



Gaetan Mangano

Naval Air System Command

Gaetan Mangano, Lakehurst Site Lead

Technology Transfer Office
Educational Outreach Office



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Naval Air Warfare Center Aircraft Division
Rt. 547, Mail Stop 150-3 Lakehurst, NJ 08733

Education Outreach

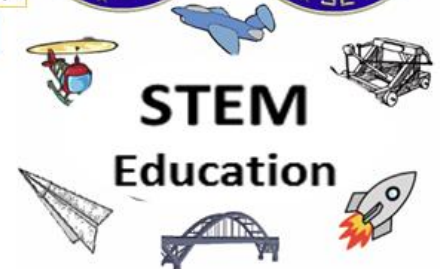
Technology Transfer

Gaetan Mangano
Lakehurst Site Lead
Educational Outreach
Technology Transfer



"Inspiring STEM Education"

Naval Air Systems Command
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Identity Crisis





Why Do We Do Tech Transfer?

Federal Legislation Title 15

USC 3701-
3716

- T2 is a federally legislated requirement of all Federal agencies
- T2 ensures full use of the Nation's Federal investment in R&D
- T2...Provide Exposure & Spin out Technologies that normally stay inside an organizations "Silos"



Technology Transfer

Technology Transfer is the process by which existing knowledge, facilities, or capabilities developed under a federal research and development (R&D) funding are utilized to fulfill public and private needs.



