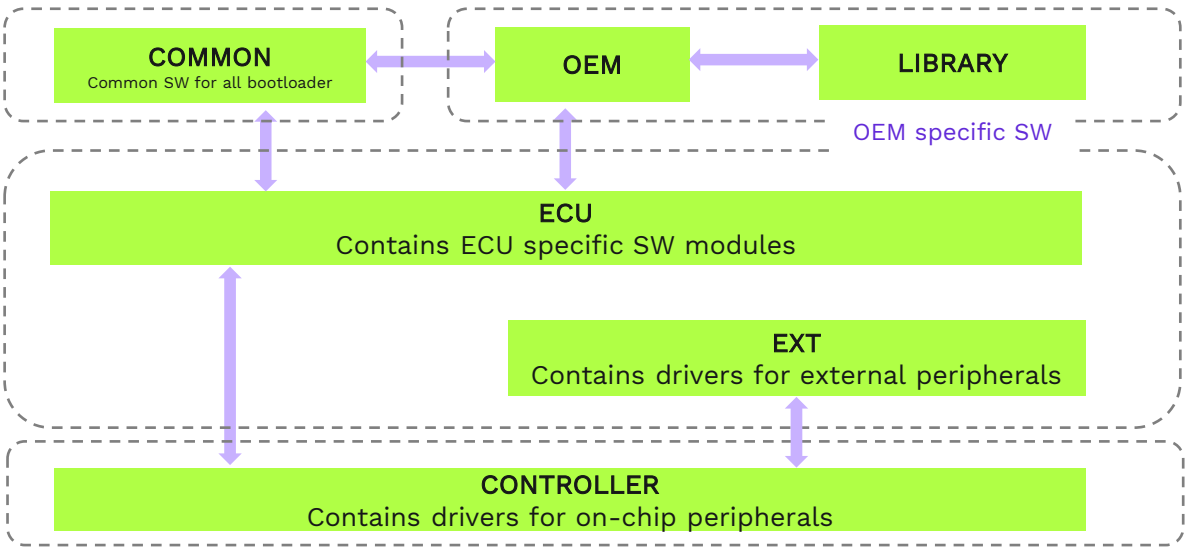
KPIT's Bootloader Solution

KSARbootloader
KPIT

KSAR Bootloader is a secure Bootloader based on ISO specifications. It supports CAN, CAN FD, FR, Ethernet, LIN, Dual Boot as well as integrates with KPIT's Over-The-Air (OTA) updates solution.

KSAR Bootloader Architecture



Supports CAN, CAN FD, Ethernet (DoIP), FR, LIN, Dual Boot

Key Highlights

1. Bootloader based on ISO specifications with configurable features
2. Integration services over Third Party Bootloaders
3. Secure Flashing
4. Secure Boot – Secure boot of Bootloader APP & its components
5. ECU sub-node programming
6. Integrates with KPIT's OTA update solutions
7. SOTA (Software Over The Air) – Background download while application runs with 'Dual Bank' memory

KSAR Bootloader Features

Supports CAN, CAN FD, Ethernet (DoIP), FR, LIN, Dual Boot

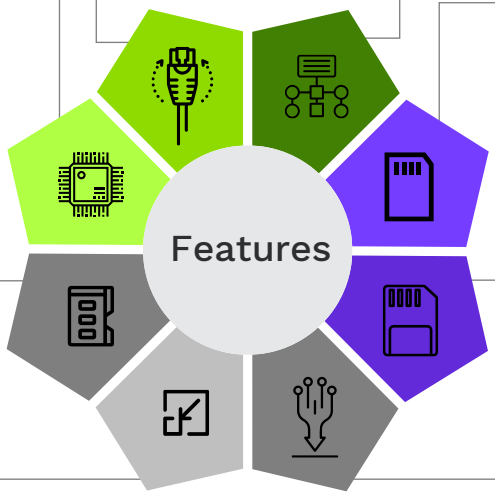
Short porting duration to various OEMs and Microcontrollers due to

- Modular, Scalable and Configurable architecture
- Support for integration of Autosar MCAL drivers (instead of non-Autosar drivers for peripherals CAN, ETH, etc)

Supports multi-stage bootloading (Secondary Bootloader residing in RAM)

