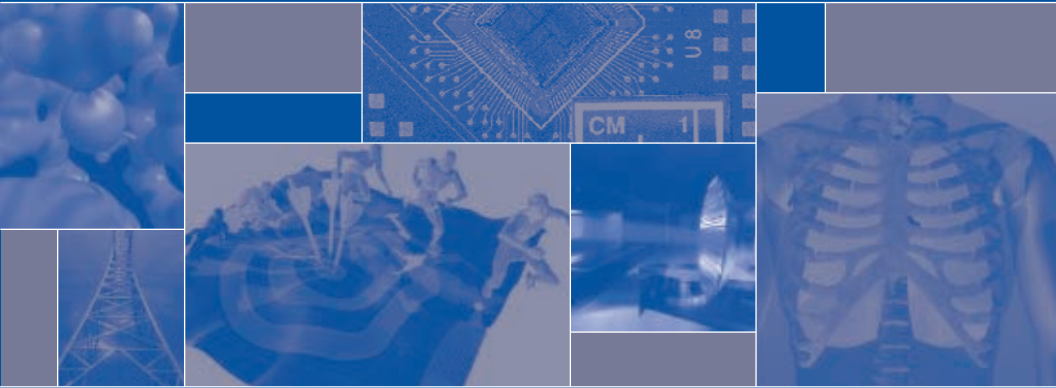


- ▶ Wyndham Baltimore Inner Harbor  
101 West Fayette Street  
Baltimore, Maryland 21201  
410-752-1100

# ▼ ATP National Meeting June 3-5, 2001



## ▶ Technologies at the Crossroads: Frontiers of the Future

# NIST

**National Institute of Standards and Technology**  
Technology Administration, U.S. Department of Commerce  
Gaithersburg, Maryland 20899-4701



## About ATP

The Advanced Technology Program (ATP) bridges the gap between the research lab and the market place, stimulating prosperity through innovation. Through partnerships with the private sector, ATP's early stage investment is accelerating the development of innovative technologies that promise widespread benefits for the nation. As part of the highly regarded National Institute of Standards and Technology (NIST), the ATP enables industry to leverage R&D resources, extending its technological reach for the benefit of the nation.

Technology research in the private sector is driven by today's global economic realities which force companies to make narrower, shorter-term investments in R&D that maximize return to the company quickly. The ATP views R&D projects from a broader perspective. The bottom line for ATP is the national benefits beyond the commercial payoffs to enter the marketplace. In sharing the relatively high risks of technologies that could potentially make a broad range of new commercial opportunities feasible, the ATP fosters projects with a high payoff for the nation as a whole, in addition to a direct but smaller return to the innovators. The ATP is designed to stimulate joint research ventures that link small, medium and large companies, states, universities and other organizations with end users to solve common problems with unique technical hurdles.

## JOIN US AS WE LOOK INTO THE FUTURE

What will technology look like in the year 2020? What existing technologies will have merged with others to form new frontiers and how will those frontiers impact our life styles? Will "smart" technology create new opportunities that pass today's hot trends? Will new frontiers provide new tools to continue ruining new materials and technology? The ATP National Meeting will focus on the technology crossroads that will lead us from today to the frontiers of tomorrow.

The National Meeting will be held from June 3-5 Baltimore, Maryland at the Wyndham Baltimore Inner Harbor Hotel, located within a few blocks of the Inner Harbor Waterfront.

## About the Meeting

**Christopher Reeve**  
Actor and Biomedical Research  
Advocate



**Peter Schwartz**  
CEO  
Global Business Network  
Author, [The Long Boom](#)

**Peter Boer**  
President/CEO  
Tiger Scientific

- Frontier Forums: Eight (8) Forums featuring national and international experts in various technology fields.
- Poster Sessions: Meet with scientists from the NIST Labs.
- ATP/Industry Showcase: Quality projects that have secured ATP funding assistance over the years.
- Interactive Networking Opportunities: Interact with leaders in "cutting edge" technologies, ATP program managers and business experts.

