



## ***European Office of Aerospace Research and Development (EOARD)***



# **Aeronautical Sciences Program**



July 2007



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**Chief, Aeronautical Sciences**  
**AFOSR/EOARD**  
**Air Force Research Laboratory**

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## **Overview**



- **Purpose**
- **Background**
- **EOARD Programs**
  - **Conference Support**
  - **Research Projects**
  - **Window-on-Science**



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# EOARD Purpose



- Promote Basic Research in Europe through grants and contracts to universities and Research Organizations
- Sponsor small conferences and workshops providing opportunities for technical experts to get together and exchange new ideas
- Organize European technical expert visits to USA federal labs or universities closer to federal labs to discuss topics of mutual interest in Basic Research

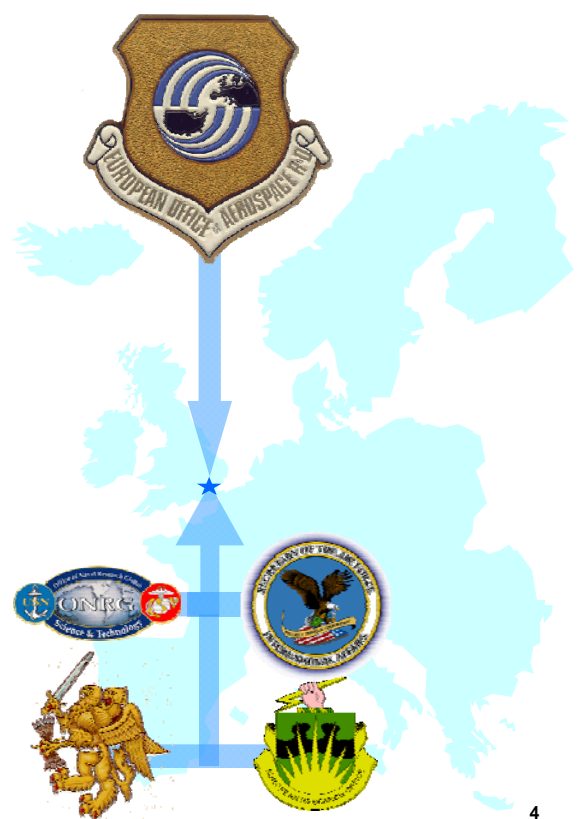
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# EOARD History



- 1952 -- Established as *West European Office, Air Research and Development Command* in Brussels
- 1960 -- Renamed *European Office of Aerospace Research, Office of Aerospace Research*
- 1970 -- Collocated with Navy and Army counterparts in London
- 1973 -- Became ***European Office of Aerospace Research and Development***, Air Force Office of Scientific Research Detachment 1, Air Force Systems Command
- 1974 -- Moved to Edison House



