

Curriculum Vitae for John M. Linebarger

As of 14 January 2010

1. Career Goals

To serve in a leadership role in a software research and development organization

2. Skills Areas

Distributed computing, collaborative virtual environments, semantic technologies, cognitive systems, modeling and simulation, software architecture, scientific visualization, virtual reality, project management and leadership, software design and development in distributed teams, cross-platform software development, publication and presentation

3. Education

YEAR	DEGREE	SCHOOL	SPECIALIZATION/ACCOMPLISHMENTS
2004	PhD in Computer Science	Lehigh University	<ul style="list-style-type: none">• Collaborative Virtual Environments and Distributed Computing• Created the Simple Shared Virtual Environment (SSVE), a cross-platform software framework for distributed collaborative virtual reality• Dissertation title: “<i>GroupMorph: A Group Collaboration Mode Approach to Shared Virtual Environments for Product Design</i>”• GPA: 4.0
1999	Master’s in Computer Science	University of New Mexico	<ul style="list-style-type: none">• Broad coursework as a foundation for a PhD• GPA: 3.93
1989	Master’s in Theological Studies	Regent College	<ul style="list-style-type: none">• Systematic and Historical Theology• Thesis title: “Evangelical Theologies of the New Testament Canon: A Taxonomy and Critique”• Awarded the History Prize in 1988
1986	MBA	New York University	<ul style="list-style-type: none">• Information Systems/International Business• Graduated with distinction• Awarded the Westchester/Fairfield Alumni Chapter Award in 1986 for the highest GPA in the Manhattanville campus graduating class• Elected to Beta Gamma Sigma
1980	BA in History	The King’s College	<ul style="list-style-type: none">• History and Classical Guitar Performance• Graduated <i>summa cum laude</i>.

4. Professional Society Affiliations

- Member of IEEE, IEEE Computer Society, and ACM (Association for Computing Machinery)
- Member of Beta Gamma Sigma, the national business education honor society

5. Sandia Project Experience

DATES	ACCOMPLISHMENTS	TECHNICAL SKILLS
2008 to present	Team lead for ThreatView, an information analysis application for the intelligence community. Application programming using the Umbra simulation framework. As the Umbra training coordinator, developed and taught three courses on Umbra and Dante. Simulation integration using iSIGHT-FD and Python. Cognitive modeling and cognitive systems programming using STANLEY. Founder and coordinator of the lab-wide Multicore Working Group. Contributed to the Multi-Scale Behavioral Analysis of Integrated Surety Designs, the Large Scale Social Simulation, and the Risk-Based Cost-Benefit Analysis LDRDs. Co-leader of the Hybrid Behavior Framework for LVC LDRD.	C++, Tcl/Tk, C#, Java, Python, STANLEY text analysis API, iSIGHT-FD, Qt, ParaView, VTK/Titan, CMake
2006-2007	Architecture team lead for the first deployment of the Integrated Public Alert and Warning System (IPAWS) project for FEMA. Contributed to the design, documentation, and prototyping of a vendor-neutral distributed messaging architecture for the secure delivery of national alert and warning messages.	XML, XSLT, Java, DoDAF, PKI, OWL, RDF, SPARQL
2006-2007	Team member and semantic technologies subject matter expert (SME) for the development of the Semantic Web Advanced Toolkit (SWAT), which was funded by a Shared Vision project with Lockheed Martin	C#, STANLEY text analysis API, WordNet API, OWL, RDFS, RDF, SPARQL, Java
2005-2006	Project leader for semantic technologies and ontology development for the National Infrastructure Simulation and Analysis Center (NISAC) program. Created an ontology for the knowledge management (KM) of critical infrastructure protection (CIP); prototyped the semantic navigation of the NISAC CIP KM portal; and implemented a semantically-driven keyword expansion facility for search terms in the CIP KM portal.	OWL, RDFS, RDF, SKOS, XSLT, Jena API, SPARQL, Java, Oracle
2005	Technical lead for a distributed collaborative simulation software architecture LDRD in collaboration with Sandia California	Java, RMI-over-IIOP, Grid and Distributed Simulation technologies (OGSA, HLA)
2004-2005	Project leader for the creation of <i>GroupMeld</i> , a programmable multimedia collaboration library, for the National Infrastructure Simulation and Analysis Center (NISAC) program	Java, Java Web Start, RMI, RMI-over-IIOP, CORBA
2004-2005	Technical project lead for the redesign and implementation of the Policy and Procedures Infrastructure (PNPI) system	Java, Servlets, Flash, HTML, JavaScript, SQL Server
2004-2006	Program Manager for the DHS 30 Cities Initiative	Project management, vendor negotiation, and purchasing
2000-2003	Doctoral Study Program at Lehigh University	C++, CORBA, RMI, COM/COM+/DCOM, Java, OpenGL, JPEG API, VTK
1999-2000	Scientific visualization library and component development for the Accelerated Strategic Computing Initiative (ASCI) X-cut project	C/C++, CORBA, OpenGL, EnSight, JPEG API
1998-1999	Development of distributed scientific visualization components for the Simulation Infrastructure/Product Development Object (SI/PDO) project within the ASCI program	C++, CORBA, OpenGL
1995-1997	Virtual reality-based scientific visualization application development, primarily of massively parallel finite element simulations. Helped to port MuSE to the Motif graphical user interface and to other Unix platforms, rebranding it as EIGEN/VR. Principal contributor to an LDRD that developed a parallel algorithm for dynamic level-of-detail and isosurface generation.	C/C++, OpenGL, IRIS GL, MPI, Motif/Xt/Xlib, Tcl/Tk, Java, MuSE, EIGEN/VR, UNIX/IRIX
1995-1997	University Part-Time program at the University of New Mexico	C/C++, OpenGL, VTK, ML, Tcl/Tk, Java, CLOS, LISP, Scheme, Prolog, UNIX/Linux

