Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Information Systems Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*				R-1 ITEM NOMENCLATURE PE 0303153K: *Joint Spectrum Center/JS1*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	19.162	18.865	20.991	0.000	20.991	23.679	20.433	17.534	17.796	Continuing	Continuing
JS1: *Joint Spectrum Center*	19.162	18.865	20.991	0.000	20.991	23.679	20.433	17.534	17.796	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Spectrum Organization (DSO) is responsible for developing comprehensive and integrated spectrum planning and long-term strategies to address future needs for DoD electromagnetic (EM) spectrum access. The DSO supports DoD on national and international spectrum issues, spectrum coordination, and in the pursuit of emerging spectrum-efficient technologies in DoD acquisitions. The DSO serves as the DoD Center of Excellence for EM spectrum management, planning, policy implementation, and operational matters, and provides direct support to the Assistant Secretary of Defense for Networks and Information Integration/DoD Chief Information Office, the Chairman of the Joint Chiefs of Staff, Combatant Commands (COCOMs), Secretaries of Military Departments (MILDEPs), and Directors of Defense Agencies. The DSO was established by merging and realigning the spectrum assets and resources of DISA's Defense Spectrum Office, hereafter referred to as the Strategic Planning Office (SPO), and the Joint Spectrum Center (JSC). On 1 October 2008, the Global Electromagnetic Spectrum Information System (GEMSIS) Program Office was transferred to the DSO, thus consolidating all DISA EM spectrum activities into one organization. The title of this program element was changed from Joint Spectrum Center beginning in FY 2010 to reflect the total organization.

The Joint Spectrum Center's (JSC) mission is to enable DoD's effective use of the EM spectrum in support of national security and military objectives. The JSC is responsible for developing and maintaining DoD standard information systems that support DoD spectrum related activities and processes. The JSC is the focal point for both the DoD Electromagnetic Environmental Effects (E3) Program and the Joint-Service Interference Resolution (JSIR) Program, which provides 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), Electronic Warfare (EW) and other special projects as directed by the Joint Staff.

The Global Electromagnetic Spectrum Information System (GEMSIS) is a net centric capability that will provide 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.

This program element is under Budget Activity 07 because it supports operational systems development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Information Systems Agency	DATE: February 2010
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B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	19.267	18.944	0.000	0.000	0.000
Current President's Budget	19.162	18.865	20.991	0.000	20.991
Total Adjustments	-0.105	-0.079	20.991	0.000	20.991
• Congressional General Reductions		-0.079			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.105	0.000	20.991	0.000	20.991

