# John H. Fikus, PhD

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## EMPLOYMENT GOAL:

Leadership position in leading-edge company offering technical innovation and forward-looking program responsibilities in advanced wired/wireless communications, digital network architectures, and proof-of-concept activities.

## AREAS OF SPECIALIZATION:

- Government and Military Resilient Network Design and Analysis.
- Enterprise Communication Systems and End-use Services/Terminals.
- Broadband/Narrowband Communications Systems Integration.
- Network Optimization and Performance Simulation.
- Proposal Generation and Presentation, Program Execution and Tracking.
- Advanced Technical Team Management.
- Cross-Company/Agency Team/Program Facilitation.

## EXPERIENCE:

### Prediction Systems, Inc., (PSI), Oct 2001 to Mar 2006, Spring Lake, NJ
### Technical Director

- Excelled in several overlapping and divergent roles:
  - Technical marketing and business development.
  - Project management and leadership.
  - Proposal and white paper development, technical contracts management.
  - Discrete event modeling and simulation expertise and development.
- Developed expertise in military communications, particularly Tactical Data Links (TDLs).
- Built and managed several innovative distributed simulations.
- Spearheaded new PSI executive overview; numerous presentations
- Proactive lead on FY07 Congressional Plus-up.

**Architectural Assessment Tool (AAT) (Apr 05 – Dec 05)**
**Air Force Research Laboratory – Information Directorate (AFRL/IF), Rome NY**

- Assumed contracts management, technical leadership and engineering management.
- Negotiated client acceptance of Phase 2 proposal in light of reduced funding.
- AAT assessed impacts of design choices in passing IP communications over TDL.
- SINCGARS radio, IP-based networking models and Link-16 models were interfaced by gateways.
- AAT supported:
  - Force deployment of SINCGARS and Link-16 platforms over Korean terrain.
  - RF propagation and connectivity visualization.
  - Placement of gateways, and interactive design of the Link-16 Networks.
  - Measurement of architectural impacts of network design tradeoffs.
- Built operational force deployment scenarios and network variations for simulation analysis.
- Created and presented the AAT Final Report to government client.
- Managed development and delivery of AAT Customer Training.
- Government client was quite satisfied with final project delivery and results.

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**JICO Support System (JSS) Phase 1 Contract – Team Lockheed  (Sep 03 – Jun 05)**
**Lockheed Martin (LMCO) – Maritime Systems & Sensors (MS2), Moorestown, NJ**

- PSI project lead for the Joint Information Control Officer (JICO) support system (JSS).
- Expertise on planning functions and Link-16 helped win Phase 1 contract for Team Lockheed.
- Innovative monitor feedback interface into the Link-16 simulation for effective demonstration.
- Proactive project manager for three sub-contracts with LMCO (Phase 1, B&P and IRAD):
  - Statements of work that sized schedules and staffing.
  - Technical contract development and closures.
  - Inputs to Phase 1 and 2 LMCO proposals for the JSS.
  - Active participation in LMCO planning and customer meetings.
- Technical management of all phases of on-time project deliveries:
  - Link-16 Network Management System enhancements.
  - Time projection of platform positions to anticipate future RF connectivity.
  - Link-11 HF radio propagation and terminal models and planning system (MIL-STD-6011C).
  - Joint Range Extension Gateway (JREG) models and simulation (MIL-STD-3011).
  - UHF Tactical, GEO Satellite models and simulation using 25 KHz DAMA-like protocol.
- Authored several reports and presentations:
  - Planning for the Future talk - at the Phase 1 JSS kickoff – excited  the customer.
  - White paper on Future Multi-TDL Architecture (MTA) Planning (w/ Bill Cave).
  - MTA Planning Requirements Analysis.
  - MTA Integration Requirements, Architecture, Tool and Processor Analysis.
  - Final contract presentation to LMCO management team that was very well received.
- LMCO management expressed satisfaction and applauded the speed and quality of work.

