is, central government, prefectures, and in some cases cities – are all outsourcing subsidized projects to SMEs. Conventionally, academia-industry cooperation is made at the phase of technology development. Furthermore, SMEs, and companies in general, develop products and take them to the market in order to revitalize their business. This is the sequence of work. In conventional technology development projects, academia-industry cooperation ends at the conclusion of the technology development. You can see how the cooperation would have less impact on the revitalization of business. Therefore, together with Chiba Prefecture I am currently working out a possible plan to extend academia-industry cooperation to the stage of development of specific markets, from technology development to development of specific market.

The concept of specific market is not widely recognized by society, but it involves setting goals.
depending on your own capacity in terms of what is sold, how much is sold, through what channels, and in which regions and areas those things are sold. This goal must be set before a project starts, not after the technology development or product development, with a concept of market creation and product development in mind. Then at the stage of technology development and product development, a partner with interest in the business is selected with whom to carry out development. It is at this point that the goal is set for development of a specific market. Academia-industry cooperation continues to this point.

To give one concrete example, I think that in fact administrative institutions, university research laboratories, and university course materials can be thought of as specific market, and another significant specific market would be large firms. Furthermore, when the time comes to put the product into the general market, it would be done through the partner that had developed the specific market together.

In brief, a lot of SMEs do not have enough sales channels. Therefore, the concept I have in mind is that products will go out into the market with help of a major corporation or administrative body. For example, I am carrying out SME’s business creation with Chiba Prefecture, more specifically, we are developing collagen. Industries, which use collagen – the cosmetics and drug industries –, have a negative image as a result of mad cow diseases (BSE), as you know. Further, we have received requests for collagen extracted from natural sources as there was some concern regarding the diseases. The governor of Chiba Prefecture says that the industrial structure of Chiba Prefecture is well balanced at about 30% each for fisheries, agriculture, and industry. In my opinion, this could also be said to be a prefecture without any special features.

Therefore, I focused on fisheries, a traditional key industry. Although some sorts of fish are artificially cultivated, most are caught at sea, so they are close to nature. Here I looked at fish scales. The scales of fish are full of proteins, containing around 30 types of amino acid. I was thinking about extracting collagen from them, but because I am not a specialist, I then created a support group. This support group is divided into technology support, evaluation support, production process support, and patent support, and each support group carried out their activities under individual projects. In terms of technology support, extraction technology is scientific, so a specialist in the field gives his or her support in this regard. Evaluation support is needed to make surveys to see if that technology is worth applying. And for production processes, we had already started to think at this stage about production processes in the event that the business will be set up. And then, patent support. If, during the project process, another company obtained the patent, that patent potential would lose much of its value. Therefore, we also have to consider withdrawing from the project if that would be the case.

In this way, the goal of market development is set in the process of technology development, and effort is made toward the goal. This is the concept of specific market. Furthermore, as I explained earlier, the process shown in the handout on the right-hand side goes right up until development for the general market. So, if we want to do this, how should universities and business change?

Professor Nishi spoke this morning about the framework, but where we are at the cutting edge, the place where the connection between business and universities is being forged channels to the university need to be strengthened. This could be adequately expressed by the Japanese saying, “Let’s all eat always from the same bowl.” To be specific, universities actually recognize their identity as a local economic resource. We have been inclined to evaluate university faculty on the basis of academic papers.
alone. I think faculty performance evaluation must be reformed.

Currently in my department, we set four items for evaluation: service to society, service to business, administration service within the university, and academic papers, and we disclose these information. Therefore, when faculty members receive promotions, we are changing the process to one where a decision is made based on their own proposal.

Furthermore, we are currently working on establishing a Business Creation Support Organization or Project Management (PM) Center. The Business Creation Support Organization is mentioned in the presentation material already distributed, but for details please refer to my research paper. As Professor Nishi mentioned earlier, this PM Center aims to manage talented individuals working together. Therefore, government and university invest in the creation of this Center. In this Center, individuals, groups, and organizations will be registered as human resources.

SMEs, in turn, will take advantage of this Center, using its human resources. In the future, I would like to consider possible bi-directional utilization by SMEs, in which SMEs can be both clients and suppliers of the Center’s services, depending on the case. My intention is to establish a joint-research center in the Chiba Institute of Technology as a center that can implement business creation.

I have to conclude my presentation. Currently the academia-industry-government cooperation provides support particularly for SMEs by developing technologies. Adoption of project management will result in the development of specific market. My proposal is to change the marketplace to one where technology is developed. Thank you for your attention.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Now I would like to introduce Mr. Tatsuya Niwa from Yamagata Prefecture, the Executive Advisor to Miyagi Kogyo Co., Ltd. Mr. Niwa undertook research into a special type of shoe sole using rice bran with Professor Kazuo Hokkirigawa of Tohoku University, and today he will introduce the results of that research as a successful example of academia-industry cooperation in Japan.

Tatsuya Niwa (Executive Advisor, Miyagi Kogyo Co., Ltd.)

Good afternoon. With the exception of myself, all of the presenters today are involved in cutting-edge high-technology, and I must say that in my capacity as perhaps the most traditional or rather long-running industries to be represented today – the shoe-making industry – it is an honor for me to be here today and I am grateful to all those responsible for making my participation possible.

What you can see on the screen is the shoes that we developed and I would like to provide you with the process and background to the development of these shoes as a probably unique example of academia-industry-government cooperation. It has already been mentioned that we are a successful example of such cooperation, but I would like to clarify the definition of “successful” by myself. If success means a “company making money” or “improved performance”, then we have not reached that stage yet. Let us define the world “success” as follows: to produce and sell something that is accepted by consumers as useful in their daily life, which then in turn creates a situation where more demand can be expected, or to succeed in commercialization of products.

I would like to start with a background of my company. Miyagi Kogyo was founded in 1941 and is currently engaged in manufacturing leather shoes in Nanyou City of Yamagata Prefecture. At its peak,
the company had 280 employees, producing 300,000 pairs of shoes annually. But it has since been downsized to 60 employees and has now an annual production of 180,000 pairs of shoes. Most of the domestic manufacturing of shoes has been rapidly transferred overseas, mainly to China, and now there are very few businesses consistently manufacturing shoe products in Japan.

Even under those circumstances, we have been trying to continue consistent production from designing through finishing. Firstly, it is because we believe in the significance of making shoes to promptly reflect people’s down-to-earth needs. The second reason is that there are young workers in Japan who are eager to create their own original shoes and therefore we feel it important to secure for such people an optimum working environment.

The first reason is based on the idea of local production/local consumption, of making products close to the area in which consumers are living. If this idea is converted into our phrase it would be “shoes for the people of Yamagata Prefecture should be made by the people of the prefecture for the people of the prefecture”. Based on this idea we engage in our daily work. It was on such a basis that the “Not-so-Slippery Shoes of RB ceramics” were made possible by technology developed through cooperation among industry, academia and Yamagata Prefectural Government.

Next, in regard to the process of cooperation, there were key persons involved. While on the industry side I was involved, on the academia side, there was Professor Kazuo Hokkirigawa. At that time Professor Hokkirigawa was an assistant professor of the Faculty of Industry at Yamagata University and he is currently professor of the graduate school of Tohoku University. He had personally always been interested in making shoes that do not easily slip and is an authority in friction. Another key person was Professor Hiroyuki Ono, who was then seconded from the Yamagata Prefectural Government to Yamagata University, and has since returned to the prefectural office. In August 1999, Professors Hokkirigawa and Ono came to our company and told us of their idea. I realized that non-slippery shoes were something very close to the hearts of people living in the snowy northern regions of Japan and I immediately set about on producing test samples. Three months later, in November 1999, about 20 to 30 test pairs were provided to Yamagata University for sampling and testing. Of course also within the company we conducted tests for the shoes. This process of development lasted over the course of a year until we finalized the development of the not-so-slippery shoes. Then, in January 2001, the production series was released for sale to the general public. To date, approximately 4,000 pairs of shoes have been shipped.

Let me now say a few words concerning the form of academia-industry cooperation as experienced by our company. In my view, cooperation between industry and academia alone is insufficient. The public sector must also be involved. As a traditional industry, or virtually an underdeveloped industry, it is no easy thing for a company like ours with few links to work with a university. Therefore what is necessary is an intermediary body to act as a matchmaker between companies and universities. That should be a public sector or public-oriented organization. In our case, it was the prefectural office that took on this role.

Next I would like to mention the significance of local production/local consumption, and we believe that it is significant to produce goods locally that are needed locally, particularly in this era of globalization. The appraisal of non-slip functions cannot be done merely by laboratory data alone. It is our belief that the ultimate appraisal is when consumers put their hands in their pockets to spend money
on the product itself. We wish to win direct and immediate evaluation from local consumers. Production and appraisal on the local level is the swiftest method and the one by which word-of-mouth is very important. In this way it can be seen that local production/local consumption are of great importance.

On the other hand, we, as a private company, have to sell our products. It is therefore necessary that the customer is aware of the existence and virtue of our products. The product therefore needs to be advertised, but there are limitations that one company can do because of cost factor. This is another role that we could expect of the public sector. By holding exhibitions and expositions in various forms organized by the public sector, this would provide us with an opportunity to display our goods. We have already made maximum use of such occasions and we believe such an opportunity is very important for the promotion of local production and consumption, and our expectations to the public sector are accordingly large. Those are my brief introduction of and it is our belief, based on such experiences, that for local traditional industries, it is important to receive evaluation by local consumers to achieve further growth.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Now, allow me to introduce the next presenter, Professor Shigeaki Tsunoyama, professor at the University-Business Innovation Center (UBIC) of the University of Aizu. For many years Professor Tsunoyama has been serving as a cutting-edge engineer at Toshiba Corporation, and in September 2002, he was appointed a full-time professor at the UBIC.

Shigeaki Tsunoyama (Professor, the University of Aizu)

As introduced, I have just moved from the private sector to the academic world. In that sense, what I would like to say today is related to university activities, but I feel that there is some gap between the academia seeds, or the research of university professors, and the actual manufacturing and launch of products in business. Indeed, from a private sector viewpoint, if business development is not needs driven, then it will be difficult to lead to tangible results.

Presently, we intend to promote a needs-driven academia-industry cooperation at the University of Aizu that will act as a liaison. The reasons for this endeavor stem from some negative experience in the past that I will explain now. Four to five years ago, I created a physical random number generator. At that time, there was competition in sales of supercomputers, and two of the competing companies were Hitachi and IBM. While Hitachi could create such a generator, IBM was only specialized in making computers and could not create a random number generator, so it asked Toshiba to create it. This was a routine operation for us, so we created the generator at the cost of approximately 20 million yen in development expenses.

We approached the project quite optimistically, thinking that if IBM won in the competition, the generator could be sold for about 200-300 million yen. However, unfortunately, IBM lost the all-important supercomputer competition and there was no one we could sell the generator to. As we did not wish all our efforts to be wasted, we immediately conducted market exploitation and sold some of the generators to the Defense Agency for their coding-related work. They never told us how they used the generators but at least they bought them. Then we approached the finance-related market. In such a market, an extremely large number of random numbers is used to make derivative forecasts and share
forecasts, so we managed to realize some sales in that field as well. Third, recreational facilities. I am not sure if the foreign guests today are acquainted with this, but in Japan we have something called “pachinko.” A pinball machine has a very complex system, and since it is necessary to prove that chances for winning are theoretically correct, the pachinko industry purchased the random number generator. The sales volume on the market was about 300-400 million yen, but since we considered it was not going to increase, we stopped further sales.

However, the Nihon Keizai Shimbun published its opinion in a top article that it is a very positive move to make business by combining state-of-the-art technology in the field of atomic energy and the one in the field of finance, something which got a late start in Japan. Minister Takenaka, who at that time was a professor in Keio University, spoke very highly of our venture, but actually it was not very profitable, although our invention got a Japanese and a US patent. With this example I wanted to show you that all such efforts will turn out fruitless, unless they are adequately focused on market trends.

One more example that I will bring to your attention is our experience “From Seeds to Needs,” which I consider to be rather successful. An entrepreneur in Yamagata Prefecture engaged in civil engineering work had a difficulty with earth and sand, and with the high concentration of water in them. As he was unable to find a disposal ground, the earth and sand turned into industrial waste, so he asked for advice from the academic circle to which I belong. That was a rather small circle, with about 800 members, and at that time I was serving as its chairman. We were asked for advice and we gave guidance in cooperation with the venture. There is a means called the Bon Terrain Method, as you can see in the distributed paper. In French, *bon terrain* means “good earth.” This is an example of how, using this method, the academic circle supported the venture to transform the bad earth with its high concentration of water into good earth and to reutilize it.

Thus, we supported the venture by making a pamphlet in which the name of the academic circle is appeared in the top left part. I apologize for the small letters. In the upper part there is a list of about 30 companies. All these companies are SMEs. They are not large companies, like Toshiba. We, as an academic circle, formed a team with these SMEs and cooperated with them to enable the application of the above-mentioned method in Japan. Acknowledgement of technology by local governments is vital for enabling small venture businesses to use technologies for these kinds of operations, but to achieve such acknowledgement is a very hard task to be accomplished by one venture enterprise alone, so the academic circle provided support. Technology advisors in the academic circle are in the papers. Our experience shows that a needs-driven approach will establish teamwork on a wide basis, which will result in specific development.

I have just come to the University of Aizu, but I intend to work on future models for academia-industry cooperation using my experience to date. Earlier today we heard a presentation by a Stanford University professor, and in that regard I would like to mention that we have a staff member who worked at the Stanford University as a visiting professor, so we intend to draw on the Stanford and Northern European business models as models for academia-industry cooperation and to participate in such cooperation, focusing our concern on needs. Thank you for your attention.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. I would like to proceed with our next presenter, Mr. Yoshibumi Kawauchi,
who is engaged in a joint project with Professor Nikolay Milenkov of the University of Aizu for the development of a certain system for use by the elderly and the disabled as well as other people.

