

Regional Aviation/Aerospace Business Cluster Development & Planning Assistance

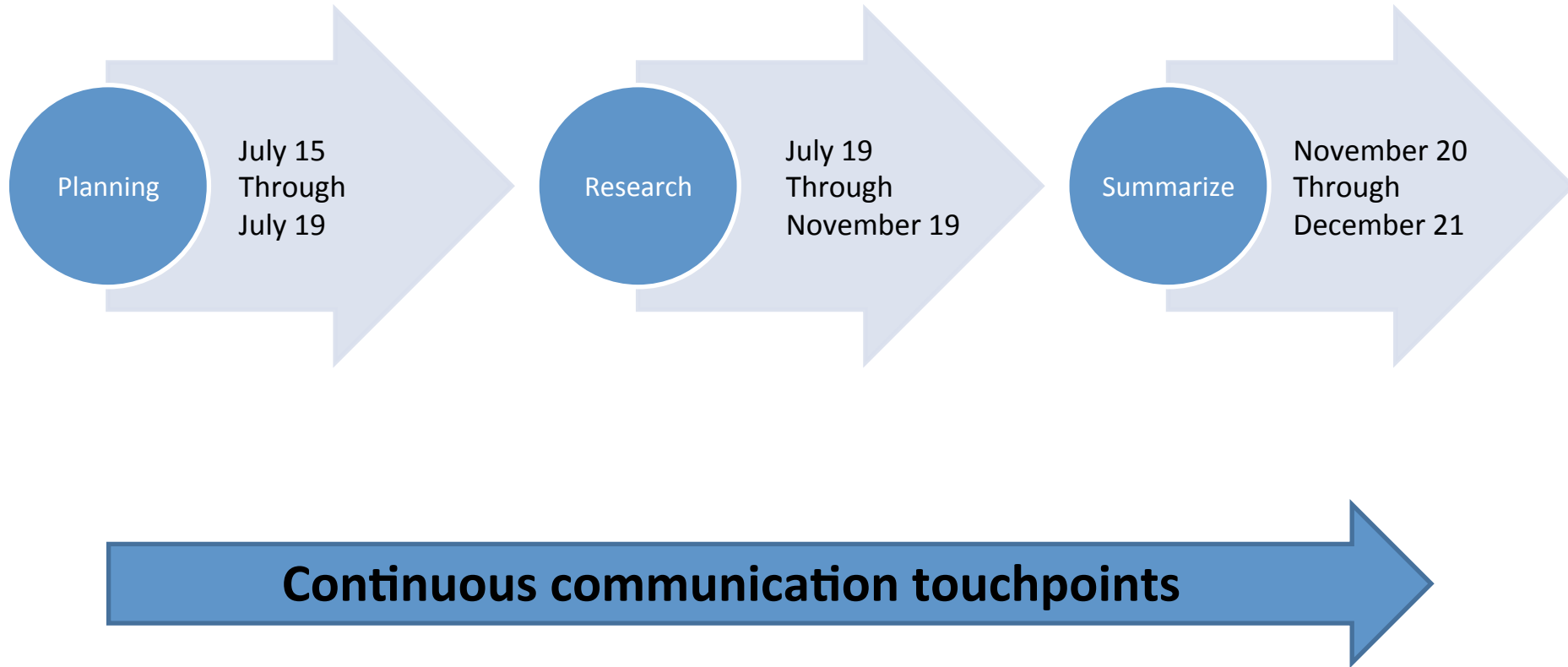
Supply Chain and Workforce Needs and Gaps Summary Presentation

Purpose

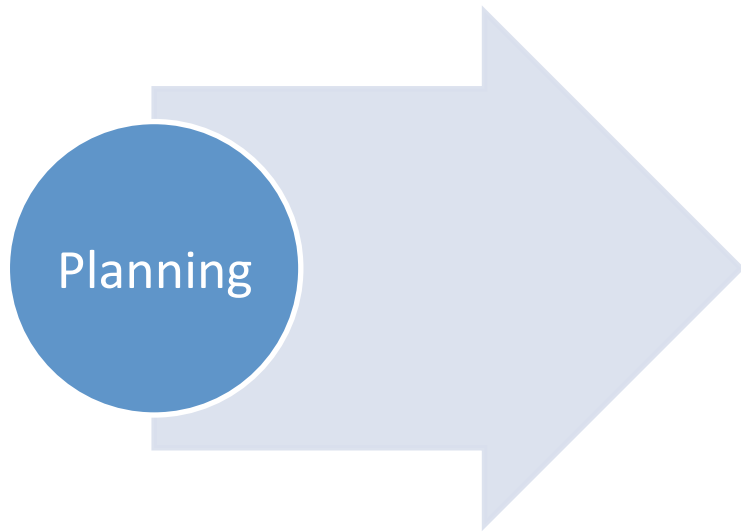
- The purpose of the activities defined in this presentation were in support of the Regional Aviation/Aerospace Business Cluster Development and Planning Assistance grant specifically to identify aviation/aerospace needs and gaps as they apply to both workforce and supply chain.
- Research was to be done through one-on-one meetings with industry leaders, manufacturers and ancillary strategic partners.
- Findings were summarized in a report delivered to the City of Oshkosh in December of 2015 to be utilized in the business and implementation plan submitted to the Department of Defense.



