

Fiscal Year:	FY 2014	Task Last Updated:	FY 02/26/2015
PI Name:	Vos, Gordon Ph.D.		
Project Title:	A Tool for the Automated Collection of Space Utilization Data		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Space Human Factors Engineering		
Joint Agency Name:	TechPort:	No	
Human Research Program Elements:	(1) HFBP :Human Factors & Behavioral Performance (IRP Rev H)		
Human Research Program Risks:	(1) HSIA :Risk of Adverse Outcomes Due to Inadequate Human Systems Integration Architecture		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	gordon.a.vos@nasa.gov	Fax:	FY
PI Organization Type:	NASA CENTER	Phone:	281-483-6269
Organization Name:	Wyle Laboratories/NASA Johnson Space Center		
PI Address 1:	SF3 - Habitability and Human Factors Branch		
PI Address 2:	2101 NASA Pkwy		
PI Web Page:			
City:	Houston	State:	TX
Zip Code:	77058-3607	Congressional District:	36
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	2013 HERO NNJ13ZSA002N-Crew Health (FLAGSHIP & NSBRI)
Start Date:	07/21/2014	End Date:	07/17/2017
No. of Post Docs:	No. of PhD Degrees:		
No. of PhD Candidates:	No. of Master' Degrees:		
No. of Master's Candidates:	No. of Bachelor's Degrees:		
No. of Bachelor's Candidates:	Monitoring Center: NASA JSC		
Contact Monitor:	Whitmore, Mihriban	Contact Phone:	281-244-1004
Contact Email:	mihriban.whitmore-1@nasa.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	McGuire, Kerry Ph.D. (NASA Johnson Space Center) Thompson, Shelby Ph.D. (Lockheed Martin/NASA Johnson Space Center)		
Grant/Contract No.:	Internal Project		
Performance Goal No.:			
Performance Goal Text:	This HERO FLAGSHIP NASA Research Announcement (NRA) response has been written to address item J of Appendix A of the NRA (Automated Data Collection Tools for Habitability Design and Assessment), PRD (Program Requirements Document) Risk of Incompatible Vehicle/Habitat Design, as well as associated IRP (Integrated Research Plan) Gap Space Human Factors Engineering (SHFE) SHFE-HAB-09. The objective of this proposal is to develop and validate an automated data collection system that delivers data useful in the analysis of space utilization and vehicle habitability pertaining to crew activities on the International Space Station (ISS) as well as potential long duration space missions. The investigation will utilize two independent technologies, 3D RFID-Real Time Location System (RTLS) and Microsoft Kinect 3D volumetric and anatomical scanning tools, integrating them into a single solution. The project will advance the integrated system through validation using the Human Research Program (HRP) Human Exploration		

Task Description:	<p>Research Analog (HERA) platform. This synthesis of 2 technologies will enable HRP to collect all of the specific data and metrics requested by the NRA, as well as several additional measures. This comprehensive data collection methodology will provide data regarding: (a) the number of crew present in each area of the vehicle at any given time, (b) the quantity of time crew spend at each workstation in the performance of tasks, (c) the physical orientation of crew while utilizing the provided volume, (d) frequent or common translation paths and traffic flow patterns within the volume, (e) operational flow/volume required for mission tasks by single or multiple crew in the vehicle, and (f) 3D biomechanical and postural data related to individual and team based tasks.</p> <p>The expected significance of this project is that it will provide NASA with a quantitative methodology for collecting data 3D space utilization data that is validated for use in flight analogs and has potential direct applicability for use in actual flight environments. This is a capability that does not currently exist at NASA, and will have a significant positive impact on NASA's ability to generate quantitatively derived net habitable volume requirements by task and mission. It will also feed directly into the use of computational modeling and simulation for habitat/vehicle design by providing a valid method to generate input data for modeling efforts.</p>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	<p>New project for FY2014. (Ed. note: added to Task Book when received period of performance information Feb. 2015)</p>
Bibliography Type:	<p>Description: (Last Updated: 06/19/2018)</p>