
亿咖通科技生态日
赋能·创变
ecarx
ECARX Tech Day 2023 | Enable & Accelerate

ZIYU SHEN

Chairman & CEO, ECARX
Chairman, SiEngine

* SiEngine is a joint venture between ECARX and ARM China in which ECARX is the largest shareholder.

ecarx

GLOBAL R&D
GLOBAL DELIVERY

Founded in 2017

Close to 2,000 employees

10 operation centers globally

Global R&D capability

Mass production experience for 3.7 million cars

NASDAQ listed

ecarx

FOUNDATION AND HUB OF AUTOMOTIVE INTELLIGENCE

Serving 12 OEMs

Collaboration with global Tier-1 suppliers

ecarx

Pressing forward
with persistent innovation

ecarx

TRAILBLAZER · SET NO LIMITS

Blaze a new trail in industry crossover and customise auto-grade computing modules

SOP in 2018

1.7 million pieces produced for 25 vehicle models

SOP in 2020

0.7 million pieces produced for 26 vehicle models

* Source from estimated commercial operations

Trailblazer · Be the first mover

Join hands with ARM China in establishing SiEngine to pioneer in-house development of high-performance auto-grade **SoCs**

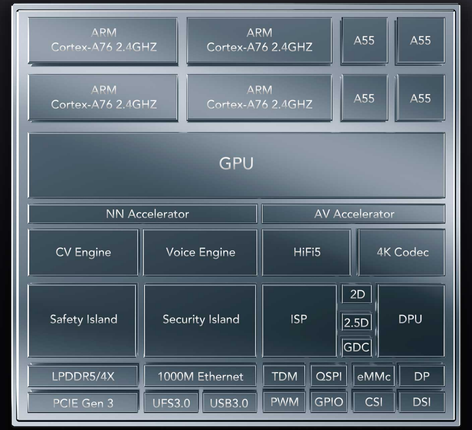
SiEngine

SiEngine took just **24** months since its founding to tape out its first **7nm SoC** product

SE1000

World-leading 7nm cockpit SoC

AEC-Q100 / ISO 26262



High-performance, low power consumption heterogeneous computing engine

8-core CPU
100K DMIPS

14-core GPU
900G FLOPS

Programmable NPU
8 TOPS int8

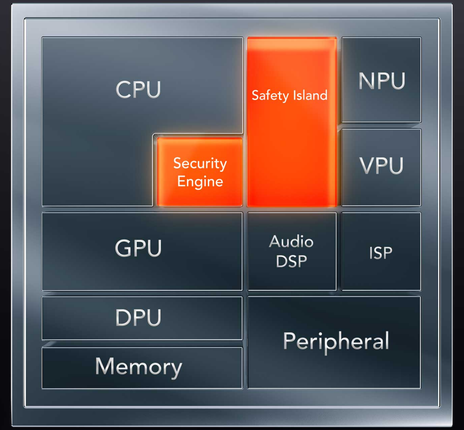
Accelerator engine
DSP DPU VPU

Dedicated for vehicles

safety and security guaranteed by hardware partitioning

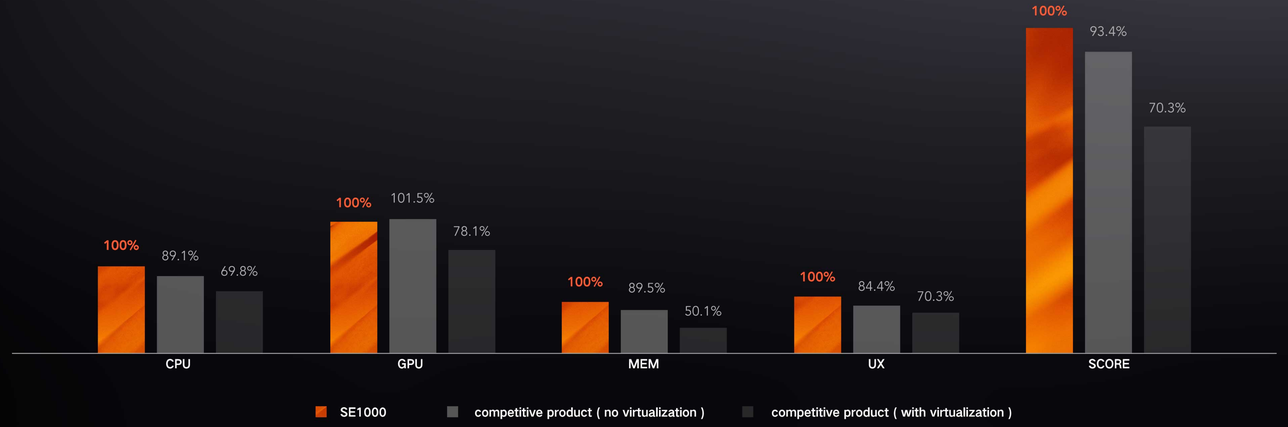
standalone information security module

High-performance encryption and decryption engine, supporting SM series national encryption algorithms
Trust Zone supported, providing trusted execution environments for key applications



