



CONTENTS

JCEDM.....3
MEMBERSHIP3
CHAPTERS.....4
IEA.....4
CALLS FOR PAPERS5

WEB SITE6
NEWS6
SHORT COURSES6
PEOPLE7
IN THE NEWS7
CALENDAR7

Automation in IT Service Delivery: Human Factors Challenges

By John Bailey & Cheryl Kieliszewski

Everywhere you look today, you find services that satisfy almost every possible need – fast food, health care, information, education, entertainment, and commerce, to name a few areas. Over 70% of the U.S. labor force is engaged in services, and the economies of most developed countries have shifted toward services. Economic dynamos such as India and China are quickly moving from agriculture and goods toward a services-based economy.

In the United States, the fastest-growing segments of the services industry are business consulting and information technology (IT) services. Unlike most other services, these services are primarily business to business, not business to customer.

Although a lucrative business, this domain has major challenges. IT service providers are developing and deploying increasingly complex IT solutions for their clients, including globally distributed solutions supported by globally distributed teams. As such, the complexity of the IT solutions has continued to increase and the cost of managing them has far outpaced the initial technology investment. The cost of managing these solutions is now at least twice that of the initial technology expenditure, and that difference is expected to continue widening quickly if left unchecked.

The IT service industry is responding to this challenge. There are at least three promising technical approaches to controlling the cost of IT solutions management: standardization, integration (or consolidation), and automation. Automation has been heralded by several IT service companies as the next big innovation in IT systems management. HP, Microsoft, Sun, and IBM have launched initiatives to make IT systems self-managing – in effect, automating human tasks and activities. Because most IT systems management activities are still highly manual – including deployment, configuration, maintenance, and problem determination – there is an opportunity for large cost savings and improved quality of service through the effective use of automation.

Human factors should play a significant role in designing successful, effective automation for IT systems. The exact nature of how highly automated IT systems will interact with all the various aspects of IT delivery service is far from being well understood. Human skill and expertise will necessarily continue to play an im-

portant role in complex activities, requiring mixed-initiative interaction techniques and adaptable and adaptive automation. The human factors challenges in designing these kinds of systems for IT service delivery are noteworthy.

During a panel session that took place during the HFES 49th Annual Meeting, questions were raised about these challenges. Speakers on the panel, which was entitled “Human Interaction with Autonomic Computing Systems,” included Alva Couch (Tufts University), Asaf Degani (NASA Ames Research Center), Christopher Miller (SIFT), and David Woods (Ohio State University). We chaired and moderated the panel.

The panel opened with this question: “Does automation for IT solutions pose unique human factors challenges compared with automation in other domains, such as air traffic control, aviation, military systems, power plants, transportation, manufacturing, and space exploration?”

What’s Unique About Automation in IT Systems?

Alva Couch made the point that the evolution of IT systems differs significantly from that of many other kinds of systems, if only because it is common to have the latest interface version sitting alongside a legacy version (or versions) to manage the system. For example, he said, “one does not, in a typical airplane, have the old interface sitting alongside the new. And in system and network administration, it is very commonly necessary to deal with legacy issues, due to the fact that old systems are sitting alongside new systems. Transition planning is not a matter of coming into a new plane. It’s actually a matter of having the old plane sitting beside the new plane – for at least five years! Therefore, there is a very different character to the kinds of transitions that one has to deal with in systems administration, and in automation and in autonomies.”

Additionally, there are two ways that automation is integrated into IT systems; bottom-up and top-down. IT systems tend to be open and extendable, with not just third-party vendors building add-on administrative tools – users themselves regularly write scripts to automate frequent or labor-intensive tasks. These scripts tend to be circulated among colleagues and evolve and are adapted over time. This is the bottom-up approach to automation.

Automation in IT Service Delivery...

(continued from page 1)

However, it has also become necessary for these scripts to coexist with new top-down automation that is provided “out of the box” or otherwise purposefully architected into an IT solution. These combined automation circumstances are unique to the IT domain in that it is unlikely that a nuclear power plant operator or aircraft pilot will be developing his or her own automation routines to supplement the ones provided by the manufacture.

