

JAPAN'S POLICY IMPLEMENTATION SYSTEM

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POLICY MECHANISM, CREATION &
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Allen B. Rosenstein
July 9, 1982

I. MITI STRUCTURE & FUNCTIONS

MITI STRUCTURE

Secretariat

1. Administrative
2. Data and Statistics

Seven Bureaus

1. Industrial Policy
2. International Trade Policy
3. International Trade Administration
4. Industrial Location & Environmental Pollution
5. Basic Industries
6. Machinery & Information Industries
7. Consumer Good Industries

Councils

Thirty-five Councils with approximately two hundred committees

Five Agencies

1. Natural Resources & Energy
2. Patent Office
3. Small & Medium Enterprise
4. Regional MITI Bureaus
5. Industrial Science & Technology
 - a. Coordination Department
 - b. Standards Department
 - c. Sixteen Attached Institutes and Laboratories
 1. Weights & Measures - Metrology
 2. Geological Survey
 3. Mechanical, Chemical, Electrical Laboratories
 4. Fermentations
 5. Industrial Products Research
 6. Polymers & Textiles
 7. Pollution & Resources
 8. Seven Regional Government Industrial Laboratories

Four Training Institutions

1. MITI Personnel
2. Inspection Agencies (3)

Information & Statistics

1. JETRO
2. Policy Planning Information Systems Office
3. Research & Statistics Office

FUNCTION ANALYSIS

1-2.

MITI has an Administrative Secretariat, seven bureaus with over seventy divisions, five agencies, four training institutions, thirty-five councils with two hundred committees and a highly developed national and international information system. MITI's Minister and Vice Ministers are appointed by the Prime Minister. There is an annual budget of \$3 to \$6 billion, depending upon the accounting process with personnel numbering approximately 14,000 exclusive of JETRO.

BUREAUS:

Although MITI's bureaus originally concentrated on international trade and industry policy, this has become too restrictive. The interdependence of societal activities has forced the Ministry to expand its policy field to include industrial siting, water, pollution, national leisure and life quality.

The seven bureaus with over seventy divisions and offices have the responsibility for facilitating the creation, maintenance, implementation of rational consistent national policies, including a coherent policy framework. The Industrial Policy Bureau is responsible for industrial policies including:

- . Industrial Structure Policies
- . Industrial Finance Policies
- . Industrial Taxation Policies
- . International Business Policies.

MITI bureaus are responsible for facilitating and implementing policy, including recognition of impending national problems, but the actual creation of policy has become the function of thirty-five COUNCILS which are charged with ensuring that the true interests of the Japanese people are properly represented.

COUNCILS

Thirty-five councils with two hundred committees cover the full range of MITI responsibilities and ensure that public opinion involving a wide section of the Japanese people has been taken into account in the policy process. The Councils have been set up as advisory bodies to the Minister of International Trade and Industry. Many of the councils investigate and deliberate at the Minister's request or on their own initiatives upon future policies in their respective administrative areas.

Legally, the councils are established as attached organs to the ministry. Council membership, however, is drawn from outside MITI and composed of experts best informed in the matters deliberated upon by the respective councils, leaders in concerned industry, general consumers, financial leaders, and experts from a wide spectrum of society including labor, education, mass media and government.

The councils with their committees, after considerable national debate, create and maintain in the national interest a self-consistent hierarchy of national policies in a well-defined policy framework. Policies are developed beginning at the highest level to present the aspirations and goals of the nation (Visions of the 1980's.) Succeeding layers of policy are produced by successive council committees until a rational structure has been developed down to specific R & D projects and policies. (Attachment #2 will examine the POLICY MECHANISM in more detail and present an example of POLICY, CREATION and STRUCTURE.)

AGENCIES

The role of the five agencies in implementing and supporting national programs should be reasonably apparent from their titles and their respective Foundation offices. The Agency for Industrial Science and Technology, AIST, with its sixteen attached institutions and laboratories and annual budget of \$600,000,000 to \$900,000,000 is of particular importance. AIST responsibilities, which include R & D based on coordinated industry-academic efforts, technology assessment and promotion of private sector technological development is given in more detail in the Policy Implementation section of Attachment # 2.

America's National Laboratories have been searching for a redefinition of their long term function and objectives. AIST's role in implementing Japan's industrial policies could serve as model for the Foundation's relations with our own National Laboratories.

INFORMATION AND STATISTICS

Although the Policy Planning Information Systems and the Research and Statistics Offices are part of the Minister's Secretariat, Japan's attention to the central role of information in effective policy planning and implementation has warranted the collection of the various information and statistics operations under a single heading. Attachment #3 provides further detail on Japan's Policy Planning Information System along with the offices and organizations for information collection, organization storage, processing, dissemination and utilization.

II. FACILITATING NATIONAL POLICY-
POLICY MECHANISM, CREATION &
IMPLEMENTATION

FACILITATING NATIONAL POLICY

Contents:

- I. Policy Mechanism
- II. Policy, Creation and Structure
- III. Policy Implementation
 - a) Agency for Industrial Service and Technology
 - b) Appended Examples
 - 1. Encouragement of Private Technology Development Efforts - Takeda Riken
 - 2. National Project - Fifth Generation Computer System
 - 3. National Project - Flexible Manufacturing System Complex.

General:

MITI's role in facilitating national policy is shown through specific examples of:

- 1. The Policy Mechanism
- 2. Policy, Creation and Structure
- 3. Policy Implementation

which are intended to illustrate the policy process. Time and space limitations preclude a complete and comprehensive description or analysis. As example, AIST is only one vehicle for policy implementation. The appended examples are also not exhaustive, but are offered to illustrate the translation of policy statements into program action. Equally important, only three elements of a larger Policy Mechanism have been given to illustrate major segments of the policy making mechanism.

I. POLICY MECHANISMINDUSTRIAL POLICY BUREAU:

- Structure: Nine Divisions
- 1) General Affairs
 - 2) Industrial Structure *
 - 3) Industrial Finance
 - 4) Business Behavior
 - etc.
- Five Offices
- 1) Industrial Organization Policy (Anti-trust)
 - 2) Leisure Development
 - etc.

Responsibility: Overall coordination of industrial policies.

* INDUSTRIAL STRUCTURE DIVISION - Director: T. Tanabe

- Responsibility:
- 1) The study of what Japan's future industrial structure should be.
 - 2) Formulation of programs for implementing this ideal structure and coordination of policies when they are implemented.
 - 3) Surveys and analyzes new industries (e.g. knowledge-intensive ones)
 - 4) To design well coordinated industrial structure policies, materials are gathered on a wide range of industries through the Industrial Structure Council, an important deliberative organ of MITI handled by the division.

INDUSTRIAL STRUCTURE COUNCIL (20 Committees)

Responsibility: On its own initiative or in response to requests of the Minister of MITI, Council investigates and deliberates on the direction of long term and basic policies concerning Japan's industrial structure. Council produces a vision of the country's industrial structure every year in the form of a plan which is revised according to the pattern of a rolling plan.

Outputs: For MITI guidance

1. The Industrial Structure in Japan - 1963
2. The Vision of MITI's policies in the 1970's
3. The Vision of MITI's policies in the 1980's
4. The Industrial Structure of Japan in the 1980's
5. Highlights of MITI's Policy for 1981.

I. Policy Mechanism

On the facing page, three of the major elements of a national policy creating mechanism are listed.

MITI's Industrial Policy Bureau has the responsibility for overall coordination of industrial policies.

The Industrial Structure Division of the Industrial Policy Bureau is expected to study the structure (composition and nature) of Japan's future industries.

The Industrial Structure Council composed of outside experts and community representatives is the premier policy council of Japan and advises MITI on long term and basic policies concerning Japan's industrial structure. A major output of the Council is a ten year large picture policy report (Vision of MITI's Policies in the Late 1980's) which is revised annually. Committees of the Industrial Structure Council and other councils provide supporting policies consistent with the nation's objectives that in turn lead to projects and programs for implementation.

II. POLICY, CREATION AND STRUCTURE

- I. THE VISION OF MITI POLICIES IN THE 1980's NR-226, March 17, 1980
 By: The Industrial Structure Council
- Provides the overall framework for MITI policies for the 1980's and establishes three new national goals:
- 1) Contributing to the international community
 - 2) Overcoming the limitations of natural resources and energy
 - 3) Improved quality and comfort of life
- II. THE INDUSTRIAL STRUCTURE OF JAPAN IN THE 1980's - FUTURE OUTLOOK AND TASKS
 By: The Industrial Structure Council BI-44, May 1981
- This report, following the lines recommended by the Policy Vision, presents the future outlook of the industrial structure of Japan in the 1980's and the tasks that must be faced.
- III. HIGHLIGHTS OF THE MITI's POLICIES FOR 1981 - NR-263, October 12, 1981
 -Aimed at Building a Foundation for Sustained Economic Growth-
 By: The Industrial Structure Council
- The annual report which, based upon I and II, provides the programs and projects implemented under the Policies during the current year (1981).
- IV. RECOMMENDATION AND DATA - June 15, 1981
 To Guide Japan Toward the 21st Century by Promoting Informatisation
 By: Information Industry Committee of the Industrial Structure Council
- The Vision in the 1980's advances as one of its policies the promotion of "Knowledge Intensive Technologies". This report outlines the "Information Field" discussing problems and offering data and recommendations.
- V. REPORT OF THE INFORMATION INDUSTRY COMMITTEE ON "INFORMATISATION" NR-262, Sept. 9, 1981
- Outlines the direction for "informatisation" and the information industries in the 1980's. Emphasizes the need to establish an information oriented society and identifies the role of the computer information processing industry in promoting a knowledge intensive industrial structure in the 1980's. Problems, policies and implementation measures are offered.