Process



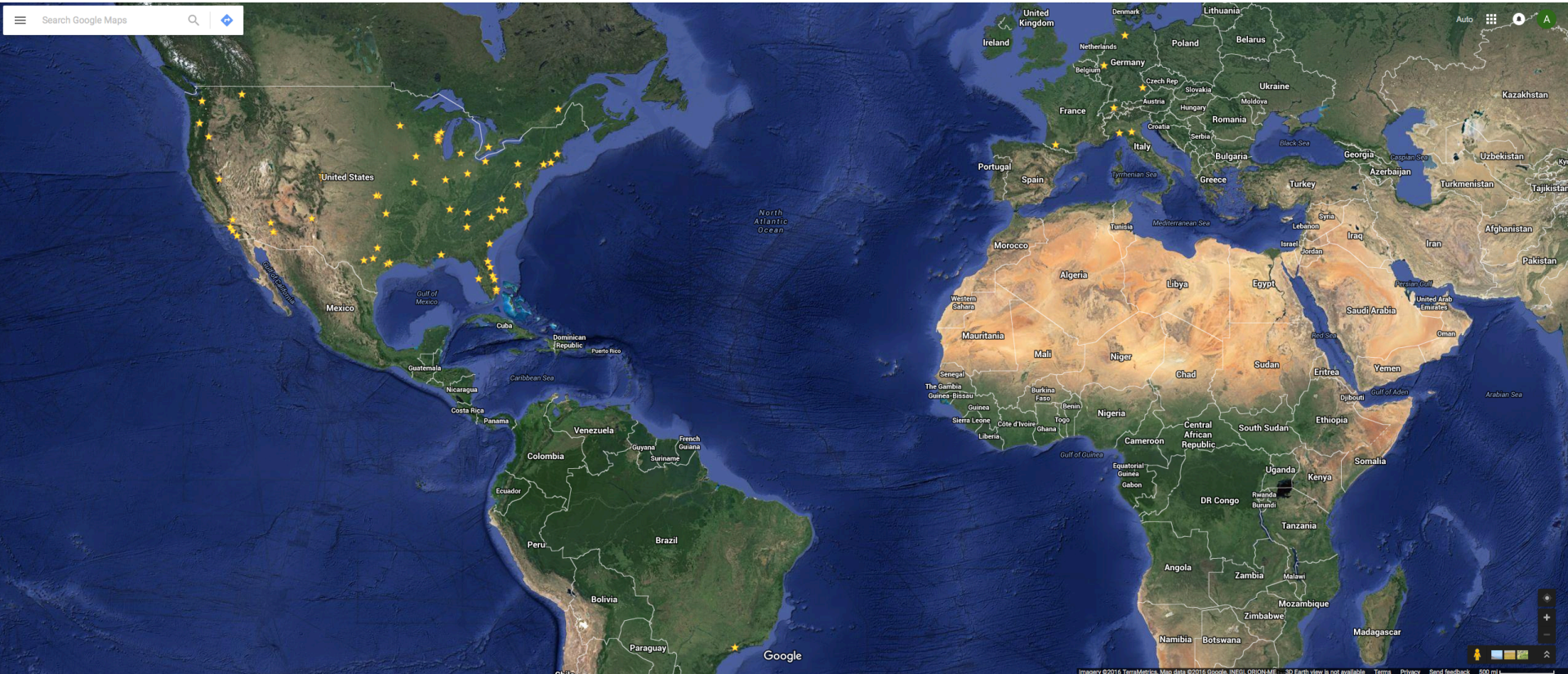
Planning Phase



- Review and harvest pertinent information from existing research gathered by Explorer Solutions.
- Develop a discussion guide to utilize to gather workforce and supply chain needs and gaps.
 - Met with Greater Oshkosh-EDC, City of Oshkosh, Wisconsin Aerospace Partners to finalize draft.
 - Set regular meeting schedule to validate work in process as meetings occurred.

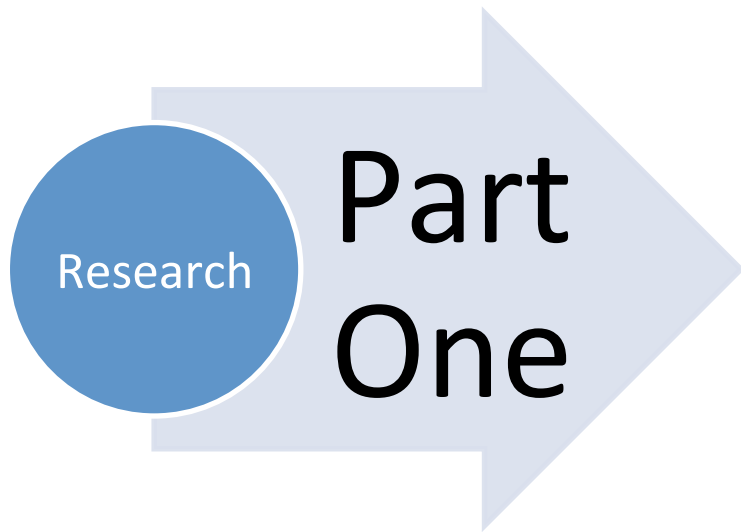
Research Phase

- In total, the research team met with 101 individuals or groups representing executive-level decision-makers within their roles at their employer.



Each yellow star indicates the headquarters of companies that were met with for the purposes of attaining data and information specific to this grant project.

Research Phase



AirVenture

(July 19 – July 26, 2015)

- Met with 49 aerospace and related companies, with an emphasis on MRO companies, exhibiting at, or visiting AirVenture 2015. Conducted one-on-one meetings with targeted companies/influencers utilizing the developed discussion guide to gather relevant data.

One-on-One Meetings Included: ACR/Artex (formerly ELT - Emerging Lifesaving Technologies), Aircraft Studio Design (for Extra aircraft), Aspen Avionics, Bad Elf, Ball Watch, Bendix/King (Honeywell), Blackhawk, Boeing, Bose Corporation, ConocoPhillips, Continental Motors Group, Covington Aircraft, D'Shannon Aviation, Daher, EAA, Embraer, Embry-Riddle Aeronautical University, Epic, Extra (Southeast Aero), ForeFlight, Globalparts.aero, GoPro, Hartzell Propeller, Inc., Honda, Icon Aircraft, Indiana State University, Jeppesen (Boeing), Lycoming, Mid-Continent Instruments Inc / True Blue Power, Mooney, NASA, Nextant Aerospace, One Aviation (Eclipse & Kestrel), Pilatus, Piper, Pratt & Whitney Canada (United Technologies), PS Engineering, Redbird Flight Simulations, Inc., Sennheiser, Shell Oil Company, Sonex, Southeast Aero, Stangarone & Associates, Swift Fuels (Tall Grass Public Relations), The McLean Group, Rimowa, United States Air Force, WACO, Zenith Aircraft

