

ResearchInChina
www.researchinchina.com

**Automotive AUTOSAR Platform
Research Report, 2023**

Jan.2023

AUTOSAR research: CP + AP integration, ecosystem construction, and localization will be the key directions

AUTOSAR standard technology keeps upgrading, and the willingness to build open cooperation gets ever stronger.

The trend for the boom in intelligent vehicle basic software brings new development opportunities to AUTOSAR. In recent years, new AUTOSAR standards have been continuously introduced to adapt to the fast-growing automotive standard software market.

In December 2022, AUTOSAR delivered its latest release R22-11. Compared with the previous releases, the new standard proposed the cross-platform concept for the first time. Moreover, the AUTOSAR Classic Platform (AUTOSAR CP) adds V2X and DDS communication support for China; the AUTOSAR Adaptive Platform (AUTOSAR AP) offers additions or improvements in CAN, firewall, service-oriented vehicle diagnosis and other aspects. In the AUTOSAR AP architecture, compared with R20-11, the releases R21-11 and R22-11 remove ara:rest cluster and add ara:idsm and ara:fw clusters.

As the releases like AUTOSAR R20-11, R21-11 and R22-11 are published, the AUTOSAR AP specification is becoming mature. Some basic functions of the AP platform have been mature enough to be marketed, and the relevant software platforms compatible with the AUTOSAR AP, especially autonomous driving-related products, have been rolled out one after another. The first-generation AP-based vehicle models have come into the market, and the launch of more models equipped with the platform will also follow up.

The future automotive industry will be a fully open ecosystem built by third-party collaborative organizations. This is also AUTOSAR's future vision and important direction. As an alliance, AUTOSAR is making continuous efforts on cooperation with third parties. For example, in terms of Vehicle API for vehicle-cloud cooperation, AUTOSAR often partners with COVESA; as concerns data exchange formats, it teams up with ASAM; it cooperates with KHRONOS in hardware acceleration and image acceleration.

AUTOSAR Support in Autonomous Driving Software Platforms of Some Suppliers

Company	Product	Application of AUTOSAR
Nvidia	Autonomous Driving Platform NVIDIA DRIVE	<ul style="list-style-type: none"> Its DRIVE OS basic software platform uses AUTOSAR (RTE BSW MCAL)
Bosch	SOA of Vehicle Central Computer (VCC)	<ul style="list-style-type: none"> Classic AUTOSAR covers security and high real-time requirements; Adaptive AUTOSAR covers flexible security requirements; Linux only needs QM.
TTTech	TTTech MotionWise	<ul style="list-style-type: none"> MOTIONWISE CLASSIC based on AUTOSAR CP MOTIONWISE supports Classic and Adaptive AUTOSAR™, ROS2™, DDS™, etc.
Z-ONE	SOA Software Platform	<ul style="list-style-type: none"> The basic software platform supports AUTOSAR AP/ROS
Neusoft Reach	NeuSAR Vehicle Operating System	<ul style="list-style-type: none"> Integrate AUTOSAR CP and AUTOSAR AP, SOA middleware, underlying file system support, etc.
EnjoyMove Technology	EMOS	<ul style="list-style-type: none"> Integrate enhanced AUTOSAR AP (adding self-developed deterministic scheduling and communication) and conventional CP
iSoft Infrastructure Software	iSoft Automotive Basic Software Platform ORIENTAIS Adaptive AUTOSAR and Tool Chain Products	<ul style="list-style-type: none"> The AUTOSAR standard-compliant platform makes breakthroughs in key technologies such as service-based vehicle communication, software platform health management, unified operating system interface, and security trust chain.
DJI	Autonomous Driving Middleware	<ul style="list-style-type: none"> Adapt to Classic AUTOSAR and Adaptive AUTOSAR standards
Untouch	High-safety High-performance Autonomous Driving Middleware	<ul style="list-style-type: none"> Implemented by Adaptive AUTOSAR based on the Rust language, with completely independent intellectual property rights and being independently controllable.
HoloMatic	HoloSAR	<ul style="list-style-type: none"> The autonomous driving basic components that meet the Adaptive AUTOSAR standard are suitable for the SOA, and support the communication and diagnosis protocols of global DDS, SOME/IP, Zero-copy, and DoIP.

Source: ResearchInChina

Outlook for Collaboration with Third Parties

The future automotive development ecosystem will be jointly provided by different cooperative organizations



Source: AUTOSAR China

Following the development trend of E/E architecture, much more AUTOSAR CP+AP integrated products tend to be supplied.

Vehicle domain controller and vehicle central computer are developing by leaps and bounds, which is accompanied by the gradual evolution of vehicle E/E architecture towards centralized integration. For new-generation powerful processors, basic software of the two is required to pack both AUTOSAR AP and AUTOSAR CP to meet the requirements of the corresponding security domain and high-performance computing domain. The AUTOSAR CP+AP integrated supply becomes a major trend. While meeting technical performance requirements, it can greatly shorten the development cycle of software applications and reduce costs to achieve rapid iterations. In recent years, major suppliers have raced to launch their integrated solutions.

In April 2022, iSoft Infrastructure Software introduced its AUTOSAR CP+AP integrated solution. With features of hard real-time performance, high security, and low energy consumption, the solution meets automotive requirements, supports heterogeneous computing, and builds software system architecture that can be managed flexibly, enabling dynamic communication connection and deployment of applications. It also supports SOME/IP, DDS and other protocols, and can be used in intelligent driving, autonomous driving and Internet of Vehicles, covering such application scenarios as ADAS, intelligent cockpit, T-BOX, and domain controller.

