

Hector Velasco

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Experienced technical leader with a track record of spearheading diverse teams and implementing robust communications architectures for space and ground segments. Skilled in strategic planning and international operations management. Certified in Control Account Management (CAM). Possess an Active Top Secret clearance with SCI eligibility.

- Systems Engineering/Architecture
- Space Segment & Ground Segment
- Mission RF/Communications
- Team Leadership and Team Building
- Strategy Development / Strategic Planning
- Strategy and Value Creation

EXPERIENCE

Northrop Grumman, San Diego, CA Sep 2014 – present.

SUPPORT ACROSS SECTORS:

NC3 and Sentinel Programs (Mission Systems Sector) Systems Engineering Manager / Systems Engineer Architect / RF-Comms Lead.

- Conducted comprehensive research into the existing architecture of Nuclear Command Control and Communications (NC3), for the development of a digital model serving as an initial framework for its modernization efforts. Identified areas for enhancement to meet evolving operational requirements effectively.
- Leveraged advanced modeling techniques, notably the Cameo Model-Based Systems Engineering (MBSE) tool, to map and conceptualize NC3 Communications architecture artifacts. Ensured the accuracy and integrity of the architectural representation, facilitating precise analysis and strategic decision-making.
- Demonstrated exceptional leadership acumen by guiding a proficient RF/Communications team through the design phase of communication solutions tailored to the Sentinel program. Oversight included critical tasks such as antenna selection, radio configuration, thorough link budget assessments, and rigorous co-site analysis, resulting in optimized system performance and reliability.
- Held accountability for the management and mentorship of a dedicated team comprising 12 engineers spanning T1 to T6 levels. Cultivated a collaborative and high-performing work environment, fostering innovation, skill development, and a steadfast commitment to achieving project objectives with excellence.

BACN Program (Mission Systems Sector) RF/Comms IPT Lead.

- Responsible for analyzing the complex details of payloads, antennas, coverage requirements, and performance metrics pertinent to aeronautical platforms, encompassing comprehensive assessments of ground segment architecture to ensure seamless integration and operational efficiency.
- Pioneered the adoption of cutting-edge methodologies such as Model-Based Systems Engineering (MBSE) and digital modeling with STK to simulate and validate the performance of systems and payloads deployed on airborne platforms, enhancing accuracy and reliability in pre-deployment evaluations.
- Oversaw the seamless integration of radios and antenna systems, conducted co-site analyses, and performed comprehensive link budget and coverage assessments across various communication protocols including UHF/VHF, Link-16, TCDL, Wideband, and Narrowband Satcom, ensuring robust connectivity and interoperability.
- Provided effective leadership to a talented team of 10 Communications engineers, fostering a collaborative and goal-oriented environment. Spearheaded the development of mission strategies and performance metrics, ensuring alignment with overarching objectives and facilitating sustained engagement and focus among team members.

- Formulated comprehensive engineering and communications Basis of Estimates (BOEs) to support the development of new proposals, ensuring accuracy and feasibility in resource allocation and project planning.
- Played a crucial role in talent acquisition, coaching, and professional development initiatives, offering technical guidance and mentorship to the RF/Communications team, thereby cultivating a skilled and motivated workforce capable of delivering high-quality outcomes consistently.

JP2008 Program (Defense Systems Sector) SATCOM SME

- Created a tool to predict interference for Satcom services over WGS.
- Implemented tools for antenna modeling and simulation of interference analysis.
- Designed Comms capabilities for NMS and requirements decomposition.
- Validated and refined interference algorithms to use on an NMS for services on WGS constellation.

F-35 Program (Mission Systems Sector) Engineering Manager and CAM

- Managed the Development Verification Test (DVT) efforts across diverse disciplines teams.
- Led the implementation of Agile methodology and tools in the program as a Scrum Master.
- Developed engineering Basis of Estimates (BOEs).
- Coordinated efforts across disciplines to verify over 850 requirements in a team of 15 engineers.
- Accelerated test efforts by implementing Agile methodology tools.
- Reported results and metrics to upper management as a CAM for HW control accounts.