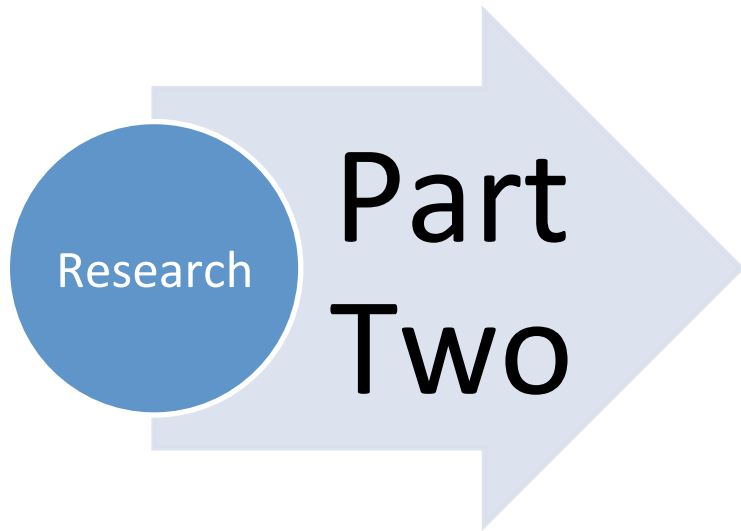
State of the Aerospace Industry - EAA

- The overall atmosphere was highly optimistic. There were many sales of both aircraft components and aircraft. Several companies were anticipating additional sales in the weeks that followed the convention.
- Several companies have been putting an emphasis on their products being American made. This is becoming more prominent in the general aviation industry.
- Over the past few years, Chinese companies have purchased several aviation-specific American businesses. The initial negative reactions to this are quelling to a point, however, there remains a current of discontent.
- In June of 2013, the FAA created a request for companies to create alternatives to leaded fuel for piston aircraft engines (AvGas). This began a multi-year research and development program that remains top-of-mind for many OEMs and aviators in the GA sector.
- Research continues on bringing new materials to the aerospace sector en masse. Composite aircraft have demonstrated their capabilities and durability as have glass cockpits. Several companies are focused on bringing new materials to market.

State of the Aerospace Industry – EAA *(continued)*

- There remains a need to foster next generation interest in aviation, i.e. Young Eagles, internships, STEM programs, and media outreach with programs like The Aviators.
- The GA market continues to explore new opportunities to refurbish existing aircraft versus buying new aircraft. Several companies have now built an entire business around this.
- As flight simulation equipment becomes more accurate in its depiction of actual flight, there is a continued push to allow more simulation time to count towards the hours required to become a certificated pilot.
- Both the Lockheed Martin F22 and F35 were exhibited. Flight crews gave presentations on the aircraft and there was an underlying discussion on how much of our military aviation development should be shared publicly.
- The use of drones by unlicensed “pilots” remained a hot topic.

Research Phase



41 Corridor Research

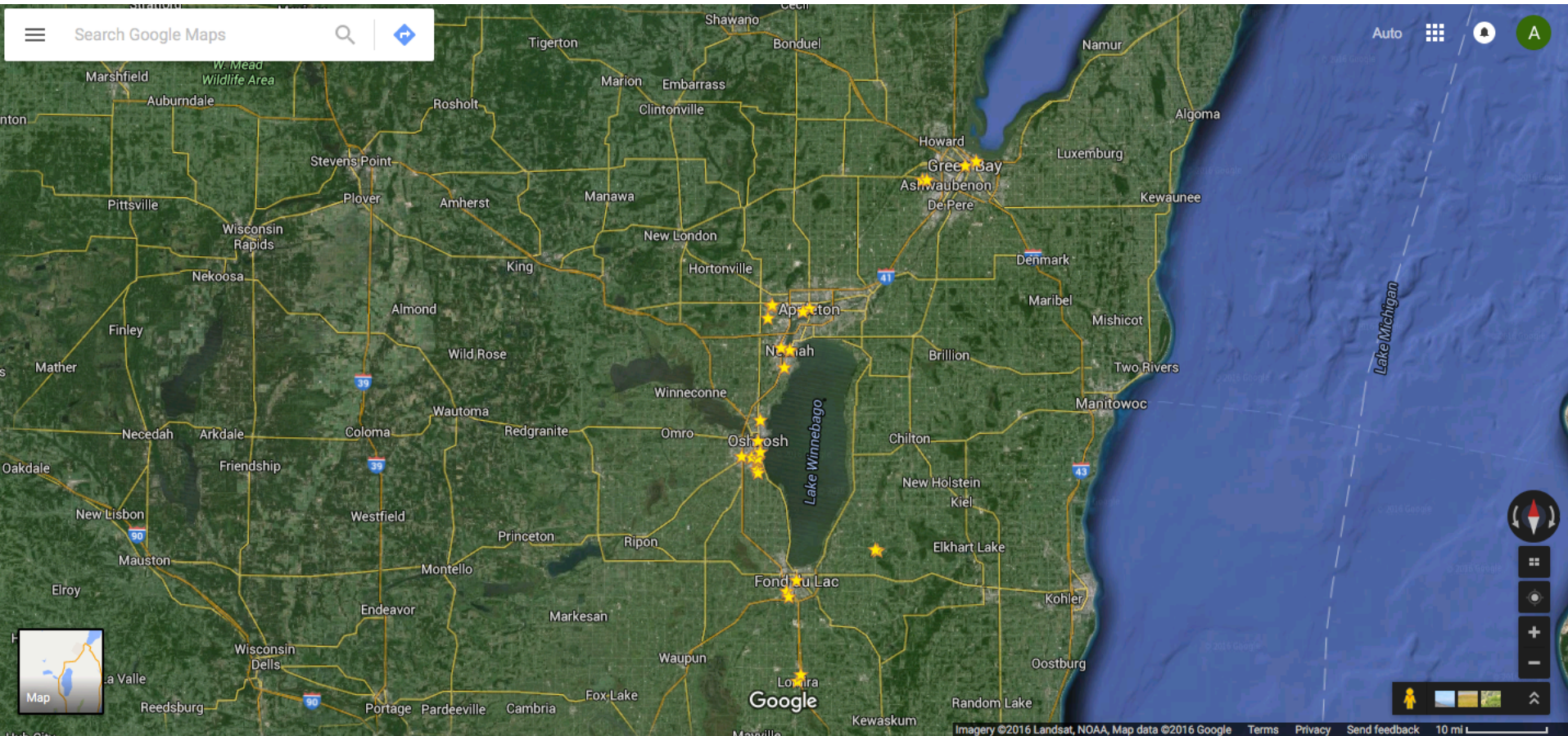
(August 1, 2015 – December 15, 2015)

- Met with 26 companies in aerospace and manufacturing at all vested airports and along the 41 Corridor using the discussion guide to compliment existing research completed prior to July 1, 2015. Further explored industry needs and gaps in both workforce and supply chain as they pertain to this specific region.

