

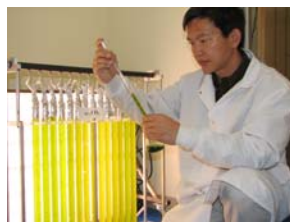
ASU[®] ARIZONA STATE UNIVERSITY

REPORT FOR THE FISCAL YEAR
ENDING JUNE 30, 2009

TECHNOLOGY AND RESEARCH
INITIATIVE FUND (TRIF)



The LEED Platinum certified Biodesign Institute (top) includes laboratories (below) that are designed to enhance communication and collaboration.



ASU scientists research alternative sources of fuel that are economically feasible and good for our planet.

At the January 2009 Board of Regents meeting, ASU presented its plan to restructure the TRIF investments to reflect the reduction in available funding and increase the impact and leveraging of these funds. This process assessed the potential for incentivizing research to increase the return in terms of funding, work force development, and economic impact. This analysis of research funding, industry collaboration, and economic impact opportunities, including the potential to attract significant investments through the American Recovery and Reinvestment Act (ARRA), led to consolidation of the proposed targeted research areas into four themes:

BioSciences — includes investments in biological, clinical and health sciences. The Biodesign Institute (BDI) leads this effort and is ASU's flagship TRIF initiative, focused on use-inspired, collaborative research that improves human health and the quality of life. The research agenda emphasizes translation (the application of discoveries to commercial uses and societal benefits) and impact (the quest for effective innovation).

Advanced Materials — an emerging coalition of researchers in flexible electronics, nanotechnologies, biomaterials, chemistry, and physics that creates breakthrough new products, materials, and technologies.

Sustainability — focuses on understanding the interrelationships of growth and urban development with environmental, economic, and social systems, storage and transmission of power, and developing renewable energy technologies to reduce the impact on our planet.

Discovery/Exploration/Education — focuses on multi-disciplinary cross-cutting approaches that positions ASU for attracting investments in new research areas (such as astrobiology), and capacity building projects in information technology and communications, education, and entrepreneurship. The planning and reporting of this effort is included under the flagship Biosciences initiative.

ASU TRIF PROGRAM

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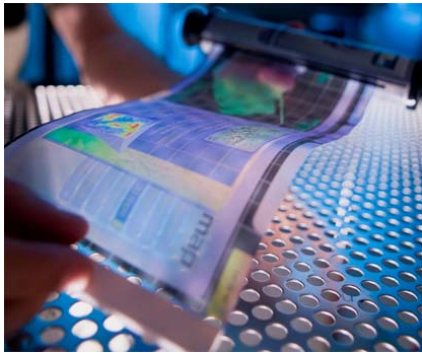


Dr. Rick Shangraw
Vice President for
Research and
Economic Affairs





The Decision Theater at ASU develops and deploys cutting-edge decision support tools to model scenarios of complex systems.



Prototype easy-to-manufacture, low-power-consumption Flexible Display developed at ASU.

The strategic investments in emerging areas of advanced materials and sustainability leverages the intellectual strengths of our faculty and collaborations with industry positioning us to attract significant federal and industry funding resulting in a high economic impact. The capacity building projects in information technology and communications, education, and technology transfer are not only significant in terms of their economic and societal impacts but also ensures the success of the Biosciences, Advanced Materials, and the Sustainability initiatives.

During FY 2007–FY 2009, TRIF supported the Joint ASU-UA Biomedical Research Fund from combined ASU-UA TRIF resources to advance collaborative biomedical projects.

Beginning in FY 2008, TRIF funded a joint ASU-UA initiative in Solar Energy. ASU established the Solar Power Laboratory (SPL) to manage and direct the Solar Energy Initiative. The mission of SPL is to advance the science, innovation, development, education, and training in solar power utilization to provide abundant, clean, sustainable power to Arizona. ASU is unique in its integrated science-to-commercialization-to-policy structure, which is particularly critical to successful transfer of research breakthroughs in the renewable energy field.

TRIF also provides annual debt service funding for ASU Polytechnic and ASU West infrastructure and campus improvement projects, including multiple building renovations and a laboratory/computer classroom building.

CONSOLIDATED PERFORMANCE ANALYSIS

ASU tracks and monitors performance and return on investment (ROI) for each TRIF focus area, including: external research funding and expenditures; intellectual property generated and technology transfer; work force development; partnerships with local business and industry; curriculum development (to improve the effectiveness of our students and reduce the time needed for them to become productive as entrepreneurs and in the workplace); and economic impact on our cities, state, and nation.

