JAPANESE RESEARCH PROJECTS AND INTELLECTUAL PROPERTY LAWS

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FOREWORD

Japan has a long tradition of industry-government partnerships and government-sponsored research projects to promote technological innovation and economic growth. Japan is now making a concerted effort to increase its basic research capability and to open its research and development system to international participation. While some major U.S. corporations have successfully participated in these programs in the past, American industry and government have concerns about differences in the Japanese treatment of intellectual property.

Since 1987, the Office of Technology Policy's Asia-Pacific Technology Program has helped U.S. companies and researchers leverage Japanese science and technology through the publication of high-quality technical assessments and studies, and its many other activities. This study, **"Japanese Research Projects and Intellectual Property Laws,"** recognizes that the treatment of intellectual property is a key element of any firm's assessment of foreign science and technology.

A thorough understanding of the differences in regimes and practices becomes especially important as companies move from monitoring foreign technical developments to actively accessing foreign science and technology expertise through cooperative programs. This study lays out the key administrative players as well as the legal and contractual issues involved with the treatment of intellectual property in Japanese national research projects. The author rightly admonishes that successful negotiation, not litigation, is the key to successful partnering. We hope that this study, **"Japanese Research Projects and Intellectual Property Laws,"** will provide information necessary to help you make a decision about possible participation in Japanese national research projects.

The views expressed are those of the authors and editors and not necessarily those of the Department of Commerce.

Graham R. Mitchell
Assistant Secretary of Commerce
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JAPANESE RESEARCH PROJECTS AND INTELLECTUAL PROPERTY LAWS[1]

Introduction

"There is no question of the need to make international contributions the basis of policies governing future technological development at the Ministry of International Trade and Industry. This ideal will be passed on to all subsequent research and development projects."[2]

Japan's industrial complex has a long history of partnership with government to shape the course of technological innovation. National government-sponsored research projects play a major role in this relationship. The Ministry of International Trade and Industry (MITI), through its implementing agencies, supports an extensive program to foster international technological cooperation. Among the project themes, past and present, are: Supersonic Jet Propulsion, the Very Large Scale Integrated Circuit, semiconductors and related materials, the Intelligent Manufacturing System, the Fifth Generation Computer Project, and its successor, the Real World Computer Partnership. MITI's goal has been to create an environment for collaboration between engineers of leading private companies and experts in the university and government laboratory communities.[3]

The Ministry of International Trade and Industry (MITI), through its implementing agencies, supports an extensive program to foster international technological cooperation.

The rewards of MITI's investment are often very clear. Economists have argued that the government of Japan subsidized the development of its electronics industry and is now attempting to "leapfrog" ahead in the

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[2] Keynote Speech, Mr. Hideaki Kumano, Director General, Machinery and Information Industries Bureau, MITI, at the International Conference on Fifth Generation Computer Systems 1992, Tokyo Prince Hotel, June 1, 1992, 3.

[3] Dr. Hiroshi Kashiwagi, Director-General, Agency of Industrial Science and Technology, Opening Remarks, "AIST 1993."

Several U.S. Fortune 500 firms have participated in joint research and development (R&D) to pursue various Japanese national research objectives.

information processing industry through government-sponsored consortia.[4] Supporters of this industrial policy argue that technology diffuses through an industry much faster when there is open access to information, shared resources, and low risk for participation.[5] While participation in most of the programs is restricted to domestic firms, some areas have been open to foreign companies for many years. Several U.S. Fortune 500 firms—including Motorola, IBM, United Technologies and Pratt & Whitney, General Electric, Crucible Materials, and the Stanford Research Institute—have participated in joint research and development (R&D) to pursue various Japanese national research objectives.[6]

However, international cooperative research is not without its pitfalls. Specifically, American industry and the U.S. government have consistently raised concerns about the effect of differences in Japan's treatment of intellectual property, the structure and enforcement of its antitrust provisions, and commercial groups known as *keiretsu* and their effect on the competitiveness of U.S. industry.[7] In addition, some companies hesitate to participate because they feel their technological contribution would exceed their benefit.[8]

Participation improves access to and an understanding of the Japanese marketplace.

This paper discusses and illustrates the major intellectual property issues that arise when participating in a national research project in Japan. Three major points regarding foreign participation in Japanese national research projects will be addressed:

First, there are several opportunities for U.S. companies to participate in significant R&D in various areas of technology. Participation improves access to and an understanding of the Japanese marketplace. Part I, "The History of Japanese National Research Projects/Research and Development Opportunities Open to U.S. Firms," introduces Japan's national research projects that allow international participation.

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[4] Okamoto, Daniel I., *Between MITI and the Market: Japanese Industrial Policy for High Technology*, (1989), 67, "National research projects gathering together talent from the leading companies and government laboratories represent an ideal way of leapfrogging ahead."

[5] Interview with MITI Industrial Organization Policy Division, Sangyo Soshiki Seisaku Shitsu, April 1993.

[6] See Appendix II detailing foreign participation.

[7] Okamoto, 69. The Semiconductor Industry Association has argued that there is a "lack of openness and transparency and the asymmetrical advantages conferred on Japanese companies."

[8] Interview with ATT, Winter 1993.

Second, the Japanese government regulates ownership and distribution of intellectual property and management of the national research project. Potential participants must be prepared to deal with the difficulties that arise out of close government supervision. Part II, "Treatment of Intellectual Property Rights in Japanese National Research Projects," explains the intellectual property management and strategic issues through analysis of the standard licensing agreement offered by MITI to all participants in research it funds and supervises. Examples of sensitive issues affecting U.S. participants illustrate the discussion.

Potential participants must be prepared to deal with the difficulties that arise out of close government supervision.

The analysis often refers to the rights of the Japanese national government. These rights derive from ownership of a part or whole of intellectual property that resulted from a nationally sponsored research project. The treatment of this "nationally" owned intellectual property is an important aspect of consideration and will be discussed in depth.[9] The general treatment of ownership and distribution of rights under Japanese law is illustrated by the schemes provided in two on-going national research projects, the Intelligent Manufacturing System and the Real World Computer Partnership. This analysis is limited to a great extent to patents and patentable subject matter. Although issues concerning copyright protection exist in the national research environment, most research projects open to international participation focus mostly on the ownership and distribution of patent rights under Japanese law. Copyright law has not been an issue.[10] The treatment of reverse engineering of software under Japanese copyright law is a hot topic in the private sector.

Third, in order to maintain a constructive and cooperative environment, the Japanese government attempts to prevent and resolve disputes that arise from the treatment of intellectual property, from the management of the research project, or between participants. Part III, "Dispute Resolution in National Research Projects," discusses the dynamics of dispute resolution in Japan with respect to collaboration in a national research project. Understanding the mechanics of preventing and resolving intellectual property disputes in general, and particularly when dealing with the

Understanding the mechanics of preventing and resolving intellectual property disputes in general, and particularly when dealing with the Japanese government, is essential to protecting the participants' rights and technology.

[9] Japanese National Asset Law, Art. 2, *Kokuyu zaisan Ho 2 jo*.

[10] Unlike the U.S. legal system, there are two legal standards for inventions in Japan: a high standard for patents, and a lower standard for what are called utility models. An invention that fails to meet the higher standard is considered a utility model. Note that what the U.S. calls a utility patent only meets the Japanese definition of "patent" if it fulfills the higher technological standard.

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This paper uses several terms that assume a basic familiarity with patents and intellectual property. While not intended as a complete discussion of the subject, this paper includes an appendix titled "Basic Introduction to Japanese Patent Law" (see Appendix I).[11]

[11] In addition to patents and copyrights, discussion will refer to a type of intellectual property known as "know-how." Know-how generally refers to technical information that enables a party to use an invention or technology. Licensing refers to a transfer of rights that are granted by the applicable laws of intellectual property, including the right to use, make, sell, distribute, and exploit.

PART I

The History of Japanese National Research Projects/Research and Development Opportunities Open to U.S. Firms

Past Projects and Participants

In 1995, the Japanese government, through the Ministry of International Trade and Industry (MITI) (known as "Tsusho sangyo sho," abbreviated as "Tsusan Sho"), will continue its commitment to research and development (R&D) by spending in excess of $3 billion on science and technology. Half of this funding is directed toward national research projects. These projects include breakthrough attempts at the neural computer, intelligent manufacturing, basic technologies for future industries, superconductivity, solutions to energy security, and improving the quality of life with limited resources.[12] These efforts represent the largest commitment since the Electric Laboratory was formed in 1891, marking Japan's start in modern science and technology. In addition, Japan's long track record reveals an industrial policy that has overcome many of the hurdles other developed nations cite for their inability to structure similar national research programs.[13]

As shown in Table 1, other Japanese government ministries are also committed to science and technology. MITI, however, takes the lead as a supporter of R&D and international research cooperation.

While many reasons are given to justify this industrial policy, MITI states that the financial risk faced by independent research prevents progress in

[12] The Fiscal Budget for Industrial Technology in MITI:

1991	$1,904,328,358.20
1992	$2,129,039,104.47
1993	$2,380,265,718.80
1994	$2,661,137,073.62

[13] Okamoto at 67. Okamoto lists five reasons: (1) difficulty in organizing; (2) companies are not sufficiently competitive; (3) distrust is too deep seated to overcome; (4) disincentives outweigh incentives to participate; and (5) antitrust law is too strictly enforced.

National research provides a foundation of basic knowledge throughout industry, which accelerates the commercialization process.

Table 1. Appropriations Related to Science and Technology, by Ministry.

FISCAL YEAR 1995 (¥ in millions)

National S&T Budget	**2,490,838**
Ministry of Education	1,157,384
Science and Technology Agency	646,120
MITI	**297,058**
Defense Agency	154,499
Ministry of Agriculture, Forestry, and Fisheries	85,418
Ministry of Health and Welfare	70,813
Ministry of Posts and Telecommunications	36,916
Ministry of Transport	21,862
Environmental Affairs	14,733
Ministry of Foreign Affairs	10,271
Ministry of Construction	8,276

Source: Japanese Scientific Monthly, vol. 48, no. 7 (in Japanese).

several significant areas.[14] National research provides a foundation of basic knowledge throughout industry, which accelerates the commercialization process.[15] In addition, government sponsorship and guidance provide an environment and opportunity for the pursuit of interdisciplinary projects necessary to solve long-term problems.[16] Several U.S. and European companies have participated and continue to participate in projects established and funded by MITI and other Japanese government ministries. Before examining specific projects and their terms, this paper first introduces the institutions that play a major role in Japan's national research programs that are open to international participation.

[14] Interview with MITI, Industrial Structural Policy Division, October 1993. Times are changing rapidly. Japanese companies, having developed large capital surpluses, are less dependent on government subsidies and guidance. As a result, the Japanese government must provide attractive financial and tax benefits to attract valued participants.

[15] Interview with MITI, October 1993.

[16] *Ibid.*

Overview of Research and Development Programs in Japan

A History of Japan's Science and Research and Treatment of Intellectual Property

While institutions of science and research in post-Meiji Restoration[17] Japan started with the Electric Laboratory in 1891 and the Industrial Laboratory in 1900, the promotion of cooperative research and development between government and industry did not begin until 1951 with the establishment of a program to finance enterprises for "New Technologies."

Japan's body of law regulating intellectual property had its beginning at the same time. The Japanese legal system is a civil law system of codes and regulations. Japan's modern legal system began in 1868 after the Meiji Restoration and derives in part from the German system and in part from the American system. Japan's patent law is almost identical to that of the German system.

Japan's legal tradition differs most significantly from the U.S. system in the role of the bureaucracy. The regulatory power and jurisdiction of the Japanese ministry is arguably broader than U.S. agencies in many areas.[18] While U.S. agencies are subject to oversight by the legislature, Japan's ministries operate with substantially more autonomy.

While U.S. agencies are subject to oversight by the legislature, Japan's ministries operate with substantially more autonomy.

Licenses with the Japanese government reveal the extent of this power. Nationally owned intellectual property is centrally regulated. Specifically, patent and know-how rights, owned in full or in part by the Japanese government as a result of a government-sponsored project, must be licensed and royalties set in conformance with the National Patent Licensing Contract Form, Revised, General Patent Regulation No. 88, last revised in 1972.[19] Copyrights are under the jurisdiction of the Ministry of Education and regulated under a separate body of law.[20] This regulatory scheme will be explained at length in Part II.

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[17] Beginning in 1868, the Meiji Restoration marked the foundation for transforming feudal Japan into a modern state. See, e.g., Tanaka Hideo, *The Japanese Legal System*, 621, (1976).

[18] See, Chalmers Johnson, *MITI and the Japanese Miracle: Growth of Industrial Policy* (1982).

[19] See, General Patent Regulation No. 88, (1972), TokuSoDai No. 88, Showa 47.2.9.

[20] However, if a copyright was licensed between a foreign entity and the Japanese government or industry in conjunction with other intellectual property, the agreement could fall under the jurisdiction of MITI and the Foreign Exchange and Foreign Trade Control Laws.

MITI's goal in the sciences is to bring "government research institutes, industrial and academic organizations" together using government funding.