II. Policy, Creation and Structure

Five steps in the progressive creation of national policy and a coherent, consistent policy framework are illustrated on the facing page. (Page 2-4) Beginning with "The Vision of MITI Policies in the 1980's", the Industrial Structure Council after public debate and review produced a framework of national policies for the 1980's and established three new national goals. These policy statements formed the background for the succeeding report that provides the guidelines for the Industrial Structure of Japan in the 1980's indicating the industries and programs that could expect support during the decade.

To avoid the dangers of static policies in a changing society, the Industrial Structure Council reviews MITI's policies every year. The dates on which the first three reports were published would indicate the progressive development of policy.

If a nation decided to overcome "the limitations of natural resources and energy," the development of its information processing resources and industry is the logical conclusion reached by the Industrial Structure Council. Consequently, the Council has an Information Industry Committee which produced two reports in 1981 that built upon the information policies advanced by the Council. The first carefully explored the "Information Field" discussing problems and opportunities, projections for the future and a set of recommendations. The second report appearing only three months later offered specific recommendations and programs whose implementation appeared within a year.

III. Policy Implementation

Japan has a number of vehicles for the implementation of national policy. The Agency of Industrial Science and Technology, AIST, with many laboratories, institutions and an annual budget of approximately \$700,000,000 is a major contributor. For large scale projects involving university and industry, AIST will often act as the lead agency. In other cases an independent, not for profit corporation with a limited life will be created.

In this section we briefly examine the structure, responsibilities, project categories and typical programs of AIST. It is important to realize that each AIST program is a direct and logical consequence of publicly debated and published national policy. This consistency of policy enables the various societal sectors - public, private, academic - to join cooperative programs extending over lengthy time periods with full confidence in the program continuity and probably success.

Three specific examples of Policy Implementation are offered. The first is an illustration of the effectivity of a policy to encourage technology development in the private sector. A second outlines a major national project operated by a special not for profit corporation and the third is a large national project coordinated by AIST. In each case we have sought the particular policy statement which lead to the project.

III. Policy Implementation, Cont.

III a. Agency of Industrial Science and Technology of MITI.

Vehicle: Agency of Industrial Science and Technology of MITI

Established: 1948

Personnel: 4005 (1981)

Budget: Approx. \$700,000,000. (1982)

Responsibilities:

1. Planning, dissemination and implementation of comprehensive policies related to MITI's administration of Technology.
2. Implementation of various experimental and research programs in response to social and administrative need.
3. Includes:
 - a) Development of natural resources.
 - b) Modernization of production methods.
 - c) Upgrading of production technology
 - d) Standardization of Industry
 - e) Encourage and subsidize R&D in Japan's private sector.
 - f) Comprehensive system of research and experimentation to realize above policies. (MITI H.B.77- p.115 AIST 1981- p.8)

Organization:

- a) General Coordination Department (includes direction and administration)
 1. National R&D programs.
 2. R&D of Basic Technology for Future Industries
 3. Energy Technology Planning
 4. Technology Promotion - Private industry, medical & welfare technology.
 5. Prevention of Industrial Pollution
 6. Technology assessment & Planning of Long Range Industrial R&D Strategy.
- b) Standards Department
- c) Sixteen Institutions and Laboratories
 1. National Metrology Lab
 2. Geological Survey
 3. Mechanical, Electrotechnical, Chemical Labs.
 4. Fermentation Research Institute
 5. Industrial Products Research Lab.
 6. Polymers and Textiles
 7. Pollution and Resources
 8. Seven Regional Government Industrial Laboratories.

III a. CONT.

Project Categories:

- I. Ordinary R&D: for development of fundamental technology
- II. Special R&D: for more urgent and feasible technology
- III. National Projects: * R&D based on coordinated industrial and academic efforts.

Programs:

1. * R&D projects on Basic Technologies for New Industries.
2. * The Sunshine Project - R&D on New Energy Technology (1981 Budget - \$130,000,000.)
3. * The Moonlight Project - R&D on Energy Conservation Technology
4. * National R&D Programs - Large Scale Projects.
 - Examples: a) High speed computer systems
 - b) Flexible Manufacturing System Complex (Total expend. \$50 million.)
 - c) Unmanned Tailoring System - Seven years - \$60,000,000.
5. * Medical and Welfare Equipment Technology R&D - 1981 Budget - \$3,500,000.
6. Promotion of Private Sector Technological Development
 - a) Subsidies for important R&D projects.
 - b) Investment (at low interest rate) via Development Bank.
 - c) Research Association System - cooperative research assoc.
 - d) Technology Promotion Tax system.
7. Promotion of Industrial Standardization.
8. Technology Assessment.

III b. Examples of Policy Implementation

Three specific examples of policy implementation are given:

1. Encouragement of Private Technology Development Efforts - Takida Riken.
2. National Project - Fifth Generation Computer System.
3. National Project - Flexible Manufacturing Systems Complex.

III b (1). Policy Implementation - Encouragement of Private Technology Development Efforts.

Example: Takeda Riken

Policy: Highlights of the MITI's policy for 1981.
Industrial Structure Council (Oct.12, 1981, NR-263)
Section 4. Promotion of Technology Development.
Recommendation 4 - Encouragement of Private Technology Development Efforts (P.13).

"To encourage technology development by private business enterprises, the subsidy system will be effectively utilized in such a way as to stimulate the development of critical technology."

Results: The consequence of long term industry-government cooperation can be seen in the attached material describing Takeda Riken.

Takeda Riken is a classical example of the ability of long-range Industrial Policy to produce in this case a world class manufacturer of electronic test equipment.

A. HISTORY

The story of Takeda Riken is given in the following pages.

1. In 1954 Takeda Riken Industry was founded with an initial capitalization of 500,000 Yen (\$2,500).
2. By 1961, Takeda Riken received the first of a long series of two-year "Research Subsidies" by the Ministry of International Trade and Industry (MITI) to develop basic instrumentation and measurement elements.
3. In 1970 the Japan Society for the promotion of the Machine Industry gave the company a project for new machine development.
4. Four years later in 1974, Tadedda Riken joined with six other measuring equipment manufacturers for MITI's First Important Technology Development Program. This subsidy was renewed in 1970.
5. The Research Development Corporation of Japan gave orders in 1978 for the joint development of manufacturing technology for magnetic resonator elements.

B. RESULTS

Two decades of extensive industry government cooperation in support of national policies is summed up in the May 1, 1982 issue of ELECTRONIC BUSINESS, Page 62.

"The appearance of Tadedda Riken among the top suppliers of semiconductor production equipment signals a trend of deep concern to the United States Suppliers".

Takeda Riken with 710 employees expected sales of \$85,000,000 and profits of over \$10,000,000 for fiscal 1980.

Allen Rosenstein, P.E.
Professor of Engineering
University of California
Los Angeles

July 9, 1982

Premium performance equipment from Japan

The appearance of two Japanese companies, Takeda Riken and Canon Inc., among the top suppliers of semiconductor-production equipment signals a trend of deep concern to United States suppliers, which have been dominant up to now. Long content with buying U.S. equipment with which to make their chips, Japanese companies are increasingly turning to, and finding, domestic suppliers to meet their needs.

Unlike Japanese penetration of other electronics markets such as consumer and instrumentation, Japanese suppliers of production equipment for semiconductors aren't entering with low-end, low-technology products. Takeda Riken makes advanced VLSI component testers. Canon, which manufactures early-generation but still very useful proximity mask aligners, also makes state-of-the-art step and repeat (stepper) aligners as well. Canon "owns" the proximity market and competes with leaders Perkin-Elmer Corp. in projection aligners and GCA Corp. in steppers.

The Japanese pattern is repeating itself in one respect: Their home market provides a base from which to attack U.S. and other markets. "I think you'd be kidding yourself if you say they're not a threat," says Noel C. MacDonald, director of marketing for the semiconductor operations of Perkin-Elmer. "Look at the huge potential market in

Japan alone," he says. "They've got to be setting themselves up [for penetration elsewhere]. They have all the incentives they need."

Canon's new projection aligner, competitive with Perkin-Elmer's, should do well in Japan and "pick up market share here," observes G. Dan Hutcheson, vice president of market-research firm VLSI Research Inc. Canon's machine has automatic alignment, "which means that National Semiconductor [which uses several] can have one operator run three aligners," he says. That reduces labor costs "phenomenally" while also increasing throughput, he adds.

As good as Canon is, it's Tokyo Electron Ltd. (TEL) that could become the No. 1 semiconductor-equipment supplier by the end of the decade if the present trend continues, according to VLSI Research. The company has been aggressively pursuing cross-licensing agreements with major U.S. suppliers that give it manufacturing rights in Japan. Agreements so far include Cobilt's wafer-prober and wafer-track systems, TRE's stepping aligner and Thermco's diffusion furnace. "They get the license to manufacture a piece of equipment in Japan and then improve on it," such as Cobilt's wafer prober, Hutcheson notes.

Moreover, TEL also is a sales representative for E.T. Systems' plasma etchers, Varian's ion im-

planters and Mech-El's wire bonders, Hutcheson says. Whereas TEL was only No. 15 in equipment sales in 1980, it could move up fast as part of a total business that includes complementary expertise in computer-controlled systems, measurement-analysis systems and electronic components, VLSI Research points out.

Tokyo Ohka Kogyo Co., already the world's No. 1 supplier of plasma etchers, is another one to watch, Hutcheson says. One of the reasons it makes good plasma etchers is that it's also a strong photoresist manufacturer and understands the materials side of the business.

Nihon Jido Siegyo, by offering fully automatic inspection equipment for masks and reticles, merits watching also. Automatic inspection is important because as many as 8 million one-micron places for defects could lie on a four-inch wafer, Hutcheson explains. An automatic inspector can catch up to five times more defects than an operator can.