**Federal
R&D
Labs**



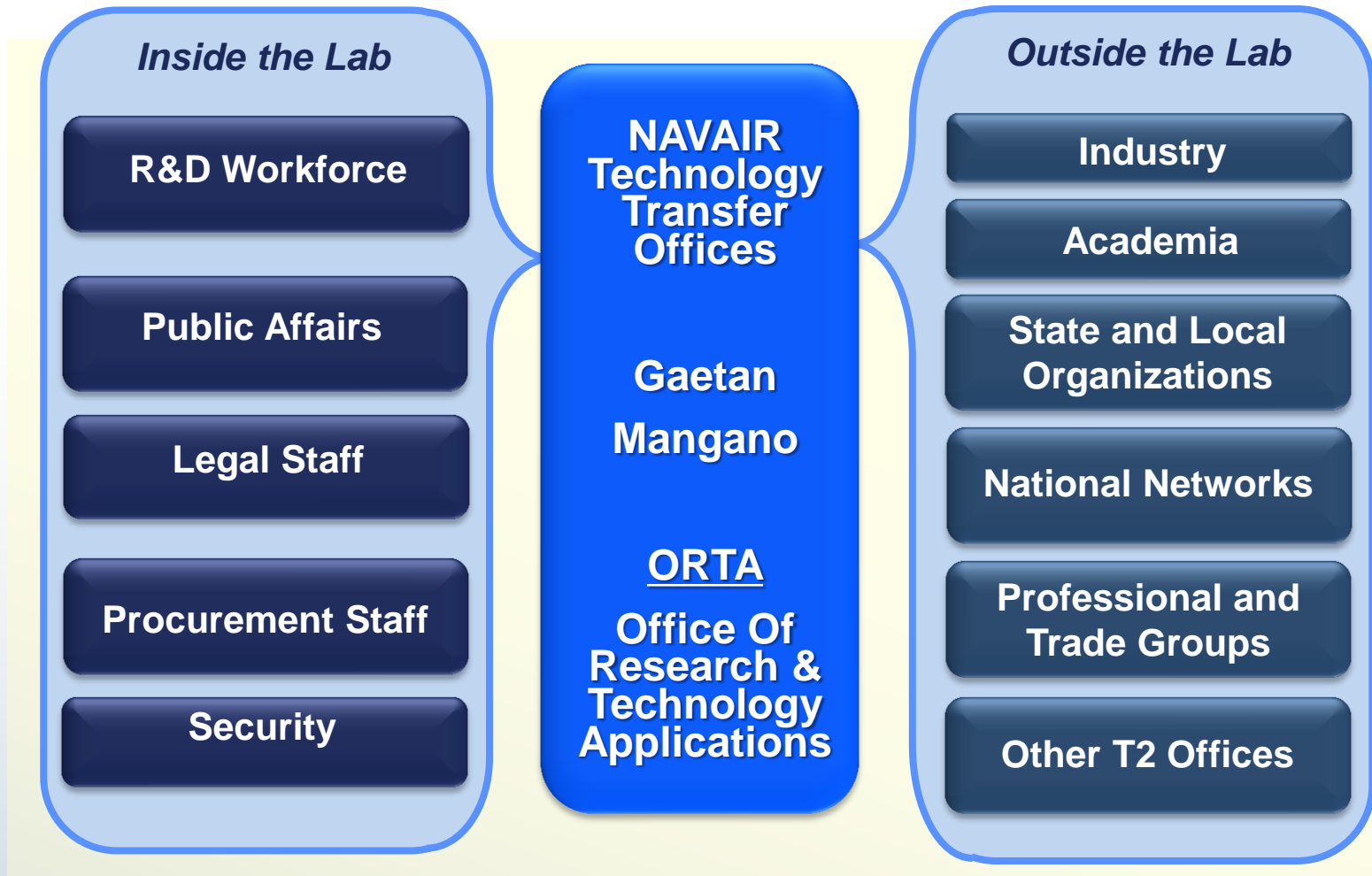
**Public &
Private
Needs**



Technology Transfer

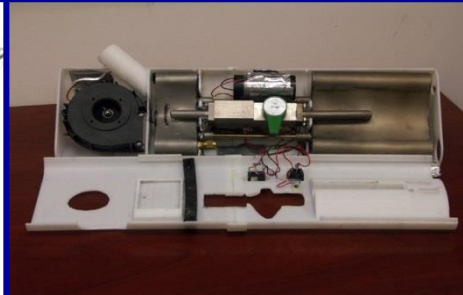
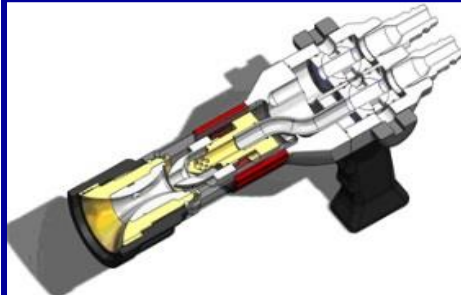


The Link Between Lab & Outside World





Benefits & Mechanisms of Tech Transfer

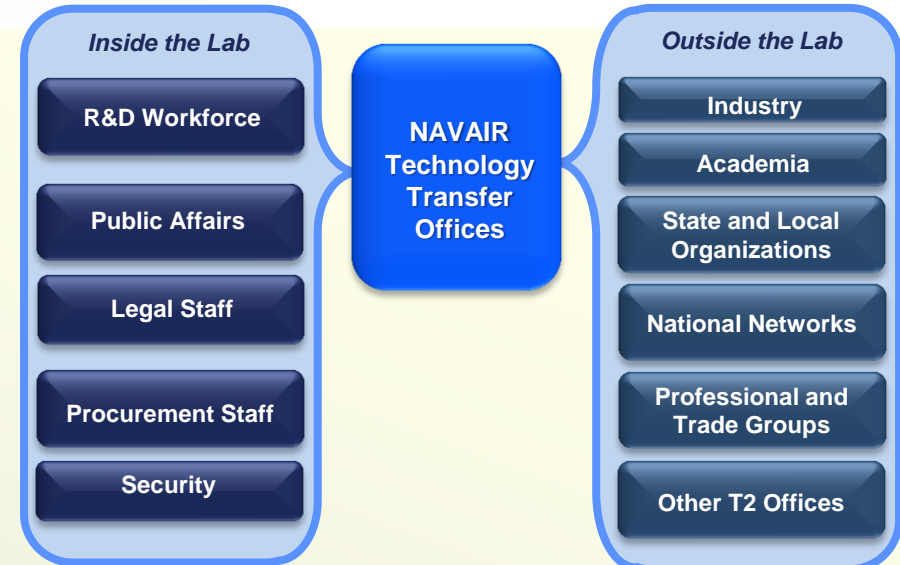


Benefits for Small Businesses

- Leverage R&D innovations already funded by NAVAIR.
- Better awareness of Government needs through R&D collaboration.
- Use of unique Government facilities (e.g. product testing).
- Access to and collaborations with expert federal scientists and engineers .