Change Summary Explanation

In FY 2009, less funding was required to develop Joint Ordnance E3 Risk Assessment Database (JOERAD). The FY 2010 decrease of $0.079 million is a result of general Congressional adjustments for Economic Assumptions. The DoD did not estimate FY 2011 cost when the FY 2010 President's Budget was prepared.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
JS1: *Joint Spectrum Center*	19.162	18.865	20.991	0.000	20.991	23.679	20.433	17.534	17.796	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The Defense Spectrum Organization's (DSO) Joint Spectrum Center (JSC) designs, develops, and maintains DoD automated spectrum management systems, evaluation tools, and databases. The JSC databases are the prime sources of information for DoD use of the Electromagnetic (EM) spectrum. The JSC provides technical measurement and analysis in support of DoD spectrum policy decisions to ensure the development, acquisition, and operational deployment of systems 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 Defense Spectrum Organization's (DSO) Global Electromagnetic Spectrum Information System (GEMSIS) is a net centric capability that will provide 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.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Spectrum Knowledge Resources	10.935	7.828	7.953	0.000	7.953
The Spectrum Knowledge Resources program supports development of spectrum modeling and simulation capabilities, spectrum database development, and spectrum data transformation and standardization. This program provides the Combatant Commands and Military Services with the spectrum management tools and associated databases to manage spectrum resources at the strategic and operational level. It also provides the DoD acquisition community with tools to conduct Electromagnetic Environmental Effects (E3) evaluations and spectrum supportability risk assessments.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: In FY 2009 the following software products were successfully developed: (1) three releases of software to build equipment record, (2) three releases of various frequency assignment data maps, (3) one release of tactical data maps, (4) two releases of various space system data maps, and (5) two releases of Joint Data Access Web Server (JDAWS). JDAWS provides direct online access to some of the JSC's primary databases. These efforts will result in significantly improved features for the warfighter including an approved DoD spectrum data standard that will provide the ability to seamlessly share spectrum data with other DoD data standard compliant organizations. During FY 2009 JSC also completed the development, testing and release of SPECTRUM XXI version 4.2.4 server and client software to the SPECTRUM XXI central server and all four regional servers. SPECTRUM XXI is the joint standard DoD spectrum management system as well as the system of choice of NATO, currently supporting their operations in Afghanistan. *FY 2010 Plans:* FY 2010 new software development initiatives currently underway are expected to eliminate the need for the majority of the current suite of data mapping tools. JSC will develop enhanced tools that will enable analysts and engineers to conduct thorough, valid, and cost effective E3 evaluations and spectrum supportability risk assessments. The tools range from shared common services registered with Net-Centric Enterprise Services (NCES) and accessible by other authorized services (such as a electromagnetic propagation service subscribed to by communication planning services), to an orchestrated set of web services that provide capabilities to conduct E3 assessments for a specific platform or installation. The capabilities will be developed to replace and enhance the existing Joint E3 Evaluation Tool (JEET), which is currently a stand alone tool of distributed via CD-ROM. DSO will provide SPECTRUM XXI software updates. SPECTRUM XXI provides the warfighter the capability to deconflict spectrum dependent devices, facilitates the spectrum management workflow and business process, and provides a common spectrum use database for the warfighter. JDAWS Version 7.2 will be deployed and enhanced accessibility for the DoD acquisition community will be provided in FY 2010.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: In FY 2011 an additional version of JDAWS will be developed which will improve data sharing with NATO. This effort also implements interface enhancements to accommodate evolving spectrum data standard changes. FY 2011 efforts will also include the development and deployment of the SPECTRUM XXI Online (SXXI-O) infrastructure.					
Electromagnetic Environmental Effects (E3) The E3 Program supports the Joint Capabilities Integration and Development System (JCIDS) process and the DoD acquisition process to ensure that E3 control and Spectrum Supportability (SS) are addressed during the development, testing and procurement of information technology and National Security Systems. These efforts support the DoD acquisition process. The E3 Program also supports the development of the Joint Ordnance E3 Risk Assessment Database (JOERAD) and Hazards of Electromagnetic Radiation to Ordnance (HERO) electromagnetic environmental effects (EME) surveys in support of the COCOMS and Joint Task Forces (JTF). JOERAD develops algorithms and provides analytical capabilities to perform real-time risk assessments to evaluate platform/system safety and identify equipment limitations in the operational EM environment. JOERAD enables operators to make critical decisions about the hazards associated with the use of ordnance within complex EM environments. *FY 2009 Accomplishments:* FY 2009 funding resulted in development of JOERAD v9.4.2. This tool gives the warfighter the ability to compare the maximum allowable environment (MAE) to which an ordnance item can be exposed (without creating a safety or operational reliability problem) with the output from the radio frequency (RF) emitter suites found on various operational land, sea, and air platforms. This tool automates the analysis process and assists in mission planning and impact assessments and it critical for joint operations.	2.774	3.068	3.107	0.000	3.107

