

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2008

APPROPRIATION/ BUDGET ACTIVITY
RDTE, Defense Wide BA 01

PE NUMBER AND TITLE
0601111D8Z - Government/Industry Co-sponsorship of University Research

COST (\$ in Millions)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
P111 Government/Industry Co-sponsorship of University Research	8.679	6.161					

A. Mission Description and Budget Item Justification: (U) The FY 2008 Government/Industry Co-sponsorship of University Research (GICUR) program reflects four Congressional adds, they are:

1. Nanotechnology Initiative at Shaw University (\$.990 million). Sponsor Rep Etheridge (NC)
2. New York Structural Biology Center (\$1.590 million). Sponsors Rep Rangel, Senators Clinton and Schumer (NY)
3. Integrated Cryo-cooled High Power Density Systems (\$1.590 million). Sponsor Rep Boyd (FL)
4. High Power Densities Research (\$1.991 million). Senator Martinez (FL)

B. Program Change Summary	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2008)	9.147		
Current BES/President's Budget (FY 2009)	8.679	6.161	
Total Adjustments	-0.468	6.161	
Congressional Program Reductions		-0.039	
Congressional Rescissions			
Congressional Increases		6.200	
Reprogrammings	-0.226		
SBIR/STTR Transfer	-0.255		
Other	0.013		

Two FY07 Congressional Initiatives were added to this PE:
 Bio/Nano Electronic Defense Devices and Sensors - \$1.200 million
 Focus Center Defense Research Program - \$8.000 million

C. Other Program Funding Summary Not applicable for this item.

D. Acquisition Strategy Not applicable for this item.

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E. Performance Metrics: Not Applicable.

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APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA# 1		PE NUMBER AND TITLE 0601111D8Z - Government/Industry Co-sponsorship of University Research					PROJECT P111	
COST (\$ in Millions)	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	
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B. Accomplishments/Planned Program:

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Interconnect Focus Center, Georgia Institute of Technology, Atlanta, GA	1.085		

FY 2007 Accomplishments:

The integration of optical materials with silicon was demonstrated.
Optical links were developed and measurements of power consumption and bit-error rate were collected.
Experiments with nanotubes were conducted, leading to the development and refinement of accurate models of transient performance, including parasitic reactances.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Materials/Structures/Devices Center, Massachusetts Institute of Technology, Cambridge, MA	1.072		

FY 2007 Accomplishments

Experiments with carbon nanotubes and the integration of nanotubes with silicon circuits were conducted.
Measurements of mobility were performed and methods to form good contacts using metallics were developed.
Experiments were conducted to quantify how film strains and new materials will provide carrier mobility enhancements for very short channel transistors.

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<u>Accomplishments/Planned Program Title:</u>		<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Functional Engineering Nano-Architectonics Center, University of California at Los Angeles, Los Angeles, CA		1.222		
FY 2007 Accomplishments				
Advances in understanding the chemistry of certain polymeric materials enabled development of a process for creating a novel polymeric memory cell that would have significant low power and low fabrication cost and could be scaled to nano-scale dimensions.				
<u>Accomplishments/Planned Program Title:</u>		<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Gigascale Design Center, University of California at Berkeley, Berkeley, CA		2.000		
FY 2007 Accomplishments				
A design methodology for obtaining low power but high performance processors was developed using a robust checking circuit that corrects errors in a very low voltage core processor. A design roadmap was implemented to guide future technologies by enabling the accurate modeling and simulation of "what-if" experiments and scenarios on the complex semiconductor technology process. Concepts of platform-centric design were translated from the digital domain to the analog/mixed signal regime and work started to formalize the approach.				
<u>Accomplishments/Planned Program Title:</u>		<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Circuits, Systems, and Software Focus Center, Carnegie Mellon University, Pittsburgh, PA		2.100		
FY 2007 Accomplishments				
Robust design methodologies for enabling computation with unreliable or faulty components were investigated and interfaces defined. Applications of fin field effect transistors (FinFETs) were investigated, including dynamic and dc properties.				
<u>Accomplishments/Planned Program Title:</u>		<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Bio/Nano Electric Defense Devices and Sensors Program		1.200		
FY 2007 Plan				
The performer for this congressional add was Florida International University. The objective of this research is (1) to develop a protein based and a 3-dimensional mechanism for writing and reading from ultra-dense magnetic medium, with orders of magnitude improvement in stored non-volatile information density over current state-of-the-art magnetic memory storage technologies; (2) to develop high power cold cathodes for microwave generators; (3) to model, design and synthesize carbon-nanotube-based biosensors; (4) to integrate nanoparticles and nanophotonic resonators with the aim of creating multiple wavelength on-chip laser arrays and high sensitivity to bio/chemicals sensors; and (5) to use nanocrystalline diamonds to make nanoceramic lasers.				
<u>Accomplishments/Planned Program Title:</u>		<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Nanotechnology Initiative at Shaw University. Sponsor Rep Etheridge (NC)			0.990	