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ABSTRACT

The project addressed the need for Oregon higher education faculty to receive state-of-the art information from Oregon businesses and industries in computer science, business, and engineering areas. Planning for a statewide interactive Eudcational Television Network (ED-NET) has been underway in Oregon for several years. The network will involve cooperation among community colleges, four-year colleges/universities, business and industry, K-12 schools, state agencies, and the Oregon Public Broadcasting System. Over a 20-month period, the project completed 27 faculty development videotape programs by leading industry experts and pilot tested the use of a variety of telecommunications technologies to deliver these programs. Videotapes are available in a videotape library and cover such topics as: knowledge engineering, desktop publishing, diode lasers for high speed applications, programming languages, and superconductivity. Appended are the video catalog, examples of comments on programs provided during the project, and a project contract. (DB)

FINAL REPORT

Grantee Organization: Oregon State System of Higher Education
Office of Academic Affairs
P. O. Box 3175
Eugene, Oregon 97403

Grant Number: G008642199

Project Dates:

Starting Date:	October 1, 1986
Ending Date:	May 31, 1988
Number of Months:	20

Project Director: Holly Zanville, Associate Vice Chancellor
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Fund Program Officer: Lynn DeMeester

Grant Award: $79,025

Project Title: Industry/Postsecondary Education Partnership
For Faculty Development

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ONE-PAGE SUMMARY

Industry/Postsecondary Education Partnership for Faculty Development

Planning for a statewide interactive Educational Television Network (ED-NET) has been underway in Oregon for several years. In cooperation with community colleges, four-year colleges/universities, business and industry, K-12 schools, state agencies, and the Oregon Public Broadcasting System. While the major purpose of the network will be to link together educational institutions to share specialized academic resources and provide academic programs to industries through telecommunications, an emerging need for programming which comes from industries to educational institutions, particularly colleges and universities, was identified as a top priority in Oregon. The project addressed the need for faculty to receive state-of-the art information from Oregon businesses and industries in computer science, business, and engineering areas. Over a 20-month period, the project completed 27 faculty development programs by leading industry experts and pilot tested the use of a variety of telecommunications technologies to deliver these programs. As a result of the project, the Oregon Center for Advanced Technology Education has developed a model for a statewide industry-based faculty development program which will be delivered over ED-NET when it is operational.

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Titles of Products: **"Video Catalog 1987-88"**
(27 Programs, 32 Videotapes)

EXECUTIVE SUMMARY

PROJECT OVERVIEW

Planning for a Statewide Interactive Educational Television Network (ED-NET) has been underway in Oregon for several years, in cooperation with community colleges, four-year colleges/universities, business and industry, K-12 schools, state agencies, and the Oregon Public Broadcasting System. The major purpose of the network will be to link together educational institutions to share specialized academic resources and provide academic programs to industries through telecommunications. An emerging need for programming which comes *from* industries *to* educational institutions, particularly colleges and universities, was identified as a top priority in Oregon.

The project addressed the need for faculty to receive state-of-the-art information using new telecommunications technologies from industry experts in computer science, business, and engineering areas.

The project enabled the Oregon Center for Advanced Technology Education (OCATE) to pilot test a number of delivery formats and originations, greatly expanding access by faculty to experts in business and industry. Formats included: a live satellite presentation reaching campuses throughout the state (and campuses in many other states), videotaped presentations for later viewing by faculty, live satellite presentation utilizing pre-produced segments (including use of microwave link-in), and imported teleconference (produced outside the state).

Over a 20 month period the project completed a total of 27 presentations on topics in the following areas: artificial intelligence, digital processing, information systems, optoelectronics, parallel computing, semiconductors, semiconductor devices and materials, superconductivity, technical writing, and telecommunications technology.

Through the use of telecommunications technologies, OCATE developed a model for expanding access to its heretofore limited access programs. Continuing as a model program of OCATE since the end of the grant period, the program will become a permanent feature of ED-NET once the network becomes operational in January 1990 (pending approval by the 1989 Oregon Legislature).

PURPOSE

The purpose of the project was to improve faculty instruction, research, and public service in disciplines highly dependent upon currency of knowledge: engineering, sciences, computer sciences, and business.

BACKGROUND AND ORIGIN

Advanced technology industries are driven by innovation and new scientific developments. Increasingly, many research scientists and engineers in industry are moving ahead of our college and university faculty along the cutting edge of scientific knowledge. Faculty development opportunities are needed to maintain the vital partnerships that will spawn information sharing between those that educate the future professionals in our businesses and industries, and those already working in our businesses and industries. There is also a critical need to find new delivery systems that will expand access to faculty development opportunities throughout the State of Oregon.

Planning for a statewide interactive television network (ED-NET) has been underway in our state for several years in cooperation with community colleges, four-year colleges/universities, K-12 schools, business and industry, state agencies, and the Oregon Public Broadcasting System. While the major purpose of ED-NET will be to link educational institutions together to share specialized academic resources and provide degree and professional development programs to industries via telecommunications, an additional feature of the network is needed to develop programming *from* industries *to* our colleges and universities. This link would enable faculty to receive state-of-

the-art information on applications of their disciplines to businesses and industries in Oregon, with the goal of strengthening faculty instruction, research, and public service.

PROJECT DESCRIPTION

The project developed a statewide model for an industry-based faculty development program which could be delivered over the Oregon Instructional television network when it becomes operational (expected January 1990 if the Legislature appropriates funds in spring 1989). Working through the Oregon Center for Advanced Technology Education, the project developed and pilot-tested 27 programs (symposia, forums, mini-courses) from industry "faculty" selected for their expertise in areas of need identified by colleges and universities, using a variety of telecommunications technologies that were available in Oregon during the project period (1987-88). The technologies pilot-tested included: for live broadcast -- satellite and microwave technologies; for delayed broadcasts -- permanent-sited videotaping and mobile unit videotaping. Using these telecommunications technologies, the unique resources of industry in a wide variety of state-of-the-art topics were delivered to faculty throughout the state (and in two of the programs, to many other states).

PROJECT RESULTS

The project was tremendously successful. Not only did the Oregon Center for Advanced Technology Education gain expertise in the uses of a variety of telecommunications technologies new to the State of Oregon as a way of delivering educational programs to faculty and graduate students, but OCATE produced many more programs than originally anticipated -- the project proposal called for 10-15 programs to be produced, the project was able to produce 27 programs (titles listed below) in the following subject areas: artificial intelligence, digital processing, information systems, optoelectronics, parallel computing, semiconductors, semiconductor devices and materials, superconductivity, technical writing, and telecommunications technology. Videotapes are available in a videotape library for the use of faculty, students, industry, and governmental employees in Oregon and elsewhere.

- Knowledge Engineering
- What Can Be Done With a Few Bits?
- Business Advantage - '87
- Desktop Publishing -- Changing the Workplace
- III-VI Materials for Optoelectronics
- Physics and Applications of Quantum Well Structures
- Packaging Effectors on Ultrafast Optical Devices
- High Speed Photodetectors for Communication/Instrumentation
- Diode Lasers for High Speed Applications
- Optical Techniques for Measuring Ultrafast Signals
- Recent Developments in Semiconductor Lasers
- Architecture and Basic Technology
- Programming Languages
- Programming Tools and Systems
- Applications and Algorithms
- Electron Energy Loss and Microscopy of Defects and Interfaces in Semiconductors
- Optical Studies of GaAs, AlGaAs, and GaAs/AlGaAs Multiple Quantum Wells
- Formation of Buried Conducting and Insulating Layers by Ion Implantation
- High Temperature Superconductor: Fundamental Properties That Set Bounds on Application
- Thin Films, Patterning, and Squids Made by Ion Implantation in Y Ba_2Cu_3OX
- Explosive Fabrication of High Temperature Superconducting Monoliths and Fixtures
- Resonating Bond Theory of High Temperature Superconductivity
- Neuro-Magnetism: A New Window on the Brain
- High Speed Computing and Data Capture
- Antistrophy in Y Ba_2Cu_3OX: Critical Currents & Fields
- What's Hot in Superconductivity at the NRC?
- Emerging Technologies in Telecommunications

There were also two important unanticipated results. First, some of Oregon's high technology industries wanted to obtain videotaped materials produced through the project for their scientists and engineers. While the project's intended audience was faculty and graduate students, industry engineers and scientists also expressed interest in participating in the telecommunications programs. A second result was that campuses throughout the nation were able to participate in two of the project's programs which had to be provided via satellite transmission in order to reach Oregon faculty throughout the State. These two programs ("Desk Top Publishing" and "Gaining a Competitive Business Advantage") alone reached more than 1,000 faculty members located outside the State of Oregon, greatly increasing the impact of the project.

