LOCKHEED MARTIN

Innovation and Technology Focus at Lockheed Martin

17 August2017

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Director, International Business Development

NextGenLM

Lockheed Martin Business Areas

Aeronautics

- Tactical Fighters
- Tactical /Strategic Airlift
- Advanced Development
- Sustainment Operations

Missiles & Fire Control

- Air and Missile Defense
- Tactical Missiles
- Fire Control
- Combat Maneuver Systems
- Energy

Rotary & Mission Systems

- Maritime Solutions
- Radar & Surveillance Systems
- Aviation Systems & Rotorcraft Platforms
- Training & Logistics Solutions
- Cyber Security
- Command & Control Systems

Space Systems

- Surveillance and Navigation
- Global Communications
- Human and Deep Space Exploration
- Strategic and Defensive Systems

Aeronautics Tech Focus

Aeronautics

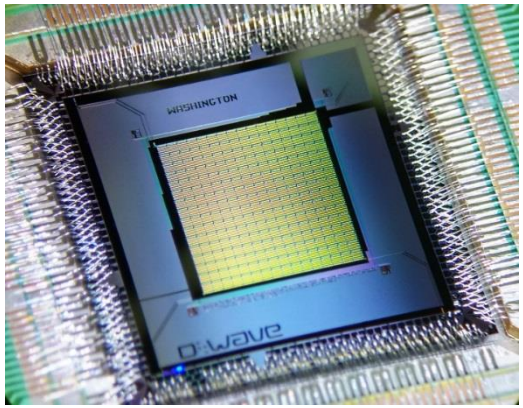
- **Tactical Fighters**
- **Tactical /Strategic Airlift**
- **Advanced Development**
- **Sustainment Operations**

Quantum information processing and quantum device applications are critical to the future.

Quantum annealing is fast growing and of particular interest.

Applications include:

- Machine learning
- Software verification
- Fault diagnosis
- Planning and scheduling
- Resource allocation
- Anomaly detection



Quantum Modem:

- Communicate reliably over noisy channels
- Use quantum decoding to approach the Shannon limit

Quantum Brownout:

- See through dusty or cloudy environments
- Quantum components could include sensors and processing

Missiles and Fire Control Tech Focus

Increased survivability and technologies associated with mission assurance are critically important.

Survivability spans many different technologies and sciences and can include areas such as information superiority, battlefield agility, and direct threat survival. In general we are experiencing larger and more sophisticated threats, and need to develop lightweight and low cost solutions where possible.

Missiles & Fire Control

- **Air and Missile Defense**
- **Tactical Missiles**
- **Fire Control**
- **Combat Maneuver Systems**
- **Energy**

The MFC Challenge Areas include topics such as flight navigation in a GPS denied environment, lightweight armor for direct attack protection, and lightweight blast survival technologies for ground vehicles.

Rotary and Mission Systems Tech Focus

Improve system performance in real time through human systems integration: <u>coordinating human-machine action to leverage strengths and ameliorate weaknesses</u> of each.

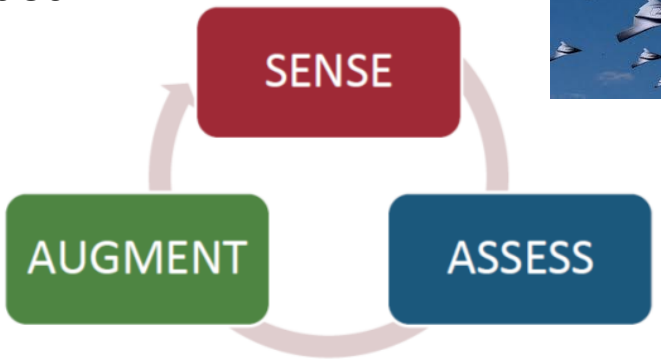
Sense: Measure biomarkers and other vitals correlated with cognitive and physical state

Assess: Evaluate sensor data in context of warfighter performance and mission

Augment: Implement regulatory and adaptive control strategies as needed.

Rotary & Mission Systems

- **Maritime Solutions**
- **Radar & Surveillance Systems**
- **Aviation Systems & Rotorcraft Platforms**
- **Training & Logistics Solutions**
- **Cyber Security**
- **Command & Control Systems**



Space Systems Tech Focus

Low Power Consumption Components for Phased Arrays

Reducing power consumption is key to the widespread use of phased arrays in space

Efficient Coherent IR Power Collector

Desire to efficiently collect coherent IR power
Remote charging of electric UAVs

Coherence Capacitor

Seeking to exploit quantum thermodynamics to radically improve the energy density and power density of batteries

Space Systems

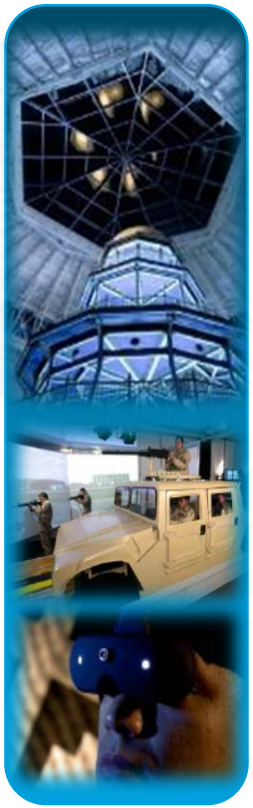
- **Surveillance and Navigation**
- **Global Communications**
- **Human and Deep Space Exploration**
- **Strategic and Defensive Systems**

Research, Development, & Innovation

Advanced Development Programs

Advanced Technology Laboratories

Center For Innovation



Global R&D

Global Universities

STELaRLab

LOCKHEED MARTIN ROKST&R TECHNOLOGY INVESTMENT FUND

Global Laboratories

Advanced Technology Center

Applied Research & Advanced Programs

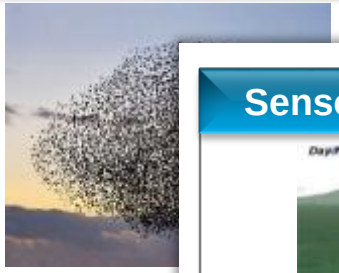
Sikorsky Innovations

The Global Vision for LM Technology

Technology Focus

Strategic

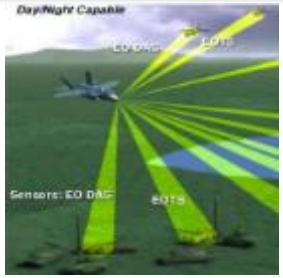
Autonomy/Robotics



Cyber Security

Directed Energy

Sensors Tech/Exploit



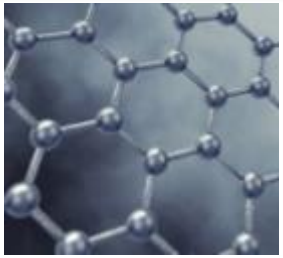
Signals and Comms

Enabling

Data Analytics

Next Gen Electronics

Materials/Manufacture



Strategic Technology Roadmaps and Focused Investments