

P. Roger Williamson, Ph. D.

Senior Consultant
BlueShift Consulting

Summary

Roger Williamson is a Senior Consultant with BlueShift Consulting and President of Austin Sensors, LLC. He has a wide variety of experience in management and technology fields. For more than 40 years he has been creating, implementing, and managing technology projects. As a physicist, he has the background and knowledge to evaluate the technology related aspects of a business. His business background includes NASA projects, startups, small businesses, and consulting for industry and government agencies. He is known for his ability to analyze technology and business problems, identify risks, and explain these uncertainties so that his clients can make better informed decisions.

Professional Experience

◆ Consulting

- ◇ Designed and recommended project management plan, documentation plan, and risk management plan for startup company using alliances to provide online design and delivery of residential and commercial buildings.
- ◇ Instrument prototype for inventive technique to monitor cryogenic temperature inside a small needle used for cryoablation surgery
- ◇ Membership modeling, database management, data analysis, and forecasting for large, national aircraft pilot organization.
- ◇ Aviation accident database management, report generation, and data analysis for multiple clients. Studies included helicopter accident rates, airport perimeter ground involvement statistics, and aviation accident frequency and cause reports
- ◇ Twin engine injector failure risk management study of near-miss cases to prevent fatal accident
- ◇ Aircraft based remote sensing video system design, hardware, and operations
- ◇ Red Team proposal and program management for a Space Shuttle based laser ranging instrument
- ◇ Water flow sensor technology study for larger aerospace company

◆ NASA Program Management

- ◇ Program Scientist at NASA HQ
- ◇ Major responsibilities for sounding rocket program and proposal review in Space Plasma Physics Office
- ◇ Introduced office automation technology to Office of Space Science at NASA Headquarters including use of email, database management, contact records management, and database report generation for managing proposal review process

◆ Phoenix Mars Lander

- ◇ Chair of design review committees for cameras and analyzers
- ◇ Manage panel discussion and critique

Resume

- ◇ Identify major risks, critique risk management, and recommend risk mitigation
- ◇ Write report and manage submission to development team
- ◇ Phoenix photographed, sampled, analyzed, and identified water ice on Mars for the first time
- ◆ **Gravitational Reference Sensor (ST-7/GRS)**
 - ◇ Chair, Standing Review Board
 - ◇ Technology Consultant
 - ◇ Developed technique and electronics for 6 axis sensing of ultrasensitive accelerometer
- ◆ **Low Temperature Microgravity Physics Facility (LTMPF)**
 - ◇ Technology Consultant
 - ◇ Electronics and Software Subsystem
 - ◇ System design including electronics and software for resistive and SQUID based controllers
- ◆ **GLAST Advanced Technology Program**
 - ◇ Gamma-ray Large Area Space Telescope
 - ◇ \$400M joint NASA/DOE/International collaboration project
 - ◇ Data Acquisition Subsystem Manager
 - ◇ Responsible for data system design
 - ◇ Managed group at Stanford and team member contributions
 - ◇ Completed beam test of prototype
 - ◇ Proposal was selected by NASA.
 - ◇ Satellite renamed Fermi Gamma-Ray Space Telescope after launch.
- ◆ **Station Processor and Experiment Controller (SPEC)**
 - ◇ Designed and developed prototype data acquisition system for Space Station based cryogenic experiments.
 - ◇ SPEC provides greatly reduced resources (mass, power, cost) with enhanced performance and low EMI.
 - ◇ Supervised one engineer and 2 technicians.
 - ◇ Designs and concepts handed off to industry for flight implementation.
- ◆ **Confined Helium Experiment (CHeX)**
 - ◇ Managed electronics and computer system group for Space Shuttle based cryogenic experiment
 - ◇ Designed new computer system and software to significantly increase data acquisition and control capabilities using R3000 CPU, VME chassis and 'C' application code using VxWorks RTOS
 - ◇ Modified existing electronics to increase performance including precision, pulsed heater circuit
- ◆ **Lambda Point Experiment (LPE)**
 - ◇ Performed electronics design review and consulting during development phase mission support, and data analysis.
 - ◇ Mission operations support and post-flight data analysis.
- ◆ **Shuttle Electrodynamic Tether System (SETS)**
 - ◇ Designed and managed the experiment beginning with the initial concept
 - ◇ Participated in NASA committees and promoted the mission concept leading to a NASA Announcement of Opportunity
 - ◇ Total US and Italy mission costs about \$500M.
 - ◇ SETS selected for development and flow on 2 Space Shuttle missions
- ◆ **Ultra Low Power CMOS**