Equipment purchased through the project is being permanently sited in OCATE's new facility at the Oregon Graduate Center. The Oregon Graduate Center is located in Washington County in the midst of Oregon's high technology "corridor." As OCATE continues to bring in renowned industry and university engineers and scientists for in-person professional development presentations for engineers and scientists in the state's high technology companies (this is OCATE's major charge from the Oregon Legislature), OCATE will expand access to these presentations through ED-NET, using the model developed through the FIPSE project.

SUMMARY AND CONCLUSIONS

The project provided a unique opportunity for the State System of Higher Education, working with the Oregon Center for Advanced Technology Education, Oregon State University, Portland Community College, and numerous high technology businesses, to develop a model industry-based faculty development program. The project completed 27 programs reaching hundreds of Oregon faculty and graduate students in highly specialized discipline areas, as well as over a thousand faculty from around the country. The project tested the usefulness of several telecommunications technologies, designed a permanently sited facility for the continuation of programming of this type through OCATE, and completed a videotape library for the use of faculty, graduate students, governmental employees, and industry scientists and engineers wishing to utilize programs developed through the project.

NARRATIVE REPORT

PROJECT OVERVIEW

Planning for a Statewide Interactive Educational Television Network (ED-NET) has been underway in Oregon for several years, in cooperation with community colleges, four-year colleges/universities, business and industry, K-12 schools, State agencies, and the Oregon Public Broadcasting System. The major purpose of the network will be to link together educational institutions to share specialized academic resources and provide academic programs to industries through telecommunications. An emerging need for programming which comes *from* industries *to* educational institutions, particularly colleges and universities, was identified as a top priority in Oregon.

The project addressed the need for faculty to receive state-of-the-art information -- using the new telecommunications technologies -- from businesses and industries in computer science, business, and engineering areas. The project enabled colleges and universities in Oregon to try out a number of delivery systems, greatly expanding access by faculty to the many business and industry officials who visit the state through the Oregon Center for Advanced Technology Education (OCATE).

Through the project OCATE pilot tested a number of delivery formats and originations. Formats included live satellite presentation from Portland to campuses throughout the state (and campuses in many other states); videotaped presentations for later viewing by faculty; "imported" satellite program produced in another state; and live satellite presentation utilizing pre-produced segments, with a microwave link-in from Corvallis.

Over a 20 month period the project completed a total of 27 presentations on topics in the following areas: artificial intelligence, digital processing, information systems, optoelectronics, parallel computing, semiconductors, semiconductor devices and materials, superconductivity, technical writing, and telecommunications technology.

Through the use of telecommunications technologies, OCATE developed a model for expanding access to its heretofore limited access programs (until this time OCATE's programs were restricted to in-person presentations, for an audience of high technology engineers and scientists). Programs were made available to faculty and graduate students at community colleges and four-year colleges throughout Oregon via three live (satellite) programs and 24 videotaped programs. Faculty at campuses in states throughout the country were able to participate in the two satellite programs.

Continuing as a model program of OCATE since the end of the grant period (a number of programs have been scheduled for 1988-89), the program will become a permanent feature of ED-NET once the network becomes operational in January 1990, pending approval by the 1989 Oregon Legislature.

PURPOSE

The central purpose of the project was to improve faculty instruction, research, and public service in disciplines highly dependent upon currency of knowledge -- for example, engineering, sciences, computer sciences, and business. A second purpose of the project was to strengthen the developing partnership between Oregon colleges and universities and high technology industries in the State, as an important precursor to the implementation of ED-NET. A third purpose of the project was to develop expertise in the emerging telecommunications technologies as a way of planning for the growing use of technologies to deliver instruction.

BACKGROUND AND ORIGIN

Advanced technology industries are driven by innovation and new scientific developments. Increasingly, many research scientists and engineers in industry are moving ahead of our college and university faculty along the cutting edge of scientific knowledge. Faculty development opportunities are needed to maintain the vital partnerships that will spawn information sharing between those that educate the future professionals in our businesses and industries, and those

already working in our businesses and industries. There is also a critical need to find new delivery systems that will expand access to faculty development opportunities throughout the State of Oregon.

Planning for a statewide interactive television network (ED-NET) has been underway in our State for several years in cooperation with community colleges, four-year colleges/universities, K-12 schools, business and industry, state agencies, and the Oregon Public Broadcasting System. While the major purpose of ED-NET will be to link educational institutions together to share specialized academic resources and provide degree and professional development programs to industries via telecommunications, an additional feature of the network is needed to develop programming *from* industries *to* our colleges and universities. This link would enable faculty to receive state-of-the-art information on applications of their disciplines to businesses and industries in Oregon, with the goal of strengthening faculty instruction, research, and public service.

This was the context at the time we initiated our project.

PROJECT DESCRIPTION

The project developed a statewide model for an industry-based faculty development program which could be delivered over the Oregon instructional television network when it becomes operational.

The project was operated as a program of the Oregon Center for Advanced Technology Education, a unit created by the Oregon 1985 Legislature to be administered by the Oregon State System of Higher Education. The Governor's Commission on Technical Education, whose members are drawn from top leadership ranks of the major advanced technology firms located throughout Oregon, serves as an advisory board to oversee OCATE's policy and program development. These important links to the top leadership of Oregon's high technology community were vital to the success of the project, providing a ready source for consultation and selection of industry personnel to assist in the design of programs.

The project also involved key staff from the Chancellor's Office of the Oregon State System and Oregon State University. The coordinated management design of the project, with organizations contributing a variety of resources to the project, was responsible for the project going farther than the grant funds allowed. All of these agencies (particularly the Chancellor's Office, OCATE, Oregon State University, and high technology industries) contributed significant amounts of staff time, printing costs, the use of equipment to the project (production equipment especially needed for editing of materials), travel costs, and the like.

The project developed and pilot-tested 27 programs (symposia, forums, mini-courses) from industry "faculty" selected for their expertise in areas of need identified by colleges and universities, using a variety of telecommunications technologies that were available in Oregon during the project period 1987-88. The technologies tested included: for live broadcast -- satellite and microwave technologies; for delayed broadcasts -- permanent-sited videotaping and mobile unit videotaping.

While the project had originally hoped to utilize more "live" broadcasting of programs, technical problems developed regarding the microwave line that runs between Corvallis and Portland at that time; we were, therefore, unable to send programs southbound from Portland to faculty at Oregon State University, although programs could be sent northbound.

In order to reach faculty throughout the state, therefore, we opted to try a satellite broadcast as our first program. This was an ambitious *first* effort (a four hour-long teleconference) involving a number of industry officials on the topic of "Building Competitive Business Advantages." Because this was a satellite broadcast, campuses throughout the nation were able to pick up this program. We were able to reach nearly 1,000 faculty with this program. Evaluation instruments were sent to all the participants and we completed an assessment of both the subject and technology (delivery mode) of this first teleconference.

