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USING KVA AND REAL OPTIONS FOR IT ACQUISITION: CASE EXAMPLE

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by

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The following article is taken as an excerpt from the proceedings of the annual Acquisition Research Program. This annual event showcases the research projects funded through the Acquisition Research Program at the Graduate School of Business and Public Policy at the Naval Postgraduate School. Featuring keynote speakers, plenary panels, multiple panel sessions, a student research poster show and social events, the Annual Acquisition Research Symposium offers a candid environment where high-ranking Department of Defense (DoD) officials, industry officials, accomplished faculty and military students are encouraged to collaborate on finding applicable solutions to the challenges facing acquisition policies and processes within the DoD today. By jointly and publicly questioning the norms of industry and academia, the resulting research benefits from myriad perspectives and collaborations which can identify better solutions and practices in acquisition, contract, financial, logistics and program management.

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Presenter: LCDR Cesar Rios, USN

Presenter: Thomas Housel, specializes in valuing intellectual capital, telecommunications, information technology, value-based business process reengineering, and knowledge value measurement. He is currently a tenured Full Professor for the Information Sciences (Systems) Department at NPS. His areas of teaching include: information technology for homeland defense, decision support systems, knowledge management, electronic business, telecommunications, and reengineering. His current research focuses on the use of "Real Options" models in identifying, valuing, maintaining, and exercising options in military decision making. Prior to joining NPS, he also was a Research Fellow for the Center for Telecommunications Management and Associate Professor at the Marshall School of Business at the University of Southern California. Tom has been the Chief Business Process Engineer for Pacific Bell, where he completed numerous reengineering projects and developed a new objective method for measuring the value-added by reengineering. His last assignment in the corporate world was as the Chief of Consumer Market Research for Telecom Italia in Venice, Italy where he developed new methods for predicting the adoption rates for new interactive multimedia broadband applications. He is Managing Partner for Business Process Auditors, a firm that specializes in training Big Six consultants, large manufacturing and service companies in the Knowledge Value-Added methodology for objectively measuring the return generated by corporate knowledge assets/intellectual capital.

He received his PhD from the University of Utah in 1980. He won the prestigious Society for Information Management award for best paper in the field in 1986. His work on measuring the value of intellectual capital has been featured in a *Fortune* cover story (October 3, 1994) and *Investor's Business Daily*, numerous books, professional periodicals, and academic journals (most recently in the *Journal of Intellectual Capital*, vol 2, 2005). His latest books include: *Measuring and Managing Knowledge* and *Global Telecommunications Revolution: The Business Perspective* with McGraw-Hill (both in 2001).

Presenter: Dr. Johnathan C. Mun, is the CEO of Real Options Valuation LLC, a consulting, training, and software development firm specializing in real options, employee stock options, financial valuation, and risk analysis located in Northern California. He is the creator of the *Real Option Super Lattice Solver* software, Monte Carlo *Risk Simulator* software, and *Employee Stock Options Valuation* software at the firm. The *Employee Stock Options Valuation* software was used by the Financial Accounting Standards Board (FASB) to develop their example valuation (A87) in the 2004 FAS 123 requirements. He has authored numerous books including *Real Options Analysis: Tools and Techniques* (Wiley 2002, with a second edition forthcoming September 2005), *Real Options Analysis Course* (Wiley 2003), *Applied Risk Analysis* (Wiley 2003), and *Valuing Employee Stock Options* (Wiley 2004). His books and software are being used around the world at top universities.

He is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He has taught at universities all over the world and has chaired many graduate research thesis committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. where he headed up the development of real options and financial analytics software products, analytical consulting, training, and technical support, and where he was the creator of the Real Options Analysis Toolkit software, the predecessor of the Super Lattice Software discussed above. Prior to joining Decisioneering, he

was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has extensive experience in econometric modeling, financial analysis, real options, economic analysis, and statistics. During his tenure at Real Options Valuation, LLC, Decisioneering, and at KPMG Consulting, he had consulted on many real options, risk analysis, financial forecasting, project management, and financial valuation for many multinational firms. His experience prior to joining KPMG included being Department Head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research. Prior to that, he had also performed some financial planning and freelance financial consulting work.

Dr. Mun received his PhD in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of Investment Finance, Econometric Modeling, Financial Options, Corporate Finance, and Microeconomic Theory. He also has a MBA in business administration, a MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and is Certified in Risk Analysis (CRA). Finally, he has written many academic articles published in the *Journal of the Advances in Quantitative Accounting and Finance,* the *Global Finance Journal,* the *International Financial Review,* the *Journal of Financial Analysis,* the *Journal of Applied Financial Economics,* the *Journal of International Financial Markets, Institutions and Money,* the *Financial Engineering News,* and the *Journal of the Society of Petroleum Engineers.*

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Presenter: David Mirano, currently lectures on Defense Acquisition at the Graduate School of Business and Public Policy, Naval Postgraduate School (NPS), Monterey, California. He holds a Bachelor's Degree in Economics from Harvard (1985), and a Master's Degree in Systems Management from NPS (2000).

CDR Mirano's previous Navy experience includes a tour as Military Deputy for Contracts at NAVAIR Weapons Division, China Lake, California, as well as four operational tours, i.e., Services Officer onboard USS CARL VINSON (CVN 70), Supply Officer of USS SPRINGFIELD (SSN 761), Material Control Officer for FAIRECONRON TWO (VQ-2) and Stock Control, Sales and Disbursing Officers onboard USS CONSTELLATION (CV 64). CDR Mirano holds three warfare qualifications as Naval Aviation Supply Officer (NASO), Submarine Warfare Supply Officer (SUBSUPPO), and Surface Warfare Supply Corps Officer (SWSCO). CDR Mirano is a member of the Department of Defense Acquisition Professional Community (APC), and holds certification as a National Contract Management Association Certified Professional Contract Manager (CPCM).

Presenter: Sarah Nelson

Abstract

This presentation reviews the use of Knowledge Valuation Analysis (KVA) and Real Options Analysis (ROAn) methodologies in information technology (IT) portfolio acquisition decision-making. The presentation provides an overview of the theory supporting each methodology as well as the operationalization of KVA and ROAn for use as practical tools in IT portfolio acquisition. We use a proof-of-concept case example to demonstrate how KVA

provides comparable historical data for ROAn and also permits the monetization of ROAn discounted cash-flow inputs. The two software suites that support KVA (i.e., GaussSoft) and ROAn (SuperLatice) are reviewed in terms of their role in making the methodologies practical and scalable; their ability to maintain performance data on options over time will also be addressed. We conclude with the implications for this approach by addressing some common option valuation and risk challenges in the DoD acquisition environment.

Keywords: real options, knowledge, valuation, risk, valuation, monetization

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