

**COMPREHENSIVE PROGRAM REVIEW SELF-STUDY**

**FOR THE**

**CENTER FOR INDUSTRIAL COLLABORATION**

**IN THE**

**COLLEGE OF SCIENCE AND MATHEMATICS**

**FOR**

**YEAR 2: 2002-2003**

**COMPREHENSIVE PROGRAM REVIEW EXECUTIVE SUMMARY  
FOR THE  
CENTER FOR INDUSTRIAL COLLABORATION**

The Center for Industrial Collaboration (CIC) was formed in April 1998 as a public service center. The mission of this center is to generate and share technical knowledge in the college's core competencies of Biology, Biochemistry, Biotechnology, Chemistry, Computer Science, Information Systems and Mathematics as a consequence of partnerships and relationships with the regional business and industrial community. The activities of the center are selected to enable both students and faculty to apply the theory taught in our classrooms and the research programs of our faculty to practical problems in the workplace. Our goals in these endeavors are to enrich the overall educational process through service learning and produce a significant economic development impact upon our state and local communities.

The major activity within the CIC since June 1999 has been Georgia's Small Business Innovation Research (SBIR) Resource Program, hereinafter referred to as the "SBIR Resource Program". The purpose of the SBIR Resource Program is to integrate the academic and scientific expertise of Kennesaw State University with small, high technology businesses thus improving the performance of both, and to provide Georgia's high technology entrepreneurs and small businesses with the knowledge and skills to secure Federal research and development grants, which would result in commercially viable products manufactured in Georgia.

**Overall Assessment of the CIC's Productivity: Very Strong.**

On November 18, 2002, the SBIR Resource Program within the Center for Industrial Collaboration was the recipient of the 2002 Georgia Economic Developers Association's (GEDA) TERRIFIC Award as the institution of higher education that has most significantly influenced economic development in the State. When our program was initiated in 1999, Georgia was receiving only \$3-5 million per year in federal SBIR funding. The current funding level is in the \$12-15 million range. Although the SBIR Resource Program cannot take credit for all of this increase, a significant portion of this increase can be attributed to our efforts. Additionally, when our program began, most entrepreneurs and small businesses were not aware of the existence of federal SBIR funds and those that were had the misconception that SBIR funding was in the form of loans and the federal government retained intellectual property (patent) rights. Now there is a high level of awareness within the small business community of the availability of \$1.5 billion annual SBIR funding and they understand the money is provided as grants and they will fully retain all patent rights to any technology developed under the SBIR program.

The college needs to raise the awareness of our faculty to pursue more external collaborations, both SBIR-related and non-SBIR, with the regional business and industrial community since the total collaborations have remained few in number.

### **Recommendations for Improving the Center's Productivity:**

There are several ways to enhance and improve the productivity of the SBIR Resource Program within CIC. First, a stable organization with long-term funding is necessary to keep up with the demands for training and assistance currently provided by the center; and assist in commercializing technologies developed through Federal grants. A critical element in performance improvement in terms of the number of projects within the CIC, is the need for a stronger faculty interest and commitment. This is primarily an educational process and the number of projects will increase as we have more role models and as individual faculty benefit from successful collaborations.

Over the past three years, we have learned that entrepreneurs and small business owners are reluctant to collaborate with the SBIR Resource Program beyond the initial introductory stage. Unless they encounter a serious problem or roadblock, they tend to pursue SBIR Grants independently and typically do not even provide feedback whether or not an SBIR Grant Proposal was submitted or funded. Several states have established a cash incentive program with excellent results. We have envisioned creating a small Set-aside Fund with annual legislative funding, which would provide an incentive in the \$1,000 – 10,000 range to entrepreneurs or small businesses who work with the SBIR Resource Program until a professionally written proposal is submitted. The preferred incentive would be a \$5,000 award that requires a collaboration with a faculty member within the University System of Georgia in order to be redeemed. We believe this would provide the necessary incentive for ensuring continued involvement with the CIC and would also build new relationships with scientific or business faculty who would infuse much needed expertise and intellectual capital into the project.

