



EXECUTIVE SUMMARY



Bringing The World's First Hybrid Airship to Market



- HQ in Bethesda, Md., with 126,000 employees worldwide
- Global security and aerospace and is principally engaged in the R&D, manufacturing, integration and sustainment of advanced technology systems, products and services
- \$47.2 billion 2016 revenue
- Core products – military aircraft, ships, helicopters and munitions



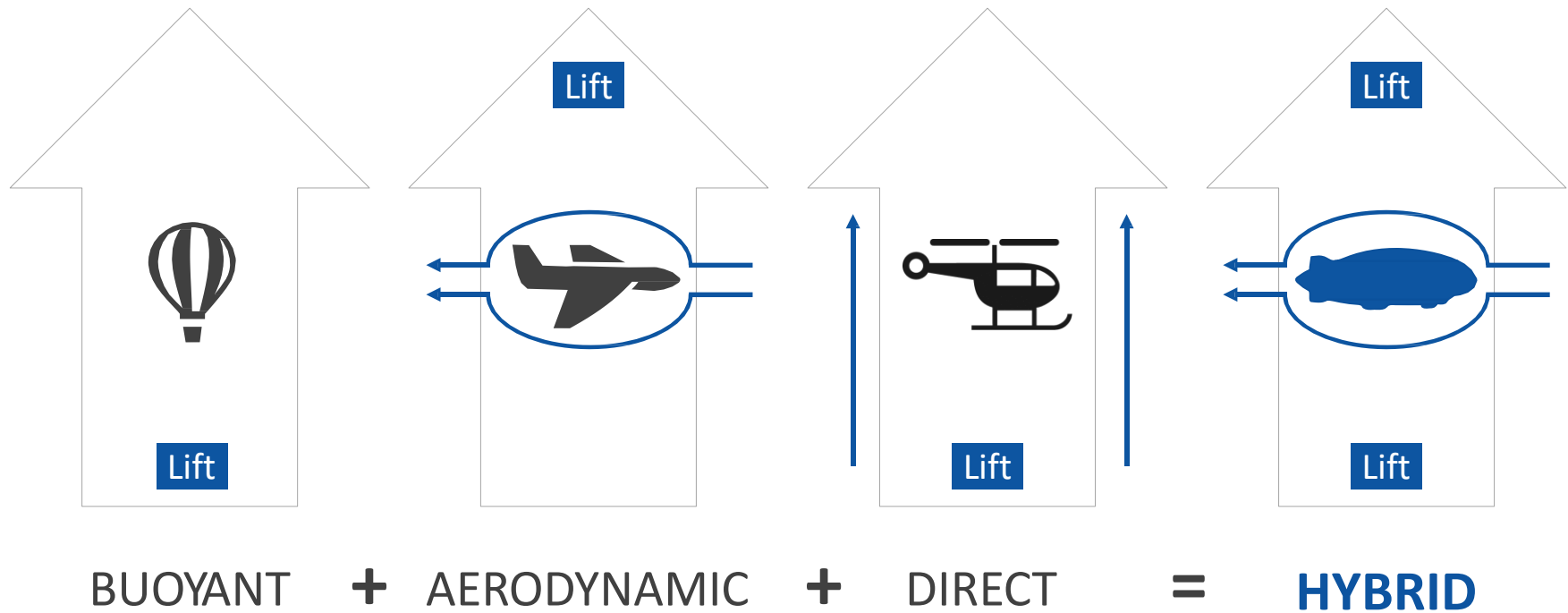
- Lockheed's development center for new techs and products
- 6 time winner of the Collier Trophy, aviation's most prestigious award
- Developed Hybrid Airship technology for both commercial and military purposes



- Established to connect Lockheed Martin with the Hybrid Airship commercial customer base
- Domestic and international commercial customer exclusivity
- Founded in July 2014
- Core team of experienced industry professionals
- Atlanta, GA headquarters

20 Years in the Development. Now Ready to
Revolutionize Transportation

WHAT IS HYBRID LIFT?