## Who Should Attend?

- High-Tech Companies
- Scientists
- Engineers
- University Researchers and Administrators
- Venture Capital Funding Groups
- ATP Awardees
- Representatives from:
  - State Technology offices
  - State and Local Government Economic Development Offices
  - Technology Associations
  - Small Business Development Centers

## National Institute of Standards and Technology

As part of the Commerce Department's Technology Administration, the National Institute of Standards and Technology works to promote U.S. economic growth by collaborating with industry to develop and apply technology, measurements, and standards. NIST carries out its mission through a portfolio of four major programs:

- **Measurement and Standards Laboratories that provide technical leadership for vital components of the nation's technology infrastructure needed by U.S. industry to continually improve its products and services;**
- **the Advanced Technology Program, which accelerates the development of innovative technologies for broad national benefit through R&D partnerships with the private sector;**
- **grassroots Manufacturing Extension Partnership with a nationwide network of local centers offering technical and business assistance to smaller manufacturers; and**
- **highly visible quality outreach program associated with the Malcolm Baldrige National Quality Award that recognizes continuous improvements in quality management by U.S. manufacturers and service companies.**

In fiscal year 2001, NIST is operating on a budget of about \$720 million with nearly 3,200 staff members at its sites in Gaithersburg, Md., and Boulder, Colo. News and general information about NIST programs and services are available on the World Wide Web at <http://www.nist.gov>, or you can call general inquiries at **(301) 975-NIST (975-6478)** or e-mail: [inquiries@nist.gov](mailto:inquiries@nist.gov).

## Poster Sessions

New and fascinating NIST research areas will be the focus of a comprehensive poster session. Recent years have been witness to remarkable advances in the chemical, physical, and biological areas of science that have direct impact on advances in all technologies. This directly relates to the numerous innovative and exciting advances made in the different research areas to be presented at these poster sessions. Our goal, through a cross-disciplinary theme, is to provide a unique educational experience to aid in the development of new infrastructures for future technologies and clinical therapies. We also hope to stimulate ideas that could be the basis for developing novel experimental models and critical design criteria for successful new "smart" materials and devices.

During these poster sessions, attendees will have the opportunity to meet with the scientists from the NIST Laboratories for one-on-one discussions. The poster sessions will highlight several different technologies including Near-field Scanning Optical Microscopy (NSOM), Optical coherence tomography (OTC), Atomic force Microscopy (AFM), Optical Laser – Tweezers and many more.

## Venture Capital Forum

The goal of this Forum is to provide you with information on how Venture Capital firms choose the Frontier Technologies that they decide to fund out of an expanding universe of emerging technologies. This goal will be achieved by looking at some historical perspectives and the wisdom of recent selections in different areas of technology. For example, did the Venture Capital community foresee the rise of the Internet and the rocky road of the dot-coms? How do such events affect their future investments? These are important issues facing startup companies when developing and commercializing their path-breaking technologies.

<b>MONDAY, JUNE 4</b>
<b>12:00 NOON–7:00 PM</b>
<b>TUESDAY, JUNE 5</b>
<b>9:00 AM–4:00 PM</b>

<b>TUESDAY, JUNE 5</b>
<b>8:45 AM–10:30 AM</b>

## Technology Showcase

- Learn About GE's Path-breaking Digital X-Ray Technology
- Visit PPL Therapeutics' Cloned Piglet
- View the Digital Cinema of the Future by Demografx

Throughout the Technology Showcase, ATP awardees will exhibit a wide range of exciting ATP-funded emerging and enabling technologies in various stages of technical application and business development. Attendees will be able to view demonstrations of these new technologies and discuss first-hand with company representatives, those technical and business accomplishments that offer significant potential for broad-based, national economic benefits. As in previous years, the ATP Technology Showcase presents a special opportunity for attendees and showcase exhibitors to network based on technical and commercial interests, with the possibility of collaborations developing in the interest of applying to the ATP, or private alliances to further technology diffusion into the marketplace.

The Technology Showcase will be open throughout the meeting (with the exception of the general sessions) for everyone to spend time investigating and enjoying the exhibits that encompass numerous technology areas. Visit the cloned pig brought to the showcase by PPL Therapeutics, who are developing technologies to provide genetically modified pigs for xenogeneic transplants of pig organs and tissues to humans. View the cinema of the future at the exhibit by Demografx, who have developed a compression and decompression system to enable the secure end-to-end deployment of digital media. Talk to GE representatives about the world's first digital X-ray medical system that enables faster and better X-ray examinations for patients creating new opportunities for improved medical care in the areas of breast cancer and heart disease. Explore the exhibit area and discover the frontiers of technology that have been expanded as a result of industry and ATP partnerships enabling pathbreaking technologies bound to affect your life in a positive way.

