

William J. Cohen, Ph.D.
Principal Engineer

Professional Profile

Dr. William J. Cohen is a Principal in Exponent's Technology Development practice. Dr. Cohen's consulting practice in industrial engineering specializes in the design, adaptation, and implementation of technology to solve operational problems for the U.S. Military. This work involves evaluation of capability gaps for deployed Soldiers, technology assessment and testing, rapid prototyping, and iterative product design.

Dr. Cohen spent 32 months working throughout Iraq providing science and technology solutions to mission-essential operational problems (June 2004 to December 2005 and December 2006 to June 2008). Using his engineering expertise in conjunction with extensive field experience, Dr. Cohen's main focus was examining high-priority war-time problems, and developing a holistic, systematic approach to provide innovative tools and implementable solutions for the most complex safety and security issues facing U.S. Army Soldiers and Marines conducting IED sweeps and patrols in Iraq. Of particular note is the MARCbot robot that is used for remote inspection of potential IEDs. Over the course of a year, Dr. Cohen was the chief proponent for the design, testing, training, repair, and fielding of the MARCbot—culminating in the delivery of 350 units of this proven, lifesaving device to the U.S. Army in late 2005 (Exponent produced 1000 MARCbots in all). As a solution finder for Soldiers, Dr. Cohen's approach was to focus on purpose-built, practical, high-quality, and value-for-money solutions for the U.S. Military, while ensuring that Soldiers receive gear that is reliable, simple to use, and effective in the field.

Dr. Cohen assessed, designed, and implemented solutions for many safety-related issues facing Soldiers, including new turret gunner seating, power solutions, and a cooling device for the armored HMMWV (particularly for turret gunners). Solutions to mission-specific problems included acoustic and visual surveillance tools, persistent stare technology for base security and field over-watch (such as the Rapid Deployment Integrated Surveillance System—RDISS), translation devices, and vehicle inspection at base entry control points. In response to stated commander intentions to decrease accidental shootings of inattentive civilian drivers, Dr. Cohen's team quickly invented a simple escalation-of-force tool for automated weapons stations, to allow Soldiers to warn civilians with powerful, eye-safe lasers prior to the use of bullets. Dr. Cohen's efforts for the Army's Rapid Equipping Force focus on high-priority safety issues such as sniper and ambush protection, buried IED detection, and defense against close-quarter attacks.

Prior to his work with the U.S. Army, Dr. Cohen consulted extensively on human factors, ergonomics, and safety engineering relating to industrial accidents (particularly in the oil and train industries). With a background in vision and human information processing research, Dr. Cohen uses his professional photography skills to help clients understand potential hazards and accidents.

As an assistant professor of business management at Massey University in New Zealand, Dr. Cohen taught operations management and ergonomics and was a safety and ergonomics consultant to industry. His teaching and research background in industrial engineering and psychology includes human factors engineering, operations management, occupational safety, job and organizational design, and industrial ergonomics. Additionally, Dr. Cohen was a licensed EMT in New Zealand, working as a volunteer ambulance officer for four years, in addition to ski patrolling at Whakapapa Ski Field on the North Island. He was also a professional and volunteer ski patroller at Mount Snow, Vermont, over 10 years.

Academic Credentials and Professional Honors

Ph.D., Industrial Engineering, University of Wisconsin, Madison, 1996
M.S., Engineering Psychology, University of Wisconsin, Madison, 1992
B.A., Psychology, University of California, San Diego, 1987

BP Amoco Chairman's Award for best safety and health project worldwide, 1999
New Zealand Ergonomics Society National Committee Member, 1998
Brittingham Madison Viking Scholarship, 1992

Selected Publications

Smith JH, Cohen WJ, Conway FT, Carayon P, Bayeh AD, Smith MJ. Community ergonomics. In: *Macroergonomics: Theory, Methods, and Applications*. Hendrick H, Kleiner B (eds), 2002.

Cohen WJ, Smith JH. Community ergonomics: Planning and design solutions for urban poverty. In: *International Encyclopedia of Ergonomics and Human Factors*. Karwowski W (ed), Taylor & Francis, 2000.

