**LARA: Biologically inspired Engineering and Exploration System Mission concept and components for lunar exploration and exploitation tools.** P.E. Clark1 (Contact Author), S..A. Curtis2, C.Y. Cheung2; M.L. Rilee1, G. Marr2; W. Truszkowski2, Contact address: Pamela Clark, Code 695, NASA/GSFC, Greenbelt, MD 20771, 301-286-7457, Pamela.clark@gsfc.nasa.gov; 1Affiliation: L3 Communications, Government Services, Inc., 3750 Centerview Drive, Chantilly, VA 20151, 2Af -----Original Message----filiation: Code 6-From: Linda Mennitt [mail95, NASA/GSFC, Greenbelt, MD 20771.

ANTS (Autonomous Nano Technology Swarm) Architecture is well suited to surface-basedto:felix.com@verizon.net] forms for use on the Moon or Mars or any relatiSent: Monday, March 14, 20vely low G surface environment, as illustrated by an application called LARA (Lander-Antenna-Rover Arrays). ]. Here, we analyze the nature of components and sequence of behaviors required for spacecraft operational scenarios for an ANTS application in a05 11:08 PMTo: commentsSub low gravity surface.

**Introduction**: Basic structural components would , as in other applications, be highly moduject: fair tax for all Advlar, addressable arrays of more robust than Zero G carbon NEMS-based nodes, from which highly morphable struts, tethers, 2D mesh, and 3D fabric could be reversibly deployed for varioerse Tax Consequences for us functions. Individual craft would be releasSame-Sex Couples 1.Health ed, possibly by a human crew on or neaInsurance for Partners - Ar the Moon or from an unmanned facility. Individual craft would be c Taxing Proposition: Emplapable of landinoyees payincome and payrolg on a low G surface, using a miniaturized version of high impulse thruster techl tax on the health insuranology, transforming into rovers, antennas, or more specialized service providers, as needed, and ultimately taking off to return to the poinnce premiums their employet of release.

**Methodology**: We have developed preliminary conceptual and physical models of spacecrars provide for domestic paft and components and models of the interaction of ANTS at the spacecraft level irtners who do not otherwisn order to determine hardware and software requirementse qualify as dependents. B for typical operations driven by operating on a low graenefits for different-sex vity surface to support a human crew.

**Discussion**: As in the other applicaspouses are not subject totions of the ANTS architecture, movement would not employ wheels, which work best in a special environment. Instead, the ANTS approach harnesses the effective skeletal/ muscular system this tax. 2.Flexible Spen of the frame itself to enable more ‘natural’ movement, effectively allowing ‘flow’ across a surface or into a particular morphological form. As rovers, craft would be ding Accounts Not So Flexiequipped for exploring, prospecting, monitoring, as required. Craft could individually or collectiveble: Employees can useflely form cylindrical or bowl shaped arrays to act as antennas, for communication or astronomical observatories. The architecture would also be useful in the constructioxible spending accounts ton of tools a pay for a different-sex snd structures for human occupation of permanent bases. pouse's medical expenses, ANTS structures, operating continuously or on demand, could be thus used for exploration, reconnaissance, communicaincluding eyeglasses, prestion, navigation, transportation, construction, permanent monitorincriptions, and co-pays, ong, or observation, protecting human cre a pre-tax basis. These acws and facilitating their work.

**Concluscounts cannot be used for ions:**  The ANTS architecture is a promising approach for supporting hua same-sex partner, or eveman crew activities on the surface of the Moon or Mars as part of the new NASA iniative.

**Acknowledgment**: Suppn a same-sex spouse. 3.Retort for this work has been provided throughirement Savings - Death an NASA contract NAS5-99189, subcd Taxes: Tax treatment of ontract 0299189EER, with ITMI.

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