

Joseph E. Palaia, IV

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Education	MASSACHUSETTS INSTITUTE OF TECHNOLOGY Master of Science in Nuclear Science & Engineering , June 2006 NEW JERSEY INSTITUTE OF TECHNOLOGY Bachelor of Science with Honors in Electrical Engineering , June 2002	Cambridge, MA Mt. Laurel, NJ
Certifications & Training	BLACK BAY TECHNICAL INSTITUTE Electric Vehicle Technician Certification Course , November 2009 PRIORIA ROBOTICS Maveric Unmanned Aerial Vehicle (UAV) Flight Training Course , June 2009 HARVARD BUSINESS SCHOOL Executive Education Intensive Course – Launching New Ventures , January 2009	Tarpon Springs, FL Gainesville, FL Boston, MA
Experience	MANAGER NewSpace Center, LLC (www.NewSpaceCenter.com) (May 2008 - Present) Co-founded space-themed entertainment venture, as a spin-off of the 4Frontiers Corporation. Company is developing, and will build and operate the NewSpace Center, a combined tourism and R&D facility including a pavilion showcasing the latest developments by the NewSpace industry, and a full-scale mockup of a Mars settlement.	New Port Richey, FL
	VP OF OPERATIONS AND R&D 4FRONTIERS CORPORATION (www.4FrontiersCorp.com) (June 2005 - Present) Co-founded space commerce company. Mission statement: Design, fund, build and operate the first permanent settlement on Mars, and pursue the economic development of the inner solar system. Company is pursuing business opportunities in research & development, informative entertainment / education, and consultancy, and is spinning off profitable companies as appropriate. – Heavily involved in business development, contract negotiation, grant and proposal writing, technical research & consulting, presentations, marketing and more.	Cambridge, MA & New Port Richey, FL
	<u>Served as PRINCIPAL INVESTIGATOR on the Following Research Grants Via 4Frontiers:</u>	
	“Heat Transfer and Stress Investigations of Transparent Material Subjected to Internal Greenhouse Conditions in a Simulated Mars Surface Environment.” – \$25,000 – (2008-2009) – A grant awarded under the 2008 Florida Space Research & Education Grant Program, funded by NASA and administered by the University of Central Florida’s Florida Space Grant Consortium. Research involved testing various materials proposed for use in future transparent Mars greenhouses under Mars simulated conditions.	
	<u>Served as a CONSULTANT on the following contracts via 4Frontiers:</u>	
	BLACK BAY TECHNOLOGIES (http://blackbayev.com) (Sept - Nov 2009) Assisted Black Bay Technologies’ client in establishing the first electric vehicle conversion facility in Singapore. Served in a lead role in a small team that performed the first two vehicle conversions ever performed in Sinagpore, converting a diesel internal combustion engine (ICE) powered Renault Kangoo and a gasoline ICE powered BMW 5 Series sedan to electric drive. Developed training materials and conducted lectures for client on electric vehicle topics, certifying client staff as EV conversion specialists.	Singapore
	ATLANTIS RESEARCH (2008) Developed and conducted two custom tour package programs for New Delhi based Atlantis Research. Tour participants were Indian high school students, and tours included visits to US cultural destinations, space and science centers and behind the scenes at space facilities.	Tampa, FL
	GALACTIC SUITE, LTD. (www.galacticsuite.com/) (2007-2008) Performed business plan development and provided technical advice related to the development of an Earth-orbiting hotel resort.	Barcelona, Spain

THERMOCON, INC. (2007) Daytona Beach, FL
Performed technical review, component specification development and component provider evaluation for ThermoCon, Inc, a company developing a novel thermionic energy converter.

MKS INSTRUMENTS, INC. (2006) Reading, MA
Assisted in the design and testing of a radio frequency (RF) generator for use in semiconductor processing applications.

RESEARCH ASSISTANCESHIP

MINI-HELICON PLASMA THRUSTER EXPERIMENT (Jan 2005 - Jan 2006)
MIT SPACE PROPULSION LAB – AEROSTRO DEPT. Cambridge, MA
Assisted in design and construction of experimental thruster apparatus. Manufactured mechanical systems. Installed and troubleshot RF power delivery and chamber grounding systems.

RESEARCH ASSISTANCESHIP

PLASMATRON RESERACH GROUP (Oct 2002 - Dec 2004)
MIT PLASMA SCIENCE & FUSION CENTER Cambridge, MA
Helped to develop and improve plasma fuel reformers for just-in-time hydrogen generation systems. Constructed and maintained high voltage (~20kV) RF switching power supplies, circuit design, and installation of experimental setup instrumentation. Performed some NI Labview and PIC microcontroller programming.

