

Charles Chase
Savannah, GA 31405



UnLAB (current) Co-Founder, Director and CTO of the UnLAB, a 501(c)(3) non-profit dedicated to working with our collaborators on the development of advanced technologies and products that are good for people, the biome, and that further human understanding. Currently executing fundamental research grants for DARPA/DSO, Office of Naval Research, and the Limitless Space Institute, collaborating with Stanford, Princeton, UCLA, and Technion.

Lockheed Martin Skunk Works (1986 - 1991, 1994 - October 2018)

Founder and Leader of Revolutionary Technology Programs, the organization at the technological front end of the Skunk Works. I set the vision, led, managed, and inspired a world class multi-disciplinary team responsible for the conception, development, and market transition of transformative aerospace technologies. Products under development by my team in 2018 included:

- Compact Fusion – an elegant and radical new approach that can provide energy for everyone
- Hypersonic systems and materials
- Adaptive structures and materials, morphing, sense and respond
- Aerodynamic materials, flow control, and cutting-edge vehicle design
- Breakthrough power and propulsion, from the here and now to the can't-believe-it's-possible
- Aware, responsive, communicating and energy-harvesting building façades focused on art and design
- Engineered materials and systems, metamaterials; thermal, optical, and RF
- Novel particle, neutral, and intelligent wave front beams, we build our own beams
- RF systems for communication, power transfer and control
- Human potential and wellness; positive and beneficial integrated man-machine interfaces
- Physics theory development, influencing the current conceptual mind-set
- Commercial applications and products

Lockheed Martin Senior Tech Fellow, a distinction reserved for the top 0.1% of the technical talent in the corporation. My area of expertise is revolutionary technologies. I developed in-depth technical strategies for the corporation, provide technical solutions, and mentor high potential engineers and scientists.

Technical breadth: multi-spectral (IR/RF/Optical) signature management; new sensor modalities; adaptive and bio-inspired structures; air vehicle conceptual design; mission systems; hypersonics; physiological sensors; cognitive systems; power generation; directed energy; flight controls; smart materials; RF and optical meta-materials; photonics; nano systems; autonomy; swarming; fusion; and plasma systems.

Develop and further collaborative partnerships and projects with multiple Government agencies (DARPA (TTO, STO, IPTO, MTO, & DSO), AFRL, NASA, ONR, etc), National Labs, Companies, Universities, and other Lockheed Martin Business Areas. with SSC, MFC, MST, ATL, and IS&GS. Excellent customer relations as evidenced by feedback during reviews and ability to develop new customer opportunities.

Led a corporate wide transformative technology team to identify, select, and develop moonshots. We identified more than 50 potential breakthrough technologies and products, and initiated the incubation of 10 diverse projects in 2017, including market assessments. The potential value of the portfolio was assessed to be in the billions. Worked with the LM CTO to develop and implement a new approach and organizational structure for transformative technology development based on my team's accomplishments, portfolio, and knowledge.

Organized LM corporate wide game-changing innovation working group, striving to improve LM innovation culture and remove structural and organizational roadblocks. Also organized LM Corporate wide meta-materials working group to foster joint technology development, CRAD capture, and understanding of system level impacts.

Inspiring and compelling speaker. I love giving keynote talks on interactions, innovation, science and technology to companies, academia, and the government. Recent examples include McKinsey, Microsoft, Merck, Stanford, MIT, UTEP, and briefings to Secretary of the Air Force, House Representatives, Under-Secretary of the Navy, DOE, ODNI, Science Advisory Boards, the JASONS, and LM Board of Directors.

Create an environment of joy and ease so people can flourish, be happy, and do their best work. I turn advanced concepts and technologies into reality through execution of solid engineering development plans. I believe in unlimited abundance and that we can create the future. I focus on the work and the people, setting and maintaining the vision, and directing the day to day execution of the projects. I can inspire and influence people to do their best and accomplish great things. We are our interactions, and our collaborators across diverse disciplines and mindsets are essential for our success. I love working with extraordinary people with inherent Go who are driven to do things, and are always moving forward. I am driven to discover the new and turn it into reality.

Inventor and Solver across a wide range of disciplines. I have conceived of and implemented many of the technologies under development in my organization, forming the teams and collaborations needed to develop and transition to application. I am a polymath with extensive, diverse knowledge and interests. In my spare time I read science papers and play tennis.

- Granted US patents include: "Improved Aircraft Runway", "Systems and Methods for Plasma Jets"; "Over-wing traveling-wave axial flow plasma accelerator", "Aharonov-Bohm Sensor", "Pyroelectric Power from Turbulent Airflow", "Coherent Matter Wave", "Cognitive Enhancement through Feedback Control", and "Mask Integrated Physiological Sensor".
- Winner of the Lockheed Martin *Innovate the Future* contest with "Power from Low Speed Wind", selected from 670 ideas submitted from across the corporation. Semifinalist in *Buckminster Fuller Challenge* with "Bio-Inspired Morphing" to eliminate design stagnation. *Aerostar* award for signature management technology.

Program Manager 100% responsible and accountable for the nuts and bolts technical, financial, and milestone performance of customer and internally funded projects, including recruitment, team building, and contractual, legal and intellectual property considerations. I manage multi-million dollar research budgets and more than 50 team members, 2/3 with advanced degrees. I have an extensive group of outside collaborators from companies, universities, and national labs. I have successfully executed more than 50 customer contracts, meeting all financial, milestone, and technical goals. I actively seek collaborations with artists and designers.

Led repeated commercialization studies, working with outside consultants to evaluate the entire Skunk Works technology and intellectual property portfolio to identify commercial opportunities. I defined business cases, market transitions and development resources for 10 top candidates and recommended commercial transition best practices.

Conception, implementation, and management of the Compact Fusion development program, a new approach to hot fusion that can provide 100 MW of power in a compact form. I convinced senior LM leadership to invest significant company resources into the development of a very high risk, game changing technology. This was achieved through an 8-year persistence of vision in the face of the typical large corporation bureaucratic inertia and risk-adverse committee-based decision making. I planned and developed the program, recruited the team, implemented the infrastructure, marshalled resources, and inspired belief in what we could accomplish. The project is now breathing on its own, and the experimental and simulation campaign has been very successful to date.

Experience on production, full-scale development, conceptual vehicle design, technology, and research programs. Transition of technologies from conception to production. I have developed and transitioned technologies from conception under internal research to operational fielding, with widespread application and production.

Lockheed Martin Space Systems, Group Lead, Electromagnetics (1991 – 1994)

- Supervised group of nine engineers as part of the full-scale engineering development of a multispectral system. Solved major program technical issue that was stopping the program.

Electromagnetic Signature Engineer and Manager

- *Program Manager Signature Management*: contracts and internal research; vehicle design; operational analysis; material, edge, antenna, control effector, inlet, and nozzle design and maturation.
 - *Group Engineer Signature Analysis*: Led team responsible for development and maintenance of new computational electromagnetic modeling simulation techniques and design software.
 - *Low Observable Research Engineer*: F-117A development and operational programs, other programs
-

Education: University of California, Berkeley, 1985

BS Electrical Engineering and Computer Science - Electromagnetics Concentration

Disney Animation Consultant: advice on story, accuracy, and look and feel