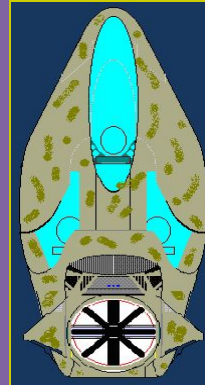
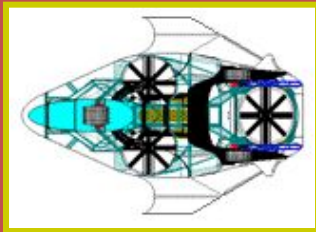


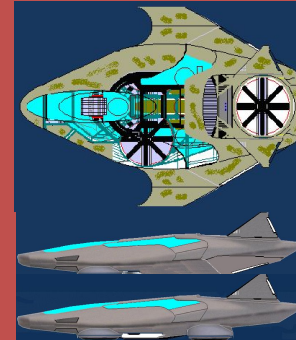
AirShip Technologies Group

- Phase 1 – Vehicle design and preliminary prototype analysis of endurance trade-offs
- Phase 2 – Verification of flight control (theory, simulation, and VTOL UAV demonstration)
- Phase 3 – Dual-Use Commercialization and Certification

Reinvent the Future!



Construction



Manufacture



AirShip V2 & AirScape Supply Chain

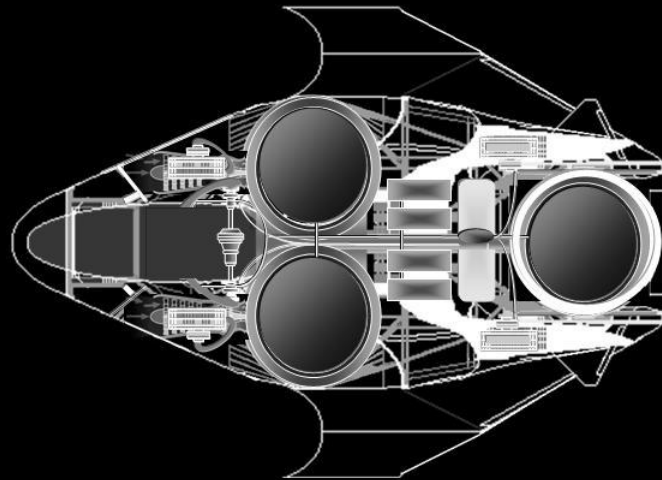
Presented to the University of Portland Operations & Technology Management
Benjamin.Berry@comcast.net 503 320-1175

AirShip V2 UAV VTOL

— Flight Test #2 September 16, 2012



http://www.youtube.com/watch?v=kOOJ86VR_G0



AirShip Wins Linus Pauling Award

2011 Willamette Innovators Network Conference



AirShip Technologies Group won the Win2011 Linus Pauling Innovative Company of the Year award with their entry of the AirShip VTOL UAV Transformer known as "AirShip Endurance V5." Fellow innovators from around the Pacific NW region met at the Willamette Innovators Summit for an evening of networking and collaboration. Cutting-edge research, commercialization efforts from Oregon State University and exhibits from over 50 leading businesses were represented within the area. The event featured industry leading speakers and success stories from the region's star entrepreneurs. Ben Berry, CEO of AirShip Technologies Group, demonstrated the prototype AirShip VTOL UAV. November 10, 2011

What is AirShip Technologies Group

- **AirShip designs and manufactures** vertical takeoff and landing (VTOL) unmanned aerial vehicles (UAV).
- **FAA law ushers in untapped demand for UAV aircraft**
 - 30,000 commercial UAVs forecasted worldwide by 2018, with United States accounting for half of them.
 - Hungriest commercial market is the nation's 19,000 law-enforcement agencies. *(4.4 lbs UAV at 400 ft altitude ceiling)*
 - UAVs in demand with an expanded domestic mission.
- **AirShipTG Competitiveness & Value Proposition**
 - 4-scaled UAV versions and Solar Turbine propulsion.
 - Innovative air, ground and persistent endurance.

MEETS 3 out of 4

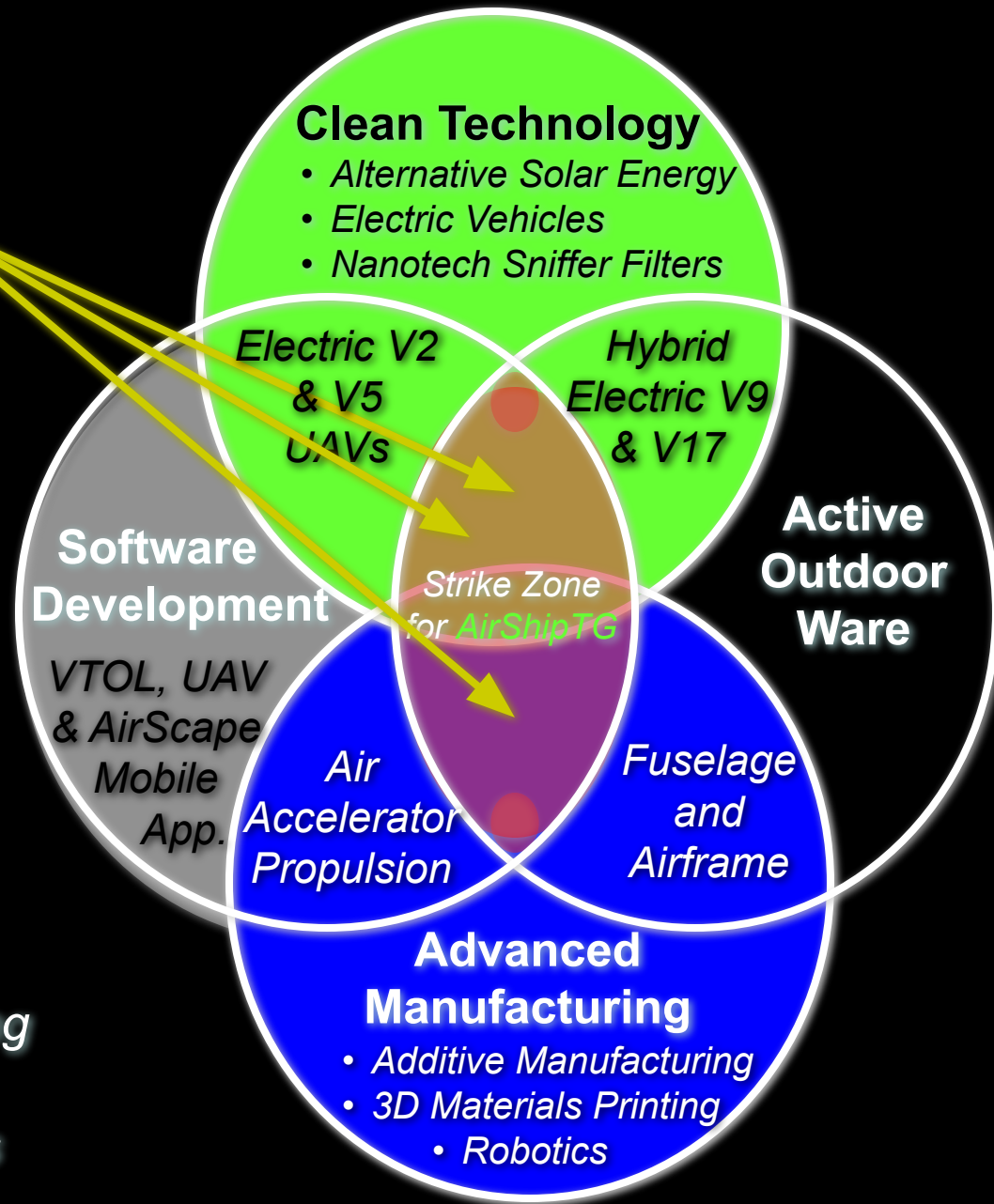
Portland Development Commission
Investment Focus

Oregon Jobs

Year	Direct Jobs	Derived Jobs	Total Jobs
2012	5		
2013	7		
2014	29		
2015	404		
2016	1,004		
2017	2,504		

