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Folder Title:
Industrial Research Institute/Federal Science & Technology Committee (IRI/FST) [4]

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GOLF AT THE GOLDEN HORSESHOE
The Golden Horseshoe Golf Course, designed by Robert Trent Jones, is ranked among the best in the world. Tee times have been reserved from noon to 1:30 pm Tuesday afternoon for casual play (no tournament). If you wish to play at some other time, use the Williamsburg Recreational Request form. Do not use the form for play Tuesday afternoon.
Cost: $85 minimum 4/maximum 40

GOVERNOR'S PALACE CONCERT
Presented will be vocal and instrumental music of the 18th century reminiscent of Thomas Jefferson's entertaining days.
Cost: $ 10 minimum 80/ maximum 110

JAMESTOWN ISLAND AND SETTLEMENT
A presentation by the director of archaeological fieldwork for the Jamestown Assessment Project, which is the work of Colonial Williamsburg, the College of William and Mary, and the Virginia Institute for Marine Science, in cooperation with the National Park Service, will begin our tour. Scan the brochure for more information.
Cost: $ 35 minimum 40/maximum 45

LANDSCAPE NURSERY AND GARDENS
Ride a CW bus for a short trip to the landscape nursery where manager Susan Woodall will conduct an hour's tour with insights into the research undertaken for the validation of the 18th century plants found in Colonial Williamsburg. Then it's on the bus again for a quick trip back to CW to begin the garden tour that will conclude at the Lodge.
Cost: $ 15 minimum 25/maximum 40

PEOPLE OF THE PAST
In 18th century costume and speech, our guides on *Monday* will be Mr. James Hubbard, Attorney at Law, practicing before the city and county court, and Mrs. Annabelle Powell, a noted business woman of the city. The Reverend Mr. Samuel Henley, Professor at the College of William and Mary, and Mrs. Grissel Hay, lodging-house keeper, will be our guides on *Tuesday.*
Cost: $ 10 minimum 25/maximum 50

PLANTATIONS ON THE JAMES RIVER
Three plantations; Evelynton, Berkeley (with lunch served), and Sherwood Forest are our stops. Scan the brochure for information.
Cost: $ 55 minimum 40/maximum 45

VIRGINIA DRIED FLOWERS WORKSHOP
Using dried flowers native to Virginia, Libby Oliver, manager of Flower Services for Colonial Williamsburg (she is responsible for all the spectacular Christmas Decorations in CW), will help you make an arrangement suitable for use as a table decoration for Thanksgiving or as a wall swag. It can be shipped for a nominal fee.
Cost: $ 45 minimum 10/maximum 20

WILLIAMSBURG SAMPLER
This is a walking introduction to Colonial Williamsburg for those who have never been to CW or want a refresher course.
Cost: $ 10 minimum 15/maximum 40

* * * *

PHYSICAL FITNESS AND RECREATION

The **TAZEWELL FITNESS CENTER** at the Williamsburg Lodge offers a complete line of Keiser and cardiovascular exercise equipment, a 60-foot indoor lap pool, aerobic classes, whirlpool, steam, and sauna.

Four **TENNIS COURTS** have been reserved for Tuesday afternoon, beginning at 1:00 p.m. If you wish to play tennis Tuesday afternoon or at other times during the meeting, use the Dining and Recreational Request form and sign for the charge at the Tennis Pro Shop.

Industrial Research Institute, Inc.
Fall Meeting
Williamsburg Lodge, Williamsburg, Virginia
Sunday to Wednesday, October 23-26, 1994

COMPANION PROGRAM (TENTATIVE)

Saturday, October 22		
3:00 to 5:30 pm	**REGISTRATION DESK OPEN**	East Gallery
3:15 to 4:45 pm	***AIR TOURS**	
3:30 to 5:00 pm	***WILLIAMSBURG SAMPLER**	
Sunday, October 23		
9:00 am to 7:00 pm	**REGISTRATION DESK OPEN**	East Gallery
9:30 to 11:00 am	***WILLIAMSBURG SAMPLER**	
10:00 to 11:30 am	***AIR TOURS**	
11:00 am to 2:00 pm	**BRUNCH--CONSULT DINING GUIDE**	
1:00 to 5:30 pm	***JAMESTOWN ISLAND AND SETTLEMENT**	
1:30 to 5:00 pm	***CARTER'S GROVE**	
2:00 to 3:30 pm	***WILLIAMSBURG SAMPLER**	
2:30 to 4:00 pm	***AIR TOURS**	
6:00 to 7:00 pm	**NEWCOMERS' RECEPTION** Hosted by Board of Directors for those attending their first IRI meeting.	Rooms ABC
6:30 to 7:30 pm	**SOCIAL HOUR**	North Gallery
7:30 to 10:00 pm	***GROUP DINNER** Colonial Williamsburg's Governor, Thomas Jefferson, will be our after dinner speaker.	Virginia Room

***ADVANCE REGISTRATION AND PAYMENT REQUIRED**

Monday, October 24

7:30 to 9:00 am	**COMPANION HOSPITALITY** Continental breakfast offered.	Garden Lounge
7:00 am to 3:00 pm	**REGISTRATION DESK OPEN**	East Gallery
9:00 am to 3:30 pm	***PLANTATIONS ON THE JAMES RIVER**	
10:00 to 11:30 am	***EIGHTEENTH CENTURY TOUR**	
12:15 to 1:30 pm	***GROUP LUNCHEON** Achievement Award Address and Business Session	Virginia Room
2:00 to 5:00 pm	***VIRGINIA DRIED FLOWERS WORKSHOP**	
6:00 to 7:00 pm	**SOCIAL HOUR** Hosted by Philip Morris U.S.A. and Reynolds Metals Company	Tazewell Courtyard
7:00 pm	**DINNER ON YOUR OWN.** Consult the dining guide and dining reservation form. Making reservations well ahead of your arrival is strongly recommended.	
9:30 to 10:30 pm	***GOVERNOR'S PALACE CONCERT**	Governor's Palace

Tuesday, October 25

7:30 to 9:00 am	**COMPANION HOSPITALITY** Continental breakfast offered.	Garden Lounge
7:00 am to 1:30 pm	**REGISTRATION DESK OPEN**	East Gallery
9:00 am to Noon	***VIRGINIA DRIED FLOWERS WORKSHOP**	
9:30 to 11:00 am	***EIGHTEENTH CENTURY TOUR**	
10:00 to 11:30 am	***FOLK ART CENTER**	AAR Folk Art Center
Noon to 12:45 pm	***GROUP LUNCH**	Virginia Room
12:15 to 1:30 pm	***GOLF TEE TIMES**	Golden Horseshoe Course
1:00 to 3:00 p.m.	**TENNIS**	Tennis Courts
1:00 to 5:30 pm	***JAMESTOWN ISLAND AND SETTLEMENT**	
1:00 to 2:30 pm	***WILLIAMSBURG SAMPLER**	
1:00 to 5:30 pm	***CARTER'S GROVE AND WILLIAMSBURG WINERY**	
2:30 to 4:00 pm	***AIR TOURS**	
2:00 to 5:00 pm	***LANDSCAPE NURSERY AND GARDENS**	
6:30 to 7:30 pm	**SOCIAL HOUR**	North Gallery

7:30 to 10:30 pm	***ACHIEVEMENT AWARD DINNER** (Business attire) Presentation of IRI Achievement Award to: Dr. Marinus Los Agricultural Research Division American Cyanamid Company	Virginia Room

Wednesday, October 26

7:00 to 9:00 am	**COMPANION HOSPITALITY** Continental breakfast offered.	Garden Lounge
7:00 to 11:30 am	**REGISTRATION DESK OPEN**	East Gallery
9:00 to 10:30 am	***COSTUMES OF THE 18th CENTURY**	Hennage Auditorium
10:00 to 11:30 am	***FOLK ART CENTER**	AAR Folk Art Center
11:30 am	**MEETING ADJOURNS**	

COACH TOURS LEAVE FROM NORTH GALLERY EXIT; WALKING TOURS FROM IRI REGISTRATION DESK.

Space on tours is **reserved** according to the **date** that the **registration form** with **payment** is received at IRI Headquarters. Check your choices of tours on the enclosed duplicate of the registration form. Then ask your companion to transfer them to the form that will be returned to IRI Headquarters and return the duplicate to you. If minimums are not met for a tour by **October 7**, that tour will be canceled. When a maximum is reached, names will be placed on a stand-by list according to the arrival of the registration form and payment at IRI Headquarters. **REMINDER:** Companions are always welcome at the REP/ALT general sessions.

DESCRIPTION OF TOURS AND SPECIAL EVENTS

AIR TOURS

The Peninsula Tour is a 35-minute flight that covers the entire historic triangle--Williamsburg, Jamestown, and Yorktown--with a spectacular view all the way to the Eastern Shore.
Cost: $ 55 minimum/maximum 5 per plane

The Civil War Tour is 55 minutes in duration and offers views of the area's major sites during that war.
Cost: $ 75 minimum/maximum 5 per plane

CARTER'S GROVE AND WILLIAMSBURG WINERY

Four hundred years of history will be seen on this tour. See the brochure on Carter's Grove. The next stop is the Williamsburg Winery where a tour, the tasting of several wines, and crackers with cheese will be offered.
Cost: $ 35 minimum 35/maximum 45

COSTUMES OF THE 18th CENTURY

"Getting Dressed for the Ball: Eighteenth Century Formal Clothing" features men's and women's fashions for an evening at the Governor's Palace circa 1770. Presenting this program is Sally Queen, manager of the Costume Design Center, which is responsible for the design, production and maintenance of costumes worn by the interpreters in the Historic Area. It is a short walk to the DeWitt Wallace Decorative Arts Gallery where the program will be held in the Hennage Auditorium.
Cost: $ 10 minimum 25/maximum 50

FOLK ART CENTER

Abby Aldrich Rockefeller, wife of the founder of Colonial Williamsburg Foundation, began this museum with her American Folk Art collection that includes paintings, sculptures, and creations of untutored early artists along with later work done in folk or naive style by American artists. The center is just across the street from the Garden Lounge.
Cost: $ 10 minimum 20/maximum 50

1550 M Street, NW, Washington, DC 20005 • (202) 872-6350 • Fax (202) 872-6356

Industrial Research Institute, Inc.

April 23, 1993

Dr. Lionel S. Johns
Associate Director for Industrial Technology
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Skip:

Enclosed for your information is an IRI Position Statement issued in 1990 that proposed the creation of a counterpart to IRI in the Federal government.

In view of the current efforts toward better coordination of Federal R&D, we believe that collaboration among lab directors and others on the effective management of this R&D would be wise. First-level managers on up to laboratory directors can grow professionally and develop new skills through interaction with their peers and experts in the field. Such an organization would also offer numerous other benefits, as outlined in the statement.

OSTP was suggested as the organizing catalyst, but no effort was made to move forward with the proposal. Therefore, we created a small liaison group of lab directors and senior policy officials to meet regularly with our Federal Science & Technology Committee, as described on page 12 of the enclosed 1992 IRI Annual Report. That group is now being reorganized. I am also enclosing our 1992 Position Statement on U.S. Economic and Technology Policy. We hope to see you in Hot Springs next month.

Sincerely,

Charles F. Larson
Executive Director

CFL:pt
Enclosures
Copies to B. M. Rushton and A. R. C. Westwood

I.R.I. POSITION STATEMENT

ON

ESTABLISHMENT OF A FEDERAL RESEARCH INSTITUTE

BACKGROUND

For 52 years, the Industrial Research Institute (I.R.I.) has promoted successful interaction among senior research directors on matters related to the management of research and development (R&D) in the private sector. Founded in 1938 by the National Research Council, the Mission of I.R.I. is to enhance the effectiveness of industrial research. Although the Institute has been an independent organization since 1945, it continues to interact with the Federal government on many issues. Indeed, that is one reason the Institute's headquarters was recently moved from New York City to Washington, D.C.

PROPOSAL FOR A COUNTERPART IN THE FEDERAL GOVERNMENT

Reflecting on its own success in bringing together the leaders of 85% of the Nation's industrially-funded R&D to address matters of mutual interest and concern, the I.R.I. proposes that a similar organization be established to bring together leaders of R&D agencies and laboratories in the Federal government. Such an organization could be named the Federal Research Institute.

MISSION OF FEDERAL RESEARCH INSTITUTE

The Mission of the Federal Research Institute would be similar to that of I.R.I.--to enhance the effectiveness of government research. It would not address the technical aspects of R&D in government laboratories. Instead, it would focus on managing the process of R&D in government, including but not limited to the following:

(1) Developing effective techniques of transferring science.
(2) Selection, retention, and career development of qualified scientists and engineers in R&D.
(3) Creativity and motivation of scientists and engineers in R&D.
(4) Recognition and reward systems for outstanding performance.
(5) Selection and training of R&D managers and administrators.
(6) Development of leadership qualities of senior scientists, engineers, and managers.
(7) Project selection, control, and termination procedures.
(8) Building project teams.
(9) Implementation of the quality process in laboratories.
(10) Interaction between the laboratory and other functions of the agency/department, as well as between other government and private-sector institutions.
(11) Budgeting and facility administration.

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ORGANIZATION AND MANAGEMENT

I.R.I. further proposes that the Office of Science & Technology Policy (OSTP) assume the initiative in forming the Federal Research Institute. I.R.I. stands ready to assist OSTP in this process through the I.R.I. Fellow in OSTP, an ongoing arrangement that has been practiced for over six years.

It is expected that the Federal Research Institute would engage a small headquarters staff for membership promotion, organization of activities and meetings, record keeping, publishing, and other responsibilities. A chairman, vice chairman, and Board of Directors would be elected by founding members as one of the first steps. A Constitution and By-Laws, and a dues structure, would also be created in the start-up process.

POTENTIAL BENEFITS

A few of the potential benefits to members and their representatives are listed below:

(1) Direct interaction on a professional and social basis with one's peers in other laboratories across the spectrum of government R&D efforts.
(2) Timely information on effective management techniques.
(3) Opportunities for interaction with counterparts in industry and academe.
(4) Opportunities for more effective transfer of science and technology to industry as well as other areas of government.

I.R.I. believes that a Federal Research Institute would offer three special advantages:

(1) Opportunity for improved coordination of Federal R&D efforts (particularly in a strategic sense relative to the Nation's global economic competitiveness);
(2) Provide a focal point for effective communication and interaction with the industrial and academic communities on matters of mutual interest and concern, particularly economic competitiveness; and
(3) Opportunity to establish a close working relationship with the Industrial Research Institute and other organizations with similar interests.

SUMMARY

The Industrial Research Institute proposes that an organization be established to enhance the management of R&D in the Federal government. This organization would help catalyze constructive interactions between R&D organizations in the public and private sectors. I.R.I. stands ready to help make the Federal Research Institute become a reality, if appropriate leaders in the Federal government see similar benefits.

Industrial Research Institute Position Statement on United States Economic and Technology Policy

Introduction

Innovation is the creation of new knowledge and the transformation of this knowledge into technologies, processes, products, and services that meet market needs. Innovation creates new businesses and new jobs. It is the fundamental source of growth and wealth in society.

Although innovation is primarily the responsibility of private enterprise, the environment created by government can either encourage or inhibit its intensity and speed. If government is effective in encouraging innovation, then jobs are created, national wealth increases, and the country is more competitive in global markets.

A Message to the Presidential Candidates

International competitors of the United States have been very effective--frequently more so than we--in directly and rapidly turning scientific knowledge (often developed in the United States) into innovative products, services, and manufacturing efficiencies. These competitors, collectively and in concert with their governments, plan ways to improve their countries' innovation climate. They effectively bring together public and private resources to assure success. Increased intensity and greater speed in their innovation has often enabled them to capture important markets from the United States, including, in some cases, a major share of our domestic markets. The consequence is a decline in industrial competitiveness in the United States that threatens our economic strength--the real basis of our national security--and erodes the standard of living and quality of life for all U.S. citizens.

The Industrial Research Institute (IRI) asserts that this situation requires immediate action by our national business and political leadership. Specifically, this leadership must create a revitalized fiscal, legal, and competitive environment that will stimulate and accelerate the amount and pace of successful technological innovation within the private sector of the United States.

In particular, IRI recommends that the President act to:

1. **Increase the formation and availability of capital for long-term investment by the private sector in wealth-creating new products, processes, and services.**

   Effective innovation requires patient capital. Government fiscal policy greatly affects the national savings rate and the availability of capital. The government should consider actions such as:

   a. Modifying taxes on capital gains to favor long-term, productive investment.

   b. Maintaining stable, reasonable interest rates as well as consistent fiscal and monetary policies, and controlling inflation by stimulating productive investment.

   c. Encouraging investment in R&D and new manufacturing equipment by appropriately accelerated depreciation, investment tax credit, and tax deduction schedules.

   d. Revising current legal and regulatory barriers as necessary to encourage, rather than inhibit, long-term institutional capital investment in industrial enterprises.

   e. Relaxing or eliminating anti-trust prohibitions on co-production arrangements where adequate non-U.S. enterprises exist to assure competition.

-over-

2. **Increase the innovative productivity of the nearly $70 billion in federal funds being spent annually for research and development.**

Specifically, IRI urges the President to redirect a substantial portion of government R&D spending, especially at federal laboratories, toward industrial innovation and environmental technology. An industry-driven process should be created and implemented for the identification and development of appropriate laboratory missions and programs. The redirection should include the establishment of new missions, and, where justified, the consolidation or closure of certain existing federal R&D establishments.

3. **Increase private sector involvement in the deliberations that establish policies affecting innovation, and that determine major government R&D investments.**

IRI believes that the President must act aggressively to improve the communication, harmony, and--most importantly--trust between the business community and the federal government. These relationships are presently impeded by unnecessarily restrictive criteria for government service by experienced individuals from the private sector and by a mistrustful concern by government about conflict of interest in obtaining private sector advice and assistance. IRI submits that persons working in industry are as respectful of such concerns as our colleagues in academia or government.

