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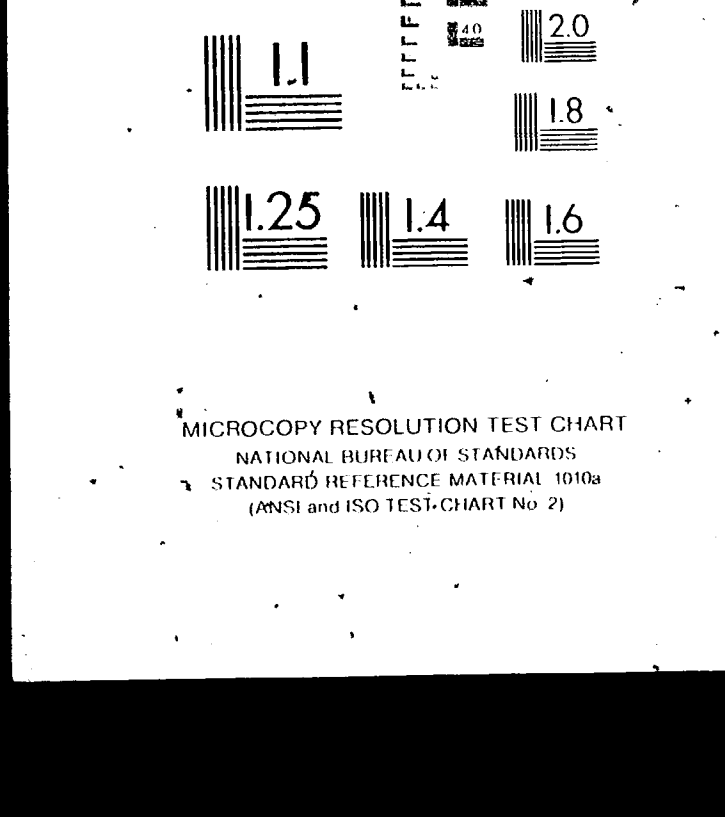

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ABSTRACT

The relationship of postsecondary education to the economy in Ohio is discussed. Attention is focused on efforts of the Ohio Board of Regents and the Ohio Department of Development to foster economic development and revitalization. Information is included on the Ohio Board of Regents' "Master Plan for Higher Education," along with initiatives for economic revitalization contained in "Toward a Working Ohio." Themes of another volume, "Human Resources--Investing in Ohio," are also identified, and perspectives on strategic planning and management for economic development are offered. Information on the number of establishments by industry is included to help identify critical issues and trends. Appendices include: action agendas for job creation, job training, quality education, control of health care costs, tax reform, and streamlining state government; a list of strengths, weaknesses, opportunities, and threats in the state; a conceptual framework for the relationship between research and development and economic development; an analysis of mechanisms intended to meet selected needs; a list of technological advances since 1950s; and a list of 22 measurement factors used in determining Ohio's position in general manufacturing business climates and rankings of 48 states based on the 22 factors. (SW)

STRATEGIC PLANNING FOR ECONOMIC DEVELOPMENT

by

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Economics Section Colloquim

"How Can Universities Contribute

to Ohio's Economic Revitalization?"

Ohio Academy of Science

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ABSTRACT

The transformation from the industrial society to a technical society based on information will be highlighted by numerous issues in the 1980s. No issue will be more important, however, than the relationship of postsecondary education to the economy. In the past, postsecondary education saw its relationship to the economy primarily in terms of providing a trained workforce. This focus will continue to be important in the future but not sufficient. New expanded relationships will be required between postsecondary education and the economy in the computer literate, high technology, information society.

Elements of the "new social compact" are beginning to mature as stated in the Ohio Board of Regents Master Plan for Higher Education (1982). In addition, Toward a Working Ohio is a blueprint of new initiatives aimed at revitalizing the economy of Ohio. This paper will analyze initiatives by the Ohio Board of Regents and the Department of Development that are intended to foster economic development and revitalization in Ohio.

INTRODUCTION

Shortly after I began to work on my presentation, I was reminded of the story of the fisherman who always caught his limit. Because the game warden was curious about the situation, he decided to follow the fisherman. When the fisherman reached the boat he used to row to his favorite spot, the game warden appeared and asked to go along. The fisherman rowed to his favorite spot and then was faced with a question. Should he fish in the conventional way or should he use his own technique? He decided on the latter, reached into his basket, pulled out a stick of dynamite, lit it, and threw it in the water. Up came the fish. The warden was shocked and gave the fisherman a lengthy lecture about the process. The fisherman tired of the lecture, reached into his basket, pulled out a stick of dynamite, lit it, gave it to the game warden, and said, "Do you want to talk or fish?"

The central point to the story is obvious. Although the national economy is in the process of a recovery, Ohio's economy is lagging behind with a set of persistent problems. Clearly, we must take a proactive posture to meet the challenges of this structural economic transition.

After spending some time on the presentation, I settled on the following limited, but achievable objectives:

1. To describe briefly selected elements of "the new social compact" in the Ohio Board of Regents Master Plan for Higher Education and the new initiatives aimed at revitalizing the economy for Ohio contained in Toward A Working Ohio.
2. To define strategic planning and management emphasizing elements that relate to economic development.
3. To suggest some things we should be doing to foster economic development and revitalization in Ohio.

Master Planning

The Ohio Board of Regents is charged every fifth year to present a plan intended to help guide the higher education institutions in broad areas and communicate that direction to a broad range of constituencies including the Governor and the General Assembly. The 1964 plan dealt with resources for the increased number of students seeking access to postsecondary education and the necessary expansion of the number of institutions to meet that need. The 1970 plan was a transitional one with a focus on balancing some of the issues that were beginning to emerge. The 1976 plan dealt with demographic change and resource constraints and examined issues of access, quality, lifelong learning, graduate education, and health personnel education.

The 1982 Master Plan for Higher Education examined the demographic threat of a 33% decline in the number of high school graduates by 1993 and the chronic difficulties with financing postsecondary education in Ohio. The theme "Oportunity In A Time of Change" suggests a reexamination of institutional missions, a systematic and thorough review of all programs, and collaboration in addressing statewide problems through regional consortia. More specifically, the plan calls for a consolidation of institutional strengths in order to forge a new social compact via partnerships with Ohio's businesses, industries, and governmental units to help in the revitalization of the state's economic strength and industrial base. The new social compact calls for instructional linkages with business, industry, health care, social services, and government. In the area of research, the plan suggests that if the research interests of institutions and individual faculty members could focus on producing new technologies or products useful to business and industry, as opposed to concentrating primarily on greater concern for extending basic research knowledge, perhaps immediate and long-term industrial development could be achieved. In the area of public service, the plan calls for systematic access to information growing out of research efforts and the continued development of technology

transfer services primarily through the Ohio Cooperative Extension Service, the Ohio Technology Transfer Organization, and the Urban Universities Program.

The election of Richard F. Celeste to the position of Governor of Ohio marked a new era that is reflected, in part, in his statement, "In the first 90 days of my administration I will submit an Action Agenda that will get Ohio working again." The Celeste Action Agenda consisted of the following themes and program actions:

	Themes	Number of Program Actions
A.	Job Creation	13
B.	Job Training	8
C.	Quality Education	13
D.	Control of Health Care Costs	9
E.	Tax Reform	15
F.	Streamlining State Government	7

These themes and program actions were the highlights of the July 1, 1983, to June 30, 1985, biennium budget. (See APPENDIX A).

Governor Celeste formed a Cabinet Cluster for Strategic Planning which developed a model for strategic planning and a process which sought the insights and contributions of many groups and individuals. The model consisted of the following steps:

1. Identify and define problems.
2. Establish goals and create vision.
3. Create initiatives and implement structures.
4. Monitor, evaluate, and revise plan.