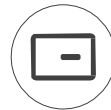


80% Lift from Buoyancy | 20% Lift from Aerodynamic or Direct Lift

OUR HYBRID AIRSHIP



Large payloads
21.000 kg + 19 passengers



Large volume cargo bay
3m x 3m x 18m, roll-on roll-off



Takes off and lands on
unimproved surfaces,
water, snow, ice, sand



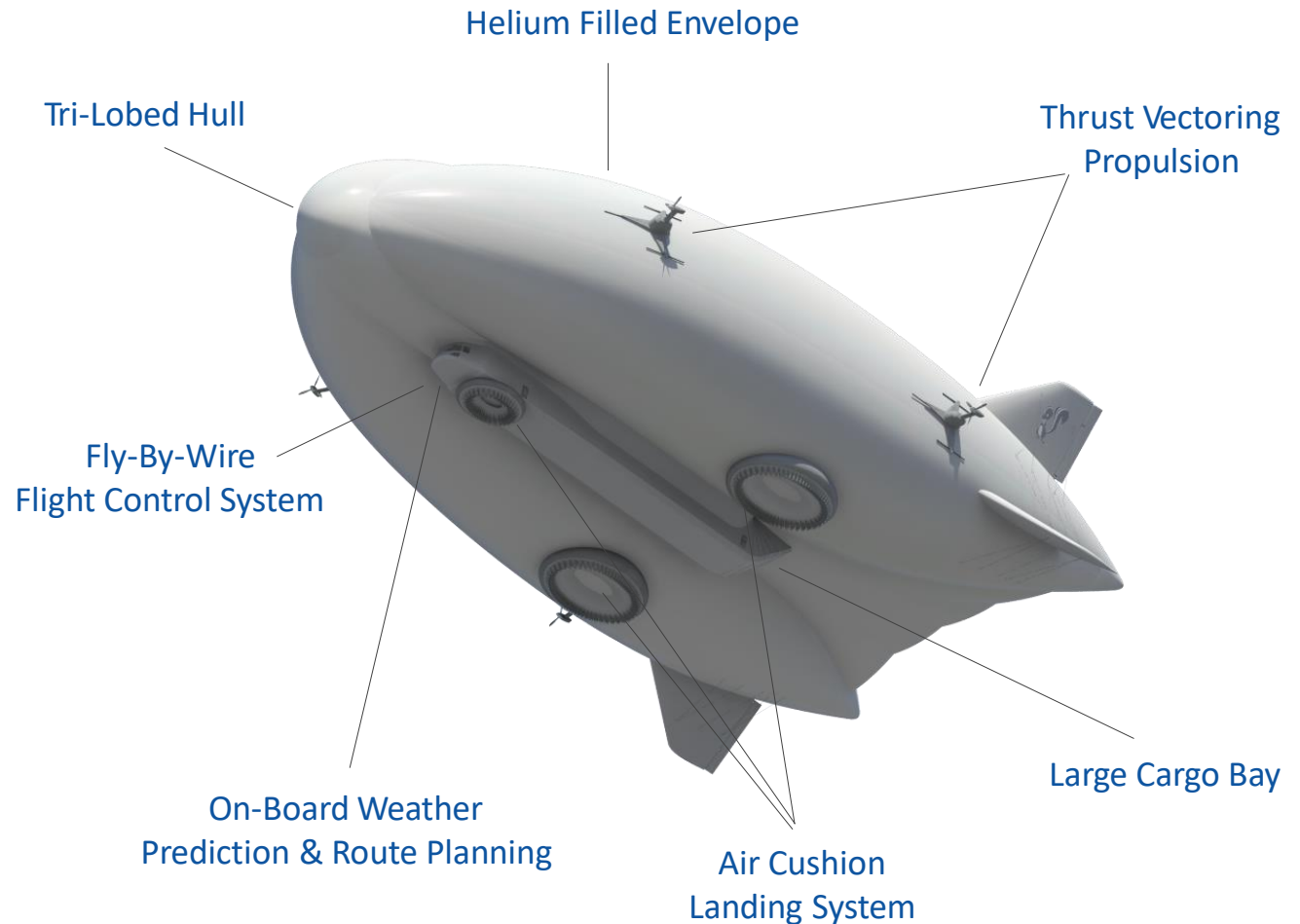
Overflies environmentally
sensitive areas...quietly



Low fuel consumption
Lowest carbon footprint compared
to other aircraft



Little or no forward
infrastructure



Hybrid Airships – Outstanding Remote Cargo Delivery

SIMPLE Advantage



- Design for Cargo
47,000 lbs. - 10 x 10 x 60
- Full Access Cargo Bay
No contour, truck height
- External Storage Tanks
Fuel to site without reducing space
- Ease of Maintenance
Engine Parts Fabric
- Greater Availability