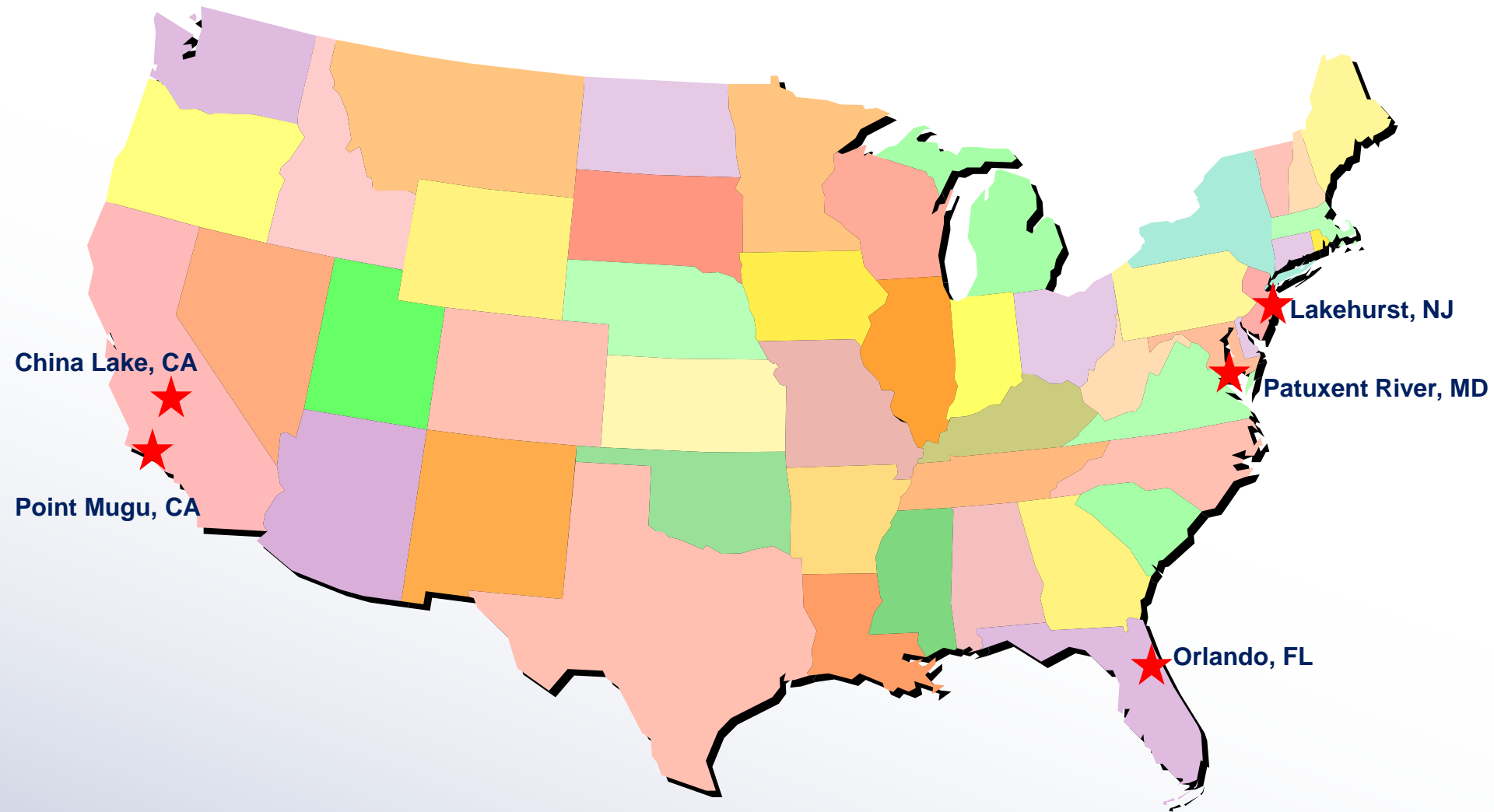
Technology Transfer Mechanisms

- Cooperative Research and Development Agreements (CRADA)
- Patent License Agreements (PLA)
- Commercial Service Agreements (CSA)
- Partnership Intermediaries Agreements (PIA)
- Educational Partnership Agreements (EPA)