Our evaluations showed that while satellite broadcasts could gain us a "big" audience, the content of the program had to be very tightly controlled in order to make the program truly

effective. We found that industry "faculty" would not always follow the topic(s) that had been agreed upon and that editing would be necessary for widespread use of information for faculty development purposes.

Furthermore, because of the very tight schedules most faculty have with their classroom and research responsibilities, live broadcasts (particularly of duration of two or more hours) were seen in most cases as less desirable than having materials available on videotape for delayed viewing (when faculty had time).

Because of this finding (and the high costs of satellite broadcasts as well as the technical problems we were experiencing in using the existing microwave lines in the state at the time), we altered the project's focus somewhat. We thereafter emphasized the use of videotaping of industry presentations provided by OCATE.

It should be noted that one of OCATE's missions is to bring to Oregon expert industry presenters on cutting edge topics for the professional development of a rather limited audience of industry engineers and scientists. When staff of the FIPSE project compared the list of topics that faculty had identified of interest to them for professional development (this list was developed as part of our proposal planning process some 6-12 months earlier), many of the topics overlapped with the type of programs already being planned by OCATE for its limited audience of industry professionals. The project attempted to make use of this "duplication of interest" wherever possible, on the assumption that telecommunications technologies could be used to expand access of OCATE's very costly and highly specialized programs to faculty throughout the state (who without such access would never be able to participate in these programs).

Thereafter, industry "faculty" were videotaped when they made presentations in Oregon that had been identified to be of interest to our college and university faculty These videotapes were then edited prior to dissemination to faculty throughout the state. Deans, department heads, and faculty in engineering, science, computer science, business, science, and related disciplines were asked to review materials and provide an assessment of both the content and the technology.

Faculty from eight four-year colleges and universities as well as thirteen community colleges were involved in these assessments.

All of the videotaped programs have been located in a permanent videotape library at OCATE. Videotapes are mailed to faculty upon request. Industry officials who gave the presentations have also given their permission for materials to be copied for faculty member's use in classroom assignments. We learned from faculty assessments that this will help ensure that the materials will be used not only for faculty development but for instructional purposes as well.

Because of the project's interest in providing some programs that were not so specialized in their content that community college faculty could not participate, some programs were planned to have more widespread interest; one of these was the program on "Desktop Publishing -- the Changing Workplace." Because evaluation results from our first live broadcast program revealed that we needed "tighter control" over content, we decided that much of the content of the Desktop Publishing program should be pre-produced, then interspersed with 'live' questions and answers from our faculty audience around the state and elsewhere. This program proved to be one of our most successful because of the tight control we maintained over the content. Many campuses around the country have continued to request copies of the program, and the materials are being used as supplements to courses at some campuses today (for example, technical writing, journalism).

One of the goals of the project was to create the capacity to continue programs of this type after the grant period, with the expectation that ED-NET would provide a network for reaching all areas of the state once it became operational. When it was established in 1985, OCATE was tentatively sited at one of Portland Community College's campuses in Washington County. This was necessary to provide easy access to Oregon's high technology companies. Over time, however, OCATE found that it needed closer ties to the higher education community and needed to relocate elsewhere in Washington County. Because of the length of time it took for OCATE to find a new home (this became a "political" decision involving the Governor's Office), the equipment used during the grant period had to be only temporarily sited at OCATE's office at

Portland Community College, Rock Creek. In the last year, the Governor's Office played a leadership role in creating a new partnership between a private graduate university located in the center of the state's high technology corridor -- the Oregon Graduate Center -- and OCATE. On March 27, 1989, OCATE will move to the Graduate Center, and the new video facility will be permanently sited there (see Lease Agreement in Appendix C). Programs that will feed into ED-NET will therefore originate at OCATE, continuing the model program that was developed during the FIPSE project.

PROJECT RESULTS

The project was very successful. Not only did we gain expertise in the uses of a variety of telecommunications technologies new to the State of Oregon as a way of delivering educational programs to faculty and graduate students, but we produced many more programs than originally anticipated -- the project proposal called for 10-15 programs to be produced, the project was able to produce 27 programs in the following subject areas: artificial intelligence, digital processing, information systems, optoelectronics, parallel computing, semiconductors, semiconductor devices and materials, superconductivity, technical writing, and telecommunications technology.

There were also two important unanticipated results. First, some of Oregon's high technology industries wanted to obtain videotaped materials produced through the project for their scientists and engineers. While the project's intended audience was faculty and graduate students, industry engineers and scientists also expressed interest in participating in the telecommunications programs. A second result was that campuses throughout the nation were able to participate in two of the project's programs which had to be provided via satellite transmission in order to reach Oregon faculty throughout the state. These two programs ("Desk Top Publishing" and "Gaining a Competitive Business Advantage") alone reached more than 1,000 faculty members located outside the State of Oregon, greatly increasing the impact of the project. The following 26 campuses participated in "Business Advantage '87: Creating Competitive Advantage through Information Systems and Technology" held in February 1987:

In Oregon (16 sites):

Oregon State University
Eastern Oregon State College
Umpqua Community College
Central Oregon Community College
Blue Mountain Community College
Chemeketa Community College
Linn-Benton Community College
Clackamas Community College
Oregon Institute of Technology
University of Oregon
Rogue Valley Community College
Treasure Valley Community College
Lane Community College
Portland Community College - Sylvania
Clatsop Community College
Portland Community College - Rock Creek

Outside Oregon (10 sites):

University of Arkansas, Arkansas
Loyola University, Illinois
Buena Vista College, Iowa
Mission College, California
Ball State University, Indiana
Gateway Technical Institute, Wisconsin
Briar Cliff College, Iowa
Kirkwood Community College, Iowa
Lewis and Clark College, Idaho
Central Washington University, Washington

The following 35 campuses participated in "Desktop Publishing - Changing the Workplace" Program held in May, 1988:

In Oregon (8 sites):

Western Oregon State College
Southern Oregon State College
Treaty Oak Community College
Eastern Oregon State College
Southwestern Community College
Lane Community College
Umpqua Community College
Oregon State University

Outside Oregon (27 sites):

South Seattle Community College, Washington
Chandler-Gilbert Community College, Arizona
Kellogg Community College, Michigan
University of Winnipeg, Manitoba, Canada
North Arkansas Community College, Arkansas
Penn Valley Communication College, Missouri
Madison Area Technical College, Wisconsin
Lakeshore Technical College, Wisconsin
Chippewa Valley Technical College, Wisconsin
Tyler Junior College, Texas
University of Missouri, Missouri
University of Missouri, Rolla
College of the Mainland, Texas
William Rainey-Harper College, Illinois
Northeast Iowa Technical Institute, Iowa
Ball State University, Indiana
Drake University, Iowa
Mission College, California
Lincoln University, Missouri
Western Michigan University, Michigan
Texas A & M, Texas
Skagit Valley College, Washington
Southern Utah State College, Utah
University of Maine, Maine
Wayne County Intermediate School District, Michigan
University of Massachusetts, Massachusetts
Sheridan College, Ontario, Canada

The 27 programs listed below were completed as a result of the project (see Appendix A for a catalog of programs including names of presenters). These are available in a videotape library for the use of faculty, students, industry, and governmental employees in Oregon and elsewhere. Examples of comments received from faculty, graduate students, and industry representatives are provided in Appendix B. Evaluation questionnaires providing assessments of content and technical/delivery system aspects of programs are available in project files.

