

MATTHEW B. TRAVIS

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CAREER SUMMARY

I have over two decades of experience in tech and the aerospace industry as a software engineer, aerospace engineer and entrepreneur. My diverse experience includes software architecture, propulsion engineering, launch vehicle design, and startup business operations. I am currently leading a highly driven engineering-focused team at Aphelion Aerospace to achieve the goal of bringing to market innovative new propulsion technologies supporting the satellite launch service and spacecraft systems industries.

I studied Computer Science and Aerospace Engineering at the University of Illinois in Urbana-Champaign. I started my career as a software engineer employed by the National Center for Supercomputing Applications and College of Agricultural and Consumer Economics. I then transitioned to the private sector, working at CDW and The Systems House in Chicago. In 2000, I relocated to Florida and continued my career as a contract engineer at Kennedy Space Center, where I worked on projects for NASA, Boeing, USAF, and other organizations. In 2016, I joined the founding team and incorporated Aphelion Orbitals, now Aphelion Aerospace, where I serve as Chief Technology Officer.

AREAS OF EXPERTISE

Program Management
Engineering Management
Startup Business Leadership
Executive Leadership

Software Engineering
Data Architecture & Management
Technical Leadership
Strategic Planning

Propulsion & Thermochemistry
Systems Engineering
Media & Public Relations
Non-Profit Management

WORK EXPERIENCE

Aphelion Aerospace – Las Vegas, NV
Chief Technology Officer (CTO) – Founder

3/2019 – Present

I am a Co-Founder and CTO of Aphelion Aerospace, a spacecraft propulsion systems and launch services company. I built and currently lead the engineering team performing critical R&D to commercialize our proprietary environmentally-friendly rocket propulsion technology, spacecraft propulsion systems, and our partially-reusable small satellite launch service. I am also a Director and member of the Executive team guiding the company's vision, strategy, and plans.

In my role, I am responsible for leading the development of new technologies and implementing them in products and services. I coordinate the engineering development, the team performing the work, and act as the interface between the engineering workforce and executive management.

Our business involves both hardware and software and a high level of integration between systems so a primary role for me is leading all software development projects. This includes software for safety, control systems, ground control stations, simulation, and internet applications. In that capacity, I am the software engineering technical lead and senior software architect for the company. Finally, I lead the planning and scheduling for R&D, product development, and the market strategy in cooperation with the Executive team.

In 2023 I was the Principal Investigator for a NASA Phase I SBIR (Small Business Innovation Research) contract that we were awarded to develop new AI-enabled technologies for autonomous ground process and space launch operations.

I filed two patents relating to our inventions in 2023.

Some activities I have participated in or have sponsored on behalf of Aphelion include:

- NewSpace Ignitor Accelerator, 2024

- Starburst Aerospace Accelerator, 2023
- Creative Destruction Lab, 2022
- Space Force “Assured Access To Space” Industry Days panelist, 2022
- Space Symposium Exhibitor, 2021, 2022
- Space Entrepreneur Summit, 2021
- Rockies Venture Club HyperAccelerator, 2021
- U.S. Air Force AFWERX EngageSpace, 2020
- NewSpace Business Plan Competition, 2019

Tools & Skills: C++, Python, PHP, Java, Matlab, Fortran, Visual Studio, ANSYS, Autodesk Inventor, Siemens NX, Siemens FEMAP, Siemens Star-CCM+, Linux, Rocket Propulsion Analysis, STK, OpenRocket, and NASTRAN.

Aerospace Research & Engineering Systems Institute – Las Vegas, NV

3/2003 – Present

Chief Executive Officer (CEO) – Founder

The Aerospace Research & Engineering Systems Institute, Inc. (ARES Institute) is a 501 (c)(3) not-for-profit corporation operating in the state of Nevada. I have led the organization since I founded it in 2003. ARES Institute develops innovative research programs involving academia, industry, and government organizations in order to benefit high-tech industries and the workforce of the future. I currently manage the business affairs, industry collaborations and technology development programs of the institute.

In addition to organizational leadership, my responsibilities within the Institute include leading all technical work, including hardware and software projects. The research involves a lot of data-driven simulation, analysis, and network applications, the development of which I also lead, including leading software architecture and development projects. I take a hands-on approach and am actively involved in software architecture and development with the team.