Giant Hitachi Ltd. could be important in the equipment business, but it's not clear whether it will enter the market or build primarily for internal use, Hutcheson says. Nikon has applied its well-known expertise in optics to make one of the better steppers, he says.

Other Japanese competitors include Ando Electric in testing and Anelva in plasma etching and vacuum deposition.

Takeda Riken is up to the challenge.

Takeda Riken Industry Co., Ltd.

● **Registered name**

Takeda Riken Industry Co., Ltd.
 Head Office: 1-32-1, Asahi-cho, Nerima-ku,
 Tokyo 176, Japan
 Phone: Tokyo 930-4111
 Cable Add: TRITRONICS TOKYO Telex: 272-2140
 Main Plant: 1-16-1, Fujimi-cho, Gyoda, Saitama 361, Japan
 Phone: (0485) 34-8211 Telex: 2942528

● **Business category**

Manufacturing and selling of electronic measuring equipment and automatic test equipment.

● **Company registration**

December 18, 1945

● **Capital**

Yen 400,000,000.-

● **Main share holders**

Fujitsu Ltd.
 Kanemitsu-Gosho Ltd.
 Saitama Electronic Lab.
 Ikiyo Lease Co., Ltd.
 Mr. Ikuo Takeda
 The Nissan Fire & Marine Insurance Co., Ltd.
 The Dai-ichi Kangyo Bank Ltd.

● **Directors**

Risei Kaiwa	Representative Director & President
Kazusada Sogo	Representative Director and Executive Vice President
Noboru Man'ei	Executive Managing Director (General Manager of Engineering and Production Division)
Takemitsu Saigusa	Executive Director (General Manager of Corporate Planning Group)
Tadayuki Adachi	Executive Director (General Manager of Sales Division; General Manager of Sales Department)
Mitsuo Goto	Counselor
Kazuo Karasawa	Director (Deputy General Manager of Engineering and Production Division; General Manager of Production Control Department)
Haruo Aoki	Director (General Manager of Material Purchasing Department)
Tohru Kazemaki	Director (Corporate Strategic Staff for R & D)
Sadao Nakamura	Director (General Manager of Administration Division)
Yummu Takehara	Auditor

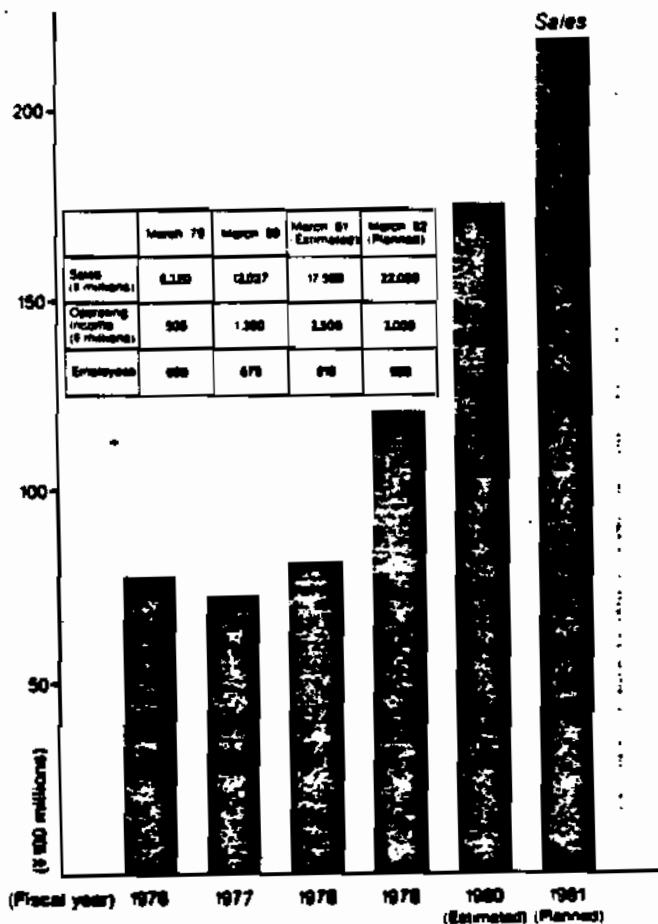
● **Employees**

940 as of April 1, 1981
 (Male 640, Female 300)

● **Banks**

Dai-ichi Kangyo Bank Ltd.
 Main Office
 The Taiyo Kobe Bank Ltd.
 Kamitabashi Branch, Tokyo
 The Sanwa Bank Ltd.
 Ginza Branch, Tokyo
 The Bank of Tokyo Ltd.
 Ikebukuro Branch, Tokyo
 Japan Long Term Credit Bank Ltd.
 Main Office, Tokyo
 The Yasuda Trust & Banking Co. Ltd.
 Ikebukuro Branch, Tokyo

● **Year Financial Review**



Brief history in management

2-14

1954

- Takada Riken Industry Co., Ltd. was built in Tokyo. Capital 500 thousand yen. Started production of sensitive Electrometers.

1967

- Started production of Electronic Counters.

1969

- Main facility was newly built at Nerima-ku Tokyo.
- Entered quantity production of Digital Counters.

1969

- Opened a Sales/Service Office in Osaka.

1961

- Awarded 1961 Research Subsidy by the Ministry of International Trade & Industry (MITI).

1962

- Increased Capital to 8 Million Yen.
- Built an additional plant.

1963

- Honored as an excellent medium/small enterprise by Tokyo Metropolitan Office.
- Awarded 1963 Research Subsidy by MITI.
- Entered quantity production of Digital Voltmeters.
- Opened Sales/Service Office in Nagoya and Kyushu.

1964

- Honored by Tokyo Metropolitan Office for 100MHz direct reading Frequency Counter.
- Honored by Medium-Small-Enterprises Agency as an excellent enterprise.
- Increased Capital to 40 Million Yen.
- Awarded 1964 Research Subsidy by MITI.

1966

- Awarded 1966 Research Subsidy BY MITI.

1967

- Built a plant for measuring systems.
- Opened Sales/Service Office in Yokohama, Mito and Sendai.

1966

- Opened a Sales/Service Office in Nagano.
- Awarded 1966 Research Subsidy by MITI.

1969

- Awarded 1969 Research Subsidy by MITI.

1970

- Built a new facility in Gyoda for Engineering, Development and Production.
- Received a promotion project for new machine development from the Japan Society for the promotion of Machine Industry.

1971

- Extended products line into Mini-computer controlled measuring systems.

- Started handling of Oscilloscopes and Pulse Generators under an arrangement with Philips.
- Awarded 1971 Research Subsidy by MITI.

1972

- Succeeded to develop first Japanese LSI Test System in cooperation with Japan Society for the Promotion of Machine Industry.
- Started distribution of Realtime Signal Analysis System under an agreement with Nicolet Scientific Corporation.
- Awarded 1972 Research Subsidy by MITI.

1973

- Awarded 1973 Research Subsidy by MITI.

1974

- Increased Capital to 138 Million Yen.
- Terminated the arrangement with Philips.
- Joined MITI's First Important Technology Development Program with 6 other measuring equipment makers.

1975

- Mr. Mitsuo Goto succeeded the president.
- Proceeded rationalization of management constitution under the recession.
- Increased Capital to 150 Million Yen.

1976

- Reorganized the management with capital participation by Fujitsu, Kanematsu-Gosho, Tokyo Lease, Nissan Fire & Marine Insurance, and Dai-ichi Kangyo Bank.
- Announced new models of LSI Test Systems.
- Awarded Second Important Technology Development Subsidy by MITI.

1977

- Mr. Rieki Kaiwa was elected the president.
- Withdrawal from computer controlled Measuring Systems to improve the profitability.
- Terminated the agreement with Nicolet Scientific Corporation.
- Honored for cooperative research on a Josephson's Standard Equipment by Electro Technical Laboratory.
- Awarded for development result of LSI Test Systems by the Japan Society for the Promotion of Machine Industry.

1978

- Ordered by Research Development Corporation of Japan to jointly development of manufacturing technology for magnetic resonator element using YIG (Yttrium Iron Garnet)™ with Fuji Electrochemical Co., Ltd.

1979

- Increased capital to 250 million yen.
- Awarded 1979 subsidy by MITI (for 2 years).
- Built new plant at Gyoda facility.

1980

- Increased capital to 400 million yen.
- Opened a Sales/Service Office in Trukuba.

1965

1970

DC Amplification technology

Analog/Digital conversion technology

10⁻⁸A digital measurement

6-1/2 digit measurement

Highly stable voltage generating technology

Time-sharing technology development

● DC Amplifier and A-D Conversion Technologies

Takeda Riken combines a vast amount of fundamental measuring technology with advanced DC amplifier technology to realize highly stable and accurate measurement of extremely small voltage and current. The technologies incorporated in our analog and digital converters, highly stable voltage generators and physical quantity linearizers are the result of what is said above. The same applies to our 7-1/2 digit digital voltmeter, digital thermometers, system-use voltage generator and other products. All of these are high-performance products which, when utilized with a microcomputer, achieve more intelligent measurement.

● High speed pulse/high frequency technologies

In 1957, Takeda Riken marketed the first electronic counter made in Japan. Since then Takeda Riken has kept pace with advances in communications technology and has introduced direct scaling 100MHz electronic counters, 500MHz counters and 1000MHz models. High speed pulse technology enabled us to manufacture the world's fastest—100MHz—VLSI test system and our high-frequency technology provided the base for the manufacture of spectrum analyzers for analyzing the frequencies of radio waves.

● Applied Computer Technology

Applied computer technology has opened a new age to measuring instruments. This technology is used in a variety of commercial systems and is shared in LSI test systems and those with GP-IB. It also plays an important role in the intelligent measurement program of Takeda Riken. In conjunction with its software technology, including FFT algorithm, applied computer technology is now being incorporated in our digital spectrum analyzer as a first step toward enlarged intelligent measurement.