The Players

Research open to international participation is conducted mainly by MITI. The focus on MITI is essential because licensing between a foreign participant and the Japanese government falls under the jurisdiction of MITI and the Japanese Foreign Exchange and Foreign Trade Control Laws, regardless of the funding agency. The Japanese government does, however, conduct research under many other agencies. In addition to MITI, the Ministry of Posts and Telecommunications, the Science and Technology Agency, and the Ministry of Agriculture, Forestry, and Fisheries also sponsor projects open to international participation on a limited basis. Figure 1 shows an overview of the Japanese government. This document focuses on MITI-sponsored research because of its size in relation to other programs, and because its policies and methodologies are referred to by other bodies as instructive and guiding.

Ministry of International Trade and Industry. The Ministry of International Trade and Industry (MITI) was established in 1952 to "promote the production of export goods, and promoting, improving and regulating the production, circulation and consumption of industrial goods."[21] MITI's goal in the sciences is to bring "government research institutes, industrial and academic organizations" together using government funding.[22] Generally, the projects last from five to ten years, with a total cost of between ¥10 and ¥20 billion ($95–195 million). Projects are chosen according to the following criteria: "1) pioneer large-scale industrial technology essential and urgent for the national economy; 2) requires considerable funds, long lead time and risks; and 3) R&D which is difficult to carry out in the private sector." In addition, it was emphasized in April 1989 that the project should "contribute to International Society by addressing international problems...enrich life...[and] contribute to international society by the development of technology to satisfy people's expectations for increased...standards of living and should establish a sound industrial society."[23]

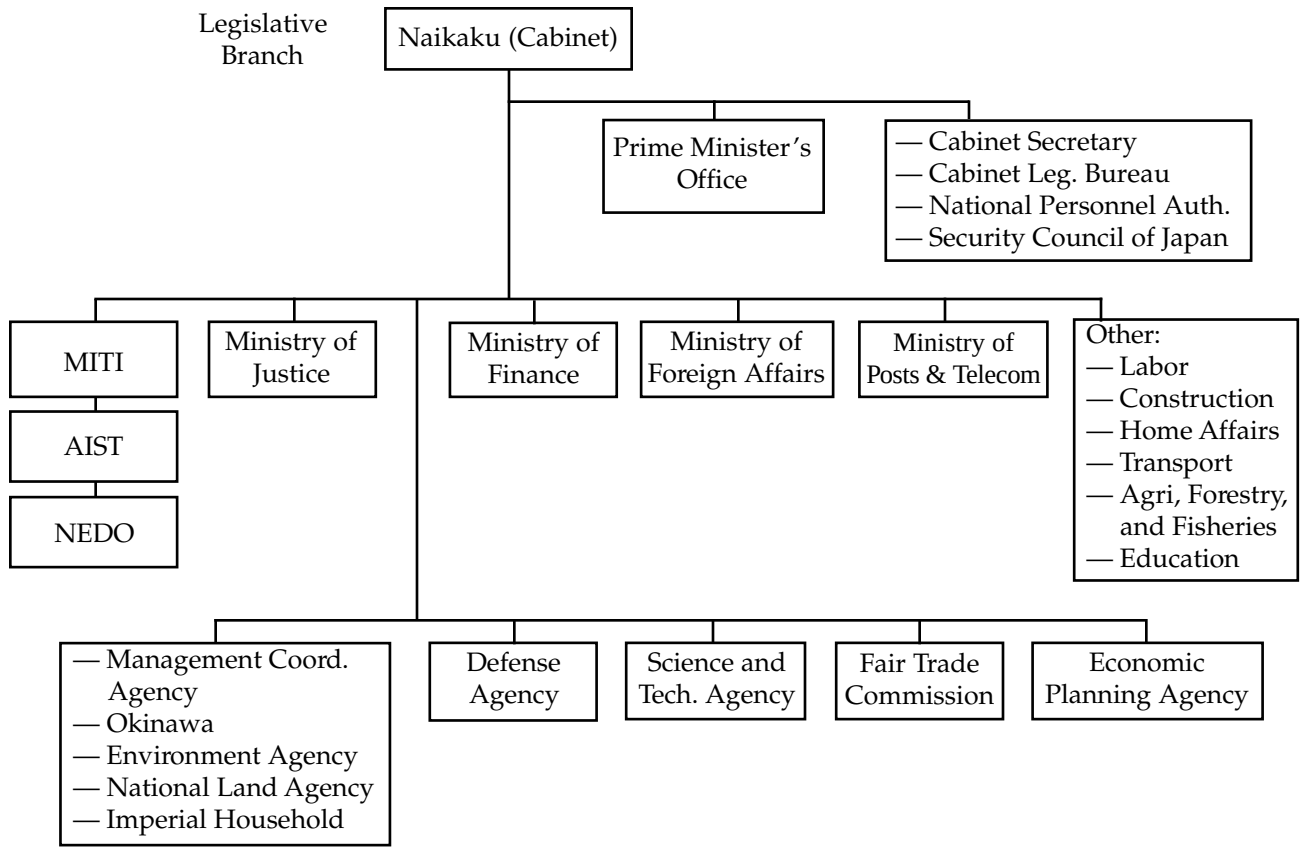
Agency of Industrial Science and Technology. The Agency of Industrial Science and Technology (AIST; Kogyo Gijutsu in), not to be confused with the Science and Technology Agency, is an agency under the control of the Ministry of International Trade and Industry. Established in 1948 under a different name, the agency became formally known as AIST in 1952 and took its place under MITI. AIST has grown into an organization with

[21] Organization of the Ministry of International Trade and Industry Act (Tsusho Sangyo Sho Setchi Ho) (1952 c. 275) art. 3(i), (ii).

[22] Interview with MITI Industrial Policy Division, October 1993.

[23] AIST publication "Introduction to AIST," 1993.

Figure 1. Overview of the Japanese Government.

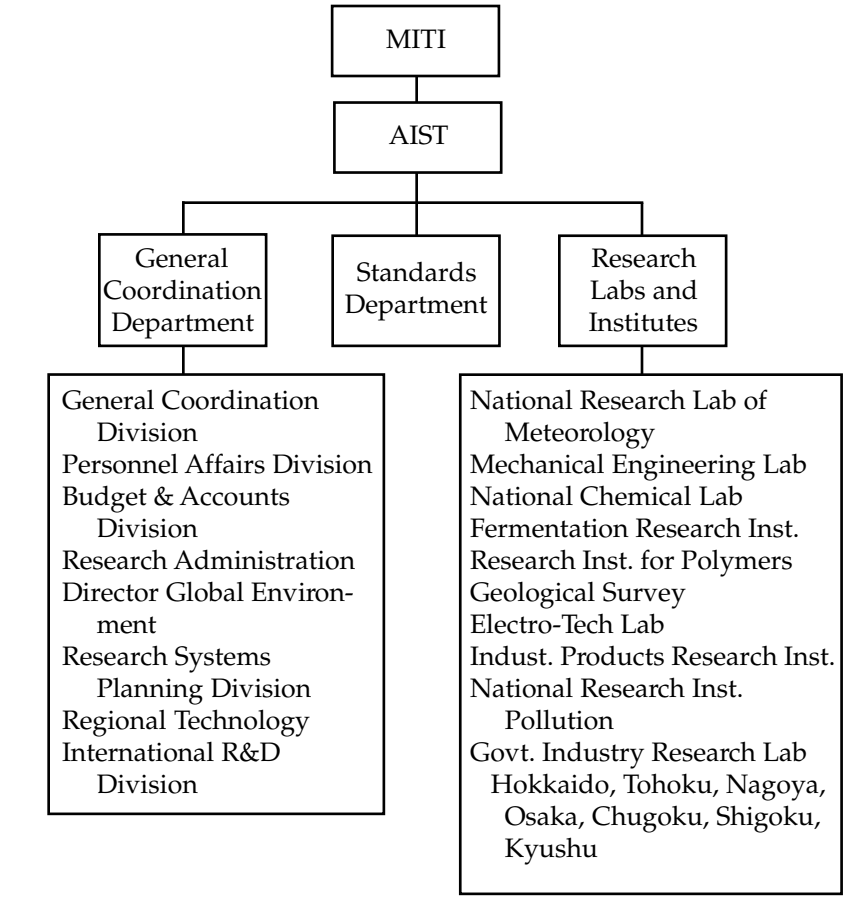


3,500 researchers, technologists, and administrators and more than 16 research and laboratory facilities. (See figure 2.)

In addition, AIST administers all of MITI's research institutes and laboratories, representing more than 8,000 personnel, researchers, and administrators. In 1991, AIST's budget accounted for 45 percent of MITI's total budget.[24] In 1966, the National Research and Development Program, also known as "the Large-Scale Projects Program," was established. Since 1966, AIST has undertaken 29 projects; 16 projects have been completed. Table 2 shows budgets for 1990–1995.

[24] There are nine Kenkyujo (Research Facilities) and seven Laboratories. They are differentiated by the level of research that they pursue.

Figure 2. Agency of Industrial Science and Technology.



NEDO was created to develop new and existing research facilities, and to sponsor international research programs.

New Energy and Industrial Technology Consolidated Development Organization. The New Energy and Industrial Technology Consolidated Development Organization (NEDO; "Shin energi sangyo gijutsu sogou kaihatsu kiko") is a sub-agency of AIST and an implementing agency of MITI.[25] In addition to conventional research programs conducted under the auspices of the AIST, NEDO was created to develop new and existing research facilities, and to sponsor international research programs. MITI controls NEDO's budget, gives and withholds approval for research projects, and appoints the Senior Council members who run the organization. Although MITI's presence in national research is pronounced, the research participant will most likely deal with NEDO and its staff.

[25] *The Innovation of New Technology*, NEDO, October 1992, 3.

Table 2. Budget for Industrial Technology at MITI.

	(¥ in millions)					
	1990	**1991**	**1992**	**1993**	**1994**	**1995**
Intelligent Manufacturing	1.1	4.2	800	1,100	1,253	1,254
International Aircraft Development	69	94	8,100	8,200	8,595	9,102
Fifth Generation Computer Project	105	113	3,600	1,400	⊕	⊕
Real World Computing Partnership					4,986	6,007
Industrial Tech. Collaboration Program	12	28	1,000	1,800	1,716	3,363
R&D Project on Basic Technologies	115	129	23,600	28,000	23,584	24,860
Large-Scale Projects	243	253	*	*	*	*
Superconductivity	96	117	NA	NA	3,206	3,196
Research Facility Dev. Program	22	24	40	300	300	300
Japan Key Technology Center	260	280	28,500	28,000	28,000	28,100

⊕ Project ended; NA Not Available

* Basic Technologies and Large-Scale Projects are combined under one budget after 1991 titled "Industrial Science and Technology Frontier Program," included above under "R&D Project on Basic Technologies" for 1992-95.

Sources: *AIST Introduction* (in Japanese), 1990-93; AIST 1994; Japanese Scientific Monthly, vol. 48, no. 7 (in Japanese).

Following a reorganization in 1988,[26] NEDO took over four areas of R&D previously managed by AIST:

- the Industrial Science and Frontier Program consisting of
  - the Research and Development Program on Basic Technologies for Future Industries, and
  - the National Research and Development Program (Large-Scale Project)[27];

[26] Under the "Law for Consolidating Research and Development System Relating to Industrial Technology," enacted in May 1988, the New Energy Development Organization was expanded in October 1988.

[27] These projects include the Super High Performance Electronic Computer, Sea-Water Desalination and By-Product Recovery, Direct Steelmaking Process, Resources Recovery Technology, Subsea Oil Production System. *AIST Overview*, p. 8.; *National Research and Development Program, Large-Scale Project*, 1992, published by the Japan Industrial Technology Association, March 1992, p. 1.

- the Research and Development Program on Medical and Welfare Equipment Technology; and

- the Research and Development of Important Regional Technologies.

NEDO's stated purpose is to:

- promote coordinated development and commercialization of oil-alternative energy sources for the purpose of reducing the dependency of the Japanese economy on imported oil;

- *carry out basic and advanced research and development on industrial technology; construction and operation of large-scale research and development facilities;* ***international joint research*** *and to coordinate these activities for the purpose of improving Japanese industrial technology and making a contribution to the international community through technological development and cooperation* [emphasis added];

- promote rationalization and stabilization of Japan's coal mining industry by providing financial and technical assistance for investment required for the restructuring of the industry and the modernization of coal mines; and

- produce industrial alcohol for the purpose of ensuring a stable domestic supply.[28]

An international researcher exchange program and an international research cooperation program were added in April 1989.[29]

Science and Technology Agency/National Aerospace and Development Administration. The Science and Technology Agency (Kakaku Gijutsu Cho) was established in 1956 as an agency of the national government responsible for the "formulation, coordination and implementation of research and development."[30] Its director-general is appointed by the Prime Minister and serves as a member of the Cabinet. This agency includes:

- the Japan Atomic Energy Research Institute;

- the National Aerospace Laboratory;

[28] *The Innovation of New Technology*, NEDO, October 1992, p. 3.