NATO-AGS Program (Aeronautical Systems Sector) - Comms Responsible Engineer for Ground Segment.

- Led comprehensive testing and seamless integration of Command and Control (C2) and Mission communications infrastructure, encompassing Intercom, Line-of-Sight (LOS), and Beyond-Line-of-Sight (BLOS) subsystems for both UHF and Wideband Satellite data links. Ensured the interoperability and robustness of communication systems critical to mission success.
- Coordinated the integration of networking equipment within the command and control center, including routers, switches, and encryptors, within red/black environment.
- Executed the integration and testing of Communications Ground Segment infrastructure, including antennas, towers, radios, and associated communications equipment, on-site in Italy.

Xenon (Space Systems Sector) - Communications Systems Engineer

- Leveraged technical expertise and analytical skills to contribute valuable insights and recommendations, ensuring the alignment of payload specifications with mission objectives and operational requirements.

Leadership and Collaboration Involvement

- **NG AAP (Architect Apprenticeship Program) graduate – Cohort 2022**
- **Guest Speaker** at ANSYS Simulation World 2021 conference - Presented the Modeling and Simulation process that I developed using ANSYS products, including STK, HFSS and EMIT
- **ADELANTE ERG Chair** - STEM outreach and engagement with educational institutions

ViaSat, Carlsbad, CA 3/2013-4/2014 SATCOM Technical Project Engineer

- Coordinated the design of ground segment solutions, encompassing antenna systems, RF components, and networking equipment, ensuring seamless integration and optimal functionality.
- Leveraged Modeling and Simulation tools to develop digital models of satellites and sensors, facilitating comprehensive assessments of coverage across mission areas.
- Collaborated closely with satellite operators to coordinate spacecraft maneuvers, aligning operations with mission requirements and validating performance post-maneuvers.
- Directed initiatives to ensure the delivery of dependable ISR (Intelligence, Surveillance, and Reconnaissance) services across mission areas, emphasizing reliability and operational effectiveness.
- Conducted in-depth analysis of RF coverage, identifying areas for improvement and providing strategic recommendations to enhance RF performance and optimize mission outcomes.

Panasonic Avionics Corporation, Lake Forest, CA 3/2011-3/2013 Sr. Satellite Network Engineer

- Conducted comprehensive analysis of engineering metrics impacting Service Level Agreements (SLA) and ground segment performance, contributing to the optimization of the largest commercial aeronautical satellite network of its time.
- Cultivated strategic partnerships with satellite operators, facilitating seamless coordination of services on spacecraft and ensuring alignment with operational objectives.
- Served as a Satellite Subject Matter Expert (SME) specializing in aeronautical applications, conducting detailed assessments of capacity, coverage, and interference within a multi-satellite network. Analyzed the performance of panel antennas on aeronautical platforms operating in Ka-band frequency.
- Implemented statistical tools and the Failure Reporting, Analysis, and Corrective Action System (FRACAS) process to enhance RF performance. Identified and addressed root causes of issues during operations, fostering continuous improvement and operational excellence.

Space Systems/Loral, Palo Alto, CA 1/2010 – 12/2010 Mission Engineer

- Spearheaded the design of the communications architecture for a Department of Defense (DoD) Ka-band satellite constellation, ensuring robust and efficient communication capabilities.
- Conceptualized comprehensive end-to-end communications solutions encompassing both ground and space segments, including earth stations, payload configurations, sensors, and networking equipment.
- Developed innovative Geostationary Orbit (GSO) and Non-Geostationary Orbit (NGSO) architectures, meticulously considering geometries to mitigate interference and optimize performance.
- Conducted thorough trade-off analyses to achieve the requisite RF performance on spacecraft, leveraging advanced link budget analysis techniques.
- Pioneered the proposal of a satellite constellation tailored for military aeronautical Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) missions utilizing Unmanned Aerial Vehicles (UAVs) and establishing connectivity with Ground Control Stations (GCS).
- Derived precise spacecraft and communications payload requirements by extensively researching UAV platform profiles, ensuring compatibility and effectiveness.
- Evaluated the performance of commercial terminals on airborne platforms using sophisticated link budget analyses and analytical tools, aligning satellite design with present and future capacity requirements.
- Formulated innovative communications architectures leveraging X and Ka bands, spot beams, cross-links, and multi-satellite networks to optimize performance and coverage.