**Link-16 Network Management System (NMS) (May 02 – Dec 05):**
**Air Force Research Laboratory – Information Directorate (AFRL/IF), Wright-Patterson AFB**

- Engineering and business contributor to the Link-16 Network Management System (NMS).
- Built several dynamic, complex, operational scenarios for testing Link-16 networks.
- Complex scenarios involved force deployments of over 160 Link-16/JTIDS platforms involving air, ground and sea systems with ingress/egress vectors of Suppression of Enemy Air Defenses (SEAD) and Striker aircraft directed at ground threats and targets in three Areas of Interest (AoIs).
- Many scenarios based on the Single Integrated Air Picture (SAIP) NEA III 2010 reference scenario.
- Supported analysis of Link-16 as a Weapons Data Link (WDL) for Small Bombs (SBs).
- Responsible for User and System documentation.
- Developed and presented several demonstrations, and built AVIs (videos) of the NMS tools.
- Made several modeling contributions to the Link-16 NMS:
  - Model and GUI for copying platform scenario hierarchies.
  - Models for stimulating message traffic via scheduled events and subsequent message strings that closely correlated with messages exchanged in operational Mission Threads.
  - Under the JSS program (see above) served as a manager for development of on-line help, new GUIs, and more comprehensive user documentation.
- Gave many executive level presentations and demonstrations on the Link-16 NMS.
- NMS served as basis for several other projects such as the JSS (above) and the GIESim Lab (next).
- Most recently contributed to building a classified scenario for a PACOM exercise.

**Global Information Enterprise Simulation (GIESim) Laboratory (May 02 – Jun 05)**
**Air Force Research Laboratory – Information Directorate (AFRL/IF), Rome NY**

- PSI technical and project lead on GIESim; original team member; lead four contract cycles.
- HLA connected "best of breed" models and simulations to form communications simulations.
- Co-designed an HLA interface (with SAIC) between the GIESim PSI Link-16 Simulation and JSAF:
  - Joint Semi-Automated Forces (JSAF) simulation; a large war gaming simulation without comms.

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- Modified GIESim PSI Link-16 simulation to:
  - Handle Link-16 platform position updates and transmission requests from JSAF.
  - Report successful message receptions to JSAF.
- Created Time Critical Target (TCT) scenario for interoperability testing and demonstration.
- Designed Link-16 networks to support common force deployment communications needs.
- Presented acclaimed talks and demonstrations to leadership at AFRL Rome and at JFCOM J9.
- Published technical paper on merge, and gave presentation and demo at 2005 SPIE conference.

- Other GIESim work and responsibilities:
  - Distributed simulation components for an AFRL Scientific Advisory Board (SAB) review.
  - Construction and demonstration of PSI multi-simulation system for AFRL Rome.

**Other PSI Work:**

- Presented this briefing to many potential clients and partners including Lockheed Martin, Northrop Grumman, Strategy X, SRA (Galaxy Scientific), NSA, AFRL, JFCOM, SPAWAR, US Army, etc.
- Proactive lead on a Congressional Plus-up effort:
  - Obtained major command support from Electronic Systems Center (ESC), Hanscom AFB.
  - Obtained support from three congressmen after briefings given on Capital Hill in Washington DC.
- Led several GSS-oriented modeling and simulation workshops.
- Research on Information Operations (Information Assurance – IA, and Information Warfare – IW):
  - Intrusion Detection Systems (IDS), Attack trees, Intelligence Preparation of the Battlespace (IPB), Cyber Terrorism, and Zombie computers.
- Additional research on Joint Doctrine, Tactical Data Link (TDL) standards (maintain DISA), Common Data Links (CDLs), Airborne Networks, and Network Centric Operations (NCO) and Warfare (NCW).

## Acoustic Technologies, Inc., Mesa, Arizona
**Consultant, Aug-Sep 2001**

- Consulting and research on Full Duplex (FDX) Speakerphone technologies; Competitive Analysis.

## Lucent/AT&T Bell Labs, 1977 to 2002, Middletown and Holmdel, NJ

### Senior Manager - Lucent Media Server System Test Team
**Lucent Switching Solutions Group (2000 to Jul 2001)**

- Assembled System Test team and labs for two generations of Voice over IP (VoIP) Media Servers.
  - Media Servers provided VoIP services for Lucent Softswitches © over IP networks.
- Championed automation of test execution and results collection.
- Managed creation of test cases in Java, C++, and proprietary script language, and tool development:
  - Individual feature testing, capacity testing, and voice quality tests .
  - Test configurations included multiple Gateways (Max TNT, Cisco AS5300), Definity PBX, Sun SMP Processors, Ethernet switches, Softswitches, and LAN test equipment.
- Responsible for Customer Support and product delivery of first generation product.