[29] *Ibid.*

[30] *Ibid.*

- the National Space Development Agency of Japan; and
- the Japanese Information Center for Science and Technology.

The Research Projects

Fourteen non-Japanese companies, including eight American firms, have participated in AIST-supervised R&D projects under the Industrial Science and Technology Frontier Program over the past two decades. This section provides an overview of the National Research Program and introduces the different research and development programs, their goals, and their sponsors. Part II of the report discusses specific examples of foreign participation and the intellectual property issues related to each project. The titles used for each program are those given by the supervising agency, unless otherwise noted. As shown in Appendix II, "Foreign Participants in Japanese National Research by Project," most American companies taking part in Japanese national research programs have participated in projects organized under the Basic Technologies for Future Industries program.

Financing and Structuring the Research Relationship

1. Funding. Originally, research and development projects sponsored by the Japanese government were funded by way of "hojokin" or conditional loans, repaid upon success. MITI would advance the funds as "seed money" and the participants would finance the balance. All early research projects were funded in this manner. Although economists were skeptical of its success, 1982 data showed that 43.6 percent of AIST hojokin were repaid.[31] When the Fifth Generation Computer Project was first conceived around 1985, MITI wanted to fund only 50 percent of the project. However, the participants, led by Fujitsu, persuaded MITI to play a larger role. MITI agreed to fund 100 percent of the project for at least the first three years.[32] One explanation for this change in MITI policy is that Japanese industry, having grown wealthy since the establishment of the national research policy, required greater incentives to participate. Since then, MITI's financial role has been regulated by the new "Itaku Keiyaku," known as the "Entrustment Contract" research relationship.[33] The Entrustment Contract will be discussed in detail in Part II.

MITI was determined to pursue "state-of-the-art projects which are costly, risky, of uncertain success and longer gestation."[34] However, industry

[31] Interview with MITI; Okamoto at 79.

[32] *Ibid.* and Okamoto at 80.

[33] *Ibid.*

[34] *Ibid.*

would not follow in this direction unless it was provided a "free ride." The Itaku Keiyaku made this possible.

Projects supervised under NEDO have generally taken two legal structures: the Cooperative and the Foundation.

This free ride, however, did not result in a flood of participation. One explanation might be found in the treatment of intellectual property ownership and distribution, which, unlike the financial arrangements of the projects, remained relatively unchanged. Another explanation is that industry has grown less dependent on government-subsidized research.

Direct investment from Japanese Government. Occasionally funding is appropriated directly from a ministry. Usually, this is for smaller research projects and studies. One example would be funding appropriated for a foreign company or researcher to participate in a study conducted at a national laboratory, such as the Electro-Technical Laboratory in Tsukuba. There are four major direct financing methods available: (1) the Japan Development Bank provides funding at an attractive interest rate; (2) International Joint Research projects sponsored by NEDO gives grants; (3) Conditional Loans for Development of Applied Energy exist through AIST; and (4) the Program for Research in Mining and Manufacturing Technology offers funding.[35]

2. The Structures: The Cooperative (Kumiai) and the Foundation (Zaidanhojin). Projects supervised under NEDO, as outlined in Part I, have generally taken two legal structures: the Cooperative and the Foundation. While significant differences in corporate law exist in the formation and dissolution of these two structures, the key distinction for intellectual property is the way in which ownership rights are distributed. However, because the structure of the research project is established by the supervising agency, few opportunities to negotiate the type of structure exist. While the structure of a project is usually determined by the source of funds for the research, it has developed through the experience of NEDO with national research. As a result, interested parties should be aware of the differences to make adjustments in their strategy.

- The Kumiai (Cooperative)
  - *Administration and organization.* In the Japanese national research environment, a research "Kumiai" or "Cooperative" need not physically exist, say, in the form of a laboratory or facility. Rather, it can exist as a forum for information

[35] AIST Introduction, 1993, 27. An explanation of these programs is beyond the scope of this paper.

exchange taking place through computer networks and meetings. In the Kumiai, each company is responsible for a module of research that is combined with the results of the other participants. This research method is often referred to as "mochi kaeri kenkyu," which literally means "research that you take home."[36]

- *Benefits and risks of this structure.* This structure permits the members to determine distribution of intellectual property rights and the general administration of the project. This form poses little risk of exposing intellectual property to potential competitors because the flow of information is limited to the specific module under the responsibility of each participant. The Kumiai is also beneficial from the standpoint of dispute prevention and resolution. Because each member owns an equal share of all intellectual property that is created, it is in the mutual interests of the parties to resolve disputes quickly.

  In addition, because of its relatively informal legal form,[37] it is easy to dispose of property, including intellectual property. The Cooperative can be dissolved with less difficulty than a regular corporation. As a result, the Kumiai is the preferred form for projects with limited purposes.

This form poses little risk of exposing intellectual property to potential competitors because the flow of information is limited to the specific module under the responsibility of each participant.

- The Zaidanhojin (Foundation)

  - *Administration and organization.* Recent projects under the supervision of MITI have taken the form of a "Zaidanhojin" or "Foundation." The Foundation is rigorously structured according to Japanese Civil Code (Minpo). Because of this formal structure, the distribution of intellectual property rights and general administration is defined in detail. Intellectual property cannot simply be distributed among the member companies as in a Cooperative.[38] In the Zaidanhojin, the members are bound by a more structured legal relationship to each other. Specific licensing agreements must be created to distribute intellectual property.

[36] Interview with NEDO, April 22, 1993.

[37] The Kumiai is formed through Japanese Civil Code.

[38] Interview with NEDO, April 22, 1993.

The major benefit of this structure is that the risk to a company's non-related proprietary information is reduced.

Under this structure of research, a physical facility often exists. As in the case of the Very Large Scale Integrated Circuit project, representatives from each member company conducted research at a facility built by NEC. The major benefit of this structure is that while the members can work together, the members' own laboratory is not "invaded."[39] By isolating the research at a separate facility, the risk to a company's non-related proprietary information is reduced.

- *Benefits and risks of this structure.* While a Zaidanhojin, or Foundation, is relatively simple to set up, it is very difficult to dissolve.[40] More importantly, the establishing law[41] prohibits the distribution of assets to industry.

3. IBM and the Fifth Generation Computer. A good example of the Foundation is found in the Fifth Generation project, led by the former head of the Electro-Technical Laboratory. The purpose of this project was to "chase the neural computer,"[42] a goal far from commercialization. The Japanese government established a legal body, the Institute for New Generation Computer Technology (ICOT), as the headquarters of the project. Although its capital funding came from MITI, the project appealed to foreign participants because the decision-making body consisted of member companies.[43] As the Fifth Generation project ended and the Real World Computer Partnership began, intellectual property concerns slowly developed.

Overview of the Project Groups[44]

1. Basic Technologies for Future Industries. Projects funded by Basic Technologies for Future Industries have represented 5 to 6 percent of MITI's budget for industrial technology. Established in 1981, this program seeks to develop innovative basic technologies "essential for establishing new industries" in five fields: superconductivity, materials, biotechnology, electronic devices, and software. In the materials area, R&D continues until the new materials are "ready for practical application."[45]

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[39] *Ibid.*

[40] Japanese Civil Code, Minpo Article 33 et. seq. and Dissolution Article 68. Dissolution can only occur if bankrupt; the corporate goal is frustrated; or the certificate of incorporation is revoked, Art. 68.

[41] *Ibid.*

[42] Interview with MITI, Electronics Division, Winter 1993.

[43] NEDO interview.

[44] See Appendix II.

[45] AIST Overview, at p. 7.

In 1981, the Research and Development Program on Basic Technologies for Future Industries (JISEDAI) was established to research and develop "innovative technologies necessary to establish future industries and to upgrade present industries such as aerospace, information processing, and biotechnology."[46] Since its inception, 22 projects have been undertaken, of which 12 have been completed, including: Advanced Alloys with Controlled Crystalline, Advanced Composite Materials, Bioreactor Project, Fortified Integrated Circuits for Extreme Conditions, and Three-dimensional Integrated Circuits.

2. The Large-Scale Project. Funding for the Large-Scale Project has represented more than 10 percent of MITI's budget for research programs in industrial technology. Research projects under this program are conducted if they are "of particular importance and need to the nation."[47] Government funds are distributed by contract to participating private "enterprises" that work with national laboratories and academic organizations. The goal is to create results that are available for use by the public.

3. The Japan Key Technology Center. The JKTC was established in 1985 in response to a proposal by the private sector. It conducts activities directed at the overall improvement of the environment for private research and development in fundamental technologies. The center provides capital investment for research carried out by companies established for joint research purposes. Conditional interest-free loans are also available to aid in reducing R&D-related risks and costs. In addition, the center conducts mediation for private companies wishing to conduct joint research with national research institutions. The center has also established a charitable trust called the Japan Trust Fund to support foreign researchers in key technologies to Japan.

MITI also spends significant sums on R&D related to superconductivity and on the promotion of research at National Laboratories and Universities and NEDO's research facility development program.

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[46] *Research and Development Program on Basic Technologies for Future Industries (JISEDAI Program)*, Publication of Ministry of International Trade and Industry, 3, 1992. There are three major criteria for selecting an R&D project: (1) it must involve highly innovative basic technology with a wide range of technical applicability; (2) it must involve technology that is generally expected to require ten or more years of R&D and investment risk; (3) it must involve basic technology that appears to be applicable in the future.

[47] *Ibid.*

MITI spent more than 15 percent of its research budget for Industrial Technology on projects for the promotion of international cooperation.

4. Promotion of International Cooperation. MITI spent more than 15 percent of its research budget for Industrial Technology on projects for the promotion of international cooperation.

- *The Human Frontier Science Program.* This program, originated at the Venice Summit in 1987, is a joint international project promoting basic research in the areas of the brain and biological function to elucidate superior functions of living organisms. Research grants for periods of up to three years are available to participating countries, including the United States. The size of a grant is based on need, and the funding can be used for equipment, materials, supplies, salaries for assistants, and travel. Several fellowship programs and workshops are offered. In 1990, its second year of operation, the program funded 32 research grants, 90 long-term fellowships, and three workshops.

- *Intelligent Manufacturing Systems Project.*[48] The IMS Project is an attempt to develop a next-generation manufacturing system in which the entire manufacturing process—from order booking through R&D, design, manufacturing, distribution, and management—may be realized through an autonomous production line comprised of equally autonomous components. Established in 1991, this five- to ten-year project represents the first collaborative effort by the U.S., Canadian, Australian, EFTA, EU, and Japanese governments in the area of R&D. In 1993, MITI committed more than $111 million toward the IMS International Joint Research Program.[49] There are 65 "core member" companies and 19 "supporting member" companies participating in six areas of development: (1) enterprise integration; (2) global manufacturing; (3) system component technologies; (4) clean manufacturing; (5) human and organizational aspects; and (6) advanced materials processing. Part II examines the treatment of intellectual property under IMS.

[48] Interview with MITI, Industrial Organization Policy Planning Div., October 1993.

[49] ¥11.6 Oku, up from ¥7.6 Oku in 1992. See "IMS Kankei," MITI, unpublished document, Winter 1994.

- *Fifth Generation Computer System*.[50] For 11 years, full-scale R&D was undertaken to develop technology for a parallel processor. IBM participated in this project, which was run ostensibly by Fujitsu. Industry has given the project and its results mixed reviews. After the project was completed in 1993, a new one was begun called the Real World Computer Partnership (RWC). MITI is attempting to transfer the software results of the Fifth Generation project to the widely-used UNIX platform by offering it to the public free of charge. MITI seeks to establish a foundation for fifth-generation computer technology research and further its efforts to develop applied technology. The treatment under the RWC scheme is evaluated in Part II.

Joint Research Programs[51]

AIST conducts joint research programs in advanced technology with developed countries and invites the participation of foreign researchers. The programs are conducted through both the Institutes for Transfer of Industrial Technology (ITIT) and NEDO.[52]

AIST cooperates with developed countries through science and technology cooperation agreements, industrial cooperation talks concerning joint research, and exchange of researchers and information.

[50] *Outline of 1993 MITI R&D Budget*, JITA News, pp. 4-13, March 1993, (in Japanese).

[51] *AIST Introduction*, 1993-4, International Joint Research on Global Environment Research on Mechanisms for Release of Methane into the Atmosphere.

Foreign researchers can also be invited under the following programs:

a) The AIST accepts researchers from the EC through the Japan-EC Industrial Cooperation Center;

b) Invitation by a charitable trust called the Japan Trust Fund administered by the Japan Key Technology Center;

c) AIST has made a memorandum of understanding with the National Science Foundation to accept up to thirty U.S. researchers a year to AIST laboratories.

[52] The following qualifications and guidelines apply:

a) The researcher must be under 35 years old, with a doctorate in science or engineering;

b) Approximately 14 people are hosted by one of 16 institutes belonging to AIST for one year;

c) The researcher is given round-trip airfare, living expenses, housing, and family and relocation allowances;

d) A Japanese language course is given at the beginning of the researcher's stay.