**Yoshibumi Kawauchi (Senior Managing Director, Aizu F-COM Co., Ltd)**

Good afternoon, ladies and gentlemen. My name is Yoshibumi Kawauchi and I work at Aizu F-COM. First, I would like to extend my gratitude to everyone concerned for giving a small local business like Aizu F-COM a chance to make a presentation at this Forum. I hope my presentation could provide guidance to representatives of SMEs that have gathered here today to engage in academia-industry cooperation projects.

In my presentation, I will raise following three points. First, objectives of regional SMEs to engage in academia-industry cooperation. Second, results of their engagement in such cooperation. Although at present, honestly speaking, the examples of our academia-industry cooperation have very few results to report, we intend to continue our efforts in that direction. Finally, I will raise several points for success in academia-industry cooperation, based on our experience.

First, let me introduce my business. Aizu F-COM was established approximately three and a half years ago. It is located very close to the University of Aizu. In regard to the content of operations, the company provides system integration in the form of computer-related learning services. The company has 45 employees. Its characteristic area of expertise is integration of administrative systems for local governments. Furthermore, it advances its business activities through a community-based approach, which includes joint research projects with the University of Aizu. We are advantaged by the geographical closeness to the University. In regard to its area of expertise of local governments, it is said that the transition to mass production, due to various financial difficulties in the public sector, is somewhat challenging. However, we believe that the electronic government-related operations within the framework of the “e-Japan Program” formulated by the Government will present substantial opportunities for future development. In this sense, we intend to accumulate competitive knowledge and technology through various cooperation projects with academia or universities, and to utilize them for our future development.

In regard to the market and trading area of Aizu F-COM, as our expertise involves the integration of administrative systems for local governments, 90% of the demand comes from the public sector or government, and 10% from the private sector. The ratios by area in which we develop our operations represent 90% in the local community and 10% in other areas. In this sense, on one hand, the added value the company provides in its area of expertise will further improve. On the other hand, although we heard some opinions in the morning presentation session that we must not undertake tasks that go out of beyond our areas of expertise, I think that new business areas can be born through the academia-industry cooperation.

Next, in regard to the significance of academia-industry cooperation efforts, I will raise four objectives that Aizu F-COM considers important. The first two are new business creation and expansion of new markets. In addition, we share technology with the University of Aizu, an academic institution that specializes in computer engineering. In that sense, we perceive it as extremely efficient for the securing of new human resources.

Furthermore, I think that new business creation and expansion of new markets are fundamental objectives of academia-industry cooperation. Further, improvement of business climate is another
objective for engaging in academia-industry cooperation. It might sound rather disrespectful, but I think that when getting in touch with university professors, business people like me experience some cultural differences. In my opinion, these cultural differences may offer an opportunity for us to obtain some new ideas and perspectives, which otherwise cannot be born within the enterprises. Thus, creating opportunities for expansion of the horizons of every employee of the company, and for getting in touch with universities, will result in expanding horizons and globalization. In this sense, the contacts with different cultures will improve the quality of enterprises and their corporate abilities, and will cultivate the ability to respond well to the expected social changes in the future.

Next, I will talk about results. As Professor Ikegami, the President of Aizu University, mentioned already, Aizu F-COM has been conducting a joint research project with Professor Milenkov of the University of Aizu for about three years. The theme of this project is development of a communication tool for use by the elderly and the disabled.

What we mean by a communication tool for use by the elderly and the disabled is, in other words, a tool that can be used by persons in a weak position in obtaining information. We engaged ourselves in this project with such a high ideal that, if our system is used successfully among those disadvantaged in obtaining information, it could also be used by all. The achievements of the approximately three-year implementation are a technology patent and demonstration with prototype, which were assessed by our potential users. However, unfortunately, we still have not reached any product shipment. The first reason for our inability of shipment of product is insufficient quality. The versatility and functionality of the product as a package are still not sufficient. In addition, there are various differences of opinions in regard to the way to advance the project, and it is not proceeding very smoothly.

In the future, we plan to participate together in the Joint Research Project for Demonstration of Intellectual Clusters in Fukushima Prefecture, so we intend to apply our experience to date and work toward achieving good results.

Now, in my opinion, the reasons why the project is not proceeding smoothly stem from the slight gap of perception between business and university. Objectives of the enterprise are to control investments as much as possible, to reduce risk, and to produce business results immediately, while the university thinks that the more research budget is, the better, and wishes to conduct research without haste. Therefore, I think the two sides must realize the specific sharing of objectives to be achieved and clarify their mutual areas of expertise and roles before starting joint projects. In that sense, it is very important to strictly formulate a business plan that can be shared by both sides.

Finally, I would like to elaborate a little more the issues of investment control and risk reduction that I mentioned before. Nowadays, numerous support systems that incorporate various methods implemented in a number of countries have emerged in an attempt to control investments and reduce risk as much as possible. Enterprises can receive various types of support, including development expenses aid and management support, and therefore they should utilize them actively. In addition, there are liaison organizations that support this system. So, in my opinion, enterprises should work on reducing risk while utilizing effectively those organizations. The company I work for is also engaged in this support system, and since I heard that many representatives of governmental circles, which are one side of academia-industry-government cooperation, are present here today, I would like to finish my presentation with some issues to be considered in the future and some requests.
I would like the Government to consider to simplify application procedures to various support systems and on-demand reception. For SMEs, application procedures are too complex and take a great deal of time to complete. In that sense, I would like to ask the Government to make some revisions such as changes in the form of applications in order to simplify as much as possible application to various systems so that SMEs can apply for support more easily.

I just mentioned on-demand reception, but in my opinion business plans and ideas are not something that emerges in line with the system. In reality, ideas sometimes require support immediately after they are born. Understanding fully that there are often difficulties related to budget and so on, I would like to ask the Government to consider revising the procedures in terms of limit for application period and form.

As for our cooperation with the University of Aizu, we have signed a joint research contract. My request is to show flexibility of such joint research contracts with universities. Currently, contracts are signed for a fixed amount of research expenses, but I would like the Government to consider adoption of incentive contracts, which take into consideration achieved results. Presently, the project we are working on still has not reached a stage at which I can report sufficient results, but our intention is to continue working in order to be able to present before you specific results at some later occasion. Thank you very much for the attention.

 Coordinator Tetsuhiko Ikegami

Thank you very much. What was pointed out at the end of the presentation is in particular a very important issue and one that is typical not only in Japan, namely the issue of government bureaucracy. High-tech ventures and in particular perhaps start-ups place great importance on speed and we face the difficulty of raising such concepts as “speed” or “risk” to government officials. I would like to invite discussion on what the role of government should be in the final session.

Now allow me to introduce the next presenter from academia, Professor Sadao Omata from Nihon University. Professor Omata has for a long time been at the forefront of academia-industry cooperation in Japan and has supported research and development activities of SMEs over a long period, even before academia-industry cooperation began attracting much attention. He could be called the pioneer of academia-industry cooperation in Japan.

Sadao Omata (Professor, Nihon University)

My name is Sadao Omata of Nihon University. I am most grateful to have been invited to such an occasion as this today. While the main part of Nihon University is located in Tokyo, the College of Engineering moved to Koriyama about 50 years ago. I began to be involved in academia-industry cooperation from the 1990s, and ten years ago, in 1992, I visited Professor Constantinou, who is here with us today, at Stanford University, and after observing the joint research activities and environment over the course of a year at Stanford, I became painfully aware of how retarded Japan was in this area. After making such observations, I returned to Japan. At that time, it was not common at all for universities in Japan to apply for patents for themselves or establish a company or start a venture business, and such attempts, if there were any, only resulted in verbal bashing.

Despite such an environment, realizing that something must be done, I have then been engaged in joint research with various companies numbering about 10 to date. It is very important that universities
do something in the industrial field, but at the same time it is also important that universities do not engage themselves in something merely for the sake of doing it. I believe that the real technical capability and core technologies possessed by the universities should be used with the involvement of enterprises.

As an example of what can be done in my own research field, I show in the distributed paper a picture of the Mona Lisa. Among the five human senses, which are illustrated on the left side, thanks to the advancement of IT technology, the two senses of sight: vision and hearing: audition are being rapidly developed. However, only haptic technology is still a virtually unknown branch of technology. At Stanford University and Massachusetts Institute of Technology (MIT), haptic technologies collected from around the world are being used in an attempt to create a technology that can realize a virtual reality. Regrettably however, no such technology has yet been realized. In actual fact, from last year I proposed to the Fukushima Prefecture and central government the real importance of haptic technologies in the coming age and requested that a cooperation be initiated among the University of Aizu, Fukushima Medical University, and the College of Engineering of Nihon University in an attempt to collaborate medicine with engineering. We applied for the Project for Formation of Intellectual Clusters in Fukushima Prefecture, with the IT prowess of the University of Aizu, our haptic technology, and the medical knowledge of the Fukushima Medical University, and this was adopted under the Project to Promote Academia-Industry-Government Cooperation in the City Area of the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

The core technology is developed at the Worldwide Research Center for Advanced Engineering and Technology (NEWCAT) of the College of Engineering of Nihon University, established in April 2002, and although we are an engineering university, we established a hospital in the Center. A detailed explanation of the hospital is available in leaflet format at the back of this auditorium, but allow me to mention that we established a hospital in the College of Engineering for research purposes with facilities capable of transplants, surgical operations, diagnosis using x-ray and supersonic ray, genetic engineering, and cell regeneration. As you can see on the right side of the slide, we are dealing with many themes. For the themes numbered one to nine, we have submitted applications for patents.

The section colored blue on the slide is related to virtual reality. For these themes also, patent applications have been filed and we are working to realize this system with the University of Aizu and Fukushima Medical University as the intellectual cluster in Fukushima Prefecture. Accordingly, we are aiming to realize a “partnership between medicine and engineering” in a format that links with IT technology and nano-technology.

One example is this one, which is a system to check for breast cancer. In actual fact this project has been in operation for some time and can be realized as a technology we are conducting under the Project for Formation of Intellectual Clusters in Fukushima Prefecture, a research and development of a small-size handy-type product that will enable women to check themselves for breast cancer. This is also being supported by the intellectual clusters in Fukushima Prefecture.

Next, when talking about how and under which system Japanese universities are mobilizing technology transfer and acquisition of patents, in the case of universities, there are TLOs. Although I am professor of Nihon University, at the same time I also own a company called Taozer Research Center Ltd., of which I am president. Given that if the technologies that have been given birth to at a university
are transferred to the hands of TLOs, the university gains patent fees and Taozer pays royalties to the Nihon University TLO. In addition, in my private capacity I am involved in various projects with private companies and, in these cases too, private sector companies conclude contracts with Nihon University and are paying royalties for use of licenses.

In terms of the basic proportions, when I apply to the university for a patent, I receive approximately 50% of the royalties. The remaining 50% is split evenly between the Nihon University TLO and the College of Engineering of the University. This is the form in which it works. I think almost all universities are in the same direction. In most cases, the patent system receives support of Fukushima Prefecture and the central government. What we are doing jointly with P&M Co., Ltd., the president of which will give a presentation next, is a development of micro actuator system. This is a system that measures from the nano-level to the macro level and P&M have developed this system. P&M will give a specific talk about this technology.

Finally, although there are various opinions concerning cooperation between universities and companies, as Professor Nishi has spoken in his keynote speech, without passion and strong will or conviction, Japan will only fall into a mire. It is my belief that with such strong conviction, people can move forward successfully, no matter how hard it may be.

One more thing is that at this APEC SME Business Network Promotion Forum, there are many people from different countries and universities, and we are now in a world in which one university or one company cannot achieve things alone. Indeed, through coordinating effectively the core technologies with originality, cooperation will proceed not only in Japan or indeed Koriyama but also in the number of partnerships among companies and universities around the world. In this context, the companies of Koriyama and Japan should not seek only to enter into partnerships with Japanese universities, but also seek possible cooperation with overseas universities.

Finally, I would like to take advantage of APEC to actively make partnerships between various universities and companies and I would like to ask for your cooperation in this regard. Thank you for your attention.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Actually, Nihon University is a private university. Therefore conditions are quite different from that of national universities and local public universities run by local governments, and nowadays it is adopting the American style of academia-industry cooperation. By the way, in Japan there are 99 national universities, 74 local public universities run by local governments, and approximately 500 private universities. Currently, a reform of national universities is underway and in two years time the university staffs, who are now civil servants, will be converted into non-civil servants. At the present point, local public universities have no concrete ideas as to their future orientation. In any case, I think we all recognize that private universities like Nihon University are undertaking rather actions vigorously in view of the future.

Now, I would like to invite our next presenter, who was just introduced, Mr. Yasuo Tamanoi, President of P&M Co., Ltd. Mr. Tamanoi recruits talented graduates of the College of Engineering of Nihon University, and is engaged in a joint research with Professor Omata for the development of a small-size, high-density, cylinder-type microactuator.
Yasuo Tamanoi (President, P&M Co., Ltd.)

As introduced by the coordinator, I am Yasuo Tamanoi. I would like to express my deep gratitude for being invited to this Forum. Allow me first to introduce my company. Its name is an abbreviation of two words, peace and mind, which are recognized as necessary for all aspects of social life, including manufacturing. I was motivated to name the company P&M by my desire to work with full consciousness of the meaning of these two words. I established P&M in October 1998, in Aizubange-machi, Kawanuma-gun, Fukushima Prefecture, so the company has just reached its fifth anniversary. At the background of the slide is the Tsurugajyo Castle, which is a landmark of Aizu-Wakamatsu City, and was built 600 years ago. The Castle is one of the city residents’ favorite spots because of its cherry garden as well. The site of our plant is approximately four kilometers from the Castle. This is P&M Wakamatsu Plant. The Plant was moved to this two-story building in Kogyo Danchi, Monden-machi, Aizu-Wakamatsu City. The first floor is occupied with the processing plant and the plant business office, and the second floor with business offices. The plant facilities, as displayed here, consist of machining centers, cutters, high-precision wire EDM (electrical discharge machining) machines, grinders, and a milling machine.