The process solicited the ideas of many people in both the public and private sectors. A "working draft" of Volume I was circulated for two months in the summer of 1983. Jobs and Ohio's Economy was distributed in December of 1983. The document contains three goals with accompanying strategies and initiatives. (See FIGURE 1). Volume II, Human

FIGURE 1

A STRATEGIC PLAN FOR OHIO

VOLUME I JOBS AND OHIO'S ECONOMY

Goal I.	To establish Ohio as a world leader in innovation and entrepreneurial activity.
Strategy A.	Design and implement programs that stimulate economic growth through innovation and entrepreneurial activity.
Strategy B.	Remove the barriers that undermine Ohio's economic revitalization efforts.
Strategy C.	Provide special assistance to meet the needs of Ohio businesses.
Goal II.	To make Ohio's businesses more competitive in the world marketplace.
Strategy A.	Identify and improve conditions or factors that reduce Ohio's competitive position.
Strategy B.	Implement an Action Plan to improve Ohio's competitive position in national and world markets.
Goal III.	To use State and Federal funds to accelerate new job creation.
Strategy A.	Make full use of all public dollars - both state and federal.
Strategy B.	Use state funds in creating private employment opportunities.

Resources: Investing In Ohio, is in the formation stage of development and contains ten themes. (See FIGURE 2).

Strategic Planning and Management

The transformation from an industrial society to a new type of society is causing institutions and state governments to develop new ways to manage their affairs. Strategic planning and management, essentially, is a process of assessing the external environment for opportunities and threats and auditing the internal environment for strengths and weaknesses in order to chart a course of action which will (1) capitalize on strengths, (2) minimize weaknesses, (3) take advantage of opportunities, and (4) eliminate or reduce threats.[1] An assessment of the external environment must include a broad range of variables such as (1) demographic characteristics, (2) economic trends, (3) social indicators, (4) political change, (5) technological advances, (6) changes in the workplace, (7) advances in the information technologies, (8) value shifts, and others. (See FIGURE 3). An audit of the internal environment must examine all aspects of the institution with particular emphasis on program review in terms of centrality to mission, quality, and market viability.

Matching data from the external assessment with data from the internal audit yields insights about strategic options and tactical alternatives. Strategic options are (1) redirect resources toward higher quality, (2) redirect resources toward research, (3) redirect resources toward public service, (4) redirect resources toward new student clientele, and (5) retrenchment.[2] Tactical alternatives under redirect resources toward higher quality include (1) improving diagnostic services - aptitude and skill testing, career life planning counseling, and learning styles/hemisphericity diagnosis; (2) improving content - within and between disciplines, issues specification, and values clarification; (3) improving the delivery system and teaching methodology through

FIGURE 2

A STRATEGIC PLAN FOR OHIO

VOLUME II HUMAN RESOURCES: INVESTING IN OHIO

1. A PUBLIC EDUCATION SYSTEM SECOND TO NONE.
2. EXCELLENCE IN HIGHER EDUCATION.
3. EXPAND ADULT EDUCATION AND FACILITATE CAREER CHANGE.
4. DEVELOP AN EFFECTIVE NETWORK OF TRAINING AND EMPLOYMENT SERVICES.
5. PROVIDE CRISIS SUPPORT FOR CHILDREN AND FAMILIES
6. PROMOTE INDEPENDENCE.
7. PROMOTE HOME - BASED CARE.
8. CONTAIN HEALTH CARE COSTS.
9. PROMOTE PREVENTATIVE CARE.
10. PROTECT SOCIETY AND PROMOTE REHABILITATION.

FIGURE 3

SAMPLE SUB-CATEGORIES FOR SUGGESTED DATA CATEGORIES

EXTERNAL ENVIRONMENT		
DEMOGRAPHIC CHARACTERISTICS	ECONOMIC TRENDS	SOCIAL INDICATORS
Population Size	Textile Industry	Population & The Family
Age Distribution	Auto Industry	Health & Nutrition
Sex Ratio	Electronics Industry	Housing & The Environment
Marital Status	Telecommunications Industry	Transportation
Ethnic and Cultural Characteristics	Health Care Industry	Public Safety
Education Levels	Agriculture Industry	Education & Training
Economic Status	Airline Industry	Work
Population Density	Energy Industry	Social Security & Welfare
Degree of Urbanization	Steel Industry	Income & Productivity
Racial Composition	Insurance Industry	Social Participation
Unemployment	Shipbuilding Industry	Culture, Leisure & Use of Time
Poverty & Deprivation	Biotechnology Industry	
Illiteracy	Aerospace/Space Industry	
Existence of Basic Community Services	Defense Industry	
Social, Political, Economic Well Being	Synfuel Industry	
	Mining Industry	
	Education Industry	

individualization and electronic delivery of programs and services; (4) improving evaluation methodology - articulation agreements, competency-based format, and academic credit for experiential learning; and (5) improving outcomes follow-up - output of the program and longitudinal study of impact. Tactical alternatives under redirect resources toward public service include (1) small business development assistance, (2) economic development and revitalization, (3) technology transfer, (4) "Building Better Boards," (5) issues and values clarification, (6) strategic planning for business and industry, (7) community and state goal setting projects, and (8) community leadership development.

As a part of a continuing interest in the extent to which colleges assess their external environment, I asked my fellow instructional officers at two-year colleges to indicate their perception about the extent to which their institution collects and analyzes data systematically to determine change using a five point scale. The results of this one question on foresight activity are displayed on FIGURE 4.

Suggested Directions

This is my third consecutive presentation on strategic planning to the Economics Section Colloquim of the Ohio Academy of Science. The presentation in 1982 was entitled "Strategic Planning of Technology Transfer." The presentation in 1983 was entitled "The Economic and Social Impacts of the Transition from the Industrial Society To A Computer Literate, High Technology, Information Society." I shall highlight selected parts from those presentations and add to it insights gained through having chaired the OBR Task Force on High Technology, currently serving on the OBR Higher Education Telecommunication Committee, and numerous other activities that had a focus on strategic planning and management for economic development including conducting the week-long Snowmass Institutes the past three summers.

The industrial nations of the world are in the turbulent times of a structural shift from an industrial society to a technological society. The scope and rate of change of

FIGURE 4

FORESIGHT ACTIVITIES AT TWO-YEAR COLLEGES IN OHIO

1. Place an "X" beneath the number that best indicates the extent to which your institution collects and analyzes data <u>systematically</u> to determine change.

Key:
- 5 Outstanding, comprehensive, incorporated into institutional MIS.
- 4 Good, collected systematically but not incorporated into institutional MIS.
- 3 Satisfactory, attempt is made to relate data to decision making.
- 2 Doubtful, attempt is made to collect and analyze in some units.
- 1 Unsatisfactory, inadequate attempt to collect data, let alone analyze it.
- 0 Non-existent, no attempt is made to analyze systematically.

	5	4	3	2	1	0
a. Demographic characteristics	2	4	2	2	1	
b. Social indicators		3	3	3	1	
c. Economic trends	2	4	3	1	1	
d. Political change		4	2	4		
e. Technological advances	2	5	4			
f. Changes in the workplace	2	4	2	2	1	
g. Information technologies	1	4	3	2	1	
h. Value shifts		1	2	3	5	

science and technology is unprecedented and it impacts on us culturally, psychologically, socially, and economically. Some of the change is attributable, in part, to the dramatic explosion in high technology. As dramatic as the explosion in high technology is, however, it is not a sudden, isolated happening. Rather, the explosion is the cumulative effect of integrating complex technology from a variety of fields which have been evolving at an ever increasing pace for the past thirty years. The internationalization of the economy, foreign competition, technological advances, changes in productivity, changing costs of energy and raw material, industry and human obsolescence, and infrastructure deterioration have caused, and will continue to cause, massive dislocations in our economy. We simply must do a better job of planning and managing the relationship of our postsecondary education institutions to the economy in this transitional era. Stated another way, if our institutions are to be dedicated to economic development and revitalization of Ohio's economy, there must be a conceptual framework for doing it and then there must be some coordinated plan of action for redesigning and restructuring our education and training industry.

I shall begin by listing a number of "facts" that I have collected over the past several years. These facts are drawn from hard research and popular literature. When examined collectively they offer some idea of the magnitude of the task which lies before us.