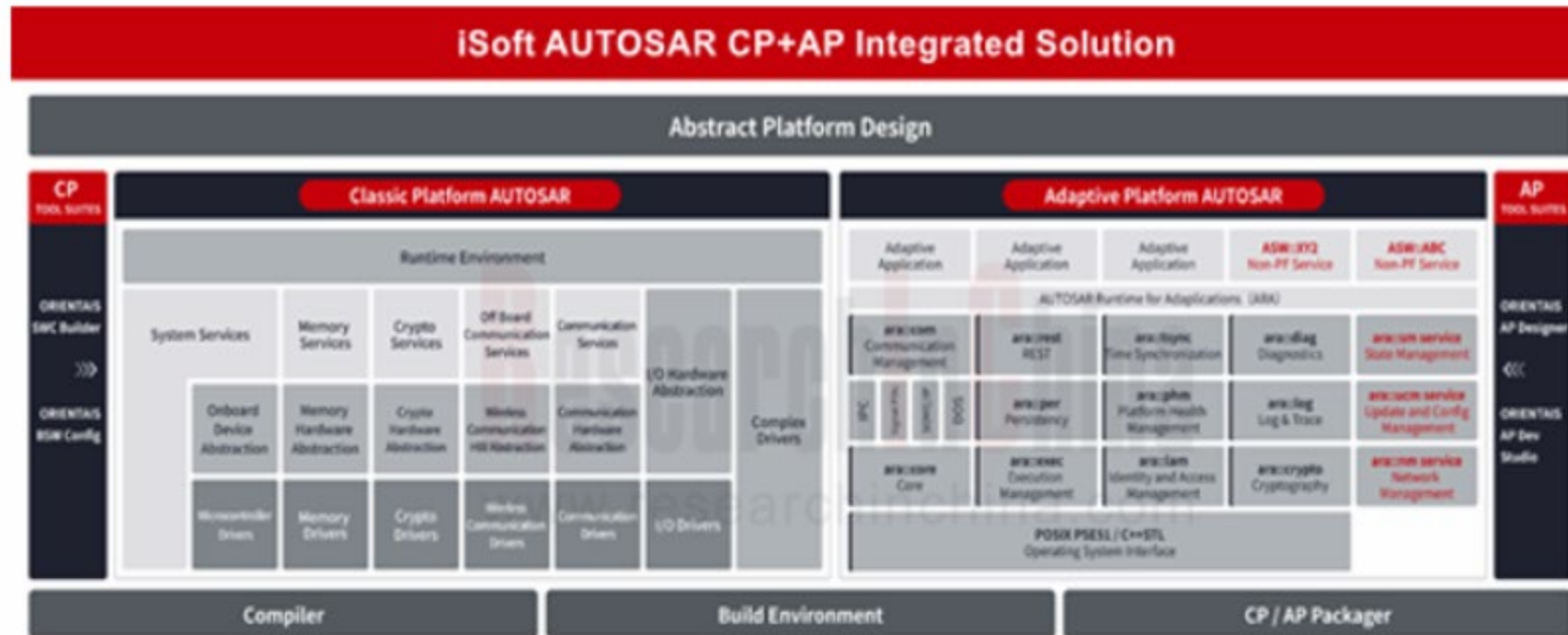
AUTOSAR CP+AP Integrated Products of Major Suppliers

Supplier	Product	AUTOSAR CP+AP Integrated Product
Neusoft Reach	NeuSAR Vehicle Operating System	Neusoft Reach NeuSAR is the first "AUTOSARAP + CP + middleware" full-stack software platform product to be mass-produced and implemented in China, and also the world's first one to be upgraded to AUTOSAR R21-11. NeuSAR integrates AUTOSAR CP and AUTOSAR AP, SOA middleware, underlying file system support, etc., and builds NeuSAR SF (Service Framework), a cross-domain fusion framework that complements AUTOSAR standards.
iSoft Infrastructure Software	AUTOSAR CP+AP Integrated Solution	Standardize the interfaces and architectures of different operating systems, underlying hardware and protocol software to enable service-oriented architecture; fully cover the software development of perception, decision, and control systems of intelligent connected vehicles to support the development from conventional vehicles to intelligent connected vehicles.
Novauto	NOVA Drive	The highly reliable system software for intelligent driving is compatible with AUTOSAR AP & CP standards, meeting the requirements of next-generation automotive E/E architecture.
ETAS	Highly Integrated End-to-end Software Solution	Its solution provides the vehicle OS cloud-native software stack and vehicle containers on the kernel of general operating system Linux, allowing for rapid iteration, update and even function upgrade of various new vehicle applications; AUTOSAR Classic, AUTOSAR Adaptive, Safety & ADAS/AD and Vehicle Edge middleware, operating system manager and ESCRYPT's cyber security solutions are used for continuous deployment and operation of vehicle software stacks.
Continental Elektrotbit	EB Xelor	The AP & CP integrated software platform is optimized for next-generation new scalable HPC environments, shortening the development cycle.

Source: ResearchInChina

AUTOSAR CP+AP Integrated Solution of iSoft Infrastructure Software

In addition, in the trend for AP+CP integrated supply, the architecture and methodology of the two are tending to integrated, which has started from the release AUTOSAR R21-11. Before R20-11, the architecture and methodology of AP and CP were separated. In the latest release R22-11, the concept of cross-platform is just proposed for the first time.



Source: iSoft Infrastructure Software

R21-11 – Overview / 概览

Edit Sub-Heading



Source: AUTOSAR China

Chinese suppliers are working hard to deploy, and the localization of AUTOSAR in China is accelerating.

In the context of increasingly high requirements for vehicle development speed and function iteration, conventional software products and software development modes no longer fully adapt to the current market. In the face of the fast-paced intelligent vehicle market, suppliers, especially Chinese local suppliers, make an active response and keep launching new marketable products, answering the needs of customers for rapid iteration.