In terms of P&M selling points, we aim at need-based manufacturing, supported by the following three fundamental elements: outstanding technology, highly creative development ability, and highly competitive dynamism. P&M’s major activities consist of design, development, and production of mainly metal products.

Next, allow me to show some of our products. This, as many of you probably know, is called a linear guide, and it is a ball-shaped pairing used as a guide and extended along a straight line. The measurements are not shown here but this linear guide is really very small. This here is a slide guide. Its shape is the same as that of the linear guide that I showed you, but the big difference between the two types of guides is that the slide guide is ball-less, with a special coating on the block leading apexes as a substitute. This type of guide reduces abrasion and potential resistance. Since the guide is ball-less, the hitting sound of the ball during operation is completely eliminated. Another characteristic feature of the guide is that since the apexes are covered with special coating, it can be operated smoothly even without applying grease or other lubricants. Therefore it is considered most appropriate for application in a clean and quiet environment.

Next, I will tackle the issue of academia-industry-government cooperation. As you can see on the screen, P&M is in the process of the implementation of a joint research and development project in cooperation with the College of Engineering at Nihon University and Fukushima Prefecture. This cooperation resulted in the development of various devices and equipments, including microactuator and urine incontinence diagnostic device, as well as of a three-dimensional microstage under the Fukushima Prefecture Spiral Plan that started this year.

First, the three dimensional microstage. It is a jointly developed product used mainly in cellular level research. Currently, the micro manipulator is the major product used for that purpose, so you may consider the three-dimensional microstage as its alternative. We were commissioned by Fukushima Prefecture to develop this product and are currently working on it in a joint project with the College of Engineering at Nihon University.
Next, the urine incontinence diagnostic device. Currently it is in the process of testing, so there are some details on which I cannot disclose information and will refrain from providing explanations at this point. Let me just say that we are developing this product in a joint project with the College of Engineering at Nihon University.

The product I would like to present to you next is the electrical microactuator, which P&M launched to the market as an original product of the company. This actuator, called PMMA-1005S, has a five-millimeter stroke, and is the first product of that kind in the world that features small size, lightness, and a high level of precision. This is PMMA12-15S16, an upgraded version of the actuator in terms of stroke and speed, which features a fifteen-millimeter stroke. This is PMMA-1215S2OK. It was upgraded in order to realize even better stroke and speed than the S16 actuator. In terms of size and capacity, it is an unprecedented product. We plan to equip the actuator with a position-tracking sensor, which is currently being developed mainly by the College of Engineering at Nihon University. We will present the actual device the day after tomorrow at the Business Creation Tohoku 2002, so please come and visit our booth.

Lastly, I would like to tackle the issue of academia-industry-government cooperation from P&M’s point of view. First, as you can see on the screen, when academia-industry-government cooperation is implemented in a smooth and effective way, the fusion of the technology and skills of Fukushima Prefecture, the College of Engineering at Nihon University, and P&M, will result in a substantial improvement in product development speed. Furthermore, the combination of original viewpoints of each side in the cooperation will enable a supply of original products and products that meet users’ needs. P&M is determined to continue participating as much as possible in the academia-industry-government cooperation.

Finally, I would like to address all those representatives of enterprises who aim at creating development-type enterprises. Including this kind of participation in your business plans and realizing it without delay will accelerate the start up of your enterprise. With these remarks I would like to conclude my simple presentation. Thank you for the attention.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Next, I would like to invite the presenters from China. First, we will hear the presentation of Mr. Chen Hongbo, Deputy Director of Tsinghua University Science Park Development Center. Tsinghua University Science Park Development Center, is one of the top-level R & D institutions in China and is a part of the Zhoggnuancun Science Park, called the Chinese Silicon Valley.

Chen Hongbo (Deputy Director, Tsinghua University Science Park Development Center)

I am very glad to have this opportunity to introduce Tsinghua University’s practice, industrial-university cooperation and industrialization.

Tsinghua University is the most famous university in China. It has about 90 years of history and student enrollment is about 20,000. Making a direct contribution to the development of the country by accelerating the transfer of technology has become a more and more important objective of the universities in China. Also, during the modernization of China, universities are becoming the center of society and thus the social service function of the university is becoming more and more important.
So my introduction will include those points. The first one is the function of Chinese universities and the practice of technological transfer of Chinese universities, the achievements made by Tsinghua University in China, and problems in the human resources scheme.

We think there are three functions of Chinese universities. The first one is cultivating the talent of personnel, the second is scientific research and the third is social service. Of course the university’s main job is to cultivate high-level qualification and diverse and creative personnel.

For scientific research, the university is the important base for knowledge and technology innovation of the country. So we are concentrating on original and strategic primary research and strategic high technology that symbolizes the great strides of national technology, and also research for applied technology.

The third one is social service. Universities are providing wider and wider social services in many aspects like the cultivation of people, transformation of high and new technologies, strategic research, consultation, promotion of new technology, etc.

I think the main characteristic for Chinese universities in transfer of technology is not only that we sell the patent, but also that we participate in the process of the transformation. That means the universities serve as a support platform and provide a new creative environment for local and national technology invention and the development of new, high technology in the industry. Why we are doing it this way is that because in China, from long ago, it was decided that enterprise would not normally have an independent research and technology invention function, and that scientific research achievements in the university would be very primary with very high technology, far away from any relations with industry. So now the universities and their staff have to be combined with enterprises through various ways and participate in the whole process of industrialization.

I am going to talk about the methods used and achievements made by Tsinghua University in transforming technology and the service to society. There are five points: The first one is that we have a very good relationship with the enterprise. The second one, we promote new technology by combining with social companies. The third one is that we are establishing high-tech companies by the university itself. Also, we have a very good cooperation with our local government. The final one is the establishment of Tsinghua University Science Park.

First, to create a very good relationship with social enterprise, we set up a committee named the Science and Technology Development Department. We have more than 130 members, 30 percent are from other countries, and we have already signed more than 800 contracts during the year 2001. This was about more than 500 million RMB.

Second, combining with social enterprise to transfer technology. We have one example here: we established a 10-MW, high temperature, air conditioned nuclear reactor which was decided by Tsinghua University and was carried out in cooperation with the National Electrical Energy Company. A similar thing happened with a small satellite and biological core frag technology.

The third point is that we have to set up the company by ourselves sometimes. At this moment, we have more than 10 large-scale enterprises. Some of them are public companies. Business in 2001 was more than 10 billion RMB. One example is the way we designed a large container, danger-measuring technology, which was industrialized by a Tsinghua company named Tong Fang Co. It is a listed company, and we have already received orders from Chinese customers for 47 sets, which is worth about
270 million RMB. We have also sent this product all over the world, such as Australia and Holland. There is a similar story for a solar energy company as well. We also have a very good relationship with other province governments. We try to build a very good environment for technical immersion in local areas. We have already signed an agreement with more than half of all the provinces in China.

Finally, we set up the Science Park, which is a platform for technology immersion and the transfer of technologies. The planned construction area is about 70,000 square meters. At the moment, we have finished about 25 percent of it. We already have 235 enterprises in the park, including Sun Microsystems and P&G. Their R&D centers are already located in our Science Park. The whole project here will be finished in 2005. There are three main functions for this science park: The first is that it will be a base for incubating high-tech startups. The second one is that it will be a base for cultivating entrepreneurs. We have one entrepreneur here, Mr. Ye Bin, who will give you a presentation. He is one of the entrepreneurs cultivated in our Science Park. The third is that it will be a base for commercializing scientific achievement.

Also we will have a special introduction here about a Japanese business incubator in Tsinghua University. In our office this year, we have already received more than 1,000 visitors from Japan. Also, this is my second time coming to Japan to promote our Science Park. That means that Japanese companies do have an interest in the Chinese market, but sometimes they feel a little bit of difficulty and that maybe they do not have the right channels. So we have provided a very nice environment here to help them get into the Chinese market and know the society of China. So we provide services and also business support to them.

We do have some problems when doing technology transfers. If teachers or professors participate in a company operation, that may harm education and scientific research. Also, we have had some difficulties protecting IP. There is the risk for a university where if you run a business by yourself and it is not successful, you harm your reputation. Also, some companies may use the name of Tsinghua University to do something not right. To overcome these kinds of problems, the university has already set up a committee to protect and deal with all issues about knowledge property, university staff and enterprises in society. Also, we have to try very hard to make clear the relations between cultivation, research and social services.

Finally, we are going to set up one company named Tsinghua Corporate Company. This will be the only one company that can use the Tsinghua University name. All other companies that belong to the university will be managed by this group. In this way, we can draw a very clear line between enterprise and the university, and make sure that any unsuccessful operations of the company do not bring negative influence to the university.

You are welcome to come to China. If you have the chance, please come to our Tsinghua University and our Science Park.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Next, I would like to invite our other presenter from China, Mr. Ye Bin, CEO of V2 Technology Inc. His name was mentioned in the preceding presentation and as I learn, was awarded the Star of Startups Award by Tsinghua University Science Park in 2002.
Ye Bin (CEO, V2 Technology Inc.)

Today, my topic is the student startup, a way for university-industry cooperation. I will first introduce V2 Technology, which is a student startup, incubated in Tsinghua Science Park. Later, I will address how universities can help startup companies, and then talk about the challenges of cooperation.

A brief introduction about myself. I received a master’s degree from Tsinghua University in 2000. My major is electronic engineering. I took part in the Tsinghua Business Plan Competition in 1999 and I won the Excellence Award. Later in that year, I founded a company named V2 Technology. In August of this year, I was awarded by Tsinghua Science Park as the Star of Start-ups.

V2 stands for Voice and Video. Basically, three years since its inception, we are now a profitable company. It is a video conferencing software, and it is the best selling software in China in the video conferencing software category. From this interface, you can easily see multiple people at the same time and you can also have data collaboration functionalities, such as showing Power Point or Excel documents.

Now something about how universities can help startup companies. Here, I listed some characteristics of a typical student startup. I think in a typical student startup in China, the founders mainly consist of students graduated from the engineering department. So their strengths are mainly and obviously their understanding of the latest technology. They have read a lot of papers and they have done a lot of research. Also they are very creative and they are very passionate which is very important when starting a company. Also, there are some weaknesses, such as not understanding the market very well. They do not know how to build a product—here I mean the product, not the technology. It is a long way from raw technology to a mature product. Also they do not have much business knowledge or skill sets, and they lack people and money. So all these weaknesses are points where a university may be able to help.

Take V2 as an example. How has V2 benefited from Tsinghua University? First is obviously the team. The team mainly consists of Tsinghua graduates. From a business perspective, in 1999, the Business Plan Competition was very important for us because the competition created the business awareness for me and for my team. Without the competition, we would never have been able to start up the company. Also, during the competition, we received some business training. Tsinghua held this business training jointly with companies like Mckinsey and KPMG. Also, they provided business networking; from these salon seminars, you could meet more people and get more partners and VCs.

Also, since we are making a software product, we need to upgrade our software continuously. So you need to keep your products at a very advanced technology level. So where do you find the most advanced technology? The university is the obvious choice. We have held several joint development projects with labs from several universities including Tsinghua.

Obviously, we have benefited very much from Tsinghua University. But, of all this help, I think business-awareness creation is the most important. Why? First, from the university perspective, Tsinghua was once regarded as the creator of engineers, and now it is changing to creator of entrepreneurs. How to make that change happen? The most important thing is that you should make all these engineers aware that they can be entrepreneurs some day. Also from a people perspective, before 1999, students like me, when they graduated, had mainly two choices: the first was to go for further education, most of them going to the United States; some of the elite students were able to go to Stanford or MIT. The second way was that you chose to be an engineer and you probably worked for big
companies like IBM, Microsoft and Motorola.

After 1999, there emerged a third choice, which was to be an entrepreneur. That was a very big change. So I very much agree with the keynote speech made by Dr. Nishi this morning that the most important thing is that you should break the limits of the people. You have to lead people to have more imagination about their future. From my personal perspective, the business planning competition was a turning point in my life. And, trust me, this life is very, very exciting—I mean the entrepreneur life.

However, we have some challenges as well. We held some joint development projects with the university, but encountered some problems. First was that the professors did not have much management skills. Another thing was that the professors and entrepreneurs had different ways of thinking. When we were doing a project together, the professors were always thinking, “can I write a paper on it?” While the entrepreneurs were always thinking, “can I make a product?”, “Is that stable and can be sold to the market?” So the professors tended to add more innovation to the product, they wanted to add as much functionality as possible. But the entrepreneurs were more realistic. They just needed a very stable product.

Also there was the ownership of IP. When we cooperated with the labs, the labs themselves were not business entities and we could not sign contracts with them. If you directly contact a university at the top level, then you will meet with some difficulties. So our solution is that for a joint development project, an entrepreneur had better manage the students directly. In other words, manage the students jointly with the professors. On the ownership of IP, there are some professors who are establishing their own companies and it is easier for us to cooperate. And we hope the university can set up a clear and simple rule on the IP transfer issue.

I have told you about V2 Technology, which is a beneficiary from academia-industry cooperation. And on cooperation, from the startup’s perspective, I think help on the business aspect is more important, among them business-awareness creation is the most important. On IP transfer, I think we need a clear and simple rule.

<Coordinator> Tetsuhiko Ikegami

Thank you very much for your impressive presentation. Now, I open the floor for questions to our two presenters from China. I would like to ask the first question. At the end of your presentation you mentioned that awareness creation is extremely important. Can you please further elaborate on that point?

Ye Bin

Take myself as an example. When I was trained in Tsinghua University, my major was engineering and so, all these year, I was dreaming of starting up a company because that was an exciting life, but all my education before 1999 was for me to become an engineer. That kind of education set some barriers in your thoughts. I have known some excellent students in Tsinghua University, very bright and clever. But I think the problem, the reason, why most of the students did not have a chance to start up a company is that they have some barriers in their mindsets. So I think to create business awareness or business sense is very important for engineering students, so that they may have big dreams and do not have a limit, just as Dr. Nishi said.
Who actually taught you that?

