Engineering Services

Lantronix leverages our unparalleled engineering expertise and product development best practices to deliver high quality, innovative products, cost-effectively and on time. With over 2,000 projects successfully delivered to leading global companies in various industrial and commercial verticals, you can trust Lantronix to deliver the results you are looking for.

Lantronix’s Embedded Compute solutions provides high-volume production System-on-Modules (SOM) and development kits that enable OEMs to develop next-generation IoT products. To augment this development, Lantronix offers engineering services that help turn an idea into a reality. In addition to off the shelf SOMs, we specialize in providing custom chip down solutions based on Qualcomm, NXP, Broadcom, Cypress chipsets and many more. Our development process is built with a focus on manufacturability, robust project management, and industry-leading engineering best practices. It involves seamless integration of in-house design, testing and manufacturing domains that provide us an edge in the industry so that our clients can enjoy the best-in-class service. We work closely with clients to ensure their product vision can be realized and employ a collaborative team approach across engineering disciplines, marketing, operations, regulatory and product teams to assure high product quality while minimizing development time. From concept to production, our end-to-end engineering services will help create a comprehensive pathway for the launch of your product.

Our flexible business models allow you to choose from various engagement options that suit your organizational and project requirements. Be it a fixed-cost turnkey product development or just augmenting your team for the more complex areas of product development, Lantronix can provide services to the scale of your demands. Our strong global presence and decades of industry experience enable accelerated development timelines allowing rapid project delivery and a shorter time to market. We maintain a close relationship with our technology partners that enhances our capabilities, keeping us a step ahead in the industry. From rapid prototyping to mass production, our robust manufacturing services complement our development process making Lantronix a one-stop solution for your product design and development.
In addition to designing and developing our proprietary advanced development kits, hardware reference designs, and high-volume production system-on-modules (SOM), Lantronix’s electrical engineering team develops custom embedded computing modules and peripheral boards tailored to our client’s specifications.

With an average of over eighteen years’ experience, our electrical engineering team has expertise in working with high-performance 32-bit and 64-bit processors from Qualcomm, NXP, Nvidia, TI, Broadcom, Cypress, Marvell, and many others. From concept to production, our competence is spread across various areas of electrical design that include:

- Complex schematic design and PCB layout.
- High-Density Interconnect (HDI) Design.
- Wireless technology (Cellular, Wi-Fi, Bluetooth, GPS, NFC).
- FPGAs and CPLDs.
- Power supply circuits & battery devices.
- High-speed signals.
- A vast range of peripherals such as storage devices, USB devices, displays, sensors, audio input and output devices.

Additionally, our team has a strong background in RF circuit and antenna, simulation, prototyping and testing of proprietary and standards-based radio designs. We often work on non-standard radio system design and can provide a customized solution for your product if required. This could involve radio system architecture development, radio range and link budget analysis, or even custom wireless protocol development.
Lantronix’s mechanical engineering team has extensive experience in the development and commercialization of mobile and IoT products. This design experience spans a breadth of product types, with a variety of thermal and structural engineering challenges, high-density device packaging, as well as design for ruggedized products. The mechanical design and manufacturing experience can support proof of concept/prototype projects and low to high volume fabrication and production processes.

While Lantronix’s mechanical engineering capabilities span the entire development cycle, there are often opportunities that utilize a subset of the entire process. Lantronix’s approach is flexible and can accommodate any customer requirements.
Lantronix’s software engineering team works with our technology partners at the earliest stages of new chip introduction, giving us valuable early access and knowledge of the newest high-performance technology. Our team has extensive experience with embedded systems software, having created countless Board Support Packages (BSPs) for Android, Linux, Windows, Green Hills Software’s Integrity OS and QNX.

This includes drivers for a range of areas:
- Cameras including non-standard image sensors such as Time of Flight and IR sensors.
- Displays (LCD & AMOLED).
- Audio devices such as microphones, speakers, power amplifiers, and codecs.
- Legacy and specialty sensors.
- Wired and wireless network connectivity devices.

Lantronix has a rich history of developing proprietary middleware and applications, as well as custom applications for our clients. Our software applications have been licensed by the world’s largest silicon and modem vendors, ODMs, and OEMs, enhancing hundreds of millions of mobile and IoT devices. With years of debugging and testing hours, our software engineering team is well-versed in delivering software that provides a smooth user experience.
With hundreds of camera products successfully developed, Lantronix has strong system expertise with a wide range of camera applications. Our camera specialists have many years of experience working with Image Signal Processors (ISPs) from various silicon vendors as well as camera sensor suppliers, including Qualcomm, NXP, On-Semi, Sony and Omni-Vision.

Camera centric devices developed by Lantronix:
- 360° cameras.
- Security cameras, including thermal imaging devices.
- Advanced prosumer digital camera (37.4MP).
- Wearable cameras for public safety.
- Stereoscopic cameras for depth calculation in a range of verticals including retail analytics and surveillance.
- Cameras for sleep monitoring and analytics.
- Many other cameras integrated into robotics, wearables and a variety of other consumer and industrial applications.