Although there are undoubtedly other aspects of IT systems that make them a unique – or, at least, a very challenging – domain in which to apply effective automation (e.g., global distribution, decentralization, shared resources, and heterogeneous architectures), these were not addressed during the panel.

What Do We Know That Can Be Applied to Automation in IT Systems?

It was clear that much of what we’ve learned thus far in human factors research with respect to automation is applicable to IT systems. For example, according to David Woods, we’ve learned that as the level of autonomy across various systems and components increases, counter to common expectations, the need for sophisticated forms of coordination actually increases. How do you build sophisticated coordination into highly distributed, decentralized IT systems? How do you build coordination systems that work with automated agents and people, each supplying some critical knowledge or capability?

We know that nondeterminism – that is, the inability to reliably predict which state a system will transition to next – is a major source of complexity. Perhaps we can apply techniques suggested by Asaf Degani to apply algorithms to find nondeterministic states and simplify the system by aggregating them into deterministic clusters. This approach might be coupled with existing software reliability methods for reducing hidden dependencies, leaving only the ones that really matter, and managing new dependencies as they emerge during use or changed use. These techniques can simplify the user interaction model, thus reducing errors and improving productivity.

Chris Miller noted work by James Bright, published in the *Harvard Business Review* in 1958, regarding the area of the automation of assembly lines. Based on that work, one can anticipate that during the initial introduction of automation, one should not expect

improvements in key productivity and cost metrics. They will actually become worse until the automation evolves to achieve a better fit in terms of higher resilience and reliability in the context of use. Once that happens, one should expect to see improvements on the downside of that curve. However, Woods suggests that there are dangers to the downside of the curve, because when the automation is ideally optimized, it is inherently more complex. This is when one starts to see occasional drastic failures occur and when resilience is needed to guard against them.

If automation fails because the envelope for which it has been designed to operate has been punctured, according to Woods, high levels of coordination and resilience are required as additional resources are brought in to help recover from the failure. High levels of coordination and resilience require shifting perspectives, observability, directed attention, and directability.

Conclusion


Throughout the session, each panelist introduced some element of existing knowledge or techniques for improving the human factors of automation. These elements included contrasting semantic-based planning versus policy-based planning, management of increased interaction complexity caused by automation versus simplification, and abstraction and simplification of system interfaces.

The panelists generally agreed that, to this point, there is no grounded theory that provides a framework for human interaction with automated IT systems. However, it is evident that a lack of system transparency, observability, and resilience are issues that need to be addressed for the most effective interaction balance between the human and differing degrees of automation.

Many questions were posed but left unanswered. How do you recognize when the boundaries of IT system automation are being challenged, and how do you bring in the right resources to recover? How do you effectively coordinate resources that are pulled in to deal with anomalies? Is there something we can learn from mission control, which became very good at recognizing anomalies that might occur, and when they did occur, fanned them out to the appropriate areas of expertise for analysis followed by reintegration and planning? How can we tell who is failing – the user or the automation?

Thus, it appears that there is still much to learn in the area of human factors in automation as applied to the domain of IT systems and service delivery. Although human factors issues are beginning to be addressed in some professional forums (e.g., International Conference on Autonomic Computing ICAC and USENIX conferences), there is still a need for greater focus on human factors. Toward that goal, as part of IBM, we’re working with other industry and academic leaders to establish a conference dedicated to this topic, targeted for the late first quarter of 2007.

John Bailey is a human factors scientist at the IBM Almaden Research Center. He has a Ph.D. in human factors psychology from the University of Central Florida. His primary research is in IT service delivery. Cheryl Kieliszewski is a human factors scientist at the IBM Almaden Research Center. She has a Ph.D. in human factors engineering from Virginia Tech. Her current research focus is in the area of business-to-business services. The authors extend their thanks and recognition to the esteemed panelists, who provided for an interesting and enlightening discussion. ☒



Bulletin

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New Cognitive Engineering Journal Seeking Submissions

The Human Factors and Ergonomics Society is pleased to announce a new journal in the area of cognitive engineering and decision making, the *Journal of Cognitive Engineering and Decision Making*.

