

PROJECT EXPERIENCE

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PROJECT DESCRIPTION

TITLE OF PROJECT: CENTER FOR INTERACTIVE MANAGEMENT

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: Three Years

PROJECT SPONSOR: University of Virginia and outside sponsors

PROJECT ACTIVITY: Establish a Center for Interactive Management to provide problem-solving services to various sponsors, using specially-designed facilities and the results of a long period of research on how to make groups of people highly productive in working with complex issues. A primary goal of the work was to transfer the system of problem-solving to client organizations.

PRINCIPAL RESULTS OF PROJECT: The Center was established, and served several clients, including the U. S. Forest Service, the Virginia State Department of Forestry, the Southwest Fisheries Science Center (part of the National Marine Fisheries Service), the National Computer Graphics Association, and the School of Engineering and Applied Science of the University of Virginia. The Center was replicated at the Southwest Fisheries Science Center, under the direction of David Mackett, and is still very active as of 1992. The Center was also replicated at the Atlanta Office of the U. S. Forest Service, but was destroyed in a building fire in the late 1980's. A very similar center was established, with the help of IBM Corporation, at the University of São Paulo in Brazil, and it is also very active as of 1992. A very similar center was established at the City University, London, England, and it is also active as of 1992. A new systems engineering and cybernetics study center was established by the Tata Corporation in the city of Hyderabad, India, using practices pioneered by the Center for Interactive Management. This center is also very active as of 1992, and has served a variety of clients in India.

Following the start-up period, the Center was moved to the George Mason University, Fairfax, Virginia, in 1984, where it was re-established in October, 1984, as part of the Institute of Information Technology.

PROJECT DESCRIPTION

TITLE OF PROJECT: Institute for Advanced Study in the Integrative Sciences (IASIS)

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: 1987-present

PROJECT SPONSOR: George Mason University and various outside sponsors

PROJECT ACTIVITY: Developing a science of generic system design, publishing this science, applying it through the processes of Interactive Management, developing a handbook of Interactive Management, serving numerous sponsors in applying Interactive Management, and providing training courses in Interactive Management.

PRINCIPAL RESULTS OF PROJECT: The principal results of this project are fivefold: (a) significant publications of books and papers, (b) major sponsorship from two sponsors (the Defense Systems Management College and the Ford Motor Company Research Laboratory), modest sponsorship from many sponsors, (c) expansion of the number of organizations that have demonstrated their capability of carrying out Interactive Management independently, or with only partial support from IASIS, and (d) significant impact on the teaching program in the Department of Communication at George Mason University, which (with major assistance from the Americans for Indian Opportunity) has introduced Interactive Management to numerous tribes of native Americans, who are using Interactive Management to build independent governance capabilities. This teaching program also has introduced Interactive Management successfully to the U. S. National Railway Service (AMTRAK), which is presently applying it, largely to change the organizational culture. Finally (e) the research and practice carried out in IASIS has been very thoroughly documented in the computer-indexed IASIS file of the Fenwick Library (the George Mason University Library), with a similar file being located in the library of the Defense Systems Management College at Fort Belvoir, Virginia.

PROJECT DESCRIPTION

TITLE OF PROJECT: Defense Systems Management College Research and Training

PRINCIPAL INVESTIGATORS: John N. Warfield and Alexander Christakis

DURATION OF PROJECT: 1987 to present date

PROJECT SPONSOR: Defense Systems Management College

PROJECT ACTIVITY: Planning and conducting training programs and Interactive Management Workshops for and in cooperation with the Defense Systems Management College. This College has the only legal authority to certify program managers for the Department of Defense's (DoD) acquisition programs. It provides special courses for military and civilian personnel in program management. Many of the issues dealt with are very complex, and require participative work in groups. There have been over 30 workshops held as part of this program, dealing with a wide variety of topics of importance to the DoD.

PRINCIPAL RESULTS OF PROJECT: The following is a list of titles of workshop reports, all related to defense systems management or acquisition. All of these workshops used Interactive Management as the governing methodology. The early reports are based on workshops held at George Mason University at the (now inoperative) Center for Interactive Management (CIM). The later reports are based on workshops held at the Defense Systems Management College (DSMC, Fort Belvoir, VA). During the entire period represented by this list of titles, people affiliated with the Institute for Advanced Study in the Integrative Sciences (IASIS) at George Mason University were involved in educating and training selected members of the faculty and staff of DSMC. The latter have conducted most of the workshops in this list that were held in 1990 and thereafter. This latter group of workshops took place at DSMC in a situation room outfitted like the one designed and built at George Mason University in 1984. The faculty of DSMC expect to conduct additional workshops of this type in 1992, with assistance from IASIS.

