Carlos T. Miralles

President, Alare Technologies, LLC August 2025

Mr. Miralles is Founding President of Alare Technologies (AlareTech), a company that provides end-to-end innovative unmanned aircraft systems (UAS) solutions for military, civil and commercial markets. He graduated from Cal Poly San Luis Obispo in 1981 with a Bachelor's Degree in Aeronautical Engineering and has over 45 years professional experience in the aerospace industry having worked at Northrop Corporation, North American Aircraft, and AeroVironment in addition to consulting as a subject matter expert in the general aviation industry.

His professional career has focused mainly on innovative concept development, rapid prototyping and test of small unmanned aerial systems (SUAS). Specialties include: system concept development, aerodynamic design, analysis and performance estimation, flight test planning, flight operations, and user flight training. He has managed and led teams of more than 20 engineers in basic research and applied system development through validation test and transition to production. He was the key individual in the creation through initial operational capability fielding of Switchblade (named one of the best inventions of 2012 by Times Technology), a significant military doctrine paradigm change. Mr. Miralles is named inventor on 12 US and world patents.

Education

1981 B.S. Aeronautical Engineering, California Polytechnic State University at San Luis Obispo.

1995 - 1996 Anderson School of Management, UCLA, extension courses in business management.

Professional Experience

2012 - Pres. Alare Technologies, LLC – President and Co-founder. In addition to his responsibilities as General Manager, he continues to manage projects, and is technically involved in all aspects of conceptual design, development and proof-of-concept demonstration of several SUAS for military, civil and commercial markets. AlareTech is wholly owned by the original founding members and has experienced continuous profitable growth since inception.

2006 - 2007 Icon Aircraft, Marina Del Rey, CA – Technical Consultant. Supported Icon Aircraft startup conceptual design, aerodynamic analysis, and flight simulation of the A5 light sport amphibious aircraft toward achieving Round A funding.

1997 - 2012 AeroVironment Inc., Simi Valley, CA – Sr. Program Manager, Chief Engineer, Chief Test Pilot, and Chief Training Instructor for Packaged UAS (now TMS). Most notable accomplishments include the proposed Mars Aircraft Micro-Mission 'KittyHawk" to celebrate the 100th anniversary of the Write Brothers first flight, inventor of a light weight mortar-launched SUAS (15,000 g's), and inventor of the Switchblade family of tube launched loitering munitions, and first SUAS to ever have been launched and flown from a submerged submarine. Miralles was the key individual responsible for taking Switchblade from concept to PDR, CDR, Safety Review Board approvals, DVT, ATEC safety confirmation, PVT, IOC training and transition fielding OCONUS for AFSOC and the US Army. Switchblade represents the creation of a new market and significant military doctrine paradigm change. (Also see AeroVironment 1990 -1997 below)

1997 - 2000 Art Center College of Design, Pasadena, CA. Instructed senior level courses in automotive aerodynamics.

1995 Kellogg and Rockefeller Foundations – Sponsored Delegate and Subject Matter Expert. Conducted an in-country technical and business feasibility study on the application of renewable energy technologies for rural enterprise development in Zimbabwe.

1994 - 1998 California Polytechnic University, Pomona, CA. – Technical Advisor and Consultant. Responsible for the initial system sizing and design of the 1-ton solar powered commercial freezer at the Center for Renewable Energy Studies.

1990 - 1997 AeroVironment Inc., Monrovia, CA. Co-Manager AeroSciences Division. Participated in the initial concept development and flight demonstration phases of high-altitude solar aircraft and several small UAS designs. Was responsible for and managed the green-field startup of the AeroVironment product manufacturing division in Monrovia, CA, including business development, product design, technical development, test, and UL certification of AeroVironment's first commercial products, the Universal Solar Pump Controller (USPC-2000 and 5000), Solar Battery Charger (SBC-1000), and Advanced Battery Cycler (ABC-150). Participated in initial renewable energy product installations in remote locations of the US and Brazil. Managed and led automotive technology studies for General Motors in areas of underhood thermal management and aerodynamic drag reduction.

1989 - 1990 North American Aircraft / Rockwell – Sr. Engineer. Contributed in the design of advanced aircraft and other robotic aerial systems, developed design tools and simulations for the study of agility metrics, evaluated effectiveness of helmet mounted displays for pilot situational awareness on the X-31 project.

1981 – 1988 Northrop Aircraft Division – Sr. Engineer. B-2 aerodynamic design and airfoil shaping with RCS constraints, performance prediction and analysis using CFD codes, low speed and transonic wind tunnel test, and aerodynamic loads modeling and analysis. Conducted wind tunnel tests (Mach 0.2 to 1.8), stability and control analysis, 6DOF simulation modeling and real-time pilot-in-the-loop simulations for validation of the aero-propulsion model implementation and initial flying qualities assessment on the YF-23 program. Flew the F-5, F-20, F-18 and YF-23 flight simulators.