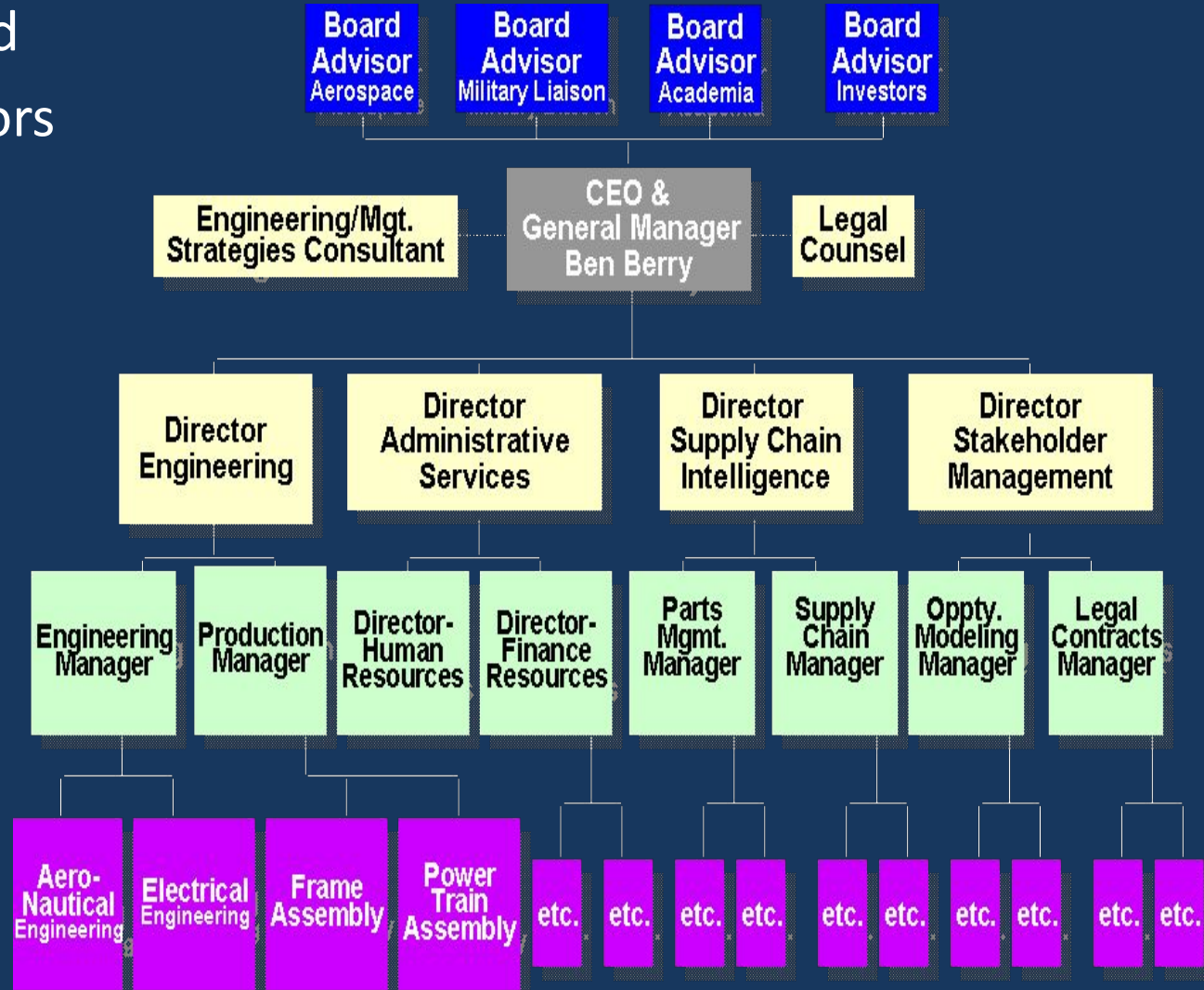
Family Wage Jobs

- Clean Tech Manufacturing
- Solar Film Production
- Aerospace and Business Professional Services

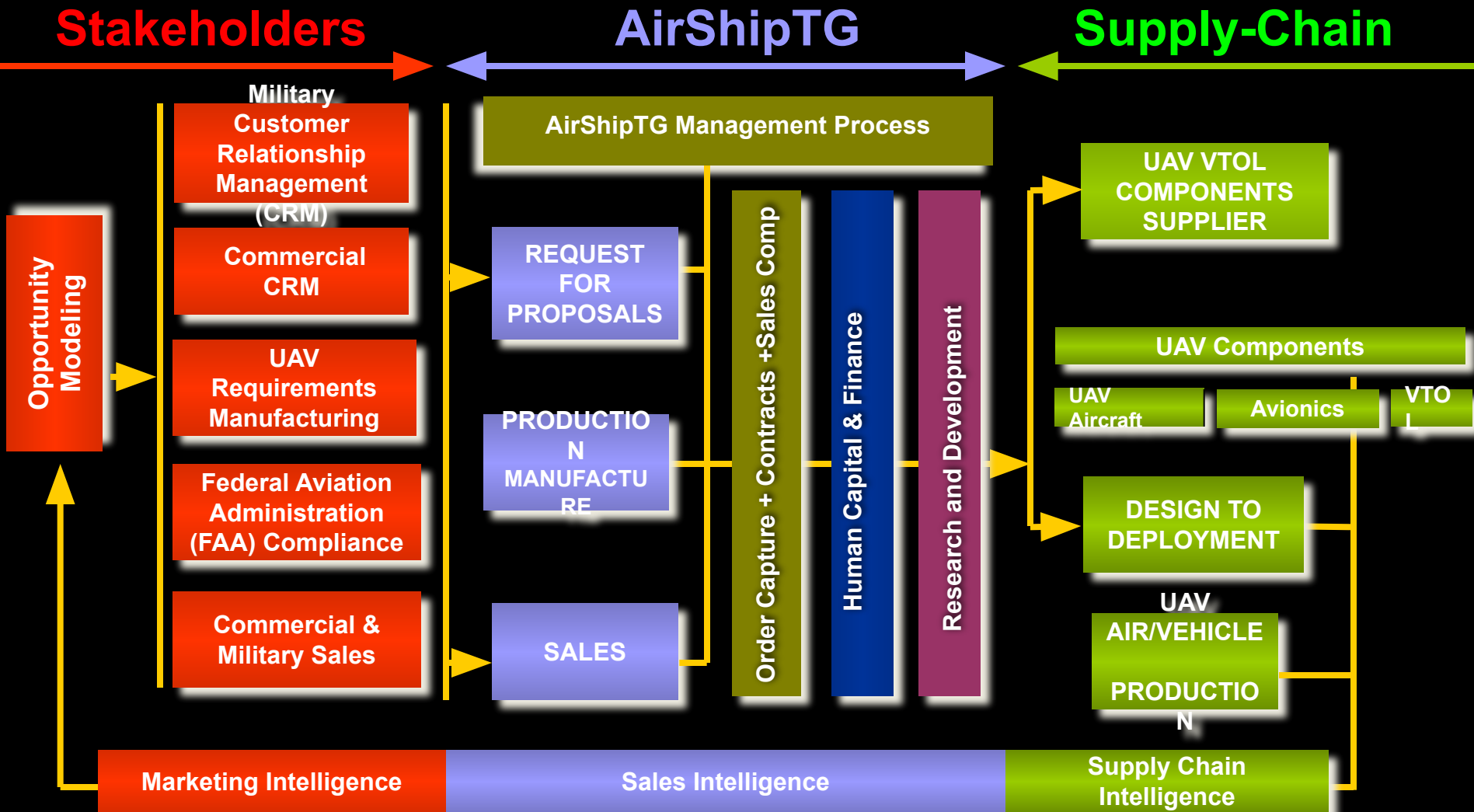


AirShipTG: Functional Organization Chart

- Privately owned
- Board of Advisors advise CEO
- Academic/commercial partnerships
- UAV air/vehicle design and manufacturing



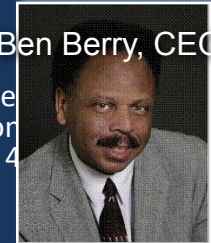
AirScape Concept of Operation and Business Process Model



20-Year Industry Background

Aviation, Aerospace & Transportation

- **AirShip Technologies Group.** Aviation Entrepreneurial CEO and Chief Technology Officer for the AirShip Endurance VTOL UAV program, an air and ground transit air/vehicle designed for new business investment of high endurance unmanned aerial vehicle transportation. Responsible for product development of a fuel-to-electric vehicle powertrain and system integration while leading design, development, production efforts, and providing strategic product and business development solutions. VTOL UAV versions meet requirements for A) Tier I VTOL (vertical takeoff and landing) close proximity up to 4000 ft and B) Tier II VTOL unmanned aerial vehicle (UAV) for medium altitude (10,000 ft) and long endurance (MALE). Spoke about the AirShip V2 and AirScape Service at the November [Oregon 2012 SBIR / STTR National Conference](#).
- **Hughes Aircraft Company/Hughes Electronics.** Computer applications development manager developing global business application products for a \$20B aerospace/defense corporation and enterprise-wide networked information systems including Sales/Marketing, Customer Relationship Management, Corporate Communications, Purchasing/Materials Management, Contracts Administration and Human Resources. Served as information and computing services manager developing all global business applications, end-user computing, and system operations for Hughes Aircraft Corporate Offices. Supported business development for Hughes Corporate, Space and Communications Group, Missile Systems Group, and Radar Systems Group.
- **Royal Saudi Air Force and Litton Computer Services.** Responsible for program controls of a Foreign Military Sales (FMS) supply chain defense automated logistics (AUTOLOG) computer system supporting the Saudi Air Force, US Air Force and Peace Shield. Work included product development comprising operations management, aircraft supply logistics, maintenance, staff training and program monitoring for eight Royal Saudi Air Force (RSAF) bases.
- **Saudi Arabian International Airport Projects.** Consultant technology division manager responsible for managing global strategic, tactical, and operational computing products for three international airports in the Kingdom of Saudi Arabia and supporting Saudia Airlines travel worldwide.
- **Oregon Department of Transportation.** Provided overall leadership in strategic planning, applications development, performance management, and delivery of information services for business, applications, data, and technology for ODOT and several other non-transportation organizations.



