LICRIT

WHEN CRITICALITY MATTERS

MAKING THE WORLD BETTER AND SAFER BY PROVIDING STATE OF THE ART MISSION CRITICAL AND LIFE CRITICAL ELECTRONICS SOLUTIONS AND CONSULTING

LICRIT
WHEN CRITICALITY MATTERS

Our mission is to build a safer and better world by providing tailored solutions and consulting for safety-critical applications. We are committed to excellence in all aspects of our work, enabling our clients to achieve their objectives with confidence and integrity. By prioritizing quality and innovation, we strive to be trusted and agile partners in their journey toward success.

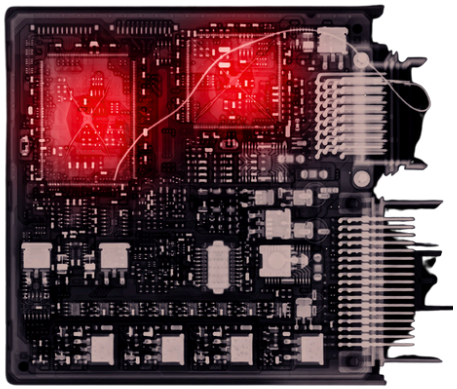
LICRIT specializes in the development of systems where criticality matters.

Safety-critical systems are systems whose failure or malfunction may result in death or serious injury to people, loss or severe damage of equipment or property, or environmental harm.

We develop highly reliable embedded systems, certified software, and qualified hardware.

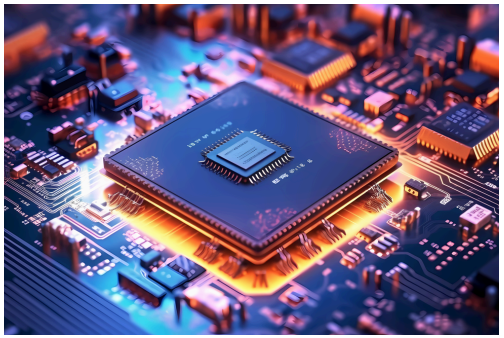
With deep expertise across the aviation, space, and functional safety industries, we deliver both comprehensive support and turnkey solutions. Through our consulting, we guide our customers through the challenges of safety-critical development, certification, and regulatory compliance.

LICRIT ELECTRONICS



Turnkey Safety-Critical Electronics Development for Control and Safety Systems.

LICRIT SOFTWARE

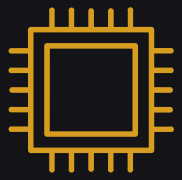


Turnkey Solutions for Safety-Critical Software Development and Certification.

LICRIT CONSULTING

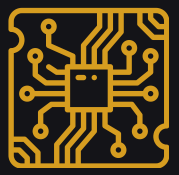
Specialized engineering services, trainings and compliance support.

Our Capabilities for Safety-Critical Electronics Projects

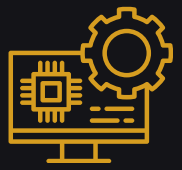


Safety-critical embedded and real-time software.

Bare-metal firmware, BSP and platform drivers.



Turnkey electronics development, hardware design and hardware qualification.



Requirements development, conceptual design and detailed design.

Own qualified tools for development and testing.

System integration testing, software validation.

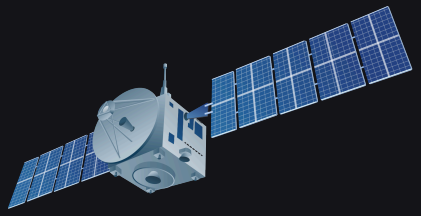
Software integration testing.

Software unit testing.

Continuous testing and integration.

Industry standards and regulations compliance, certification support.

Safety-Critical Industry Standards and Regulations



Space Software Development

- **ECSS-E-ST-40C** - Space Software Engineering
- **ECSS-Q-ST-80C** - Software Product Assurance
- **NASA NPR 7150.2D** - NASA Software Engineering Requirements

Aviation Development Ecosystem

- ***ARP 4754B*** *- Development of Civil Aircraft and Systems*
- ***ARP 4761A*** *- Safety Assessment Process on Civil Aircraft, Systems, and Equipment*
- ***DO-178C*** *- Airborne Software Development*
- ***DO-254*** *- Airborne Electronics Hardware*
- ***DO-160G*** *- Environmental Conditions and Test Procedures for Airborne Equipment*
- ***AS9100*** *- Quality Management Systems - Requirements for Aviation, Space and Defense*
- ***EASA AMC-20*** *- AMC for Airworthiness of Products, Parts and Appliances*
- ***EASA PART 21*** *- Airworthiness and Environmental Certification*

Functional Safety and Railway

- **IEC EN 61508** - Functional Safety of E/E/PE safety-related systems.
- **EN 50126 (IEC 62278)** - Railway: The Specification and Demonstration of RAMS
- **EN 50128 (IEC 622279), EN 50716** - Railway: Software
- **EN 50129 (IEC 62425)** - Railway: Communication, signaling and processing systems

Other Standards

- **MIL-STD-217** - Reliability prediction of electronic equipment
- **MIL-STD-882** - System Safety

Your Industry?

