JOSEPH L. VILELLA

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PRINCIPAL INVENTOR

ACHIEVEMENT HIGHLIGHTS

- Published author of a basic Chemistry textbook in Spanish at the age of 23. This textbook was written for 8th grade level students and was comprehensive enough to be used as a reference source for 11th grade Chemistry.
- Systems Integration Laboratory (SIL) Lead Design Engineer responsible for the development, integration, test, and implementation of the Sil Systems Test Set (SSTS). The SSTS consisted of three full height computer racks designed to simulate the B-52 Bomber missile launch system and pylon. The SSTS was responsible for the mission loading, systems check, arming and simulated launch of the missiles connected to the Advanced Cruise Missile (ACM) "Missile in the Loop" Flight Simulator. The ACM was stealth nuclear weapon system.
- Principal Engineer for Design Verification, Systems Integration and Flight Simulation of the ACM Program. This program level position had flight testing veto authority. Responsible for the avionics suite design verification tests, the avionics hardware-software systems integration and tests, as well as the set up and performance of the ACM "Missile in the Loop" flight simulations. In the event of any actual ACM missile crash during the flight test program, this position provided leadership of SIL investigations related to any failure of the avionics hardware or software contributing to the missile crash.
- Developer and Chief Engineer of the Advanced Data Display System (ADDS). This cutting-edge high technology innovation was not part of the original ACM "Missile in the Loop" flight simulation design requirements. The ADDS was independently developed by the SIL to provide critically needed real-time feedback of the flight simulations. Developed in 1986, the ADDS was the first flight simulation real-time feedback system in the world based on personal computers. It supported long range mission while flawlessly performing subsonic events and data graphic display in multiple high-speed terminals. The ADDS was the paradigm shifting innovation that ultimately led to the development of the surveillance and attack remotely piloted vehicles in use today.
- Developer and Chief Engineer of a laser-based Fingerprint Identification System prototype for the Central Intelligence Agency (CIA). This special project was independently performed in addition to the above-mentioned Stealth Cruise Missile duties.
- Developer, Patent Inventor and Chief Engineer of the Parametric Automated Optical Inspection System (K2-AOI) high technology innovation. The K2-AOI revolutionized the Surface Mount Technology (SMT) industry facilitating the accurate inspection of printed circuit boards by measuring the placement and physical attributes of electronics components placed on them via a single high-resolution digital color image.
- Developer of the SMT Cost of Quality Model. This was the first successful tool designed to predict SMT production line first pass yields with and without the use of automated optical inspection systems. The SMT Cost of Quality Model was requested by over 150 entities worldwide including electronics corporations, custom processes software design firms and Universities. This tool facilitated the understanding of the operational realities of a components placement process that was constantly challenged by electronic components miniaturization.
- Chairman of Automated Inspection Technologies of the Institute of Printed Circuits and Technical Advisor to the Minister of Electronics of the People's Republic of China. Attainment of both positions resulted from the recognition of the fundamental importance of the SMT Cost of Quality Model.
- Design, Integration and Test Technical Advisor to the US Navy. In that position, prevented the cancellation of a 1.3 billion dollars US Navy based, geographic-wide Network Centric Warfare Program for the island of Taiwan. Identified and eliminated critical flaws within the systems integration and tests effort that for two years plagued the program and ultimately threatened its cancellation. Became the Chief Design Requirements Architect of the program until all its critical design requirements were successfully met and its future phases were properly planned.
- Principal Inventor of the Mutually Secured Optical Data Network and Method patent of SPADA Innovations, Inc. This patent describes the method by which Layer 3 Virtual Private Networks (VPNs) are successfully transmitted across Passive Optical Networks (PON) in accordance RFC 4364 Standard. Responsible for the patent prosecution efforts due to COVID-19 constraints imposed on SPADA's patent attorney firm. Successfully moved to issuance two patents in 2021 and one patent in 2023.

PROFESSIONAL EXPERIENCE

SPADA Innovations, Inc. | San Diego, CA **2010 – 2023**

Chief Executive Officer and Principal Inventor

- Principal founding partner and CEO of SPADA Innovations, Inc. (SPADA). SPADA's was incorporated to promote and deploy Passive Optical Networks (PON) in the West of the United States.
- Performed executive management activities and strongly promoted the use of PON.
- Led the negotiations of the potential acquisition of the Motorola's PON technology by SPADA.
- Subject Matter Expert responsible for the PON networks design and implementation.
- Principal Inventor and patents prosecutor of the Mutually Secure Optical Data Network and Method.
- Responsible for management and technical support of all the efforts leading to the successful assertion of SPADA's patent rights.
- Provided PON implementation advisory services to Sempra Energy, Time Warner Cable, Qualcomm, LEIDOS, the City of San Diego and the other high-profile companies.
- Supported Sempra Energy to implement PON as a mandatory technology within the Title 24 Construction Code across the State of California.

Science Applications International Corp. (SAIC) | San Diego, CA **2005 - 2010**

Engineering Director & Senior Technical Advisor (2007-2010)

- Director of Engineering for PON and Sustainability of the Intelligence and Information Security Business Unit.
- Senior Technical Advisor to a Green power generation entity in New Mexico with a fundamental breakthrough in geothermal and reclaimed power production.
- Senior Technical Advisor for the Zenith Insurance Corporation in support of critical software migration of their core enterprise/multistate Oracle-based application.