Ye Bin
On Tsinghua campus, there are many kind of nongovernmental associations. These associations held the competition, and of course they got sponsorship from the university. When they held the competition, they prepared for all the training and all the basic materials on how to write a business plan, how to start up a company.

Professor Chen, do you have any comments on this?

Chen Hongbo
Just as Mr. Ye Bin said, because Tsinghua University has a very long engineering history, what they think when going to the university is that they will become the best engineer in China. They never think that they can create a new enterprise. I agree with him, it is very important to set up the environment, to show the people “you can do it.” So the main job for Tsinghua Science Park is to provide this environment near the campus. So when new students come to the university, they can see the Science Park, they can meet friends in the Science Park, and say, “Oh, you did it? I can, too.”

Questioner
Somebody told me that in order to start a business, people usually in the first stage start as employees after graduation in order to get to know more about the market and gain experience. At the second stage, they go to sales-employ because they know more, they want to scrutinize their experience, they want to collect money for the next investment. And at the third stage, they become owners or entrepreneurs. And at the fourth stage, the dream for everybody is to become chair holders. And now, from this forum, we know that we have the chance, jumping from the first step to the second step to the third step, to become an entrepreneur. A shortcut would be really good, but I think that we also have to know the effects because people love to know about marketing and love the chance to scrutinize their own experiences.

You are one of the good examples because you are successful. But some people, when they lose the first step and second step, they do not know. Then they will miss their failures. For me, if I graduate, make my first business and then meet with failure, maybe lose the chance, lose any money to do the next one—do you have any comment on that?

Ye Bin
That is a very good question because that is also a very hot topic in China. There were a lot of student startups back in 1999, and of course you know that was the dot-com age. Some of the students started dot-com portals and ICPs, and they failed after the bubble crashed. So back in 1999, everyone used to say, the student startup is a wonderful thing. Students are marvelous. They can start up a company at such a young age. But when the bubble crashed, everybody was saying, it is not good, they are not very mature, they do not have experience and they do not have the knowledge to start up a company. It has been very heatedly discussed. From my personal point of view, I do think that you do not have such
experiences in business and managing a company. But if you really wait for several years to start a company, you are actually making a tradeoff. In these several years, when you are working in a big company, you certainly will gain more contacts, gain more experience, but you are trading experience for understanding of the most advanced technology, and in most cases, you will not be able to be as passionate as you are when you were very young. So it depends on you.

**Chen Hongbo**

Also technology is going too fast, changing very rapidly every year. If a student gets an idea and it is very nice, they cannot wait for three or five years. That is why some students are anxious to start a business immediately. On the other hand, this is the reason why we set up the Science Park as well because we have an incubator over there and the incubator has 40 small startup enterprises at the moment. So if they lack some experience in human resource, marketing, accounting or law, we can provide to the students with full service about this part, so we can make them successful. But to speak the truth, if you incubate about 40 enterprises, the final number may be only three or five. This is another thing we have to pay attention to.

**<Coordinator> Tetsuhiko Ikegami**

Thank you very much. We can discuss these issues again in depth during the time for discussions.

Now, I would like to invite our next presenter, Professor Kwack from Korea. He is currently a professor in Hanyang University and is engaged in various activities. He has been a secretary-general of the Institute of Electrical and Electronics Engineers (IEEE) Seoul Section since 2001, while at the same time serving as head of Hanyang-Fudan University Semiconductor Design Laboratory.

**Kwack Kae Dal (Professor, Hanyang University)**

I want to share a vision for academia-industry cooperation of small businesses in the global context.

Small businesses in Korea are defined in terms of the number of employees, asset size and revenue volume. Criteria are different from industry to industry. For the manufacturing industry, the criteria call for small businesses to have less than 300 employees on each payroll or less than 7 million dollars in capital. For developing and export-oriented countries like Korea, it will help to define big businesses first. The rest is then small businesses. Roughly speaking, 30 of the biggest businesses ranked by asset size are considered big businesses. They are subject to close provision and regulation by the Korean Government. They are perceived to enjoy excellent credit and brand recognition by belonging to the group. It will greatly help them borrow money from banks. However, they often complain that their business activities are constrained for political or policy reasons. Some big businesses have deliberately spun off businesses and fall into the category of small business in order to free themselves from political interference and government regulations. There are some incentives or regulations to protect and foster small business. Government may ban big businesses from entering certain businesses or government can set the military draft rule in favor of small businesses.

The development of IT challenged the traditional notion of business. The present distinction between big and small businesses will be a thing of the past. The new business notion will be redefined as either online or offline or IT based industry and mass production based industry. Big companies have a tendency to engage in core businesses only while being spun off into several specialized businesses. Big
companies rely on specialized businesses for outsourcing purposes through structural reform. On the other hand, small businesses have a tendency to merge with the companies that complement each other. Here, we can foresee the following trend, such that big businesses will diversify and spin off, and small businesses will network with the help of IT.

The emerging of China as a big player in the world economy has forced neighboring economies to reform their industry structures. China has become the world’s manufacturing center, forcing Japan and others to move their manufacturing facilities to China, leaving many voids behind.

Korea is no exception. In order to fill these voids, the industry inevitably reformed itself into an IT-based one to improve productivity and create extra product value. However, the excessive expansion of IT during the last few years and the subsequent bubble burst forced a restructuring in IT businesses. An emerging scenario pattern has suggested a new online business model on top of a traditional offline business. They work together in a perfect fit to improve management and productivity to its maximum extent.

The new model for this 21st century industry-academia cooperation calls for several elements to keep up with knowledge-based globalization and localization. A knowledge management system will be the core basis of the model. It involves the following elements, such as an international comparative advantage, establishment of strong strategic alliances, innovation of basic technologies, creation of new knowledge, and a technology system through the fusion of diverse knowledge and industries. We can bring the current industry to another higher level by moving present production technology and highly advanced information software technology together.

The critical factors that determine the success of the cooperation are technology, human resources and industry strategies. In the past, the technology factor was the most important. But in the future, globalization and IT will replace the technology factor with human resources and industry strategies for the reason that the trend is that the prime mover of the cooperation is found more in academia and less in industry. As for technological factors, technology development efforts for commercialization are critical to the success of the cooperation because commercial success is very hard to achieve. The technology developments that insufficiently take commercialization into account are likely to fail. As far as human resources are concerned, the strong will of business managers, academia leaders’ research capacities, confidence of the resource steps in supervisors, and passion for the job will play a critical role in the success.

As for policy factors, academia needs to adapt to the information age and focus on research-oriented institutions. It is advisable that academia expand information related to the departments, technology centers and incubations of venture business. Also, it is advisable to include the establishment of research support facilities, training facilities for industry, hiring of more researchers and research professors, joint appointment of professors, and the expansion of CEO lecturers in the university.

In short, it is necessary to establish the culture in which industry-academia is a single entity. It is recommended that academia should combine the academic knowledge group and industrial management group into its networking so that it would build and maintain various databases, and implement knowledge management in order to enhance the maximum value of information. Academia should also build the infrastructure for education and networking in the age of globalization. The interaction with foreign entities should not be superficial, but specific and highly motivated so that
academia will help industry to invite brain pool and localize on IT business centers by working together with the local industry and academia.

Government should not chase after programs which do not fit into its situation. It should not be swayed by popular demand in particular areas. It should focus on conducting realistic programs. Government is necessary to be less bureaucratic and to be more proactive in public relations. The bureaucratic culture that does not accept its failed policies can spoil the cooperation model aimed at the globalization of cutting-edge technology. Government should help small businesses and colleges to come up with the best R&D capabilities and creative ideas. Government should also help them adjust to a changing environment quickly by providing funding and strategies for them to be on top of global competition through their cooperation.

Recently, the Government is considering fusion technology that encompasses multiple advanced technologies such as IT, biotechnology, nanotechnology, environmental technology and cultural technology. The issue of fusion involves emerging, different technologies, encouraging productivity and efficiency on and offline, improving business value, business strategies and other details. The fusion of technology can be best managed by organizing academia export groups. These export groups can make the information economy widely available to a larger society, and as a result, they can establish truly effective cooperation. The cooperation in the future emphasizes inter-industry know-how instead of individual ones. Sharing does not reduce the body of knowledge. Instead, sharing makes it only grow. Let’s say ten people go to a Chinese restaurant with 30 Chinese yuan each. If the ten people order their favorite food and do not share it with the rest of the people, 30 Chinese yuan will get you only one dish. If ten people order and share ten different dishes together, they can all enjoy ten dishes worth of Chinese food. Sharing knowledge is capable of generating boundary’s added value, building on knowledge.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. I felt that was very well summed-up. In particular, concerning the role of government. Although I would like to invite more discussion on this issue later, I felt that the cases of Japan and the Republic of Korea are very similar.

Next, we have a presentation from industry, and I would like to ask the Vice President of Moditech Co., Ltd. Mr. Chung Yong Wook to give his presentation. Moditech is a mobile application software-related company and is numbered among the top of such companies in the Republic of Korea.

**Chung Yong Wook (Vice President, Moditech Co., Ltd.)**

Hello, everybody, and thank you very much for inviting me to attend this wonderful Forum today. Usually, I am responsible for management at the company, but due to personal circumstances preventing our company president from attending the Forum today, I have come in his place. This is not my field of expertise and I have limited knowledge on technical aspects, but I will do my best to introduce our activities to you.

The themes are academia-industry cooperation and product development, but given time constraints, I will skip over some of the contents. I would like to start my presentation from the second point—our corporate profile. For those areas that cannot be covered, please refer to the handout material.

Moditech is a venture company specializing in product development in the Bluetooth and
Embedded System Solution areas. The development of Bluetooth has resulted in revolutionary changes in Close-Range Wireless Communication Networks, and brought, accordingly, revolutionary technology to all industries. In the Bluetooth sector, there are mobile solutions, real time OS, and embedded solutions.

Concerning the product development research being undertaken currently by Moditech, there are five areas that we are involved in: BLUEWING, BLUEWING Module, BLUEWING Access Pointer, MODIX and AMOT (Auto Menu Order Terminal).

I would like to continue with an explanation of academia-industry cooperation. I would specifically like to explain our experiences from February to September 2001, when we were successful in overcoming previous difficult areas in academia-industry cooperation with Hanyang University. As a joint research project we engaged in a project for a Bluetooth Serial Printer, and from the university side, we were provided with Bluetooth Module Design, PCB Artwork, researchers and the shared use of measurement equipment. For its part, Moditech provided Bluetooth Stack & Profile, Embedded Modules, Firmware, Application S/W, and technical experts as well as shared use of development equipment. This was the plan from the outset, but the project underwent trial and error, and the company failed during the first four months to realize the dispatch of technical experts to the university. It was for this reason that information exchange with Hanyang University was somewhat insufficient and due to this, there were some parts of the module design where overlapping occurred, which wasted time and research costs. These are areas that should be considered.

Through this process of trial and error, we were successful in the next three months in the joint research and development of a Bluetooth Serial Printer. Our method was to dispatch technical experts to Hanyang University and compile one team there. Hanyang University, especially with the support of the College of Information and Communications, provided researchers, and thus, academia-industry cooperation was established. Through being able to compile these expert teams, we were able to see to it that information flowed smoothly. In the space of three months, we were successful in the development a Bluetooth Serial Printer. Having the background as a basis of what led to the successful joint research with Hanyang University, Moditech will participate, starting next year, in the IT Business Center Project in Shanghai conducted mainly by Professor Kwack of Hanyang University with Fudan University, a university in Shanghai. We would like to continue our effort to promote academia-industry cooperation. Thank you very much.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. I would now like to invite questions from the audience concerning the two presentations that we have just heard.

Kazuhiko Nishi

I apologize for having to leave for Tokyo at the time for discussion. Today, we have heard from various participants and I would like to sum-up a little my impressions of what I have heard. Firstly, the most impressive thing I have heard out of all the discussions today is the presentation made by Professor Constantinou of Stanford University concerning venture businesses, in which he clearly mentioned the point that transfer of technology can make a real contribution to society.

Of course, other participants may have the same recognition as Professor Constantinou, but the
general perception I gained today is that when they speak of business, they think it should definitely make profit. I have no intention of making any criticism, but I was just greatly impressed by Professor Constantinou’s presentation, which explained that in the background to the reason why the central or local governments attempt to support venture businesses and SMEs, in the long history of Stanford’s experiences, a concept naturally appeared that it is more important to make a contribution to society than to make profit.

Secondly, I would like to stress most strongly that universities are not subcontracted research institutes. Rather than thinking of a university as a subcontractor and that working with universities would lessen costs and result in the acquisition of leading-edge technology, I believe that universities provide an opportunity for corporate researchers to come to universities and reenter the field of learning for themselves once again. Education, at least in the Japanese language, is divided into “teaching” and “nurturing.” In the process of learning, understanding and developing what is learnt, I believe that it is best to use universities and this is the case that I have felt has worked the best.

Thirdly, we have now reached an era in which it is natural to hold an international conference like this with participants from all over the world, or APEC economies, in this case, such as Singapore, Malaysia, China, Korea, Japan and the United States. Also, as the Forum is conducted in both Japanese and English, we have also reached the era in which, using English, we can communicate with people of different nations. Also, the Internet has enabled us to obtain corporate products from any economy in Asia within a few days from the date of order. While hearing today a number of presentations from various aspects, I am convinced that we are living in a really competitive society, whereby university teaching staffs and students can freely move to universities in which they have an interest, or where they want to take classes in, or, for example, one can take classes at a university in Singapore with the excellent textbooks of Tsinghua University in China, or take courses of universities around the world through the Internet, which is producing various elements for both enterprises and universities. I also gained the impression that various people learn things at an event like this and start new attempts, which could promote an even more competitive environment, in which a clear distinction is made between the winners and losers, instead of making everyone happy. Aside from whether this is a good thing or not, I got the impression that we have dived headfirst into an era of competition.

