

FRANK E. RITTER

*Professor of Information Sciences and Technology, of Psychology, and of
Computer Science and Engineering*

<http://acs.ist.psu.edu>

Frank Ritter's current research is in the development, application, and methodology of cognitive models, particularly as applied to interface design, predicting the effect of behavioral moderators, and understanding learning. With Martin Yeh, he has an iPhone app, *caffeinezone*, for predicting the time course and effects of caffeine, and his lab is building tutors for the Marine Corps on shooting and combat lifesaving skills. He has helped write and edit several books. A report on applying cognitive models in synthetic environments, was published by the Human Systems Information Analysis Center (HSIAC) as a State of the Art Report (2003), a book on order effects on learning was published in 2007 by Oxford, and he contributed to a National Research Council report (Pew & Mavor, eds., 2007) on how to use cognitive models to improve human-system design.

He is about to publish a book of practical advice on how to run studies given as a tutorial here at BRIMS 2012 (Sage) and the ABCS of what psychology do systems designers need to know (Springer).

Three of his papers on modeling users have won awards, one on high level languages with St. Amant was selected for the "Siegel-Wolf Award for best applied modeling paper" at the International Conference on Cognitive Modeling, and two were selected for recommended reading lists by the BRIMS conference, one on interfaces for models and one on how rules of engagement can be influenced by moderators. The ABCS book has repeatedly won awards at the HCI Consortium annual meeting.

He has served as an external examiner in England for degree programs in cognitive science and knowledge management systems. He currently edits the Oxford series on cognitive models and architectures for Oxford University Press. With Drs. William Kennedy and Bradley Best, he has co-chaired the BRIMS conference and edited special issues of the best papers for Computational and Mathematical Organizational Theory. His work has been funded by ARL, Darpa, DMSO, Dstl (UK), DSTO (Australia), DTRA, and ONR. He spent the Fall 2005 semester as a Senior Fulbright Scholar at TU/Chemnitz in Germany.

USING BEHAVIOR REPRESENTATION MODELS IN RISK-DRIVEN DESIGN

Frank E. Ritter, PhD

Applied Cognitive Science Lab, College of IST, Pennsylvania State University

A report by the National Research Council (Human-system integration in the system development process: A new look. Pew & Mavor, eds., 2007, available free with registration;

http://www.nap.edu/openbook.php?record_id=11893) noted a new way to include human factors in developing systems of systems, the risk-driven spiral model. In this talk I introduce the theory in this report and note a few extensions based on thinking since the report. The report argues that most systems are developed with a mind to what are the riskier aspects of the design and implementation. The report notes how different perspectives have different views of what is risky, and that risk-driven spiral model can be used to organize methods in HCI. (This theory can apply to developing our own models as well.) The report calls for using user models as a shared representation between designers and design stages. The use of models as shared representations in design offers a new outlet and use for user models, but also raised new challenges and repeats old ones, like the ability to build models easily and make them explainable to others. Knowing this report will help modelers understand their own work, find their audience, and apply their models more effectively.