



GENIVI Hypervisor Project

A standards-based approach to virtualization

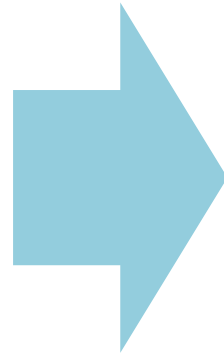
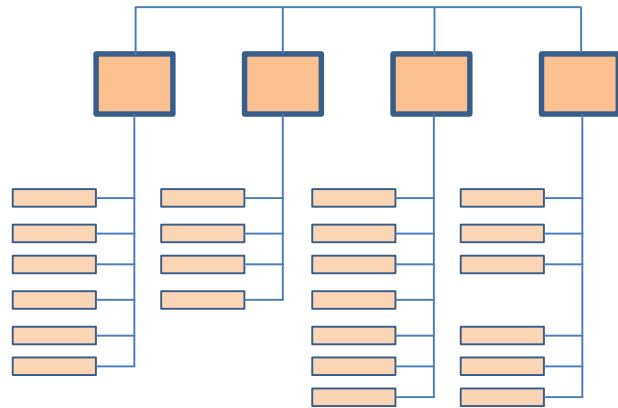
Adam Lackorzynski, Kernkonzept

GENIVI Virtual Tech Summit | May 2020

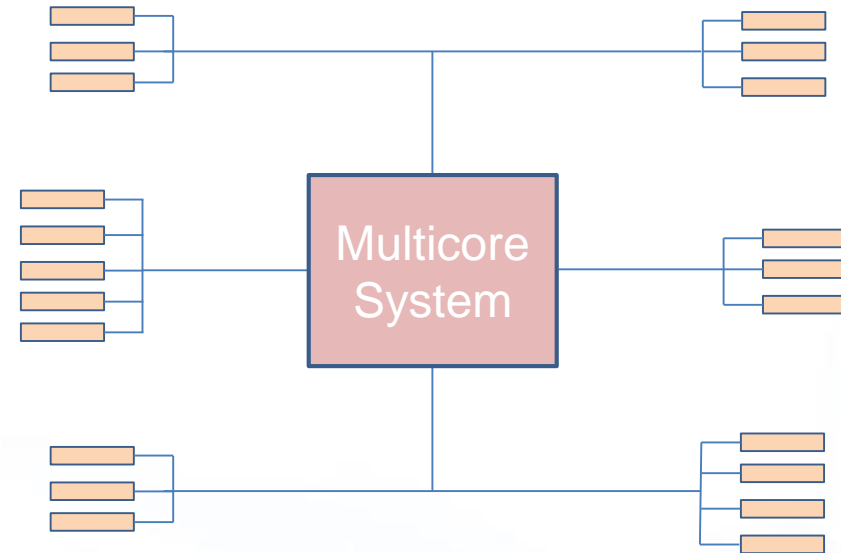


Evolution of Automotive Architectures

Domain Architecture

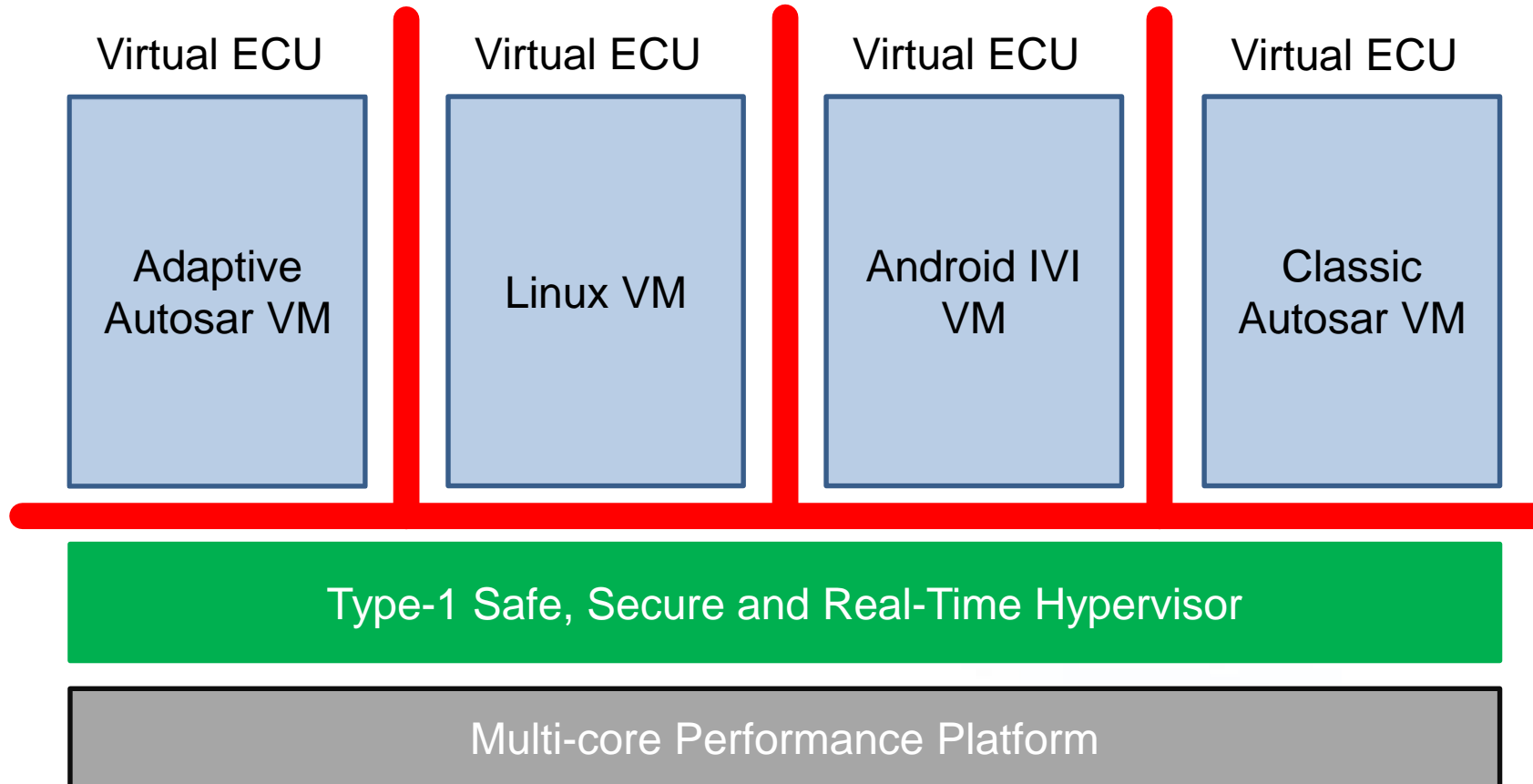


Central Architecture



Consolidation of functions into a single system

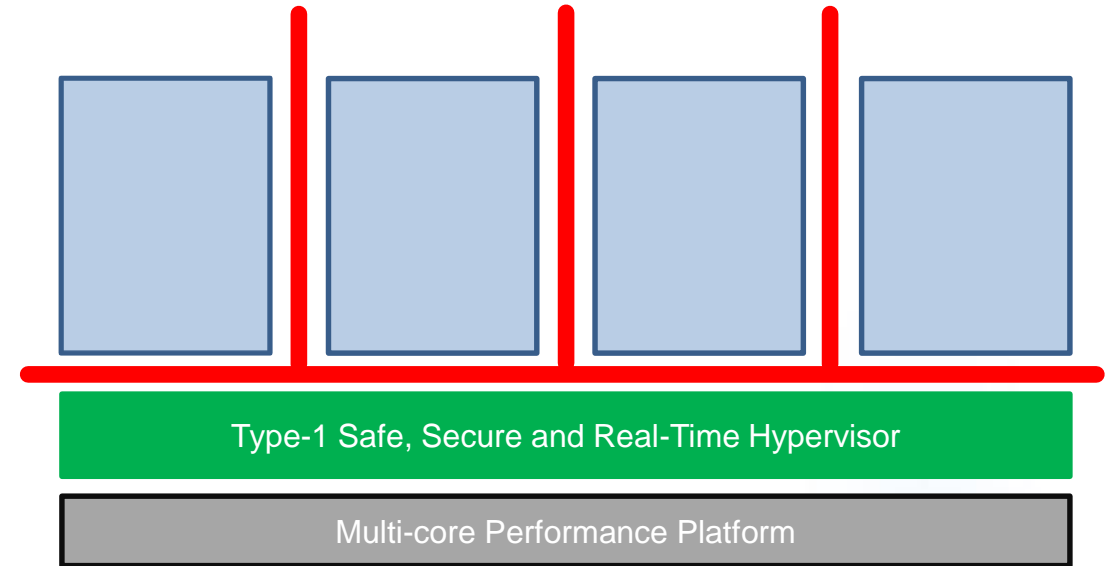
Virtualization-based ECU



Virtualization Benefits



- Independent software modules
- Minimize influence
- Maximize parallel and independent development
- Safety and security domains



Key Role of Virtualization



Virtualization is the key enabler for exploiting the performance of today's and future high-performance automotive systems in a **safe** and **secure** way

Interoperability and Standardization



Cross-vendor virtual machine and hypervisor interoperability is a key capability

GENIVI Hypervisor Project

Make virtualization easily deployable in automotive environments

Standard for Hypervisor / VM Interaction

AVPS - Automotive Virtual Platform Specification

Effects of Standardization



Hypervisor
API

Guest Boot
Protocol

Power
Management

Device
Virtualization

Architectures

Hypervisor
Requirements



- Virtual machines can be ported across hypervisors
- Common code (drivers, etc.)
- Shared validation tests
- Easier multi sourcing
- Standards can be referenced in OEM specifications
- Shortened development cycle
- Software/system re-use

Automotive Virtual Platform Specification



- Version 1 of AVPS has been released in January 2020
- Currently working on next Version of AVPS
- Planned to be released this year

GENIVI Hypervisor Project



- A collaborative group addressing challenges in Virtualization
- Disseminate knowledge on automotive virtualization:
 - AVPS and whitepapers
- A key activity since the start of GENIVI's Domain Interaction and Multi-OS integration strategy - Active since early 2018
- Members from OEMs, TIER1's, HW and SoC, and system software suppliers
 - Currently most active members:
Arm, BMW, Bosch, Elektrobit, EPAM, Kernkonzept, OpenSynergy, Renesas

Genivi Hypervisor Project

- Weekly call every Monday at 10am CET
 - US-friendly call time is possible (let us know your interest)
- **You are welcome!**
- All documented on GENIVI Public Wiki: [Minutes](#), [Agenda announcements](#)