One-on-One Meetings Included: Gulfstream, Kimberly Clark – Flight Department, FedEx, Bemis – Flight Department, CAVU Flight Academy, Executive Air, Jet Air, Basler Turbo Conversions, Sonex, Myers Aviation, New View Technologies, Green Bay Packaging, Oshkosh Corp, Generac, Kondex, Wisconsin Public Service, Miller Electric, Blended Waxes, Plexus, Bergstrom Automotive Group, Advanced Tooling, Jay Manufacturing, Integrity Saw and Tool, RB Royal, Mercury Marine, Bemis North America

Research Phase

- ATW – 8 visits
- FLD – 5 visits
- GRB – 4 visits
- OSH – 9 visits

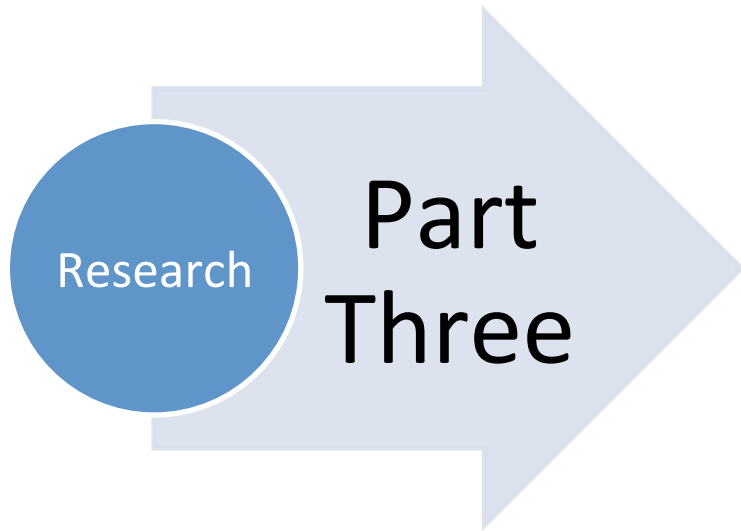


Each yellow star indicates meetings that were held along the 41 Corridor for the purposes of attaining data and information specific to this grant project.

State of the Industry – 41 Corridor

- Overall impressions with businesses along the 41 Corridor were positive.
- Several business are experiencing growth and have projected to continue through 2016.
- The manufacturing capabilities within the region are exceptional, however, they are not currently connected.
- The name “Oshkosh” and it’s associations with aviation/aerospace/manufacturing.
- Aviation tax breaks are a huge incentive to attract new aviation/aerospace business.
- Local governments can provide more support making expansion or new opportunities less challenging.
- Desire for growth/expansion and support of those activities.

Research Phase



National Business Aviation Association Expo (November 16 – November 19, 2015)

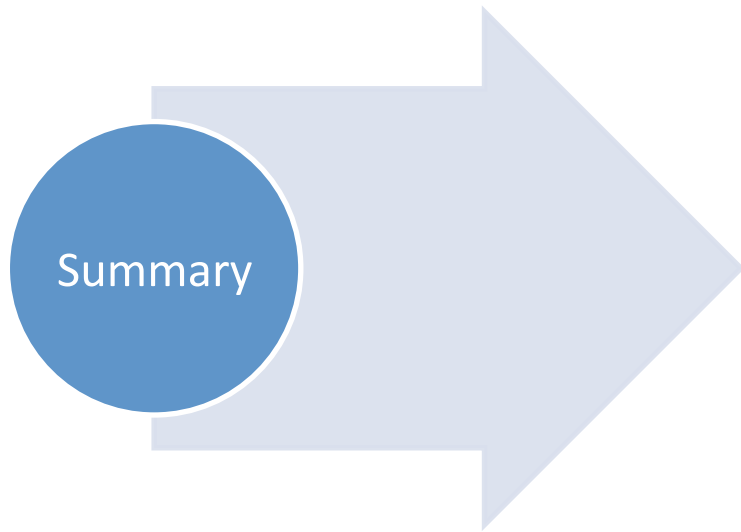
- Met with 26 aerospace companies exhibiting at, or visiting the NBAA's Annual Conference and Expo. Conducted one-on-one meetings with targeted companies/influencers utilizing the developed discussion guide to gather relevant data. Some of these meetings were follow ups to earlier connections.

One-on-One Meetings Included: Piaggio Aerospace, Gulfstream, Boeing Business Jets, Aerion Corporation, Pratt & Whitney Canada (United Technologies), Million Air, Mid-Continent Instruments, Foreflight, Bose, Diamond Aircraft, Embry-Riddle, Stellar, AvionTeq, Lufthansa Technik, Kimberly Clark Professional, Kodiak Quest, Moore & Giles, MT Propeller, Rockwell Collins, Lightspeed, Covington, Hartzell, UTC Aerospace, Jetcraft, jetAVIVA, Epic

State of the Industry - NBAA

- As with AirVenture, the overall atmosphere was very positive with companies committing to large purchases across the business aviation market.
- Forums and presentations on the following topics were the most telling:
 - How to engage and attract top talent to aviation careers.
 - Future of planes in flying (3d printing / battery advantages / big data and web / artificial intelligence).
 - Utilizing internships to create interest in the aviation sector.
 - Benchmark and metric costs for aviation business.
 - The challenges of business aviation around the world including different requirements and standards.
 - Tracking and predicting weather patterns.
 - Live emergency response simulation.
 - “Engaging your employees in a culture of disengagement.”
 - The ever-changing demands and costs for fuel and how to better manage usage.

Summary Phase



- Utilizing all data gathered from one-on-one meetings, summarize the needs and gaps as they pertain to aviation/aerospace industry in the Highway 41 Corridor focused on Appleton International Airport, Austin Straubel International Airport, Fond du Lac County Airport and Wittman Regional Airport.
- Present findings in a summarized report with data utilized in the “Business Plan” developed by Greater Oshkosh-EDC for this specific grant.
- Final report was delivered on Monday, December 21, 2015.

Common Voice

Through our research across the aerospace and manufacturing industries, specifically as these industries meet and cope with supply chain and workforce needs and gaps, and as it refers to these companies doing business in the state of Wisconsin, three common voice items were uniform across the study.

1. Manufacturing and the manufacturing supply chain in Wisconsin is incredibly diverse and supportive. There are very few challenges for companies to attain the materials they need to manufacture their products. Logistically, being somewhat centrally located in the United States has benefits for both shipping and receiving.
2. There is a generational gap in both skilled labor and qualified engineers across the manufacturing industry. There is a strong need to educate youth on the career opportunities and paths available in aerospace/manufacturing.
3. The industry is in need of specific training for skilled labor. These positions have evolved and are now more technical and diverse than at any other time in history. Employees need basic computer skills to accompany those skills taught on-the-job.

