Press Release

Wireless Remote Development (WRD)

With the newly developed WRD Toolbox, SSV offers developers of wireless IoT applications various tools for debugging, end-to-end testing and monitoring with telemetry data on all relevant application components. The modular WRD Toolbox function blocks enable comprehensive field tests in real application environments.

Hanover, February 2025. Anyone who has ever been involved in the new development of a somewhat more complex embedded systems software knows the challenge: all individual components were subjected to a unit test, the interaction was ensured via integration and functional tests and finally a comprehensive system test was successfully carried out. Nevertheless, some assemblies with the new software failed immediately after the first delivery to the customer. The reasons for the failures are actually also known: After all, the aforementioned tests were carried out in the development environment and in special test laboratories. However, the environmental conditions and, in particular, possible interference variables in an application environment are often completely different - especially when wireless functions and battery operating modes are used, numerous surprises can be expected. Added to this is the unpredictable creativity of the application users and the resulting interaction sequences. A familiar question in this context is therefore: How do we determine the causal details for each individual failure and what software changes are required to prevent such failures?

To meet the challenges of wireless IoT development, SSV has developed a new toolbox called "Wireless Remote Development (WRD)". The WRD toolbox contains methods and function blocks for the three task areas of debugging, end-to-end (E2E) testing and monitoring. The WRD services are the central component of the new SSV development. They are operated as an integration level in a cloud or on-premises between the embedded systems and IT software components of an IoT application. These services can be used to continuously supply a DevOps team with telemetry data for the entire application. Furthermore, the WRD services enable specially secured remote debugging access to all software functions, i.e. from the individual embedded system of a wireless IoT sensor to the smartphone app of the user of the IoT application. The scope of this horizontal system integration provides IoT developers with a multifunctional E2E test platform as a modular application for the first time.

R&D Manager Jürgen Fitschen from SSV explains: "From a cybersecurity perspective, wireless remote debugging of an IoT endpoint in particular is a highly sensitive matter. That's why we have developed a pairing method and a highly secure end-to-end tunnel that uses a central WRD Rendezvous Service as a transparent infrastructure component. However, even this communication service cannot view or manipulate the encrypted session data. The key required to pair the two endpoints is negotiated directly between the developer PC screen and the remote debugger device by means of optical data transmission. A similar procedure is also used in banking, for example, to generate secure TANs using flicker code. A secure remote debug connection can only be released by a new pairing or via a blacklist."

You will find us at embedded world in hall 4 // booth 638.

The SSV Software Systems GmbH:

SSV SOFTWARE SYSTEMS was founded in Hanover in 1981 as a development service provider for microprocessor applications in logistics and automation. Since the early 1990s, the company has been developing and producing its own hardware modules, systems and solutions for industrial applications. The application focus is on industrial M2M and IoT communication as well as the development and practical use of embedded AI solutions.

For further questions, please contact:

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Image caption:
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You can find the corresponding images for this press release on our website www.ssv-embedded.de.