Optimizing the Training of Knowledge and Skills: A Review of Accomplishments from the Multidisciplinary University Research Initiative (MURI) on Training

**Brief Summary:** The goal of this MURI has been to construct a theoretical and empirical framework that can account for and make accurate predictions about the effectiveness of different training methods over a wide range of tasks. The work that will be described in the symposium falls into two interrelated categories: First, experiments will be reported that identify and empirically test training principles. Second, predictive computational models will be discussed that embody the training principles.

(1) **Overview**  
Alice Healy and Lyle Bourne, University of Colorado  
(Bourne serves as introducer, chairman, and timekeeper, 5 minutes; Healy presents overview, 10 minutes)

(2) **Experiments on development and testing of training principles**  
Alice Healy University of Colorado (20-25 minutes talk, 5-10 minutes questions)

(3) **Experiments on acquisition and retention of basic components of skill**  
Robert Proctor, Purdue University (20-25 minutes talk, 5-10 minutes questions)

(4) **Experiments on levels of automation, individual differences, and team performance**  
Benjamin Clegg, Colorado State University, and Eric Heggestad, University of North Carolina, Charlotte (20-25 minutes talk, 5-10 minutes questions)

(5) **Modeling Training Performance in ACT-R**  
Cleotilde Gonzalez, Carnegie Mellon University (20-25 minutes talk, 5-10 minutes questions)

(6) **Modeling Training Performance in IMPRINT**  
William Raymond and Carolyn Buck-Gengler, University of Colorado (20-25 minutes talk, 5-10 minutes questions)

(7) **Conclusions and Open Discussion**  
Lyle Bourne, University of Colorado (15 minutes)

**Agenda for Closed Meeting**

I. Lavery opening remarks. (2 min)  
II. Healy and Bourne. Summary of Annual Progress. (3 min)  
III. Bourne. Response to 2009 Government Committee Report (15 min)  
IV. Bengt Fornberg progress. To be given by Bill Raymond if Fornberg is absent. (15 min)  
V. Bourne. Description and handout of technical reports (5 min)
A. Training Principles (Healy and Bourne)
B. Taxonomy (Raymond)
C. Performance Shaping Functions (Bourne, Raymond, & Healy)
D. ACT-R modeling (Visual Basic Version to use with Instance-Based Modeling) (Gonzalez)
E. IMPRINT models (CD) (Buck-Gengler)
F. Model assessment (Fornberg)
VI. Comparison of Goals and Accomplishments (Bourne and Healy) (10 min)
VII. Dialogue between MURI team members and government committee (10 min)
VIII. Government Caucus (with separate MURI team caucus) (45 min)
IX. Debriefing by Lavery (15 min)