

A light gray map of the state of Ohio is centered in the background. Several white circles of varying sizes are scattered across the map, representing targeted areas for industry development.

Ohio Targeted Industry Development Aerospace Recommendations

Prepared by

The Ohio Aerospace & Business Aviation Advisory Council in
collaboration with the Ohio Department of Development

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Ohio Aerospace & Business Aviation Advisory Council: Purpose & Scope

- Formed to develop a strategy to strengthen and grow Ohio's Aerospace & Business Aviation industry – including related federal, academic, non-profit installations and assets. (Includes: Aerospace, Aviation & Defense)
- Challenge was to unite key Aerospace & Business Aviation industry thought leaders to define development initiatives that will drive Ohio's economy and increase Ohio's global competitiveness.
 - 74 of Ohio's top Aerospace industry thought leaders participated in the development of these recommendations
 - Extensive research, data gathering and competitive benchmarking was completed in support of this effort
 - All industry segments were represented

Ohio Aerospace & Business Aviation Advisory Council: Purpose & Scope

- Although historically Ohio has received recognition as a player in the aerospace industry, the prevalence of the aviation and aerospace industries in Ohio may not have been appreciated to their full impact. The depth of Ohio's strength in the aerospace and aviation sectors was again reviewed by Aerospace and Business Aviation Advisory Council. The following summaries the industries scope:

Aerospace comprises the atmosphere of earth surrounding space. Typically the term is used to refer to the industry that researches, designs, manufacturers, operates and maintains vehicles moving through air and space.

Aviation is the science and technology of flight through the air and applies to the mode of travel provided by aircraft as carriers for passengers and cargo. Aviation is broadly groups into three categories:

General Aviation – all aviation not included in air-transportation and military aviation further delineated as Business Aviation (i.e., NetJets, corporate flight departments, or supporting another business and recreational aviation – owner-flown aircraft.

Air-Transport Aviation – primarily the operation of commercial airlines essentially as a public utility for the movement of persons and commodities and

Military Aviation – all forms of aviation in military activities.

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Ohio Aerospace, Aviation, & Defense (AA&D)

Employment

The Ohio Aerospace, Aviation, & Defense (AA&D) industry is one of Ohio's largest industries, **directly employing 100,133 full-time workers**

Direct Aerospace & Defense Manufacturing, Final Demand Sector	38,820
Department of Defense Military & Civilian Employees	28,915
NASA Glenn	1,672
NASA Glenn & Department of Defense Contractors	8,569
Air Transportation & Related Services, including Government	22,157
Total Direct Ohio Aerospace, Aviation & Defense	100,133

This total does not include ten's of thousands of additional Ohio jobs:

- Jobs in Ohio's 1,200+ supplier companies serving multiple industries
- R&D jobs in Ohio's university and non-profit sectors
- Business aviation employees of non-aviation companies
- Indirect jobs created in other industry sectors as a result of demand and revenue generated in Ohio's AA&D industry

Employment

At **100,133 direct full-time workers**, Aerospace, Aviation, & Defense (AA&D) is the **second largest** of the Ohio's targeted technology industries:

Ohio Strategic Plan Targeted Technology Industries	
Motor Vehicle & Parts Manufacturing	103,884
Ohio Aerospace, Aviation, & Defense Employment	100,133
Agriculture & Food Processing	97,726
Polymers & Advanced Materials	81,553
Advanced Energy & Environment	60,361
Biosciences	55,465
Instruments, Controls & Electronics	24,091

High-Paying, Productive, & Impactful Industry

- Wages paid to Ohio Aerospace, Aviation, & Defense (AA&D) manufacturing workers were **65 percent higher than the average wage paid to all manufacturing workers** across Ohio – \$76,600 vs. \$46,300
- Ohio's AA&D manufacturing ranks **1st among the 12 comparable states in manufacturing value-added** at \$199,500 per employee, nearly double the national average of \$101,300
- Almost all **Ohio AA&D jobs are export**, bringing revenues in from outside the State resulting in **extremely high positive impact on the Ohio economy**
- The **Ohio AA&D industry is both a major developer of advanced technology** as well as an early adopter of advanced technologies from other technology sectors
 - **Ohio AA&D industry accelerates the maturation and commercialization of new technology and its transfer into other sectors of the Ohio economy**

Serving a Rapidly Growing Global Demand for Aircraft Products

- Global aircraft demand is projected to increase at an annual rate that is 19% higher than that of the US economy over the next decade (3.44% vs. 2.9% Congressional Budget Office Forecast)
- Segments of the industry are expected to increase at rates 150% to 300% times that of the national economy

	2010*	2019*	Compound Annual Growth Rate
All Aircraft	\$118	\$160	3.44%
Commercial Jets	\$58	\$85	4.34%
Business Jets	\$15.5	\$24	4.98%
UAVs	\$4.9	\$11.5	8.90%
Maintenance, Repair, & Overhaul	\$42.3	\$65.3	4.40%

* \$ = Billions

Uniquely Positioned for Global Industry Growth in Aerospace Propulsion

Ohio is the Undisputed Leader in Aircraft Engine Manufacturing & Development

Aircraft engine and engine parts manufacturing (NAIC 336412)	2008 Employment	% Total US Industry Employment
Ohio	11,747	17%
Connecticut	8,453	12%
Indiana	5,962	8%
Massachusetts	3,267	5%
California	3,191	5%
Michigan	3,166	5%

30% of US aircraft engine manufacturing is located in Ohio and the adjacent states of Indiana and Michigan

WPAFB AFRL's Propulsion Directorate is the Nation's premier source of advanced propulsion technologies for the nation's military services

Every commercial and/or military aircraft engine currently in service contains NASA Glenn developed/derived technology

All of the above is complemented by the technical expertise and test facilities of the Ohio university system

Uniquely Positioned for Global Industry Growth in Military Aeronautics

Ohio is the Undisputed Leader in Military Aeronautics Acquisition and R&D

- Aeronautical Systems Center at WPAFB designs, develops, and delivers **dominant aerospace weapon systems** and capabilities for US Air Force, other US military, allied, and coalition-partner war fighters (**Budget : \$23 billion**)
- AFRL is the Air Force's only organization wholly dedicated to leading the **discovery, development, and integration of war fighting technologies** for our air, space and cyberspace forces (**Budget: \$3.2 billion**)
- With headquarters located at WPAFB, the Air Force Materials Command (AFMC), in civilian terms, is a “Fortune 35” company **directly executing 30-40% of the Air Force’s budget and responsible for more than 100 major acquisition programs**
 - AFMC supports more than 6,400 aircraft and 29,500 engines, while at the same time operating 13 host bases and running Air Force's medical and test pilot schools

Uniquely Positioned for Global Industry Growth as the Foremost US Supplier to the World's OEMs

Ohio is the Undisputed Leading Supplier to the World's Major Aerospace OEMs

- Aviation & Defense Original Equipment Manufacturers (OEMs)
 - #1 US supplier state to Airbus (\$4.3B)
 - #2 US supplier state to Boeing (\$4.8B)
 - #3 US supplier state to Northrop Grumman
(Lockheed building presence in Ohio)
- Moreover, these statistics do not take into account:
 - Jobs in Ohio's 1,200+ supplier companies serving multiple industries
 - Indirect jobs created in other industry sectors as a result of demand and income generated in Ohio's Aerospace, Aviation, & Defense (AA&D) industry

Uniquely Positioned for Global Industry Growth in One-of-a-Kind Test Facilities & World Class R&D

- **NASA Glenn Research Center (R&D/Testing):** World's largest space systems environmental testing capability; Nation's only thermal vacuum upper stage rocket test chamber; Nation's only large scale icing research tunnel; Space power; Space Communications; Aeropropulsion; Electric propulsion, Broad suite of aeronautics test facilities (wind tunnels, engine test stands, and R&D labs), Plum Brook Station and other R&D capabilities; major role in development of NextGen* Air Traffic Control System
- **Advanced Material Technology:** AFRL Materials Directorate, world-class university research capabilities, NASA Glenn
- **Advanced Sensors:** AFRL sensor directorate, university research capabilities, NASA Glenn
- **Aerospace Medicine & Human Performance:** Consolidation of USAF School of Aerospace Medicine, Human Effectiveness Directorate, Naval Aerospace Medical Research to create the Air Force's Center of Excellence for Human Performance (1,200 new government positions); NASA Glenn, Cleveland Clinic, Case Western and University Hospitals of Cleveland are engaged in space-related human research and development activities
- **Aerospace Propulsion:** Extensive wind tunnel, hypersonic propulsion chamber, and propeller system testing facilities

