



Advanced Technology

The Advanced Technology Program Executive Office develops new system concepts and key components to ensure the Ballistic Missile Defense System (BMDS) keeps pace with the continually evolving ballistic missile threat. The advanced technology effort is focused on developing and demonstrating the next generation of technology that will give us the capability to intercept early in the battle space, force less effective deployment of counter-measures, and reduce the number of interceptors required to defeat a raid of in-bound threats.



- **Standard Missile 3 Block IIB:** Phase 4 of the European Phased Adaptive Approach will include the more capable SM-3 Block IIB deployed to Europe in the 2021 timeframe to provide an early and independent interceptor layer against existing ICBM threats to the homeland and enhanced intercept capability against regional threats. The program is conducting system trades and developing high performance interceptor components as well as exploiting existing technology to increase the BMDS effectiveness against high density raids and long range threats.
- **Directed Energy Research:** The MDA transitioned its Directed Energy Research program from the Airborne Laser flight test program to investigating the next generation high energy lasers. MDA is exploring two promising laser technologies, Diode Pumped Alkali Laser System and Fiber Combining Laser system. From these technologies, a 200kW class flight qualifiable laser will be selected, built and tested. In parallel, the MDA will collect high-altitude, low-Mach flight data to validate the benefits of operating a high power laser system in this flight regime for Ballistic Missile Defense applications.
- **University Research Programs:** Awards contracts with colleges and universities to develop next generation technologies for possible implementation into the BMDS. Research is ongoing in many technology areas. These include minimizing the impact of debris, rapid response architecture optimization, propulsion, electro-optical sensors, and materials characterization.
- **Small Business Innovation Research (SBIR) Program:** The purpose of the SBIR program is to harness the innovative talents of our nation's small technology companies for U.S. military and economic strength. The SBIR program funds early-stage Research and Development (R&D) at these companies and is designed to: stimulate technological innovation, increase private sector commercialization of federal R&D, increase small business participation in federally-funded R&D, and foster participation by minority and disadvantaged firms in technological innovation.
- **Small Business Technology Transfer (STTR) Program:** is similar in structure to SBIR but funds *cooperative* R&D projects involving a small business and a research institution (e.g., university, federally-funded R&D center, or nonprofit research institution). The purpose of STTR is to create an effective vehicle for moving ideas from our nation's research institutions to the market, where they can benefit both private sector and military customers.
- **Advance Sensor Technology:** The MDA is developing advanced sensor technologies to meet the expanding Ballistic Missile threat. System modeling has shown that integrating advanced sensors into the BMDS will allow it to efficiently develop precise 3-dimensional tracks, discriminate the threat, and significantly increase interceptor performance. Advanced Sensor Technology Research matures emerging sensor technologies and algorithms to achieve these capabilities.