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Career Summary: Major current focus is developing systems thinking methods for improving organizational performance, including improving [project management](#), [processes](#), [organizational strategy/structure](#), & [leadership](#). [Systems thinking](#) is “seeking to understand system behavior by examining ‘the whole,’ instead of by analyzing the parts” to [achieve shared understanding](#), resolve conflicts and determine actions. Systems thinking is especially useful when dealing with systems “messes” (combinations of interrelated problems around difficult issues).

Primary Subject Area Experience: ASIC product engineering (interfacing between engineering and manufacturing), ASIC CAD software integration, and process development in a variety of technical fields.

Role Experience: program, proposal, project, functional and computer system management; reengineering, business process improvement; financial analysis. Excellent written, verbal and computer presentation skills.

Professional Experience

Continuous Improvement Associates, Colorado Springs, CO 1993-2007. Consultant

- Consultant and speaker on “Practical Systems Thinking” for improving organizational performance. Facilitator of groups in using systems thinking to surface mental models to develop shared understanding of organizational issues and in designing specific strategies and action plans to address them. Facilitated groups developing values, purpose & vision. Created a well-defined, systems thinking [organizational development path](#) from values, to purpose, to vision, to mental models / system structures, to strategies & action plans. Design, production & business process improvement are a major focus.
- Projects have included: Workshops on the Dynamics of [Sustainable Computing & Calls for Service](#) for Colorado College IT Services plus conference keynote; system integration study on reengineering the CAD design flow of microelectromechanical systems for Ford Microelectronics; process / yield improvement for GaAs crystal ingot growth for Crystal Specialties; system thinking modeling of economic clusters, the [workforce system](#), and a variety of organizational models.
- Adjunct professor at Colorado Technical University teaching courses on “[Systems Thinking & Problem Solving](#).”

Technology Associates of Colorado, Colorado Springs, CO, 1993-1995. President and co-founder in 1993 of a consulting network of professional consultants. Projects included:

- Defense Contractor Conversion study for the City of Colorado Springs on benchmarking, best practices and strategies for business growth support, business attraction & retention, displaced worker support and community initiatives.
- Workforce study for the Economic Development Corporation. Emphasis on systems analysis using IDEF methodology and reengineering of the workforce system. Included [Labor Market Economics report](#) integrating world, national, and local trends into strategies for increasing the efficiency and effectiveness of the Colorado Springs workforce system.

United Technologies Microelectronics Center, Colorado Springs, CO 1981-1992

Manager, ASIC Product Engineering, 1987-1992, responsible for 1.2 μ , 1.5 μ & 3 μ CMOS circuit functionality, yield, and scheduling of fast-turn prototypes. Defined and coordinated efficient proto & proto-to-production flows. [Reduced ASIC PE hours/prototype](#) by 87% in 3½ years giving savings of greater than 7 man-years of engineering labor, while improving design success from 20% to 93% and on-time delivery from 55% to 100%.

Manager, HIGHLAND CAD System, 1981-1987, re-engineered the IC development process for digital system designers, not VLSI experts. This was one of the first systems to emphasize system integration of commercial and internally-developed tools and libraries for ease-of-use by designers (see paper 1984). Later, system integration became a major industry focus.

- Program manager of all corporate CAD projects in 1985 and 1986. Chaired company’s Design Integrity Steering Committee for 1.5 years to identify and solve problems related to design, fabrication and test.
- Extraordinary Management Excellence Award, 1985.

Manager, VHDL Independent Verification and Validation, 1985-1987. Led successful proposal effort for AFWAL VHDL IVV contract to V&V VHDL Support Environment developed under VHSIC program. Technical Manager of the program plan development team and of the 18-month program. Met 100% of planning and technical milestones on schedule and significantly under budget. Excellent program performance resulted in 8 month cost-plus contract extension.

E-Systems, ECI Division, St. Petersburg, FL 1974-1981

Section Head, Computer-Aided Design, 1979-1981, installed and managed CAD facility supporting ASIC, hybrid microelectronics and PC/ES design. System manager for Computervision systems, responsible for system diagnostics, backups, and maintenance. Developed the financial analysis for a \$2 million CAD system acquisition for LSI/microelectronics applications.

Principal Engineer, Peripheral Equipment Engineering, 1974-1978. Designed and developed thermal print wafers for thermal printers. Designed and constructed vapor deposition system necessary for practical manufacture of high-tolerance military wafers for low-power printers. Designed a new wafer deposition process and made thermal wafer manufacturing process changes which increased commercial product yield from 30% to 80%. Savings were \$1 million in 2-3 years.

EDUCATION

MBA, Florida Institute of Technology, Melbourne, FL (emphasis on government contracts)

Ph.D., Physics, Case Western Reserve University, Cleveland, OH

MS, Physics, Case Western Reserve University, Cleveland, OH

BA, Physics, Kalamazoo College, Kalamazoo, MI

Foreign Language: French
 Martial Arts: Black Belt in Aikido

Selected Papers and Presentations

Numerous papers on organizational issues at <http://www.exponentialimprovement.com>.

Robert E. Powell (Continuous Improvement Associates) Colorado Springs Labor Market: Components, Interfaces, and Leverage Points; Labor Market Economics, Colorado Springs Labor Market Service Provider Interviews. Greater Colorado Springs Strategic Planning Data and Analysis, Volume VIII (Dec. 1994).

Robert E. Powell, Glenn Marshall (Technology Associates of Colorado) - Final Benchmarking Report, State and Local Business Development Strategies and Support Sources. Greater Colorado Springs Strategic Planning Data and Analysis, Volume VII (Dec. 1994).

Anderson, K and Powell, R., "UTMC's LSI CAD System -- HIGHLAND", 21st Design Automation Conference, (1984), Miami, FL, pp. 580-586.

Powell, R. E., "Design Philosophy at UTMC for LSI/CAD", GOMAC, (1982), Orlando, FL, pp. 255-258.

Powell, R. E., "Evaluation of CAD Systems," Session Chairman and Panel Moderator, 18th Design Automation Conference (1981), Nashville, TN.

Powell, R. E., "Financial Analysis for CAD," 17th Design Automation Conference (1980), Minneapolis, MN, pp. 564-571.

Powell, R. E., "Standard Cell LSI Design Utilizing CADD2, CADD3, AND MP2D," Proceedings First International Computervision Users Conference (1980), Phoenix, AZ.

Rossmesl, R. and Powell, R., "Proposal to Develop a Custom LSI Design Capability for E-Systems, ECI Division," Internal ECI Report, 200 pages, (1978).