**NextGen represents Next Generation Air Transportation System, the name given to a new National Airspace System due for implementation across the United States in stages between 2012 and 2025. The FAA will lead this wide-ranging transformation.*

Ohio's Rich Aerospace Heritage: Home of the Wright Brothers and the Birthplace of Aviation

- Ohio boasts numerous aerospace pioneers – Orville and Wilbur Wright, “Hap” Arnold, Eddie Rickenbacker, Jimmy Doolittle, Bennie Schriever, Hans Von Ohain, John Glenn, Neil Armstrong, Jim Lovell, Judith Resnick, etc...
- Ohio is the birthplace of powered aviation, high bypass turbine engine, ion thrusters, hydrogen rockets, etc...
- Ohio is the Nation's second top astronaut producing state – 24 Ohio Astronauts and growing!
- Southwest Ohio boasts the National Aviation Heritage Area which Congress established in November 2004 in recognition of the region's leadership in America's aviation history. Historic and current significant contributors to aerospace include: Wright Cycle Company; Huffman Prairie Flying Field; Paul Laurence Dunbar State Memorial, National Museum of the US Air Force and the National Aviation Hall of Fame; WACO Field; Armstrong Air & Space Museum; International Women's Air & Space Museum; etc...

Ohio's "Right to Win"/Ohio Strengths

- Ohio has no other industrial sector in which its federal facilities, industry, and academic institutions play as dominant a role in US industrial production, R&D, and policy leadership role as in Ohio Aerospace, Aviation, & Defense (AA&D)
 - Ohio is the undisputed leader in Aircraft Engine Manufacturing & Development
 - Ohio is the undisputed leader in US Military Aviation Research & Development
 - Ohio is the undisputed leading supplier to the World's major Aerospace, Aviation, & Defense OEMs
 - Ohio offers unique test facilities and world-class R&D in emerging areas: Materials, Sensors, Aerospace Propulsion, Aero Medicine, and Human Effectiveness
 - Ohio is the "Birthplace of Aviation" (Rich Aviation Heritage)
- Ohio has no similar industrial production, R&D, and policy leadership in Automotive Manufacturing, Agriculture & Food Processing, Biosciences, Energy, Advanced Materials or Sensors industries

Ohio's "Right to Win"/Ohio Strengths

Driving Ohio's economy and increasing Ohio's global competitiveness

- Ohio needs to embrace the Aerospace, Aviation & Defense Industry as one of its top opportunities to create jobs and income for the benefit of Ohio's citizens
- Ohio must:
 - Protect and strengthen its Aerospace, Aviation, & Defense (AA&D) industry assets against intense competition from other states and nations
 - Aggressively leverage and exploit every opportunity to expand, extend, and grow its AA&D industry assets to create new jobs and income for Ohioans



Ohio Aerospace Strategies for Vigilance & Aggressiveness

Demands Intense Public Advocacy in Support of the Industry

- Future success requires that a permanent, systematic **Executive Branch Oversight & Legislative Advocacy** program be established to influence and support federal expenditure and policy decisions impacting the Ohio AA&D industry since these institutions are key drivers in the state economy
- Ongoing, structured, and systematic effort needs an organized focus on the Executive Branch, “key” agency decision makers, the Ohio Legislative Delegation, Chairpersons of critical Legislative Committees, and other influential legislators
 - AA&D is more significantly impacted by federal expenditures and policy decisions than other industries
 - Different regions are impacted by different budgets; therefore, Ohio’s efforts to influence federal expenditure and policy decisions (while successful in the case of the BRAC) are often fragmented across the state and ad hoc in response to immediate policy or budgetary concerns

Demands Intense Focus on the Competitiveness of Ohio Tax, Incentive, & Regulatory Issues

Ohio's incentive and investment policies need to be aligned to support the Ohio Aerospace, Aviation, & Defense (AA&D) industry strategy post a fact-finding study to clarify competitive implications

- Third Frontier investment policies should recognize the important role of the Aerospace industry and funding increased to address Ohio's unique opportunities in AA&D industry
 - RFPs should be broad in scope
- Investment incentives should be evaluated to ensure that they remain competitive
- In order to support testing at Ohio facilities, targeted new incentives should be developed to encourage both in-state and out-of-state use and grow the industrial complex around all federal organizations with focus on NASA Glenn and WPAFB
 - Incent “In Ohio” tech transfer in AFRL/NASA GRC and university R&D expertise segments, e.g., sensors, propulsion, platforms, human factors, etc. (model available)

Demands Intense Public Policy Focus on Labor Management Relations

Ohio needs to support measures to maintain positive labor-management relations to ensure its attractiveness for investment by the Aerospace, Aviation, & Defense (AA&D) industry

- 21% of AA&D Industry employees belong to unions (vs.13% for the remainder of US industry)
- OEMs have experienced major work stoppages in other states in recent years:

		Worker Days	Idle Days
2009	Bell Helicopter (Texas)	2,500	67,500
2008	Boeing (WA, OR, KS)	27,000	1,053,600
2007	Northrop Grumman (MS)	6,500	130,000
2006	Sikorsky (CT)	3,600	106,000
	Bombardier (AZ)	1,100	16,500
	Raytheon (AZ)	1,900	70,300

- While Ohio has experienced no major work stoppages impacting the AA&D industry in recent times, ODOT needs to continue its support measures to maintain positive labor-management relations such as the Ohio Labor Management Cooperation Program

Demands Intense Focus on Workforce Development & Education Issues

Ohio needs to be aggressive in its support for human capital, workforce development, & education required to meet the needs of the Aerospace, Aviation, & Defense (AA&D) industry

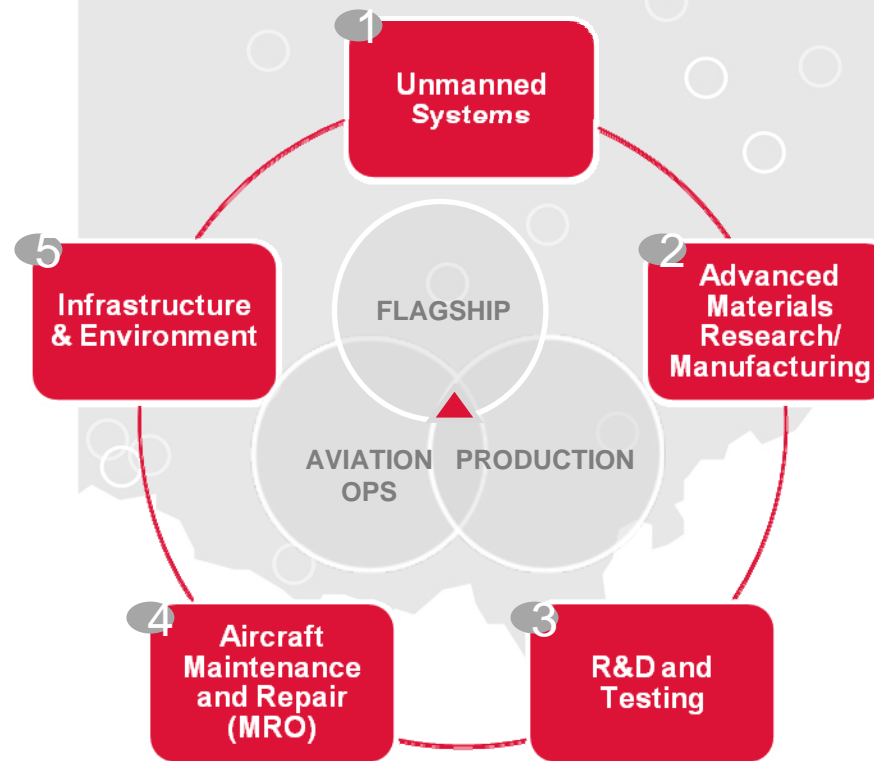
- Success depends upon the continued availability of highly qualified and skilled engineers, technicians, and production workers
 - Example: Boeing has found an insufficient number of aerospace engineering graduates within the State of Washington
- 50% or more of the current AA&D industry workforce is expected to retire in the coming decade (aging workforce)
- Make aerospace an employment industry of choice for Ohio students