Ben Berry, CEO

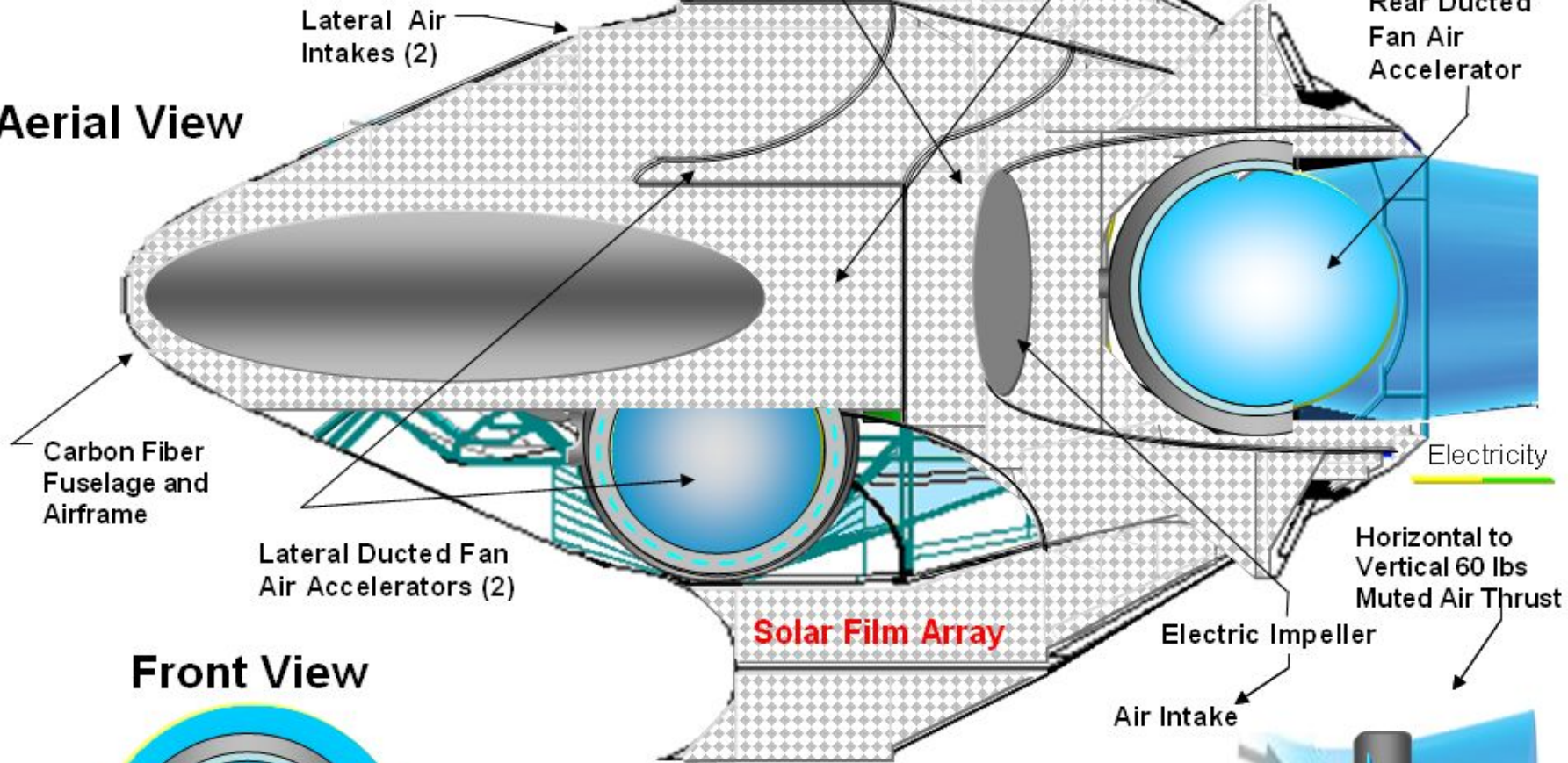
AirShipTG Status

- AirShip VTOL UAV designed by Berry in 1991
- Innovation in AirShip VTOL UAV Technology delivered at PICMET'99 –Science & Engineering Summit
- Team of 16 with 98 years collective aviation & manufacturing
 - 2012 NW Collaboratory & Clean Tech Solar Turbine Proposal
 - Survival Air Stretcher InnoCentive Award, May 2012
 - USAF Research Lab -Special Operations Transport V9 Proposal, 2011
 - SBIR RFP, 2011 - AirShip VTOL UAV V5 Long Endurance VTOL Tier 2
- Upcoming November 2012 Speaking Engagements:
 - SBIR National Conf –AirShip V2 and AirScape Commercialization
 - Luther College (Iowa) –AirShip Solar Turbine Entrepreneurship
 - Luther College –AirScape Cloud Technology Architecture for Virtual City Grid ISR (*Intelligence, Surveillance & Reconnaissance*)

AirShip UAV VTOL Drone

Solar Turbine (Solar Film/Rechargeable Ultracapacitors Electric Propulsion) - Persistent Endurance
V2 and V5

Aerial View



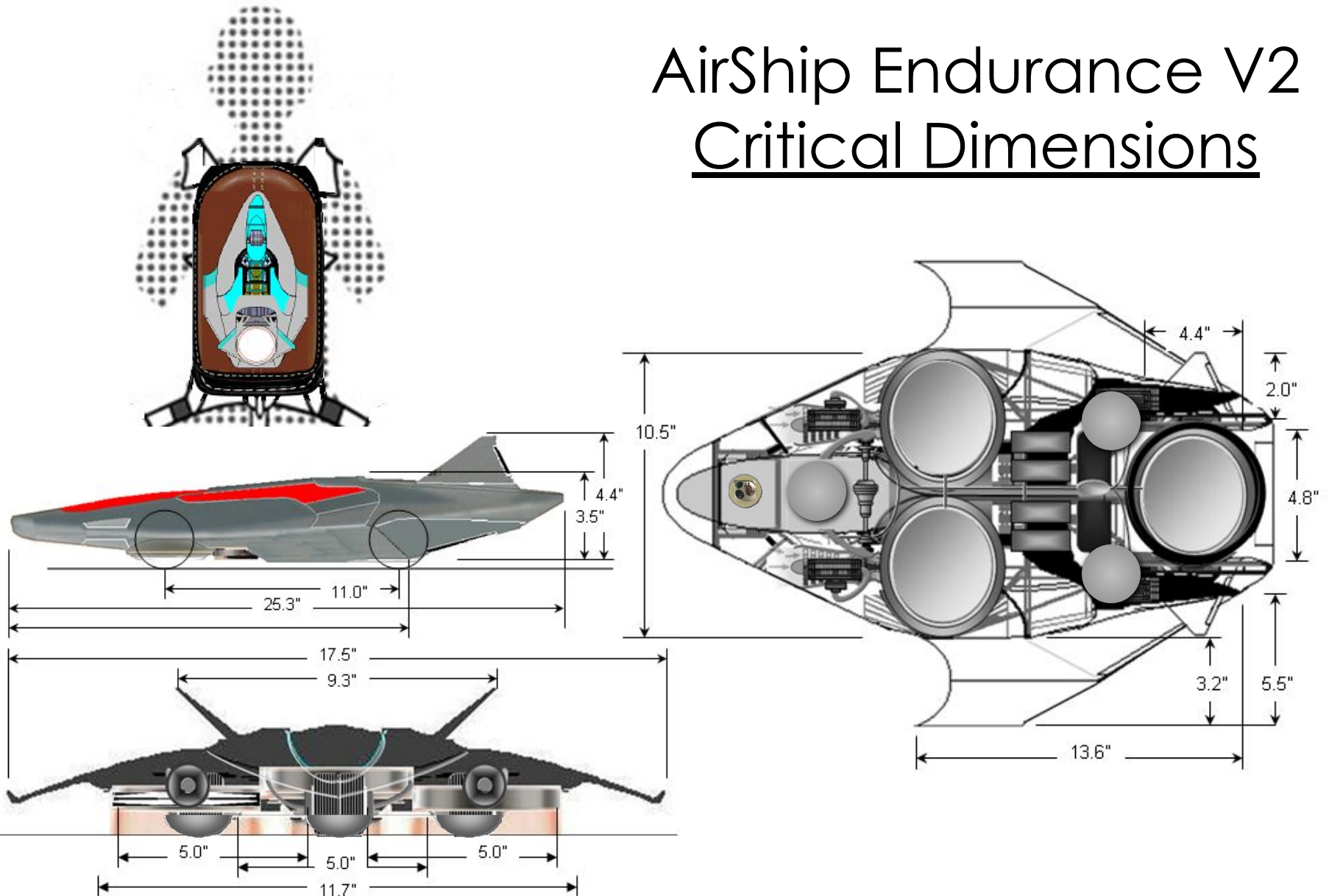
Front View



Lateral View



AirShip Endurance V2 Critical Dimensions



AirShip V2 VTOL UAV - Military 2-foot Drone in a Backpack

The V2 Competition – Ultralite UAV's

	AirShip V2	Dragon Eye	FPASS	Pointer	Raven	BUSTER
Manufacturer	AirShip Technologies	AeroVironment	Lockheed Martin	AeroVironment	AeroVironment	Mission Technologies, Inc.
User Service	Commercial/DOD	Marine Corps	Air Force	SOCOM, AF	Army, SOCOM, AF	Night Vision Labs, US Army
Weight	4.4 lb	4.5 lb	7 lb	8.3 lb	4 lb	10 lb
Length	2.1 ft	2.4 ft	2.7 ft	6 ft	3.4 ft	41 inches
Wingspan	1.4 ft	3.8 ft	4.3 ft	9 ft	4.3 ft	49.5 inches
Payload Capacity	1 lb	1 lb	1 lb	1 lb	2 lb	3.0 lb
Engine Type	Solar Turbine: Solar Film/Ultra Capacitors	Battery	Battery	Battery	Battery	Gasoline/JP-5& JP-8
Ceiling	400 ft	1,000 ft	1,000 ft	1,000 ft	1,000 ft	10,000 ft
Radius	3,500 nm	2.5 nm	6 nm	6 nm	6 nm	10 km
Endurance	30 to 90 days	45-60 min	1 hr	2 hr	1.5 hr	4 + hr
Number Planned	6,120 systems	467 systems*	21 systems	50 systems	300+ systems	9 systems
Estimated Cost	\$19,500	\$60,000-\$70,000	\$300,000	\$35,000	\$35,000	Unknown



* Does not include 4 Dragon Eye, 6 Swift, and 15 Evolution systems (58 UA total) for SOCOM.

