

# Joseph Gruber

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## ENGINEERING PROJECT MANAGER / TECHNICAL LEADER

- More than 15 years of experience serving as a technical and programmatic leader in the aerospace, satellite, and defense industries, managing multi-disciplinary teams across the system development lifecycle with numerous successful large-scale mission-critical project deliveries including NASA's earth science satellite constellation coordination system (C#, C++, AngularJS, FreeFlyer) and flight dynamics system (Node.js, MATLAB, FreeFlyer).
  - Motivated by a passion for achieving our nation's space exploration goals and the growing commercial space industry, thriving on seemingly impossible, challenging projects with passionate teams, a bias for action, and the use of innovation and automation to drive "agile aerospace."
  - Widely praised for leading NASA Earth Science Mission Operations (ESMO) through an agile scrum transformation on a flight operations ground system (.NET, Node.js), championing and implementing continuous improvement to engineering operations and product development (transitioning to virtualized infrastructures for staging, testing, and operations), resulting in improved customer service, on-time deliveries, and enhanced system performance.
  - Established a comprehensive system integration and test plan to conduct verification, validation, and readiness activities to support flight mission and spacecraft operations while serving as the primary point of contact to technical and non-technical customers (e.g., NASA mission management team, contract staff). Received Flight Dynamics Support Services Team Technical Innovation Award for engineering process improvements, including implementation of test-driven development, continuous integration and automated testing resulting in an 87% savings in manual effort by the flight operations team.
  - Received GOES-R Process Improvement and Innovation Award for implementation of mission planning software solution allowing for improved performance monitoring across ground and flight project segments leading up to GOES-S Flight Readiness Review and GOES-R Launch Readiness Review.
  - Managed large customer service-oriented teams for the successful delivery of software projects, ahead of schedule and under budget, while managing scheduling, resources, risk, quality, safety, configuration, and customization.
  - Deep expertise in the areas of: spacecraft, low earth orbit (LEO) satellite, geostationary (GEO) satellite, high-performance aircraft system development, systems engineering and integration technical project management, systems and software engineering (CMMI-DEV Level 3, AS9100), team leadership, collaboration, innovative engineering solutions, system development, cloud computing (Amazon Web Services/AWS, Microsoft Azure), customer relationship management, risk management, business process re-engineering, growing / mentoring staff, organizational re-design, and change management.
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## Professional Experience

**a.i. solutions (NASA)**, Project Engineer, Principal Systems Engineer (2016 – present)

***Space Network Ground Segment Sustainment (SGSS); System engineering research, sustainment planning, modernization***

- Advise on system and software engineering best practices for the modernization and sustainment of the Tracking and Data Relay Satellite System (TDRSS) ground terminals and space network operations center.
- Review contractor system design and architecture documentation to identify lifecycle supportability risks and associated mitigation strategies and assess post-final acceptance review/handover operational posture.
- Perform engineering analyses and trade studies, formulating and documenting findings resulting from sustainment research of legacy systems and software. Created a configuration control database for long-term planning and asset reporting.

***Earth Science Mission Operations; System/software engineering management, technical innovation, spacecraft operations***

- Provide technical leadership and project management support, across a large, multi-disciplinary software engineering and system engineering team, for telemetry, tracking, and control (TT&C) of multiple spacecraft and missions including NASA's Aqua, Aura, and Terra. Develop and execute project management plan incorporating schedule, resources, risk, cost, quality, and configuration management.
- Designed, planned, and implemented automated debris avoidance maneuver capability, automated acquisition of spacecraft ephemeris data from the Joint Space Operations Center (JSpOC), and automated close approach violation notifications, increasing spacecraft safety awareness and improving efficiency across the flight team and external mission partners.

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- Actively identify opportunities for technical and business process improvements instituting internal standards reflecting engineering best practices through standardized workflows, mandatory peer reviews, and documented standard operating procedures enabling automated testing and ensuring long-term maintainability of flight operations software.
- Interface with internal and external mission management and flight operation teams to maintain an environment of technical excellence and customer service ensuring successful mission support. Established technical interchange increasing communication between the engineering team and mission teams from multiple space agencies (JAXA, CNES, ESA, NASA).
- Integrated flight dynamics analysis team into system development lifecycle allowing increased collaboration and innovation with the system engineering and software engineering teams. Fostered a positive team culture of curiosity, collaboration, and mutually challenging team communication. Developed, mentored, and coached the engineering team to enhance productivity, increase morale, and ensure team success.

## **ECG, Inc. (NASA), Lead Planner (2014 – 2016)**

### ***Geostationary Operational Environmental Satellite-R Series (GOES-R); IV&V, project management, spacecraft ground systems***

- Guided cross-functional planning coordination across multiple contractors, federal agencies, flight team, ground team, and post-handover team during deployment, integration, and verification & validation of disaggregate ground systems, including software systems, ground segment (antenna system, RF hardware, etc.), and product distribution storage services, for the GOES-R geostationary weather satellite fleet. Built, maintained, and updated program/project integrated master plan (IMP) and integrated master schedule (IMS).
- Developed custom metrics analysis toolset, including performance trending and variance analysis, enabling current and historical assessment of baseline performance and actual execution. Contributed systems engineering expertise to the design and implementation of level zero storage system for petabyte-scale long-term baseline product data storage.
- Generated timelines for Launch and Orbit Raising (LOR) activities to verify on-orbit performance requirements and identified post-launch test events to validate the operational readiness of mission products. Integrated with supplemental near earth network (NEN) ground stations to establish requirements for LOR.
- Identified gaps in existing operational processes and procedures during verification and validation test events. Documented best practices and standard operating procedures ensuring compliance with flight project directives, NASA and NOAA policies, and federal government regulations.
- Supported chief engineer's office on flight readiness activities including performing and organizing mission readiness review, flight readiness review, and launch readiness review artifacts. Created program and project critical path analysis and contractor performance analyses in support of flight readiness.