### SUNDAY, JUNE 3

5:00 PM–7:00 PM

### MONDAY, JUNE 4

12:00 NOON–5:00 PM

### TUESDAY, JUNE 5

9:00 AM–4:00 PM

## ATP National Meeting TECHNOLOGIES AT THE CROSSROADS: FRONTIERS OF THE FUTURE

June 3-5, 2001  
Wyndham Baltimore  
Inner Harbor

### SUNDAY, JUNE 3

5:00 - 7:00 PM      **On-Site Registration**  
Promenade  
**Hospitality Session**  
Apex Technology Arena  
**Transportation to Inner Harbor available**

### MONDAY, JUNE 4

**7:00 AM**      **Registration/Continental Breakfast**  
Apex Technology Arena

**9:00 AM**      **Welcome/Opening Remarks**  
International A-E

**9:45 AM**      **"Ten Ideas that Have Already Decided The Future",  
Peter Schwartz**  
Cofounder & Chairman, Global Business Network,  
and author, [The Long Boom: The Coming Age  
of Prosperity](#)  
International A-E

**10:30 AM**      **Coffee Break & Networking**  
Apex Technology Arena

**11:00 AM**      **Presentation & Q/A Session**  
**Christopher Reeve**  
Actor and Biomedical Research Advocate  
International A-E

**11:45 AM**      **Lunch & Networking**  
Apex Technology Arena

**1:00 PM**      **Frontier Forums**  
**# 1 "Manufacturing With 2020 Intelligence"**  
International D-E

**Roger W. Cope**  
Vice President Business Development,  
Lamb Technicon, Machining Systems

**Charles L. Bailey**  
Vice President, Chemicals and Life Sciences  
Operations & Maintenance, Fluor Global Services

**Select #1 or  
#2 and  
indicate your  
selection on  
the registra-  
tion form**

Manufacturing represents an opportunity to create significant national wealth and added value. How that will be done in the future, and how that will differ from the present is anyone's guess. This Frontier Forum will present the views and opinions on the future of manufacturing and processing in a variety of industrial sectors.

What will manufacturing facilities look like?

What new technologies will need to be developed?

What will the operating requirements be?

Where can greater intelligence and knowledge be built in?

These are just a few of the questions that will be addressed. The presentations will lay the foundation for future technology-based discussions on development needs and opportunities, leading to the beginning of long term planning for R&D collaborations and ventures.

### # 2 "Virtual Voyage Through Medicine"

International A-C

#### Dr. Michael J. Ackerman

##### "Visible Human Project: From Data to Knowledge"

National Library of Medicine

#### Dr. Richard M. Satava

Yale University School of Medicine

#### Dr. Yulun Wang

Founder/CTO

Computer Motion

Virtual Reality (VR) has found its place on the frontiers of medicine where it is transforming all aspects of healthcare. VR is revolutionizing healthcare delivery, training, research and education. It is breaking through the barriers of distance, enabling quality care in remote geographical areas. By providing new, effective methods for medical education and training, virtual reality will enable surgeons to practice a planned procedure before the patient enters the operating room. Once in the operating room, the surgeon can be guided using visualization technologies, with robots on hand to assist with some of the most difficult procedures. This Frontier Forum will present information from leading experts in virtual reality in medicine. Where is virtual reality pushing the frontiers of medicine? What is beyond this virtual voyage?

2:30 PM

#### Coffee Break & Networking

Apex Technology Arena

Please return this card via mail

or fax by **May 18, 2001.**

## Mail

Finance Division

National Institute of Standards and Technology

100 Bureau Dr., Stop 3751

Bldg. 101, Rm. A822

Gaithersburg, MD 20899-3751 USA

## Fax

attn: Kimberly Snouffer

(301) 948-2067

## World Wide Web

register electronically at:

<http://www.nist.gov/conferences>

## Privacy Statement

The information you provide in the conference registration form will be used to process your payment and to create a conference name badge for you. We will also publish your name, business address, business phone number, and business email address in the participants' list for this conference. In addition, we will include this information on our mailing lists so we can notify you of future conferences in this area. We retain this information indefinitely.