Rugged

Remote

Reliable

SAFE Advantage



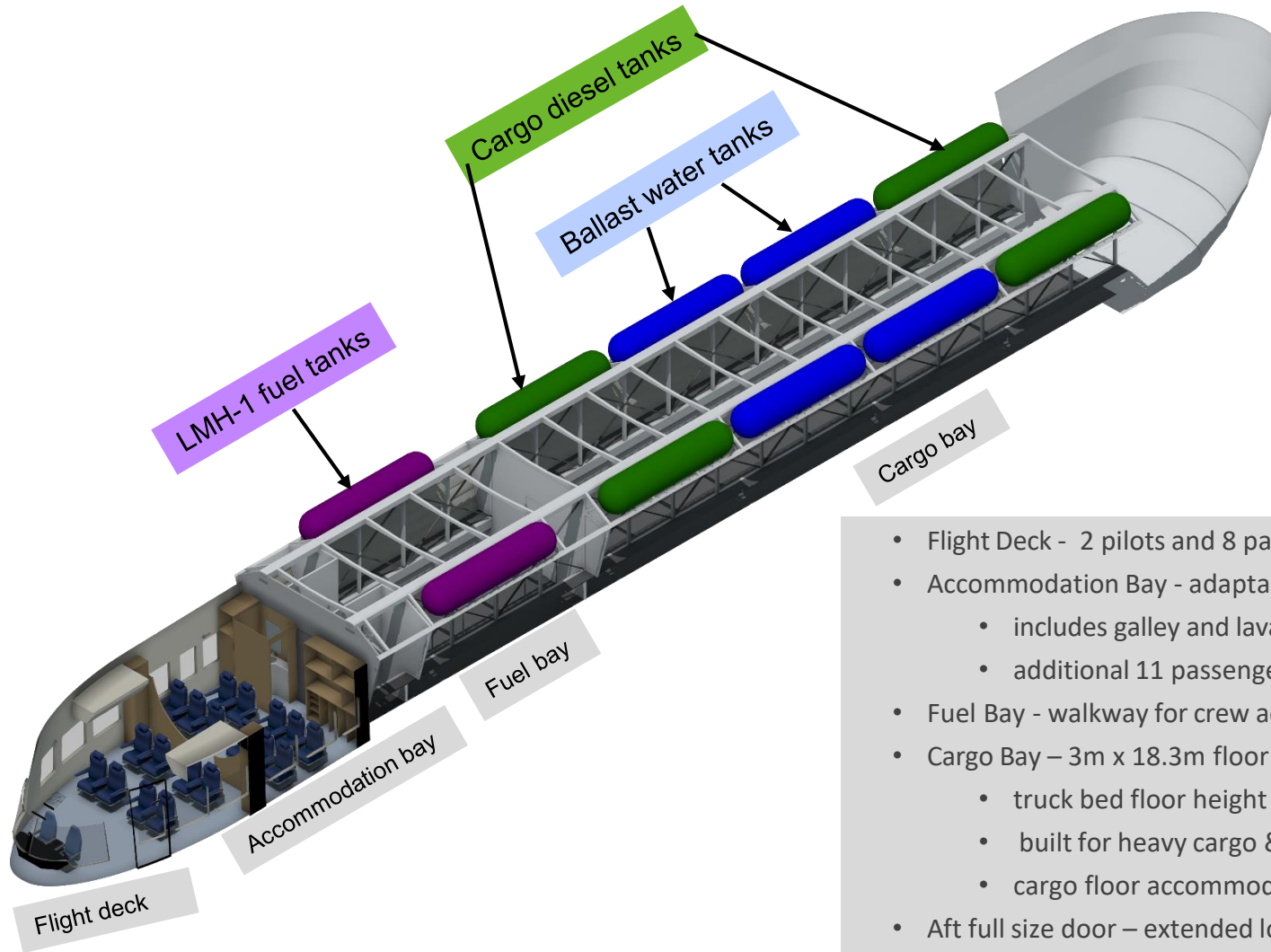
- Wants to Fly vs Forced to Fly
- Continuous lift with ability to Hover
- Low Maneuvering Speed
- Human Factors - Stop, review, proceed
- ACLS Stable ground operations
- Very Low pressure
- Advanced Flight control, navigation and weather
- Avoids inconsistency and unrest

DEMONSTRATOR FLIGHT



Maneuverability

LMH-1 INTERIOR LAYOUT



- Flight Deck - 2 pilots and 8 passenger seats
- Accommodation Bay - adaptable to user needs
 - includes galley and lavatory
 - additional 11 passenger seats (19 total)
- Fuel Bay - walkway for crew access to cargo bay
- Cargo Bay – 3m x 18.3m floor area, 3m height,
 - truck bed floor height for easy loading
 - built for heavy cargo & vehicles
 - cargo floor accommodates standard 96"X125" pallets
- Aft full size door – extended loads capable with door open
- Saddle tanks for ballast water and optional cargo fuel

Built for cargo with passenger capability

HYBRID AIRSHIP SUSTAINABILITY

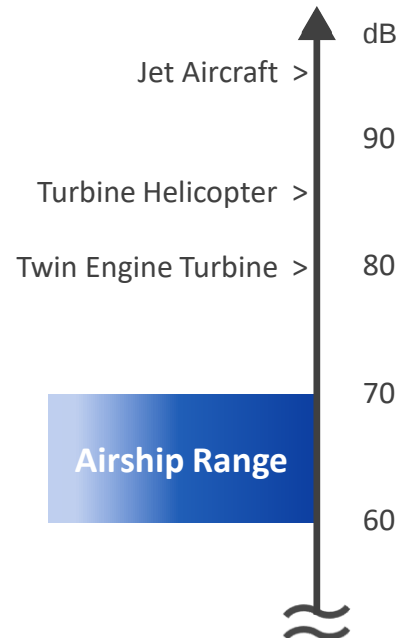


LESS FUEL



LESS NOISE

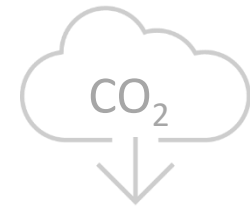
Aircraft Takeoff Noise (300m)



LESS EMISSIONS



Jet Aircraft
1.2 kg per ton mile



Airship
0.4 kg per ton mile

CUSTOMER INDUSTRIES



Oil and Gas



Mining



Transportation
Providers



Lessors



Governments

Commercial Market Capability provides Humanitarian Availability

BASELINE LMH-1 OPERATING COSTS



LMH-1	
Distance (one way)	250 nm
Speed	60 knots
Flight Time (one way)	4.2 hrs
Load (one way) ¹	47,000 lbs
Fuel burn	68 gal/hr
Cost per ton-mile	\$0.96

