Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing
P003: *Cyber Security Applied Research*	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing

A. Mission Description and Budget Item Justification

Our military forces require resilient, reliable networks to conduct effective operations. However, the number and sophistication of threats in cyberspace are rapidly growing, making it urgent and critical to improve the cyber security of Department of Defense (DoD) networks to counter those threats and assure our missions. This program will focus on innovative and sustained research in both cyber security and computer network operations to develop new concepts to harden key network components, increase the military's ability to fight and survive during cyber attacks, disrupt nation-state level attack planning and execution, measure the state of cyber security, and explore and exploit new ideas in cyber warfare.

The Cyber Security Applied Research program element is budgeted in the applied research budget activity because it emphasizes an approach to develop new cyber security paradigms to change the cyber game to build a more resilient and trustworthy cyberspace. These approaches will include changing the defensive terrain of our existing digital infrastructure and identifying ways to raise the risk and lower the value of attack from an advanced, persistent cyber threat. The Cyber Security Applied Research program will build on the existing basic and applied research results and transition new successful applied research results to the Cyber Security Advanced Technology Development program element (0603668D8Z).

This Defense-wide program element will address advanced persistent threats to fill DoD science and technology (S&T) gaps identified in key reports and studies conducted by DDR&E over the past year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602668D8Z: *Cyber Security Applied Research*

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	10.000	10.000	-	10.000
Current President's Budget	-	10.000	9.735	-	9.735
Total Adjustments	-	-	-0.265	-	-0.265
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.251	-	-0.251
• Economic Assumptions	-	-	-0.014	-	-0.014

Change Summary Explanation

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*	PROJECT P003: *Cyber Security Applied Research*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P003: *Cyber Security Applied Research*	-	10.000	9.735	-	9.735	19.519	19.573	9.817	10.105	Continuing	Continuing

A. Mission Description and Budget Item Justification

The program will develop technology options through the DoD S&T organizations within and across the following technical areas:

Information Assurance / Computer Network Defense (IA/CND) – Develop technologies to harden DoD network components; improve understanding of cyber threat and the mitigation of the threat; and enable systems to operate through cyber attacks in degraded environments.

Computer Network Operations (CNO) – Disrupt adversary attack planning and execution; explore game-changing ideas over the full spectrum of CNO and new concepts in cyber warfare; increase collaboration between disparate research communities within CNO; and address identified gaps in DoD CNO S&T to prepare for cyber conflict against advanced persistent threats.

Cyber Security Metrics – Explore new analytical methodologies, models, and experimental data sets to establish metrics to measure a system's state of security; and apply the scientific method to establish the foundations of a scientific framework in which cyber security research can be conducted to test hypothesis with measurable, repeatable results.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Cyber Security Applied Research	-	10.000	9.735
Description: Project plans for FY2011 and beyond will be developed by the Office of the Director, Defense Research & Engineering (DDR&E) for execution by the DoD S&T organizations. This process will be conducted using the established Information Assurance and Cyber Security (IA/CS) Science & Technology and Computer Network Operations (CNO) Science & Technology Steering Councils chartered by DDR&E. The Cyber Security Applied Research program will build on the existing basic and applied research results and transition new successful applied research results to the Cyber Security Advanced Technology Development program element. The link between the Cyber Security Applied Research and Cyber Security Advanced Technology Development program elements is intended to create a mechanism to take existing basic research results and mature them to the point of incorporation into technology demonstrations.			
FY 2011 Plans: Initiate research activities in the candidate focuses within each technical area. Establish performance metrics for candidate performers. Evaluate results.			
Candidate focuses of each technical area:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602668D8Z: *Cyber Security Applied Research*	PROJECT P003: *Cyber Security Applied Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Information Assurance / Computer Network Defense (IA/CND): -Harden critical points in the security architecture. -Reduce, rapidly and autonomously detect, and mitigate attack effects. -Reduce cyber reaction time for rapid system reconstitution to a known secure state. -Enable critical mission operation through cyber attacks in degraded environments. Computer Network Operations (CNO): -Improve understanding of the adversarial threat. -Increase adversary risk and work factor to decrease effectiveness during attack and exploitation attempts. -Disrupt and confuse adversarial attack planning cycles. Cyber Security Metrics -Measure effectiveness of existing countermeasures and the current level of DoD cyber security. -Measure impacts of new cyber security technologies. -Measure computer and network assurance levels for enhanced situational awareness. ***FY 2012 Plans:*** Continue research activities in each technical area began in FY 2011. Evaluate results.			
Accomplishments/Planned Programs Subtotals	-	10.000	9.735

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Specific programmatic performance metrics are listed above in the program plans section.