Naval Air Warfare Center Lab Sites



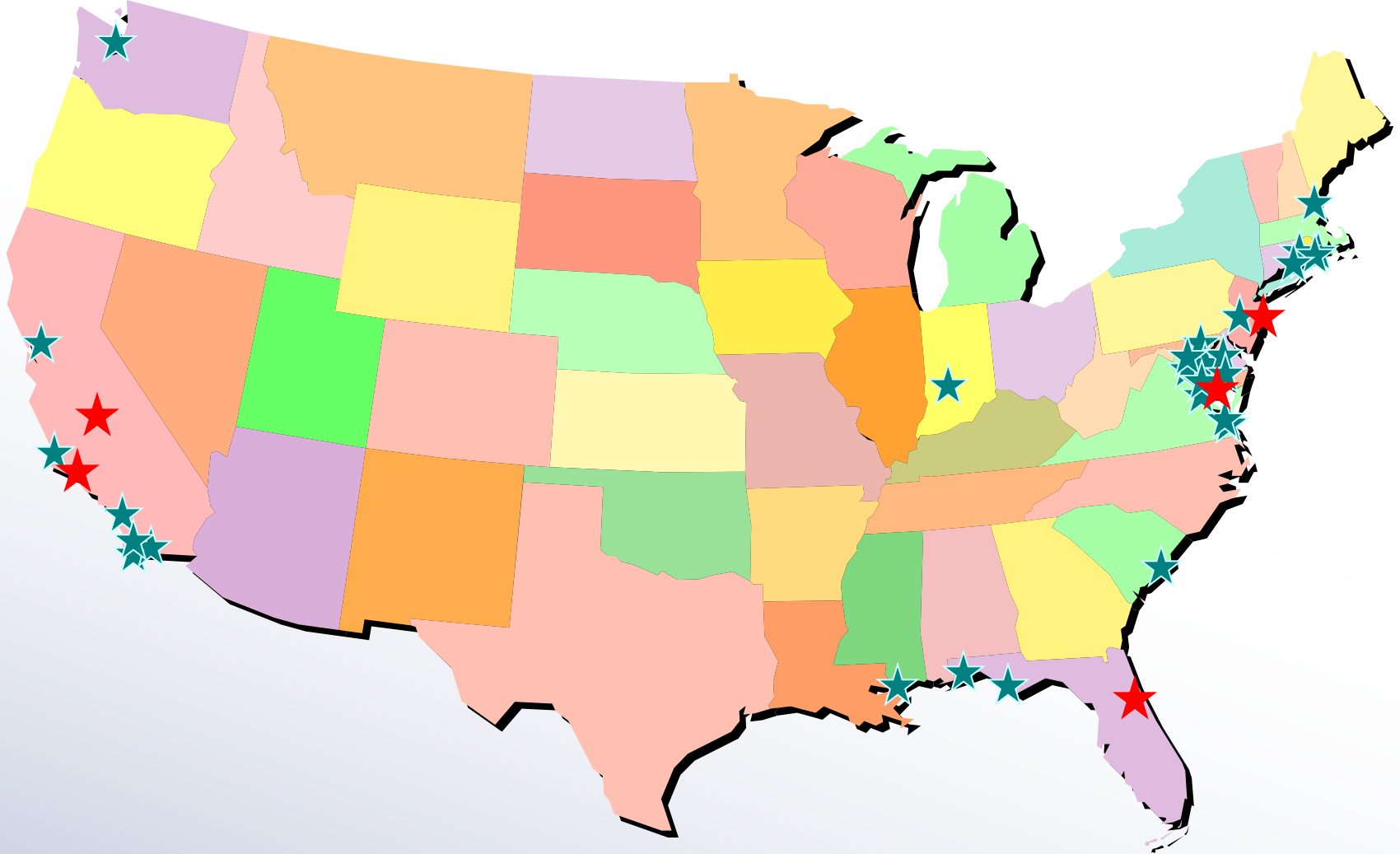
West Coast Weapons Divisions

East Coast Aircraft Divisions



All Navy/Marine Corps Lab Sites

★ NAWC ★ Other NAVY





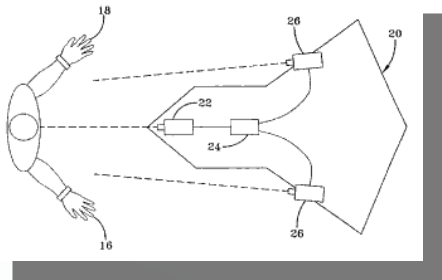
 **Dept Interior & Homeland Security**



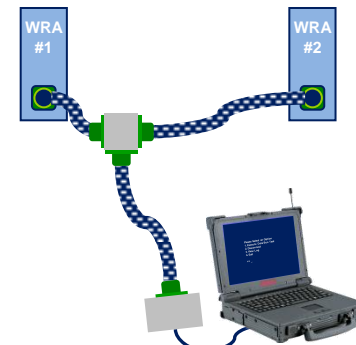


Partnership Opportunities

Patents available for Commercialization



➤ **Gesture recognition apparatus and method & Robotic gesture recognition system - Larry Venetsky**



➤ **System for isolating faults between electrical equipment - Russ Shannon**



➤ **Adjustable liquid atomization nozzle, Spray array apparatus, Liquid atomizing nozzle - Joe Wolfe**



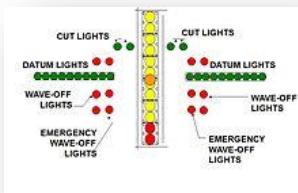
➤ **Just in time wiring information system - Gail Edwards**



Partnership Opportunities



Technical Assistance Agreement
Technical assistance to a French Company leading the integration of the Navy's IFLOS into the *Charles de Gaulle*



Collaborative Research & Development Agreement
Assess and evaluate operational capabilities of patented Fine Water Mist nozzle technologies for a bus engine fire protection system.

Collaborative Research & Development Agreement
Working Collaboratively with large contractor in configuration development of a P-8 Export Variant



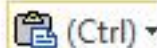
"Limited Purpose"
Collaborative Research & Development Agreement
Providing interested companies temporary use (Equipment Transfer) of our patented Liquid Atomizing Nozzle to conduct research, test and evaluation





Education Outreach

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Technology Transfer



"Inspiring STEM Education"