FACTS

1. 74% of all the markets lie outside the United States.
2. 1 out of every 4 manufacturing jobs now depends on foreign markets.
3. 20% of U.S. industrial production is for export.
4. One-third of American corporate profits are from international activity.
5. 80% of foreign trade is done by 1% or 2500 manufacturers.
6. 25,000 jobs are created for every billion dollars of export income earned.
7. 40% of U.S. farmland produces goods only for export.
8. The Fortune 500 industries have not created a net new job in the last decade.
9. 80% of the new jobs are created by establishments no more than 4 years of age and with 20 or fewer employees.

10. In 1982, 25,346 businesses went bankrupt, the most since the great depression, but 566,942 new companies opened their doors.
11. 1 in 5 persons is functionally illiterate, 2 additional persons are marginally illiterate.
13. For the first time in history, the educational skills of the current generation will not even approach, let alone equal or surpass, those of their parents.
14. Of the 10 categories of jobs the Department of Labor predicts will grow most in the next decade, not a single one is "high tech."
15. Less than 10% of new jobs will be high tech.
16. 90% of the present workforce will still be working in 1990 and 75% of the present workforce will be working in the year 2000.
17. There is an undeniable relationship between research and development, technological advances and jobs, and economic development be the focus on attracting, retaining, or expanding business and industry.

These times call for extraordinary leadership on our part and the design of new approaches to planning and management. The 1974 Final Report of the Ohio Citizen's Task Force on Higher Education and the 1976 Ohio Board of Regents Master Plan identified paramount goals for Ohio's diverse structure of higher education and called for a shift from episodic, periodic production of master plans once every five years to a continuous systemic mode of planning. The 1982 OBR Master Plan extended the range of goals to include "a new social compact," a tighter relationship between postsecondary education and the economy. Operationally, this mandate is translated into doing something on (1) upgrading employed persons, (2) retraining dislocated persons, and (3) economic development and revitalization. Essential questions, however, focus on upgrading and retraining for what jobs and economic development and revitalization for what industries?

One response to dealing with critical issues Ohio is currently facing, and will face in the future, is to adopt what is turning out to be a trend and establish a group responsible for strategic planning. This could consist of a Strategic Planning Advisory Council and a Vice Chancellor for Strategic Planning. The SPAC would provide overall direction to this effort which would do essentially two things: (1) systematic collection and analysis of a broad range of demographic, social, economic, and political data to identify critical issues and trends that will shape the long-term scenario of Ohio and (2) provide leadership in programming to develop our human capital based on this analysis. The SPAC should have representatives from the private sector, departments of

government, the Inter-University Council, the Ohio Technical and Community College Association, private colleges and universities, and secondary education. The Vice Chancellor for Strategic Planning would coordinate activities related to these two functions, both of which are discussed briefly.

Critical Issues and Trends Identification. Growth of foresight activities among private firms, government agencies, and service organizations is documented by Lederman of the National Science Foundation in an article in the September/October 1983 World Future Society Bulletin.[3] The growing importance of this function can be seen in H.R. 3070, a bill proposing the "Critical Trends Assessment Act" and the project by the National Center for Research in Vocational Education entitled "Anticipating the Future for Technical Education." While serving as chairperson on the Task Force on High Technology last year, numerous examples of documents were received that were generated from such early warning systems in postsecondary education throughout this action. The TFHT could, in fact, have dealt with its charge more specifically had such a system been in place. Robotics provides a good example. Ohio is strategically located adjacent to two states with major universities benefitting from hugh federal contracts in artificial intelligence and robotics. In addition, Ohio is a national leader in the R&D of automated manufacturing technology. Should Ohio develop robotics programs to produce technicians and engineers to supply the manpower to support the implementation of automated manufacturing technology? If so, how many programs and where should they be located and what type of programs? Should the programs focus only on robotics or should they be a part of a technical core for a high technology curriculum? The answers to these questions lie in data analysis, historical and prospective. An Upjohn Foundation report indicates Michigan has overextended itself in this area. Several outcomes of this effort would be the development of regional and state-wide scenarios, linkages between OBR and the strategic plans developed by other departments of state government, and a

better perspective of the relationship between the current program structure and the occupational structure of the future.

Critical issues and trend identification could begin with a critical analysis of the distribution of the number of establishments by industry, information readily available from Census Bureau economic data published every five years. (See APPENDIX B-1). The project should include a listing of strengths, weaknesses, opportunities, and threats. (See APPENDIX B-2). The project should produce a conceptual framework for (1) the relationship between research and development and economic development and (2) an analysis of mechanisms intended to meet selected needs. (See APPENDIX B-3). The project should include some way of analyzing technological advances over past years so that their impact on us can be predicted with some accuracy. (See APPENDIX B-4). The project should analyze the 22 measurement factors used in determining Ohio's position in the General Manufacturing Business Climates of the Forty-Eight Contiguous States of America.[5] (See APPENDIX B-5 and B-6). The project should examine how Ohio's future could be altered through the World Trade and Technology Center of Columbus, the seventh such center in the United States and the thirty-second in the world, that opens in June of 1984 and the impact of a U.S. Department of International Trade and Industry by 1985 that is intended to increase the relative strength of American industries in international markets through "competitiveness councils."

The Strategic Planning Advisory Council and the Vice Chancellor for Strategic Planning would be well advised to evaluate critically similar efforts in other states. A preliminary report of the Task Force on Technological Innovation of the National Governor's Association listed thirty-two states that had in operation some sort of initiative in technological innovation.[4] Of particular importance would be efforts in neighboring states such as (1) Illinois' High Technology Task Force of the Governor's Commission on Science and Technology, (2) the Centers for Advanced Technology of the New York State Science and Technology Foundation and (3) the "Ben Franklin Partnership"

Advance Technology Program in Pennsylvania and the complementary "Pennsylvania Research Inventory Project" undertaken by the Center for the Study of Higher Education of the Pennsylvania State University in cooperation with the Pennsylvania Association of Colleges and Universities. Other projects worthy of examination include the Massachusetts Small Business Advancement and Identification Programs and the Arkansas Science and Technology Authority.

Programming To Develop Human Capital. The 109th General Assembly created the Management Improvement Program in 1971 to improve management practices of state-assisted colleges and universities. During the 1977-79 and 1979-81 biennia, $250,000 per year was dedicated to studies in five areas; to conducting a series of workshops for two-year college faculty in the engineering and business technologies; and to running the Statewide Management Development Program consisting of (1) The Ohio Institute for Two-Year College Management held August 20-25, 1978, (2) The Administrative Development Fellowship Program held 1978-1980, and (3) The Ohio Institute for Department Chairpersons held in July 15-20, 1979. Many technological and personnel changes have occurred since then but human capital programming has waned at the state level. If Ohio is to maximize on state-of-the-art technology, we must reinstitute a program dedicated to intellectual capital formation and human resource development, the former being the larger conceptual frameworks and long-term scenarios while the latter dealing with the specific prices in the larger designs. Numerous examples can be cited. The Center For Futures Research at the University of Southern California is doing a project on "The Strategic Impact of Information Technologies on Managerial Work." Insights gained from this project and others like it could form the conceptual framework for the design and implementation of technological and human systems that contribute to improvement in organizational effectiveness, a Peters and Waterman approach to excellence. The storm of criticism about education suggests that we must redesign and restructure our education and training industry.

One major challenge we face is the relationship of the existing program structure and the occupational structure of the future. This nation is often compared with other nations in terms of the number of engineers, lawyers, and physicians which are produced. While these data are interesting, they typically do not consider regional variations between the "foundry" states and the wheat belt states or the critical deployment of personnel in relationship to technological concentration such as engineering industries or biomedical industries. If polymer-related companies are important to the economic revitalization of a region in Ohio, what is the critical mass of human talent, research and development, and "public service" that is necessary to nurture its growth and maturation? (See APPENDIX C-1). In what way will the Thomas Alva Edison Partdership Program suggest changes in the existing program structure?

A second major challenge we face is quality. Numerous studies rank programs based on various criteria. Ohio does not fare well on such lists. There are several ways, however, to examine quality and excellence.[5] When Sputnik I and II were launched on October 4 and November 3 of 1957, the education industry was criticized for failure to develop the critical mass of mathematics and scientific infrastructure to compete with the USSR. This nation launched one of the largest battery of projects to redesign mathematics and science by calling upon the expertise of mathematicians, physicists, and other scientists. We learned a great deal about how to teach better mathematics but not about how to teach mathematics better. The Sputniks have come back to challenge us again in the form of user-friendly fifth generation computers and the need for economic development and economic revitalization on an international scale.

