MIAASC

Michigan Advanced Aerial System Consortium

MIAASC Launch Press Conference

August 8, 2013

Collins Center, CRTC, Alpena

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MIAASC Board Members

Name	Organization	Title
Rick Carlson	MDOT Aeronautics	Chairman
Tom Mullaney	Alpena County	1st Vice-Chairman
Aaron Cook	Northwestern Michigan College	2nd Vice-Chairman
Vikki Kulju	Upper Michigan Green Aircraft Coalition	Secretary
Aaron Johnson	MEDC	Treasurer
Beth Seiler	Western Michigan University	Board Member
Cameron Habermehl	Alpena County	Board Member
Colin Brooks	Michigan Tech	Board Member
Gavin Brown	Michigan Aerospace Manufacturers Association	Board Member
George Kiefer	GE Aviation	Board Member
Gerald Lane	AUVSI Great Lakes Chapter	Board Member
John Kinsey	University of Michigan	Board Member
Ron Moffett	Michigan National Guard	Board Member
Valde Garcia	Wyle	Board Member

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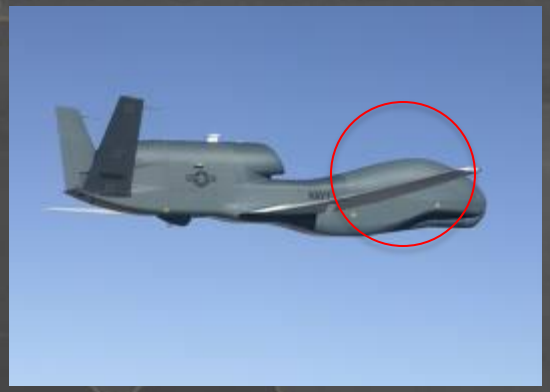
PROJECT RECAP AND HISTORY

Difference between a Drone and a UAV?

Drone: Simple targets…

UAV: Intelligent systems!



Why UAS in Michigan?

Market Potential & Diversification Opportunity for MI

"Unmanned Aircraft Systems (UASs) and Remotely Piloted Aircraft (RPA) have seen a golden age in the last decade growing to an annual budget of $7 billion. Most of this growth has been through the wars in Iraq and Afghanistan, but with the drawing down of troops, what's next? Analysts still predict growth in this industry, estimating a total increase to just over $89 billion in the next decade. Not only is the military expected to sustain its backing of UAS technology, but the civil and commercial markets are poised to open up to a host of opportunities for the industry"

An Untapped Potential!

Applications	Markets
Homeland Security	- Emergency evaluation - Criminal apprehension support - Border and maritime monitoring - Monitoring of waterways and shipping - Aerial Reconnaissance - Maritime and Mountain Search and Rescue
Land Management	- Crop management and Crop dusting - Disaster damage estimation - Rescue and clear up effort supervision - Exploration, mining and geological statements
Commercial	- Publicity, media relay - Pipeline Monitoring - Power line Monitoring - Telecommunications - Infrastructure Inspection and Management
Earth Science	- Weather and environmental monitoring - Management of animal life, flora and forests - Geophysical surveys - Pollution Control and Air Sampling

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Michigan based companies already working on UAS

Industry	
AcroMag	Michigan Aerospace Corporation
Adaptive Materials	Mahle Powertrain
Baker Engineering	Merrill Aviation
Bergen RC Helicopters	PPI Aerospace
Braintech Inc.	Quantum Signal
Detroit Aircraft Corp	Ricardo
Ford Motor Company	Reactor Zero
GE Aviation	Sierra Nevada Corporation
Ilmor Engineering	Technical Directions, Inc.
GE Fanuc Intelligence Platforms	Williams International

Michigan academia already working on UAS

Academia
University of Michigan
Western Michigan University
Michigan Tech Research Institute
Northwestern Michigan College
Central Michigan University
Kettering University
Alpena Community College

Why UAS in Michigan?