It is especially important to improve industry-government relations with federal organizations whose primary responsibility includes the management or oversight of federal technology policy. Where science and technology policy management are combined, it is essential that balance between them be maintained, and that the President secure advice from industry as well as from the non-commercial science community. Senior staff of the Office of Science and Technology Policy should always have persons with broad and recent industrial experience.

About the Industrial Research Institute

The Industrial Research Institute is an organization of more than 260 major industrial firms having common interest in the effective management and conduct of industrial research and development. IRI member companies invest over $55 billion annually in R&D, representing some 80% of the Nation's privately funded effort. These companies, spanning diverse industries, compete in the global marketplace and provide jobs for more than 10 million of America's workers. Together they generate well over $1 trillion in annual sales, representing some 20% of our gross domestic product.

IRI welcomes the opportunity to discuss further its views on these important initiatives. For additional information, please contact Mr. Charles F. Larson, Executive Director, Industrial Research Institute, 1550 M Street NW, Washington, DC 20005.

June 30, 1992

1550 M Street, NW. Washington, DC 20005 • (202) 872-6350 • Fax (202) 872-6356

Industrial
Research
Institute, Inc.

April 25, 1994

To Members of the FST Committee:

Attached is a draft agenda for our meeting at 2:00 pm on Sunday, May 1, 1994, in Palm Desert, as well as the minutes from the January 14, 1994, meeting. Also attached is a draft of the FST committee's priorities for 1994/95. We will discuss this draft at the meeting.

I look forward to seeing many of you there.

Andrew H. Pettifor, Chairman
Federal Science & Technology Committee

AHP:cjd

Federal Science and Technology Committee

Sunday, May 1, 1994

Salon A / B

DRAFT AGENDA

2:00 pm	Welcome and Introductions	A. Pettifor
2:10 pm	Parallel Processing in the National Labs, LLNL Visit, Future Visits	A. Pettifor
2:30 pm	LANL Industrial Fellows Program	S. Hecker
2:50 pm	Sandia Report	B. Westwood
3:00 pm	FST '94/'95 Priorities	A. Pettifor
3:15 pm	Commercial Technology Policy	G. Mitchell
3:45 pm	NAS Update	P. Smith
4:00 pm	External Research Directors Network - Report on Recent Visits and Plans	M. Rawlinson
4:30 pm	Patent Reform Update	A. Jackson
5:00 pm	Adjourn	

DRAFT FOR COMMENT

FEDERAL SCIENCE & TECHNOLOGY COMMITTEE PRIORITIES

1994/5

The Federal Science & Technology (FST) Committee serves as the primary liaison between IRI and the Federal Government on policies and programs of national interest.

The primary priority for the coming year will be to enhance the impressive momentum achieved by FST's new Government Liaison Committee. This group has enlisted active involvement from senior officials in key government departments, and parallel interest from Congressional staff. We would like to see the momentum sustained and the emphasis move from "updating" IRI on government technology policy and trends to a balanced dialogue where industry's views are heard by government. (Industry generally has vehicles for providing advice to individual federal agencies, but has access to the Administration's new Science & Technology Council only indirectly through the agencies. Hence, our ability to discuss broader national priorities appears critically dependent on ad hoc efforts such as the Government Liaison Committee.)

The second key priority will be to participate in the ongoing national dialogue regarding the future of the National Laboratories. Several suggestions have been made on how to improve communication regarding opportunities to transfer technologies from the Laboratories to American industry. There is broad consensus on the goal, but much less agreement on effective mechanisms for achieving it. Opportunities appear to exist in the early involvement of specialists and in the

streamlining of CRADA's. Better mechanisms need to be explored through review of past experiences and by testing innovative new approaches.

Another priority will involve follow-up on the industry-sector workshops scheduled for the 1994 Annual Meeting in regard to further development of industry benchmarking and technology roadmapping.

F. Peter Boer

Andrew H. Pettifor

4/8/94

Minutes of the IRI Federal Science and Technology Committee Meeting
IRI Headquarters
Friday, January 14, 1994

Attendees: See attached list.

1. Welcome and Introductions: The chairman called the meeting to order at 8:40 am, and all present introduced themselves. Chuck Larson briefly described a request to summarize IRI's recent interactions with the Federal government, and Chuck distributed a summary of these since 1989 (attachment 1). Chuck also noted that IRI members would present an R&D management briefing to DOE headquarters and laboratory officials on January 21.

   Pettifor then opened a discussion on the next IRI sponsored visit to the federal laboratories. He noted that the committee had agreed that visits focused on specific technology areas, which could attract and take advantage of IRI members' corresponding technical specialists, were the preferred format. This approach also permits several labs to make presentations on their corresponding capabilities at a single location. Pettifor suggested three technical areas for consideration: software development, sensors, and hazardous material substitution and disposal. Bert Westwood endorsed the single technical area focus and suggested that the software development focus should be on parallel processing. Marv Garfinkel suggested that the hazardous materials topic focus on site remediation and the separation and recycling of plastics. Sensors to assist hazardous waste cleanup were proposed by Peter Boer together with the need to emphasize sensor systems. Al Schriesheim and Marv Garfinkel both urged that efforts to discuss these topics need to be focused and specific to particular real applications.

   Action: Chairman to organize appropriate lab visit to focus on one or more of these technology areas.

2. Mary Good, Under Secretary for Technology, DOC. Good began her remarks by reviewing the formation of the National Science and Technology Council (NSTC), as the cabinet-level structure that will set priorities, and coordinate as well as oversee implementation of the government's technology policies. It is replacing the old Federal Coordinating Council on Science Engineering and Technology (FCCSET), which had no authority to change anything. NSTC will be nominally chaired by the President, but more usually by the Vice President and will have nine working committees, co-chaired by a senior White House executive and a senior member of the lead cabinet agency in that field. The preliminary list of committees and co-chairs is attachment 2.

   Good then discussed in more detail the civilian Industrial Technology Committee, which she co-chairs with Skip Johns from OSTP. She plans to keep this committee small, with DOC, DOE and DOD as the major players. It will be responsible for overseeing the Clean Car Initiative, along with likely

initiatives in areas such as electronics, materials (emphasizing their commercialization), manufacturing (including the ManTech program), building construction, and the commercialization of environmental technologies (as distinct from environmental regulation and monitoring issues).

Within DOC, Mary noted:

- The Clean Car Initiative seems to be working well.
- DOC's technology administration has been reasonably funded for the first time.
- The GATT agreement's S&T provisions emerged quite satisfactorily. By having DOC's Advanced Technology Directorate working with the International Trade Administration, DOC was able to present a common position for the first time.
- Several international S&T agreements are being developed: Israel now, with a Japanese framework to follow.
- DOC still needs to find ways to interact with the private sector more effectively. Bert Westwood commented that his experience suggested that because of the Federal Advisory Committee Act (FACA) it is difficult to create real "advisory" groups.

Lee Rivers asked about the Rockefeller bill to amend the CRADA provisions and give industry greater intellectual property rights. Mary noted that her personal opinion was that industry needed "string free" licenses or it would not invest its own money but she was not sure this bill was the best way to do this. The bill also raises the issue of how to define an "American" company. Francis Via asked about adding catalysis to the list of Committee topics. Mary noted that it was not the intent of the committee to focus on technologies without a clear business sector pull. Catalysis is probably too generic to be able to meet this test. Bert Westwood asked Mary's opinion on the needed role of the national labs. Mary responded that in her view, the labs themselves are not the problem, but the issue is that they cannot deliver under the current bureaucratic policies and procedures.

3. Graham Mitchell, Assistant Secretary-Designate for Technology Policy, DOC. Graham outlined the Administration's justification for developing and promoting a technology policy: its role in enhancing competitiveness and sustained economic growth. Economic growth provides the basis for many policy options not otherwise doable. The Administration has announced policies to support investment and education. Technology policy is the third leg of this program.

DOC's ACTS report is intended to set a clear Administration driven technology policy agenda for DOC as a whole. Graham admitted that the report had been criticized by the engineering community for being too focused on DOC's internal agenda, and for its emphasis on R&D at the expense of technology roadmaps and benchmarking of U.S. capabilities. DOC plans to aggressively seek industry advice and guidance on both these topics and they will also be addressed at the IRI annual meeting. Joe Reagan questioned whether this kind of focus on technology was really the

issue - in his view the real issue is the government's role in business growth and the better utilization of technology, the roadblocks it creates between what industry wants to do and what it can do. Bert Westwood again noted that in the context of the national labs, the key problem here is the bureaucracy. Graham handed out copies of the DOC Technology Administration's Vision, Mission and Strategic Direction (attachment 3).

4. Jon Paugh, Technology Administration, DOC
Jon described three areas where the Technology Administration was developing policies and procedures to support economic competitiveness.

4.1 Measures of success for lab commercialization programs. The Secretary of Energy has committed to a system of metrics, and the conclusion of the agencies involved is that the only viable basis for such metrics is to ask the customers. Jon distributed a 5-dimensional matrix (attachment 4) intended to outline the kind of customer feedback data they think they need. This generated a less than enthusiastic response from the members present. He also distributed a questionnaire (attachment 6), due by the end of January seeking industry's feedback on government-industry cooperative efforts. Mary Garfinkel argued that a top-down survey was unlikely to be effective in assessing project success. Sam Kramer from NIST noted that they have sought industry reaction to providing "success" data only, with no questions on the money or level of effort involved, to allay fears of any government audit interest. This requires agreement up front on what constitutes "success".

4.2 CRADA Harmonization: DOC has concluded that a single universal CRADA agreement is unachievable, and they are working to develop a set of principles (e.g. liability) for such agreements instead. Peter Boer noted that the government should not expect a single industry view on this issue either.

4.3 Permissible Role of Federal Employees and the Conflict of Interest Issue:
DOC is working to come up with guidelines on the scope of the freedom that agencies have to cooperate with industry. A draft will be available shortly and industry feedback comments will be requested. Bert Westwood hoped that the emphasis was on "trust" rather than "anti-trust". Lee Rivers argued that the government influenced technology in several different ways: by specifying and buying it, by reducing market risk, by cooperating with industry (this is new), and by developing regulations and standards. Different metrics are appropriate depending on which kind of interaction is being encouraged.

5. Skip Johns, Associate Director for Technology, OSTP
Johns gave a follow up to Mary Good's description of the NSTC. He noted that one of the primary objectives of this Committee will be to protect the government's $72b R&D budget, and to provide strategic guidance for R&D priority setting. OMB will incorporate the various Committee analyses in its budget process.

Johns asked for industry support and understanding for the necessity for the cuts in the President's budget, which will cause "pain" in the various government labs, but which are required to support long term economic growth and recovery.

Bert Westwood got a solid commitment to seek industry advice and timely inputs before decisions are made. Johns suggested that the FACA rules might have to be restructured to accomplish this. Lee Rivers asked about the redundancy of some federal R&D. Johns said that the FCST was setting objectives for agencies, and attempting to create a common vision for government R&D programs. Johns also reported the President's Council of Advisors in Science and Technology (PCAST) has been recreated with 15 members, still to be announced. It will likely be more heavily representative of the sciences than industry and focus on strategic science policy issues. We should expect subcommittees to be established that will be paired with NSTC committees.

6. Martha Krebs, Director of Energy Research, DOE
Krebs reviewed some of the changes at DOE under the new Administration. DOE is emphasizing quality management through a focus on its customers, but she admitted that how TQM is applied to R&D is not clear. Last summer, DOE's managers all attended a session at Motorola University, and reviewed several issues including DOE's business practices, such as contract reform and science planning (which looked at the construction of DOE's large scale science facilities, the need to address international competitiveness, and DOE's role in education, including the use of the national labs for pre-college programs).

The end of the Cold War has changed DOE's priorities. This has implications for its national security programs, resulting in weapons dismantlement, nonproliferation programs, and the science base to support their new thrusts. In the area of energy, the Administration is encouraging partnerships between industry and the national labs in the gas and oil initiative, to deploy technology to mitigate global climate change, and to develop the clean car initiative.

Krebs also described some of the changes and challenges in Energy Research. She noted that at $2.4b it is a major R&D agency, with unique facilities, and strong cooperative programs with universities. She emphasized that with the demise of the SSC, future large programs will have to be international rather than national in scope. Secretary O'Leary is concerned that the national labs are not being utilized, which she attributes in part to a poor job in "marketing the laboratories". She is making it easier for industry to interact with the labs. Krebs noted that changes in the CRADA process have already been announced. Secretary O'Leary has also rechartered the Energy Research Advisory Board to give it a greater business and management perspective.

Bert Westwood noted that CRADAs are an example of an area where DOE needs to publicize the improvements in the process, and also to increase the level of funding available to improve the odds for success. Peter Boer

noted that at approximately $5M per lab, CRADA funding is not much for a major commercialization program with many industrial partners.

7. Pat Windham, Staff Member, U.S. Senate, Commerce, Science and Transportation Committee

Windham began by noting that support for industrial R&D is now seen as a legitimate government role, and a major area of Congressional interest. There will be a growing push to look at what is working, e.g. ATP. There will also be a hard look at universities. He emphasized that "strategic research" is not the same as applied research. Rather, it is basic research in strategic areas. Windham noted that there would be an NSF authorization bill this year, and this will be the occasion for a major review. For example, have NSF's industry/university research centers helped? Is industry happy with what it got (Chuck Larson noted that Al MacLachlan spoke on this topic at a recent NSF conference). Also do we need the national labs the size they are? What will they deliver and how will we measure it? What would industry like to see? The assumption here is that the key problem is not new technology; rather it is speed of commercialization. Hence, the current emphasis on ATP type programs and funding industry.

Other questions that Windham raised as examples of Congress' concerns include: how much should the government emphasize generic technologies (e.g. the ATP program) and how such sector specific support (e.g. SEMATECH)? How will programs be evaluated? What constitutes a "foreign" company and should they be able to participate?

Windham expressed his appreciation for the opportunity to discuss questions like these. He also noted a concern that many agency programs continue as before and are not really responding to industry needs. How can IRI help provide report cards on projects that agencies claim help industry?

Peter Boer reminded the group of IRI's ranking of five major science and technology related projects at the request of Congressman Ritter. Bert Westwood argued that once federal laboratories have agreement on their missions, they can be turned around. Al MacLachlan argued that based on industry experience, labs can change, but only if their management is changed. He also urged that Congress not throw the baby out with the bath water when it came to reorganizing the labs. Marv Garfinkel and Al also highlighted the pros and cons of direct customer R&D funding. It was agreed that industry participation is important in setting the labs' new directions. Alan Schriesheim reminded the group that the federal lab system is a highly heterogeneous group, and that legislation has to be careful not to oversimplify. Bert Westwood urged that U.S. core competencies such as electronics and high speed computing must be preserved.

Action: Send members Windham's questions for comment. (Most will be covered in Wednesday AM session at Palm Desert.)

8. Al Tiedman, Special Studies Team Leader, Director's Staff, and Peter Lyons, Director, Industrial Partnership Office, Los Alamos National Laboratory.
Al described efforts to change the culture at Los Alamos to a greater industry focus. Los Alamos has set itself a two year goal for 20% of their activities to comprise joint civilian technology programs with industry. To this end, Los Alamos has established an Industry Assignment Program that will make senior lab scientists or managers available for 1-2 year assignments in industry. Los Alamos will continue to pay the participants' salaries. They will focus on how industry manages R&D, and on better understanding of private sector corporate cultures. Sample agreements for this program are now being developed, and industry will be invited to bid for selections.

9. Gregory Reck, Acting Associate Administrator, Office of Advanced Concepts and Technology, NASA
Reck described profound changes at NASA under Administrator Daniel Goldin. In particular he reported on Goldin's breaking up the old science program and the "mission" approach, both of which had led to very large and expensive (and hence risk averse) programs. The new emphasis is on smaller, cheaper and higher technology missions, drawing from the DOD technology base (since the NASA technology base is seen to be obsolete). Other changes were summarized in a series of charts that Reck distributed to participants describing space transportation, small satellite launchers, remote sensing and communications satellites. Reck also described current plans for materials processing in space, and technology spin-off programs. NASA plans to launch a smaller scale ATP-like program to encourage industry-led activities in the small satellite area. Reck reported that he expected the FY'95 budgets for aeronautics and Mission to Planet Earth to increase slightly, while that for space science would decrease some.

10. Ken Flamm, Principal Deputy, Assistant Secretary of Defense for Dual Use Technology Policy and International Programs
Flamm reviewed DOD's problems in keeping pace with commercial technologies, and the much higher costs associated with military technology. The new DOD leadership is committed to crossing the boundary line between commercial and defense industrial bases through: changes in the DOD acquisition laws, investment in dual-use technology, and improved international technology access.

This last goal has given rise to the so called Perry Initiative, focused on improving U.S. industry access to Japanese technology. The Perry initiative is designed to provide a framework to exchange U.S. defense technology for access to Japanese commercial dual use technology of value to U.S. industry. The emphasis will be on supporting company to company agreements. Flamm appealed for IRI help to identify dual-use technology areas of interest. He agreed that DOD may have to consider three or even four party deals. There was no great support for this proposal from the members present, in particular, a reluctance to have DOD involved in ongoing company-to-company commercial technology negotiations) and

there was concern that DOD has not thought through how such a program might be implemented.

Action: It was agreed to send FST members the Perry Initiative proposal and to follow up with Chuck Kimzey. (This was done in a meeting with IRI Directors and Kimzey on January 28.)

