Project Status

This project is continuing. The primary objective of building a research tool for investigating interactive design using Behavior Tables has not yet been achieved.

I continue to wonder why my request for a second extension, which was filed in Fastlane on February 5, 2001, was never acted on by NSF. I have heard nothing, positive or negative, on this request. The residual funds would have applied directly to the development effort, bringing us much closer to a disseminable tool prototype.

The main thing hindering progress has been retaining graduate assistants. I have awarded support to 6 students in the course of this project. Four left school with masters degrees; and one transferred to the University of Edinburgh, where I expect a continuing, though less formal, collaboration in this research. For a considerable period, I had an open, unfilled assistantship.

There remains one student, Alex Tsow, who is writing a dissertation on this work. Tsow spent a year on leave for his wife’s PhD field study in Poland. Fortunately, he has been awarded a GSRP Fellowship from NASA that enables him to complete his doctoral work with a full commitment to software development.

In any case this is project was one in a series of projects that has already produced six PhDs, with a seventh pending now, and made significant contributions in formal methods for system design. It will continue to do so.

Published papers

An asterisk marks authors who used travel funding from this project to present conference papers. References [2, 3, 8] describe work directly resulting from this project. References [4, 5] describe collaborative research related to this project. References [6, 7] are reports related to education issues in formal methods which have a direct impact on this research area. Reference [1] is and invited talk that included a review of design derivation research since 1983, including the work of this project. Internet accessible copies of articles are available through:

http://www.cs.indiana.edu/hmg/bib/iuhmg.html


Invited presentation at the joint session of CHARME’01 and the 14th International Conference on Theorem Proving in Higher Order Logics (TPHOLs’01) at Edinburgh, Scotland, UK.


**System development**

The DDD (Digital Design Derivation) research tool was commercialized by students from this research project, who started Derivations Systems, Inc. (www.derivation.com) in 1995. One of these students was an ABD doctoral student whose dissertation topic was behavior tables. After a couple of years it became clear that a collaborative relationship would not form with DSI, and that the ABD student would not continue his doctoral work in a commercial setting. Hence it became necessary to revive the DDD tool, latent since 1994, and that a new student would inherit responsibility for the graphical front end. Thus, unanticipated development work and training became necessary, setting back new development objectives.

We shall continue the development effort, with one student funded by NASA, and, it is hoped, additional funding. Both Java and Tcl/Tk table graphics have been explored and
background connections between the GUI and the semantic editor have been developed. I expect a research demonstration tool to be finished in 2003, regardless of additional funding.

Travel

The following travel was funded in whole or in part by this grant.


Other relevant items


3. I was on the organization committee and was principal author of the report of the 21st Century Engineering Consortium Workshop, held at Melbourne Florida in March 1998. Hosted by AFOSR, this meeting was devoted to formal methods education, and remains the only meeting on that topic held in the United States, as far as I know.

4. In conjunction with the previous item, Kathryn Fisler and I established the Formal Methods Education Resources information hub for educators. Fisler is the maintainer of the web site at http://www.cs.indiana.edu/formal-methods-education/

5. In September 2001, I was elected Chair of SIG-CHARME, an international interest group for applied formal methods. This organization traces its history to the early 1980s, organizing the first and longest conference series (now called FMCAD/CHARME) in this topic.