James A. Rome

Objective

To apply data analysis insight obtained in numerous scientific fields to new and challenging venues.

Experience

2010–   **Consultant**
- Passur Aerospace: Study air traffic flows in air and on ground; optimize position calculations; write reports for clients.
- Manage Web Sites for multiple non-profit organizations (orcma.org, kacbtn.org,…).
- Board of Directors for several non-profit organizations.

2004   **Consultant**
- MetronAviation: Study air traffic flows and metrics.
- Adsantec: Intrusion detection using statistical methods.
- ORNL: Continuing activities as TeraGrid security working group representative (unpaid).

2000–   Oak Ridge National Laboratory   Computer Science & Mathematics Division   Oak Ridge, TN
2003   **Senior Scientist**
- Created security plans for cross-site collaboration enclaves, wireless LANs, HR enclaves.
- Simulated 40-Gbps networks and found how packets can get dropped.
- Created long-range security direction white paper for ORNL.
- Co-chair of one-time password effort.
- ORNL TeraGrid security point of contact. (Continuing activity)

1994–   Scientific Endeavors Corporation   Kingston, TN
   President
- Write and sell a C-based scientific graphics library and a terminal emulator.
- Manage the company, write code, and do publicity.

1999–   Y12 Plant   Center for Infrastructure Information Technology   Oak Ridge, TN
2000   **Senior Scientist**
- Established secure electronic Lab Notebook for HFIR.
- Collaborated with Northwest Airlines on second study using proprietary NWA data to determine the economic benefit of swapping landing slots.
- Studied Cleveland Center airspace for FAA and NASA. Determined new method of solving the 4-D deconfliction problem.

1998–   Oak Ridge National Laboratory   Computing Information and Networking Division   Oak Ridge, TN
1999   **Senior Scientist**
- Successfully modeled effects of down-line delay of landing arrivals for the FAA using American Airlines data.
- Used the above model to propose and win a subcontract from Lockheed Martin Missiles and Defense Systems for NASA to model the effect of changing the lending sequence at hub airports on airline operations. We teamed with Northwest airlines and used their proprietary data. If our proposed changes

were put into effect it would save the industry over $150 m/year.

- FAA studies on collaborative decision making and common situational awareness.

1996–	Oak Ridge National Laboratory	Computer Science & Mathematics Division	Oak Ridge, TN
1997	**Senior Scientist**		

- DOE representative to intra-governmental Collaborations on Internet Security task force as a result of a proposal submitted and won. Head of Kerberos task force and now maintain a Kerberos resource page (http://www.ornl.gov/~jar/HowToKerb.html) which has been accessed by over 20000 people.
- Key player in proposal for the MMC (Materials Microcharacterization Collaboratory) DOE2000 test bed. This five-site proposal is worth $12 m over 3 years.
- Created MMC PKI security infrastructure for remote control of online electron microscopes.

1971–	Oak Ridge National Laboratory	Fusion Energy Division	Oak Ridge, TN
1995	**Research Staff Member**		

- Developed most of the theory for neutral beam injection into toroidal plasmas including deposition, thermalization and loss regions.
- Expert at visualizing orbits of charged particles in complicated magnetic geometries.
- Design magnetic configurations (stellarators) to obtain specific physics results.
- Important role in the engineering design of ATF stellarator. Originated the computational techniques needed to build, measure, and assemble the complicated helical coils.
- Editor of bimonthly international newsletter Stellarator News. (90 issues so far.)
- Key member of data analysis team for FAA air traffic analysis study (1991-1993). We collected all airspace data for a month to find the sources of delay.
- Studied secure distributed databases running on CMW and MLS secure workstation platforms. Am especially interested in applying these secure platforms to non-military applications.
- Technical lead and proposer of project to convert DOE classified file room (3.5 million pages) to electronic form. Used a multi-level secure CMW workstation platform. Designed a secure Web Client/Server application as a user-friendly front end.
- Organized and ran the 1996 American Physical Society Division of Plasma Physics in Louisville with 1500 attendees.

1965–	MIT	Department of Electrical Engineering	Cambridge, MA
1971	**Teaching Assistant; Instructor of Electrical Engineering**		

- Taught courses in circuit theory, electromagnetism, plasma physics
- Won Supervised Investor Services award for outstanding teaching.

1963–	EG&G Inc.		Bedford, MA
1968	**Electrical Engineer**		

- Worked on one of the first relativistic electron beam generators.
- Designed and built a fast, low-inductance solid dielectric switch for a 20-kJ, 150-kV capacitor bank. Received US patent on switch trigger.

Education

1960–	MIT	Department of Electrical Engineering	Cambridge, MA
1964			

- S.B. in Electrical Engineering.

1964–	MIT	Department of Electrical Engineering	Cambridge, MA
1971			

- S.M. E.E., and Sc.D degrees in Electrical Engineering

Honors

- Member of honorary societies Eta Kappa Nu, Tau Beta Pi, Sigma Xi
- Fellow of the American Physical Society
- Member of the IEEE and ACM.

Skills

- Programming languages: Java, C, SQL, some C++, FORTRAN, S Plus, HTML, Servlets
- System administration: HP-UX, AIX, Solaris, Linux, Windows
- Databases: Oracle, Informix
- Computer security: Policies and procedures, public key infrastructure, intrusion detection, one-time password tokens
- PC-based tools: Adobe Creative Suite, FrameMaker, Office Pro, CorelDraw, DreamWeaver, and many others
- Languages: HS French and some Japanese
- Life skills: Woodworking, cooking, gardening, photography, skiing, sailing, masonry, sewing

Self Appraisal of Strengths

I am definitely a "generalist" as opposed to a "specialist." Since I have real skills in many diverse areas, I can bring a variety of viewpoints to bear upon any problem. This cross-fertilization bore fruit during the construction of the ORNL torsatron, ATF, when I ignored the statements of our engineers and launched a parallel effort to determine how to properly manufacture and measure the complicated magnets. We were ready to step in with the necessary programs when the straight-forward approaches failed.

Although I have been doing theory and computations at ORNL, the rest of my career has been experimental. I prefer a mixture of both. I like to solve problems that people care about and always assess the priorities involved and consider the results of success and failure before starting a task. I am very customer oriented and prefer working on a project in which the sponsor cares about the results.

These attributes affect my view of activities as a whole. I refuse to become compartmentalized, and feel that all parts of a project are important and deserve my attention. Thus, I try to interact strongly with members of all groups in several Divisions (experimentalists, technologists, and theorists) and feel free to offer suggestions and to provide help.

I write well and make excellent oral presentations. I can explain complicated concepts to lay audiences. I have had a lot of publicity experience since high school. I am especially good at creating new ways to visualize complicated data. In particular, I usually find that canned plots (such as those from Excel) do not provide adequate insight into most problems, so I often create new ways of representing the data that provide new insight.

I have successfully managed numerous students and research projects, as well as my own company. I am a mentor of female students via the MentorNet Program. I would welcome the challenge of managing research at larger enterprises.