Airship Operations

- 19 passengers per one-way trip
- 6,600 FH/year
- 340 operating days/year

Airship Performance

RT Volume
Trips/year

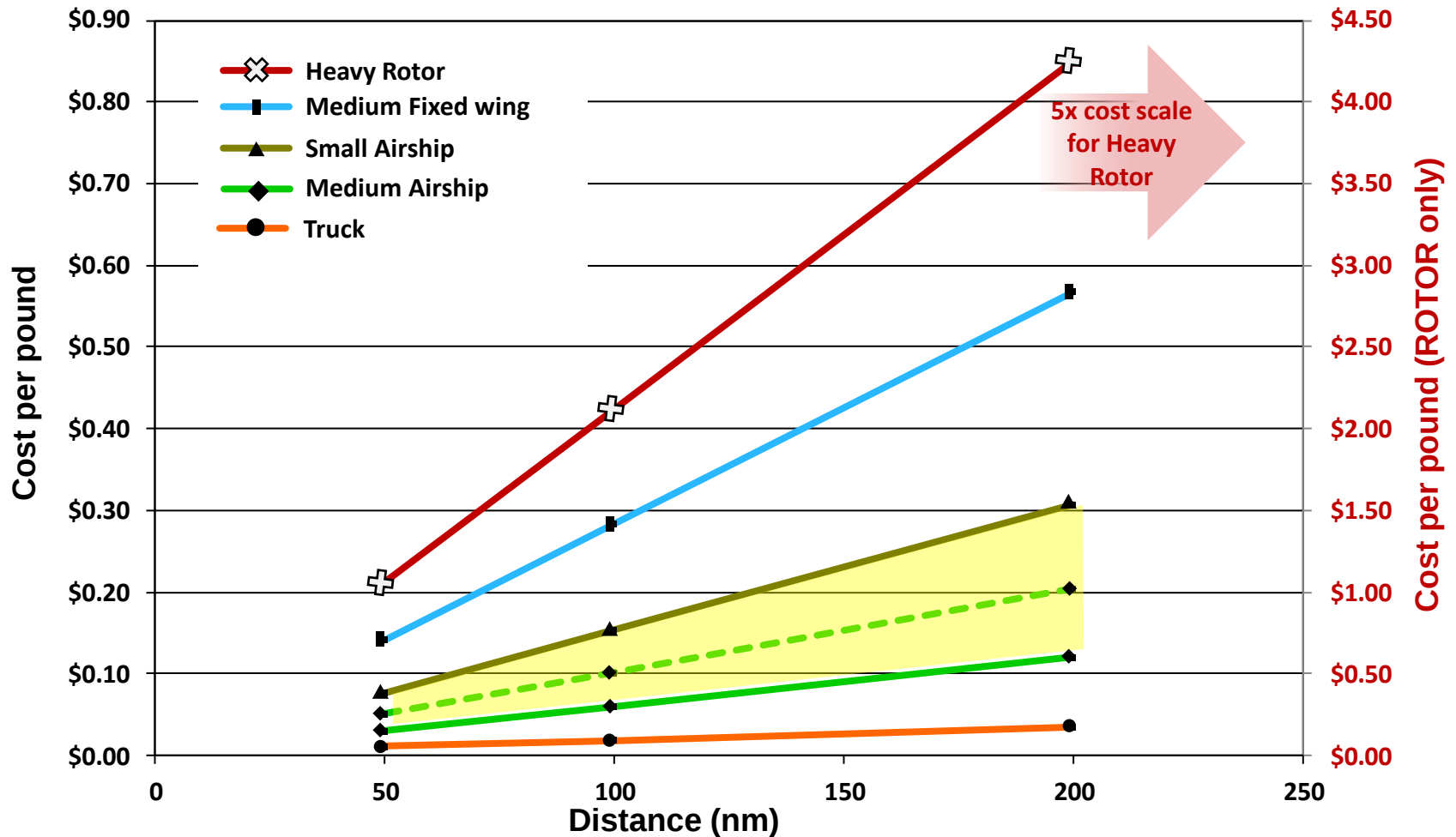
790

Volume
Tons/year²

37,000

Cost Comparison - Short Range Vehicles

Cost to Move a Pound of Cargo to a Distance



TECH DEMO TO OPERATIONAL CAPABILITY

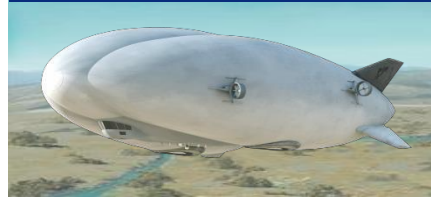


P-791 (2006)



- Proven technology demonstrator
- Tri-lobe envelope design
- Digital flight control
- Full vectored thrust
- Air cushion landing system
- No payload – test only

LMH-1



- Remote cargo transport
- 1,400 nm range
- Take-off & land from unimproved fields or water
- Low operating costs (much less than helicopters)

LMH-2



- Regional cargo transport
- 3,000+ nm range
- Take-off & land from unimproved fields or water
- Lower operating costs (similar to fixed wing)

LMH-3



- Global cargo transport
- 6,000+ nm range
- Very large cargo hold
- Containerized freight mover
- Take-off & land from unimproved land or sea
- Lowest operating cost