There are many faculty members who would enjoy the collaborative opportunities offered by the SBIR Resource Program. Unfortunately, their “free” time is limited. A small consulting/collaboration incentive is envisioned that would provide reasonable compensation to faculty members for their contributions. In addition, there is a need to educate university faculty as to the professional, educational and research funding opportunities that can accrue to them from direct involvement with the business community on SBIR projects. This will make a difference in the growth, quality and competitiveness of many Georgia high technology companies.

The field of research and development is well established but the ability to commercialize technology is not a mature process for the small business community and the academy at large. At present, an opportunity exists to take a leadership role in the academic study of “technology commercialization” as a process and a regional economic engine. We are currently considering this opportunity as a basis for a future graduate degree program that would cut across and involve all disciplines in the college. There is; however, no movement in Georgia, or in any other state, to study the successes and failures of high technology commercialization. Until this is done, the knowledge of how science and technology are translated into viable business will remain as anecdotal events.

### **Conclusion About the Center's Viability:**

The CIC has created a strong interest in our programs as viable alternatives to Angel and Venture Capital funding. Our impact has been so significant that the University of Georgia and Georgia Tech have recently established their own programs to market aspects of the SBIR program and associated

business services. Without appropriate long term funding, the SBIR Resource program will be superceded by the University of Georgia and Georgia Tech programs.

**Potential for “Model Program” Status:**

The Center for Industrial Collaboration is widely known for its leadership in advancing the cause of high technology focused small businesses. We are the recognized leader in Georgia as well as known and respected nationally by those in the business of small business research and development. The CIC has been able to effectively influence the actions of individuals, companies, and institutions in terms of pursuing SBIR Grants and commercializing technology. As the first of its kind in Georgia, and the reputation it has earned, the CIC and the SBIR Resource Program has distinguished itself and brought statewide recognition to the College of Science and Mathematics and Kennesaw State University.

The CIC has become an organization that the Georgia technology community defers to when alternative funding is the topic. There is no substitute for the recognition by our peers and customers as the leader in our area of expertise. However, if we do not seize the opportunity to take the lead in affecting technology commercialization by turning research into businesses, and to be recognized as the intellectual leader in technology commercialization, someone else will very likely seize the initiative.

**Recommendation for Future General Institutional and Supporting Rationale:**

We have established the economic development benefits of a statewide initiative to educate entrepreneurs and the small business community about the availability SBIR grants to fund technology-driven research and development. Previously, the business community has felt that economic development initiatives were the exclusive purview of colleges of business or engineering. Our program has demonstrated that colleges of science or even arts and science can have an immediate and lasting impact on economic development. We have shown that the outreach efforts of the College of Science and Mathematics at KSU address an important community need and effectively link our university to the business and industrial community. Furthermore, the involvement of individual faculty and students in the implementation of SBIR grants can provide an important educational experience by showing the viability between the theory taught in the classroom and how it is use in the workplace to stimulate economic development.

**YEAR 2 GUIDANCE FOR COMPLETING A  
COMPREHENSIVE PROGRAM REVIEW SELF-STUDY  
(PUBLIC SERVICE & RESEARCH CENTERS)**

**A DETAILED SELF-STUDY of THE CENTER FOR INDUSTRIAL COLLABORATION**

**OVERALL SUMMARY CONCLUSION: Exemplary, and can be significantly improved, when expanded from a program focused center to include the intellectual pursuits and rigor of an academic center.**