PROGRAMS COMPLETED

	Dates
Artificial Intelligence	
• Knowledge Engineering	November 18, 1986
Digital processing	
• What Can Be Done With a Few Bits?	April 2, 1987
Information systems	
• Business Advantage - '87	February 6, 1987
Technical Writing/Computers	
• Desktop Publishing -- Changing the Workplace	May 5, 1988
Optoelectronics	
• III-VI Materials for Optoelectronics	March 16, 1987
• Physics and Applications of Quantum Well Structures	March 16, 1987
• Packaging Effectors on Ultrafast Optical Devices	March 16, 1987
• High Speed Photodetectors for Communication/Instrumentation	March 16, 1987
• Diode Lasers for High Speed Applications	March 17, 1987
• Optical Techniques for Measuring Ultrafast Signals	March 17, 1987
• Recent Developments in Semiconductor Lasers	May 22, 1987
Parallel Computing	
• Architecture and Basic Technology	June 1, 1987
• Programming Languages	June 1, 1987
• Programming Tools and Systems	June 2, 1987
• Applications and Algorithms	June 2, 1987

	Dates
Semiconductor Devices and Materials	
• Electron Energy Loss and Microscopy of Defects and Interfaces in Semiconductors	April 14, 1987
• Optical Studies of GaAs, AlGaAs, and GaAs/AlGaAs Multiple Quantum Wells	April 20, 1987
• Formation of Buried Conducting and Insulating Layers by Ion Implantation	May 1, 1987
Superconductivity	
• High Temperature Superconductor: Fundamental Properties that Set Bounds on Application	October 8, 1987
• Thin Films, Patterning, and Squids Made by Ion Implantation in Y Ba_2Cu_3Ox	October 15, 1987
• Explosive Fabrication of High Tempercture Superconducting Monoliths and Fixtures	October 22, 1987
• Resonating Bond Theory of High Temperature Superconductivity	October 29, 1987
• Neuro-Magnetism: A New Window on the Brain	November 5, 1987
• High Speed Computing and Data Capture	November 12, 1987
• Antistrophy in Y Ba_2Cu_3Ox: Critical Currents & Fields	November 19, 1987
• What's Hot in Superconductivity at the NRC?	December 7, 1987
Telecommunications Technology	
• Emerging Technologies in Telecommunications	March 10, 1987

Equipment purchased through the project will be permanently sited in OCATE's new facility at the Oregon Graduate Center; the date of the move is scheduled for March 27, 1989 (the Oregon Graduate Center is located in Washington County in the midst of Oregon's high technology "corridor"). Equipment is currently being used on a "mobile" basis to produce programs now. The following programs have been completed for distribution to faculty outside of the grant project (with OCATE's funds):

	Dates
Parallel Computing Workshop 1988	
• Languages and Programming Tools	April 12, 1988
• Parallel Processing for Robots	April 12, 1988
• Algorithms, Performance and Applications	April 13, 1988
• Neural Computing	April 13, 1988

	Dates
Superconductivity	
• High Temperature Superconductivity: Experiment and Theory	June 8, 1988
• Wide-Bandwidth Analog Signal Processing Using Superconductive Electronics	June 29, 1988
Technology Management	
• Strategic Issues and Directions in Technology Management	September 19, 1988
• Trade Issues in Technology Management	November 18, 1988

As OCATE continues to bring in renowned industry and university engineers and scientists for in-person professional development presentations for engineers and scientists in the state's high technology companies (this is OCATE's major charge from the Oregon Legislature), OCATE will expand access to these presentations through ED-NET, using the model developed through the FIPSE project.

SUMMARY AND CONCLUSIONS

The project provided a unique opportunity for the State System of Higher Education, working with the Oregon Center for Advanced Technology Education, Oregon State University, Portland Community College, and numerous high technology businesses, to develop a model industry-based faculty development program. The project completed 27 programs reaching hundreds of Oregon faculty and graduate students in highly specialized discipline areas, as well as over a thousand faculty from around the country.

The project tested the usefulness of several telecommunications technologies, designed a permanently sited facility for the continuation of programming of this type through OCATE, and now houses a videotape library for the use of faculty, graduate students, governmental employees, and industry scientists and engineers wishing to utilize programs developed through the project.

The project was influential in moving Oregon's early plans for a statewide instructional television network into "high gear." Shortly after the FIPSE project was funded, the 1987 Legislature provided $250,000 to complete the technical plans for ED-NET, expanding the concept of ED-NET from a postsecondary network to a network which could serve all of education (including state agencies)

through the uses of new telecommunications technologies. The FIPSE project played a key role in moving Oregon ahead by further involving Oregon industry in planning for their own "active" role in ED-NET -- an important link that would move information *from* industry *to* the campuses. The involvement of business and industry in Oregon has been central to the development of ED-NET: if the 1989 Oregon Legislature appropriates the $8 million needed to built ED-NET, the credit will in large part go to the leadership provided by our high technology industries. The FIPSE project played an important role in keeping industry involvement central tc the planning process.

BUDGET

A budget breakout of costs appears below, along with the attached Federal Form 269.

		Original FIPSE Budget	Total Expended	Remaining Balance
	Direct Costs			
1.	Salaries/Benefits	$ 23,625	$ 23,625	$ 0
2.	Travel	2,200	2,200	0
3.	Equipment (see on the following page)	27,450	27,450	0
4.	Materials/Supplies	1,500	1,500	0
5.	Consultants (12 involved in programs)	7,500	7,500	0
6.	Other (Production Costs/ Studio Modifications)	16,750	16,630	120
	Totals:	$ 79,025	$ 78,905	$ 120

Indirect Costs

Contributed by Project

FIPSE GRANT EQUIPMENT EXPENDITURES

Item	Amount
Camera Lens (Fujinon ECL 8077)	$ 133.50
Microphone System (Audio Mixer Shure AMS8000)	1,807.00
2 Color NEC TV Monitors 2 with built-in speaker system ($717 each)	1,434.00
Spot Light	169.00
Spot Light	169.00
Spot Light	169.00
3 Spot Light Color Frame Accessories	15.00
2 Sony Monitor Rack Mounts	156.00
4 Color Sony Monitors ($460/each)	1,840.00
2 Sharp Color Video Cameras and 2 Mount Plates	11,190.00
1 Sharp Teleconference Panel and Service Manual	1,524.00
TSM Pan and Tilt System and Control Unit	2,471.00
1 Sony Monitor	469.61
Color Special Effects Generator (JVC)	3,514.60
Condenser Microphone	155.00
Sony Video Cassette Recorder/Player	2,068.00
Service Manual for Sony VCR	50.00
EVR Lamps & Plugs	80.97
Video Tapes	34.32
TOTAL	**$ 27,450.00**

FINANCIAL STATUS REPORT

(Follow instructions on the back)

1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED	2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER	OMB Approved No. 80-R0180	PAGE	OF
U.S. DEPT. OF EDUCATION, FIPSE	G008642199		1	1 PAGES

3. RECIPIENT ORGANIZATION (Name and complete address, including ZIP code)	4. EMPLOYER IDENTIFICATION NUMBER	5. RECIPIENT ACCOUNT NUMBER OR IDENTIFYING NUMBER	6. FINAL REPORT	7. BASIS
OREGON STATE SYSTEM OF HIGHER EDUCATION PO Box 3175 Eugene, OR 97403	1936001786B4	5593/5593G 80-260-0011	[X] YES [ ] NO	[X] CASH [ ] ACCRUAL

8. PROJECT/GRANT PERIOD (See instructions)		9. PERIOD COVERED BY THIS REPORT	
FROM (Month, day, year)	TO (Month, day, year)	FROM (Month, day, year)	TO (Month, day, year)
10/01/86	05/31/88	10/01/86	05/31/88

10.