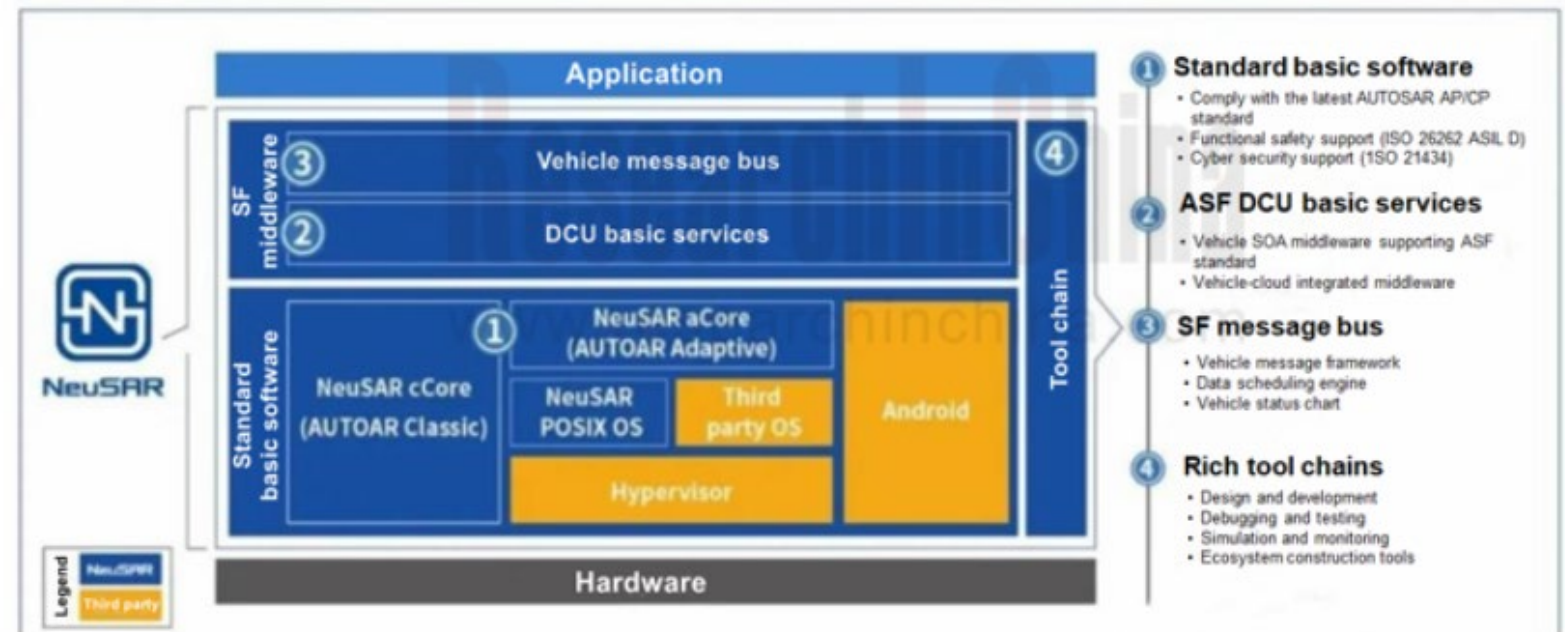
Neusoft Reach joined AUTOSAR in 2017 as a Premium Member. In December 2022, Neusoft Reach announced a new release of basic software - NeuSAR 4.0. As a new automotive software application development framework, NeuSAR 4.0 provides AUTOSAR standard-compliant components, including Classic AUTOSAR - NeuSAR cCore and Adaptive AUTOSAR - NeuSAR aCore. In this upgrade, both cCore and aCore are iterated to the release AUTOSAR R21-11.

NeuSAR 4.0 not only still offers improvements in AUTOSAR, but also introduces a new automotive software application development framework for the cross-domain integration stage and upgrades the NeuSAR SF (Service Framework) and NeuSAR DevKit tool chain. It moves the development view from the domain controller level to the full vehicle level to solve the problem in software deployment for multi-core heterogeneous domain controllers, and also releases NeuSAR DS (Domain System) for prototype development platforms that integrates the latest AUTOSAR components and SF middleware.

Neusoft Reach NeuSAR 4.0 Architecture

A New Automotive Software Architecture--- NeuSAR 4.0全新架构图

NeuSAR always offers innovations and keeps evolving, and NeuSAR 4.0 is fully upgraded



Source: Neusoft Reach

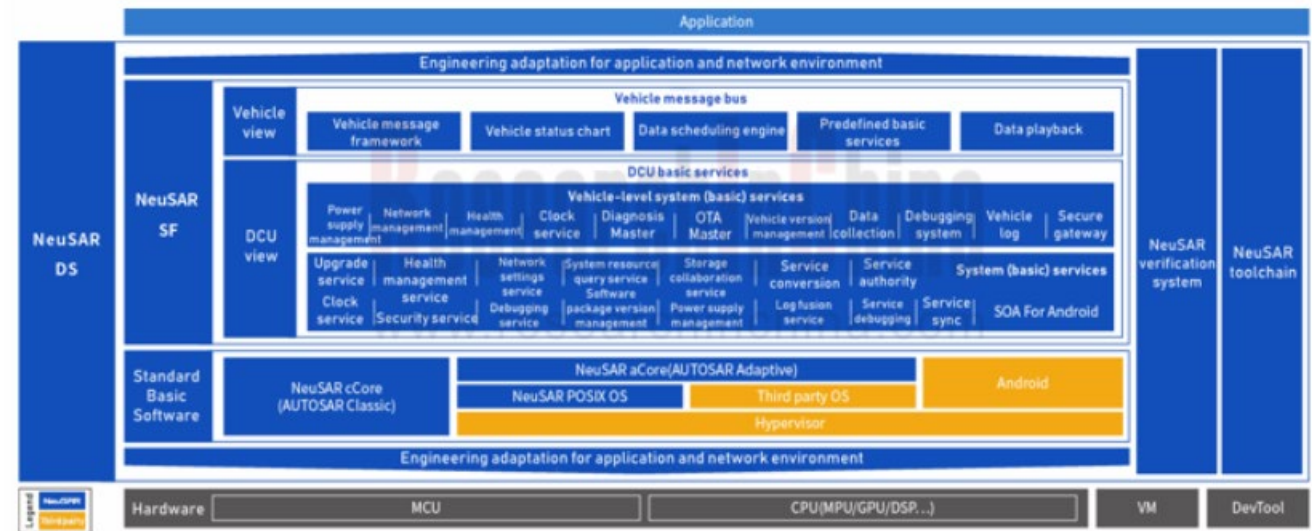
Chinese suppliers are working hard to deploy, and the localization of AUTOSAR in China is accelerating.

