MESSAGE FROM THE CHAIR
By Chairman Larry W. Avery
lavery@humancentrictech.com

We have initiated a number of actions that should come to fruition in 2001

This will be my final communication to the SDTG as the Technical Chair (TC) and likely my shortest one (grin). It has been a very enjoyable and productive two years as TC. The SDTG has grown - and while I would love to take credit for that growth, it has been largely due to the efforts of a wonderful group of officers and other folks. My profound thanks to them.

The next year will continue to be a busy one for the SDTG. We have initiated a number of actions that should come to fruition in 2001. Some of those actions include publishing of an SDTG web site, setting up a SDTG list server, approval of a revised set of by-laws, and the determination of a list of seminal readings in human factors and system development. In addition, Tom Malone, the incoming TC, has thrown down an interesting challenge to us. I look forward to seeing how it develops.

So in closing, I want to thank the membership for all your support and ask that you continue to support the incoming officers. I also ask that you exercise your privileges and vote for future officers - see the ballot included in this newsletter.

Larry Avery

SKILLS TAXONOMY UPDATE
by Kevin Bracken

The Council of Technical Groups (COTG), on behest of the HFES Executive Council requested that the Technical Groups provide a “skills taxonomy” for each of their groups. The intent is to provide the HFES with the ability to quickly refer a query for information by the press or other interested parties to an acknowledged expert in the technical area.

The SDTG prepared a preliminary Skills Taxonomy based on member inputs and distributed it to the membership. The members were asked to provide ratings of the relative importance of the SDTG Activities and Skills, as well as propose additions, deletions, and changes. The results are briefly summarized below. The low response rate (ten responses) limits the usefulness of the survey, but did provide some useful suggestions for additions. The results of the survey, and any additional feedback received from the membership, will be used to revise and expand the SDTG Skills Taxonomy.

Summary of Survey Results
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SDTG ELECTIONS - MAIL IN THOSE BALLOTS!

Enclosed in this edition of the newsletter is a special balloting issue, and a pre-stamped, mail in ballot. We are electing a Program Chair - Elect, a Newsletter Editor - Elect, and a Secretary/Treasurer. Please see the Balloting Issue for details about the jobs and candidates, and Please Mail in Your Ballots!

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There were ten responses to the request for feedback on the initial SDTG Skills Taxonomy that was distributed to SDTG members. Seven suggested that the level of coverage represented by the Taxonomy was adequate and three provided suggestions for expansion of the SDTG Activities and SDTG Skills. Only eight of the respondents provided importance ratings for the SDTG Activities and Skills. The SDTG Activities and Skills were generally rated as highly important. There were not enough responses and the range of responses was too narrow to warrant statistical analysis. The most highly rated Activities (all rated high) were:

- Operational concept definition/operational analysis
- Analysis of mission
- Requirements analysis and definition/elicitation
- Function definition and analysis
- Assessment of impact of design options on the user
- Conduct of trade-off studies and analyses

The least highly rated Activities (medium range) were:

- Development of scenarios
- Identification of manpower and personnel considerations
- Identification of training requirements
- Portability analysis
- Conduct of experiments

The most highly rated Skills (all high) were:

- Ability to apply the results of SDTG activities to influence design

The following SDTG activities were suggested for addition to the taxonomy:

- Some working knowledge of the system domain
- Thorough understanding of the terminology and vocabulary of the system domain
- Rapport with SMEs (part of Interpersonal Skills)
- Knowledge of organizational authority and information sources that impact the new system or product (design, legal, marketing, safety, etc.)
- Conversance with available current databases that contain HFE information that might influence design, analysis, or test decisions
- Knowledge of available company, government, and voluntary standards on HF practices and design, both domestic and international
- Understanding of Instructional Systems Development (ISD), or Systems Approach to Training (SAT)
- Ability to understand cognitive problems in learning that design causes
- Ability to understand crew/team relationships that can be fostered or hindered by design

Suggestions for Additions

The following SDTG activities were suggested for addition to the Taxonomy:

- System process articulation (e.g., OSDs, IDEF models, FFBDs, DFDs, etc.)
- System process reviews with SMEs
- Operational analysis of current systems or products

Suggestions for Deletions

Two respondents suggested deleting Portability Analysis from the SDTG activities.

