

SEAN DESSUREAULT

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ASSISTANT PROFESSOR (Tenure Track) ♦ University of Arizona
PRINCIPAL CONSULTANT ♦ MISOM Consulting Services

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Develop a world-recognized research and development program with strategy in Information Technology (IT) and Automation that helps the industry move toward integrated Mine Control and Engineering resulting in step-change improvements.

World-recognized expert in mining information technology integration and utilization, widely consulted on technology (both automation and IS) strategy, professional education program development, utilization of technology, data warehouse design and technology acquisitions. Directed research and development programs focused on developing data mining and process modeling techniques. Client-focused, results driven, taking into consideration culture and requisite phases of development toward goals.

Operations Management ♦ Corporate IT Strategy for Effective Utilization ♦ Advanced Strategic Valuation of New Technologies ♦ Forming and Managing Research & Development Programs in Mine IS ♦ International leadership in academic and professional organizations in mine technology ♦ Education of Senior Mining Professionals and Graduate/Undergraduate Students ♦ Modernized mining engineering curriculum

SELECTED ACHIEVEMENT HIGHLIGHTS

- **Developed Research Portfolio of \$2+ million**, developed proposals, formulated multi-institutional team, and corporate sponsorship for developing research and commercialization of integrated mine information technology, multiple multi-year projects.
- **Mining expert in Data Warehouse design team**, developed strategies, integration approaches, validation, and design of a corporate-wide integrated mine data warehouse focused on production reporting.

PROFESSIONAL EXPERIENCE

ASSISTANT PROFESSOR, tenure track

2002 - Present

Mining and Geological Engineering Department, University of Arizona, Tucson AZ.

Recruited to modernize mining engineering curriculum (education) and begin the first mining research program in information technology and its effective utilization. Key projects and achievements:

- Successfully developed proposals and led teams that have been awarded over 2 million in research funds, mostly in mine information technology development
- Won multiple leadership awards
- Chaired the 2007 Applications of Computers and Operations Management in the Minerals Industry, the most respected international peer reviewed technology conference in mining.
- Invited to join the Surface Mining Association of Research and Technology and several other boards
- In leadership roles in professional organizations driving the advancement of technology in both Canada and USA
- Led a team to establish a chapter of Engineers Without Borders, at the University of Arizona (UA)
- Developed and taught UA's first sustainable development course in the engineering college
- Modernized undergraduate and graduate curriculum to include the latest technology and delivered using latest technology
- Developed and taught a professional short courses in Chile, Canada, and the USA
- Helped form a strategy for a research program for Australia's Cooperative Research Center (CRC) Mining, in integrated mine information technology and automation
- Invited to advise theses in Australia, Canada, and USA
- Lectured at several invitation-only executive training seminars

PROFESSIONAL CONSULTANT 1998 - Present
Mining Information Systems and Operations Management (MISOM) Consulting Services, Tucson AZ

Selected relevant contract highlights:

- Phelps Dodge 2 (2006 – ongoing) Equipment Automation Expert, largely confidential
- Powder River Coal LLC. (2005 – ongoing) IT Utilization and Effectiveness
 - A Peabody company, helping PRC integrate and gain increased effectiveness and utilization of new or underutilized Information Systems (example: AQUILA, Accuweigh, etc...)
 - Developing IS policies for system purchases and other strategic tasks
- Phelps Dodge 1 (2004 – 2005) Mining Expert in Corporate Data Warehousing Project
 - Helped in the design of a corporate data warehouse that integrated data from all mining processes, and reporting data marts (executed through Business Objects)
 - Provided strategic advice for effective utilization of integrated data sources
 - Helped develop and execute training programs at mine sites

Several other shorter consulting endeavors, largely to provide either IT or automation strategic advice or technical support: Placer Dome Canada, INCO Limited, Dias Engineering. Booked clients include Cargill Deciding products, BHPBilliton.

