

# HARRY V. WINSOR, PhD, PMP, CSM Applied Scientist

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410-788-8884 - Home

## PROFESSIONAL PROFILE

**Innovative applied scientist and systems engineer** with extensive experience in numerous leading edge technologies. Experience includes specification and computer modeling of complex systems and phenomena; radar; digital, radio and optical communications; classical and quantum computer algorithms and architectures; high and low power optics; fiber optics and thin films; optical, structural and electronic materials; nuclear and cryogenic phenomena and applied physics of systems. Managed and led a wide variety of teams and projects in corporate, military, university, and startup environments. Proven track record defining technological and scientific opportunities, recognizing vulnerabilities affecting systems, businesses and products, and **conceiving and designing improved products, technologies and systems architectures**. Computer, network and programming literate, active clearances, fluent in German, PMP and Scrum Master certified, and willing to acquire new skills for suitable challenge.

## Education

- Ph.D., Engineering** (Applied Science), 1978; University of California, Davis (UCD), Davis CA  
Experimental Thesis: Angular Distribution of Photoemission from Single Crystal Gallium Arsenide.
- M.S., Physics** (Nuclear), 1966; University Of Washington, Seattle WA
- B.S., Physics**, Magna cum Laude, 1965; University Of Washington, Seattle WA
- B.A., German**, Magna cum Laude, 1965; University Of Washington, Seattle WA

## Experience

- International Business Machines Inc. (IBM) (Acquired NISC)** April 2010 to Present
- National Interest Security Company, LLC (NISC-LLC) (Acquired Omen)** Mar 2009 to Mar 2010
- Omen Inc., Annapolis Junction, MD, and Idaho Falls, ID** Sept 2007 to Aug 2009
  - **Advisory IT Architect**, SETA support to NSA's Customer Relationships Directorate Feb 2008 to Present  
Support Customer Relationships Directorate of NSA (S11). Author project and program vision documents, Concepts of Operation, Functional Requirements Specifications, and other procurement documents, track program requirements, and perform experiments and investigations to determine the cause of process and software problems, and then suggest solutions to them. Completed Scrum Master certification.
  - **Senior Applied Scientist**, Awaiting new task. Completed PMP certification. Sept 2007 to Jan 2008
  - **Senior Applied Scientist**, Quantum & Molecular Computing Systems Jan 2001 to Aug 2007  
Support the IC-Advanced Research and Development Activity (ARDA) and its successor, DNI/DTO, in the areas of quantum, molecular, and optical computing technology, strategic technology development and the prevention of technological surprise mission areas. Plan and manage research efforts in Quantum Information Science, including defining research priorities, writing the BAA, evaluating proposals, and evaluating researcher performance. Consult on advanced optical, quantum, and molecular computing, molecular electronics, QKD and performance limiting phenomena in quantum and classical systems.

## The University of Maryland, Baltimore County Campus (UMBC), Baltimore, MD

- **Adjunct and Research Professor**, Applied Physics, 1993 to 2010  
Successfully supported establishment of UMBC's Applied Physics program. Identified and proposed several research collaboration opportunities of significant benefit to both UMBC and Westinghouse. Worked on proposals for a new lidar (laser radar) system for atmospheric sensing, a new system for detection of unexploded and buried land mines, and an idea for precision measurement in a space environment. Raised to Research Professor in 2005.

## ANSER, Arlington, VA

- **Senior Applied Scientist**, Space Based Laser Optics Aug 1998 to Jan 2001  
Support the Ballistic Missile Defense Office in the area of Space Based Laser Boost-Phase Intercept systems for theater and national missile defense mission areas. Developed and managed a capability for engineering performance evaluation of high power optical systems which included new performance limiting phenomena. Began concurrent support of the Air Force Global Combat Support System. Published 3 professional papers.

**Butler Service Group, Baltimore, MD**

- **Consultant, Applied Engineering Physics** Jan 1997 to Apr 1998  
B-1B Radar Product Improvement (Air-Air Mode Clutter Studies for Northrop Grumman ESSD). Made numerous upgrades to FORTRAN engineering modeling code to incorporate new phenomena and geometries.

**Westinghouse Electric Company, Electronic Systems Group, Baltimore, MD**

- **Advisory Engineer, Communications Systems Engineering,** July 1994 to Dec 1995  
Explored architectures of digital communications systems to find and evaluate new approaches with significant economic, performance or market advantages. Reviewed PCS & digital cellular methods, satellite digital technology, circuit modularization and interconnection to the public switched telephone network. Identified methods for improving voice call handling capacity over existing digital services by a factor of up to 100; found a method of improving bandwidth efficiency of FDMA digital links by a factor of 2-4; invented a method of cutting the cost of large region SCADA systems by a factor of 2 to 100 and a method of orchestrating mobile RF nodes to dramatically enhance severe environment performance, resulting in 4 invention disclosures and one patent.
- **Advisory Engineer, Public Safety Systems Engineering,** Feb 1990 to July 1994  
Conceived a new approach to cargo inspection for incorporation into commercial import processing facilities to exclude drugs, contraband and explosives from containers, luggage and personal effects (3 Disclosures). Devised a class of fingerprint searching algorithms potentially over 10,000 times more efficient than current commercial algorithms (4 Disclosures). Invented new fingerprint sensing methods for improved quality and reliability of impression taking (2 Disclosures).
- **Advisory Engineer, Communications Systems Engineering,** Nov 1986 to Feb 1990  
Designed superior satellite to submarine optical communications system receiver, displacing incumbent. Invented new architectures for military radio frequency communications systems. Devised an approach to developing extremely high bandwidth superconducting digital communications systems. Proposed a novel architecture for an inter-satellite optical link eliminating receiving telescope.

