Approved March 14, 1984
Date

MINUTES OF THE HOUSE COMMITTEE ON COMMUNICATIONS, COMPUTERS AND TECHNOLOGY

The meeting was called to order by Representative Mike Meacham at
Chairperson

3:30 ~~a.m.~~p.m. on February 15, 1984 in room 522-S of the Capitol.

All members were present except:

Representative Rolfs (excused)

Committee staff present:

Sherry Brown, Fiscal Staff, Research Department
Chris Stanfield, Fiscal Staff, Research Department
James A. Wilson, III, Senior Assistant Revisor
Betty Ellison, Secretary to the Committee

Conferees appearing before the committee:

Mr. Joe McFarland, Academic Officer, Board of Regents
Dr. Ed Meyen, Acting Vice Chancellor, University of Kansas
Mr. Fred Sudermann, Director of Research and Sponsored Programs, Wichita State University
Dr. Robert Kruh, Dean of Graduate School, Kansas State University

The meeting was called to order by Chairman Meacham.

Mr. Joe McFarland expressed the interest of the Board of Regents in the Centers of Excellence. He noted that the Board of Regents had taken the initiative in approving the Centers in advance of their receiving funding so there would not be duplicative features between the Centers of Excellence. He said that two Centers had been approved and were presently being implemented.

Dr. Ed Meyen distributed a handout describing the Center of Excellence at the University of Kansas. (Attachment 1) The handout lists the research projects that have been approved and are operational under the Advanced Technology Program there. He noted that Kansas University's Center of Excellence is in the area of Bioanalytical Research and will be developing new technology, rather than a new product. Dr. Meyen explained that the Endowment Association provided the private match by creating a "for profit" corporate structure--in essence a company; that company then provided the required financial match of $195,000 to the University of Kansas for its Center. The company will become the marketer for technologies coming out of the Center, creating an economic impact. Because that firm has an attachment to the Endowment Association, the benefits will come back to the University of Kansas, and in turn, to the state. This model is different from some of the partnerships that have been developed in other universities. Dr. Meyen noted that in three of their projects, they worked with small, local firms which probably could not do research and development without this kind of support.

At the request of Chairman Meacham, Dr. Meyen discussed what the long-term approach should be on behalf of the Legislature in terms of state funding, private match, etc. He noted that in terms of a Center of Excellence, it is important to have initial resources as part of the base so there is a margin which allows them to maintain quality people in those programs. The private support--the match--provides a margin for start-up costs, etc. He said that a director has been named for the Center at the University of Kansas, and other people are being recruited.

Representative Chronister asked if Dr. Meyen expected any further expansion of the base of the Center of Excellence for Bioanalytical Research into other areas. Tom Patton of the University of Kansas answered that because of some of the areas that this group might get into, there would be some collaborative type of work.

Mr. Fred Sudermann distributed a summary of the Center for Productivity Enhancement at Wichita State University. (Attachment 2) He noted that the Center was approved by the Board of Regents and the Advanced Technology Commission in October and November. He said that they are in the process of organizing both on campus and with industry in developing staff and equipment needs and program planning. Mr. Sudermann noted that the matching funds of $195,000 will be in place this spring and at that time a nation-wide search will begin for a director of the Center. He said it is envisioned that when the Center is fully developed, more than a million dollars annual funding operation from federal grants, industrial contracts, etc. would be possible. He commented that the university had some concerns about how the state might participate in support of the Center.

In reply to a question from Representative Chronister, Mr. Sudermann said that the Center at Wichita State is being built on experience and abilities that they currently have in computer sciences and engineering. The funds from the Center and the continued development of that activity will enhance those talents and expertise that Wichita State currently has from a long history of working relationships with business and industry. In addition to employing staff through the Center, they intend to recruit faculty members with expertise in engineering and computer science, hopefully pulling those people into this activity at some point.

Responding to a question from the Chairman regarding state support and the private match, Mr. Sudermann commented that he would support the Regents' and the Governor's recommendation for next year's continuation of more than $130,000. In terms of the match, he felt that it would be very difficult for the universities to continue to raise 150 percent of the state's seed money. His suggestion was to continue to support it at the level of state dollars, but remove the restrictions requiring the match.