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**Technical Manager - Diverse Jobs in the Innovative Desktop Solutions**
**Business Communications Systems (BCS) (1984-1999)**

**Audio Excellence Teams:**

- Directed development of enhancements to speakerphone algorithms and acoustic design.
- Beat Nortel and Siemens speakerphones in subjective tests (1998-1999).
- Managed the Advanced Audio Technologies Group for high quality audio from 1993-1995:
  - Assembled expert audio/DSP team; realized world-class, full-duplex, AEC video speakerphone.
  - Member of AT&T Center of Excellence for Audio; cross-BU acoustic and full-duplex audio excellence.
  - Managed Forward looking DSP-based Perceptual Audio Speech coder.
  - Merit awards for AT&T Technical Journal paper (co-authored) and for Acoustics Research.
- Enhanced overall state of audio performance, and fostered a deeper appreciation for the importance of audio and audio challenges and solutions, particularly in VoIP applications.

**Product Quality Improvement and Cost Avoidance Teams:**

- Managed high performance team that handled trouble escalations from US  and international customers.
- Proactively drove through process and system changes to improve business operations.
  - Example: Improved Definity PBX system interface for installation and maintenance of terminals.
- Led cross-organizational, break-through teams (1996-1998) that transcended traditional approaches:
  - Reduced product trouble rate by over 35% and avoided over $10M of full-stream business costs.
  - Won a Trailblazers Award (1998), and a President's Silver Award (1996).
  - 1996 Galaxy Award to Handset Cord Tiger Team: $750K cost reduction and 2X quality improvements.
  - Shared 1996 President's Gold Award as a member of the Definity PBX Trouble Rate Reduction Team.
  - Achieved 3:1 reduction in maintenance usage as leader of a break-through, 10-fold reliability initiative:
    - Created early warning processes - avoided millions of dollars of expense and customer troubles.
    - Created  Java-based analysis of weekly data feeds to automate Web page creation for results.
    - Won 1996 Trailblazers Award for Customer Satisfaction.

**System Test / Field Support Team:**

- Managed the award-winning Business Terminals Product Assurance Group (1987-1993).
- Responsible for System Test of:
  - Dozens of Analog and Digital Voice-Data telephones.
  - Terminal Adjuncts including Advanced Speakerphones (won Quality Pennant).
- Created new sophisticated System Test lab and advanced tools to automate key parts of the test process.
- Managed successful Customer Field Evaluations of above products.
- Earlier, supervised Project Management of all product developments.
- Won a Council of Leaders and Shared Values awards for management.
- Successful introduction of dozens of analog and digital products.
- Effectively managed a large number of customer trouble escalations.

**Systems Engineering Group:**

- Supervised the Business Terminals Systems Engineering Group (1984-1987)
- Defined next generation voice and data products and developed their requirements.
- Supervised Human Factors engineering, System Test, and Field Evaluation of Analog and Digital Voice and Data Terminals.
- Participated in Product Planning and led Customer Focus groups with Product Management.

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**Member of Technical Staff (MTS) Data Products Systems Engineer**
**AT&T Data Products Division from 1981 to 1984**

- Defined next generation and system architecture of new Data Phone products to meet customer needs.
- Lead Systems Engineer, developed requirements for high-speed, V.32 modem.
- Conducted market research to assess customer needs, reactions to product concepts,
- Lead MTS Systems Engineer for specifications for a graphics conferencing system:
    - Group III FAX with high definition scanned and projected video images.
    - Use in audio-graphics teleconferencing.
    - Audio-graphics teleconferencing task force aimed at defining future directions for conferencing.

**MTS Systems Engineer**
**AT&T Digital PBX development area from 1977 to 1981**.

- Responsible for specifications and internal marketing for new communications processor.
- Developed specifications for new video display terminal for PBX and several office automation efforts.
- Early work involved market study and evaluation of display terminals and printers.