MINE ENGINEERING 1993 - 2002

Acted in various engineering roles in both full and part time positions, all in Canada

- 1999 - 2002 INCO-West Mines Complex. Sudbury, Ont..
 - Design and implementation of IT-driven Tactical Management Systems
 - Part of management team and main facilitator for an industrially-focused research project.
 - Designed a tactical management system and structure for an accompanying data warehouse
 - Implemented Ph.D. theories into a division composed of three large underground Nickel mines
 - Aid in the implementation of Information Systems and Management Procedures, engaged in various mine engineering projects and functions, Tested and implemented tactical management system.
 - Won award from SAP for this work “Best Graduate Project in IT in Canada.”
- 1998 Highland Valley Copper Logan Lake, B.C.
 - Consultant at the Highland Valley Copper mine
 - Aided in auditing GPS drill technology while undertaking research masters
 - Informally trained personnel in linear programming and new capital budgeting techniques
- 1996 INCO-Mines Research Copper Cliff, Ont.
 - Initialized and partly managed research project in gyroscopic underground navigation and positioning
 - Aided in the development of new advanced technology as part of the Mining Automation Program (MAP) project
- 1996 Conwest Resources Ltd. Baffin Island, NWT
 - Underground Laborer - Nanisivik Mine
 - Operated Wagner MT439 & DJB D330 haul trucks and crush/conveyor circuit
 - Worked as diamond drill, Jumbo, and Simba drill helper
 - Nipped, scaled, cleaned face, utilities, assisted in loading explosives and rock bolting
- 1995 Placer Dome Canada Val d’Or, Que.
 - Engineering Staff at Les Mines d’Or Kiena Ltd.
 - Worked in ground control, ventilation, pumping, surveyed, layouts, and worked on mine plan
 - Created economic analyses and budgets

EDUCATION

University of British Columbia, Vancouver, Canada, Mining & Mineral Process Engineering Department

- Ph.D., May 99 - Dec. 01, Title: Tactical Mine Management (driven through Information Technology)
- M.Sc., May 97 – May 99 Title: Capital Investment Appraisal for Advanced Mining Technology

McGill University Montreal, Canada Mining Engineering Department

- B.Eng., September 93 – May 97 Concentration: Automation and robotics in mining systems

SELECTED PUBLICATIONS

Refereed Journal Publications

- Dessureault, Sean, Kazakidis, Vassilios and Mayer, Zachary. "Flexibility Valuation in Operating Mine Decisions using Real Options Pricing" *International Journal of Risk Assessment and Management*. In Press
- Gavelan, Zetti, and Dessureault, Sean. "Probabilistic Approach to Project-Specific Political Risk Analysis for Mineral Projects." *Mining Engineering*. In Press (SME Mining Engineering)
- Dessureault, S. and Schissler, A. "Challenges to Overcome in Applying Information Technology in the Mining Industry." *Can. Inst. of Min. Met. and Pet. Bulletin*. Vol. 98 No. 1087, February 2006.
- Dessureault, S. "Justification techniques for information technology infrastructure in mining." *Mining Technology: Transactions of the Institute of Mining & Metallurgy, Section A, Dec2004, Vol. 113 Issue 4, p257-263, 7p*
- Kazakidis, V.N., and Dessureault, S., (2004), "Incorporating Ground Delays in Underground Mine Production System Simulation", *SME Transactions, Society for Mining, Metallurgy and Exploration, USA, Vol. 316, pp. 51-57.*
- Dessureault, S. *Justification Techniques for Computer Integrated Mining*. South African Institute of Mining and Metallurgy, Johannesburg, 2004, Vol. 104, No. 2, p104-123
- Dessureault, Sean, Porter, Jim, and Woodhall, Michael. *Data Integration for Information Technology Infrastructure in Mining*. *Can. Inst. of Min. Met. and Pet. Bulletin*. Vol 97 No. 1076, January 2004, p.49 56.
- Dessureault, S. *Data Infrastructure for a Tactical Mine Management System*. *Mining Technology: Transactions of the Inst. Mining and Met., Vol.112 No. 2, August 2003, pp.A73 - A85*
- Dessureault, S., Scoble, M. *Capital Investment Appraisal for the Integration of New Technology into Mining Systems.*, *Transactions of the Inst. Mining and Met., London, Vol. 109, Jan – Apr 2000, p.A30-A40.*
- Dessureault, S., Scoble, M., *A Study of the Synergy of New Technology, Business Tools, and Information to Optimize Mine Production*. *Int. Jnl. of Surface Min., Reclamation and Environment*, 21p, Summer 2001
- Scoble, M., Dessureault, S. and Rubio, *Strategic Planning for Internet Applications in Mining*. *Can. Inst. of Min. Met. and Pet. Bulletin*. Vol 93 No. 1042, July 2000, p.100-104
- Dunbar, S., Dessureault, Sean, and Scoble, Malcolm. (1998) *Analysis of Flexible Mining Systems*. *Int. Jnl. Mnrl. Res. Eng., Imp.* College Press, London. p.165-179