11. Arati Prabhakar, Director NIST
Prabhakar discussed two of NIST's three growth areas (she did not discuss the third: in-house programs). The Advanced Technology Program (ATP) will now focus most of its funding on specific technology areas. Key criteria will be job creation, technological promise, and commitment by industry. The first four technology areas will be announced in April, and will each be planned at approximately $30M/year. The Manufacturing Extension Program (MEP) is targeted at providing technological expertise to small manufacturers across the country. Prabhakar noted that in all this there were two key issues for which there are not simple answers: how to set priorities, and how to measure the results.

Adjournment
The meeting was adjourned at 4:00 pm.

Federal Science & Technology Committee Meeting

January 14, 1994
Washington, DC

ATTENDANCE

Boer, Peter	W. R. Grace & Co.
Burkart, Bob	IRI
Davis, Kathy	Dept. of Commerce
Flamm, Ken	DOD
Garfinkel, Marv	General Electric
Good, Mary	Dept. of Commerce
Grucza, Margaret	IRI
Jackson, Auzzie	IRI Emeritus
Johns, Skip	OSTP
Kimzey, Chuck	DOD
Kramer, Sam	NIST
Krebs, Martha	Dept. of Energy
Lamertson, Roger	Lockheed
Larson, Chuck	IRI
Lyons, Peter	Los Alamos
MacLachlan, Al	Dupont R&D
Mitchell, Graham	Dept. of Commerce
Mooney, Dan	Boeing
Paugh, Jon	Dept. of Commerce
Pettifor, Andy	Rockwell
Prabhakar, Arati	NIST
Preeg, Bill	Schlumberger
Reagan, Joe	Lockheed
Reck, Gregory	NASA
Redmond, John	GTE Labs
Rivers, Lee	NTTC
Schriesheim, Alan	Argonne
Tiedman, Al	Los Alamos
Via, Francis	Akzo
Westwood, Bert	Sandia
Windham, Pat	Senate Commerce Committee

I.R.I. news

A monthly newsletter for members of the Industrial Research Institute, Inc. • 1550 M Street, NW, Washington, DC 20005 • (202) 872-6350

Ludita H. Vallarta, Editor **No. 170 -- February 1994**

ANNUAL MEETING -- NETWORK MEETINGS -- STUDY GROUPS: EXPERIENCED LEADERS -- STUDY GROUPS: CORE ISSUES -- IRI SEMINAR -- PAST PRESIDENT PASSES AWAY -- UPCOMING EVENTS

1994 ANNUAL MEETING TO FOCUS ON EXTERNAL SOURCING OF TECHNOLOGY

In these days of tight or declining R&D budgets, the **acquisition of new technology** from other companies, from consortia, from universities, and from Federal labs is becoming critical to compete globally over the long term. The IRI Annual Meeting in Palm Desert on May 1-4 will focus on successful and unsuccessful techniques of partnering to access other people's technology. The meeting will also focus on the activities of **four IRI Networks** and offer an opportunity to suggest areas for them to study in the future. In addition, **industry-specific workshops** will consider **global competitiveness and technology roadmaps** for their sectors, in cooperation with representatives of the U.S. Department of Commerce. Hotel and travel information will be mailed February 4. The registration form and other materials will follow in March. A Tutorial **on "Third Generation R&D"** will be offered, prior to the Annual Meeting, April 29-May 1.

NETWORK MEETINGS

Have your appropriate staff person call the IRI network liaison and gain from the benefits of participation.

Finance Directors' Network - February 13-15, Marco Island, Florida. Staff Liaison is Margaret Grucza at 202-872-6355. Discussion topics include: Activity based costing and its application to the R&D environment; results from the "person-year" survey, and a comparison of cost allocation methods used by industry and academia on government research programs.

Human Resources Directors' Network - February 13-15, and ***Training & Development Directors' Network*** - February 15-17, Marco Island, Florida. Staff liaison for both is Bob Burkart at 202-872-6361. Some of the projects to be reviewed are "Reward, Recognition, Award," "Work/Family Issues," "Retention Strategies/Career Development During Downsizing," "R&D Orientation," "Drug Testing Policies," "BS Placement Survey," "Benefits Survey," "R&D Career Study Guide," and "Diversity."

R&D Information Services Directors' Network - February 23-25, Mesa, Arizona. Staff liaison is Ludita Vallarta at 202-872-6362. Network mission is to promote the exploration, development, management, and application of innovative information services in the R&D environment that result in superior customer services and products and improve competitive market advantage.

(over)

R&D Communications Directors' Network - March 8-9, Houston, Texas. Staff liaison is Ludita Vallarta at 202-872-6362. Current projects are: Communications with Non-Technical Senior Management; Communications with Business Units; and Communications with Employees.

Research Services Directors' Network - March 16-18, New Orleans, Louisiana. Staff liaison is Margaret Grucza at 202-872-6355. Topics to be discussed are: Safety/Environmental/Industrial Hygiene, Analytical Services, Teamwork/Empowerment, Computers, and Personnel/Staffing Issues.

STUDY GROUPS: EXPERIENCED LEADERS

Space is still available for additional registrants in these upcoming programs:

"Quality ... Benchmarking" March 9-11 Charleston, SC or April 6-8 Williamsburg, VA
"Selling Your R&D..." May 11-13 Chicago, IL

See the green insert in your January-February issue of RESEARCH•TECHNOLOGY MANAGEMENT.

STUDY GROUPS: CORE ISSUES

This season's offering of 16 study groups finished with a **9% increase in participation** and enjoyed a **boost in the overall quality** rating. Next season's schedule will be announced at the IRI Annual Meeting, May 1-4.

THE SEMINAR

Rep/Alts may nominate their high-talent R&D managers for **IRI's premier leadership development event** using the burgundy brochure distributed December 10 and appearing as an insert in the March-April issue of RESEARCH •TECHNOLOGY MANAGEMENT. The **June 12-24 Management Seminar** will offer several industrial speakers, augmenting the Harvard Faculty, including: Walt Robb, 1994 IRI Medalist & Senior Vice President, Corporate R&D, General Electric (retired) (June 15); Alfred Zeien, Chief Executive Officer, The Gillette Company (June 21); and Allen Womack, 1993-94 IRI President and Senior Vice President & Chief Technical Officer, McDermott International (June 22).

IRI PAST PRESIDENT PASSES AWAY

Keith W. McHenry, Jr., IRI president for 1988-1989 and Senior Vice President, Technology (retired) at Amoco, died January 21 after a long bout with cancer. Sympathies may be expressed to Mrs. Keith W. McHenry (Dee), 1853 N. Orchard, Chicago, IL 60614. Contributions may be made to Bethel New Life, Inc., 367 N. Karlov, Chicago, IL 60624.

OTHER UPCOMING EVENTS

February	
9-11	Study Groups: Experienced Leaders (formerly ASGs), St. Petersburg Beach, FL
17-19	Research-on-Research Committee, Marco Island, FL
March	
9-11	Study Groups: Experienced Leaders (formerly ASGs), Charleston, SC

Industrial Research Institute, Inc.

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Tel. (202) 872-6350 • Fax (202) 872-6356

January 28, 1994

To: Member Company Representatives and Alternates

Subject: **NOMINATING COMMITTEE REPORT**

In accordance with our By-Laws, election of a new IRI Vice President and new members of the Board of Directors will take place by letter ballot in February. Two candidates for the office of Vice President have been named by IRI's Nominating Committee:

Jerry A. Cogan (Milliken Research)
Stanley V. Jaskolski (Eaton)

Ten candidates listed below have been nominated for five openings on the Board of Directors:

J. Peter Bingham (Philips Laboratories)
Kenneth W. Ciriacks (Amoco)
Clarence M. Eidt (Exxon Res. & Engrg.)
Robert W. Lucky (Bellcore)
Thomas A. Manuel (Air Products)
Gary E. McGraw (Eastman Chemical)
Marshall J. Myers (McCormick)
Andrew H. Pettifor (Rockwell International)
Wayne H. Pitcher (Genencor)
Rudolph J. H. Voorhoeve (Great Lakes)

The Nominating Committee, consisting of Peter Boer (chair), John Bush, Bill Miller, Dale Pollart, and Jack Wise, has confirmed the willingness of these candidates to serve if elected.

Other member company Representatives or Alternates may be nominated for these offices by petition from Representatives of at least ten member companies. The Secretary (myself) must be notified in writing to this effect, together with written consent of the nominee. Names of such nominees shall also be placed on the official ballot.

Deadline for additional nominees to be received at IRI headquarters is Wednesday, February 16. Within the following week, a ballot will be prepared and mailed to the Representative of each member company. Those candidates elected will take office at the end of our 1994 Annual Meeting, on May 4.

Charles F. Larson
Executive Director

CFL:hk

AAAS Symposium Book Available from IRI

TECHNOLOGY MANAGEMENT IN JAPAN: R&D POLICY, INDUSTRIAL STRATEGIES AND CURRENT PRACTICE
edited by Robert S. Cutler

Japan's advancements in high technology demonstrate a system of scientific research and development which differs in significant ways from that of the United States. The unique features of Japanese-style R&D management are becoming better understood by more American scientists, engineers, managers, and policy makers. Japan's experience is instructive.

The management of technology has been a crucial success factor in the R&D-intensive companies in Japan. It involves attention not only to research and engineering capabilities, but also to human resource development, strategic planning, network building, customer satisfaction and competitive environment. Moreover, recent investments by Japanese companies in U.S. research and production facilities have brought new organizational models to American companies for rapidly integrating the development, production, and marketing phases of the technology commercialization process.

This book contains the papers presented at a joint symposium held as part of the 1993 Annual Meeting of the American Association for the Advancement of Science (AAAS) in Boston, Massachusetts, 13 February 1993. Ten Japanese and American science policy observers from academia and industry examined key concepts and practices of "technology management" in Japan.

The first session of the symposium addressed current R&D management strategies and industrial practices that differ between the two cultures. A panel of discussants compared certain Japanese R&D management practices to those now emerging in U.S. industrial operations. The second session featured a presentation of four American university programs focusing on Japanese language and technology management skills to prepare U.S. scientists and engineers to work with counterparts in Japan. A second panel of experts offered comments regarding the importance of these university programs. One question remains: As America grapples with restructuring its industrial base to become more globally competitive, what changes could U.S. industry adopt to make better use of technology management practices from Japan?

Price: $24.95 per copy

To order, please write to:
Industrial Research Institute, Inc.
1550 M Street, NW
Suite 1100
Washington, DC 20005-1708 (USA)
TEL: 202-872-6350
FAX: 202-872-6356

THE INDUSTRIAL RESEARCH INSTITUTE, INC.

in cooperation with the Sloan Program on Integration of Trade and Technology Policies
of the George Mason University International Institute

cordially invites you
to attend our next late-afternoon
symposium in the series on management of
industrial R&D, technology, and innovation

"GATT R&D SUBSIDIES -- REVISITED"

Speaker:

J. Thomas Ratchford
Professor, International Science & Technology Policy
International Institute
George Mason University
Arlington, Virginia

Panelists:

Peter S. Watson
Vice Chairman
U.S. International Trade Commission
Washington, DC

Eric I. Garfinkel
Senior Fellow
Council on Competitiveness
Washington, DC

Lawrence C. Kravitz
Vice President, Technology
Allied-Signal Inc.
Morristown, New Jersey

Date and Time: **Monday, February 14, 1994, 4:00 p.m.**

Location: IRI Headquarters, 1550 M Street, NW
Washington, DC (Lobby Level)

Schedule:
4:00 p.m. -- Introductions and Presentations
5:30 p.m. -- Comments and Questions
6:00 p.m. -- Refreshments
6:30 p.m. -- Adjournment

IRI LATE-AFTERNOON SYMPOSIUM
Monday, February 14, 1994

_____ I plan to attend

_____ I am unable to attend but will send:

_____

Please add him/her to the mailing list _____ Yes _____ No

_____
Name

_____
Organization

Fax to: Heather Candace Kouffman, IRI, 202-872-6356

FEDERAL SCIENCE & TECHNOLOGY COMMITTEE MEETING

INDUSTRIAL RESEARCH INSTITUTE
1550 M Street, NW, Washington, DC
First Floor Conference Room
January 14, 1994

AGENDA

8:30 - 9:00 a.m.	Andy Pettifor, FST Chair Introductions, Announcements, Fed Lab Visit
9:00 - 9:30 a.m.	Mary Good, Commerce Commerce Initiatives
9:30 - 10:00 a.m.	Graham Mitchell, Commerce Commerce ACTS Report
10:00 - 10:30 a.m.	Jon Paugh, Commerce Commercialization of Federal Labs
10:30 - 11:15 a.m.	Skip Johns, OSTP Update on OSTP Activities
11:15 - Noon	Martha Krebs, DOE Office of Energy Research
Noon - 1:00 p.m.	WORKING LUNCH Pat Windham, Senate Commerce Committee Technology Legislation
1:00 - 1:30 p.m.	Al Tiedman & Peter Lyons, Los Alamos Industry Fellow Program
1:30 - 2:00 p.m.	Gregory Reck, NASA Overview of NASA Initiatives
2:00 - 2:30 p.m.	Ken Flamm & Chuck Kimzey, DOD Technology Cooperation between U. S. & Japan
2:30 - 3:15 p.m.	Arati Prabhakar, NIST ATP, other NIST Activities
3:15 - 3:30 p.m.	Andy Pettifor, FST Chair Action Items, Future Agenda Items, etc.

FEDERAL SCIENCE & TECHNOLOGY COMMITTEE OF THE INDUSTRIAL RESEARCH INSTITUTE

Summary of Recent Accomplishments

Founded under the auspices of the National Research Council, IRI's third Purpose is "To afford a means for industry to cooperate effectively with the Federal government on matters related to research." This cooperation was strengthened by IRI's relocation from New York City to Washington, DC in 1989. That move has allowed the Institute, through its Federal Science & Technology Committee and the IRI staff, to become an even more effective resource to government. IRI interactions with the Federal government since 1989 are outlined below.

1989

- **Aug.** Rep/Alts asked to prioritize five Federal R&D megaprojects and to provide comments on their technical feasibility, commercial potential, and cost-benefit. The overall rankings were (1) Human Genome Project, (2) National Aerospace Plane, (3) Space Station, (4) Strategic Defense Initiative, and (5) Superconducting Super-collider. Results sent to Rep/Alts and circulated widely in Congress and the Administration.

1990

- **Mar.** IRI issues a Position Statement on "Establishment of a Federal Research Institute." Copies sent to Rep/Alts, the Administration, Members of Congress, other associations, and the media.

- **May** Exhibits illustrating the facilities and expertise available at selected Federal laboratories and consortia at IRI Annual Meeting.

- **May** Special Interest Session on "The Advanced Technology Program: A New Role for the Federal Government in Civilian Technology Development" at IRI Annual Meeting.

- **June** IRI Rep/Alts invited to offer opinions to the National Science Board (NSB) on the "Potential Causes for the Erosion in U.S. Technology Leadership." Responses formed the basis for NSB's report, "The Competitive Strength of U.S. Industrial Science and Technology," issued August 12, 1992.

- **July** IRI officers hosted the President's Council of Advisors on Science & Technology (PCAST) for informal reception and dinner.

- **Sept.** IRI Past President Jules Blake began his 18 months' service as IRI Fellow in the Office of Science & Technology Policy. He was the seventh IRI Fellow to serve in OSTP over an eight-year period. His predecessors were Joe Morone (GE), Ora Smith (Rockwell), Lee Rivers (Allied-Signal), Fred Leavitt (Dow), Bill Owczarski (United Technologies), and Bob Schaefer (Amoco).

- **Nov.** Exhibits illustrating the facilities and expertise available at selected Federal laboratories and consortia at IRI Fall Meeting.

- **Nov.** Special Interest Session on "Opportunities for Technology Transfer with the DOE National Laboratories" at IRI Fall Meeting.

1991

- **May** Two Special Interest Sessions conducted in cooperation with the Department of Commerce, on "Financing of Technology" and "Vertically Linked Industrial Teams" at IRI Annual Meeting.

- **June** Created a 10-person liaison group of Federal laboratory directors and senior government executives responsible for science and technology policies (originally designated as the Federal Advisory Council, now Federal Government Liaison Council). Meets with FST Committee four times each year and provides focal point for closer interaction between industry and government on matters related to science and technology.

- **July** Conducted survey for Department of Defense on member company recommendations for future directions in manufacturing R&D.

- **Aug.** Rep/Alts invited to comment on the report of the National Critical Technologies Panel. Responses provided to OSTP and DOC.

- **Sept.** Selected Rep/Alts invited by Treasury Department to comment on staff analysis of "Foreign Investment in the United States: Unencumbered Access."

- **Oct.** Visits to Argonne National Laboratory and Fermi Lab during IRI Fall Meeting.

- **Dec.** IRI Emeriti provide proposal review from a business perspective for NIST's first awards in its Advanced Technology Program.

- **Dec.** Survey conducted for the U.S. Patent Office on the use of patent information by industry. Results provided to the Patent Office and the IRI membership.

1992

- **Jan.** IRI's Program Committee hosted a dinner with NSF Director Walter Massey. Subsequent meetings were arranged with industry R&D representatives in New York City (September 1992) and Pittsburgh (October 1992).

- **Feb.** IRI officers hosted the President's Council of Advisors on Science & Technology (PCAST) for informal reception and dinner.

- **Mar.** IRI co-sponsored, with CORETECH, a "Presidential Candidates' Forum on Research & Technology Policy " in Washington, DC.

- **June** Conducted survey for Department of Energy on member company interaction with Federal laboratories, for comparison with a similar survey conducted four years earlier. Results presented in Congressional testimony, at an IRI late-afternoon symposium, at the 1993 AAAS Annual Meeting, and in several publications.

- **July** "IRI Day" held at the National Institute for Standards and Technology and co-hosted reception for President's National Technology Institute meeting held at NIST the following day.

- **July** Survey conducted for OSTP to identify member companies interacting with the Former Soviet Union in science and technology, and to list barriers being encountered in this interaction.

