

Driving progress in
individual & team
performance

Human Performance 2003

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EVENT ANNOUNCEMENT

SUMMARY

- Who:** Approximately 100 technology developers and users from NASA, the military, other government agencies/laboratories, and academia
- What:** Small-scale, technology-focused event on the solutions that advance individual and team performance in remote or hostile environments
- Where:** Gilruth Conference Center at NASA, Houston, TX
- When:** October 28 - 29, 2003; note date change announced July 2003
- Why:** To address the most critical technology needs and best solutions for human performance in a forum that encourages education, networking, and collaboration
- How:** Participants and speakers do NOT pay any registration fee! But we do NOT have funds to defray travel, hotel, or meal costs

OBJECTIVES

Human Performance 2003 (HP) will be a technology-focused event for representatives from NASA, the military, other government agencies, and academia. The [Advanced Technology Integration Group](#) at NASA's Johnson Space Center (JSC) is organizing it, while NASA and the National Institute of Occupational Safety and Health (NIOSH) are co-chairing it.

! Check the event page for updates: <http://advtech.jsc.nasa.gov/humanperf.asp>

HP 2003 is designed to meet two objectives:

- to learn about technology needs and solutions common to NASA, government, and military, and
- to foster collaborative technology development between these communities.

Together, we will explore the technology needs and solutions that will drive the next advances in individual and team performance. Of particular interest are technologies that blur the human-machine interface or otherwise enhance human-machine operations. Technologies that permit better characterization or understanding of human performance are equally important.

The future of human performance lies in seamless interaction between team members and the systems that support them, regardless of whether the environment is a hostile battlefield, the civilian workspace, or a spacecraft traveling the vast reaches of space. In such environs, optimal human performance is vital and must be maintained.

What HP 2003 Is

HP 2003 will bring together a new or existing community of technology developers and users. These potential collaborators can educate one other on technology needs and emerging solutions. The purpose of this event is not to present concepts or experiments, but rather to explore technology approaches and solutions with peers who share requirements or solutions. Networking that results in or nurtures collaboration is the most valuable result of this symposium.

What HP 2003 Is Not

Unlike typical large-scale conferences, HP 2003 will be a small-scale, focused event. We do not use our resources on elaborate facilities, materials, or refreshments, but instead ask participants to donate money for refreshments (~\$5) and to cover their own expenses. Based on past events, this approach is quite successful since we can focus on networking and the content itself.

Technology-Focused Events

The Advanced Technology Integration Group [ATIG] of the Space and Life Sciences Directorate at the Johnson Space Center organizes two technology-focused events a year. These highlight areas of technology that are critical to NASA and other government agencies, especially the military. They also encourage networking between NASA and others in the life sciences community, potentially resulting in collaborative technology development. Such collaborations may yield solutions for human health, safety, and performance in hostile environments.

To reach the widest possible audience, talks from recent ATIG events are published online as streaming audio with slides. Check the Presentation Archives for each event to see the depth and breadth of topics typically covered:

- BioE / Biotech, <http://advtech.jsc.nasa.gov/bioeng.asp>
- Environmental Sentinels, <http://advtech.jsc.nasa.gov/envirosent.asp>
- Human Operations, <http://advtech.jsc.nasa.gov/humanops.asp>

REGISTRATION

With limited space and a focus on high-quality networking, HP 2003 is invitation-only. Request your invitation via the form on the event homepage:

<http://advtech.jsc.nasa.gov/humanperf.asp>

We may not be able to extend an invitation to everyone who registers, so please look for a confirmation once you have submitted your registration.

! September 26 deadline: request your invitation to attend or speak now

Who Should Attend

The conference facility allows for 100 participants, so we seek approximately equal representation from:

- NASA,
- the military and other government agencies, and
- academic researchers and technology developers

We encourage technology developers and users who are currently working in fields related to human performance to participate; those performing interdisciplinary research and development often have much to contribute. Students who are earning degrees in related fields and who are considering a career are invited to participate.

Making Travel Plans

Our events emphasize learning and interaction, which can only take place if we have strong representation from relevant communities. We make every effort to announce events and to invite key players. But in the event that participant or speaker response is low, we reserve the right to cancel or change the date of an event. We recognize that travel plans must be made in advance, so any change will be made no less than 30 days before the event.

SPEAKERS

We are now accepting requests to present at HP 2003! Presentations will last no more than 30 minutes and may include discussion time at the speaker's discretion. In general, the HP 2003 agenda will include three types of presentations that describe:

- a specific government technology program or project,
- a relevant technology or capability, especially if it has multiple applications, or
- a broad summary of technologies in a relevant area

While new and emerging technologies are of greatest interest, all speakers who have a solution in this area are encouraged to present. Often, existing technologies have not yet been applied to current problems.

Call for Speakers

Any presentation on an important technology or program with the potential to advance or better characterize human performance in military or space environments will be considered.

- Please use the online speaker form to register and to suggest a topic and presentation type: <http://advtech.jsc.nasa.gov/forms/speakreg.html>

Human performance draws from a number of diverse fields, including human factors, psychology, and engineering, so we have compiled a list of potential presentation topics on page 4. This list is not all-inclusive!