Peer-reviewed conference proceedings:

- Yildirim, Metin and Dessureault, Sean. "Truck Assignment Performance Evaluation by Using Data Mining Techniques." *Proc. of the 32nd Int. Symp. of Computer Applications in the Minerals Industries (APCOM 2005)*, Tucson, Arizona. March 30th – April 1st, 2005.
- Dessureault, S. *Justification Techniques for Computer Integrated Mining*. *Proc. of the 31st Int. Symp. of Computer Applications in the Minerals Industries (APCOM'03)*, Cape Town, South Africa. May 14-19 2003. pp. 67-72
- Dessureault, S., Scoble, M. *Activity Based Costing and Information Engineering: Formulation of an Annual Mine Budget*. *Proc. of the 30th Int. Symp. of Computer Applications in the Minerals Industries (APCOM'02)*, Phoenix Arizona. February 24-27, 2002. pp.601-613
- Dessureault, S., Scoble, M., Rubio, E. *Simulating Block Cave Secondary Breakage – An Application of Information and Operations Management Tools in Mass Mining System*. *Proc. of Massmin 2000*. (AusIMM: Carlton Victoria Australia) Brisbane, Aust. Oct. 29 – Nov. 22 2000, p 893-896

Speaker Invitations

- World Mining Equipment: *Loading & Haulage 2006*, *Jnl. World Mining Equipment*, New York, invited speaker. May 17-19, 2005, San Antonio TX, topic: "IS BIGGER STILL BETTER? ...or is smarter?"
- Canadian Institute of Mining, Metallurgy and Petroleum: 2006 CIM AGM, invited speaker.. May 14-17 2006, Vancouver Canada. "INNOVATION through Effective and Novel use of IT & BPI"
- Universidad de Chile & Codelco, TIC-MIN invited speaker, May 3 – 5, 2006. "Integrated Information Technology Infrastructure: Essentials for the Next Level of BPI / R"
- World Mining Equipment: *Drilling and Blasting*, *Jnl. World Mining Equipment*, New York, invited speaker. April 17-19, 2005, San Antonio TX, topic: *Data Integration and Utilization*.
- "Porphyry Copper Mining Methods", University of Arizona, Geosciences Lowell Short Course, December 10th
- "Modern Mining Technology", National Coal Transportation Association, Wednesday April 21st, 2004, El Conquistador
- Dessureault, "Methodologies and Modeling tools for data-driven production-system algorithm development" *CRCMining internal conference*, Noosa Heads, June 16-17th. 2004
- "Mining in the classroom", Arizona Rock Products Association, October 16th, 2004
- World Mining Equipment *Survival seminar series*, *Jnl. World Mining Equipment*, New York, invited speaker. September 10-11, 2001, Toronto, Ont., topic: *Activity Based Costing within Mine Management Systems*
- World Mining Equipment 2000 seminar series, *Jnl. World Mining Equipment*, New York, invited speaker. November 10-12, 1999, Toronto, Ont., topic: *Activity Based Costing: A mine tailored Approach*
- Visiting Lecturer at: *Cooperative Research Center for Mining Technology and Equipment* (topic: *Process Innovation in Mining Systems – at INCO's Crean Hill mine*); *W.H. Bryan Mining Geology Research Center* (topic: *Operations Research in Mining*); *Mining, Minerals and Materials Engineering Department* (topic: *Capital Investment Appraisal for Advanced Systems*).
- World Mining Equipment 2000 seminar series, *Jnl. World Mining Equipment*, New York, invited speaker. November 10-12, 1999, Toronto, Ont., topic: *Activity Based Costing: A mine tailored Approach*

