

Appendix 4 – Project Team Biographies

Listed alphabetically by last name are abbreviated biographies for the NATO ACT CD&E – RTO HFM-138 project team. Included are representative relevant publications. The intent is to give the reader insight as the scientific qualifications of the researchers.

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Anne Lise Bjørnstad is a research psychologist in the Division for Information Management at the Norwegian Defence Research Establishment (FFI). She has been with FFI for 6 years and is currently working on two projects, LTAMC and FFI project 108401 *Network Collaboration – Experimentation* (SINETT). SINETT aims to study the new possibilities for collaboration allowed by current technological trends in both military and civilian sectors and advice the Norwegian Defence. SINETT started in 2007, continuing the work of project 879 *NEC in Operations*. This project conducted theoretical and empirical examinations of the NEC concept, linked to both technological and organizational developments. Bjørnstad has had an organizational focus in these projects, including the analyses of consequences for cooperation in military operations nationally and internationally. This overlaps with some of the aims of LTAMC where her work has focused on cross-cultural organizational issues linked to cooperation in international NATO headquarters.

Bjørnstad holds a *Cand.Polit.*⁵⁰ degree in psychology from the University of Trondheim (NTNU), Norway, where she specialized in cross-cultural organizational psychology. Her main research interests are within the areas of cross-cultural psychology, organizational psychology, decision-making and group psychology. At FFI, this expertise has mainly been directed at command and control (C2) and organizational issues related to the transformation of the Norwegian Armed Forces. She has focused on future military organizational designs enabled through technological advancements, including a focus on NEC and C2 issues, and has been involved in a number of activities and forums related to the development and analyses of the NEC-concept in Norway. She maintains a close cooperation with the technological research environment at FFI, into which she provides a human factor perspective.

Bjørnstad A L (2005). *Part I: Allied Warrior 2004 - Pilot study and analysis of cross-cultural organizational issues*. FFI/RAPPORT-2005/01709.

Bjørnstad A L (2006). *Part II: Allied Warrior 2004 - Pilot study and analysis of cross-cultural organizational issues*. FFI/RAPPORT-2006/00112.

Bjørnstad A L (2006b). *Battle Griffin 2005 – analysis of organizational processes*. FFI/NOTAT-2006/00211.

⁵⁰ Cand Polit. is a Norwegian degree ranging between a Masters degree and a Ph.D

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Dr. Lichacz received his doctoral degree in Cognitive Psychology in 1998 from Carleton University in Ottawa, Canada and began his career as an Experimental Psychologist at Defence Research and Development Canada (Toronto) (nee Defence and Civil Institute of Environmental Medicine, Toronto) in 1998. His primary research interests focus on decision-making in both individual and team settings. Since 2002, Dr. Lichacz has been a member of the Science and Technology Team at the Canadian Forces Experimentation Centre (CFEC) in Ottawa, Canada, where he provides human factors support to CFEC's mission of leading the exploration of emerging joint operational concepts and the experimentation of capabilities supporting Canadian Forces transformation. In this position, Dr. Lichacz has developed and maintained a research program that focuses on the relationship between situation awareness and confidence within complex, distributed information-sharing environments. This work has been applied to the effects of sleep loss on performance, visual search, Uninhabited Aerial Vehicle operations, and distributed command and control settings. Currently, Dr Lichacz is the Canadian representative for NATO's HFM-138 LTAMC project and is also the Canadian Lead Analyst for Multinational Experiment 5.

Lichacz, F. M. J. (in press). Augmenting our understanding of the relationship between situation awareness and confidence using calibration and resolution techniques. *Ergonomics*.

Baranski, J. V., Thompson, M.M., **Lichacz, F. M. J.**, Pasto, L., McCann, C., Gil, V., & Pigeau, R. (in press). Effects of sleep loss on team decision making: Motivational loss or motivation gain? *Human Factors*.

Lichacz, F. M. J. & Farrell, P. S. E. (2005). The calibration of situation awareness and confidence within a multinational operational net assessment. *Military Psychology*, *17*, 247-268.

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Jenny Lindoff currently works as a researcher at the Swedish Defence Research Agency (FOI) where she conducts research and development in the command and control domain. Miss Lindoff holds a Bachelors degree in Cognitive Science. She has worked at FOI for five years and has conducted research in several different domains and environments. Miss Lindoff has conducted studies with military personnel in operational settings, during large international command and control exercises as well as during controlled game based simulations. Miss Lindoff has also conducted research where military exercises have been combined with controlled experiments, which has proved to be very successful.