High speed pulse technology

High frequency technology

1,000MHz direct coupling measurement

Development of 1.5GHz Spectrum Analyzer

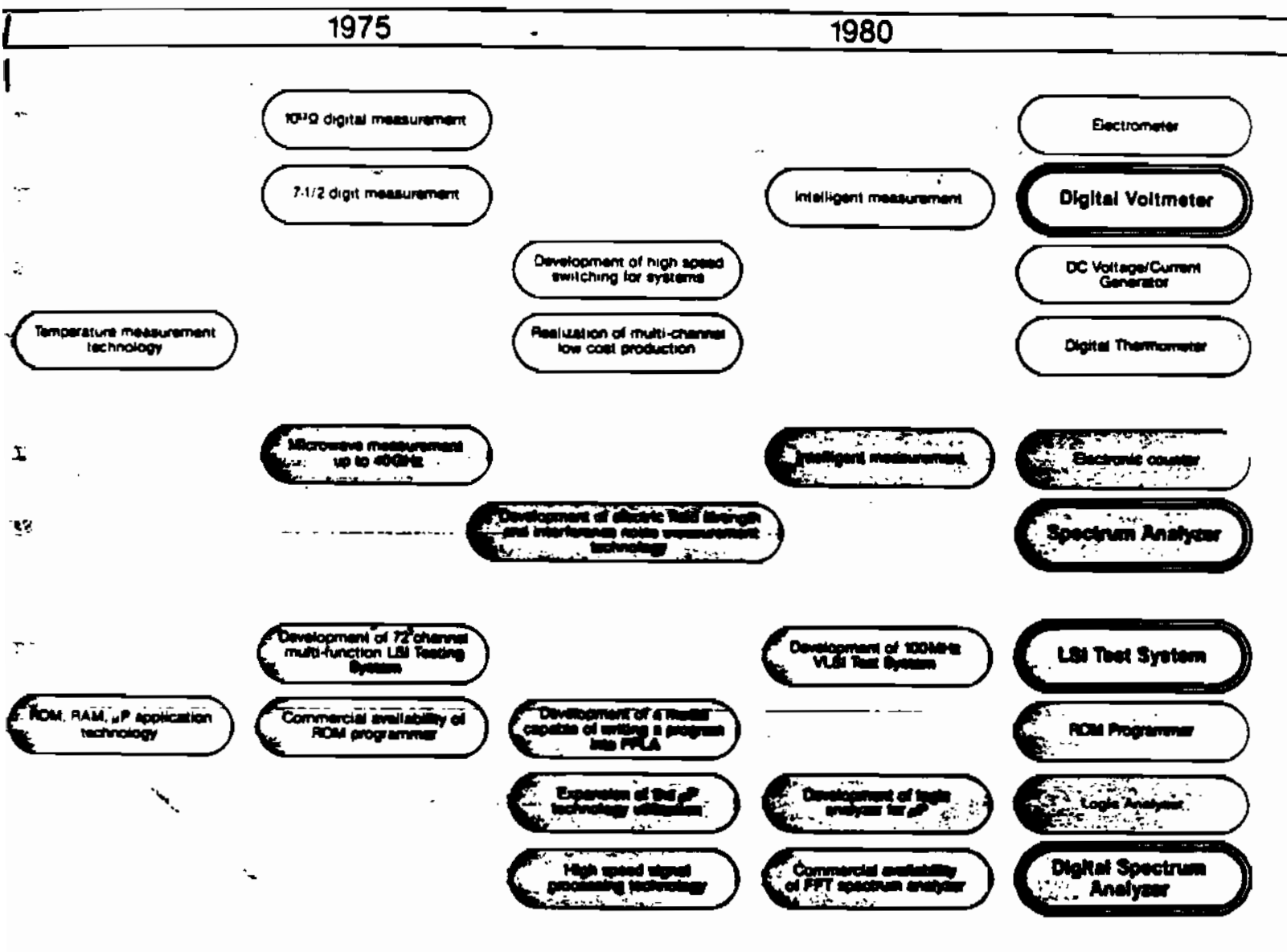
Computer application technology

Development of IC Test System

History in quality assurance

- 1964 ● Equipped Japan's first private cesium beam frequency standard
- 1965 ● Introduced the concept of traceability to the national standards. Fully equipped the standard instruments including standard cells. Started warranty of measurement results.
- 1966 ● Completed the standard laboratory (room temperature stability: ±1°C)
- Organized the Quality Assurance Group to control the product's quality at user's side and also to review the MTBF on practical information in the field.
- 1968 ● Started mobile laboratory service for calibration servicing to users throughout the country.
- Equipped the rubidium beam frequency standard at Tokyo and Osaka servicing stations to reinforce traceability.
- Embarked in hybrid technology.

- 1968 ● Developed and manufactured high precision and high stability winding resistors (5ppm/°C, 10ppm/year)
- Established a warranty system for high reliability parts such as semiconductor diodes and crystal oscillators.
- Built 6 month assurance system for the accuracy of digital voltmeter.
- 1970 ● Added a new standard laboratory (23°C ±0.3°C) following operation of Gyode plant.
- 1971 ● Equipped the IC tester developed by own company and started inspection of all incoming digital ICs.
- 1972 ● Succeeded to make the first Josephson voltage standard system and delivered it to Electro Technical Laboratory.
- 1973 ● Equipped the second cesium beam frequency standard.
- Reinforced control system for resistance standard (1 ppm level, high resistance up to 10¹¹Ω)



- 1974
- Established the temperature standard system.
 - Delivered the second Josephson voltage standard system to Electro Technical Laboratory.
- 1975
- Established the high voltage calibration system (DC 50kV, 100ppm)
 - Established the RF power standard system (2GHz to 8GHz).
 - Located the parts handbook (TES-Takeda Riken Electronics Standard) at key places of the company for parts standardization to proceed high reliability designing, and inaugurated biweekly check system.
- 1976
- Delivered the third Josephson voltage standard system to Electro Technical Laboratory. (Japanese voltage standard maintained by the Josephson voltage standard as of January 1, 1977).
- 1977
- Introduced computer management system for internal traceability.
 - Developed 0.1 ppm digital voltmeter/ohmmeter to automate calibration and achieve higher precision.

- 1978
- Further equipped defect analysis systems such as electron microscope fluorescence, automatic cold inspect tester and relay tester.
 - Introduced computer management system for technical design management.
- 1979
- Established high precision warranty system for RF attenuator.
 - Introduced multilayer printed circuit boards and automatic design system.
 - Introduced design automation techniques.
 - Rebuilt the clean room for hybrid IC production.
- 1980
- Fully equipped the standard laboratory (23°C ±1°C) at Osaka servicing station, and powered up calibration services in Western Japan.

III b (2). Policy Implementation - National Project.

Example: Fifth Generation Computer Systems

Policy: Report of the Information Industry Committee of the Industrial Structure Council (September 9, 1981 - NR-262. P.25.)

Section 3. "Development of Guiding and Innovative Technologies."

Recommendation 2. "Research and Development of a Fifth Generation Computer."

Project Manager: Institute for New Generation Computer Technology. A non-profit organization established April 14, 1982, ICOT is supported by the government, academic institutions and computer manufacturers.

Outline of Plans: See attached.

Program: Ten years.

First step - 3 years: Development of basic computer technology.

Second step - 4 years: Development of subsidization.

Third step - 3 years: Development of total system.

Funding: \$40,000,000 for first step.

Initial Organization: Forty experts from university, industry, government. Salaries paid by MITI for three years.

INSTITUTE FOR NEW GENERATION COMPUTER TECHNOLOGY

INTRODUCTION

Computers have become indispensable tools in our modern society. The computers are being used in more fields for more variety of applications and for more amount of information by more non-computer-professionals. However, the current computer technology has its own limit not to be able to meet these needs in the very near future. We will need new computer systems based on innovative theory and technology, which we name the Fifth Generation Computer Systems. The new computer systems will work as assistants to mankind with easy accessibility, high performance and advanced functions.

Under these circumstances we launched a new institute for research in the Fifth Generation Computer Systems. The Institute is a non-profit organization for research purpose, supported by the Government, academic institutions and computer manufactures.