Bilateral Cooperation

AIST cooperates with developed countries—including the United States, Germany, France, Italy, and the United Kingdom—through science and technology cooperation agreements, industrial cooperation talks concerning joint research, and exchange of researchers and information. The United States has initiated several bilateral research agreements.[53]

[53] 1) The U.S.-Japan Conference on Natural Resources, initiated in 1964, for Fire Research and Safety, Marine Mining, Marine Instrumentation and Communications, Marine Geology, and others.

2) Cooperation in Research and Development in Energy and Related Fields, initiated in 1979, covering Fusion, Coal Energy, Solar Energy, High-energy Physics, other energy and energy-related research and development areas, as may be mutually selected.

3) Cooperation in the field of Environmental Protection, initiated in 1975, including Stationary Source Pollution Control Technology, Management of Bottom Sediment Containing Toxic Substances, Air Pollution-related Meteorology.

4) Cooperation in research and development in science and technology, initiated in 1988, including life sciences, such as biotechnology; information science and technology; manufacturing technology; automation and process control; global geoscience and environment; joint database development; and advanced materials, including superconductors.

PART II

Treatment of Intellectual Property Rights in Japanese National Research Projects

This section discusses the legal and strategic issues concerning intellectual property rights (IPR) and licensing particular to national research in Japan. It begins with an introduction to the major issues of Japanese patent law and Japanese trade law. This is followed by an explanation of the general intellectual property and licensing framework that regulates the relationship between private industry and the Japanese government. These issues are illustrated by the specific approaches taken in the Intelligent Manufacturing Systems and the Real World Computer projects. Part II concludes with a brief examination of the treatment of other intellectual property, including copyright and trade secrets under a licensing relationship with the Japanese government.

Effect of Japan's Treatment of Joint Patents and the Foreign Control Law

Joint Patents and Consent

The treatment of joint patents under Japanese national patent law is a major issue affecting the ownership of intellectual property created under a Japanese national research project. The issue of jointly-owned patents arises when: intellectual property is not created solely by the participant at his or her own facility; it is created with the participation of other project members; or it is created with the benefit of funding, information, or synergy generated by the project.[54] The effect of a jointly owned patent is clear: Japanese patent law requires "the consent of all parties before jointly owned rights can be exchanged."[55]

Japanese patent law requires "the consent of all parties before jointly owned rights can be exchanged."

This provision affects the ability of an owner to sub-license the intellectual property and creates obligations to other rights owners, including employee inventors.[56] The justification for this provision, which excludes transfers as a result of the distribution of an estate, is that licensing by one

[54] See Article 72, Japan's Patent Law and The "Entrustment Contract" (Itaku Keiyaku).

[55] Articles 72.2, 73.1, 74.1, 74.3 of the Patent Law; Article 2.2 of the Utility Model Law; and Article 33.2 of the Design Law.

[56] For example, IBM enumerates what are called "future" rights—rights held by the employee after the license expires.

user cannot impinge on the right to use held by the other joint owner. "Consent is essential because the economic value of the intellectual property could be affected depending on the new joint rights holder."[57] For example, economic value could be affected by a joint owner's capital strength, technical capability, and trustworthiness.[58] Similar provisions exist in the laws of England, France, and Germany.[59] U.S. participants in Japanese research projects are often unaware of this issue and unprepared to proceed.

Originally all patents and utility models resulting from an international joint research project supervised by the national government were owned entirely by the Japanese government.

Japan's Foreign Exchange Control Law

The second issue relates to Japan's general regulation of international licensing. An international licensing agreement concerning the import of technology in Japan is subject to the Revised Foreign Exchange and Foreign Trade Control Act.[60] Prior notice of the intention to enter an intellectual property know-how licensing agreement must be submitted to both the Ministry of Finance and the ministry having jurisdiction over the industry or project involved. Additional regulations were issued in 1980 setting out the procedural process.[61]

General Intellectual Property Framework Between Industry and MITI: Licensing Intellectual Property from the Japanese Government

Jurisdiction

As in the United States, patents and copyrights in Japan fall under the jurisdiction of different government bodies. Patents are under the juris-

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[57] Yoshida Kosaku, *Tokkyo Ho Gaisetsu*, (Treatise on Patent Law), 458, note 1, 1992.

[58] *Ibid.*

[59] Consent is not necessary in Germany to share one's interests. However, consent is necessary to license your interest to a third party. *Kakoku Tokkyo Seito Ni Okeru Kyoyusha no Koui ni Taisuru Doi no Hitsuyousei ni Tuite*, AIST publication, p. 24. Consent might have been at the heart of the problem that William Dick, IBM, presented to the American Chamber of Commerce Japan's Licensing Patents and Technology Committee, Tokyo, January 26, 1993. Specifically, IBM was concerned with the treatment of "futures" and the effect on the right to the invention held by the employee. Futures relate to rights based on patents taken on the original patent, and thus extend rights past the term of the patent. The problem was stated that "contracts made with the government violate existing licenses if the invention is made by the employee."

[60] Revisions went into effect on December 1, 1980; Foreign Exchange and Foreign Trade Control Act *Gaikoku Kawase Oyobi Gaikoku Boeki Kanri Ho*, Law No. 228, 1949.

[61] *Ibid*., Articles 29-30. See also Japanese Fair Trade Commissions Regulations on Registration of International Licensing Agreements.

diction of MITI. As previously mentioned, MITI established the Agency of Industrial Science and Technology as the supervising agency of R&D and intellectual property relationships, in coordination with NEDO. Copyrights are under the jurisdiction of the Ministry of Education.[62]

MITI's jurisdiction over patents derives from Japanese Patent Law and the Horei, a codification of Japanese private international laws.[63] The body of law called MITI's Codified Laws[64] defines the scope and breadth of MITI's jurisdiction.

Although the national law is regulated by different ministries, the results of international research projects sponsored by the Japanese government, either patent or copyright, are said to be subject to the same regulatory scheme. This paper, however, focuses only on patent-related inventions.

A New Approach

Originally all patents and utility models resulting from an international joint research project supervised by the national government were owned entirely by the Japanese government, as provided in the Law Governing the Smooth Flow of Basic Research (Kipan Gijutsu Kenkyu Enpatsuka Ho).[65] AIST granted licenses through a special organization called the Japan Industrial Technology Association (JITA), which was established in 1969 to be the national licensing agent.

Today, when a patentable invention results from contracted research projects supervised by AIST and NEDO, it is half-owned by NEDO and half-owned by the participants. NEDO has the right to license it to others. The JITA has a limited role as a clearinghouse for national intellectual property. This system of ownership and distribution is regulated by the Entrustment Contract (Itaku Keiyaku Sho), provided by NEDO to all researchers or national research participants.

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Under this structure—created in 1988 to encourage international cooperation and increase the transfer of technology to private industry—owner-

[62] Referred to as Monbusho, in Japanese.

[63] Horei Law No. 89, 1898, Act Concerning the Applications of Laws, Art. 7, Para. 1.

[64] *Tsusansho Roppo*, MITI Code of Law, a collection of relevant law and provisions.

[65] *Kipan Gijutsu Kenkyu Enpatsuka Ho*, (The Law Governing the Smooth Flow of Basic Research), June 15, 1985, Law 65, which regulates basic electronics and telecommunications–related research and results and states that all patents must be given free or at a low fee. Article 4; Pursuant to Minpo 44 and 45, a Basic Technology Research Promotion Center is formed. See Article 14 of *Law Governing the Smooth Flow of Basic Research*.

ship of the intellectual property is split between the participating company and the Japanese government.[66] NEDO was created at this time to "carry out basic and advanced research and development, facilitate international joint research and to coordinate these activities for the purpose of improving Japanese industrial technology and making a contribution to the international community through technological development and cooperation."[67] As of March 1992, the AIST and the 16 National Research Institutes and National Projects produced 15,241 patents, utility models, and trademarks in Japan, and 2,346 abroad.[68] As a result, more than 660 patents have been licensed to private and semiprivate enterprises resulting in an annual revenue of more than ¥200 million ($20 million) for the Japanese government.

Intellectual property rights owned by the Japanese government are available for licensing to "anyone in accordance with the following three principles:"[69]

- First, all licenses are nonexclusive. Since the intellectual property resulted from government funding, they are subject to equal use by everyone and protected as public property.

- Second, any enterprise can get a license, irrespective of size and nationality of the recipient industry, under the same terms and conditions; and

- Third, since national patents are state-owned property, their use requires payments of a reasonable royalty, calculated in

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[66] *Ibid*. 4. Pursuant to *Sangyo Gijutsu ni kansuru Kenkyu Kaihatsu Taisei no Seibi nado ni Kansuru Horitsu*, (Law Governing the Research Organization of Industrial Technology), Showa 63.5.6 Law 33. In the U.S., France, Germany, and England, the private ownership of intellectual property resulting from government-sponsored research or projects is permitted for little or no fee.

[67] *Ibid*. As well as "to promote coordinated development and commercialization of oil-alternative energy sources...and to produce industrial alcohol for the purpose of ensuring a stable domestic supply." In 1990, the goal of global protection was also added.

[68] *Guidance to Use of National Research Results*, published by the Agency of Industrial Science and Technology, MITI, 1993. The 16 National Research Institutes and Laboratories yielded 9,650 patents and the National Projects yielded the remaining 5,591 patents. Regarding foreign patents: 16 National Research Institutes yielded 1,900 and the National Projects yielded 446. These represent intellectual property registered or pending.

[69] See note 26, Article 3, pursuant to Japanese Civil Code ("Minpo") Articles 44 and 45.

accordance with the notification of Director-General of the Japanese Patent Office.[70]

The Regulation of Intellectual Property

The basic rule is that all intellectual property, including patents and copyrights, which results from a nationally sponsored research project, except for work done completely independent of the research project, is first owned by the Japanese government.[71] Some of the rights are then licensed to interested participants. The ownership proportion of copyrights is different from that of patents. The Japanese government retains full ownership of all copyrights created under a direct-sponsored research project; patents are jointly owned.

The basic rule is that all intellectual property which results from a nationally sponsored research project is first owned by the Japanese government.

All U.S. companies participating in National Research projects and licensing with the Japanese government will enter into an agreement similar to the "Entrustment Contract." Thus, all patents resulting from nationally sponsored research projects are subject to the regulations of the Japanese Patent Law.

Analysis of the Entrustment Contract focuses on patentable technology. Although other types of intellectual property, specifically copyrights, are the subject of nationally sponsored research projects, they will not be explained in depth here for two reasons: (1) copyrights created as a result of a nationally sponsored research project are subject to 100 percent ownership by the Japanese government,[72] and (2) the research projects tend to focus on patentable subject matter.

Following are the basic principles for the ownership of intellectual property resulting from national research projects. Intellectual property created under the auspices of a national research project is owned half by the Japanese government, through its supervising agency, and half by the research participant. If the intellectual property is created by several participants, half is owned by the Japanese government and each participant gains a percentage of the remaining half in proportion to his or her contribution.

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[70] National Patent Royalty Form, explained below. Referring to Japanese national Asset Law, *Kokuyu Zaisan Ho.*

[71] *Kenkyu Koryu Sokushin Ho: Kuni no okonau kokusaikyodo kenkyu ni keru Tokkyohatsumei nado no jishi*, (Law for the Promotion of Research Exchange Regarding the Patentable Inventions and Licensing of Results from Nationally Sponsored International Cooperative Research Efforts) Article 8.

[72] AIST *Information*, July 1994.

NEDO plays a dominant role in regulating R&D projects that are open to international participation.

Contract Provisions: NEDO's Entrustment Contract

NEDO, as explained in Part I, plays a dominant role in regulating R&D projects that are open to international participation. These include: (1) The Research and Development Program on Basic Technologies for Future Industries; (2) The National Research and Development Program (Large-Scale Project)[73]; (3) the Research and Development Program on Medical and Welfare Equipment Technology; and (4) Research and Development of Important Regional Technologies or similar projects. Although MITI is the leader in international joint research, participants in projects sponsored by other ministries face a similar regulatory scheme.

The Entrustment Contract (Itaku Keiyaku sho as it is called) is long and detailed, and requires close scrutiny and discussion. This contract applies to at least two types of intellectual property transactions: (1) the ownership of intellectual property rights generated from a research project, and (2) the licensing of existing intellectual property held by NEDO. The beginning of the contract usually identifies the participant and the project. The specifics of the project, including the term and goals, are outlined in the announcement of the project.

Participants may find problems with this type of agreement in the following areas: (1) the Japanese government's regulations governing the administration of the project and the right of the Japanese government to inspect the project and audit the books of the participants; (2) the ownership and distribution of intellectual property; (3) the consent requirement of joint patent owners in advance of third-party licensing; and (4) the general supervisory nature of the provisions.

The following discussion examines portions of the contract and explains their implications:

Project Administration

NEDO exercises control over the participant through several provisions that explicitly set forth the obligations of the participant. Although each of the provisions will not be explained in this paper, the major issues will be highlighted. These provisions illustrate the hands-on role of NEDO and the Japanese government.