PROGRAMS/FUNCTIONS/ACTIVITIES ▶	(a)	(b)	(c)	(d)	(e)	(f)	TOTAL (g)
	STATUS OF FUNDS						
a. Net outlays previously reported	$ --	$	$	$	$	$	$ --
b. Total outlays this report period	78,905						78,905
c. *Less:* Program income credits	--						--
d. Net outlays this report period (*Line b minus line c*)	78,905						78,905
e. Net outlays to date (*Line a plus line d*)	78,905						78,905
f. *Less:* Non-Federal share of outlays	--						--
g. Total Federal share of outlays (*Line e minus line f*)	78,905						78,905
h. Total unliquidated obligations	--						--
i. *Less:* Non-Federal share of unliquidated obligations shown on line h	--						--
j. Federal share of unliquidated obligations	--						--
k. Total Federal share of outlays and unliquidated obligations	78,905						78,905
l. Total cumulative amount of Federal funds authorized	79,025						79,025
m. Unobligated balance of Federal funds	120						120

11. INDIRECT EXPENSE	a. TYPE OF RATE (*Place "X" in appropriate box*) [ ] PROVISIONAL [ ] PREDETERMINED [ ] FINAL [ ] FIXED	b. RATE	c. BASE	d. TOTAL AMOUNT	e. FEDERAL SHARE
				none	

12. REMARKS: *Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation.*

13. CERTIFICATION

I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL: Holly Zanville

DATE REPORT SUBMITTED: 1/18/89

TYPED OR PRINTED NAME AND TITLE: Holly Zanville, Associate Vice Chancellor for Academic Affairs

TELEPHONE (*Area code, number and extension*): 503-686-5726

STANDARD FORM 269 (7-76)
Prescribed by Office of Management and Budget
Cir. No. A-110

APPENDIX A

VIDEO CATALOG 1987-88

Artificial Intelligence

"Knowledge Engineering"

Dr. Michael Freiling, Tektronix, Inc.; Beaverton, Oregon.

TAPE # AI0001 VHS running time: 1 hr. 56 min.

This presentation provides an introduction to the methods and principles of knowledge engineering. Types of knowledge engineering problems and tasks. How to select a likely problem to work on. Knowledge acquisition and knowledge engineering using ontological analysis. The components of a knowledge-based system. Important design choices for building knowledge-based systems. Techniques for managing system development.

Digital Processing

"What Can One Do With a Few Bits?"

Prof. Bede Liu, Dept. of Electrical Engineering; Princeton Univ, New Jersey.

TAPE # DP0001 VHS running time 1 hr. 04 min.

This is a discussion of digital signal processing using very short wordlengths; sometimes down to one bit. Examples will include digital filtering (in 1 and 2D), data acquisition (A/D), adaptive signal processing (channel equalization, echo cancellation), and beam forming from sensor arrays.

Information Systems

"Business Advantage '87" -- a two tape series.

TAPE # IS0001A VHS running time 1 hr. 46 min.

James Reinmuth, University of Oregon
The concepts of competitive advantage.

Steve Gray, Softouch Software, Inc.
Business systems strategies for competitive advantage.

Larry Bunyard, Tektronix, Inc.
Designing and developing competitive advantage systems.

Yolanda Green, Tektronix, Inc.
Competitive advantage through quality information systems.

Malek Daaboul, Tektronix, Inc.
Selecting expert business systems for competitive advantage.

TAPE # IS0001B VHS running time 1 hr. 38 min.

Mike Mount, Apple Computer, Inc.
Competitive advantage opportunities with micro-computing technologies.

Dave Ellman, IBM Corp.
Competing with manufacturing systems.

Dana Becker, AT&T
Competitive advantage through integrated telecommunications.

Hap Prindle, Digital Equip. Corp.
Competing with engineering systems.

Optoelectronics

"III-IV Materials for Optoelectronics"
Dr. Ralph Dawson, Sandia National Labs; Albuquerque, New Mexico.
TAPE # OE0001 VHS running time 1 hr. 45 min.

Numerous high speed optoelectronic devices have been made from LPE, MBE, and MOCVD materials. Each technique has its unique advantages and problems. These are discussed with an emphasis on superlattice material systems.

"Physics and Applications of Quantum Well Structures"
Dr. Joe Weiner, AT&T Bell Laboratories; Murray Hill, New Jersey.
TAPE # OE0002 VHS running time 1 hr. 18 min.

Quantum well materials can provide novel and unique properties which make new devices possible. Several of these applications are discussed to illustrate the power of "quantum designing" materials for specific purposes.

"Packaging Effects on Ultrafast Optical Devices"
Dr. John Bowers, AT&T Bell Laboratories; Holmdel, New Jersey.
TAPE # OE0003 VHS running time 1 hr. 45 min.

Designing lasers and detectors which operate in the picosecond time frame can be futile if the device packages limit performance. The importance of proper packaging and techniques of good design are addressed.

"High Speed Photodetectors for Communication and Instrumentation"
Dr. Hermann Schumacher, Bell Communication Research; Red Bank, New Jersey.
TAPE # OE0004 VHS running time 1 hr. 17 min.

The properties of various photodetectors determine their suitability for certain applications. This presentation examines and compares different photodetectors with emphasis on performance limitations and their causes.

"Diode Lasers for High Speed Applications"
Dr. Kam Lau, Ortel Corporation; Alhambra, California.
TAPE # OE0005 VHS running time 1 hr. 55 min.

Depending on the particular application, diode lasers need to provide either very fast pulses or a narrow linewidth CW modulated signal. This presentation emphasizes the physics of the diode laser relative to the design and response of the device.

Optoelectronics

"Optical Techniques for Measuring Ultrafast Signals"
Mark Rodwell, Ginzton Laboratory; Stanford University.
TAPE # OE0006 VHS running time 51 min.

Picosecond photoconductive switches provide one means for probing ultrafast signals. Electro-optic sampling is less perturbing to the signal being measured and has been shown to be a valuable tool for probing working devices on chips.

"Recent Developments in Semiconductor Lasers"
Dr. H. Namizaki, Mitsubishi Electric Corp.; Itami, Hyogo, Japan.
TAPE # OE0007 VHS running time 1 hr.

Recent developments in semiconductor lasers are reviewed, focusing mainly on commercial laser diodes. High power, short and long wavelength, single longitudinal mode lasers are described.

Parallel Computing

"Architecture and Basic Technology" -- a two tape series.

TAPE # PC0001A VHS running time 1 hr. 30 min.

Donald Whitehead, Scientific Computer Systems Inc.
Some of the tradeoffs between single and multiple CPU processors are discussed.

David Rodger, Sequent Computer Systems.
Interaction between basic technology, from design through manufacturing.

Pete Wilson, INMOS Corporation.
An introduction to high performance computing "done right."

Peter Borgwardt, Tektronix, Inc.
Parallelism with transputers to achieve graphics animation speed.

TAPE # PC0001B VHS running time 1 hr. 11 min.

Richard Kieburtz, Oregon Graduate Center.
Asynchronous parallel computation on non-shared memory multiprocessors.

John Murray, Oregon State University.
Silicon compilers potential as the next big step in computer architecture.

PANEL DISCUSSION.
with the speakers from both tapes.

Parallel Computing

"Programming Languages" -- a two tape series.

TAPE # PC0002A VHS running time 1 hr. 38 min.

Dr. Robert Kessler, University of Utah.
The implementation and optimization of portable standard Lisp for the Cray.

Rod Oldehoef, Lawrence Livermore National Lab.
An introduction to the nature of functional programming languages.

Dr. Lawrence Snyder, University of Washington.
Parallel programming and the Poker environment.

TAPE # PC0002B VHS running time 1 hr. 23 min.

Dr. Robert Babb, Oregon Graduate Center.
Programming parallel processors with large-grain data flow techniques.