Recommended Areas of Focus & Catalytic Initiatives

Five Core Areas

- Recommending five core areas of focus based on synergistic opportunity areas (there are others for future consideration)
- Supported with catalytic, growth-acceleration initiatives



Unmanned Systems (US) – Air, Ground, and Other

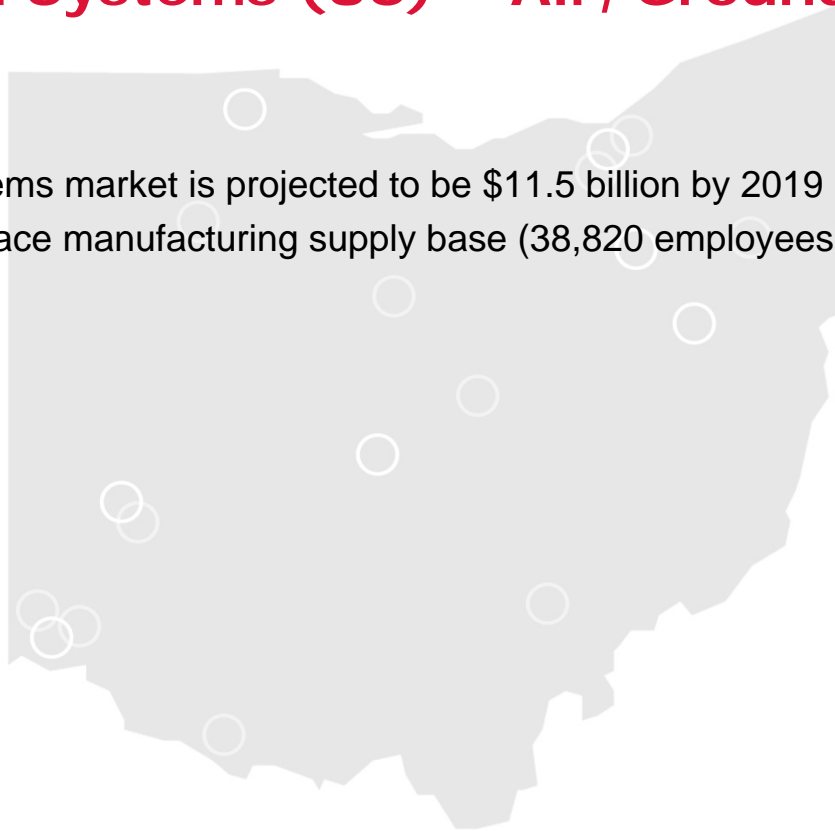
Ohio's Right To Win/Ohio Strengths

- Ohio has assets and relationships that can assist DoD, FAA, and NASA with development of policy to integrate US technology into national and international airspace
- Ohio has two federal labs with relevant assets and ongoing research in Unmanned Systems
 - Unmanned System Program Office is located at WPAFB (huge competitive advantage)
 - AFRL directorates represent the leading engineering and manufacturing work in sensors, propulsion, etc
- NASA Glenn offers world-unique capabilities in flight and ground testing, communication technologies, computational modeling and wind tunnel testing assets
- Ohio's strong Manufacturing Extension Partnership (MEP) program in support of Ohio manufacturing/educating manufacturers in Unmanned Systems
- Current research programs at Ohio universities in NextGen, US platforms, sensors, system engineering, etc.

Unmanned Systems (US) – Air, Ground, and Other

Size of the Prize

- The Unmanned Systems market is projected to be \$11.5 billion by 2019 (from \$4.9 billion in 2010)
- Ohio's strong Aerospace manufacturing supply base (38,820 employees) seeking ways to stay globally competitive



Unmanned Systems (US) – Air, Ground, and Other

Objective

Expand Ohio's research and development leadership (in both commercial and defense applications) to become a recognized center for US development and testing

Opportunities

- Strengthen Ohio's research and development (military and university assets), Unmanned Systems assets, and industrial base (private sector)
- Prioritize Unmanned Systems supply chain/OEM attraction efforts

Primary Initiatives

- Collaborate with FAA to secure controlled airspace for testing for Unmanned Systems and the development of NextGen Air Traffic Management System, work with NASA GRC and FAA on command and control communications (ground-to-vehicle, vehicle-to-vehicle, and satellite-to-vehicle)
- Focus investment on the creation of a Unmanned Systems Cluster/Center of Excellence that fosters the development, integration, testing, and commercialization of sensor, communication, and power systems
- Secure investment in US R&D from federal, DoD, private, and state-funded programs (e.g., Third Frontier)

Unmanned Systems (US) – Air, Ground, and Other

Other Potential Initiatives

- Increase outreach/delegation efforts to OEMs and Unmanned Systems programs (includes congressional support to Unmanned Systems caucus)
- Evaluate the competitiveness of Ohio's Unmanned Systems attraction package and incentives
- Encourage one or more Ohio universities to offer Unmanned Systems engineering courses
- Capitalize on regional investments in modeling/simulation/testing infrastructure including collaboration with Canada

Advanced Materials Research & Manufacturing

Ohio's Right To Win/Ohio Strengths

- AFRL Manufacturing Materials Directorate controls Air Force materials development globally
- WPAFB leads the world in transferring new military technologies to the private sector through commercial licensing
- 1,000 aerospace and defense firms using advanced materials and employing over 100,000 Ohioans
- NASA Glenn offers a world class R&D capability (staff and facilities) in aerospace materials (including composites), structures, and coatings.
- Home to multiple thought-leaders: National Composite Center (Dayton), UDRI and Battelle
- Largest producer of composites material in USA (*Site Selection* magazine; Sept 2010 issue)
- Many Universities in Ohio offer material science programs (gives Ohio strong research and talent base)
 - Wright State, AFIT, University of Dayton, University of Toledo, Case Western, The Ohio State University, Kent State, Bowling Green State University, & Cleveland State University
- The University of Dayton is #2 in the nation in regards to materials research funding
- The State has designated six centers of excellence in the areas of advanced materials and sensors
 - University of Akron, Case Western University, University of Cincinnati, Kent State University, The Ohio State University, and Youngstown State University

Advanced Materials Research & Manufacturing

Size of the Prize

- Advanced materials provide new capabilities and advances in aerospace propulsion, aircraft structures, avionics, and aerospace power management
- To maintain and expand position in aerospace propulsion, military air craft and aircraft component supply, Ohio must maintain and extend its leadership in advanced materials
- Demand for advanced aerospace materials is growing
 - Purchases of composite material for the global aerospace expected to grow at 10.6% per year and reach \$5.1 billion in 2018
 - Industry projections for titanium indicate a 40 percent increase in demand by 2015 - other Ohio industries benefit from the breadth of aerospace materials research, e.g. titanium use in BioMed, composites in wind turbines, etc

Advanced Materials Research & Manufacturing

Objective

Leverage and advance Ohio's dominant position in Advanced Materials Research & Development

Opportunities

- Identify and promote funding for advanced materials research entities (e.g., AFRL, NASA GRC, universities, private industries, etc.)
- Incent and promote the transition of scalable advanced materials R&D from the federal labs, universities, and other research organizations to Ohio's private industry/manufacturers and supply chain
- Focus attraction efforts on expanding Ohio's material supply chain

Primary Initiatives

- Increase Third Frontier funding for advanced aerospace material R&D and manufacturing process technologies for industry (Current Third Frontier advanced material awards total \$25.861 million)
- Create an Ohio match to the Federal SBIR program to better leverage SBIR Phase 2 & 3 funding to connect with small companies
- Encourage an Aerospace Council outreach network/consortium of Ohio's material development leaders

Advanced Materials Research & Manufacturing

Other Potential Initiatives

- Establish a small-large company mentor protégé program of aerospace material companies focused on “scaling-up” advanced materials to production
- Further expand the activities in existing designated industry clusters by promoting new investment in these areas
 - Includes: 79-Seventy, Dayton Aerospace Hub, Youngstown Entrepreneurial Hub of Advanced Materials Commercialization and Software Development