1980 AeroVironment Inc. – Summer Intern. Participated in the design and fabrication of the Solar Challenger, Kremer Prize winning solar powered aircraft.

1978 – 1984 Spectra Aircraft and Delta Wing Kites and Gliders – Designer and Test Pilot. Hang glider design, fabrication, development, test and HGMA certification. Notable designs produced include the Aeolus, Mystic-Lite, and Lite-Dream.

1978 – 1979 Naval Air Rework Facility, Alameda, CA – Summer Intern, Jr. Engineer. Wrote software to catalogue and analyze P-3 and S-3 aircraft maintenance and re-work historical data.

1976 - 1979 AeroVironment Inc. – Part Time Unpaid Intern. Participated in fabrication and flight test of Kremer Prize winning Gossamer Condor and Gossamer Albatross human powered aircraft.

Ratings and Other Flight Experience

Since 1970	Model aircraft pilot and designer.
1973 - 1993	Advanced rated hang glider pilot, designer and test pilot.
Since 1991	Active private pilot (FAA Part 61) and competitive glider pilot.
Since 2003	Groups 1 and 2 SUAS operator. Types flown include; Wasp, Raven, X-Glider II, GLUAV-EP, OAV II, Switchblade 300, SOTHOC, ArrowLite, Ronin, Wahoo and BLADE in addition to several commercial systems. Operated and launched SUAS from; surface conventional and tube launched, moving vehicles, other UAS, high altitude balloons, fixed and rotary wing manned aircraft. Performed several flight operations with live munitions.
Since 2017	Remote pilot certificated (FAA Part 107).

Test Facility Experience

Flight Test	Developmental flight test, training and demonstrations on government ranges including: Edwards AFB / Camp Roberts / Eglin AFB / AUTEC / PMRF / Avon Park / Dugway Proving Grounds / Yuma Proving Grounds / Aberdeen Proving Grounds / Twenty-Nine Palms / Tehachapi Test Range / Tonopah Test Range / White Sands Missile Range / 9-Mile Test Center. Also: AFSOC sponsored COA and Part 107 test sites located in Southern California within 2 hours of the AlareTech facility.
Wind Tunnels	GALCIT 10ft low speed tunnel at CalTech, Pasadena, CA / Northrop 7X10 low speed tunnel, Hawthorne, CA / Calspan 8X10 pressurized transonic tunnel, Buffalo, NY / AEDC 16ft pressurized supersonic tunnel, Tullahoma, TN / NASA Langley 7X10 pressurized transonic and 2X2 transonic blow-down tunnels / AeroVironment 2ft low speed tunnel / General Motors Environmental Test Facility, Flint, MI / University of Illinois low turbulence wind tunnel.

Patents

US 6,231,003 B1 (1990)	Apparatus for defending a vehicle against an approaching threat.
US D444,512 S (2001)	Foldable aircraft
US D459,286 S (2002)	Ducted fan aircraft
US D461,159 S (2002)	Foldable wing aircraft
US 2002/0066825 A1	Payload delivery system
US 2003/0089821 A1	Payload delivery system
US 2010/0198514 A1	Multimode unmanned aerial vehicle
US 8,505,430 B2, WO 2011/066030 A2	Systems and devices for remotely operated UAV report suppressing launcher with portable RF transparent launch tube
US 2012/0267473, WO 2011/066031 A2	Elevon control system
US 2014/0172200 A1	Unmanned aerial vehicle angular reorientation
US 2015/050175	Portable electrically powered debris blower apparatus
US 10,974,809 B2	Air-launched unmanned aerial vehicle

Publications, Interviews and Seminars

1989 AIAA Paper 89-3311-CP, An Air Combat Simulation Model Suitable for the Evaluation of Agility and Enhanced Fighter Maneuverability.
1997 K12, Online Environmental Class, WorldClass '97 – Online Q&A with students worldwide on the topics of renewable energy and electric vehicles.
2000 Robo Sapiens: Evolution of a New Species, Peter Menzel, Faith D'Aluisio (Page 158)
2000 Scientific American Frontiers – Mars Flyer, from Kitty Hawk to Kitty Hawk, http://www.pbs.org/saf/1109/features/mars.htm
2000 Air & Space Magazine – MarsAir, How to build the first extraterrestrial airplane, http://www.airspacemag.com/space-exploration/mars.html?c=y&page=3 http://quest.nasa.gov/aero/planetary/MarsAir.html
2001 Scientific American Frontiers – Science Hotline, http://www.pbs.org/saf/1109/hotline/hmirales.htm
2001 Scientific American Frontiers – Eyes in the Sky, http://www.pbs.org/saf/1109/segments/1109-3.htm
2001 Seminar – Flight on Mars, University of California at Irvine, CA
2001 Seminar – Flight on Mars, California Institute of Technology, Pasadena, CA
2001 Seminar – Flight on Mars, Range Commander's Council, Point Mugu NAS, CA