- **July** IRI Position Statement on "United States Economic and Technology Policy-- A Message to the Presidential Candidates" sent to President Bush, Governor Clinton, and Mr. Perot, as well as to Members of Congress, the Administration, campaign advisors, Rep/Alts, the media, and other associations.

- **July** Four representatives of IRI participated in the Naval War College's Global '92 program.

- **Aug.** Roundtable meeting to provide industry input on GATT R&D issues held in conjunction with OSTP, DOC, DOE, and USTR.

- **Sept.** Rep/Alts invited to offer suggestions on future directions of National Science Foundation (NSF), in response to a request from the Commission to Study the Future of NSF. Each reply and a summary of the responses were submitted to the Commission in October 1992. These responses also provided the basis for Testimony by IRI President Brian Rushton on future science policy in the U.S. before the House Subcommittee on Science and Technology in March 1993, and a subsequent IRI Position Statement on "Strengthening Industry-University Interactions," issued July 1993.

- **Oct.** Special Interest Session on "Federal Centers of Excellence" at IRI Fall Meeting.

- **Oct.** IRI representatives participate in a Symposium on "Targeting R&D for Competitive Advantage" at Department of State.

1993

- **Feb.** IRI participates in AAAS Seminar on industrial innovation and technology policy for new Congressional staffers.

- **Feb.** Rep/Alts invited to suggest names of appropriately qualified younger members of their research staffs for consideration as future members of NRC Committees.

- **April** IRI representatives participate in a Symposium on "New Directions in Technology Policy" at Department of Commerce.

- **May** Exhibits illustrating the facilities and expertise available at selected Federal laboratories and consortia at IRI Annual Meeting.

- **Sept.** IRI sponsors Spotlight on Advanced Materials and Manufacturing Technology at Los Alamos and Sandia National Laboratories.

- **Oct.** IRI Director MacLachlan testifies on S. 1537, "The Technology Commercialization Act of 1993," before the Senate Commerce Subcommittee on Science, Technology, and Space.

- **Nov.** Special Interest Session on "Technology Transfer from National Labs: Learning from Industry's Needs and Experience" at IRI Fall Meeting.

- **Nov.** Rep/Alts invited to comment on Department of Commerce's "Advanced Civilian Technology Strategy," which references IRI's 1992 Position Statement on "U.S. Economic and Technology Policy."

- **Nov.** IRI appeals to U.S. Trade Representative about possible adverse effects of GATT R&D issues.

1994

- **Jan.** IRI co-sponsors, with NSF, Engineering Foundation, and NJIT, 20th Anniversary Conference on "New Directions for Multimember Research Collaborations: The Best Path for Industrial Research?" in Washington, DC.

- **Jan.** IRI conducts Seminar on "R&D Portfolio Selection and Evaluation" for DOE laboratory directors in Washington, DC.

- **Feb.** IRI co-sponsors, with OSTP, AAU, NAE, NAS, IOM, NIA, AAAS, and other organizations, a "Forum on Science in the National Interest: World Leadership in Basic Science, Mathematics and Engineering," in Washington, DC.

CFL:pt
1/13/94

Federal Government Liaison Council (FGLC) Members

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KRR
1/12/94

We would be grateful if you would provide the following information to the Office of Technology Competitiveness group within the Department of Commerce. Please send the completed questionnaire to:

Kathleen V. Davis
H4418
U.S. Department of Commerce
14th St and Constitution Ave, NW
Washington, D.C. 20230

phone: (202) 482-0659
fax: (202) 219-8667
Internet: kdavis%OTC%TA@CROW.NIST.GOV

Thank you.

PLEASE NUMBER THE RESPONSES **(1 = most preferred)** IN THE PRIORITY YOU SEE THEM. PLEASE NUMBER EACH RESPONSE.

A. What are your criteria for success in working with federal laboratories on technology commercialization programs?

____ The state of the art was advanced.
____ Increased profits/market share.
____ The firm obtained title to the intellectual property.
____ Minimal bureaucratic hassle.
____ Increased understanding of the federal laboratory programs/personnel/structure.
____ Our scientists improved their knowledge of the technology.
____ Saved research dollars through leveraging.
____ Facilities were available in which we did not have to invest.
____ (Your added response here)

_____

_____

B. What types of information should the federal government request from you as part of any measurement system?

____ Nature of the technical effort.
____ Amount of your investment (dollar value of labor and facilities, etc).
____ Satisfaction with the interaction.
____ Amount of your revenue resulting from the interaction (gross receipts, profit, etc).
____ Names of your technical personnel involved in the work.
____ Company name, department, etc.
____ (Your added response here)

_____

_____

C. In which of these areas are you most interested in providing recommendations to federal agencies for policy formulation and evaluation?

____ Revisions to intellectual property statutes.
____ Revisions to technology transfer statutes (CRDAs, etc).
____ Research areas for federal laboratories (technical).
____ Funding mechanisms and availability for your work.
____ (Your added response here)

_____

_____

D. What role should industry associations and consortia play in providing feedback to the federal government for policy development on technology commercialization?

____ Filter and prioritize policy recommendations from industry to the federal government.
____ Conduct surveys of member satisfaction with the technology commercialization process and share with the federal government if appropriate.
____ Track individual technology commercialization projects.
____ Work with firms in developing technology roadmaps.
____ (Your added response here)

_____

_____

E. What methodologies are most likely to be successful in collecting information from your firm?

____ Telephone interviews of key personnel.
____ Written survey instruments.
____ Personal interviews (in person).
____ Industry-initiated identification of issues (you call us).
____ Routine data collection (e.g., annual reporting on each CRDA).
____ Formal testimony in a public forum to key federal officials.
___ Membership in federally sponsored committees and working groups.
____ (Your added response here)

_____

_____

F. Should the federal government seek proprietary or confidential information relating to a company's experience in technology commercialization projects with federal labs?

Please place a "1" in the answer that best describes your response, a "2" in the answer that also applies but less strongly, and so on. The highest numbers will be those you least agree with.

____ We would prefer to not provide any proprietary information.
____ Only to government entities (not to an intermediary such as a university).
____ Depends on the situation and the information requested.
____ We would provide proprietary information to a CRDA partner if it can be protected from disclosure to our competitors.
____ We would provide proprietary information to an industry association if it can be protected from disclosure to our competitors.
____ (Your added response here)

_____

_____

Suite 1100 • 1550 M Street, NW, Washington, DC 20005-1708
Tel. (202) 872-6350 • Fax (202) 872-6356

Industrial Research Institute, Inc.

July 19, 1993

Dr. William G. Wells
Consultant
Office of Science & Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Bill:

We are pleased to offer some ideas on the scope, mission, and composition of a new group to advise the President on issues related to science and technology. The premise for these thoughts is that IRI believes it is vitally important to increase industry input to federal organizations whose primary responsibility includes the management and oversight of federal technology policy. Where science and technology policy are combined, it is essential that a balance between them be maintained. However, the issue should not be science and technology per se, but how they contribute to our national economic strength and competitiveness.

SCOPE

Rather than addressing science and technology as ends in themselves, the new body should focus on how science and technology contribute to the very complicated and often long process of innovation. Innovation is the creation of new knowledge and the transformation of this knowledge into technologies, processes, products, and services that meet market needs. Successful innovation results in new businesses and new jobs. It is the fundamental source of growth and wealth in society. We suggest, therefore, that the advisory body focus on science, technology, innovation, and competitiveness.

This focus should be directed to long-term, rather than short-term, needs of our nation to be competitive in the global market. By long term, we mean 10 to 20 years, as exemplified by the report I gave you last Friday entitled "Japanese Competitiveness and Technology Strategies." Identification of current actions required to meet long-term needs and goals, particularly in areas of new-product development envisioned in the next century, would provide guidance for R&D efforts in our federal laboratories, universities, consortia, and industry.

This new body should also have a global perspective, rather than solely domestic. Companies in other countries have been very effective in rapidly turning scientific knowledge into new or improved products and processes. These competitors of ours work closely with their governments to develop ways to improve their country's climate for innovation. Thus, the new group must address ways to remove barriers to the rapid conversion of science and technology into commercially viable products.

MISSION

The new group should recommend to the President federal actions to accelerate the innovation process and to enhance federal investment strategies which meet both defense and economic growth requirements. The group should also support the goal that the United States remain among the leaders in all areas of science and technology, and that this leadership base is effectively transformed into global economic competitiveness into the next century.

COMPOSITION

A group of up to 16 persons is suggested. It is strongly recommended that at least half of the group have broad industry expertise, including top-management experience. Persons from industry who could serve the group well are listed below. There are, of course, numerous other highly qualified industrial candidates that we could suggest.

1) Dr. F. Peter Boer
Executive Vice President
W. R. Grace

2) Dr. Peter R. Bridenbaugh
Executive Vice President
Alcoa

3) Dr. David A. Duke
Vice Chairman, Technology
Corning Incorporated

4) Dr. George M. C. Fisher
CEO
Motorola

5) Dr. George H. Heilmeier
President & CEO
Bellcore

6) Dr. S. Allen Heininger
Former Vice President, R&D
Monsanto Company

7) Dr. George B. Rathmann
President & CEO
ICOS Corporation

8) Dr. Roland W. Schmitt
Former Senior Vice President, R&D
General Electric Company

9) Dr. Robert Stratton
Vice President, Corp. Staff
& Director Central Research
Texas Instruments

10) Dr. P. Roy Vagelos
President & CEO
Merck & Co.

11) Dr. Albert R. C. Westwood Now SANDIA, HO.
Vice President, Research & Technology
Martin Marietta

12) Dr. John A. Young
Former President & CEO
Hewlett-Packard

We appreciate the opportunity to provide these suggestions, and look forward to further discussions with you on this matter as more specific plans develop.

Sincerely,

Chuck

Charles F. Larson
Executive Director

CFL:pt

Report of the Executive Director

Charles F. Larson

A Business Session was not scheduled for the Charleston meeting, but we are providing written reports covering an overview of recent IRI activities and details on the work of one IRI committee and two Networks (Emeriti Committee, R&D Quality Directors' Network, and Research Services Directors' Network).

IRI has welcomed five new members since our Annual Meeting in Hot Springs last May. The new member companies and their Representatives are: (1) United Parcel Service (June 2), Klaus Nielsen, Rep; (2) Panasonic Technologies (August 31), Ron Richards, Rep; (3) Association of American Railroads (September 18), Scott Harvey, Rep; (4) OSi Specialties Inc. (October 1), Eugene Jarrett, Rep.; and (5) NEC Research Institute, Inc. (October 20), C. William Gear; Rep.

No additional resignations have been received since May, so the number of members lost in F.Y. 1993, namely 12, was the same as in F.Y. 1992. Membership now stands at 266 companies, one more than at this time a year ago. Thirty-two member prospects were invited to the Charleston meeting, but only four were expected to be present. Suggestions for additional member prospects are always welcome! Give me a call if you become aware of a good prospect and we will follow up.

IRI's finances are on track for F.Y. 1994. The six-month's financial statements (for the period ended August 31) showed that a small surplus was projected for year end, whereas the budget for the year was balanced. The preliminary budget for F.Y. 1995, to be reviewed by the Board at its meeting in Charleston on November 3, calls for no increase in dues. F.Y. 1995 thus would be the fourth year that the basic dues will have been $3,000. However, the new budget will not provide for extra growth in the Reserve Fund, as the Board had stipulated in 1992 for the next ten years.

Networks are the fastest growing activity in IRI these days. Nearly 500 Rep/Alts and company associates serve on these Networks, which provide an excellent technique for benchmarking their R&D operations. Indeed, the membership on IRI's eight Networks now outnumbers that of IRI's 22 standing committees. One new Network was formed since last May, for R&D Information Services Directors. This group held its first meeting on September 21-22 in Chicago. Six other Networks have also met since May: R&D Communications Directors in Chicago on June 2-3; Research Services Directors in Scottsdale on September 19-21; Human Resource Directors at Research Triangle Park on September 21-23; R&D Quality Directors in Red Bank on September 27-29; University Relations Directors in Champaign on September 28-30; and R&D Finance Directors in Princeton on October 13-15.

IRI also provides numerous other opportunities for benchmarking R&D operations. The Roundtables on "Measuring and Improving R&D Productivity and Effectiveness" held July 7 and October 30 were good examples. Both of these sessions were at their planned capacity and provided the participants with useful insights on how "other companies do it." Study Groups for new and experienced R&D leaders are another example of how IRI provides opportunities for benchmarking and thus value for the IRI membership.

Another value-adding new activity in IRI is the R&D Database Project of our Research-on-Research Committee. Data-collection efforts began in March and continued through August. The R&D Database Subcommittee, chaired by Gary McGraw of Eastman Chemical, has met several times to discuss techniques of stimulating broader participation in the survey, to review the solicitation of financial support from the National Science Foundation for analysis and interpretation, and to agree on the metrics to be calculated from the initial survey. These metrics will be presented for the first time in a Special Interest Session at the Charleston meeting, and will be published in the January-February 1994 issue of **RESEARCH·TECHNOLOGY MANAGEMENT**. We are looking forward to additional member companies participating in next year's survey, which will make it even more comprehensive and useful.

Two other initiatives since last May included the IRI Position Statement on "Strengthening Industry-University Interactions," issued in August, and the IRI Spotlight on Los Alamos and Sandia Laboratories in September. The Position Statement was sent to all Rep/Alts, to key members of the Clinton Administration, to all members of the House Science, Space, and Technology Committee, and the Senate Commerce Committee, to the Engineering Deans Council of the American Society for Engineering Education, and to numerous representatives of other societies and the press. It has been well received and quoted in several meetings as well as publications.

Over 60 IRI Rep/Alts and company associates enjoyed informative and interesting visits to Los Alamos and Sandia National Laboratories on September 22 and 23. IRI Past President Bert Westwood, now affiliated with Sandia as Vice President of Research & Exploratory Technology, helped ensure that the visit would be enlightening and productive.

One more highlight of IRI activity since last May was the September 13 late-afternoon symposium, with IRI Medalist George Heilmeier as the keynote speaker and former IRI Medalist Mary Good, now Under Secretary of Commerce for Technology, as panelist. A record turnout was in attendance. Our next symposium is scheduled for 4:30 p.m. on Monday, November 22 at IRI headquarters. Gary McGraw of Eastman Chemical, and chair of the Research-on-Research Committee, will review the results of IRI's R&D trends forecast for 1994. Panelists will be Jules Duga of Battelle and Graham Mitchell of the U.S. Department of Commerce.

We look forward to working closely with former IRI directors Mary Good and Graham Mitchell, who now have responsiblity for the Technology Administration at the Department of Commerce. They should prove to be a most effective team, but they will need the cooperation of and input from numerous IRI member companies. If you wish to get in touch with them, Mary's number is 202-482-1575 and Graham's is 202-482-1581.

Finally, on behalf of IRI, I wish to congratulate Gary McGraw, Jerry Holmes, Jim Chitwood, and all of their associates at Eastman Chemical Company on winning the 1993 Malcolm Baldrige National Quality Award in manufacturing!

October 1993

Report of the IRI Emeriti Committee

W. Gale Cutler, Co-Chair
Warren R. Stumpe, Co-Chair

The Emeriti Committee was organized in 1977 and charged with utilizing the experience, skills and freedom of the IRI Emeriti in furthering the Purposes of IRI and providing a group of industrially trained experts for possible use in the field of public technology. Since 1977 the ranks of Emeriti have continued to grow and now number over 200 members. Over 40 Emeriti attended the 1993 IRI Annual Meeting.

To keep abreast of the activities, experiences and interests of Emeriti, the Committee has conducted a periodic survey of all Emeriti. The latest survey, conducted in 1992, had an excellent response. Some of the key results were: 64% of Emeriti continue a career practiced in their pre-retirement years; only 32% of retirees move to a new area of the country upon retirement; the most popular new "recreation" is personal computing. The principal reasons given for belonging to the Emeriti group were social contact with other Emeriti and access to IRI meetings. The main Emeriti activity, as viewed by survey respondents, should be providing IRI with a reservoir of talent and experience to be used as required.

Along with survey responses, a skills inventory was collected from individuals interested in participating in consulting and related activities of the Emeritus Activity Group (Emeriti who wish to remain active in such pursuits). The Activity Group serves as a resource to the committee and the entire IRI membership. This skills inventory will be used in selecting Emeriti for proposal and program evaluation and review for various government agencies and for other consulting opportunities. A group of Emeriti recently performed an evaluation of NIST's Opportunities for Innovation Program following its first year of operation.

Based on the opinions expressed in the above survey, a plan has been implemented to assign one or more interested Emeriti as working members of most IRI committees.

From time to time Emeriti have shared their retirement experiences with IRI Rep/Alts planning for retirement through a Special Interest Session at an IRI meeting. Such a session is planned for the 1994 IRI Annual Meeting.

Report of the IRI Quality Directors' Network

Nathan Dodge, Texas Instruments
QDN Chair

The IRI Quality Directors' Network (QDN) is one of the younger IRI workgroups, chartered in July of 1992. The QDN's stated mission is to "...contribute through its membership to the effectiveness of Industrial R&D by sharing experiences, educating members, seeking best practices, and collectively solving problems in the use of quality processes..." At our charter meeting, we identified 20 key topics of concern to members. From those topics we selected four areas for study and formed teams to lead efforts in each of these areas: 1) Metrics, 2) Benchmarking, 3) Re-engineering, and 4) Pervasive Deployment.

