



Electronic and Optical Design Services from Mantaro Networks Inc. represented in the UK and Ireland by Opticus call +44 (0) 1389 800 020

Mantaro Networks provides a full range of product development services to our technology clients. Their technical staff comprises highly talented professional engineers with a history of successful product development and innovative design experience. The Mantaro team has many years of industry expertise with leading companies that develop telecommunications systems, software applications, semiconductors, and test and measurement instrumentation.

The Engineering team is composed of over 50 professional engineers who hold degrees in either Electrical Engineering or Computer Science and includes several holding Masters, and Doctorate degrees. Whether it is designing a new high-speed interface for a client's existing product line or developing a product or system to address a new market opportunity, Mantaro can provide a solution to meet the challenge.

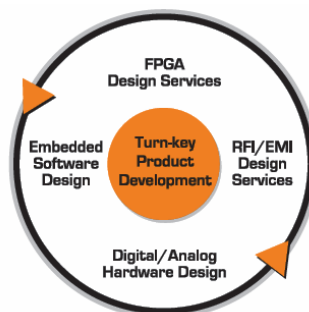
Areas of applications expertise include:

- Embedded Software Systems
- Telecom Switching Technology
- Digital Signal Processing
- Signal and Control Systems
- Test and Instrumentation
- Carrier Test Equipment and Ssystems
- Wireless Communications Systems
- Element Management Systems (EMS) and Diagnostic Systems
- Evaluation Platforms and Reference Designs

Turn Key Product Development

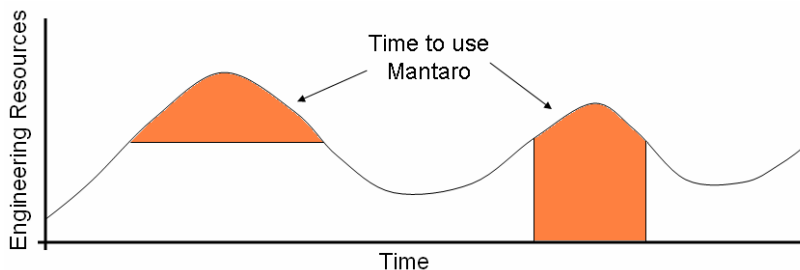
Mantaro's Turn-key Product Development Service leverages all of their resources and partners to produce a complete solution. Examples of complete solutions include:

- Development of a daughter card for an already existing system
- Server and PC cards that utilize standard Linux, UNIX, Windows or other operating systems
- Packaged products that include industrial design support and are ready for manufacturing.



You may decide to have Mantaro develop this solution for a variety of reasons. Many companies want to stay focused on development of their proprietary component or software and decide to use Mantaro as their partner to develop the support hardware and software systems. Some companies prefer not to sustain a full engineering organization after a product is initially developed and decide to keep only a key group of system architects and designers on board. Other companies are interested in only providing professional services to a market segment and decide to have Mantaro develop a customized solution for them that gives them a competitive advantage.

In every scenario, customers view Mantaro as a valuable partner that allows them to stay focused and grow their business.



FPGA Design Services

Mantaro's FPGA Design Services provide clients with access to an expert engineering team with proven systems development experience in a variety of industries and applications. The engineering team stays current with the latest FPGA technologies, tools and techniques for design through partnerships with industry leading FPGA vendors including Altera and Xilinx. Mantaro is **1 of only 18 Altera Certified Design Centers (CDC) in the world** and has over 20 FPGA designers available to work on projects. Their design experience covers a range of programmable logic product families from simple PLDs to the largest Stratix and Virtex devices. Many times customers require specific expertise to support a product development effort or solve a technical design issue where experienced internal resources are not immediately available. Mantaro provides focused teams dedicated to address this requirement.

Embedded Software Design

Mantaro offers a complete portfolio of software development services for clients. Their proven experience spans low level embedded software and the associated application software to work with it. Embedded software systems are developed by working very closely with the hardware engineering design team to optimize performance and ensure seamless integration. Mantaro maintains expertise in both open source software platforms such as Linux and proprietary software solutions such as pSOS and VxWorks. This means that they are able to select the development software based solely on specific performance requirements and optimal lifecycle costs.

Digital/Analog Hardware Design

Mantaro Hardware Design Services allows you to take advantage of their extensive experience designing hardware for telecommunication networks, industrial applications, and commercial devices. Their combination of digital, analog, and RF design experience allows products to be designed to meet your performance, power, reliability, and regulatory requirements without lengthy project delays. Mantaro can also be the right solution to pin point elusive power supply problems or update designs to overcome component obsolescence issues. With their digital signal processing (DSP) and wireless experience, Mantaro can develop products that use the latest technology. Mantaro engineers are also trained to design both hardware and software

solutions using the Cavium Networks OCTEON Processor. Mantaro's hardware design team works closely with their FPGA and embedded system engineers to provide turn-key solutions that are optimized to meet your specifications.

RF/EMI Design Consulting

Mantaro provides EMI services at all stages of product development, whether at architecture definition or assisting with products that have failed to comply with the required standards. Generally, the most cost effective and expeditious approach is to address EMI objectives as early in the development process as possible, where EMI control strategies can be implemented with minimal impact to schedule and cost. Over the years, Mantaro's team has developed multiple high-speed digital, as well as low noise RF/ analog designs adhering to various compliance standards.

Mantaro can guide the EMI design process at each stage of development and manage the product through the compliance process with the appropriate compliance labs.

Engineering Tech Services

Mantaro's full-time technicians specialize in the areas listed below and engage in short term projects ranging from a few hours or few weeks to long term projects lasting month

Prototyping, Initial Board Debug, and Rework

- Reverse Engineering
- Software Testing
- Test Systems and Execution
- Configuration Database Management