Cargo Bay Sizes >



P-791:
120' long, 65' wide
37' tall



23.5 Ton:
276' long, 157' wide
75' tall



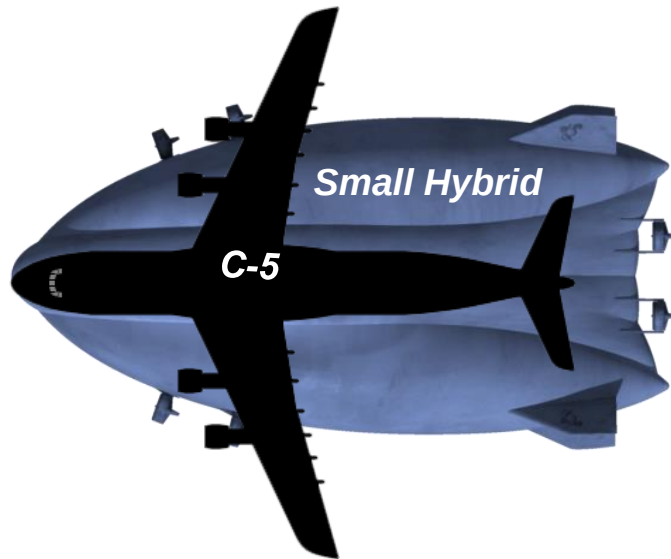
90 Ton:
423' long, 242' wide
117' tall



500 Ton:
742' long, 394' wide
202' tall

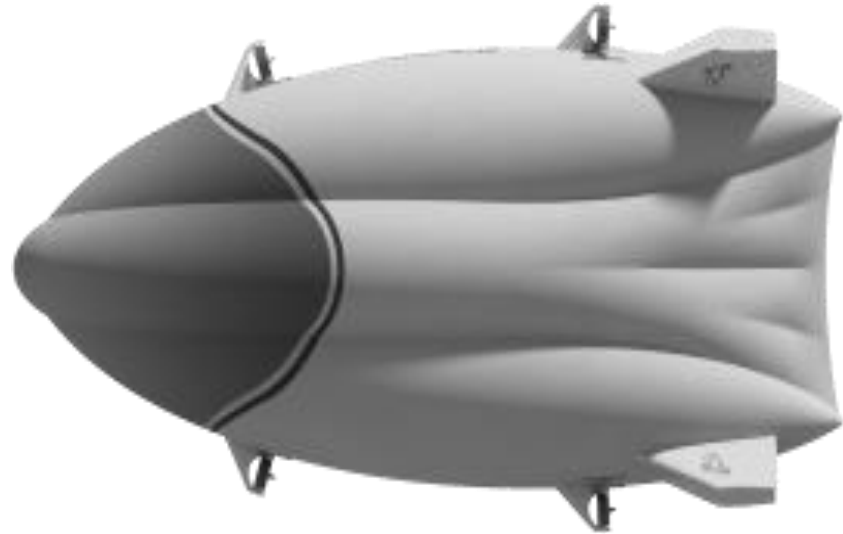
Three platform sizes – Decades of development and growth

Hybrid Size Comparisons



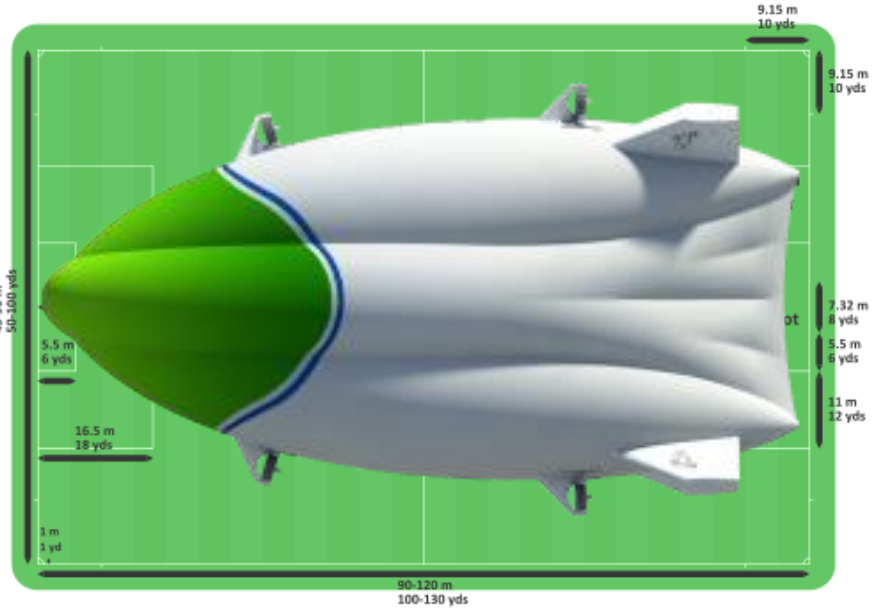
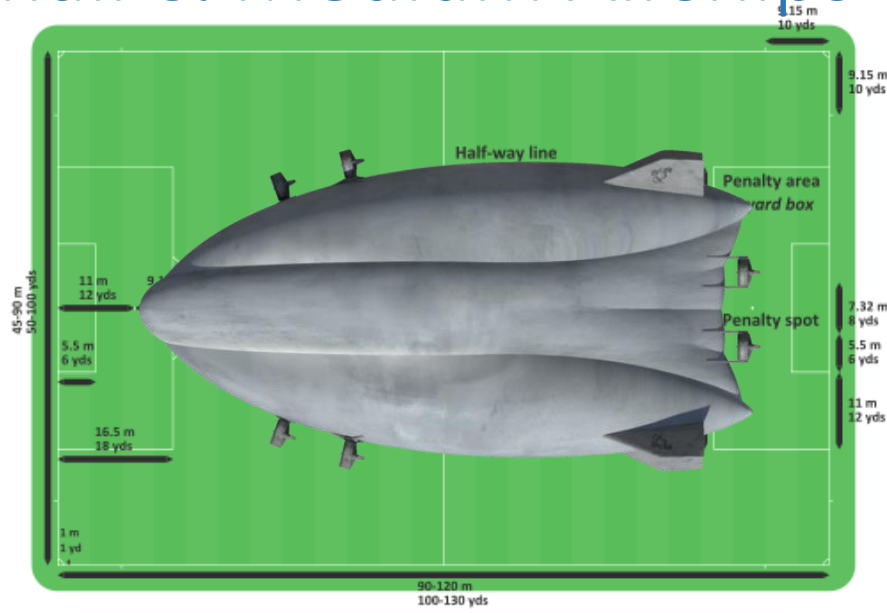
Small Airship: ~300' (91m) long,
~75' (23 m) tall, ~160' (49m) wide

