

## **Smart Embedded Vision Off-the-shelf and Custom-made**

### **ARIES Embedded Serves Manifold Project Requirements with Flexible and Powerful FPGA- and CPU-based Modules**

Fuerstenfeldbruck, Germany, September 8, 2022 – ARIES Embedded, specialist in embedded services and products, is further expanding its portfolio around smart embedded vision. "Off-the-shelf products often cannot meet the various complex requirements of embedded vision projects," explained Andreas Widder, Managing Director of ARIES Embedded. "Precisely tailored to our customers' projects, we select the optimal microprocessors and FPGAs from leading manufacturers for our boards and services in each case." For simple vision applications that can also use artificial intelligence, ARIES Embedded provides comparatively inexpensive products with the system-in-packages (SiP) MSRZG2UL and MSMP1. The FPGA-based system-on-modules (SoM) from the three major manufacturers Intel, Microchip, and Xilinx are more flexible and meet higher demands. The areas of application range from industrial image processing, agriculture, robotics, automated driving, UAV (Unmanned Aerial Vehicle), and drones to medical technology.

### **Versatile FPGAs for Challenging Smart Vision**

Embedded vision modules based on FPGAs can use almost any sensor in terms of light spectrum, resolution, frame rate, and electrical interface. On the IP side, it is possible to map the complete image path from the data source (image sensor, camera) to the data sink (monitor, storage medium). For this, ARIES Embedded uses suitable compression methods such as MJPEG compression and H.264/H.265, which are available as fixed IP blocks in the FPGA, or integrates corresponding soft cores. IP development also covers image processing, including white balance, brightness, sharpness etc. as well as further image processing. In addition to the standard products, ARIES Embedded designs the appropriate hardware that mechanically corresponds exactly to the customer's specifications.

The M100PF and M100PFS SoMs rely on Microchip's PolarFire (SoC) FPGA architecture, with the M100PFS supporting four high-performance 64-bit RISC-V cores. The C-Vision kit is based on the proven MCVEVP FPGA development board with Intel's Cyclone V SoC FPGA and includes two Basler dart cameras, an adapter card, and an AI accelerator card. The UAV

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and robotics platform URP, developed by TOPIC Embedded Systems and in the portfolio of ARIES Embedded, offers a highly integrated single board design based on the Xilinx Zynq UltraScale+ MPSoC.

### **Simple Vision Applications Based on CPUs**

For applications with lower vision functionality requirements, ARIES Embedded offers modules based on Renesas' RZG2UL/RZFive and STMicroelectronics' STM32MP1. "The microprocessors are much less expensive and more convenient to use than FPGAs," added Andreas Widder. "Renesas in particular offers a solution with the RZ/V2L architecture that supports artificial intelligence applications." In addition to the standard modules, ARIES Embedded develops the complete hardware and basic software.

The versatile, OSM (open standard module)-compatible MSRZG2UL and MSRZFive system-in-packages are based on Renesas' RZ/G2UL and RZ/Five single-core microprocessors. The RZ/G2UL microprocessor contains a Cortex®-A55 (1.0 GHz) CPU and a CortexM33 coprocessor, while the RZ/Five has a RISC-V CPU core (AX45MP Single) running at 1.0 GHz. ARIES Embedded's MSMP1 SiP integrates STMicroelectronics' STM32MP1 CPU family with high-performance single or dual-arm CortexA7 cores (up to 800 MHz) combined with a CortexM4 core (up to 209 MHz).

ARIES Embedded will present its wide range of embedded systems at Vision 2022, the world's leading trade show for machine vision, from October 4 to 6, 2022 in Stuttgart, Germany, at stand C08 in hall 8.

Words: 540

Keywords: Aries Embedded, embedded system, smart vision, CPU, FPGA, system-in-package, system-on-module, AI, artificial intelligence, Renesas, STMicroelectronics, Microchip, Intel, Xilinx

## Images



Image 1: ARIES Embedded supports smart embedded vision with FPGA modules such as the M100PF with Microchip's Polarfire

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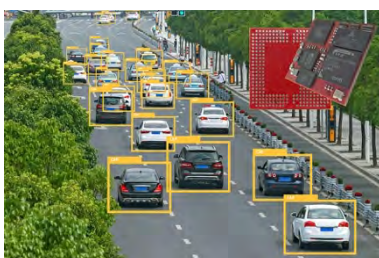


Image 2: MSRZG2UL SiP from ARIES Embedded with Renesas RZ/G2UL for simple embedded vision with artificial intelligence

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Image 3: Andreas Widder is Managing Director of ARIES Embedded GmbH

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## About ARIES Embedded

ARIES Embedded provides hardware and software development and standard products for industrial and agricultural sectors. The 2001 founded embedded specialist headquartered in Fürstfeldbruck, Germany, focuses on FPGA technology and open source software. The portfolio comprises of modular systems for flexible and fast use in functional prototypes, pilot series and mass production. On customer request, ARIES Embedded individually customizes standard products in accordance with project requirements. Further information is available at [www.aries-embedded.com](http://www.aries-embedded.com).

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