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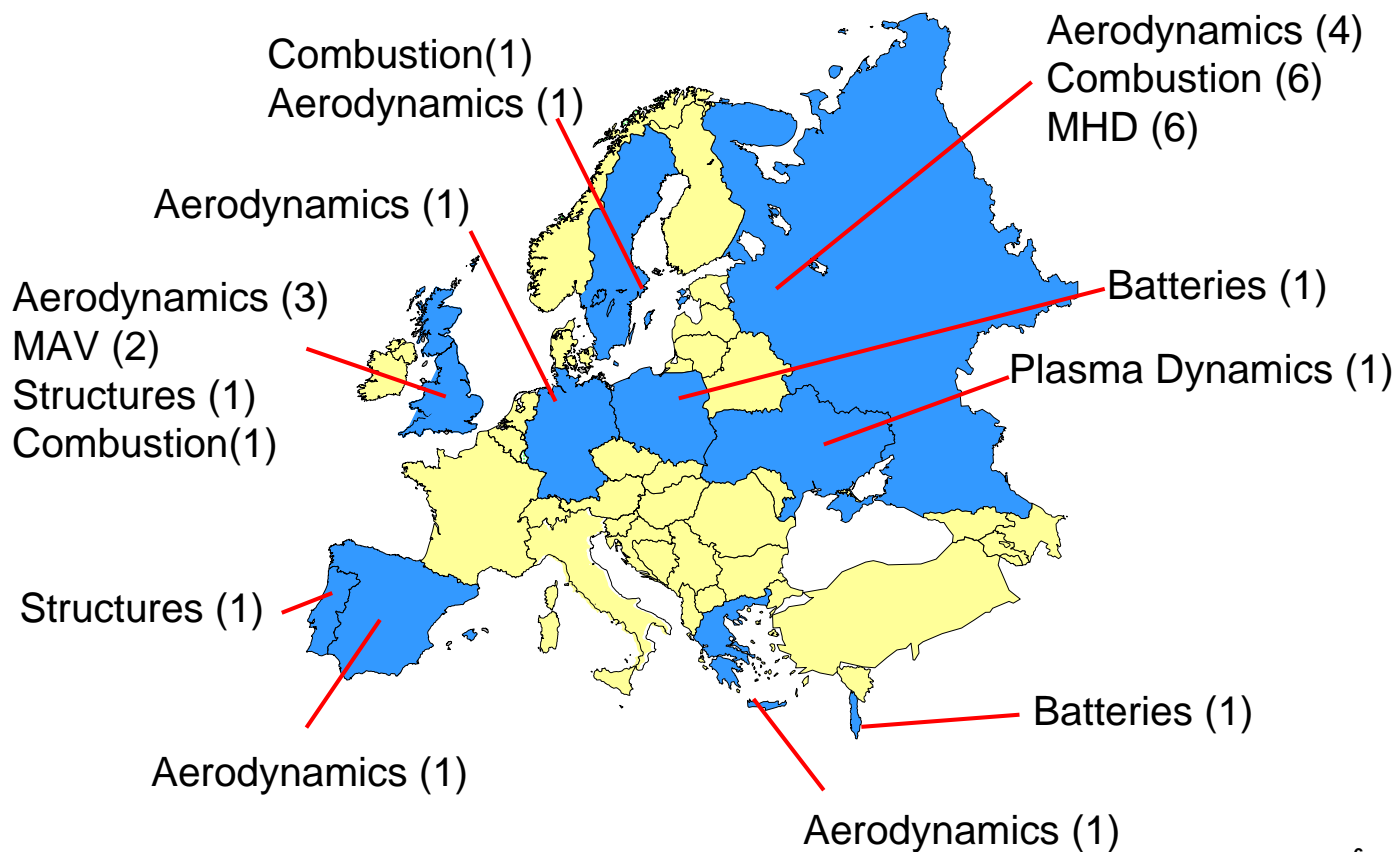
# Where EOARD Fits



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# FY06 Research Portfolio



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# EOARD Staffing



## 18 Personnel

- 9 Management/Support
- 9 Program Managers
  - Electromagnetic Sciences
  - Lasers and Electro-optics
  - Aero/Propulsion/Structures
  - Information
  - Materials
  - Human Factors
  - Space
  - Chemistry



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## Conference Support Program



- Designed to promote conferences and workshops focused on topics of interest to US and European Scientists
- Facilitate attendance/access by US researchers
  - Expand availability of proceedings to US (DTIC)
- Examine joint opportunity with Navy and/or Army
- Typically <\$5000 for conference support
  - Proceedings and complimentary registrations to EOARD
    - Support posted to [AFOSR Conferences and Workshops](#) web page
  - International visibility and access
- Focus on smaller workshops
- Approximately 80 conferences supported each year