In recent years, in the background of the boom of intelligent vehicles in China and the increasing number of Chinese partners, AUTOSAR has valued the Chinese market more highly. Based on the original AUTOSAR User Group in China, in April 2022, AUTOSAR established the AUTOSAR China Hub, the third regional center outside of Japan and the US, aiming to enhance services and support for Chinese partners and carry out a range of AUTOSAR-related training or popularization activities.

Meanwhile, in 2022, the latest release AUTOSAR R22-11 added the new feature of "V2X Support for China" to the CP to further support China's V2X technical standards. It is known that this feature is jointly developed by Huawei, Neusoft Reach, Bosch, BMW, Volkswagen Audi, Continental and HingeTech among others.

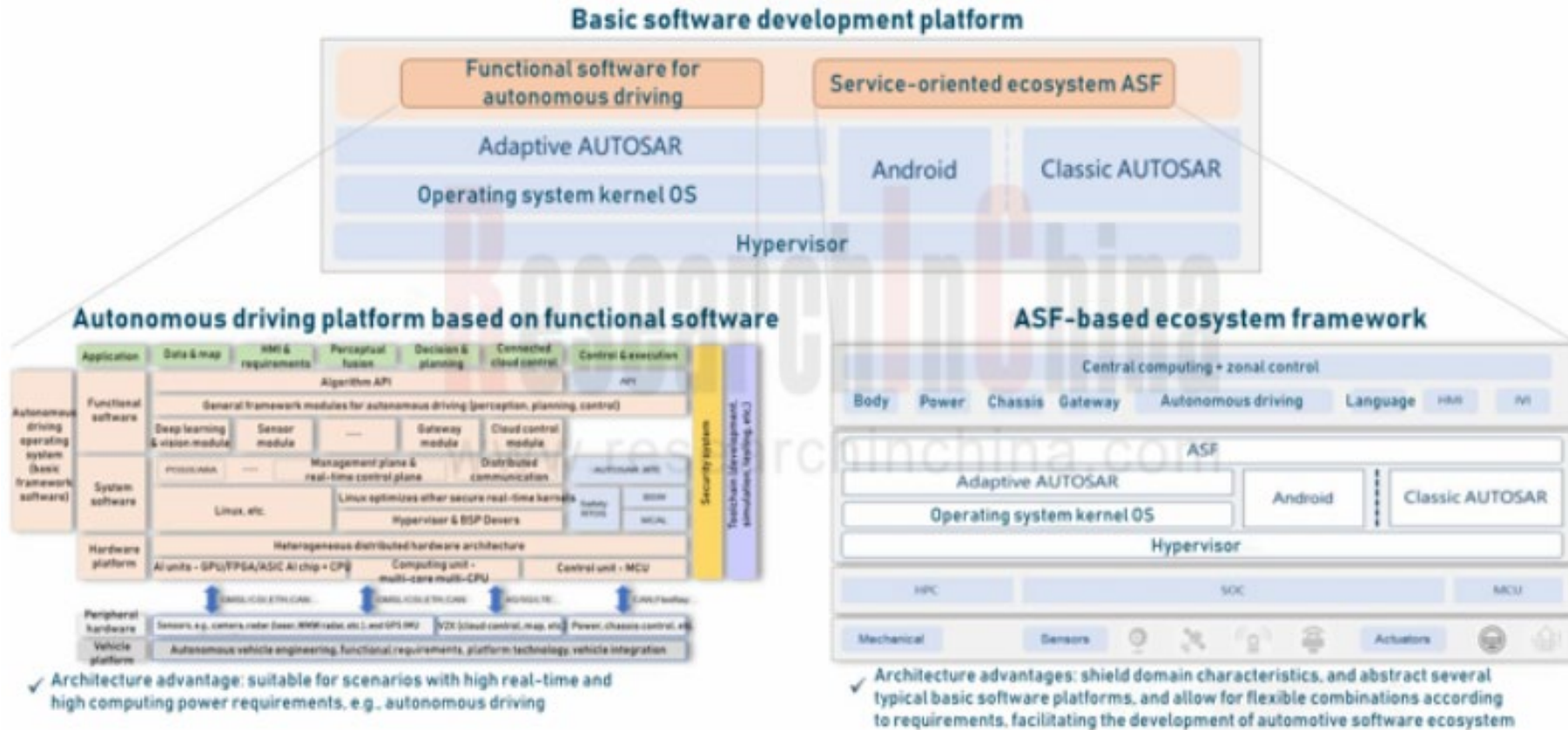
Based on the AUTOSAR architecture standards, China established the China Automotive Basic Software Ecosystem Committee (AUTOSEMO), with the aim of coordinating and organizing members to introduce a range of basic software standards and specifications, for example, providing white papers on the development of automotive basic software, ASF technical specifications, and vehicle-cloud integration technical specifications. Wherein, in the white papers on the development of automotive basic software, the basic software development platform is built on AUTOSAR AP and AUTOSAR CP; the ASF is an expansion of general basic software, and also expands the service management framework of AUTOSAR, facilitating localization of AUTOSAR in China.