**I. Center Description**

- a) Purpose of the Center, and specifically the SBIR Resource Program:** Provide a means for small, high technology focused businesses to collaborate with researchers from the University System of Georgia (USG), and to assist the same businesses in securing Federal research and development grants in order to develop commercially viable products. The broader mission of this center is to generate and share technical knowledge in the college's core competencies of Biology, Biochemistry, Biotechnology, Chemistry, Computer Science, Information Systems and Mathematics as a consequence of partnerships and relationships with the regional business and industrial community. The specific research activities of the center are selected to enable both students and faculty to apply the theory taught in our classrooms and the research programs of our faculty to practical problems in the workplace.
- b) Principal Functions/Key Projects of the Center:** The primary program sponsored by the CIC in the Small Business Innovation Research (SBIR) Resource Program. Through this program high technology companies are identified, collaborators sought, and Federal grants pursued. To accomplish its mission the CIC conducts a statewide awareness program, trains through seminars and workshop, provides direct assistance and consulting, and mentors researchers and business leaders alike.
- c) Strategic Importance of the Center to KSU:** This is the first center of its kind in Georgia and has a mission to support any small, high technology company, researcher, or professor throughout the state. The *strategic objective* of the CIC is to generate the interest required to secure Georgia's appropriate place as the fifth largest high technology state. The long-term goal of our program was to have the State's inventors and innovators realize a minimum of \$50 million in Federal R&D grants annually. The major thrust of the center is to have a significant impact upon regional economic development.
- d) Age (Years) of the Center as of 2002:** Four
- e) Name(s) and Title(s) of Center's Director(s):**
  - 1) Director:** From Inception to June 1999: Dr. Leon Combs, Ph.D., Chair, Department of Chemistry and BioChemistry

- 2) **Director:** From June 1999 to December 31, 2002: Richard L. Teters, Jr. MSMS, Assistant Professor of Project Management. The Directorship of the center has been reassumed by Dr. Leon Combs effective January 1, 2003.
- f) **Names and Titles of Personnel Assigned Full-Time in the Center:**  
Richard L. Teters, Jr. (1999-Present), Nerina Petrie (1999-2001)
- g) **Names, Titles, and %Time of Personnel Assigned Part-Time to the Center**
- h) **Total Funds Budgeted for Operation of the Center in FY2002-03\***
- i) **Center's Physical Location(s) & Assigned Square Footage:** The CIC operates in rooms SC433 and SC434. Approximately 360 square feet are utilized.

## II. Summary Conclusion About the Strength of the Center's Overall Productivity

The Center for Industrial Collaboration is a viable member of Georgia's science, technology, and business communities. It is the only organization of its kind, and is respected throughout Georgia for its ability to develop successful techno-business teams and coach these businesses in alternative financing.

The CIC is the 2002 Recipient of the Georgia Economic Developers Association's TERRIFIC Award as the institution of higher education that has most significantly influenced economic development in the State.

The CIC is clearly recognized as the subject matter expert in Federal research and development grants, and technology commercialization, outside of incubators, by such organizations as Emory University, Mercer University, Georgia Tech Research Institute, Georgia Tech Economic Development Institute, and Georgia's Departments of Community Affairs and Industry Trade and Tourism.

Over 300 high technology companies have been trained in SBIR and STTR (Small Business Technology Transfer) grant programs.

Over 3000 individuals, from inventors, to investors, to fully operational corporations have participated in some form of CIC event.

When the CIC was formed, Georgia was ranked last of the states in providing support for SBIR and STTR programs. Georgia provided none of the 25 measurables identified by the State Science and Technology Institute, a non-profit research and policy organization based in Columbus, Ohio ([www.ssti.org](http://www.ssti.org)). By the end of the first year the CIC excelled in providing 14 of the measurables, and currently excels in 21. The remaining four services involve the granting of funds for proposal preparation and matching, and bridge funds. If the SBIR Resource Program continues, we must target such funds from the State Legislature.

In 2001, we established a mutually supporting partnership with the Business Outreach Services of the University of Georgia. We expected this to be a long-term partnership, which would provide Georgia's high tech small businesses with a continuous stream of support from the very early stages of product development to full commercialization. After one year, the UGA Small Business Development Center severed the relationship in order to retain all the Federal funding for themselves.