Please make a note on your registration form(s) if you **do not** want to be included in the participants' list or to be added to our conference mailing list.

For additional information go to: [http://www.nist.gov/public\\_affairs/privacy.htm](http://www.nist.gov/public_affairs/privacy.htm)

# Technologies at the Crossroads: Frontiers of the Future

**June 3-5, 2001**

last name \_\_\_\_\_

first name \_\_\_\_\_

title \_\_\_\_\_

organization \_\_\_\_\_

address \_\_\_\_\_

room or mail code \_\_\_\_\_

city, state, zip \_\_\_\_\_

country \_\_\_\_\_

telephone \_\_\_\_\_

facsimile \_\_\_\_\_

email \_\_\_\_\_



services \_\_\_\_\_

Frontier Forum Choices			
Attending: (Circle one from each group)			
1	3	5	7
2	4	6	8

**Registration Fee: \$525**

**Form of Payment:**

- Check enclosed, payable to: NIST/ATP National Meeting  
Checks from outside the U.S.A. should be written on a U.S.A. bank.
- MasterCard    VISA    Discover Card    American Express

Card No. \_\_\_\_\_

Expiration Date \_\_\_\_\_

Authorized Signature \_\_\_\_\_

Purchase Order No. / Training Form \_\_\_\_\_

(Enclose a copy or provide one on-site at registration; faxed copy unacceptable.)

- I am planning to attend the ATP Hospitality Session on June 3 (included in registration fee).
- Please **do not** include my information in the participants' list or add me to your conference mailing list.

**Requests for cancellation and refund must be received in writing by May 18, 2001.**

# Technologies at the Crossroads: Frontiers of the Future

**June 3-5, 2001**

last name \_\_\_\_\_

first name \_\_\_\_\_

title \_\_\_\_\_

organization \_\_\_\_\_

address \_\_\_\_\_

room or mail code \_\_\_\_\_

city, state, zip \_\_\_\_\_

country \_\_\_\_\_

telephone \_\_\_\_\_

facsimile \_\_\_\_\_

email \_\_\_\_\_



services \_\_\_\_\_

**Rate: \$165**, single or double, plus 12.5% tax. All reservations must be received by **May 11, 2001**. All reservations must be guaranteed with a one-night deposit. Reservations must be cancelled 72 hours in advance for a refund.

Arrival Date: \_\_\_\_\_

Departure Date: \_\_\_\_\_

**Form of Payment:**

- Check enclosed, payable to: Wyndham Baltimore Inner Harbor  
Checks from outside the U.S.A. should be written on a U.S.A. bank.
- MasterCard    VISA    Discover Card    American Express

Credit Card \_\_\_\_\_

Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Authorized Signature \_\_\_\_\_

Please return this card by

**May 11, 2001** to:

## Mail

Wyndham Baltimore Inner Harbor  
101 West Fayette Street  
Baltimore, MD 21201

## Phone

410-752-1100

## Fax

410-752-0832

**Select #3 or #4 and indicate your selection on the registration form**

### 3:00 PM **Frontier Forums**

#### # 3 "The Pathway to Virtual Research Communities"

International D-E

##### **Dr. H. Mario Geysen**

GlaxoSmithKline

##### **Dr. F. Raymond Salemm**

3-Dimensional Pharmaceuticals, Inc.

##### **Dr. Ian Maxwell**

Avantium Technologies B.V., Netherlands

The concept of Virtual Research Communities is one of geographically dispersed research centers utilizing intelligent research tools that are connected to each other via high-bandwidth networks. This Frontier Forum will describe potential paths forward for attaining the convergence of hardware and software technologies needed to develop the next generation technologies for the high throughput screening and discovery of tomorrow's advanced materials.