The new journal focuses on research that seeks to understand how people engage in cognitive work in real-world settings and the development of systems that support that work. The journal features research on human cognition and the application of this knowledge to the design and development of system interfaces, automation, aids and other support systems, training programs, personnel selection devices, and coordination environments for people who work in teams or groups.


Research that is conducted in both ecologically valid task simulations and in field settings will be included. The editors are interested in advances in the theory of cognition in naturalistic work environments, empirical results obtained from the study of decision processes, cognitive engineering initiatives, cognitive modeling, and innovative methodologies for conducting research in simulation and natural settings.

Submissions now are invited. Manuscripts should be submitted electronically, in *APA Publication Manual* (5th edition) format, to cedm.journal@satechnologies.com.

Submissions may include case studies, advances in theory, developments in research methods, metacognitive modeling, and empirical and experimental work capturing critical information on human cognition and on the impact of system design characteristics on the cognition and performance of individuals and teams. The journal will include studies in many domains, including aviation, air traffic control, process control, transportation, manufacturing systems, maintenance and diagnostic systems, system design, medical and emergency services, teleoperations and supervisory control, command and control, and military systems.

The *Journal of Cognitive Engineering and Decision Making* features three main tracks:

- **Cognition in Context** – including naturalistic and ecological studies of domain-embedded knowledge and reasoning, cognitive task analyses, cognitive work analyses, cognitive field research, or knowledge elicitation.
- **Studies in Simulations and Synthetic Environments** – emphasizing cognitively rich environments, and a reliance on domain experts working as individuals or in teams.
- **Design of Complex and Joint Cognitive Systems** – including training and support systems for individuals, teams, and complex sociotechnical systems. Studies might involve evaluations of systems or envisioning exercises, and empirical analyses capturing critical information on the impact of system designs on cognition and collaboration.


For more information about the *Journal of Cognitive Engineering and Decision Making*, go to <http://www.hfes.org/publications/cedmjournals.html>. 

Share the Benefits of HFES Membership

You know the value of your HFES membership, but do your friends and colleagues who have an interest in human factors/ergonomics? They too can benefit from the complimentary subscriptions to our regular publications and discounts on books, proceedings, standards, and annual meeting registration. In addition, all HFES members are entitled to the following:

- discounted registration fees for the HFES Annual Meeting
- members-only access to résumé posting and job search at the HFES Placement Service (<http://www.hfes.org/web/CareerCenter/Career.aspx>)
- members-only access to the Online Member Directory
- 20% off software, workload assessment tools, data analysis tools, and other products from the Human Systems Information Analysis Center (formerly CSERIAC)
- 15% off Taylor & Francis books and subscriptions to *Ergonomics*
- 15% off books and periodicals from Lawrence Erlbaum Associates
- 15% off John Wiley & Sons books and other resources
- 15% off selected books from Academic Press
- discounts on car rentals from Alamo and Hertz

In addition, Full Members and Fellows are entitled to list their consulting and expert-witness services in the online Directory of Human Factors/Ergonomics Consultants, which is freely available to visitors to <http://hfes.org>. The listing fee is \$150 for individuals and \$250 for companies (employing at least two HFES Full Members); the fee covers a full year from the date of initial posting. There are now 55 consultants in the directory; to view a sample listing and learn more about the consultants directory, go to <http://www.hfes.org/web/ConsultDirectory/Consultdirectory.aspx>.

Help a friend or colleague advance his or her professional career and strengthen the HF/E community by recommending membership in the Human Factors and Ergonomics Society. Applications are available at hfes.org or by contacting Member Services at membership@hfes.org or 310/394-1811. 