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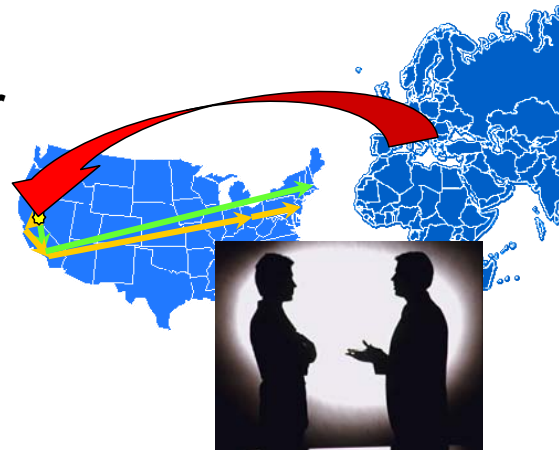




# Window on Science



- Selected scientists brief their research to U.S. researchers supporting AF needs
- Often used to gauge quality of a scientist's work
  - May lead to further investment (contracts/confs)
- Covers cost of transportation, lodging, conference, etc.
- Approximately 200 trips / year
  - Target multiple sites/organizations per visit



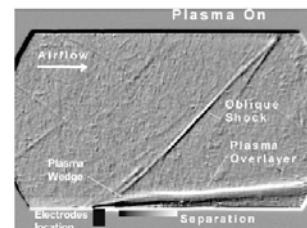
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# Research Projects



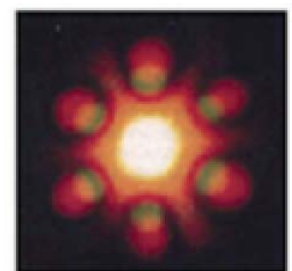
- Small research projects at universities/institutes
- Proposals in response to AFOSR Broad Agency Announcement
  - Fixed-price contracts or grants
    - Range: \$1,000-\$600,000
    - 1 year/\$25,000 is norm
- FSU Access



Shock wave position control for hypersonic vehicles



Hall effect thrusters for space applications



Fiber lasers



International Science and Technology Center



Science and Technology Center of Ukraine



US Civilian Research and Development Foundation

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# Aeronautical Sciences OVERVIEW



NAME: Dr. Surya Surampudi

NO. OF YEARS AS OSR PM: 2 Years

## BRIEF DESCRIPTION OF PORTFOLIO:

International support of airbreathing propulsion & air vehicle technologies for AFOSR/NA, AFOSR/NE, AFRL/VA, AFRL/PR, AFRL/MN, and AFRL/VS.

## SUB-AREAS IN PORTFOLIO:

• Aerodynamics	12	• Combustion	10
• Plasma & MHD	7	• Structures	3
• MAV	2	• Batteries	2