**Headquarters, Air Force Systems Command, Andrews Air Force Base, MD**

- **Project Forecast Research Manager,** Mar 1986 to Nov 1986  
Advised Air Force Systems Command program office regarding incorporation of Project Forecast priorities and recommendations into the Air Force's basic research programs. Briefed Project Forecast II results to Air Force contractors. Successfully defended the Air Force basic research program.

**USAF Project Forecast II, Arlington, VA**

- **Strategic Technology Planner,** July 1985 to Mar 1986  
Member of the Electronics Panel. Analyzed Air Force needs for advanced technology in the areas of Wafer Scale Union of microelectronic circuitry and Nonlinear Optics technology. Authored project final report chapters for both areas, and prepared and edited portions of the final Project briefing.

**The Air Force Office of Scientific Research (AFOSR), Bolling Air Force Base, DC**

- **Director (Acting), Electronic and Materials Sciences Directorate,** Aug 1983 to July 1985  
Directed and reviewed all Air Force fundamental electronics and materials science research. Staffed and managed program office with 8 professionals and 4 support staff, dramatically improving office efficiency. Oversaw research at 6 sites and generated \$5 million program growth to \$50 million per year total.
- **Deputy Director, Electronic and Materials Sciences Directorate,** Jan 1983 to Aug 1983  
Initiated an innovative \$1 million per year Space Smokes program, much of which transitioned to the Strategic Defense Initiative. Continued managing \$3 million per year in research programs and assisted the Director in program management. Promoted to Lieutenant Colonel.
- **Program Manager, Electromagnetic Materials** Sept 1980 to Jan 1983  
Managed fundamental research programs on Microlithography Resists, Surface and Interface State Characterization, Optical and Electronic Thin Films, Surface Acoustic Wave Materials and Devices, and Magnetostatic Wave Materials. Awarded an Air Force Regular Officer's Commission.

**Defense Advanced Research Projects Agency (DARPA), Arlington, VA**

- **Program Manager**, Defense Sciences Office (Optical Materials) Aug 1975 to Sept 1980  
Managed applied research programs on Laser Windows, Coatings & Mirrors and X-Ray Lasers. Started and managed new programs on Autoreplication Technology; Surface Acoustic Wave Sensors; New Armor & Penetrator Materials; Efficient Laser Materials; Strong Optical Fibers; Ultra-low Loss Optical Fibers; and Fiber Optic Sensors (FOSS). FOSS was designated the Navy's number two technology development program by the Chief of Naval Operations. Promoted to Major.

**The Air Force Weapons Laboratory, Kirtland Air Force Base, NM**

- **Group Chief**, Advanced Laser Optics Design, Oct 1973 to Aug 1975  
Started and built up new design group to 2 professional and 1-2 support staff, while retaining previous job responsibilities (see below). Developed and used tools to design Airborne Laser Laboratory optics in the presence of high power beam-caused component and atmospheric aberrations. Developed system specifications and preliminary design approaches for a high power laser wavefront interferometer.
- **Project Officer**, Laser Window Design, Oct 1970 to Feb 1974  
Started and managed window materials and material window development programs for high power carbon dioxide lasers and the Airborne Laser Laboratory. Devised methods for tolerancing high power component and whole-system aberrations to achieve high system optical quality. Found an unsuspected phenomenon, intensity mapped aberration, and started a new group (see above) to manage it. Supervised 1-2 professionals and prepared successful program funding requests, including Congressional testimony.

**Consulting and Early Employment:****Details provided on request****Publications****Further Details Available**

15 Articles, 2 Patents, 13 Invention Disclosures and Numerous Proposals and Reports.

**Awards & Honors**

**1991-1995** - 13 Invention Disclosure Awards  
**1980** - Joint Services Commendation Medal (DoD)  
**1977** - Conference Chair; Optics In Adverse Environments, SPIE, San Diego, CA  
**1965** - Elected to Phi Beta Kappa

**Other Information**

**Military Service:** USAF: 1966-1986, LtCol (Ret)  
**Clearances:** Highest: TS (+), Q (+); Current: TS(+)  
**Languages:** Native English and Fluent German  
**Relocation:** Open to US and overseas relocation  
**Detailed resume:** Available upon request

**Project Management Professional Certification:** 27 Dec 2007 **Scrum Master certification:** June 2010**Computer Skills:** Scientific computing focus, with FORTRAN, C++, MS Office with VBA, and familiarity with many other scripting, software and hardware areas, including assembly language, networking and Mathematica.