<Coordinator> Tetsuhiko Ikegami

Thank you very much. Professor Nishi is leaving now, so I would like to thank you for your stimulating comments and support today. After a short break, I would like to begin discussions.
【Discussions】

<Coordinator> Tetsuhiko Ikegami

Now, let us begin the discussion session in the latter half of the program. We have about 90 minutes until we are supposed to end the session at 5 p.m. We had a total of 16 presenters today, with each of them offering very interesting views. The two gentlemen from the Untied States provided us with an insight into medical technologies. Mr. Nishi at last talked about proactive social action programs of U.S. companies. As far as I know, American corporations are characterized by their remarkable harmonization of business operations and activities related to social action programs. The two gentlemen from Singapore talked mainly about microelectronics. They also explained about the Small and Medium Enterprise 21 program, which was very interesting as well. As I understand it, the program has been developed so as to contribute to the economy of Singapore. Then, the two gentlemen from Malaysia offered their views on the IT field, and I was impressed by their suggestion that we need more solid institutionalized frameworks for academia-industry cooperation.

The Japanese presenters introduced several examples of success, talked about what they perceive as the wide gap between the needs and the seeds, and also suggested that universities may be able to help venture businesses substantially increase their market shares. In particular, Mr. Omata emphasized that those who want to create venture businesses need to have the passion and firm resolve to be successful, echoing what Mr. Nishi told us in his keynote speech.

Then, the two gentlemen from China discussed various issues associated with science park projects, and they singled out V2 Technology as the most vigorous company among start-ups. I expect we will probably come back to this matter in later discussions. At any rate, we were impressed anew by the very rapid pace of technological evolution and once again recognized that one of the key issues confronting us is how to accelerate the speed. I felt that the future success of so-called venture businesses, including SMEs, will likely depend on how we can organize the system of support for this acceleration of speed. The two gentlemen from Korea, in a sense, offered their business-oriented views, and Mr. Kwack said academia-industry cooperation would not be so effective unless it is geared toward the goal of commercialization. Mr. Kwack also pointed out that the IT-based networking environment should give rise to a new industrial structure that opens up a range of opportunities SMEs may be able to take advantage of. He also had some comments on the role of the government. We would like to focus on this issue later.

Now, let me suggest how we should proceed with this session of discussion. I will first raise several issues by way of opening the exchange of views, and then we will invite comments and questions from the floor and the presenters will be asked to respond to them.

First, let me pose this question to you all. Today’s session is the APEC SME Business Network Promotion Forum. When we look at so-called technology-based, high-tech start-ups, why are they all SMEs, not big businesses? Mr. Nishi said we should not be drawing the line between SMEs and big businesses because what really matters is the stance toward business creation and not the size of businesses. Mr. Kwack for his part offered the view that in short, we are no longer in the era when we approached business matters on the basis of company size, and he further suggested that it would be
more appropriate to make a distinction between on-line and off-line companies.

In Japan, the successful model until recently was the vertical integration model led by so-called big businesses. In this vertical integration model, SMEs were subcontractors catering to big businesses. In the United States, however, the horizontal alliance model had an upper hand over vertical integration, and the only difference between SMEs and big businesses, as Mr. Nishi pointed out, is the scale of business, and they are on an equal footing in all other aspects.

In other words, the key question is what sort of technologies they have and what that is, and the corporate size has no role to play there. Based on these points I just raised, I would like to hear what the presenters have to say about why SMEs should be the principal players in academia-industry cooperation. Anyone?

**Chris Constantinou**

I think the best reason is due to inertia. A large company has inertia. It cannot mobilize a dedicated group of people who would get together and solve the problem quickly. In technology, we need to be able to do that instead of going through various layers of a bureaucratic, financial, budgetary organization that you need in a large company. A smaller company or a startup company would address a very specific problem, a very specific issue. Normally, the people who would address the issue would also raise it. So the question or the need has to be generated. Do we need to have this? Or is it necessary to have this or that technology to take care of this or that particular issue? Some companies do that. As an example I will bring up Johnson and Johnson, a very large company. They would put together their own small group of people who would focus on a specific suture, device or application, and create basically a small company associated with a larger monolith. So I think basically it is size, inertia—with big size there is big inertia—and knowledge of technology. In a university, you have a much closer connection to what is beginning, what is the trend, as opposed to what has been established. So you are prepared to take a risk if you think a bunch of people is not so critical, you can always resurface again. It is not so possible in a large company.

**Shigeaki Tsunoyama**

I was working for a large company until recently. When you want to do something new at a large company, at a certain stage of decision-making, people who form the core of the technological staff tend to make a final decision on their own. In making that decision, they cannot shake off the habit of basing their decisions on the conventional approach of judgment, such as potential market size and whether a new product can be turned out at an existing plant. So, they do not easily cross the line to start new things. It is a time-consuming process. In that sense, as Mr. Constantinou pointed out, large companies do have the knotty problem of inertia.

I have another comment on the issue of taking risk. After joining the University of Aizu, I came to develop some ties with Prof. Adler of Stanford University, who is involved in a venture on Cyberknife. Treating a human body with machines involves risk, and companies like Toshiba would not get involved in such a risky venture.

Toshiba had to pay as much as ¥100 billion just to buy the technologies involving computer hard disks. So, big companies just cannot get involved with high-risk ventures, such as medical treatment of the human body using machines. But when you look at it as a way to contribute to the social good, it is
necessary for patients who cannot be operated on with other means. So, I think these things are meant to be jobs cut out for venture-like high-tech companies.

**Ye Bin**

I want to take Intel as an example. I read a book written by the ex-CEO of Intel, Andrew Grove, *Only the Paranoid Survive*. He raised a very interesting example. Back in early 1990, Intel’s main business was selling memory chips. But, later, they found that the Japanese companies could produce the chip at a very cheap price and at a very high quality. So they had to move from memory chips to a new business. At that time, they had one choice, which was the CPU. It took Andrew Grove several years to make the decision. So, in that case, we can see that history sometimes can be of use, it can be a very valuable experience. But history can also be a very big burden for the big companies. So I think that might be why SMEs can compete with the big companies because SMEs can move faster. They do not have the burden. They do not have the history.

**<Coordinator> Tetsuhiko Ikegami**

Mr. Chen, any comment?

**Chen Hongbo**

I think sometimes when a company becomes bigger and bigger, they also become sensitive. One report from the bottom to the top level may take one week or one month. Small companies, like the students, have at the moment more channels to get what happens in the world, the latest information. And they generate very good ideas. So I think that is why SMEs play a very important role in new technologies.

**<Coordinator> Tetsuhiko Ikegami**

Thank you. At NTT, it took six months for a report to reach the top level.

**Jeffrey Phang**

I would just like to add on to what you have said. If you take the example of IBM, they were once a very massive company and a very powerful company. But at one time, because of their size, the size turned into a disadvantage. As a result, they nearly went down until they actually broke up the company and de-structured instead of restructured. As a result, they became agile again. So what Dr. Nishi was saying earlier on was really that we are not defining people by size now but by their spirit, I would say he is talking about agility. So although we are talking about SMEs, we are really saying that big companies that revamp themselves will still be competitive, but those that do not, of course will not have that spirit. So size is not important, the spirit is. Most of this spirit is found in SMEs unfortunately, in these present circumstances. And the big companies are, right now, trying to overcome past baggage, so to transform themselves is a little bit difficult. That is why SMEs are moving ahead.

The other thing is about the horizontal and vertical integration is that some of the SMEs have partnered with big multi-nationals, and have fallen into that value chain, whether it is vertical or horizontal. Now, I think the collaboration is only worried about those that have not fallen into that value chain. They are out of the picture. And it is the universities that can help them get themselves into a value
chain. I think this is where the prosperity of a nation will rest—the ability to get SMEs in because they form a big wealth generation platform for us.

<Coordinator> Tetsuhiko Ikegami

Thank you. Mr. Kwack, I understand that Korea is witnessing the growth of very big businesses. Could you tell us something about that?

Kwack Kae Dal

In Korea, we are in a big situation of tradition because of IT business and venture companies, many companies, appearing and disappearing now. At the same time, we also have some struggles between big businesses and small businesses. Big businesses want to adapt quickly but they cannot do that. The notion of IT business is most specialized because the massive entities can move very fast. For example, we have three big companies in Korea, but, for example, one company has now changed the structure into a team-base working. At the same time, they want to help some small businesses, for example, to do some outsourcing for some projects. They started to begin but everything failed because of the characteristics of the big business. The characteristics of a big business are that they do not like to share, firstly. Secondly, socially, there are many views of people in Korea, so they do not want to be blamed by the people and by the government. But naturally, they cannot do that. So the change of big businesses is only in speaking. In reality, it is impossible. So the future of big business must change to a specialized one, or they must engage in core business. But in reality, it will be very hard.

<Coordinator> Tetsuhiko Ikegami

Thank you. Next, from the Japanese side, can we have some comments from anyone who is actually in the business field?

Yoshifumi Kawauchi

Well, this is about my own company. My company was created through a spin-off. In that sense, we are conducting business by slimming down the corporate structure. Consequently, in my view, risks associated with corporate management have risen considerably. On the other hand, I feel that our company’s organizational strength as a whole has increased after the spin-off, compared with the organizational strength we had previously with the same staff. All employees are making more intensive efforts than before, and I think things are going into the right direction.

In order to create new things, I feel that it is crucially important to have an organization where we can all share information and an environment where we can work with passion, and those things have to be established at venture companies, not only at big businesses.

<Coordinator> Tetsuhiko Ikegami

Thank you. Finally, when we think of SMEs in Singapore, I suppose many of them have been established by foreign multinational companies. What comments do you have to offer from your experiences of dealing with those companies, Mr. Lee?
Lee Boon Leng

Before I answer the question, maybe I will get back to the size of companies and whether it matters in startups and high-tech. If you look at it objectively, maybe it does not matter because you see very high-tech things, very innovative things coming from small companies. Small, nimble, decision-making being fast are assets. But on the other hand, they suffer from market, they suffer from technologies, resources and so on. I think, basically, maybe the central question is not so much the size but whether it can survive long term. You will find that many companies, once they are successful, have to quickly get into a critical mass. Go IPO and become bigger, for example, but quite a few companies do not survive for long. So, I think size matters in the sense of critical mass. You must be big enough to survive long term so that you are not a one-product wonder. You can keep being innovative and come up with more and more new products. That is my contribution on that.

Then, on the question that you just raised about multinationals. In fact, SMEs are getting a lot of attention now in Singapore because Singapore has been very successful because of our heavy dependence on multinationals. But that has become increasingly a problem because multinationals tend to move where the manufacturing, the investment environment is best, and we are seeing hollowing out. For that reason, we are putting a lot of emphasis on SMEs. But we do not want the traditional SMEs because in the past, SMEs were basically supporters or subcontractors for the multinationals. We want innovative SMEs, SMEs that can actually design ODMs and OBMs (original brand manufacturers) rather than just being subcontractors. So how you position your SMEs is very important and that is the question we are discussing in Singapore. If you want to raise your own indigenous companies, they must have a certain positioning to survive long term.

<Coordinator> Tetsuhiko Ikegami

Thank you. Concerning the first part of Mr. Lee’s remarks, indeed, there are phases in the development of a company. First, there is the phase of a start-up, then the phase of incubation. If these phases go without a hitch, the next phase will probably be the initial public offering, or IPO. However, without an adequate follow-up even after that phase, it will unlikely grow stronger as a viable enterprise. I think that was what Mr. Lee pointed out.

Perhaps, I think different players come on the scene in respective phases. There are players who have particular strengths in certain phases. For example, in the phase of incubation, those who are good at this particular phase help companies get into action. It may be the case that an entrepreneur in the start-up phase is not quite up to the job of building a big production line.

In Japan, we feel that switching players in respective phases is not an easy thing to do. In that sense, I think the United States has an enviable situation where a diversified group of players exists. Mr. Timm from the United States, do you have any comment to make on this?

Gerald W. Timm

First, let me comment also on the size thing. I really do think that it is a structural issue. Dr. Constantinou mentioned Johnson and Johnson. We also have an example in Minneapolis, the 3M Company, which really prided itself in a program that they called intrapreneurship where they really sponsored innovation within the company and it was a way to recognize the contributions of inventors within the company, which is very unusual quite frankly. But they have been very successful with it and
they have had a lot of innovations come out of there, including these little post-it notes which you would think no one would make any money on, and they have made billions, literally billions of dollars, and the fellow who invented them has also been well taken care of by the company. The main reason, small and medium-size business appeal to entrepreneurs more, is the way to realize gain from your innovation. Most large companies really do not recognize, I think, the contributions of a lot of innovation within the company. The engineers may get a plaque on the wall, but they rarely get any kind of a royalty or return on their inventions within the company. So I think 3M is quite unique in that way, and whereas in small companies which I have been involved with my whole life with four different startups, it is a much better chance for me to get a position in the company and to help participate in the growth that takes place.

Sadao Omata

On the size issue, it may be the same with all big businesses around the world, but I think Japanese big businesses are the ones that are agonizing most. In Japan, before the bursting of the bubble, big businesses were mass-producing goods. We had and still have a lot of home appliance manufacturers and a lot of auto companies. So, they are locked in a very fierce competition on the home market. But SMEs were not taken good care of in that fierce competition among big businesses. That is our history. Though SMEs provided most of the employment, we had a history of big businesses forcing SMEs to swallow the burden of cost reductions so that big businesses could pare their own costs. Despite a long history of existence, SMEs could not really take off in Japan.

Lately, however, if you look around, there are companies that have unique technologies, only-one technologies, all over Japan, including those based outside big cities. But many of these companies are incapable of taking advantage of their specialized only-one technologies, incapable of advertising them on a commercial basis. They cannot turn them into viable business with high value-added. We have a lot of these companies everywhere.

The key theme of today’s Forum is how SMEs should be enhancing their technological expertise. Ultimately, I think, the key question is how these technologies can contribute to the betterment of life for mankind, human happiness. If companies are making a lot of things simply because they sell well and selling them simply because they are cheap and handy, then they have no future.