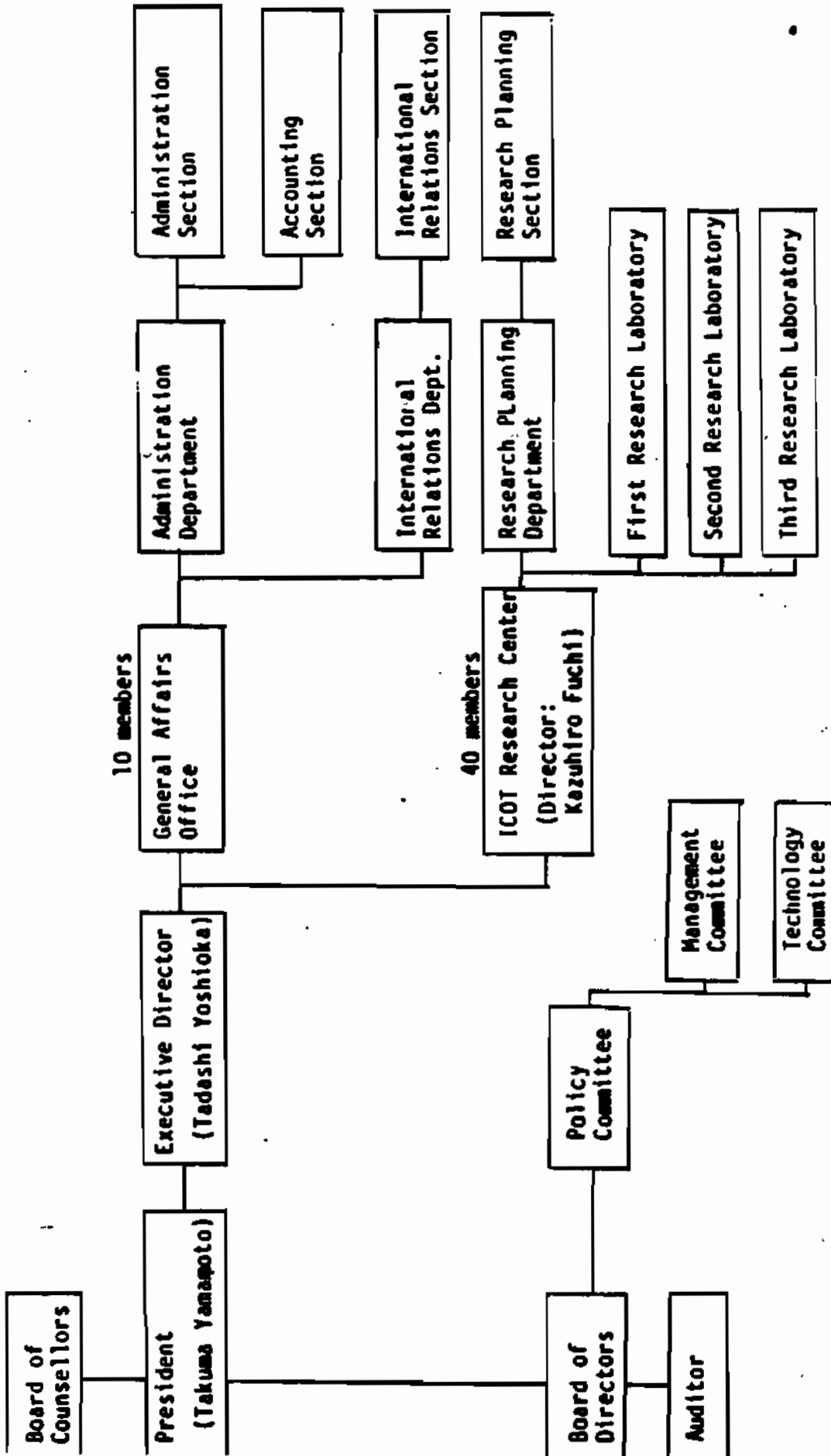
The new computer systems should contribute to the benefit of all mankind and our next generation. Therefore, we expect to promote international cooperation in the project, exchanging information and achievements to the mutual benefit of all involved in the world.

June, 1982

INSTITUTE FOR NEW GENERATION COMPUTER TECHNOLOGY

ORGANIZATION

Establishment: April 14, 1982



III b(3). Policy Implementation - National Project

Example: Flexible Manufacturing System Complex Provided with Laser.

Policy: The industrial Structure of Japan in the 1980's (Summary). - Future Outlook and Tasks - May 1981; BI-44, P. 45.

Based on materials furnished by the Industrial Structure Division, Industrial Policy Bureau, MITI.

"Processes. Areas of automation will expand through utilization of industrial robots, with greater flexibility to adapt the operations to the need for producing larger varieties of products in smaller quantities."

Object: To establish a complex manufacturing system that offers rapid and flexible production of machine components in small batches.

Project Manager: Agency of Industrial Science and Technology, MITI.

Duration: Seven years.

Budget: \$50,000,000.

Participation: . Three Government Laboratories
. Twenty Private Companies

Organization: Five technical subcommittees include four R&D groups organized to address critical technology problems. (See attached.)

RESEARCH ASSOCIATION 研究組合 FAC

当研究組合は、昭和52年12月に発足した産学官共同研究システムの大型プロジェクト「レーザー応用複合生産システムの研究開発」の民間委託のために、昭和53年3月に設立されました。現在下記の20社が加盟し、それぞれポテンシャルの高い技術分野での研究開発を分担し、昭和58年度までの7ヶ年計画の前半を順調に進捗しています。

本プロジェクトの総予算は約130億円に達していますが、この中には国立試験研究機関(機械技術研究所、電子技術総合研究所、九州工業試験場)の研究予算が約

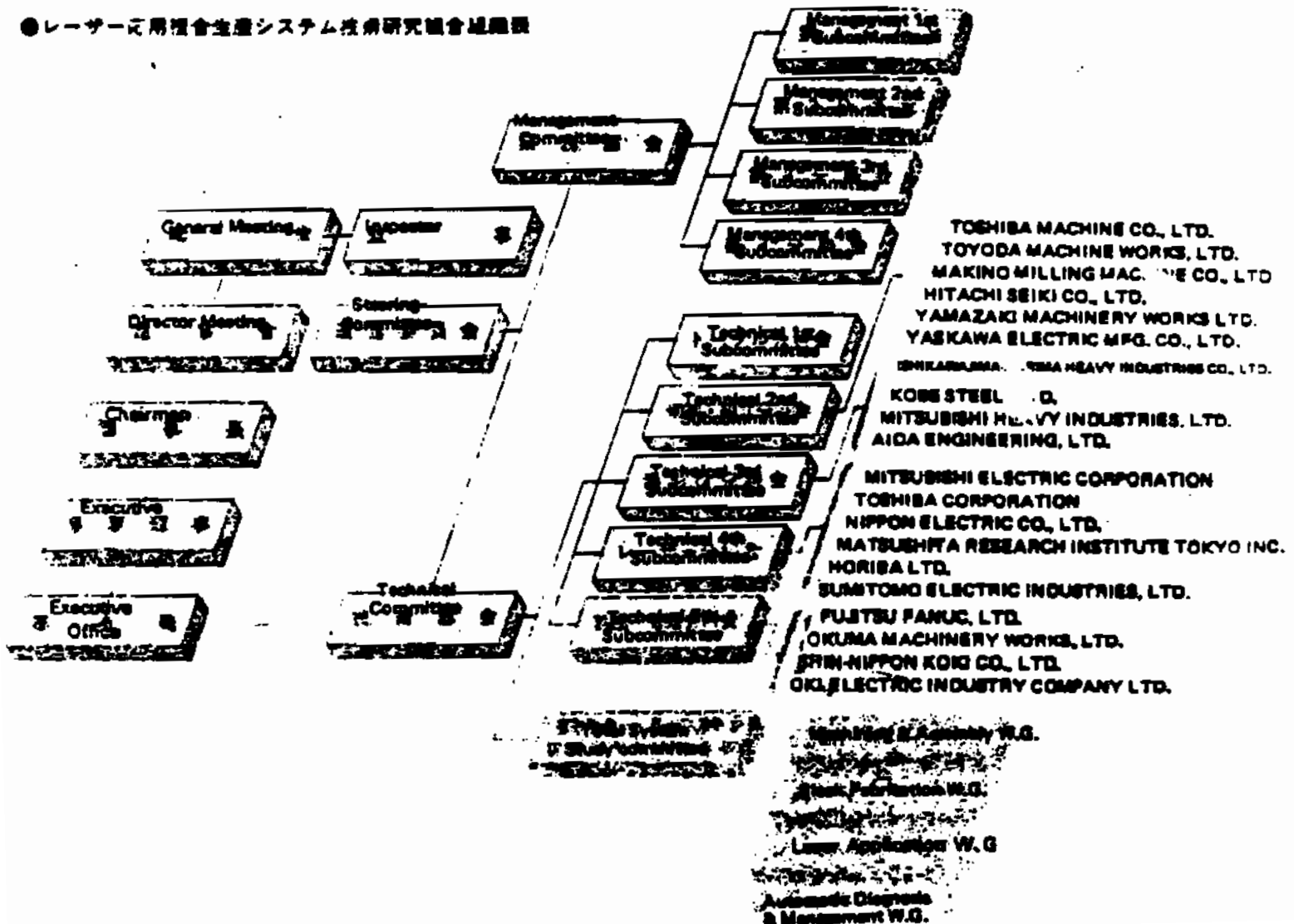
20億円に達するほか、学・官の協力体制のもとに国の総力をあげた開発が行なわれています。

本プロジェクトの基本目標は、多品種少量生産の機械構成部品を、素材加工から製品検査に至るまで柔軟かつ迅速に生産できる自動生産システムを世界にも冠して実現するためのもので、その研究開発は下記に示す10のサブグループから成り立っています。すなわち、切削・組立グループ、素材加工グループ、レーザー応用グループ、治具・管理グループがあり、これらを統合

するグループ、レーザーの協働、各サブグループ、企業が連携し、レーザー応用複合生産システムに必要の信頼性を確保しています。

昭和53年度技術承継計画は複合生産システム製作に

●レーザー応用複合生産システム技術研究組合組織図



III. POLICY PLANNING INFORMATION SYSTEM

JAPAN'S POLICY PLANNING INFORMATION SYSTEM
and
Mechanisms for Information Collection, Organization,
Processing, Dissemination and Utilization

Discussion

- . Materials, energy and information are three of the most precious assets of any modern society.
- . Early civilizations built upon their ability to process materials. Quantum advances were made as society learned to process energy in large amounts. The present day post industrial revolution is fueled by our rapidly increasing ability to process information.
- . Japan recognizing the central role of information in societal decision and policy making has built an elaborate system to collect, process, disseminate and utilize information both from within and outside Japan.

A. External Information, i.e., foreign data.

Background: In the 1950's, the Japanese became concerned about blind trade, i.e., manufacturers operating without detailed information on what they should be producing for various foreign markets. In 1958, MITI established as a public corporation:

JAPAN EXTERNAL TRADE ORGANIZATION (JETRO)

1. Fundamental function - the dissemination of information.
2. Staffing:
 - a) Key personnel including President and Executive Vice President from MITI.
 - b) Virtually all of JETRO's overseas personnel are MITI transferees who return to MITI to continue their careers.
 - c) As of March 1981 - 1233 employees (591 domestic and 641 over-seas.)
3. Charter and organization - attached p.3-3.
4. Annual budget - \$66,000,000 (1980).