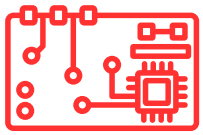
- We can apply the same rigor to a product development according to a new standard.

LICRIT Electronics – Turnkey Safety-Critical Electronics Development

LICRIT can cover all phases of the product life cycle – from conception and system design to production and maintenance.

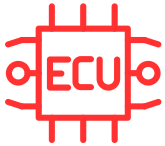
With our advanced expertise in the development and certification of engine control systems, communication systems, and other safety-critical embedded systems, we excel in design of safety control systems which are robust, safe and performant.

LICRIT ensures compliance with strict standards and regulations, and certification with the authority (EASA/FAA, TÜV SÜD).



Prototype (lab) development (TRL4)

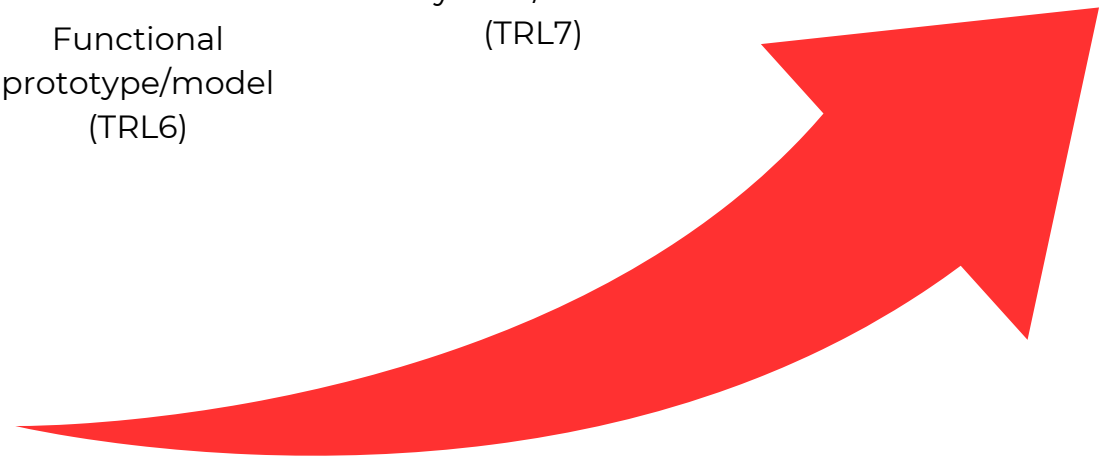
Integrated and validated system (TRL5)