Plan to Attend the HFES 50th Annual Meeting

<http://www.hfes.org/web/HFESMeetings/06annualmeeting.html>

RMC Chapter's Katrina Relief Efforts

By *Beth Meyer, HFES Rocky Mountain Chapter President*

On Saturday October 8, 2005, the HFES Rocky Mountain Chapter held a workday at the Food Bank of the Rockies in Denver to benefit local and remote victims of Hurricane Katrina. HFES members and friends spent the morning packing boxes of food to go to hurricane evacuees who must stay in the Denver area for the long term. As they worked, the participants discussed ways to help with the work process for food bank volunteers and shared those ideas with the food bank staff.

This effort was part of the chapter's activities in honor of the 2005 National Ergonomics Month.

Chapter Revitalization Success in Ohio

By *Kermit Davis, Tristate Chapter President*

In 1997, the lights went out for the HFES Tri-State Chapter in Cincinnati, Ohio. The chapter remained in the dark for more than three years until a core group of individuals led by Leslie MacDonald began to stimulate its resurrection.

There were other unsuccessful attempts to revitalize the chapter, with one meeting in March 2001, but no regular program was formulated until October 2002. Around that time, the core group started small with a few meetings with individuals who were new to the area and individuals who had been involved since the inception of the chapter. Through hard work and lots of communication, this group developed a program for the following year that included four evening meetings and a plant tour. Elections were held shortly after the first meeting, although many of the officers were among the original core group, which helped maintain the momentum. The chapter has been able to sustain good attendance (around 15 to 20 members per meeting) for the past two and a half years.

So how has the momentum of the revitalization of the local chapter been maintained? We think there are several factors. First, a core of individuals remains driven to continue the revitalization. The board members routinely meet to discuss the direction of the program and reflect on the successes and failures of previous meetings. Second, the board has continued to focus on a very diverse program. Over the past two years, the chapter has invited speakers who have talked about topics such as low-back biomechanics, the process of certification of professional ergonomists, medical errors, clinical reminders in medical devices, macroergonomics, and translation research in occupational health. Our chapter has also had meetings that spotlighted the capabilities of the local universities and research agencies (e.g., NIOSH). At one meeting, students

presented posters of recent research, and at another, faculty members presented an overview of their programs.

The culmination of these spotlight meetings occurred recently when we held a networking event that coincided with World Usability Day on November 3, 2005. The event was attended by more than 80 individuals and was cosponsored by the Tristate Chapter and a corporate sponsor, LexisNexis. A significant number of members of the Southern Ohio Chapter were also in attendance. The meeting featured more than 20 posters and demonstrations, a panel of usability experts, and a special address from HFES President Marv Dainoff.

In addition to meetings, we also made several plant tours to local companies, including Toyota, Jim Beam, and JTM.

The third factor in our successful revitalization is that the board is constantly trying to be creative in encouraging new individuals to attend. One of the main areas of focus has been to integrate students into the chapter by encouraging them to participate in meetings as well as having students serve as representatives on the board.

The key to any revitalization of a local chapter is the dedication of the leadership, involvement of the membership, and consistency in the meetings. However, the sustainability of the chapter can be accomplished only by continued effort and integration of new blood into the chapter each year. With time commitments being one of the major obstacles, a chapter must continue to be innovative with respect to a broad and flexible program each year.

The future of the field of human factors/ergonomics remains with the professionals who drive the discipline and who must serve as resources for the revitalization of the local chapters. Just remember, the path is long and will require a tremendous effort by the leadership of the chapters. But the effort is well worth it. ☒

IEA

IEA Fellow Nominations Open

The International Ergonomics Association (IEA) invites HFES members to recommend candidates for the IEA Fellow Award. The IEA Fellowship was created to recognize extraordinary or sustained, superior accomplishments of an individual to the ergonomics profession or discipline at an international level. To be considered for the award, nominees must meet two eligibility criteria: (a) international service (including such activities as service to IEA, an extensive publication record in international journals, international consulting, or service to the United Nations and similar organizations) and (b) membership in an IEA-federated (e.g., HFES) or affiliated society for at least 10 years. A list of past recipients can be found at the IEA Web site, <http://www.iea.cc>. The deadline for submissions is *April 15, 2006*.

