

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA# 5		PE NUMBER AND TITLE 0605140D8Z - Trusted Foundry						
	COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate				
P014	Trusted Foundry	41.306	42.127	41.223				

A. Mission Description and Budget Item Justification:

The Department of Defense (DoD) and National Security Agency (NSA) require uninterrupted access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. Under DODI 5200.39, integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, or sabotaged parts. Worldwide competition from foreign state-subsidized manufacturing facilities (foundries) is making fabless semiconductor companies the norm in the U.S. Sophisticated off-shore design and manufacturing facilities with engineering labor rates vastly less than engineering rates in the U.S. have resulted in outsourcing of electronics components and integrated circuits. These trends threaten the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic on-shore suppliers and reducing access to trusted fabrication sources for advanced technology. These trends are of acute concern to the defense and intelligence community. Secure communications and cryptographic applications depend heavily upon high performance semiconductors where a generation of improvement can translate into a significant force multiplier and capability advantage. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors

This program will provide DoD and NSA with the trusted state-of-the-art microelectronics design and manufacturing capabilities necessary to meet the performance and delivery needs of their customers while at the same time providing the Services with a competitive cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit components. NSA, in their role of Trusted Access Program Office, has successfully looked to commercial sources to satisfy their requirements. Access to trusted suppliers is imperative to ongoing and future DoD/NSA systems, and most centrally, Trusted Foundry access is absolutely necessary to meet secure communication and cryptographic needs.

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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010	
Previous President's Budget (FY 2008/2009)	43.227	42.360	41.953	
Current BES/President's Budget (FY 2010)	41.306	42.127	41.223	
Total Adjustments	-1.921	-0.233	-0.730	
Congressional Program Reductions				
Congressional Rescissions		-0.233		
Congressional Increases				
Reprogrammings	-0.627			
SBIR/STTR Transfer	-1.211			
Other	-0.083		-0.730	

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

D. Acquisition Strategy:

NSA has negotiated a "take or pay" contract with IBM with 10 one year options. IBM will provide custom integrated circuit parts in production and prototype quantities to meet DoD/NSA leading edge integrated circuit needs. Additional suppliers of behind the leading edge production processes will be developed and accredited by DMEA and NSA as Trusted Suppliers to provide program managers the flexibility to acquire trusted parts appropriate to the minimum risk and vulnerability of their particular system needs. Process Intellectual Property will be obtained from trusted suppliers to assure the availability of parts over the long term.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
08						

Comment:

All delivered parts will meet IBM standard commercial requirements. Any damaged or misprocessed parts will be replaced free of charge.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate					
P014 Trusted Foundry	41.306	42.127	41.223					

A. Mission Description and Budget Item Justification:

The Department of Defense (DoD) and National Security Agency (NSA) require uninterrupted access to state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. Under DODI 5200.39, integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, or sabotaged parts. Worldwide competition from foreign state-subsidized manufacturing facilities (foundries) is making fabless semiconductor companies the norm in the U.S. Sophisticated off-shore design and manufacturing facilities with engineering labor rates vastly less than engineering rates in the U.S. have resulted in outsourcing of electronics components and integrated circuits. These trends threaten the integrity and worldwide leadership of the U.S. semiconductor industry by eliminating many domestic on-shore suppliers and reducing access to trusted fabrication sources for advanced technology. These trends are of acute concern to the defense and intelligence community. Secure communications and cryptographic applications depend heavily upon high performance semiconductors where a generation of improvement can translate into a significant force multiplier and capability advantage. Important defense technology investments and demonstrations carry size, weight, power, and performance goals that can only be met through the use of the most sophisticated semiconductors.

This program will provide DoD and NSA with the trusted state-of-the-art microelectronics design and manufacturing capabilities necessary to meet the performance and delivery needs of their customers while at the same time providing the Services with a competitive cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit components. NSA, in their role of Trusted Access Program Office, has successfully looked to commercial sources to satisfy their requirements. Access to trusted suppliers is imperative to ongoing and future DoD/NSA systems, and most centrally, Trusted Foundry access is absolutely necessary to meet secure communication and cryptographic needs.

B. Accomplishments/Planned Program:

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Trusted Foundry	41.306	42.127	41.223	

FY2008 Accomplishments: The Trusted Foundry produced over 21,000 parts for more than 70 DoD/NSA customers (i.e., programs and contractors). The Trusted Foundry Program initiated 17 multi-project wafer lots that supported 340 different integrated circuit designs for subsequent use in Service, DoD agency, and NSA programs. Five of those lots were implemented with leading-edge manufacturing technology of 90nm and the program pioneered foundry access for trusted applications. Additional trusted circuit cores were converted for use in the Trusted Foundry process flow and were made available to defense customers. Established a trusted design activity for use by DoD and NSA programs.