The purpose of the organization is to conduct leading-edge research into advanced technologies enabling space exploration, sustainable energy, climate change mitigation and other future-looking focus areas. The flagship project at the institute is SphereLab, a proposed a proposed plasma and fusion applied research laboratory with the goal of developing advanced applications of nuclear fusion and plasma technologies and mature them to the stage they may be commercialized across many industries, including power, spaceflight, healthcare, and pollution remediation.

With a focus on stimulating STEM education, ARES Institute develops and manages projects involving students at all levels, helping to inspire the younger generation to pursue careers in science, math, and engineering with a perspective on how they will impact society and the future of humanity.

Tools & Skills: C++, Python, PHP, Java, Matlab, Fortran, Visual Studio, ANSYS, Autodesk Inventor, OpenFOAM, Arduino, Raspberry Pi, Linux, MySQL, Rocket Propulsion Analysis, STK, OpenRocket, and NASTRAN.

Aphelion Orbitals – Union City, NJ

6/2016 – 11/2018

Chief Operating Officer – Founder

As one of 4 co-founders of the company, I recruited and led our engineering team in developing a nanosatellite launch system, rocket engines, and cubesat components. I had overall responsibility for the engineering design of our propulsion system and launch vehicle hardware and software. We designed and built a fully-functional mobile test stand and data/control system. We also completed development and initial sales of a custom line of cubesat hardware, electronic and software components.

A key role for me was as the company's software development lead. This includes software for safety, control systems, simulation, and internet applications. Work also included development of intensely data-driven applications that we executed on HPC, primarily in support of space vehicle flight simulation and autonomous systems for flight safety and launch. In this capacity, I was the software engineering technical lead and senior software architect.

In addition to engineering, I managed the day-to-day operations of the company and assisted the Board of Directors in management of company strategy. In my capacity, I was the primary point of contact for vendors, media and government agencies.

In support of the engineering work, I led the team at Aphelion Orbitals competing in the DARPA Launch Challenge in 2018 to demonstrate rapid-response automated launch capabilities. We were successful in completing the process to qualify for the competition. I also led the research and development effort to design, build and test our unique environmentally-friendly propulsion system.

I presented at a number of industry events and speaking engagements, such as with the New York Space Alliance (NYSA) and NewSpace NYC.

Aphelion Orbitals successfully raised a \$500,000 Seed Series funding round in 2017 which, combined with \$300,000 of internal funding, enabled us to complete R&D and hotfire testing of our innovative "green" propulsion system for our launch vehicle design. We completed R&D in less than a year and under budget.

In 2019, Aphelion Orbitals was re-organized as Aphelion Aerospace and relocated to Colorado to continue research & development activities.

Tools & Skills: C++, Python, PHP, Java, Matlab, Fortran, Visual Studio, Linux, MySQL, ANSYS, Autodesk Inventor, Solidworks, Rocket Propulsion Analysis, STK, OpenRocket, and NASTRAN.

Eckler Industries – Titusville, FL

5/2013 – 8/2017

Senior Software Engineer – Data Systems Management

At Eckler's, I helped lead a team of engineers with development, integration and support of the company's marketing and sales platforms, ecommerce systems, and Microsoft Dynamics AX infrastructure buildout. During this time, I had a lead role in projects to upgrade the company's marketing, sales, and distribution systems over a multi-year effort. The focus of my work was database architecture and programming middleware that enabled integration of the inventory management and order fulfillment systems with backend databases and sales and marketing portals. This included third-party API integrations with Amazon, Ebay, and other service providers as well as data analytics systems.

Tools & Skills: C++, Python, PHP, Java, HTML, Javascript, Magento, Linux, Visual Studio, MySQL, MS Dynamics.

NASA – Kennedy Space Center, FL

7/2003 – 9/2011

Contract Engineer – Ground Processing and Launch Operations

I provided software engineering services for numerous projects at Kennedy Space Center through the end of the space shuttle program. I subcontracted to United Space Alliance, Boeing, NASA, and other companies and organizations at the space center. I performed work supporting the space shuttle, ISS, as well as commercial and planetary exploration space missions.