[73] These projects include the Super High Performance Electronic Computer, Sea-Water Desalination and By-Product Recovery, Direct Steelmaking Process, Resources Recovery Technology, Subsea Oil Production System. AIST Overview, p. 8; National Research and Development Program, Large-Scale Project, 1992, Published by the Japan Industrial Technology Association, March 1992, 1.

- *Regulating the participating researchers.* NEDO requires advance approval of all "numbers, names, and/or titles of researchers, the department to which the said person belongs...the name and/or title of the person responsible for accounting," and their effect on the "Contract Work."[74] In addition, NEDO requires advance approval of all purchases and manufacturing of property for the purpose of "performing the Contract Work."[75]

  Under the terms of the Entrustment Contract, the participant cannot subcontract any portion of the contract work unless NEDO "recognizes the need" and "provides for such."[76] In addition, if the need arises for "joint research" with a third party, the participant will "bear total responsibility to NEDO for the activities of the said third party derived from such" participation.[77] Also, the participant cannot transfer or convey rights or obligations that result from the contract to any party without advance notice to and consent by NEDO.[78]

- *Accounting requirements.* Participants must keep documents and documentation of "expenditures, specifications, cost estimates (including cost estimates by competing vendors), contracts, certificates for delivery of goods, documents certifying that delivered goods provides acceptable, invoices, receipts, bank transfer documents, payroll ledgers for employees engaged in contract work, vouchers for business trip expenditures and the like."[79] Documents must be kept for five years from the day following the closing date of the project.[80]

Inspection and Reporting[81]

Inspection and reporting provisions are considered among the most problematic aspects of the Entrustment Contract.

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[74] Itaku Keiyaku, Entrustment Contract, Article 6.1-4, Contract Work being the scope of the participants responsibilities in the project.

[75] *Ibid.* at Article 7.

[76] *Ibid.* at Article 8.2.

[77] *Ibid.* at Article 9.2.

[78] *Ibid.* at Article 10.

[79] *Ibid.* at Article 16.

[80] *Ibid.* at Article 16.5.

[81] *Ibid.* at Article 17.

Under Japanese law governing national research projects, the supervising Japanese agency, or ministry, reserves the right to inspect the research program to determine "how their money is being spent by dispatching government employees."

- *Right to inspect.* Under Japanese law governing national research projects, the supervising Japanese agency, or ministry, reserves the right to inspect the research program to determine "how their money is being spent by dispatching government employees."[82] Often this is expressly stated in the contract as well. Participants must understand their rights under such a provision and devise a strategy to protect important technology while operating under the provision. This provision may be the most invasive of the administrative requirements. It has caused substantial concern among participants.

  Until recently, all research sponsored by MITI required inspection of the research organization by MITI employees. Presently, in order to alleviate the concerns of participants, a third party is appointed. Some credit the foreign members of the Supersonic Jet Project for this change. The foreign participants in that project persuaded NEDO to enter into a side agreement to ensure that a third, non-related party would conduct the inspection and audits, as required.[83]

  Inspection rights and the scope of authority of the inspectors are serious issues requiring close examination. Even the most recent version of the Entrustment Contract states that "when NEDO deems it necessary, it may have personnel of MITI, which is NEDO's competent authority, present at an inspection and [the participant] shall accept such presence." NEDO agrees to notify the participating company of their intent to inspect.[84]

- *Reporting.* The participant is subject to a tremendous amount of paperwork. Each participant is required to submit to NEDO an interim report after the first six months and at year's end, as well as a performance report upon the completion of the project. In addition, there is a lengthy provision for inspections in the Entrustment Contract. NEDO reserves the right to conduct an

[82] *Ibid.* at Article 10; *Kokuyu Tokkyoken Jishi Keiyaku Sho*, National Patent Licensing Agreement and Explanation, (Hereinafter "*Explanation"),* in Japanese, Article 10, [Shokunin wo haken]; Stating the importance of cooperation from the licensee to ensure this occurs.

[83] The use of "side agreements" will be discussed in Part III. The side agreement is a means by which NEDO enters into an agreement with a participant. It is a letter of understanding, but its legal authority is unclear.

[84] *Draft Entrustment Contract,* April 1993, Article 17.7.

inspection of: (a) the status of expenses and accounting books and procedures; (b) the performance and required reports and documents to be used for reference in the case of conducting such an inspection; (c) the status concerning the construction of a plant, production of machinery, and the like; and (d) other matters in connection with the Contract Work and Contract expenses "whose inspection is deemed necessary by NEDO."

NEDO reserves the right to inspect the factories, offices, or other facilities of the participant, and shall notify the participant "in advance, of the location, time, date, inspection staff and other such information as is necessary for conducting such an inspection."[85]

"Upon such notification, the participant shall prepare an Inspection Confirmation Record, an Incurred Amount Breakdown for each month and item designated by NEDO, and make available, at the participant's expense, personnel who can explain the contents of the Contract Work and details concerning expenses at an inspection site designated by NEDO."[86] In addition, when NEDO deems it necessary, MITI personnel may be present at an inspection and the participant shall accept their presence.[87]

Intellectual Property Rights

- *Ownership of intellectual property.* A potential problem for participation may exist in the determination of ownership of intellectual property rights[88] during the course of the project.

  Under the contract, ownership of industrial property rights is set forth in the following way: "when the participant produces inventions, etc., which may be the objects of industrial property rights *through the performance of the contract work*, the rights to obtain industrial property rights and industrial property rights for such inventions, and know-how notified by NEDO, shall be *jointly and equally owned by NEDO and the participant*"[89] [emphasis

When the participant produces inventions, the rights to obtain industrial property rights and industrial property rights for such inventions shall be jointly and equally owned by NEDO and the participant.

[85] *Ibid.* at Article 17.5.

[86] *Ibid.* at Article 17.6.

[87] *Ibid.* at Article 17.7.

[88] The terms "intellectual property rights" and "industrial property rights" will be used interchangeably.

[89] *Draft Entrustment Contract*, April 1993, Article 30.

added].

NEDO may, "without any charge, obtain the succession of a part of the rights to obtain industrial property rights from the participant, and the timing of the succession shall be determined by NEDO."[90] Either party may waive its share of the intellectual property with prior notice.

Intellectual property, which is discovered or invented independent of the research project by researchers not involved in the project, in areas not related to the project's goals would be considered solely owned by the participant. However, certain safeguards, including a physical separation of work areas must be implemented to prevent unrelated discovery from being considered "jointly owned." In addition, intellectual property managers should analyze their patent portfolios to determine which researchers and which work must be separated. The participant might also identify in a memorandum, prior to participation, those areas where intellectual property overlap might occur. This memorandum could be attached to the Entrustment Contract.

- *Collateral rights and joint patents.* Equally significant is the participant's obligation to obtain the consent of a joint owner prior to any third-party licensing. The Entrustment Contract states that the participating company "shall not establish pledges or other collateral rights on the Acquired Property set forth [therein]."[91] Under Japanese law, consent is required from a joint owner of intellectual property when a co-owner seeks to license the intellectual property to a third party.[92] Similarly, an exclusive licensee under a patent cannot grant a non-exclusive sub-license unless the licensee obtains the consent of the licensor.[93] NEDO ensures however, that "there will be no chance of a problem

[90] *Ibid.* at Article 30.2.

[91] *Ibid.* at Article 10.

[92] Japanese Patent Act, Article 73.3; Utility Model Act, Article 26; Design Act, Article 36; Trademark Act, Article 35.

[93] Japanese Patent Act, Article 77.4; Utility Model Act, Article 18.3; Design Act, Article 27.3; Trademark Act, Article 30.4. U.S. patent law does not have this restriction, and is thus seen as unique in comparison to both Europe and Japan.

[94] In response to the question, "Is it possible for NEDO to obtain the approval of the co-owner of the IPR?" NEDO's IPR Licensing System, publication by NEDO.

arising with our co-owner concerning exercise of the IPR."[94]

In the Entrustment Contract, NEDO clearly provides for a consent requirement stating that: "[i]n accordance with the law, the licensee must notify the government without delay, in the event of a transfer of the license or any other change of events."[95] This article reiterates the requirement that "approval, and consent" are necessary as a general requirement of Japanese patent and other intellectual property laws. An exception states that "so long as in accordance with the law, no notification is necessary if the primary business of the license changes due to legal or business reasons."[96]

- *Know-how.* NEDO is required to instruct the participant when it determines that some of the results are considered "know-how" "(of the properties that cannot be objects of Intellectual Property Rights of Japan, those which can be kept secret and at the same time have asset value; they include the copyright for a computer program)." Secrecy will be maintained for ten years from the date such designation is made.[97]

- *Employee inventions.* The treatment of intellectual property rights retained by the employee who invents the intellectual property is a significant issue. The Entrustment Contract requires that all intellectual property produced by the employee be "transferred to the participating company," unless an agreement to so transfer the intellectual property already exists.[98] This term is identical in effect to the procedure in Japanese private industry. Employees in private industry must transfer all ownership to their employer when intellectual property is invented during the scope of their employment.[99]

- *Exercising intellectual property rights.* While the participant's ability to license and transfer jointly owned IPR is restricted with little

Employees in private industry must transfer all ownership to their employer when intellectual property is invented during the scope of their employment.

[95] Article 8. *See* also "The Revised Entrustment Contract," April 1993, Article 10. See e.g., *Explanation* Article 8.

[96] *Ibid.* at Article 8.

[97] *Ibid.* at Article 29.

[98] *Ibid.* at Article 27.

[99] Nakayama, Nobuhiro, *A Study of the Inventor's Rights*, *Hatsumeishaken no Kenkyu*, 1987.

NEDO may grant to a third party a non-exclusive license for intellectual property rights, and the participant shall agree to such licensing.

exception, the provisions grant NEDO considerably more flexibility to license and transfer its portion of jointly owned IPR.

For example, the participant must notify NEDO in advance of exercising intellectual property rights by submitting a "Notification for Exercising of Intellectual Property Rights/ Know-how." In such a case, the participant shall pay a royalty for exercising such industrial property, unless waived.[100] NEDO, however, may grant to a third party a non-exclusive license for intellectual property rights and a license based on the rights to obtain industrial property rights and know-how jointly owned with the participant, and the participant *shall agree to such licensing*. NEDO will have the licensee report the status of its exercising the industrial property to the participant.[101] In addition, if NEDO grants a license to a third party, the participant "shall strive to cooperate with the third party concerned in the technical aspect."[102]

In the case of a participant licensing intellectual property rights jointly owned by NEDO to a third party, the participant shall submit to NEDO in advance an "Application for Consent and Approval Regarding the Licensing of Industrial Property Rights/ Know-how."[103] In addition, the terms of the "Foreign Exchange and Foreign Trade Control Law" must be met, and the participant must ensure the licensee reports their exercising activity to NEDO.[104]

- *Indemnification.*[105] Provisions on indemnification are similar to those normally found in commercial contracts and those related to IPR transactions. Under them, neither NEDO nor the participant would be liable for any of the following:
  - any damage, losses, claims, or demands, including consequential or indirect, occurring to an exercising party,

[100] Entrustment Contract at Article 37.

[101] *Ibid.* at Article 37.2.

[102] *Ibid*. at Article 37.

[103] *Ibid.* at Article 37.4.

[104] *Ibid.* at Article 37.4(1)-(2).

[105] *Ibid*. at Article 37.

whether it is the participant or a third party, or a customer hereof under an agreement between NEDO and the participant concerning the participant's own exercise of industrial property rights, or between NEDO or the participant and a third party concerning the third party's exercise of industrial property rights;

- ❑ breach of any warranties of non-infringement of industrial property rights owned by a third party; and

- ❑ defending the exercising party from or settling any claims made due to the infringement of industrial property rights owned by a third party.

The Treatment of Royalties

The National Patent Licensing Agreement provides for royalties on Japanese national patents.[106] Originally, licensing of intellectual property created under the national scheme required a fee for Japanese companies and was free to a foreign licensee.[107] However, the law was changed in 1991 to allow for free licensing regardless of the nationality of the licensee to "smooth implementation of international joint research and development projects...and to make Japan's treatment of patent rights similar to that of other advanced nations."[108] This revision applies to all "national" intellectual property.[109] However, since no projects have been conducted since the revision, it has not yet been applied.

This new royalty arrangement will make it possible for any participating corporation to exercise patent rights free of charge or at a minimal cost.[110] It is interesting to note that this revision was brought about by pressure exerted by the foreign participants—General Electric, Pratt & Whitney, Rolls Royce, SNECMA (France)—which joined Japan's Ishikawa Heavy, Mitsubishi Heavy, and Kawasaki Steel in the Supersonic Jet project.[111] This

[106] This document, referred to earlier, modified Japanese Patent Law. Japanese Title: Kokuyu Tokkyo Ken Jishi Keiyaku Sho. Revised, February 1972, General Patent Provision No. 88.

[107] Revised on March 1, 1991. AIST publication.

[108] Concerning a law to revise a part of the "Law for Consolidating Research and Development Systems Relating to Industrial Technology," MITI, April 1, 1991.

