

# MANAGING THE INDUSTRY/UNIVERSITY COOPERATIVE RESEARCH CENTER

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A Guide for Directors  
and Other Stakeholders

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**Any opinions, findings, conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the project sponsors.**



# PREFACE

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DENIS O. GRAY, *North Carolina State University, Raleigh*

S. GEORGE WALTERS, *Professor Emeritus, Rutgers University, NJ*

In the early 1980s we became involved in the evaluation of a small initiative supported by the National Science Foundation (NSF), the Industry/University Cooperative Research Centers (I/UCRC) Program. A primary objective of the program was to see if NSF could replicate the successful industry-university partnership it had produced in the pioneering Massachusetts Institute of Technology (MIT) Polymer Processing Center. Several years ago, we looked back on this humble beginning and marveled at what this modestly funded program had accomplished.

More than 80 cooperative research centers involving over 100 universities had been created and 55 of those centers were still in operation! With \$4 million in NSF funding annually, these centers supported 600 faculty and 1,000 students, attracted 600 industrial members, and generated an annual budget of \$60 million per year. Remarkably, feedback indicated both industry and university participants felt they benefitted from these partnerships. We also found that individual industry members can leverage their own typical \$30,000 membership fee at least ten, or even 30 times or more in funded center research.

More importantly, I/UCRC surveys revealed that the research knowledge generated by these centers triggers an additional \$100 million in new industry research activities. This represents a 1.66 precompetitive research dollar multiplier and shows IUCRC research results are good enough to invest in.

The I/UCRC program has also helped pave the way for several larger center-based programs, including Engineering Research Centers, Science and Technology Centers, and state I/UCRCs. As we were quoted in *Chemical Engineering News* (January 1994) the NSF I/UCRC program is one of “the most significant pieces of social technology for managing cooperative research to emerge from the National Science Foundation.”

Consistent with this view, Richard Cyert (1993), President Emeritus of Carnegie Mellon University, has said these centers have had a major impact on the “relevance to competitiveness” of academic research in the U.S. and “are models that could be used in the management area to a great advantage.”

As we shared our observations on the I/UCRC model with our colleagues, we realized there was great interest both inside and outside the I/UCRC program in understanding what factors accounted for the I/UCRC model’s effectiveness and, more importantly, how to emulate that success. Center Directors appeared to have an insatiable interest in learning how to improve their performance to the level achieved by “the best in class” centers. At the same time, other stakeholders including university, industry and government representatives from across the U.S. and abroad continually approached I/UCRC participants with questions about how to start their own centers. Persuaded that there would be an interest in learning how to build and manage lasting “win-win” partnerships between industry and university, we set out to write this book.

In preparing this volume we have gone to great lengths to incorporate input from a variety of relevant sources and perspectives. Detailed chapter outlines were reviewed by 30 I/UCRC evaluators and 50 Center Directors. Seven evaluators with six to 15 years of program experience co-authored the chapters. These contributors had complete access to some 14 years of NSF industrial and faculty center participants surveys and historical profiles. They also held discussions with company members, directors, faculty and student researchers. After several iterations, individual chapters were reviewed by an Editorial Review Board of seven successful Center Directors. The NSF-I/UCRC Senior Program Director reviewed all chapters. Additional reviews were provided by Battelle Press.

While our strategy emphasized experience-based knowledge and principles accumulated over 20 years of NSF I/UCRC experimentation, each of our eleven chapters begins with an introduction which provides a literature-based conceptual framework for

the principles and practices which follow. The chapters include: (1) The Background and Evolution of the I/UCRC model, (2) Planning and Establishing an I/UCRC, (3) The Structure and Protocols of an I/UCRC, (4) Recruiting and Maintaining Membership in an I/UCRC, (5) Planning Center Research, (6) Implementing the Cooperative Research Program, (7) Knowledge and Technology Transfer, (8) Control, Budgeting, and Evaluation, (9) Communication, (10) Leadership, and (11) Growth and Diversification. All of the chapters have been written to meet the needs of university, industry and government stakeholders.

It is our belief that a university science or engineering professor with entrepreneurial skill and committed faculty and industry colleagues can achieve successful, lasting and mutually-beneficial partnerships by building and sustaining I/UCRC-type centers. We hope that this book will facilitate and support such efforts.

## REFERENCES

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I/UCRC: Industry/University Cooperative Research Centers Program Jan 2010. SHARE. HTML. 2 I/UCRC: CISE Outline CISE Budget CISE centers collaboration with Engineering Examples Multi-University: WIKI Special Projects: Status on Ask Alex Avatar Life Form Management System Reaching Maturity Examples More examples Reconfigurable Computing IMS students. 3 IUCRC: CISE CISE Budget On the rise Desires Beyond the moon More collaboration More Tie (Corbi) projects. 4 I/UCRC: CISE Example: Jose & Flaura CAC: Center for Autonomic Computing (UF) & CChIPS: Child Injury Prevention Studies (Children's Hospital). A guide for faculty, administrators, industrial representatives, and government officials who manage the complex linkages of UCRCs. Covers planning. " A significant contribution to the art and science of leveraging and managing industry, university, and government research dollars. This material is valuable to our achieving continued innovation in increased productivity." - - Frank R. Lautenberg, U.S. Senator (D) New Jersey. ". an excellent step-by-step guide...highlighting the challenges as well as the opportunities. The book is based on experience obtained in the United States, but the existence of an IUCRC in my own university shows that the authors' model is fully transferable." - - Professor George Bain, Vice The NSF Industry/University Cooperative Research Center on Net-Centric and Cloud Software and Systems (Net-Centric IUCRC) has been in existence since 2009. Originally the center included the University of North Texas, the University of Texas at Dallas and Southern Methodist University. Arizona State University joined the center in 2010. For an overview of IUCRC program and Net-centric IUCRC, click here. Learn more about our center and about some of our recent research by visiting our YouTube channel. Why Join Us? Proven model optimized for collaboration between industry, government, and academe