So, big businesses and SMEs alike, as Mr. Nishi pointed out, unless they constantly ask themselves what their real purposes are and consider ways to contribute to society, and if they do nothing but go after short-term gains, they will surely be defeated by rivals who come after them. Even if we think that something is the best thing, other inventors come up with much better, more wonderful things. If all we have is the repetition of this pattern, we would never be satisfied. On top of the pursuit of profits, we should always bear in mind how we can contribute to society and to the environment over the long term. Otherwise, we would be challenged by constant competition and would eventually lose out. This is how I feel.

<Coordinator> Tetsuhiko Ikegami

In a sense, what Mr. Omata just said represents an opinion typical of professors at Japanese universities. Does anyone have additional comments?
Shinzo Enomoto  
As a university professor, I have a similar opinion. I think administration in Japan is still in the form of protective administration, not particular administration found in the United States. In a more typical way of saying it, they always think that we should abide by rules set by the government. Against this background, what we need is technological development subsidies or enterprise management subsidies intended for SMEs. If recipient SMEs are successful, part of these subsidies can be paid back with their profits.

We do not have a system that would allow refunded subsidies to be used for other projects to subsidize technological development. As Professor Nishi and the coordinator of the Forum pointed out, we should change our mindset so that entrepreneurial successes funded by subsidies can be considered as public assets, not as entirely belonging to enterprises. And if we establish a system under which part of profits from technological development projects carried out as public projects or funded with public money can be used to subsidize other technological development projects, that will be one of the forms how universities can provide support.

<Coordinator> Tetsuhiko Ikegami

Thank you. Actually, the Japanese government is now working out new rules one after another in such areas as taxation and support measures. At least in terms of an institutional framework, we can expect to see a total picture within a year or two. But I think whether what we are going to see is something with coherence is a different matter.

What Mr. Enomoto raised is indeed a subject similar to the Bayh-Dole Act in the United States. I understand the United States enacted the Bayh-Dole Act in the beginning of 1980 amid the mounting sense of crisis that American industries might be overtaken by Japanese rivals. And some countries have established systems for academia-industry cooperation modeled on the Bayh-Dole Act. Does anyone have comments from that standpoint, or comments on what the two Japanese speakers just said?

Liu Shin-Jeng (Participant of the APEC SME and New Business Support Workshop (Chinese-Taipei))

I would like to say something about SMEs in Japan. I would like to shed some light on problems facing SMEs in Japan in the context of the comparison between the industrial structure of Japan and Chinese Taipei.

In the past, the Japanese industrial structure was pyramidal, with SMEs organized under the “keiretsu” (affiliate) systems. The industrial structure of Chinese Taipei is the shape of an inverted pyramid and completely different from Japan’s. SMEs in Chinese Taipei purchase materials from large corporations and process them for exports.

On the other hand, most SMEs in Japan make parts and materials, and send them to parent companies. As Mr. Omata pointed out earlier, SMEs in Japan seem content with putting all their energy into making superb products and superb parts and components and sending them to parent companies. In Chinese Taipei, however, SMEs manufacture superb products themselves and export them on their own. This is the consistent practice seen there since 30 to 40 years ago.

In the past decade or so, however, things have been changing in the Japanese keiretsu system. For example, among automakers, parent companies or large corporations made direct investment in the
United States, and these large corporations or parent companies now do not look after small businesses. Japanese SMEs must now explore ways for their survival. For example, there are SMEs, like the one owned by Mr. Tamanoi, which have strong technologies and make superb products. The biggest challenge to SMEs in Japan is how they can export and sell their own products. I think whether or not Japan can rebuild its industrial structure certainly depends on whether Japanese SMEs and the Japanese economy as a whole will be able to repeat their success and achieve further development.

**Questioner**

I am running a venture business in Koriyama, Fukushima Prefecture. My first impression is that there is too wide a gap between the mindset of university professors and successful entrepreneurs and that of SME business owners. Let me explain why I feel that way. A phrase like “contribution to the society” sounds wonderful. But the most important matter for us is to feed our employees.

The contribution to the society should not be the first step. What I imagine from the title of this Forum, Fifth APEC SME Business Network Promotion Forum, is that for example, we begin with university professors walking shoulder to shoulder with us. If we are to hold discussion from that basis, things would start from almost nil. Then, the most important thing is funding. As Professor Nishi pointed out, once we take off, we would crash if fuel runs out. Unfortunately, I have to say that university professors have not really experienced such a severe situation themselves. This is what really matters to SMEs in Japan.

I can accept the high idea of contribution to the society. But the most important thing is to commercialize technologies to turn out products, sell these products on the market, and keep operations going. Only after we clear that stage, can we move on to the next stage. Contribution to the society as Professor Nishi and others talked about is a process we can think about only after reaching that stage.

So, I do not feel comfortable with the way of playing up contribution to the society by neglecting that process.

Another thing is that we have had an expert from China with our company since July. He is scheduled to stay with us for about two years, taking leave from a university in China. We welcome this very much because we have the privilege of accepting a very talented Chinese expert who has taken a leave of absence from the university. The Chinese government has permitted this. As explained in the information kit at the entrance, the Japanese government instituted a similar system in 2000. But, how many university professors or post-docs are willing to come to SMEs like mine for two or three years to experience the harsh realities? Universities should not unilaterally impose parent-child relations on companies. Rather, universities and companies should be both parents and children reciprocally, and if we have scholars dedicated enough to stay with SMEs for a few years, that would surely help enhance the levels of Japanese industries, particularly SMEs. What I wanted to say were these two points.

**<Coordinator> Tetsuhiko Ikegami**

Thank you very much. We all know SMEs have an important role to play. But from the viewpoints of SME owners or venture business owners, universities have much to be desired. We are now into that question, I believe.

One thing is the question of which comes first, contribution to the society or cash flows for businesses. Another thing is the flow of people. Japan has big problems in this area, and I think we have very low
mobility of people. When we look at companies and universities, the flow of people, in fact, is only one-way. People may move from companies to universities, but the reverse flow of people from universities to companies rarely occurs. In addition, once you flow out, you seldom come back. It has been pointed out often that this mechanism accounts for much of the lack of vitality in Japan.

There are many problems in this area. For example, though I do not quite remember who raised this issue, there was a reference to a plan to send university scholars to companies for a period of two years. We are indeed considering such a system now. In reality, however, it is hard to conceive the system of sending university scholars to companies in Japan at present. This mobility problem remains a major unresolved issue.

Does anyone have comments on the points raised from the audience?

**Chris Constantinou**

I would like to respond to the last comment. We have to keep things in perspective. We are here to talk about academia and industry. We are not talking about industry as a whole. So the academic society has a different mission than industry as a whole. So the comments I have made refer to the mission of the academic institution whose job it is to educate and enrich the human mind, and involve with people who are in the same process. We have faced the issue of where do you make most of your money and where do you produce the best products in the United States. About 20, 30 years ago, during the Vietnam War, you could make the most money working for the military. Working for what we call the military-industrial complex was the most profitable enterprise within the United States. The universities at that time really went to pieces because the university students, they were idealistic, they were young, and perhaps they had higher ideas. But they did not want the university resources, the university mindset and the mission of the university to be involved in the military. They did not want to be involved in the killing process. So the universities within the United States at that time had totally reformed. Very lucrative programs. The faculty could not operate within the military system—the navy, the army the air force—just because they could make a lot of money. I can tell you from my own experience at Stanford, I could see from walking down the classes and departments that were working with the military that they had all their windows broken. You could walk around Stanford University and you would think you were in Palestine at some times because the students did not want the academic institutions to be involved in the military. If other enterprises were prepared to do that, that is fair enough. If other industries now want to be involved in products and produce a lot of money and so on, that is a different issue. That is not really what we are here to talk about. We are here to talk about academia, and people in the academic fields. So I think once we put this issue into perspective and once we separate the various components that are involved, then I do not think we will have the venture capitalist comment that we just heard because, really, the mission of the university is education and the consequences of education. I thought our mission here was to really talk about that.

**Sadao Omata**

Concerning the comments from the SME owner among the audience, what I intended to say in my previous comments has nothing to do with the issue of whether universities can make money by getting involved with real business. What universities can offer are seeds and advanced ideas about technologies.
So, the important thing is how to grow these seeds and ideas, and from our standpoint, this relates to the issue of how we can contribute to the society. The ultimate purpose is for companies to come to that kind of mindset, and I have no intention of saying that you should not be making money.

So, we have this dilemma that universities in Japan are not growing up in a give-and-take partnership with SMEs. This gap is keeping things from going smoothly, I think. There was talk about sending university scholars to SMEs, and I feel the question is how we can build such close relationships. One party is hard pressed for funding, while the other party is thinking about ways of how quickly to transfer technology to companies and commercialize it into marketable products. Unless both parties share the same vector, the result would be, “University scholars just don’t know business. They have no idea about making money. We are having hard times in real business.” Unless both parties share the same awareness, the transfer of technology or commercialization of technology would be very hard to come by. Only when they understand problems of the other party, the takeoff would become possible. We need to create an environment where universities can readily support that takeoff as soon as possible. That should lead to the revitalization of TLO in Japan and SMEs.

<Coordinator> Tetsuhiko Ikegami

I agree that universities and companies have different missions and different goals. As Professor Omata pointed out just now, if academia-industry cooperation is to be realized, they should at least share the common vision or visions they can share. Without this, it may be hard to move forward together. Many of the speakers offered their views on this point, and I also think we certainly need that sort of thing.

From my own experiences, I feel the stance of Japanese universities toward start-up companies may be different from their peers in other economies. In the United States, for example, when university professors establish start-up companies, they, without exception, want to get involved in actual production. In the case of Japanese professors, however, they offer ideas but would not dare to get involved in the manufacturing stage. In making a marketable product, you have to think about inspection, reliability and cost issues. They tend to go no further than the phase of seeds, with no part in the difficult but exciting phases in the eyes of entrepreneurs. I feel this is a very regrettable situation.

Another thing is, as someone pointed out, that what we need to launch a business is to gather players who are good in their respective fields. The role a university professor needs to play is chief science officer or chief technology officer. Business management can be left to a chief executive officer who is good at running business. Securing this kind of combination seems to be the key to success. It is my impression that this kind of approach has been fairly successful in the Silicon Valley and the Route 128 area in the United States.

At any rate, on how universities and SMEs can forge a relationship of mutual trust and develop the common vision holds the key. Any comment on this?

Tatsuya Niwa

As an SME executive, I would like to talk about what I think about running business and contributing to the society. In order to keep business going, we need to chalk up sales and recover funds we invested. To register sales, we need consumers who buy our products. In order to have consumers buy our products, we have to offer products they like or they appreciate.

I think offering products that consumers appreciate is our contribution to the society. I do not think
contribution to the society has to be some donation out of our profits from running business. To me, contributing to the society through corporate activities, which in my case are the making and selling of shoes, means offering products that make consumers happy and help them stay healthy. Though our business is in a very tough situation at the moment, I feel we cannot stay in business and survive unless we can contribute to the society in the sense I just mentioned. That’s all what I want to say.

Shinzo Enomoto

I will follow up on Mr. Niwa’s comments by citing an example in Chiba Prefecture. SMEs in Chiba Prefecture have similarly been in difficulties recently. As they are facing an acute shortage of funds for development, the Chiba prefectural government will soon set up an investment firm. Previously, government entities have been providing loans to SMEs. But this is a third-sector investment firm, not venture capital. The current plan calls for this investment firm to make equity participation when SMEs launch venture businesses. For universities, they will collaborate with companies and share profits when they are successful, instead of getting research expenses from them. Universities will support companies in obtaining patent rights.

As for human resources, the Chiba Institute of Technology hires about half of its faculty staff from the private sector. Up until now, Japanese universities have been confining themselves to the narrow domain of education and research, but we thought we should make better use of universities at the interface with society. So, we are pushing ahead with these three policy initiatives in Chiba Prefecture.

<Coordinator> Tetsuhiko Ikegami

Thank you. Do you have the mechanism that allows those people who joined universities from companies to go back to the industry sector again?

Shinzo Enomoto

Actually, we have people over from a big company on the condition that they return to this company after three years. We have this exchange for a three-year tenure because they would lose company positions to return to if they stay with the university longer than three years.

<Coordinator> Tetsuhiko Ikegami

How about university scholars? Can’t they stay with companies for three years as well?

Shinzo Enomoto

Regrettably, it is quite difficult to send university faculty members to companies because we have to keep the stipulated number of staff. But at the moment, we have a plan to hire part-time faculty members to fill vacancies when we send some people to companies and are now at the stage to present it to the Ministry of Education, Culture, Sports, Science and Technology.

<Coordinator> Tetsuhiko Ikegami

Can’t you solve that problem by turning your university into an independent administrative institution?
Shinzo Enomoto

I think we can. We probably can do that within a couple of years.

<Coordinator> Tetsuhiko Ikegami

As you see, our discussions are now coming to cover what companies have to say about the role of universities and vice versa. Today, we have representatives of both universities and companies in pairs from each economy. Do you have anything more to say to the other’s side, or any comments from the audience?

Tan Sin Leng

I was very impressed by the SME experience of Mr. Ye Bin from China. It is a prize-winning essay that he made the decision to turn himself into an entrepreneur. I think it has to do with our Asian culture. For most of us in the APEC region, with the exception for Canada and the United States, our students are not educated to start their careers on their own. For example, in the States, the boss of Microsoft, Bill Gates, had the courage to start his own company even without a degree. In our Malaysian universities, two or three years ago, we realized that the difference is in the mindset.

So we, in the University of Multimedia, introduced a course called Introduction to Entrepreneurship, where we teach our students that you must be brave enough to start your company if you really want to be an entrepreneur. In the university, it is a compulsory class. So, from our experience, we have students who have in there sophomore or junior year, already decided that they will not seek employment, they will start their own company. There are students who work in good companies like Intel for one or two years and decide to quit the company and start their own company. Also, at the same time, the university can help in this business creation by providing proper guidance, have certain centers to help the students come up with a good business plan, find venture capital for them, and then maybe we will have more startup companies in a way that will directly contribute to the nation’s economy.

