

STEPHEN GUERIN
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Experience

Current **President, RedfishGroup** (www.redfish.com)
Scientific visualization, agent-based modeling and research in applications of self-organizing systems. Please see website for current projects (<http://www.redfish.com/projects/>).

5/2000 – 4/2002 **BiosGroup, Inc.** – Applied complexity consulting (www.biosgroup.com)
Senior Software Developer

Project Summaries:

Large Data Storage Company – Developed resource allocation algorithms, visualizations and agent based models for a self-administering, self-organizing data network.

Network Flow – Created 3D visualization of a novel network flow optimization for natural gas pipelines.

Air Products, Inc. – Developed and deployed a strategic portfolio management tool. Used Java Peer2Peer architecture with embedded webserver (Jetty), prototype Matlab code and integrated within a corporate Microsoft environment (IIS, SQL, COM-ASP).

MarketProwess – Developed interactive web visualization of “trade space” for a B2B high-dimensional preference-matching engine. Integrated to prototype Matlab code via web interface.

Honda ShapeShifter – Developed a web application that allows consumers to evolve the shape of future possible automobile shapes. Three-dimensional auto shapes were bred using genetic algorithms in a peer2peer web application that runs in a web browser and screensaver context. Car designs were traded between users without the need for intermediary servers.

NASDAQ – Integrated a web-based Java3D visualization of clustering algorithms for stock portfolios.

Large Energy Trading Company - Designed and developed distributed enterprise application for semantically specifying option contracts for energy trading.

Stuart Kauffman’s Research Group - Researched theoretical foundations for approaching the inverse problem of local rule discovery to achieve desired global behaviors of distributed agents. Explored techniques for realizing Autonomous Agents (as described in [Investigations](#), 2000) in software. Explored mappings of Autonomous Agents to adaptive social organizations.

1991-5/2000 **RedfishGroup, Inc.** – (www.redfish.com)
Founder, Lead Sales, Lead Development and Business Management

Project Summaries:

1999-2000 *Phoenix, Arizona* - Designed business-to-business Internet reverse-auction website focused on Asian supply of electronic components. Designed a globally distributed information system using n-tier design including transaction servers, object databases and secure commerce servers. Personally established supply relationships with Chinese manufacturers and tied real-time into a global shipping company’s information system.

1998-99 *Phoenix, Arizona* - Developed web-based enterprise resource planning system for an electronics manufacturer. Implemented as n-tier design. Business object tier consisted of Java and Microsoft COM components. Data tier consisted of MS SQL, legacy and object database. Interface tier consists of Java, HTML, XML and Shockwave components. Pioneered "virtual manufacturing" concept which allowed suppliers and customers real-time access to factory floor with web-based 3D interfaces.

1995-97 *Beijing, China* - China Internet consulting - Marketed to and developed Internet solutions for multinational corporations including Dow Jones, Total Petroleum, Reuters, Hewlett Packard, Apple, CNN, United Nations, Cray Research, Nippon Telecom, German Embassy, Siemens, ABC, Warner Brothers and Time. Designed and hosted US Embassy's web site. Integrated with back end databases for citizen registrations, visa applications and knowledgebase searches. RedfishGroup was the first foreign company to host a server on China's nascent Internet backbone.

1995-96 *Beijing, China* - AVID video editor for "Behind the Scenes" - a Chinese Television program covering Chinese films in production. The program aired on China's national network, CCTV. Responsible for storyboarding, editing, graphic design and animations.

1994-95 *Beijing, China* - Developed web-based Chinese dictionary. Integrated web server with relational database for online searches.

1991-94 *Jupiter, Florida* - Apple Value Added Reseller, Multimedia Research and Development - Designed and animated several award winning cd-rom and pc-based multimedia presentations. Gained strong experience in multimedia programming/scripting, video compositing and 3D design. Researched and developed electronic prepress techniques for commercial printers. Conducted professional training in Photoshop and other desktop prepress software. Extensive experience in color calibration, image correction and graphic design.

Publications

- Guerin, S. (2004) Peeking into the Black Box: Some art and science to visualizing agent-based models. *Proceedings of the 2004 Winter Simulation Conference R .G. Ingalls, M. D. Rossetti, J. S. Smith, and B. A. Peters, eds.*
- Agar, M., Guerin, S., Holmes, R., and Kunkle, D. 2004. DrugSim: the structure of agent-based revolutions. In: *Proceedings of Agent 2004:Challenges in Social Simulation. Chicago, IL.*
- Gambhir, M., Guerin, S., Kauffman, S., Kunkle, D., (2004) Steps toward a possible theory of organization. *Proceedings of the International Conference on Complex Systems 2004.*
- Guerin, S. and Kunkle, D. (2004) Emergence of constraint in self-organizing systems. *Journal of Nonlinear Dynamics, Psychology, and Life Sciences, Vol. 8, No. 2, April, 2004.*
- Boyle, S., Guerin S., Pratt J., Kunkle D. (2003) Application of Agent-Based Simulation to Policy Appraisal in the Criminal Justice System in England. In: *Proceedings of Agent 2003:Challenges in Social Simulation. Chicago, IL.*

Boards

National Science Foundation – 2004 Human Behavior and Social Dynamics Grant Review
Arizona State University Agent-Based Modeling Lab – External Advisory Board
New Mexico Information Technology and Software Association – Board Member
Santa Fe Economic Development, Inc. – External Advisory Board

Education

2000 **Santa Fe Institute** – Complex Systems Summer School – Business Network attendee
1998-2000 **Arizona State University** Graduate Studies, Cognitive Science (27 hours)
Complex Adaptive System studies in Mathematics, Computer Science, and Cognitive Science
1994 **Peoples University**, Beijing, Peoples Republic of China
China Studies
1986-1990 **Arizona State University**

1988 Bachelor of Science in Economics
Nanjing University, Peoples Republic of China
China Studies

Skills

- Algorithm visualization, 2D and 3D animation, distributed systems design, algorithm development for self-organizing systems, agent based modeling, evolving neural networks, search and optimization
- Rapid prototyping and visualization of agent based models / GUI and graphic design
- Client interaction to discover novel applications of new technologies

Technologies

Python , Director/Shockwave, Lingo, ASP/COM, SQL Database Admin, Java, Flash, peer2peer design, Java Servlets, Matlab, Microsoft .Net, Photoshop, HTML

Recent Conferences

2003 Arrowhead Human Complex Systems, UChicago/Argonne National Lab Agent 2004/2003, 2002 Keynote speaker at the Society for Chaos Theory in Psychology and Life Sciences conference, Santa Fe Institute - Biological Framings of Problems in Computing, Santa Fe Institute - Collective Cognition Workshop, Artificial Life VI & VII, Genetic and Evolutionary Computation (GECCO99), Siggraph99, Biota III

References and project portfolio samples available on request