The national economic downturn and reduced sales tax revenues resulted in significant mid-year reductions in TRIF funding. Feedback from prior years and changes in leadership led to transitioning TRIF investments in FY 09.

The consolidated performance analysis reflects budget reductions of approximately \$12 million in TRIF funding over FY 09–FY 10 period to accommodate the decreasing funding available for investment. Implementation of the reorganization plan allowed ASU to reduce FY 09 by \$5.0M and FY 10 by \$7.0M, for a total reduction of \$12M over FY 09 and FY 10.



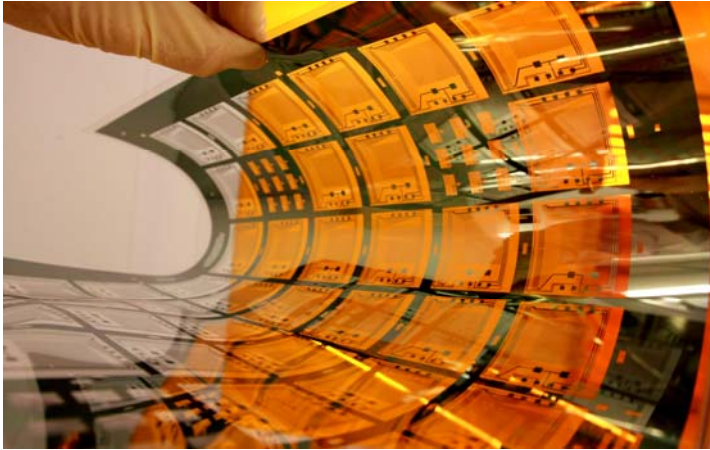
The Department of Biomedical Informatics is located in the Arizona Biomedical Collaborative building (left) in downtown Phoenix and on the Tempe campus in the Brickyard building in Downtown Tempe.

EXPLANATION OF PERFORMANCE ANALYSIS

- The FY 07–FY 11 **Return on Investment (ROI)** measures include federal and non-federal awards, royalty income, and foundation funding. The sum of these three components (the Return Total) is then divided by the related TRIF expenditures for the fiscal year to arrive at the Return on Investment ratios included in the financial table below. For the initial five year TRIF funding period FY 02–FY 06, the return on investment was 1.7:1. FY 02–FY 06 ROI calculations do not include royalty income and foundation funding.
- **Technology Transfer** measures provide results for ASU's newly structured technology transfer initiative, Arizona Technology Enterprises (AzTE). Measures for inventions, patents, and licensing activity are included. The Biodesign Institute provides a primary focus for AzTE as it facilitates the development of intellectual property, promotes industrial linkages, drives technology marketing, and accelerates the successful transition of ASU discoveries into the marketplace.
- **Work force Contribution** measures show the impact of TRIF funding and research participation by undergraduate students, graduate students, and post-doctoral appointments in the TRIF Initiatives. The measures also include the number of graduate students and post-doctoral researchers leaving ASU to enter the work force.
- **Partnerships/Collaborations** are an important component for growth of the Biodesign Institute and other TRIF investments. Increasing involvement with non-ASU researchers such as the Mayo Clinic, Barrows Neurological Institute, the Translational Genomics Research Institute and the University of Arizona College of Medicine provides additional opportunities to expand and enhance ASU research in biomedicine, personalized medicine, and other TRIF focus areas.
- **Curriculum Innovations and Economic Development** measures, along with selected measures in the other categories, were used for the first TRIF funding cycle (FY 02–FY 06). For the second funding cycle (FY 07–FY 11), several of these measures were no longer applicable or were replaced with more current and meaningful measures.