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: FY 2010, JSC will continue to provide HERO Impact Assessments, forward deployed EME surveys, and JOERAD shipboard installations. During this period, DSO will also initiate conversion of JOERAD to a network-connected capability, JOERAD version 10.0. JOERAD 10.0 will provide an automated data update capability for users that are connected to the SIPRNET and data updates will be delivered in the DoD approved spectrum standard data format. *FY 2011 Base Plans:* FY 2011 resources will continue conversion of JOERAD to a network-connected capability, JOERAD 10.0. JSC will also continue to provide HERO Impact Assessments, forward deployed EME surveys, and JOERAD shipboard installations.					
Emerging Spectrum Technology (EST) DSO has the responsibility to investigate emerging spectrum related technologies and evaluate their applicability to improve future warfighter EM spectrum utilization through technological innovation. The goal of the EST program is to identify the opportunities and risks associated with emerging spectrum-related technologies in the early stages of the technology development, influence and lead technology development in order to maximize DoD spectrum utilization, and ensure that spectrum policies incorporate optimal technology to meet DoD mission requirements. Within EST there has been an increased focus on Dynamic Spectrum Access (DSA). DSA is realized through wireless networking architectures and technologies that enable wireless devices to dynamically adapt their spectrum access according to criteria such as policy constraints, spectrum availability, propagation environment, and application performance requirements. *FY 2009 Accomplishments:* FY 2009 funds resulted in the development of a DSA Roadmap and the DSA Technical Framework study and the DSA Spectrum Management Framework were completed. An Incumbent Systems	3.854	3.719	3.715	0.000	3.715

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Protection Study was initiated, and three research efforts dealing with DSA technical issues were initiated (hidden node, policy-based management, scalability). Funds supported research comparing Worldwide Interoperability for Microwave Access (WiMAX) and Long Term Evolution (LTE) broadband wireless standards, the applicability of machine intelligence in spectrum management, carrier-in-carrier bandwidth compression techniques for SATCOM, and a study on internet protocol (IP)-based networking protocols to identify which new networking protocol technologies provide the most significant savings in spectrum use. *FY 2010 Plans:* FY 2010 funds continue research of emerging spectrum-related technologies. DSA efforts are focusing on research and development of a framework to support deployment of DSA-enabled systems. These efforts include preparing recommended technology enhancements to the Defense Spectrum Management Architecture (DSMA); further research into the impact of DSA systems on the electromagnetic environment (EME); and performance of various technical assessments, including establishing the technical foundation for protecting legacy systems as DSA is implemented; and continued development of the DSA Roadmap. *FY 2011 Base Plans:* FY 2011 funds will focus research on spectrum sharing techniques and interference mitigation approaches in general, and specific to advanced radar systems. Research into DSA capabilities will continue.					
Spectrum Data Sharing Capability *FY 2009 Accomplishments:* N/A *FY 2010 Plans:* N/A	0.000	0.000	4.500	0.000	4.500

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY 2011 funds will be used to initiate an authoritative data source for the Department's spectrum management (SM) information and an automated spectrum data capture and quality control process. The spectrum data enhancement will develop the data sharing solution to CENTCOM's Joint Urgent Operational Need (JUON), Radio Frequency Spectrum Management. This enhancement will provide accurate data for automated Counter Radio Electronic Warfare (CREW) deconfliction and spectrum inventory calculation; enables automated data capture; automates data access capabilities; provides business process engines of oversight and quality control; and enables interoperability with NATO.					
Global Electromagnetic Spectrum Information System (GEMSIS)	1.599	4.250	1.716	0.000	1.716
FY 2009 Accomplishments: In FY 2009 the Program Management Office (PMO) documented a standard GEMSIS architecture framework for Increment 1 to include the Host Nation Spectrum Worldwide Database Online (HNSWDO) and Coalition Joint Spectrum Management Planning Tool (CJSMPT). GEMSIS identified CJSMPT data quality and interoperability improvements and recommendations, and began to transition CJSMPT data into the Joint Spectrum Center Data Repository. The PMO completed analysis and assessment of Certification and Accreditation areas with appropriate mitigation and corrective action for identified risks. Additional accomplishments included transitioning HNSWDO V3.1 into GEMSIS Increment 1, initiated development of HNSWDO upgrade based on customer identified requirements and began a HNSWDO Business Process Management Pilot Program. The PMO initiated efforts to improve net-centricity and spectrum data standardization for Increment 1 and began the architecture design for the GEMSIS catalogue of services.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: In FY 2010 GEMSIS transitioned CJSMPT Joint Capability Technology Demonstration (JCTD) approved capabilities into Increment 1. The PMO began design and development of an on-line training program structure for GEMSIS Increments. GEMSIS continues to develop, test, and deliver GEMSIS Increment 1 approved enhancements. The GEMSIS Catalog of Services architecture design will be finalized and the initial catalog will be piloted and demonstrated to the user community. In addition, improvements to increase net-centricity and spectrum data standardization for Increment 1 will continue, and completion of HNSWDO Business Process Management Pilot Program. *FY 2011 Base Plans:* In FY 2011 the GEMSIS PMO will finalize the GEMSIS Catalog of Services architecture and infrastructure standards to implement GEMSIS Increment 2 Analysis of Alternatives (AoA) recommendations, continue to support process improvements, upgrades, and developmental efforts to increase the capabilities and functionality of GEMSIS spectrum tools.					
Accomplishments/Planned Programs Subtotals	19.162	18.865	20.991	0.000	20.991

