Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Office of Secretary Of Defense										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Joint Data Management Research*							
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	0.000	0.000	3.261	0.000	3.261	3.640	3.060	3.342	3.432	Continuing	Continuing
P266: *Joint Data Management Research*	0.000	0.000	3.261	0.000	3.261	3.640	3.060	3.342	3.432	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a new start program.

(U) As the Department of Defense increases the capability and capacity to generate increasing amounts of data from numerous sensors in the battlespace, the issue of handling very large data sets has become more challenging. This is in part due to Department of Defense response to a changing threat environment where there is an expansion of the types of sensors deployed, new types of information collected, and different features used to classify these new threats. From a technical perspective, sensor processing speeds have outpaced the speed and ability to transport, store and process the data created. Science and technology investigation into new and novel ways to manage and exploit this data is required to more efficiently use sensor assets and effectively use information in a timely fashion.

(U) This applied research program will explore ways to apply emerging mathematics and information sciences to improve machine processing of large amounts of data beyond simple data processing and information distillation. This level of automated processing must lead to a better understanding of the information presented at higher levels of decision making. As a part of this effort, the development of challenge problems will be established to define metrics in the way data and decision problems are solved (inference, prediction, analysis). The metrics, models and methods that result from this definitional work will be validated through warfighter and analyst demonstrations and experiments. Successful results will be measured in a reduced time to access information, reduced time to effect a decision, less information handling required, and redefining operational processes.

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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	0.000	4.940	0.000	0.000	0.000
Current President's Budget	0.000	0.000	3.261	0.000	3.261
Total Adjustments	0.000	-4.940	3.261	0.000	3.261
• Congressional General Reductions		0.000			
• 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 Program Adjustments	0.000	-4.940	3.261	0.000	3.261

Exhibit R-2A, RDT&E Project Justification: PB 2011 Office of Secretary Of Defense			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602663D8Z: *Joint Data Management Research*	PROJECT P266: *Joint Data Management Research*	

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
P266: *Joint Data Management Research*	0.000	0.000	3.261	0.000	3.261	3.640	3.060	3.342	3.432	Continuing	Continuing

A. Mission Description and Budget Item Justification

This is a new start program.

(U) Data Shaping for Exploitation – When tracing the information processing chain from the sensor inputs to the user/analysts, the automated techniques that are known and can be applied become fewer and less mature. The simple information process chain goes from (1) data tagging to (2) pre-processing to (3) multi-source common data representation to (4) triage/identify high priority data subsets for analysis and action. Candidate research topics to be explored include pattern analysis, data classification for importance and prioritization, criticality assessment, change detection, uncertainty management and reduction, high level structures, data search and retrieval, feature extraction, automatic translation, and automated or assisted pattern recognition.

(U) Data Discovery for Exploitation – In order to better discover and exploit the growing amount of sensor data, the following areas of research are considered: object recognition in scenes and streams, discovery and exploitation at the edge, structuring knowledge for discovery, improving analytic throughput, aiding ISR functions, layered analysis and interpretation, effects prediction for decision support, and cross domain access for effective ISR.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Data Shaping for Exploitation	0.000	0.000	2.482	0.000	2.482
When tracing the information processing chain from the sensor inputs to the user/analysts, the automated techniques that are known and can be applied become fewer and less mature. The simple information process chain goes from (1) data tagging to (2) pre-processing to (3) multi-source common data representation to (4) triage/identify high priority data subsets for analysis and action. Candidate research topics to be explored include pattern analysis, data classification for importance and prioritization, criticality assessment, change detection, uncertainty management and reduction, high					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
level structures, data search and retrieval, feature extraction, automatic translation, and automated or assisted pattern recognition. Program Outputs and Efficiencies – (U) Increased awareness of the underlying assumptions and error propagation for sensor information processing pipelines. Streamline sensor data to user timelines. *FY 2011 Base Plans:* (U) Initiate applied research in candidate areas. Evaluate potential candidates for transition into experimentation and demonstration.					
Data Discovery for Exploitation In order to better to discover and exploit the growing amount of sensor data, the following areas of research are considered: Object recognition in scenes and streams, discovery and exploitation at the edge, structuring knowledge for discovery, improving analytic throughput, aiding ISR functions, layered analysis and interpretation, effects prediction for decision support and cross domain access for effective ISR. Program Outputs and Efficiencies – (U) Determine areas where activity modeling and advanced sensor cueing will accelerate user awareness of the information available. *FY 2011 Base Plans:* (U) Initiate applied research in candidate areas. Evaluate potential candidates for transition into experimentation and demonstration.	0.000	0.000	0.779	0.000	0.779
Accomplishments/Planned Programs Subtotals	0.000	0.000	3.261	0.000	3.261

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C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A