Research & Development and Testing

Ohio's Right To Win/Ohio Strengths

- WPAFB is the headquarters of AFRL with five of the ten directorates (Air Vehicles, 711th Human Performance Wing, Materials and Manufacturing, Propulsion, and Sensors) and houses unique wind tunnels, propulsion, materials, and human subject research testing capabilities
- NASA Glenn is home to some of the most unique testing facilities in the world – used by both the military and commercial/aviation companies (Icing Research Tunnel, Space Power Facility, Spacecraft Propulsion Research Facility, and numerous wind tunnels, engine /engine component test cells, vacuum chambers, and small R&D laboratories)
- NASA Glenn's Plum Brook Station features the world's largest thermal vacuum chamber – critical for future large space systems testing
- Ohio is a leader in bio fuel advancements
- Third Frontier funding for R&D projects has been identified as a significant competitive advantage for the state in attraction efforts with over \$100 million invested in areas that will benefit Ohio Aerospace
- Ohio offers a world-class university/community college R&D network and STEM education program (The Ohio State University, University of Cincinnati, University of Dayton, University of Toledo, Ohio University, etc.)
- NASA Glenn has a significant core competency in aerospace communications (critical for NextGen and space exploration missions) and in aerospace power (dual use potential for terrestrial power applications)

Research & Development and Testing

Size of the Prize

- With over \$9 billion annually in R&D, performance and management of R&D and testing is a major Ohio industry in and of itself
 - AFRL \$3.6 billion, NASA \$0.7 billion, Battelle \$4 billion, Ohio university system \$1.8 billion
- R&D and testing of advanced materials and manufacturing provides the technological underpinnings of new capabilities and advances in aerospace propulsion, aircraft structures, avionics, and aerospace power management
- Maintaining and expanding R&D and testing is critical to the retention and further development of NASA Glenn and Wright Patterson Air Force Base/AFRL
- NASA Glenn's Plum Brook Space Power Facility expansion project is expected to bring significant investment in Ohio

Research & Development and Testing

Objective

Maintain and expand Ohio's position as a world-wide leader of cutting edge, one-of-a-kind R&D and testing capabilities

Opportunities

- Ensure maintenance and expansion of Ohio's federal labs R&D and testing to grow the capabilities
- Market Ohio's unique capabilities to aerospace, business aviation, and testing lab service companies
- Promote access and knowledge transfer between flagship entities (AFRL/NASA Glenn/universities) and Ohio's existing aerospace supply chain

Primary Initiatives

- Attract and incent customers to use Ohio R&D /testing facilities in an overall testing services portfolio
 - Utilize nationally known testing service companies to market what is available (e.g., National Testing Service, Wyle Labs, Dayton T. Brown, etc.)
- Identify and market all of Ohio's R&D and testing capabilities including industry and university assets (leverage OMNI and marketing resources)
- Define and remove barriers to access federal labs and universities by private industry

Research & Development and Testing

Other Potential Initiatives

- Build the business case and business development plan to support construction/funding (with partners) of a 9,000 foot runway at GRC's Plum Brook Station and other testing airspace sites
- Create an Ohio match to the federal SBIR program to better leverage SBIR Phase 2 & 3 funding to connect with small companies
- Create an Ohio version of the FAA CLEEN program (Continuous Lower Energy, Emissions, and Noise) to expand/attract businesses – can be broad and cross-functional
- Coordinate the State's bio and alternative fuels innovation efforts

Aircraft Maintenance Repair & Overhaul (MRO)

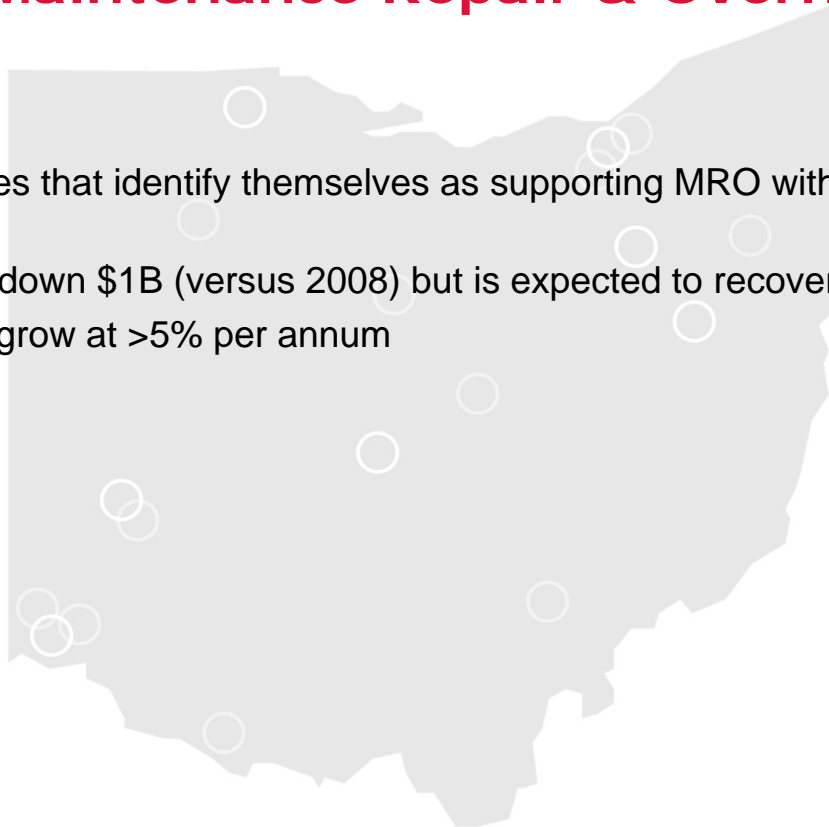
Ohio's Right To Win/Ohio Strengths

- There are 10,386 aircraft registered in Ohio (potential MRO service opportunities)
- Central location – 500 miles to 60% of GA traffic
- Diverse supply chain of resources and services that parallel MRO needs
- Ohio's diverse parts manufacturing and services provides unparalleled manufacturing base
- Aircraft fleets are rapidly aging/the cost of replacement continues to be deferred
- General aviation market is growing - 90% of S&P 500 organizations are non-commercial aviation users

Aircraft Maintenance Repair & Overhaul (MRO)

Size of the Prize

- Ohio has 118 companies that identify themselves as supporting MRO with sales exceeding \$1.7B in 2008
- 2009 MRO spend was down \$1B (versus 2008) but is expected to recover in 2012
- Non-warranty fleet will grow at >5% per annum



Aircraft Maintenance Repair & Overhaul (MRO)

Objective

Leverage Ohio's aerospace supply network to support the expansion of Ohio's Aircraft Maintenance, Repair, and Overhaul (MRO) industry

Opportunities

- Focus attraction efforts on expanding Ohio's MRO supply chain and attracting a major airframe/airline MRO
- Create an MRO network

Primary Initiatives

- Fund an analysis of MRO requirements/gaps by aircraft segment
- Create a task force of public and private representatives to:
 1. Identify MRO broker companies and make the pitch to the MRO brokers
 2. Develop a strategy to look for an existing airframe/airline company to expand in Ohio
- Identify an MRO broker and promote/incent team to push a networked Ohio MRO offering
 - Consider tax or regulation issues that need to be addressed including tax free services, landing zone tax-free services, etc.