DATES	ACCOMPLISHMENTS	TECHNICAL SKILLS
1994-1995	Team member for the modeling, design, and development of several supply chain data exchange and simulation prototypes for the Demand Activated Manufacturing Project (DAMA)	Visual Basic, C/C++, SQL Server, Access, Arena simulation API, IDEF
1992-1993	Project leader for the development and implementation of the Sandia Reimbursement and Vouchering System (SRVS)	CASE (using the Information Engineering Facility [IEF]), COBOL, CICS, DB2, JCL
1989-1992	Team member for the implementation of the Just-In-Time (JIT) Purchasing System and the Document Production System.	IEF, COBOL, CICS, CSP, C, DB2, JCL, batch files

6. Work Experience Prior to Sandia

DATES	COMPANY	ACCOMPLISHMENTS	TECHNICAL SKILLS
1987-1989	Regent College, Vancouver, BC	Specified, selected, converted, and implemented a registration, student records, and alumni development system	COBOL, dBASE, HP 3000 MPE
1986-1988	Wolfe & Associates, Albuquerque, NM	Information systems consultant on several public and private sector projects	COBOL, CICS, IBM JCL, Adabas/Natural, Speed II
1985-1986	Norelco Corporation, Stamford, CT	Project Leader for the redesign of a customer order processing system	COBOL, PL/I, CICS, DB2, IBM JCL, IBM MVS/VSE, System/360 assembly language, Adabas/Natural
1980-1985	Burndy Corporation, Norwalk, CT	Manager of Information Support for the Electrical Division Project Leader for development of a work-in-process job costing system and commodity surcharge system	COBOL, TIP, UNIVAC JCL, SSG, MAPPER, CODASYL DBMS, Assembly language, dBASE, Pascal

7. Publications

- Linebarger, John M. (2009). "Group Collaboration Patterns." Invited chapter (4.10) in Jennifer O'Connor *et al.*, eds., "Collaboration in the National Security Arena: Myths and Reality – What Science and Experience Can Contribute to its Success," Topical Strategic Multi-Layer Assessment (SMA) Multi-Agency/Multi-Disciplinary White Paper in Support of Counter-Terrorism and Counter-WMD, June.
- Cloutier, Robert J., Mark J. De Spain, John M. Linebarger, and Floyd W. Spencer. (2009). "Agile Development of Tractable Analyses and Simulations of Complex Systems." *Proceedings of the 19th International INCOSE International Symposium (INCOSE 2009)*, 20-23 July, Singapore, IS 7.2.2.
- Linebarger, John M., Mark J. De Spain, Michael J. McDonald, Floyd W. Spencer, and Robert J. Cloutier. (2009). "The Design for Tractable Analysis (DTA) Framework: A Methodology for the Analysis and Simulation of Complex Systems." *International Journal of Decision Support Systems Technologies* 1.2 (April-June), 69-91.
- Bowers, John S., John M. Linebarger, and J. Cecil. (2007). "Semantic Web Technologies for Knowledge Management of Small-Scale Virtual Manufacturing Enterprises." Accepted for publication in *Proceedings of the 19th IEEE International Engineering Management Conference (IEMC 2007)*, 29 July-1 August, Austin, TX.
- Linebarger, John M., Michael Goldsby, Daniel Fellig, Marilyn F. Hawley, Patrick C. Moore, and Timothy J. Sa. (2007). "Smallpox over San Diego: Joint Real-Time Federations of Simulations and Simulation Users under a Common Scenario." *Proceedings of the 21st International Workshop on Principles of Advanced and Distributed Simulation (PADS 2007)*, 12-15 June, San Diego, CA, 7-14.
- Linebarger, John M., Andrew J. Scholand, and Mark A. Ehlen. (2006). "Representations and Metaphors for the Structure of Synchronous Multimedia Collaboration within Task-Oriented, Time-Constrained Distributed Teams." *Proceedings of the 39th Hawaii International Conference on System Sciences (HICSS 39)*, 4-7 January, Kauai, Hawaii.
- Linebarger, John M., Andrew J. Scholand, Mark A. Ehlen, and Michael J. Procopio. (2005). "Benefits of Synchronous Collaboration Support for an Application-Centered Analysis Team Working on Complex Problems: A Case