Miss Lindoff has worked with a wide range of research issue like dynamic decision-making in military command and control, performance assessment in complex environments, as well as studying the impact on team structures on decision-making and performance. Miss Lindoff has worked closely with the Swedish Armed Forces conducting studies to support the transformation towards a Network Based Defence. This year Miss Lindoff has been in charge of a large scale experimentation exercise at the Swedish Armed Forces Development Centre in Enköping. The exercise turned out to be very successful.

Miss Lindoff has also conducted several studies with the Swedish Air Force. Last year a comprehensive study was conducted in an Air Command Operations Centre in Uppsala, Sweden. The purpose of the study was to test and develop a repeated measurement technique to assess performance in complex environments. Third generation statistics were used to analyze the data from which a causal model was derived showing the relations between mental workload, individual performance and team performance. The Swedish Air Force was very pleased with this study and Miss Lindoff was personally invited to conduct a second study this year during real, rapid readiness ‘high alert’ operations.

Miss Lindoff is an active member of the NATO Allied Command Transformation Concept Development & Experimentation (CD&E) project, “Leader and Team Adaptability in Multinational Coalitions (LTAMC): Cultural diversity in cognition and teamwork”. Miss Lindoff has been in charge of conducting experiments with Swedish officers which is part of a large study that the LTAMC is conducting in six different countries. Miss Lindoff has also helped analyzing data from Allied Warrior 04 and Allied Warrior 05 which generated the Cultural Adaptability Model which is described in the proposal.

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Dr. Mangos has performed applied research in personnel selection, measurement, training, and assessment. His basic and applied research efforts within the Naval Air Systems Command have focused on the development of adaptive, simulation-based training and skill assessment methodologies useful for customizing instructional content to the unique needs of the learner. His current program of work focuses on the application of psychometric theory to the development of scenarios in simulation-based training, focusing on data reduction methods and other techniques useful for scaling scenario content. His research is also addressing the measurement of team cognition within naval aviation and Command and Control teams, methods to explore, assess, and model patterns of shared cognition among team members (with particular emphasis on congruence with respect to procedural knowledge), and influences of these patterns on individual and team performance outcomes.

Highlights of his applied research and development efforts in the U.S. Navy include an analysis and revision of all Naval Flight Officer training curricula, training task analyses spanning all Naval Aviator and Naval Flight Officer training pipelines, and the development of assessment content for the primary Naval aviation training personnel selection battery. For this effort, Dr. Mangos led item development for 2500+ new assessment items and designed and executed a psychometric analysis and validation plan for the items. Dr. Mangos has also engaged in a number of large-scale efforts to develop personnel selection systems spanning multiple jobs and training domains, serving employees within the aviation, manufacturing, public safety, and intelligence domains. His research has been published within applied psychology journals (*Human Performance*) and presented at national conferences. He holds a Ph.D. in Industrial/Organizational and Human Factors Psychology from Wright State University.

Kozarcycki, M. P., Mangos, P. M., Johnston, J. H., Isaacson, J., McCoy, C., & Ogreten, S. (April, 2007). What will they be thinking? Developing cultural situational judgment tests. Paper presented at the 22nd Annual Conference of the Society for Industrial and Organizational Psychology, New York, NY.

Mangos, P. M., Johnston, J. H., & Littrell, L. (Forthcoming). Performance measurement issues and guidelines for adaptive, simulation-based training. To appear in D. A. Vincenzi & J. A. Wise (Eds.), *Human Factors in Simulation*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Mangos, P. M., Steele-Johnson, D., LaHuis, D., & White, E. D. (In Press). A multiple-task measurement framework for assessing maximum-typical performance. *Human Performance*.

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Linda Pierce is Chief of the U.S. Army Research Institute-Aberdeen Proving Ground field unit. She leads a program of research to improve performance of networked teams and organizations. She has almost 20 years of experience conducting research on collaboration and decision making in battle command teams. In a previous position at the U.S. Army Research Laboratory she initiated ground-breaking research on coalition operations working in Bosnia-Herzegovina with NATO forces at combined force headquarters and the Singapore Center for Military Experimentation. This work has resulted in methods and tools to support and evaluate multinational teamwork in peacekeeping operations and is influencing the direction of socio-cultural research in military operations. Her current research focus areas include the design, training, and support of joint, interagency, and multinational teams; understanding the dynamics of multi-team systems; and developing and evaluating a framework of automation reliance in networked teams. She is the ARI lead for the multi-agency Tactical Human Integration of Networked Knowledge Army Technology Objective. She earned her PhD from Texas Tech University in 1987 and has authored or coauthored more than 50 journal articles, book chapters, and conference proceedings.