Camera Development Services:
- Camera driver development for RAW, Bayer and YUV sensors from multiple camera sensor vendors Custom FPGA and ToF sensors development.
- Single, dual (stereoscopic) and multi-camera systems.
- Enablement of features such as High-Definition Range (HDR), High Frame Rate (HFR), Image stitching and Electronic Image Stabilization (EIS).

Camera and ISP Tuning Services:
Lantronix offers image tuning to cater to our clients’ camera-specific subjective and objective requirements. With advanced camera labs set up at 2 locations – North America and Asia, we host state-of-the-art tools to undertake advanced camera tuning in the following areas:
- Sensor characterization for major sensor parameters affecting imaging quality.
- Color calibration.
- Lens and color shading compensation.
- 3A tuning, Auto Exposure, Auto Focus and Auto White Balance.
- Sensor tuning for high-performance and quality.
Lantronix has superior expertise in audio technology and tuning gained through the development of scores of products with advanced audio capabilities. Many of Lantronix’s computing solutions leverage Qualcomm’s high-end SoC’s, including Hexagon DSP-based processing and audio codec chipsets, offering flexible and powerful audio input and output possibilities. We are experts in the utilization of a variety of audio tools to configure and tune audio settings for optimal functionality and performance.

Products developed by Lantronix include:
- Voice-controlled TV remote for a leading cable TV company.
- Smart home hub reference design – Qualcomm and global consumer OEMs.
- Smart speaker reference design – Qualcomm and global consumer OEMs.
- Smart headphones for innovative startup.
- Numerous other mobile and consumer devices.

Audio Services Performed by Lantronix:
- Audio architecture definition and module configuration.
- Speaker, microphone and headset.
- Adaptive Input Gain (AIG).
- Dynamic Range Control (DRC).
- Feedback Speaker Protection (FBSP).
- Multi-button Headset Control (MBHC).

Fluence Noise Cancellation:
- Far-End Noise Suppression (FENS).
- Wind Noise Reduction (WNR).
- Adaptive Active Noise Cancellation (AANC).
- Multi-mic ECNS.
- Surround Sound Recording (SSR).

Snapdragon Voice+ (SV+):
- Dual-mic Echo Cancellation Noise Suppression (ECNS).
- Automatic Volume Control (AVC).
- Volume boost.
In addition to designing and developing software drivers and frameworks, Lantronix has deployed numerous AI/Machine Learning solutions.

- Computer vision analysis.
- Object detection and tracking.
- Facial recognition.
- Handwriting recognition.
- 3D image generation.
- Camera and sensor fusion.

Lantronix's solutions support Qualcomm's AI Engine and Snapdragon Neural Processing Engine (SNPE), leveraging hardware-accelerated performance to deliver high performance and low-power Deep Learning and Neural Networking capabilities. With these and other computer vision solutions deployed in proven production systems, Lantronix products and engineering staff are ready to support your AI solutions today.
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Lantronix helps our clients to build thoughtful device management and security into their products, with expertise in these key areas: provisioning and authentication, configuration and control, monitoring and diagnostics, software updates, maintenance, and security. Lantronix has a long history of managing and securing mobile and IoT devices, including the development of our proprietary patented secure boot technology. Today, we work closely with Qualcomm, Android and other 3rd party technology providers to build in reliable device management and security to our client’s products.

Examples of products developed by Lantronix include:

- Digital Signage – Secure boot, Device Lock-Down, DRM and HDCP.
- In-Flight Entertainment – Secure boot, DRM, Key Management.
- Robotics – Customized secure boot chain, QSEE/Trustzone, OpenSC and tamper-proof (hardware-protected) key store.
- Connected security camera – Encrypted partition/filesystem for media storage.
- Media Hub – DRM, HDCP.
Lantronix provides rapid prototyping services to help our clients realize concepts quickly and cost-effectively. Rapid prototyping takes ideas, images, and concepts from a concept or two-dimensional visual into hands-on products that clients, colleagues, and collaborators, as well as potential investors, can hold in their hands and see in action.

Lantronix has a multi-discipline team of mechanical, electrical and software engineers that can accelerate the design of consumer and industrial IoT devices. Our integrated team can quickly develop peripheral boards compatible with Lantronix’s proprietary SOMs or complete functional product prototypes to your specifications.

Along with carrying out multiple assessments early-on, a rapid prototype run helps eliminate critical design flaws that may prove costly otherwise. When combined with our development methodology, our rapid prototyping approach also enables you to iterate designs and incorporate changes that allow for improved evaluation and functional testing of the product. This iterative process provides a roadmap to developing and refining the final product before taking it to the market, ensuring that your design is optimized and reliable.