Airspace & Infrastructure

- The airport is host to one of only four Combat Readiness Training Centers (CRTC) across the USA.
- Access to the Alpena Combat Readiness Training Center (CRTC) provides us with an integrated, year-round, realistic training environment.
- operational flexibility, the required infrastructure, proximity to available airspace and diversified testing capabilities to UAS organizations.
- The airspace over Alpena and Grayling is vast, and regroups seven (7) Military Operating Airspaces (MOA), in addition to three (3) Restricted Operating Airspaces.
- The CRTC is also equipped with the latest DASR 11 radar, enabling air traffic controllers to see and track the smallest UAS over the Alpena region providing a safe airspace for all manned and unmanned aircraft.
- Runways, hangar and other facilities to accommodate all type of UAS.

History

- Spring 2011 – Under the leadership of the Alpena County Regional Airport, the county of Alpena and local economic development organizations, the region decided to move forward with plans to strategically position its regional airport and develop an industry.
- Summer/Fall 2011 – Market analysis and validation of the UAS cluster concept with industry stakeholders.
- On February 15, 2012, more than thirty-five (35) organizations attended the first steering committee meeting, and endorsed the development plan and cluster concept.
- March 2012 - the FAA announced its interest to integrate UAS into the national airspace by 2015, and to designate six (6) official test sites.
- July 23-25, 2012 - 2nd steering committee regrouping 25 political and community leaders. The decision was made to be a strong proponent for the FAA Screening Information Request (SIR), and to prepare a Concept of Operations (CONOPS), to support commercial flight-test activities.

History

- August 4-7, 2012 - AUVSI Conference in Las Vegas, Nevada. We attended the event, advocated for the Michigan initiative, and established important business contacts.
- August 11, 2012 - Resolution passed at the Michigan State Senate, supporting the UAS initiative.
- September 15, 2012 - Official endorsement by Michigan's Governor's Office.
- November 1, 2012 - Official endorsement by Michigan's Army National Guard.
- November 15, 2012- Creation of the cluster's Board of Directors.

➢ December 2012 - The project was renamed MIAASC, and regrouped six (6) local airports: two (2) located in central Michigan, two (2) others in south Michigan, with the remaining two (2) located in the Upper Peninsula.

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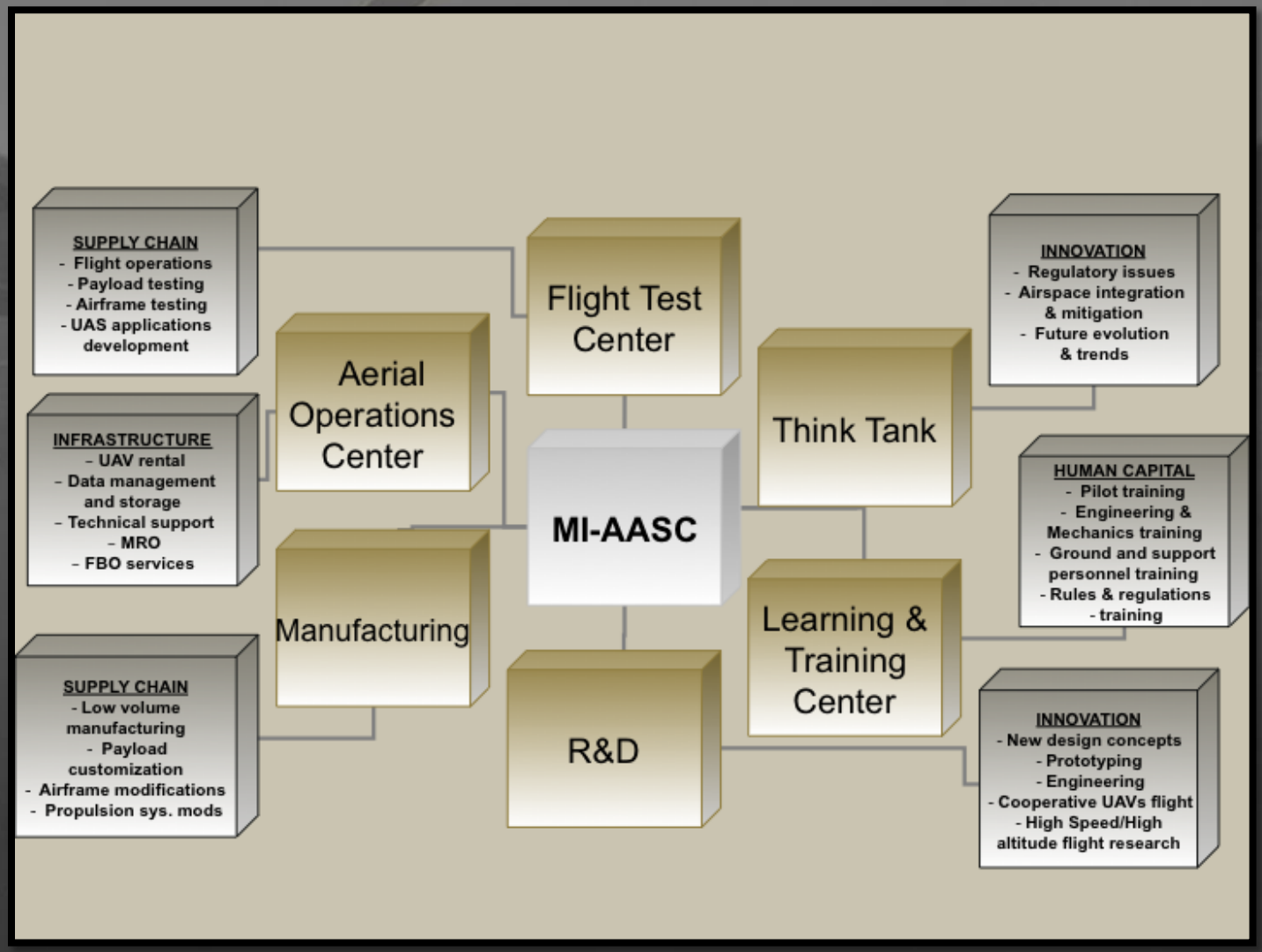
Cluster Structure



