SIListra Systems Press release / Dresden, October 1st, 2024

Safety controllers on commercial-of-the-shelf multicore hardware with a TÜV-certified solution

SIListra Systems presents an established range of solutions with the SIListra Safety Transformer and SIListra Safety Tools & Engineering

Abstract / Short version

In 2024 SIListra Systems GmbH from Dresden will again be exhibiting at SPS in Nuremberg for the third time in a row. As a co-exhibitor at the **CODESYS** joint booth in **Hall 7, Booth 677**, SIListra Systems will be showcasing its proven and TÜV SÜD-certified solution for safety PLCs on commercial-of-the-shelf hardware. Experts from the Dresden-based high-tech company will provide interested parties with guidance on how to achieve maximum flexibility in the selection of hardware for safety controllers. At its core, the SIListra Systems solution is based on a software approach for diagnosing random faults. The SIListra Safety Transformer is a software development tool that automatically generates the necessary redundant diagnostics. This approach replaces traditional redundant hardware channels, enabling the development of new safety control architectures and virtual safety control solutions. At the joint booth, CODESYS will present the CODESYS VIRTUAL SAFE CONTROL as a reference for a virtual SIL3 safety controller based on the SIListra Systems solution. Those interested will have the chance to discuss their safety use case and learn about the benefits and advantages of this technology.

Full version

The SIListra Safety Transformer 2.0 developed by SIListra Systems GmbH is certified by TÜV SÜD for the development of safety-critical systems with standard hardware in accordance with IEC 61508 (up to SIL3), ISO 13849-1 (up to PLe), ISO 62061 (maximum SIL3) and ISO 26262 (up to ASIL-D). Instead of specially developed safety hardware with traditionally two or more hardware channels, the SIListra Systems solution relies on two software channels that run on the same commercial-of-the-shelf hardware. The two software channels are diverse to each other, as one of the two channels is generated by the SIListra Safety Transformer from the source code of the other channel using the coded processing technology. The hardware does not need to have its own diagnostic capabilities. The advantages of this solution compared to traditional two- or multi-channel hardware are greater flexibility in component selection, reduced hardware development costs, fast portability in case of system changes and even completely new applications such as virtual safe control systems.

In addition to the current SIListra Safety Transformer version 2.0, SIListra Systems is giving an outlook on the new version 2.1, which will be released at the end of 2024. The new version improves support for C/C++ up to C++20 and C17. The newly available support for multi-threading allows users to scale their control solutions better and more efficiently on modern multicore CPUs. The runtime components included with the SIListra Safety Transformer have been greatly expanded and restructured. This gives users better options for debugging their code and allows them to adapt specific parts to their target platform and simply continue to use unaffected runtime components. The documentation has been expanded and additional examples have been added to the included tutorial.

With the newly added certification in accordance with the EN 50716 standard, the SIListra Safety Transformer meets an important requirement for use in the railway applications for the first time.

SIListra Systems GmbH is a solution provider. Customers are supported comprehensively when using the SIListra Safety Transformer. TÜV SÜD-certified functional safety engineers and software developers work on control platform development projects. The support ranges from safety concepts and safety analyses to the programming of software components for a control platform (execution logic, compilers, interpreters, safe communication stacks). SIListra Systems thus offers comprehensive consulting and engineering services for the development of scalable, safety-relevant and cost-efficient control solutions for standard hardware.