A third major challenge we face is the way in which we deliver education and training services. In the industrial society, the division of labor, hierarchial structural, principles of standardization, and the metallic character of the factory were incorporated into almost all major institutions of society. Schools and colleges were designed primarily like broadcast television--education and training services were

delivered in uniform packages in a manner and at a time convenient to the provider. The challenge to the academic professions in the information society is to redesign the education and training delivery system so that it is user controlled-relevant, state-of-the-art, magazine styled programming that the consumer can use when it is needed, as often as needed, see any part of the sequence and based on the latest in brain research about how humans learn at various stages of development. TeleLearning Systems opened its doors in September of 1983 and already has 170 college courses that students can complete at home or in the workplace via modem and personal computer. The American Medical Association plans to offer at least 100 courses through the network. The company predicts that by the end of 1984 at least one million people will be taking courses using the firm's technology. In Japan, government officials hope to start "Broadcast University" in 1984, teaching their entire population through television, computers, and regional learning centers. The OBR Computer Task Force and the OBR Higher Education Telecommunications Committee are completing a Phase I plan for each of these technologies. The HETC is seeking funding (1) to expand the Regents' telecourse series, (2) to develop the Ohio External Student Degree Program, (3) to offer professional teleconferencing, and (4) to develop Regional Learning Resource Centers. In addition, HETC is recommending multi-institutional cooperation in the development of Regional Instructional Technology Systems. An example of such a project is the Ohio University Telecommunications Center that will network Belmont Technical College, Hocking Technical College, Jefferson Technical College, Muskingum Area Technical College, Rio Grande Community College, Shawnee State Community College, and Washington Technical College. These institutions will be able to offer consortial programs that could not have been offered unilaterally and conduct professional development programs with other institutions. At an "External Review Workshop" sponsored by the TFHT the bottom line was "an uplink in every region and a downlink on each campus." (See APPENDIX C-2).

A fourth major challenge facing postsecondary education, particularly teacher education, has a focus on illiteracy and retraining. During periods of rapid technological change or a structural shift such as the industrial nations are experiencing, human obsolescence and dislocation are at their highest point. During such periods, the academic professions must design ways to deal with the issues of illiteracy and retraining, both of which deserve additional comment. A background study found universal agreement among economists and productivity experts that two of the primary reasons for low productivity are functional illiteracy and being untrained for specific jobs. According to the National Commission on Excellence in Education report, some 23 million American adults are functionally illiterate by the simplest test of everyday reading, writing, and comprehension. In addition, the U.S. Department of Education estimates that 46 million Americans are marginally literate. Functional illiteracy means not having the competencies required to perform effectively in real life roles of employee, consumer, and citizen. The figures become staggering when to these data we add occupational illiteracy, research illiteracy, information processing illiteracy, management systems illiteracy, economic illiteracy, and scientific and technological illiteracy. During the industrial society, the engine fueled by a power source was the tool that permitted us to handle large amounts of physical matter with ease and speed. In the information society, the computer powered by the human mind is doing what the engine did for human muscle. A computer-literate populace is the energy and raw material in an information based society. A report by the Association of American Colleges indicates there is growing concern over the average citizen's lack of scientific knowledge and the failure of colleges and universities to ensure that all graduates become scientifically and technologically educated.[6]

A fifth major challenge we face is how to assist business and industry improve their competitive edge in an international economy and how to assist municipalities in economic development and revitalization. Numerous experts in a variety of fields are discussing

the emergence of an interdependent and global "information age" economy. A major impetus for this development has been the growing dependence on the rapid dissemination of data and communications through computer networks and telecommunications. As technological innovation continues and the shift from industrial to information-based economics is accelerated, Ohio must begin (1) to assess realistically and pragmatically its role in the evolving global economy, (2) to target more clearly on a set of goals to be pursued in the international arena and domestic economy, and (3) to develop a plan of action to which purposeful human activity can be linked. Very few of us understand the relationship between Research and Development, technological advances, and economic development. We need help to understand these relationships along with such concepts as the adoption of technological innovations. (See APPENDIX C-3). We need help to understand entrepreneurship and how an entrepreneur develops a business plan in this new economy. We need help to know how to assist local economic development groups like the Richland Economic Development Corporation, a private-public development corporation involving business, education, and government to build businesses and create jobs in Richland County. (See APPENDIX C-4).

CONCLUSION

The industrialized nations of the world are in the turbulent times of a structural shift from an industrial society to a technical society based on information. The scope and rate of change of science and technology is unprecedented and it impacts culturally, phychologically, socially, and economically. The central question is how this rapid rate of change will affect society and whether people will be the beneficiaries or victims of science and technology.

Numerous issues will be important in the next decades. No issues will be more important, however, than the relationship of postsecondary education to the economy. In the past, postsecondary education saw its relationship to the economy primarily in terms of providing a trained workforce. This focus will continue to be important in the future but not sufficient. New expanded relationships will be required between postsecondary education and the economy in the computer literate, high technology, information society. Strategic planning and management is one means for dealing with the issues of intellectual capital formation and the role of postsecondary education in economic development in our society's evolution toward a humanistic, person-centered society that is the beneficiary of science and technology.

The February 28, 1977, issue of the Chronicle of Higher Education contained an article entitled "Where are the Leaders in Higher Education?" The author alleges that the modern collegial context has caused the disappearance of the statesmen leader to the institutional manager. We have the tools. Do we have the entrepreneurial spirit and are we willing to commit the resources to dedicate our institutions and associations as instruments to develop that type of society?

FOOTNOTES

[1] Warren H. Groff, "Key External Data Required in Strategic Decision-Making: A New Role for Management Systems," presented at CAUSE, December 9, 1980. (Published in Proceedings and January 1981 issue of CAUSE/EFFECT, pp. 28-34). ED 201 295. Abstract in Resources in Education, September 1981.

Warren H. Groff, "Strategic Planning: A New Role For Management Information Systems," presented at the 1981 CAUSE National Conference, December 2, 1981. (Published in Proceedings). ED 213 446. Abstract in Resources in Education, July 1982.

Warren H. Groff, "Strategic Planning," in Strategic Management In The Community College, edited by Gunder A. Myran (San Francisco: Jossey-Bass, 1983).

Warren H. Groff, "Entrepreneurship Through Strategic Planning, Management, and Evaluation", Trustee Quarterly of the Association of Community College Trustees, Spring 1982, Vol. 6, No. 2, pp. 12-17.

[2] Howard R. Bowen, Adult Learning, Higher Education, And the Economics of Unused Capacity (New York: College Entrance Examination Board, 1980) pp. 4-10.

[3] Leonard L. Lederman, "Foresight Activities in Business and Government: An Empirical Examination", World Future Society Bulletin, September-October 1983, Vol. XVII, No. 5, pp. 1-10.

[4] State Initiatives In Technological Innovation (Washington, D.C.: National Governors' Association, February 1983).

[5] A Report on the Study of Excellence at Ohio State Assisted Colleges and Universities (Columbus: Ohio Board of Regents, July 1980).

[6] Science and Technology Education for Civic and Professional Life: The Undergraduate Years (Washington, D.C.: Association of American Colleges, 1982).

APPENDIX A

CELESTE ACTION AGENDA

A. JOB CREATION

1. Establish and implement a $698 million highway and mass transportation jobs program.
2. Implement a $200 million housing construction jobs program.
3. Invest $585 million in capital improvement programs.
4. Create thousands of new jobs through expansion of Ohio's Travel and Tourism Program.
5. Establish a coordinated development assistance program for Ohio businesses.
6. Expand the state's economic development incentive programs by $115 million during FY 1984.
7. Stimulate high technology development in Ohio.
8. Assist Ohio's minority businesses.
9. Establish a one-stop licensing center and one-stop service centers in local communities.
10. Create an Ohio Trade Council, composed of successful exporters.
11. Establish Retention and Expansion Teams, composed of loaned executives and labor leaders.
12. Develop a community adjustment program to bring all the resources of state and local agencies to the assistance of communities experiencing the loss of jobs.
13. Target $5 million to the Industrial Inducement Fund.