If you would like to recommend an HFES member for this award, please contact Executive Director Lynn Strother (lynn@hfes.org) as soon as possible. ☒

SAFE Symposium

The 2006 SAFE Association Annual Symposium is accepting proposals for papers, panels, workshops, briefings, demonstrations, and open forums for its 44th Annual Symposium, to be held in Salt Lake City, Utah, October 23–25, 2006. Areas of interest include homeland security, simulation, human factors, and life support systems.

Abstracts are due *June 30, 2006*, in electronic form at safe@peak.org. For more information about the SAFE symposium, contact SAFE at 541/895-3012, fax 541/895-3014, safe@peak.org, <http://www.safeassociation.com>.

2007 Bower Award

Nominations are being accepted for the 2007 Bower Award and Prize, to be presented to a distinguished scientist in the field of human-centered computing. The Bower Award for Achievements in Science is presented annually by the Franklin Institute to a researcher of any nationality for outstanding work in the applied or basic sciences or engineering. This year, the field of human-centered computing has been chosen as a theme. A gold medal and a cash prize of \$250,000 will be awarded.

Individuals who have significantly advanced the field of human-centered computing, who have clarified the relationship between human cognition and computing, or who have successfully translated some important aspect of basic research into significant, practical results may be nominated. Areas of contribution can include issues of design, collaborative work, and assistive technology.

All nominations must be received by *May 31, 2006*. More information about the award and a downloadable call for nominations can be found at <http://www.fi.edu/tfi/exhibits/bower/06/07nominate.html>. Questions about the appropriateness of a particular nomination are welcome and should be directed to Franklin Institute Vice President Philip W. Hammer at bhammer@fi.edu.

Special Issue on ATC

The *International Journal of Aviation Psychology* is seeking submissions for a special issue on human factors in air traffic control (ATC). The field has seen many changes in the air traffic environment since the last special issue on this topic in 1993, including advances in the areas of technology, procedures and regulations, training, and human resources. Many of these advances have benefited from recent applied psychological research focused on attaining a better understanding of the interaction between the many elements in the ATC environment. The new era of air traffic control proposes increased use of automation, the movement from paper to digital processes, a net-centric sharing of information, and increased collaboration among air traffic service providers, pilots, and airline dispatchers.

Suggested topics for the special issue include, but are not limited to, the application of psychological principles to ATC design, research and development of ATC issues that examine the interaction of system users and technology, effects of new procedures on ATC efficiency, collaboration and information sharing between ATC and other aviation stakeholders, testing of advanced ATC decision support systems, and innovative methods for the collection and analysis of applied ATC research

The deadline for submissions is *August 1, 2006*. For more information about the *International Journal of Aviation Psychology* and the special issue on ATC, contact Jim Hitt at hitt_james@bah.com or Mike McAnulty at mike.mcanulty@faa.gov.

2007 SAE Congress

The Society of Automotive Engineers (SAE) is seeking submissions for the 2007 SAE World Congress, to be held April 16–19 in Detroit. Abstracts may be submitted online at <http://www.sae.org/congress>. Abstracts should be no more than 300 words. The deadline to submit titles and abstracts is *June 1, 2006*. For more information about the 2007 SAE Congress, contact Lijian Zhang at lee.zhang@delphi.com.

Automotive Human Factors Award

As part of its International Award in Design, Engineering, and Innovation, Italdesign-Giugiaro will give prizes to three innovative research projects in the field of automotive human factors design. Projects will be judged on technological novelty, optimization for human shape, optimization for human movement, optimization of the thermal environment, optimization for comfort and convenience, perception enhancement of cognitive interaction, use of information-society interfaces, improvements in active and passive safety, use of biologically compatible and environmentally sustainable materials, inclusive design for special populations (children/elderly/disabled), and implementation potential.

