

UNLOCKING THE COMMERCIAL VALUE OF NASA TECHNOLOGY INVESTMENTS

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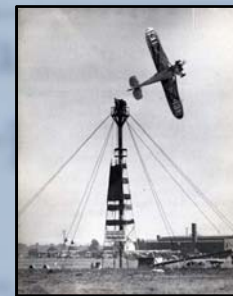
Director, Office of Technology Incubation
and Innovation

Center Chief Technologist

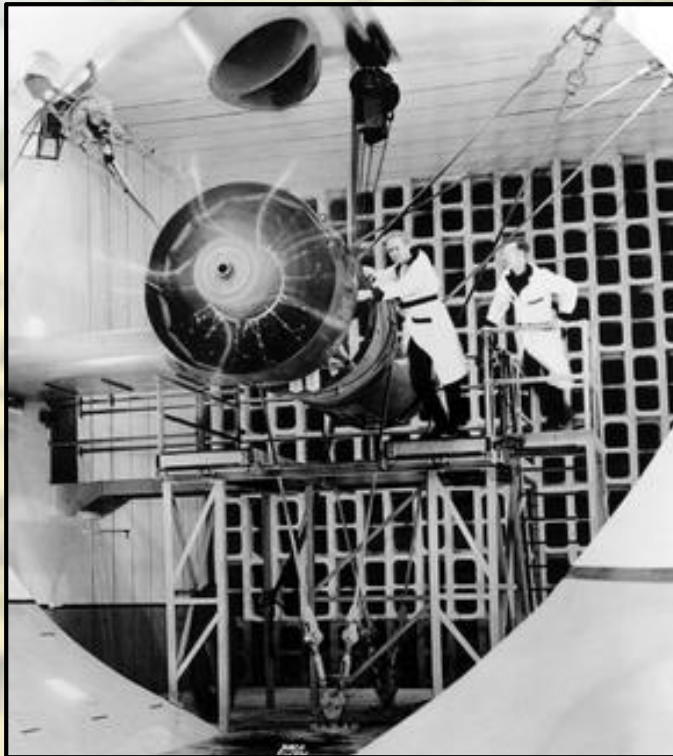
September 20, 2017



The Roots of NASA Glenn



NASA Glenn Goes to War



1942: Initiation of research ceremony Engine
Propeller Research Building

FLYING LABORATORY



THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS
ESTABLISHED BY THE U. S. GOVERNMENT IN 1915, IS
OFFERING EMPLOYMENT TO MEN AND WOMEN COLLEGE
STUDENTS IN ALL FIELDS OF ENGINEERING, MATHEMATICS
AND PHYSICS WHO WILL GRADUATE WITHIN THE NEXT 8 MONTHS

It offers

A Career in Aeronautical Research
Permanent Activity
Freedom from Monotony

YOU ARE INVITED TO ARRANGE WITH YOUR PLACEMENT DIRECTOR
FOR A PERSONAL INTERVIEW WITH OUR REPRESENTATIVE ON
1944, AT _____ M. IN _____

AMES AERONAUTICAL
LABORATORY
MOFFETT FIELD, CAL.

LANGLEY MEMORIAL
AERONAUTICAL LABORATORY
HAMPTON, VA.

AIRCRAFT ENGINE
RESEARCH LABORATORY
CLEVELAND, O.

Research employment opportunities

Who is NASA Glenn Today?



Lewis Field (Cleveland)

- 350 acres
- 1561 civil servants and 1476 contractors



Plum Brook Station (Sandusky)

- 6500 acres
- 18 civil servants and 89 contractors

GRC Aero | Highly Refined Present



GRC Aero | NASA X-Planes and Technologies to Enable New Aviation Horizons—An Exciting Future



GRC Aero | Future Subsonic Flight—Electrified



GRC Aero | Future Supersonic Flight

Quiet Supersonic Transport (QueSST)—Low Boom Supersonic

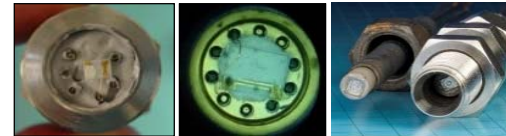


GRC Aero | Future Hypersonic Flight

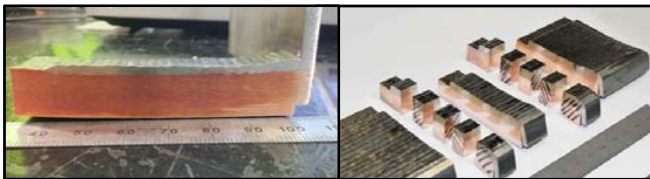
Research, Tools and Technologies for Affordable, Reusable, Air-Breathing Hypersonic Systems.



Systems Analysis



Advanced Sensor Research and Development



Materials Research



Propulsion Research

Ohio Aero Contributions

Aerospace Ecosystem Within Ohio

*Ohio is ranked the No. 1
U.S. supplier state to...*

BOEING



AIRBUS



Source: JobsOhio

Ohio's Aerospace and Aviation Industry Quick Facts



41,000 full-time employees statewide

591 businesses statewide

\$7.37 billion gross state product (GSP)

