



McKinney Associates

- **Systems Analysis & Optimization**
- **Aerospace & Defense**
- **Environmental and Public Works Engineering**
- **Environmental & Regulatory Affairs**
- **Public Policy**

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OVERVIEW

- **McKinney Associates** delivers solutions to complex systems analysis and optimization problems, with emphases on aerospace & defense, environmental and public works engineering, environmental & regulatory affairs, manufacturing processes, and public policy. System analysis and optimization can improve system performance, costs, resource allocation and process engineering, which can lead to increasing revenues, profits and market share.
- **McKinney Associates** employs state-of-the-art tools for aerospace & defense system & mission modeling and optimization, including **OTIS, POST, GVSIM/GVTRAJ, Model Center, APAS, DATCOM, PANAIR, SHABP, RJPA and GECAT**. **McKinney Associates** has a wide range of experience in analysis of aircraft, missiles, space launch vehicles, space platforms, reentry systems, tactical and strategic systems that is unique in the aerospace and defense community, with an equally unique data archive of systems analyses.
- **McKinney Associates** uses state-of-the-art tools for non-aerospace & defense system modeling and optimization, including a variety of optimization software packages, **Model Center** and the statistical analysis package **JMP**. **McKinney Associates** specializes in developing simple mathematical models that precisely emulate the behavior of very complex, nonlinear systems, allowing customers to obtain exact answers to "what-if" scenarios and trade studies.
- **McKinney Associates** has 25 years of experience engaging with federal government executive branch agencies including the **Department of Defense** and **NASA**, and also with the **United States Congress Members, staff and committees**, enabling **McKinney Associates** to provide timely programmatic and policy assessments and effective outreach and advocacy.

McKINNEY ASSOCIATES WORK HISTORY (AEROSPACE)

- **Oct 2009 –** System analysis and strategic planning support to Universal Technologies
- **Jul 2009 –** System analysis support and training for Raytheon Space Development & Tech Lab
- **Jan 2009 –** System analysis for Boeing Phantom Works on various high-speed vehicle concepts
- **Jan 2009 –** Charter member and Executive Director of National High-Speed Industry Team to advocate research and development of high-speed capabilities to DoD, the Intelligence Community, the US Congress and the federal Executive Branch
- **Jan 2009 –** System analysis for Boeing Advanced Weapons & Missiles Systems (AWMS) on various high-speed weapon concepts
- **Nov 2008 –** System analysis for IN Space LLC / Purdue University on SBIR program
- **Jul 2008 – Aug 2009** System analysis for Pratt & Whitney-Rocketdyne on advanced vehicle concepts
- **Jun 2008 – Nov 2008** System analysis for Boeing Advanced Weapons & Missiles Systems (AWMS) Triple Target Terminator (T3) program
- **Jun 2008 – Nov 2008** System analysis for Boeing AWMS Medium Range Time Critical Strike program
- **Mar 2008 – May 2008** System analysis for JHU Applied Physics Lab NASA ALHAT program
- **Feb 2008 – Dec 2008** Hypersonic Test Vehicle concept performance analyses for Boeing Phantom Works
- **Sep 2007 – Dec 2007** System analysis of Aerojet proprietary hypersonic engine concept
- **Aug 2007 – Dec 2007** System analysis for JHU Applied Physics Lab for missile / reentry vehicle concepts
- **Nov 2006 – Feb 2007** Lead system performance / launch vehicle director for American Spacecraft Corporation, San Rafael, CA