Burke, S., Pierce, L., & Salas, E., Eds. (2006). *Advances in human performance and cognitive engineering: Vol. 6. A prerequisite for effective performance within complex environments*, Amsterdam: Elsevier.

Dzindolet, M.T., Pierce, L.G., & Dixon, M.W. (in press) *Augmenting Multi-Cultural Collaboration*. In P.A. Hancock & J.L. Szalma (Eds.). *Stress and Performance*. Ashgate.

Pierce, L., & Dixon, M. (2006). *Improving multi-cultural teamwork to combat terrorism*. NATO RTO-MP-SCI Panel Workshop-174, *Tactical Decision Making and Situational Awareness for Defence Against Terrorism*, <http://www.rta.nato.int/>.

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As a defense scientist for the U.S. Army Research Laboratory, Mr. Morelli has conducted empirical research supporting system design and development for the U.S. Department of Defense Future Force Warrior (FFW) and Future Combat Systems (FCS) programs. He has also conducted basic research using immersive simulation to evaluate human visual tracking and identification capabilities under stress. A primary research focus has been the systematic exploration of the relationship between stress response and measures of attention and perception. Using paradigms that test the human visual ability to track and identify multiple moving items at once, his ongoing research attempts to address the impact of stress upon basic cognitive and attentional processes characteristic to tasks commonly encountered during peacekeeping, force protection and combat operations. Given the disproportionate distractor-to-target ratio intentionally employed within his multi-element tracking paradigms, this work holds special relevance to operations that take place in urban settings, where potential for non-combatant interference is elevated. The research has design implications for advanced C4I systems, where the limits of situational awareness may be taxed by processing multiple inputs while concurrently distributing information to relevant parties within the operational landscape.

Related work also focuses upon the relationship between stress and perceptual learning effects, multimodal processing (e.g., visual, auditory and haptic), and the impact of crossmodal processing upon cognitive and psychomotor performance. Ongoing efforts include research on the detection of human behavioral threat signatures based on biological motion cues (e.g., complex and purposeful human motor activity such as gait, posture, and gestures), and the development of a social network analysis capability for the Army Research Laboratory.

Morelli, F. & Burton, P.A. (2006). The Impact of Induced Stress upon Selective Attention in Multiple Object Tracking. *Military Psychology* (in press).

Morelli, F. & Burton, P.A. (2006). Visuomotor processing, induced stress and perceptual learning. *Proceedings of the 25th Army Science Conference*, Orlando, FL.

Burton, P.A. & Morelli, F. (2006). The effect of stress on crossmodal interference during visual search. *Proceedings of the 25th Army Science Conference*, Orlando, FL.

Sharon L. Riedel, PhD, Research Psychologist

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One of Dr. Riedel's major research interests is in developing training in critical thinking for military leaders and teams. Her critical thinking projects developed a conceptual model for critical thinking, identified eight high payoff critical thinking skills for Army officers, and developed and evaluated web based training for the critical thinking skills. The conceptual model and eight critical thinking skills have been taught in the major blocks of instruction at the U.S. Army's Command and General Staff Officers' Course. Another area of research interest is facilitating the effective performance of multinational teams and team leaders. In the area of multinational team communication, she has developed and tested training in communication skills for SFOR multinational teams at Camp Butmir, Sarajevo. In addition to membership on HFM -138/LTAMC, Dr. Riedel also has an appointment to the HFM-120 research task group, titled 'Exploration of the Areas of Multinational Operations and Inter-Cultural Factors.' The purpose of this group is to increase awareness and understanding of the impact of inter-cultural factors on multinational military operations. One of the group's projects is a literature review that examines the applied and theoretical knowledge on diversity in the areas of human culture, organizations and technologies relevant to effectiveness in multinational military missions.

Adelman, L. & Riedel, S.L. (1997). *Handbook for the evaluation of knowledge-based systems: Conceptual framework and compendium of methods*. Boston, MA: Kluwer Academic Publishers.