## **NASA, Mission Support Lead, (2013 – present)**

### ***Hawaii Space Exploration Analog & Simulation; Human spaceflight research, proto-flight system & infrastructure development***

- Serve as HI-SEAS mission support lead guiding 30+ experienced mission support team members on long-duration, isolated human spaceflight simulations ranging in duration from four months to one year.
- Direct the primary communication interface to crew members participating in analog simulations, coordinating and monitoring Mars simulated time-delayed mission operations, troubleshooting issues, and providing day-to-day operational support and technical expertise for distributed infrastructure (systems, network, sensor, power, water) at the habitat.
- Design and develop systems and tools (PHP, JavaScript, C++) to interface between the HI-SEAS habitat and mission support software. Produced recommendations on the usage of AWS EC2, S3, SES, and Lambda as components of mission management and time-delayed communications applications.

## **Wyle (Naval Air Systems Command/NAVAIR), Lead Planner, (2012 – 2014)**

### ***F-35 Joint Strike Fighter; Autonomous systems, Monte Carlo risk simulation, system development, aircraft sustainment***

- Mentored and led planning team, along with integrated project teams, through project plan development, technical interchange meetings, integrated baseline reviews and program management reviews during system design and development (SDD) flight testing and initial operational test and evaluation (OT&E).
- Witnessed and supported test event dry runs, hardware-in-the-loop simulations, and for the record validation exercises reporting results and metrics to senior project leadership and adjusting future test events as required.
- Interfaced with project engineers, program managers, and analysts throughout all phases of the system development life cycle for the F-35 Autonomous Logistics Information System (Java, C++, .NET) offboard mission support system.

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- Conducted probabilistic risk assessments to model and determine the probability of completion of event milestones utilizing statistical analysis, including Monte Carlo simulations, to quantify technical and programmatic risks. Developed innovative, automated technical solutions to allow for improved data analytics of multiple, extremely large data sets.

## CSC (Department of Defense), Technical Project Manager, (2011 – 2012)

*Engineering management, configuration management, requirements gathering and analysis, cross-agency collaboration*

- Managed a team of system engineering personnel, leading product development for a joint-agency communications and data transfer application (C#) and system. Responsible for the full engineering lifecycle including software and system requirements definition, design, development, test, and transition to operations and maintenance. Reduced six-month baseline slip to an on-time delivery for twelve disparate installations.
- Orchestrated technical leadership between the project management office (PMO) and regional technical staff contributing as subject matter expert and ensuring communication of stakeholder priorities across multiple teams within a matrixed, multiple contractor organization.

## Prior Experience

- Self Employed (US Army, DoD – Connected Logistics, CompuGain Staffing), Technical Project Manager, 2010 – 2011.
- SAIC / CTSC (Naval Station / Joint Task Force Guantanamo Bay), System Integration Engineer, 2009 – 2010.
- Lockheed Martin, System Engineer, 2005 – 2008.
- Rissman, Weisberg, Barrett, Hurt, Donahue, & McLain, P.A., Senior System Administrator, 2003 – 2005.
- America Online, Senior Technical Consultant, 2001 – 2003.

## Education

- Embry-Riddle Aeronautical University; Masters in Aeronautical Science (Specializations: Space Studies, Aerospace Management).
- Florida Institute of Technology; Bachelors in Business Administration, Computer Information Systems (Magna Cum Laude).

## Certifications

- Project Management Professional (PMP) – Project Management Institute (PMI)
- Professional Scrum Master I (PSM-I) – Scrum.org
- Professional Scrum Product Owner I (PSPO-I) – Scrum.org
- Satellite Tool Kit (STK) Master Certified – Analytical Graphics, Inc. (AGI)
- Microsoft Certified Systems Engineer (MCSE: Messaging) – Microsoft

## Professional Affiliations

- Consultative Committee for Space Data Systems (CCSDS) – Associate
- PMI, Washington D.C. Chapter; PMBOK 5th Edition – Risk Management Content Editor
- American Institute of Aeronautics and Astronautics (AIAA) – SciTech Conference Chair
- AIAA National Capital Section (NCS) – Communications Committee
- International Council on Systems Engineering (INCOSE), Washington Metro Area
- Toastmasters, PMI Washington D.C. Chapter – President, Advanced Communicator, Advanced Leader
- Civil Air Patrol, United States Air Force Auxiliary – Captain; Communications Officer (VHF/HF)

## Technical Proficiencies

**Systems:** Microsoft Windows Server, Linux (Ubuntu, Red Hat), RTLinux, Mac OS X, Solaris, VMware ESXi / vSphere

**Software:** Atlassian (JIRA, Confluence, Bitbucket), Microsoft Office (Word, Excel, PowerPoint, Access, Outlook), IBM Rational DOORS, IBM Rational Team Concert, Oracle Primavera P6, Oracle Primavera Risk Analysis (PRA), Microsoft Project, Microsoft SQL Server, MySQL, Mathworks MATLAB, Mathworks Simulink, a.i. solutions FreeFlyer, AGI STK, Microsoft SharePoint, Xerox DocuShare, Gitlab, GitHub, Jenkins, TeamCity

**Programming Languages:** Python, JavaScript, PHP, HTML, CSS, Visual Basic .NET, Visual Basic for Applications (VBA), Bash