ELECTRICAL ENGINEERING INTERNSHIP

ADVANCED ENERGY INDUSTRIES, INC. (May 2000 - Sept 2002) Voorhees, NJ
Electrical engineer-in-training. Responsibilities included circuit design, simulation and prototyping of RF power supplies/amplifiers. Efforts included circuit analysis, testing, and modification to meet required specs, CAD design of printed circuit boards and prototype circuit construction and testing.

Leadership

EXECUTIVE OFFICER / ENGINEER (July 2009)

MARS SOCIETY – FMARS CREW XII Devon Island, NU, Canada
Selected as one of six crew members to conduct one month simulated Mars expedition at the Flashline Mars Arctic Research Station (FMARS), located on Devon Island in the high Canadian arctic. Solicited donations of equipment and financial support from multiple entities. Secured an Unmanned Aerial Vehicle (UAV) for expedition use through a partnership with Prioria (Gainesville, FL). Conducted UAV flights on Devon Island while wearing a simulated Mars spacesuit (first person to ever operate a UAV while wearing a space suit). Obtained donations from AUVSI, Florida Space Grant Consortium & the Space Coast Office of Tourism. Conducted live Q&A sessions with Florida, Georgia and Texas students during expedition for outreach purposes. Partnered with Omega Envoy, a team competing in the Google Lunar Xprize, to test their rover prototype during the expedition.

CORE MANAGEMENT TEAM MEMBER (June 2004 – June 2005)

MARS FOUNDATION - MARS HOMESTEAD PROJECT Cambridge, MA
Coordinated activities including fundraising, outreach, publication, and some project management. Served as Nuclear and Electrical discipline leads for Mars settlement feasibility study.

TEAM MENTOR - FIRST NATIONAL ROBOTICS COMPETITION TEAM #204 (1999 - 2002)

Assisted a team of approximately 40 high school students through the design, construction and testing of robots during the course of four competition seasons. Provided instruction in mechanical design, use of 3DCAD software, robot programming, part machining, mechanism assembly, and group / project management.

FOUNDER & 1ST CAPTAIN - FIRST NATIONAL ROBOTICS COMPETITION TEAM #204 (1998)

Organized group of high school physics students to begin first ever Eastern High School robotics team (Voorhees, NJ). Solicited funding for competition entry fee, material and travel costs from local area businesses. Served as liaison between corporate sponsors, school district management and competition officials.

Awards, Honors

Invited to and attended NASA's Next Generation Exploration Conference 2 at NASA Ames (2007), selected for and attended Space Generation Congress (2007 – Hyderabad, India; 2006 – Valencia, Spain; 2005 – Fukuoka, Japan); Young Professionals Entrepreneurship Prize, Awarded by the Luigi Gerardo Napolitano Society and the International Astronautical Federation (2007); Peter Diamandis Leadership Award (2005); NJIT Albert Dorman Honors College Full 4Year Undergraduate Scholarship (1998 - 2002); New Jersey Institute of Chemists Distinguished Award (1999); Edward J. Bloustein Distinguished Scholarship (1998); Selected for and attended American Legion New Jersey Boys State (1997); Eagle Scout, Boy Scouts of America (1997); BSA Troop 48 Walter Kowelewski Memorial Award (1997)

Computer Skills

Proficient in MS Office, Adobe Photoshop, 2D Autocad, 3D Autodesk Inventor, HTML for web design. Some knowledge of programming in 68000 & PIC microcontroller assembly languages, Mathworks Matlab, National Instruments Labview, and Flash for web design.

Professional Memberships

American Institute of Aeronautics and Astronautics (AIAA)
Association for Unmanned Vehicle Systems International (AUVSI)
Association of Mars Explorers
Mars Society
National Space Society (NSS)
Planetary Society

Professional Committees & Boards

4Frontiers Corporation – Board of Directors
AIAA Space Colonization Technical Committee
NSS Space Settlement Committee
Students for the Exploration & Development of Space – Board of Alumni

Publications

Palaia J, Homnick M, Crossman F, Stimpson A, Truett J. (2009) Economics of Energy on Mars. In: Badescu V. Mars: Prospective Energy and Material Resources. New York: Springer. p1-41.

Sylvan R, Komerath N, Woellert K, Homnick M, Palaia J. (2009) The Emerging Inner Solar System Economy. World Future Review, Vol.1 No.1, April-May

Som S, Manyapu K, Palaia J, Beaumont M, Garcia-Oviedo L, Jordan N. (2008) A Global Imperative: We Must Go!" 59th International Astronautical Congress, Paper IAC-08-B3.1.10, Glasgow, Scotland.

