



1999 National Meeting Workshop

Advanced Wireless Communications: Are We Ready?

November 17, 1999
DoubleTree Hotel
San Jose, CA

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The Competitive Environment

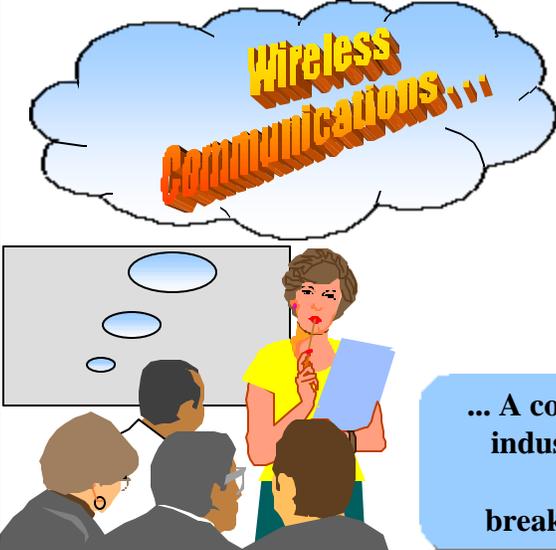
- Advances in technology account for more than **50 % of U.S. economic growth**
- Global competition has forced a focus on **short-term return** on investment
- Now more than ever, our nation's economic well being depends on **rapid development and commercialization** of technology



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ADVANCED TECHNOLOGY PROGRAM



Wireless Communications

- tremendous growth potential
- technology driven
- capable of producing an endless stream of new products

... A complex and fascinating industry that is redefined with each breakthrough technology!

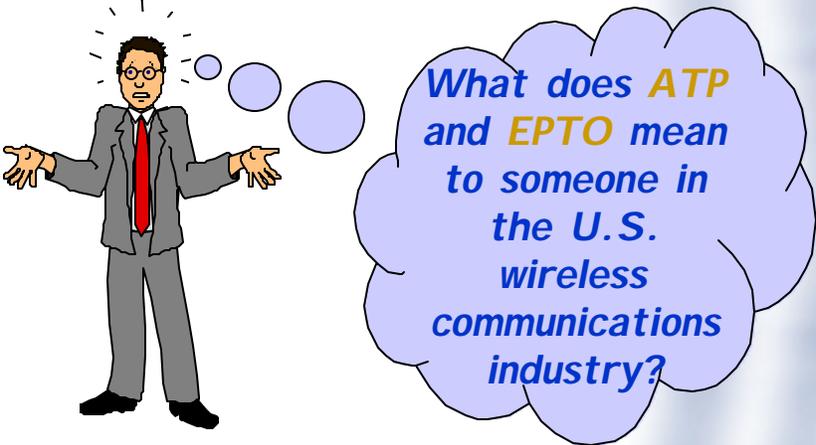


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ADVANCED TECHNOLOGY PROGRAM

The Question



What does ATP and EPTO mean to someone in the U.S. wireless communications industry?



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ATP is part of NIST

NIST Mission:
Strengthen the U.S. economy and improve the quality of life by working with industry to develop and apply technology, measurements, and standards.



- 3300 employees
- \$760 million budget
- 1200 industrial partners
- 2000 field agents
- 1550 guest researchers
- \$1.4 billion co-funding of industry R&D
- national measurement standards

Helping America Measure Up

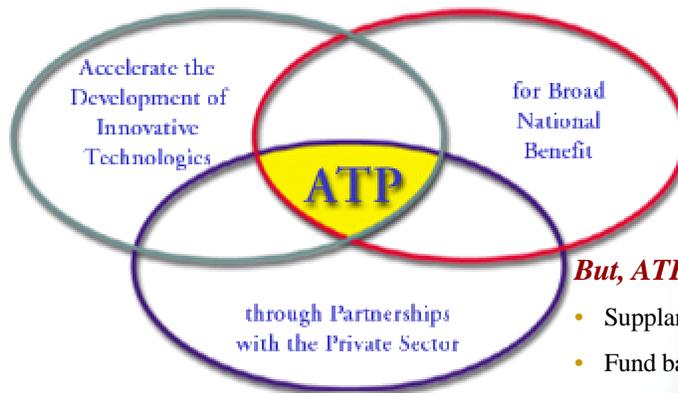
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Stimulates the U.S. Industry

To Tackle the R&D Challenges of the 21st Century

ATP Mission . . .



But, ATP does NOT...

- Supplant private capital
- Fund basic research
- Fund product development

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ATP Offices

- **Chemistry and Life Sciences**
 - ✓ Linda Schilling (301) 975-2887
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- **Economic Assessment**
 - ✓ Rosalie Ruegg (301) 975-6135
 - ✓ rosalie.ruegg@nist.gov



Investments in Innovative Technologies

Electronics and Photonics (\$329 M)

- Microelectronics
- Optoelectronics
- Optics Technologies
- Power Technologies
- RF/Wireless Electronics
- Organic Electronics

Biotechnology (\$254M)

- DNA Technologies
- Tissue Engineering
- Drug Discovery Methods
- Proteomics
- Medical Devices & Imaging
- Microfluidics

Manufacturing (\$180 M)

Information Technology (\$389 M)

- Advanced Learning Systems
- Component-Based Software
- Digital Video
- Information Infrastructure for Healthcare
- Electronic Commerce
- Dependable Computing Systems
- Technologies for the Integration of Manufacturing Applications