The QDN goal is to be a working, productive organization, which provides "value-added" information to members to enhance the quality of R&D in their respective organizations. Members take pride in the QDN "work ethic," and participate actively in the project teams. In a typical meeting, each team makes a report on team activities and status. There are also presentations by guest speakers and workshops that concentrate on other topics of special interest. Our meetings are generally 1 & 1/2 days, typically preceded by a dinner or other social event the evening prior to the meeting. Our September meeting, at AT&T Bell Laboratories in Holmdel, NJ, was hosted by Ralph Wyndrum, QDN Vice-Chair, who also hosted an excellent dinner at his home the preceding evening.

The major event was the final report, on day 2, of the Benchmarking Team's initial project. This working group had undertaken a benchmarking project as a way both to educate the QDN membership about benchmarking, and to gain knowledge about a specific problem area. The project chosen addressed a particularly difficult question, that of best practices in R&D strategic decision-making. The team focused on four best practices identified in a survey of 45 companies (about 1/2 of the QDN membership). The team sought to identify effectiveness of the practice, how it was acquired, and the barriers encountered. Of the 45 participants, 10 best-practice companies were identified and interviewed. The benchmarking team was ably assisted by staff of the Strategic Decisions Group, a west-coast consulting firm which volunteered its services. This very effective SDG/QDN collaboration produced an excellent report on adopting and using the best practices. This report also incorporated the Metric team activities, and a proposal for further collaboration between the two teams. Presentation material of the report will be available in the QDN minutes for interested IRI members.

In addition to the benchmarking team report, a number of additional, excellent presentations and activities completed our meeting agenda. An address by Ed Fuchs of AT&T Bell Laboratories highlighted R&D implications of the Baldrige Award. The Pervasive Deployment Team gave an excellent short report, followed by an update from Jim Tipping on the ROR subcommittee work on R&D effectiveness. An afternoon workshop considering the topics of change management, nurturing idea generation, and new projects for the QDN, plus re-engineering case study presentations, completed day 1 of our meeting. In addition to the day-2 benchmarking presentation, Larry Huston, Director of R&D Quality for Procter & Gamble, gave an outstanding presentation on "Fast-Cycle Strategy Achievement Through Total Quality." A key learning's session after lunch completed our September meeting.

In summary, our latest QDN meeting was a typical one, crammed with information and activity, and extremely fast-paced. I believe that it met the standards set by Don Kinosz, our first QDN Chairman, and Bob Burkart, IRI Staff Liaison, in providing valuable information to members on R&D quality improvement. We are all looking forward to our next meeting in January.

Report of the IRI Research Service Directors' Network

Ralph Powell, Mobil Research & Development
Immediate Past Chair, RSDN

The Research Service Directors' Network (RSDN) was formed in the summer of 1992 to facilitate interaction among those who provide service and support to the research effort. The Mission of the RSDN is: "...to facilitate the interchange of expertise and knowledge among those responsible for the delivery of support services, for maintaining the physical plant, and for providing a safe, secure, and environmentally sensitive and compliant research site. The goal of this interchange is to improve the efficiency and productivity of the research facility, while providing the highest quality services and maintaining a creative research environment."

The Network's membership is comprised of over 100 company representatives who are responsible for the research laboratory's service function. Approximately 30 attend each meeting.

The first bi-annual meeting was held at IRI headquarters in Washington, DC in October 1992. Meetings now alternate between a location west of the Mississippi for one meeting each year, and a location east of the Mississippi for the other meeting.

Specific topics covered to date include:

Industrial Hygiene/Safety	Computers
Analytical Services	Environmental/Hazardous Materials
Facilities Planning	Cost Effectiveness/Benchmarking
Contract & Agency Employees	Image of the Service Function
Team Work/Empowerment	OSHA Lab Standard

Topics of general interest are discussed on an ad hoc basis.

Notwithstanding the expertise exchanged relative to the above topics, a major benefit of the Network, as in all Networks, is the ability to meet and know professionals who experience similar tactical and strategic problems. Through the Network mechanism, professional relations are developed that allow members to seek advice on a one-on-one basis.

Industrial Research Institute, Inc.

Expected Attendance

FALL MEETING

Charleston, South Carolina
October 31 - November 3, 1993

Guests

*BARTH, RICH; *CAROL
Council on Competitiveness
BEAN, AL; DIANE
CIMS
BERGER, BEVERLY
Federal Laboratory Consortium
*DARLING, MARTHA
Boeing
ECONOMY, JIM; STACY
University of Illinois
FARRIS, GEORGE
Rutgers University
FRIEDMAN, LARRY
University of Pennsylvania
FUSFELD, ALAN
The Fusfeld Group
*GASKO, WILLIAM
Center for Technology Commercialization
GOOD, MARY
U.S. Department of Commerce
HOPFENBERG, HAL; PATSY
North Carolina State University
HOUGHTON, JAMIE
Corning
*HOUNSHELL, DAVID
Carnegie Mellon University
*JOHNS, SKIP
OSTP
*JOHNSON, MARVIN; *MARILYN
Phillips Petroleum
Achievement Award Recipient
*LESSARD, PAMELA
McGraw-Hill
*LINDER-SCHOLER, BILL
Cray Research
*LING, ALVIN
Coca-Cola Foods
LINTVEDT, DICK
Wayne State University
McLAUGHLIN, ED; AINE
Louisiana State University
MITCHELL, GRAHAM; PAT
U.S. Department of Commerce
Maurice Holland Award Recipient
MOORE, BRAD
University of California, Berkeley
MORRISON, HARRY; HARRIET
Purdue University
*NARIN, FRANCIS
CHI Research
PAUL, DON
University of Texas
*PEAKE, TRIPP
Science Park Associates
PERROLLE, LOIS
National Research Council
RATCHFORD, TOM; *JOANNE
George Mason University
ROBERTS, ED
MIT
SCHLIE, TED
Lehigh University
SCHRIESHEIM, ALAN; BEATRICE
Argonne National Laboratory
SLOWINSKI, GENE; KATHY
Rutgers University
WEERTMAN, JULIA
Northwestern University
*WHITCOMB, BRUCE
EG&G Energy Measurements

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* Newcomers

From Member Companies

ALDRICH, BOB
EPRI
ALLABASHI, JOHN; DOLORES
Hercules
ALLAIN, RON; JAN
Nalco
*ANDERSON, GEORGE; *SANDRA
Georgia-Pacific
ANTES, HARRY; BETTY
SPS Technologies
BAKER, LEN; RUTH
Praxair
BEARDMORE, PETER
Ford
BEDNARSKI, TED; BONNIE
Hercules
BESSO, MIKE; EVA
Elf Atochem N.A.
BIBEAU, TOM
Heublein
BINGHAM, PETE; SUSAN
Phillips Electronics
BISHOP, CHUCK; YVONNE
A.O. Smith
IRI Vice President
BODELLE, JACQUES; FRANCOISE
Elf Aquitaine
BOER, PETER; ELLEN
W.R. Grace
IRI Past President
BONEWITZ, BOB; RUTH
Alcoa
BROADHEAD, JOHN
Duracell
BRODSKY, PHIL; SUNNY
Monsanto
BROWN, STAN; PAM
Engelhard
BURNS, ALLAN; SENIE
PQ
BURROWS, BRIAN
USG
BUSH, JOHN; YASUKO
Gillette
BUTLER, PAUL
Alcan
CAMPBELL, SANDY
Xerox
CANTRALL, ED; MARGOT
American Cyanamid
IRI President
CASSIDY, JOHN
United Technologies
CASTILLON, PIERRE
Elf Aquitaine
EIRMA Vice President
CESSNA, LARRY; LUCILLE
Hercules
*CHANCE, LARRY; *BECKY
Beloit
CHATTERJI, DEB
BOC Group
CHESTER, ART; KITTY
GM Hughes
CIRIACKS, KEN; LINDA
Amoco
CLOVIS, JIM
Rohm & Haas
COGAN, JERRY
Milliken
COHEN, MEL; *ELAINE
AT&T
COLUCCI, JOE
General Motors
COX, GENE; ANNE
Georgia-Pacific
CRANEY, PAUL; MARGERY
Olin
CROSSMAN, LEON; *PAT
Dow Corning
DAVIS, JOHN; NANCY
Marathon Oil
DEIASI, RICHARD; GAIL
Grumman

DENEKA, SKIP
Corning
DEVRIES, VERN
American Cyanamid
DOUGLAS, FRANK
Marion Merrell Dow
DUKE, DAVE
Corning
*EICKMAN, NANCY
Hoechst Celanese
EIDT, CLARENCE; ROSA LEE
Exxon Res. & Eng.
EISENSTEIN, BARRY; *JOYCE
Eli Lilly
*ELLIS, CATHY
Philip Morris
ELSON, DON
Black & Decker
EVINS, VIC; ELLEN
Hoechst Celanese
FANTAZIER, DICK
Armstrong
*FITZPATRICK, MICHAEL
Rohm & Haas
FOSTER, TED, ANNE
Westinghouse
FRANCIS, PHIL; *DIANA
Square D
FRICK, NEIL; CHARLOTTE
PPG
FRIDLEY, DALE; *JAN
Exxon Chemical
GARDON, JOHN; BERTA
Akzo Coatings
GARFINKEL, HARMON; LORRIE
Engelhard
GARFINKEL, MARVIN
General Electric
GESSINGER, GERNOT
Asea Brown Boveri
GILBY, STEVE; *BETTY
Armco
GILMONT, ERNEST
A.D. Little
GIORDAN, JUDY
Henkel Corp.
GOLDSTEIN, CHARLES
Becton Dickinson
GREENWOOD, DAN
Anheuser-Busch
GRIFFITH, MIKE
ARCO Chemical
HAID, DAVE; BLANCHE
Praxair
HAMMOND, HOWELL; *BEVERLY
Eastman Kodak
HANNEMAN, ROD, BODIL
Reynolds Metals
HANSEN, LARRY
Searle
*HARVEY, SCOTT
Assoc. of American Railroads
HAUSER, MARTY; ANN
Loctite
*HAYNES, VICTORIA
BFGoodrich
HERBERT, PAT; JOANNA
Baker Hughes
HETZEL, DON
Becton Dickinson
HILLSTROM, BOB; ANN
BFGoodrich
HIRSCHMANN, BOB; PAT
Vulcan
HOLMES, JERRY
Eastman Chemical
HUME, FRED
Keithley
HUSTON, LARRY
Procter & Gamble
*JARRETT, LARRY
OSi Specialties
JASKOLSKI, STAN; CINDY
Eaton
JONES, DAVE
Raytheon
JONES, TOM; *WANDA
Lorillard
JOST, JOHN; KIM
Unocal
KAY, BILL
Hewlett-Packard

KESSLER, DICK; LISA
Weyerhaeuser
KESTEN, ART; HILDA
United Technologies
KETTUNEN, MARK
Kraft General Foods
KIES, FRED; JO
BOC Group
KOSA, BRUCE; DONNA
Rogers
KUBANEK, GEORGE
Noranda
LAITY, JOHN; JANICE
Shell
*LAMOLA, ANGELO
Rohm & Haas
LEDERMAN, FRANK;
DAPHNA KAPLANSKY
Noranda
LEHNERD, AL; JEAN
Steelcase
LERNER, STEVE; MICHELLE
Praxair
LEVY, BOB; CANDY
M.W. Kellogg
LORENZ, ED; TIL
DuPont
LOSEE, MIKE
NutraSweet
LUCKY, BOB; JOAN
Bellcore
*MACHIDA, YASUHIKO
Pansonic Technologies
MACLEAN, DON
BOC Group
*McAULAY, CARL; *TERRYE
Unocal
McFADDEN, PAT
Gates
McGRAW, GARY
Eastman Chemical
McKAIN, RODGER
BP America
McSHEFFERTY, JOHN; GLENNA
Gillette
McVEIGH, HARRY
Mobil R&D
MEILING, JERRY; JANE
Corning
*MENGER, EVE
Corning
METZ, PHIL
SRI International
MEYER, JIM; JENNY
Eastman Kodak
MIDGLEY, JOHN
Raychem
MIGLIORESE, KEN
Helene Curtis
MIHM, JOHN; JANET
Phillips Petroleum
MILEY, JACK; JUNE
Milliken
MILLER, BILL; ROCHELLE
Sonoco
MILLER, BILL
Steelcase
MITCHELL, BOB
Briggs & Stratton
*MITCHELL, DICK; *ANN
Sun
*MIYAGI, MORIO
Toyobo
MOHR, TERRY
Timken
MOOREHEAD, ERIC
M. W. Kellogg
MUELLER, DON; LINDA
Ashland Chemical
*MUELLER, WERNER; *JANICE
Hoechst Celanese
*MURRAY, KENT
Chevron
*MYERS, MARK; *ANNA
Xerox
MYERS, MARSHALL
McCormick
NEMETH, ED; ELEANOR
Aristech
NIELSEN, KLAUS
UPS
NORLING, PARRY
DuPont

O'KEEFE, DUGAN
TRW
*OTTOSON, JAVAN
Arco
OWCZARSKI, BILL; CONNIE
Babcock & Wilcox
PATTERSON, BOB; *TERRY
PQ
PETTERSON, DEWITT; TINKIE
Albany International
PETTIFOR, ANDY; DIANE
Rockwell
PITCHER, WAYNE; JULIA
Genencor
POLLART, DALE; MAUREEN
Texaco
POOL, BILL; MARY
American Cyanamid
*PRATT, GEORGE
Penwest
RACKLEY, JOHN; JANICE
Babcock & Wilcox
RAKSIS, JOE; MARYBETH
W.R. Grace
RAMAGE, MIKE
Mobil
RAMIG, JR., ALEX; JANET
Glidden
RANSLEY, DEREK
Chevron
RAYMOND, MAURICE
Rhone-Poulenc
REAGAN, JOE; DOTTIE
Lockheed
*REID, JACK; *LINDA
Lorillard
REINDEL, KEN
Keithley
REYNOLDS, DICK; LISA
GM Hughes
REYNOLDS, KENN
Anheuser-Busch
RICHARDS, KEN
Kerr-McGee
ROBERTS, MAL
Bethlehem Steel
ROSKOPF, DON; SHIRLEY
Masco
ROTHENBERGER, BURT; GAIL
Sun
RUDD, JAMES
Dexter
RUDOLPH, STEVE
A.D. Little
RUSHTON, BRIAN; JEAN
Air Products
IRI Past President
SACCO, GEORGE
Goodyear Tire
SAND, MARY
Helene Curtis
SANDERS, DAVE; MARY
Great Lakes
SANFORD, KARL
Genencor
SANNELLA, JOE; NANCY
Ball
SCACCIA, CARL
Ashland
SCHAFER, BOB; MAURA
Ashland
*SCHAFFER, ARNIE; *SUE
Phillips Petroleum
SCHRAMM, CHUCK; MARILYN
Rhone-Poulenc
SEEFRIED, CARL; RENEE
Olin
SHERIDAN, LEE; SALLY
ITW
*SIADAT, BARRY
W.R. Grace
SIENKIEWICZ, WALT
Liquid Carbonic
SMITH, BILL; CATHY
Polaroid
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1993 FALL MEETING

October 31 - November 3, 1993

Charleston, South Carolina

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☐#2 CREATIVITY AND INNOVATION, *Francis Narin*
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FOSTERING INNOVATION AT UPS - A SERVICE INDUSTRY, *Klaus W. Nielsen*

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☐#7 DELIVERING INNOVATION AND TECHNOLOGY AT BP, *David J. H. Smith*

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WRAP-UP OF PRESENTATIONS ON FOSTERING INNOVATION, *Graham R. Mitchell*

SPECIAL INTEREST SESSIONS - PANEL DISCUSSIONS

☐#9 MAKING INNOVATION HAPPEN VIA SMALL COMPANY/LARGE COMPANY PARTNERSHIPS, *Leader: Wayne G. Burwell*

☐#10 R&D'S ROLE IN ENVIRONMENTAL INITIATIVES, *Leaders: James A. Tshudy, Eugene Slowinski*

☐#11 R&D DATABASE PROJECT FINDINGS - DARE TO COMPARE!, *Leader: Gary E. McGraw*

☐#12 STANDARDS-BASED SYSTEMIC EDUCATIONAL REFORM: OPPORTUNITIES FOR ACTION, *Leader: Lawrence B. Friedman*

☐#13
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On or before October 15	$ 645	$ 90
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After October 15	695	90
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Antiquing (Mon. p.m.____; Tues. a.m.____)	NA	25
Boone Hall (Sun. a.m.____; Tues. a.m.____)	35	35
Carriage Ride (Sat. p.m._____; Sun. a.m._____; Sun. p.m._____)	15	15
Churches (Sun. p.m._____; Mon. a.m._____; Tues. p.m._____; Wed. a.m._____)	25	25
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Drayton (Mon. a.m./p.m.; includes lunch)	NA	75
Ft. Sumter (Sun. p.m._____; Tues. p.m._____)	25	25
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Sunday Dinner (Pork Medallions___/Crab Cakes___)	50	50
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COMMITTEE MEETING(S) ATTENDANCE (From list on back, indicate which you will attend): FST onsite only

SPECIAL INTEREST SESSIONS. Attendance limited to 40 at each session. Circle one on each line for both times.

Wednesday, 8:00 a.m.	(1st choice)	A	B	C	D	E	F
	(2nd choice)	A	B	C	D	E	F
9:30 a.m.	(1st choice)	A	B	C	D	E	F
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COMMITTEE MEETINGS		DAY, TIME
*AWARDS	Awards	Sunday, 4:30-5 p.m.
*EMERITI	Emeriti	Sunday, 10-12 noon
APC	Advanced Programs	Wednesday, 7-8:15 a.m.
BOE	Board of Editors	Sunday, 3-5 p.m.
EMERITI	Emeriti	Monday, 7-8:15 a.m.
FST	Federal Science & Technology	Sunday, 2-5 p.m.
INTL	International	Sunday, 2-5 p.m.
MDAC	Management Development Advisory	Sunday, 2:30-4:30 p.m.
MEMB	Membership	Sunday, 3-5 p.m.
PCE	Pre-College Education	Sunday, 10-12 noon
PPC	Plans & Policies	Sunday, 2-5 p.m.
PROG	Program	Sunday, 10-12 noon
RDC	R&D Communications	Sunday, 3-5 p.m.
ROR	Research-on-Research	Sunday, 2-5 p.m.
SEM	Seminar	Sunday, 4:30-5 p.m.
SG:CI	Core Issues (MSG)	Monday, 7-8:15 a.m.
SG:CT	Current Topics (ASG)	Monday, 7-8:15 a.m.
URC	University Relations	Sunday, 2-5 p.m.