Martin Booth, INMOS Corporation.
Occam - A programming language for scalable parallel processing systems.

PANEL DISCUSSION
with the speakers from both tapes.

"Programming Tools and Systems" -- a two tape series.

TAPE # PC0003A VHS running time 1 hr. 29 min.

Bob Norin, Quantitative Technology Corp.
A software company's perspective on parallel programming tools.

Kathleen Nichols, AT&T Bell Labs.
Modeling multicomputer systems with PARET (Parallel Architecture Research and Evaluation Tool)

Shreekant Thakkar, Sequent Computer Systems.
Experience using three different parallel programming environments and the tools needed for performance analysis of parallel programs.

TAPE # PC0003B VHS running time 1 hr.

Dr. T.G. Lewis, Oregon State University.
Duplication scheduling heuristic (DSH), a new precedence task scheduler for parallel processor systems.

Gary Graunke, Sequent Computer Systems.
Annotating sequential programs for concurrent execution.

Parallel Computing

"Applications and Algorithms" -- a two tape series.

TAPE # PC0004A VHS running time 1 hr. 10 min.

Dr. Sartaj Sahni, University of Minnesota,
Parallel computing on a hypercube computer.

Dr. Dharma Agrawal, North Carolina State University.
Strategies for concurrent execution of application algorithms.

Dr. David Scott, Intel Corporation.
Three major approaches to programming hypercubes –data decomposition, control decomposition, and completely heterogeneous.

TAPE # PC0004B VHS running time 1 hr. 20 min.

Dr. Herbert Schwetman, MCC.
Some experiences with a parallel version of C (PLL). PLL features, debugging, performance evaluations, granularity, programming difficulty and speed-up.

Greg Donault, Hewlett Packard Co.
Design methodology for conversion of a 2D fluid flow model from a fortran source to a concurrent design using Occam.

PANEL DISCUSSION
with the speakers from both tapes.

Semiconductor Devices and Materials

"Electron Energy Loss and Microscopy of Defects and Interfaces in Semiconductors"

P.E. Batson, IBM Research Center.

TAPE # SD0001 VHS running time 1 hr. 29 min.

By combining a high quality energy loss spectrometer with a scanning transmission electron microscope (0.3 eV energy resolution using a 0.5 nm probe size), we are now able to study the local electronic structure and how it is related to morphology and atomic structure.

"Optical Studies of GaAs, AlGaAs, and GaAs/AlGaAs Multiple Quantum Wells"

P. Yu, Wright State Research Center

TAPE # SD0002 VHS running time 1 hr. 55 min.

High resolution photoluminescence, reflection spectroscopy, and photocurrent studies of antisite related centers and new defect centers are studied and explained in terms of melt stoichiometry. Exciton line widths in MQW's are very small indicating very high quality material, and allowing determination of interface state energies and oscillator strengths.

Semiconductor Devices and Materials

"Formation of Buried Conducting and Insulating Layers by Ion Implantation"

Dr. Gregory Clark, IBM Research Labs.

TAPE # SD0003 VHS running time 55 min.

High dose implantation of metals (Co and Ti) has been used to produce single crystal conducting layers in Si. The formation of these epitaxial and sometimes misotaxial structures are described. Structural and electrical characterization, including superconducting Tc's are discussed.

PROGRAMS COMPLETED AFTER THE END OF THE GRANT PERIOD

"High Temperature Superconductivity: Experiment and Theory"
J. C. Phillips, AT&T Bell Laboratories
TAPE # SC0009 VHS running time

The electronic mechanism responsible for T_c - 100 K in some layered cuprates is probably described correctly by the standard BCS theory of superconductivity, with minor refinements. Salient experiments demonstrate that the remarkable properties of these materials lie in a previously unknown region between ceramics and metals.

"Wide-Bandwidth Analog Signal Processing Using Superconductive Electronics"
Jonathan B. Green, MIT Lincoln Labs
TAPE # SC00010 VHS running time

Abstract information not available at time of print.

PARALLEL COMPUTING WORKSHOP - 1988

"Languages and Programming Tools" -- a two tape series.

TAPE # PC0005A VHS running time 1 hr. 48 min.
Duncan Lawrie, University of Illinois
Software in the Cedar Project
Mario Barbacci, Carnegie Mellon University
Programming at the Processor-Memory-Switch Level
S. R. Ahuja, AT&T Bell Labs
The Linda Machine Project

TAPE # PC0005B VHS running time 52 min.
Narain Gehani, AT&T Bell Labs
Concurrent C/C++ and its Application to Robotics
Charles Vollum, Cogent Research
A Visual Environment for Parallel Programming

"Parallel Processing for Robotics"

TAPE # PC0006 VHS running time 1 hr. 40 min.
M. Wagner, University of Portland
Distributed Control System of Dynamically Stable Bipedal Motion
D. E. Koditschek, Yale University
Distributed Control System for a Juggling Robot
Miriam Zacksenhouse, Lockheed
EVA Retriever: Architecture of a Free-Flying Robot

"Algorithms, Performance & Applications" -- a two tape series.

TAPE # PC0007A VHS running time 1 hr. 19 min.

Shreekant Thakkar, Sequent Computer Systems
Performance of Symmetry
Kit Tham, Mentor Graphics
Parallel Processing Logic Simulation

TAPE # PC0007B VHS running time 1 hr. 16 min.

G. S. Stiles, Utah State University
Parallel Fourier and Hartley Transforms
Marina Chen, Yale University
Crystal: From Functional Description to Efficient Parallel Code

"Neural Computing" -- a two tape series.

TAPE # PC0008A VHS running time 1 hr.

Dan Kimura, Washington University
A Neuron Model with Inhibitory Field
Stephen Deiss, SAIC
Performance of Neural Networks

TAPE # PC0008B VHS running time 1 hr. 9 min.

Dan Hammerstrom, Oregon Graduate Center
Casting Neural Networks into Silicon: There's good news, and there's bad news
George Mpitsos, Oregon State University
What We Can Learn About Adaptive Networks From Brain Function

MICROWAVE ENGINEERING

"The Physics of III-V Compound Semiconductors"

J. S. Blakemore, Oregon Graduate Center
TAPE #ME00001 VHS running time 90 minutes

An outline of the physical properties (mechanical, thermal, optical), and the electron band and carrier transport features the direct-gap and indirect-gap III-V materials - with a primary emphasis on GaAs.

"GaAs Modeling Through 50 GHz"

Eric W. Strid, Cascade Microtech, Inc.
TAPE #ME0002 VHS running time 78 minutes

Measurement and modeling of microwave and millimeter-wave transistors, including physical explanations of parasitic element measurement verifications, model extraction techniques, and implications to millimeter-wave design.

"Passive Component Design"

Len Roland, Tektronix, Inc.
TAPE #ME0003 VHS running time 90 minutes

Practical problems of filter, coupler, and attenuator pad design model deficiencies and realization difficulties; practical solutions and compensating techniques; tips on how to select the most practical realization of a design, i.e. coaxial, ceramic, waveguide, duriod, etc.

"GaAs MESFET IC Technology" - a two tape series

Richard Y. Koyama, TriQuint Semiconductor

TAPE #ME0004A VHS running time 90 minutes
TAPE #ME0004B VHS running time 90 minutes

The GaAs MESFET is the basic building block for most of the prevalent III-V technologies and is analyzed in detail including fabrication processes. In addition, other basic III-V IC devices are considered including the homojunction FET, the selectively doped heterostructure transistor, and the heterojunction bipolar transistor

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"Microwave Oscillators - Techniques & Technology"

Thomas G. Ruttan, Tektronix, Inc.
TAPE #ME0005 VHS running time 90 minutes

Oscillator characteristics are examined: wide and narrow bandwidth tuning, fixed frequency, low noise, high power and frequency stabilized oscillators are examined; the characteristic YIG (Yttrium Iron Garnet) tuned, varactor tuned, mechanically tuned, dielectric resonator and cavity resonator oscillators.