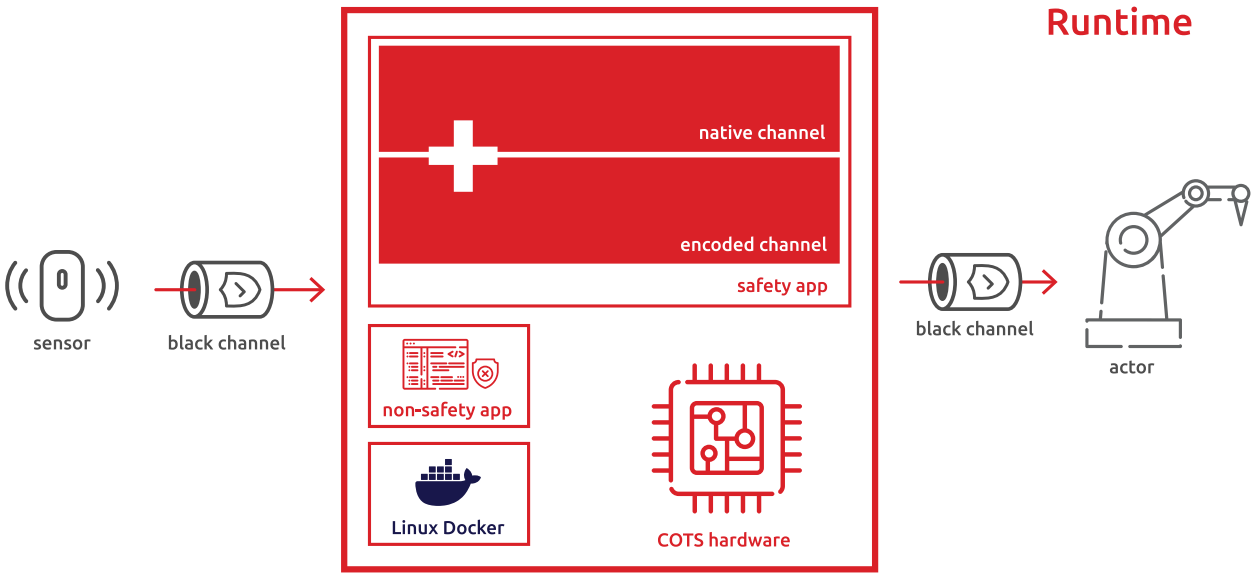

Figure: Runtime view - the safety application consists of two diverse software channels that run together on a standard hardware.

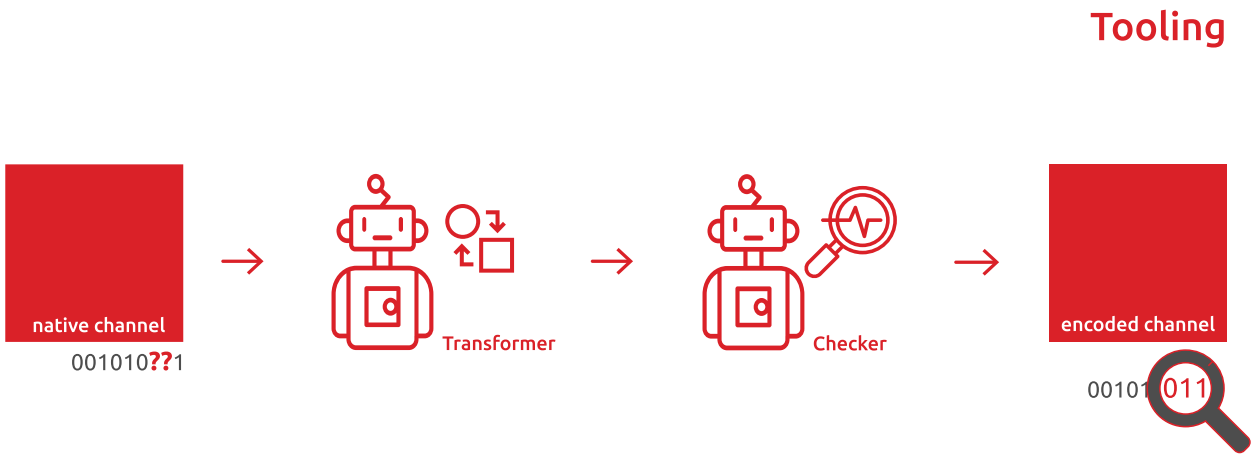

Figure: Tool view - The SIListra Safety Transformer generates the source code of the encoded channel from the source code of the native channel. The checker safeguards the execution of the SIListra Safety Transformer.

About SIListra Systems:

SIListra Systems GmbH is a highly specialized technology company that is a spin-off from TU Dresden in 2012. The company's software-based solutions can be used to implement safety-critical applications on standard hardware. Automation and robotics companies in Germany, Austria and France use the technologies from SIListra Systems. Also "CODESYS Virtual Safe Control SL" is realized with SIListra Systems' Coded Processing technology. More information about the company, the certified product and engineering service is available at silistra-systems.com.

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