



## Sandia National Laboratories as a Resource for SE-2020 Supporting NAS Evolution to NextGen

Sandia is a Department of Energy/National Nuclear Security Administration national security laboratory. Our core and historical mission is weaponizing physics packages developed by Lawrence Livermore and Los Alamos to make functional nuclear weapons. As a result, Sandia is an engineering laboratory, focused on system solutions – fielding and supporting critical, high-value and high-impact, nationally important systems. Our system approach includes system definition, design for life cycle in a very demanding environment, risk assessment, vulnerability analysis, red-teaming (adversary viewpoint) to exploit system weaknesses, command and control, test, validation, and sustainment through retirement, disassembly and disposal. Sandia regularly supports all branches of the federal government and partners with the private sector in both Cooperative Research and Development and Work for Others programs.

Sandia created and operates the FAA Airworthiness Assurance Non-Destructive Inspection Validation Center (AANC) for the FAA. AANC activities focus on developing, testing and validating advanced inspection, maintenance, and repair technologies; advanced materials; and in-situ sensors for structural health monitoring. We routinely work with the private sector.

Sandia has a long history of work in command, control, communications, and computer systems. We have extensive experience in data systems and the critical interface between data presentation, analysis, and human interaction/interpretation. We have supported the FAA in many projects, e.g. analysis of its Safety Performance Analysis System, development and deployment of the Air Transportation Oversight System, and the Aircraft Certification Process Study. Sandia has expertise in both the science aspects of what will become NextGen and aircraft operations and maintenance. Sandia is involved with aviation safety programs such as explosive mitigation. We have worked with the FAA on physical security assessments.

We see the evolution to NextGen as a system-of-systems development and integration problem on a grand scale. It will involve evolutionary and revolutionary technologies, physical and cyber security, and the soft sciences of processes, procedures, people, cultures, etc. It is an exciting prospect. We would be very pleased to be able to participate.

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