- Study." *Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work (Group'05)*, Sanibel Island, FL, USA, 6-9 November, 51-60.
- Scholand, Andrew J., John M. Linebarger, and Mark A. Ehlen. (2005). "Thoughts on Critical Infrastructure Collaboration." *Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work (Group'05)*, Sanibel Island, FL, USA, 6-9 November, 344-345.
- Linebarger, John M., Christopher D. Janneck, and G. Drew Kessler. (2005). "Leaving the World Behind: Supporting Group Collaboration Patterns in a Shared Virtual Environment for Product Design." *Presence: Teleoperators and Virtual Environments* 14.6 (December), 697-719.
- Linebarger, John M., and G. Drew Kessler. (2004). "Concurrency Control Mechanisms for Closely Coupled Collaboration in Multithreaded Peer-to-Peer Virtual Environments." *Presence: Teleoperators and Virtual Environments* 13.3 (June), 296-314.
- Linebarger, John M., Janneck, Christopher D., and Kessler, G. Drew. (2003). "Shared Simple Virtual Environment: An Object-Oriented Framework for Highly-Interactive Group Collaboration." *Proceedings of the Seventh IEEE International Symposium on Distributed Simulation and Real Time Applications (DS-RT 2003)*, 23-25 October, Delft, The Netherlands, 170-180.
- Linebarger, John M., and G. Drew Kessler. (2002). "GroupMorph: A Group Collaboration Mode Approach to Shared Virtual Environments for Product Design," *ACM Conference on Collaborative Virtual Environments (CVE 2002)*, 30 September–2 October, Bonn, Germany, 145-146.
- Linebarger, John M., and G. Drew Kessler. (2002). "GroupMorph: Supporting Group Collaboration Modes for Hierarchically Decomposable Tasks in 3D Environments." *Conference Supplement to the ACM 2002 Conference on Computer Supported Cooperative Work (CSCW 2002)*, New Orleans, LA, USA, 16-20 November 2002, 179-181.
- Erle, M. A., M. J. Schulte, and J. M. Linebarger. (2002). "Potential Speedup with Decimal Floating-Point Hardware." *Proceedings of the Thirty Sixth Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, California, 3-6 November 2002, 1073-1077.
- Holmes, Victor P., John M. Linebarger, David J. Miller, Ruthe L. Vandewart, and Charles P. Crowley. (2001). "Evolving the Web-based Distributed SI/PDO Architecture for High-Performance Visualization." *Proceedings of the 2001 Advanced Simulation Technologies Conference (ASTC 2001)*, 22-26 April, Seattle, WA, 151-158.
- Holmes, Victor P., John M. Linebarger, David J. Miller, Clark A. Poore, and Ruthe L. Vandewart. (2000). "Distributed Design Tools: Mapping Targeted Design Tools onto a Web-based Distributed Architecture for High-Performance Computing." *Proceedings of the 2000 International Conference on Web-Based Modeling and Simulation*, 34-39.
- Holmes, Victor P., John M. Linebarger, David J. Miller, and Ruthe L. Vanderwart. (1999). "The Simulation Intranet Architecture." *Proceedings of the 1999 International Conference on Web-Based Modeling and Simulation*, SCS Simulation Series 31.3, 94-104.
- Holmes, Victor P., John M. Linebarger, David J. Miller, and Ruthe L. Vanderwart. (1999). "An Object-Based Metasystem for Distributed High Performance Simulation and Product Realization." *Proceedings of the Workshop on Parallel/High-Performance Object-Oriented Scientific Computing (POOSC'99)*, 15 June, Lisbon, Portugal, 31-40.
- Bencoe, Michael, and John M. Linebarger. (1993). "The Perils and Pitfalls of the FDUMP COBOL Compiler Option." *IEF Technical Newsletter* (July), 4-5.
- Linebarger, John M. (1992). "An Information Engineering Facility (IEF) Implementation of the Shell-Metzner Sort Algorithm." *BrIEFly Speaking* (Second Quarter), 7-14.
- Linebarger, John M. (1991). "Calculating Fret Positions for Non-standard Scale Lengths." *Soundboard* 18.3 (Fall), 20-27.
- Linebarger, John M. (1991). "History Meets Theology: Three Recent Books about the Canon. A Review Article." *Crux* 27.3 (September), 34-37.

