ECS 2024 GHENT BELGIUM 5-6 December

Systems Design and Integration

TRISTAN and ISOLDE Projects

TRISTAN: Together for RISC-V Technology and Applications

ISOLDE: HIgh Performance, Safe, Secure, Open-Source Leveraged RISC-V Domain-Specific Ecosystems

TRISTAN

Speeding up the transition to RISC-V chip architecture

ABSTRACT

Europe needs an open source ecosystem to drive competitiveness and enable greater and more agile innovation. The use of open-source hardware and software drastically lowers the barrier to de-signing innovative integrated circuits. The EU-funded TRISTAN project aims to further expand and develop RISC-V architecture in Europe so that is able to compete with existing commercial alternatives. This open specification eliminates the need to learn and create unique ecosystems for each processor architecture, increasing productivity, security and transparency. TRISTAN approach will be holistic, covering both electronic design automation tools and the full software stack.

TRISTAN will expand, mature and industrialise the European RISC-V eco-system to be able to compete with existing commercial alternatives. This goal will be achieved by defining a European strategy for RISC-V based designs including the creation of a repository of industrial quality building blocks to be used for SoC designs in different application domains (e.g. automotive, industrial, etc.). The TRISTAN approach is holistic, covering both electronic design automation tools (EDA) and the full software stack. The broad consortium will expose a large number of engineers to RISC-V technology, which will encourage adoption. This ecosystem will ensure a European sovereign alternative to existing industrial players. The 46 partners are from Austria, Belgium, Finland, France, Germany, Italy, the Netherlands, Poland, Romania, Turkey and Switzerland.

ISOLDE

Expand, mature, industrialize the European high-performance RISC-V ecosystem

ABSTRACT

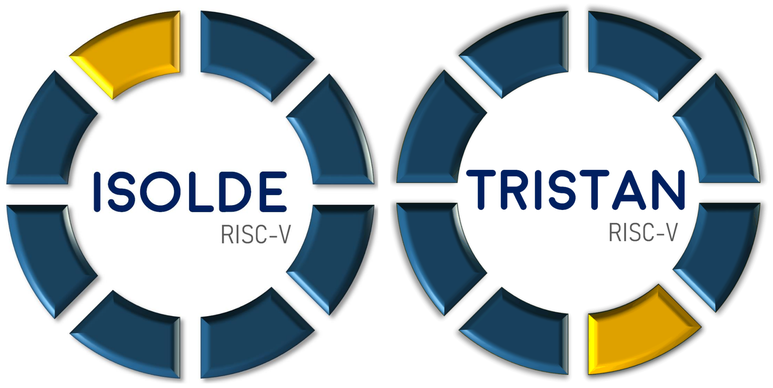
ISOLDE Project will have high performance RISC-V processing systems and platforms at least at TRL 7 for the vast majority of building blocks, demonstrated for key European application domains such as automotive, space and IoT with the expectation that two years after completion ISOLDE's high performance components will be used in industrial quality products.

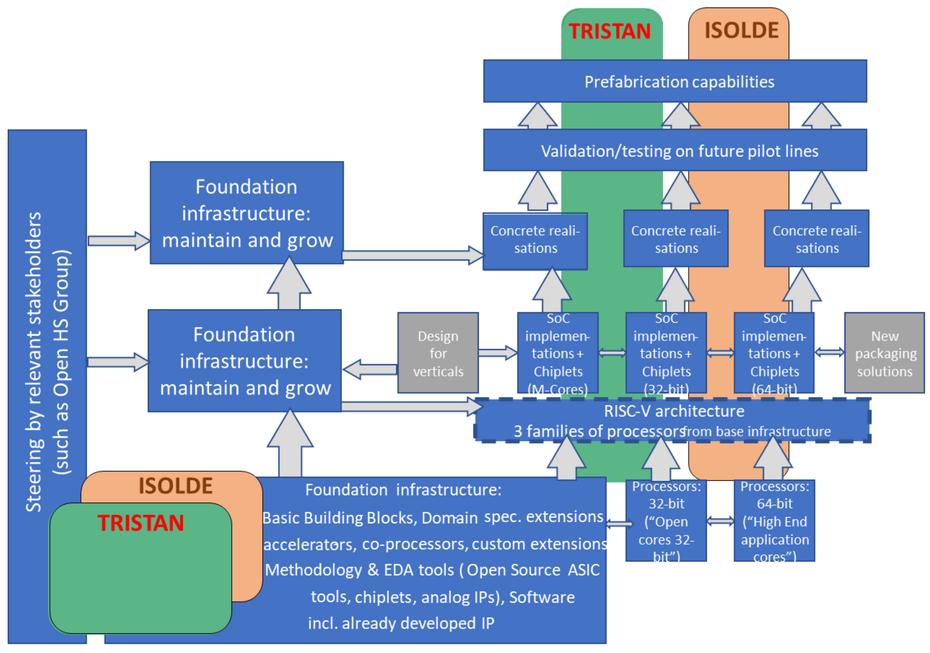
ISOLDE focuses on the provision of industrial-grade open-source support for development, verification, and maintenance. The customizable IPs will be hosted on physically located European servers. This way, ISOLDE will have delivered a major contribution to the unification and focus of the full-fledged – industry-supported – eco-system for RISC-V open-source architecture, especially in the area of embedded high-performance computing, and thus to the creation of a breakthrough design capacity across the EU microelectronics industry. The 37 partners are from Austria, Czechia, France, Germany, Italy, Romania, Spain, Sweden and Switzerland.

TRISTAN and ISOLDE

The TRISTAN and ISOLDE projects are working closely together on establishing RISC-V processor technology in Europe. The results of the projects are planned to complement each other. Each project focuses on a different performance class. Both projects' consortia are composed of partners from industry (both large industries as well as SMEs), research and RISC-V related industry associations.

The 3-year projects fit in the strategy of the European Commission to support the digital transformation of all economic and societal sectors towards a green, climate neutral and digital Europe. New semi-conductor components, such as processors, as these are considered of key importance in retaining technological and digital sovereignty will be developed. Development strategies leveraging public research funding that exploit Open-Source have been shown to boost productivity, increase security, increase transparency, allow better interoperability, reduce cost to companies and consumers, and avoid vendor lock-ins.





Contact details

TRISTAN Project Coordination:
NXP Semiconductors Germany - Patrick Pype
Duration: 01.12.2022 - 30.11.2025
Email: info@tristan-project.eu
Website: tristan-project.eu
www.linkedin.com/company/tristan-kdt/

ISOLDE Project Coordination:
Infineon Technologies AG - Holger Schmidt
Duration: 01.05.2023 - 30.04.2026
Email: info@isolde-project.eu
Website: www.isolde-project.eu
www.linkedin.com/company/isolde-project/

TRISTAN website

ISOLDE website

Virtual Repository

TRISTAN - ISOLDE flyer

Partners

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