

# SYSTEMS ENGINEERING

Stay ahead, stay secure

## Comprehensive Systems Engineering Services for Smarter, Safer, and Scalable Products by Innovating the Future with Embedded Intelligence at the Edge

ACL Digital is a design-led digital experience, product innovation, and engineering services leader. Backed by decades of expertise, we partner with global product and system companies to accelerate product development and deliver transformative embedded solutions across industries by leveraging accelerator platforms.

### Industry Expertise



#### CONNECTED CONSUMER ELECTRONICS

- Wearables, smart home, & lifestyle technologies
- Audio/video streaming, integration, & voice control
- UX/UI middleware integration
- Sensor interfacing & wireless communication (BLE, Wi-Fi, 4G, LoRa, Zigbee, Zwave)
- Cloud connectivity & OTA firmware updates
- Edge AI integration



#### INDUSTRIAL IOT (IIOT)

- Rugged industrial-grade hardware and mechanical design, development
- Industry-standard connectivity with RS-232/485, Modbus, BACnet, CAN, Ethernet, and OPC UA
- HMI and wireless connectivity, and automation solutions
- Asset tracking, predictive maintenance, and edge computing solutions



#### MEDICAL DEVICES ENGINEERING

- IEC 60601 / ISO 13485 compliant medical devices design, development
- IEC 62304 compliant software lifecycle
- Medical sensors, health monitoring devices, and wearables
- FDA-compliant verification and validation for connected healthcare devices



#### SEMICONDUCTOR & PLATFORM ENGINEERING

- Post-silicon bring-up and validation
- Platform low-level firmware, secure boot, device drivers
- BSP, SDK development for Linux, Android, RTOS
- FAE and Pro-Support to Tier 1, 2 customers, OEM/ODMs



#### EDGE AI

- Data curation for ML applications - collection, annotation, cleaning, augmentation
- Real-time AI inference at the edge (low latency, no cloud dependency)
- Model optimization for edge deployment
- Support for leading frameworks: TensorFlow Lite, ONNX, PyTorch Mobile
- Integration with edge AI hardware (NVIDIA Jetson, NXP i.MX, Synaptics SL)
- AI-enabled video, audio, and sensor intelligence related use-cases for smart manufacturing, healthcare, and IoT
- AI model integration with microcontrollers (TinyML)

## Areas of Offering



### HARDWARE DESIGN & DEVELOPMENT

- End-to-end hardware design: schematics to PCB layout
- HDI, Flex-Rigid, high-speed, multi-layer board design
- Prototype development and validation
- Enclosure Design - 3D printed, soft & hard mold
- Certification - FCC/IC, CE, UL, PTCRB, ROHS, etc.



### EMBEDDED SOFTWARE DEVELOPMENT

- Bare-metal and RTOS-based (FreeRTOS, Zephyr, etc.) firmware
- Linux device drivers and BSP development
- Linux and Android-based firmware development
- HAL, secure boot, and system bring-up
- Middleware and communication stacks



### MANUFACTURING READINESS & PRODUCTION SUPPORT

- SI/PI analysis, RF Tuning, simulation, DFM, DFMEA, MTBF, HALT/HASS
- Engineering Manufacturing Transfer, DFM/DFA/DFT analysis, yield improvement
- Production test planning, fully/semi-automated ATE design & production EOL testing
- Product label, gift box & transportation packaging design



### QUALITY ENGINEERING, AUTOMATION & COMPLIANCE

- End-to-end quality engineering
- System test plan, test cases development, integration with Jira, and test management tools
- Functional, UI/UX, integration, regression, sanity, performance, load/stress testing
- Automated test framework and automation testing
- Compliance and certification testing