## **II A. Fulfillment of the Center's Purpose and Attainment of Goals**

1. Awareness: Create a Statewide awareness of Federal R&D grants. Fulfillment: The SBIR Resource Program is recognized throughout the state by educators, academic researchers, businesses, industry association, elected officials, and inventors.
2. Training: Train technology companies to identify and secure federal funding. Fulfillment: Over 300 companies trained in four years.
3. Assistance: Provide direct assistance where possible to improve high technology business collaborations. Fulfillment: Over 200 individuals per year receive direct assistance in some form related to SBIR and building of successful technology companies.
4. Networking: Provide a means to effectively introduce, research collaborators, business leaders, investors and inventors. Fulfillment: This has become a daily event for the director. Each day produces opportunities to introduce one or more interested parties to others who have the skills and knowledge to contribute to a successful team effort.

If there is a specific shortfall, it lies in the lack of an automated means of allowing one party to locate and contact another with complementary interests. This requires the development of an interactive database that currently does not exist.

## **II B. Services Rendered by the Center to the Campus Community**

The SBIR Resource Program has been externally focused and not targeted in support of the Kennesaw State University community at large. In a larger sense, the Center for Industrial Collaboration provides students and faculty an opportunity for service learning and a vehicle for the university to have a direct, positive impact upon economic development both regionally and statewide.

In the beginning, the services of the CIC were restricted to the College of Science and Mathematics, and the center's mission was initially conceived to provide a collaboration mechanism exclusively for the college's faculty. Beginning in June 1999 the CIC offered its services to the academy, but was not necessarily perceived by all faculty as a mutually beneficial organization. On occasion, opportunities are made available to KSU faculty and students. Specifically, business plan classes in the Coles College are given access to CIC clients. We currently have two professors working with client companies. Of significant note is that we have one of our students, who has formed a company around an original technological concept.

There are four actions that should be taken to improve the support to the campus community:

1. The CIC should become an intellectual and academic resource for technology commercialization.
2. The center should aggressively seek opportunities for collaborative research between faculty and industry.
3. The Center should establish over the long term, an aggressive marketing campaign explaining how the center can be of value to both faculty and the business community.
4. Through undergraduate and graduate degree programs, the college and center can produce graduates with the educational expertise and skills to more effectively commercialize technology.

## **II C. Services Rendered by the Center to External Communities**

The center is without equal in the services it renders to the citizens of Georgia. The CIC is responsible for assisting companies in securing Federal research and development grants, which will become high technology manufacturing corporations in the long term. The CIC is an investment in Georgia's high technology future.

The following services are provided:

1. **Awareness:** Public speaking opportunities and networking at events where science and technology researchers and entrepreneurs gather, along with direct marketing, generates word-of-mouth advertising. Through these methods the community becomes aware of the existence of Federal grants and how to secure them.
2. **Training:** Seminars and workshops are conducted throughout the State to provide interested and qualified researchers the tools necessary to identify grant opportunities and to develop successful product development proposals.
3. **Assistance:** The center provides direct assistance to individuals and companies in all aspects of corporate development and technology commercialization.
4. **Networking:** The most significant contribution the center makes to the efforts of researchers and businesses alike is our ability to quickly identify and introduce them to collaborators with the skills, intellect, and interest to contribute to a winning organization.
5. **Mentoring:** A direct benefit of our networking efforts is the ability to introduce novices to those having extensive experiences in securing small business grants.

In June 1999, we started with a limited awareness program and a couple of workshops. Very quickly we became recognized as a major economic development resource. The awareness of the program and KSU's efforts in this arena has caused Emory's Vice President for Research to publicly state that Kennesaw State University was the place to go if you are serious about technology commercialization. Our success has also caused the University of Georgia to become practioners of our SBIR Resource Program, and for Georgia Tech's Advanced Technology Development Center to augment their start-up company funding strategies with our SBIR Resource Program.