- **Aug 2006 – Feb 2007** System analysis of Air Force Research Lab Flexible Aerospace Transportation (FAST) system, AirLaunch QuickReach Launch Vehicle and Lockheed Martin HTV-2 reentry vehicle family
- **Jan 2006 – Present** System analysis for Boeing Phantom Works global range studies
- **Apr 2005 – Dec 2005** System analysis for SAIC/Boeing NASA X-43C hypersonic demonstrator program
- **Feb 2004 – Aug 2004** System analyses of Common Aero Vehicle (CAV and Hypersonic Cruise Vehicle (HCV) concepts for Boeing Phantom Works/DARPA FALCON program
- **Jan 2004 – Sep 2005** Lead for system modeling & system performance for SAIC on NASA Exploration Systems Mission Directorate support
- **May 2003 – Jun 2003** System analysis for SAIC on NASA-DoD Space Partnership Council support
- **Apr 2003 – Present** System analysis for Boeing Phantom Works on Common Aero Vehicle (CAV) studies
- **Sep 2002 – Dec 2004** System analysis for SAIC on NASA Integrated Space Transportation Plan (ISTP) and NGLT (Next Generation Launch Technology) programs
- **Jul 2001 – Sep 2002** System analyses of Space Operations Vehicle systems studies for US Air Force Research Lab, Propulsion Directorate
- **Jul 2001** OTIS training class for US Air Force Research Lab personnel
- **Feb 2001 – Jul 2002** System analyses of military launch systems for US Air Force Research Lab
- **Feb 2001 – Sep 2002** Lead for system modeling & system performance for SAIC on NASA Integrated Technology Assessment Center (ITAC) contract
- **Oct 2000 – Mar 2003** System analyses of laser propulsion launch systems for US Air Force Research Lab
- **Oct 2000 – Present** Lead for system modeling & system performance for ANSER/Princeton team on National Science Foundation grants to investigate MHD for hypersonic vehicle/systems applications
- **Sep 2000 – Dec 2005** System analyses for Boeing Phantom Works on NASA and DoD vehicle studies related to X-43 hypersonic demonstrator program
- **Sep 2000 – Jul 2002** System analyses of Common Aero Vehicle (CAV) concepts for Boeing Phantom Works on Advanced Technology Vehicle System Demonstration study
- **Jun 2000** OTIS training class for US Air Force Research Lab personnel
- **Feb 2000 – May 2000** System analyses for Space Access LLC
- **Feb 2000 – Mar 2000** Developed tactical mission simulations of advanced air-to-air tactical missiles for USAF Phillips Lab, Propulsion Directorate
- **Jan 2000 – Sep 2000** System analyses of Common Aero Vehicle (CAV) concepts for Boeing Phantom Works on Advanced Reentry Vehicle Design Concepts study
- **Apr 1999 – Sep 1999** System analyses of Common Aero Vehicle (CAV) concepts for Boeing Phantom Works
- **Sep 1999 – Nov 1999** Conducted upper stage orbit mission and aeromanuever analyses for Space Access LLC on Space Transportation Architecture Study
- **Apr 1999 – Jan 2001** System analyses of ABLV (Airbreathing Launch Vehicle) concepts for NASA Marshall Space Flight Center Advanced Space Transportation Program
- **Mar 1999 – Aug 2000** Developed 6-DOF trajectory simulation in support of Great Lakes Rocket Society application to FAA for approval of launch system
- **Jan 1999 – Nov 1999** System analysis for ANSER/Princeton team on National Science Foundation grant to investigate MHD for hypersonic vehicle/systems applications
- **Dec 1998 – Nov 1999** Developed proprietary systems performance software for Lockheed Skunk Works
- **Oct 1998 – Jan 1999** System analyses on NASA STAS study for Space Access LLC
- **Jun 1998 – Jul 1998** Supported Lockheed Skunk Works assessment of launch system concept
- **Jun 1998 – Mar 1999** Testified to and assisted U.S. House Committees investigating possible transfer of aerospace technology to China
- **Apr 1998 – Aug 1998** Supported Boeing Phantom Works on CAV Phase 1 study
- **Jan 1998 – Jul 1998** Independent assessment of Space Access LLC launch system for ANSER/USAF
- **Oct 1997 – Jan 1998** System analyses of Military Space Plane concepts for Lockheed ADP
- **Feb 1997 – Apr 1997** System analyses of hypersonic missile concepts for Lockheed ADP
- **Jan 1996 – Dec 1997** System performance for ANSER/Lockheed team NASA's HRST study
- **May 1995 – Oct 1995** Developed simulations of advanced tactical missiles for USAF Phillips Lab
- **Apr 1994 – Jun 1994** Developed simulations of advanced tactical anti-missile interceptors for Ballistic Missile Defense Organization

McKINNEY ASSOCIATES WORK HISTORY (NON-AEROSPACE)

- **Mar 2006 – Mar 2007** Developed model of Howard Bend Levee District flood and storm water system using Microsoft Excel that allows optimization of any system parameter(s) - model produced immediate savings of over \$300K (a 15-to-1 return on McKinney Associates contract cost) due to better modeling of levee culverts and also validated engineering decisions on culverts design and placement
- **Oct 1998 – Jan 1999** Performed system optimization study for Chesterfield, Missouri flood plain water control system design, resulting in planned land acquisition cost savings of nearly 90% (over \$35 M), several orders of magnitude above McKinney Associates cost
- **Jun 1993 –** Supported various clients in government and private sectors on public policy, political and environmental & regulatory issues

EDUCATION

- Masters of Science in Aerospace System Engineering, Purdue University, 1982
- Bachelor of Science in Aerospace Systems Engineering, Purdue University, 1981

HIGHLIGHTS

- Eleven years with McDonnell Douglas Aerospace as senior technical analyst prior to founding McKinney Associates consultancy. Performed system concept synthesis, design, optimization, performance assessment and mission analyses on space and strategic systems.
- Significant work on sensitive/classified projects, including Soviet Capabilities & Intentions (SC&I) in support of National Intelligence Estimates (NIEs)
- Involved on every major US space transportation development program since 1982
- Nationally-published commentator on politics, economics, public policy, science and technology - Publications appeared in include the *Orange County Register*, *Los Angeles Times*, *Detroit News*, *Houston Post*, *St. Louis Post-Dispatch*, *National Review*, *California Political Review*.