B. Internal Information - domestic data

The Research and Statistics Department of the Secretariat is responsible for:

1. Compilation of Statistics: including the Census of Manufacturers
2. Analyses of Statistics.

C. The Policy Planning Information System Office of the MITI Secretariat has developed a computerized Policy Planning Information System - PPIS (see attached , p.3-9)

1. Function - to provide abundant data and powerful software tools to support policy-making and decision-making in MITI.

2. Organization of PPIS

a. DATA SOURCES

1. Government Agencies

- a. MITI
- b. Ministry of Finance
- c. Economic Planning Agency
- d. Prime Minister's Office
- e. Ministry of Labor
- f. Administration Management Agencies
- g. Bank of Japan
- h. etc.

2. Information Service Corporations

- a. JETRO
- b. IDE
- c. JAPATIC (patents)

3. Industrial Groups

4. International Organizations (U.N., etc.)

b. DATA BASES

- 1. Enterprises
- 2. Technology
- 3. International Trade
- 4. International Economy
- 5. Mineral Resources and Energy
- 6. Industrial Activity and Market
- 7. Macro-economic Inductors of Japan
- 8. Pollution Control

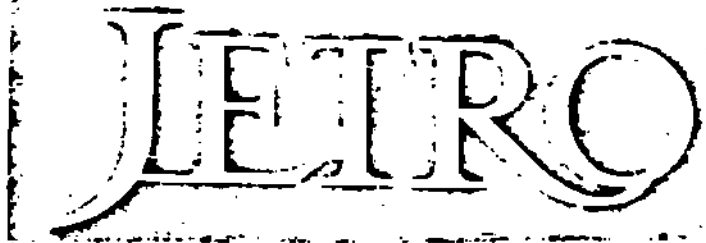
c. SOFTWARE

- 1. Retrieval and Editing
- 2. Tabulation
- 3. Graph Display
- 4. Analysis
- 5. Model Building and Simulation

d. USERS

- 1. MITI (has 40 terminals)
- 2. Agency of National Resource & Energy
- 3. Patent Office
- 4. Small and Medium Enterprise Agency
- 5. Regional Bureaus of MITI (8)
- 6. MITI Training Institute
- 7. Ministry of Foreign Affairs

Japan External Trade Organization



The Japan External Trade Organization — JETRO — was founded with Japanese Government capital in 1958 as non-profit organization for the promotion of trade. Prior to that, in the confusion of the post war years, a number of Governmental and private-sector organizations geared to export promotion had made their appearance.

Aware of the dislocated nature of the nation's trade activities, the Ministry of International Trade and Industry (MITI) realized the need for a new organization into which all Japan's international trade promotional functions could be incorporated. The Ministry proposed the establishment of such an integrated organization, and accordingly, legislation for the Japan External Trade Organization was presented and enacted at the 28th Ordinary Session of the Diet in 1958 (Law #95, April 26, 1958; Revised Law #169, July 11, 1958). The new organization was fully capitalized by the Japanese Government at ¥2,000 million and had a total operational budget of ¥1,812 million.

In 1958, the year JETRO was founded, Japan's total trade volume stood at US\$6,000 million (exports US\$2,876 million & imports US\$ 3,033 million). Twenty-two years later, in 1980, this had reached a value of US\$270,335 million (exports US\$129,807 million & imports US\$140,528 million). Over the same period, JETRO's capitalization increased to ¥10,200 million and the total annual operational budget rose to ¥15,500 million, with ¥9,550 million contributed by the Government.

Concurrent with this expansion of JETRO's operations was a significant change in the climate surrounding world trade, as represented by increasing interdependence among national economies and diversification of the structure of the world economy. In accordance with these changes, the role assigned to JETRO, which initially placed more emphasis on the promotion of exports from Japan, came to encompass more varied functions, including the promotion of mutual understanding among trading partners, import promotion — particularly manufactured goods, cooperative efforts to help develop overseas trade capability in developing countries, and liaison between small- and medium-scale industries in Japan and their overseas counterparts. These functions now constitute JETRO's fundamental role and are equally important as the organization's initial activity of export promotion.

The organization and operation of the Japan External Trade Organization are set out and governed by specially enacted legislation. Activities authorized for JETRO by this legal framework can be summarized as follows:

- 1) Research into international trade and publication of research results;
- 2) Introduction and publicity of the industry and merchandise of Japan;
- 3) Services to facilitate international trade transactions;
- 4) Publication and distribution of printed materials on international trade;
- 5) Holding of, or participation in, exhibitions, trade fairs and similar events, and services to facilitate the holding of, or participation in, such events;
- 6) Activities to expand international trade commissioned by the

Government, and;

- 7) All other affairs in connection with, or in addition to the aforementioned activities deemed necessary for the effective promotion of Japan's international trade.

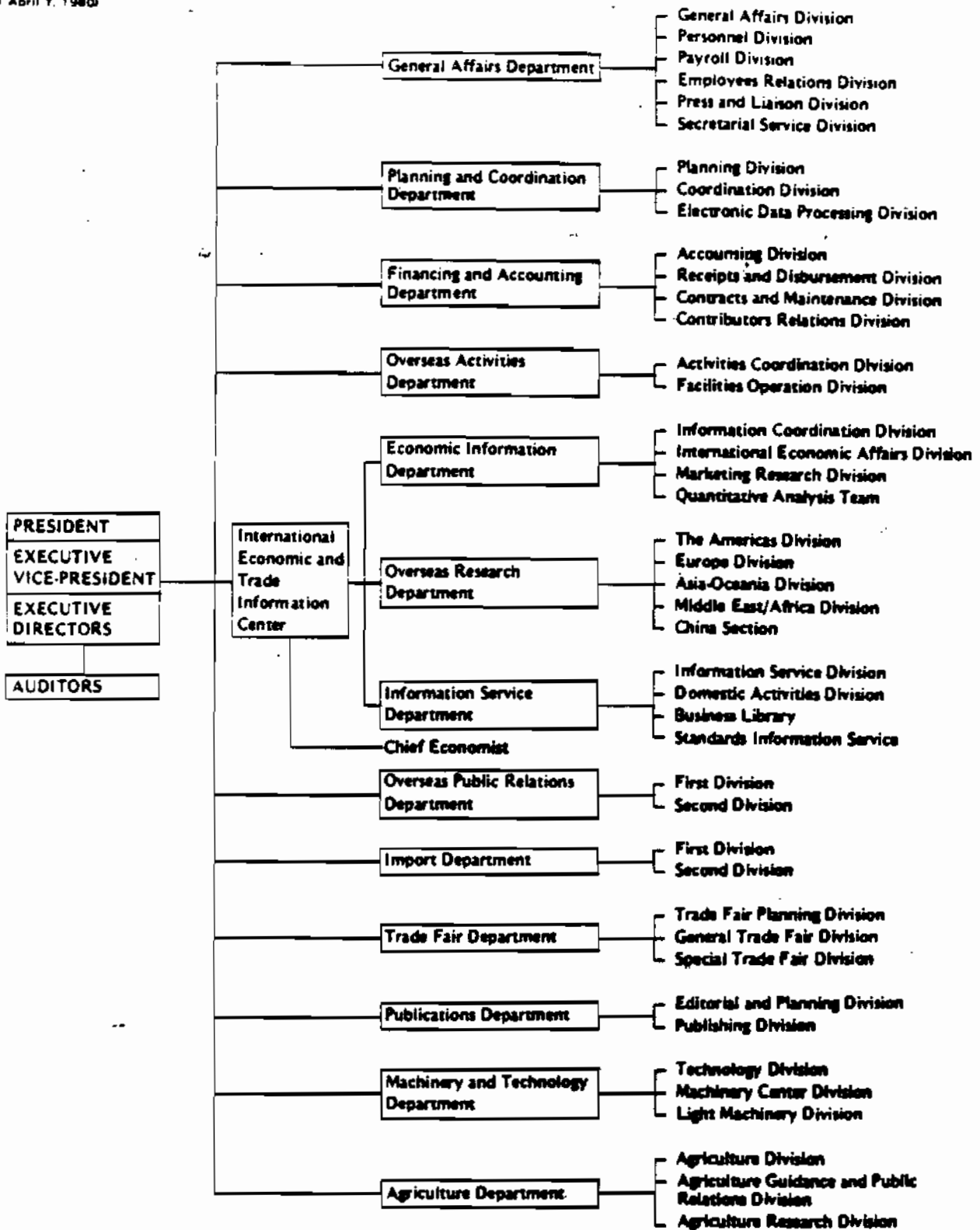
In Japan, the organizational structure of JETRO Headquarters in Tokyo consists of 13 departments, incorporating 43 divisions. The Osaka Office and 29 local offices in other major cities serve as liaison units between Japan's local industries and overseas counterparts. JETRO local offices are at Sapporo, Aomori, Morioka, Sendai, Yamagata, Niigata, Nagano, Suwa, Yokohama, Shimizu, Nagoya, Tsu, Toyama, Kanazawa, Fukui, Kobe, Okayama, Hiroshima, Matsue, Shimonoseki, Takamatsu, Kochi, Tokushima, Fukuoka, Kitakyushu, Nagasaki, Kumamoto, Kagoshima and Naha.

All of JETRO's activities are supervised by the president, assisted by an executive vice-president, and together with two auditors responsible for auditing all of JETRO's activities, are appointed by the Minister of International Trade and Industry. The president and vice-president are assisted by six executive directors.