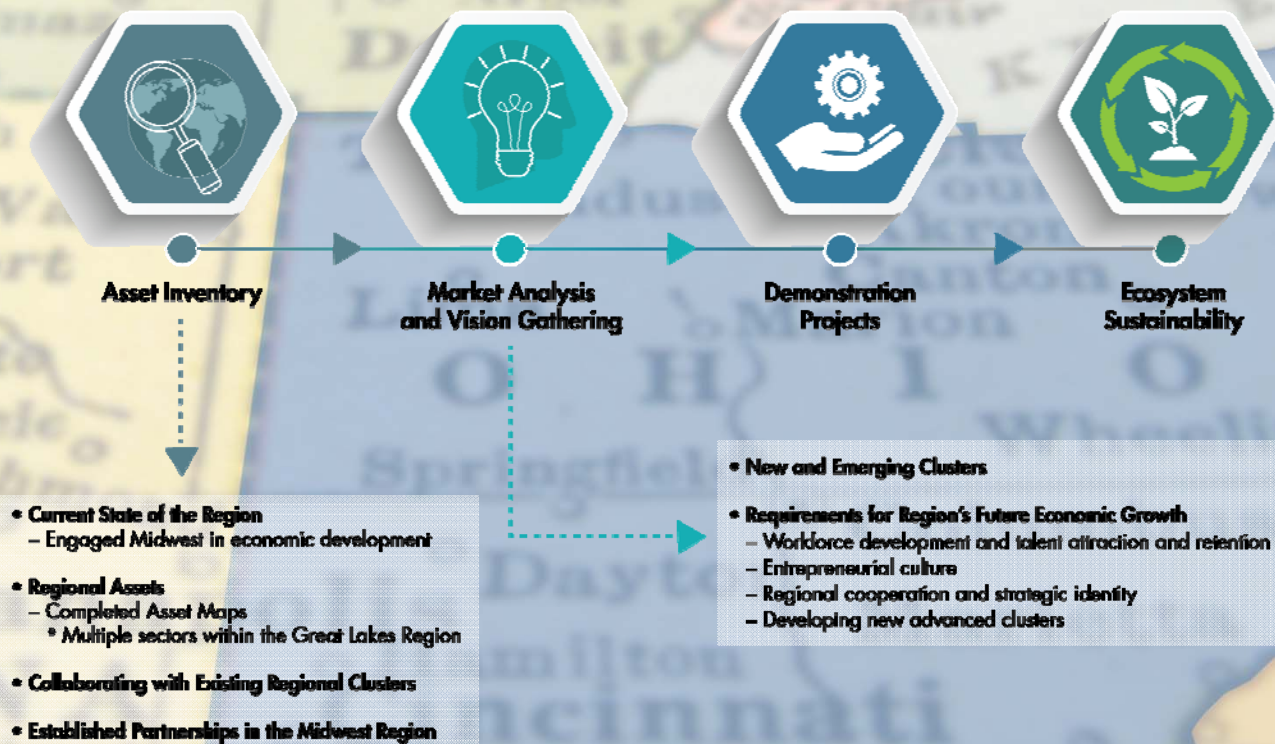
\$109,775 average wage per worker



Source: Ohio Aerospace and Aviation Technology Committee (OAATC)

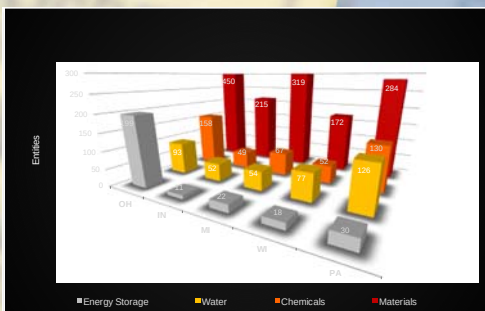
Regional Economic Development

RED Maturity Model



Regional Economic Development

USING SPACE FOR AMERICA



Regional Economic Development

GRC Technology Transfer Activity FY 2016



141
NTRS* New
Technology Reports



22
U.S. Patent
Applications Filed*
64
U.S. Provisional
Patent Applications*
24
U.S. Patent
Issued*
210
Active Patents*
(issued and pending)



162
Technologies
published in Tech
Opportunity Sheets*
40
Quicklaunch
Patents Available*
Tech Brief Webinars
Outreach event
Social media posts



209
New Software
Usage Agreements*
23
New Licenses*

*CMT 09/30 Report
**IAWGTT Report

Regional Economic Development

ADOPT – A – CITY | Greater Cleveland Area

A collaboration between

- NASA Glenn Research Center
- Cuyahoga County
- City of Cleveland
- Manufacturing Advocacy and Growth

Network (MAGNET)

This program helps manufacturers who are facing challenges with their products and processes.

Companies receive the support of NASA Glenn Experts, as well as access to low-interest loans provided by the City of Cleveland and Cuyahoga County.



Regional Economic Development

TECHNOLOGY ROADSHOW

Leveraging NASA's SMEs to Solve
Technological Challenges in the MIDWEST REGION

NASA GRC's Technology Roadshows provide unique access to the expertise of NASA researchers and technologists. Companies receive the dedicated time of NASA's world-recognized subject matter experts committed to helping them solve complex technological challenges related to a specific product or within their manufacturing operations.

- 8-hours of Subject Matter Expert Consultation Services
- Per Company
- 29 Companies Served
- Hosted 5 Roadshow Events Since 2014

Regional Economic Development

WATER INITIATIVE PLAN

Leveraging NASA's SMEs to Solve
Technological Challenges NATIONWIDE

- The agency water initiative combines all NASA center capabilities and technologies to explore collaborations with industry and academia
- Goals - To accelerate innovation and water-based economic development through a water innovation technology accelerator
- 20% of the World's fresh water is located in the Great Lakes. The Great Lakes Commission reports, 8 US states and 2 Canadian provinces within the Great Lakes Region, is the world's 5th largest economy and is a significant job creation opportunity.

Regional Industries – Extraterrestrial Markets

Autonomous
Excavation Equipment

Smart Power Infrastructure

Liquefaction, Transfer, and
Storage of Cryogenic Fluids

Using Raw Materials
for Construction

Robotics and
Artificial Intelligence

Energy-Efficient
Materials Processing



*"We're not up there in space just to joyride, We're up there to
Do things that are of value to everybody right here on Earth."*

—John Glenn