*Open to Committee Members only

SPECIAL INTEREST SESSIONS (maximum of 40 in each)

A Making Innovation Happen Via Small Company-Large Company Partnerships

B R&D's Role in Environmental Initiatives

C R&D Database Project Findings--Dare to Compare!

D Standards-Based Systemic Educational Reform-Opportunities for Action

E Technology Transfer from National Labs: Learning from Industry's Needs & Experiences

F Industry Interactions with China: Opportunities and Challenges

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December 7, 1993

Dr. Lionel Johns
Associate Director for Technology
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Dr. Johns: Skip

I wanted to thank you personally for the time and trouble you took to attend the IRI Federal Science and Technology Committee meeting in Charleston three weeks ago. The fact that you made a special trip to be there was especially appreciated and there was agreement that your comments were the highlight of the meeting. We look forward to future interactions.

The minutes of the session will be out shortly and I will also send you a summary of Wednesday's Special Interest Session on technology transfer from the federal labs. Our next meeting will be in Washington on January 14 and an agenda and further details will be available shortly.

Once again, many thanks for your participation.

Sincerely,

Andrew H. Pettifor (ajp)

Andrew H. Pettifor
Chairman, FST Committee

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File

Industrial Research Institute, Inc.

July 19, 1993

Dr. William G. Wells
Consultant
Office of Science & Technology Policy
Executive Office of the President
Washington, DC 20500

Dear Bill:

We are pleased to offer some ideas on the scope, mission, and composition of a new group to advise the President on issues related to science and technology. The premise for these thoughts is that IRI believes it is vitally important to increase industry input to federal organizations whose primary responsibility includes the management and oversight of federal technology policy. Where science and technology policy are combined, it is essential that a balance between them be maintained. However, the issue should not be science and technology per se, but how they contribute to our national economic strength and competitiveness.

SCOPE

Rather than addressing science and technology as ends in themselves, the new body should focus on how science and technology contribute to the very complicated and often long process of innovation. Innovation is the creation of new knowledge and the transformation of this knowledge into technologies, processes, products, and services that meet market needs. Successful innovation results in new businesses and new jobs. It is the fundamental source of growth and wealth in society. We suggest, therefore, that the advisory body focus on science, technology, innovation, and competitiveness.

This focus should be directed to long-term, rather than short-term, needs of our nation to be competitive in the global market. By long term, we mean 10 to 20 years, as exemplified by the report I gave you last Friday entitled "Japanese Competitiveness and Technology Strategies." Identification of current actions required to meet long-term needs and goals, particularly in areas of new-product development envisioned in the next century, would provide guidance for R&D efforts in our federal laboratories, universities, consortia, and industry.

This new body should also have a global perspective, rather than solely domestic. Companies in other countries have been very effective in rapidly turning scientific knowledge into new or improved products and processes. These competitors of ours work closely with their governments to develop ways to improve their country's climate for innovation. Thus, the new group must address ways to remove barriers to the rapid conversion of science and technology into commercially viable products.

MISSION

The new group should recommend to the President federal actions to accelerate the innovation process and to enhance federal investment strategies which meet both defense and economic growth requirements. The group should also support the goal that the United States remain among the leaders in all areas of science and technology, and that this leadership base is effectively transformed into global economic competitiveness into the next century.

COMPOSITION

A group of up to 16 persons is suggested. It is strongly recommended that at least half of the group have broad industry expertise, including top-management experience. Persons from industry who could serve the group well are listed below. There are, of course, numerous other highly qualified industrial candidates that we could suggest.

1) Dr. F. Peter Boer
Executive Vice President
W. R. Grace

2) Dr. Peter R. Bridenbaugh
Executive Vice President
Alcoa

3) Dr. David A. Duke
Vice Chairman, Technology
Corning Incorporated

4) Dr. George M. C. Fisher
CEO
Motorola

5) Dr. George H. Heilmeier
President & CEO
Bellcore

6) Dr. S. Allen Heininger
Former Vice President, R&D
Monsanto Company

7) Dr. George B. Rathmann
President & CEO
ICOS Corporation

8) Dr. Roland W. Schmitt
Former Senior Vice President, R&D
General Electric Company

9) Dr. Robert Stratton
Vice President, Corp. Staff
& Director Central Research
Texas Instruments

10) Dr. P. Roy Vagelos
President & CEO
Merck & Co.

11) Dr. Albert R. C. Westwood
Vice President, Research & Technology
Martin Marietta

12) Dr. John A. Young
Former President & CEO
Hewlett-Packard

We appreciate the opportunity to provide these suggestions, and look forward to further discussions with you on this matter as more specific plans develop.

Sincerely,

Charles F. Larson
Executive Director

CFL:pt

I.R.I. news

A monthly newsletter for members of the Industrial Research Institute, Inc. • 1550 M Street, NW, Washington, DC 20005 • (202) 872-6350

Ludita H. Vallarta, Editor **No. 169 -- January 1994**

NEW MEMBERS WELCOMED -- DUES BILLS -- IRI STUDY GROUPS -- FST COMMITTEE MEETING -- EIRMA ANNUAL CONFERENCE -- U.S.-JAPAN MANUFACTURING TECHNOLOGY FELLOWSHIP PROGRAM -- UPCOMING EVENTS

NEW MEMBER COMPANIES

The following companies and their Representatives have been welcomed as **new members** of the Institute recently. Give them a **call and say hello**!

ASSOCIATION OF AMERICAN RAILROADS
Rep: Dr. Roy A. Allen
Vice President, Research & Development
Tel. 202-639-2250

OSi SPECIALTIES, INC.
Rep: Dr. Eugene L. Jarrett (Larry)
Director, Research & Development
Tel. 914-789-2154

NEC RESEARCH INSTITUTE, INC.
Rep: Dr. C. William Gear
President
Tel. 609-951-2500

PANASONIC TECHNOLOGIES, INC.
Rep: Mr. Ronald B. Richard
Executive Vice President
Tel. 609-987-3942

SYNCRUDE CANADA LTD.
Rep: Dr. John E. Clark
Manager, Research
Tel. 403-449-2917

DUES BILLS

Dues statements for F.Y. 1995, beginning March 1, 1994, were mailed to the Representative of each member company on December 3. The basic dues of $3000, **unchanged from F.Y. 1994, are payable on or before March 1**. Early payments are, of course, appreciated. Reps wishing to name more Additional Alternates ($1000 each) should fill in a Certification Form, found in the back of your WHO'S WHO IN IRI directory, and send it to headquarters.

IRI STUDY GROUPS

The 1993-1994 CORE ISSUES STUDY GROUPS (formerly MSGs) will conclude with the January 5-7 program. **Registrations increased 13%** over the 1992-93 season. It is encouraging to see an improvement and we hope you will budget for expanded participation in the 1994-95 offering which begins next October. The 1994 EXPERIENCED LEADERS STUDY GROUPS (formerly ASGs) currently has **openings for sessions** on these

(over)

topics: "Selling Your R&D Ideas" (Feb. 9-11 or May 11-13); "Shortening the Product Development Cycle" (Mar. 9-11); "Quality Issues & Benchmarking" (Mar. 9-11 or Apr. 6-8); "Technology Transfer" (Apr. 6-8); and "Multifunctional Team Effectiveness" (May 11-13). For reservations/registrations, **call Arline Lewis** at 202-872-6360; fax your message to 202-872-6356; or write to her at IRI headquarters.

FST COMMITTEE MEETING IN WASHINGTON, DC

Andy Pettifor, Chair of the Federal Science and Technology (FST) Committee, **extends an invitation** to you or a company associate **to attend the committee's next meeting**, in Washington, DC on January 14th. Members of the Federal Government Liaison Council, including Mary Good (DOC), Skip Johns (OSTP), Neal Lane (NSF), Arati Prabakar (NIST), and Martha Krebs (DOE), have been invited to brief members on key issues of interest to industry. Other agenda items include an update on technology legislation, CRADA harmonization, a review of the Commerce's ACTS report (Graham Mitchell), and a briefing on a proposed "Federal Labs Industry Fellowship Program." Call Margaret Grucza (202-872-6355) by January 10th if you plan to attend.

EIRMA ANNUAL CONFERENCE

EIRMA will hold its **1994 Annual Conference** in Interlaken, Switzerland, May 18-20, on the theme, **"Funding and Financing Industrial R&D."** If interested in attending or for more information, write to EIRMA, 34 rue de Bassano F 75008 Paris or call 33-1-47-23-00-66 (Fax: 33-1-47-20-05-30).

U.S. JAPAN MANUFACTURING TECHNOLOGY FELLOWSHIP PROGRAM

Sponsored by the U.S. Department of Commerce, with assistance from the Society of Manufacturing Engineers (SME) and the Japanese government, **this program seeks to recruit the "best and brightest" manufacturing engineers** to be placed for a year or so in **leading Japanese manufacturing facilities**. Up to 100 individuals sponsored by American companies will work as visiting engineers in plants across Japan, where they will learn, first-hand, how new technologies reach the factory floor. Sponsoring U.S. employers can benefit by obtaining valuable in-house expertise in Japanese manufacturing technology. Applications will be available January 1994. Deadline for submission is March 18. If interested in participating, call Mike Wright of SME at 313-271-1500, ext. 505.

UPCOMING EVENTS

January	
5-7	Study Groups: Core Issues (formerly Management Study Groups), Washington, DC
12	ROR R&D Database Subcommittee, Washington, DC
13	Nominating Committee, Washington, DC
	ROR Strategic Technology Planning Subcommittee, Washington, DC
14	FST Committee, Washington, DC
20-22	Quality Directors' Network, Orlando, FL
27	Staff & Facilities Administration Committee, Washington, DC
28	Board of Directors, Washington, DC
February	
9-11	Study Groups: Experienced Leaders (formerly ASGs), St. Petersburg, FL
13-15	Finance Directors' Network, Marco Island, FL
	Human Resources Directors' Network, Marco Island, FL
15-17	Training & Development Directors' Network, Marco Island, FL
17-19	Research-on-Research Committee, Marco Island, FL
23-25	R&D Information Services Directors' Network, Mesa, AZ

A HAPPY NEW YEAR TO ALL!

IRI PRE-COLLEGE EDUCATION NEWS

A quarterly bulletin to inform members of IRI about programs to improve pre-college education

Ludita H. Vallarta - Editor

January 1994 -- No. 10

SPOTLIGHT ON WINNING PROGRAMS

What makes a winning program in math and science? The Winning Programs Subcommittee of the Pre-College Education Committee faced that question in the past year and developed criteria with which it selected 11 programs out of 37 submitted for consideration. The winners were Amoco's *Science Enrichment Program*, CNA Insurance's *Mathcounts*, Dow Chemical's *Reform of Elementary School Science* (a joint effort with the National Academy of Sciences and the Smithsonian Institution), Ford's *Academy of Sciences* and *High School Science and Technology Program*, the Franklin Institute's *Museum to Go Science Kits*, Phillips Petroleum's *Green County Science Teachers' Program*, Rockwell's *Youth Motivation Program*, 3M's *Technical Teams Encouraging Career Horizons* and the *Visiting Wizards* programs, and Upjohn's *Kalamazoo Area Math and Science Center.*

Dick Chase of Ford gave a brief presentation to members of the Pre-College Education Committee at its meeting in Charleston, on October 31, to provide insight on Ford's *High School Science and Technology Program.* An article will be written about each of these winning programs in a future issue of RESEARCH•TECHNOLOGY MANAGEMENT. In addition, IRI recognition plaques will be given to the 11 companies with "winning programs." Congratulations to all for a job well done. Keep up the good work!

BENCHMARKS FOR SCIENCE LITERACY

Benchmarks for Science Literacy, which recommends what students should know and be able to do in science, mathematics, and technology by the end of grades 2, 5, 8, and 12 in order to achieve science literacy, was released October 25. A product of AAAS's Project 2061, funded in part by the U. S. Department of Education, *Benchmarks* builds on work begun in *Science for All Americans*, the Association's 1989 report that recommends what all high school graduates should know and be able to do in science, mathematics, and technology. In its newsletter article announcing release of the project, AAAS said that "the benchmark effort is the first time educators have thought through, on a national level, what children should learn in science, mathematics, and technology from kindergarten to 12th grade. The effort has been fragmented. What has been taught in elementary school has not necessarily been linked to what students needed to learn in high school." According to F. James Rutherford, Project 2061 director, "by charting the flow of learning, *Benchmarks* offers a powerful tool to help educators create high-quality curricula." For more information on *Benchmarks*, write to AAAS/PROJECT 2061, 1333 H Street, NW, Washington, DC 20005.

GOAL LINE

In October we mentioned GOAL LINE, the interactive computer network that will link Coalition Members and Communities together for education reform discussions. Development of the database is underway and Coalition members have been invited to participate in the pilot program. **Don Piehl**, chair of IRI's Pre-College

(over)

Education Committee, and **Ludita Vallarta**, Staff Liaison to the Committee, are members of GOAL LINE's pilot project. *PBS Learning Link*, the K-12 service of PBS ONLINE, will provide the computer-based communications services. Network Director Rick Hough said he looks forward to working with Coalition Members to make GOAL LINE a "gold mine" of good education ideas and practices. The pilot test of the network is possible through a grant from the Walton Family Foundation, Inc. which has provided initial funding. George Washington University's School of Education is also providing comprehensive support. The Coalition is seeking long-term funding for GOAL LINE to provide one "free" GOAL LINE "site" in each 2000 Community. Once the pilot test is complete, organizations and individuals will be able to subscribe to the service for an annual fee. More on this effort in the next issue.

TRANSFORMATIONS

The American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) recently produced an exciting new tool to enhance 6th-9th grade teaching, according to an announcement mailed in October. Called *Transformations*, it is a set of eight 20-minute videotapes and accompanying teacher's guides that are full of hands-on activities, lab and discussion suggestions. *Transformations* was produced because AIME and its member societies saw a need for industry support if schools are to produce adults equipped to succeed in a technology based society. The series was developed with the help of teachers, and shows how industry *can* make a difference in education. For more information, call Alfred Weiss, Executive Director of AIME, at 212-705-7679; fax 212-371-9622 or write to him at 345 East 47th Street, New York, NY 10017.

SCIENCE IS FUN

Letters....letters...kids' letters. Nalco Chemical Compay gets them from third graders who have participated in *Science Is Fun*. Of the many ways the Nalco Chemical Company works to support science education, no program has reached more students in the Houston area than this one, a brainchild of Dr. Wes Cravey, Division Vice President, Research of Nalco's Petroleum Chemicals Division in Sugar Land, Texas. It is aimed at third grade students with the idea of generating enough enthusiasm to want them to pursue careers in the sciences. Started four years ago, after a meeting of the Industrial Research Institute in which Dr. Cravey is an active Representative, the program began as a demonstration for the Fort Bend Independent School District representatives in Texas. It has since expanded to other schools in the Sugar Land area, as well as in Naperville, Illinois where Nalco's Corporate and Technical Center is located. Consisting of 14 different experiments illustrating various aspects of chemistry and physics, the students are asked to observe and explain what happens in an experiment. Green slime, showing how superabsorbent polymers keep a diaper dry, and experiments on the basic law of thermodynamics, are some of the fun things children marvel at. At Sugar Land, 65 researchers, marketers, and secretaries reach an estimated 5100 students a year. The success of *Science is Fun* is evident in the responses from the children. As Dr. Les May of Nalco's Technical Center in Naperville says, "when you're doing a demonstration and the kids' eyes light up with the comprehension of how science plays such an important part of their world, it's a real high."

SUPPORT AND CONTRIBUTE

SCIENCE IN AMERICAN LIFE, a project supported by ACS and the Smithsonian Institution, is still in need of help. Corporate sponsorship is acknowledged in the permanent exhibit. Call Joe Griffith at 202-357-4533.

About the Newsletter

The PCE Newsletter is a quarterly publication of the IRI Pre-College Education Committee. It is intended to highlight what IRI Member Companies and others in industry are doing to improve pre-college education in the United States. ***Suggested items for publication are encouraged. Member Companies are urged to encourage external educational organizations to also submit information for publication.*** Mail or fax articles to Ludita Vallarta, Editor, Industrial Research Institute (IRI), 1550 M Street, NW, Washington, DC 20005-1708; fax 202-872-6356, indicating the name, address, and telephone number of a contact for each item submitted so that interested readers can obtain additional information.