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MIAASC LEGAL AND OPERATIONAL STRUCTURE

Who we are?

MIAASC is a not-for-profit and industry-driven organization that brings together industry leaders, educational and research institutions, government agencies and industry associations that contribute towards the development of unmanned aerial systems in Michigan and across the country.

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An Integrated Model

Mission and Vision

Our mission is to foster a favorable environment while supporting the development of the unmanned vehicles supply chain and contributing to the accelerated growth of the industry for both the commercial and military sectors.

MIAASC intends to make of this industry, a source of continuous growing wealth for the state of Michigan, the Great Lakes region, and the United States as a whole.

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MIAASC – A test center and an industry cluster

MIAASC TEST CENTER

MIAASC test center provides you with a turnkey solution for your UAS operations: competitive hourly access fees to our airspace, equipment and UAS rental, pilot, ground, and technical support; FBO services, and an experienced team of professionals to assist you with rules & regulation issues, and other consulting needs.

MIAASC INDUSTRY CLUSTER

MIAASC is not only the best location for your flight-test activities, it is also an integrated cluster for the unmanned aerial systems industry. MIAASC's cluster structure encompasses the whole UAS value chain: R&D, flight-test activities, aerial operations, training and education, think tank and manufacturing.

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MIASSC FLIGHT TEST CENTER

LARGEST AIRSPACE EAST OF THE MISSISSIPPI

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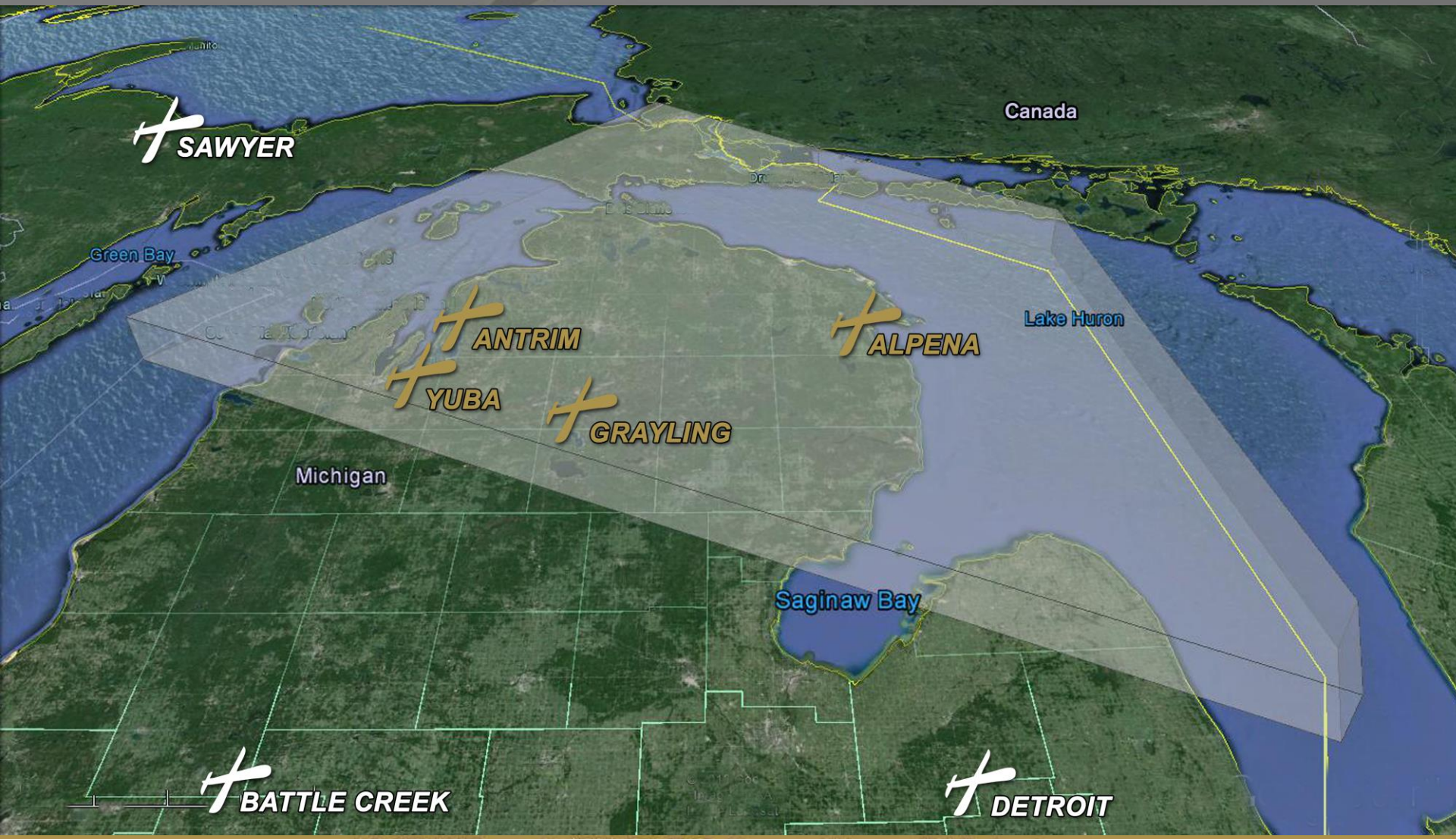
MIAASC Airspace



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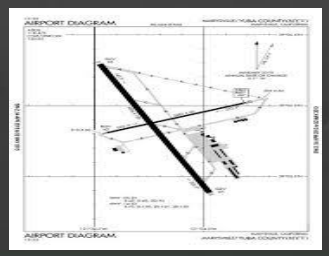
Test Sites Locations

Alpena: The airport is owned and operated by Alpena County, and is located five minutes west of the city of Alpena, in a remote area, easily accessible by Highway M-32. The Airport offers two runways: 1/19 (9001 ft x 150 ft) and 7/25 (5028 ft x 100 ft).

Grayling: Grayling Army field is owned and operated by the US Army. The Army National Guard manages its two restricted airspace areas - R-4201A and R-4201B. The airport is situated at 1158 ft. above Mean Sea Level (AMSL) in elevation and offers two good runways: Runway 5/23 (5,000 feet concrete) and Runway 14/32, (5,000 feet asphalt covered). Infrastructure to support collaborative UGV & UAV operations.

Antrim: Located in the northwestern corner of Lower Michigan, the Antrim Regional Airport is owned and operated by Antrim County and will be a part of our NCTR complex. A COA will be required to fly at this location. 100LL, Jet A Fuel, and repairs are available. The airport is situated at 623 ft. AMSL. Runway 02/20 is asphalt, 4999 ft. x 100 ft.



Yuba: Four miles south of Elk Rapids, and next to the fresh water bay of Grand Traverse, Yuba airport is a privately owned airport, currently closed to all commercial traffic. The airport is situated at 645 ft. AMSL and has one turf runway: Runway 18/36, 2975 ft. x 100 ft.