B. JOB TRAINING

1. Channel $348 million to Ohio's chronically unemployed through the federal Job Training Partnership Act.

2. Provide seed money for training and retraining demonstration projects through a Community Partnership Agreement.

3. Establish a job training program for communities faced with the shut down of a major business or state facility.

4. Convene a Business/Education Council to identify future job possibilities and the necessary job-related skills.

5. Implement a coordinated effort to familiarize businesses with the Targetted Job Tax Credit Program.

6. Increase vocational education spending by $32 million (18%) in FY 1984.

7. Target $119 million for the phased-in implementation of the Ohio Work Programs ("Workfare").

8. Allocate $8.5 million to enhance the Ohio National Guard's Scholarship Program.

C. QUALITY EDUCATION

1. Increase state subsidies for elementary and secondary education by 13% in FY 1984.

2. Target $2 billion for higher education, an increase of 29% over the 1982-1983 biennial budget.

3. Increase state spending for the education of disadvantaged students and a variety of special education programs, and provide funds for an increase in the minimum salary schedule for teachers.

4. Establish a Contingency Growth Fund to reclaim public dollars for education.

5. Earmark Ohio's personal income tax and lottery receipts for education.

6. Repeal the authority of local school districts to institute a district income tax.

7. Implement a competency testing program for elementary and secondary students.

8. Target $12 million for exemplary programs in math and science.

9. Commit $1 million for the expansion of early testing programs.

10. Establish an "Eminent Scholars" program, to attract internationally recognized scholars to Ohio's universities.

11. Target $3 million for the building of "centers of excellence" at Ohio's universities.

12. Require the Ohio Board of Regents to work with universities in reviewing 25% of their course offerings by the end of FY 1985.

13. Mandate a 5% reduction in medical school enrollments by 1985.

D. CONTROL OF HEALTH CARE COSTS

1. Develop and implement a new approach to providing routine medical care for Ohio's Medicaid recipients.

2. Expand the Utilization Review process to identify and disallow unnecessary hospital inpatient treatment through computer analysis and appropriateness reviews by medical teams.

3. Adopt a prospective Hospital Reimbursement Methodology which will give hospitals financial incentives to live within a prescribed budget.

4. Emphasize home and community-based care and curb unnecessary expansion of long-term nursing homes.

5. Develop and implement a Pre-Admission Screening System.

6. Establish a volume purchase program.

7. Adopt changes in Medicaid program coverage to encourage financial incentives for out-patient surgery and reduced office visits.

8. Revise the state computer system to assure that only those individuals who are eligible for Medicaid are able to participate in the program, and to permit individuals who have met the financial requirements to immediately receive proper coverage.

9. Appropriate $737,000 in additional state funds to the Department of Health for the Certificate-of-Need program in FY 1985.

E. TAX REFORM

1. Provide $243 million in tax relief for Ohio's working couples.

2. Provide $42 million in tax relief during the 1984-1985 biennium to Ohio's senior citizens.

3. Provide $244 million in tax relief over the biennium by raising the personal income tax exemption from $650 to $1000.

4. Repeal an ineffective school tax -- the local district income tax.

5. Provide $33 million in tax relief for surviving spouses.

6. Provide homeowners with an estimated $44 million in tax relief over the biennium.

7. Provide $38 million in tax relief by repealing the local intangibles tax effective CY 1985.

8. Repeal the H.B. 828 tax credits on the corporate franchise tax.

9. Make the temporary corporate franchise tax surcharge permanent, and return to pre-1981 depreciation schedules, thus plugging tax loopholes.

10. Freeze the financial institutions tax at the 1983 level.

11. Broaden Ohio's business tax base by applying a 4% excise tax to business consumers of selected services.

12. Set the public utility excise tax permanently at 4.75% and make the October payment permanent.

13. Remove barriers to investment in Ohio business by reducing the tangible personal property assessment from 35% to 25% over a ten year period.

14. Help small business by providing an exemption of $10,000 on tangible personal property tax.

15. Strengthen the Ohio Department of Taxation's enforcement activities.

F. STREAMLINING STATE GOVERNMENT

1. Abolish 8,000 vacant positions and eliminate another 1500 jobs.

2. Eliminate unneeded state agencies and consolidate their functions with Cabinet level departments.

3. Restrict the use of take-home state cars.

4. Reduce the number of state print shops from 31 to five.

5. Review the operation of regional state offices to determine if they are needed and/or being operated in a cost-efficient manner.

6. Initiate management reviews in selected state departments.

7. Develop and implement a modernized accounting system for the State of Ohio.

APPENDIX B-1

EMPLOYEES AND ESTABLISHMENTS BY INDUSTRY, 1979

	Number of Employees	Number of Establishments	Number of Establishments By Employment Size								
			1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000+
Agriculture, forestry, fisheries	9226	1930	1454	282	132	59	7	3	2	-	-
Mining	32192	1154	422	241	201	178	58	34	9	9	2
Contract construction	182005	19364	12012	3587	2036	1235	316	143	27	8	3
Manufacturing	1414824	15800	3519	2421	2804	3047	1628	1304	599	264	214
Chemicals	47950	663	134	89	121	132	71	61	29	12	4
Petroleum/coal	7161	168	55	30	29	25	15	8	1	5	-
Rubber/plastics	100479	852	135	76	105	201	139	122	46	13	15
Stone/glass	52421	977	207	172	195	194	91	78	19	15	6
Primary metals	148712	633	78	52	77	130	98	85	58	28	27
Fabricated metal products	178283	2248	337	279	457	526	289	237	76	24	23
Machinery	216119	3515	887	683	683	650	250	198	88	43	33
Electric/electronic	108036	611	107	66	75	100	79	84	45	30	25
Transportation equipment	176012	398	55	45	59	60	38	48	35	26	32
Instruments	24619	297	66	45	50	56	28	27	16	5	4
Transportation	200669	6577	2708	1127	1076	948	376	230	66	25	22
Wholesale Trade	279939	16563	6409	3953	3208	2205	846	191	35	13	3
Retail trade	751815	56526	25449	14289	8505	5699	1880	551	116	26	11
Finance, Ins, R. Estate	211125	18521	10899	3726	2154	1171	350	138	47	25	11
Services	768079	57306	33716	11726	6224	3487	1178	655	170	83	66
TOTAL	3833422	201238	103203	41908	26531	18067	6339	3338	1070	451	331

SOURCE: Ohio County Business Patterns 1979 (Washington, D. C.: Bureau of the Census, 1981) pp. 3-15.

APPENDIX B-2

SWOT ANALYSIS

STRENGTHS

The Batelle Institute

Diversity of Business Establishments

Land Availability

Transportation - Highway, Air, Rail

Water

Geographic Location

Leadership Organizations

IUC-OTCCA
7 WFS Chapters
8 ASTD Chapters

Ohio Technology Transfer Organization

Jt. Commission of Voc-Tech Education

Committee on Higher Education Telecommunications

Eminent Scholars Prospect

Ohio Council for Inter-institutional Research(OCIR)

Ohio Assn. for Staff, Program, and Org. Dev. (OASPOD)

Ohio Assn. of Two-Year Colleges

WEAKNESSES

State Funding of Education

Student Fee Assumption

1980-81	33%
1981-82	37%
1982-83	44%

Participation in Higher Educ.

