

Steven P. Hotaling, Ph.D.

Data-Driven
Innovator

AI and Quantum
Computing Expert

National Security
Advisor

Patent Holder and Published
Academic

Transformational strategic leader with over 50 years of experience in RDT&E (Research, Development, Test & Engineering), Theoretical & Applied Physics, and over 40 years in National Security Consulting. Generative/Agentic AI (G/A-AI), and Proven track record of leveraging technical capabilities to ensure mission or enterprise success; delivering results and high value. Expert in bridging the gap between "impossible" science and operational field capabilities for the Intelligence Community (IC), Department of Defense (DoD, now DoW), and Silicon Valley critical technologies.

CORE COMPETENCIES

TECHNICAL MILESTONES & NATIONAL IMPACT

Strategic Advisory & Policy

- Congressional SME: Provided formal testimony and briefed HPSCI, SSCI, HASC, and SASC members/staffers on technology sectors and national security (multi-billion-dollar systems); Submission of Congressionally Directed Action (CDA) analytical reports.
- White House SME: Contributed to Presidential Daily Briefs (PDB) for Presidents G.W. Bush and B. Obama; SME for National Security Policy Board (President Clinton); and National Security Council (NSC) support.
- Proteus Project: Core team member for a major alternative futures study, culminating in a trade book used by Fortune 400 companies.
- SME: DoD(now DoW) and Intelligence Community War Games: Game Facilitator, White Cell, Red Cell, Black Cell, Senior Executive Ventanna Session facilitator

Innovation & Engineering

- Quantum: Designed a quantum cryptographic system experiment that set a world record for key distribution, Created USAF Quantum Computing Program, Created SPIE Photonic Quantum Computing Group; nano-technology patents and publications, energy conversion semiconductor design and fabrication; Intelligence Community and/DoW SME for Quantum Mechanics, and Listed in compendium on Foundations of Quantum Mechanics.
- Field Deployment: Developed an operational ISR prototype deployed to Iraq (OIF) and Afghanistan (OEF) that was so successful it launched a new national-level R&D program with over 20 deployed systems flying by 2020; Worked with SOF teams and flew in SOF Aircraft; Middle Eastern, European and Asian NATO and UN crisis support.
- Satellite Systems: Lead PI for radiation-hardened high-power teams and technical lead for multi-sensor ISR constellations; multi-Int AI enabled tasking and data analytics

PROFESSIONAL EXPERIENCE

Areté Associates | *Senior Principal Scientist*

2019 – Present

- Chief Strategy Office engaging on programs spanning seafloor to space
- Created/Leading: Generative/Agentic AI programs, enterprise and tactical edge systems
- Creator/ Principal Investigator: Missile Defense Programs; National System ISR programs

PolymathN LLC | *President*

2013 – Present

- Directs a multidisciplinary R&D consultancy working with senior leaders in government, NGOs, and industry to improve U.S. national security and competitiveness
 - National Strategic Systems: Missiles and Space ISR and War fighting
 - DoW: Tactical -Theater levels: Differential War Game design/analysis informing Strategic level Acquisition modeling - US (PPBS/POM) and adversarial (CH and RU 5-year plans).
- Integrates policy, technology disruption, and DIME-FIL (Diplomatic, Informational, Military, Economic-Financial, Intelligence, Legal) modeling to envision alternative futures and strategic growth – applies to both government and industry
- Provides C-Suite support for M&A, corporate strategy, and full technology lifecycle planning - technology ideation to transition from S&T to operations

Noblis | *Senior Data Scientist – Machine Learning*

2015 – 2018

- Applied Big Data Analytics and AI to Cyber Security, focusing on Network/NetFlow analysis and anomaly discovery- cyber behavioral analysis (open and dark web, terrestrial and satellite)
- Interdepartmental consulting for healthcare, finance, and market segmentation/penetration analysis

Stellar Solutions | *Senior Scientist*

2013 – 2015

- Supported intelligence programs by envisioning new "possibility spaces" for business development
- Developed AI/Machine Learning use cases for DNA genomics, geospatial analytics, and predictive fraud detection
- National Program (multi-billion-dollar) Systems Engineering

EDUCATION & DISTINCTIONS

Academic Background

Ph.D., Engineering Science (Interdisciplinary Physics) | Clarkson University
M.Sc., Condensed Matter Physics | Syracuse University
B.S., Electrical Engineering | Syracuse University
Diploma | Air Command and Staff College (ACSC), Air Force University

- Erdős number 4
- Einstein number 5

Intellectual Property & Publications

- Patents: 9 US Patents issued in Quantum Computation, Ring Laser Gyros, and Solar Cells
- Publications: Over 70 open literature publications and over 2000 citations

Selected Awards

- ODNI Certificate of Appreciation: For support to the National Intelligence Council (NIC)
- Combined Intelligence Coin: Awarded by PACOM/USFK for excellence in the Intelligence Community (Crisis Support)
- AFMC S&T Achievement Award: For patented inventions in micro/nanotechnology