Key Location Advantages

- **Large airspace complex** - Allows up to 200 flights simultaneously, making it the perfect location for dissimilar aircraft operations at different altitudes.
- **Altitude ranging from 0 to 50,000 ft.** - Capacity to support high altitude and high speed flights, with an airspace complex of 20,000 sq. miles, within a 600-mile perimeter.
- **Uncongested flying area -** Very limited civilian flights and low populated areas for ideal flight testing conditions.
- **Airspace over fresh water -** Miles of open Great Lakes freshwater within the test range makes it the perfect location for joint air and marine UAS research & operations.

Key Location Advantages

- **Four season location and a diversified terrain** - The climatic diversity of the test range provides a variety of environments for test-flights and data collection.

- **Cross-border activities** - Airspace complex located next to the Canadian border with access to a cross-border Military Operating Airspace (MOA). Potential to perform joint training.

- **Infrastructure & Equipment** – Equipped with the latest radar system (DASR-11) to ensure safe flight and operations, our test site locations offer state-of-the-art infrastructure and all the amenities to support UAS operations.

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MIASSC TEST CENTER SERVICES

A TURNKEY SERVICE OFFERING

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Flights Services

Chase plane	Aircraft of various sizes to meet the mission. Prices include pilot.
Ground observers	MIAASC will provide ground observers for any mission.
Payload operators	MIAASC will provide experienced sensor operators to operate your equipment or rented equipment.
UAS rental	Aircraft, individual components and ground station rentals can be arranged to support your mission's needs. We have UAVs available for rent in the mini/small and tactical categories.
Ground station rental	
Pilot services	MIAASC will provide experienced pilots to fly your equipment or rented equipment.

Technical Support

Data interpretation processing	Clients testing proof of concepts in agricultural surveys, oil and gas inspections, power line inspections, or environmental monitoring, are all examples of applications that require significant post data processing. Our personnel have state-of-the art experience with technology and the software needed to efficiently assist clients in this process.
Mission planning	Experienced planners stand ready to provide specific mission planning advice, including flight-test designs (routes, altitudes, test parameter sequences, ATC coordination requirements, weather interpretation and decision making, etc.)

Rules & Procedures / Consulting

Standard Operating Procedures (SOP)	MIAASC has personnel specializing in COA applications, CONOPS or standard operating procedures. We can prepare the required documents for you, or be available to support your staff. The revision will guarantee that your procedures are compliant with FAA and our test sites locations standards.
Certification of Authorization (COA)	COA preparation and review. MIAASC's team of experts will make sure your documents are compliant with FAA requirements

Fixed Base Operations (FBO)

Hangar rental	Hangar space at a competitive price available for annual or monthly leasing.
Office space rental	Office space at a competitive price available for annual or monthly leasing.
Maintenance	Minor airframe, engine, payload maintenance.
Fuel	Competitive fuel price.
Ground Handling	Ground handling available on-demand.
Car/Van/Trailer rental	Vehicles capable of accommodating any mission will be made available for the transportation of individuals and equipment, to sites throughout the MIAASC region.

