

Garrick Villaume, Ph.D.

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BUSINESS OPERATIONS AND TECHNOLOGY DEVELOPMENT EXECUTIVE

INNOVATIVE AND VERSATILE LEADER GENERATES SYSTEMATICALLY OUTSTANDING PERFORMANCE

Accelerates technology development and integration, ensures timely delivery of reliable products, and harmonizes essential processes and decision systems to maximize business performance and sustain operating efficiency. Accomplished leading high-performing teams in solar power and cleantech startups and disc drive enterprises in roles spanning technology and product development, program management, manufacturing, and quality assurance functions.

Proven strategic planning, business development, and operations management skills complement deep scientific and broad engineering knowledge. Adept platform developer and process systems integrator has produced advanced nanotechnology and photovoltaic, optoelectronic, and magnetic data storage products; guided systems engineering groups to deliver best-in-class performance and product cost in global enterprises; and built effective business systems, lean operations, and seeded key organizations for new technology ventures.

CONSISTENTLY PRODUCES RESULTS AND CONTINUOUSLY IMPROVES PERFORMANCE BENCHMARKS

- Leading process and product development and planning production operations for pre-revenue startup using disruptive technology to harvest high-value nutrients and organic biomaterials from food waste. Guiding business models and cultivating supply-chain and partner relationships for scaling. Demonstrated commercialization potential of several material sources and channels. Establishing cost and production models to underpin and financial forecasts and growth plans.
- Administering Cleantech Open Midwest, a non-profit business accelerator through organizational transition. Renewing partner network and leading sponsorship and fundraising efforts. Mentoring, coaching and training early-stage startups for 3+ years, providing guidance and support with general business development, product-market fit, financial modeling, investor pitches, and sustainability practices. Planned events, developed programming and curated speakers and panelists for 3 Business Clinics and Innovation Showcases for >30 new ventures.
- Developed, implemented, and upgraded engineering and operations infrastructure for 3 early photovoltaic systems companies. Led technology and product development, manufacturing and delivery, and quality assurance for pre-revenue startups and during growth and restructuring stages. Provided essential product features, led design verification, system certification, and process qualification. Planned factories, supported due-diligence and led field service projects.
- Developed and produced nanotechnology and complex products using semiconductor materials and processes, and advanced fabrication and assembly operations for more than 20 years. Set performance benchmarks for dozens of magnetic recording devices and disc drive products. Streamlined product transitions and raised yields from <80% to >90% for >20 products over 5 technology generations by improving engineering and process change qualification procedures.
- Delivered >\$50M savings as Six-sigma Executive Champion leading 5 projects to reengineer mission-critical enterprise applications for managing product requirements and test specifications, process performance and quality analytics. Led 3 global program management teams, chaired 2 international summits to increase forecasting accuracy from ~50% to >99%.
- Systems savvy spans research, engineering and business domains with extensive experience in electromagnetic/electromechanical and optical/photonics systems and integrated hardware-software applications. Innovative analytical systems architect developed 4 global data analysis and business intelligence groups in \$10B+ data storage and growing photovoltaics businesses.

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ACCOMPLISHED DEVELOPING TECHNOLOGY AND PROCESSES TO DELIVER EXCEPTIONAL PRODUCTS

Chief Science and Technology Officer, NetZro, LLC, Minneapolis, MN 2017 – Present

NetZro is an early stage venture developing innovative solutions to limit the impacts of waste in the food supply chain by reclaiming high-value nutrients and biological materials for developing markets.

- Evaluating material entitlements, validating product requirements and developing business models to recover value from discarded fractions and waste in several food production channels.
- Adapting proprietary technology and integrating conventional process equipment and material control systems to commercialize profitable nutrient and biochemical recovery operations.

Board of Advisors, Cleantech Open Midwest, Minneapolis, MN 2016 – Present

Joined Board of Advisors for Midwest affiliate of nonprofit, startup accelerator in 2016, administering since January 2018. The Midwest has advanced >110 start-up companies since being founded in 2010.

- Chairing Regional Steering Committee and Co-Director of 2018 program for cohort of 9 Midwestern startups while developing sponsorship strategy and leading fundraising effort.
- Organized 2-day Business Clinics in 2017 and 2018, providing entrepreneurial coaching and skills development for 35 startups. Planned agenda, curated dozens of speakers and managed events.
- Formally and informally mentored >6 startups since 2016, assisting with curriculum, business model and risk-opportunity analysis to assist funding pitches and assure sustainable growth.

Vice President of Programs, Vixar, Inc., Plymouth, MN 2017 – 2017

Joined semiconductor laser developer making products for consumer and industrial imaging applications to streamline and document product development procedures and consolidate program management.

- Adapted product development process to unify program management across product portfolio.
- Identified quality management system improvements required to achieve ISO9001 certification.