I have experience in both human spaceflight operations and uncrewed missions, including:

- Space Shuttle Program
- International Space Station Program
- Mars Curiosity
- NBSP
- Juno
- New Horizons
- MAVEN
- DSCOVR
- Numerous commercial satellite launches

NASA – Kennedy Space Center, FL

7/2001 – 2/2002

Contract Engineer – Checkout & Launch Control System

Working for a subcontractor to the space shuttle program, I developed software systems for the Checkout & Launch Control System program. A component of NASA's efforts at the time to extend the life of the space shuttle through 2020, CLCS was designed to completely replace the legacy Launch Processing System as well as ground pre-launch processing systems. The goal was to integrate the entire processing, prelaunch and launch operations into a single system with a high degree of automation.

One aspect of the CLCS program was modernizing processing systems that were developed in the 1970's and operated on outdated hardware using a custom language called the Ground Operations Aerospace Language. As a subcontractor, I worked in this area with a focus on modernizing the data and information flow architectures.

CLCS was cancelled in 2002, along with portions of the International Space Station, due to budget cuts. However, many of the products our team created are currently being utilized in support of NASA's Space Launch System and the Artemis program.

Johnson Controls – Cape Canaveral, FL

7/2000 – 11/2000

Software Engineer – Process Control

Worked as a subcontractor to support the Joint Base Operations Support Contract. As the prime operations contract, JBOSC managed and coordinated operations at Cape Canaveral Air Force Station on behalf of the U.S. Air Force. It covered areas ranging from security to civilian tenants and launch operators.

I worked on the data management aspect of the contract, including creating and managing data stores and software interfaces to implement required operations processes.

The Systems House – Des Plaines, IL

2/1999 – 7/2000

Software Engineer

I created Java and .NET based sales, inventory tracking and portal software for The Systems House. I also worked on the Y2K transition effort in 1999. The Systems House was a wholly-owned subsidiary of U.S. Office Products that managed all software and data management for the company. USOP was acquired in late 2000 / early 2001 and The Systems House was spun off on its own. There is currently a company with the same name. I did not work at that company.

University of Illinois – Urbana-Champaign, IL

6/1997 – 11/1998

Staff Programmer – College of Agricultural & Consumer Economics

I architected and developed web based educational applications for the College of Agricultural, Consumer and Environmental Sciences. Served in a lead role in the development of JavaBeans components for online applications. Engineered application development using Perl, SQL and Java. Created Java-based user interfaces for the applications using AWT and Swing. Developed

applications for staff to manage curricula, testing and student records. Responsible for design and implementation of MySQL, MS Access and MS SQL Server databases.

University of Illinois – Urbana-Champaign, IL

8/1995 – 1/1996

Software Engineer – National Center for Supercomputing Applications

I developed applications in C++ and Java for real-time object sharing and communications. Additionally, I created shared libraries in C/C++ that were callable from Java, in support of the Habanero object-sharing and collaboration project. I also performed debugging and Q.A for the NCSA Mosaic web browser development team.

SKILLS

Project Management • Program Management • Engineering • Systems Engineering • Engineering Management • System Architecture • Software Development • Vendor Management • Integration • Leadership • Spacecraft • Early-stage Startups • Product Management • Visual Studio • Software Development Life Cycle (SDLC) • Management • Start-ups • MySQL • User Interface Design • C (Programming Language) • Object-Oriented Programming • Adobe Illustrator • Software as a Service (SaaS) • Agile Methodologies • HTML • Cascading Style Sheets (CSS) • XHTML • C++ • Java Web Services • Core Java • JavaScript • Java • AJAX • Python • MATLAB • Aerospace • Space Systems • Propulsion • Proposal Writing • Strategy • Technical Writing • Marketing • Science • Strategic Planning • SQL • Matlab • Linux

PROFESSIONAL ASSOCIATIONS

American Institute of Aeronautics & Astronautics (AIAA) , American Nuclear Society (ANS), National Space Society (NSS), Space Frontier Foundation (SFF), National Space Club – Florida, Electric Propulsion Society (ERPS), Reaction Research Society (RRS), Lifeboat Foundation

EDUCATION

Computer Science, Aeronautical/Astronautical Engineering

University of Illinois, Urbana-Champaign, IL 8/1988 - 6/1997