

**Centers of Excellence Proposal Summaries  
Sixth Round of Funding**

**Commission-Recommended Proposal  
May 19, 2010**

**North Dakota State University – Center for Advanced Technology Development and Commercialization (CATCOM)**

*Amount Recommended: \$3,900,000*

*Amount of Match: \$7,800,000*

*Proposed Private Sector Partner: Triton Systems, Inc.*

*Proposed Job Creation: 6*

*Summary:* The Center for Advanced Technology Development and Commercialization (CATCOM) is in response to those private sector partners who wish to develop and manufacture products incorporating inventions, technologies and IP created by NDSU and/or private sector partner. Private sector partners engaged with CATCOM have identified key NDSU inventions, technologies and other IP that, if further developed, tested, and commercialized jointly, will result in valuable products such as advanced semiconductors, printable/flexible electronics and photovoltaics/solar cells. The private sector partners need NDSU's research and development skills, technical expertise, and other capabilities to conduct applied research and commercialization activities to swiftly move products based upon these key technologies to the marketplace.

CATCOM will initially focus on moving NDSU inventions, technologies and IP from "bench to market" by performing market-driven, research and development (as specified by private sector partners) that will help the private sector partners prototype, test, and produce advanced materials and products for such large market applications as printable/flexible electronics, photovoltaics/solar energy, energy storage (advanced batteries), and functional coatings. The private sector partners initially want to use NDSU's "liquid silicon" technology to manufacture such advanced materials and products. Future private sector partners may be interested in having CATCOM work on other NDSU discoveries and technologies such as protective coatings for ships, planes, and cars, biomedical devices and implants, etc. The private sector partners will, in turn, scale-up production for manufacturing such advanced materials and products.

### **III. Executive Summary** (limited to one page)

The Center for Advanced Technology Development and Commercialization ("CATCOM") will assist its private sector partners in commercializing new inventions, technologies, and other intellectual property (IP) discovered or created by NDSU faculty, staff, and students and/or private sector partners. If fully funded, CATCOM will combine the market knowledge, product specifications, and commercialization capabilities of its private sector partners with NDSU's research capabilities and expertise to improve and refine NDSU and/or private sector inventions, technologies and other IP leading to the development and manufacturing of new products. A powerful commercialization ally to other NDSU ED-COE centers (CAEDM, CSP, and CIES), CATCOM will bridge the technical "valley of death" that separates laboratory discoveries from commercialized products thereby propelling inventions, technologies, and other IP from "bench to market". In doing so, CATCOM will enable private sector partners to bring new products to the market as well as grow and enhance their businesses. It will also create opportunities for the formation of new start-up and spin-off companies that address other associated markets with related technologies. The economic development impacts of CATCOM will be many, including the possibility of new additions to N.D.'s advanced manufacturing industry cluster, e.g., growth of a new N.D.-based company using NDSU's "liquid silicon" to produce new photovoltaic/solar cells, printable/flexible electronics, improved energy storage systems (advanced batteries) and new functional (antimicrobial) coatings.

CATCOM will assist its private sector partners by: 1) performing market-driven, applied R&D needed to convert inventions and technologies into commercial products; 2) making product enhancements leading to better market penetration and market share, 3) developing, qualifying, and implementing new or better test methods, quality assurance and control procedures for technologies and products; and 4) collaborating with private sector in building and operating new processing and manufacturing facilities in N.D. and elsewhere.

## Attachment A

### Center for Advanced Technology Development and Commercialization (CATCOM)

#### Budget and Justification

##### FUNDS REQUESTED OF THE ND ED-COE CATCOM CENTER:

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Total</u>
Scientific & Technical Personnel (Engineers, chemists, other researchers, graduate, undergraduates, etc.)	\$182,000	\$341,560	\$463,638	\$486,820	\$1,474,018
Program & Project Administration (Program- and Project-related personnel for project administration, financial oversight & management, reporting)	\$45,571	\$100,627	\$105,658	\$110,941	\$362,797
Program- and Project-related operating expenses, project-specific travel	\$11,500	\$40,300	\$42,315	\$44,431	\$138,546
Program- and Project-related equipment, chemicals, reagents, supplies, materials, etc.	\$50,000	\$518,000	\$691,000	\$532,398	\$1,791,398
Business development & related activities	\$12,500	\$38,300	\$40,215	\$42,226	\$133,241
<b>TOTAL REQUESTED OF THE ND ED-COE PROGRAM</b>	<b>\$301,571</b>	<b>\$1,038,787</b>	<b>\$1,342,826</b>	<b>\$1,216,815</b>	<b>\$3,900,000</b>

