Exhibit R-2, RDT&E Budget Item Justification				DATE: February 2007				
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07				R-1 ITEM NOMENCLATURE Joint Spectrum Center /PE 0303153K				
COST (in Millions)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Joint Spectrum Center /JS1	14.356	12.401	18.653	19.446	20.140	18.007	18.970	17.670

A. Mission Description and Budget Item Justification:

The Joint Spectrum Center's (JSC) mission is to ensure the Department of Defense's (DoD) effective use of the electromagnetic spectrum in support of national security and military objectives. The JSC serves as the DoD center of excellence for Electromagnetic (EM) spectrum management matters in support of the Unified Commands, Joint Staff, Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)), Military Departments, and Defense Agencies. The JSC supports the Electronic Protect missions of Information Warfare (IW) as they relate to spectrum supremacy. It is responsible for developing and maintaining DoD standard information systems that support DoD spectrum related activities and processes. Specifically, the Center designs, develops, and maintains DoD automated spectrum management systems, evaluation tools, and databases employed by the Unified Commands, Military Departments, and Defense Agencies. The JSC databases are the prime sources of information for DoD use of the EM spectrum. The JSC provides technical assistance to the Office of Assistant Secretary of Defense (OASD) NII, the Joint Staff, DoD activities and the Unified Commands in support of spectrum policy decisions and ensuring the development, acquisition, and operational deployment of systems that are compatible with other spectrum dependent systems operating within the same EM environment. Additional focus is centered on improving future warfighter EM spectrum utilization through technological innovation accomplished by researching, studying, and steering the direction of Research and Development (R&D) emerging technology efforts from a spectrum perspective. The Center is the DoD focal point for technical spectrum related support, Electromagnetic Environmental Effects (E^3), and EM interference resolution assistance to operational units including deployable support to COCOM Joint Task Forces. The JSC mission is integral to other vital activities such as Information Operations (IO), Command and Control (C2) Protect and other defensive IW activities as directed by the Joint Staff. This program element is under Budget Activity 07 because it supports operational systems development.

Accomplishments/Planned Program:

Spectrum Knowledge Resources	FY 06	FY 07	FY 08	FY 09
Subtotal Cost	7.113	6.721	6.517	6.924

This function includes development and updates of DoD systems such as the Frequency Resource Record System (FRRS), the Spectrum Certification System (SCS), and the Spectrum Requirements System (SRS) which provide critical frequency assignment and equipment data that is necessary in predicting and avoiding spectrum conflicts. This area also includes development and updates of the SPECTRUM XXI, the joint standard DoD spectrum management system. This system ensures DoD has adequate spectrum access to accomplish its missions by addressing the regulatory requirements of host nation

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spectrum administrations and by ensuring that a common operating picture of the spectrum is available to the warfighter. SPECTRUM XXI Version 4.2 was released in FY 2005 with periodic releases planned thereafter.

Electromagnetic Environmental Effects (E3)	FY 06	FY 07	FY 08	FY 09
Subtotal Cost	3.076	2.766	2.963	3.022

The mission of this program is to ensure that DoD platforms, systems, equipment, and other assets can effectively use the Electromagnetic (EM) spectrum in support of national security and military objectives. It supports the requirements generation system, the DoD acquisition process, operational test and evaluation, and EM compatibility standardization. Algorithms and E3 analytical tools are developed for functions such as Hazards of Electromagnetic Radiation to Ordnance (HERO) risk assessments in support of the COCOMS and the Joint Task Force (JTF). Assessments are conducted to determine system and equipment limitations in the operational EM environment. Efforts also include the development and maintenance of the JSC Ordnance E3 Risk Assessment Database (JOERAD), a decision support system that helps the warfighter make critical decisions about the hazards associated with the use of introduced ordnance within complex EM environments.