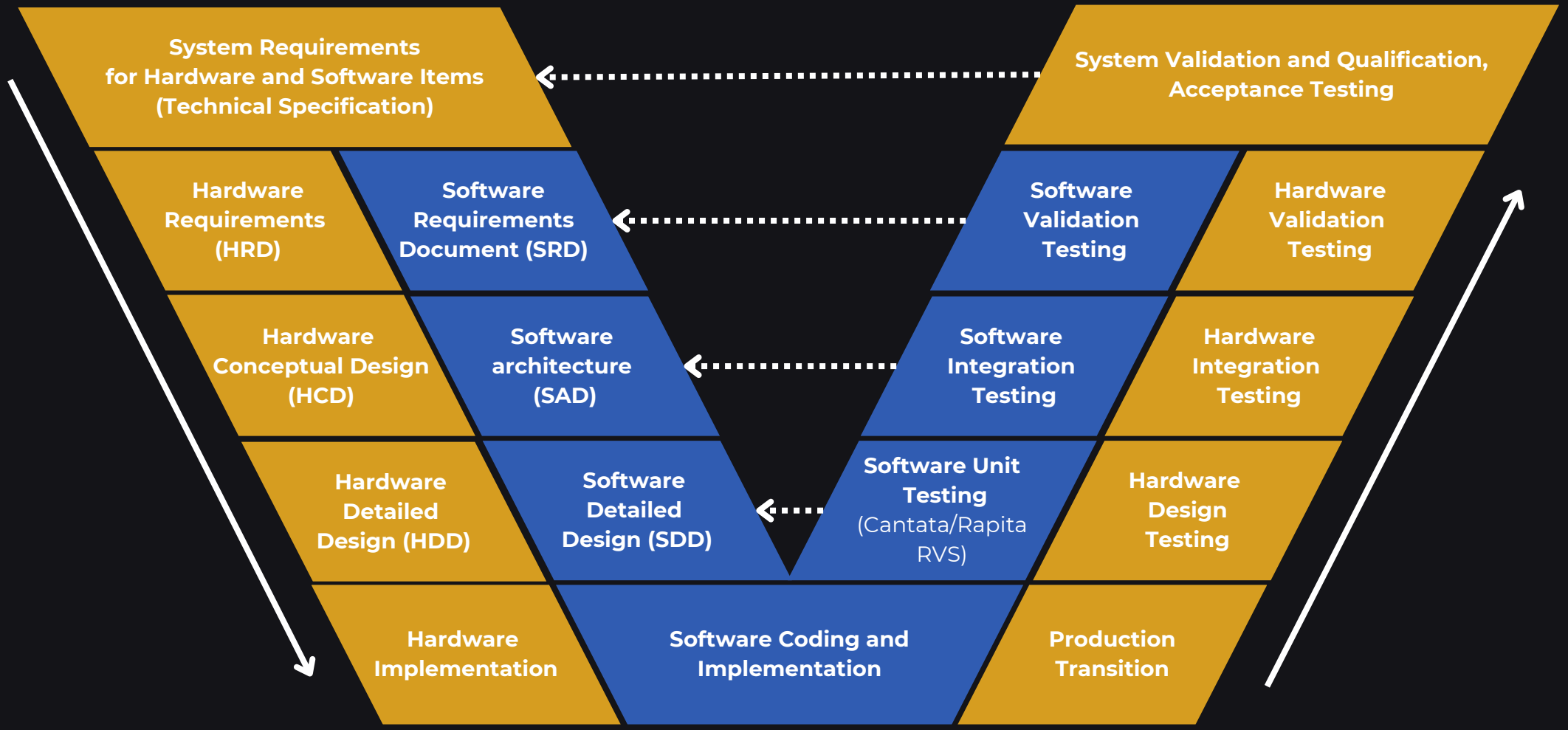
Functional prototype/model (TRL6)

Qualifiable system/model (TRL7)

Completed and qualified system (TRL8)



LICRIT Electronics – System/HW/SW Development TRL6+ Life-Cycle



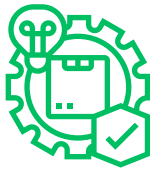
LICRIT Software – Turnkey Software Development

LICRIT specializes in providing comprehensive turnkey software development solutions for safety-critical software projects fully compliant with the stringent requirements of aviation, space and functional safety industries. As software development for the safety critical electronics needs to adhere to strict certification and qualification requirements, we base all our activities on the complete understanding of the complex requirements crucial for the optimal development path, cost, and the technical solution.

For both ongoing and planned customer projects, we offer **software certification solutions that empower project success, accelerate development, and reduce costs and time to certification**. LICRIT is an AS9100D certified supplier of DO-178C software, certification solutions and consulting. We deliver highly reliable embedded software, automated testing solutions, model-based design and self-contained certification packages for safety-critical applications.

LICRIT can manage all phases of software development from certification planning, requirement definition, design, implementation, unit/integration testing to software validation.

Turnkey Safety-Critical Software Development from Scratch



Complete Software Life Cycle Based on TS and Software Concept

Complementary Software Life Cycle Based on Certifiable Software Prototype

Lower Software Life Cycle

Independent Software Verification & Validation (ISV&V)

LICRIT Software – Turnkey Software Development and Software Specialties

Safety-critical embedded and real-time software
We develop safety-critical embedded and real-time application software, integrating RTOS capabilities with powerful software embedded components.

Bare-metal firmware, BSP and platform drivers
Utilize your target hardware at maximum with device drivers, bare-metal firmware, and platform software optimized for specific hardware capabilities and target application. We work with targets such as TMS570, STM32 F4+, PIC32, and others.

Bootloader and dataloader software
Our solutions for programming, booting and field-loading of the embedded software ensure safe and robust downloading of the software to the target hardware during production, maintenance or field deployment. We provide PC application software to cooperate with an embedded loading solution.

