The F-35 Joint Strike Fighter is a single aircraft developed to meet the multirole fighter requirements of the U.S. Air Force, Navy, Marine Corps, and the country’s allies. The Air Force variant is a supersonic, single engine stealth fighter. The Navy variant has a larger wing and more robust structure in order to operate from an aircraft carrier, while the Marine Corps variant incorporates an innovative propulsion system that can be switched from a turbofan cycle to a turbo shaft cycle for vertical take-off and landing. This novel propulsion system enabled the X-35 demonstrator to become the first aircraft in history to fly at supersonic speeds, hover, and land vertically. This lecture will describe the technical and program challenges involved in growing an innovative idea into an international program with engineers from a half dozen countries developing a replacement for multiple aircraft types.

Dr. Bevilaqua is a Fellow of the AIAA and a member of the National Academy of Engineering. He subsequently joined Lockheed Martin as chief engineer of the SKUNK WORKS®, where he played a leading role in creating the Joint Strike Fighter. He invented the dual cycle propulsion system that made it possible to build a stealthy supersonic V/STOL Strike Fighter, and proposed designs for conventional and Naval variants of this aircraft in order to share development costs between the Air Force, Navy and Marine Corps. He then led the engineering team that demonstrated the feasibility of building three variants of this aircraft.