Medium Hybrid

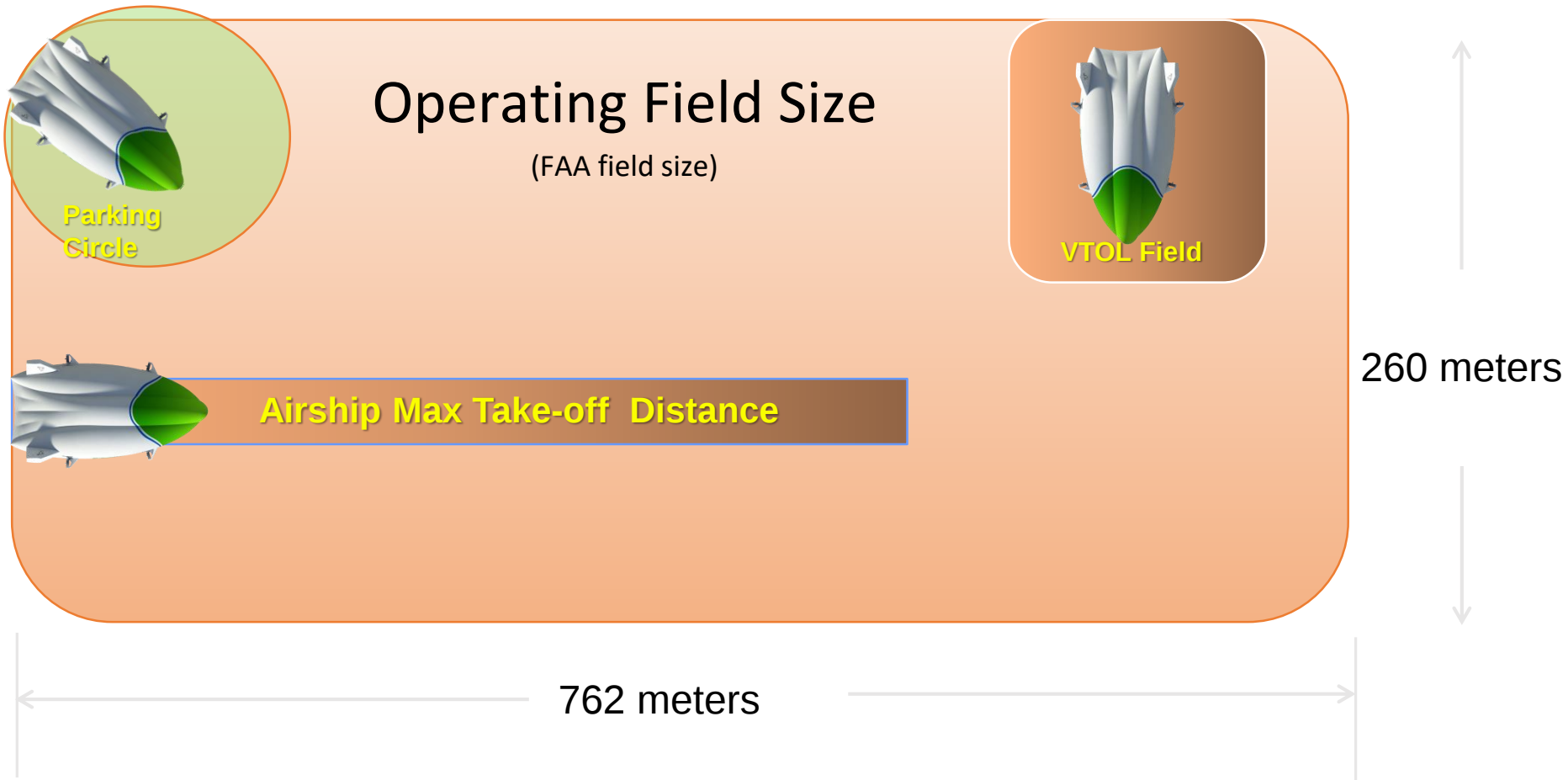


Medium Airship: ~400' (120m) long,
~105' (32 m) tall, ~170' (55m) wide

Small & Medium Airships



LMH-1 Operating Site Dimensions



National Mall Comparison

- National Mall 1.2 miles in length
- Open area 300 Feet in width



Medium Airship
VTOL Area

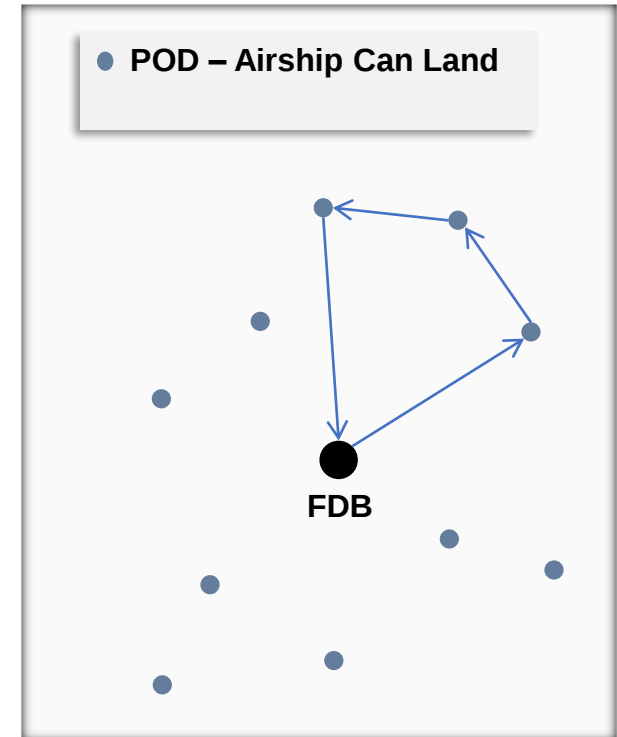
Small Airship
VTOL Areas

Small Airship Max
CTOL Distance



Forward Resupply

- Two-tier distribution –FDB to PODs
- Primary distribution –
 - Cargo airships and fixed-wing deliver faster than trucks
 - Airships deliver to FDB, not dependent on a runway
- Secondary distribution – FDB to POD
- Direct distribution –
 - Right to Site
 - Low speed airdrop capability possible for airships
 - Airship delivery methods other than airdrop improve resupply effectiveness



*Airships Are Less Dependent on Forward Infrastructure;
Provide Resupply Alternatives to Airdrop, Helicopters and Trucks*

Operational Insights -HAITI

- Alternative operational approaches
 - Connector from nearby undamaged ports
 - Bypass damaged port and congested airfield
 - Land airship in open areas to create additional “port”
- Self deployable, vertical / hovering capability
- Cargo flexibility
 - accommodate variety of cargo packaging and handling systems with minimal vehicle impact
- Long-duration flight crew implications
 - ‘Ship-like’ crew provisions/facilities
 - Consider crewing/crew rest alternatives