The V5 Competition – Small UAV's

	AirShip V5	Cormorant	DP-5X	Long Gun	Neptune	XPV-1 Tern	XPV- 2 Mako	CQ-10 SnowGoose
Manufacturer	AirShip Technologies Group	Lockheed Martin	Dragon Fly Pictures	Titan Corporation	DRS Unmanned Technologies	BAI Aerosystems	NAVMAR Applied Science BAI Aerosystems	MMIST Inc.
Length	5 ft	19 ft	11 ft	12 ft	6 ft	9 ft	9.11 ft	9.5 ft
Gross Weight	25 lb	9,000 lb	475 lb	720 lb	80 lb	130 lb	130 lb	1,400 lb
Fuel Capacity	6 lb	2,500 lb	165 lb	300 lb	18 lb	28 lb	5 gals	91 gal
Engine Make	Solar Turbine	TBD	TPR 80-1	UEV Engines	2-stroke	3W 100 cc	3W 100cc	Rotax 914 UL
Wing Span	3.5 ft	16 ft	10.5 ft	13 ft	7 ft	11.4 ft	12.8 ft	6.8 ft
Payload Capacity	10 lb	1,000 lb	75 lb	160 lb	20 lb	25 lb	30 lb	575 lb
Fuel Type	Electric	JP-5	Heavy Fuel	JPS/JP5/Diesel	MOGAS	MOGAS/Oil	MOGAS/Oil	MOGAS/AVGAS
Power	340 lb thrust	3,000 lb thrust	97 hp @ SL	28 hp, 1KW generator	15 hp	12 hp	9.5 hp	110 hp
PERFORMANCE								
Endurance	30 days	3 hrs	5.5 hrs	30+ hrs	4 hrs	2 hrs	8.5 hrs	19 hrs
Ceiling	10,000 ft	35,000 ft	10,000 ft	15,000 ft	8,000 ft	10,000 ft	10,000 ft MSL	>18,000 ft
Takeoff Means	VTOL -Hover	Rocket-Boosted	VTOL - Hover	HIMARS/Rail	Pneumatic	Runway	Runway	Air Drop/Trk
Max/Loiter Speeds	81/40 kt	0.8M/0.5M	100 kt	125 kt	84/60 kt	87/50 kt	75/50 kt	33/33 kt
Radius	3,600 nm	400-500 nm	410 nm	1,800 km	40 nm	40 nm	40 nm	160 nm
Landing Means	VTOL -Hover	Splashdown	VTOL - Hover	Remote Field	Water/Skid/ Parachute	Runway	Runway	Parafoil
Data Links	LOS C2/ LOS Video				LOS C2/ LOS Video	LOS C2/ LOS Video	C2/ Video	C2/LOS/ BLOS/Video
Frequency	Cellular, UHF/LS band				UHF	L/S band/UHF	VHF/UHF, L-band Video Downlink	L-band
Sensor	EO and IR					EO and IR	EO and IR	Configurable
Sensor Make	TBD					BAI/ PTZ	BAI	



AirScape

1st Responder Commercial Market

**News
Media**



**Law
Enforcement**



Fire Depts.



Agriculture



DOT's



Intelligence

Surveillance

Geo-Imaging

Reconnaissance

AirSniff

Payload

Video-on-Demand

AirScape Services



ISR

Military Emerging Tactical Problem

Major hurdles are faced by military ground troops:

- Need air platform with high flight endurance and capable of driving on prepared surfaces, light off-road conditions or rough terrain, while pilotless flight functionality employs VTOL (vertical take off and landing) ability and cruising up to 10,000 feet above ground.
- Small launch and land footprint.



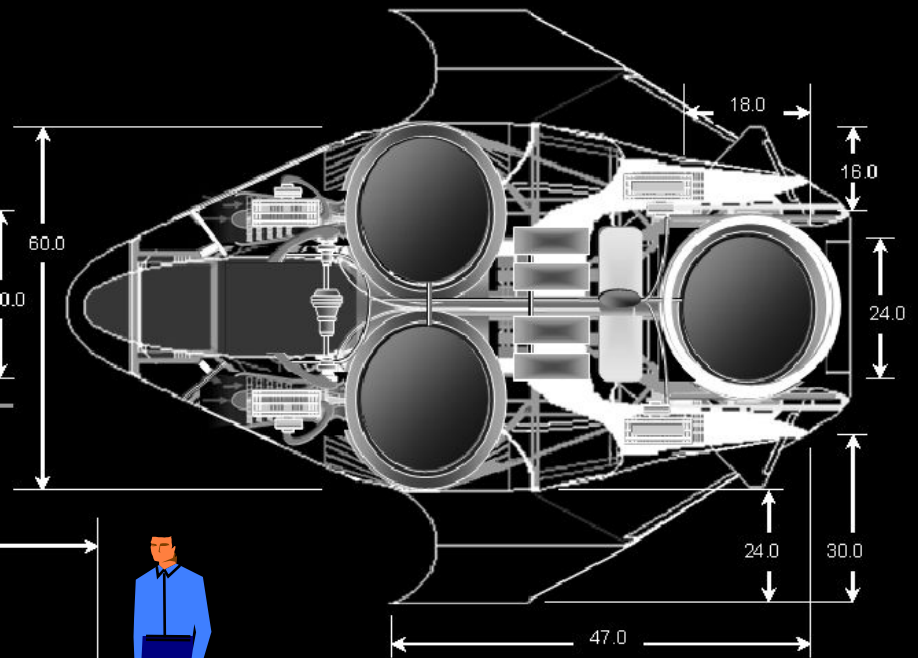
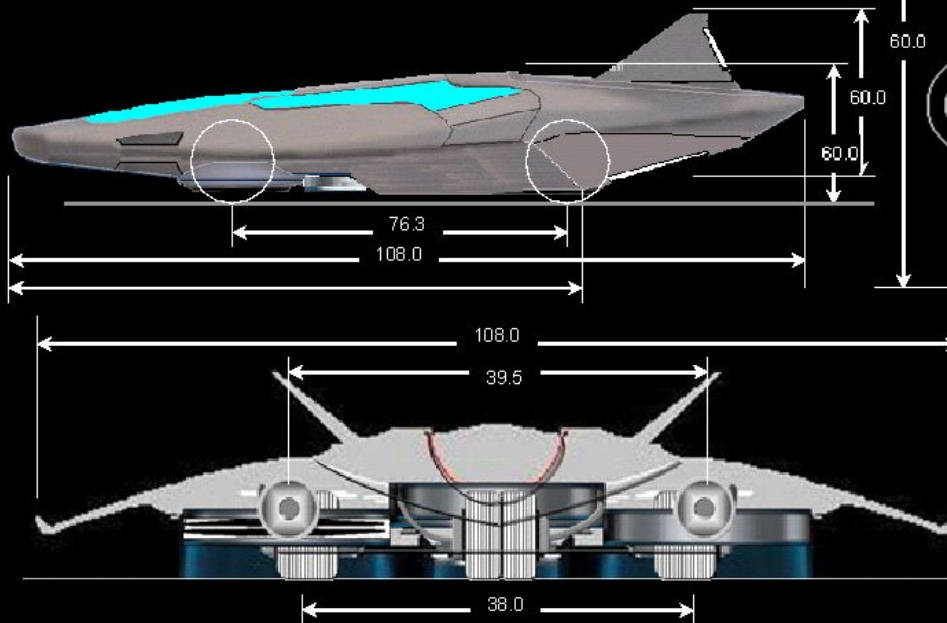
Lockheed Martin's Ducted-Fan Design

Vertical Take Off & Land
VTOL Production

The Challenge:
Build an Air-to-Ground VTOL UAV

AirShip Endurance V9 Critical Dimensions

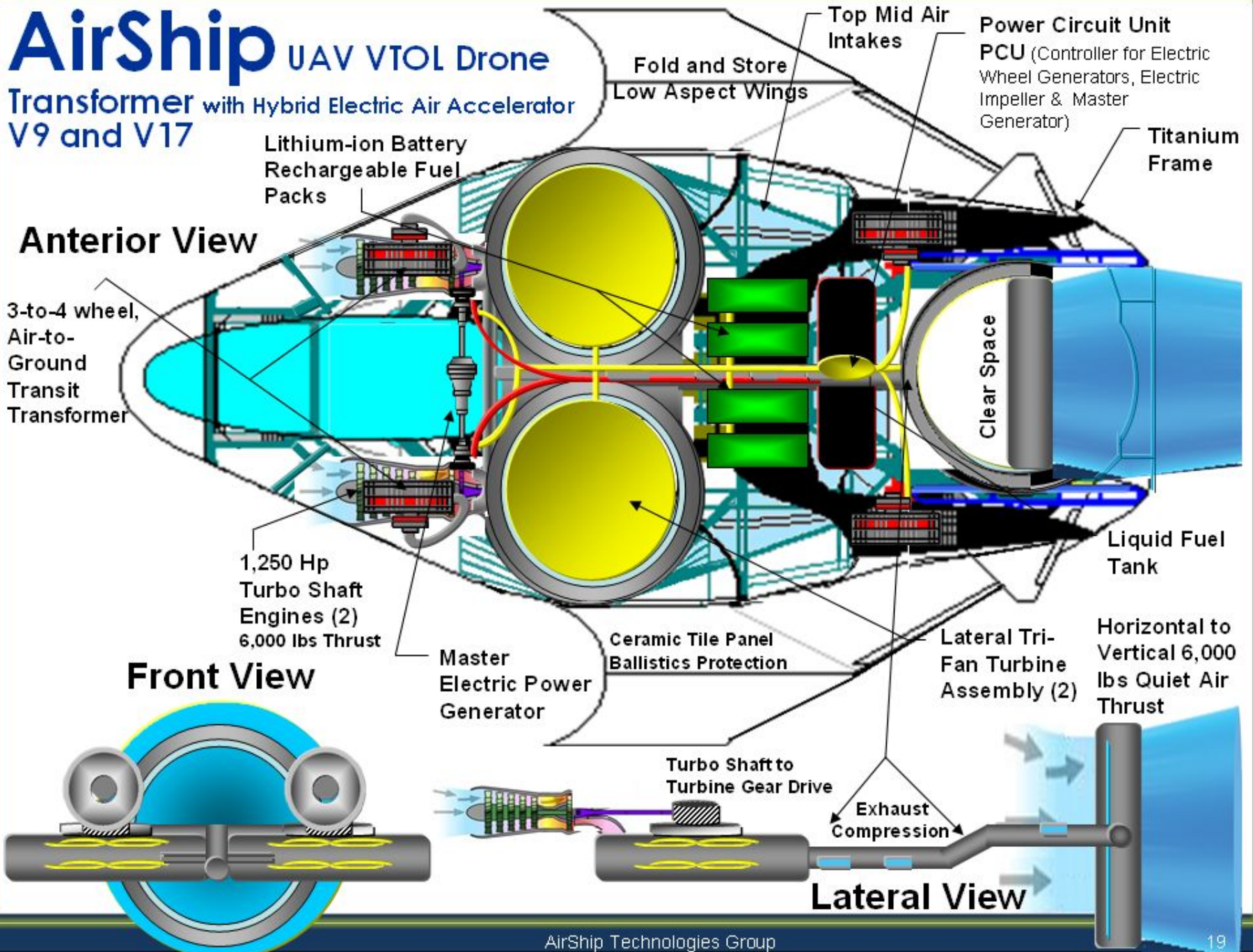
AIR/VEHICLE Critical Dimensions	WING	V-WING TAIL
Area (Sq. Inches) (gross)	1,128.0	207.4
Aspect Ratio (gross)	6.865	1.708
Taper Ratio (trap)	0.228	0.366
Tip Chord (Inches (trap)	8	
Span (Inches) at Flight	108.0	60.0
Span (Inches) at Rest	60.0	16.0