Needs and Gaps – Supply Chain

As a whole, there are few issues with the supply chain operating in Wisconsin. Diversification among existing suppliers to the aerospace/manufacturing industries needs to be explored, connected and capitalized on.

- Throughout Wisconsin, manufacturers have access to outsourcing work as needed
 - Several regional and local machine shops
 - Component work
 - Assembly work

- Several manufacturers make parts using their in-house machine shops
 - These may be very specialized parts
 - Oftentimes there is not a need for the higher quantities an outside vendor may provide
 - Many of these parts need to meet FAA regulation standards creating challenges to using outside suppliers

Needs and Gaps – Supply Chain *(continued)*

- Most companies do at least some ordering of parts/materials
 - Used or new specialized component parts
 - They are sourced from online marketplace or direct from the manufacturer
 - Through modern shipping methods including: air, rail and trucking, it is easy to get parts shipped in
- Some companies do keep used component parts on hand, others recycle materials/parts
 - For own use
 - To sell to others as needed
- Overall there was a mixed response on additive manufacturing
 - Few local companies are taking advantage of these opportunities due to cost or not understanding the technology
 - Need to meet FAA regulations for materials and parts
- Along the 41 Corridor, several companies expressed the desire to have closer access to painting, avionics, and interior capabilities for aviation

Needs and Gaps - Workforce

The two main areas of concern for workforce are the large generational gap in skilled trades and engineers creating the need to educate youth on career paths and opportunities across aerospace and manufacturing along with the need for more skilled training.

- Baby boomers had a high number of skilled trades employees. The following generation was encouraged to attend college and pursue careers other than trades.
- Engineer positions were also downsized over the last 20 years as those jobs were streamlined. The industry is now realizing that the engineering positions create the opportunities for the skilled workforce. The US is far behind some European countries in its engineering curriculum.
- Recently the skilled trades have made headway as students realize that a four-year degree may not be required for occupational success.
- Need to gain interest from the potential workforce and make them aware of the many and varied aerospace careers earlier. Some companies are willing to financially support outreach programs to students. Some local companies already are doing so.

Needs and Gaps – Workforce *(continued)*

- Several companies are also willing to provide internships. Several local companies already offer these opportunities, but could be developed further.
- Those who are currently in aviation careers tend to stay in aviation for many years creating fewer opportunities for new employees.
- Younger employees are more likely to change careers sooner and are not as willing to work their way up...they don't always see the paths of opportunity that exist by staying within a company.
- Regionally, several of the bigger companies are directly competing with other local manufacturing/skilled labor companies for employees.
- Along the 41 Corridor there is a large amount of educated workforce, with excellent work ethic and skills needed to be successful. However, there is simply not enough of them!

Needs and Gaps - Location

The overall sentiment is that doing business in the state of Wisconsin is positive. The most commonly heard challenges are high tax rate and inclement weather.

- Why companies are at their specific locations...
 - Acquisition opportunity
 - Local business needed an aviation team
 - Provide Service to this area
 - Provide career path to the area
 - Originally from the area and want to stay here or return here
 - Expanding presence
- Buildings/facilities – “if you build it they will come”
- Aviation tax breaks and incentives are important
 - Can make the difference of doing business here or elsewhere
 - Needs to be more widely communicated. Not sure how aware others out-of-state are aware of this

Needs and Gaps – Location *(continued)*

- Non-union environment
- A “Let business do business” attitude
 - Be enabling, supportive of business needs, airport grounds upkeep and maintenance.
 - Let those hired do their jobs, do not micromanage decisions
 - Limiting covenants/restrictions that can make it unprofitable to do business
- Locally, positive comments on current airport directors enabling business, concerns of county/government micromanagement, desire for more T-hangers, improved FBO services, and MRO.

Local Insights- Location

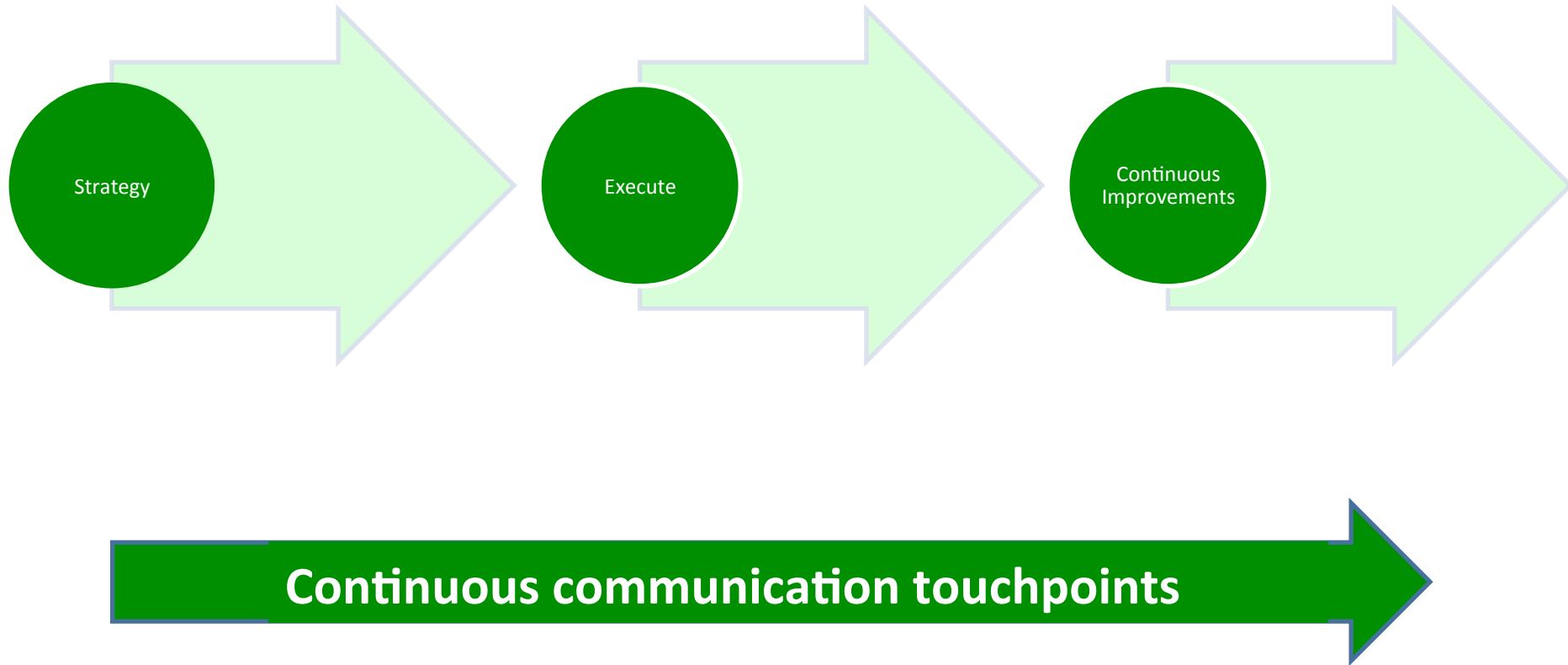
Positive attributes for being in this region:

- Cost of living is very good compared to neighboring states
- Great for family
- Strong sense of community
- Highly rated education system
- High quality healthcare system
- Low crime, safe environment especially for kids
- Outdoor recreational activities

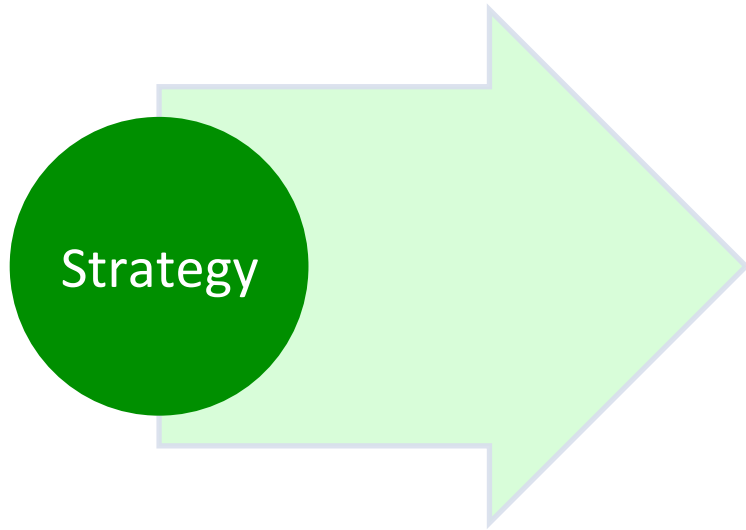
Challenges for being in this region:

- Cold weather is a challenge to some
- Some companies with younger employees without families expressed the need for more social activities for this group
- High rate of sex offenders in the area (Oshkosh/Appleton)

Recommendations

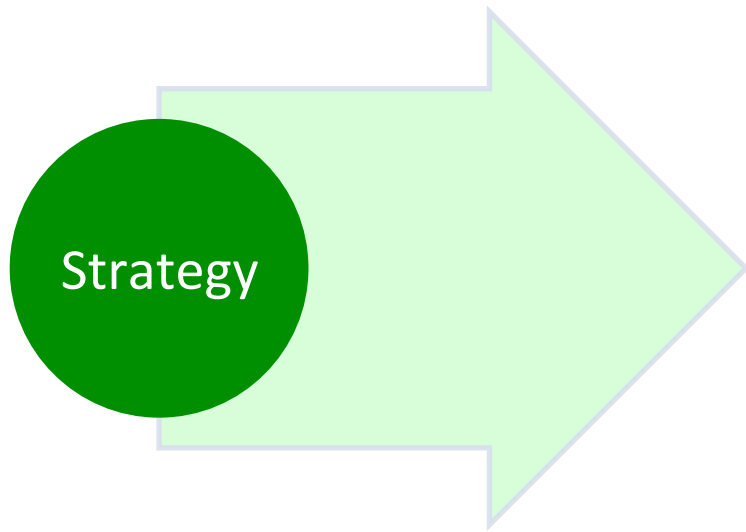


Strategy



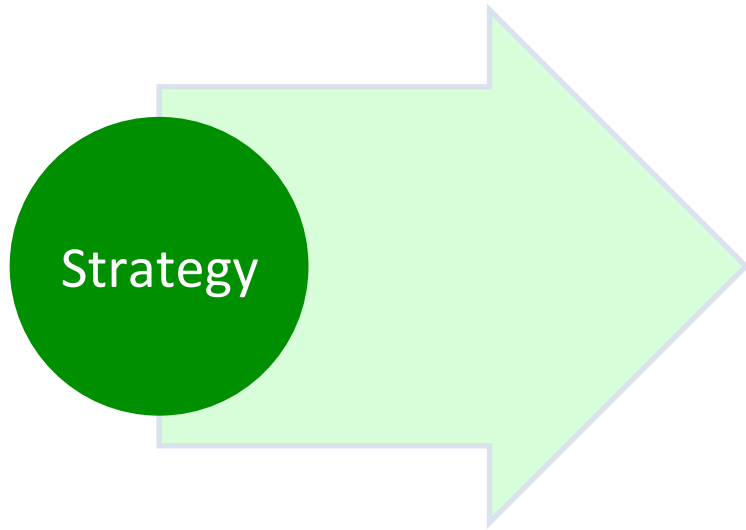
- Create go-to-market strategy
 - Develop key selling points overall
 - For each individual airport
 - Story of how they each provide unique complimentary benefits to our area
- Understanding competitive/benchmarks
- Evolve compelling PODs (Point of Difference)
- Create strategic target plan with knowledge needs
 - Types of potential new business category needs
 - To include support business needs such as painting, interiors, and avionics

Strategy *(continued)*



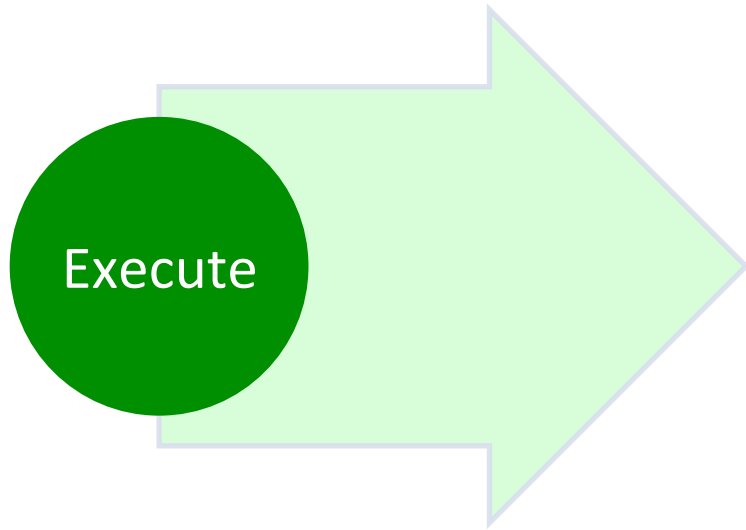
- Create go-to-market sales materials
- Tailor business development sales propositions based on the specific type of companies the region is seeking...
 - MRO (*Maintenance, Repair & Overhaul*)
 - Avionics
 - Interiors
 - Paint
 - FBO (*Fixed Base Operator*)
 - Additive Manufacturing
- Custom tailor business development sales propositions based on the needs of each prospect
 - Global companies looking to expand presence or grow US operations.
 - Global companies looking for their first time presence in US.
 - Small-to-midsize companies looking for strategically located presence as part of their expansion planning
 - Start-up innovation companies