<i>Date</i>	<i>Title of Report</i>	<i>Report Prepared By:</i>
Dec. 15-16, 1986	Understanding Defense Management in a Form that Supports Action Planning	Center for Interactive Management George Mason University Fairfax, VA
Nov. 30-Dec. 4, 1987	Acquisition Management Alternatives	CIM
Aug. 1-3, 1988	First Report on Smart Muni-tions Acquisition Management	CIM

<i>Date</i>	<i>Title of Report</i>	<i>Report Prepared By:</i>
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Sept. 12-14, 1988	Second Report on Smart Munitions Acquisition Management	CIM
Sept. 19-21, 1988	Third Report on Smart Munitions Acquisition Management	CIM
Sept. 27-29, 1988	Fourth Report on Smart Munitions Acquisition Management	CIM
Feb., 1989	Final Report on Smart Munitions Acquisition Management	Office of Munitions, Office of the Under Secretary of Defense, the Pentagon
Mar. 7-9, 1990	Department of Defense Fuze Industry Workshop	Institute for Defense Analyses, Alexandria, VA
Mar. 14-15, 1990	Department of Defense Program Stability Workshop	Defense Systems Management College (DSMC), Fort Belvoir, VA
Jul. 17-19, 1990	First Defense Industrial Base Workshop	DSMC
Nov. 6-7, 1990	Risk Reduction Management Workshop	DSMC
Nov. 14--15, 1990	First Concurrent Engineering Workshop	DSMC
Nov. 27-28, 1990	Requirements/Resource Allocation/Acquisition Process Alignment Workshop	DSMC
Dec. 11-12, 1990	Second Defense Industrial Base Workshop	DSMC
Dec. 17-21, 1990	Second Concurrent Engineering Workshop	DSMC
Jan. 22-25, 1991	Contractor Integrated Technical Information Service (CITIS) Workshop	DSMC

Date

Title of Report

Report Prepared By:

Jan. 28-29, 1991	Summary Report on DoD Work-shops on Concurrent Engineering	DSMC
Feb. 27-Mar. 1, 1991	North American Defense Industrial Base Critical Technologies Workshop	DSMC
Apr. 18, 1991	Student Focus Group Workshop	DSMC
May 16, 1991	Student Focus Group Workshop	DSMC
May 20, 1991	Student Focus Group Workshop	DSMC
June 3, 1991	Student Focus Group Workshop	DSMC
June 17-21, 1991	Technical Managers Advanced Workshop (TMAW)--Redesigning the Defense Acquisition System	DSMC
July 23-24, 1991	TMAW--Redesigning the Defense Acquisition System II	DSMC
Aug. 19-21, 1991	Industrial Base Study Tiger Team Workshop	DSMC
Oct. 15-16, 1991	Faculty Training Workshop #1	DSMC
Nov. 18-22	TMAW--Redesigning the Defense Acquisition System III	DSMC
Dec. 2 and 5, 1991	Faculty Training Workshop #2	DSMC
Dec. 10-12, 1991	TMAW--Redesigning the Defense Acquisition System IV	DSMC
Dec. 15-16, 1991	Faculty Training Workshop #3	DSMC

[Some of these reports are available in the IASIS File, as part of a special collection of the Fenwick Library, George Mason University, Fairfax, Virginia, 22030-4444]

PROJECT DESCRIPTION

TITLE OF PROJECT: National Development of Ghana

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: January, 1989 to June, 1990

PROJECT SPONSOR: Council for Scientific and Industrial Research (C.S.I.R.) and Technology Transfer Centre of Ghana; Accra, Ghana

PROJECT ACTIVITY: Analyzing the current state of technology transfer in Ghana, and proposing plans for Ghana's use of a large World Bank project dealing with technology transfer in the framework of national development. This involved two trips to Ghana, a year apart, each of 2 weeks duration; the preparation of two project reports; two presentations to high-level personnel in Ghana; and assistance in preparing a large proposal for submission by the Technology Transfer Centre of Ghana to a variety of sponsors.

PRINCIPAL RESULTS OF PROJECT: A high percentage of the recommendations made in the presentations and reports were accepted and acted on by the C.S.I.R. and/or the Technology Transfer Centre. These included bringing to Ghana personnel with high-level experience in planning the Korean transformation and in providing consulting services in India, as well as Chinese experts in the development and practice of herbal medicine. It also included some assistance in developing the Ghana energy plan.

PROJECT DESCRIPTION

TITLE OF PROJECT: University Software Development Program

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: August, 1983 to August, 1984

PROJECT SPONSOR: Burroughs Corporation (now called UniSys)

PROJECT ACTIVITY: Developing contractual arrangements between Burroughs Corporation and various universities, wherein the universities would receive Burroughs computer equipment and would write educational software for use with such equipment, making this software available to the Burroughs corporation for their use in interacting with universities.

PRINCIPAL RESULTS OF PROJECT: In a one-year period, a total contractual amount of \$2,500,000 was committed to six universities; with the universities agreeing to write educational software for Burroughs Corporation.

PROJECT DESCRIPTION

TITLE OF PROJECT: Design of Environmental Education System

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: 1976-1980

PROJECT SPONSOR: United States Office of Education, Office of Environmental Education

PROJECT ACTIVITY: Developing a plan for developing and carrying out environmental education in the educational system of the United States.