Suggestions for Wording Changes

One respondent suggested changing the wording of the effective communication skill to include “orally and in writing”.

Where to go from here?

Based on the survey results and some informal feedback on the Taxonomy, it seems like next step should be to expand the initial Taxonomy both in breath and depth of
The HFES is establishing a Task Force on Human Factors in Medicine. This committee will be developing a statement of capabilities and research needs in the medical systems area as well as an implementation plan for moving the Society forward in addressing this rapidly evolving area.

One of the major challenges facing this country today in medical systems is the extremely high rate of human error in medical systems. A report published by the Institute of Medicine in 2000 entitled “To Err is Human”, and a report to the President, entitled “Doing What Counts for Patient Safety: Federal Actions to Reduce Medical Errors and Their Impact” (February, 2000) cited evidence that the national rate of errors in health care in hospitals may lead to some 98,000 deaths per year and that adverse events occur to approximately 3-4% of patients in American hospitals. The rate may be higher: investigators, using both records and provider reports on a general medical service at a university hospital, reported that 36% of patients reviewed had an iatrogenic illness, 9% of these threatened life or produced considerable disability, and 2% of cases contributed to patient death. Other recent research evidence reported a rate of 45.8% among patients admitted to two intensive care units and one surgical unit of a teaching hospital and 17.7% of those with adverse events suffered disability or death.

According to “To Err is Human” total national costs (lost income, lost household production, disability, health care costs) are estimated to be between $37.6 billion and $50 billion for adverse events and between $17 billion and $29 billion for preventable adverse events. Health care costs account for over one-half of the total costs. Even when using the lower estimates, the total national costs associated with adverse events and preventable adverse events represent approximately 4 percent and 2 percent, respectively, of national health expenditures in 1996. This is a health care problem for which there are proven human factors solutions. It is a systems problem, and, as such, it needs system design solutions. I would contend that the Technical Group within HFES which has the Charter, technical expertise, and hopefully the interest in addressing the problem of medical error is the Systems Development TG.

I would propose that a thrust of the SDTG efforts in 2001 would be to tailor the principles, processes, methods and data of human factors to the reduction of errors in hospitals and health care systems. The human factors principles which will be applied include the following:

- the human (patient and practitioner) must be viewed as an integral element of the system rather than simply a user of the system;
- the major implication of considering the human as an element of the system is that system design must address the interfaces between the human and other elements of the system (hardware, software, information, environments, organizations, procedures, protocols, treatment pathways, and other humans);
- human factors must influence system design and development to ensure that human interfaces are designed in terms of the requirements, limitations, capabilities, and expectations of the human;
- human factors will reduce the potential for error by modeling human tasks and associated requirements, and ensuring that task performance requirements are in line with human capabilities, limitations and expectations;
- Where errors cannot be prevented, human factors analyses will ensure that the system is error tolerant; that errors, once occurred, will be detected & cor-

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The System Development Group fosters research and the exchange of information for integrating human factors into the development of systems.

MEDICAL SYSTEMS
Cont.

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rected in time, or that their impact will be minimal;
• The majority of errors in a complex system are due to situational and design factors rather than to personnel factors;
• medical systems must be designed to facilitate and encourage the accurate and timely reporting of actual errors and near misses.

I propose that the HFES SDTG cooperate with the Human Factors in Medicine Task Force to specifically address where human factors can contribute to the reduction of medical errors. I’d like feedback from the SDTG membership concerning this focus of our efforts.

IEA/HFES 2000 PROCEEDINGS

The proceedings of the IEA/HFES 2000 Congress are vast - 5500 pages in 7 volumes. The good news is that the volumes are arranged topically, which may make them more attractive to TG members who wish to order the books. (The CD-ROM is available for separate sale as well.) The SD related volume is Volume 6: Product and System Design, Miscellaneous. The Topics include:

Consumer Products
General Sessions
Special Sessions
Standards
System Development

IEA/HFES 2000 PROCEEDINGS

Send submissions for future SDTG newsletters to: Brian Gore
640 W. Sunnyoaks Ave.
Campbell, CA 95008-5342
(123)456-7890
bgore@mail.arc.nasa.gov

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