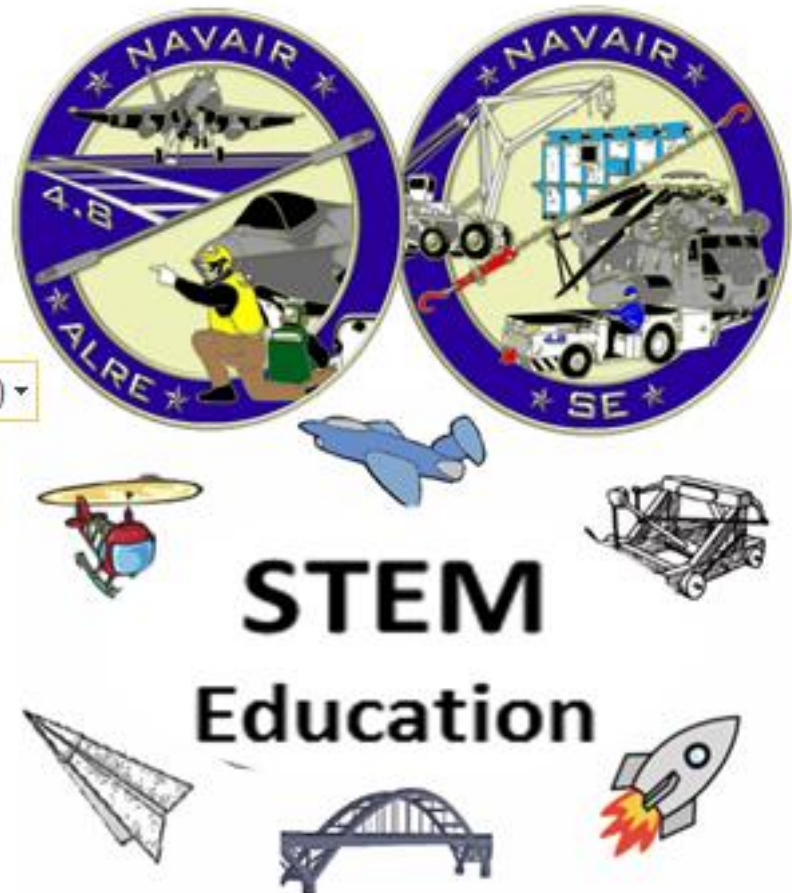
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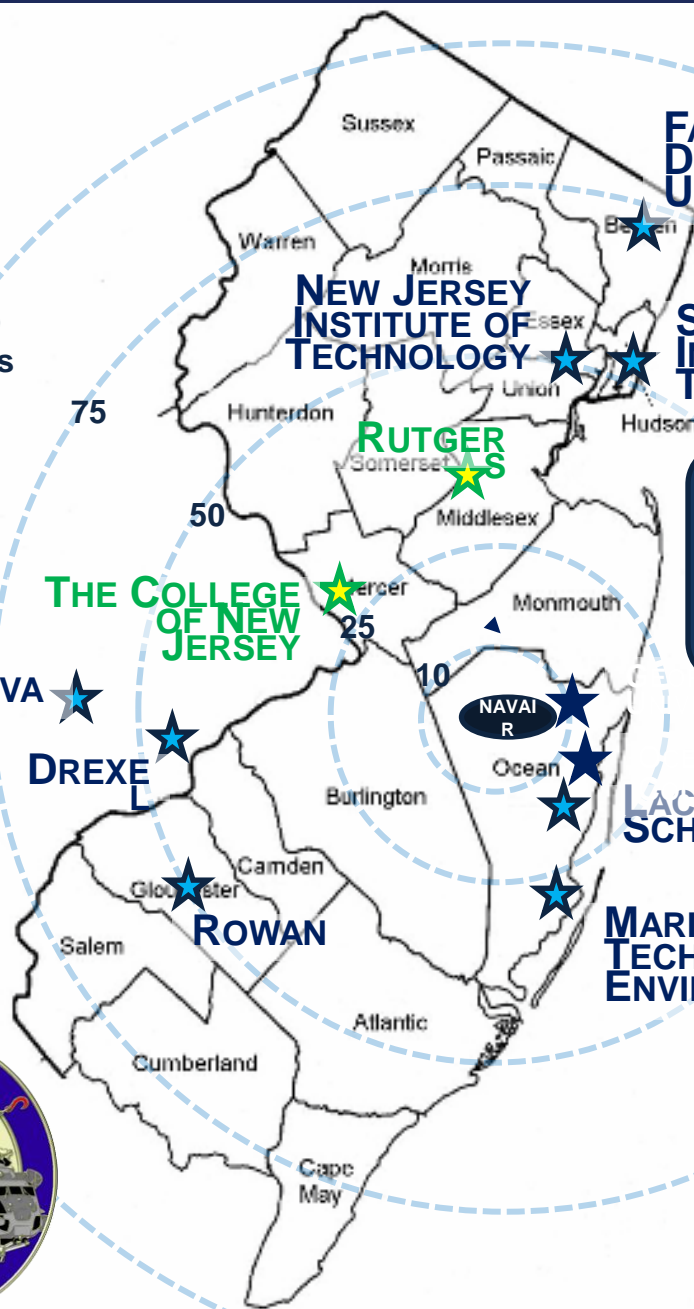
Educational Partnership Agreements

- ★ CURRENT
- ★ FUTURE PLANNED
- ★ EXPIRED/UN-RENEWED

★ PENN STATE

Next EPA

100 Miles



FAIRLEIGH
DICKINSON
UNIVERSITY

NEW JERSEY
INSTITUTE OF
TECHNOLOGY

STEVENS
INSTITUTE OF
TECHNOLOGY

RUTGER'S

THE COLLEGE
OF NEW
JERSEY

VILLANOVA

DREXEL

ROWAN

NAVAL
R

LACEY TOWNSHIP
SCHOOL DISTRICT

MARINE ACADEMY FOR
TECHNICAL &
ENVIRONMENTAL SCIENCES



Stevens
Signing
Ceremony
Sep 14th 2014





STEM Engagement at K-20 Educational Levels

Elementary & Middle Schools 1,180	High Schools 3,402	Undergraduate Programs 72	Graduate Programs 74
Teacher Training 7	8	Engineering Capstone Design Projects 13	On-Site Graduate Programs* 74
Robotics and Engineering Design Challenges 86	599	Engineering Co-op Programs 7	Engineering Masters Programs
Shadowing/ Mentoring , Internships, ONR SEAP 65	56 2 SEAP	ONR NREIP 8	ONR SMART 3
Tours and Visits 741	1,551	Tours and Visits 31	Tours and Visits
Science Fair Judging & Technology Demonstrations 125	645	Senior Project Mentoring & Judging	
Engineer Weeks, Career Days, Interview Fair 156	543	Pathways Intern Program 10	
Educational Partnership Agreements, Collaborations, Grants and Advisory Councils 6 EPAs, 2 Advisory Councils, 2 Collaborations			