Emerging Spectrum Technology (EST)	FY 06	FY 07	FY 08	FY 09
Subtotal Cost	4.167	2.914	4.673	5.000

The JSC, in conjunction with the Strategic Planning Office, has the responsibility of planning, developing, and executing the DISA Emerging Spectrum Technology (EST) program to improve future warfighter EM spectrum utilization through technological innovation accomplished by researching, studying, and steering the direction of Research and Development (R&D) emerging technology efforts from a spectrum perspective. This support will provide R&D analysis support to NII and other organizations with executive summary presentations; high-level reports and briefings; development of EST roadmaps; development of an EST Testbed; and detailed survey and review of emerging technologies to identify trends and analyze their implications on DoD spectrum management and supportability processes and procedures. As part of the outreach efforts, focused partnerships will be pursued with internal DoD departments, federal agencies, private industry, and the academic world to complement current and future DoD R&D spectrum initiatives and to provide collaborative spectrum R&D opportunities; advocacy of new spectrum strategies; and sponsorship of spectrum conferences and technical information exchanges. The JSC will produce necessary tools for conducting technical analyses of next-generation technologies in support of efficient DoD use of the spectrum. Efforts include the development of models,

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algorithms, and measurement tools for use in analyzing ultra-wideband technologies, software defined radios, and high-power and directed-energy weapons. In software defined radios, the parameters (frequency range, modulation type, or maximum power) can be altered by making a software modification without changing hardware components that can affect the radio frequency emissions. As for directed energy weapons, these systems will be evaluated with respect to E3 and measurements conducted to assist in modifying Military Standards to ensure compatible coexistence of these systems with legacy systems. The FY 2006 program included the development of the EST Testbed Prototype. The goal of the Spectrum Testbed initiative is to establish simulation capabilities to assess and measure performance of innovative spectrum access methods, systems, and components. The initial spectrum testbed prototype is intended to demonstrate the knowledge that can be gained from such a capability and the benefits in terms of more effective spectrum operations. The JSC will conduct an assessment of the electromagnetic spectrum implications of adaptive networks and potential application to support DoD warfighting concepts. These networks typically consist of mobile nodes that communicate over wireless links, without any fixed network infrastructure or central control. JSC will investigate how network management functions such as initialization, routing, and security are distributed among the nodes can be combined with spectrum management for effective spectrum operations in support of network-centric warfare.

Global Electromagnetic Spectrum Information System (GEMSIS)	FY 06	FY 07	FY 08	FY 09
Subtotal Cost	0.000	0.000	4.500	4.500

On 23 January 2006, the Joint Requirements Oversight Council (JROC) approved the GEMSIS Initial Capabilities Document (ICD). GEMSIS is intended to provide capabilities for integrated spectrum operations across the entire Department of Defense (DoD) in addition to interoperability with Federal, State and local government spectrum agencies, and coalition forces. GEMSIS is envisioned as a net-centric emerging capability providing commanders with an increased common picture of spectrum situational awareness of friendly and hostile forces while transparently deconflicting competing mission requirements for spectrum use. This capability will enable the transformation from the current preplanned and static assignment strategy into autonomous and adaptive spectrum operations.

GEMSIS is expected to provide a long-term solution for spectrum management capabilities. GEMSIS will provide a family of spectrum capabilities and a joint enabling concept. As a family of spectrum capabilities, GEMSIS will support all levels of warfare (Strategic, Operational, and Tactical) and National Strategy through the fielding of supportable and adaptive RF spectrum-dependent capabilities. Military readiness, mobilization, strategic operations, logistics, and

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space-based capabilities depend on the availability of the electromagnetic spectrum to plan and execute missions. Global communications, the sustaining infrastructure, interagency, local government, and coalition operations similarly depend on spectrum planning and execution. The GEMSIS architecture will provide GIG-based capabilities enabling the seamless exchange of spectrum access resources, equipment supportability assessments, mission planning and rehearsal guidance, and acquisition decision support inputs DOD wide.