Strategy *(continued)*



- Opportunity to raise awareness of the outsourcing components/materials capabilities (matchmaking)
 - Quick ordering capabilities of parts that are not readily available within a company
 - Part component capabilities nearby
 - Assembly capability
- Opportunity to raise awareness of full workforce options
 - The 41 Corridor houses an educated, skilled talent pool with a strong work ethic
 - These potential employees may not have the right skills, but need to be educated on career opportunities
 - Flexible staffing of engineering, technical workforce
 - Product development expertise outsourcing capability (schools, internship, military, 3D printing, additive manufacturing)

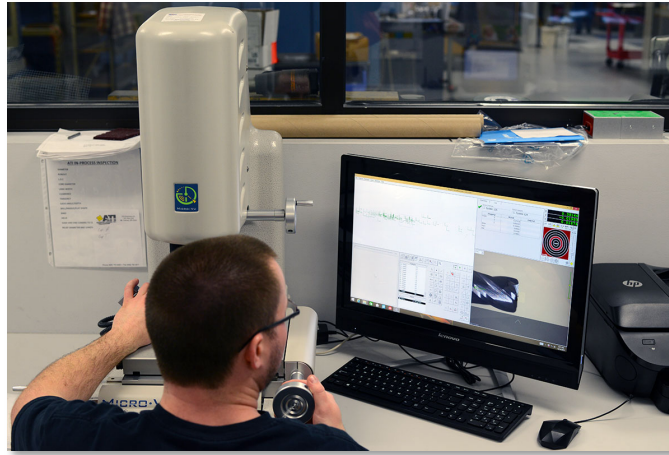
Execute



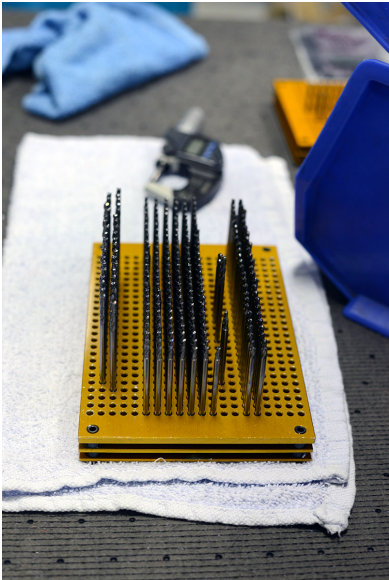
- Business Development Planning
 - Designate dedicated aviation - knowledgeable and aviation-connected sales team.
 - Designate core business-enabling support team for when opportunities arise.
 - Target AirVenture 2016 as an opportunity to unveil materials and create sales momentum to attract viable business opportunities.
 - Follow-up with additional in-person touch points/selling opportunities after AirVenture 2016 and during NBAA 2016.

Continuing Education – create the “spark”

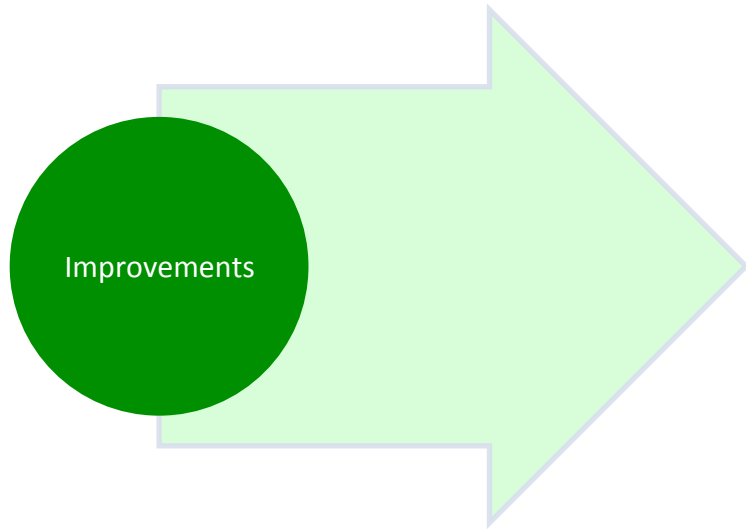
Improvements



- What interested you in aviation?
 - Everyone in aviation has a story
 - Local business – school tours
 - Total lack of awareness of opportunities



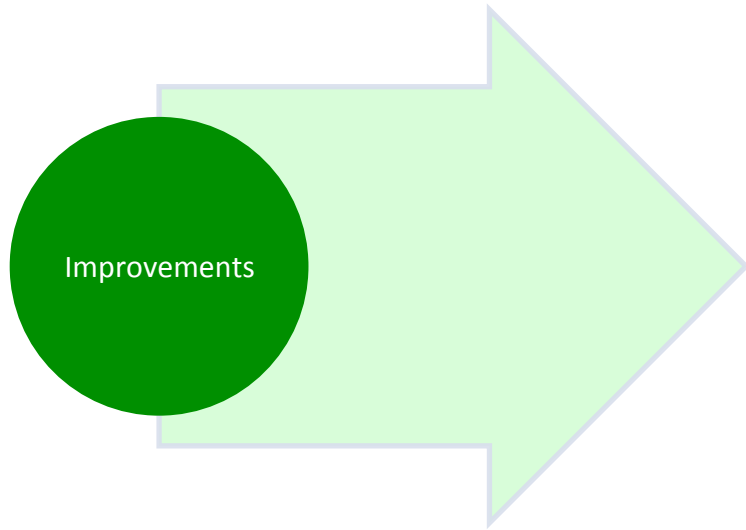
Continuing Education – create the “spark”



- Opportunity to raise awareness earlier in schools
 - Where automotive was 20 years ago
 - As part of STEM programs
 - Several companies expressed interest in financially supporting outreach

- Provide internship opportunities
 - Some local companies are using internships to attract young workforce.
 - Mirror these successes with additional businesses.
 - Clearly demonstrate the path to progression to encourage younger employees to stay at a specific employer.