[Special Operations Transport](#) - USAF Research Lab Submittal November 14, 2011

AirShip UAV VTOL Drone

Transformer with Hybrid Electric Air Accelerator
V9 and V17



Mission Cycles without Refueling

V9 and V17

Cycle 1. Ship to Shore Insertion

Depart ship based Staging area

Land at area of operation



Cycle 3. Special Operations Forces Resupply

Load supplies At staging base

Land - Drive Drop off

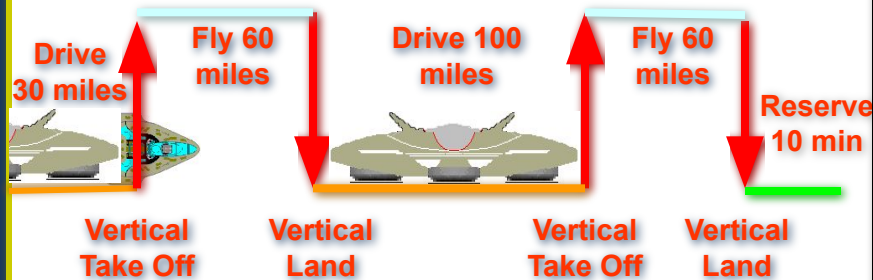
Land back at staging base



Cycle 2. IED Avoidance

Scout or Patrol

Avoid IED Zone



Cycle 4. Medical Evacuations

Depart stage area in response to Emergency Call

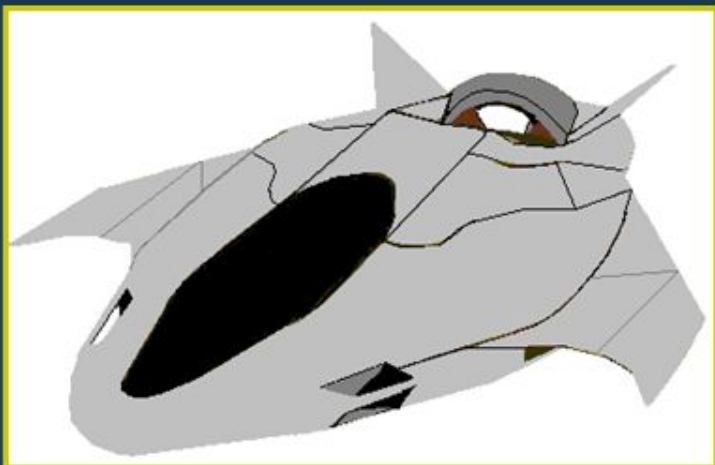
Land - Drive Pickup - Recover

Land at medical facility



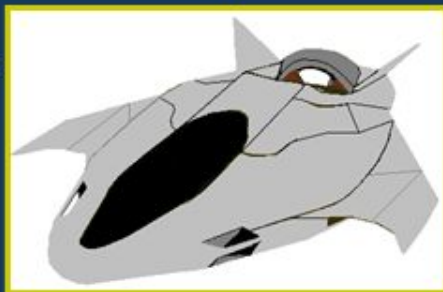
AirShip Endurance

VTOL UAV Diverse Market Requirements



DARPA – US Army

- AirShip Endurance V17
- 4 troops with Equipment
- Resupply
- Medical Evacuation
- 17 ft long by 16 ft span
- 1,500 lbs. payload
- Endurance: 5 hours



USAF – Research Lab

- AirShip Endurance V9
- Special Operations Transport
- 2 troop transport
- 9 ft long by 9 ft span
- 1,000 lbs. payload
- Endurance: 10 hours



USAF – SBIR

- AirShip Endurance V5
- AirScape/AirSniff/ISR – Intelligence/Reconnaissance/Surveillance
- 5 ft long by 3.5 ft span
- 10 lbs. payload
- Endurance: Persistent 30 to 90 days



Dual-Use

- AirShip Endurance V2
- AirScape/AirSniff/ISR – Intelligence/Reconnaissance/Surveillance
- 25" long by 17.5" span
- 4.4 lbs. total weight
- Endurance: Persistent Surveillance with solar film & ultra capacitors 30 - 90 days endurance

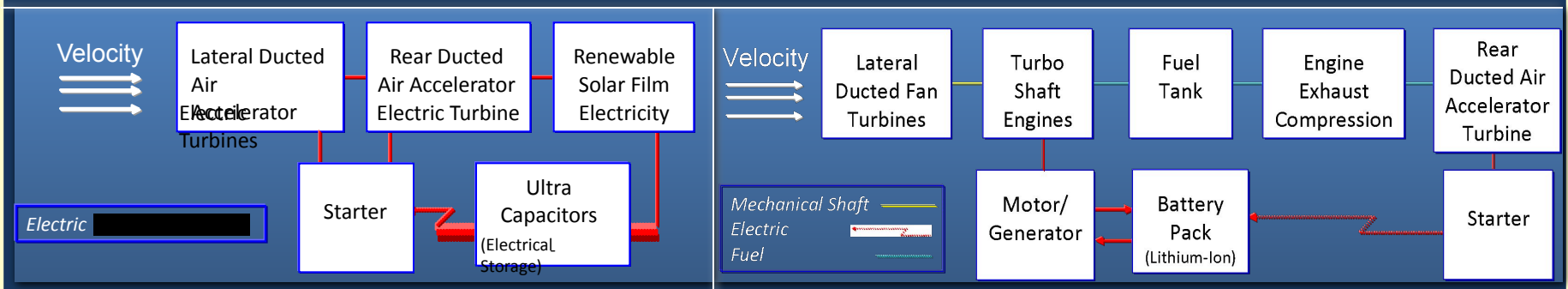
Persistent Flight Endurance

Persistent Endurance is working at a high level for a long time without fatigue setting in early. AirShip Endurance V2 and V5 use a constant recharging electric architecture based on external solar film array and ultra capacitors. With their reduced weight and glide patterns, the AirShip V2 and V5 flight endurance is designed to stay aloft for 30 to 90 days, based on flight speed & weather.



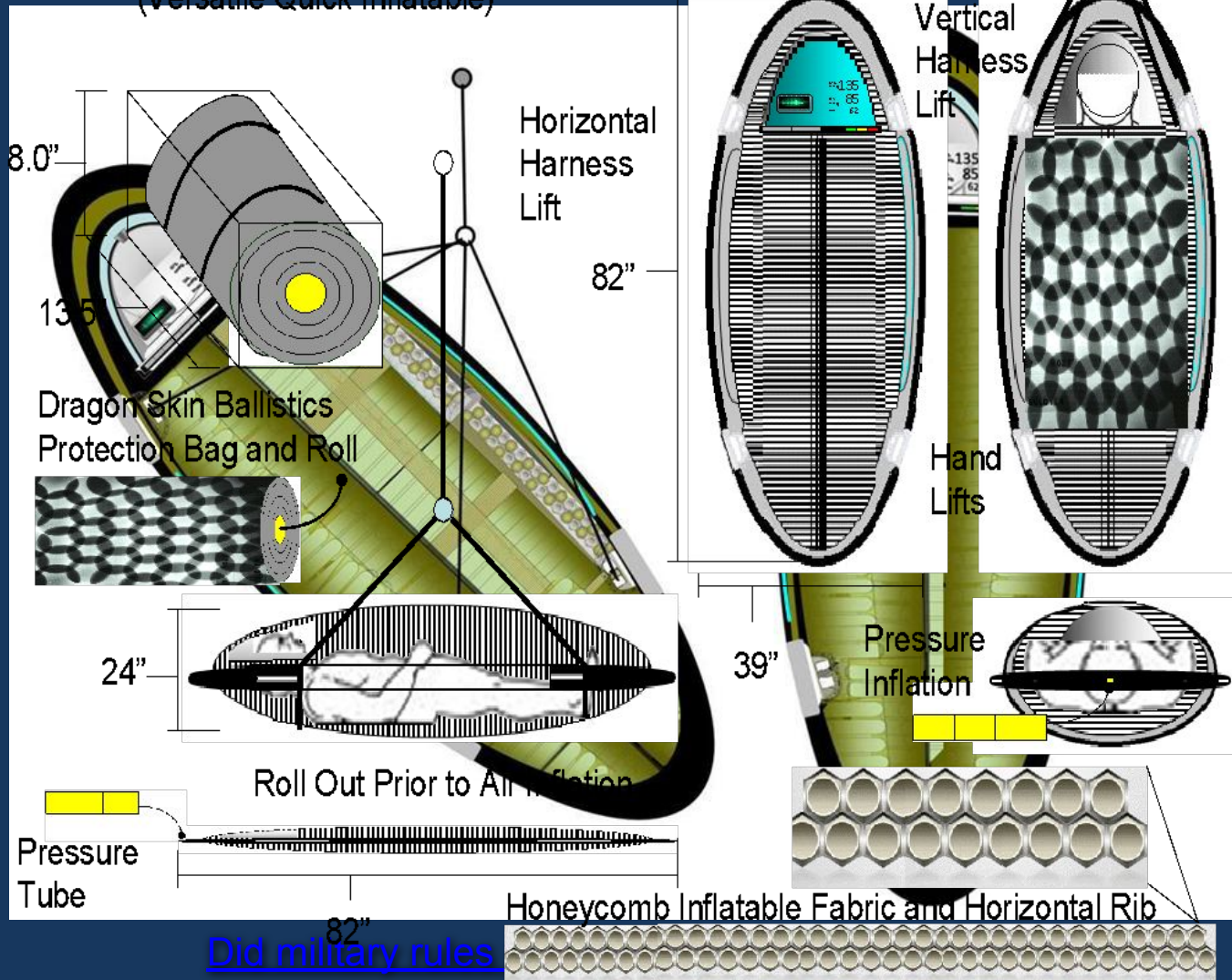
Persistent Endurance: V2 & V5

5 to 10 hours Endurance: V9 & V17



AirShipTG's Survival Air Stretcher

Survival Air Stretcher (SAS) (Versatile Quick Inflatable)