Built-in standalone hardware safety island

ASIL D-grade hardware functional safety island imbedded
Realize full-chain functional safety on the hardware, reducing development cycle and cost



The competitor’s product needs virtualization to support two operating systems, while SE1000 doesn’t

Actual computing power determines experience

Separate CPU cores, virtualization unnecessary

How to unleash the full potential of SE1000

to achieve the best performance on flagship intelligent cockpits?


ecarx
Antora
Intellligent cockpit computing platform
Flagship offering from the start

ecarx

Antora 1000

intellligent cockpit computing platform

Providing flexible and comprehensive solutions
from auto-grade core modules to computing platforms

Flagship SoC

SE1000

- Industry-leading 7nm process
- High-performance and low power-consumption

Groundbreaking

LPDDR5

- Data transmission rate up by 50%
- Data transmission bandwidth up by 50%
- Power consumption down by 10%

*compared with LPDDR4X

Effective integration

COMPUTING MODULE

- Highly integrated to reduce production difficulty, with pins decreased by 40% comparing to SoC
- PCB area down by 10%, from 12 layers to 8 layers
- Enhanced reliability with reduced components and faults
- Enable clients to optimize development cycle by 20%

*Data from comparison between computing platforms and SoC solutions

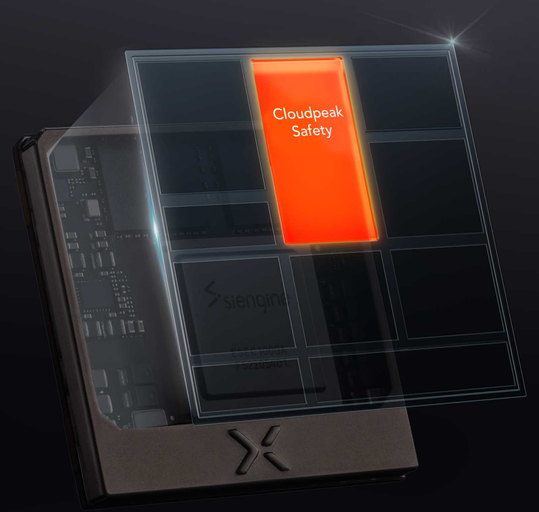

ecarx
Cloudpeak
Cross-domain system capability foundation
The secret weapon for extreme performance

ecarx

Cloudpeak

Fulfil functional safety and information security requirement of global markets
Support multiple operating systems
and high performance computing platform

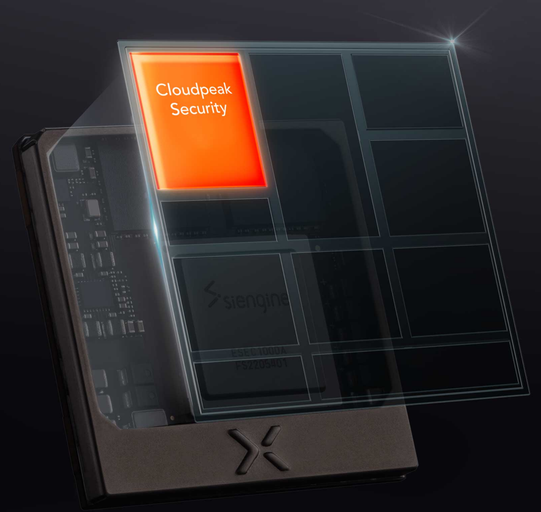
Established HaleyTek in JV with VOLVO
Co-development by global R&D teams



