RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001	
APPROPRIATION/BUDGET ACTIVITY RDT&E/Defense Wide/BA 1							R-1 ITEM NOMENCLATURE Government/Industry Co-sponsorship of University R **PE 0601111D8Z**			
COST *(In Millions)*	FY2000	FY2001	FY2002						Cost to Complete	Total Cost
Total Program Element (PE) Cost	6.142	6.654	3.421						Continuing	Continuing
GICUR/P111	6.142	6.654	3.421						Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

(U) BRIEF DESCRIPTION OF ELEMENT

(U) A shared commitment between industry and Government continues to be created via the Government/Industry Co-sponsorship of University Research (GICUR) program. It will capitalize on university based research, education and training in technologies of strategic importance to national defense and also to industry. It provides an emphasis on ground-breaking research with a long-term horizon, and education and training in selected research areas which are vital to advancement of technologies. The ommitment is a jointly formed pool of funding and a shared management structure for sponsoring this sort of long term basic research at universities. This will provide the military with leading-edge technologies as well as reducing vulnerabilities of industries involved, increase long-term technical growth in these areas, infuse new ideas and approaches, all of which are important for national security. Industry and government share responsibility for research focus area selection and overall direction. This program will also employ advances in information technologies and telecommunications to provide extensive connectivity among the partners and research performers from the outset. Thus, strengths of individual investigators can be effectively linked, taking advantage of geographically disbursed national resources. Mechanisms will be established for personnel exchange and interactions to provide for continuing education of highly qualified researchers already working in leading edge and emerging S&T. One program area implemented is on Complex Adaptive Networks. It meets the program criteria and is vital to DoD needs. The high priority thrust in this area is providing powerful mathematical and computer modeling methods to steer technology such that cascading effects and rapid, catastrophic failure of networks (e.g., battlefield communications, electrically powered ships, multisensor surveillanc/integration) are avoided. The results are of extreme importance for the Critical Infrastructures Protection national need. The second area implemented very strongly

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(U) emphasizes basic concepts for DoD needs in high frequency applications such as radars, millimeter/microwave communications and radiometry, with special attention to devices fabricated from compound semiconductors, such as gallium arsenide. This thrust is unique to DoD. The thrust is by no means limited to silicon-based CMOS (complementary metal oxide silicon) digital topics. Research here is aimed at breakthroughs to enable rapid, correct, verifiable, implementable designs of complex circuits. Interconnect research will include causes of delays and performance limits as features become smaller (for higher speed). Higher conductivity metals and very low dielectric constant materials will be investigated, as will non-conventional, innovative fabrication processes beyond present vision. These areas require truly innovative research.

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(U) Project Number and Title: P111 GICUR

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

(U) FY 2000 Accomplishments:

(U) Continue research through the Semic onductor Focus Research Initiative and the Complex Interactive Network/ Systems projects. For complex adaptive networks, mathematical and computer modeling methods developed will be tested against real world data and situations. For complex circuits, advance design concepts and interconnect schemes will be expressed in prototype devices. For smart structures and smart materials, opportunities will be identified to take concepts and methods achieved and use them in environments which could provide indicators for reliability advances. ($ 6.142 million)

(U) FY 2001 Plans: (U) Continue research in semiconductor. Theoretical and experimental achievements will be fully documented. Research will continue along lines both needs and opportunity driven, dependent upon success to date.($ 6.654 million)

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(U) FY 2002 Plans:

(U) In cooperation with the Microelectronics Advanced Research Corporation (MARCO) the Semiconductor Electronics Microelectronics project funds two university research centers. The University of California at Berkley leading a team of eight other universities performing research into "Design and Test" technologies for the Giga-scale semiconductor integrated circuit. Georgia Tech leads a team of seven universities for research into "Interconnect" technologies to solve the impending materials, processes, and architecture challenges in connecting billions of devices. Under MARCO the electronics Industry provides at least three dollars for each dollar provided by DoD.($ 3.421 million)

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(U) B. Program Change Summary	**FY2000**	**FY2001**	**FY2002**	**Total Cost**
Previous President's Budget Submit	6.175	6.715	6.838	Continuing
Appropriated Value	0.000	6.715	0.000	Continuing
Adjustments to Appropriated Value				
a. Congressionally Directed Undistributed Reduction	0.000	-0.000	0.000	
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	-0.033	-0.061	0.000	
c. Other	0.000	0.000	-3.417	
Current President's Budget	6.142	6.654	3.421	Continuing

Change Summary Explanation

(U) **Funding**: FY 2000 reductions are due to reprogramming adjustments. FY 2001 reductions reflect Section 8086 adjustments.

(U) **Schedule**: N/A

(U) **Technical**

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(U) C. OTHER PROGRAM FUNDING SUMMARY COST: N/A

(U) D. ACQUISITION STRATEGY: N/A

(U) E. SCHEDULE PROFILE: N/A