Recommendations

i) *Information Management Strategy*
An Information Management Strategy should be defined and implemented within the company, with the full support of management (a recommendation of Working Group 31) and applying the principle of Total Quality Management (TQM). This must encompass, among other things :
- a clear vision of the information flow i.e. what the company needs
- responsibilities for creating, capturing, holding, disseminating and destroying particular elements of information
- standardisation of procedures and protocols
- balance between human and capital resources and the role of external services.
- the partnership between R&D and the Business

ii) *Links with the Business*
There should be systematic and structural links between the business and R&D units that establish clear business and technology strategies, stimulate the flow of information, and ensure that R&D information contributes to the formulation and implementation of company strategy.

iii) *People*
Rigourous procedures should be instituted to select and analyse the wealth of data, develop this into information and knowledge and then present it in the appropriate way to those who can act upon it. For this, human intellect is irreplaceable, although it will be increasingly assisted by more sophisticated information technology. Suitable human resources should be provided and identified throughout the organisation.

iv) *An active information department*
The information department must adopt an active role. It should identify the needs of different R&D units and the rest of the company, establish good user-supplier relationships and clear channels of information and get across the concept that information is a valuable asset of the company and the product of R&D in itself. The information department should also be able to provide cross fertilisation between different departments. It should be responsible for managing both published and proprietary information and, for the latter, should develop records management programmes and policies.

v) *A wider network of information handling*
Information is the very essence of R&D and not just something to be handled by a separate information department. A clear framework of responsibilities that recognises the key roles to be played by gatekeepers, patent departments, research scientists etc., should be agreed and published.

vi) *Use of information systems and technology*
Information technology can bring considerable benefits to information handling, but the requirements must first be defined and the technology then identified to deliver them. Information systems development must involve the end-users in order that their needs are matched. More power to manage information can now be given to the end-users at their desktop.

vii) *Product and process information*
Detailed technical information packages should be generated for specific processes and/or product developments to meet the needs of particular "customers" in the organisation e.g. product developers, production managers, marketing managers.

viii) *Expertise*
The expertise available within the company should be promoted, for example by :
- specially commissioning manuals setting out the company's know-how in particular fields of science or technology e.g. analytical methods, process engineering, product formulation
- maintaining directories of individual expertise available within the company.

ix) *Standardisation of definitions, codes and classification*
Confusion often arises through different meanings being attached to the same term - or, similarly, different names being given to the same information. Benefits will accrue from the standardisation of definitions, codes and classifications for all key information - certainly within a company and, wherever possible, worldwide. The widespread application of quality standards such as ISO 9000 to R&D should further improve the quality and coherence of in-house information.

EIRMA *European Industrial Research Management Association* *MANAGEMENT SUMMARY*

MANAGING IN-HOUSE INFORMATION

Report of EIRMA Working Group 45

Managing information to make it effective and relevant for R&D and managing R&D to make it effective for the business are but two sides of the same coin - the creation of competitive advantage.

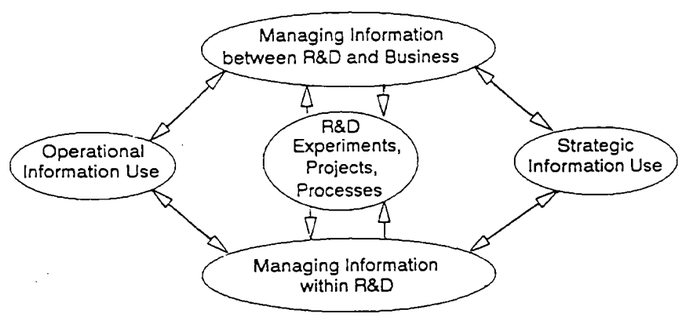
Increasingly, it is being understood that information available at the right moment in the proper place can have considerable value. This recognition of the value of information, coupled with the fact that information is available on a global scale and in ever increasing quantities, makes it important for any company to have proper management of in-house information.

Working Group 45 was established to 'analyse the problems and make recommendations associated with the better exploitation and management of in-house information in all aspects that impinge on R&D management'.

The Group considered the management of information in two categories :

(i) managing information between R&D and the Business
(ii) managing information within R&D.

The first is essential for establishing and directing the R&D/Business relationship and programme of work, the second to facilitate its effective implementation. A further distinction was made based on whether the information is used for strategic or operational purposes :



Managing Information between R&D and the Business

The technological capabilities of a business are one of the key factors in the strategic positioning of a company. R&D, with production, marketing, etc., must be explicitly managed to produce a cohesive whole.

The insights and strategy of the business directly influence R&D and technology strategy. Conversely, R&D and technological capabilities must be included in business strategy formulation.

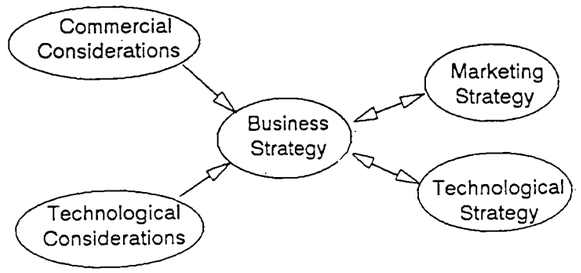
Working Group 45, chaired by Drs. C.H. van DALEN (DSM), was active between September 1990 and March 1993.

Previous EIRMA reports on related topics :
- Working Group N° 31 "The impact of new information technology on R&D and on I&D management"
- Working Group N° 33 "Developing R&D strategies"
- Annual Conference Berlin 1990 "Mastering the growth of scientific and technological information"

All reports are available from the EIRMA Secretariat :

EUROPEAN INDUSTRIAL RESEARCH MANAGEMENT ASSOCIATION
ASSOCIATION EUROPEENNE POUR L'ADMINISTRATION DE LA RECHERCHE INDUSTRIELLE
34, RUE DE BASSANO - 75008 PARIS - TEL. (1) 47.23.00.66 - FAX (1) 47.20.05.30

The most important information flows that contribute to business strategy and the derived marketing and technological strategies are represented below :



Key success factors in the partnership between R&D and the rest of the Business are :

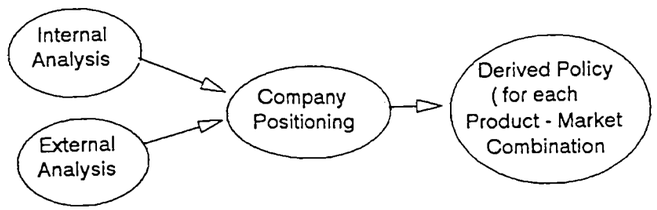
- a clear statement of policy from the top, actively disseminated and backed up by prompt information flows between R&D and the Business
- an ability to understand each others' language, problems and goals at all organisational levels
- clear definition of the potential and limitations of each product/market combination, understood by both R&D and the Business without creation of unrealistic expectations
- systematic interactions, based on the dynamic concurrent process of the above Figure with feedback loops, as part of a continuing relationship.

Any system at the strategy or policy level, which interfaces between R&D and the Business(es) they serve, will be based on two cornerstones :

(i) An **internal** examination of the company's competitive position (its abilities) and the Business thrust (its desires)

(ii) An **external** evaluation of the company's competitive position (its capabilities), trends in the industry and the intensity of competition

Output from these two information gathering processes needs to be combined for policy/strategy purposes as the company positions itself bearing in mind its capabilities and the competitive intensity of its chosen fields :.



Key success factors for the system are :

- a systematic approach - regular, uniform and company-wide
- top management guidance and control
- use of forward cost benefit analysis to identify profitable and unprofitable research
- commitment of business management to an effective mix of short, medium and long term R&D to support the realisation of strategic aims
- a system that enables R&D to be run transparently and effectively
- a dynamic recycle between policy and the assumptions on which it is based

A key problem area for such a system is to ensure that cost benefit analysis does not stifle innovation.

Managing information within R&D

Information from inside and outside the company is an essential input to any R&D activity, whilst the R&D operation itself generates new information as its output or product.

The 'information heap' is a particularly severe problem, which information technology may even be stoking. It is thus very important to establish mechanisms for the selection, analysis and presentation of information to users, and to determine the useful life and ultimate disposal of the information. For these activities human resources are irreplaceable.

Managing internal information on company products, processes, markets and competitors

This type of information is poorly managed. It covers a wide range of activities and should be an integral part of a company's business. Failure to manage it effectively may have serious consequences, e.g., business and research opportunities may be missed, much time may be wasted in searching for needed information, inadequate organisation of technical documentation and information may lead to dangerous situations in the operation and maintenance of installations.

Specific challenges include the anticipation of user requirements, structuring and organising the collection of the information, validating and updating it, assessing its quality, storing this relatively unstructured information such that it can be retrieved and used, and disseminating it regularly and to the right people.

Improvements will cost a lot of money and effort, but they will pay off through more effective business processes and improved use of strategic information for business planning and research.

Improving the management of in-house strategic and operational information

In order to manage information effectively and hence facilitate its use strategically and operationally, two things must happen :

(i) the information explosion must be managed by the effective use of information technology and information (records) management strategies

(ii) information support functions must be improved and developed

The amounts of information available are such that it is necessary to control what is actually being created and to be selective in what is being kept and disseminated. Records management programmes, together with effective and appropriate use of information technology, can achieve this and help to solve the problem of information explosion.

Information technology alone has failed to select, analyse, interpret and present information in the necessary ways for users. Highly professional people are needed to carry out these activities which are especially important for the effective delivery of relevant information to senior management and executives as input to the plans and decisions level of the information hierarchy. These people include information professionals, the patent department and 'gatekeepers'.

Information professionals have to know not only the actual information needs but also the latent, potential needs. They must add value to the information they manage by selecting, reviewing and delivering tailored packages to their customers.

The patent department can assist R&D personnel and top management with added value, analytical services by supplying information on emerging technologies developed by competitors or on the intellectual property strategy of those competitors.

Gatekeepers are experts in a given technological discipline who have many internal and external contacts. Their role is closely related to that of an information professional, the difference being that they monitor what happens only in their specific field.

RECOMMENDATIONS

- The company's corporate strategy should be made visible to its employees, including the R&D staff and management.

- As an extension of the corporate strategy, the R&D strategy also needs to be clearly defined to all R&D staff.

- Senior management should be able to understand scientific working methods and mentalities and be involved in the process of encouraging ideas and reviewing innovation plans.

- Communications networks should be in place throughout the company to facilitate the exchange of ideas, policies and other information, thereby optimising the conditions for innovation.

- Special attention should be given, by R&D staff, to the detection and amplification of "weak signals" for communication to senior management.

- The use of Quality Function Deployment is strongly recommended in the start-up phase of innovation projects.

- Creativity can be fostered by removing fear, a potentially powerful demotivating element, from the R&D environment.

- Mechanisms should be in place which allow researchers to pursue a particular idea for which there is no official approval without being penalised.

- Use should be made of the key attributes of creative individuals while recruiting the best available and right mix of people.

- Appropriate continued training and development of R&D staff should be available to keep their skills and knowledge up-to-date, and to keep them fully motivated.

- Time for thinking is a vital factor in innovation. Those involved need to set aside some time specifically for creative reflection.

Workshop Report IV, Chaired by Dr. R.-P. MARTIN (Elf Aquitaine) was active between September 1991 and October 1992

Previous EIRMA reports on related topics:

- Working Group N° 14 "Creativity and motivation in industrial R&D"
- Working Group N° 35 "Increasing productivity in R&D"
- Working Group N° 42 "New aspects of the interface between R&D and Marketing"

All reports are available from the EIRMA Secretariat.

EIRMA *European Industrial Research Management Association* *MANAGEMENT SUMMARY*

STIMULATING CREATIVITY AND INNOVATION

Report of EIRMA Workshop IV

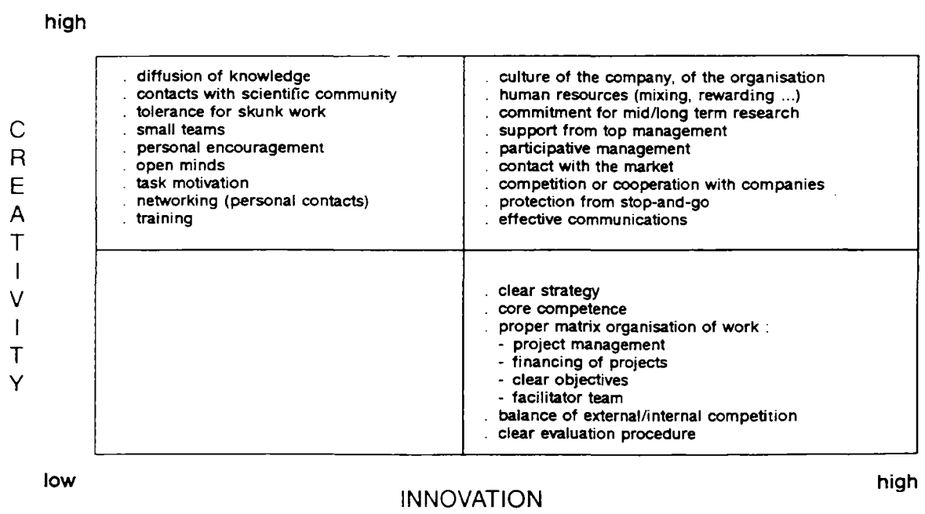
"Creativity and motivation in industrial R&D" was the theme of an earlier EIRMA Working Group. The broader scope of the new study to include innovation very much reflects the developments of recent years whereby R&D is increasingly recognised as an integral part of a company's competitive strength. Management has an important role in ensuring that creativity and innovation are stimulated and fostered, and that people throughout the organisation recognise that entrepreneurship and change are essential for the company's future success.

EIRMA Workshop IV looked specifically at the following areas :

- Roles of the individual, organisational structures and R&D in the innovation process.
- Factors/systems which stimulate or hamper creativity and innovation.
- Formulating and implementing a strategy and developing a culture for change.
- R&D's role in generating ideas for new methods of working in functions outside R&D.
- Tools for creativity, their value and acceptability, and their measurability.
- The importance of relations with external research.
- Role of R&D in the innovation process.

CREATIVITY AND INNOVATION

An important element of creativity is the ability to identify new connections between seemingly unrelated objects or events. It is the starting point for innovative activity. Creative input is also an essential part of the solution of problems that arise at all phases of the innovation chain. Those factors that mainly influence creativity are largely concerned with the individual and his performance and environment, those that bear mainly on innovation centre on team work and organisation. The two come together in the top right sector of the matrix below:



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INNOVATION AND THE COMPANY

The starting point for stimulating innovation in a company must be the company's corporate strategy such as: cost leadership, differentiation or focus. A company can pursue one or more of these strategies depending on the nature of its perceived competitive forces. These strategies will determine which radical or incremental product or process ideas will be encouraged or discouraged; they must therefore be visible to all employees.

Total Quality Management helps in implementing the corporate strategy by concentrating on customers and changing management styles. Key TQM tools such as benchmarking, should also have a high profile within the organisation. A market-focused approach to innovation will lead to a higher success rate, enhancing the motivation of researchers and, as a result of this, creativity.

Top management commitment to the defined business strategy and quality management programmes, and its involvement in the formulation of consensus action plans for innovation is crucial.

In recent years, the innovation process has become more efficient, with more successful products resulting from fewer development projects. This is a direct result of creating good "Innovation Teams" which can filter the concepts through the innovation stages of evaluation, business analysis, development, testing, and commercialisation

Criteria to measure the number, rate and value of technological innovations to enable performance to be improved include :

Quantitative
Number of new products over a time period.
Number of patents, papers published.

Semi quantitative
Results of independent customer surveys.
Number of external contacts/relationships.
Top management time spent on improving innovation.
Contribution to market share and profit margin.

Qualitative
Perception of technological expertise with universities and customers.
Existence of risk taking culture and acceptance of failure.

Product innovation is usually considered as disruptive to the existing activities of a company and a formal structure needs to be instigated to deal with different types of innovation.

THE ROLE OF R&D IN THE STIMULATION OF CREATIVITY AND INNOVATION

R&D is at the forefront of innovation, but scientific new concepts are not the only source of innovation. New customer demands, technology transfer, new organisation forms can also be important. R&D can often contribute to innovative approaches to working inside the company to improve efficiency, speed, safety, quality in products and sales.

Organisational style strongly influences both creativity and innovation. It covers factors such as management philosophy, leadership style, motivation factors, participation and internal communication.

It is not unlikely that, given the mid/long-term impact of some major innovations, these might be perceived in drastically different ways in the business unit and at the corporate level. It is an absolute prerequisite for flourishing innovation that top management supports and is committed to mid/long-term research.

The essential element in R&D is the human resource. Great attention must be given to recruiting, rewarding (coaching and dual ladder), mixing of talents, and the allocation of behavioural roles such as idea generators, gatekeepers, sponsors, product champions, etc.

A "cultural mismatch" between R&D and other functions still occurs and can be a major obstacle in the transfer of R&D output. Career progression paths for young R&D staff to other functions, the assignment of a sponsor to the project, the establishment of multifunctional project teams will improve this situation.

A key role of the R&D organisations is to assimilate market intelligence from both inside and outside the company and in the light of this intelligence help to define strategic aims.

THE ROLE OF THE INDIVIDUAL

Entrepreneurial qualities, leadership, expertise, risk taking, communication skills are among the attributes shown by creative and innovative employees. Their role as individuals and as team members is crucial.

Factors likely to hamper the creative individual's performance are: fear, plagiarism, too large teams, the "Not Invented Here" syndrome, bureaucracy/systemisation, narrow thinking, premature choice of targets, and stop/go decisions

TOOLS FOR CREATIVITY AND INNOVATION

Various methods exist that can be used as aids in stimulating creativity. Members of the Workshop who have actually used such tools were asked in a questionnaire to state the value they perceived they provided in stimulating creativity:

Position	Tools	Value as percentage of those who used the method
1.	Brainstorming	80%
1=	Morphological analysis	80%
3.	Ishikawa	75%
3=	Pareto charts	75%
4.	Questionnaires	60%
4=	Suggestion schemes	60%
4=	Metaphorical analogy	60%
8.	Scenarios	55%
8=	Why-Why diagrams	55%

Brainstorming is the most used tool for stimulating creativity and is perceived to be the one of most value. Although a significant number of organisations appear to use tools such as questionnaires and scenarios, their value is thought to be considerably less. Tools such as morphological analysis, Ishikawa and Pareto, although not well known or used by many, are considered to be of value by those that do actually use them.

The tools used for the innovation process include: development and training, Project management, Total Quality Management, reward for merit and performance, dual ladder system, Competence framework, and performance management. Development and training are considered the most important tool, followed by project management and Total Quality Management.