The competition is open to designers, engineers, and individual undergraduates, graduates, and researchers working in universities or other state or private research centers or design schools worldwide. Competitors must be less than 35 years of age at the time of the closing date. All submitted projects must be original; projects previously submitted to other similar competitions will not be considered.

The deadline for all entries is *April 18, 2006*. Send entries to the Politecnico di Torino, 1a Facoltà di Ingegneria, Dipartimento di Meccanica, Area di Ingegneria Industriale, Corso Duca degli Abruzzi, 24, 10129 Torino, Italy. A panel of judges will notify all competitors by the end of June. For more information about the competition, go to <http://www.icsid.org/media/pdf/bando+scbede%20definitivo.pdf?PHPSESSID=975bb926cfa84accaad4fe23f78bc6d4>.



HFES Web Site Update

HFES has made several updates to the Web site (<http://hfes.org>). Three new navigation bars have been added on the left side of the page: Awards & Fellows, Standards, and Advertise with HFES. Descriptions of HFES awards, deadlines, and information about the nomination processes for both HFES Awards and Fellows are located in the new Awards & Fellows section. Descriptions of HFES standards efforts are now available by clicking on the Standards bar. Also included in this section is a collection of standards-related articles published in the *HFES Bulletin*. Finally, the Advertise with HFES section lists all the advertising opportunities available in HFES publications and events, including the *Bulletin*, *Ergonomics in Design*, *HFES Directory and Yearbook*, annual meeting newsletter, and HFES Career Center.

HFES invites feedback and suggestions about the new additions to the Web site. Please address comments to Communications Director Lois Smith at 310/394-1811, lois@hfes.org. ☒

NEWS

Michigan Governor Vetoes Antiergonomics Legislation

On February 7, Michigan Governor Jennifer Granholm vetoed a bill that would have blocked the ability of the Michigan Occupational Safety and Health Administration (MIOSHA) to create ergonomics standards. Michigan lawmakers had passed the bill in January; it would have prevented the state from adopting an ergonomics standard. Legislators claimed that with recent auto industry layoffs and factory closings, new ergonomics standards might exacerbate Michigan's already struggling job economy. An advisory commission assembled by MIOSHA has drafted several possible sets of state ergonomics standards in the wake of the repeal of federal ergonomics rules in 1996.

New Standard for Color Measurement

In January, the Business and Institutional Furniture Manufacturer's Association (BIFMA) International released a new color measurement standard, BIFMA Color 3.1-2005. The new standard provides a common practice of color measurement technique for office furniture manufacturers and suppliers. It is integral to establishing methods of visual and numerical requirements for color evaluation. The new standard also provides a description of primary and secondary light sources. Copies of the BIFMA Color 3.1-2005 are available in electronic (pdf file) or paper copy. Contact BIFMA at 616/285-3963, or visit its Web site at <http://www.bifma.org>. ☒

SHORT COURSES

Certified Safety Professional Review Course, April 24–28, 2006, Chapel Hill, NC. Occupational Safety and Health Education and Research Center, University of North Carolina, 3300 Hwy. 54 West, Chapel Hill, NC 27516-8264; 888/235-3320, fax 919/966-7579; oshercww@sph.unc.edu, <http://www.sph.unc.edu/osherc/>.

Putting Ergonomics into Practice, May 2–5, 2006, Columbus, OH. Candi McCain, Institute for Ergonomics, Ohio State University, 1971 Neil Ave., 210 Baker Systems, Columbus, OH 43210, 614/292-4565, fax 614/292-7852, ergonomics@osu.edu, <http://ergonomics.osu.edu/>.

Summer 2006 Human Factors Engineering Short Course, July 24–30 and July 31–August 4, 2006, Ann Arbor, MI. Paul Green, University of Michigan, 2901 Baxter Rd., Ann Arbor, MI 48109-2150, 734/763-3795, pagreen@umich.edu, <http://cpd.engin.umich.edu/>.

