

## R-Car Proactive Partner Solution

# eMCOS<sup>®</sup> SDK

eSOL

### Overview

#### Multikernel architecture to maximize the capabilities of HPC in SDVs

The eMCOS SDK maximizes the multicore processor performance of the R-Car SoC to its fullest, providing robust support for automotive system development.

eMCOS, the real-time operating system (RTOS) included in the eMCOS SDK, adopts a multikernel architecture that differs significantly from conventional architectures by allocating small kernels to each core of the multicore processor, enabling high parallel processing. By avoiding the inherent overhead of conventional architectures, it maximizes the performance of multicore processors as the number of cores increases with the evolution of SDVs.

### Key features

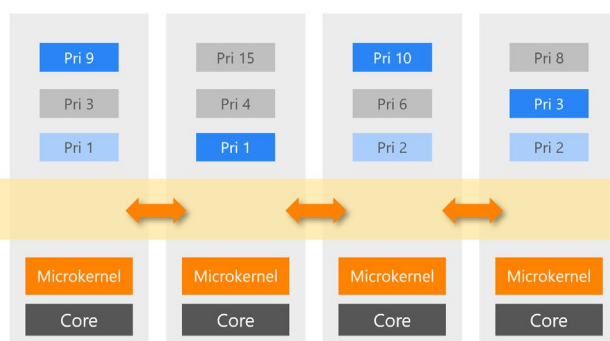
- Compliant with POSIX 1003.13 PSE 53 specification
- Supports [Type 1.5 hypervisor](#) that balances real-time capability with rich functionality provided by guest OS
- Bundles all necessary software for embedded system development, including file systems, TCP/IP, hypervisor, debugger, etc.
- Planned support for functional safety (ISO 26262) and cybersecurity (ISO/SAE 21434)
- Can provide AUTOSAR Classic Platform and Adaptive Platform BSW together
- Seamlessly integrates with CI/CD tools
- Allows building platforms combined with ROS 2/Autoware

### Block diagram

eMCOS with multikernel architecture

Fast inter process communication (IPC) by asynchronous message manager

Every core gets its own microkernel, all microkernels together build the multikernel



### Target markets and applications

- Industrial equipment
- Consumer/OA devices
- Aerospace
- Medical devices
- Automotive equipment
- Audio equipment
- Scientific instruments
- Research and academic applications

[https://www.esol.com/embedded/product/emcos-sdk\\_overview.html](https://www.esol.com/embedded/product/emcos-sdk_overview.html)



## About eSOL

Founded in 1975 and listed on the Standard Market of the Tokyo Stock Exchange (TSE: 4420), eSOL is a leading global company in the fields of embedded systems and edge computing that seeks to contribute to a safer and better-connected society.

eSOL's high-performance and scalable software platform products and first-class professional services, centered around its unique and patented eMCOS multikernel real-time operating system (RTOS) technology, are used worldwide in demanding embedded application fields that conform to stringent quality, safety, and security standards. This includes automotive systems, industrial equipment, satellites, medical and digital consumer electronics.

In addition to the research and development of its leading-edge products, and joint research with major manufacturers and universities, eSOL is actively engaged in AUTOSAR, Autoware, and multi/many-core technology standardization activities.

\* Autoware is an open source software built on ROS/ROS 2 for autonomous driving.

Website: <https://www.esol.com/>