Near-term GEMSIS concepts include: 1) Spectrum operations will begin to be transformed by providing visibility into the spectrum supportability process through a set of web-based capabilities, 2) An interoperable spectrum management system will provide an end-to-end tool suite for use by all spectrum management organizations, 3) Spectrum data will be standardized to improve the interoperability with NATO, NTIA, and coalition partners. and 4) Spectrum considerations will become a part of the strategic planning process enabling the command staff to plan for and coordinate specific access prior to the start of operations. Far-term GEMSIS concepts include: 1) Future spectrum operations will require far less manual intervention than today’s operations that require the custom matching of frequency resources to unique hardware characteristics; 2) Future spectrum operations will be conducted over the network and will integrate command and control, intelligence, surveillance, reconnaissance, logistics, and offensive IO with platforms, and on-board sensors and weapon systems; 3) Situational awareness applications will determine and warn operators of potential radiation hazards through network integration of ordnance, munitions, and radiators; and 4) Preplanned and static frequency assignment spectrum management will be transformed to allow the decentralized and autonomous self-assignment of spectrum for use in accordance with the commander’s intent and consistent with national and international rules and regulations.

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B. Program Change Summary:

	FY 06	FY 07	FY 08	FY 09
Previous President's Budget	13.896	12.448	14.804	15.468
Current Submission	14.356	12.401	18.653	19.446
Total Adjustments	0.460	-0.047	3.849	3.978

Change Summary Explanation: FY 2006 decrease is due to below-threshold reprogramming. FY 2007 change is due to reductions for Section 8106 Economic Assumptions. FY 2008 and 2009 funding changes are due to revised fiscal guidance and the addition of the new GEMSIS function.

C. Other Program Funding Summary:

	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	To Complete	Total Cost
O&M, DW	19.893	43.072	28.721	31.707	32.265	34.365	34.456	35.735	Contg	Contg

D. Acquisition Strategy: Engineering support services for the JSC are provided via contract. No in-house government capability exists, nor is it practical to develop one that can provide the expertise necessary to fulfill the mission and responsibilities of the JSC. Full and open competition was used for the acquisition of the current contract with ITT Industries, Inc. that became effective 5 August 2005 with a basic period of three years and seven one year options. The previous contract with ALION science and Technology expired 31 December 2006.

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E. Performance Metrics:

Support through analyses, planning, and policy recommendations, emerging spectrum-dependent technologies to enhance DoD operational capabilities by:

a. Identifying beneficial and potentially threatening spectrum technologies with respect to DoD spectrum access and operations (% of spectrum-dependent technologies assessed).

b. Forming strategic alliances with government, industry and academia to advocate, influence, and promote spectrum dependent emerging technologies (% of partnerships formed after outreach and engagement).

Exhibit R-3 Cost Analysis		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NAME AND NUMBER
RDT&E, Defense-Wide/07	Joint Spectrum Center / PE 0303153K	Joint Spectrum Center / JS1

Cost Category	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Contractor Engineering/Technical Spt	C/CPAF	IIT Research Inst Annapolis, MD	13.408							0	13.408	13.408
GFE	C/CPAF	IIT Research Inst Annapolis, MD	.800							0	.800	.800
Engineering/Technical Support	C/FFP	Georgia Tech	.186							0	.186	.186
Engineering/Technical Support	C/FFP	Virginia Tech	.170							0	.170	.170
Engineering/Technical Support	MIPR	Various	2.640	.423	10/06	.453	10/07	.462	10/08	0	3.978	3.978
Contractor Engineering/Technical Spt	C/CPFF	Various	1.619							0	1.619	1.619
Contractor Engineering/Technical Spt	C/CPAF	ALION Annapolis, MD	73.441							0	73.441	73.441
GFE	C/CPAF	ALION Annapolis, MD	4.439							0	4.439	4.439
Contractor Engineering Technical/Spt	C/TBD	ITT Industries, Inc.		11.978	10/06	18.200	10/07	18.984	10/08	Contg	Contg	Contg
Subtotal Test & Evaluation			96.703	12.401		18.653		19.446				
Total			96.703	12.401		18.653		19.446				

Exhibit R-4 Schedule Profile | **Date: February 2007**

Appropriation/Budget Activity	Program Element Number and Name	Project Number and Name
RDT&E, Defense-Wide/07	Joint Spectrum Center/PE 0303153K	Joint Spectrum Center/JS1