2006 Summer Ergonomics Institute, August 3–4, 2006, Berkeley, CA. Ira L. Janowitz, Center for Occupational and Environmental Health, University of California, UC Berkeley, Mailcode 5120, 2223 Fulton St., 2nd Floor, Berkeley, CA 94720-5120, 510/643-7277, <http://socrates.berkeley.edu/~coebce/>.

Fundamentals of Workplace Safety, August 3–4, 2006, Berkeley, CA. Barbara A. Plog, Center for Occupational and Environmental Health, University of California, UC Berkeley, Mailcode 5120, 2223 Fulton St., 2nd Floor, Berkeley, CA 94720-5120, 510/643-7277, <http://socrates.berkeley.edu/~coebce/>.

29th Annual Occupational Safety and Health Summer Institute, August 7–11, 2006, Marco Island, FL. Occupational Safety and Health Education and Research Center, University of North Carolina, 3300 Hwy. 54 West, Chapel Hill, NC 27516-8264; 888/235-3320, fax 919/966-7579; oshercww@sph.unc.edu, <http://www.sph.unc.edu/osherc/>.

The Human Factors Engineering and Patient Safety Short Course – Part I and Part II, August 14–18, 2006, Madison, WI. The Center for Quality and Productivity Improvement, 575 WARF Bldg., 610 Walnut St., Madison WI 53726-2336, 608/263-2520, fax 608/263-1425, cqpi@engr.wisc.edu, <http://www2.fym.wisc.edu/seips/Courses/coursehome.html>.

Putting Ergonomics into Practice, October 10–13, 2006, Columbus, OH. Candi McCain, Institute for Ergonomics, Ohio State University, 1971 Neil Ave., 210 Baker Systems, Columbus, OH 43210, 614/292-4565, fax 614/292-7852, ergonomics@osu.edu, <http://ergonomics.osu.edu/>.

Penn State Postbaccalaureate Certificate in Human Factors and Ergonomics, Pennsylvania State University World Campus, 128 Outreach Bldg., University Park PA 16802-3601, 800/252-3592, fax 814/865-3290, psuwd@psu.edu, <http://www.worldcampus.psu.edu/wc/HumanFactorsandErgonomicsCertificate.shtml>. ☒

PEOPLE

Charles A. Baker, a long-time Member and Fellow of HFES, died January 7, 2006, at the age of 80.

Gary Klein was elected a Fellow of the American Psychological Association at the 2005 Annual APA Convention. He may be reached at Klein Associates, Inc., 1750 Commerce Ctr. Blvd. N., Fairborn, OH 45324-3987, 937/873-8166 x 116, fax 937/873-8258, gary@decisionmaking.com.

Kathryn L. Woodcock was appointed to Ontario's newly established Accessibility Standards Advisory Committee. The body will advise the minister of Community and Social Services on the development of accessibility standards. Woodcock may be reached at the School of Occupational and Public Health, Ryerson University, 350 Victoria St., Toronto, ON M5B 2K3, Canada, kwoodcoc@ryerson.ca.

Tom B. Leamon received the 2005 Jorma Rantanen Award by the Finnish Institute of Occupational Health (FIOH) and delivered the annual Jorma Rantanen Lecture at an FIOH ceremony in December. Leamon may be reached at Liberty Mutual Research Institute for Safety, 71 Frankland Rd., Hopkinton, MA 01748, 508/497-0201, tom.leamon@libertymutual.com. ☒

IN THE NEWS

Douglas H. Harris, Jack W. Stuster, Eric Holder, and Steven P. Rogers were featured in a November 4-10 *Pacific Coast Business Times* profile of Anacapa Sciences. The article recounted the company's history and featured a picture of the four in the offices of the company.

Susan A. Ferguson was featured in a February 6 *AutoWeek* magazine article, "Success story: As airbags get smarter, death toll nears," which attributed the reduction in deaths caused by airbags to the auto industry's safety efforts. As chair of the Insurance Institute for Highway Safety's Blue Ribbon Panel for Advanced Technology Airbags, Ferguson talked about the panel's efforts to ensure that future airbags will continue to be effective.