Ye Bin

As an SME, myself, I think the first thing you should bear in mind is that there is no free lunch because there are way too many SMEs in the society. You cannot expect that you will get much help from outside. You should try to be independent. Take V2 as an example. We are not as lucky as MicroFab. They have received several fundings from the government while all the funding that V2 received was provided by venture capitalists, and none of them came from mainland China. That was actually a very good thing for us because there is a Chinese saying that a poor child will be able to support his family at an the earlier age. So I think all the SMEs here should keep in mind that there is no free lunch.

My hope for the university is that I hope the university can have better marketing. Because, as for me, I have some personal relations with the professors or with the labs, so I am able to know which people I should refer to if I want to use the latest technology. But there are people who are not graduates from universities like Tsinghua, and they will not be able to know. They do not know whom to contact for the high-tech.

<Coordinator> Tetsuhiko Ikegami

Thank you, Mr. Ye. Do you have any requests to make of Tsinghua University, something you would like the university to do or not to do, those kinds of requests? Or requests you would like to make to other
Ye Bin

What I expect from the university is education. I think that is the specialty of universities. They have many resources in their professors. For example, Tsinghua not only has an engineering department, they also have MBA training, an MBA school, and also some economy departments. All these departments, all these professors can be of help to the SMEs and this will not take up too many resources from the university. It is not like funding. If you receive funding from someone else, you will not be able to get the funding. But if you distribute education, everybody will enjoy it. So I think that is the way the university could do much better.

Jeffrey Phang

Actually, I was about to make a comment about its contribution to society. I would like to tie up a few points. Dr. Nishi actually mentioned about SMEs making a contribution to society. I think the gentleman from the back has quite clearly stated that SMEs only look after their own profits and cannot look after society in that sense, that contribution. I would tend to agree with him. Because businesses must survive and have profits before you can actually contribute to the society. But, at the same time, things that are turning in the global events are coming out very strangely. When we had this Agenda 21 on environmental issues, all economies are now trying to be a bit more environmental conscious. Later on, with all the free trade barriers taken down, the next barrier that will come out for exporting to other economies might be environmental issues. So if your manufacturing process is not environmentally friendly, we will not buy from you. In that case, you come back to the profit issue and then the business community will start looking into contributions to society. I think it will come to that kind of process rather than voluntary. I do not think SMEs will really take a lot of profits out and contribute to the society as such.

The other more important thing is that we are talking about SMEs and academia. SMEs and academia have different missions, as you said. The question is, how do we actually bring them together again? SMEs operate just on profits but most universities operate on budget. So the sense of urgency is completely different. There are structural barriers that prevent academia from actually getting involved with industry itself. For example, in Malaysia, you cannot have more than 60 days of industrial consultancy for a university lecturer. So that would actually discourage or cause a person who spends more time with industry to be viewed suspiciously by others in academia. So the question, is how do we actually bring the two missions together and channel everybody towards the same destiny? What are the structural changes that can be proposed in this forum that will force both communities to look at the same thing? For example, right now, if the GDP is dropping, then the government servants should get less bonus because industry is also suffering. So can it be linked up in such a way that we all share a common destiny? If we can come up with a platform that can reconcile the two missions, then I think industry-academia collaborations can proceed on with the same understanding.

Lee Loke Chong

From the Singapore perspective, I think the relationship between academia and especially the SMEs, and industry in general, should be re-looked at in a broader sense. I think sometimes industry expects too
much and probably in the wrong way of the universities because the universities must contribute to the
economy, not necessarily work directly with the SMEs. That is why I am rather amused that Stanford
had to defend itself because we all know the value of Stanford to the American economy, not directly by
helping companies but basically growing new industries. So, in that sense, what we have done in
Singapore is that we know it is going to be very difficult for companies to depend on the universities
because the universities have a different charter, a different mindset. Their principal charter is really to
contribute to manpower resource development. So their only commitment is to make sure that the
resources that they produce, the students that they produce are of relevance to the economy. So what we
have chosen to do in Singapore is to establish an intermediary between the universities and industry, the
setting up of the research institutes. In fact, in Singapore, we have about 1,400 researchers in the research
institutes, which is quite a substantial manpower resource. Because apart from this, most of the research
people would reside in the university, and with the research institute you can then dedicate more
attention to the industry. That is the approach that we have chosen in Singapore.

Chen Hongbo
I think we are talking about the contribution to society by industry or earning the money, I think we
are talking about the same thing. Something like how the students study very hard at school and how
they have to pass some examinations. The purpose of the study is not for examinations but for them to
use the knowledge in their future. So, it is the same thing. If we cannot make money, that means you
cannot contribute to society. So that is my point. I think, even with the university, when you are talking
about contribution to the society, where is the money coming from? It is coming from the taxes gotten
from the government. Where are the taxes coming from? They are coming from the company for earning
the money. So we are basically talking about the same thing. Money is just an indicator of how and if
you can contribute to society. If you can gain money that means you can contribute to society. If you
cannot gain money, that means you are meaningless. You cannot contribute to society.

<Coordinator> Tetsuhiko Ikegami
Thank you. What you have just said is quite interesting. It seems to me that when we consider the
whole life ahead of a student, it is not so easy to decide what the ultimate goal is. In Japan,
universities fall under the jurisdiction of the Ministry of Education, while industries are subject to
the Ministry of Economy, Trade and Industry (METI). Because of the bureaucratic vertical
administrative structure and bureaucratic sectionalism, universities and industries have not
necessarily been able to establish close links.

In the eyes of a student, such bureaucratic sectionalism is meaningless because it is only natural for
that student to seek employment at a company in the real world upon graduation. In reality, however, we
still have such strong sectionalism in Japan. If we look at the whole life cycle, we may not have an a
priori ultimate goal, and goals may present themselves one after another before us. So, I feel we might
have some awkward situation unless we maintain flexibility. Now, any requests or complaints about
universities from the audience?

Questioner
This is a question, not a request. As I have come to find some motivation about my work some 10
years after graduation, I now have a strong desire to study again. What I would like to know is how wide the door is open at Japanese universities to accommodate people like me. Another question is about prospects for collaboration among universities, apart from academia-industry cooperation.

<Coordinator> Tetsuhiko Ikegami

I suppose your questions fall on my territory. In the sense of your questions, I think Japanese universities are in a very peculiar situation. Higher education is translated to mean university education in Japan, but the situation is a little different in the United States, for example. People aged 24 or older are said to account for 40% of all students in higher education in the United States. In Japan, higher education means studying at universities after graduating from high school. But the situation is different in other parts of the world. At the moment, we are considering ways to improve the institutional framework to accept more working adults into universities. But, in a sense, those who are blocking such endeavors are university professors themselves. Generally, professors are very conservative, or they may simply want to defend their vested interests.

So, the biggest problem we have on hand is how to deal with those professors who are now at universities. But, as the overall trend now is definitely toward the acceptance of adult students, we should be moving in that direction over time, though we may have some victims here and there.

On the second question, this is also very difficult in Japan. Nihon University is a private university. Still, even within Nihon University, it is very difficult to move from one department to another. The University of Aizu has a computer science and engineering department, but occasionally we have students who just do not fit in. We have students who do not like computers. If they can move to the department of economics or the department of commerce, we are pretty sure they will do all right there on the strength of their computer literacy. But even this is a tall order under present circumstances. If you consider transferring students from national universities to private universities, we face the problem of the wide gap in school fees. National universities are not so flexible, either, on these matters. Actually, we are now discussing the possibility of student transfers between prefecture-funded universities instead. If we are going to do that, we need to develop, for example, arrangements that exempt students from paying entrance fees a second time if they paid them to their original universities. As you pointed out, the world is moving in the direction of global standards, and things will surely get better if you wait a while longer. Any comments from others on this matter?

Gerald W. Timm

I just want to say that the attitude where I come from is that education is a life-long process. The University of Minnesota, being a national university or federal land grant university, has really three parts to its mission. One is, of course, education, but the second is research and the third is service to the community. As a result, they have set up continuing education programs that allow industry people, teachers, educators, nurses, physicians, anybody to come back to the university and take classes in the evening or on the weekends. So it is a continuing renewal process.

I know also when I was on the faculty at the university, they encouraged us to do outside consulting as much as 20 percent of our time. And particularly in the technology area where we were, if we sat and taught courses all the time, we would not keep current with what was going on technologically. So it was
very important for us to interact with local industry to keep current in terms of what is going on in their laboratories. So they encouraged us strongly to do that and it also provided a service and a continuous interaction amongst us and the industrial people in the community.

**Questioner**

I run a manufacturing company in Saitama Prefecture. When it comes to academia-industry cooperation, SMEs like ours do not know which universities are conducting research into which fields, and we have few opportunities to know these things. Maybe we are not trying hard enough, but we have little access to that kind of information. I also suppose universities on their part are not quite aware either of what specific technologies SMEs possess.

So we need to consider what is necessary for both sides to mutually understand their respective situations and share a common vector. I would appreciate if you can enlighten us on the approaches adopted in other countries to ensure this kind of mutual understanding.

**<Coordinator> Tetsuhiko Ikegami**

This question is about how universities are providing information publicly on technologies that they have and on their liaison offices to handle relations with outside companies. Mr. Tsunoyama, could you please comment on this?

**Shigeaki Tsunoyama**

First, about the liaison function. We prepare pamphlets and other materials for meetings like this Forum. So, participation in conferences like this one is one way to have access to information.

But, I am aware that company executives do not necessarily find these meetings readily accessible. I was in the private sector until recently myself, and I know from my personal experiences that it is pretty difficult to directly go and see university professors unless you personally know their ways of thinking.

In that sense, I can understand quite well the problems you face.

Let me explain some of the things we are considering doing at the University of Aizu. We think collaboration is not feasible unless we know the needs in the first place. Since the university cannot deal with individual companies, we first go to local chambers of commerce and industry to find out which groups are engaged in what activities. Once we become aware of ideas the private sector is interested in, the university may be able to address them as research themes. Entrepreneurs living in Saitama Prefecture may find some problems with the University of Aizu being located in a different prefecture. But I think we can turn them around to a certain extent by utilizing the network of university professors. This is what I think, though it may not be a satisfactory, systematic answer.

**Sadao Omata**

One gentleman spoke of his desire to go back to university to study again a few moments ago. As Mr. Ikegami pointed out, universities have their own circumstances and find it very difficult to accommodate such desires immediately. So, I have a proposal to make, and this is also a request to the prefectural government of Fukushima. Since we had an opportunity to have this APEC event here in Fukushima Prefecture, I would like to suggest that Mr. Ikegami take the initiative to organize the seven universities in the prefecture, all of which have their own priorities and originality, and gather volunteers among scholars with expertise from these universities to provide reeducation opportunities at sites like here.
I think it may be a good idea for Fukushima Prefecture to take the initiative to create such a platform and establish an independent university with no organizational strings attached. Using today’s Forum as a good opportunity, I would like to suggest that universities and companies taking part in APEC initiatives organize people with advanced knowledge for such a project.

I would also like to suggest that local universities get involved in a prefectural university to develop respective courses for education of working adults.

**Tan Sin Leng**

I would like to share our experience from Multimedia University. In Malaysia, in the state of Penang, well known for its electronics industry, some of the companies wanted to upgrade their engineers to a master’s degree or to acquire certain knowledge in engineering. So they approached the university, and we started part-time courses not purely on research, rather, we provide them with further courses in electronics. Unfortunately, most of the engineers are not from SME, but rather from big companies like Intel or Altera. So these are the people who come to the courses to do a part-time master’s degree.

The other example is we have some conversion courses. For example, for people working in the industry for many years, who are from arts courses, but end up doing some IT business. So they like to acquire certain knowledge in IT. So we started a kind of master’s degree in IT. It is a conversion course. It is not a master’s degree by research. So people who do not have a good IT background can also participate in the program. In a way, we are trying to contribute and to work together with industry to enhance the quality of industry.

**<Coordinator> Tetsuhiko Ikegami**

Thank you. In relation to the last question about efforts on the part of universities to make necessary information available to companies, can anyone provide some concrete examples?

**Yasuo Tamanoi**

My company is still young, but I think the reason we could make this much progress in academia-industry cooperation is that I actively took part in various industrial forums and university meetings on research results and established communication channels with university professors who spoke on these occasions. I aggressively approached university professors to establish communication with them to provide them a better understanding of the specific characteristics of my company and to discover the seeds held by universities that can be made available to my company. I think these efforts paid off and led to a concrete form of academia-industry cooperation. So, I think it is necessary for companies to actively approach universities.

**<Coordinator> Tetsuhiko Ikegami**

Thank you. I think that what Mr. Tamanoi suggested is the most effective way at the moment. If anything, I feel that company people are reluctant to come and spend time at universities. I understand time is a very precious thing for corporate executives, but I would like to urge them to come and knock on the gates of universities more often.

We are running out of time. I would like to touch upon the role of government as the last subject of this discussion. When we say governments, it could give varied images depending on which country you
live in. Anything specific to say about governments? Generally speaking, governments do not understand problems of risks or costs. For bureaucrats, the first priority always is to maintain their organization, and I suspect there are many and strong opinions hoping to see governments change their ways a bit more. From the standpoint of promoting academia-industry cooperation, does anyone have anything to say about their own government?

**Gerald W. Timm**

Give us lots of money and get out of the way.

**<Coordinator> Tetsuhiko Ikegami**

The money comes first, all right.

**Chris Constantinou**

I will make a comment about the government because we have not really touched on it today. In the United States, there is an organization, a department of the Government, called the Small Business Administration which devotes about five percent of the total research budgets to the financing of small businesses. Usually, that is an initial investment of $100,000 for a good idea that somebody has who wants to get an approval of concept into the market. After that, $500,000 for three years to actually see if that would work. So the Government basically would act in an entirely separate way than the academia from the point of view of financing the small business individual, and it could be one individual with one idea. But if it has pulled its resources together and the idea is quite good, they will get a good hearing from its peers. And I think that is the other issue. The people who make the decisions are not the Government. The Government would get experts from industry as well as academia, and say, “This person wants to make this device for a blind person,” or, “This device for detection of material pollution,” what have you. The decision is really made by the people who are in the business. The business people make the decisions, give a ranking, give a grade to the various applications. And there are hundreds of thousands of applications within the United States, which the Government supports. I do not know if a similar system exists in Japan, but it is a parallel system to what academia is involved with.