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 0303153K O&M, DW/PE : *O&M, DW/PE*	41.482	31.811	32.404		32.404	34.002	35.271	36.218	36.845	Continuing	Continuing
• 0303153K Procurement, DW/PE : *Procurement, DW/PE*	0.000	0.490	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Engineering support services for DSO 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 DSO. Full and open competition was used for the acquisition of the current contracts with ITT Industries,

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Inc. GEMSIS' acquisition approach is to obtain capabilities by adopting existing capabilities, buying commercial products, or developing new capabilities by delivering incrementally within the context of a streamlined and adaptive acquisition approach.

E. Performance Metrics

1. Initial deployment of the Net-Centric JSC Data Repository (JDR) which will enable spectrum managers and E3 analysts to exchange spectrum information in a format consistent across NATO and CCEB counterparts for full coordination of spectrum operations and situational awareness.
2. Publish three emerging spectrum technology analyses per year
3. Implement DSA Roadmap actions/recommendations
4. Continued incorporation of JOERAD into Navy ship software inventory.
5. Continued presentation of E3 technical courses.
6. Conduct 7 -10 HERO/ EME Analyses per year.
7. Conduct analyses and make policy recommendations for spectrum sharing techniques and interference mitigation approaches for radar systems.
8. Continue GEMSIS integration, development and deployment by:

a. Implementation of the Service Oriented Architecture (SOA) for GEMSIS Increment 1.
b. Development, testing and delivery of GEMSIS Increment 1 approved enhancements in accordance with user requirements.
c. Identifying data deficiencies and characterizing the risks to the Warfighter and coordinate mitigation strategies with data owners.
d. Federating and cataloging of Services' spectrum management tools.
e. Improvements in net-centricity and spectrum data standardization for Increment 1.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency			DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	0.000		0.000		0.000		0.000			

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services	C/CPIF	ITT Industries, Inc. ITT Industries, Inc.	42.899	17.471	Oct 2009	19.569	Oct 2010	0.000		19.569	Continuing	Continuing	Continuing
Technical Engineering Services	MIPR	Various Various	1.846	0.462	Jan 2009	0.474	Jan 2010	0.000		0.474	Continuing	Continuing	Continuing
		Subtotal	44.745	17.933		20.043		0.000		20.043			

Remarks

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Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	JTIC Ft. Hauchuca	0.792	0.077	Jan 2009	0.079	Jan 2010	0.000		0.079	Continuing	Continuing	Continuing
		Subtotal	0.792	0.077		0.079		0.000		0.079			

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	FFRDC	MITRE MITRE	4.168	0.855	Oct 2009	0.869	Nov 2010	0.000		0.869	Continuing	Continuing	Continuing
		Subtotal	4.168	0.855		0.869		0.000		0.869			