## Business Skills and Experience:

- First-rate proposals and white papers.
- Interface experience with large primary contractors:
    - Statements of Work (SOWs), technical contracting associated with government/military programs.
    - Project and program management and leadership.
- Effective executive presentations and demonstrations.
- Direct experience with all facets of product and solution realization from customer focus groups, requirements analysis, system engineering, design and development, factory interface, unit and system test, field trails, product introductions, field support, and repair.
- Success in building strong effective teams and growing individual and team performance.
- Excellent analytical skills. Knowledge of full-stream business cost components, quality processes, experienced with budget management and cost containment.
- Vertical and horizontal business communications, inter-organizational networking.
- Training and experience with Technical/Business Management, Quality and Process (ISO 9001, 14000).
- Advocate for customers and quality.

## Technical Skills and Experience:

- Discrete event modeling and simulation (M&S) of communications systems, and distributed simulations:
    - High Level Architecture (HLA), TCP/IP (client/server) and knowledge of DIS.
- Tactical Data Links (TDLs), particularly Link-16/JTIDS/MIDS, Link-11 and multi-TDL architectures.
    - Associated MIL-STDs - 6016C, 3011, 6011C.
- Design of dynamic, complex operational scenarios with Mission Threads.
- Familiarity with SINCGARS and EPLRS radio communications, SATCOM, Sensors, JTRS, Joint Range Extension (JRE) gateways and protocols, radio propagation, Link-16 network design, Network Centric Operations (NCO) and Warfare (NCW), C4ISR, and Information Operations (IA, IW).
- Computer modeling of physical systems (MS and PhD).
- Technologies: ▪ Object Oriented Design (OOD) and Analysis (OOA), and Design Patterns.
    - ▪ Voice over IP (VoIP), H.323, TCP/IP, XML, ODBC, JDBC.
    - ▪ HTML and Web page design.
- Software: C, C++, General Simulation System (GSS), Java (J2SE 1.5), PERL, AWK, KSH.
- Hardware: Digital/Analog circuits, Z80, Intel 80x86/87, DSP32.
- Applications: MS Office, Access and Project, Designer, Visio.
- Systems: Windows, UNIX, DOS.

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## Recent Publications:

- "Technical challenges and solutions in merging GIESim and JSAF", John H. Fikus, et. al. 28 Mar – 1 Apr 2005, SPIE Defense & Security Symposium Enabling Technologies for Simulation Science IX, Conference 5805, Paper Number 5805-43

- "Prediction of Human Behavior", W.C. Cave and J. H. Fikus, PhD, Aug 14-17, 2004, Computing, Communications and Control Technologies (CCCT04) Conference Proceedings, Vol IV.

## Recent Papers & Proposals:

- Advanced Sensor Optimal Placement System (ASOPS) Proposal, 12 Jan 06  for Navy SBIR N06-097
- White Papers for Airborne Networking Broad Agency Announcement (BAA), Dec 2005:
    - Visual Scenario Development and Analysis
    - Enhanced Communications Interface Models
- Line of Sight (LOS) Networked Communications System White Paper for 2005 Naval Surface Warfare Center, Joint Unmanned Systems Common Control (JUSC2) ACTD, RFI N61331-05-Q-MR01
- Enhanced Link-16 Algorithm Specification Document, PSI, 30 Sep. 2005.
- Architectural Assessment Tool Phase II Proposal, PSI, 2005.
- Multi-TDL Planning Analysis Report to Lockheed Martin, PSI, 2004.
- White Paper on Future Multi-TDL Architecture Planning to Lockheed Martin, (with Bill Cave), PSI, 2004.
- Multi-TDL Network Integration Requirements Analysis, Architecture, Tool Needs and Processor Assessment to Lockheed Martin, PSI 2004.
- An Introduction to Modeling and Simulation Tools Created by Prediction Systems, Inc., 2004.
- Netted Full Spectrum Sensor (NFSS) Operations Management System (OMS) User's Guide, PSI, 30 Apr 03, for US Army CECOM I2WD.
- Intelligent Scenario Generation Tool Proposal, 2002, Navy SBIR N02-184
- Enhanced Visualization of Modeling and Simulation Processes Proposal, 2002, Navy/Joint Warfare Analysis Center (JWAC) SBIR N02-102 *(Phase 1 winner)*
- Communications Modeling Solutions Proposal, 28 Feb 2002 to Boeing Australia LTD.
- White Paper on Command and Control (C2), with US Army CECOM, 12 April 2002, for Boeing Broad Industry Announcement (BIA) on Future Combat Systems (FCS).