Aviation Infrastructure & Environment

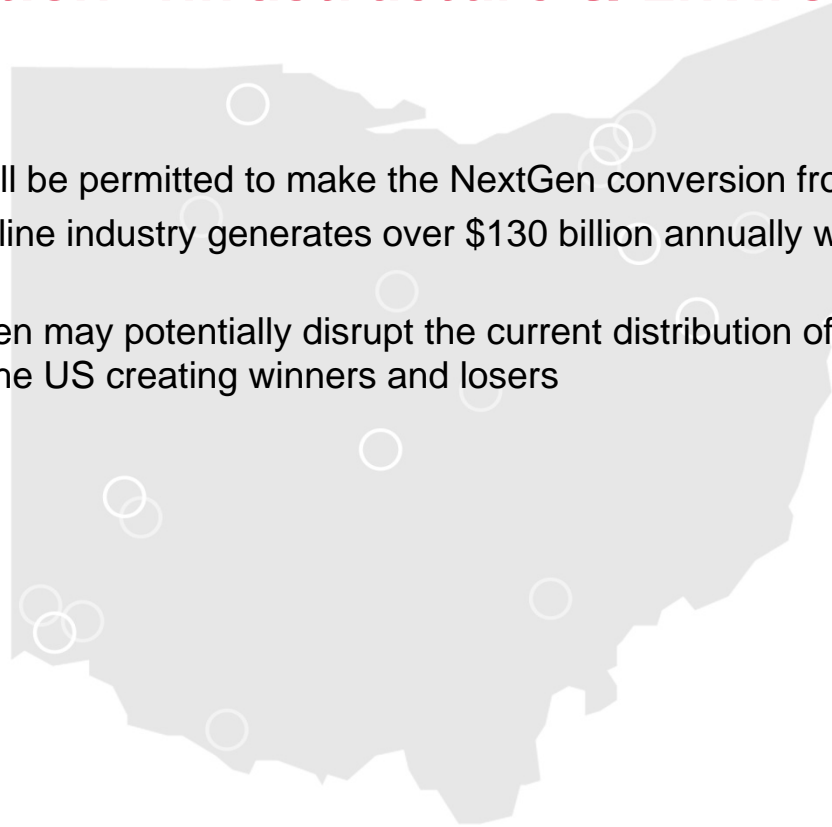
Ohio's Right To Win

- General Aviation contributes \$5.56 billion to the Ohio economy
- Ohio has had five years of record growth for the GA industry
- 90% of the top companies in Ohio have corporate flight departments
- Ohio is home to 60 charter companies -- Ohio-based NetJet and Flight Options are #1 and #2 in the industry
- Ohio has 13 flight schools
 - The Ohio State University, Kent State, Bowling Green, Ohio University, Sinclair, etc.
- Ohio has broad geographic coverage
 - Aviation in four to five metro areas vs. most states only have one
- Ohio airports serve as “first impression” for investment prospects visiting the state

Aviation Infrastructure & Environment

Size of the Prize

- Only select airports will be permitted to make the NextGen conversion from analog to digital
- The US passenger airline industry generates over \$130 billion annually while Air Freight generates \$52 billion
- Deployment of NextGen may potentially disrupt the current distribution of passenger and air cargo business throughout the US creating winners and losers



Aviation Infrastructure & Environment

Objective

Maintain and improve Ohio's aviation infrastructure to meet the global requirements of Ohio companies and citizens needing Aviation transportation services

Opportunity

- Develop efficient airport operations, procedures and logistics (for all segments of aviation) to posture for NextGen advancements

Primary Initiatives

- Create a joint industry/multi-university consortium to support research, education and certification requirements in areas of critical importance to NextGen
- Support the efforts of the existing coalition assembled to create the business plan for the Ohio Center for Business Aviation (The mission is planned to include research, education, and advocacy for the industry)
- Support the **Go OHIO** infrastructure plan that includes:
 - Fund infrastructure improvement as defined in the Go OHIO plan
 - Support extension of the Airport Improvement Plan (AIP)
 - Preserve Ohio airspace and airport facilities (protect from development)
 - Invest in and give political support for Ohio airports with NextGen technology upgrades



Future Considerations

Aerospace Propulsion Strategy

- Ohio is the undisputed leader in Aircraft Engine Manufacturing & Development
- Many of the general recommendations and several of the catalytic initiatives, specifically Advanced Materials Research & Manufacturing and R&D and Testing, will benefit Ohio's aerospace propulsion industry
- The Aerospace Propulsion industry is the “keystone” of Ohio aerospace manufacturing
 - Ohio's prominent aerospace propulsion assets (GE Aviation, AFRL Propulsion Directorate, etc.) are of critical importance to the future of the industry in Ohio
- A more narrowly focused and detailed strategy targeted exclusively to Ohio's Aerospace Propulsion industry should be developed to ensure that Ohio maintains and expands its leadership in Aircraft Engine Manufacturing & Development

Commercial Space

- Prospective contributions by Ohio's NASA Glenn Research Center and the Air Force Research Lab may include research, development, test and evaluation of a heavy lift vehicle that is human rated; upper stage segments including propulsion, power, and communications systems, composite structures; and re-usable rocket engine systems
- Many commercial space companies are contacting Ohio and other states seeking public investment support and locations for operations, as well as space ports
- Requirements cited by these companies (extremely low population density locations, no-cost facilities, and very high risk early-stage capital) often do not readily align with Ohio capabilities
- Ohio does have unique test facilities, R&D assets, and manufacturing capability that could serve this growing industry well

Ohio needs to develop an investment and assistance policy that strategically aligns Ohio's capabilities with the needs of this emerging industry

Emerging Areas of Specialization

Several areas of emerging excellence and opportunities were identified that need to be monitored and supported as part of the State's overall technology and emerging industry portfolio:

Aerospace Power Management: Higher payload, more effective propulsion, and lighter aircraft requirements compel commercial and defense systems to find ways to manage power output and consumption. A notable Ohio investment is GE Aviation's recent development of an Electrical Power Integrated Systems Research & Development Center.

Aerospace Sensors Strategy: Continued advances in aerospace sensors are of significant interest for defense and homeland security applications. By virtue of AFRL's Sensor Directorate and NASA Glenn, Ohio leads the nation in sensors research and application for defense and space applications.

Aerospace Human Effectiveness Strategy: Ohio-based 711th Human Performance Wing at WPAFB is a unique combination of three units: the Human Effectiveness Directorate, the USAF School of Aerospace Medicine, and the Human Performance Integration Directorate. The synergies of combining the ideas, resources, and technologies of these units position Ohio as a world leader in the study and advancement of human performance for aerospace.

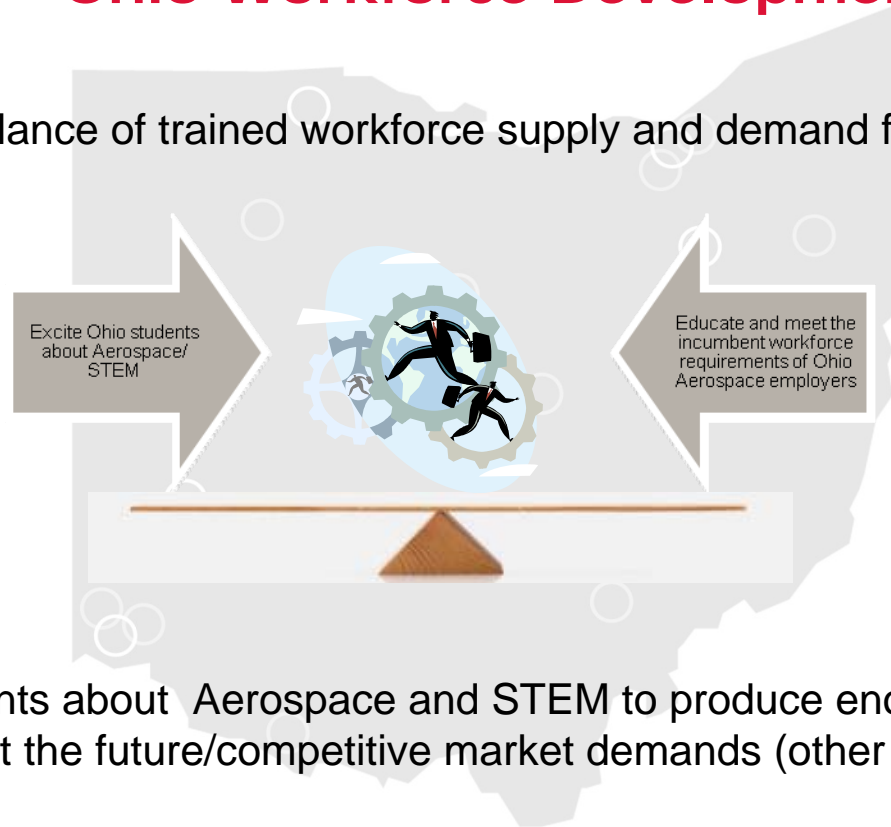


Ohio Workforce Development

Ohio Workforce Development

Objective

Maintain Ohio's balance of trained workforce supply and demand for AA&D



Opportunities

- Excite Ohio students about Aerospace and STEM to produce enough engineers and technicians to meet the future/competitive market demands (other states now recruiting from Ohio)
- Serve the needs of Ohio employers through continued support of incumbent worker training of existing Ohio companies (making a commitment to making/keeping them globally competitive)

Workforce Education & Development Recommendation: Excite Students about Ohio Aerospace (& Employers)