Safety-critical control software
We have advanced expertise in development and implementation of engine control systems, BLDC motor control systems, fuel pump control systems, and other safety-critical control systems.

Communication stack
Interconnect your embedded system with the outside world via solutions based on industry-wide data communication buses and networking stacks, such us ARINC 429, ARINC 825, ARINC 826, CAN, Ethernet and other transfer protocols.

Software safety features and built-in tests
Make embedded software robust, safe and secure with implemented safety features, error handling and periodic built-in test systems and diagnostics.

LICRIT Software – Turnkey Software Verification and Validation

With industry-proven qualified software tools and years of experience working on the safety-critical applications, **LICRIT's engineering team can meticulously fulfill all verification and validation (V&V) objectives required by industry standards up to the highest criticality level.**

Our turnkey software V&V services include both complete or partial coverage of verification and validation processes and activities. We can test the safety-critical software with our automatic test harness and complete the test campaign with additional verification and testing activities, measure and evaluate MCDC structural code coverage, object-to-code traceability, required timing & performance with WCET analysis and testing, and ensure the code quality with the reviews and static code analysis.

LICRIT provides Independent Software Verification & Validation (ISVV) service for safety-critical projects. The ISVV is coherent and complementary service to the software project nominal V&V tasks and activities, and it helps to reduce development risks by performing V&V of the software requirements and code independent to the customer's organization.


At LICRIT, we are more than a consultancy; we are partners in progress, navigating the customers through complexities of safety-critical development, standards, and regulations.

LICRIT Consulting – Services and Expertise

LICRIT offers a comprehensive suite of engineering services designed to elevate customer project's success. Our engineers have broad expertise and hands-on experiences from many safety-critical projects, enabling us to support our customers throughout their development journey.

Training, Consulting, Team member:
Empower your team with tailored training, ongoing consulting services, or seamless integration as an extension of your development team. Our support aims to elevate your capabilities at every stage.

QA and Compliance Verification:
Our expertise in the industry standards, compliance verification, quality and process assurance, guarantees adherence to the certification objectives and regulatory requirements.

Tooling and Process Optimization:
We assist in selecting and customizing suitable design, development and verification tools for efficient project execution.

Reliability and Safety Analyses:
Conducting thorough reliability and safety analysis based on ARP4761A, MIL-STD-217 and MIL-STD-882 to evaluate the system's RAMS parameters and overall dependability.

Technical and Certification Documents:
From defining to implementing technical requirements at any level of product design, our engineers will help you with the development following the optimized certification plans ensuring smooth accomplishment of all certification objectives. We provide also templates simplifiing writing of certification documentation.

Our Aviation Trainings – Most Popular Aviation Industry Courses

We offer a series of comprehensive training courses designed to equip professionals in the aviation industry with the necessary expertise and practical knowledge required to navigate throughout the most controlled development environment. Our courses provide in-depth insights into certification process, most popular aviation standards, and industry regulations, bolstered by practical examples, workshops, and interactive group activities.

Product Certification, Development and Airworthiness

- **Introduction to EASA Part 21, Part 21 Light, (A)DOA, and POA:** Familiarize yourself with the essential aspects of EASA Part 21 regulations, including Part 21 Light, Design Organization Approval (DOA), and Production Organization Approval (POA).
- **Product Certification Specifications:** Understand the detailed specifications and requirements essential for product certification within the aviation industry.
- **eVToL and EHPS Airworthiness Requirements:** Dive into regulatory base for electric Vertical Take-Off and Landing aircrafts and Electric/Hybrid Propulsion Systems.

Aviation Design and Development Standards

- **Introduction to Aerospace Development and Regulations**
- **Overview of Development and Verification Processes, ARP 4754B Intro:** Delve into an overview of the development and verification processes, specifically focusing on ARP 4754B guidelines.
- **Safety Process per ARP 4761A:** Understand safety processes and methodologies as outlined in ARP 4761A for the aviation industry.
- **Software Development per DO 178C:** Learn the essentials of software development in accordance with DO 178C standards, crucial for aviation systems.
- **Electronic Hardware Development per DO 254/AMC 20-152A, DO 160G Intro:** Explore electronic hardware development based on DO 254 guidelines and DO 160 introductory concepts.
- **Introduction to Cybersecurity in Aerospace:** Explore the fundamental principles and practices of cybersecurity tailored to the aerospace sector.
- **Configuration Management, Process, and Quality Assurance:** Gain insights into effective configuration control and management, process assurance, and quality assurance practices.