PRINCIPAL RESULTS OF PROJECT: A plan was produced for developing and carrying out environmental education in the United States. This plan required that the education be theme-based, and recommended the theme of "human settlements" as the basic theme. The plan also required the use of systems theory and methodology as the primary basis for learning about the environment; involving the use of the generic system design science as a major part of the underlying philosophy, and involving the use of Interactive Management as a teaching and learning system. The results of this project were widely distributed, but have not yet made a significant impact in educational change. However the project manager for the U. S. government is continuing to pursue the approach from his position at the American Association for the Advancement of Science, where he is presently developing an environmental encyclopedia.

PROJECT DESCRIPTION

TITLE OF PROJECT: Ford Motor Company System Design and Quality Control

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: 1989 to date

PROJECT SPONSOR: Ford Motor Company--Ford Research Laboratory

PROJECT ACTIVITY: Working cooperatively with Ford Motor Company Research Laboratory to modify significantly the system used to design automobiles and control the quality of manufactured products.

PRINCIPAL RESULTS OF PROJECT: So far, the sponsor has begun to use Interactive Management to define a major internal program, and expects to use it to design a new set of computer design tools for computer-aided engineering, computer-aided design, and computer-aided manufacturing. In addition, sponsor personnel are learning how to plan and conduct Interactive Management workshops, and how to interpret their results.

PROJECT DESCRIPTION

TITLE OF PROJECT: Integrating a Corporate Research Laboratory with Other Corporate Activities

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: Three Months

PROJECT SPONSOR: Comsat Corporation

PROJECT ACTIVITY: Interviewing numerous high-level executives and researchers in the Comsat Corporation, to examine how the activities of the Corporate Research Laboratory could be integrated with other corporate activities; including factoring developments from the research activity into the strategic plans of the corporation.

PRINCIPAL RESULTS OF PROJECT: Management gained an understanding of some of the bad decisions that had been made in the past because of failure of communications between the financial and research parts of the organization; and was provided with a strategy for improving greatly the communication links between research and financial management.

PROJECT DESCRIPTION

TITLE OF PROJECT: PROFESSIONAL DEVELOPMENT TRAINING PROGRAMS IN SYSTEM DESIGN AND MANAGEMENT

- #1. The Mathematics of Modeling: Language and Knowledge Organization and Interpretation (one week; Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, N. L., Mexico, 1992)
- #2. Education in Generic Design Science and Interactive Management (1 3/4 years, and continuing; Defense Systems Management College, Fort Belvoir, VA, 1990-date)
- #3. Translating the Theory of the Science of Generic Design into Practice (2 days; Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, N. L., Mexico, 1990)
- #4. The Management of Complexity Through Systems Design (Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, N. L., Mexico, one week, 1989)
- #5. Methods for Working With Complexity (one week; Polytechnic Institute of Mexico, Mexico City, Mexico, 1988)
- #6. Interpretive Structural Modeling and the Sigma-4 Process (four days; IBM Corporation with the University of São Paulo Department of Administration, São Paulo, Brazil, 1982) in cooperation
- #7. Consensus Methodologies (three days; Carl Cranz Gesellschaft, Bonn, W. Ger., 1982)
- #8. Workshop on Consensus Methodologies (six days; Saudi Arabian National Center for Science and Technology, Riyadh, 1980)
- #9. Interpretive Structural Modeling (2 days; International Conference on Cybernetics and IEEE, Cambridge, MA, 1980) Society of the
- #10. Collective Inquiry Methods (3 days; Far West Laboratory for Educational Research and Development, San Francisco, California, 1980)
- #11. Methodology for Large Scale Systems (7 days; IEEE and Tata Corporation, Pune, Bombay, Bangalore, India, 1979)

PRINCIPAL INVESTIGATOR: John N. Warfield

DURATION OF PROJECT: See parenthese information following project title above.

PROJECT SPONSOR: See parentheses information following project title above.

PROJECT ACTIVITY: Education and training in working together in groups on problems of great complexity. The education and training includes:

- Training in setting up an appropriate physical facility to conduct the work
- Training in planning group workshop activity
- Training in conducting Interactive Management (IM) workshops
- Training in interpreting the products of IM workshops
- Training in applying the product of IM workshops in resolving complex issues
- Training in the theory and mathematics of generic design science

PRINCIPAL RESULTS OF PROJECT: The sponsors learn to set up their own facility and carry out their own workshops. They learn the various roles involved and how to carry out the roles. They learn how to use

the computer software to keep track of the information generated. They learn how to interpret and use the results of their work to implement their own products. After a period of about three years, they become independent of outside contractors assistance and conduct the work entirely in their own organization.

The primary result is that they are much better informed about complex issues, and much more insightful about how to resolve them. There is a cultural change brought about by the participation of numerous relevant individuals, and a great improvement in quality brought about by the workshops where people learn to understand the complex issues.