Palaia J, (2006) Empirical Aspects of a Mini-Helicon Plasma Thruster Experiment (mHTX@MIT). M.S. thesis, Massachusetts Institute of Technology

Pucci JM, Sinenian N, Palaia J, LaBry Z, Shabshelowitz A, Celik M, Batishchev O, and Martinez-Sanchez M. (2006) mHTX@MIT: Characterization of a Mini Helicon Plasma Thruster. MIT

Ellender DJ, Palaia J, Mackenzie B. (2005) Requirements for Establishment of Site Data for a Permanent Mars Settlement. The 2nd Mars Expedition Planning Workshop, Vancouver BC, August

Petrov G, Homnick M, Mackenzie B, Palaia J (2005) A Permanent Settlement on Mars: The Architecture of the MarsHomestead Project. Published by the 35th International Conference on Environmental Systems (ICES), Rome, Italy, 05ICES-466, July

Dostal V, Gezelius K, Horng J, Koser J, Palaia J, Shwageraus E, Yarsky P, Kadak AC. (2004) Mission to Mars: How to Get People There and Back with Nuclear Energy. Published by the MIT CANES (Center for Advanced Nuclear Studies), Cambridge MA, MIT-NSA-TR-1, September

Conferences & Workshops Attended

- 2009, July 30-Aug 2 – 12th Annual Intl. Mars Society Convention – University of Maryland, College Park, MD (Speaker)
- 2009, May 28-31 – 28th International Space Development Conference (ISDC) – Kissimmee, FL (Speaker)
- 2009, May 27 – Space Investment Summit 6 – Kissimmee, FL (Speaker)
- 2008, Oct 2-3 – State of Space Based Solar Power Technology Conference – Lake Buena Vista, FL
- 2008, July 26-28 – International Space Settlement Design Competition Finals – Houston, TX (Team mentor)
- 2008, Apr 11 – Spring Space Forum – Purdue University, West Lafayette, IN (Speaker)
- 2007 – NASA's Next Generation Exploration Conference 2 – NASA Ames Research Center, Mountain View, California.
- 2007 – Florida Association of Science Supervisors & Teachers, Meeting and Conference – Orlando, FL (Speaker)
- 2007 – International Astronautical Congress – Hyderabad, India
- 2007, Sept 24-28 – Space Generation Congress - Hyderabad, India (Speaker)
- 2007, Sept 14-16 – Wired NextFest – Los Angeles, California
- 2007, April 16-17 – Space Investment Summit 2 (SIS2) – New York City, NY
- 2007 – 26th International Space Development Conference (ISDC) – Dallas, Texas (Speaker)
- 2006 – AIAA Space 2006 Conference – San Jose, California
- 2006, Oct 2-6 – International Astronautical Congress – Valencia, Spain
- 2006 Sept 30-Oct 1 – Space Generation Congress - Valencia, Spain
- 2006, Aug 3-6 – 9th International Mars Society Convention – Washington, DC (Speaker)
- 2006 – 25th International Space Development Conference (ISDC) – Los Angeles, California (Speaker)
- 2006, July 30-Aug 3 – Siggraph 2006 Conference – Boston, Massachusetts
- 2006, June 6 – Planetary & Terrestrial Mining Science Symposium (PTMSS) – Sudbury, Ontario, Canada (Speaker)
- 2006, Mar 5-8 – ASCE Earth & Space 2006 Conference – League City, Texas (Speaker)
- 2006 – Arisia Science Fiction Convention – Boston, Massachusetts (Speaker)
- 2005 – Space Frontier Foundation Conference (SFC 14) – Los Angeles, California (Speaker)
- 2005, Oct 17-21 – International Astronautical Congress – Fukuoka, Japan
- 2005, Oct 14-16 – Space Generation Congress – Fukuoka, Japan
- 2005, Aug 11-14 – 8th International Mars Society Convention – Boulder, Colorado (Speaker)
- 2005, May 19-22 – 24th International Space Development Conference (ISDC) – Washington, DC (Speaker)
- 2004, Nov 11-14 – SpaceVision2004 Conference – Cambridge, Massachusetts
- 2004, Aug 19-22 – 7th International Mars Society Convention – Chicago, Illinois
- 2004 – MIT Mars Week Conference – Cambridge, Massachusetts
- 2002, Oct 4-6 – MIT Mars Week Conference – Cambridge, Massachusetts
- 2002 – Apr 19-21 – FIRST Robotics Competition National Championship – Orlando, Florida (with Team #204)
- 2001 - FIRST Robotics Competition National Championship – Orlando, Florida (with Team #204)
- 2000, Oct 20-22 – MIT Mars Week Conference – Cambridge, Massachusetts
- 2000, Apr 6-8 – FIRST Robotics Competition National Championship – Orlando, Florida (with Team #204)
- 1999 - FIRST Robotics Competition National Championship – Orlando, Florida (with Team #204)
- 1999, June 5-6 – NASA Jet Propulsion Laboratory Open House – Pasadena, California
- 1998 – FIRST Robotics Competition National Championship – Orlando, Florida (as captain of Team #204)
- 1997 – American Legion New Jersey Boys State
- 1991 – US Space Camp – Huntsville, Alabama