Conference Proceedings

- Dessureault, S. Integrated Information Technology Infrastructure. SME Annual St. Louis, MO, March, 2006.
- Dessureault, S. Tactical Open Pit Decisions Justified with Real Option Models. SME Annual Salt Lake City, Utah, Feb 23-25, 2005. 8p.
- Dessureault, S. Developing Decision Support Systems at Large-scale Underground Mines. SME Annual Meeting, Denver, Colorado, Feb 23-25, 2004. 8p.
- Gavelan, Z., Dessureault, S. Probabilistic Approach to Project-Specific Political Risk Analysis for Mineral Projects. SME Annual Meeting, Denver, Colorado, Feb 23-25, 2004.
- Dessureault, S. and Zetti Gavelan. The Impact of Sustainability on Political Risk. SME Arizona conference. December 7-8, 2003. Presentation only
- Dessureault, S. Mine Mill Integration through Data Warehousing. Proc. of the 4th Int. Conf. on Computer Applications in the Minerals Industries (CAMI 2003), September 8-10, 2003, Calgary Alberta. Edited by Singhal / Fytas / Chiwetelu, CD-ROM
- Dessureault, S. Developing a Data Warehouse for Decision Support Systems for Large-Scale Underground Mines. Proc. of the High-Performance Mine Production Symposium, Aachen, Germany. April 11 and 12 2003. pp. 379-390.
- Dessureault, S, Lipsett, M. and Scoble, M. Achieving the Benefits of Information Technology in Surface and Underground Mining Processes. 104th Ann. Gen. Meet., Can. Inst. Min. Metall., May, Vancouver, BC. 2002, CD-ROM. 8p.
- Dessureault, S. and Scoble, M. Strategy to Achieve the Next Evolution of Process Control in Mining. Intelligent Production Management in Mining Systems. Proc. of the 3rd Int. Conf. on Intelligent Processing and Manufacturing of Materials, Vancouver, BC,
- Dessureault, S., Scoble, M., and Mathews, Ken. Factors Controlling the Success of Mining Technology Development and Implementation. Proc. 102nd Ann. Gen. Meet., Can. Inst. Min. Metall., March 5-10, Toronto, Ont. 2000, CD-ROM.
- Scoble, M., Dessureault, S. and Rubio, Strategic Planning for Internet Applications in Mining. Can. Inst. of Min. Met. and Pet. Bulletin. Vol 93 No. 1042, July 2000, p.100-104
- Dessureault, S., Scoble, M., and Dunbar, S. Intelligent Production Management in Mining Systems. . Proc. of the 2nd Int. Conf. on Intelligent Processing and Manufacturing of Materials, Honolulu, Hawaii, p. 145-149.
- Dessureault, S., Scoble, M., and Dunbar, S. Analytical management tools for continuous improvement in mining operations. Proc. of the 29th Int. Symp. of Computer Applications in the Minerals Industries (APCOM'99), Golden Colorado. October 20-22nd. P.719-726, CD-ROM
- Dessureault, S., Scoble, M., Dunbar, S., and Richards M., Case Study of Capital Investment Appraisal Methods for Mining Automation. . Proc. 5th ISMMA and 1st Telemin Conference, Sudbury, Ont., June , 1999. 15 p, CD-ROM
- Dessureault, S., Scoble, M. and S. Dunbar. Management Tools to Appraise Advanced Technologies in Mining. Proceedings 101st Ann. Gen. Meeting, Can. Inst. Min. Metall., May 2-5, Calgary, Alberta, 1999, CD-ROM.
- Dunbar, S., Dessureault, S., and Scoble, M., Analysis of Flexible Mining Systems, Proceedings 100th Ann. Gen. Meeting, Can. Inst. of Min., May, Montreal 1998 CD-ROM
- Dunbar, S., Dessureault, Sean, and Scoble, Malcolm. (1998) Analysis of Flexible Mining Systems. Int. Jnl. Mnrl. Res. Eng., Imp. College Press, London. p.165-179
- Dessureault, S. Tactical Open Pit Decisions Justified with Real Option Models. SME Annual Meeting, Salt Lake City, Utah, Feb 27-Mar 2, 2005.
- Yildirim, Metin and Dessureault, S. Data Mining In Pit Production Management System. SME Annual Meeting, Salt Lake City, Utah, Feb 27-Mar 2, 2005.
- Dessureault, Sean, Kecojevic, Vladislav, Nieto, Antonio, and Ganguli, Rajive. Infrastructure for Integrated Data Environments and Analysis (IIDEA) for Mining and Processing Systems. Mine Planning and Equipment Selection (MPES 2005), Computer Applications in the Minerals Industries (CAMI 2005), October 31-November 3, 2005, Banff, Canada.