



Verification and Analysis for Safety and Security of Applications in Life

About the project

As software becomes more complex, ensuring its safety, resilience, and freedom from vulnerabilities is increasingly essential—not only in safety-critical systems but also across general-purpose platforms and IoT environments.

VASSAL unites top-tier research in formal methods, model-based design, and economics to advance software safety and security across digital societies.

VASSAL reinforces secure-by-design and safe-by-design principles by advancing techniques for automated analysis and verification of software, enhancing the robustness of both the development process and its outcomes. The project also examines the economic feasibility of these techniques, particularly to support adoption among SMEs, where high-assurance software practices are often perceived as inaccessible.

Research & Innovation Focus Areas



Logics & Automata

Efficient decision techniques for logic formulae (string logic, separation logic) and manipulation of compact automata.



Model-Based Design & Synthesis

Automation of requirement specification, synthesis of systems in uncertain environments.



Verification & Analysis

Precision / scalability balance in automated verification, for low-level / memory-intensive and AI-based systems, incl. incomplete code.



Economic Implications

Economic assessment of automated software engineering tools to support informed, risk-aware adoption in industry.

Application and End Users

The VASSAL project targets domains where high-assurance software engineering is mission-critical. VASSAL develops advanced methods for the early detection of vulnerabilities and systemic flaws. These techniques improve system dependability, enhance lifecycle efficiency, and strengthen resilience and security at scale.



Transportation and Mobility

(e.g., autonomous vehicles, railway control systems)



Cyber-Physical Infrastructure

(e.g., industrial automation)



Healthcare and Medical

(e.g., embedded diagnostic systems, regulated health software)



Energy Systems

(e.g., grid resilience platforms, supervisory control for renewables)

Follow our journey as we shape the future of secure, resilient SW engineering.



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VASSAL Project