Improving this program can be achieved by reducing our involvement in awareness and the training of the basics, increasing our efforts in assistance, networking, and mentoring; and developing a very strong ability to actually commercialize the products that evolve from the technologies.

#### **II D. Grants and Contracts Acquired by the Center**

Aside from \$450,000.00 in seed money received from ICAPP and the Georgia Power Company, the CIC has not been successful in raising new funds in the current economic climate through the private or legislative sectors or leverage existing funds from the State budget. To date, we also have made a conscious decision not to try to generate funds from recharging client companies for our services.

In the Federal Fiscal Year 2002, we partnered with the Business Outreach Services of the University of Georgia. As a team we received a grant of \$125,000, of which CIC received \$62,500.00, from the Federal and State Technology (FAST) partnership. The FAST-SBIR program is sponsored by the Small Business Administration. In FY 2003, the Business Outreach Services unilaterally terminated this arrangement and decided to try to incorporate our program into their organization. Without a clear source of new funds, we decided to put the SBIR Resource Program on-hold and discontinued funding for the full time staff.

#### **II E. Center Publications, Reports, and Professional Presentations**

The CIC has not published or made professional presentations. We have provided the ICAPP Program with progress reports and annual reports. As a program focused center, the CIC has conducted over 25 presentations to organizations, groups, and faculty and 13 full day workshops drawing scientists, entrepreneurs and small business owners from throughout Georgia and as far away as California and Rhode Island.

#### **II F. Sponsorships, Endowments & Gifts Acquired for the Center**

Not applicable.

#### **II G. Sales, Service Fees, & Income Generating Activity**

The CIC staff has considered a fee for consulting services as a method of raising funds, but elected not to pursue this line of revenue generation, because of concerns about possible conflicts of interest.

#### **II H. Return on Investment**

Any attempt to calculate a Return on Investment at this stage would be suspect because of the limited data base. Superficially, were we to take credit for 50% of the state increase in SBIR funding from \$5 million when our program began to the approximately \$12 million received in the current year, we could calculate an annual ROI of at least 40. Our efforts have been focused on seeking funds for scientific research from concept to product viability. This is at best a five-year process. Our first opportunity to actually assist anyone in the SBIR program was in calendar year 2000. Beginning in

2005, the direct benefits of this program will be felt. In 2005 Georgia Tech, the University of Georgia, the Medical College of Georgia, and Emory will take credit for products coming to market from the SBIR/STTR programs. An accurate accounting would reveal many of these projects resulted from the efforts of KSU's Center for Industrial Collaboration.

## **II I. Contribution to Achieving KSU's Mission**

The Center for Industrial Collaboration's contribution to the KSU Mission is best considered in the context of the university's "commitment to public service, continuing education, technical assistance and economic development activities that address the needs, improve the quality of life and raise the educational level within the university's scope of influence." As stated in previous paragraphs, the CIC has made a major impact statewide on economic development and been perceived as a major collaborator with our sister institutions across the state. Every citizen of the state, involved in advancing Georgia's status in technology, has been positively impacted by our programs and staff.

## **III. Summary Conclusion About the Strength of the Center's Overall Quality**

The Center for Industrial Collaboration has been an outstanding success as an outreach program. It is recognized within the State and at the Federal level as the place for alternative financing of technologies and their commercialization. The CIC dominates the Internet when searching for SBIR in Georgia.

As an academic research center, the CIC requires a long-term source of funding to continue to engage the college and its faculty with Georgia's business and industrial communities. The first step, linking industry and small business to KSU and the CIC has been accomplished. Our next step is to build upon this success in such a way that our faculty can synchronize their professional interests with business interests and opportunities.

Given the funding and qualified staff, we should consider the creation of an academic program within the college and the focus should be on evolving the CIC and college into a preferred source, if not a nationwide leader, of information and analysis in the discipline of technology commercialization.