Initiatives

- Create internships
 - Engage aerospace employers to promote internship offerings by providing technical support to build partnerships with educational institutions that provide students with documented academic experience
 - Explore incentives for aerospace employers to create internship opportunities
- Leverage existing STEM educational assets
 - Recognize the extensive STEM education that is being done across Ohio
 - Track STEM graduates at the post-secondary level to monitor and promote success
 - Promote best practices in STEM education
 - Attract K-12 students to STEM by involving them in “industry days” and industry-sponsored events that can excite them about the aerospace and business aviation industries

Workforce Education & Development Recommendation: Serve the Needs of Ohio Aerospace Employers

Initiatives

- Survey and document employer demand to identify incumbent worker needs
 - Identify relevant Aerospace industry clusters and quantify occupational demand within the following four areas of concentration: Aviation, Manufacturing, Aerospace and R&D
 - Vet demand data with employers in the industry clusters and make adjustments to staffing patterns and ensure incumbent worker needs are met
- Align curricula and programs with market needs
 - Based on employer demand, analyze current aerospace-related educational programs and identify curricula gaps
 - Invest in new curriculum, collaboration between educational institutions, or alternative course content providers to ensure education and training is available anywhere in the state to meet employer demands
- Identify and elevate a funded program and mechanisms to reimburse industry for incumbent training/training workers

Workforce Education & Development Recommendation: Serve the Needs of Ohio Aerospace Employers

Initiatives

- Retain graduates and retirees in Ohio's workforce
 - Promote the state's graduates to Ohio companies looking for talented, high-skilled individuals (includes veterans with relevant Aerospace experience)
 - Develop strategies to engage retirement-eligible workers and retirees to keep them connected to the workforce
- Share the story of Ohio's aerospace workforce
 - Leverage industry veterans to speak on behalf of the state workforce and interests
 - Catalog successful aerospace and business aviation workforce projects and expert resources that will illustrate the scope of existing aerospace and aviation industry-specific state programs
 - Raise profile and increase resources to current workforce delivery systems
 - Recruit companies to Ohio that are seeking a skilled aerospace workforce
 - Better market university and tech programs to the Aerospace industry to satisfy both in state and national workforce demands



Marketing Considerations & Initiatives

Marketing Focus

Focus: Tell Ohio's Aerospace Story

- Define relevant Ohio Aerospace target audiences
- Develop a compelling Ohio Aerospace positioning that articulates a relevant and differentiated basis for choosing to expand and/or retain business in Ohio
- Align regional, state, and industry marketing efforts
- Develop a unifying visual identity that communicates Ohio's core branding and Ohio's Aerospace strengths while being relevant and inspirational for current Ohio Aerospace businesses

Multi-Layer Target with Focused Message



Ohio Aerospace Target Audiences

Key Political & Executive Stakeholders

Educate, inspire, and engage to make Ohio Aerospace a key priority for funding and resources

State Leadership: Governor's Office
(Request support in efforts to keep federal institutions protected/funded)

State Leadership: Executive & Legislative
(Request support in efforts to keep federal institutions protected/funded)

Federal Leadership: Executive & Legislative (Request: Executive and legislative support in efforts to keep federal institutions protected/funded)

Key Aerospace & Industrial "Players"/Support Organizations:
Representatives of major aerospace and aviation industry players

Investment Targets

Prime Prospects

Reduce barriers and increase investment in Ohio Aerospace and Aviation

Retention Targets: C-level executives of aerospace and aviation companies (with focus on five new segments and Third Frontier recipients)

Expansion Targets: C-level executives of aerospace and aviation companies (with focus on Ohio's five Aerospace expansion segments and Third Frontier recipients)

Short-term (<12 Months) Attraction Targets: C-level executives in companies evaluating/considering expansion to Ohio

Long-term (>12 Months) Attraction Targets: Potential relocation or satellite companies that benefit from other Ohio companies (tend to be smaller companies)

Aerospace & Aviation Community World-wide

Educate and involve on Ohio Aerospace leadership and innovation

Thought-leader Aerospace Companies:
Large OEMs/Primes/Tier I-II with industry "influence"

Aerospace Researchers, Universities, and Technology Leaders: Thought-leaders in key in Ohio's five Aerospace expansion segments

Aerospace Image Driver Enterprises: AIA, AIAA, Select Trade publications that can broadly build Ohio's Aerospace perception

Investment Firms/Groups:
Executives/authorizers in Aerospace industry friendly venture capital groups

Ohio Aerospace Message Track

Topic/Story Line (Benefit)	Communication Objective (The target audience should be able to ...)	Reasons to Believe (Examples, Proof Points, Data)
Ohio empowers companies and individuals to make a difference without having to sacrifice business or personal success.	Understand Ohio's Promise – Ohio offers balance without compromise. An enriching future in both business and life is equally and readily attainable. Ultimately, Ohio is the "State of Perfect Balance."	<ul style="list-style-type: none"> • Low cost, low-stress living environment • Close proximity to customers, supply chain and lifestyle options • Diverse economic sectors • Central location • Large productive labor pool • Support from private industry, educational system and government
Access cutting edge Aerospace R&D/Testing technologies and optimized production capabilities in Ohio	See the benefit in gaining access to Ohio-based research, testing technology and production strengths in aerospace and how gaining access provides the perfect foundation for businesses seeking to locate or expand in our state.	<ul style="list-style-type: none"> • The US Air Force does all of its aeronautics research in Ohio • Ohio's Aerospace supply chain has unmatched breadth and depth • Specific Ohio-based /aerospace aviation resources (WPAFB, GRC) lead the research of aeronautics and aerospace-propulsion.
Maximize marketability with Ohio's central location and proximity to world leaders in aerospace and business aviation	Want to become a part of the collaborative effort among Ohio's flagship investors (GRC, WPAFB, GE, etc.), all of which are working to solve some of the aerospace industry's most challenging innovation needs, while subsequently gaining central access to customers and the world. The combination of a central location, leading companies and their customers will enable your company to more rapidly and profitably get its products to market.	<ul style="list-style-type: none"> • Ohio's flagship investors (GRC; WPAFB; GE, etc.) generate billions in economic impact to Ohio • Ohio is centrally located and Aerospace companies within Ohio are within 100 miles of 2 or more flagship "investors" (GRC; WPAFB; GE, etc.) • Ohio/WPAFB is the purchasing headquarters for the entire USAF and its allies • Ohio offers world-class logistics infrastructure

Ohio Aerospace Message Track

Topic/Story Line (Benefit)	Communication Objective (The target audience should be able to ...)	Reasons to Believe (Examples, Proof Points, Data)
Improve productivity & profitability with Ohio's skilled labor and low-cost supply base	See the value in having access to Ohio's total workforce of 5.9 million, among the largest in the nation, includes additional skilled talent in a labor pool of 800,000 manufacturing workers ready to grow your aerospace and aviation business.	<ul style="list-style-type: none"> • Ohio rates tops in national high quality of life versus low cost of living studies • Ohio has a highly skilled, low-cost supply base for manufacturing complex mechanical parts • Ohio universities have world-class aerospace/aviation training
Minimize innovation risk (balance costs and opportunity) in Ohio, the state of Aerospace Firsts	Understand Ohio's innovative firsts and approach to recruitment and retention of business in the aerospace-business aviation sector means your company can count on a commerce-friendly platform, augmented by support from the Ohio Department of Development and state investments in high-tech ventures. Instead of resting on the strengths of the state's comprehensive industry-specific resources, Ohio actively strives to provide a low-cost, low-risk environment for your company.	<ul style="list-style-type: none"> • Ohio's heritage of innovation "firsts" drives a culture of tech-transfer support <ul style="list-style-type: none"> • First in Aerospace-propulsion • First in Military Aviation • First in Aerospace Supply • Birthplace of Aviation (WB) • The State of Ohio invests over \$100 million dollars annually in R&D projects that will impact the aerospace industry • Recent tax reform designed to reduce business costs