Susan M. Evans was profiled in a February 20 *Washington Business Journal* article, "Sitting down on the job." The piece described her work as an ergonomics consultant with her Fairfax, Virginia-based company, Evans, Inc. ☒

CALENDAR

Announcement deadlines: 1st day of the month prior to the desired issue; for events or deadlines within the first 3 weeks of a month, send information at least 2 months in advance. Items are published according to space availability.

Ergonomics Society Annual Conference 2006, April 4-6, 2006, Cambridge, UK. Annual Conference Programme Secretary, Ergonomics Society, Devonshire House, Devonshire Square, Loughborough, Leicestershire LE11 3DW, UK, 44 0 1509 234904, fax 44 0 1509235666,

ergosoc@ergonomics.org.uk, <http://www.ergonomics.org.uk/events/conferences.htm>.

CHI 2006, April 24-27, 2006, Montreal, Canada. <http://www.chi2006.org>.

American Occupational Therapy Association 86th Annual Conference and Expo, April 27-30, 2006, Charlotte, NC. AOTA, 4720 Montgomery Ln., Bethesda, MD 20814-3425, 301/652-6611 x 2715, fax 301/652-3218, <http://www.aota.org/nomembers/area28/links/link01.asp>.

2006 International Congress of Imaging Science, May 7-12, 2006, Rochester, NY. IS&T, 7003 Kilworth Ln., Springfield, VA 22151, 703/642-9090, fax 703/642-9094, cgiv@imaging.org, <http://www.imaging.org/conferences/icis06/index.cfm>.

AIHce 2006, May 13-18, 2006, Chicago, IL. AIHA, 2700 Prosperity Ave., Suite 250, Fairfax, VA 22031, 703/849-8888, fax 703/207-3561, <http://www.aiha.org/aihce06/aibce.htm>.

2006 Annual Meeting of the Inter-Society Color Council, May 14-15, 2006, Ottawa, ON, Canada. Robert T. Marcus, Datacolor International, 5 Princess Rd., Lawrenceville, NJ 08648, 609/895-7426, fax 609/895-7438, rmarcus@datacolor.com, <http://www.iscc.org>.

15th Conference on Behavior Representation in Modeling and Simulation, May 15-18, 2006, Baltimore, MD. <http://www.sisostds.org/index.php?tg=articles&idx=More&article=332&topics=4>.

3rd Annual Workshop on Human Factors of Unmanned Aerial Vehicles, May 24-26, 2006, Mesa, AZ. Nancy Cooke, ncooke@asu.edu, <http://www.cerici.org/>.

SID 2006, June 4-9, 2006, San Francisco, CA. Mark Goldfarb, Society for Information Display, 610 S. 2nd St., San Jose, CA 95112, mrk@sid.org, <http://www.sid2006.org/>.

151st Meeting of the Acoustical Society of America, June 5-9, 2006, Providence, RI. Acoustical Society of America, Ste. 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502, 516/576-2360, fax 516/576-2377, asa@aip.org, <http://asa.aip.org/meetings.html>. ☒

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Reviews of Human Factors and Ergonomics, Volume 1

Edited by
Raymond S. Nickerson

The Human Factors and Ergonomics Society is proud to announce the publication of the first volume in a new annual series, *Reviews of Human Factors and Ergonomics*. The series is intended to condense human factors/ergonomics knowledge in specific subject areas into a form that will provide HF/E professionals with a comprehensive understanding of each topic – its current state, important new research findings and technology, and current issues and research needs. In addition, the series seeks to inform specialists outside the HF/E community and laypersons who have an interest in the problem areas addressed.

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FLASH!

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Nomination ballots for the election of new HFES officers will be mailed on March 15; completed ballots are due on April 26. Election ballots will be mailed on June 19 and are due on August 31.

HFES Awards

The deadline to submit nominations for HFES Awards is March 31, 2006.

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