*Note for On-Site Graduate Programs
• Drexel EE & ME Programs - 42
• Stevens Systems Engineering - 32



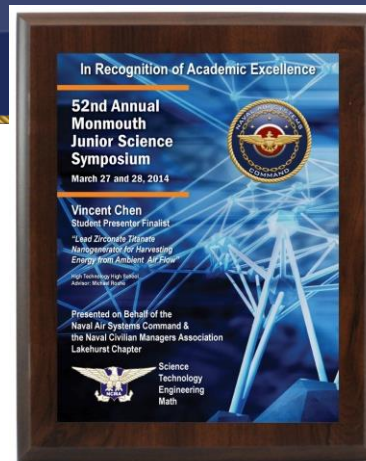
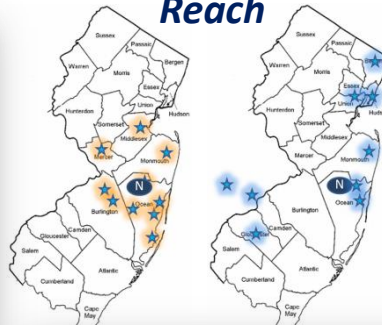
Education Outreach

Science Symposiums

New Navy & NAWCAD Employees



K-12 & University Reach



STEM Competitions



Science Competitions

Students Reached

4,728

Teachers Supported

351

S&E Participation

348



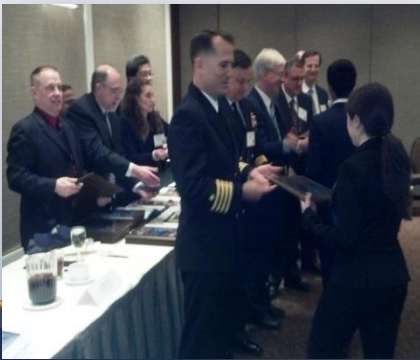
STEM Fairs & Festivals



NAVAIR engineers inspire students at annual Science & Engineering Festival



Symposium Support



Robotics Team Mentorship

Scholarships



Upstone Projects





Visits to Lakehurst

A Special Tour of the FBI

Hanger for the
Pemberton Middle School
Students



Willie Cusaac hosts
Burlington county
"Youth Achievers"
students



John Schmelzle shows
students how his 3-D
Printer Lab and
engineers support the
Fleet in times needing a
quick turnaround

Steinert Robotics Team
get a tour of Our
Robotics Lab by Dr.
James Hing

Lakewood High School Girls Involved in Science &
Technology (GIST) snap a shot in front of the F-14



A Tour of The Army's
CERDEC Hanger & a
chance to climb on board
an Helo

Toms River High School's
Authentic Science
Research Students talk
about what their research
for next year will involve



Ocean County College
Students get a Tour of
the Jet Cars



University/College Capstone Projects

3 Capstone Projects

2 Universities

13 Students



**Working Real Project
With Our Engineers & Scientists**

**Electrical, Computer, Mechanical, Materials
Engineering Projects**

**Providing Challenging
Projects to University
Seniors, Solving Real-Life
NAVAIR Problems**



**Drexel Students bring fresh new
ideas for automating support
equipment & reducing
Operational Costs**

**NJIT Students Bring NAVAIR Lakehurst's Tool Control Program
into the 21st Century with Image Scanning Technology**



**MANUFACTURING & PROTOTYPE DIVISION IS LOOKING TO IMPROVE
THE EFFICIENCY OF THEIR TOOL SHADOWING TOOL CONTROL
PROGRAM – STUDENTS FROM NJIT ARE BRINGING INNOVATIVE &
AUTOMATED IDEAS TO SOLVE THE CHALLENGE**