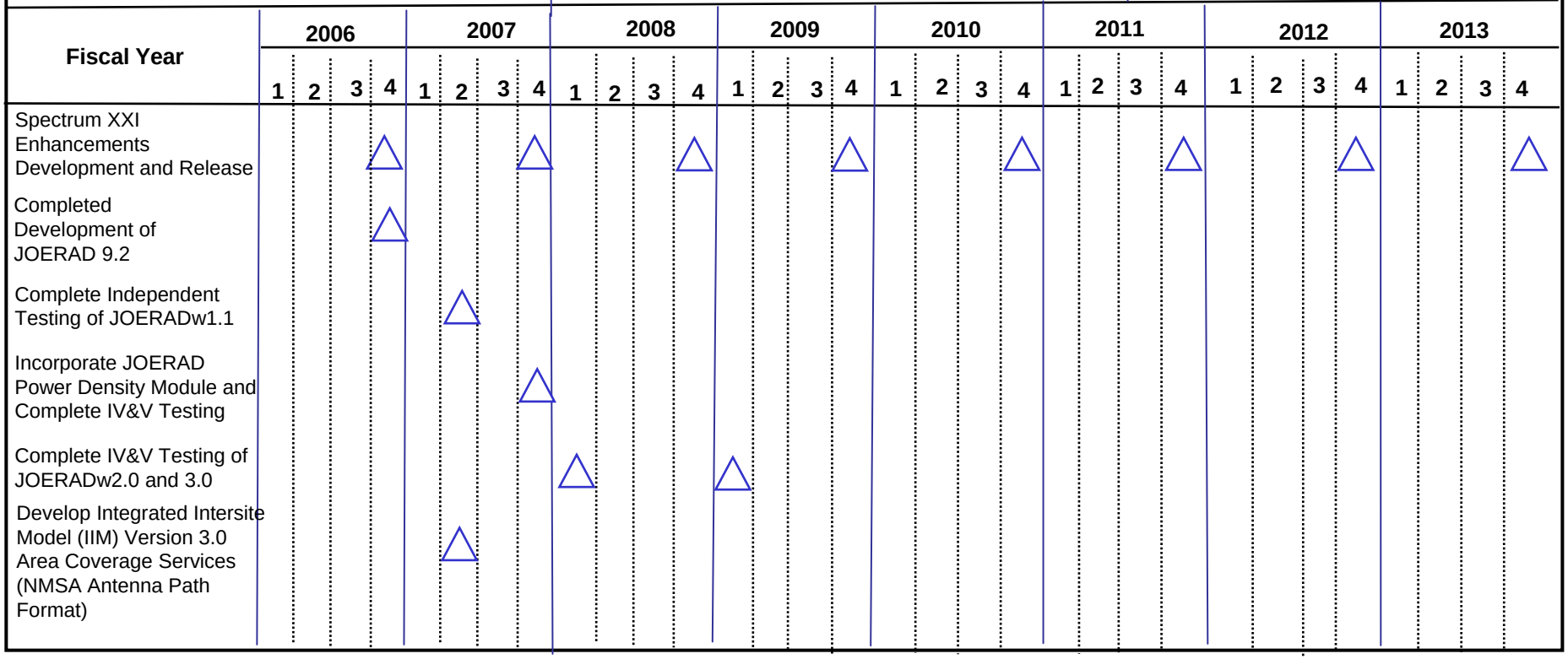

Exhibit R-4 Schedule Profile | **Date: February 2007**

Appropriation/Budget Activity	Program Element Number and Name	Project Number and Name
RDT&E, Defense-Wide/07	Joint Spectrum Center/PE 0303153K	Joint Spectrum Center/JS1