Neusoft Reach NeuSAR DS (Domain System)



Source: Neusoft Reach

AUTOSEMO Basic Software Development Platform



Source: AUTOSEMO

Table of Content (1)

1 Overview of AUTOSAR

1.1 Introduction of AUTOSAR Standard

1.1.1 Introduction of AUTOSAR

1.1.2 Introduction to Background and Purposes of AUTOSAR (1)

1.1.3 Introduction to Background and Purposes of AUTOSAR (2)

1.1.4 AUTOSAR Architecture

1.1.5 AUTOSAR Basic Software Layer (1)

1.1.6 AUTOSAR Basic Software Layer (2)

1.1.7 AUTOSAR Packages Basic Software

1.1.8 AUTOSAR Interfaces

1.1.9 AUTOSAR Methodology

1.1.10 AUTOSAR Development Flow

1.1.11 Tool Chain Involved in AUTOSAR CP Development

1.1.12 Tool Chain Involved in AUTOSAR AP Development

1.2 Classification of AUTOSAR

1.2.1 Types of AUTOSAR

1.2.2 Comparison between AUTOSAR Classic Platform (CP) and AUTOSAR Adaptive Platform (AP) (1)

1.2.3 Comparison between AUTOSAR Classic Platform (CP) and AUTOSAR Adaptive Platform (AP) (2)

1.2.4 Evolution of AUTOSAR Classic (CP)/AUTOSAR Adaptive (AP)

1.2.5 Execution Mode of AUTOSAR Classic (CP)/AUTOSAR Adaptive (AP)

1.2.6 Interaction Examples of AUTOSAR Classic (CP)/AUTOSAR Adaptive (AP)

1.2.7 AUTOSAR Classic (CP) Architecture

1.3 AUTOSAR Adaptive

1.3.1 Architecture (1)

1.3.2 Architecture (2)

1.3.3 AUTOSAR Runtime for Adaptive (ARA)

1.3.4 Three Pillars

1.3.5 AUTOSAR Adaptive Supports Address Space Virtualization

1.3.6 Boot Sequence

1.3.7 Methodology

1.3.8 Development Method

1.3.9 Development Flow

1.3.10 Tasks Undertaken by Providers in the Development Process

1.3.11 Tool Chain Business Models

1.4 AUTOSAR Partnership

1.4.1 Introduction

1.4.2 Organizational Structure

1.4.3 Working Groups

1.4.4 Groups, Boards and Task Forces

1.4.5 Members

1.4.6 Rights and Obligations of Various Types of Members

1.4.7 AUTOSAR China

1.4.8 User Groups of AUTOSAR China

1.4.9 Partners of AUTOSAR China

1.4.10 Self-positioning of AUTOSAR in the Automotive Ecology

1.4.11 AUTOSAR Standards

1.5 AUTOSEMO Development

1.5.1 Based on AUTOSAR Architecture, the Automotive Software Ecosystem Member Organization of China (AUTOSEMO) Was Established

1.5.2 Establishment of AUTOSEMO to Promote the Localization of AUTOSAR

1.5.3 Standard Roadmap of AUTOSEMO

1.5.4 Standards Established by AUTOSEMO

1.5.5 AUTOSEMO Built "Intelligent Vehicle Software Ecological Framework (2022)"

1.5.6 AUTOSEMO Established "China Automotive Basic Software Development White Paper 3.0"

Table of Content (2)

