



ProtoBox Capabilities Brief

Protobox LLC

Simulation Systems, Software Development, IT & Network Support

Company Overview

Protobox LLC is a trusted leader in delivering innovative solutions for government and commercial sectors, specializing in modeling & **simulation systems, software development, IT/network support, and custom electronics**. Our multidisciplinary team excels in designing, building, and integrating advanced technologies for aerospace, defense, and commercial applications. With decades of hands-on experience, we provide end-to-end capabilities from simulation environments to secure infrastructure, ensuring mission success across a variety of high-stakes environments.

Core Capabilities

Simulation Systems & Aerospace Prototyping

- **Motion Base Simulators**
 - Expertise in hydraulic pump/motor systems, force transducers, and valve/fluid control technologies.
 - Analog-to-digital input/output interface development.
 - Complex wiring, mechanical repairs, and management of PMI programs for motion base systems.
- **Fixed Base Simulators**
 - Design and integration of immersive visual systems using projector technologies and lens selection.
 - Development of low-cost cockpits for F-35, F-22, F-16, F-15, A-10 with high-resolution displays.
 - Expertise in first surface mirrors and immersive environments for U.S. Government clients.
- **Proficient in HOTAS Platforms**
 - MSI, Aertotronics, BugEye, Sterling, Wittenstein

- **Aerospace Prototyping**
 - Instrumental in design and fabrication of **XCOR Aerospace Lynx Spaceplane Testbed**: center sticks, rudder pedals, pilot dash, and OTW visual systems.
 - Complete on-site system integration and installation support.
 - **Custom Electronic Design**
 - Development of specialized logger boxes, load stand valve controllers, and custom wire harnesses for Emerson Industries.
 - System adaptation and integration for spiral compressors and custom electronics prototyping.
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Software Engineering & Application Development

- **AFSIM Expertise**
 - Custom plugin development (CIGI, LMCP, DIS, IO modules).
 - Simulation behavior control, communication protocol development, and visualization tools using Qt, OpenGL.
 - **Custom Application Development**
 - Cross-platform application development in **C++, C#, Python, Java, PHP**.
 - Web portals with Drupal, HTML/CSS/JavaScript, and SQL database integration.
 - GUI/CLI tool development using Qt and OpenGL-based components.
 - **Embedded and Device Integration**
 - Integration with hardware input devices (e.g., Phidgets, LabJack, throttle controllers).
 - Communication with external systems (OBOGS, FDR, HDD) via Serial and TCP/UDP.
 - **Data Systems & Automation**
 - Database design and integration (MySQL, PostgreSQL, Oracle, MongoDB, SQLite).
 - Reporting, analytics, automated label/tag generation, and system notifications.
 - **Mobile and Cloud Projects**
 - Android app development (Kotlin) and cloud-based solutions with Docker, AWS, Google Compute Engine.
 - Continuous Integration/Continuous Deployment (CI/CD) pipelines using TeamCity, GitLab, Docker.
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Network Engineering & IT Support

- **Network Administration**
 - Secure configuration and management of Windows/Linux networks.
 - Setup of virtual lab environments, switches, VLANs, and remote access.
 - Cybersecurity hygiene aligned with CMMC standards and vulnerability remediation.

- **System & Hardware Support**
 - Full hardware lifecycle management: procurement, imaging, patching, and deployment.
 - Local and travel-ready rack systems, AV environments, and demo infrastructure.
 - End-user training, documentation, and ongoing support.
- **Facilities & Security Management**
 - Facility clearance coordination and employee security clearance management (FSO/AFSO roles).
 - Implementation of surveillance, access control, and ID badge systems for secure facilities.
 - Full compliance with DoD cybersecurity audits and protocols.
 - All employees have DOD security clearances from SECRET, TOP SECRET, to SCI

Key Technologies & Tools

Category	Technologies & Tools
Languages & Scripting	C++, C#, Python, Java, PHP, SQL, JavaScript, Kotlin, Bash
Frameworks & Platforms	AFSIM, Qt, OpenGL, Unreal, Unity, Godot, Drupal, ASP.NET
Databases	PostgreSQL, MongoDB, SQLite, Oracle
Tools & DevOps	GitLab, TeamCity, Docker, Jenkins, CMake, Selenium
Simulation & Graphics	OpenSceneGraph, GLSL, Blender, Protocol Buffers
OS & Networking	Windows Server, Linux (multiple distros), VPN, VLAN

ProtoBox Simulator Products

1. 3-Channel Display Triton
2. 8-Channel Octonion
3. 9-Channel ICE-Box Boom Refueler Station
4. H-60 Helicopter Simulator (Mercator)
5. Combat Stations

ProtoBox Modified Products

1. LAMARS
 2. C-141 Simulator
 3. A-10 Warthog Simulator
 4. OVI Station
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SBIR Awards (Government Sponsored)

1. Sentinel Trigger – PC Card Development
 2. Naval Ship Interior Lighting – Unique Grid Integration
 3. Luxeon LED Technology
 4. Portable Airfield LED Lighting
 5. Variable Collimated Display System
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Unique Value Propositions

- **Proven Expertise:** Decades of combined experience in **simulation, software, IT, and secure systems.**
 - **Full Spectrum Solutions:** Offering end-to-end services—**design, development, integration, and support** for both hardware and software.
 - **Trusted Government Partner:** Cleared personnel with a proven track record supporting **DoD projects, classified environments, and simulation systems.**
 - **Agile & Scalable:** Our team is adaptable and capable of handling complex, evolving requirements. We deliver rapid, scalable solutions, ensuring successful outcomes for all stakeholders.
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Why Protobox LLC?

- **Comprehensive Expertise:** Our team's breadth covers software, hardware, simulation systems, and IT/networking, enabling **seamless, integrated solutions.**
- **End-to-End Support:** From initial design to deployment and ongoing support, we manage every aspect of the project lifecycle.