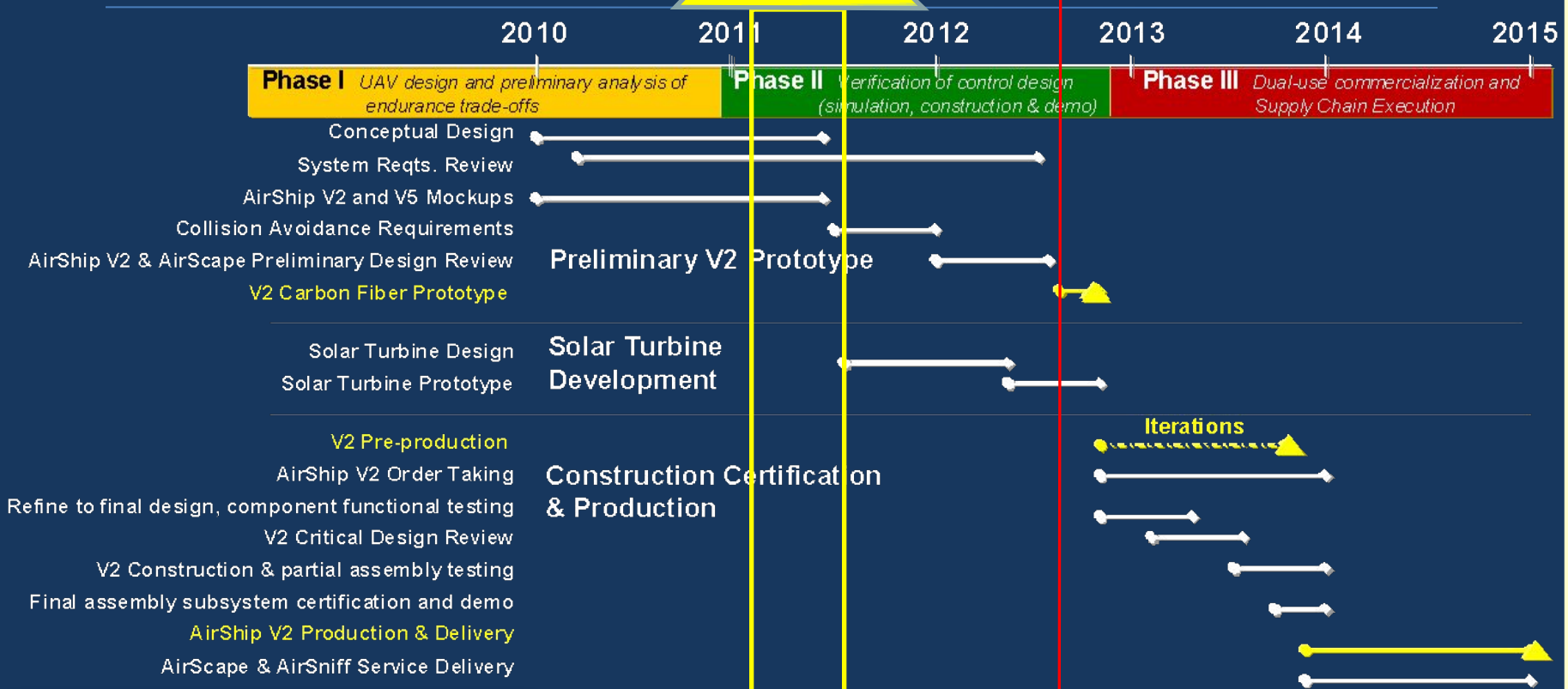
PRODUCT

- ✓ Collapsible
- ✓ Lightweight
- ✓ Strong
- ✓ Quick Loading
- ✓ Lift-to-evacuate
- ✓ Robust to bumps and vibration
- ✓ Traverses rough terrain
- ✓ One-man operation
- ✓ Reusable/separable
- ✓ Quick & compact storage
- ✓ Head & neck support
- ✓ Minimizes total energy required from a rescuer
- ✓ Thermal management for injured person
- ✓ Ballistics protection
- ✓ Face Portal Shield with Interactive Vital Signs Monitor

[Did military rules](#)

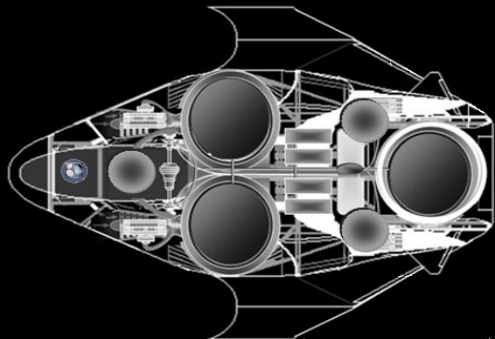
AirShip V2 UAV Development Plan

We are here.



AirShipTG Effort & Focus

Prototype Air/Vehicle	AirShip Reqts.	Initial prototype design	Refine to final design, component functional testing	Construction & partial assembly testing	Final assembly subsystem checkout, prepare to demo
Field Air/Vehicle	Operational concept design	Track traceability	Track traceability	Track traceability	Plan to transition
	UAV Requirements		UAV Design	UAV Construction	UAV V2 Production



The Market – Unmanned Aerial Vehicles

- Unmanned aerial vehicles (UAVs) make up the aerospace industry's most dynamic growth sector. UAV spending is on pace to double during the next decade from current worldwide expenditures of \$5.9 billion annually to \$11.3 billion, totaling just more than \$94 billion, as detailed in a recent *Teal Group market study: World Unmanned Aerial Vehicle Systems—2011*.
- Para-Public Missions Have Grown And Driven The Demand For More Vertical Lift Capability. How about UAV replacements?

Drug Interactions



Plan Colombia: \$1B international aid program includes the acquisition and support for approx. 100 helicopters.

Humanitarian



US Civil and Military Forces have participated in over 30 humanitarian missions since 2001, most requiring significant vertical lift.

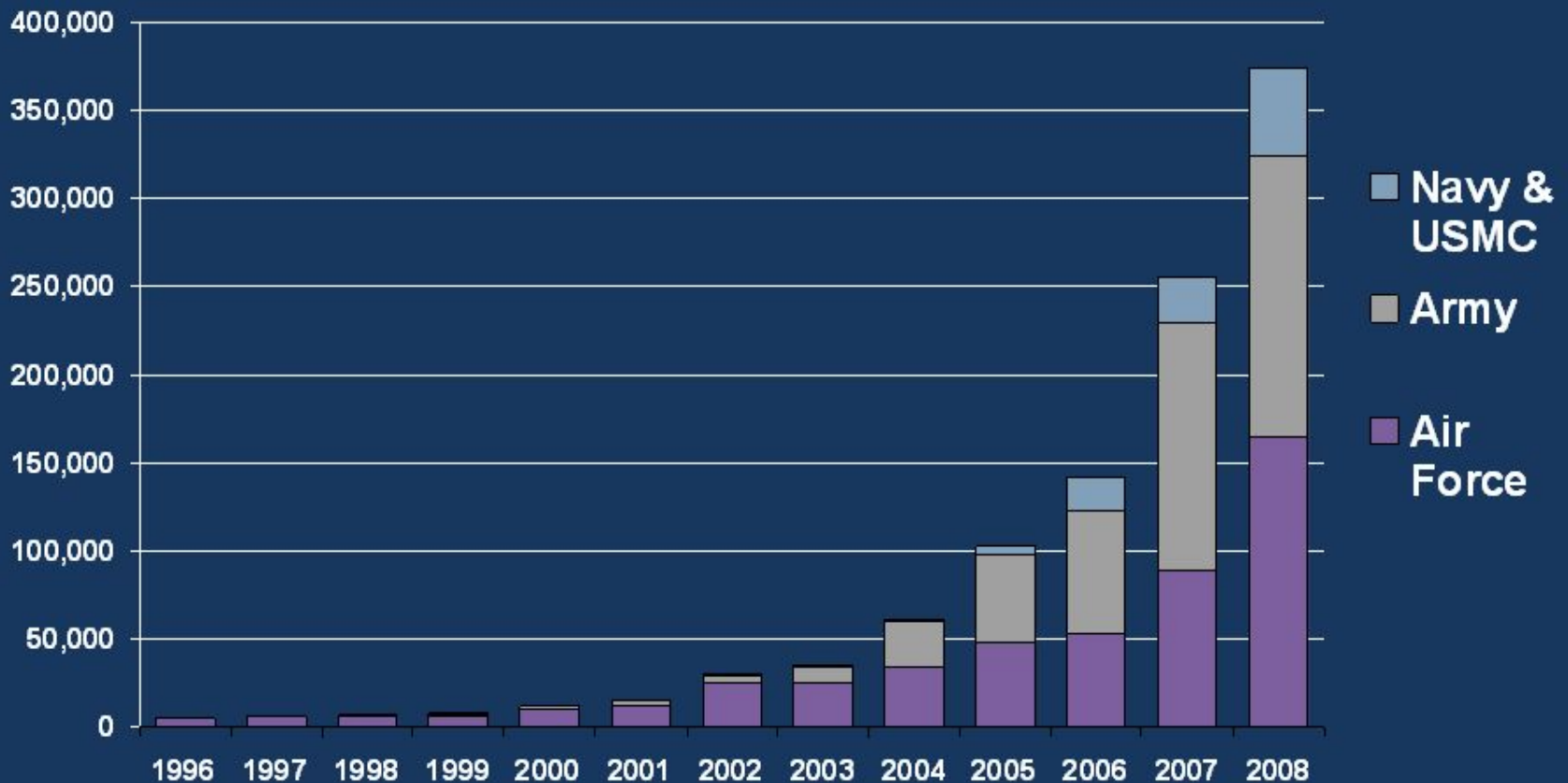
Border Patrol



US Borders And Customs Patrol has added 50 helicopters in the past decade (total force on 70) and expected to add 55 more in the next 5 years.