#### # 4 "Replication of Nanodevices"

International A-C

##### **Ralph Merkle**

Zyvex

Richardson, TX

Many examples of biological replication exist in nature. The replication of biological structures usually requires an increasing array of tools and building blocks as the complexity of the structure increases. Manufacturing products with nanometer-scale features also requires elaborate tools to organize and manipulate atoms and molecules. At present, this process is painstakingly slow and not readily scaleable. However, some applications may be satisfied through biologically-inspired approaches where systems spontaneously self-assemble and replicate with nanometer-scale precision. This strategy may represent a truly low-cost manufacturing approach for nano-devices. This session will cover molecular replicating systems, including replications of more complex structures on the nanometer scale and exponential assembly into larger devices at the micron scale.

5:00 PM

#### **Cash Bar/Reception**

Apex Technology Arena

### **TUESDAY, JUNE 5**

7:00 AM

#### **Continental Breakfast**

Apex Technology Arena

8:00 AM

#### **"Building Value Roadmaps for Frontier Technology with Real Options"**

International A-E



8:45 AM

**Dr. F. Peter Boer**  
 President & CEO, Tiger Scientific Inc., and  
 Adjunct Professor, Chemical Engineering and Management,  
 Yale University

**Venture Capital Forum**  
 International A-E

**Presentation:**  
**Linda Powers**  
 Managing Director, Toucan Capital

**Panel:**  
**Wei-wu He**  
 Cofounder, General Partner,  
 Emerging Technology Partners, LLC

**William Schneider**  
 General Partner,  
 Emerging Technology Partners, LLC

**Michael Sheridan**  
 Managing Partner,  
 Mohr, Davidow Ventures

**Ginger Ehn Lew**  
 CEO,  
 Telecommunication Development Fund

**Mike Joseph**  
 Managing Director,  
 Optical Capital Group

**Dr. Katya Flakshahi**  
 Partner,  
 New Enterprise Associates

**Questions to Panel**

10:30 AM

**Coffee Break & Networking**  
 Apex Technology Arena

11:00 AM **Frontier Forums**

**Select #5 or #6 and indicate your selection on the registration form**

**# 5 “Connectelligence: The Convergence of People, Machines and Their Environment”**  
 International D-E

**Brock Hinzman**  
 Technology Navigator  
 SRI Consulting Business Intelligence, Menlo Park, CA

**Dr. Charles Shanley**  
 Vice President and Director,  
 Technology and Special Government Programs,  
 Motorola, Schaumburg, IL

How might healthcare, transportation, commerce, and even running a household be transformed, if at our fingertips, we could obtain and use information in real-time to exert control over our environment? Across our everyday lives, pervasive, ultra- low-cost and compact connected intelligence is increasingly integrating people, machines and our environment into one. “Connectelligence” represents this convergence of smart electronic devices and materials, ultra-low cost electronics and photonics, embedded intelligence, ubiquitous computing, advanced networking, and knowledge-based system technologies. This Frontier Session will explore some of the opportunities likely to unfold as these technological enablers allow citizens to more effectively and enjoyably interface with the world around them.

**# 6 “Diagnostic Imaging in the New Millennium”**  
 International A-C

**Dr. Dan Silverman, MD, PhD**  
 Associate Professor, Nuclear Medicine,  
 Pharmacology & Structural Biology  
 University of California–Los Angeles

**Dr. Nancy Albritton**  
 University of California–Irvine

In this Frontier Session, the presenters will discuss the areas of cutting-edge science and technology related to interactions of photons with tissues in diagnostic imaging. Dr. Silverman will describe the role of non-invasive imaging of neurodegeneration using specific and sensitive radioactive tracers and positron emission tomography (PET). While mutations can be diagnosed using the tools of DNA diagnostics, micro arrays and biopsied tissues or blood, the sites of disease in a patient should be located, so that diseased tissue can be ablated using laser technology or removed surgically at an early stage. With PET imaging, the effect of drugs and gene therapy on the diseased organs and tissues can be followed by sequential imaging techniques. By combining the latest advances in genomics, proteomics and functional imaging, diagnosis may become possible at an ultra early stage, thus leading to reductions in morbidity and mortality rates while improving the quality of life in a cost-effective manner.