FINANCIALS

	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY09	FY10	FY11
	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Rev Budget	Actual	Rev Budget	Rev Budget
ASU CONSOLIDATED TRIF FINANCIAL SCHEDULE											
Biosciences											
Revenue										\$ 18,294,400	\$ 16,210,900
Expenditures										18,294,400	16,210,900
Return on Investment										3.2:1	4.2:1
Sustainability											
Revenue										\$ 1,900,000	\$ 1,900,000
Expenditures										1,900,000	1,900,000
Return on Investment										17.8:1	22.5:1
Advanced Electronic Materials											
Revenue										\$ 400,000	\$ 400,000
Expenditures										400,000	400,000
Return on Investment										78.1:1	69.2:1
Biodesign Institute & Capacity Building Project Investments											
Revenue	\$ 15,217,000	\$ 25,242,500	\$ 21,220,700	\$ 27,210,100	\$ 26,555,300	\$30,611,700	\$24,700,800	\$ 25,721,500	\$ 22,559,000		
Expenditures	4,825,100	20,134,300	12,703,500	18,854,800	19,764,100	27,734,500	22,354,500	25,721,500	20,505,500		
Return On Investment	2.5:1	0.4:1	2.1:1	1.9:1	2.4:1	1.9:1	4.1:1	2.5:1	2.9:1		
Biomedical Informatics											
Revenue						2,000,000	2,384,600	3,005,600	2,217,400		
Expenditures						551,200	446,400	3,005,600	2,221,000		
Return on Investment						3.2:1	18.2:1	1.0:1	1.0:1		
Solar Energy											
Revenue							1,050,000	1,598,000	248,700		
Expenditures							152,000	1,598,000	248,700		
Return on Investment							N/A	2.7:1	29.9:1		
ASU-UA Joint Biomedical Research Fund											
Revenue						1,000,000	1,255,600	431,200	258,500		
Expenditures						210,700	858,100	431,200	258,500		
Return on Investment						N/A	1.0:1	2.5:1	N/A		
Phoenix Biomedical Campus Planning											
Revenue						750,000	616,800				
Expenditures						133,200	616,800				
Return on Investment						N/A	N/A				
ASU Polytechnic & ASU West Certificates of Participation (COPS)											
Revenue	2,500,000	6,100,000	3,572,000	3,815,800	3,781,700	3,791,000	3,751,800	3,748,800	3,740,200	3,714,800	3,718,600
Expenditures	-	6,128,000	3,356,200	3,708,500	3,790,300	3,650,200	3,721,800	3,748,800	3,718,800	3,714,800	3,718,600
Grand Total											
Revenue	17,717,000	31,342,500	24,792,700	31,025,900	30,337,000	38,152,700	33,759,600	34,505,100	29,023,900	24,309,200	22,229,500
Expenditures	4,825,100	26,262,300	16,059,700	22,563,300	23,554,400	32,279,800	28,149,600	34,505,100	26,952,500	24,309,200	22,229,500



Printable, plastics based flexible display developed by interdisciplinary Advanced Materials researchers at ASU

GOALS & RESULTS

ASU has successfully used TRIF funds for strategic investments that have catalyzed research in critical areas, resulting in Arizona in becoming more competitive nationally. The investments have evolved over time to reflect current need and projected opportunity. Every year performance measures and metrics are projected for the investments. This is used to create a transition plan for the initiatives to become self-sustaining over time, thereby making TRIF funds available for new investments.

Goals:

- Increase governmental and private funding in the four research areas: Biosciences; Advanced Materials; Sustainability; and Discovery, Exploration, and Education.
- Leverage TRIF funds to increase competitiveness of research in promising areas to successfully obtain research funds from private and public sources.
- Increase rate of technology transfer and commercial development from biosciences, advanced materials, sustainability and other research investments.
- Enhance interdisciplinary collaborative research in the four research teams.
- Focus on use-inspired research that will result in demonstrable improvements to quality of life and society.
- Train a new generation of scientists and engineers that are facile in emerging areas such as personalized medicine and renewable energy.

GOALS & RESULTS (CONT.)

Indicative Results:

- FY 09 TRIF related Biodesign and Capacity Building Projects generated \$50.6M of federal and non-federal awards.
- The \$100M/10-year Army Flexible Display Center leveraged ASU's investment to take new discoveries rapidly to the prototype phase.
- Several research grants were awarded in FY 09 in areas seeded by TRIF funds. A notable research award was the \$14 M Department of Energy funded Energy Frontier Research Center (EFRC) for Bio-Inspired Solar Fuel Production.
- ASU is among the top three universities in the United States (along with Stanford and Penn State) in the number of Solar America Initiative R&D Grants for photovoltaics module testing, advanced solar cell materials and next generation photovoltaic devices.
- The first class of students (13) graduated from the Master's degree program in Biomedical Informatics. The BMI program has rapidly grown to 30 Masters and PhD students and provides Informatics instruction to 72 students in the U of A College of Medicine-Phoenix.

MANAGEMENT

OFFICE OF THE VICE PRESIDENT FOR RESEARCH AND ECONOMIC AFFAIRS

R.F. "Rick" Shangraw: Vice President for Research and Economic Affairs

Sethuraman Panchanathan: Deputy Vice President for Research and Economic Affairs

ADVISORY BOARDS

Each of the investment areas is overseen by an external advisory board that includes nationally and internationally renowned industry and academic members to provide an extensive breadth of knowledge, experience and advice to the initiatives.

LEARN MORE

Office of the Vice President for Research and Economic Affairs

480.965.1225