Qualcomm, San Diego, CA 10/2002 – 1/2009 Sr. Systems Engineer - Communications Project Manager

- Led the meticulous selection of ground segment equipment essential for satellite backhaul operations, including antennas, uplink/downlink RF chains, and network infrastructure, ensuring optimal performance and reliability.
- Conducted comprehensive RF analysis, trade-offs, and link budget assessments for a Satellite Communications (Satcom) network, leveraging expertise to optimize system performance and throughput.
- Directed and supervised a team of 20 engineers and technicians during site installations, adeptly coordinating efforts across dispersed locations to ensure seamless deployment and integration.
- Devised and implemented strategic initiatives and performance metrics aimed at enhancing the efficiency and effectiveness of the Field Engineering organization, driving continuous improvement and operational excellence.
- Applied Six Sigma methodologies and tools to systematically identify, analyze, and mitigate defects in the Field Engineering process, resulting in substantial cost savings and a notable enhancement in service quality.

- Demonstrated exceptional project management skills by successfully testing, commissioning, and delivering \$1 million sites to the operations team on a biweekly basis, contributing to the deployment of over 300 sites and bolstering network capabilities.

Titan Wireless, San Diego, CA 4/2001 –12/ 2001 Technical Project Manager – Satellite Communications

- Coordinated the successful deployment of Satellite Communications ground segment solutions, encompassing the installation of large aperture antennas and networking infrastructure, ensuring robust and reliable connectivity.
- Directed and coordinated engineering endeavors and deployment teams for a high-profile program in Africa, overseeing all aspects of project execution to achieve objectives within defined timelines and budgetary constraints.
- Fostered open communication channels with customers throughout the deployment process, exhibiting keen intercultural awareness and sensitivity to diverse stakeholder needs and expectations.
- Leveraged a blend of technical acumen and project management expertise to communicate proficiently with customers and technical personnel, effectively conveying complex concepts and facilitating alignment on project requirements and objectives.
- Demonstrated versatility by undertaking systems engineering tasks as needed, showcasing a hands-on approach to problem-solving and a commitment to delivering high-quality solutions tailored to customer specifications.

Comtech EFData, Tempe, AZ 12/1997 – 4/2001 Sr. Field Systems Engineer – Satellite Communications

- Designed and tested satellite ground segment infrastructure, including large antennas, RF equipment, and Network Management System.
- Deployed Satcom infrastructure worldwide.
- Performed RF end-to-end performance analysis, link budgets, network optimization, and capacity planning.
- Served as a liaison between customer and factory and trained customer's technical team.
- Led technical remote teams overseas.

EDUCATION

Master of Engineering Management, Lockheed Martin Program	University of Colorado, Boulder
Master of Science in Telecommunications	University of Colorado, Boulder
Electrical Engineering (Electronics and Communications)	Tec de Monterrey, Mexico
Systems Engineering Professional Certification	UCSD
Model Based Systems Engineering	Caltech
Master Black Belt Six Sigma Certification	University of Colorado, Boulder
Space Nuclear Command Control & Communications Cert.	Naval Postgraduate School

MANAGEMENT METHODOLOGIES

Control Account Manager (CAM), Agile Scrum Master, Six Sigma, FRACAS, Business Performance Excellence, Strategy Development/Deployment, Project Management, People Coaching,

TECHNOLOGIES and Tools

Communication architecture, Internet Protocols, Networking, Coverage Analysis, Ground Segment Infrastructure, Large Aperture Antennas, VHF/UHF/C/Ku/Ka bands, LOS, BLOS, Tactical waveforms, Satellite Communications Space and Ground Segments, MBSE Cameo, STK.