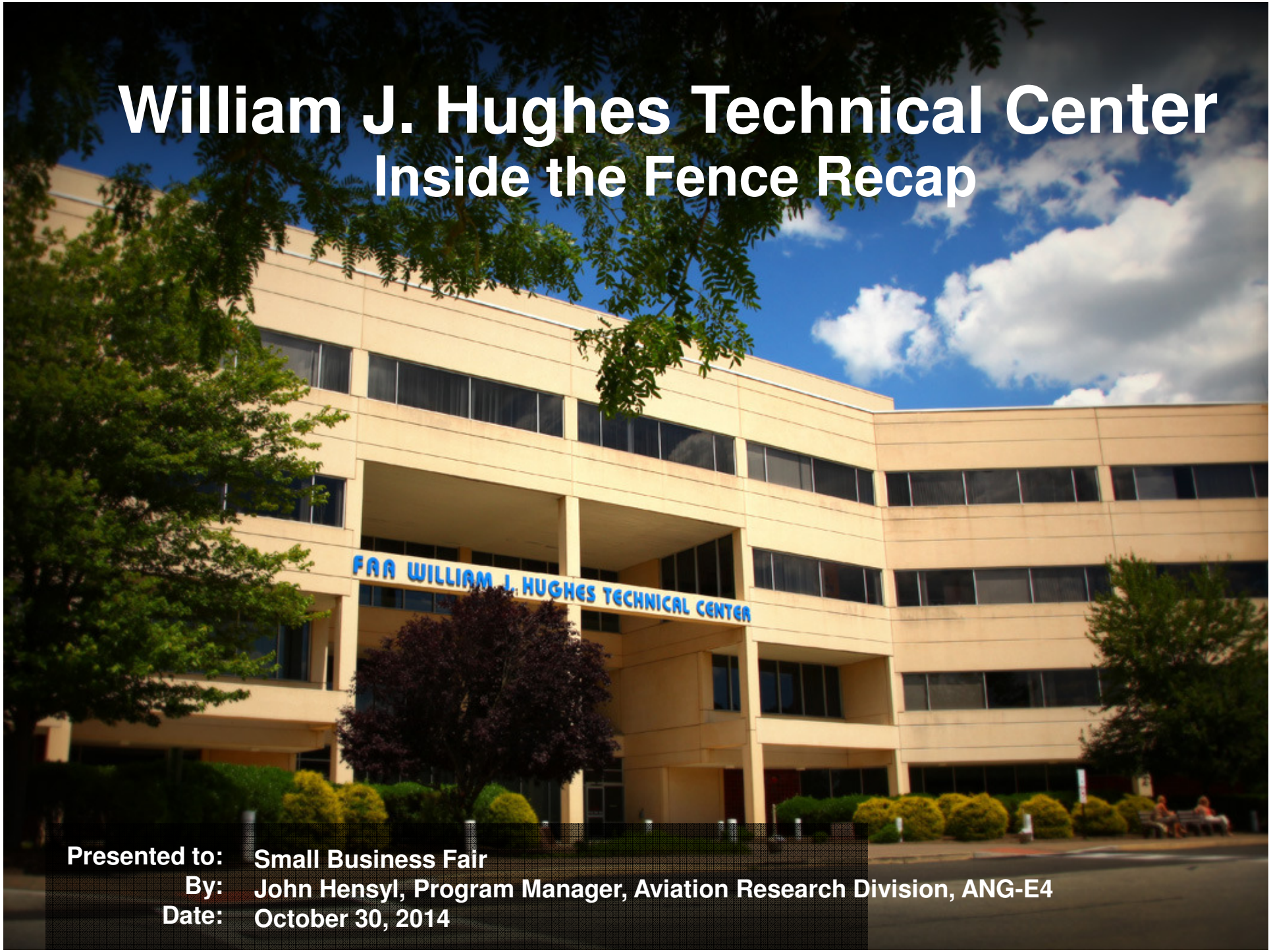
William J. Hughes Technical Center
Inside the Fence Recap



Presented to: Small Business Fair
By: John Hensyl, Program Manager, Aviation Research Division, ANG-E4
Date: October 30, 2014