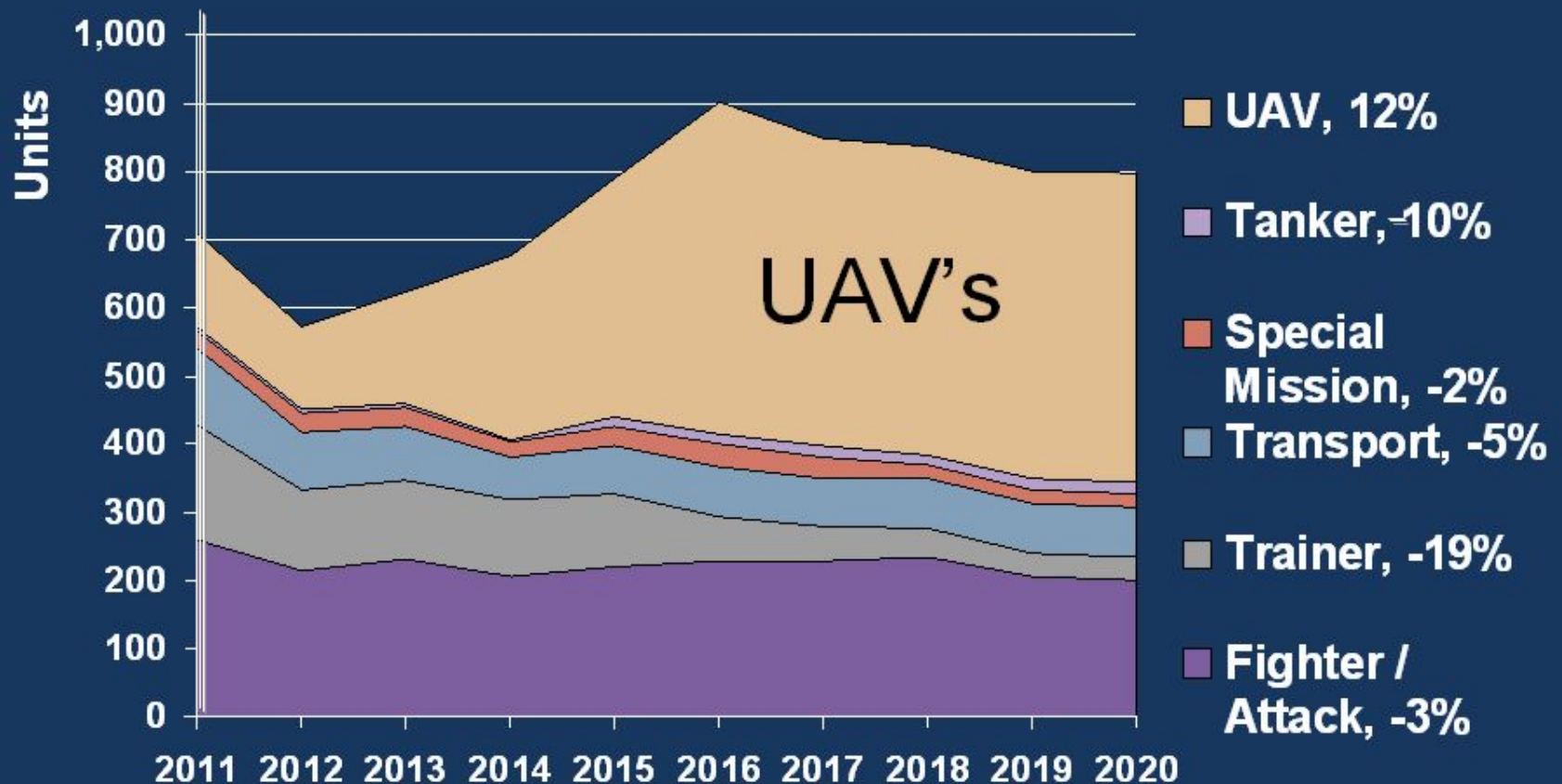
Technological Innovations Such As The UAV Have Driven Growth In Battlefield Intelligence

Airborne Intelligence, Surveillance and Reconnaissance (ISR)
Full Motion Video Collection (Flight Hours)



Over The Next Decade, Fixed Wing Aircraft Production Will Be Replaced In Part By UAV Production ...

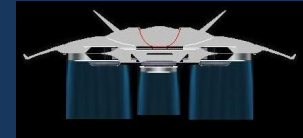
Worldwide Military Fixed Wing Aircraft Production (2011-2020)



Marketing Plan

- **Market AirShip VTOL UAVs for V2 and V5**
 - With the domestic market recently opening for US national air space UAV operations, focus on building brand awareness based on AirShip V2 & V5 competitiveness.
 - Once US Air Force and Army post RFPs & contracts for air-to-ground transit UAVs, then market V9 and V17 UAVs.
- **Promote AirShipTG Brand**
 - Create brand awareness and business credibility by establishing worldwide relationships with defense and commercial customers and suppliers.
- **Public Relations Blitz**
 - Focus advertisement through public speaking, internet, conferences, newspapers, publications, and bloggers.

Proposed AirShip V2 Capitalization



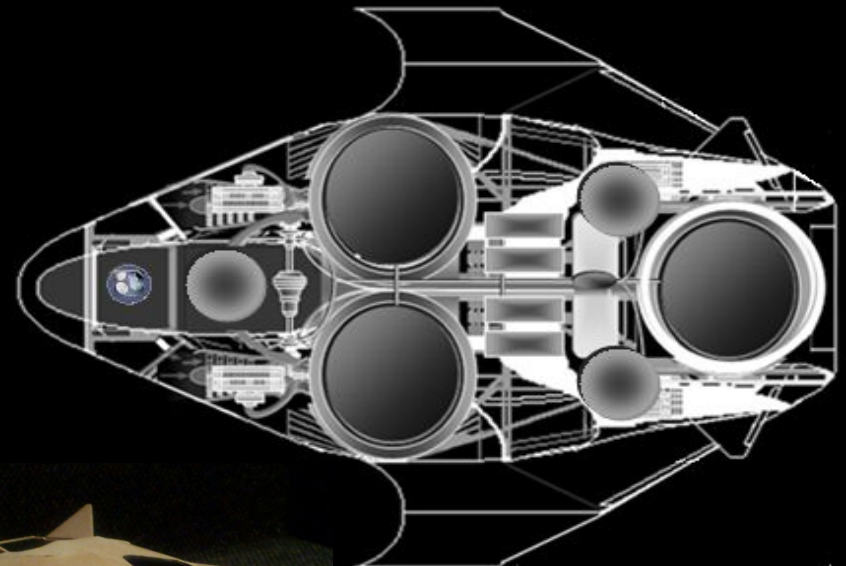
	2012	2013	2014	Total
PHASE 1	\$1,500,000	\$1,625,000	\$0	\$3,125,000
PHASE 2	\$0	\$500,000	\$440,000	\$940,000
PHASE 3	\$0	\$200,000	\$860,000	\$1,060,000
PHAST 4	\$0	\$175,000	\$1,700,000	\$1,875,000
Capitalization	\$1,500,000	\$2,500,000	\$3,000,000	\$7,000,000

Phase 1 – Vehicle design and preliminary prototype development and analysis of endurance tradeoffs.

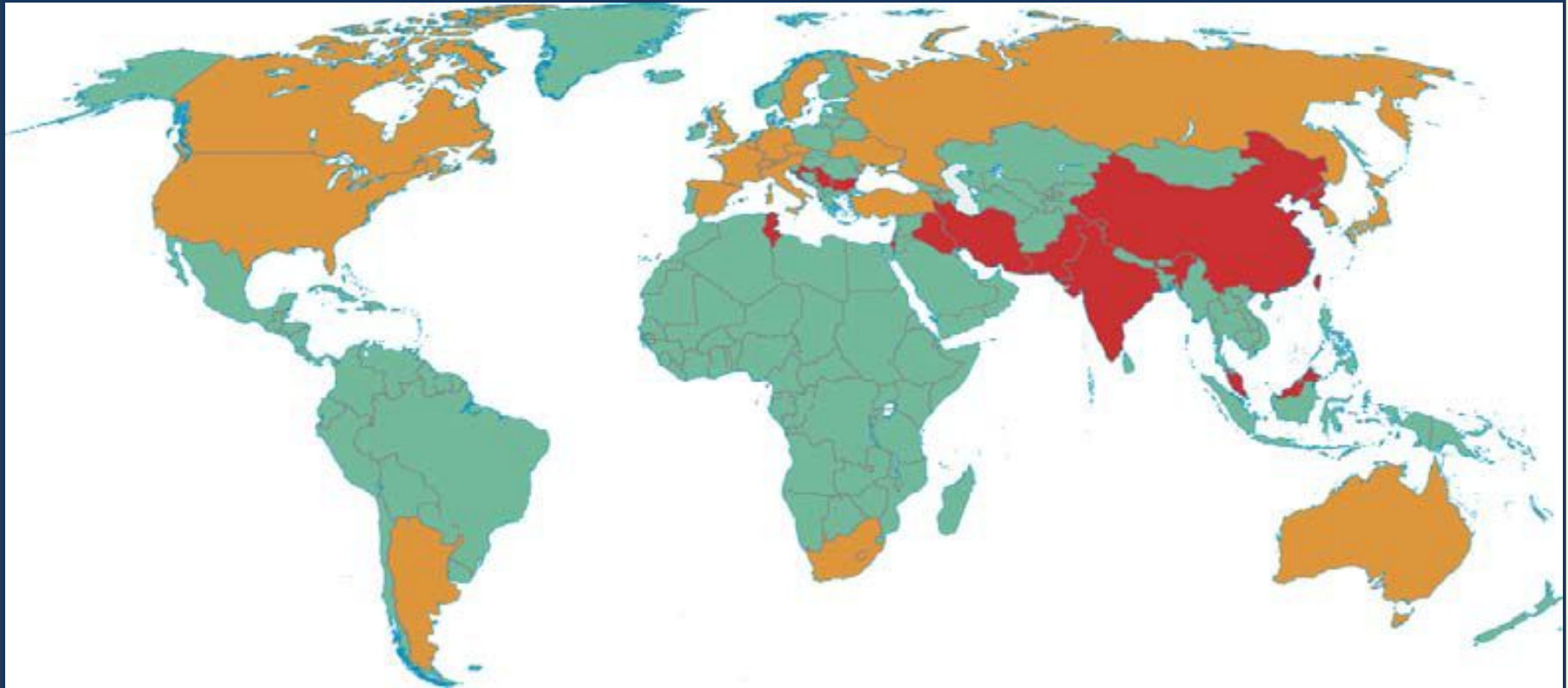
Phase 2 – Verification of flight control (simulation, Solar Turbine VTOL UAV demonstration, collision avoidance); preliminary order taking.