Small footprint

- 16K for CAN
- 62K for Ethernet (DoIP)
- 67K for CAN & DoIP (Dual boot)
- 162K for CAN & DoIP (including Dual Bank & Cyber Security)



ECU sub-node programming

Secure Flashing

- Implemented using SHA-256 and RSA-2048 algorithms
- It is easily adaptable as per customer need to use different Crypto library and algorithms

EEPROM emulation for optimal use of flash memory for flash flags (if needed)

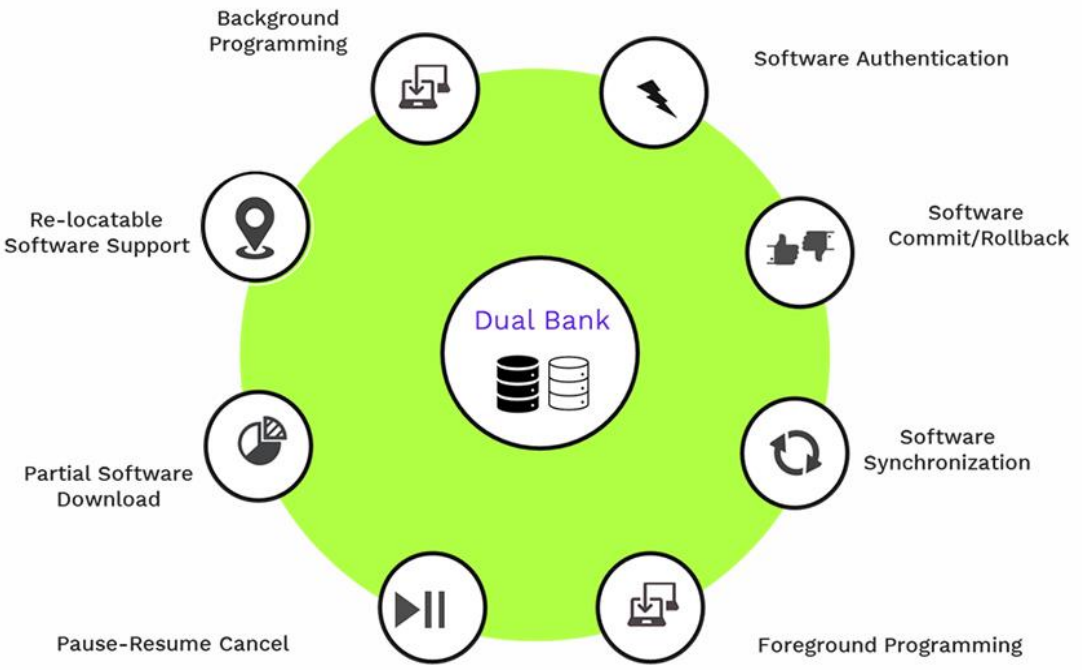
Fast download

- Pipelined flash program and verification
- LZSS decompression algorithm to download LZSS compressed data/app

Implementations of KSAR Bootloader

Client	Problem Statement	Solution Provided
Multiple OEMs and Tier-1s	Reducing Vehicle Down-Time during Software Over-the-Air (SOTA) updates	▪ Secured Dual Banking Feature in Gateway ECU ▪ Reduces Down-time of Vehicle due to Software Update ▪ Cost-effective, requires less change in Application with dual bank library in bootloader ▪ Increases Cybersecurity ▪ Restricts Tampering of ECU SW ▪ Reduce Warranty Claims ▪ Failsafe Operation
Multiple OEMs and Tier-1s	Bootloader Integration required for multiple product lines	▪ OEM requirement analysis and clarification ▪ Integrating third-party SIP using OEM provided DBC/ARXML ▪ Implement the DIDs as per OEM requirements ▪ Implement ECU-specific requirements ▪ Discuss the production process and implement the Boot concept ▪ Execute OEM tools for compliance test ▪ Report the bugs, coordinate and get the solutions ▪ Secure Flash support (HSM Integration)

Dual Bank Features



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KPIT is a global technology company with software solutions that will help mobility leapfrog towards autonomous, clean, smart and connected future. With 7000+ Automobelievers across the globe, specializing in embedded SW, AI & Digital solutions, KPIT enables customers accelerate implementation of next generation mobility technologies. With development centers in Europe, Americas, Japan, China, Thailand and India – KPIT works with leaders in mobility and is present where the ecosystem is transforming.