1.5.7 AUTOSEMO Established “ASF Technical Specification 1.0” and Middleware System ASF

2 Status Quo and Technology Trends of AUTOSAR Market

2.1 Status Quo of AUTOSAR Market

2.1.1 Status Quo and Pattern of AUTOSAR Inside and Outside China (Software Platform, Basic Software)

2.1.2 AUTOSAR Business Models

2.1.3 Major AUTOSAR Tool Providers

2.1.4 Solution Layout of Major Providers in AUTOSAR: Outside China

2.1.5 Solution Layout of Major Providers in AUTOSAR: Inside China

2.1.6 Software Providers Gain More Competitive Edges through Investments and Mergers & Acquisitions

2.1.7 Software Providers and Automakers Reshape Cooperation Models

2.1.8 Applications of OEM Software in AUTOSAR: Outside China

2.1.9 Applications of OEM Software in AUTOSAR: Inside China

2.2 Impact of E/E Architecture Evolution on AUTOSAR

2.2.1 Application of AUTOSAR in E/E Architecture (1)

2.2.2 Application of AUTOSAR in E/E Architecture (2)

2.2.3 Application of AUTOSAR in E/E Architecture (3)

2.2.4 AUTOSAR Adaptive is an Indispensable Key Element to Centralized Architecture (1)

2.2.5 AUTOSAR Adaptive is an Indispensable Key Element to Centralized Architecture (2)

2.2.6 Central Computing Unit Based on AUTOSAR Adaptive (1)

2.2.7 Central Computing Unit Based on AUTOSAR Adaptive (2)

2.2.8 Upgrade of Automotive Software Architecture to AUTOSAR Adaptive

2.2.9 Upgrade of Domain Controller Software Architecture to AUTOSAR Adaptive (1)

2.2.10 Upgrade of Domain Controller Software Architecture to AUTOSAR Adaptive (2)

2.2.11 Typical AUTOSAR-based Central Control Domain Solutions

2.2.12 CP+AP AUTOSAR Hybrid Domain Control Software Architecture (1)

2.2.13 CP+AP AUTOSAR Hybrid Domain Control Software Architecture (2)

2.2.14 Software Architecture of CP+AP AUTOSAR Hybrid Central Control Unit

2.3 AUTOSAR Adaptive is Service Oriented Architecture

2.3.1 The Development of SOA Promotes the Application of AUTOSAR Adaptive

2.3.2 AUTOSAR Adaptive Follows the Concept of "Service Oriented Architecture (SOA)" (1)

2.3.3 AUTOSAR Adaptive Follows the Concept of "Service Oriented Architecture (SOA)" (2)

2.3.4 AUTOSAR Adaptive Uses Service-oriented Inter-process Communication (1)

2.3.5 AUTOSAR Adaptive Uses Service-oriented Inter-process Communication (2)

2.4 Development Roadmap of AUTOSAR

2.4.1 Challenges for Suppliers to Develop AUTOSAR

2.4.2 Technology Evolution Roadmap of AUTOSAR

2.4.3 Development Roadmap of AUTOSAR Adaptive

2.4.4 Main New Functions in Latest AUTOSAR Version: R21-11 & R20-11

2.4.5 Main New Functions in Latest AUTOSAR Version: R22-11 & R21-11

2.4.6 Development Plan for AUTOSAR Adaptive

2.4.7 Future Additions of AUTOSAR Adaptive

2.4.8 AUTOSAR Technology Development Trend

2.4.9 Cooperation Vision with Third Parties of AUTOSAR

2.4.10 AUTOSAR Open Strategy

2.5 AUTOSAR Promotes the Application of Automotive Ethernet

2.5.1 AUTOSAR Favors Wider Adoption of Ethernet in Vehicle Architecture

2.5.2 AUTOSAR Classic ECU Communication (1)

2.5.3 AUTOSAR Classic ECU Communication (2)

2.5.4 AUTOSAR Adaptive and Ethernet Communication (SOME/IP) Protocols

2.5.5 Integration of AUTOSAR Adaptive with DDS

Table of Content (3)

2.5.6 Integration Cases of AUTOSAR Adaptive and Communication Middleware

2.5.7 AUTOSAR Classic Supports DDS

2.5.8 Ethernet Switch Solutions from Vector following AUTOSAR

3 Application Cases of AUTOSAR Adaptive

3.1 Overview

3.1.1 AUTOSAR-based Layered Structure for ICV

3.1.2 AUTOSAR Adaptive Application

3.1.3 AUTOSAR Adaptive Application Scenarios

3.1.4 Summary of Major OEM Software Platforms and AUTOSAR Applications (1)

3.1.5 Summary of Major OEM Software Platforms and AUTOSAR Applications (2)

3.1.6 Summary of Major OEM Software Platforms and AUTOSAR Applications (3)

3.1.7 Volkswagen's AUTOSAR Adaptive-based Universal Software Architecture (1)

3.1.8 Volkswagen's AUTOSAR Adaptive-based Universal Software Architecture (2)

3.1.9 Toyota Zonal Architecture Uses AUTOSAR-based SOA

3.1.10 Application of AUTOSAR in GWM Next-generation Vehicle-Cloud Integration Intelligent Ecology Architecture

3.1.11 Application of AUTOSAR in Hongqi EE Architecture Computing Platform

3.1.12 Application of AUTOSAR in Visteon E/E Architecture

3.2 Application of AUTOSAR in OTA

3.2.1 OTA Update Flow

3.2.2 Standardized Functions Via OTA Updates

3.2.3 Advantages of AUTOSAR Adaptive Platform OTA

3.2.4 UCM Specially Designed by AUTOSAR Adaptive for OTA (1)

3.2.5 UCM Specially Designed by AUTOSAR Adaptive for OTA (2)

3.2.6 UCM Specially Designed by AUTOSAR Adaptive for OTA (3)

3.2.7 UCM Specially Designed by AUTOSAR Adaptive for OTA (4)

3.2.8 OTA Protection Mechanism in AUTOSAR Adaptive

3.2.9 "Vehicle Computer Network OTA Demonstration System" Developed by AUTOSAR User Group China

3.2.10 Neusoft Reach's NeuSAR aCore for OTA

3.2.11 ABUP's AUTOSAR-based SOA OTA Solution Practice

3.2.12 Integration of OTA with EB Corbos Product

3.3 Application of AUTOSAR in AD/ADAS

3.3.1 Impact of AUTOSAR on Autonomous Driving Characteristics

3.3.2 AUTOSAR Adaptive Promotes the Development of ADAS

3.3.3 AUTOSAR-based ADAS ECU Solutions

3.3.4 Foreign Suppliers Use AUTOSAR to Deploy ADAS/AD Domain Controllers

3.3.5 Chinese Suppliers Use AUTOSAR to Deploy ADAS/AD Domain Controllers

3.3.6 Supporting Status of Autonomous Driving OS and Software Platform-related AUTOSAR in Major Suppliers (1)

3.3.7 Supporting Status of Autonomous Driving OS and Software Platform-related AUTOSAR in Major Suppliers (2)

3.3.8 Supporting Status of Autonomous Driving OS and Software Platform-related AUTOSAR in Major Suppliers (3)

3.3.9 OEM's Mass Production of Models with ADAS/AD Domain Controllers Based on AUTOSAR Platform

3.3.10 Aptiv's AUTOSAR Standard-compliant ADAS Platform

3.3.11 Desay SV's Autonomous Driving Domain Controller Is Based on AUTOSAR with Safety Components

3.3.12 Neusoft Reach's AUTOSAR-based SOA Software Architecture

3.3.13 Neusoft Reach's AUTOSAR-based NeuSAR Vehicle OS

3.3.14 Application of AUTOSAR in Untouch Technologies Autonomous Driving Middleware

3.3.15 Application of AUTOSAR in HoloMatic Autonomous Driving Middleware

3.3.16 Supporting Status of AUTOSAR in NVIDIA Basic Software Module

3.3.17 Application of AUTOSAR in Enjoy Move Multi-domain Fusion Software Platform

Table of Content (4)