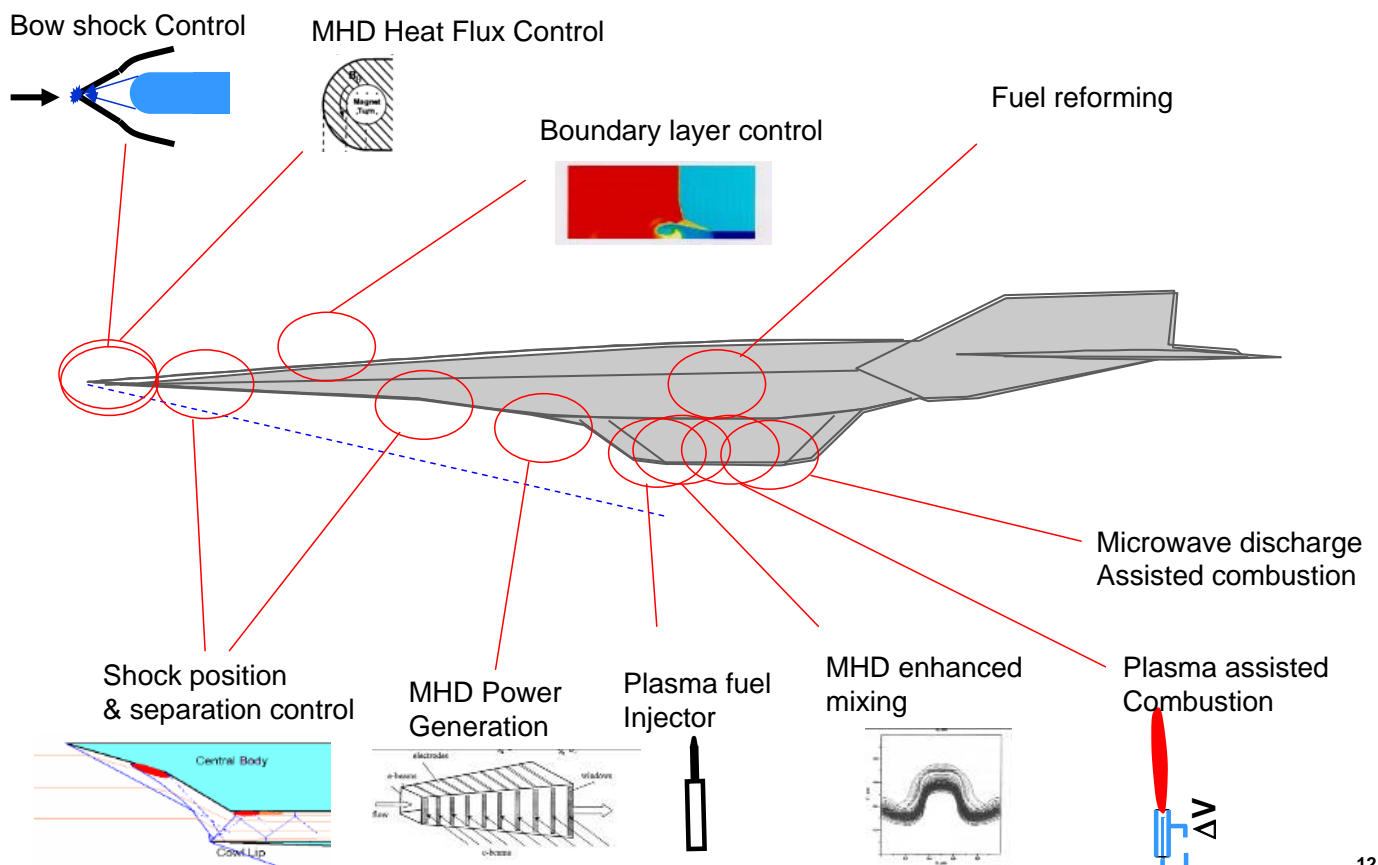
## TOTAL PROJECTS :

Conference Support	7
Window on Science	45
R&D	41

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# Concepts & Analysis



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# Experiments



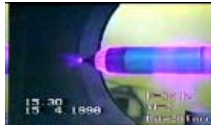
Bow shock Control



MHD Heat Flux Control



Boundary layer control



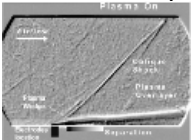
Fuel reforming



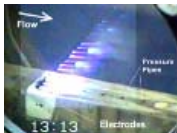
Microwave discharge Assisted combustion



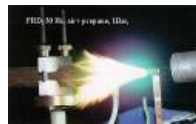
Shock position & separation control



MHD Power Generation



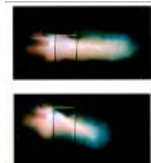
Plasma fuel Injector



Enhanced mixing



Plasma assisted Combustion



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# Conclusions



- **Russian Plasma Programs**
  - Productivity very good
  - Well coordinated with Air Force Research Lab & poised for transition
- **Aero & Propulsion Programs**
  - Well coordinated & partially funded by Air Force Research Lab
- **Explore new research opportunities such as:**
  - Unmanned Air Vehicles
  - Structural Health Monitoring
  - Work with NASA, Army and Navy
  - Work with AOARD
  - Research initiatives in Ukraine, Africa and Middle East



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# EOARD Summary



- **Small office**
  - BIG operation!
- **Direct access to world-class expertise and technologies**
  - Emphasis on BASIC RESEARCH
- **Streamlined processes**
- **International focus**
- **Supporting entire AFRL enterprise**



<http://www.london.af.mil>





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