## PSI Modeling & Simulation Workshop Leadership:

- Nov 05   Hands-on custom workshop at Northrop Grumman, Integrated Systems, Bethpage, NY.
- Dec 02   Open, hands-on GSS workshops in Hampton and Old Town Alexandria, VA
- Nov 02   Custom workshop at PSI for VIASAT
- Oct 02   Custom GSS workshop at PSI for General Dynamics
- Sep 02   Open GSS Workshop hosted by Georgia Technical Research Institute, Atlanta, GA.

## Key Presentations & Demonstrations:

"Architectural Assessment Tool (AAT) Phase II Final Briefing" (with demo), 12 Dec 05, to Air Force Research Labs (AFRL) Information Grid (IFG) Leadership, Rome, NY.

Demonstration of Link-16 Network Management System to Major General Tommy Crawford and staff at Air Force Command and Control, and Intelligence, Surveillance and Reconnaissance (C2ISR) Center, Langley Air Force Base, VA., 16 Sep 05.

"JSS Phase 1 Final Presentation and Demos", 15 Jun 05, to Lockheed Martin MS2 Management, Moorestown, NJ.  Covered PSI work performed under Joint Information Control Officer (JICO) Support System (JSS) Phase 1 program, and LMCO B&P and IRAD funding.

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Congressional Plus-up briefings and demonstrations for Link-16 Network Management System at Electronic Systems Center (ESC), Hanscom Air Force Base and on Capital Hill, Washington DC:

- ❖ Mr. Tom Powis, Director, ESC GIGSG, 2 Mar 05.  Achieved major command support. Update 15 Dec 05.
- ❖ Congressman Jim Saxton (Rep NJ), 15 Sep 05.  Achieved his support and leadership commitment.
- ❖ Congressmen Frelinghuysen (Rep NJ) and Marty Meehan (Rep MA), 19 Oct 05.  Achieved their support.

"Technical Challenges and Solutions In Merging GIESim and JSAF", 7 Jun 05 to Joint Forces Command (JFCOM) J9 Leadership, Suffolk, VA.

"Link-16 Network Management System" (with demo), 24-26 May 05, Inaugural World Wide Consortium for the Grid (W2COG) Working Symposium, Manassas, VA.

"Technical Challenges & Solutions In Merging GIESim and JSAF" (with demo),  31 Mar 05, SPIE Defense & Security Symposium 2005, Enabling Technologies for Simulation Science IX, Paper Number 5805-43.

"PSI Link-16 Capabilities Briefing", 15 Nov 04, to CAPT M. Salvato, Joint Forces Command (JFCOM) J6 – Netcentric Integration Communications and Capabilities Division, Norfolk, VA.

"Planning for the Future – Technical Details", at JICO Support System (JSS)  Phase 1 Kick-off meeting, 30 Aug 04, to Air Force Electronic Systems Center (ESC) client held at Lockheed Martin, Moorestown, NJ.

"Prediction of Human Behavior", 14-17 Aug 04, International Institute of Informatics and Systemics (CCCT04), University of Texas at Austin.

"Overview of PSI Link-16 AFRL SBIR", 21 May 03, to Link-16 Network Management Enhancements Technical Exchange Forum, San Diego, CA.

Integrated Air Defense System (IADS) Simulation demonstration, 13 Nov 01, Air Force Research Laboratory (AFRL) Effects-Based Operations (EBO), Program Review Meeting, Baltimore, MD.

## Education:

- Ph.D. Materials Science, University of Virginia, Charlottesville, VA 1977.
  Computer Modeling: "Effects of Surface Energy Barriers on Void Growth in Irradiated Metals".
- MS Materials Science, University of Virginia, Charlottesville, VA 1973.
  Computer Modeling: "Theoretical Conformations of Polypeptides".
- BS Physics, Fairleigh Dickinson University, Teaneck, NJ  1970.

## Security Clearances:  DoD Top Secret/SCI, Briefed NATO Secret.

## Affiliations:

AFCEA, IEEE, IEEE Computer Society, Sun Java Developer Connection, IBM developer Works.

## Personal:

Enjoy science and technology, computing, piano, Yoga, Qi Gung, bicycling, hiking, good food, and pets.

**References Available on Request**.