- 3.3.18 UAES's AP AUTOSAR-based Open Software Platform
- 3.3.19 iSoft ORIENTAIS Intelligent Driving OS Created Based on AP AUTOSAR
- 3.3.20 Huawei AOS Technology Platform is Compatible with AP AUTOSAR
- 3.3.21 Supporting Status of AP AUTOSAR in Banma AliOS Drive OS
- 3.3.22 Application of AUTOSAR in ZTE Intelligent Driving OS
- 3.3.23 AICC Intelligent Driving OS is Compatible with AP AUTOSAR
- 3.3.24 CAIC's AUTOSAR-based Automotive OS Technology Platform
- 3.3.25 DJI's Self-developed Autonomous Driving Domain Controller Middleware is Compatible with AUTOSAR
- 3.4 Application of AUTOSAR in Cockpit
 - 3.4.1 Requirements of Intelligent Cockpit for AUTOSAR in E/E Architecture Evolution
 - 3.4.2 Requirements of Intelligent Cockpit Functions for AUTOSAR Adaptive
 - 3.4.3 Application of AUTOSAR in Cockpit Domain Controllers of Chinese Suppliers (1)
 - 3.4.4 Application of AUTOSAR in Cockpit Domain Controllers of Chinese Suppliers (2)
 - 3.4.5 Bosch's Cockpit Fusion and Domain Control Products Use AUTOSAR
 - 3.4.6 Volkswagen's Cockpit Domain Controller Uses AUTOSAR
 - 3.4.7 Nobo Technology's Cockpit Domain Controller Uses AUTOSAR
 - 3.4.8 Wingtech Technology's Intelligent Cockpit Domain Controller Integrates AUTOSAR
 - 3.4.9 ZTE's Intelligent Cockpit OS Applies AUTOSAR
- 3.5 Application of AUTOSAR in Vehicle Control
 - 3.5.1 Requirements of Autonomous Driving Vehicle Control Functions for AUTOSAR
 - 3.5.2 AUTOSAR Solution for AERI New Energy Vehicle Control Unit (VCU)
 - 3.5.3 Neusoft Reach's AUTOSAR-based Autonomous Driving Domain Controller
 - 3.5.4 ZTE's Vehicle Control OS is Developed Based on AUTOSAR
 - 3.5.5 AUTOSAR in ENOVATE E/E Architecture
 - 3.5.6 AUTOSAR in Volkswagen Body Control Domain
 - 3.5.7 ETAS Partners with UAES to Deliver AUTOSAR-based XCU Solution
- 3.6 Application of AUTOSAR in SOA
 - 3.6.1 SOA Basic Software Architecture

- 3.6.2 Features of SOA Software Architecture
- 3.6.3 SOA Architecture Design for Central Computing EEA Adopts AUTOSAR Framework Software
- 3.6.4 Challenges and Strategies of SOA Development and Application Models
- 3.6.5 Summary of SOA Software Platform Layout and AUTOSAR Support from Major Suppliers (1)
- 3.6.6 Summary of SOA Software Platform Layout and AUTOSAR Support from Major Suppliers (2)
- 3.6.7 Neusoft Reach's SOA-designed Vehicle-Cloud Integrated Product Based on AUTOSAR
- 3.6.8 Application of AUTOSAR in Z-One Soft SOA Software Platform
- 3.6.9 Application of AUTOSAR in Wind River SOA Software Architecture
- 3.6.10 Application of AUTOSAR in Archermind Intelligent Domain Control SOA Software Platform
- 3.6.11 Automotive SOA Example Based on Bosch ECLIPSE ICEORYX

4 Foreign AUTOSAR Software Companies

- 4.1 Wind River
 - 4.1.1 Profile
 - 4.1.2 AUTOSAR Adaptive Software Platform
 - 4.1.3 AUTOSAR Adaptive Software Platform Structure
 - 4.1.4 AUTOSAR Business Trends
- 4.2 Elektrobit
 - 4.2.1 Profile
 - 4.2.2 EB Basic Software Platform-related Products
 - 4.2.3 EB AUTOSAR Classic Solution: EB tresos
 - 4.2.4 EB tresos Software Tool: EB tresos Studio
 - 4.2.5 EB AUTOSAR Adaptive Solution: EB corbos
 - 4.2.6 EB AUTOSAR Adaptive Solution: Product Architecture

Table of Content (5)

- 4.2.7 EB AUTOSAR Adaptive-based Solution: HPC Software Architecture
- 4.2.8 EB xelor Software Platform for Next Generation Vehicle Electronic Architectures
- 4.2.9 Application: Hardware Platform Based on EB tresos
- 4.2.10 Main Dynamics and Partners
- 4.3 Vector
 - 4.3.1 Profile
 - 4.3.2 AUTOSAR Solution: MICROSAR Adaptive
 - 4.3.3 Features of MICROSAR Adaptive
 - 4.3.4 MICROSAR Adaptive Architecture
 - 4.3.5 Advantages of MICROSAR Adaptive
 - 4.3.6 Vector Adaptive AUTOSAR Functional Safety Solution
 - 4.3.7 Vector Classic AUTOSAR Functional Safety Solution
 - 4.3.8 AUTOSAR Classic Tool Chain for ECU Development
 - 4.3.9 AUTOSAR Adaptive Tool Chain
 - 4.3.10 MICROSAR Adaptive Product Lines
 - 4.3.11 Main Dynamics
- 4.4 ETAS
 - 4.4.1 Profile
 - 4.4.2 CP AUTOSAR Solution: RTA-CAR
 - 4.4.3 CP AUTOSAR Solution: RTA-CAR Tool Chain
 - 4.4.4 AP AUTOSAR Solution (1): RTA-VRTE
 - 4.4.5 AP AUTOSAR Solution (2): RTA-VRTE Software Architecture
 - 4.4.6 AP AUTOSAR Solution (3): RTA-VRTE Development Flow
 - 4.4.7 AUTOSAR Software Architecture Design Tools: ISOLAR-A_ADAPTIVE
 - 4.4.8 AUTOSAR Software Architecture Design Tools
 - 4.4.9 ETAS Provides Highly Integrated End-to-End Software Solutions
 - 4.4.10 AUTOSAR Cooperation Dynamics
- 4.5 KPIT
 - 4.5.1 Profile
 - 4.5.2 Operations
 - 4.5.3 AP AUTOSAR: KSAR Adaptive
 - 4.5.4 CP AUTOSAR: KSAR Classic
 - 4.5.5 AUTOSAR Software Tool Products (1)
 - 4.5.6 AUTOSAR Software Tool Products (2)
 - 4.5.7 AUTOSAR Software Tool Product: K-SAR Editor
- 4.6 TaTa Elxsi
 - 4.6.1 Profile
 - 4.6.2 AUTOSAR Products: AUTOSAR Classic
 - 4.6.3 AUTOSAR Products: AUTOSAR Adaptive
 - 4.6.4 AUTOSAR Compliant Configuration Tool: eZyconfig
 - 4.6.5 AUTOSAR Services
 - 4.6.6 Tata Elxsi and Green Hills Introduced the Latest AUTOSAR Compliant Platforms
 - 4.6.7 SDV Solutions
 - 4.6.8 Cases: AUTOSAR-based Cockpit Architecture
 - 4.6.9 Cases: AUTOSAR-based Monitoring System Solution
 - 4.6.10 Cases: AUTOSAR-based SOA Communication Flow
 - 4.6.11 AUTOSAR Developments
- 4.7 Autron
 - 4.7.1 AUTOSAR Products: Standard Software Platform
 - 4.7.2 AUTOSAR Products: High Performance Software Platform
 - 4.7.3 Dynamics
- 4.8 Mentor Graphics
 - 4.8.1 Profile
 - 4.8.2 AUTOSAR Products: Capital VSTAR
 - 4.8.3 AUTOSAR Products: Capital VSTAR Embedded Software
 - 4.8.4 AUTOSAR Products: Capital VSTAR MCAL
 - 4.8.5 AUTOSAR Products: Capital VSTAR Tools
 - 4.8.6 AUTOSAR Products: Capital VSTAR Virtualizer