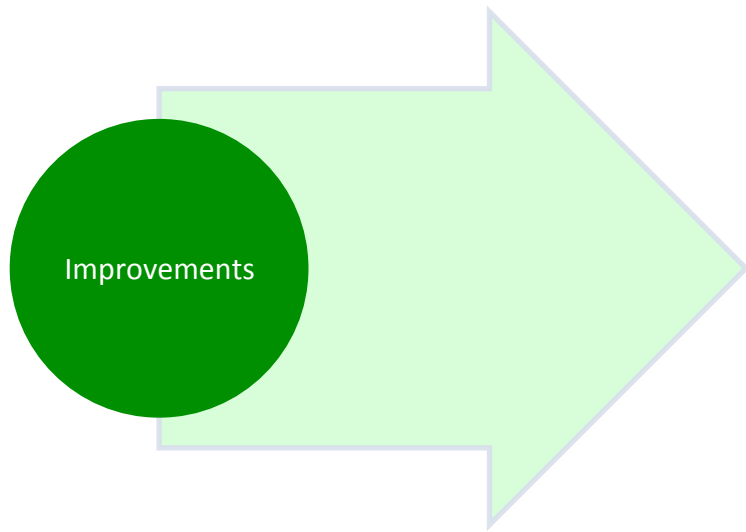
Continuing Education



- Military transition opportunities
 - Raise awareness of programs and opportunities to enter the workforce after service
 - Make the paperwork easier to get into existing programs – help define the pathways
 - Give school/work credit for experience to fast track programs

- Opportunity to raise awareness of Additive Manufacturing and 3D printing
 - What is it?
 - How is it currently being used in industry/aviation?
 - How it could be used in the future?
 - Steps for certification

Benchmarking



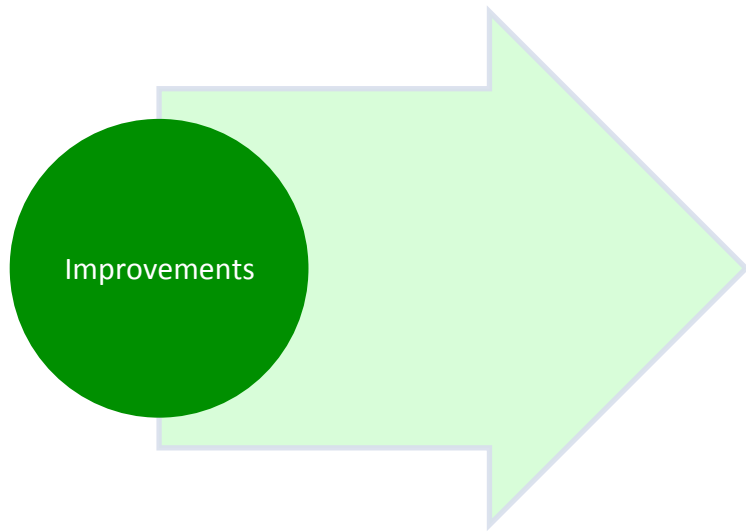
➤ Explore Aviation Cluster Insights Further

- What has worked for other aerospace business development clusters?
- What has not worked?
- Who are we competing with?

➤ Texas

- The Greater Waco Aviation Alliance (www.wacoaviation.com)
- Redbird and Blackhawk referenced them as an area to learn from as there has been a modicum of success with this group.

Benchmarking



➤ Wichita

- Has attempted to create an aerospace cluster and failed. Businesses continue to downsize operations in the area or leave the area.
- Wichita continues to receive major support from local government and existing businesses.
- NBAA promotional material.

➤ Bend Oregon Area

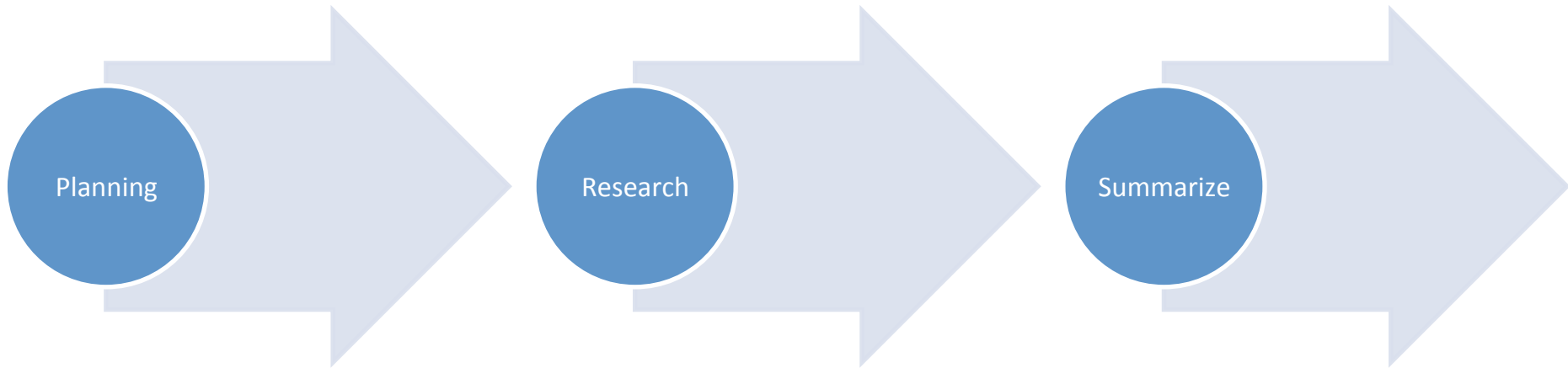
- Three OEM manufacturers reside in the Bend area. While there is not a specific cluster program or development group, these three companies have worked with local economic development organizations to create a business model to attract more aviation businesses.
- According to Epic Aircraft, the key to success is to have a full-time business development unit.

What the DOD Grant has enabled

- Enhanced grant awareness locally
 - Discussions of defining what we have here
 - How could we make things better
 - Identify support businesses which they are seeking
- What are aviation business leaders looking for when they do new business
 - Location
 - Workforce
 - Supply Chain
- Beginning to build awareness on a local and global level of what our area has to offer
 - Began to identify potential contacts and companies to approach in the future
 - Set up for next strategic phase to address needs uncovered in research phase
 - Momentum of interest has begun... Let's keep it going!

Keep the momentum!

Completed...



Next steps...