POTENTIAL TOPICS

Non-Invasive Measuring and Monitoring

- Continuous, real-time monitoring of individual and team performance for training, simulation, and real operations
- Display and control of medical, physiological, and human performance data
- Wrist bands or dog tags that collect medical data and can be queried by PDA
- Three-dimensional tracking of the human body during high-activity operations
- EEG electrode arrays that give continuous real-time 3-D determinations of brain activity with high-spatial / anatomical resolution

Human-Machine Interfaces, Workload, and Decision-Making

- Wireless computers with multimedia, monocular displays for training / decision support
- Dynamic decision support for workload management (human vs. automation)
- Data manipulation technologies for individuals and teams to extract only the most relevant information from diverse data sources during emergency operations
- Real-time natural language understanding that allows automated information extraction
- Spoken language interfaces for high-noise environments

Physical and Mental Performance Enhancers

- Performance enhancers for vigilance / attentiveness, memory, and mental performance including pharmaceuticals, nutritional supplements, biofeedback, etc.
- Reliable, real-time measures of human cognitive workload, vigilance, and fatigue
- Miniaturized, field-capable, and non-obtrusive measures of eye movements, auditory and visual evoked potentials, EEG, and other psychophysiological measures
- Rapid assessment tools that determine psychological and physiological fitness
- Ethical mean to predict resilience during severe, acute, and high, continuous stress

Once your request to speak has been submitted, look for a confirmation email and the *Speaker Guidelines*, a short file on planning and submitting your talk.

Where speakers permit it, the audio of presentations will be recorded. Recorded talks from both days will be published in the HP Presentation Archive soon after the event. This allows the widest possible audience to learn from HP 2003 presentations.

LEARN MORE

The hardware, software, and systems that advance, enhance, or improve human performance are of interest to several NASA Centers, NIOSH, and many areas of the military. While the specific application for a technology may be unique for a technology user, we see a set of common technology requirements and needs that can be addressed and explored through HP 2003.

The following Web sites provide a thorough background in this area.

<ul style="list-style-type: none"> ▪ NIOSH: part of the Centers for Disease Control (CDC); conducts research and makes recommendations to prevent work-related disease and injury 	http://www.cdc.gov/niosh
<ul style="list-style-type: none"> ▪ CDC Emerging Technologies Team: works to establish mechanisms to ensure that worker health and safety is considered when new technologies are developed and implemented 	http://www2.cdc.gov/NORA/
<ul style="list-style-type: none"> ▪ NASA Advanced Human Support Technology: performs research and technology development to provide new technologies and next-generation systems for living and working safely and effectively in space 	http://spaceresearch.nasa.gov/research_projects/ahst.html
<ul style="list-style-type: none"> ▪ NASA JSC Technology Integration: facilitates collaborative development of space life sciences technologies that are critical to the success of human spaceflight; works across NASA Centers, academia, and government 	http://advtech.jsc.nasa.gov
<ul style="list-style-type: none"> ▪ NASA JSC Habitability & Environmental Factors: provides a safe and productive environment for any human spacecraft or habitat; oversees research and technology development for safely and effectively living and working in space 	http://sbsd.jsc.nasa.gov/ (site under revision until fall 2003)
<ul style="list-style-type: none"> ▪ NASA JSC Human Adaptation & Countermeasures: develops the knowledge base and the technologies required to preserve the health, performance, and safety of space flight crews 	http://haco.jsc.nasa.gov/
<ul style="list-style-type: none"> ▪ NASA Ames Human Factors Research & Technology: advances human-centered design and operations of complex aerospace systems through analysis, experimentation, and modeling of human performance and human-automation interaction 	http://human-factors.arc.nasa.gov/
<ul style="list-style-type: none"> ▪ Jet Propulsion Lab Advanced Environmental Monitoring & Control: part of larger program, designs less invasive systems for monitoring astronaut health 	http://aemc.jpl.nasa.gov/activities/non_invasive.html
<ul style="list-style-type: none"> ▪ Jet Propulsion Lab Advanced Environmental Monitoring & Control: also develops the Wireless Augmented Reality Prototype, a personal communications interface (not a wearable computer) designed to link crewmembers with one another and data 	http://aemc.jpl.nasa.gov/activities/warp.html

LOGISTICS

HP 2003 will be a small-scale, invitation-only event. Once you request an invitation to attend or speak, look for a confirmation. Confirmed attendees will receive regular schedule updates and other information. Look for the HP 2003 *Info Pack*, which include details on travel, directions, parking, and other logistics. Participants are asked to donate money for refreshments (~ \$5) and are responsible for their own expenses.

Important Note



- Participants and speakers do not pay a registration fee, but are responsible for their own travel, hotel, and meal costs.
- We do not have any funds to defray these costs.

The agenda is still in work, but will be organized as follows:

DAY 1: Plenary session on government programs, specific technology needs, or emerging capabilities with talks by government program managers, scientists, and engineers. Talks will be broad in scope, covering many needs and technologies, rather than reports on a single technology or study. The goal is to learn about government technology needs and the programs that can form the basis of future collaborations in competitive research.

DAY 2: Sessions on specific technology solutions or on new applications of existing technologies.

CO-CHAIRS & CONTACTS

Don Stilwell of NASA JSC and Dr. Ron Schopper of NIOSH are co-chairs for Human Performance 2003. Both co-chairs are members of the CDC's Emerging Technologies Team, an interagency working group that identifies and guides new or emerging technologies for human health and safety.

HP 2003 CO-CHAIRS

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Twice a year, we organize events like HP 2003. [Email](#) us to receive notices about future events, or check the [Events section](#) of our site. And please contact us if you have any questions about HP 2003:

TECHNICAL LEAD	IT LEAD
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