

Dr. Alex Pavlak

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Main accomplishments and key skills:

- Successfully led an international team to develop an unprecedented sonar system for detection of quiet submarines.
- Strong and broad background in business, engineering, and science.
- Experienced with system architectures, business and strategic planning, project management, development projects.
- A deep generalist with an appreciation for structure, relationships, the big picture and major trends.

2010 – Present: Chairman, Future of Energy Initiative

- An open source working group with the purpose of easing the transition to a post fossil fuel economy.

2010 – 2012: Adjunct Professor of Energy, University of Maryland

- Teaching ENMG698, Strategic energy scenarios, a multidisciplinary graduate project course

1993 - 2010: President, Thales Research, Inc.

- Designed a static solar photovoltaic concentrator based on previously patented optical technology.
- Designed a variable speed wind turbine based on a continuously variable transmission.
- Created and offered public and private workshops on Creating System Architecture, Modern Tiger Teams, Total Problem-Solving.
- Expert problem solving teams: Under grants for NSF and NIMH, organized workshops and supported leading scientists addressing fundamental questions in basic science.
- Co-coordinator, Strategic Leadership Seminar Series, a public service of the PMI-WDC chapter, Strategic Leadership Network, and George Mason University. Federal Interagency Communities of Practice: consulting and support small group aspects, governance.
- Guest lecturer, Johns Hopkins University, Modern Tiger Teams.
- Dinner speaker on expert teams, total problem-solving, enterprise architecture.

1984 - 1992: Program Director, ASW Development Programs, Martin Marietta

- Orchestrated the development of TAVA, a new tactical anti-submarine warfare system concept. TAVA was effective for detecting quiet submarines. Variants of this system concept are being built and sold today.
- TAVA development included international sea trials: demonstration with U.S. Navy and NATO against a Greek submarine in the Mediterranean.
- Responsible for business and technical strategies, planning, proposals and leading development teams.
- Managed \$11M R&D investment/contracts.
- Negotiated R&D teaming agreement between Martin Marietta and the French Government.
- Orchestrated teams that created system architectures for several large ASW systems.

1976 - 1983: President, ConSuntrator Inc.

- Co-founder, Solar Energy Research and Development Company.
- Raised venture capital from 20 investors,
- Responsible for technical strategies, business planning and operations.
- Negotiated R&D contract with Phillips Petroleum Co.
- Managed a \$10m (2010\$) product development program at Phillips Petroleum R&D center.
- Invented a non-imaging optical concentrator: optimal concentration of sunlight without moving parts. 18 patents.

1968 - 1976: Research Engineer/Scientist, General Electric Co.

Managed research and development programs and contracts in:

- experimental hypersonic boundary layer transition
- lake ice physics;
- liquid acoustic lenses;
- signal processing;
- river sedimentation;
- Jupiter probe sensors;
- oceanographic buoys;
- ocean wave spectra;
- power plant thermal plumes;
- stress in shells exposed to nuclear explosive pulse;
- stability of VHF air/sea communication links;
- covert buoy concepts;
- invented and patented linear inductive electric generator.

Education, Awards, Honors

- Director, Maryland Clean Energy Center
- B.E., M.E., Ph.D., Mechanical Engineering, Stevens Institute of Technology.
- Post graduate courses, University of Pennsylvania.
- Licensed professional Engineer, State of Pennsylvania.
- Project Management Institute certified Project Management Professional.
- Elected U.S. industry representative for UDT Symposia (Paris),

Personal Passion

Man has an unexplored opportunity to expand his inductive reasoning performance by working together in special teams. Teamwork tools have evolved to the point where Special Expert Teams can reach beyond the limits of individual imagination.

Patents

- 2008 - Compound Parabolic Concentrator Modules, # 61/130,715
- 1981 - Solar Energy Collector Construction, # 4,263,893 + 4 foreign patents
- 1981 - Solar Energy Reflector Collector, # 4,263,893 + 4 foreign patents
- 1977 - Solar Energy Reflector Collector, # 4,024,852 + 4 foreign patents

Papers and publications since 2005:

- Pavlak, A., [Clean energy leadership requires wisdom](#), Letter to the editor, *Baltimore Sun*, September 18, 2017.
- Pavlak, A., [A Smarter way to analyze wind power's merits](#), OpEd, *Baltimore Sun*, Aug 8, 2017
- Pavlak, A., [A low risk path to sustainable Maryland electricity](#), OpEd, *Baltimore Sun*, Dec.14, 2016.
- Goudarzi, N., Rudesill, J., Pavlak, A., [Cost performance tradeoff study of wind systems: grid scale storage](#), *ASME 2016 Power Conference*, June 26, 2016.
- Pavlak, A., Bothwell, C., [A New Reliability Criterion for Calculating Wind System Capacity](#), Rejected by *IEEE Transactions*, July 2015.
- Goudarzi, N., Pavlak, A., [Cost performance tradeoff study of power generation from wind](#), ASME

2105 Power Conference, June 28, 2015.

- Pavlak, A., [Inexpensive, clean, reliable energy will require engineered systems](#), *Systems Engineering Journal*, pp. 241-252, May 2015.
- Goudarzi, N., Pavlak, A., [Cost Performance Tradeoff Study of Low Carbon System Concepts](#), *ASME2014 Power Conference*, July 28, 2014.
- Pavlak, A., Winsor, H., [Wind System Reliability and Capacity](#), *ASME2014 Power Conference*, July 28, 2014.
- Smith, N., Pavlak, A., [Justification for Long Distance Transmission](#), *ASME2014 Power Conference*, July 28, 2014.
- Pavlak, A., [System implications of intermittent generators](#): How to engineer reliable zero carbon wind systems, 23rd INCOSE International Symposium, Philadelphia, June, 2013.
- Pavlak, A., [How to develop system concepts](#), *IEEE Energy Tech* 2013, May 22, 2013
- Goudarzi, N., Pavlak, A., Zhu, W., [Analysis of Multiple Generator Drivetrain Configuration in Wind Turbines](#), *AWEA Offshore Windpower*, October 9-11, 2012.
- Pavlak, A., [Wind Energy is clean, but wind energy systems are not](#), OpEd, *Baltimore Sun*, Feb 9, 2012
- Pavlak, A., [Engineering Clean Energy Systems](#), *INCOSE International Symposium*, Rome, best paper award, July 12, 2012
- Pavlak, A., [The problem with wind: It doesn't get us close to zero carbon](#), OpEd, *Baltimore Sun*, May 5, 2011
- Pavlak, A., [Benefits of Offshore Wind in Short Supply](#), *The Capital OpEd*, Dec. 4, 2010, p A16,
- Pavlak, A., [Strategy vs Evolution](#), *Macroscopic Essay*, *American Scientist*, May 28, 2010
- Pavlak, A., [Wind energy contribution to a low-carbon grid](#), *The Electricity Journal* 23:4, pp. 53-58, May 2010
- Pavlak, A., [Creating Fact-Based Energy Policy: Disciplined systems engineering helps make value decisions about clean energy](#), *IEEE Tech Talk*, May 24, 2010.
- Pavlak, A., [Obama should take a Systems Approach to Clean Energy](#), *IEEE Tech Talk*, April 22, 2010.
- Pavlak, A., [Enterprise Architecture as Strategic Vision](#), *Journal of Enterprise Architecture* 4:2, pp. 31-34, May, 2008.
- Pavlak, A., [Economic Value of Wind Energy](#), *Electricity Journal* 21:8, October, 2008, pp. 46-50.
- Pavlak, A., [Architecture Governance: Management Structure for Creating Architecture](#), *Architecture and Governance* 3:4, November 2006, pp. 28,29.
- Pavlak, A., [EA Value Proposition](#), August 5, 2006, unpublished
- Pavlak, A., Enterprise Architecture: [Lessons Learned from Classical Architecture](#). *Journal of Enterprise Architecture* 2:2, 2006, pp. 20-27.
- Pavlak, A., "The Future of Great Ideas: Team Collaboration in Basic Science," in Wagner, C.G., [Foresight, Innovation and Strategy: Towards a Wiser Future](#), World Future Society, 2005, pp. 395-408.
- Pavlak, A., "Simplify the [Creation of Enterprise Architecture](#) with Special Expert Teams," *Journal of Enterprise Architecture* 1:1, 2005, pp. 29-35.
- Pavlak, A., [Project Troubleshooting: Tiger Teams for Reactive Risk Management](#), *Project Management Journal* 35:4, 2004, pp. 5-14.
- Pavlak, A., [Modern Tiger Teams, Team Management Lessons from the Space Shuttle Columbia](#)," unpublished.
- Pavlak, A., "NASA [Decision Making Governance](#)," Sept 15, 2005, unpublished.