Chemistry and Materials (\$344 M)

- Chemical Processing
- Sensors
- Metabolic Engineering/Catalysis
- Combinatorial Methods
- Separations/Membranes
- Materials Processing
- Advanced Materials
- Nanotechnology
- Material Interfaces



Electronics & Photonics Technology Office (EPTO)

*Working with American companies to fill the gap
between the laboratory and the marketplace through
early stage investment in new ideas and new
technologies in electronics and photonics*

- **Focused on supporting projects in:**

- ✓ Microelectronics
- ✓ Optoelectronics & optics technology
- ✓ Power technologies
- ★ ✓ RF/wireless electronics
- ✓ Organic electronics
- ✓ Manufacturing

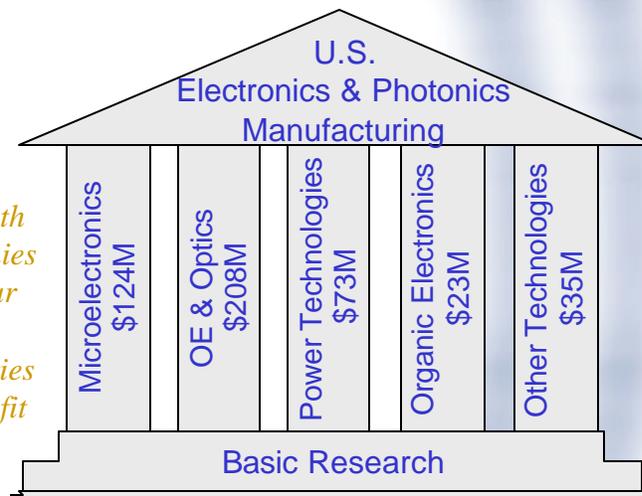


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EPTO Current Funding

*EPTO:
Collaborating with
American companies
to strengthen our
Electronics &
Photonics industries
for national benefit*



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EPTO Project Managers Relationships with Industry

- **Development**
 - ✓ Support industry efforts to define high-risk, innovative projects
 - ✓ Explore highest priority technical opportunities and barriers with American industry
 - ✓ Enable greater understanding of ATP criteria & objectives through education and outreach
- **Selection**
 - ✓ Main group responsible for evaluating and recommending electronics & photonics proposals that best meet ATP criteria
- **Management**
 - ✓ Collaborate with companies to ensure project success
 - ✓ Government's technical & business representatives
 - monitor project technical and business progress against agreed milestones and expenditures

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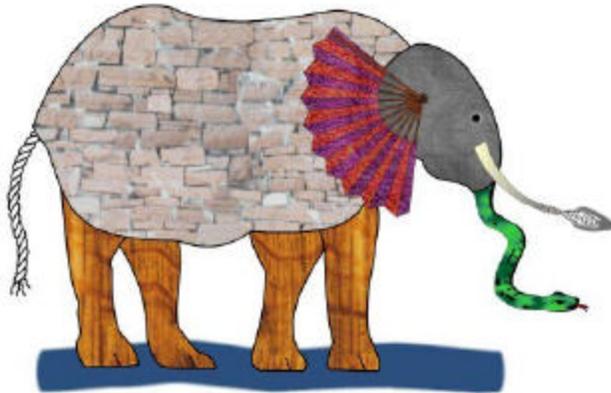
Today's Workshop Objectives

- Discuss the current SOA in wireless communications
- Help identify the technical barriers and technological challenges that need to be overcome to enable 3G and beyond advanced communications systems
- Explore synergies between future U.S. companies needs and ATP funding opportunities
- Stimulate future innovative ATP proposals that can accelerate the development of key enabling communications technologies that promise significant payoffs and widespread benefits to the U.S. in the field of advanced wireless communications systems

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Identifying the technical barriers and technological challenges that need to be overcome to enable 3G and beyond wireless communications systems is a lot like the blind men describing the elephant -- it's all in your perspective; even if you limit your perspective, the breadth of issues is enormous!



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Agenda

Wednesday, November 17, 1999

- 8:30 a.m. Introduction and Welcome**
Ms. Elissa Sobolewski, NIST/ATP
- 8:40 a.m. Wireless Communications: Where We Are Today, Where We'll Be Tomorrow**
Dr. Harold Sobol, University of Texas at Arlington (retired)
- 9:00 a.m. Overview of the WTEC Study on Wireless Technologies and Information Networks**
Dr. Anthony Ephremides, University of Maryland
- 9:30 a.m. Front End Hardware for Future Generation Wireless Communications Systems**
Dr. Tatsuo Itoh, UCLA
- 10:00 a.m. Coffee Break**

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Agenda

- 10:15 a.m.** **Convergence of Broadband Wireless Access**
Dr. Sanjay Moghe, ADC Telecommunications
Dr. Joy Laskar, RF Solutions, LLC
- 10:45 a.m.** **Panel Discussion: Trends and Opportunities in Wireless Communications and Barriers for Generation-after-Next Wireless Communications**
Panelists:
Dr. George Bechtel, Strategies Unlimited
Mr. Carl Chun, RF Solutions, LLC
Dr. Mike Golio, Rockwell Collins
Dr. Mark Grabb, GE CR&D
Dr. Amer Hassan, Teledesic Corporation
Dr. J. Stevenson Kenney, Spectrian
- 11:45 a.m.** **What's Next?**
Ms. Elissa Sobolewski, NIST/ATP
- 12:00 noon** **Adjourn**