[109] Referring to Japanese national Asset Law, *Kokuyu zaisan Ho.*

[110] *Ibid*. pg. 2.

[111] *Patent and Licensing Magazine*, December 1990.

eight-year project seeks to develop a prototype engine capable of reaching a speed of Mach 5 and may cost around ¥28 billion.

In addition, these companies sought further relaxation of the equal ownership rule. While further revisions seem unlikely for a while, MITI clearly realizes the risk of losing foreign manufacturers as core participants.

- *Proportioning intellectual property: the 50 percent rule*: Licensing agreements between private industry and the national government are governed by the Form for Licensing Agreements Regarding National Patents.[112] This Form covers the licensing of any invention created by national research or otherwise obtained by the Japanese government. Its purpose is to ensure the smooth transfer of technology from the government to industry, and to avoid common disputes.[113]

  Flexibility is built into the contract in order to address the unique situations of the parties and the marketplace. In addition, the

[112] *Kokuyu Tokyo Ken Jishi Keiyaku Sho*, Director General Japanese Patent Office Notification, 1940, Showa 25.2.27 Tokuso Dai 58. *Revised* 1967, Showa 42.5.26 Tokuso Dai 533, and again in 1972 Showa 47.2.9 Tokuso Dai 88, Tokkyo Cho Kan Tsu cho.

[113] *Ibid.* at Preamble.

[114] *Explanation*, Article 5.3. In the event that the respective patent right becomes or is determined invalid, royalties already received cannot be returned. *Id.* In the absence of this provision, the government would have to pay back royalties as a result of the invalidation, which in effect, voids the existence of the patent right.

Article 5.4. In the event that a Suit for Invalidation is filed, the Government will notify the Licensee.

Article 6. Royalties will be paid for X time according to the previously calculated royalty.

Article 7. If the license extends for less than one year, in order to calculate royalties, the licensee will notify the Government of the number of manufactured goods, sales quantity, sales amount and profits within a certain amount of days after the conclusion of this period.

Article 9. The licensee shall make efforts to display the presence of this license agreement on manufactured goods.

Article 11. The Government requires the licensee to inform the Government of infringement without delay.

Article 13. The licensee must continue to pay royalties until the end of the term, regardless of production stops, unless the licensee agreement is cancelled.

contract contains many provisions commonly used in international licensing.[114]

Generally, all patent licenses are non-exclusive.[115] The royalty fee can be paid according to any of the following standards[116]:

1) percentage of sales amount

2) x yen times production amount

3) x yen times sales number (quantity)

4) x yen times number of uses referred to as "Shiyo Kensu."

5) percentage of profits

Generally, the royalty fee falls between 1 and 4 percent of total sales[117] using the following calculation:

Royalty = basic ratio x use ratio x adjustment factor x research factor

The "basic ratio" represents a percent of sales price ranging from 2 to 4 percent. This ratio reflects an expected profit margin. The "use ratio" reflects the proportional significance of the patent relative to the whole product. The "adjustment factor" is generally set at 100 percent. Finally, the "research factor," reflects a recognition of the research expenditures of participating companies.

General Contract Provisions

The Entrustment Contract also contains several important contract law provisions that affect the participants rights:

- *Remedy of defects.*[118] If NEDO finds that the contents of a report of

[115] *Ibid.*, Article 3. "*Cho* ha Kono tokkyo hatsumei no jishi wo onore igai no *sha ni mo* kyosho suru koto ga aru." [Emphasis added to highlight non-exclusive language]. However, an exclusive license can be created. See Article 3, Explanation of Form Governing License Agreement of National Patent, 6.

[116] *Ibid.*, Article 5.1-5.5.

[117] Figuring Royalty fees, see NEDO, form 4-17.

[118] Entrustment Contract at Article 39.

acquired property are "significantly different" from the Execution Plan, then NEDO may request that the participant repair, replace, or modify such defective parts. NEDO must make this request within one year from the day following the submission of the final report. However, "with respect to a latent defect," the period shall be one year from the day NEDO became aware or could have become aware of said defect.

- *Cancellation rights.*[119] NEDO may cancel or terminate the contract in the event of any one of the following events: (1) The participant breaches the terms and conditions of the contract or *any instruction* of NEDO due to a reason attributable to the participant; (2) The contract work becomes impossible or significantly difficult to perform due to a reason attributable to the participant; or (3) The participant makes improper or false statements concerning the contract.

  The participant may cancel the contract "in whole or part" if NEDO breaches the terms and conditions stated in the contract due to reasons attributable to NEDO *and*, as a result, has made the contract work impossible or significantly difficult to perform.[120]

- *Force majeure.* The contract shall be canceled after consultation between the parties in the event of: (1) a major change in the budget or the policy of the Government of Japan; (2) a major change in the policy of the country to which the participant belongs; and/or (3) any other event unforeseeable at the time of the execution of this contract and attributable to neither NEDO nor the participant.

- *Damages for breach of contract.* When NEDO cancels the contract because of the participant, the participant shall pay to NEDO an amount equivalent to ten-hundredths of the contract amount or the part of the work that cannot be completed. Similarly, when the participant is forced to cancel, NEDO shall pay to the participant as damages an amount equal to ten-hundredths of the contract amount. When either party fails to pay, the other party shall add to the unpaid amount a penalty charge of 10.95 percent

[119] Entrustment Contract at Article 41.

[120] Entrustment Contract at Article 43.

per year for the period from the due date until the day of actual payment.

- *Mutual cooperation.*[121] The participant shall cooperate with NEDO in the following matters: (1) preparing materials concerning technical results; (2) attending committee meetings; (3) preparing materials and responding to any hearings related to the budget of the Government of Japan concerning the contract work; (4) preparing data concerning an evaluation; (5) giving presentations and preparing materials for a business meeting; or (6) submitting a "Report of Custody Status" concerning NEDO's property managed by the participant at any time when the contract work is completed or the contract is canceled, and to assist NEDO in its efforts to dispose of the property. NEDO shall bear expenses incurred by the participant in attending committee meetings, and making presentations at business report meetings organized by NEDO.

- *Japanese language.*[122] Japanese will usually be the official language of the project. The participant shall take all necessary measures to ensure that any communication between NEDO and the participant can be carried out in Japanese.

- *Jurisdiction.*[123] The participant and NEDO agree that the Tokyo District Court shall have exclusive jurisdiction in regard to any lawsuit or litigation in connection with this contract.

- *Other matters.* In the event that mutual consultation cannot resolve problems, the parties should determine a time after which the contract becomes void.[124]

Intelligent Manufacturing System

The specific provisions of the recently commenced Intelligent Manufacturing Systems (IMS) and the Real World Computer (RWC) projects,

[121] Entrustment Contract at Article 50.

[122] Entrustment Contract at Article 51.

[123] Entrustment Contract at Article 54.

[124] *Explanation*, Article 5, p. 7,8. See, e.g., Entrustment Contract at Article 57.

which follow, illustrate two applications of the general principles explained above. These provisions will be considered in comparison to the general scheme set forth by the Entrustment Contract. However, at this time, since both schemes have not been tested, it is unclear how the particular provisions will be applied in light of the general Entrustment Contract provisions.

The Intelligent Manufacturing Systems project sponsored by the Machinery and Information Bureau of MITI initiated a unique international collaboration with respect to intellectual property. In January, 1994, the International Steering and Intellectual Property committees of the IMS completed the "Intellectual Property Right Provisions for Research and Development Projects."[125] These provisions set forth "mandatory requirements as well recommended principles for" participants in order to provide "adequate protection for intellectual property rights used in and generated during joint research and development projects" under IMS.[126] While the provisions break new ground, they have yet to be tested by industry or the broader Japanese government regulatory process, although some experience was obtained as the provisions were based on the IPR Guidelines used in the IMS test cases.

The IMS Provisions address some of the problems previously identified when dealing with the Japanese government. For example, foreground inventions are to be owned by the partner or partners creating it.[127] Thus a government may not acquire ownership merely by providing funding.

The sole owner may license the invention to third parties non-exclusively without accounting to any other partner.[128] A joint owner may license the invention to third parties without the consent of and without accounting to any other partner unless otherwise agreed.[129] In addition, partners are required to provide advance notice to other partners of any government requirements that would affect rights under the agreement and to ensure that ownership and licensing of foreground inventions will comply with all mandatory provisions, including the above three.[130] This would prevent a partner from accepting funding from a government that imposes contrary provisions.

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[125] IMS Document, IMS/ISC/610/A5 Final (hereinafter "IMS Provisions").

[126] *Ibid*. at 1.

[127] *Ibid.* at Paragraph 2.2.

[128] *Ibid.* at Paragraph 2.3.

[129] *Ibid.* at Paragraph 2.4.

[130] *Ibid.* at Article 2, second paragraph.

Partners are permitted to use foreground inventions royalty-free for R&D or commercial exploitation although they may agree to pay royalties to partners that are nonprofit institutions.[131] This should encourage participation by U.S. universities. However, the IMS Provisions do not address the situation of a government charging a partner royalties because of its funding of the invention.[132]

The IMS Provisions contain other disclosure or notification requirements. When bringing together several participants representing conglomerates or groups of entities, U.S. participants are often concerned that the intellectual property expressly licensed to one entity may be transferred to an affiliate of that entity, thereby inadvertently helping a competitor.

U.S. participants are often concerned that the intellectual property expressly licensed to one entity may be transferred to an affiliate of that entity, thereby inadvertently helping a competitor.

Partners must disclose, at the beginning of the project, all affiliates that may participate.[133] This would address the above concern, enabling the participants to know whether certain affiliates of large corporations are participating. Specifically, if A company's affiliate Aa is participating, A must disclose Aa's participation. Then company B, a competitor of Aa, may exclude Aa from receiving any rights.[134]

Although the notification and disclosure requirements impose various burdens, it is not clear from the IMS Provisions what would happen if a partner fails to meet those obligations.

Also, other issues that may be problematic for the participants remain. The IPR provisions may conflict with Japanese national law and the MITI rules that govern the treatment of intellectual property, including the provisions that require consent relating to the licensing of joint patents. However, the provisions permit the cooperation agreement to override.[135]

Treatment of Intellectual Property Under the IMS Provisions

There may be a problem if a partner has had prior projects in the same area as IMS. For example, when participant A does independent research in areas related to a short-term goal of the project, it may be difficult for the participant to prove that the intellectual property claimed as indepen-

[131] *Ibid.* at Paragraph 2.8(a) and (b).

[132] The cooperation agreement could provide that any government receiving royalties on foreground inventions it owns would have to pay the fees necessary for a partner to be able to give the "free" license in the inventions required under the provisions for other partners.

[133] IMS Provisions, Article 2, third paragraph.

[134] *Ibid.*

[135] *Ibid.*at Article 2.4.

dent was in fact "created, conceived, invented and developed independent of the project." This is the standard to avoid—joint patent status.

Provisions to Be Addressed by Parties

While the IMS IPR Provisions deal with methods of determining substantive rights, two regimes vital to the determination of rights are left without any stated requirements: the method of dispute resolution and the choice of applicable law.[136]

An explicit mechanism to resolve disputes between the participants and the Japanese government must be provided.

An explicit mechanism to resolve disputes between the participants and the Japanese government must be provided. Because negotiations may not resolve disputes, the issue of applicable law becomes an important issue, especially since the laws vary from country to country.

The Real World Computer Partnership

Like the IMS Project, the Real World Computer Partnership sets forth another scheme for the ownership and distribution of intellectual property rights. This scheme also leaves many questions unanswered.

The RWC international collaboration focuses on R&D in the areas of "speed and throughput in advanced computer systems."[137] Like IMS, this project is sponsored by MITI's Machinery and Information Industries Bureau. Optoelectronics technology, including the use of fiber optics,[138] envisioned to increase the rate of data transfer within the central processing unit, is an "integral" component of the RWC project. In 1990, the U.S. government held discussions to begin U.S. industry participation. In March 1993, the Joint Management Committee of the U.S. government and MITI entered into a bilateral implementation plan to "provide a

[136] *Ibid*. at Article 3.3.

[137] *U.S.- Japan Optoelectronics Project*, March 25, 1993, Preamble.

[138] Among the technologies and services envisioned include the following materials, devices, circuits and modules: photorefractives and III-V epi wafers; self-electro-optic devices; one- and two-dimensional arrays of microlenslets and spatial light modulators, or light receivers; smart pixels and perhaps a laser array and an array of light receivers; and some hybrid assembly of the aforementioned devices and circuits. *U.S.- Japan Optoelectronics Project*, March 25, 1993, Article 5, "Scope of Technologies Involved."