Quality of Doctoral Programs:

Only 2 strong Ph.D. Programs
71 of 108 deteriorated over the last 5 years
71 of 109 were below average

Use of Educational Technology

Intramural Strategic Planning

Intermural Strategic Planning

OPPORTUNITIES

Telecommunications

NASA Lewis Research Center

Robotics

Center for Robotics - Michigan

Robotics Institute - Carnegie Mellon

Just-In-Time Manufacturing

Structural Dynamics Research Corporation

THREATS

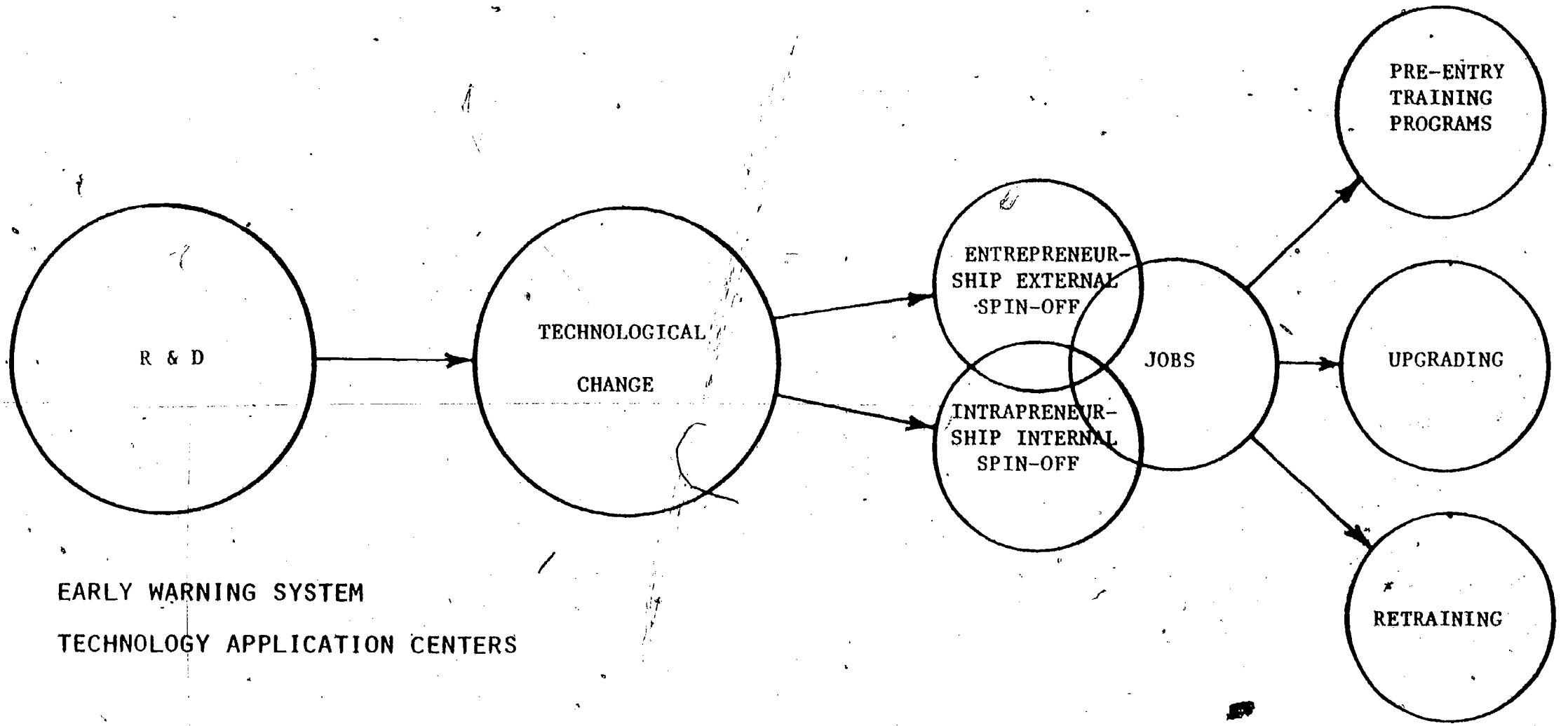
Ohio's decline from 34th (1981) to 44th of 48 contiguous states as an attrative manufacturing site.

- 4th highest manufacturing wages
- 3rd highest time lost due to work stoppage
- 1st in expenditure in environmental control
- 46th in state and local taxes

Competition from Other States and Regions

APPENDIX B-3

THE RELATIONSHIP BETWEEN R & D AND ECONOMIC DEVELOPMENT



EARLY WARNING SYSTEM

TECHNOLOGY APPLICATION CENTERS

OHIO TECHNOLOGY TRANSFER ORGANIZATION

OHIO INDUSTRIAL TRAINING PROGRAM

WANING OF "INDUSTRIAL SOCIETY" - RISE OF "TECHNICAL, INFORMATION SOCIETY"

1950s	1960s	1970s	1980s
	Data Processing/ Computer Programming	"Real Time" Interactive Systems Time Sharing Distributed Data Processing	Systems Orientation Electrical Electronic Mechanical Pneumatic Hydraulic Fluid Thermal Optical
Mechanical Design and Related Production	Numerical Control Electromechanical Instrumentation	Computer Numerical Control	
Electrical Technology (Vacuum Tubes)	Electronic Technology (Solid State Transitors & Printed Circuits)	(Silicon Chip - Microprocessor)	
	Laser Technology (Intense Beam of Energy in Form of Light Rays)	Solid State Lasers Gas Lasers Chemical Lasers Semiconductor Lasers Dye Lasers	
Materials-Synthetics	Fiber-reinforced composits, "foamed" metals alloys superconductors, new coatings, adhesives		
Microwave Radio (1930s) Transistors (1940s) Integrated Circuits	Communications	Telecommunications	Example Telematics Telecommunications Computer Information
	Broadcast TV → User Control TV (Tape and disc)	→ TV & Computer & Videotape Tech.	
		Avionics (Aviation and Electronics) Guidance Systems Electronic Warfare Electronic Navigation Flight Instrumentation Surveillance	

APPENDIX B-5

RANKING OF STATES BASED ON 22 FACTORS AFFECTING BUSINESS CLIMATE

1. Florida
2. Texas
3. N. Carolina
4. N. Dakota
5. S. Carolina
6. Georgia
7. Arizona
8. Nebraska
9. Mississippi
10. Kansas
11. Idaho
12. Louisiana
13. Tennessee
14. S. Dakota
15. Colorado
16. Nevada
17. Virginia
18. Arkansas
19. Missouri
20. Utah
21. New Hampshire
22. Wyoming
23. Alabama
24. Oklahoma
25. Montana
26. California
27. Maryland
28. Vermont
29. Indiana
30. Kentucky
31. New Mexico
32. Minnesota
33. Massachusetts
34. New Jersey
35. Iowa
36. Wisconsin
37. Washington
38. Connecticut
39. West Virginia
40. Maine
41. Delaware
42. Illinois
43. Oregon
44. Ohio
45. New York
46. Pennsylvania
47. Rhode Island
48. Michigan