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P014

FY2009 Plans: Additional integrated circuits will be provided for the U.S. Army, U.S. Navy, U.S. Air Force, and DARPA to satisfy new and on-going programs. Additional effort will be taken to further increase the number of trusted suppliers available to defense programs and to continue the acquisition of trusted process Intellectual Property (IP) and device codes to assure the long term availability of trusted parts. Application Specific Integrated Circuit (ASIC) design support software, hardware and Intellectual Property will be obtained to support up to eight ASIC designs at the leading-edge and for critical designs that require the accumulated knowledge of the IBM design team to implement in the most efficient manner for defense programs. New product developments will occur, as well as production parts for some of the prototype developments sponsored the previous year(s). Special processing equipment for low volume manufacture will be developed. Maintenance support for the facility infrastructure equipment to ascertain trust levels is also planned. Facility modifications necessary to clear the 300mm IBM fabrication facility in East Fishkill, New York will be completed. Program will begin to focus on 32/22nm technology generation, integration of specialized process technologies for military users and the complete supply chain for implementation in a trusted environment, including design, manufacturing, integration and test, and packaging.

FY2010 Plans: Additional integrated circuits will be provided for the U.S. Army, U.S. Navy, U.S. Air Force, and DARPA to satisfy new and on-going programs. ASIC Design efforts will be initiated to encompass leading-edge designs in state-of-art process technologies for military applications and the trusted design flow will be enhanced for defense designers. New circuit cores will be converted to trusted format and made available to the .customers (programs, contractors, etc.) that use the Trusted Foundry. New equipment paradigms will be furthered for low volume but leading-edge processes. New process paradigms for trusted fabrication technologies will be furthered and evaluated for implementation. New commercial and noncommercial sources and methodologies for trusted components and services within the complete supply chain will be developed and made available to the defense community.

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

D. Acquisition Strategy:

NSA has negotiated a long-term flexible contract with IBM that can be extended with options and new tasks. IBM will provide design activities and custom integrated circuit parts in production and prototype quantities to meet DoD/NSA leading edge integrated circuit needs. Additional suppliers of "behind the leading edge" production processes will also be developed and accredited by DMEA and NSA as Trusted Suppliers to provide program managers the flexibility to acquire trusted parts appropriate to the minimum risk and vulnerability of their particular system needs. Process Intellectual Property will be obtained from trusted suppliers to assure the availability of parts over the long term. Special equipment will be developed to support the flexible manufacture of initially small quantities of trusted integrated circuits that are built by exploiting these innovative scalable process technologies for small lots.

E. Major Performers: Not applicable for this item.

OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT				
5 - System Development and Demonstration (SDD)			0605140D8Z - Trusted Foundry							P014				
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Aggregate volume purchase agreements	MIPR	NSA	135655	25724	1-4Q	27546	1-4Q							
Form partnerships w/suppliers to improve the infrastructure for trust	MIPR	NSA	42168	8000	1-4Q	7290	1-4Q							
Accreditation of trusted suppliers	MIPR	NSA	22224	5392	1-4Q	4715	1-4Q							
Post-2012 plans and backup operations	MIPR	NSA	1270	2190	1-4Q	2576	1-4Q	41223	1Q					
Subtotal:			201317	41306		42127		41223						
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
Project Total Cost:			201317	41306		42127		41223						

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
5 - System Development and Demonstration (SDD)

PE NUMBER AND TITLE
0605140D8Z - Trusted Foundry

PROJECT
P014

Event Name	FY 08				FY 09				FY 10																						
	1	2	3	4	1	2	3	4	1	2	3	4																			
(1) Funding Received																															
Aggregate Volume Purchase Agreements	Hardware																														
Intellectual Property (IP)	Software																														
Security Upgrades	Process																														
Certify Trusted Suppliers	DMEA																														
(2) Funding Received																															
Aggregate Volume Purchase Agreements					Congressional Appropriation RDT&E																										
Intellectual Property (IP)					Hardware																										
Security Upgrades					Software																										
Certify Trusted Suppliers					Process																										
					DMEA effort																										

Schedule Profile (R4a Exhibit)

May 2009

BUDGET ACTIVITY

5 - System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0605140D8Z - Trusted Foundry

PROJECT

P014

<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>					
Funding Received	2Q - 4Q							
Aggregate Volume Purchase Agreements	2Q - 4Q							
Intellectual Property (IP)	2Q - 4Q							
Security Upgrades	2Q - 4Q							
Certify Trusted Suppliers	2Q - 4Q							
Funding Received		1Q - 4Q						
Aggregate Volume Purchase Agreements		1Q - 4Q						
Intellectual Property (IP)		1Q - 4Q						
Security Upgrades		1Q - 4Q						
Certify Trusted Suppliers		1Q - 4Q						
Funding Received (estimate)			2Q - 4Q					
Aggregate Volume Purchase Agreements			2Q - 4Q					
Form partnerships w/suppliers to improve the infrastructure for trust			2Q - 4Q					
Accreditation of trusted suppliers			2Q - 4Q					
Post - 2012 plans and backup operations			2Q - 4Q					

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