As of March 1981, the breakdown of JETRO personnel was as follows: 1,232 employees, of whom 591 were engaged in domestic services, and 641, including 363 locally hired personnel, in overseas activities. Overseas, JETRO's network comprises 78 facilities located in the major cities of 59 countries. All these facilities are staffed by JETRO's regular representatives, and offer information and consultative services to both local and visiting Japanese businessmen.



ORGANIZATION
as of April 7, 1980



Information Dissemination

Services to Overseas Businessmen

JETRO's overseas facilities are equipped with the latest official statistics, including various trade indices, and other information on Japan's economy and trade. Based on these materials, JETRO's overseas facilities offer information and consultative services to local businessmen on various matters related to trade with Japan.

Information provided covers such subjects as standard procedures involved in export to and import from Japan, marketability of various products in Japan, Japanese commercial regulations and custom-

trade practices & procedures, introductions to Japanese exporters and importers. Further, JETRO liaises on various trade inquiries originating from overseas businessmen and business organizations (see "Trade Inquiry Services" on page 9).

Services to Japanese Businessmen

The daily flow of information coming into the Tokyo Headquarters in written reports, cables and telex messages and, in some cases, by telephone, in addition to printed materials by mail, is disseminated among Japanese businessmen throughout Japan through (1) JETRO periodicals and other publications; (2) over-the-counter services at all domestic facilities; (3) library services; (4) seminars; (5) the subscription members' system; (6) trade inquiry services.

Periodicals and other publications

Some primary media used in JETRO's information dissemination

activities are a group of regularly published periodicals.

Tsusho Koho (Trade Bulletin)

A daily bulletin in Japanese carrying information immediately valuable to Japanese traders.

Kaigai Shijo (Overseas Market)

A monthly publication in Japanese. Contents include in-depth market reports, market analysis, special features, etc.

JETRO also publishes various other non-periodical Japanese and foreign language publications, including an "Annual Review on World Trade and Overseas Investment", based on information collected through its worldwide network (see "Publications" on page 14)

Over-the-Counter Services

In Japan, JETRO offers over-the-counter information services based on the information and data collected through its worldwide network.

The services are conducted at the Tokyo Headquarters, Osaka Office and 29 other local offices located in major cities of the country. In these over-the-counter services, JETRO's experienced staff members answer questions on trade and investment and provide informational assistance.

In FY1980, approximately 26,600 individual service cases were processed by JETRO. The breakdown is as follows: 1) documentation and other procedural matters involved in export/import operations, 6,230 cases; 2) consultations on product marketability, 5,230 cases; 3) consultations on overseas investments, including joint ventures, 700 cases; 4) introduction of overseas exporters and importers, 12,600 cases; 5) introductions from inquiries by overseas exporters/

importers received by JETRO, 1,450 cases, and; 6) translation services, 380 cases.

Library Service

JETRO maintains two libraries, one at the Tokyo Headquarters and the other at the Osaka Office. The libraries are the best public libraries in Japan specializing in trade and economic materials from various countries. All documents, which include government statistics, trade publications of both official and commercial natures, customs tariff schedules, company directories, annual reports and telephone directories for the major cities of the world, are constantly updated.

Breakdown of Materials at the Tokyo Library (as of June 1981):	
Books	65,600
— Books in Japanese	19,600
Overseas Customs Tariff Schedules	134 countries
Overseas Trade Directories	4,500
Statistical Reports	
— Domestic	500
— Overseas	2,640
Overseas Newspapers	45
Periodicals	
— Japanese	220
— Foreign	382
Telephone Directories	284
	cities
	in 80 countries

Seminars

Information dissemination efforts are also conducted through various seminars and briefing sessions held frequently by JETRO at a number of domestic locations for the benefit of local traders and businessmen.

Trade Inquiry Services

The one-way dissemination of information in the form of publications, library access, over-the-counter activities, and through seminars & sessions is, however, only a facet of JETRO's extensive information services. A large part of the organization's servicing efforts is spent attending to inquiries on trade and investment matters.

Overseas Inquiries

Approximately 300,000 inquiries from overseas individuals and organizations engaged in trade, business and other industrial and economic activities are handled annually by JETRO. The majority are handled locally by JETRO's overseas representatives. Inquiries that can be handled better by those in industry are either forwarded to the specific business organization or individual concerned or are publicly circulated in the *Tsusho Koho*, a daily bulletin. An average of 2,500 inquiries are circulated in this manner every year.

"Exporting to Japan"

For the purpose of assisting overseas exporters, JETRO publishes a directory, "Exporting to Japan." This lists the names and addresses of Japanese importers classified by the commodities in which they specialize or desire to handle. The directory, which is up-dated annually, is available for reference at each JETRO overseas facility, as well as at local chambers of commerce and other trade-related organizations in various countries.

Copy sale is also accepted. (For further information on sales of "Exporting to Japan", please contact the nearest JETRO facility or JETRO's Tokyo Headquarters.)

Information Collection

In order to support the organization's fundamental function — the dissemination of information, JETRO compiles and updates a vast amount of information on trade, economy and industry from various countries. This information collection is conducted through numerous research and survey projects and routine information gathering activities. In the main, information collection efforts are carried out by JETRO's staff members stationed abroad, and the bulk of information collected is obtained from various published sources — official reports, position papers, statistical data compilations, newspaper and magazine articles, directories and other publications. After collection, all information is concentrated at the Tokyo Headquarters, where items are processed to meet the specific objectives of the various service activities. Some basic data, such as trade statistics, are stored by computer. All publications, including major periodicals, are available to the public at the two JETRO libraries, one at the Headquarters and the other at the Osaka Office.

The major portion of information collected by JETRO constitutes fundamental data related to economy, industry and commerce that have a bearing on the promotion of trade between Japan and its

trading partners. They include basic information on customs tariffs, business organizations, commodities, regulation changes and trade statistics.

Various marketing research projects designed to assess market potentiality for specific commodities for both export from, and import to, Japan are also an indispensable part of JETRO's information collection activities. In conducting this type of research, however, increasing emphasis is being placed on the discovery of new products, the export to Japan of which may eventually contribute to a redressing of the trade balance between Japan and its trading partners.

JETRO Subscription Members

For the purpose of facilitating ready and thorough access by both relevant individuals and organizations to the varying kinds of information collected by its extensive worldwide network, JETRO maintains a subscription members' system.

All commercial, industrial, financial or other organizations recognized under Japanese law and individual Japanese nationals are eligible to become JETRO subscription members on payment of an annual fee. Current membership constitutes more than 5,000 organizations. The breakdown by trade is as follows: industrial associations, export/import cooperatives — 7%; trading companies — 37%; manufacturing firms—47%, and; miscellaneous—9%.