* Alexander Grant and Company, 6th Floor
Prudential Plaza, Chicago, IL 60601

APPENDIX B-6

TWENTY-TWO FACTORS USED IN

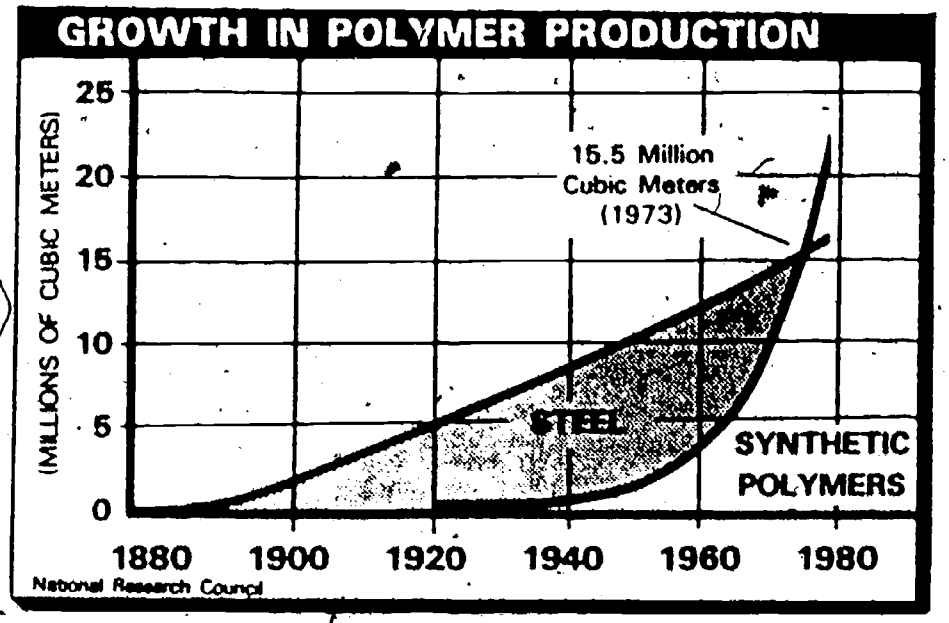
THE FOURTH STUDY OF

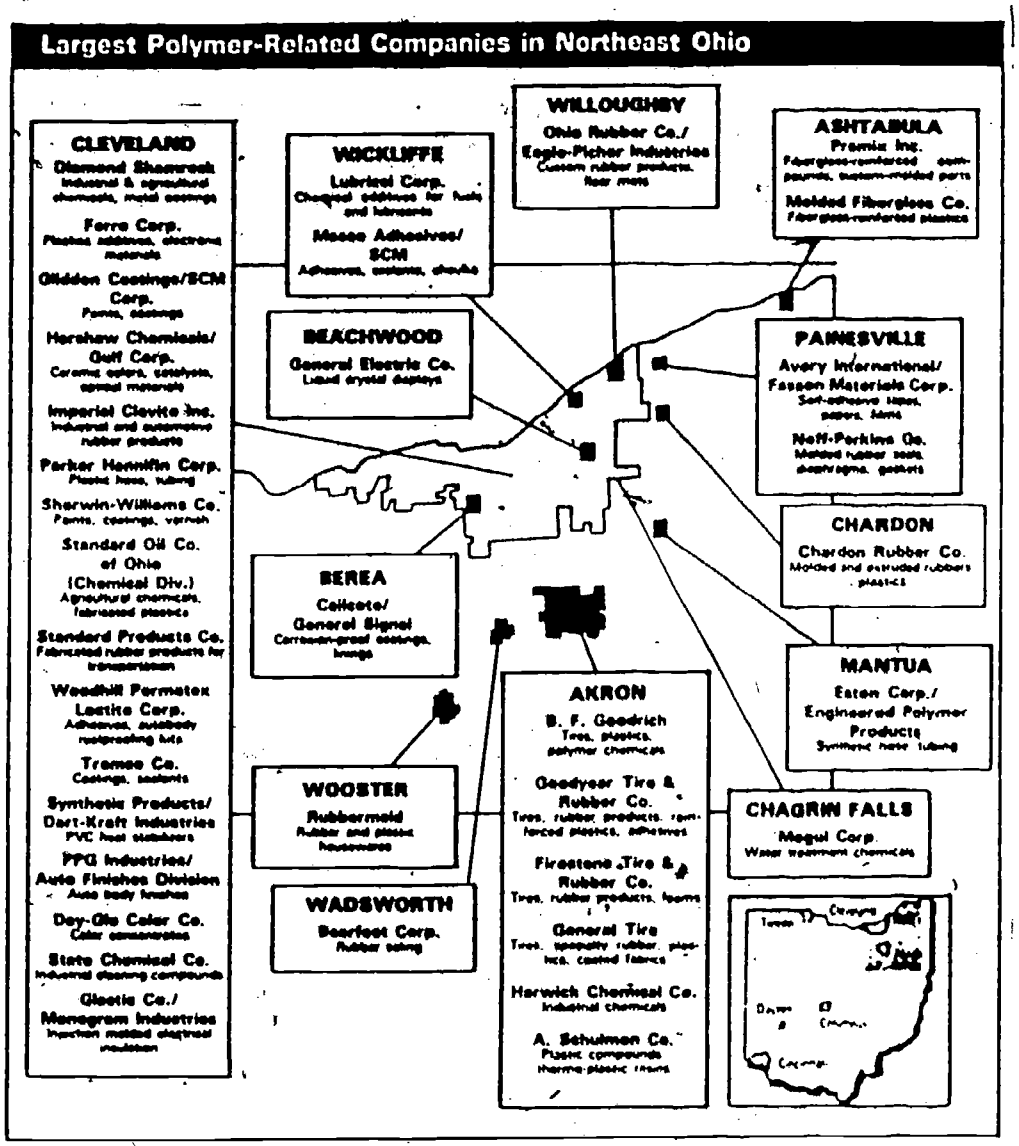
GENERAL MANUFACTURING BUSINESS CLIMATE, 1982*

	OHIO
A. State and Local Government Fiscal Policies	
1. Taxes	3
2. Change in Taxes	32
3. Expenditure Growth vs. Revenue Growth	17
4. Debt	8
5. Welfare Expenditure	34
B. State Regulated Employment Costs	
1. Unemployment Compensation Benefits	38
2. Unemployment Compensation Net Worth	26
3. Maximum Workers' Compensation Insurance	42
4. Workers' Compensation Insurance Rate	12
C. Labor Costs	
1. Wages	45
2. Change in Wages	24
3. Unionization	43
4. Change in Unionization	22
D. Availability and Productivity of Labor Force	
1. Voc-Ed Enrollment	33
2. High School Educated Adults	26
3. Manhours Lost	45
4. Value Added	40
5. Hours Worked	6
E. Other Manufacturing Related Issues	
1. Energy Costs	29
2. Environmental Control	48
3. Population Density	9
4. Population Change	34