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Dr. Sutton's research focus is on development of methods and systems to promote rapid formation of effective leaders and teams at the operational level. A major component of the research is the investigation of individual differences (for example, personality, leadership characteristics, cognitive styles) and of group differences (for example national, organizational, and military culture) for the purpose of identifying the knowledge, skills, aptitudes, and abilities required for one to adapt, as necessary, to ensure mission success. She conducts research in the laboratory and in field settings to advance the development and evaluation of military concepts and technology. For HQ Supreme Allied Command Transformation, Dr. Sutton is the project lead for the 2004 – 2007 Concept Development and Experimentation experiment titled 'Leader and Team Adaptability in Multinational Coalitions' or LTAMC. The associated body of research is a collaborative effort with the NATO Research and Technology Organization Human Factors and Medicine Panel, where Dr. Sutton is the Chairperson for the HFM-138 Research Task Group titled 'Adaptability in Coalition Teamwork.' Dr. Sutton is a charter member of the RTO Human Factors and Medicine Exploratory Team #067, 'Improving the Effectiveness of Coalition Headquarters for Multinational Operations,' where she continues to advance the concept of Adaptability, and specifically Cultural Adaptability, as a core competency for military operations.

For the U.S. Air Force Research Laboratory, she co-manages development of the Situation Authorable Behavior Research Environment (SABRE), a game-based testbed designed to evaluate the impact of individual and group differences at the individual, dyad, and team level. In addition, she works with the U.S. Army Research Laboratory (ARL) on development of a tactical for managing social interactions between U.S. military and non-Western civilians. She has, also, worked with ARL to provide Human Factors support to the Field Artillery Center & School and the Depth & Simultaneous Attack Battle Lab.

Sutton, J.L., Cosenzo, K.A., Pierce, L.G. (2004). Influence of culture and personality on determinants of cognitive processes under conditions of uncertainty. *Proceedings of the 9th International Command and Control Research and Technology Symposium*. Copenhagen, Denmark.

Sutton, J.L., & Gundling, E. (2005). Enabling Cultural Adaptability. In C.A. Rodriguez & R. Poisson (Chairs), *Strategies to maintain combat readiness during extended deployments – A human systems approach*. Symposium conducted at the HFM-124/RSY, Prague, Czech Republic.

Sutton, J.L., Pierce, L.G., Burke, C.S., & Salas, E. (2006). Cultural Adaptability. In *Advances in Human Performance and Cognitive Engineering Research, Vol 6: Understanding Adaptability: A Prerequisite for Effective Performance within Complex Environments*. ISBN 0-7623-1248-3

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Erland Svensson, Ph.D., is director of research at the Swedish Defence Research Agency (FOI), and professor at the University of Linköping. He has been head of the department of Man-System-Interaction (MSI) at Swedish Defence Research Agency, and deputy director of institute of Aviation Medicine at FOA. He is responsible for, and active in research programs directed towards human factors aspects within NCW in laboratory and operational settings. As a clinical- and military psychologist, Dr. Svensson has worked with functional psychometric principles, and he has experience in personality- and vocational testing for military selection. Dr. Svensson is Swedish PFP-representative and observer of NATO RTO Human Factors and Medicine Panel. He is PO for co-operative activities between USAF/RL and FOI/FMV on operator functional status assessment and adaptive aiding implementation. He is POC, and member of the theme group on Human-Cognitive-Social-Sciences in tri-lateral co-operative activities between the Netherlands, Canada, and Sweden, and POC in bi-lateral co-operations on Human Factors between United Kingdom and Sweden. Dr. Svensson is appointed by EC as an expert for examination of research applications on human factors within the EC research programs. Dr. Svensson is governmental expert in European Defence Agency (EDA). He has been project leader within GARTEUR, and in EC-projects.

Dr. Svensson is a member of the Royal Aeronautical Society, London, and member of the Swedish Society for M.P.s and Scientists. He is member of the board of the Swedish Society for Human Factors (HFN). He is secretary of the board of the Swedish Aviation and Naval Medical Association, and member of the Aerospace Medical Association. He is member of the Human Factors and Ergonomics Society. He is member of the committee for the Swedish-American Workshop on Modelling and Simulation. Dr. Svensson has been faculty opponent at doctoral dissertations at four universities. He has been tutor for three doctors, and is tutor for three candidates for the doctorate at the University of Linköping.