## Semiconductor Partnerships

 synaptics®

 NXP  
Registered  
Partner

 TEXAS  
INSTRUMENTS

 infineon

 SILICON LABS

## Wireless Connectivity Standards & Alliance Memberships

 Bluetooth

 Z-WAVE  
ALLIANCE

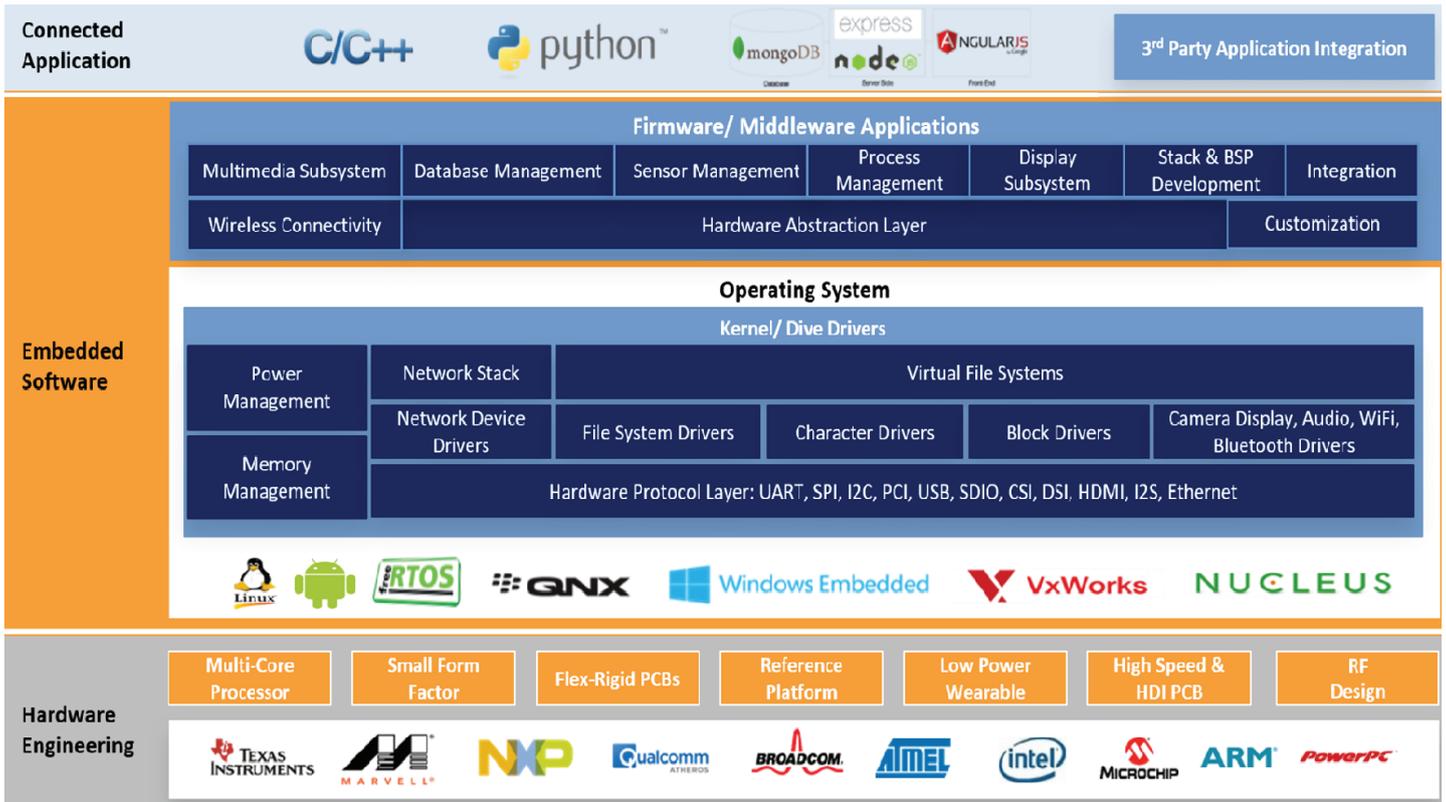
 zigbee  
alliance

 LoRa Alliance™

 THREAD  
GROUP

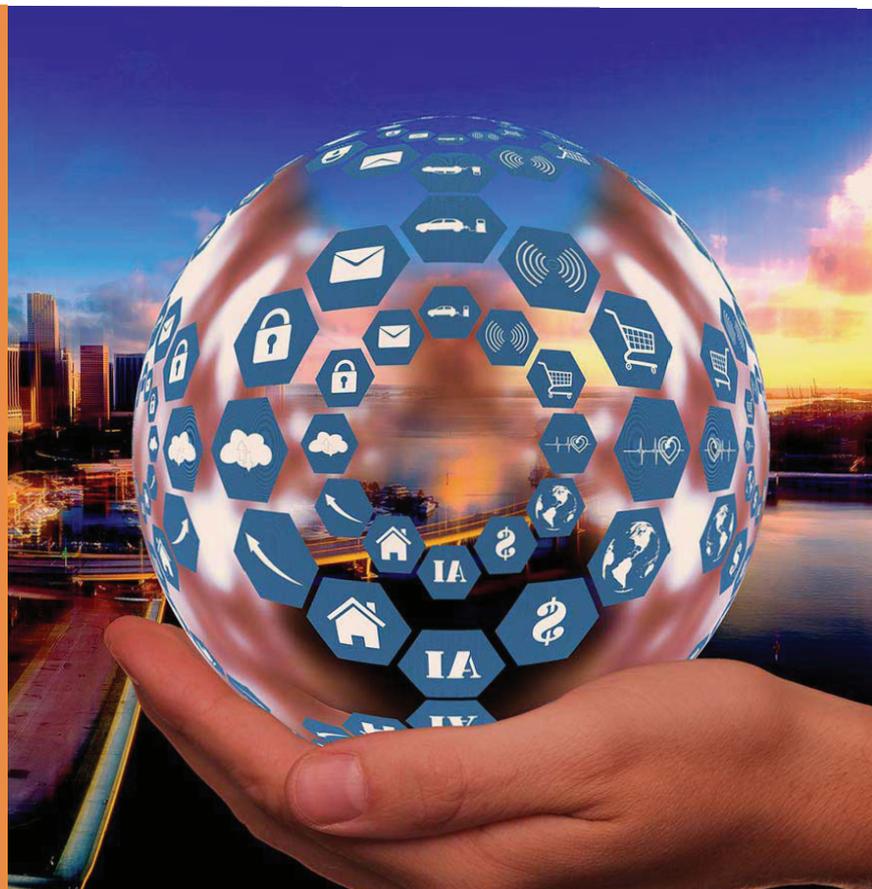
 csa connectivity  
standards  
alliance

# Technology Expertise



## Why ACL Digital?

- Proven track record in Systems Engineering
- Partnerships with top silicon vendors
- Actively engaged in industry alliances to stay at the forefront of emerging technology trends
- Investing in building accelerator platforms for achieving faster time to market
- Agile, scalable delivery models
- Strong focus on security, compliance, quality, and automation



## Success Stories



### Connected HVAC & Thermostat System Development & Validation

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- INDUSTRY** : Industrial IoT
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- CLIENT** : Global leader and manufacturer of heating, cooling, and water heating solutions for homes and businesses
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- VALUE PROPOSITION & SERVICES** : Connected technology partner delivering turnkey CTA2045 module development, hardware/firmware integration support, quality engineering and automation
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### AOSP-based Touch Screen Point of Sale Device Engineering & Validation

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- INDUSTRY** : IoT
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- CLIENT** : Global leader in touch screen solutions, including modern point-of-sale systems and interactive digital signage solutions
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- VALUE PROPOSITION & SERVICES** : Reliable, long-standing partner specializing in AOSP customization & maintenance for Rockchip, Qualcomm, NXP platform-based systems, quality engineering & automation for 30+ SKUs, GMS/CTS certification
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### Connected Endoscopy Device Design & Development

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- INDUSTRY** : Medical Technology
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- CLIENT** : Physician founded technology start-up with a vision of an all-in-one, wireless, cloud-connected endoscopy visualization system
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- VALUE PROPOSITION & SERVICES** : End-to-end system engineering, with feasibility, platform selection, system partitioning, hardware, firmware design and development, quality engineering, manufacturing production support, EdgeAI enablement
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### Electrical Structure Monitoring Solution

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- INDUSTRY** : Machine Learning and Edge IoT
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- CLIENT** : One of the world's largest energy companies
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- VALUE PROPOSITION & SERVICES** : Enabling specialized AI/ML solution with the design and development of hot-spot detection using FLIR camera images, data cleaning, annotation, training, and refining the model with 15K+ image database, deployment of inference engine
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ACL Digital, part of the ALTEN Group, is a trusted AI-led, Digital & Systems Engineering Partner driving innovation by designing and building intelligent systems across the full technology stack — from chip to cloud. By integrating AI and data-powered solutions, we help enterprises accelerate digital transformation, optimize operations, and achieve scalable business outcomes. Partner with us to turn complexity into clarity and shape the future of your organization.

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