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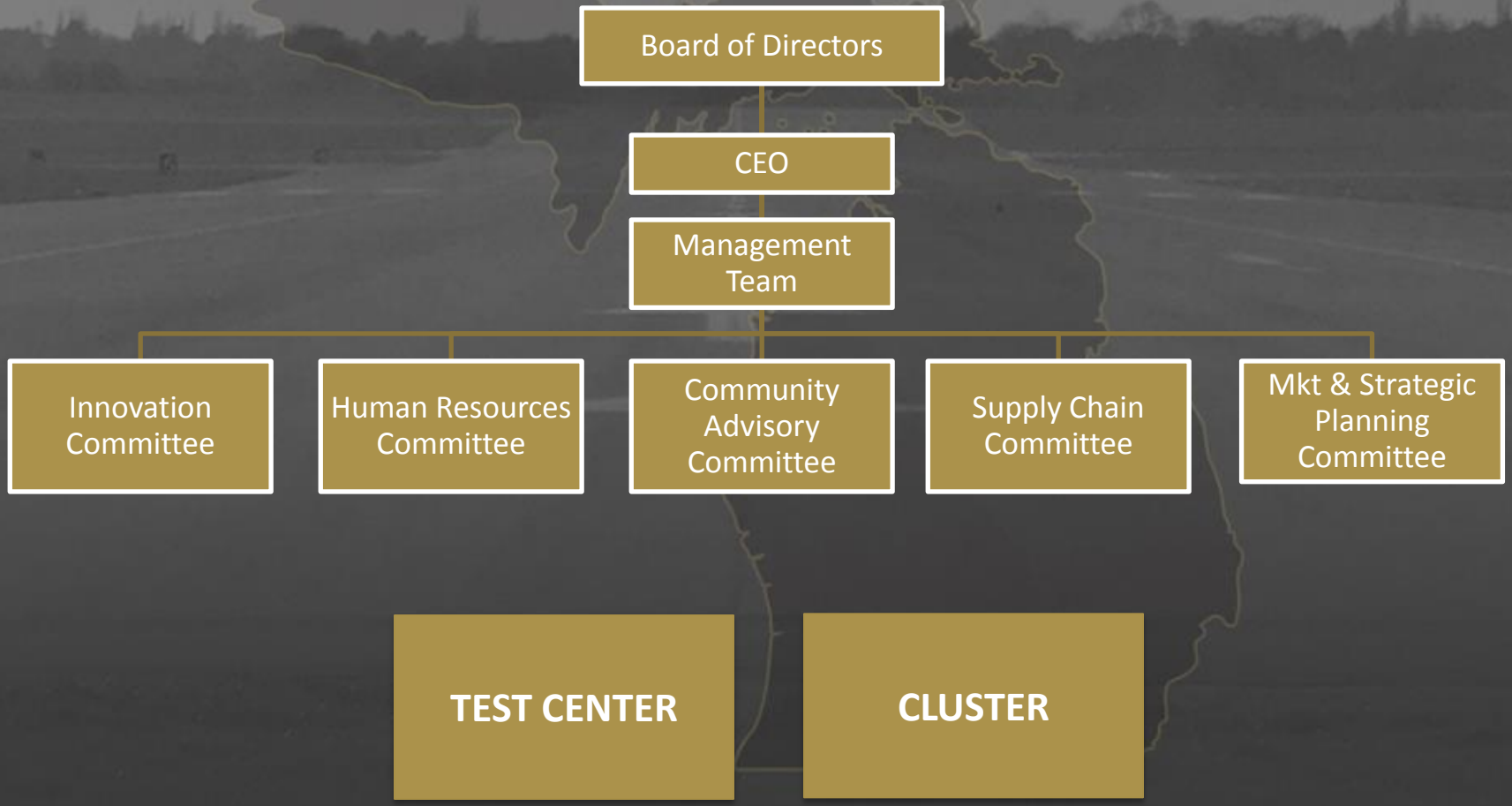
An Integrated Model



Committees

Innovation Committee: The mission is to foster R&D development and collaboration between members companies, academia, R&D centers and State & Federal agencies. Among the activities, the committee will be responsible to prepare a technology road map, to oversee R&D orientations and goals, to help obtain R&D funding and to support R&D infrastructure development. To achieve its mandate and guide MIAASC towards R&D segments that are promising for the future, the innovation committee will fulfill the following tasks:

- Per annum, provide a SWOT analysis of MIAASC R&D positioning and make recommendations to the board.
- On an ongoing basis, analyse and determine commercial UAS applications with high potential for MIAASC group of private and public organisations.
- Monitor new programs and funding opportunities for targeted R&D segments.
- Per annum, review MIAASC infrastructure and equipment and provide to the board a list of suggested improvements.

Committees

Human Resources Committee: The mission is to develop the human capital and retain talent with unique expertise in UAS. Among the activities, the committee will look at labor availability, training and skill-set requirements, at promoting the industry to high-school students, internship and mentorship programs dedicated to the unmanned vehicles sector, and at retaining key professors and researchers. To achieve its mandate and ensure long term competitiveness of MIAASC's core asset, its human capital, the human resources committee will be in charge of the following:

- Per annum, survey MIAASC members and clients and identify their manpower needs and requirements.
- On an ongoing basis, monitor market changes and new trends in the MIIASSC industry.
- Per annum, provide to the board of directors a list of action items that have to be prioritized in order to sustain MIAASC members and clients' expertise and know-how.