12:30 PM

**Lunch & Networking**  
 Apex Technology Arena



Select #7 or #8 and indicate your selection on the registration form

1:30 PM Frontier Forums

**# 7 “The Challenge of Molecular Electronics: Focusing Nanotechnology on the Future Computer”**

International D-E

**Christopher B. Murray**

Manager, Nanoscale Materials and Devices  
IBM, T. J. Watson Research Center, Yorktown Heights, NY

**Dr. Paul Weiss**

Professor of Chemistry, The Pennsylvania State University  
University Park, PA

Recent advances in the field of molecular-scale electronics have raised expectations that this technology will one day usher in a world of circuits only a few atoms wide, providing the building blocks for ultra small, ultra dense, electronic computer logic. Such revolutionary advances would radically change the future of computing. What breakthroughs and consequent spinoffs might we expect along the way? This Frontier session will explore recent notable achievements that show the promise of molecular scale electronics. Anticipating a stream of new advances, such as molecular wires, molecular switches and molecular sensors, particular attention will be placed on the enabling, spillover possibilities for this rapidly moving field.

**# 8 “Regenerative Medicine as Alternative Therapy”**

International A-C

**Dr. William A. Haseltine**

CEO  
Human Genome Sciences, Inc.

**Dr. Joseph Gold**

Geron Corporation, Genetic Engineering/Pluripotent  
Stem Cell Project

This Frontier Forum will feature two speakers and cover the following topics:

- “Tissue Regeneration”, will outline four developmental phases in the growth of regenerative medicine, a term Dr. Haseltine coined to describe new ways of using the body’s own genes, proteins, antibodies, and cells to regenerate injured, worn, and damaged tissues and organs. Such innovations as replacement organs created in the laboratory using a patient’s own cells are foreseeable in a matter of years. These and other developments are expected to significantly extend the human life span.
- “Human Embryonic Stem Cells: Applications for Drug Discovery and Regenerative Medicine”, will focus on the latest advances of genetic modification into Human Embryonic Stem Cells that facilitate their use for both in vitro studies and in clinical applications. Dr. Gold will also outline the usage of micro array technology to identify genes that may play important roles in the creation and maintenance of the pluripotent state. This information may be of use in devising a method to “reprogram” a somatic cell from a patient to form a stem cell whose differentiated progeny could be used to make fully compatible tissues for transplantation.

3:00 PM

**Coffee Break and Networking**

Apex Technology Arena

- Poster displays describing the Intramural programs in which ATP is involved with the NIST Laboratories (Carroll, Menchen, Peale, Douglass, E.A. Poe, Pratt & Hopkins Rooms).
- Transportation to Inner Harbor available

## Location

Hotel – Wyndham Baltimore Inner Harbor, 101 West Fayette Street, Baltimore, MD 21201, Phone: 410-752-1100, two (2) miles from Penn Station. Deadline for room reservation is **May 11** at **\$165** per night plus 12.5% room tax.

## Registration

Registration Fee **\$525**. There will be a registration reception on Sunday evening, June 3, and another reception on Monday evening, June 4. The registration contact is Kimberly Snouffer, NIST, phone:301-975-2776, fax: 301-948-2067, email: kimberly.snouffer@nist.gov. Electronic registration is at **<http://www.nist.gov/conferences>**. Choose “conference listing” from the menu and scroll down to June 3, 2001. Registration must be sent by **May 18, 2001**.

## Registration Contact

Kimberly Snouffer  
National Institute of Standards and Technology (NIST)  
Conference Program  
100 Bureau Dr. Stop 3461  
Building 101, Room B116  
Gaithersburg, MD 20899-3461 USA  
Voice: 301/975-2776  
Fax: 301/948-2067  
Email: kimberly.snouffer@nist.gov

## Technical Contacts

Richard Palmer, phone: 301-975-2160, fax: 301-548-1087,  
email: richard.palmer@nist.gov

Toni Nashwinter, phone: 301-975-3780, fax: 301-869-1150,  
email: toni.nashwinter@nist.gov

View our list of upcoming Conferences at **<http://www.nist.gov/conferences>**

## Coffee Breaks and Lunch

Refreshments will be provided during morning, mid-morning, and mid-afternoon breaks. A set-menu lunch will also be provided on June 4 and 5.

## General ATP Information

For general ATP information, or to add your name to the ATP mailing list, contact the ATP office: telephone 800-ATP-FUND or (800) 287-3863; fax: 301-926-9524; e-mail:atp@nist.gov. Visit **[www.aptnist.gov](http://www.aptnist.gov)** for more information.