Capability foundation

Functional safety across full chain

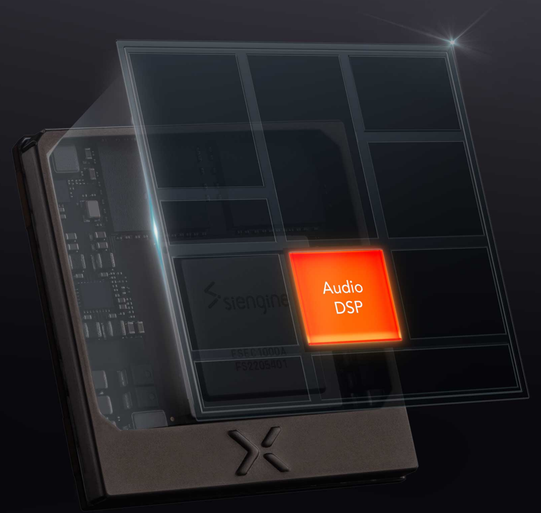
- The FuSa (functional safety) solution of self-developed Cloudpeak Safety based on hardware functional safety island
- Realize hardware functional safety across the full chain and cut development time and cost
- Support safe cluster display, and in line with ISO 26262 ASIL B qualification standard



Capability foundation

information security in line with domestic and international standards

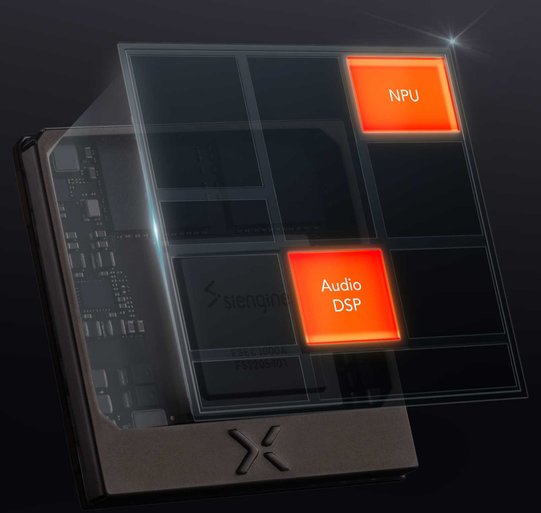
- Hardware security module (HSM) integrated enables a trusted Cloudpeak Safety environment, while providing full-stack information security protection across hardware and software.
- The solution meets the GB/T 40861-2021 and GB/T 40856-2021 standards in China, and also the ISO 21434 international standard.
- It is also compliant with the EAL4 global certification for information security.



Capability foundation

Unleashing core computing power

· 3D surrounding sound field effect to provide immersive acoustic experience
· Support development of near 20 fuctions: RNC, ECNR, HD audio processing
· 23K DMIPS of CPU is unleashed to boost overall computing performance



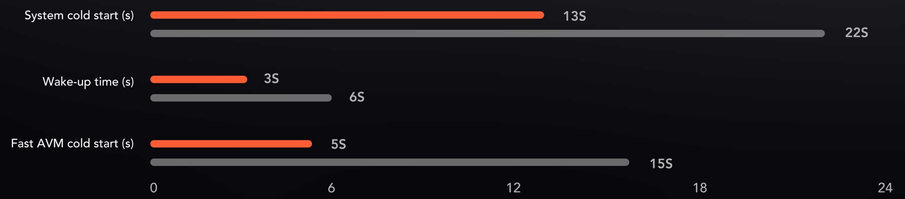
Capability foundation

AI empowered, highly efficient deployment

· AI algorithms for high-precision target detection, image classification, and semantic segmentation can be easily deployed on NPU/DSP
· L1-L2 ADAS, AI speech, machine vision, and other AI applications supported

Capability foundation

precisely target the pain points



≤13s

system cold start time far ahead of certain other industry-leading mass-produced platforms