政策情報システム

3-9

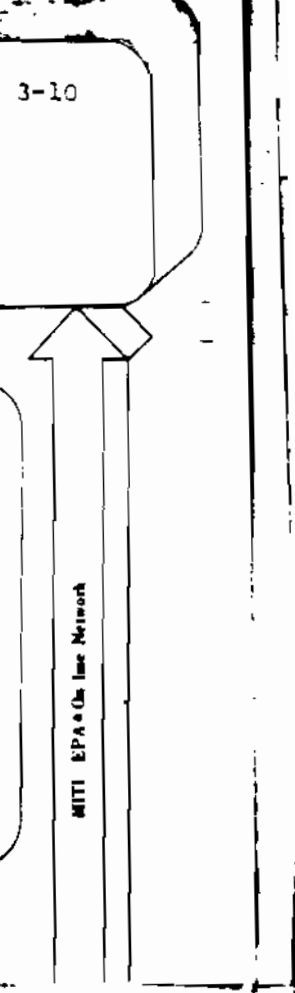
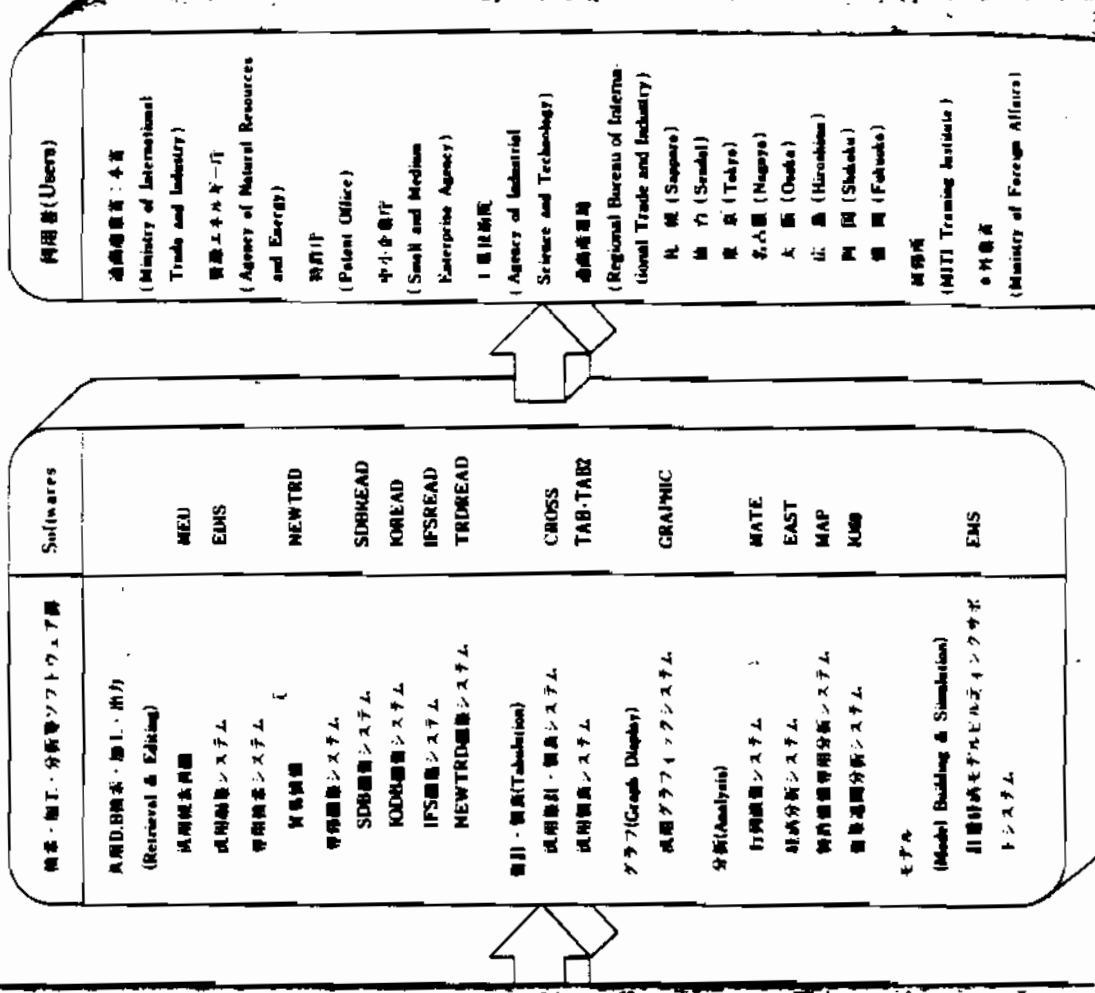
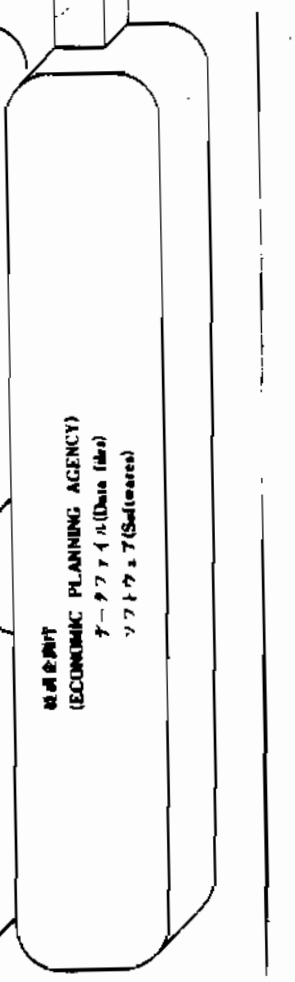
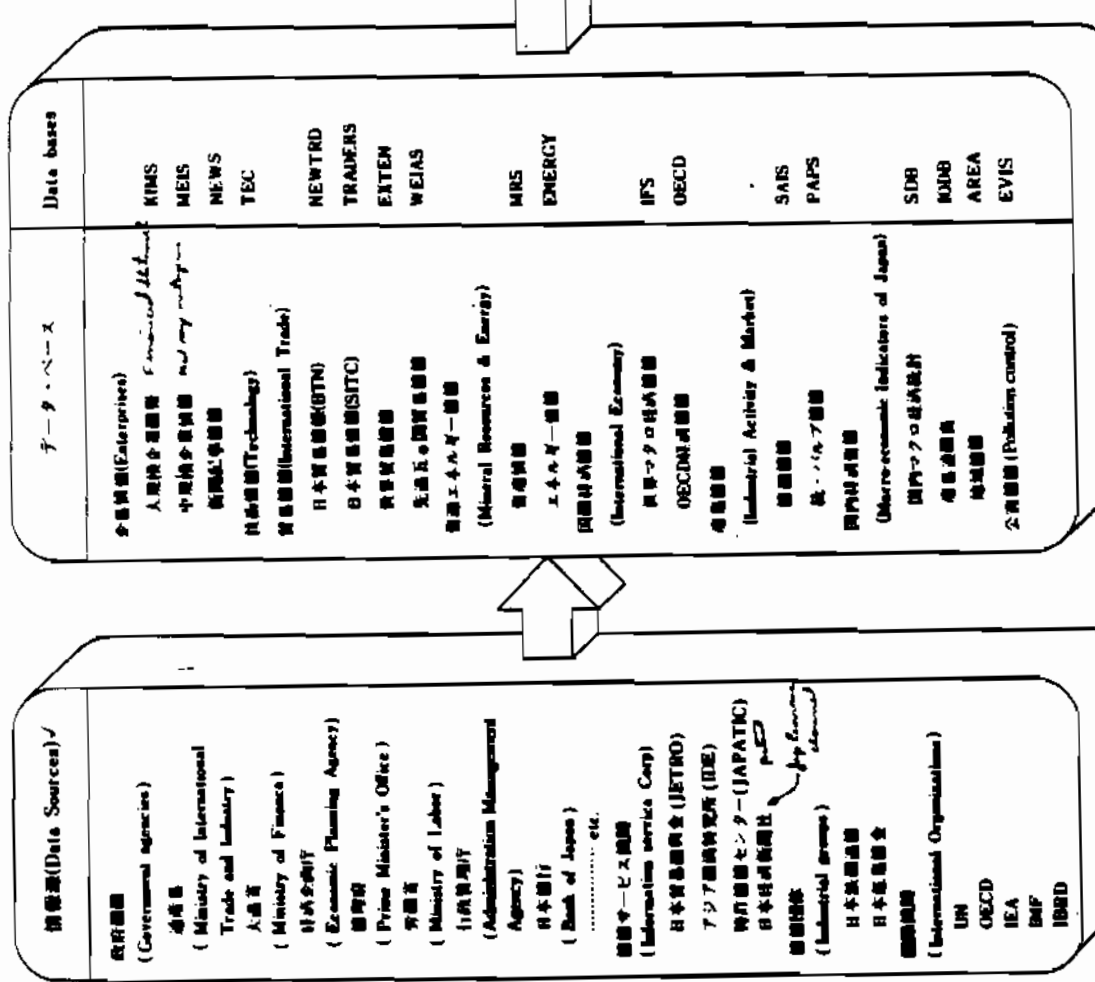
PPIS

Policy Planning Information System



政策情報システム

Policy Planning Information System



LIST OF DATA BASES

APRIL 1981

Data base	CONTENTS	PERIODS
KIMB	Financial reports and other activities (total 400 items) of 1,700 major enterprises in Japan.	1970~
MEIS	Financial reports (70 items) of 10,000 middle scale enterprises in Japan.	1975~
NEWSB	Headlines & summaries of important articles from Japanese economic journals (130,000 items/year).	1978~
TEC	Numbers of patents registered by patent office of Japan, classified by items (IPC 7-digits), countries and enterprises. (annual)	1971~
NEWTRD	Trade statistics (quantities & values) from/to Japan classified by BTN 7-digits & countries. (annual & monthly)	latest 3 years & latest 36 months
TRADERD	Trade statistics (quantities & values) from/to Japan classified by SITC 6-digits & countries. (annual)	1971~1975
REXTRN	Trade statistics of all countries listed by UN and OECD classified by SITC 4-digits. (annual)	1974~
WELAS	Trade statistics (quantities & values) of U.S. (TRUSA 7-digits), U.K. (BTN 7-digits), FR. (GBRFR 6-digits), FRANCE (BTN 7-digits) and CANADA (MCC, MCC 5-digits). (annual & monthly)	(U.S.A.) 1974~ (other) 1976~
MEB	Production, consumption, reserve and international trade of 15 major mineral resources of the world. (annual)	1968~
ENERBOY	Quantity of statistics and energy balance tables of OECD countries (coal, Vegetables). Energy supply and demand balance of Japan. (unit: subunit)	(Japan) 1968~
IFB	International financial statistics issued by IMF. (annual, quarterly & monthly)	(annual) 1969~ (quarterly) 1970~ (monthly) 1971~ 1969~
OECD	Main economic indicators, Labor force, National accounts of OECD countries. (annual, quarterly & monthly)	(annual) 1967~ (quarterly) 1972~ (monthly) 1973~
SAIG	Production, raw materials consumption & international trade of steel & iron (60 items) in the world (50 major countries).	(annual) 1967~
FAPB	Production, consumption & other activities (total 170 items) of paper and pulp industries in Japan.	(annual) 1967~
ABEA	Population, industrial & Commercial activity, Finance, Culture, etc. (total 800 items) of each city and town.	Depends on items (developing)
EVIS	Air pollution level of each 1600 points in Japan. Statistics and production regulations concerning air pollution control.	1979~
SDS	23,000 series (national accounts, production, prices, labor, balance of payments, finance, energy, etc.) which indicate the current trend of the Japanese economy. (annual & monthly)	Depends on series
IODB	Input-output tables & related tables of Japan.	1970, 1973~1976

OUTLINE OF POLICY PLANNING INFORMATION SYSTEM

The purpose of "Policy Planning Information system" (PPIS) is to offer standard data & powerful software tools to support policy making and decision making in MITI.

PPIS consists of many kind of data base, which are listed right page of this booklet. User can retrieve, update and modify these data through TBE terminals using following software tools, and store their own files for their own use. Similar functions are also available for these user's files.

APPLICATION SOFTWARES

SOFTWARE	FUNCTION
Retrieved and edit MEU EDIS NEWTRD SDRREAD IDRREAD IFRREAD TRDREAD	MITI END USER language; query language for data base. Special language to edit the retrieved data in editable form. Query language for Trade Statistics data base. Query and editing language for SDS data base. Query and editing language for RODB data base. Query and editing language for IFR data base. Query and editing language for TRD data base.
Tabulation CROSS TAB-TABS	Tabulation of cross section data to data base. Tabulation of time series data to time files.
Graphics GRAPHIC	Special language for graphic display.
Analytic MATE RAT MAP LOGG	Special language for matrix algebra. Special language for time series analysis (regression, seasonal adjustment, etc.) Plotting the status of the technology TEC data base. Input-Output analysis.
Model building and simulation EMS	Special language to support econometric model building and simulation