Process Consulting, Gap Analysis & Improvement

Aviation, Space and Functional Safety Process Consulting
LICRIT's Process Consulting specializes in the fundamental development standards and regulations required for given industry and applicable to development of safety-critical systems, electronics hardware, and software. We consult with our customers about the ways how they can reach compliance with these standards and regulations established by authorities.

An initial consulting hour is FREE, and it always serves to get to know each other better and to discuss customer's project, to identify possible technical and regulatory risks, and to clarify specific project considerations.

LICRIT's Development Processes Gap Analysis
By studying customer's processes based on the available project plans, development standards, and other project work results, accomplished by the process audit onsite and discussion with the key engineers and stakeholders, we evaluate the companies processes and capabilities from the top down to assess the overall compliance towards the certification and regulatory base and the maturity level of the processes.

Our gap analysis will analyze your system, safety, hardware, software, configuration management and quality assurance processes. LICRIT's Gap Analysis will serve to identify process non-compliances, address opportunities for process improvement and optimization, and propose corrective actions and cost-effective solutions.

Process Consulting, Gap Analysis & Improvement

Process Improvement

Following the gap analysis and tailored trainings session, and with established partnership, we closely cooperate with our customers on the closing strategy for the process improvements and corrections. Empowering the customer's engineering team with our expertise, we help with the update of project plans and process landscape, levering the existing work and effectively closing identified gaps.

Having a good understanding of the customer's mission, processes and project goals, our consulting support may also go beyond and continue in the form of engineering services helping the customer to meet the timeline and commitments.

Optional Tailored Trainings

We offer and prepare tailored training courses to support our customers in understanding, addressing the improvements and corrective actions for specific project topics, standards or processes identified by the gap analysis.

Our training courses are flexible and can be customized to meet your team's specific needs, knowledge levels, and project requirements.

Achieving Our Mission through the Quality Principles

We fulfill our mission to make the world better and safer by continuously improving the quality of our products and services and by ensuring regulatory compliance.

Quality for our customers

- Our customers can rely on our products and services to consistently meet their specifications and requirements.

Quality for our colleagues

- We operate at the highest ethical standards and take personal ownership to ensure our work meets all customer requirements.

Quality for regulatory authorities

- We meet or exceed all applicable regulatory requirements.

Quality for our company

- We drive a continuous improvement culture that is enabled by practical process improvement and our company's quality system.

LICRIT
WHEN CRITICALITY MATTERS

nqa.
ISO 9001
AS9100
INTEGRATED MANAGEMENT

Selected References

MAM COMPRO

TTTech

skylife

FED JSC

MESIT

SPEEL PRAHA

ORLIČAN

Aero

jihostroj AERO TECHNOLOGY & HYDRAULICS SINCE 1919

cross




Selected Project References across the Industries

Ethernet solution for a fault-tolerant system
Space product: ECSS & DO-178C Level A compliant Software lead, software engineering

New generation of an Auxiliary Power Unit
Aviation product: EASA CS-APU level B compliant ECU engineering, ECU team leading, Software engineering

Fuel Flow Divider
Aviation product: ARP-4761 Safety assessment

eVTOL Electric Propulsion System
Gap analysis, consultations for of Part 21, SC-VTOL, SC E-19 EHPS, DO-178C, DO-254, AMC-20

Past experience of our experts
Authorities: EASA, FAA Levels: from D up to A
Projects: Flight Controls, FADECs, Fuel Pumps, Fuel Measurement, Flight Recorders

Traffic light controller
Functional-safety product: EN 61508 SIL3
Functional-safety life-cycle and management

Electric stair chair
Functional-safety product: EN 61508 SIL2
Turnkey development of safety control board

Door control unit
Railway product: EN 50126 & EN 50129 SIL2

Partnership & Membership

VISURE SOLUTIONS

Alliance for Zero Emission Aviation

RAPITA SYSTEMS

EUROCAE - Driving the standard for aviation

CZECH AEROSPACE CLUSTER

Looking Forward to Hearing from You!

LICRIT's Commitment to Excellence

At LICRIT, we actively engage as essential team members in diverse safety-critical development projects, leveraging our advanced experience from safety-critical industries and strong expertise in the regulations and standards, to ensure successful outcomes.

Our team of highly skilled and experienced professionals provides solutions to meet the unique requirements of each of our clients. From design and development to certification and production, we are committed to delivering exceptional quality and outstanding customer service every step of the way.

Contact us today and learn more.

www.licrit.com
info@licrit.com
+420 777 859 961

LICRIT s.r.o.
Technická 2935/23
616 00 Brno
Czech Republic