≤3s

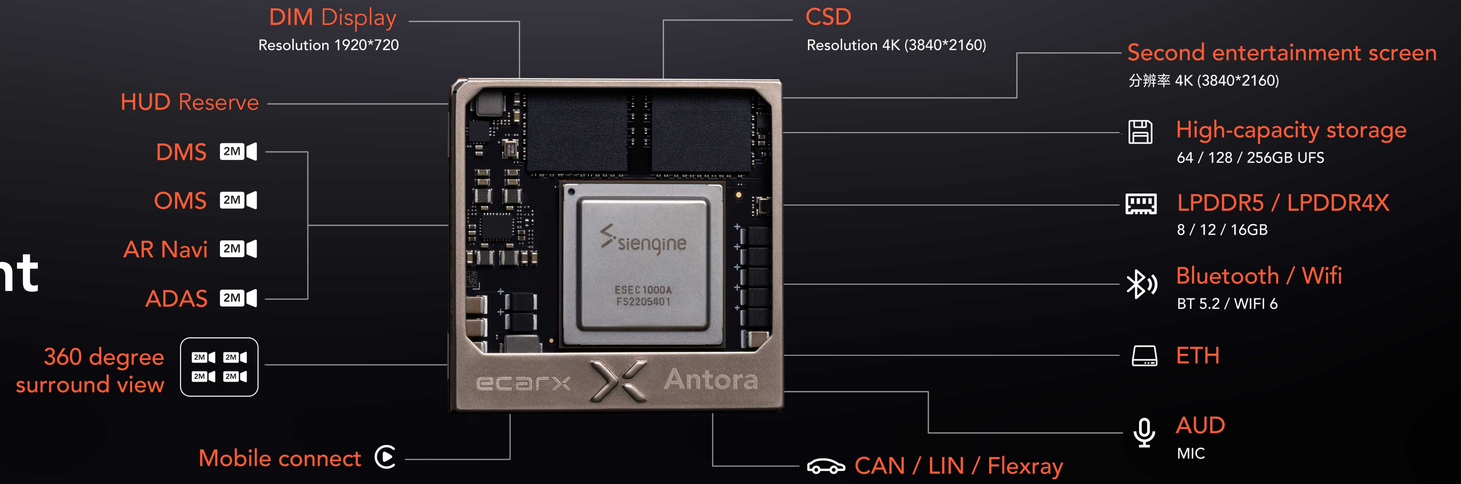
wake-up time from hibernation far ahead of certain other industry-leading mass-produced platforms

≤5s

AVM fast boot time far ahead of certain other industry-leading mass-produced platforms

* The data are based on testing result compared to the competitor's third generation computing platform, subject to actual operational results.

Extensive interfaces for flagship cockpit development



Cloudpeak

Security

In line with international information security standard

Cloudpeak

Safety

Hardware safety across full chain in line with ASIL B

ECARX

Antora

Development kit

Dual HiFi 5 DSP

Industry first

Unleash power

CPU

100K DMIPS

GPU

900G FLOPS

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Flagship offering from the start

Antora 1000

Intelligent cockpit computing platform

LPDDR5

Industry first

performance ⬆50% comparing with LPDDR4X

7nm

SE1000

AEC - Q100

≤13 sec

System cold start

≤3 sec

Wake-up

≤5 sec

Fast AVM cold start

4K/2K 60Hz

Up to 4 screens

Support up to

12

camera

AVM

DMS/OMS

PCIE 3.0

High speed connectivity

ECARX

Cloudpeak

Cross domain system capability base

NPU **8** TOPS int 8

*Source from lab data of development kit

Efficiency is king in the era of involution

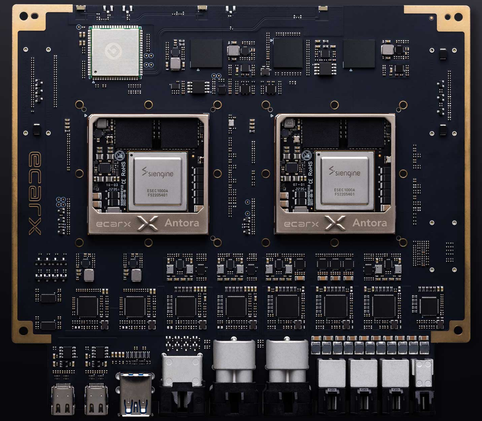
Explore the full performance of Antora platform

ecarx | Antora 1000 Pro

COMPUTING PLATFORM INTEGRATING COCKPIT AND PARKING

Dual Engine Pro

Revolutionary SE-LINK



·High-speed interconnectivity customized by SiEngine for **ECARX**

·**PCIE 3.0 1 Line** transmission speed from real tests on applications at 7.28 **GT/s**

·Inter-module video stream latency lowered by 51% than other massed-produced flagship platforms

·Doubled computing power of **CPU, GPU,** and **DSP**

·**NPU** 16 **TOPS** meets pre- and post- processing scenarios for high-computing power perception and integration

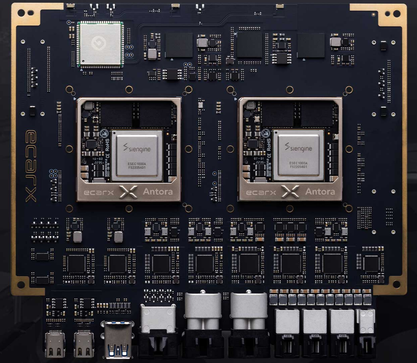
·Flexible capability of combining data and highly efficient computing powerFlexible capability of combining data and highly efficient computing power

* Source from lab data in comparison with the third generation computing platform of certain industry player, subject to actual results