Phase 3 – Dual-use commercial and military certification, pre-production, production, outsourced order fulfillment, and AirScape Cloud launch.

Phase 4 - Launch AirShip V2 UAV product and AirScape Service; Build and open AirShipTG UAV production and operations facility.



Geographic Regions



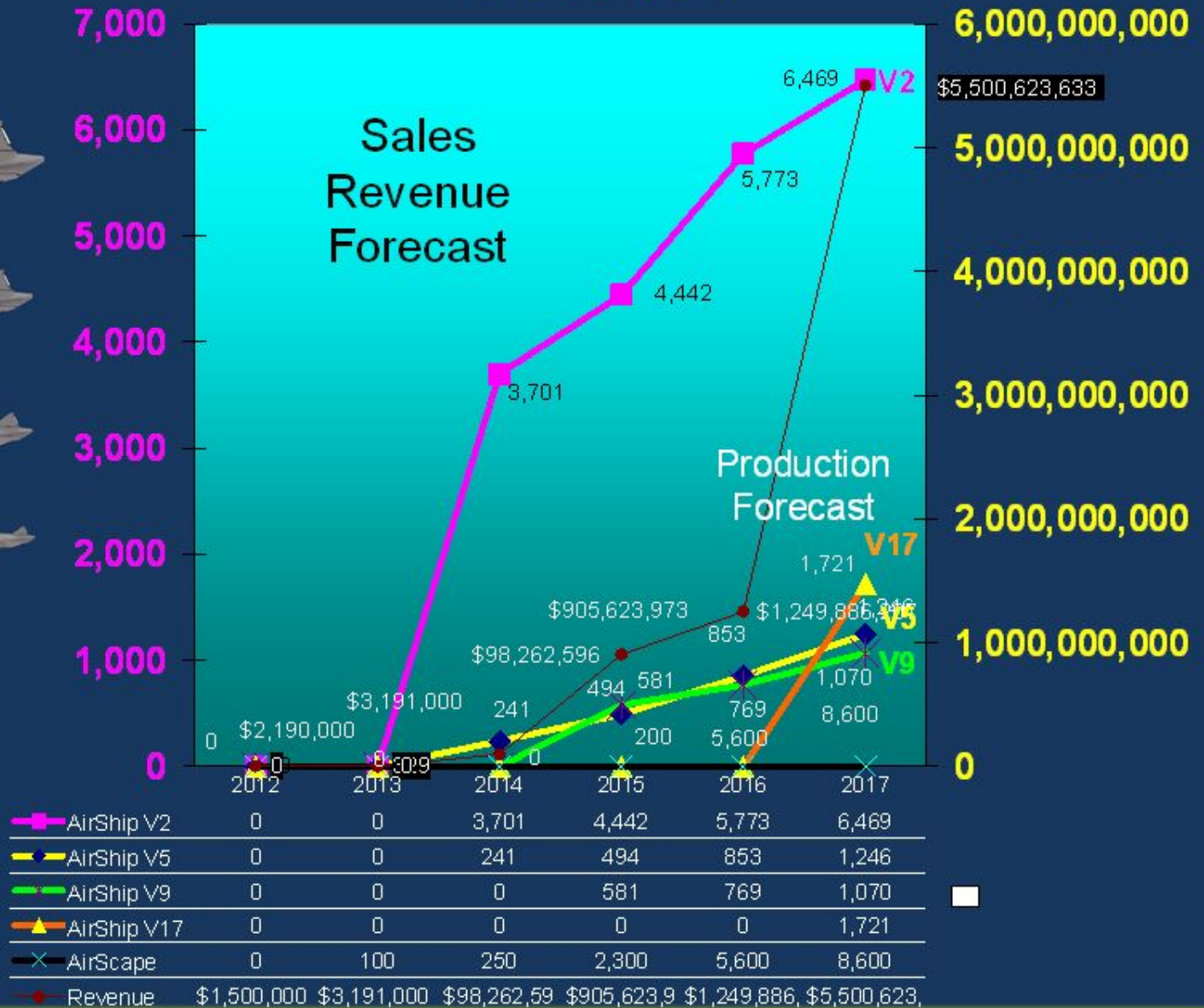
MTCR Member*	UA Exporter	UA Operator	UA Manufacturer	UA Developer
Switzerland	yes	yes	yes	yes
Turkey	yes	yes	yes	yes
Ukraine	yes	yes	yes	yes
United Kingdom	yes	yes	yes	yes
United States	yes	yes	yes	yes

* Although not a member of the MTCR, Israel has pledged to abide by its guidelines.

AirScape Financial Projections

REVENUE	2012	2013	2014	2015	2016	2017	Sub-Total	% Revenue
Income from Sales	\$0	\$0	\$83,962,809	\$801,295,289	\$1,097,111,435	\$4,879,797,918	\$6,862,167,450	88.44%
Income from Spare Parts Sales	\$0	\$0	\$5,877,397	\$56,090,670	\$76,797,800	\$341,585,854	\$480,351,722	6.19%
Income from Service Contracts	\$0	\$0	\$4,198,140	\$40,064,764	\$54,855,572	\$243,989,896	\$343,108,373	4.42%
Income from AirScape Service Contracts	\$0	\$275,000	\$756,250	\$7,653,250	\$20,497,400	\$34,625,965	\$63,807,865	0.82%
Capitalization	\$1,500,000	\$2,500,000	\$3,000,000				\$7,000,000	0.09%
Consulting Professional Services	\$0	\$416,000	\$468,000	\$520,000	\$624,000	\$624,000	\$2,652,000	0.03%
SUBTOTAL	\$1,500,000	\$3,191,000	\$98,262,596	\$905,623,973	\$1,249,886,207	\$5,500,623,633	\$7,759,087,409	100.00%
	0	0	\$50.38	\$1,125.67	\$1,299.11	\$1,545.79		
COSTS	2012	2013	2014	2015	2016	2017	Sub-Total	% Cost
Property Taxes, Building & Utilities Expense	\$2,500	\$186,430	\$186,430	\$5,000,000	\$7,500,000	\$10,000,000	\$22,875,361	0.54%
Principals' Salaries Expense	\$175,000	\$525,000	\$3,500,000	\$4,800,000	\$8,000,000	\$13,500,000	\$30,500,000	0.72%
UAV Manufacturing Staff Salaries Expense	\$324,480	\$417,768	\$2,237,565	\$35,456,806	\$91,301,275	\$235,100,782	\$364,838,676	8.62%
UAV Production Expense	\$45,000	\$168,700	\$44,429,991	\$315,511,656	\$432,459,249	\$2,218,825,129	\$3,011,439,725	71.17%
UAV Maintenance Staff & Equipment Exp @ 1%	\$0	\$0	\$839,628	\$8,012,953	\$10,971,114	\$48,797,979	\$68,621,675	1.62%
Spare Parts Production Expense @ 1%	\$0	\$0	\$839,628	\$8,012,953	\$10,971,114	\$48,797,979	\$68,621,675	1.62%
Warranty Claims Expense @ 5%	\$0	\$0	\$4,198,140	\$40,064,764	\$54,855,572	\$243,989,896	\$343,108,373	8.11%
AirScape Service Expense	\$0	\$150,000	\$1,109,640	\$1,220,604	\$1,342,664	\$1,476,930	\$5,299,837	0.13%
Marketing & Customer Relationship Mgt. Exp.	\$100,000	\$1,000,000	\$3,000,000	\$3,500,000	\$3,500,000	\$3,500,000	\$14,600,000	0.35%
Depreciation Expense	\$0	\$16,870	\$4,442,999	\$31,551,166	\$43,245,925	\$221,882,513	\$301,139,473	7.12%
SUBTOTAL	\$646,980	\$2,464,768	\$64,784,022	\$453,130,901	\$664,146,913	\$3,045,871,209	\$4,231,044,793	100.00%
PRE -TAX INCOME	\$853,020	\$726,232	\$33,478,574	\$452,493,072	\$585,739,294	\$2,454,752,424	\$3,528,042,616	
TAXES,FEDERAL(40% RATE)	\$0	\$290,493	\$13,391,429	\$180,997,229	\$234,295,718	\$981,900,970	\$1,410,875,838	
NET INCOME	\$853,020	\$435,739	\$20,087,144	\$271,495,843	\$351,443,576	\$1,472,851,455	\$2,117,166,777	
CASH FLOW								
NET INCOME	\$853,020	\$435,739	\$20,087,144	\$271,495,843	\$351,443,576	\$1,472,851,455	\$2,117,166,777	
DEPRECIATION	\$0	\$16,870	\$4,442,999	\$31,551,166	\$43,245,925	\$221,882,513	\$301,139,473	
INVESTMENT(CAPITAL COST)	\$1,500,000	\$2,500,000	\$3,000,000	\$0	\$0	\$0	\$7,000,000	
TOTAL	\$646,980	\$2,952,609	\$27,530,143	\$303,047,009	\$394,689,501	\$1,694,733,968	\$2,423,600,210	
	2012	2013	2014	2015	2016	2017	Sub-Totals	
INVESTMENT ANALYSIS								
ROI	231.85%	129.46%	151.68%	199.86%	188.19%	180.59%		

Revenue Model: Proposed AirShip VTOL UAV Sales & Production



Academic/Commercial Partnerships

- Operations & Technology Management
- University Internships [Team](#)
- Workflow Accountability
- Business, Science and Engineering Programs

■ Academic
■ Commercial

University of Portland



AirShip Technologies Group