Dr. Robert Kruh of Kansas State University began his testimony by commenting on state support and the private match. It was his feeling that it would be unrealistic to ask for contributions again from the same industry that has provided support for a Center of Excellence. However, another industry might be approached in order to establish a Center in another area. Dr. Kruh stated that Kansas State is on the point of consummating an agreement with an outside organization based in Manhattan but with ties to Texas and Canada, which will lead to the provision of the expected $195,000. He noted that the Center is intended to deal with systems operation and with computer controls and computer analyzed processes in industry and manufacturing, not only in heavy industry, but in agricultural industry and production. Dr. Kruh commented that Kansas State had a combination of engineering talent, agricultural expertise and computer science knowledge that would make an attractive package in this area. He stated that Kansas State had prepared a proposal which would be presented to the Board of Regents in March, requesting their authorization for establishment of the Center.

Asked by Representative Chronister to elaborate on the direction Kansas State's Center would be going, Dr. Kruh said that people in grain science are concerned with computerization of the grain industry's production and processing. He noted that some mechanical and electrical engineering expertise can be tied in directly with the agricultural industry, and that the expertise of computer scientists would be needed to make use of he most advanced concepts in artificial intelligence.

Representative Chronister noted that this Committee had made some recommendations last year which helped form the Centers of Excellence, and expressed appreciation for the reports of progress.

MINUTES OF THE HOUSE COMMITTEE ON COMMUNICATIONS, COMPUTERS AND TECHNOLOGY

room 522-S, Statehouse, at 3:30 ~~a.m.~~/p.m. on February 15, 1984

Chairman Meacham outlined briefly the following bills which he wanted to have introduced by the deadline on February 20:

1. Computer crime, computer theft, or computer vandalism; theft of time or manipulation of computerized information in such a fashion that it amounts to theft.

2. Public television, specifically aimed at translators and Instructional use of Public Television.

3. Centers of Excellence in a legislative bill format on the order of a three or five year plan.

Representative Dean moved and Representative Friedeman seconded that bills dealing with the above topic areas be introduced. The motion carried.

Representative Green moved that the minutes of January 31 and February 1 be approved. Representative Sallee seconded the motion. The motion carried.

The meeting was adjourned at 4:15 p.m.

The next meeting of the Committee will be held at 3:30 p.m. on February 22, 1984.

Date: Feb. 15, 1984

GUEST REGISTER

HOUSE

COMMITTEE ON COMMUNICATION, COMPUTERS AND TECHNOLOGY

NAME	ORGANIZATION	ADDRESS
Thomas Patton	Univ. of Kansas	Lawrence
Ed Meyen	Univ of Kansas	Lawrence
Kevin Carr	KDED	Topeka
Ruth Groves	KECN	Topeka
Bill Henry	KS. Eng. Society	Topeka
R.F. KRUH	Kansas State University	Manhattan
M. Farland	Board of Regents	Topeka
S. Seburn	Wichita State University	Wichita

Center of Excellence for Bioanalytical Research*

The University of Kansas

Research Team: Larry Sternson (Director), Professor, Department of Pharmaceutical Chemistry

Ralph Adams, Professor, Department of Chemistry

Robert Carlson, Professor, Department of Chemistry

Richard Givens, Professor, Department of Chemistry

Marlin Harmony, Professor, Department of Chemistry

Arnold Repta, Professor, Department of Pharmaceutical Chemistry

Richard Schowen, Professor, Department of Chemistry

Center Focus:

The Center of Excellence established at the University of Kansas is dedicated to the development of sophisticated bioanalytical technology. The focus of the Center is the design and implementation of chemistry, instrumentation and analytical methodology which will allow for the determination of the identity and quality of drug substances, biochemicals (of plant and animal origin) environmental contaminants and other bioactive species occurring in complex biological matrices. Emphasis will be placed on research in areas where available technology is insufficient and largely incapable of providing such information. The Center will concentrate on developing methods to detect, identify and analyze traces of biologically active compounds and environmental contaminants in living systems. Results from such research could be used to detect foreign substances in the body that are potentially harmful and could lead to methods for treatment.