8. Technical Reports

- Basilico, Justin D., Carl F. Diegert, Zach Heath, Theresa H. Ko, John M. Linebarger, Carmen M. Pancerella, Eric P. Parker, Max S. Shneider, and Pamela A. Williams. (2008). *Large Scale Social Simulation*. (Sandia Report SAND2008-7831). Albuquerque, NM: Sandia National Laboratories.
- De Spain, Mark, John M. Linebarger, Michael J. McDonald, Floyd W. Spencer, and Robert J. Cloutier. (2008). *The Design for Tractable Analysis (DTA) Framework: A Methodology for the Analysis and Simulation of Complex Systems*. (Sandia Report SAND2008-6030). Albuquerque, NM: Sandia National Laboratories.

Linebarger, John M., Daniel Fellig, Patrick D. Moore, Mike Goldsby, Marilyn F. Hawley, and Timothy J. Sa. (2005). *Integrating Software Architectures for Distributed Simulations and Simulation Analysis Communities*. (Sandia Report SAND2005-6642). Albuquerque, NM: Sandia National Laboratories.

Linebarger, John M. and G. Drew Kessler. (2002). *The Effect of Avatar Connectedness on Task Performance*. (Technical Report LU-CSE-02-007). Bethlehem, PA: Department of Computer Science and Engineering, Lehigh University.

Lamphere, Peter B., John M. Linebarger, and Arthurine R. Breckenridge. (1999). *Dynamic Isosurface Extraction and Level-of-Detail in Voxel Space*. Revised. (Sandia Report SAND98-1224). Albuquerque, NM: Sandia National Laboratories.

9. External Presentations and Invited Talks

“Complex Systems Modeling and Networks: Summary of NECSI Course CX202.” (2009). Invited talk for the monthly meeting of the Enchantment chapter of the International Council on Systems Engineering (INCOSE), 11 February, Albuquerque, NM.

“The Critical First Year: Introducing Semantic Technologies into an Organization.” (2007). Presentation at 2007 Semantic Technology Conference, 23 May, San Jose, CA.

“Introduction to the Semantic Web.” (2006). Presentation for the Spring 2006 Sandia Software Development Conference, 11 May, Albuquerque, NM.

“Group-oriented, Desktop-based, Object-focused Tasks: Ten Propositions on the Future of Virtual Reality.” (2003). Invited paper and talk for the Second Young Investigator’s Forum in Virtual Reality (YVR ‘03), February, Kangwon Province, South Korea.

“Shared Object-focused Tasks: Current Virtual Environment Research at Lehigh University.” (2003). Invited talk for Fraunhofer FIT, October, Sankt Augustin, Germany.

"A Gentle Introduction to External Action Blocks." (1993). Presentation for the 1993 Information Engineering Facility (IEF) User's Group Conference, April, Lake Buena Vista, FL.

"Plan the Foundation Before You Build: Using CASE to Develop Financial Information Systems." (1993). Presentation for the 1993 Financial Management Systems Conference, February, Santa Fe, NM.

"Snake Oil or Scapegoat: Anatomy of a CASE Pilot Project." (1992). Invited talk for the June meeting of the Albuquerque, NM, Data Processing Management Association (DPMA) chapter.

10. Courses Taught

DATES	COURSE	LOCATION
Fall 2007-Spring 2008	Elementary New Testament Greek	Trinity @ The Marketplace, Albuquerque, New Mexico
Fall 1991, Spring 1992	System Development Project (MGT 461)	University of New Mexico Anderson School of Management
Fall 1990, Spring 1991	New Testament Interpretation	Albuquerque Bible College