Topics

William J. Hughes Technical Center

Technology Transfer & Small Business Innovation Research (SBIR) Program Office

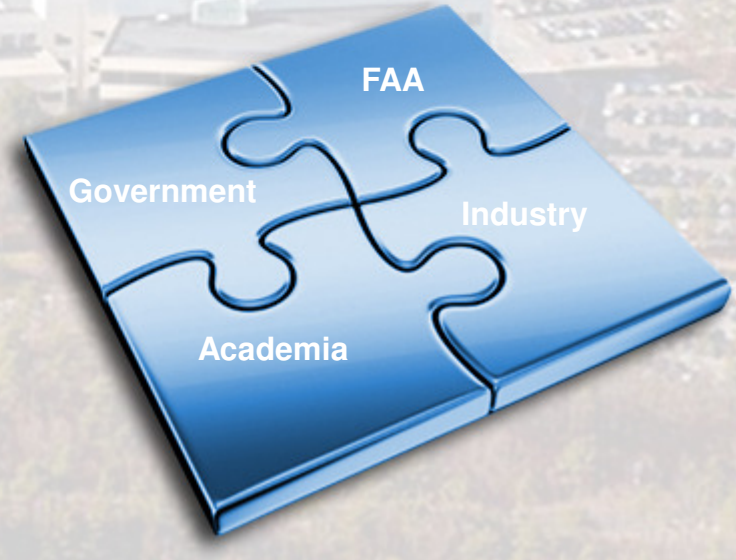
William J. Hughes Technical Center Summary

One-of-a-kind Laboratory Environment

World Class Expertise

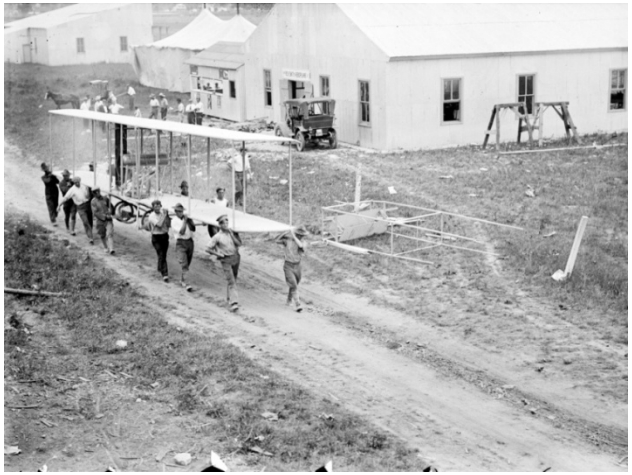
Partnerships – domestic and international

- Industry
- Academia
- Government



55+ Years of NAFEC History

- **New Jersey: Long History of High Technology Involvement**
  - Birthplace of the Industrial Research Laboratory (Menlo Park, Bell Laboratories, Sarnoff Laboratory)
- **Rich History of Aviation in South Jersey**
  - First Air "Carnival" in 1910
- **Established 1 July 1958**
  - Formerly NASAC
  - Unique National Asset
  - Federal/State Agencies Co-Located
  - Key Participant in National Air Traffic Control System Development/Testing



William J. Hughes Technical Center Quick Facts

- **Premier FAA Federal Laboratory Facility (15 USC 3703)**
- **FAA owned 5000 Acre Facility Located near Atlantic City, NJ**
- **4500 Employees (3,000 FAA/Contractor)**
- **250+ buildings**
- **500,000+ sq. ft. Aviation Research and Air Traffic Control (ATC) Laboratories**
- **Next Generation Aviation Research Technology Park**

Multiple Missions

- **Research and Development (R&D)**
- **Test and Evaluation (T&E)**
- **Second Level Field Support (2nd Level)**
- **Operational Capabilities (Ops)**