New technology developed by the Center will be applied to the solution of various biomedical, environmental and agricultural problems. For example, drug levels are present often in only the most minute quantities in the body, yet it is necessary to be able to monitor these amounts in order to design effective and safe methods for dosing drugs. Also, sometimes highly toxic environmental contaminants are often present in the atmosphere or in water at the level of parts per billion or less. Standard technology does not allow us to "see" these contaminants. The technology developed in the Center will allow such monitoring and, therefore, permit us to be alerted at an earlier stage to potential hazards. These are but two examples of the importance of sophisticated analytical technology in solving important biomedical and environmental problems.

*The Advanced Technology Program contact: Office of Research, Graduate Studies and Public Service - Edward Meyen, Acting Vice Chancellor and Tom Patton, Associate Vice Chancellor (913/864-3301).

Private Matching Support:

The required private match of $195,000 was provided by Oread Laboratories, Inc., a corporate structure created by the Kansas University Endowment Association. Oread Laboratories, Inc. has been created by KUEA for the specific purpose of providing venture capital to the Center of Excellence for Bioanalytical Research. Patents, products and technologies developed by the Center will be transferred by KUEA to Oread Laboratories, Inc. for commercial development. Within the University the Center for Bioanalytical Research is responsible to the Office of Research, Graduate Studies and Public Service.

Additional Support:

In the short time since the establishment of the Center, several important initiatives have already been undertaken which have the potential to lead to significant additional support for Center research beyond the $195,000 already provided by Oread Laboratories. In one case, the Center is negotiating with a public agency for the development of analytical technology under a contract which could approach $1 million. The Center is also collaborating with other University research units on a proposal to the same agency whose amount may exceed that mentioned above. In addition, a contract is pending with a pharmaceutical company to develop analysis procedures for an anticancer drug. This contract will be in the range of $50,000.

Advanced Technology Research Project Program

University of Kansas Allocation:
$220,000, plus $330,000 in private match

1. "Improvement of Wheelchairs Utilizing Microcomputers"

   Researcher: Dale Rummer

   Budget: State Funds $20,000
   Private Match $30,000
   Kantronics, Inc.
   Lawrence, Kansas

2. "Development of Ground-Probing FM Radars"

   Researcher: Richard K. Moore

   Budget: State Funds $24,000
   Private Match $36,073
   Kohlman Systems Research, Inc.
   Lawrence, Kansas

*3. "Detection and Determination of Environmental Pollutants"

   Researchers: L. A. Sternson
   R. Carlson
   R. Givens
   M. Harmony
   R. Schowen

   Budget: State Funds $76,000
   Private Match $114,000
   Oread Laboratories, Inc.
   Lawrence, Kansas

4. "High Capacity Modulation Methods for Communications Satellites"

   Researcher: K.S. Shanmugan

   Budget: State Funds $50,000
   Private Match $150,000
   Hughes Aircraft
   El Segundo, California

5. "Computer Assisted Design of Peptidomimetic Drugs"

   Researchers: Lester Mitscher
   Gary Grunewald
   Gerald Maggiora

   Budget: State Funds $50,000
   Private Match $75,000
   TRIPOS Associates
   St. Louis, Missouri

*Pending final approval by Kansas Advanced Technology Commission.

2/14/84

WICHITA STATE UNIVERSITY

CENTER FOR PRODUCTIVITY ENHANCEMENT

SUMMARY

Wichita State University's mission, coupled with its location in the industrial center of the State, make logical the enhancement of its expertise in manufacturing technology. Work in this field is currently being done at WSU. The establishment of a Center for Productivity Enhancement will support and expand these efforts. Programs of the Center are being designed to assist state industries in the utilization of high technology to enhance manufacturing productivity.

I. Mission

The Center's mission is to provide assistance to industries throughout the State who are attempting to increase the productivity of their manufacturing operations by introducing new technology. Emphasis of the projects undertaken by the Center staff will be on adapting existing technology to the needs of these industries. As appropriate, basic research and development projects will be conducted. Initially, the Center will address problems in the following areas:

1. Advanced composite materials
2. Computer aided design and manufacturing
3. Robotics and artificial intelligence
4. Digital electronics

Assistance will be provided through direct consultation with companies and by means of seminars, short courses, training programs and publications. Faculty and graduate and undergraduate students will be involved in the work.