[139] *The Implementation Plan*, Preamble. This plan was entered into pursuant to the Toronto Agreement between the United States and Japan on "Cooperation in Research and Development in Science and Technology" on June 20, 1988.

prototyping service for experimental devices and modules in Optoelectronics."[139] The goal of the plan is to "establish a...joint Optoelectronics Project...to: (1) improve the availability of novel prototype optoelectronic devices, etc.; (2) stimulate R&D activity in optoelectronics for computing in both the United States and Japan and encourage effective commercialization; (3) implement the successful results of a resolution...associated with the January, 1992 Global Partnership agreement between the United States and Japan; and (4) develop a model for U.S.-Japan cooperative research."[140]

While the RWC Optoelectronics Implementation Plan does not address all of the technologies at issue in the project, it demonstrates the regulatory structure of the RWC project regarding intellectual property. The Plan included provisions related to: government responsibility; accounting and funding; the methods for selecting participating companies, designated as "Users, Brokers and Suppliers" in the agreement; and the technology involved. The Plan also articulates an important scheme for the protection and distribution of intellectual property rights.

This analysis focuses on those provisions that affect the ownership and distribution of intellectual property.

A close reading of the provisions indicated that the ownership scheme for the RWC and the Optoelectronics Project is very similar to the provisions of the Intelligent Manufacturing Systems, as set forth above. Two unique differences exist. The provisions designate the rights of three parties, the "creator," "non-creating participants," and the "broker." In addition, these provisions make an explicit attempt to limit the rights of the sponsoring agency and that agent's access to ownership of intellectual property. While this structure is beneficial to the participant users, defined above, its ability to overcome the treatment of national intellectual property in Japan, specifically the architecture implemented by NEDO, is unknown at this time.

Administration

MITI's Machinery and Information Industries Bureau has the primary decision-making power over the RWC. The U.S. government is responsible for "determin[ing] the conditions under which the American community can fruitfully participate in the program and to establish the support structure needed to make participation a success."[141] A Joint

[140] *Ibid*. at Article 1 - "*Goals of the Project.*"

[141] *Ibid*. at Article 2.

Management Committee was created for the Optoelectronics Project to include five government members each from the United States and Japan.

Funding

The Optoelectronics Plan and the RWC are supported by MITI in both countries. The United States will pay for U.S. participant's administrative expenses other than those paid by MITI.[142]

Intellectual Property

The Optoelectronics Plan creates a "Broker" to act as the facilitator between the "User," who has a novel design to be fabricated, and the "Suppliers," who perform the actual fabrication. "Users" may be universities, not-for-profit research labs, industrial companies, and government laboratories.[143] "Suppliers" may be universities, not-for-profit research labs, industrial companies, and government laboratories.[144] The "Broker" in Japan is designated as the Optoelectronic Industry and Technology Development Association (OITDA). The U.S. "Broker" has yet to be chosen.

The Broker, for the purposes of intellectual property protection, has several responsibilities including: (1) facilitating exchange of information between the User and the Supplier; (2) providing protection of intellectual property rights by ensuring that Users and Suppliers take adequate steps to protect their respective IPR and enter into an agreement as to the ownership of IPR and the rights to their use specific to the individual cooperative, including the provision of a dispute resolution mechanism; and (3) obtaining licenses required for export and import as required by the laws and regulations of both countries. Due to the regulatory schemes that exist, this last portion of the Broker's task appears to be the most difficult.

The Plan states that "the Project will provide for the adequate and effective protection and distribution of intellectual property rights and other rights of a proprietary nature created or disclosed in the course of the cooperative activities under this agreement."[145]

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[142] *Ibid*. at Article 4.

[143] Government labs in the United States include Federally Funded Research and Development Centers (FFRDCs). *Ibid.* at Article 7.

[144] *Ibid*. at Article 8.

[145] *Ibid*. at Article 11.

Source of Law

The IPR scheme states that protection of IPR will be in accordance with the laws and regulations of the participants' respective countries. Intellectual property, under this scheme includes, but is not limited to: business-confidential information; inventions; computer software/programs; and semiconductor chip layout designs, which are or may be protectable under the laws of the United States, Japan, or any third country.[146]

Ownership and Distribution of Intellectual Property

Unlike the general Entrustment Contract, and the IMS scheme, these provisions set forth the rights of specific parties in more detail.

Creator's Rights

Like all of the schemes discussed above, intellectual property made in the course of an "individual cooperative activity" will be owned solely by the party creating that intellectual property.[147]

The creator has the obligation to disclose enabling information and documentation and may require other parties to delay publication or disclosure to provide time to prepare and file a patent application.

The creator has the obligation to disclose enabling information and documentation and may require other parties to delay publication or disclosure to provide time to prepare and file a patent application.

In addition, the confidentiality of certain know-how; technical data; or technical, commercial, or financial information, referred to as "business-confidential information"; is given full protection under the laws and regulations of their respective countries.[148] The burden rests with the holder to "appropriately identify" the information before it is furnished in the course of the cooperative activities. Unidentified information will be assumed to be information not protected, unless the other parties are notified otherwise in writing within a reasonable time. This confidentiality "obligation" will not expire unless the parties agree to the contrary.[149]

The creator has the right to protect his or her intellectual property in any country. If the creating party does not seek protection in any country, however, any other party may seek protection. Then, the creating party

[146] *Ibid*. at Annex, I. 3.A: "Intellectual Property Rights."

[147] *Ibid*. at Annex, I. 3. Intellectual Property Rights. A-G.

[148] The information must meet all of the following conditions: (i) it is of a type customarily held in confidence for commercial reasons; (ii) it is not generally known or publicly available from other sources; (iii) it has not been previously disclosed.

[149] *The Implementation Plan,* Annex, I. 1. Business-Confidential Information.

has the right to a royalty-free license to use the intellectual property for non-commercial purposes.

Non-creating Participant's Rights

Similar to the treatment of joint patents under the IMS scheme, intellectual property created jointly will be jointly owned. Joint owners may practice and assign their interest *without the consent* of or an accounting—defined commonly as a royalty payment—to the other owner(s), unless otherwise agreed.[150] As is true of the provisions dealing with joint patents both here and in the IMS scheme, it is unclear how they will be applied in light of the treatment of joint patents and the consent requirement under Japanese patent law.

Broker's Rights

These provisions take a unique approach in dealing with the supervising agency. These provisions provide that, if a Broker or Supplier creates intellectual property "as a result of" actions by the User, and if this intellectual property is essential to practice any design submitted by the User, the User may use this intellectual property solely for R&D without any charge, or for commercial exploitation by paying a reasonable fee to the owner of the intellectual property.[151] If however, the Broker acts as a "liaison," the Broker acquires *no right* to ownership of the intellectual property unless the Broker is a party to the creation of the new intellectual property.

[150] *Ibid*. at B.

[151] *Ibid*. at E.

PART III

Dispute Resolution in National Research Projects

The Role of Licensing and Informal Negotiation: The "Hanashiai"

A participant in a national research project must prepare to prevent and resolve disputes that may arise with the other participants or with the supervising agency. While the disputes in Japan cannot be foreseen, the approach to dispute resolution in Japan can be evaluated and a strategy can be prepared. Because successful completion of a research project depends on the cooperation of competitors in industry and regulators in government, an effective dispute resolution program is vital. Adequate preparation will ultimately depend on the personal relationships that develop. However, a specific procedure to handle disputes must be developed by the participants prior to commencement.

Because successful completion of a research project depends on the cooperation of competitors in industry and regulators in government, an effective dispute resolution program is vital.

Disputes in Japan, and in particular, intellectual property related disputes are generally resolved through informal negotiations called "hanashiai." Although the tides are changing, litigation is almost unheard of in Japan. The notion that the "party that understands the importance of compromise can solve any problem"[152] explains the innermost mechanics of dispute resolution in Japan. This is particularly relevant in disputes that arise from international research collaborative efforts because of the magnitude of the undertaking and the diversity of the participants. Thus, the U.S. practitioner must approach every problem by focusing on his or her client's bottom line and developing a reasonable position.

The U.S. practitioner must approach every problem by focusing on his or her client's bottom line and developing a reasonable position.

In projects directly under its supervision, and often as the result of the delegation of responsibility, MITI has the final word. MITI and NEDO representatives drive the dispute resolution mechanism through an explicit presence, as moderators, when the managing board of a project assembles. As in all disputes in Japan, when disputes cannot be resolved by the immediate parties themselves, they look for a third party whom

[152] *Kosho Hoho*, The Art of Negotiation, 1993.

Rapport between companies is people-based, not contractual- or equity issue-based.

both can trust but who also has an interest in the outcome. NEDO representatives, and sometimes those in MITI, play this role quite well. Although it is difficult to conceive of the government agency as neutral, it is in NEDO's best interest to be objective to avoid the appearance of conflict. This illustrates a significant difference between practice in the United States, where courts are seen as the only neutral arbiter, and Japan, where the government is seen as a participant. In fact, this notion derives from feudal times when Japan's leaders were thought to descend from God. NEDO can ensure that the dispute is settled in line with the specific goals of the project.

The role of NEDO, through its managing official, seeks to accomplish what Ohmae Kennichi argues is essential in all efficient and effective organizations: "rapport between companies is people-based, not contractual- or equity issue-based. Corporate relations must focus on the people by organizing frequent, rapport building meetings with top management, staff and line management."[153]

Member-Appointed Board

In the case of the Fifth Generation Computer Project, a board was created to represent each company.[154] MITI played the role of the promoter and the neutral decision-maker.[155]

In the Real World Computer Partnership, the project members created a development room where researchers met to discuss problems. Because this project contains a mix of public and private research at various stages of commercialization, it was envisioned that relationships would become very intense.[156] A computer network was created to enable messages to be effectively distributed, and to ensure that the administrators can watch over the actions of the parties.

Side Agreements

During the Supersonic Jet Propulsion project, the seven participants created a forum to deal with several problems that developed. One of the greatest problems developed as a result of MITI's intention to inspect the project. As previously stated, MITI reserves the right to inspect and audit the project participants in contract. The participants were able to per-

[153] Ohmae Kennichi, *The Borderless Economy*, p. 136.

[154] Interview with MITI, October 1993.

[155] Interview with MITI, January 19, 1994.

[156] *Ibid.*

[157] Interview with NEDO, April 22, 1993.

suade MITI and NEDO, by way of a Japanese intermediary, to appoint an independent industry specialist to carry out the inspections so that trade secrets would not be compromised.[157] The purpose of the inspections was to determine whether money was being spent properly. By entering into a side agreement with industry, NEDO was able to circumvent the inspection regulation.[158]

MITI does not usually physically participate in the supervision of the research project directly unless there is a problem. In such a case, a MITI bureaucrat will appear. The foreign participant usually deals only with the NEDO director or department head, known as the "bucho" or "shitsu cho" level of bureaucrat.[159] This director level has the authority to enter into a side agreement with the foreign participant, without going through the normal "ringi" or approval process.[160] The decision is usually discussed and considered by the necessary decision-makers.[161] However, it should be understood that by avoiding ringi, NEDO has a way out of the agreement, if necessary.[162] Therefore, the foreign participant is warned to gain MITI approval or sufficient approval from NEDO superiors before proceeding with the agreement. A NEDO official commented, "of course, such a side agreement would be proof at trial." However, the participant is warned that litigation would be a rare and non-beneficial route to resolution.

What to Do When Talking Fails: The Arbitration Clause

It is inevitable that talking will not resolve all disputes that arise. An arbitration clause should be drafted to enter into arbitration. Several recognized schemes exist upon which to base this clause, including the newly introduced provisions of the World Industrial Property Organization (WIPO), and the GATT Trade-Related Intellectual Property and Services (TRIPS) general provisions for arbitration. While an analysis of the pros and cons of these provisions is beyond this article, it should be stated that neither process has been tested sufficiently.

The participant should include in the arbitration clause specific language that focuses on jurisdiction and applicable laws. It is significant that the participant select a forum that has the power to and will enforce a remedy to bind the necessary parties.

[158] *Ibid.*

[159] *Ibid.*

[160] Interview with NEDO, April 22, 1994.

[161] "Nemawashii"—translated as root binding—is a method of gaining pre-approval of decisions by the necessary decision-makers prior to completing the deal.

[162] Interview with NEDO, April 22, 1994.

The advantages gained by "getting to know" a domestic partner and learning about the Japanese market are significant enough to be influential factors in deciding whether to participate in a project.

Conclusions

The most obvious benefit gained by participating in Japan's National Research Project program is the experience of doing business in Japan with successful Japanese counterparts. The advantages gained by "getting to know" a domestic partner and learning about the Japanese market are significant enough to be influential factors in deciding whether to participate in a project. Risk is also an important factor. By sharing the expense, the resources, and the time across an industry or with a Japanese competitor, the risk of bearing all or part of the investment in a new application or basic research can be substantially reduced.

However, significant issues exist when working with the Japanese government. The new participant will confront the broad jurisdiction of the Japanese supervisory agency. Generally, U.S. participants will be exposed to MITI. However, other supervisory agencies are also known to administer research projects with a visible hand. Participation will require close attention to the particular rules of the agency or ministry. A close examination of the Entrustment Contract, required when licensing with the Japanese government, reveals several important procedural and substantive issues that require preparation.