World Class Capabilities

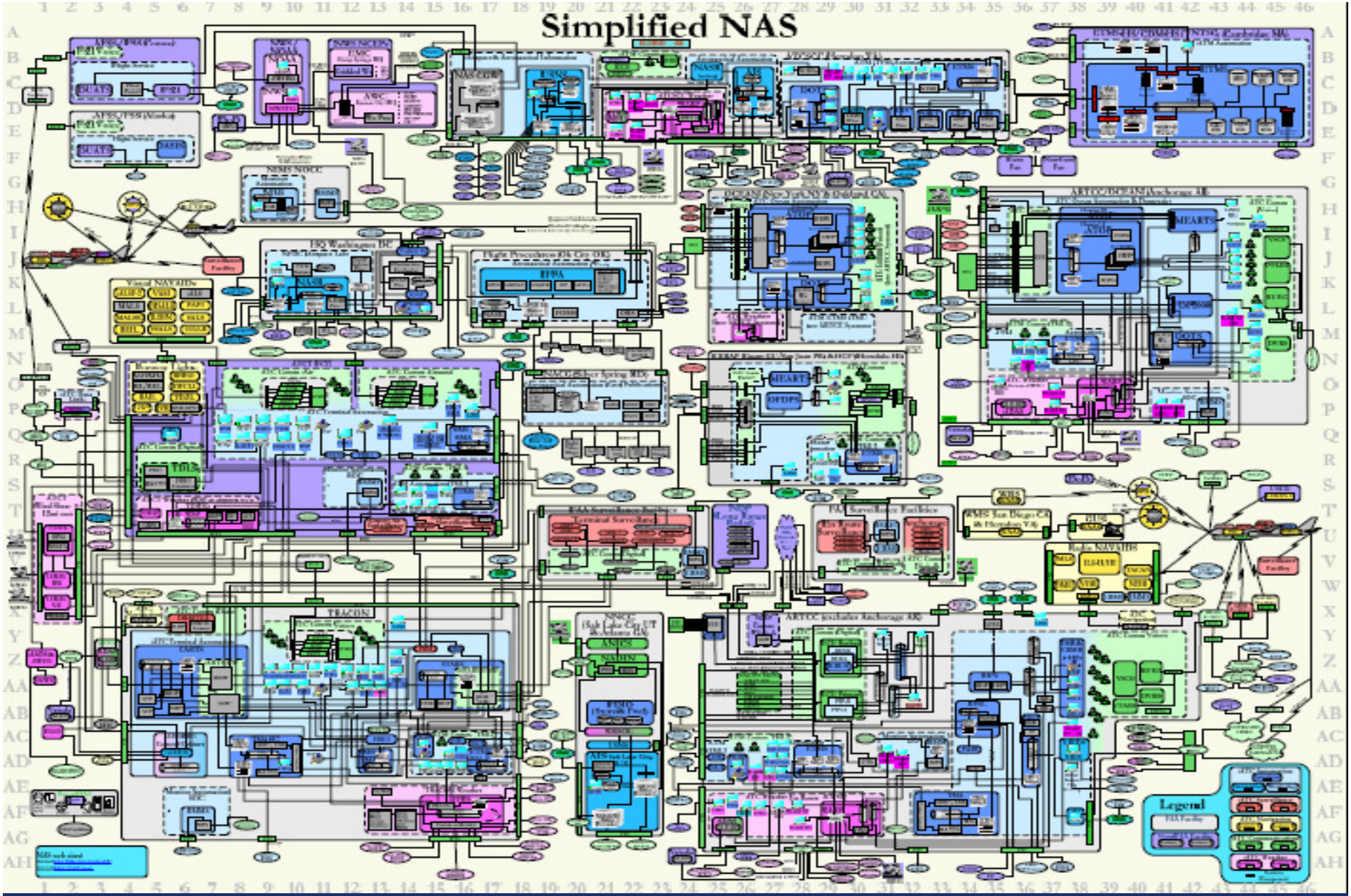
- Support the advancement of the Next Generation Air Transportation System by:
- Being the nation's leading federal laboratory for R&D, T&E, and In-Service Management
- Integrating systems and capabilities through collaboration with Industry, Academia, and Government
- Provide the gateway for National Airspace System upgrades, improvements, and operational sustainment

William J. Hughes Technical Center NAS Laboratories

High Fidelity ATC NAS Laboratories

- EnRoute, Oceanic Integration and Interoperability Facilities
- Terminal
- NextGen Surveillance and Multi-state NextGen Test Bed
- Tower Modeling and Simulation
- Human Factors
- Live Radar Access
- Capacity Modeling
- Traffic Flow Management Operations
- System Wide Information Mgmt, Fed. Telecom. Infrastructure
- Cockpit Simulation, Target Generation Facility

Simplified NAS



William J. Hughes Technical Center Aviation Research Laboratories

Technical R&D Areas

- Fire Research and Safety
- Airport Technology (Safety and Capacity)
- Propulsion, Fuel Systems, GA Alternative Fuels
- Advanced Materials/Structural Safety
- Aircraft Catastrophic Failure Prevention (Wide Spread Fatigue Damage)
- Atmospheric Hazards
- Aircraft Icing/Digital System Safety
- Human Factors
- Continued Airworthiness
- System Safety Management

Flying Laboratories

Technology Transfer - Definition

- **Technology Transfer (TT) is the process by which existing knowledge, facilities, or capabilities developed under federal research and development are utilized to fulfill public and private needs**

- **The William J. Hughes Technical Center (WJHTC) manages its and Civil Aeronautical Medical Institute's (CAMI) FAA Federal Laboratories**