Principal & Owner, Physical Systems, Inc., South Saint Paul, MN 2015 – 2017

Physical Systems is an individual consultancy helping organizations start, grow, and strengthen business operations with resilient process systems to sustain technical innovation and maximize product margins.

- Evaluated products and manufacturing processes, analyzed business models and plans, and performed SWOT analyses to help early ventures launch and grow operations, and raise capital.
- Advised small businesses upgrading their legacy processes, developed decision support systems, adapted and integrated application platforms for engineering and operations management.

Senior Director of Systems Engineering, Bloo Solar, Inc., El Dorado Hills, CA 2014 – 2015

Attracted by opportunity to catalyze development of photovoltaic modules using “3D” semiconductor devices to increase PV light absorption and energy production with patterned nanostructures.

- Developed product platform model and configuration BOM from system requirements and performed QFD to set design requirements and performance goals, milestones and metrics.
- Implemented a lean Product Development Process in <6 months, aligned functional engineering plans and implemented engineering build orders and process to manage >250 trials per week.
- Led device physics and system model development, streamlined data processing, reduced High-Performance Computing Cluster operating costs 50%, and recruited new PhD to run simulations.

Senior Director Factory Data Systems, WDC (Contract), Irvine, CA 2013 – 2014

Retained by Operations SVP-GMs of \$15B disc-drive producer to impel their global Factory Data Systems initiative and integrate global data systems to improve product quality and operational performance.

- Chaired Executive Steering Committee, established charter, governance, and decision processes to form a unified Global Operations data strategy and analytics roadmap from separate BU efforts.

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- Introduced corporate-wide data governance program model. Guided global analysis organization development and plans to align >\$5M analytics platforms with IT System architecture roadmap.
- Created teams and plans to solve >30 data systems issues leading Global Ops and IT teams in 2-day Analysis Process Summit, event rated >=8/10 by 46 of 48 reps from 12 organizations, 5 BUs.

Vice President of Product Assurance, Amonix, Inc., Seal Beach, CA **2012 – 2013**
Head of Quality | Quality Engineering Director **2011 – 2012**

Joined to lead Quality Engineering for growing utility CPV power systems firm producing the largest, most efficient solar energy generators in the world. Managed supplier-to-field quality and product performance and led restructuring of manufacturing engineering and essential product operations.

- Executed \$5M operation to repair >50 systems leading team of >20 engineers and 40+ manufacturing and construction DL to resolve 4 chronic defects and rebuild >3000 modules.
- Restarted key suppliers to support fielded units and sustain product development. Reclaimed >\$1M MRB material for service supplies and cash liquidation with analysis and novel testing.
- Led manufacturing process development and Advanced Quality Planning and planned production facility to produce next-gen CPV generators with expected system reliability and performance.

Vice President of Operations, tenKsolar, Inc., Bloomington, MN **2009 – 2011**

Recruited by Founder CTO/President of solar power startup to lead Product Operations, Manufacturing, Materials Procurement, Quality Control and IT Systems to produce RAIS® PV modules in US and China.

- Set up engineering labs and performed 100s of trials and 1000s of hours of HALT/HAST tests for design validation and verification, qualify materials, and develop manufacturing processes.
- Led UL and IEC certification effort, achieved CEC listing in 18 months. Designed and transferred custom test systems for agency labs to rate module performance and verify safety compliance.
- Developed manufacturing processes, qualified supply chains and scaled operations to lead production of first 10K+ modules in <2 years for testing, training, and developing sales channels.

Executive Director, Seagate Technology, Bloomington, MN **2005 – 2009**
Senior Director | Director **2000 – 2005**

Created new Quality Systems Engineering group after >7 years as Recording Head Integration leader. Managed yield engineering, new product qualification, quality and reliability performance of recording heads and disc drives. Led teams of 60-75 magnetic recording technologists, product analysts, systems and quality engineers, Six-sigma Directors and Product Managers in US, UK, and Asia.

- Led recording head technology validation, testing, and new product qualification, qualified hundreds of design and process changes for >\$1B revenue windfalls, saving >\$100M in COGS.
- Released Products Core Team Leader and "yield czar" for portfolio of >20 products over 6+ product platforms, raised production yields 11 of 13 quarters and final test yields to >95%.
- Six-sigma Champion for >10 Black-belt projects saving >\$50M in \$10B+ global manufacturing operations for >5 generations of industry-leading magnetic recording devices and HDD products.

ADVANCED SCIENCE AND ENGINEERING EDUCATION AND EXTENSIVE MANAGEMENT TRAINING

- Mastered and coached business management as entrepreneur and startup accelerator mentor
- Strategic Leadership Development certification, Harvard Business School, Cambridge Mass.
- Six-sigma certifications for DFR, DFSS, and DMAIC Champion.
- Lean Bootcamp for Executives
- Ph.D., Experimental Particle Physics, University of Minnesota, Minneapolis, Minnesota
- BS, Physics, University of Minnesota, Minneapolis, Minnesota