Joint patents under Japanese law are treated differently than under U.S. law. Under Japanese law, the joint owner is required to obtain the consent from the other owner or owners prior to transfer or third-party licensing. This issue is dealt with extensively in the Entrustment Contract, and practical applications are illustrated in the provisions of the IMS and RWC projects. Because it is unclear how these provisions will be reconciled with the requirement in Japanese patent law, the participant must obtain further clarification from the supervising agency. For example, it is unclear whether the Japanese government will readily consent to third-party licensing without unreasonable restrictions.

The definition of joint patents under the Entrustment Contract and the specific project provisions also require attention. The participant must establish clear guidelines to prevent any confusion resulting from intellectual property conceived independently from project participation.

In addition to several issues that arise out of substantive law, Japanese National Research projects pose several procedural and administrative issues which require attention. Japanese law and the national licensing provisions provide for the ability of the supervising agency to audit and inspect the project. Inspection by the Japanese government could put

intellectual property or trade secrets at risk. Specifically, the most recent version of the Entrustment Contract contains a provision that allows MITI to inspect the project and its participants, if necessary. Although MITI has assured participants in the Supersonic Jet project, for example, that an independent party will conduct inspections, the participant should obtain reasonable assurances that an independent agent will carry out all inspections.

Finally, the participant must understand the Japanese dispute resolution mechanism and adopt a strategy to resolve intellectual property and administrative disputes with this perspective. Because litigation still plays a minor role in solving problems between individuals and between corporations in Japan, the participant must engage a reliable agent to intermediate with the Japanese government and the other participants.

APPENDIX I

Basic Introduction to Japanese Patent Law[163]

First to File Principle

A patent application in Japan gains priority over another based on when it was filed in Japan.[164] As a result of this requirement, many applications are filed in order to gain priority although they may never in fact be pursued.[165] Because this process encourages filing, the argument is that the sheer number of applications overwhelms the few patent examiners employed by the Japanese Patent Office.[166] However, delay will continue until significantly more examiners are hired.

Multiple Claim System

The Japanese Patent System was amended[167] to *allow*, not require, applicants to apply for protection of more than one aspect of their invention.[168] This is called a multiple claim. The claim[169] is the technical term for what

[163] See Kosaku Yoshifuji, *Tokkyotto Gaisetsu (*9th ed., 1992).

[164] Tokkyo Ho (Patent Act), Law No. 121 of 1959; see e.g., JETRO at 5. An exception to this rule exists and preferential examination may be requested if the invention claimed is being infringed. Pat. Law, Art. 48-6.

[165] J. Cunard, Esq., *How to Protect Technology That's Transferred to Japan: Key Issues Involving Patents*, International Executive Reports, Ltd., East Asia, Executive Reports, v. 11 No. 11, November 15, 1989.

[166] More than 2.5 million applications are filed each year, and only 850 examiners are employed, with plans to hire only 30 more each year. The United States saw 550,000 patent applications in 1989 with more than 1400 examiners.

[167] This system came into operation only recently. Pat. Law, Art. 37 (amended effective January 1, 1988). The old system of single claims may still continue however. The multiple claim system was adopted in the amended Patent Law not only for the convenience of the applicants, but also for third parties because the technological range of an invention must be stated in definite terms. In 1976, Japan adopted this system, in part, in order to participate in the Patent Cooperation Treaty.

[168] The previous single claim system allowed only one claim per invention.

[169] Yoshifuji at p. 187. The claim is a complex statement that must be carefully written to the specifications of the Patent Office. Article 36 ¶ 5 requires that the claim "shall state only the indispensable constituent features of the inventions as described in detailed explanation." Since the "technical scope" of the patented invention will be based on the statement of claims, the claims must be supported by a detailed explanation of the invention in the specification. Thus, the inventor may include several claims for which protection is sought.

the inventor seeks to protect.[170] Inventors are encouraged to file as soon as they come up with an invention in order to get priority.

Amending the Application

Parties may amend their claim with arguments showing the distinction between their claim and the prior art.[171]

The Japanese justify this system as an opportunity to improve the original patent application. They argue that this system of disclosure and amendment of the application may lead to technological innovation. By striving to articulate the innovative step in the invention, the inventor is forced to review prior inventions and propose a true innovation. They also argue that U.S. firms have the opportunity to amend their patent applications under U.S. law. However, the real danger lies in timing, which creates the ability of another inventor to copy inventions not yet patented. Under Japanese law, the application is disclosed to the public. Therefore, the

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A "detailed explanation" contains a purpose, the constitution of the invention, and the meritorious effects of the invention. Article 36 ¶ 4. The constitution must illustrate that the invention is "capable of bringing about the best results." It should be supported by practical numerical representation.

More attention and time is required to prepare the section on meritorious effects. Meritorious effects are said to be the special effects produced by the invention.

The invention must be "sufficiently disclosed that those skilled in the art can...accurately understand and easily put the invention into practice..." Article 36 , ¶ 4. Otherwise the application will be returned incomplete. The application must fully disclose the technical means in which the invention is embodied.

The description of meritorious effects or "Koka," requires an explanation of not only the structure or differences of method in the invention over prior art but also in technical superiority over prior art due to such differences. "The mere presentation of examples is not enough...need to show some sort of comparison...but it need not have to be a quantitative difference." *Id.* However, the examiner often requires experimental data to support any alleged facts so some qualitative difference is suggested. In fact, it is suggested that the inventor rely on governmental or public research institutions of Japan for experimental data as these lend credence to the meritorious effect section. Yoshifuji, at 260.

[170] Yoshifuji, at 199.

[171] Amendments are normally allowed if "they are to add an explanation which makes the invention more easily understood; and allowed even if they relate to the invention itself so long as they do not change the features of the invention." Amendment rules have been recently revised. See *Guide to Industrial Property in Japan*, Japanese PTO, 1994.

burden is on changing one's invention before another inventor files an application.

Patent Enforcement

Full Disclosure

This discussion may seem repetitive since it addresses the invention before it has gained patent status. The intent is to examine the implication of the Japanese patent system at various stages of the process. Once the application has been made, Japanese patent law requires that the invention be fully disclosed to the public.[172] The application for the patent must be "laid open" to public inspection automatically for 18 months after the filing date, or claimed foreign priority date.[173] The invention is published in the Official Gazette. Unlike the United States, most countries publish all applications filed. Japan's reason for requiring full disclosure can also be explained by the Japanese preference for sharing technology. Accordingly, many U.S. inventors are concerned that competitors can view their invention before it is patented.

The U.S. position should be that the Japanese Patent Office should require inventors to also disclose all prior art, on which their invention relies. Bills have been introduced in the U.S. Congress to require publication. The public has been invited to comment on rules proposed by the U.S. Patent and Trademark Office in spring 1995.[174] This would address the largest problem of "laying open" an application. That is, while the invention is disclosed, others can apply for and do often receive patents for an "improvement on the original invention." The Japanese argue that non-disclosure of inventions may discourage the "sharing" of technology. In addition, they argue that other countries have pre-grant disclosure provision.

Before the invention moves from application to patent status, it must be examined by the Japanese Patent Office. During the examination the Patent Office determines whether the invention has met all formal requirements. This process does not happen automatically, but rather by

[172] Pat. Law, Article 36. Disclosure includes title of the invention, the claim, a detailed explanation of the invention, and a brief explanation of any drawing.

[173] Pat. Law, Article 65-2 with the exception of those inventions that have already been published as a result of the opposition system.

[174] *BNA's Patent, Trademark and Copyright Journal*, Vol. 50, pp. 114, 129-132 (June 1, 1995); H.R. 1733 introduced on May 25, 1995 by Rep. Carlos Moorhead.

request.[175] If no request is made within seven years of the filing, the "application is deemed to be withdrawn."[176]

Since the processes of application, amending (commonly referred to as "prosecution"), disclosure and examination are all conducted and published in Japanese, U.S. firms should use trained Japanese-speaking counsel.

[175] The Japanese Patent Office will not examine "an application until it receives a request to do so from the applicant or an agent." Pat. Law, Article 8. A request for examination may be filed at the time of filing an application, or at any time within seven years "from the date of filing in the case of a patent application." Pat. Law, Article 48-3.

[176] *Ibid.*, Article 48-3(4). See Akira Aoki, *Japanese Patent and Trademark Law,* BNA, Washington, D.C. 1976. 56.

APPENDIX II

Foreign Participants in Japanese National Research by Project

Table A1. Basic Technologies for Future Industries Program

Project Name	Description	Dates	Budget	Participants
Quantum Functional Devices	Development of control technology of new device functions based on such quantum effects as wave properties for the purpose of developing ultra-high speed, multi-function electronic devices	1991–2000	¥44 million	Motorola
Production and Utilization Technology of Complex Carbohydrates	The in vivo and in vitro and chemical synthesis, and the application of sugar chains, which combine with proteins and fats, and play an important role in improving their function	1991–2000	¥50 million	Pharmacia LKB Biotechnology AB (Sweden)
High-Performance Materials for Severe Environments	Development of carbon/carbon composites, intermetallic compounds and fiber-reinforced intermetallic compounds, which can be used to develop a space place and SST/HST	1989–1996 *Preliminary results:* SiC fiber, modified by the electron beam method was developed to stand high temperatures of (+1500°C)	¥1,699 million	Crucible Materials Corp.

Table A1. Basic Technologies for Future Industries Program (Continued)

Project Name	Description	Dates	Budget	Participants
Non-Linear Photonics Materials	Development of photonic materials that exhibit high nonlinear optical susceptibilities and short-response times for application of optical information systems	1989–1998 *Preliminary results*: Conjugated polymers and CuCl dispersed glasses having the highest susceptibility reported so far have been developed	¥523 million	BASF Aktiengesellschaft (Germany)
Molecular Assemblies for a Functional Protein System	Development of molecular assemblies of functional proteins for reactors with sophisticated functions such as production and conversion of complex biomaterials coupled with selective transport and recognition	1989–1998 *Preliminary results*: Photosynthesis protein complexes were extracted from photosynthetic bacteria, adsorbed to the surface membrane with orientation of the molecule and evaluated. Phycobiliprotein isolated from thermophilic cyanobacteria was analyzed and evaluated	¥507 million	GBF (Gesellschaft fur Biotechnologische Forshung mbH) (Germany)
New Models for Software Architecture	Development of innovative models for flexible software architecture so that software can function according to the surrounding situation	1990–1997 *Preliminary results:* Key components for computational model for cooperation in the area of situational reasoning, self reorganization and semantic adaptation are identified	¥270 million	SRI International

Table A2. Large-Scale Projects

Project Name	Description	Dates	Budget	Participants
Micromachine Technology	Manufacturing technology to perform precise operations such as inspection, diagnosis, and repair (or treatment) in restricted spaces through equipment, in vivo, etc.	Launched 1991	¥29 million	IS Robotics Corporation; SRI International; Royal Melbourne Institute of Technology (Australia)
Advanced Chemical Processing Technology	Producing new functional materials such as functionally gradient materials, pure metals, polymers with fine alignment of molecules	1990–1996 *Preliminary results:* Elementary techniques for the high power excimer laser, the high current density ion beam and the ultra precision machining have been developed. Interim evaluation was done to promote the project	¥1,161 million	SRI International
Super/Hyper Sonic Transportation Propulsion System	Combined cycle engine of the "ramjet" and "high performance turbojet," and provide high reliability and efficiency at both the subsonic and the hypersonic level. MITI will steadily promote the next generation civil transport development program (B777) and the next generation medium-sized civil transport development program (YXX). In addition, it will add a Hypersonic Transport Propulsion System under the Large-Scale Projects System.[177]	1989–1996 *Preliminary results:* Component research on Ramjet, High performance Turbojet, Measuring and Control system and Total System have started; Manufacture of experimental models and Conceptual design of Combine Cycle Engine were conducted	¥3,001 million	Rolls-Royce plc (United Kingdom); SNECMA (France); United Technologies Corp/Pratt & Whitney; GE Corp.

[177] Outline of 1993 MITI R&D Budget, JITA News, March 1993, pp. 4–13 (in Japanese).

Table A3. International Joint Research on Global Environment

Project Name	Description	Dates	Foreign Participants
Research on Acid Rain Mechanism by the advanced observation and modeling	Precision analysis of the acid rain components and creation of a simulation model based on in-situ observation of generation, long distance transport, and transformation process of acid rain components	1990–93	USA

Table A4. Joint Research Program

Project Name	AIST Research Institute	Counterpart Research Institute	Country	Duration
Research on precision evaluation of new superconductors and development of precision measurement devices	Electro-Technical Laboratory	National Institute of Standards and Technology	USA	1988–1992
Research on synthesis of fluorine containing heterocyclic compounds and evaluation of their biological activities	Government Industrial Research Institute, Nagoya	National Institutes of Health	USA	1989–1992
Research on mechanism for release of methane into the atmosphere	Fermentation Research	Ohio State Univ.; Tubingen Universitat; U.S. Geological Survey	USA; Germany	1990–1993
Research on Acid Rain Mechanism by the advanced observation and modeling	National Research Institute for Pollution and Resources; Government Industrial Research Institute, Nagoya	National Center for Atmospheric Research, Iowa State Univ.	USA	1990–1993