Technology Transfer Program

- Defined and promoted by the Stevenson-Wydler Technology Innovation Act of 1980, which:
- Applies to federal laboratories with 200 or more scientific, engineering, and related positions
- Called for the establishment of an Office of Research and Technology Applications (ORTA) to administer TT
- Effected by Presidential Memos, and Executive, Department, and Agency Orders (FAA Order 9550.6)

Implementation

- Catalog inventory, identify patents
- Process to capture innovation
- Proactive outreach to small business
- Loan, lease, or donate excess research equipment
- Coordinate with the FLC
  - http://www.federallabs.org

Technology Transfer Program Office

- **Part of FAA's Aviation Research Division (ANG-E4)**
  - http://www.faa.gov/go/techtran/
  - **Identifies innovation, recommends policy, catalogs R&D needs, capabilities, inventions, and information**
  - **R&D outreach & collaboration activities**
- **Mechanisms**
  - **Cooperative Research and Development Agreement (CRDA), Invention disclosures, Patents, Inter/Intra-Agency agreements, Grants, Licenses, Personnel exchanges**
  - **Small Business Innovation Research (SBIR)**

SBIR Purpose

- To stimulate technological innovation;
- To use small business to meet Federal R&D needs;
- To increase private sector commercialization of innovations derived from Federal R&D; and
- To foster and encourage minority and disadvantaged participation in technological innovation
- The next U.S. DOT SBIR solicitation 15.1 will be released December 2015 – January 2015
  - For full details see: http://www.volpe.dot.gov/sbir

SBIR Program Details

- **SBIR is a three phase program:**
  - **Phase I – Feasibility or proof of concept. Competitive awards limited to $150K for up to 6 months.**
  - **Phase II – Further R&D trending to commercialization. Only successful Phase I awardees are eligible. Maximum award is $1.0M for 2 years.**
  - **Phase III – Independent commercialization not funded directly by government. May include follow on non-SBIR research or production contracts.**
- **Currently the FAA is exempted from the SBIR set aside although may use the SBIR contract vehicle.**

TT and SBIR Benefits

- Collaborative research with industry, small business, nonprofits, and academia, both foreign and domestic
- Accept, retain, and use funds, personnel, services, facilities, equipment, intellectual property and other resources from collaborating party
- Provide personnel, services, facilities, equipment, intellectual property and other resources (not funding) to a collaborating party
- Rights in Data

Current Intellectual Property & Public Information

Patents

8,604,965 Apparatus and method to generate and detect virtual targets

7,592,816 Localizer cable fault analyzer

6,470,730 Dry transfer method for the preparation of explosives test samples

6,464,391 Heat Release Rate Calorimeter for Milligram Samples

6,116,049 Adiabatic Expansion Nozzle

5,981,290 Microscale Combustion Calorimeter

Inventions

Virtual Target Generator

Microscale Combustion Calorimeter

ILS Localizer Cable Fault Analyzer

Publications

http://actlibrary.tc.faa.gov

http://www.fire.tc.faa.gov/reports/reports.asp

https://acy.tc.faa.gov/Publications

https://www.hf.faa.gov/hfportalnew/Search/SearchReport.aspx#gsc.tab=0

http://www.airporttech.tc.faa.gov/naptf/documents.asp

http://www.airporttech.tc.faa.gov/search.asp

FAA TT Examples

- **Pavement Test Facility**
- **Soft Ground Arresting System**
- **Microscale Combustion Calorimeter(TC-TN12/12*)**
- **Adiabatic Expansion Nozzle (AR-TN01/60*)**
- **ILS Localizer**
- **Electronic Flight Data Management (TC-TN06/17*)**

  * - Tech Notes (TN) available from http://actlibrary.tc.faa.gov

Collaboration Outreach Opportunities

- **Fuel Cell Propulsion Technology**
- **Fire Resistant Resin Systems**
- **Multi-Core Processors for Avionics**
- **Rotor Fatigue Life Evaluation**

For more information, contact the FAA's Technology Transfer Program Office

http://www.faa.gov/go/techtran

TT and the Federal Laboratory Consortium (FLC)

- The Federal Laboratory Consortium was chartered by Congress in 1986
- Comprises several hundred federal research laboratories
- Mission is to promote the rapid movement of R&D form federal laboratories to mainstream of U.S. economy
- Offers many free resources to the public
- Primary website (www.federallabs.org) and FLCBusiness website (www.flcbusiness.com) goal: "Building better business through technology transfer"

Thank you!

For more information about working collaboratively with the FAA, contact:

FAA's Technology Transfer Program Office

http://www.faa.gov/go/techtran

Questions/Discussion