### **III A. Public Recognition, Honors & Awards Received by the Center**

The CIC is the 2002 Winner of the Georgia Economic Developers Association's Terrific Award as the institution of higher education that has most significantly influenced economic development in the State. This award was recommended by the Medical College of Georgia, one of the most responsive and collaborative institutions in the University System of Georgia.

### **III B. Stakeholder Satisfaction with the Center's Work and Accomplishments**

The stakeholders range from clients, to professional associates, other universities, state and federal agencies, and those providing funds in support of the center's operations. In most respects, the SBIR Resource Program has satisfied the needs of many of its stakeholders.

From the outset, ICAPP's investment was meant to be seed funding and that we would have to find subsequent sources of funds. Georgia Power, on the other hand, participated in the original funding along with ICAPP, and perhaps could have been utilized as a better long term supporter and a key player in securing the support of other corporations. Unfortunately, frequent changes in key leaders at Georgia Power precluded a continuous sense of ownership.

### **III C. Other Assessments of the Quality of the Center's Work**

Not applicable.

### **III D. Center's Responsiveness to State Needs & Changing Conditions**

Early in his administration, Governor Barnes stated that Georgia must become a national and international leader in technology. He publicly stated that the State should achieve a ranking as the fifth most technologically advanced state. With that statement, the CIC committed itself to doing what was necessary to place Georgia in the top five states in securing Federal small business research and development funds. When we started the program, the most recent data had Georgia listed in the bottom half of states and securing between three and five million dollars through the SBIR program annually. We now exceed \$14 million annually and are steadily growing. In order to rank number five, Georgia's small businesses would have to win a minimum of \$50 million in SBIR grants annually.

### **III E. The Quality of the Faculty & Staff Supporting the Center**

It is not for us to evaluate our quality. That is the purview of our clients, community, and those who will evaluate our contributions some time in the future. Regardless of the way we feel about our skills, commitment, and abilities, it is clearly for others to judge.

### **III F. The Quality of KSU Facilities and Equipment Supporting the Center**

The CIC has been provided adequate, quality facilities and equipment. We have not asked for much, but what we have needed to get the job done, the College of Science and Mathematics has provided.

### **III G. The Quality of the Overall Annual Financial Investment in the Operation of the Center**

The center has operated on its original seed funding and from a Federal grant, which ultimately resulted in the University of Georgia being able to lay claim to all our contributions in the SBIR program. Common data/info source: None, this is center-specific.

### **III H. Quality of Advanced Technology Available to Support the Center**

Excellent.

### **III I. Leadership Position of the Center**

The Center for Industrial Collaboration and its flagship program, the SBIR Resource Program, are the first of its kind in Georgia. UGA and GT (EDI-ATDC) have begun to emulate and replicate our mission and services.

#### **V. Summary Conclusion About the Center's Viability at KSU**

Without continued funding and a passionately committed staff, the SBIR Resource program will not be able to continue in its present form. Effective December 31, 2002 the program will be placed on hold.

#### **V. Potential for "Model Program" Status**

We are the leader in our space. We are being replicated by the best. We believe the SBIR Resource Program is THE MODEL.

#### **VI. Improvement Plan**

Until new funding is identified, we have no future plans for the SBIR Resource Program. From this point on, the focus must be on the CIC and its mission will be to provide a means to enhance the college's faculty research through small business and industrial collaborations.

#### **VII. Summary Recommendation**

Just as the SBIR Resource Program, within the Center for Industrial Collaboration, reached the point that it could transition from a programmatic, service based organization, to one with the intellectual capacity to determine most successful paths to technology commercialization, we have suspended the program for lack of external funding. The CIC and the SBIR Resource Program are clearly successful concepts. We are actively pursuing funding that will enable the SBIR Resource Program to enter its next phase that will build upon SBIR funding and focus more on technology commercialization. In the meantime, the CIC will continue to be a base for faculty-industry projects and collaborations as originally conceived.