"HEMT Technology"

Bruce Odekirk, TriQuint Semiconductor
TAPE #ME0006 VHS running time 90 minutes

A resume of HEMT technology, with an emphasis on materials and process considerations and device characteristics.

"Digital GaAs Integrated Circuit Design"

Gary D. McCormack, TriQuint Semiconductor
TAPE #ME0007 VHS running time 95 minutes

Application of GaAs FETs to logic gate design; depletion mode only; enhancement/depletion mode technologies; logic gate design with HEMT and HBT; logic timing simulation and accuracy; chip design, power distribution, thermal management, wiring parasitics, and I/O buffering; problems of interfacing GaAs chips to the rest of the world; impact of GaAs' high-speed on board level design.

"Linear GaAs Integrated Circuit Design"

Stewart S. Taylor, TriQuint Semiconductor
TAPE #ME0008 VHS running time 94 minutes

Overview of the advantages, disadvantages, and some strategies for linear GaAs design; a GaAs FET model and its limitations, operating points, transconductance, and output resistance; single-state and high-gain amplifiers, simple circuits, and frequency compensation; a design example of a wideband feedback amplifier.

"Wide Dynamic Range Receiver IF Systems"

Linley Gumm, Tektronix, Inc.
TAPE #ME0009 VHS running time 93 minutes

System level problems of design, determination of system requirements, selection of system topologies for spurious free frequency conversions and alignment of dynamic range windows as well as other pertinent topics.

"Microwave GaAs Integrated Circuit Design"

Gary S. Barta, TriQuint Semiconductor
TAPE #ME0010 VHS running time 93 minutes

Monolithic microwave integrated circuit (MMIC) passive and active elements; design topologies for circuit realization and tuning methods; grounding, power density, wafer probing, cascadability, and packaging considerations.

"Phase Lock Systems for Receiver Design"

Linley Gumm, Tektronix, Inc.
TAPE #ME0011 VHS running time 90 minutes

System level problems of designing the frequency control system of wide dynamic range receivers; determination of system requirements, selection of system topologies, prediction of performance as well as other pertinent topics.

TECHNOLOGY MANAGEMENT

"Strategic Issues and Directions in Technology Management"
Dundar F. Kocaoglu, Portland State University
TAPE # TM VHS running time

"Trade Issues in Technology Management"
Thomas Long, Tektronix-Beaverton and
Roger Majak, Tektronix-Washington, DC
TAPE # TM VHS running time

APPENDIX B

EXAMPLES OF COMMENTS ON PROGRAMS PROVIDED DURING PROJECT

"ALL PROGRAMS"

Coordinator, Academic Support Office. We received a complete set of the videotape library for our uses at Oregon Institute of Technology. We are so far from the other campuses -- nearly on the California border. As an 'outpost' it's very important for our faculty to have access to these materials. I have circulated an announcement to our whole faculty about the availability of this important resource. Several faculty have reviewed materials for their own development and many are using them as supplements to our curricula. Two of our programs have particular interest in them--Electronics Engineering Technology and Computer Science Engineering Technology. Since we are moving into master's programs in these two areas for the first time, the videotapes are timely and will greatly assist us in our curriculum development. We would like to see even more interactive programs.

"DESK TOP PUBLISHING"

Faculty, Visual Media Technology: I found the Desk Top Publishing Program very informative.

Faculty, Veterinary Medicine: The program was of high value to my interest and needs.

Staff, University Campus Computing: Thank you for being organized and presenting in such an informative way. I learned a lot. Especially liked seeing hands-on demonstration, and hearing about a variety of products with description of their capabilities. The segment on history cleared up a lot of my questions.

Staff, Computing Services: The program was very interesting on how Desk Top Publishing is being used in the corporate environment.

Faculty, Practical Arts and Vocation-Tech Education: Good program. The variety of good video presentations and questions/answers was helpful.

Faculty, Business: Very helpful in showing how Desk Top Publishing is affecting publishing and graphic arts industries worldwide.

Faculty, Landscape Architect: Very well done and informative.

Staff, School of Forest Services/Conservation: Program nicely done. This is certainly an economical method of delivering information.

Staff, Occupational Education: This needs to be incorporated into our curricula. There is a great need for this in the business world for which we must prepare our future students.

Faculty, Extension Education: My knowledge and experience of computers is very minimal so appreciated starting at the beginning. An excellent presentation--well balanced in subject matter and technical field.

Staff, Library: A very useful update for me.

Instructor, Printing Technology: Four instructors in our department viewed the program -- found it worthwhile. Would like a follow-up now at more advanced level. We've received many teleconferences -- this was one of the best engineered/produced and organized.

Faculty, Business Science: An excellence presentation.

Editor, Department of Agricultural Communication: Very informative -- thanks.

Faculty, Business: Excellent presentation of topic from all disciplines (education and business).

Faculty, Home Economics/Child Development: As a total 'illiterate' in this area, this was very valuable.

Public Information Officers: A great panel -- informed, well speaker. Down to earth. Speaks well to the novice, giving background explanations, building up to specifics.

Staff, Data Processing: A well-organized and worthwhile two hours. We'll use the tape as a valuable training and planning tool.

Graduate Student, Psychology: Very interesting. Brought me up-to-date. Now I have a better understanding of what Desk Top Publishing is and isn't. The software section was most interesting.

Faculty, Oceanography: Videotapes were a high point -- well prepared. Need more of this.

Student, Business: Good selection of speakers. It's nice to hear from the business sector.

Student, Journalism: Got me excited -- ready to learn.

Faculty, Pharmacy: I learned so much but realized how little I know. Panel well informed -- very impressive.

Faculty, Music: Very informative and helpful.

Faculty, Foreign Language: Most informative -- was new material for me and of great interest.

Graduate Student, Postsecondary Education: I feel very fortunate having access to this program -- fascinating. Just what I needed.

Graduate Student, Journalism: Very well done, inspirational. Especially valued the explanation on visual literacy skills.

Faculty, English: Can my instructors get this on video for use in technical writing classes? Our dean and department head should have attended!

Staff, Graphic Services: Very interesting. Speakers were great. We followed up the program with a tour of our area where we have machines set up.

"EMERGING TECHNOLOGIES IN TELECOMMUNICATIONS"

Graduate Student, Agricultural Engineering: I am an educator who will in some way be using these emerging technologies. I need to understand them. This program helped me do just that.

Faculty, Foods and Nutrition: I appreciated the opportunity to obtain an additional perspective on technology-enhanced education. It was a painless quick way to summarize one aspect. The frustration is the slowness of our system in keeping up with the state-of-the-art.

"SUPERCONDUCTIVITY SERIES"

High Technology Company: This series contains valuable information. Many of our engineers and scientists who could not attend all the presentations in the Superconductivity Series wanted access to the presentations. We purchased a complete set of the tapes for our employees.

Faculty, Physics: I showed the series to several of our graduate students. We appreciated the chance to have access to these current materials.

Faculty, Physics: Provided a very good overview of the basics. Would be appropriate for physics students at all levels.

Faculty, Physics: These materials are too advanced and too dry for student uses. Would be most appropriate for graduate-level students in physics, electrical engineering, and materials science.

Faculty, Physics: Of great value to my instructional responsibilities, of some value to research and professional development. Would be most appropriate for physics students at upper-division and graduate-levels. Could be used as an in-classroom supplement to a class section followed by discussion.

Faculty, Physics: I did not review this soon enough to use in my class this year but it would have been worthwhile. Would be appropriate for students in physics, biology, pre-med, and neuroscience.