**<Coordinator> Tetsuhiko Ikegami**

Thank you. In Japan as well, we are developing similar systems in recent years and we already have something similar to SBIR in the United States. But we have yet to fully verify whether the system has been working efficiently. We also have a system under which universities and SMEs have access to government funding if they jointly propose to the government research themes that can be expected to grow into commercial businesses in several years’ time.

What I am concerned about now is the possibility that these systems might not function as intended even with the infusion of ample funding. At any rate, I think I can say that the government sector, at least the national government, is trying very hard. Any more comments on the role of governments?

**Kwack Kae Dal**

The first point is that the government should not be very bureaucratic. Because in general, in the Korean situation, we are very family oriented. So, many people who work for the Government, they
want only to have a relationship with a small group of professors, so-called very specialists because they are a little bit afraid of failed results from the product. At the same time, the second thing is that they are very fashionable, I think. So, they want to obtain the first results for the project in their mind. So they always have problems with the high technology side. They always want to follow, they want to look closely into what is happening in Japan or in America, I think. Therefore, the fund is always increasing in Korea, year after year. They are in a hurry to fix the tire of research. At the same time, the capability in the university is not enough to follow such a kind of fashionable type of products. So, that is very dangerous, I think. At the same time, the other thing is we did not have a good evaluation organization. But now in Korea, we have a very good evaluation organization to help the Government. So it is very stabilized now. But the problem is that human resource is very limited in Korea, not like Japan or America. We have many dilemmas but maybe time will solve them for Korea.

Gerald W. Timm
I think government could be beneficial to all of us and that is to continue working toward the international standardization of regulations. I know in the medical device industry, when I am approved to sell in the US, it does not necessarily mean I have approval to sell in Europe or I have approval to sell in Japan or Korea or any other economy. So I know that we are working on international standardization, but anything that anybody’s government here can do to help—I am certainly pushing from my side—I would encourage the continued standardization of regulations.

<Coordinator> Tetsuhiko Ikegami
Thank you. Tomorrow, I have to attend a meeting concerning where the Japanese government should allocate research budgets and that is why I cannot meet you all at the University of Aizu tomorrow. The biggest headache is biotechnology. Japan is thinking about injecting a lot of money in the field of biotechnology. But the Ministry of Health, Labor and Welfare has very tough regulations. So, pouring a lot of research money into the field of technology does not make sense in Japan because nothing comes out from such investment. I have to participate in this kind of discussion tomorrow. But I expect Japan to change over time and a day will come when medical equipment approved in the United States can be brought into Japan as is. Still, it may take some time. Any more comments on the role of government? I understand things are going very smoothly in Singapore.

Lee Loke Chong
Singapore government is very pro-economy, pro-business. It is the people who implement the policies that are bureaucratic.

<Coordinator> Tetsuhiko Ikegami
I see. What about Malaysia where you have a very outstanding leader?

Tan Sin Leng
In Malaysia, the government is trying its best to help out SMEs. In the budget, they also say that they want to give tax exemptions. But in Malaysia, we have all kinds of problems other than purely
economy problems.

<Coordinator> Tetsuhiko Ikegami
Finally, anyone from China, any comment on the role of government?

Ye Bin
Of course, it would be great if the government can give us a lot of money. But, in fact, I do not think it is a good idea for the government to invest directly in the companies because I do not think government has the ability to distinguish which companies are worth investing in and which companies are not. So, what I hope, realistically, is that the government can hold more forums like this, business network promotion forums and maybe products promotion forums. This will help the networking between regions. With more networking, you will be able to find which companies you might be able to cooperate with and you might find synergies in the forum. As for me, I spend some time to come to these forums and one of my expectations is that I can make some potential partners in Japan. That is more important to me realistically. So I think that is the job that government can do.

<Coordinator> Tetsuhiko Ikegami
Thank you very much. My impression is that there still are many things governments should be doing. In Japan at present, the bureaucratic systems of the national and prefectural governments present obstacles when we try to make big changes. But I think this problem will go away as a matter of time and we will soon be in an era where entrepreneurs or technopreneurs will have more leeway in what they do.

One conclusion I can draw from today’s discussion is that, indeed, SMEs do have a very important role to play. It has been reconfirmed that SMEs in fact constitute the most important infrastructure for the significant development of our respective economies. At the same time, we became aware that they also have their respective problems in the development of SMEs. But, since we now have made much progress in Internet-based networking, we can expect to solve these problems one by one by utilizing that networking.

We had particularly lively discussion on the issue of contribution to the society and corporate profits. Overall, I think we were able to have a very informative session of discussions. Going forward, there are three most important things we have to pay heed to in moving forward with academia-industry cooperation. One is innovation, naturally, and another is a coherent vision. Though universities and entrepreneurs have different missions, it is important for them to find a common vision they can share. The last thing is that we need strong leadership. Innovation, coherent vision and leadership. We hope that these things will provide the basis for much greater progress in academia-industry cooperation and that such cooperation will develop in a manner that goes beyond benefiting a single economy to bring happiness to the entire world. With that optimistic note, we would like to close this afternoon’s discussion session. Thank you very much for your participation all day long.
Photo Gallery

Opening Address

Remarks by Governor, Fukushima Prefectural Government

Keynote Speech “My Theory of Ventures: Reasons for Academia-Industry Cooperation” Kazuhiko Nishi

Keynote Speech

Participants
Coordinator, Tetsuhiko Ikegami

Discussions 1

Discussions 2

Presentations
Reception 1

Reception 2
Remarks (Zenbei Otaka, Honorary Director-General, JETRO Fukushima)

Reception 3

Reception 4

Reception 5
Fifth APEC SME Business Network Promotion Forum

Visiting P&M Co., Ltd.

Exchange session with professors in the University of Aizu

Visiting Research Institute of Engineering, College of Engineering, Nihon University

Visiting Tsuruga-jo Castle
Welcome Reception hosted by Governor, Fukushima Prefectural Government

Visiting “Business Creation Tohoku 2002”

APEC SME and New Business Support Workshop
Press Coverage

Results of the Forum were favorably appeared in the local newspapers.

Fukushima Minyu    22 July 2002    Nikkan Kogyo Shimbun    8 August 2002
Fifth APEC SME Business Network Promotion Forum

Nihon Keizai Shimbun  20 November 2002  Kohoku Shimpo  20 November 2002

Fukushima Mimpo  20 November 2002
Collated Results of Questionnaire to Attendees

* Objectives for participating in the forum

<table>
<thead>
<tr>
<th>&lt;Expectations&gt;</th>
<th>&lt;Satisfaction&gt;</th>
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<tr>
<td>To gain general knowledge on academia-industry cooperation.</td>
<td>To gain general knowledge on academia-industry cooperation.</td>
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<tr>
<td>To gain knowledge on current status of academia-industry cooperation in Japan.</td>
<td>To gain knowledge on current status of academia-industry cooperation in Japan.</td>
</tr>
<tr>
<td>To get information on case studies in APEC economies.</td>
<td>To get information on case studies in APEC economies.</td>
</tr>
<tr>
<td>To exchange information or communicate with other participants.</td>
<td>To exchange information or communicate with other participants.</td>
</tr>
<tr>
<td>To listen to particular speaker/presenter.</td>
<td>To listen to particular speaker/presenter.</td>
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<tr>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

Graph showing the objectives and satisfaction levels for the forum attendees.
* Operation of the forum

**<Priority>**

- Registration and guidance was smooth.
- Forum was held in a spacious venue.
- Handout materials were useful.
- Date and time were convenient.
- Facilitation of the program was appropriate.

**<Satisfaction>**

- Registration and guidance was smooth.
- Forum was held in a spacious venue.
- Handout materials were useful.
- Date and time were convenient.
- Facilitation of the program was appropriate.
* Each program

- Keynote Speech
- Presentations
- Discussion session
- Information Corner

- Useful
- Not Useful

* Overall comments

- Satisfied
- Dissatisfied

<Comments>
- Understood the current status of SMEs in APEC economies.
- Had chance to hear ‘frank opinion’ from the representatives.
- Realized the importance of globalization and academia-industry cooperation through the reality that people from different economies gathered at the same time, with the same purpose, using English as a common language.
- Would have been better if there were specific cases of problem in terms of tug-of-war between companies and universities.
- Learned how each economy and university is developing, so that I could see the ideas of developed technique acquisition and image of the company in the future.
- Felt the power of Singapore and Chinese companies, which was very inspiring.
- Grasped the problems and challenges in setting up venture business.
- Understood the contrast between companies and universities in terms of point of views and principles.
- Learned professors’ way of thinking.
- There were too many contents, and time given to each presenter was too limited.
- Ideas given were same to what I had been thinking, and so, nothing was new to me.
- Really appreciate for the opportunity to attend such an invaluable forum. Hope you keep holding these opportunities.
- Request for holding forums at local cities in the future.
Future efforts toward academia-industry cooperation

<Comments>
- It turned out clearly that the role of government should be shifted from “obstacles” to “accelerators” in academia-industry cooperation, and I felt that it is something I want to be involved in.
- Successful factor and unsuccessful factor in academia-industry cooperation.
- Social evaluation in the future of trend for enjoying your job.
- Keenly aware of needs for coordination offices.
- Would like to Yamagata Universities, finding their activity interesting.
- Industries depend too much on academia and government. They need to have the mind to do things themselves at first.
- Each company should have a clear characteristic.
## 2002 APEC SME and New Business Support Workshop Participants List

<table>
<thead>
<tr>
<th>Economy</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brunei</td>
<td>Pg Abdul Malik bin Pg Badarudin&lt;br&gt;Special Duties Officer, Resource and Standard Center&lt;br&gt;Ministry of Industry &amp; Primary Resources</td>
</tr>
<tr>
<td>2 Indonesia</td>
<td>I-Wayan Dipta&lt;br&gt;Deputy Assistant, Coop. &amp; SME Resources Research and Development&lt;br&gt;Ministry for Cooperatives and SMEs</td>
</tr>
<tr>
<td>3 Japan</td>
<td>Yoshiaki Ohisa&lt;br&gt;Director for International Policy Planning, Small and Medium Enterprise Agency&lt;br&gt;Ministry of Economy, Trade and Industry</td>
</tr>
<tr>
<td>4 Japan</td>
<td>Shinji Urabayashi&lt;br&gt;Project Director, Economic Development Assistance Department&lt;br&gt;Japan External Trade Promotion Organization (JETRO)</td>
</tr>
<tr>
<td>5 Japan</td>
<td>Koichi Takano&lt;br&gt;Assistant Director, Economic Development Assistance Department&lt;br&gt;Japan External Trade Promotion Organization (JETRO)</td>
</tr>
<tr>
<td>6 Malaysia</td>
<td>Nik Syahril B. Nik Mahmood&lt;br&gt;Manager, Industrial Development&lt;br&gt;Small and Medium Industry Development Corporation</td>
</tr>
<tr>
<td>7 Mexico</td>
<td>Rocio Vazquez Perez&lt;br&gt;Deputy Director for International Relations&lt;br&gt;Ministry of Economy</td>
</tr>
<tr>
<td>8 Papua New Guinea</td>
<td>Diri Kobla&lt;br&gt;Director, Division of Commerce&lt;br&gt;Department of Trade and Industry&lt;br&gt;Ministry of Trade and Industry</td>
</tr>
<tr>
<td>9 Peru</td>
<td>Gladys R. Montero&lt;br&gt;National Director of Trade Decentralization and Export Culture&lt;br&gt;Foreign Trade and Tourism Ministry</td>
</tr>
<tr>
<td>10 Philippines</td>
<td>Melvin E. Abanto&lt;br&gt;Vice President, Corporate Planning Office&lt;br&gt;Small Business Guarantee and Finance Corporation</td>
</tr>
<tr>
<td>11 Singapore</td>
<td>Tan-Chan Lean Hong&lt;br&gt;Manager, SMEs &amp; Domestic Sector&lt;br&gt;SPRING Singapore</td>
</tr>
<tr>
<td>12 Chinese Taipei</td>
<td>Liu Shin-Jeng&lt;br&gt;Director, One-Stop Solution Service Center, Small and Medium Enterprise Administration&lt;br&gt;Ministry of Economic Affairs</td>
</tr>
<tr>
<td>13 Thailand</td>
<td>Wimonkan Kosumas&lt;br&gt;Director, International Cooperation Section&lt;br&gt;Office of Small and Medium Enterprise Promotion</td>
</tr>
<tr>
<td>14 Viet Nam</td>
<td>Nguyen T. Nam&lt;br&gt;Business Information Center, Department of Enterprises&lt;br&gt;The Ministry of Planning and Investment</td>
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What is Asia-Pacific Economic Cooperation (APEC)?

Asia-Pacific Economic Cooperation (APEC) was established in November 1989 as fora for an inter-governmental economic cooperation within the Asia-Pacific region. In addition to the Informal Meeting of Economic Leaders, which is organized annually, there are Ministerial Meetings, Sectoral Ministerial Meetings, Senior Officials’ Meetings (SOM), a Committee on Trade & Investment (CTI), an Economic Committee (EC), a Budget & Management Committee (BMC), 11 working groups and other organizations that are all actively working. The hosting of an APEC-SME Business Network Promotion Forum was officially approved at the 5th APEC SME Ministerial Meeting held in 1998 in Malaysia.

Member Economies
Australia / Brunei Darussalam / Canada / Chile / People’s Republic of China / Hong Kong, China / Indonesia / Japan / Korea / Malaysia / Mexico / New Zealand / Papua New Guinea / Peru / Philippines / Russia / Singapore / Chinese Taipei / Thailand / United States / Viet Nam

APEC Organizational Chart