Svensson, E., Angelborg-Thanderz, M., Sjöberg, L., & Olsson, S. (1997). Information complexity –Mental workload and performance in combat aircraft. *Ergonomics*, 40, 362-380.

Svensson, E., Angelborg-Thanderz, M., & Sjöberg, L. (1993). Mission challenge, mental workload, and performance in military aviation. *Aviation, Space, and Environmental Medicine*, 64:985-991.

Svensson, E. (1997). Pilot mental workload and situational awareness - psychological models of the pilot. In Flin,R., Salas,E., Strub, M., & Martin, L. (Eds.) *Decision Making under Stress. Emerging Themes and Applications*. Aldershot, Hampshire, England: Ashgate.

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Dr. Warren's current duties are to develop, manage, and serve as a Technical Advisor to programs on the effects of societies, crowds, culture, and personality on cognition and individual and group decision making. He develops mathematical models of cultural effects on cognition; models of culturally influenced communication effects, and models of cultural conflict and cooperation. He is the Program Manager for (1) the Rosetta Project which is developing a low-technology test-bed for multicultural research on cognition and features data collection in China, India, Japan, Korea, Malaysia, as well as America; (2) SABRE: A game-based testbed for culture and personality research (with Dr. Janet Sutton); and (3) A mathematical model of dyadic-based cultural conflict & cooperation. His NATO Activities include being a member of HFM-138/LTAMC.

Previously, Dr Warren was the Associate to the Chief Scientist for Human Effectiveness of the Air Force Research Laboratory (1998 - 2004). He serves on the editorial boards of the International Journal of Ecological Psychology and the International Journal of Aviation Psychology. He is a member of the Psychonomic Society, the International Association for Cross-Cultural Psychology, and the International Society for Ecological Psychology.

He holds a PhD in Experimental Psychology from Cornell University. In Addition to culture, his interests include perception and language. He edited (with Alex Wertheim) *Perception & Control of Self-Motion* which was published by Erlbaum Associates in 1990.

Perception & control of self-motion (1990). Edited by Rik Warren and Alex H. Wertheim. Hillsdale, NJ: Erlbaum Associates.

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Capt (Bul-N) Yanakiev has a PhD in Sociology from the Institute of Sociology, Bulgarian Academy of Sciences, Sofia (*Thesis: 'Quantification of Categorical Survey's Data: Application of Optimal Scaling Methods'*). He works in the area of Sociology of the Military, which is the changing patterns of military organization, new military missions and the challenges of the military professionalism, public opinion and security policy; cultural challenges in multinational coalitions; and diversity issues in the military. He has expertise in methodology of qualitative and quantitative sociological surveys such as data processing and analysis, social science measurement, scales and indexes construction, social science data archiving and implementation of comparative analyses.

Position held include (1) National representative for Bulgaria on the NATO RTO Human Factors and Medicine Panel (2007); (2) Chair of the HFM Exploratory Team #067, titled 'Educating Adaptable Military Leaders and Training Teams for Improved Coalition Operations' (2006); (3) Senior Research Associate (Sociology), High Commission of Attestation, Council of Ministers of the Republic of Bulgaria (2001); (4) Research Fellow, University of Cologne, Central Archive for Empirical Social Sciences, Germany (*Thesis: 'European Public Opinion and the Development of the Common European Security and Defence Policy: Comparative Analysis of West and East European Public Perceptions'* (1990-2000)); and (5) International Partnership for Peace Research Fellow, NATO Defence College, Rome, Italy (*Thesis: 'Military Co-operation in South Eastern Europe and the Future of Multinational Peace Support Operations'* (1999)).

Yanakiev, Yantsislav (2000). *Military Co-operation in South Eastern Europe and the Future of Multinational Peace-support Operations*. NATO Defence College Monograph Series, Rome, Spring 2000. Available also in INTERNET: <http://www.ndc.nato.int/publications>, p. 178

Rachev, Valeri and Yanakiev, Yantsislav (2003). *Warriors in Peacekeeping: Points of Conflict in Complex Cultural Encounters: The Case of Bulgaria/ In: Warriors in Peacekeeping: Points of Conflict in Complex Cultural Encounters*, Jean Callaghan and Mathias Scheoenborn (Eds.), Muenster, Hamburg and Berlin: LIT VERLAG, Piscataway, New Jersey: Transaction Publishers, Published also in Russian "*Солдаты в миротворческих операциях*", The Diplomatic Academy of the Russian Federation.

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