Committees

Marketing & Strategic Planning Committee:

The mission is to help structure marketing tools, and drive the notoriety of the MIAASC Consortium. The committee's mission will also be to provide a strategic vision and objective to MIAASC's board. Among the main activities, support the development of the marketing plan, branding and image, structure a public relations plan, and provide coaching to the chairman and CEO. The activities will also encompass the progress of a strategic development plan, annual brainstorming sessions, and oversight of the cluster's activities.

Committees

Community Advisory Committee: The mission is to be responsive to issues that may arise from the state and local community, in regards to operation and development of UASs. Among the responsibilities, the committee will recommend public relation strategies and mitigation strategies, and will gather sensitive information for the management team. To achieve its advocating and communication mandates, the community advisory committee will undertake the following:

- Per annum, or as required, offer support advice to public authorities.
- On an ongoing basis, gather and send to the board of directors any information pertaining to UAS public acceptance and privacy issues.
- Per annum, make recommendations to the board on how to adapt and modify our communication strategies, to enhance public awareness and acceptance of UAS.

Committees

Supply Chain Committee: The mission is to support and lead the development of a UAS supply chain in Michigan, and improve its integration. Among the activities, develop a best practice manual, coordinate supplier certification and skill-set development, define the supplier network and supplier-OEM interrelations, assess procurement requirements, and for both short and long-term objectives of the OEMs. Overreaching goal is to improve MIAASC UAS supply-chain efficiency and reliability. To achieve its mandate and improve MIAASC's supply chain efficiency and reliability, the supply chain committee will perform the following tasks:

- Per annum, conduct an overall review of MIAASC's service offering, and determine services to add to the flight-test center or cluster package.
- On an ongoing basis, make recommendations to the Board of directors on ways to improve service delivery and efficiency of the value chain.

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MIAASC CLUSTER SERVICES

IN SUPPORT OF YOUR BUSINESS

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Membership Package

Discounts & Rebates Benefits:

- Airspace Access Fee Discount
- Rebate on Fuel Purchases
- Preferred Rental Price
- Annual Industry Event Discount
- B2B Networking Conference Event Discount

Non-monetary Benefits:

- Advertisement on MIAASC Marketing Material
- Exclusive Business Committees
- Access to Business Intelligence

Training & Education

MIAASC offers state of the art facilities, with academic classrooms, simulation hardware and software, maintenance training / diagnostic equipment and hangar bays for hands-on instruction. Our partners institutions provide courses on multiple platforms and command/control packages, coupled with a real-world experience are an integral part of the program.

Type of courses offer:

- pilots, observers, imaging/sensor operations, software programming, networking and maintenance.

Research & Development

MIAASC possesses several agreements with Academic organizations that conduct basic and applied research, in a broad variety of fields, with application in all facets of UAS technology. University affiliations include :

- University of Michigan
- University of Texas in Dallas
- Northwestern Michigan College
- Michigan Technological Research Institute
- Central Michigan University
- Western Michigan University

Supply Chain

MIAASC will provide its clients and members with a turnkey solutions for all their business needs. Our networks, members and associates partners will offer the services & products for the whole value chain:

- Fundamental & Applied Research
- Engineering & Design
- Prototyping
- Manufacturing
- Maintenance
- Business Development
- After-markets sales support

Advocating & Business Development

MIAASC has a team of experts to support its members organizations and the UAS business community:

- Representation of Interests
- Funding Assistance & Consulting
- Trade Missions
- Market Data & Intelligence
- Marketing

Events & Conferences

MIAASC will organize a series of events and conferences to support the business development of its members, partners and clients:

- Annual Conference & Trade Show
- Quarterly B2B Networking Sessions
- R&D Symposium
- Supply Chain Conference

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MIAASC WEBSITE AND 2013 CONFERENCE

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2013 Michigan UAS Conference

- 2 day event on October 28-30th at the Sheraton Convention Center, Ann Arbor.
- 150+ attendees representing industry, government agencies, academia, law enforcement and commercial end-users.
- More than 15 industry speakers and panelists.
- In partnership with AUVSI Association for Unmanned Vehicle Systems International Great Lakes

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http://michiganuasflighttestcenter.com

Flight Demonstration

THANK YOU FOR YOUR PARTICIPATION!