Fiscal Year:	FY 2009 Task Las	t Updated:	FY 06/18/2009
PI Name:	O'Donnell, Robert Ph.D.		
Project Title:	Integrated Cognitive Assessment: Combining Measurement, System, and Mission		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline Element/Subdiscipline:	HUMAN RESEARCHBehavior and performance		
Joint Agency Name:	TechPort:		No
Human Research Program Elements:	(1) BHP :Behavioral Health & Performance (archival in 2017)		
Human Research Program Risks:	(1) BMed:Risk of Adverse Cognitive or Behavioral Conditions and Psychiat	ric Disorder	S
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	odnova@aol.com	Fax:	FY
PI Organization Type:	INDUSTRY	Phone:	(937) 879-0612
Organization Name:	NTI, Inc.		
PI Address 1:	1 1/2 S. Central Avenue		
PI Address 2:			
PI Web Page:			
City:	Fairborn	State:	ОН
Zip Code:	45324 Congression	al District:	7
Comments:			
Project Type:	Ground Solicitation / Fundi	ng Source:	SBIR Phase II
Start Date:	03/05/2009	End Date:	03/04/2011
No. of Post Docs:	No. of Ph	D Degrees:	
No. of PhD Candidates:	No. of Master	r' Degrees:	
No. of Master's Candidates:	No. of Bachelor	's Degrees:	
No. of Bachelor's Candidates:	Monitori	ng Center:	NASA JSC
Contact Monitor:	Leveton, Lauren Cont	act Phone:	
Contact Email:	lauren.b.leveton@nasa5.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NNX08CC20P		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	Existing cognitive performance test batteries consist of synthetic tasks that, v functions, provide an incomplete and unconvincing picture of an individual's context of space missions. In essence, they are 'laboratory' measures that app environment. This leads to user non-compliance or rejection. The present pro- traditional cognitive performance measures with assessment of the system ar operate. This yields quantified measures of the person's cognitive ability to p an entertaining and scientifically rigorous assessment tool is integrated with workload estimate for each task. This is accomplished by selecting tests base actually has to do, using the Fatigue Avoidance Scheduling Tool (FAST) to of sleep/rest, and integrating a mathematical vector to quantify the workload "Person-System-Mission (PSM) index" provides a totally new and unique wo	vhile they m true cogniti ear unrelate posal descr id mission in erform spec a sleep/fatig cd on task ar predict perfo of specific ay not only	ay probe isolated cognitive ive capacity within the total d to the real-world ibes a technique for integrating n which the individual must ific jobs in space. Specifically, ue model and a quantified halyses of what the astronaut formance capacity as a function tasks. The resulting to assess present cognitive

	capability, but to diagnose specific causes of decrement, and to suggest remedial actions.	
	POTENTIAL NASA COMMERCIAL APPLICATIONS : Measurement and prediction of the cognitive effects of stressors such as fatigue and workload on specific tasks required of the astronaut are critical to NASA. The existence of a valid metric that is expressed in terms of the individual's ability to carry out specific tasks, rather than in terms of esoteric cognitive skills, will dramatically increase the value of an assessment tool to the individual, the commander, and the flight surgeon, thereby increasing user acceptance. This will lead to incorporation of such a metric on all spaceflights, especially those of long duration.	
Rationale for HRP Directed Research:		
Research Impact/Earth Benefits:	The principal non-NASA Government applications for the technology developed here will be in the Department of Defense and the Homeland Security Department. Mission- and safety-critical jobs frequently involve stressful conditions such as fatigue and high workload in both of these agencies. In DoD, for instance, the need to assess the combat readiness of the dismounted warrior has led to the establishment of the "Cog-Fit" program, which is attempting to model the effects of combat stresses on the person's ability to perform their job. The Air Force has similar programs. Homeland security, in addition to Coast Guard operations, requires personnel such as airport screeners to maintain high levels of cognitive alertness for long periods of time. It is expected that each of these agencies will have immediate applications for this technology. Non-NASA commercial applications will involve marketing the technology to transportation, shipping, and freight organizations that routinely carry out safety-sensitive operations, as well as to educational, industrial, and self-help organizations that will recognize the value of a scientifically well-grounded, entertaining cognitive assessment system.	
Task Progress:	New project for FY2009. Reporting not required for this SBIR Phase 2 project.	
Bibliography Type:	Description: (Last Updated:)	