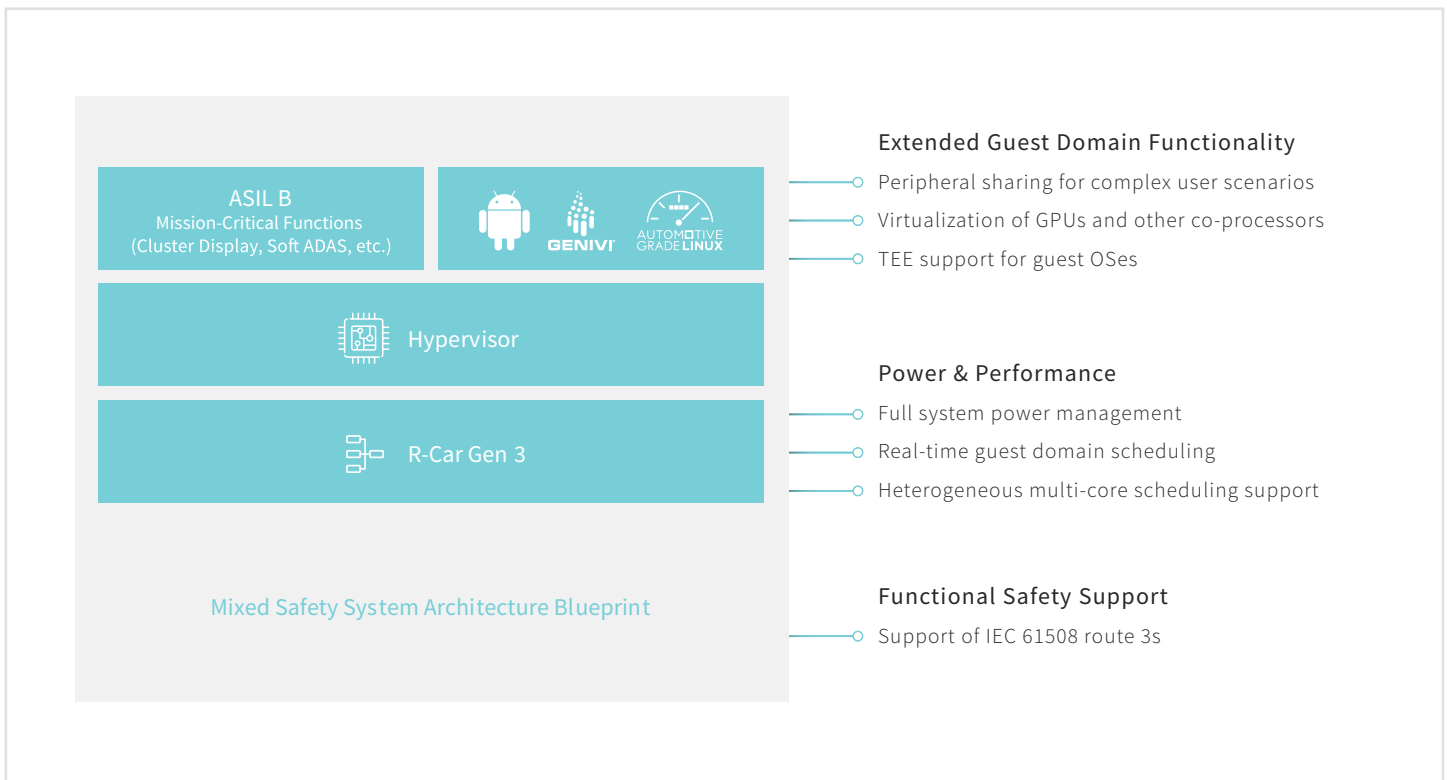# Automotive Virtualization by Xen

**CREATING NEXT-GEN DIGITAL COCKPIT SOLUTIONS WITH MIXED SAFETY FUNCTIONS**

Xen Hypervisor enables OEMs and Tier 1 suppliers to design mixed safety automotive systems. EPAM, the global leader of the Xen Hypervisor for embedded and automotive, drives the innovation and delivery of this solution.

Uniquely positioned to support a new range of use cases in automotive, Xen Hypervisor's isolation, security features, flexible virtualization modes, driver disaggregation and ARM support make it a perfect fit for mixed safety systems and embedded applications. EPAM also supports Xen open source safety certification.

In Xen Embedded & Automotive, we use the R-Car Gen 3 processor as reference hardware for integrating Xen Hypervisor with vehicle infotainment systems:

**ASIL B**
Mission-Critical Functions
(Cluster Display, Soft ADAS, etc.)

GENIVI'   AUTOMOTIVE GRADE LINUX

Hypervisor

R-Car Gen 3

Mixed Safety System Architecture Blueprint

**Extended Guest Domain Functionality**
○ Peripheral sharing for complex user scenarios
○ Virtualization of GPUs and other co-processors
○ TEE support for guest OSes

**Power & Performance**
○ Full system power management
○ Real-time guest domain scheduling
○ Heterogeneous multi-core scheduling support

**Functional Safety Support**
○ Support of IEC 61508 route 3s

## XEN HYPERVISOR FOR EMBEDDED & AUTOMOTIVE

- Paravirtualized peripheral sharing
  - Displays
  - Audio interfaces
  - Touchscreens, keyboards, mice
  - Network interfaces
  - Disk drives
  - USB

- IMG GPU virtualization with up to eight guests supported

- ARM TrustZone virtualization access supported with OP-TEE

- Real-time scheduler support (RTDS, ARINC653)

- Full Android on Xen support

- HALs for PV peripherals

- OPTEE gatekeeper/keymaster

- Sensors/GNSS/Vehicle data via VIS

- Full open source support

- Functional safety support - IEC 61508 route 3s

## OUR CONTRIBUTION TO THE XEN HYPERVISOR EMBEDDED & AUTOMOTIVE COMMUNITY

- Manager of Xen Embedded & Automotive

- Member of Hypervisor Workshop Team at GENIVI

- Member of Virtualization Expert Group at AGL

- Leading safety certification activity for Xen Embedded & Automotive

## ABOUT EPAM

EPAM (NYSE: EPAM) proudly serves Fortune 500 and Global 2000 companies, solving our customers' challenges through innovative, future-focused technology and services, engineering excellence and deep industry expertise. Our customers are risk-takers and pioneers who come up with ideas that may change the world – and we help make them a reality.

Are you ready to accelerate at the speed of software and open new revenue streams by integrating new, internet-connected platforms with unlimited business potential? Contact us today to get the conversation started.

**Automotive@EPAM.com**

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