Table of Content (6)

- 4.8.7 AUTOSAR Helps Functional Safety and Network Security
- 4.8.8 AUTOSAR-based Universal Platform Components
- 4.8.9 Siemens Capital E/E System
- 4.8.10 Major Events
- 4.9 Apex.AI
 - 4.9.1 Profile
 - 4.9.2 Main Product: Apex.Middleware
 - 4.9.3 Integration of AUTOSAR and ROS 2
 - 4.9.4 Main Dynamics
- 4.10 PopcornSAR
 - 4.10.1 Profile
 - 4.10.2 Toolkit
 - 4.10.3 AutoSAR.io
 - 4.10.4 PARA
 - 4.10.5 PACON IDE
 - 4.10.6 Development Roadmap of PopcornSAR Adaptive Tool Chain

5 Chinese AUTOSAR Companies

- 5.1 Neusoft Reach
 - 5.1.1 Profile
 - 5.1.2 Next Generation ICV Basic Software Platform: NeuSAR
 - 5.1.3 NeuSAR Development History
 - 5.1.4 NeuSAR 4.0
 - 5.1.5 NeuSAR SF
 - 5.1.6 NeuSAR DevKit
 - 5.1.7 NeuSAR DS
 - 5.1.8 NeuSAR aCore Architecture
 - 5.1.9 NeuSAR cCore Architecture

- 5.1.10 Neusoft Reach Participated in Promoting the Construction of Automotive Software Ecosystem Member Organization of China (AUTOSEMO)
- 5.1.11 Autonomous Driving Solutions
- 5.2 Huawei
 - 5.2.1 Tasks Undertaken in AUTOSAR
 - 5.2.2 Self-developed AUTOSAR
 - 5.2.3 Self-developed AUTOSAR CP and AP Architectures
 - 5.2.4 Self-developed Operating Systems
 - 5.2.5 AOS Architecture
 - 5.2.6 VOS Architecture
 - 5.2.7 Vehicle Basic Software and SOA Service Framework
 - 5.2.8 MDC Autonomous Driving Computing Platform Uses AUTOSAR
 - 5.2.9 Huawei MDC and Huanyu Zhixing Jointly Released Minibus Solution
- 5.3 iSoft Infrastructure Software
 - 5.3.1 Profile
 - 5.3.2 Classic AUTOSAR and Tool Chain Product (1)
 - 5.3.3 Classic AUTOSAR and Tool Chain Product (2)
 - 5.3.4 Adaptive AUTOSAR and Tool Chain Product
 - 5.3.5 AUTOSAR CP+AP Integrated Solution
 - 5.3.6 Cloud System Solution
 - 5.3.7 Automotive Basic Software Ecosystem
 - 5.3.8 Business Models
 - 5.3.9 Partners
- 5.4 Jingwei HiRain
 - 5.4.1 Profile
 - 5.4.2 AUTOSAR Solutions
 - 5.4.3 AUTOSAR Solutions: INTEWORK-EAS-CP
 - 5.4.4 INTEWORK-EAS-CP Tool Chain Product
 - 5.4.5 AUTOSAR Solutions: INTEWORK-EAS-AP

Table of Content (7)

- 5.4.6 INTEWORK-EAS-AP Tool Chain Product
- 5.4.7 AUTOSAR-based SOA Software Platform Practice
- 5.4.8 AP Development Plan
- 5.4.9 AP Application Cases
- 5.5 HingeTech
 - 5.5.1 Profile
 - 5.5.2 AUTOSAR Solution: AUTOSAR Adaptive Solution
 - 5.5.3 SOME/IP Protocol Stack and Automated SOA Tools
 - 5.5.4 AUTOSAR Application Practice: Smart Antenna
- 5.6 Hangzhou SMR Technology
 - 5.6.1 Profile
 - 5.6.2 AUTOSAR Solutions
 - 5.6.3 SmartSAR Studio Products
- 5.7 NOVAUTO
 - 5.7.1 Profile
 - 5.7.2 AUTOSAR Software Solutions
 - 5.7.3 Highly Reliable System Software for Intelligent Driving: NOVA Drive
 - 5.7.4 Partners
- 5.8 UAES
 - 5.8.1 SOA Software Development
 - 5.8.2 AUTOSAR-based Open Software Platform (1)
 - 5.8.3 AUTOSAR-based Open Software Platform (2)



Beijing Headquarters

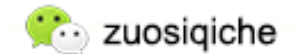
TEL: 010-82601561, 82863481

Mobile: 137 1884 5418

Email: report@researchinchina.com

Website:
www.researchinchina.com

WeChat: [zuosiqiche](https://www.wechat.com/p/zuosiqiche)



Chengdu Branch

TEL: 028-68738514

FAX: 028-86930659