Resume

- ◇ Wrote proposal and developed concept with another member of the laboratory
- ◇ Obtained 3 year NASA grant to develop technology
- ◇ Development led to discovery of techniques for back biasing and high speed, sub-threshold switching with drop in power requirement greater than factor of 10
- ◇ Technology taken over by Sun Microsystems for development
- ◆ **Center for Aeronautics and Space Information Systems (CASIS)**
 - ◇ Promoted and developed NASA block grant to Stanford to support multiple research groups in area of information systems
 - ◇ Technologies supported included: networking, solid-geometry modeling, video simulations, emulation based studies, and stereo image compression algorithms
- ◆ **Tethered Payload Experiment**
 - ◇ Pioneered the tether technique for sounding rockets
 - ◇ Series of sounding rocket experiments to develop electrodynamic tether
 - ◇ Joint project with Japanese Institute for Space and Astronautical Science
- ◆ **Space Shuttle Based Electron Beam Experiments**
 - ◇ STS-3: Vehicle Charging And Potential (VCAP) Co-Investigator, Designed experiment and instruments, wrote proposal, developed instrument, performed flight operations
 - ◇ Spacelab 1: Space Experiments with Plasma Accelerators (SEPAC) Payload Operations Control Center Co-Manager
 - ◇ Spacelab 2: VCAP Reflight Co-Investigator. Designed and conducted flight operations
- ◆ **Long Duration Balloon Flights**
 - ◇ Designed experiment, wrote proposal, managed development and flight operations
 - ◇ 3 record setting long duration balloon flights from New Zealand
 - ◇ Developed modified launch technique to decrease balloon failure probability
 - ◇ Duration/altitude record of 27.2 km for 121 days still stands
 - ◇ Hemispherical measurements of ionization rate and conductivity of the air
 - ◇ Satellite readout of data

Committee Assignments

- ◆ Member, Tethered Satellite System Facility Requirements Definition Team, NASA
- ◆ Member, Proposal evaluation panel, Halley Intercept Mission, NASA
- ◆ Member, Proposal evaluation panel, Origins of Plasmas in the Earth's Neighborhood, NASA,
- ◆ Member, Management Operations Working Group, Space Plasma Physics Office, NASA Headquarters
- ◆ Member, Spacelab Mission Implementation Cost Assessment (SMICA) Experiments Development Working Group, NASA
- ◆ Member, Spacelab End to End Data Systems Working Group, NASA
- ◆ Member, Core Equipment Definition Team, Tethered Satellite System, NASA
- ◆ Member, Space Station Plasma Interactions and Effects Working Group, NASA
- ◆ Member, Review panel for the NASA IN-STEP program proposals, Announcement of Opportunity number OAST 1-89
- ◆ Member, TIMED AO Proposal Review panel, NASA

Resume

- ◆ Member, Small Satellites and Infrastructure Committee, Joint Japan/U.S. Committee on Cooperation in Space
- ◆ Member, GP-B Risk Assessment Review Board
- ◆ Member, ST-7/Gravitational Reference Sensor, Peer Review Board
- ◆ Chair, ST-7/Gravitational Reference Sensor, Critical Design Review Peer Review Board
- ◆ Chair, Thermal Evolved Gas Analyzer/Phoenix Mars Polar Lander, Preliminary Design Review Board
- ◆ Chair, Stereo Surface Imager/Phoenix Mars Polar Lander, Preliminary Design Review Board
- ◆ Member, Prometheus, Sensor Technology Gateway Peer Review Panel/JPL
- ◆ Chair, Robotics Arm Camera/Phoenix Mars Polar Lander, Inheritance Review Board
- ◆ Chair, Thermal Evolved Gas Analyzer/Phoenix Mars Polar Lander, Critical Design Review Board
- ◆ Chair, Surface Stereo Imager/Phoenix Mars Polar Lander, Critical Design Review Board

Memberships and Professional Societies

- ◆ American Institute of Aeronautics and Astronautics (AIAA), Senior Member
- ◆ American Geophysical Union (AGU)
- ◆ Institute of Electrical and Electronics Engineers (IEEE)
- ◆ International Council on Systems Engineering (INCOSE)

Employment History

- ◆ Senior Consultant, BlueShift Consulting, Austin, TX
- ◆ President, Austin Sensors, LLC, Austin, TX
- ◆ Senior Research Scientist, Stanford University
- ◆ Research Assistant Professor of Physics, Utah State University, Logan, Utah
- ◆ Program Scientist, NASA Headquarters
- ◆ Post-doctoral Associate, Applied Physics and Information Sciences Department, University of California, San Diego
- ◆ Research Physicist, Denver Research Institute, Denver, Colorado

Education

- ◆ Ph.D., Physics, University of Denver, Denver, Colorado
 - ◆ M.S., Physics, University of Denver, Denver, Colorado
 - ◆ B.S., Physics, Stanford University, Palo Alto, California
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