ProtectedLogic CORPORATION®

Capability Statement

Core competencies

ProtectedLogic Corporation maintains expertise in the areas of design of embedded systems targeting high speed, harsh and high reliability embedded environments for space and terrestrial applications. The primary competencies address both Software and Hardware digital design services. We specialize in prototype design, development and fabrication of complex systems that require high functional density for both digital and analog systems controlled by tightly coupled real time software. We assemble PCBs and Cables to IPC specifications and have a machine shop that supports our in-house design and development process by fabricating Special Test Equipment and support articles and other hardware.

DESIGN Expertise

- Embedded Hardware Design inclusive of (system, electronic and mechanical designs)
  - Electronic design capabilities utilizing advanced Zynq SOC and ACTEL FPGAs.
  - FPGA Design using VHDL targeting high reliability and fault tolerant systems
  - FPGA interfaces to processors in MPSOCs, SOCs and discrete chips.
  - High speed Analog Front End systems.
  - Total system design from concept, implementation through testing.
  - Housing Mechanical Design (Prototypes, Deployed articles and Test Equipment)
- Deeply Embedded Software Design
  - Embedded Linux including Kernel, driver and application development.
  - FreeRTOS including unique interface and driver development
  - Embedded OS interfaces such as ADA bare metal integration
  - Custom Low-Level software requiring addressing reconfigurable architectures.
  - NON-RTOS bare metal software development, including assembly language integration and support on ARM, PPC, MIPS, Motorola and Intel platforms.
  - Application profiling and optimization.
  - GUI support for real time control and situation awareness for remote vehicles.
- Systems Design
  - Generation of system and board level specifications and Validation Matrices
  - Generation of Concept of Operations (CONOPS) for Use Case definition
  - Generation of architecture structure and interface requirements
  - Generation of test requirements
  - Generation of user interfaces
  - Program tracking to requirements

ASSEMBLY Capabilities

- Wire and Assembly to IPC standards
  - Cable assembly & rework [J-STD-001G]
  - Printed Circuit board assembly & rework [J-STD-001G]
  - Printed Circuit board QA [IPC-A-610]
  - PCB SMT (surface mount high density assembly & rework)
- Machine Shop
  - CAD and CAM drawing preparation for assembly operations.
  - CNC Vertical Mill with 4 axis capabilities.
  - Page Frame fabrication for applications in extreme environments.
  - Housing fabrication for complex assemblies.
  - Fabrication & Assembly of test and prototype systems

Test Capabilities

- Qualification and Acceptance testing over temperature.
- X-Ray Quality control for PCB and part qualification
- Thermal image testing
- Digital imager time stamp testing.

Past Performance

- iMTF (iPEHG Module Test Fixture) Chassis and electrical system to contain and support the "improved Payload Ethernet Hub Gateway" for ground testing of the ISS (International Space Station) system; currently deployed
    - Electrical, Mechanical Design, Fabrication and Assembly.
    - Flight compatible cable assemblies
    - Performed testing of the unit to customer Acceptance levels.
- CEIP Common Ethernet Interface Processor – Internal R&D
    - Developed as a fully tested hardware pluggable with a mature tested software framework; currently in test.
- PIG Pipeline Inspection Gauge
    - We designed the embedded software and hardware for an autonomous non-destructive pipeline inspection system for measuring the integrity of buried pipes containing hazardous materials over long distances. currently deployed and new designs are in development
- iPEHG Improved Payload Ethernet Hub Gateway, - BOEING
    - System Specification, System Design, Hardware Design Fault Tolerant FPGA design, Linux Kernel and driver development and debug; currently deployed
- DLWS Target Characterization – Skolnik
    - Developed an embedded software application for control and communication of a target system located on a drone: currently deployed
    - Developed the ground-based control system for the drone target board system: currently deployed
- WorldView-3 command and control subsystems - DDESC
    - Designed and developed the primary control system FPGAs for the satellite. The effort included design of the Command Telemetry Unit (CTU) the Data Telemetry Unit (DTU) and the Data Storage Unit (DSU; currently deployed
- X37B Space Plane Actuation Control System (First Generation) - GISR
    - We performed the System Design, processing architecture and specifications and consulting for subsequent system generations; currently deployed
- Numerous Confidential Programs (undisclosed)
    - Critical control code implemented in VHDL to support various satellite programs.

Differentiators

ProtectedLogic is a small agile organization that is made up of employees with a very diverse knowledge and background. We are capable and have delivered systems starting from a customer supplied concept and producing a final product that is tested and compliant with the design specifications. We require our employees to grow with the technology curve. This is done by utilizing internal vertically integrated R&D projects to hone employee skills in areas including electronic, software and mechanical technologies. This increases the quality of products and decreases our costs by not placing the learning curve on our customers. As an example, we have developed a highly integrated processing system with reconfigurable hardware that fits in an area less than 2.5 cubic inches including the power supply including interface a processing capability approaching 1.3 GHz using dual cores configured to run Linux and FreeRTOS. We are further honing our skill sets by starting the development of a more advanced systems that target the use

six processors in a small volume as well. Past programs we have worked on as shown above utilize both mature and leading-edge technologies and management skills. We have experience using processors based on PPC, ARM and Intel systems implemented in SOC packaging such as the Xilinx Vertex and Zynq technologies.

Corporate Data

ProtectedLogic Corporation is a small business that started operations on October 1, 2004. We have 4 employees and are located in Albuquerque, New Mexico. We support our non-local customers through telepresence to keep our costs low while being responsive to their needs.

DUNS: 607172272	**CAGE Code:** 4UY50
	Registered with SAM: YES
NAICS Codes:	**Description**
511210	SOFTWARE PUBLISHER
541511	CUSTOM COMPUTER PROGRAMMING SERVICES
541512	COMPUTER SYSTEMS DESIGN SERVICES
541519	OTHER COMPUTER RELATED SERVICES
541712	OTHER SCIENTIFIC AND TECHNICAL CONSULTING SERVICES
PSC Codes:	**Description**
AD23	R&D- DEFENSE OTHER: SERVICES (ADVANCED EVELOPMENT)
H269	EQUIPMENT AND MATERIALS TESTING- TRAINING AIDS AND DEVICES
H352	INSPECTION- MEASURING TOOLS
6625	ELECTRICAL AND ELECTRONIC PROPERTIES MEASUREMENT AND TESTING INSTRUMENTS
6645	TIME MEASURING INSTURMENTS
6695	COMBINATION AND MISCELLANEOUS INSTURMENTS

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