Cohen WJ. Quality work design in the 21st Century. Proceedings, Human Factors and Ergonomics Society 2000 Annual Meeting, San Diego, CA, 2000.

Cohen WJ. The theory of community ergonomics. Proceedings, International Conference on TQM and Human Factors. Vol.1, Linköping, Sweden: Linköping University Press, 1999.

Cohen WJ, Smith, J.S. Community ergonomics principles. Proceedings, International Conference on TQM and Human Factors, volume 1. Linköping, Sweden: Linköping University Press, 1999.

Cohen WJ, Haims MC. Community ergonomics and urban poverty: Planning and design activities and interface solutions. Proceedings, Global Ergonomics Conference, Capetown, South Africa, 1998.

Smith MJ, Karsh B, Conway FT, Cohen WJ, James CA, Morgan JJ, Sanders K, Zehel DJ. Effects of a split keyboard design and wrist rest on performance, posture, and comfort. *Human Factors* 1998; 40(2):324–336.

Cohen WJ, Smith J.H. Cumulative social trauma and the role of the community ergonomist. Proceedings, Global Ergonomics Conference. Capetown, South Africa, 1998.

Cohen WJ. Community ergonomics: Design practice and operational requirements. Doctoral dissertation, University of Wisconsin-Madison, 1997.

White P, Cohen WJ, Gauf M. Tools for the task: ergonomic product evaluations for business and industry, Horsham, Pennsylvania: LRP Publications, 1997.

Smith MJ, Cohen WJ. Design of VDT workstations. In: Handbook of Human Factors, Second edition. Salvendy G (ed), John Wiley & Sons, Inc., 1997.

Smith JH, Cohen WJ, Conway FT, Smith MJ. Human centered community ergonomic design. In: Organizational Design and Management 1996. Brown Jr. O (ed), Elsevier Science, 1996.

Cohen WJ, James CA, Taveira AD, Karsh B, Scholz J, Smith MJ. Analysis and design recommendations for workstations: A case study in an insurance company. Proceedings, Human Factors and Ergonomics Society 39th Annual Meeting, San Diego, CA. Vol. (1), 412–416, 1995.

Cohen WJ, Smith JH. Community ergonomics: Past approaches and future prospects toward America's urban crisis. Proceedings, Human Factors and Ergonomics Society 38th Annual Meeting, Vol. 2, pp. 734–738, October 1994.

Cohen WJ, Sanders KJ, Smith MJ. Job conditions and intentions to quit. Proceedings, Human Factors Society 35th Annual Meeting, San Francisco, CA, Vol. 2, pp. 964–968, September 2–6, 1991.

Polich J, DeFrancesco DP, Garon JF, Cohen WJ. Hemispheric differences in visual search of simple line arrays. Psychological Research 1991.

Cohen WJ, Polich J. No hemispheric differences for mental rotation of letters or polygons. Bulletin of the Psychonomic Society 1989; 27(1):25–28.

Presentations

Cohen WJ. Practical ergonomic solutions for industry. Keynote address at the One Stop Update on Occupational Safety and Health, Wellington, New Zealand, October 29, 1999.

Cohen WJ. Design for the disabled and work placement: Ergonomic imperatives. Lecture to the University of Otago Postgraduate Diploma in Occupational Medicine, Wellington, New Zealand, October 13, 1999.

Cohen WJ. Ergonomic challenges in the workplace. Presentation at the annual conference of the Australia & New Zealand Society of Occupational Medicine (ANZSOM), Rotorua, New Zealand, October 18, 1998.

Cohen WJ. Breakthrough thinking in ergonomic design of community systems. Presentation at the annual conference of the World Future Society, Chicago, IL, July 20, 1998.

Cohen WJ. Ergonomic design of community systems. Closing keynote address—American Society for Ergonomic Systems Engineering, Madison, WI, Fall 1996.

Cohen WJ. Success at the National Laboratory for Community Ergonomics—The Milwaukee Community Investment Partnership. 3rd International Breakthrough Thinking Gathering, Los Angeles, CA, Summer 1996.

Academic Appointments

- Massey University, New Zealand, Assistant Professor of Business Management, 1997–2000
- UW-Madison Industrial Engineering Department, Lecturer, 1990–1996