PROFESSIONAL MEMBERSHIPS

- Executive Director and Founding Member, US National Hypersonics Industry Team, 2009 -
- Member, American Institute of Aeronautics and Astronautics (AIAA) Corporate Member Committee, 2006-
- Member, AIAA Public Policy Committee, 2004-
- Member, AIAA HyTASP Committee, 1996-
- Member, AIAA Space Transportation Technical Committee, 1996-
- Member, AIAA Society and Aerospace Technology Technical Committee, 1993-1996
- Founding member, AIAA Space Transportation Technical Committee, 1986-1993
- Associate Fellow, AIAA
- Life Member, Tau Beta Pi

OTHER

- Received NASA Aerospace Technology Enterprise' "Turning Goals Into Reality" Award in July 2004 jointly with SAIC for the NASA Next Generation Launch Technology (NGLT) System Analysis Project
- Received McDonnell Douglas Golden Eagle Award in May 1993 for outstanding effort in supporting the Neutral Particle Beam Space Experiment, McDonnell Douglas' highest performance award for individuals and/or groups

MCDONNELL DOUGLAS EXPERIENCE

- **Nov 1991 - May 1993** Developed complex simulations of air-launched space vehicle system concepts in support of advanced launch systems studies using OTIS
- **Jun 1990 - May 1993** McDonnell Douglas lead for mission operations planning and system performance on the Strategic Defense Initiative Organization/ Grumman/McDonnell Douglas Neutral Particle Beam Space Experiment (NPBSE) program and associated NPBSE-derivative systems; helped synthesize concept for joint US-Russian lunar resource mapping mission using neutral particle beams
- **Feb 1990 - Jun 1990** Lead performance analyst for McDonnell Douglas on the Strategic Defense Initiative's Single-Stage-To-Orbit Phase I proposal; helped develop McDonnell Douglas' unique Vertical Takeoff/Vertical Landing configuration, based on earlier McDonnell Douglas' concepts (e.g. Tossback Booster); MDC won down-select for Phase II, to build the Delta Clipper-X prototype
- **Jan 1989 - Mar 1990** Developed process optimization software for McDonnell Douglas on the USAF/NASA Advanced Launch System Program's Mission Analysis Simplification (MAS) Task; MAS task utilized process optimization and critical path management (CPM) to characterize, model, and optimize space launch mission analysis for the Delta, Titan, and Shuttle systems
- **Oct 1988 - Apr 1990** One of two McDonnell Douglas Lead engineers for mission analysis, systems performance, flight mechanics, and guidance on the NASA/McDonnell Douglas Aeroassist Flight Experiment (AFE) program, a proof-of-concept flight experiment of using atmospheric re-entry drag-braking to establish Earth and/or Mars orbit
- **Apr 1988 - Dec 1990** Lead engineer for mission analysis, systems performance and flight mechanics on USAF/McDonnell Douglas Smart Maneuvering Re-Entry Vehicle (Smart MaRV) and Missile System to Attack Relocatable Targets (MSTART) studies, designed to defeat deployed and postulated Soviet ballistic missile defense (BMD) strategic launch systems
- **Apr 1987 - Dec 1987** Provided system engineering support on USAF/NASA Advanced Launch System (ALS) Phase I proposal and study; McDonnell Douglas had highest-ranked proposal
- **Aug 1985 - Apr 1988** Developed vehicle simulation and sizing software, conducted systems performance and mission analysis studies on the USAF/Advanced Research Project Agency's National Aerospace Plane (NASP) program and on NASP-Derived Vehicles (NDVs) studies. Work was critical in developing McDonnell Douglas' winning NASP configuration baselined by subsequent National Team
- **Sep 1984 - Apr 1987** Provided system analysis support to Martin Marietta/McDonnell Douglas team for USAF/NASA/SDIO Space Transportation Architecture Study (STAS), precursor to ALS program
- **Jun 1984 - Jun 1987** Led systems design studies of McDonnell Douglas proprietary launch vehicle concepts such as Tossback Booster as an Industry Research & Development (IRAD) project Principal Investigator (PI)
- **Jun 1984 - Dec 1985** Developed low-thrust orbit transfer and intercept/rendezvous software as an IRAD PI; the software package was extensively used by McDonnell Douglas for system design in early Strategic Defense Initiative studies
- **Aug 1983 - Aug 1985** Provided mission analysis and system performance to McDonnell Aircraft Company on the USAF Transatmospheric Vehicle (TAV) and Copper Canyon programs, precursors to the NASP program
- **Jan 1983 - Oct 1988** Provided overall system analysis and system performance for various Strategic Defense Initiative missile-defense system concepts
- **Oct 1982 - Aug 1984** Developed tether-control algorithms and system performance assessment software for tether-assisted orbit transfer vehicles under NASA-MSFC contract
- **Oct 1982 - Sep 1984** Performed vehicle dynamics & mission analyses for classified space shuttle payloads
- **Jun 1982 - Oct 1983** Developed branched-trajectory optimization software as an IRAD project PI.