##### PRIVATE SECTOR MATCH

###### Private sector cash match given to center for performance of project(s)

Triton Systems – Fargo	\$150,000	\$500,000	\$650,000	\$650,000	\$1,950,000
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###### *Subtotal - Cash Match*

\$150,000	\$500,000	\$650,000	\$650,000	\$1,950,000
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###### Private sector cash match reserved/allocated by partner for performance of project(s)

Triton Systems	\$150,000	\$500,000	\$650,000	\$650,000	\$1,950,000
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###### *Subtotal - Cash Match Reserved/Allocated*

\$150,000	\$500,000	\$650,000	\$650,000	\$1,950,000
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###### **Total Private Sector - Cash match**

\$300,000	\$1,000,000	\$1,300,000	\$1,300,000	\$3,900,000
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##### Private-sector in-kind/in-lieu of cash match:

Triton Systems - Personnel & related expenses, chemicals, reagents, supplies, materials, synthesis, formulations	\$300,000	\$1,000,000	\$1,300,000	\$1,300,000	\$3,900,000
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###### **Total Private Sector - In-kind/in-lieu of Cash match**

\$300,000	\$1,000,000	\$1,300,000	\$1,300,000	\$3,900,000
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###### **TOTAL PRIVATE SECTOR MATCH**

\$600,000	\$2,000,000	\$2,600,000	\$2,600,000	\$7,800,000
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**Attachment A (continued)**

**ED-COE Center for Advanced Technology Development and Commercialization (CATCOM)**

**Budget Justification for Funding Requested from ED-COE Program**

**FUNDS REQUESTED OF ND ED-COE PROGRAM FOR CATCOM CENTER:**

**CATCOM Scientific and Technical Personnel** - This includes scientific and technical personnel directly involved in project(s) including, but not limited to, chemists, biologists, chemical engineers, and other researchers and center staff members with expertise or skills involving research, development and/or commercialization. Such scientific and technical personnel will work with private sector partners on those projects of interest to the private sector partners. These positions have an estimated average, market level salary of \$80,000 to 90,000+ (plus benefits) per year. This category includes funding for some NDSU graduate and undergraduate students to working with CATCOM on project(s).

**CATCOM Program & Project Administration** - This includes personnel directly involved in project-related administration, management, and finances of the center.

**CATCOM Program- and Project-related operating expenses, Project/Private sector partner-related travel expenses, etc.-** This includes center-related and project-related operational expenses. Also included is travel expenses associated with on-site meetings with private sector partners regarding projects plus travel to national meetings for presentation of CATCOM technical accomplishments and other outcomes.

**CATCOM Program- and Project-related equipment, reagents, supplies, materials, etc. -** This includes project-specific equipment, supplies, materials needed for execution and operation of CATCOM.

**CATCOM Business Development & related activities** - This includes market analysis, marketing of center capabilities and services to private sector partner(s), project consultants, and project-related legal fees. More detail is provided in the CATCOM Business Plan (see Attachment C).

### **PRIVATE SECTOR MATCH**

The match is based on the information provided by the private sector partner(s) specified in the "Verification of Private Sector Match" form (see Attachment B).

**Private sector cash match given to center for performance of project(s)** - Cash from Triton-Fargo provided to CATCOM to perform research, development, and/or commercialization activities specified by Triton-Fargo.

**Private sector cash match reserved/allocated by partner for performance of project(s)** – Cash reserved/allocated by Triton-Fargo for working with CATCOM in N.D. on research, development, and/or commercialization project(s).

#### **Private sector in-kind assets and/or in-lieu of Cash Match:**

Value of Triton personnel (and related expenses, costs, etc.) that will be working on the project(s). This category also includes value of the equipment, chemicals, reagents, supplies, materials, synthesis, formulations and other items needed for Triton to work on the project(s).