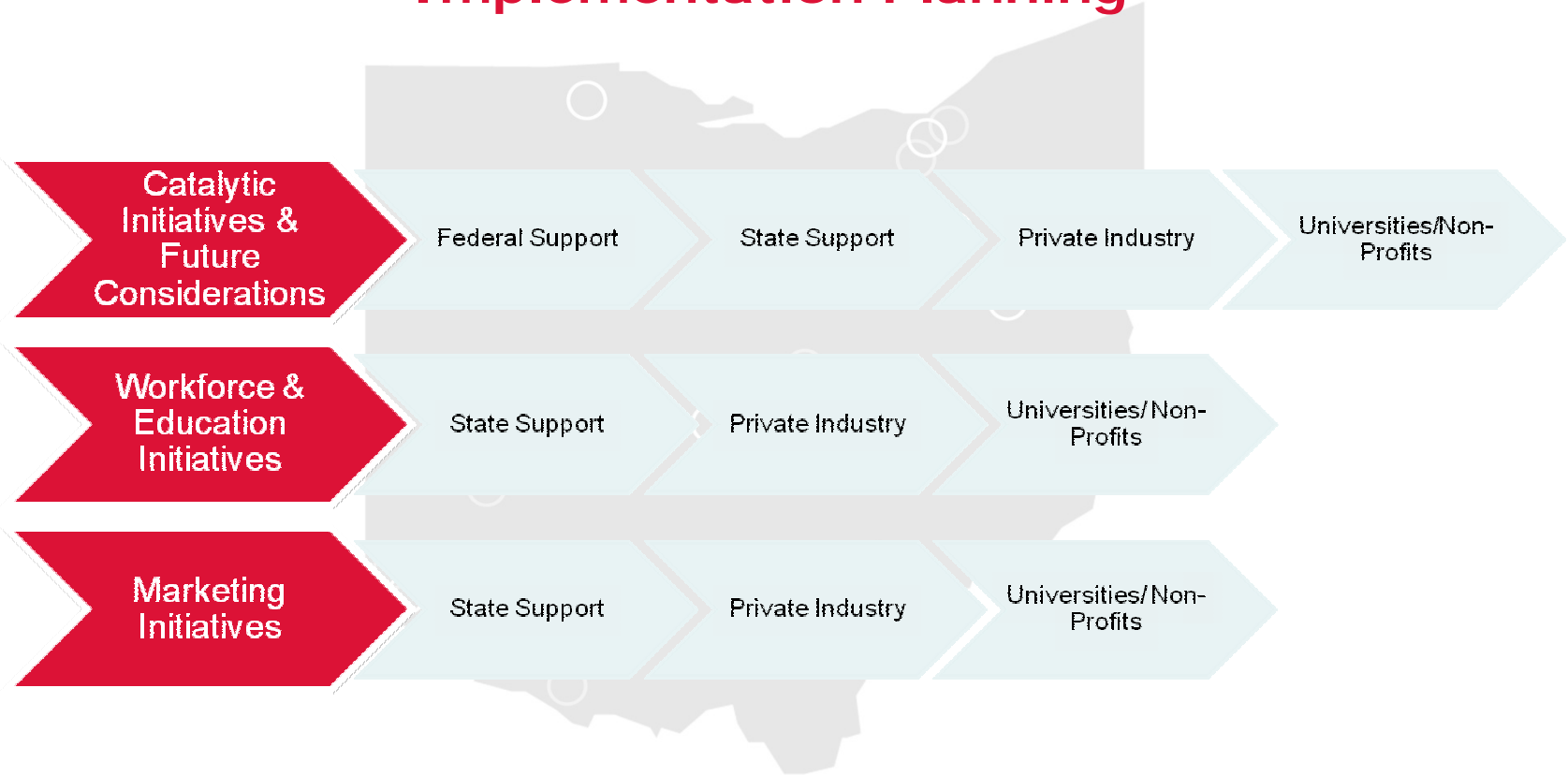
Tactics

Objectives	Short-Term Tactics (Phase I) (<6 months)	Medium/Long-Term Tactics (Phase II) (6+ months)
Educate and engage key stakeholders to make Ohio Aerospace a key priority for funding and resources	<ul style="list-style-type: none"> • Briefing event - present A-team to congressional groups and make three asks • Develop a "super sales team" (mix of state and industry representatives/ "industry veterans") • Create Ohio Map of Aerospace Assets • Promote the Aerospace Council • Continue with efforts to land a shuttle in Ohio 	<ul style="list-style-type: none"> • Host a 50th anniversary event for Sen. Glenn (2/2012) • Create a comprehensive list of under-utilized Aerospace assets • Host a mid-west governors association meeting on Aerospace • Conduct an Ohio Aerospace Summit roundtable in 2011 • Have the Governor visit 6+ industry Aerospace companies
Reduce barriers and increase expansion, retention and attraction investment in Ohio Aerospace	<ul style="list-style-type: none"> • Review and develop specific financial incentives to seed Aerospace • Develop a "super sales team" (mix of state and industry representatives) • Create a B2B expansion package/appreciation program 	<ul style="list-style-type: none"> • Create an Ohio ambassadors/alumni network • Offer the Ohio Aerospace business of the year award • Promote co-op program to businesses
Educate and involve the aerospace community world-wide on Ohio Aerospace leadership and innovation	<ul style="list-style-type: none"> • Place full-page ad in key trade publications • Place Aerospace articles/info in hiVelocity • Place Ohio Education posters in large number of Ohio and strategic national airports • Host an industry executive networking event • Create a catalog of Ohio companies • Merchandize Ohio Aerospace 	<ul style="list-style-type: none"> • Host a national UAV Summit, AOPA or NBA convention • Create Ohio presence at national/international air show • Conduct an Ohio Aerospace Summit roundtable in 2011 • Invite US President to attend the annual Hall of Fame induction Hall of Fame



Implementation Planning and Oversight

Implementation Planning



Development of Initiatives: Vigilance & Aggressiveness

Initiative	Federal	State	Industry	University/ Non-Profit	Timing Short-term <6mo. Medium 6-18 mo. Long-term >18mo.
Establish Executive Branch Oversight and Legislative Advocacy program to influence federal expenditures	◆	◆	◆	◆	Medium-Term
Review competitive incentive and investment policies		◆		◆	Short-Term
Maintain positive labor-management relations		◆	◆		Medium-Term
Support the development of strategies in the defined future consideration areas: Aerospace propulsion strategy and commercial space		◆	◆	◆	Medium-Term

Development of Initiatives: Unmanned Systems

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Pursue controlled Unmanned Systems airspace	◆	◆	◆	◆	Short-Term
Create an Unmanned Systems Center of Excellence		◆	◆		Short-Term
Secure funding/funding sources for Unmanned Systems	◆	◆	◆	◆	Medium-Term
Increase outreach/delegation efforts to OEMs (includes congressional support)	◆	◆	◆	◆	Medium-Term
Evaluate Unmanned Systems attraction package Capitalize on regional investments in US modeling and simulation		◆	◆		Medium-Term
Encourage universities to support US courses				◆	Short-Term
Capitalize on regional investments in US modeling and simulation		◆			Short-Term

Development of Initiatives: Advanced Materials

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Increase Third Frontier funding for Advanced Materials		♦			Medium
Create Ohio match to SBIR		♦			Long-Term
Outreach to material development leaders		♦	♦	♦	Short-Term
Create mentor protégé program		♦	♦	♦	Medium
Expand activities of existing designated industry clusters		♦			Long-Term

Development of Initiatives: R&D and Testing

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Attract & Incent use of R&D/Testing facilities	♦	♦	♦		Short-Term
Market R&D/Testing capabilities	♦	♦	♦	♦	Medium
Remove barriers to labs	♦	♦			Medium
Build business case and business development plan to support Plum Brook Station Runway	♦	♦			Medium
Create Ohio CLEEN program		♦	♦	♦	Medium
Coordinate the state's bio fuels efforts		♦	♦	♦	Short-Term

Development of Initiatives: MRO, Infrastructure, & Environment

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Fund an analysis of MRO requirements/gaps		♦	♦		Short-Term
Identify broker companies		♦	♦		Short-Term
Promote/Incent MRO to broker		♦	♦		Medium
Create taskforce to look for MRO/airframe expansion opportunities		♦	♦	♦	Medium
Create consortium to support NextGen	♦	♦	♦	♦	Short-Term
Support coalition on exploration of Ohio Center for Business Aviation		♦	♦	♦	Short-Term
Support Go Ohio plan	♦	♦			Short-Term

Development of Initiatives: Workforce & Education

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Survey employer demand		◆	◆	◆	Short-Term
Align curricula and programs with market need				◆	Long-Term
Identify funding mechanisms for worker training		◆	◆		Medium
Create internships			◆	◆	Medium
Leverage STEM			◆	◆	Short-Term
Retain graduate and retirees in Ohio		◆	◆	◆	Long-Term
Share Ohio's aerospace workforce story		◆	◆	◆	Medium