* Alexander Grant and Company, 6th Floor, Prudential Plaza, Chicago, IL 60601

High-technology comeback is Akron's economic goal

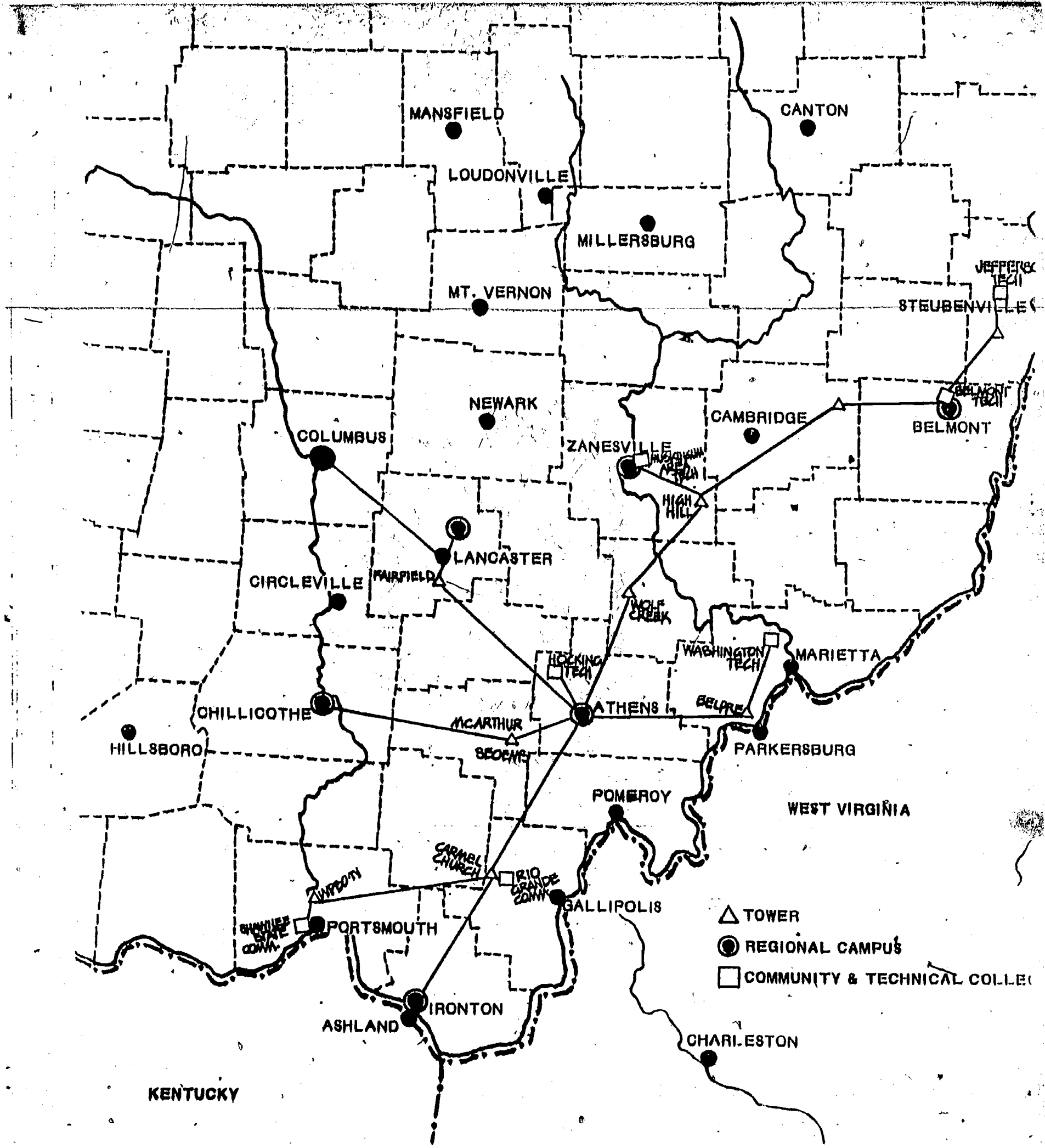




Akron Beacon Journal, June 12, 1983.

HIGHER EDUCATION MICROWAVE SERVICES

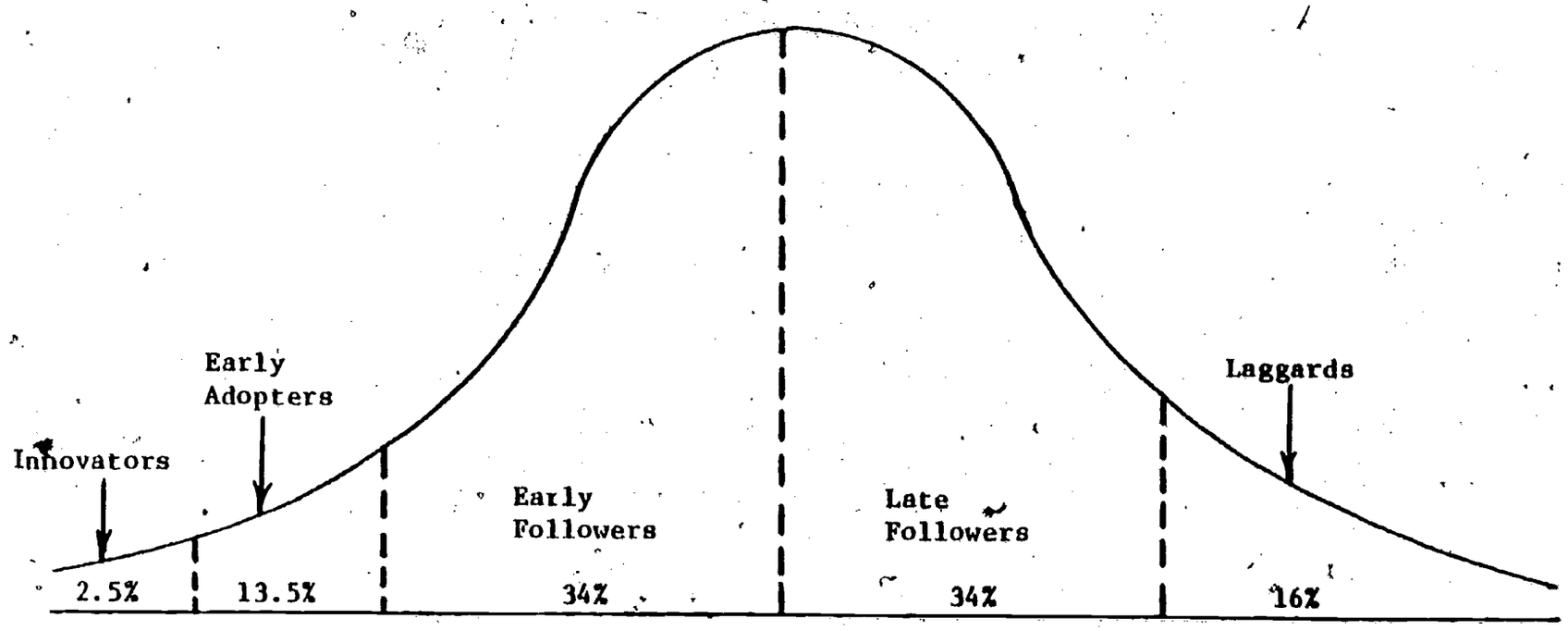
Prepared by the Ohio University Telecommunications Center



PROPOSED MICROWAVE INTERCONNECT SYSTEM

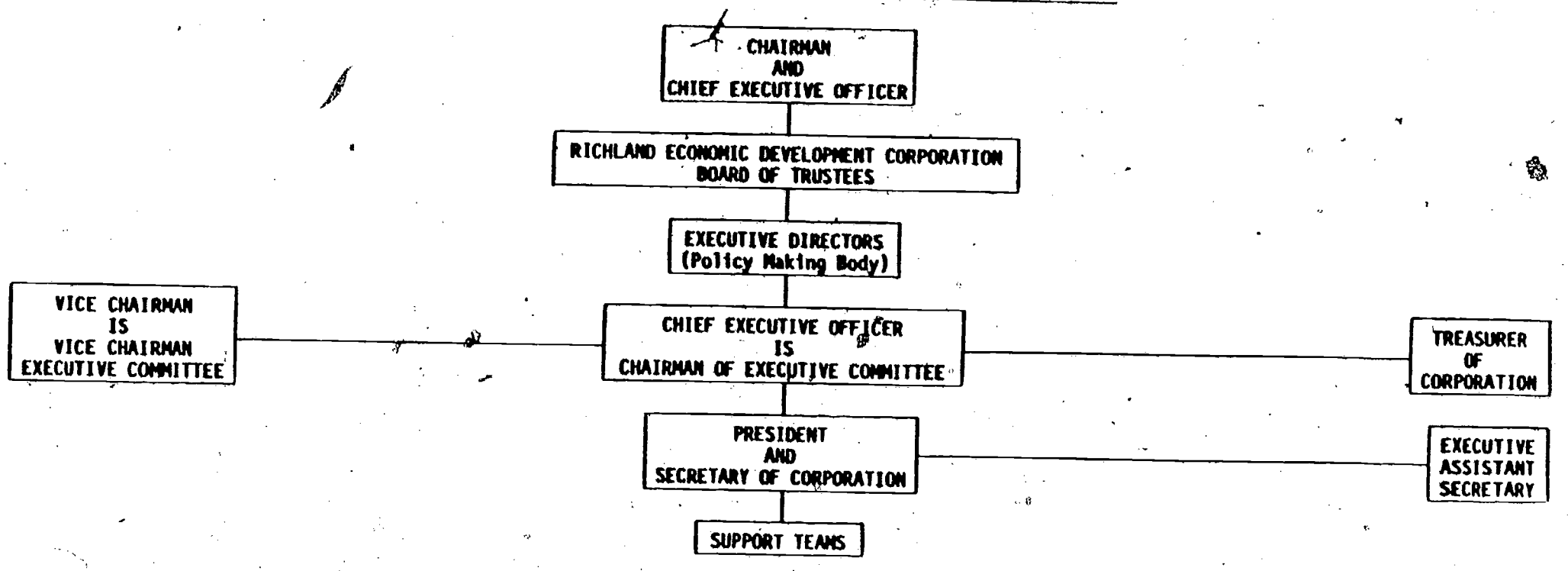
APPENDIX C-3

ADOPTER CATEGORIES ON THE BASIS OF INNOVATIVENESS



Source: Everett M. Rogers and F. Floyd Shoemaker, Communication of Innovations (New York: The Free Press, 1971)

RICHLAND ECONOMIC DEVELOPMENT CORPORATION ORGANIZATIONAL CHART



ADVERTISING AND MARKETING - GUNTHER MEISSE, CHAIRMAN

COMMUNICATIONS AND PUBLIC RELATIONS - LYNN ECKARDT, CHAIRMAN

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