II. Organization

The Center will be supervised by a director who will have expertise in one of the areas of emphasis. The duties of the Director will include coordinating Center activities, developing research and sources of funding and generally representing the Center in the community and throughout the State. The Director will facilitate interaction between the Center and other University staff and industries.

An advisory board, composed of representatives from the University and participating industries, will advise the director and staff concerning the merits of proposed projects and the need for investigations in the various areas of expertise.

Specialty areas will be coordinated by four to six members of the University faculty who have primary appointments in academic departments. Division of appointments between the Center and academic departments will help integrate the Center and its activities into the University in order to enhance the academic programs.

III. Areas of Expertise

Four areas of expertise have been defined: composite materials, CAD/CAM, robotics/artificial intelligence, and digital electronics. The University has some capabilities in these areas and members of the faculty have been engaged in research work in each.

Composite Materials - These materials have many desirable features, including a high strength to weight ratio and properties which can be tailored to specific loading situations. Present state of the art does not permit the economical design and manufacture of products that fully utilize the properties of these materials. The center will be involved in establishing a data base of material properties, developing design guides which permit the designer to translate knowledge of material properties into manufacturable plans for components and assemblies and devising tooling, manufacturing methods and quality control procedures.

Resources available for this work include three members of the Aeronautical Engineering faculty who have suitable interest and experience. Vacancies in the Aeronautical and Mechanical Engineering departments include positions in solid mechanics (AE) and materials (ME). The persons appointed to these positions are expected to be involved in composites research.

Computer Aided Design and Manufacturing (CAD/CAM) - Computer aided design involves the utilization of the computer in all phases of the design process. Computer aided manufacturing refers to a similar utilization of the computer in manufacturing operations. The design and manufacturing activities must be integrated if the full capabilities of the CAD/CAM system are to be utilized.

The Center for Productivity Enhancement will concentrate on the application of existing systems and results of research to problems encountered by local and state industries. The work in CAD would involve consultations and short courses concerning the application of computer aided design systems. This service would be particularly helpful to medium and small size concerns. Problems related to computer aided maufacturing include computer numeric control (CNC), design of integrated manufacturing systems, development of machinability packages and simulations of maufacturing systems.

Resources available for this work include faculty from the departments of Aeronautical, Industrial and Mechanical Engineering. Development of a CAD/CAM laboratory is necessary to the accomplishement of many of the projects stated above. The major item of equipment is a computer with graphics and animation capabilities.

Robotics/Artificial Intelligence - Problems in this area are closely related to CAD/CAM since robots are often a component of the manufacturing system. Because of their unique nature and capabilities, their application will be treated separately. Artificial intelligence includes the devising of "expert systems" or programs which allow the computer to diagnose problems, given appropriate symptoms, and select (and perhaps implement) an appropriate solution.

One area in which the center can serve industry is identifying applications which are appropriate for robots, selecting devices suitable for the selected task and integrating them into the manufacturing system. This service will include programming the devices and/or training industry personnel to do so. Research areas in robotics include improvement in the design of grippers, study of the kinematics of robotic devices and developing devices with greater "strength" (weight lifting capacity per unit of weight of the robot).

Research in artificial intelligence includes expert systems which can assist in the design and manufacturing processes. These systems might, for example, allow scheduling of production to proceed without human intervention. Intelligent interfaces to computer systems would make systems easier to use without specialized training and enhance software development by more experienced users. Expert systems and intelligent interfaces could be combined to make robot systems more autonomous.

The Electrical, Industrial and Mechanical Engineering Departments have faculty with interest in robotics. Faculty in Computer Science are interested in artificial intelligence and software development for robots.

Digital Electronics - Development of inexpensive, compact microelectronic circuitry has made the development of CAD/CAM, robotics and artificial intelligence possible. Continued development and implementation of these technologies depends upon the ability to design digital devices. It will be necessary for the Center to have capability to support investigators in the CAD/CAM and robotics areas through the design of specialized electronic devices. In addition, director assistance will be available to companies in both product design and improvement of production facilities.