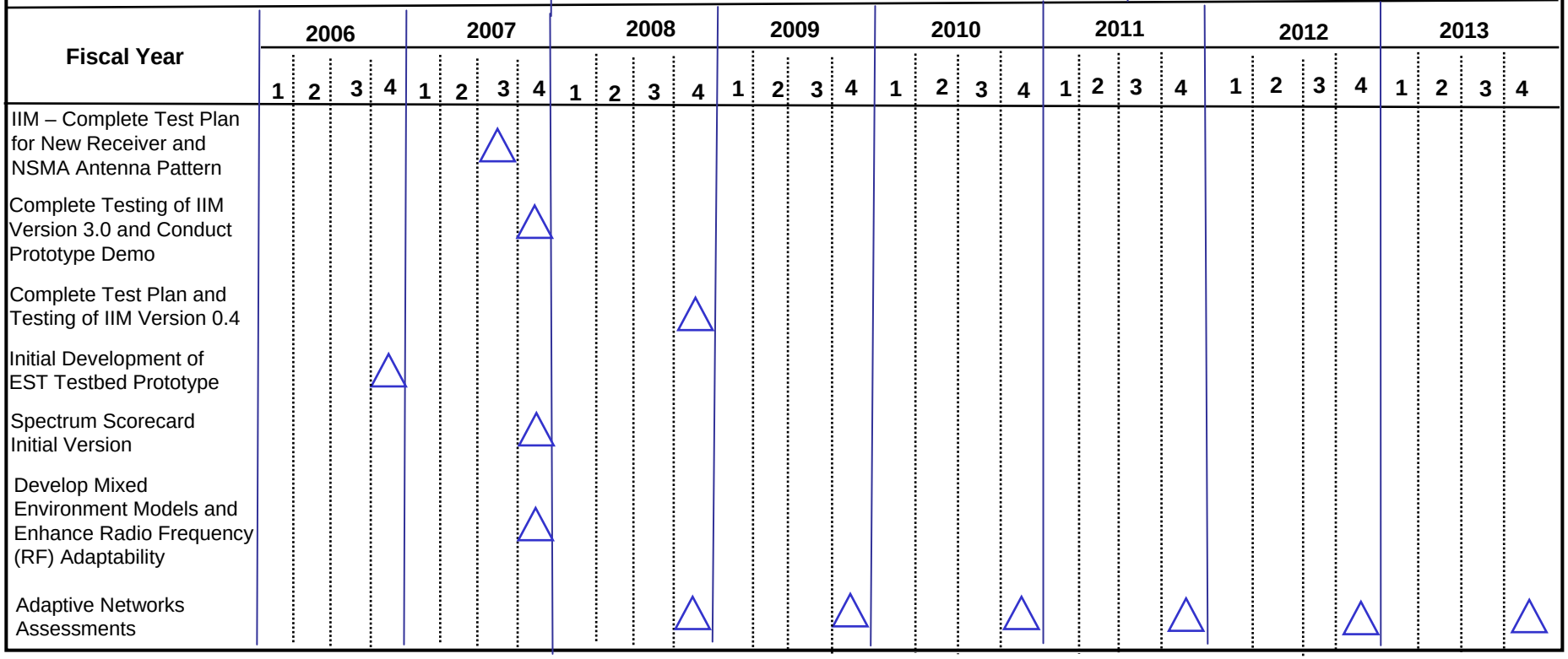

Exhibit R-4a Schedule Detail		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/07	PROGRAM ELEMENT Joint Spectrum Center / PE 0303153K	PROJECT NAME AND NUMBER Joint Spectrum Center / JS1

Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Spectrum XXI Enhancements Development	4Q	4Q	4Q	4Q	4Q	4Q	4Q	4Q
Completed Development JOERAD 9.2	4Q							
Independent Testing of JOERADw1.1		2Q						
Incorporate JOERAD Power Density Module and Complete IV&V Testing		4Q						
Complete IV&V Testing of JOERADw2.0 and 3.0			1Q	1Q				
Develop Integrated Intersite Model (IIM) Version 3.0 Area Coverage Services (NMSA Antenna Path Format)		2Q						
IIM – Complete Test Plan for New Receiver and NSMA Antenna Pattern		3Q						
Complete Testing of IIM Version 3.0 and Conduct Prototype Demo		4Q						
Complete Test Plan and Testing of IIM Version 0.4			4Q					
Initial EST Testbed Prototype	4Q							
Spectrum Scorecard Initial Version		4Q						
Develop Mixed Environment Models and Enhance RF Adaptability		4Q						
Adaptive Networks Assessments			4Q	4Q	4Q	4Q	4Q	4Q