Development of Initiatives: Marketing

Initiative	Federal	State	Industry	University/ Non-Profit	Timing
Educate key stakeholders (Phase I)		♦	♦	♦	Short-Term
Educate key stakeholders (Phase II)		♦	♦	♦	Medium/Long-Term
Reduce barriers and increase expansion, retention and attraction investment (Phase I)		♦	♦	♦	Short-Term
Reduce barriers and increase expansion, retention and attraction investment (Phase II)		♦	♦	♦	Medium/Long-Term
Educate and involve the aerospace community world-wide (Phase III)		♦	♦	♦	Short-Term
Educate and involve the aerospace community world-wide (Phase III)		♦	♦	♦	Medium/Long-Term

Continuation of Ohio Aerospace & Business Aviation Council

- The Council is planning continuation of its efforts in support of implementation of the initiatives outlined in this briefing and to ensure follow-up on the future considerations as noted.
 - It requests an annual formal meeting with senior state stakeholders to maintain Ohio AA&D concerns as a priority for the state (consider Advisor with budget role)
 - It will remain a cross-functional group representing all aspects of AA&D
- Formal “working” structure of the committees going forward will remain
 - Executive Committee becomes implementation resources
 - Strategic Planning becomes an oversight/implementation committee
 - Marketing Committee continues support of marketing efforts
 - Workforce & Education Committee continues support of workforce and education efforts

Full Council Members

Michael Anderson	Brush Wellman, Inc.
Mark Barbash	Ohio Department of Development (ODOD)
Dale Carlson	GE Aviation Advanced Technology and Preliminary Design
Carol Caruso	Greater Cleveland Partnership (GCP)
Marlon Cheatham	Ohio Business Development Coalition (OBDC)
Gary Conley	TechSolve, Inc.
Charles Dutch	The Boeing Company – Strategic Planning Committee Chair
Stacia Edwards	Ohio Board of Regents (OBR)
Awatef Hamed	University of Cincinnati Aerospace Engineering
Michael Heil	Ohio Aerospace Institute (OAI)
Peter Hennessey	Battelle
Patty Huddle	Ohio Department of Development (ODOD)
Michael Kyuliasha	Wright-Patterson AFB
Amanda Wright Lane	National Aviation Heritage Alliance (NAHA) – Marketing Committee Chair
S.K. Lau	Goodrich
Jim Leftwich	Dayton Development Coalition (DDC)
Ramon Lugo	NASA Glenn Research Center
Jason Nichols	Lockheed Martin IS & GS Civil - Exploration & Science
William Noe	NetJets
Jeff Rolf	Parker Hannifin
Joseph Roman	Greater Cleveland Partnership
Michael Rudy	Teledyne Turbine Engines
Colleen Ryan	Dayton Development Coalition
Katie Sabatino	Ohio Department of Development (ODOD)
Joe Sciabica	Wright-Patterson AFB
Robert Shaw	NASA Glenn Research Center
Rickey Shyne	NASA Glenn Research Center
Kim Veris	NASA Glenn Research Center
Gary Smith	Greater Cleveland Partnership (GCP)
Doug Stewart	Ohio Regional Business Aviation Association/AircraftLogs
Noah Sudow	Ohio Board of Regents (OBR)
Lisa Swartzwelder	Business Aviation Collaboration of Ohio
Dee Vaidya	TechniGraphics, Inc. – Talent, Workforce, & Education Committee Chair
Kara Valz	TechSolve, Inc.
Dave Vornholt	Industry Association Connections
Gregory Washington	The Ohio State University

Strategic Planning Committee Members

Michael Anderson	Brush Wellman, Inc.
Dick Bickerstaff	Columbus State Community College
Brian Bishop	Edison Welding Institute (EWI)
Dean Brainard	Persistent Elevated Solutions (PES)
Mark Brown	Retired Astronaut
Marlon Cheatham	Ohio Business Development Coalition (OBDC)
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Edward Herderick	Senator Sherrod Brown's Office
Patty Huddle	Ohio Department of Development (ODOD)
Steven Kelley	Ohio Department of Development (ODOD)
John Kinney	GE Aviation
John Kohls	Manufacturing Technology Communications
Don Majcher	Ohio Aerospace Institute (OAI)
Royce Martin	Bowling Green State University - Aviation Studies
Rod Munn	Aerospace Enterprises Inc. LLC
Anthony Panella	The Boeing Company
Rick Platt	Central Ohio Aerospace Technology Center
Phil Roberts	PAR Travel Tech, Inc.
Jeff Rolf	Parker Hannifin
Michael Rudy	Teledyne Turbine Engines
Colleen Ryan	Dayton Development Coalition
Rickey Shyne	NASA Glenn Research Center
Kim Veris	NASA Glenn Research Center
Traci Spencer	TechSolve, Inc.
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Doug Stewart	Ohio Regional Business Aviation Association/AircraftLogs
Jerald Straw	Wright-Patterson AFB (AFRL/XP)
Lisa Swartzwelder	Business Aviation Collaboration of Ohio
Kara Valz	TechSolve, Inc.
Stacy Weislogel	The Ohio State University
Joe Zeis	Dayton Development Coalition

Marketing Committee Members



Dean Brainard
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Ed Burghard
Marlon Cheatham
Gary Conley
Jessica Franks
Susan Hennie
Patty Huddle
A.J. Jonesco
Amanda Wright Lane
Don Majcher
David Miller
Doug Moormann
Kimber Perfect
Jeff Rolf
Colleen Ryan
Katie Sabatino
Traci Spencer
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Persistent Elevated Solutions (PES)
Retired Astronaut
Ohio Business Development Coalition (OBDC)
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TechSolve, Inc.
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Pairti Solutions
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Greater Cleveland Partnership
National Aviation Heritage Alliance (NAHA) – Marketing Committee Chair
Ohio Aerospace Institute (OAI)
Rocket Ventures
Cincinnati USA Regional Chamber
Ohio Department of Development (ODOD)
Parker Hannifin
Dayton Development Coalition
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Dayton Development Coalition

Talent, Workforce & Education Committee Members



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Stacia Edwards	Ohio Board of Regents (OBR)
Ann Heyward	Ohio Aerospace Institute (OAI)
John Kinney	GE Aviation
Cindy Malloy	SIFCO Industries, Inc.
Daryl Revoldt	TechniGraphics, Inc.
Traci Spencer	TechSolve, Inc.
Jennifer Spohr	Ohio Department of Development (ODOD)
Robert Sullivan	Flight Options
Lisa Swartzwelder	Business Aviation Collaboration of Ohio
Dee Vaidya	TechniGraphics, Inc. – Talent, Workforce, & Education Committee Chair
Kara Valz	TechSolve, Inc.
Stacy Weislogel	The Ohio State University

Presentation Reference Materials



2008 Economic Impact Analysis - Wright-Patterson Air Force Base	2008
2009 General Aviation Statistical Databook & Industry Outlook	2009
A Strategy for Growing - The Ohio Aerospace & Defense Industry	2005
Aerospace Top State Based on NAICS	2007
Annual Industry Review & Market Outlook Briefing	2009
Business Aviation Services Market Trends	2010
Civil Aviation Infrastructure	2010
Current Issues and Opportunities	2009
Expansion & Attractions in Ohio's Aviation Industry 2007-2009	2009
Growing Ohio's Aerospace and Business Aviation Sectors - Directive to ODOD Industry - General Aviation	2009
Industry - General Aviation	2010
Industry-Based Competitive Strategies for Ohio: Managing Three Portfolios	2005
National Space Policy of the United States of America	2010
OABAC May 27th Committee Briefing Including NASA GRC Presentation	2010
Ohio Aeropropulsion and Power Systems	2009
Ohio Aerospace and Business Aviation Advisory Council Strategic Plan - Draft	2009
Ohio Aerospace Industry Briefing	2010
Ohio Economic Development Incentive Study	2009
Ohio, Home of Innovation & Opportunity - A Strategic Plan for the ODOD	2006
Ohio's Aerospace and Defense Industries	2008
Support for USAF Sensors Research and Development	2010
The Dayton Region - A Value Proposition for Industry and Jobs	2010
The Last Healthy Part of the World Economy - Aviation Industry Overview & Forecast	2010
This is GE Aviation	2010
U.S. Aerospace Manufacturing: Industry Overview and Prospects	2009