Senior Technical Advisor and Chief USG Design Requirements Architect (2005-2007)

- Senior Technical Advisor to the US Navy for the System Design, Integration, and Test of a Geographic wide Network Centric Warfare System for Taiwan (Po Sheng).
- Chief Design Requirements Architect responsible for the restructuring, management and control of the design requirements process of Po Sheng's EOC Integration and Test activities.
- Po Sheng's final approval authority for the determination of its design requirements development and validation methods as well as their addition, modification, or deletion.
- Senior Technical Advisor to the US Navy Program Manager responsible for the coordination of technical and management activities related to the deployment of highly specialized Tactical Command and Control systems to the Pacific Surface Fleet. This advisory role was specifically related to its optimization of the technical and management processes.
- Held a Secret Clearance.

Vectron Inc. | San Diego, CA **1994 - 2005**

Chief Executive Officer/Chief Engineer

- As founder and CEO of Vectron. Developer and Chief Engineer of the first Parametric Automated Optical Inspection System. Led its systems design, build, integration and test efforts.
- Inventor of the International Patent EP1032912B1 – Electronic Assembly Video Inspection System.

Developer, SMT Cost Quality Model & Global AOI Standard

- Developed the first SMT Cost of Quality Model.
- Chairman of Automated Inspection Technologies of the Institute of Printed Circuits
- Technical Advisor on automated inspection technologies to Ministry of Electronics of the Peoples Republic of China.

JV&A Design Group | San Diego, CA **1992 - 1993**

Owner – Projects Manager

- Led the design of specialized equipment required to support complex manufacturing processes.
- Designed equipment for Qualcomm, Inc., Hewlett Parckard, Inc., Nelcor-Puritan Bennet, Inc., Encad, Inc., Medtronics Interventional Vascular, Inc., Kaigai Seiyaku Pharmaceuticals, Disease Detection International, Inc., and Trinity Biotech, PLC.

General Dynamics, Convair Division | San Diego, CA **1983 - 1991**

SIL Department Manager, Principal Integration & Test Engineer – Advanced Cruise Missile Program

- Led the avionics design verification, systems integration, and testing of the Advanced Cruise Missile (ACM) program. The ACM is a stealth, nuclear weapon system.
- Responsible for the design, build, integration, and test of the SIL Systems Test Set (SSTS) for the ACM Missile in the Loop Flight Simulator.
- Managed the Systems Integration Laboratory (SIL). The SIL was a 15 million dollars facility that performed individual avionics components testing, avionics suite hardware and software integration, flight events demonstrations, flight simulations and missile crashes investigations.
- Developed and implemented the Advanced Data Display System (ADDS) for the ACM "Missile in the Loop" Flight Simulator. The ADDS was the first PC based sub-sonic real-time data acquisition and graphics display system in the world.
- Responsible for performing the W-80 Nuclear Warhead Integration tests.
- Project Manager for the integration of the Aerodynamics Loads Simulation System to the ACM "" Missile in the Loop" Flight Simulator.
- Held a Secret Clearance.

Martin Marietta Aerospace | Denver, CO **1979 – 1983**

- Systems Engineer responsible for the design of the Digital Test Bench for the MX Ballistic Missile System.
- Member of a Tiger Team deployed to Space Craft Incorporated (SCI) of Huntsville, Alabama to support delivery activities of the MX Ballistic Missile Inertial Navigation System.

EDUCATION AND OTHER PERTINENT FACTS

Education

B.S. Management| University of Phoenix

Minors (145 credit units) in Electrical Engineering and Chemistry | University of Puerto Rico, College of Engineering

Languages (Full Fluency)

English & Spanish

Extracurricular Interests

Pedaling Mechanics Cycling Coach, Indoor Cycling Instructor, Chess.com

Marital Status

Widowed

PUBLICATIONS

Technical Manual of the MM11L - 8k Memory System (English) – Digital Equipment Corporation

Principios y Conceptos de la Quimica Moderna (Spanish) – Textbook and lab manual published by Editoriales de Armas for 8th Grade students of Puerto Rico.

A Breakthrough in 0201 Components Inspection – SMT Magazine

Revolutionizing the Industry with High Resolution Digital Color AOI – Co Authored with Robert Kane – SMT Magazine

SMT Council Interview on Automated Optical Inspection – SMT Magazine

Closing the Digital Color AOI Loop – SMT Magazine

Advances in the Digital Color Camera Technology – SMT Magazine

The High Cost of Quality in Global SMT Manufacturing- Electronics Business

The Inherent Lack of Quality in SMT Products – SMT Magazine

Can You Credibly Assess Your First Pass Yields? (Published in Chinese) – SMT China

First Draft of the Global AOI Standard - Co Authored with Martin Kane - Institute of Printed Circuits

The Fundamental Reality of an AOI Seal – SMT Magazine

AOI and AXI: One Powerful Combination – SMT Magazine

Vectron y el Gobierno of Puerto Rico (Spanish) – EMS Editors