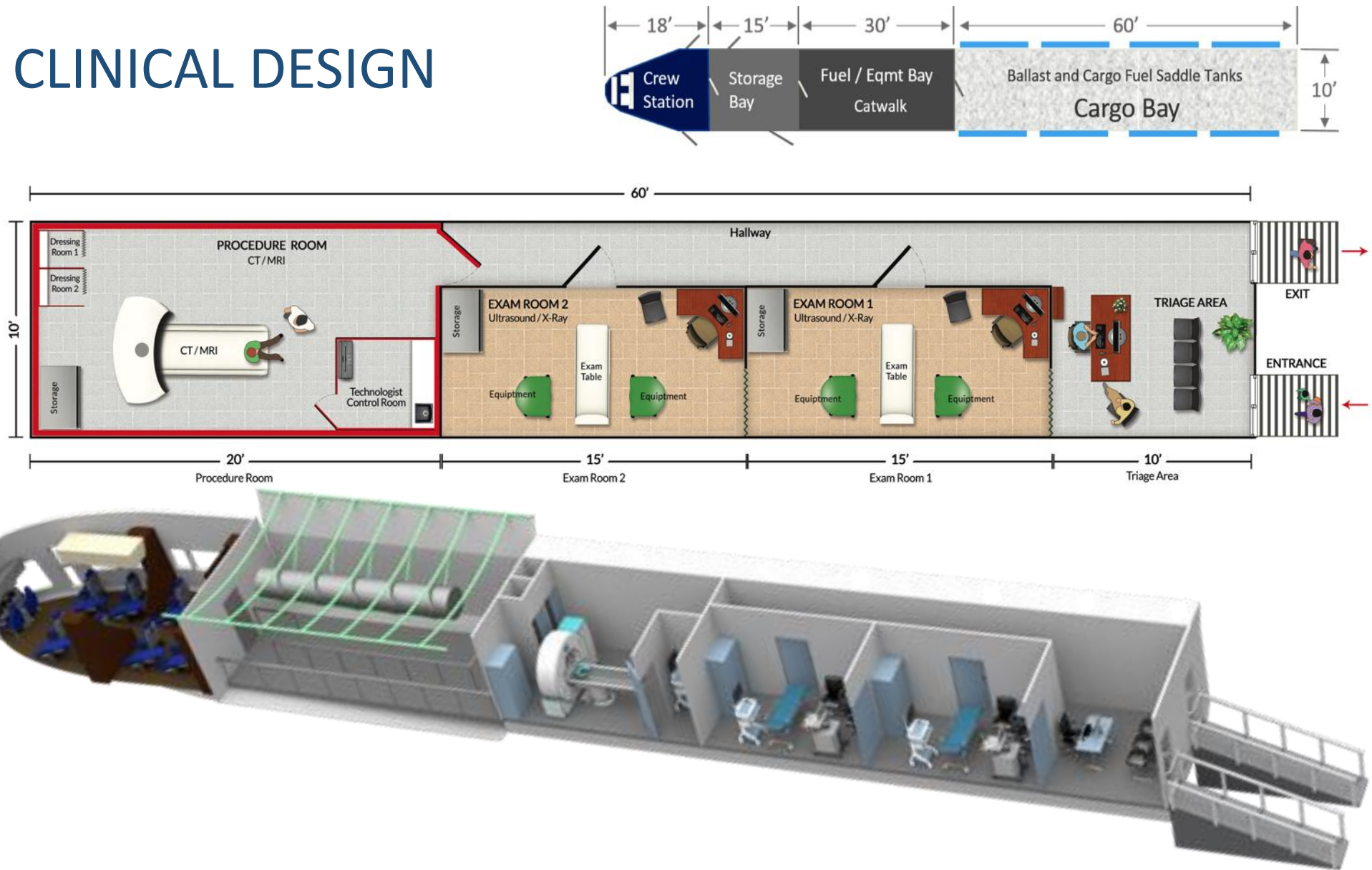


MEDICAL AIRSHIP

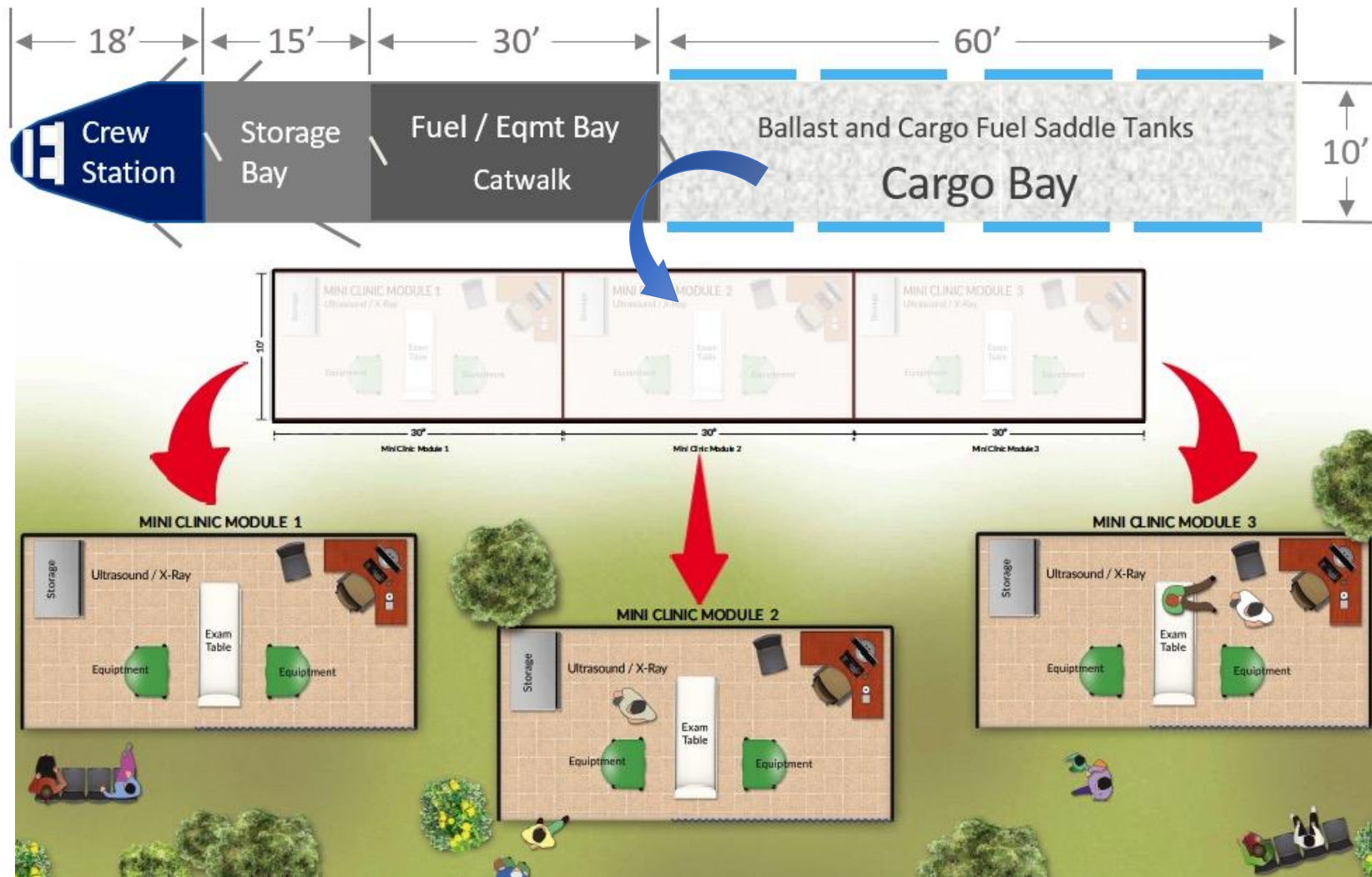
- Bring high-tech health care to remote regions
- Carry heavy medical equipment
- Carry health personnel
- Evacuate patients
- Bring critically necessary humanitarian aid/supplies



CLINICAL DESIGN



DEPLOYABLE CLINICS



Hybrid Airships

- Offer a combination of capabilities not found in other elements
 - Faster than ships and less costly than aircraft
 - Able to bypass the delays of traditional intermodal transload points
 - Complement and improve the effectiveness of current asset mix
- Require new operating concepts and thinking
 - Greater infrastructure independence
 - Direct delivery from tactical, operational or strategic distance with appropriate payloads

SUMMARY

Heavier than air + ACLS = Stable ground operation

Takeoff and land on unimproved surfaces

Low carbon emissions + low noise + eliminate infrastructure = environmentally friendly

Reduce transportation cost of remote projects

Enable launch of projects previously thought inaccessible

A Lockheed Martin product, backed by 100 years of aviation excellence

Deliveries – as early as 2019



Hybrid Airship A Transportation Revolution