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	49.705	18.865		20.991		0.000		20.991			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Defense Information Systems Agency			DATE: February 2010
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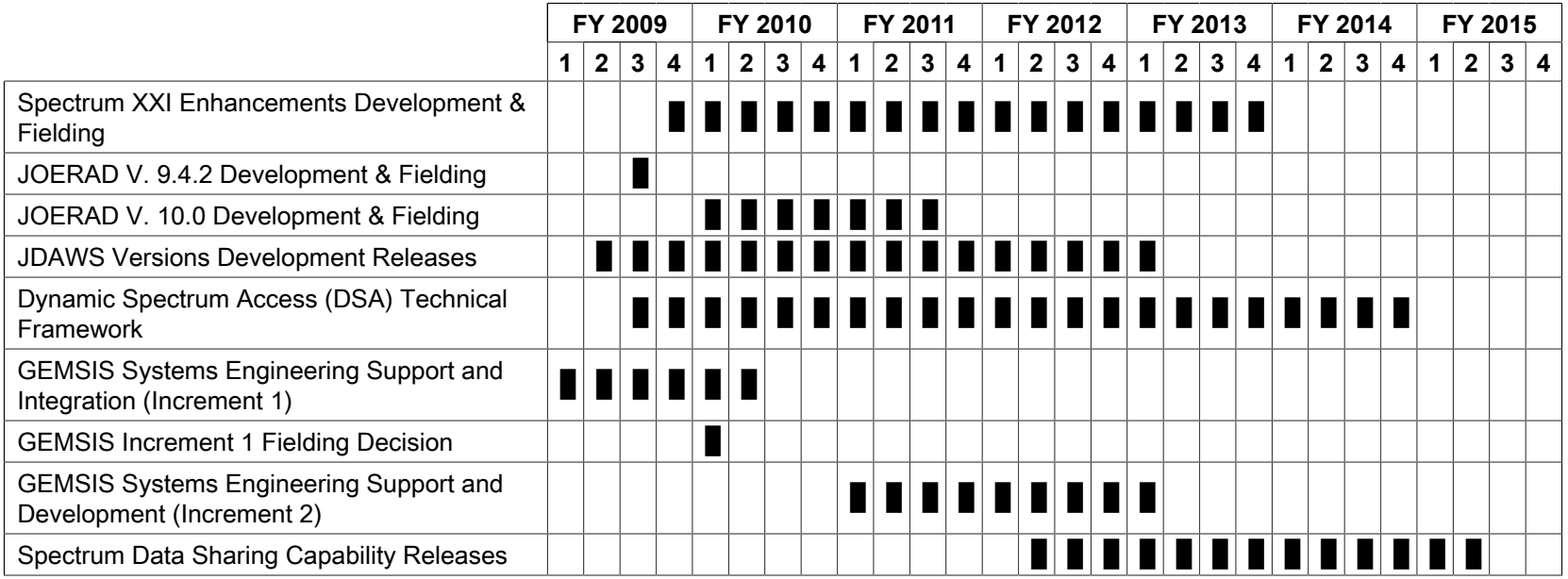

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Defense Information Systems Agency		DATE: February 2010
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Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Spectrum XXI Enhancements Development & Fielding	4	2009	4	2013
JOERAD V. 9.4.2 Development & Fielding	3	2009	3	2009
JOERAD V. 10.0 Development & Fielding	1	2010	3	2011
JDAWS Versions Development Releases	2	2009	1	2013
Dynamic Spectrum Access (DSA) Technical Framework	3	2009	4	2014
GEMSIS Systems Engineering Support and Integration (Increment 1)	1	2009	2	2010
GEMSIS Increment 1 Fielding Decision	1	2010	1	2010
GEMSIS Systems Engineering Support and Development (Increment 2)	1	2011	1	2013
Spectrum Data Sharing Capability Releases	2	2012	2	2015