INTRODUCTION

This project is a continuation of research and programming efforts made by a group of students and Professors from the University of Kentucky. Their previous efforts led to the development of software that interacts with the user to show them how various actions will likely affect the outcome of some process. The current user interface was tested by students at the University of Kentucky. The overwhelming response was that it did not provide an intuitive experience. Thus, the research team here at Cal Poly has begun the process of developing a new user interface. We have finished the first stage listed in Brian’s proposal, the qualitative analysis of the current system, and are presently working on the second step, brainstorming ideas and doing background research into cognition.

RELEVANT LITERATURE

The research team has considered the following texts as references giving information about human cognition.

Thinking, Problem Solving, Cognition - Richard E. Mayer, 1992

The psychology of thought and information processing, with historical background, summaries of experimental data, and theoretical explanations. We are using this book to understand the basics of human logic and problem solving, and how those relate to computer simulations which solve the same problems.

The Nature of Cognition - Robert J. Sternberg, 1999

Survey of cognition, with a focus on the processes within human thought, and the differences between theories/models of thought and the actual experimental results. This book will be critical in the development of an accurate and useful cognitive model for later parts of the project.
METHODS, RESULTS, AND DISCUSSION OF WORK

For research into the texts, we read independently to improve personal knowledge of that subject area. This is necessary for productive, informed participation in future stages of the project. For research into the current interface (and problems thereof) we assess the software individually, and then combine our findings during group meetings. This allows us to accumulate our separate brainstorming efforts for maximum results.

We now have a list of problems with the interface, focusing on incorrectness of the cognitive model behind it rather than any physical, easily changeable details of the visual representation. Using this, we have each made individual summaries of the problems with the cognitive model. We have also made a combined list of features we’d like to see in the new interface, again focusing on items important for human understanding, rather than the specific representation of those items. Finally, we have each prepared a use case (a start to finish summary of a user’s single use of the software) showing how a typical user would navigate a stochastic plan. These use cases will help us design the interface to emphasize the features that a user would likely use the most.

THE FUTURE

Our future work will consist of taking the list of problems with the interface, and, using our research on cognition, developing a better cognitive model for interfacing with a stochastic plan. We will include the list of desired features in the development of this model. This step will take us to initial designs of the software which we will then implement. Once the initial design has been implemented, we will perform single blind experiments to assess its efficacy as compared to the original interface. The feedback that we elicit in these tests will help us to refine and tune up the interface.

TEAM MEMBER ROLES

There have been no significant changes in our roles since our original proposals. We will continue with the brainstorming and design steps of the process over the next couple of weeks.