Measurements, tools and techniques

Each stage and activity of the R&D process, from early research to the final commercialisation, lend themselves to analysis and improvement in Total Quality terms.

It is important at the outset that the purpose and nature of each R&D activity, and the customer needs, whether internal or external to R&D, are clearly understood and agreed.

Measurements made against Quality criteria indicate the effectiveness of R&D in terms of goal achievement within cost and time targets. Over a period of time, they are the means of monitoring performance and detecting or quantifying improvements arising from Total Quality programmes.

Many of the numerous Quality tools and techniques described in the literature may be adapted for application in R&D. The more important are described in the report and their purpose and use indicated.

Conclusions

Although the experience of EIRMA member companies confirm some of the difficulties of applying Total Quality programmes in R&D, the overriding conclusion of the Working Group is that where they have been introduced with careful recognition of the role of R&D and the nature of its work they have achieved tangible benefits.

The European Model of Total Quality Management, developed as a framework for the European Quality award by the European Foundation for Quality Management, essentially provides the following message:-

CUSTOMER SATISFACTION, PEOPLE (employee) and IMPACT ON SOCIETY
are achieved through
LEADERSHIP
driving
POLICY AND STRATEGY, PEOPLE MANAGEMENT, RESOURCES and PROCESSES
leading ultimately to
EXCELLENCE IN BUSINESS RESULTS

This applies equally to R&D. It places strong emphasis on customers, internal or external to the R&D organisation, and on the role of management in providing leadership to the individuals and teams on whom the ability of R&D to satisfy its customers ultimately depends.

'COMMITMENT TO TOTAL QUALITY REQUIRES R&D TO FOCUS ON ITS CUSTOMERS AND TO INVOLVE ALL ITS PEOPLE IN SEEKING TO CONTINUOUSLY IMPROVE ITS EFFECTIVENESS AND EFFICIENCY IN ANTICIPATING AND SATISFYING THEIR REQUIREMENTS'

Working Group Report 46, Chaired by Mr. H. HERLITZ (SKF) was active between December 1990 and November 1992

Previous EIRMA reports on related topics:
- Working Group N° 29 "Evaluation of R&D output"
- Working Group N° 40 "Personnel management in R&D"
- Working Group N° 42 "New aspects of the interface between R&D and Marketing"

All reports are available from the EIRMA Secretariat.

EIRMA European Industrial Research Management Association

MANAGEMENT SUMMARY

TOTAL QUALITY IN R&D

Report of EIRMA Working Group 46

Total Quality techniques have been successfully applied for many years in manufacturing, and have more recently been extended into the service industries.

Their use to date in R&D organisations, has, however, been somewhat limited, especially where the role of the organisation is primarily to carry out research and early development work.

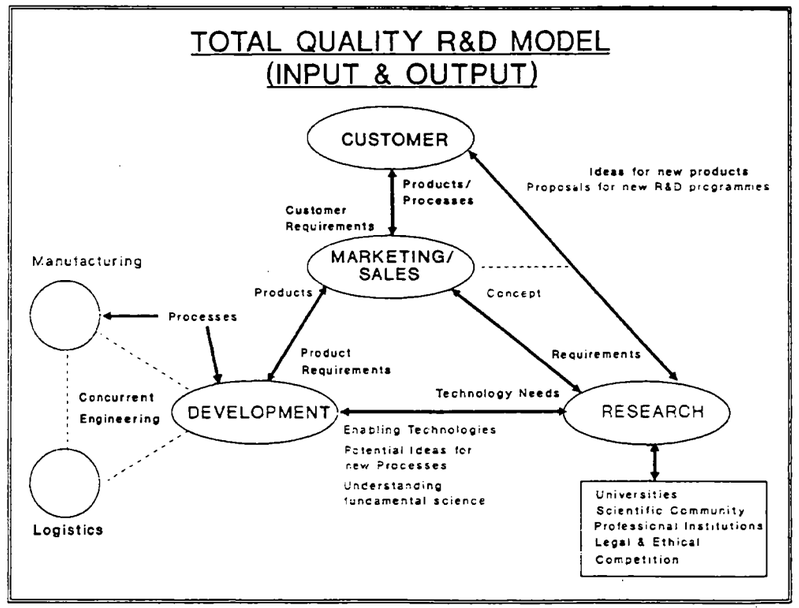
Problems and opportunities for R&D

The very nature of R&D presents a particular challenge in the implementation of established Total Quality principles and techniques.

The purpose of R&D differs from company to company. Its customers are various, the processes by which it seeks to achieve its goals are complex and rarely repetitive and its 'products' (outputs) are often intangible.

Many companies which have been very successful in implementing Total Quality programmes in other areas of their businesses, have not attempted to introduce it into R&D, and those who have done so have often encountered difficulties. Total Quality methodologies must be carefully selected and adapted to suit the R&D environment.

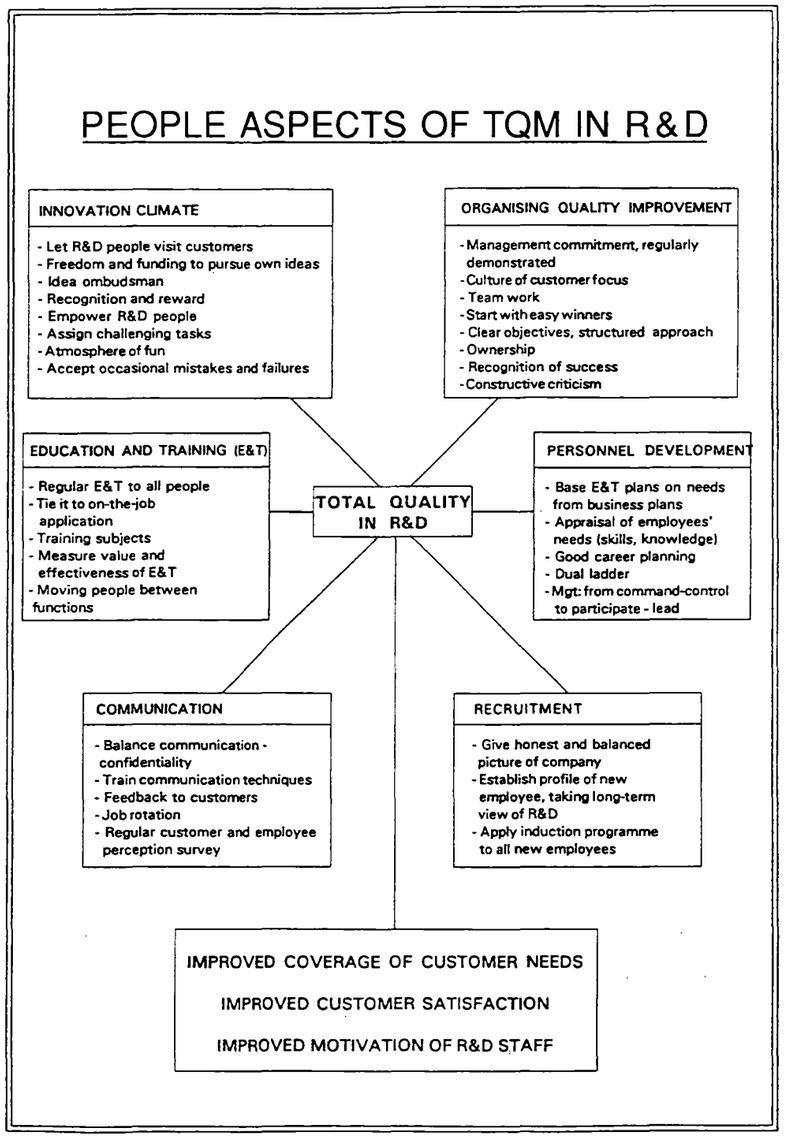
The role of R&D and its place in the organisation must be clearly defined and understood. The model below shows the links between R&D, other parts of the organisation and the external customer.



The importance of people

A Total Quality Approach requires R&D to anticipate, influence and satisfy the needs of its customers, and to involve all its people in seeking to achieve its goals in the most efficient and cost-effective way.

Any Total Quality initiative for R&D has to take account of the generally high intellectual level of R&D staff, their individualism and inclination to question and reflect, if problems are to be avoided and the desired results achieved.



Total quality and creativity

Contradictions are often perceived between the role and processes of R&D and traditional Total Quality Management (TQM) techniques, many of which depend for their success on measurements, standards and statistics.

Common to every R&D organisation is the requirement that it should be the company focus for technical creativity and innovation, and there is often concern that the introduction of Total Quality programmes into R&D might stifle creative work and be counter-productive.

While the creativity of an R&D department may be difficult to define and impossible to measure, it is certainly influenced by management style and the environment in which people work, and these factors lend themselves to a Total Quality approach.

Attention to the quality aspects of leadership and supporting systems is likely to pay dividends. It is important to find the right solution in which system constraints do not discourage creative work.

INNOVATION CLIMATE AND SYSTEMS

FACTORS FOR SUCCESSFUL MANAGEMENT

- Clear identification of Business Strategy.
- Freedom of information transfer within R&D.
- Management must devote substantial time to improving the Innovation System.
- A systematic approach is required to capture and stimulate innovation from the total company resource.
- Valid reasons must be given for not pursuing an innovation.
- Recognition of work to be given in all cases (both internally and externally), and to include all team members.
- Peer Review of work to be undertaken by a panel of internal and external personnel.
- Research staff to be grouped by discipline. As projects move towards the development stage, teams to become multi-disciplinary.

Industrial Research Institute, Inc.

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December 29, 1993

To: Member Company Representatives and Alternates

Subject: **COMMERCE ADVANCED CIVILIAN TECHNOLOGY STRATEGY (ACTS)**

Enclosed for your information is a response dated December 16, 1993 from IRI President Ed Cantrall to Mary Good at the Department of Commerce on the subject above.

Commerce ACTS was sent to each member company Representative on November 24, with an invitation from Graham Mitchell to submit comments. Please address your comments to Mary Good with a copy to me. Thanks!

Charles F. Larson
Executive Director

CFL:pt
Enclosure

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Industrial Research Institute, Inc.

December 16, 1993

Honorable Mary L. Good
Under Secretary for Technology
U.S. Department of Commerce
14th & Constitution, NW, Room 4824
Washington, DC 20230

Dear Mary:

Reading the recent document, **"Commerce Acts,"** was a delightful experience because it recognizes the many critical elements essential for industrial competitiveness and growth.

It was especially gratifying to see that our federal government, and indeed the President, recognize that technology is important, that technological innovation is essential to the economic well-being of our nation, that we have experienced problems in commercializing new technology, and that the Department of Commerce will perform a convening role with the private sector to create new partnerships and alliances.

I was particularly pleased that manufacturing technology was a key component of the Commerce strategy. While the U.S. industrial R&D enterprise presently is not expanding at a significant rate, it is the largest and most creative such enterprise of any country of the world. It is essential, therefore, that the strength of our R&D enterprise be combined with a new era of manufacturing expertise to enable U.S. industry to compete effectively not only with lower-wage countries, but with countries that currently surpass us in manufacturing technology.

My only suggestion with your overall approach would be that more emphasis should be on the creation of "market pull" than on "technology push," and that measures or factors should be developed to indicate the success of your initiatives over the next few years.

We have sent copies of **"Commerce Acts"** to our member companies in the United States, with a request that they send their comments to you. On behalf of these companies, I congratulate you on the **"Advanced Civilian Technology Strategy"** and commit our membership to helping you and your Tech Team at Commerce in making it a reality. This action will continue, I understand, with discussions at our 1994 Annual Meeting.

With best regards.

Sincerely,

Edward W. Cantrall
President

EWC:pt

Accommodations

Hyatt Regency on Capitol Hill
400 New Jersey Avenue, N.W.
Washington, D.C. 20001

Guest accommodations have been reserved for Future Directions Conference attendees at a rate of $95 (plus tax) for single and double occupancy. For reservations, call the Hyatt Regency directly and mention the Future Directions Conference. Your reservation must be received prior to December 13, 1993. After that date, if the room block is filled, guaranteed accommodations at this rate cannot be made, but will be available at prevailing room rates.

The Hyatt Regency on Capitol Hill is located 10 minutes from Washington National Airport and 45 minutes from Dulles Airport.

Airline Reservations

Conference Fees

Conference Registration

Future Directions Conference
New Jersey Institute of Technology
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Newark, NJ 07102-1982

FUTURE DIRECTIONS FOR MULTIMEMBER RESEARCH COLLABORATIONS: THE BEST PATH FOR INDUSTRIAL RESEARCH?

Multimember collaborations are an increasingly important part of research and development funding and policy in the U.S.

January 11-12, 1994
Hyatt Regency on Capitol Hill
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Your Conference Hosts:

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- **New Jersey Institute of Technology**

- Take advantage of the unique opportunity to see exhibits showcasing industrially significant research projects reflecting the efforts of over 50 centers, 70 universities, 700 industrial firms, and 1,000 researchers;
- Learn about the scope and direction of current trends toward encouraging or even requiring multimember R&D partnerships;
- Examine the advantages of various models and programs - including some of the most successful in the country;
- Have an opportunity to impact national policies about multimember research partnerships;

while gaining insight into how to navigate the policy and management issues that affect all research and development consortia.

Conference sessions, featuring several with participatory formats, will develop the following themes:

- Research challenges facing industry today;
- Strengths of different types of multimember research collaborations;
- The varied roles of specific types of collaboration and how they are suited especially to the research challenges facing industry;
- Contributions of multimember research collaborations;
- Strategic and tactical issues in creating multimember research collaborations;
- [illegible]

[illegible]

- Federal Laboratories
- Research Universities
- Deans of Engineering
- University Administrators
- Industry
- Congressional Staff
- State Science Officers
- Science Policy Analysis

OVERVIEW OF AGENDA

Tuesday, January 11, 1994

8:00 a.m. Registration

Welcome and Keynote Address

- **Dr. John Gibbons,** Director of the Office of Science and Technology Policy (invited), will detail how industrially relevant research fits into the economic policies of the Federal Government.
- An industrial leader will discuss the importance of research to industry.

Panel: What Can Multimember Research Collaborations Achieve?

Panelists will explore the nature of multimember research collaborations and what they can achieve.

- **Dr. Howard Aldrich,** Sociology and Management, University of North Carolina Chapel Hill
- **C. Richard Deininger,** Director of National Resources, SEMATECH
- **Dr. Bela Gold,** Management, Claremont Graduate School
- **Dr. Albert N. Link,** Economics, University of North Carolina Greensboro
- **Dr. Lois S. Peters,** International Science and Technology Policy Studies, Rensselaer Polytechnic Institute

Lunch

Panel: Different Kinds of Multimember Research Collaborations

Panelists will describe the beginnings, the operations, the benefits, the limitations and the successes of consortia. Panelists will include:

Government/Industry Collaboration

- **Craig Fields,** Executive Director, Microelectronics & Computer Technology Corporation (MCC)

NSF Industry/University Cooperative Research Centers

- **Dr. Denis Gray,** Center Evaluator, North Carolina State University Center of Aseptic Processing and Packaging Studies
- **Dr. Edward Haug,** Executive Director, The University of Iowa, Center for Simulation and Design Optimization of Mechanical Systems

State Sponsored Collaboration

- **Dr. Karl Graff,** Director, Edison Welding Institute

Multi-Industry Collaboration

- **Don Walkowicz,** Executive Director, United States Council for Automotive Research (USCAR)

Reception and Tabletop Exhibits will showcase exemplary I/UCRC programs reflecting a broad spectrum of technologies.

20th Anniversary Celebration Dinner

- **Dr. John White,** Regents Professor and Dean of Georgia Institute of Technology's College of Engineering and former head of the NSF Engineering Directorate, will offer a tribute in honor of the 20th Anniversary of the I/UCRC Program.
- **Partnership Recognition Ceremony**
  Conference co-sponsors will recognize the individuals, corporations and agencies who have generously contributed to the ongoing success of the I/UCRC program.

Wednesday, January 12, 1994

7:00 a.m. Continental Breakfast and Tabletop Exhibits

Roundtable Discussions

- Roundtables accommodating 15 or more participants will identify and discuss the most significant issues they face with regard to the future of multimember research collaborations.

Participatory Meeting

- This session will include an opportunity for attendees to present and discuss issues with panelists.
  Dr. John L. Warren, Research Triangle Institute, will moderate. Policy makers invited to speak on the future role of multimember research collaborations include Congressional Staff members **Dr. James Wilson**, House Subcommittee on Science, **Patrick Windham**, Senate Subcommittee, Science, Technology and Space, and **Skip Johns**, Office of Science and Technology Policy. Representatives from ARPA and OMB will also be on the panel.

Theme Speaker

- **Dr. Mary L. Good,** Under Secretary of Technology, United States Department of Commerce, will summarize the participatory meeting and wrap up the conference with her thoughts on the future role and challenges of multimember research collaborations.

12:00 p.m. Adjournment

Printed with soy based inks.
Printed on recycled paper.

REGISTRATION FORM

(Form may be duplicated)

Full Name: _____

Title: _____

Center: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

❑ In order to ensure your full participation, if you have any mobility, visual, or audio requirements, please check here and someone from our staff will contact you to discuss your needs.

Please identify any dietary requests here and follow up with a conference registrar on-site: _____

Conference Fees

Conference fees are $295 per person. I/UCRC registrants: $295 for the first registrant; $150 for each additional registrant from the I/UCRC. (Please mail multiple registrations from individual Centers together so we can process the special registration fees.)

Cancellation: Registration cancellation is subject to a $25 processing fee and must be submitted in writing by January 3, 1994. **No registration refunds after January 3, 1994.**

Questions should be addressed to Anne McMahon at (201) 642-4385. Please forward completed registration forms and payment to:

Future Directions Conference
New Jersey Institute of Technology
University Heights
Newark, NJ 07102