Faculty, Physics: The tape I viewed was of great value to my instructional responsibilities. The description of methods of measurement of important parameters of high Tc materials was very useful to my class. This information will be useful to me in the future in my research.

"OPTOELECTRONICS"

Faculty, Electrical Engineering: We found this series valuable. Several of our graduate students viewed the tapes with faculty and found them very useful.

Faculty, Electrical and Computer Engineering: The one hour formats are a bit long for in-class use since we have 50 min. classes but I have put them on file in our media center for volunteer use mostly. This is a good way to give graduate students good information in a short time as a seminar series. The materials will also be of some value to my technical assistance responsibilities -- I can refer industries to tapes for appropriate topics. These are a good review of topics, but could get quickly dated. The series provides excellent topical coverage.

"BUSINESS ADVANTAGE '87"

Faculty, Physical and Computer Science: Good definitions -- aimed correctly.

Faculty: Style, content easily assimilated. Interaction provided good communication with audience.

Faculty: Expected dull lecture but got series of presentations with movement and that held interest. Very positive.

Industry Representative, Microcomputer Manufacturer: Good presentation of the significant role education can play in the economic/technology growth of the Portland area.

Industry Representative, Corporate and Management Firm: Overall program was very informative -- impressed with the speakers, organization, and the speakers' knowledge of their subject and accessibility to the participants. Thanks for a very enlightening day.

Faculty, Business Administration: I teach a lot of management theory. It's great to have this theory validated by business leaders. This helped to further my knowledge of current business practice. Would rate of great value to my professional development.

Faculty, Management: Topics were outstanding. Could be used by business students at all levels.

"ARTIFICIAL INTELLIGENCE"

Faculty, Computer Science: While this is of minimal value or interest to computer science majors, it is informative and useful for people whose work requires knowledge of contemporary knowledge system techniques, e.g., managers. I would like this to be available in the library for students's optional viewing (most appropriate for upper-division and master's level students).

Faculty, Mechanical Engineering: Found this to be of great value to my professional development. Is appropriate for master's and doctoral level students interested in AI.

Faculty, Mechanical Engineering: Of great value to my professional development. Is appropriate for graduate-level students in computer science and application areas.

Faculty, Business Computer Systems: Of great value to my instructional, research, public service, and professional development responsibilities. Would like to see this used as an in-classroom supplement to a class session followed by discussion. Most appropriate for upper-division and graduate-level students.

"PARALLEL COMPUTING"

Faculty, Computer Science: Would rate this series of great value to my instructional, technical assistance, and professional development responsibilities. If these materials are to be used in class, copies of overheads and table of contents with timings would facilitate skipping to interesting sections.

APPENDIX C

CONTRACT OF AGREEMENT BETWEEN OCATE AND OREGON GRADUATE CENTER

LEASE

dated as of December 8, 1988

between

OGC SCIENCE PARK BUILDING E-3 LIMITED PARTNERSHIP
Landlord

and

STATE BOARD OF HIGHER EDUCATION
on behalf of
OREGON CENTER FOR ADVANCED TECHNOLOGY EDUCATION
(OCATE)
Tenant

[AN EXCERPT FROM A 20-PAGE LEASE AGREEMENT.]

LEASE

LEASE dated as of December 8, 1988 between OGC Science Park Building E-3 Limited Partnership ("Landlord"), an Oregon limited partnership having offices at 1600 NW Compton Drive, Suite 300, Beaverton, Oregon 97006 and the State of Oregon acting by and through the State Board of Education on behalf of Oregon Center for Advanced Technology Education ("Tenant"), which will have offices at 19500 N.W. Gibbs Drive, Beaverton, Oregon 97006.

RECITALS

A. Landlord owns a building ("Building") known as Building E-3 containing about 83,010 net rentable square feet of space and located on the land described on Exhibit A in the Oregon Graduate Center Science Park near Beaverton, Oregon. OGC Science Park Limited Partnership, an Oregon limited partnership, owns such land and has ground leased it to Landlord by Ground Lease dated as of January 15, 1988. (such Ground Lease as the same may be amended from time to time herein called the "Ground Lease").

B. Landlord wishes to lease to Tenant, and Tenant wishes to lease from Landlord, approximately 8,490 net rentable square feet on the first floor in the Building, identified by the outlining on the floor plan attached as Exhibit B ("Premises").

C. "Usable square feet" and "net rentable square feet" shall have the meanings, respectively, of "usable area" and "net rentable" determined in accordance with the rules, definitions and standards of the American National Standards of Industry ("ANSI").

D. The ratio of the net rentable square footage of the Premises to the total net rentable square footage of the Building shall be 8,490 square feet to 83,010 square feet, or approximately 10%. Net usable square feet in the Premises is approximately 7,789.

In consideration of the mutual promises herein contained, the parties agree as follows:

SECTION 1. LEASE. Landlord hereby leases the Premises to Tenant, and Tenant hereby leases the Premises from Landlord, upon the terms and conditions set forth in this Lease, subject to the provisions of the Ground Lease.

SECTION 2. TERM. The term of this Lease ("Term") shall commence on the later of March 1, 1989 or the date when the Premises are substantially completed and available for possession by Tenant ("Commencement Date") and shall continue through February 28, 1992. The Premises shall be deemed substantially completed and available for possession by Tenant upon issuance of an occupancy

permit. If the Commencement Date is other than March 1, 1989, then promptly after the actual Commencement Date, Landlord and Tenant shall enter into a written agreement setting forth the actual Commencement Date. This Lease shall not be terminable by Tenant, and Tenant shall in no event be entitled to an abatement or reduction of rent except as expressly set forth in Section 11.3 or Section 12.1.

SECTION 3. RENT.

3.1 Base Rent. Without any prior notice, demand, offset or deduction, Tenant shall pay Landlord as rent ("Base Rent") an amount per month (subject to adjustments as provided in Section 7.2) computed by multiplying the net rentable square feet in the Premises by $.65. Rent shall be payable on the fifth day of each month in advance at the Landlord's address set forth above or such other place as may be designated by Landlord from time to time, except that Base Rent of $5,518.50 for the first month has been paid upon execution of this Lease.

3.2 Additional Rent. This Lease is a triple net Lease. All taxes, insurance costs, utility charges and other costs, charges and expenses which Tenant is required to pay by this Lease, arising out of or in connection with this Lease or the ownership or operation of the Premises except to the extent this Lease explicitly places responsibility for any such cost, charge or expense on Landlord,shall be additional rent. Notwithstanding any other provision in this Lease, Tenant's share of taxes (Section 8), utilities relating to Common Areas (but not for electricity to HVAC systems relating to the net usable square footage in the Premises which is not separately metered but shall be allocated to Tenant on a proportionate share basis) (Section 9), insurance (Section 10) and Common Area Charges (Section 13) shall not exceed the sum of $.184 per net rentable square foot of the Premises per month during the first twelve (12) months of the Term; $.193 per net rentable square foot of the Premises per month for months 13 through 24 of the Term; and $.202 per net rentable square foot of the Premises for months 25 through 36 of the Term. (Tenant specific expenses, such as but not limited to separately metered utilities or custodial services to the Premises, are excluded from the cap.)

SECTION 4. USE.

4.1 Permitted Use. Tenant may use the Premises solely for office, classroom and storage uses.

4.2 Restrictions on Use. In connection with use of the Premises, Tenant shall:

(a) Comply with all cable laws and regulations of any public authority affecting the Premises or the use thereof, and correct at Tenant's expense any failure to comply created through Tenant's fault or by reason of Tenant's use.

(b) Refrain from any activity which would make it impossible to insure the Premises against casualty, would increase an insurance rate, or would prevent Landlord from taking advantage of