Seaperch Underwater Robotics

2nd Annual Event with Co-Sponsor Rowan University held on 26Apr14



Lakehurst's PDG & NCMA members fill key roles in the planning, coordination & execution of the competition

**3rd Annual Event
Scheduled for
18Apr15**

NCMA awards the Top Middle & High School Teams with \$400 Travel Stipends for the National Competition



NAVY AIR

PDG = Professional Development Group
NCMA = Naval Civilian Managers Association



Science Fairs, Symposia, Expositions & Scholarships



Lacey Township High School



Provided judges, including former Lacey students, to the annual Science Fair, with over 70 students participating

Kevin Griffin, from Manchester High School was awarded a \$1,000 scholarship by Lakehurst's Naval Civilian Managers Association. Kevin will attending the New Jersey Institute of Technology majoring in Chemical Engineering



Lakehurst Judges



Scholarships



S&Es & Leadership actively participate in the Regional Competition of the Junior Science and Humanities Symposia – Sponsored by DOD



CAPT Bartosh at Awards Banquet



MATES - Marine Academy of Technology & Environmental Sciences



Provided judges for the MATES Annual Freshman Science Exposition – 75 Students Participating

Juan Salazar, a Freshman at MATES, talks about his Biomass Reactor and the results of his experiment by which he attempted to create a sustainable energy source from everyday household waste

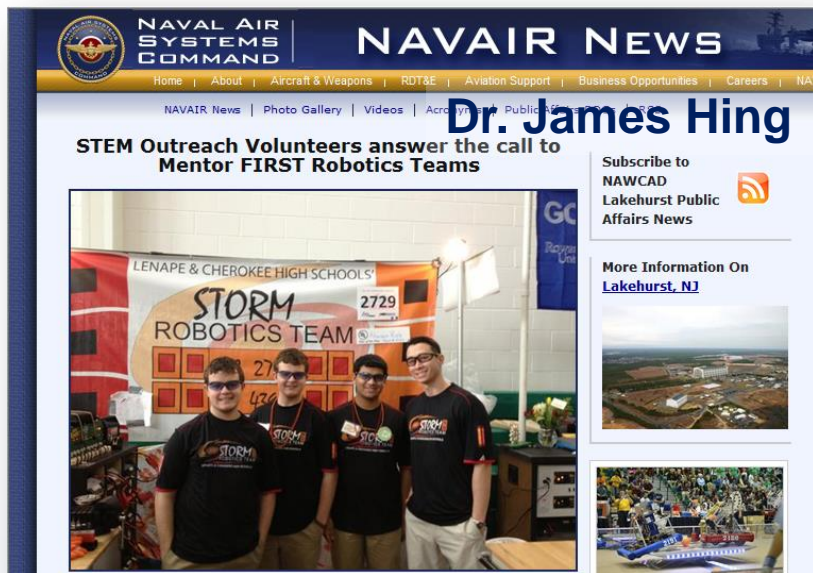


Innovation



FIRST Robotics

For Inspiration & Recognition of Science & Technology



NAWCAD Lakehurst engineer Dr. James Hing (R) with the “Storm” Robotics Team members (L-R) Ryan McCarthy, Alex McCarthy and Ahasan Rob from Lenape and Cherokee High Schools in Burlington County, N.J.

Excerpt from NAVAIR News Story:
“I really appreciate NAVAIR’s total support for educational outreach initiatives like FIRST Robotics. It gives engineers working in industry and government an opportunity to influence our future generation of young engineers,” said Hing.”



Matthew DeFelice, NAWCAD Lakehurst mechanical engineer discusses design details with his “Zero Gravity” Robotics Team members at Hamilton High School East in Mercer County, N.J

Excerpt from News Story
“As DeFelice aptly states, “I guess the takeaway is, if you want to mentor, do it because you believe in the mission and because you truly care. The work is hard, but the rewards are great.”





Ways To Get Involved

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- Partnership Intermediaries Agreements (PIA)
- Invention Discovery Event Panel Member

Education Outreach

- Monmouth Junior Science Symposium Paper Reviewers
- Ocean County Community College Engineering Design Clinics with a Team of Students
- Seaperch NJ Regional Competition Awards Travel Stipend or Robot Kits
- FIRST Robotics Sponsorship
- Request a Tour for a Group of Students

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