Capability Pro

Integrated computing platform solution featuring intelligent cockpit + parking

Ultimate understanding of the demand and cost of key in-vehicle scenarios



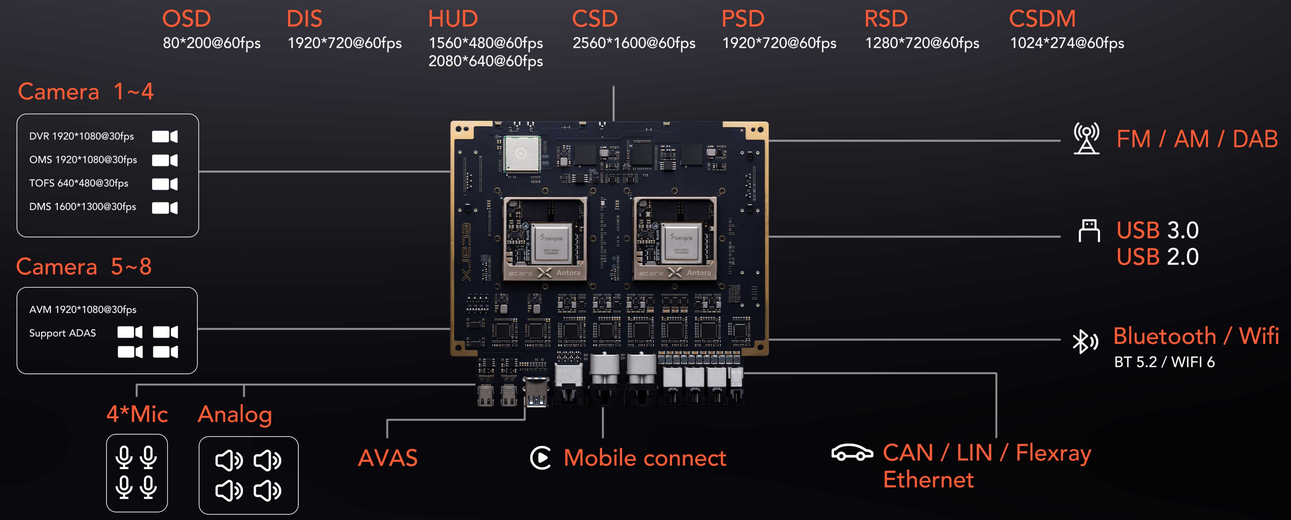
·Safety warning, comfort assistance, and safety control capabilities from L0 to L2 ADAS scenarios

·Focus on frequent ADAS scenarios in China, offering all-scenario parking ability at parking lots

·Automatic Parking Assist (APA), Remote Parking Assist (RPA)

·OTA of diverse intelligent driving functionalities, V2X high-speed interface connectivity, and real-time cloud services

Strong scalability meeting diversified platform needs



Multiple display of 8 screens

<5msec
Cross-screen latency

12 camera

3D Navigation / HMI

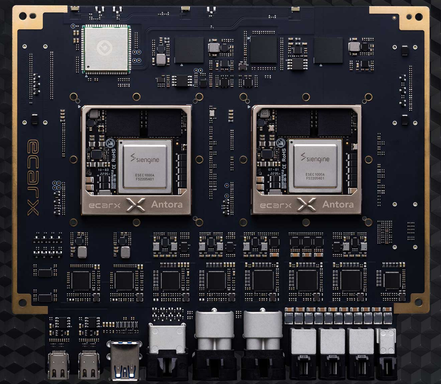
SE-LINK
High speed connectivity

4*HiFi 5
HD audio processing

CPU
200K
DMIPS

GPU
1800G
FLOPS

ecarx
Antora 1000 Pro
intelligent cockpit computing platform



LPDDR5
32GB
LPDDR4X 32GB

standalone NPU
16 TOPS int 8

ECARX
Cloudpeak
Cross domain system capability base

Parking capability integrated
APA
RPA

ECARX
Antora
Development kit

Cloudpeak
Security
In line with international information security

Cloudpeak
Safety
Hardware safety across full chain in line with ASIL B

* Source from lab data of development kit

ecarx

Antora series

Development kit

Empowering OEMs to create differentiated and platform products

User-friendly ›
Complete toolchain

· Comprehensive Antora-based toolchain and IDE

· In-depth optimized base layer OS with enhanced components for AI deployment

Higher efficiency ›
Shortened development

·Development cycles shortened by 20% using the development kit and toolchain

Lower cost ›
Iterative scalability

· System compatibility design supported under **Antora 1000** or Antora 1000 Pro

· Support upgrading and iteration

* Data based on comparison between computing platform and SoC solution

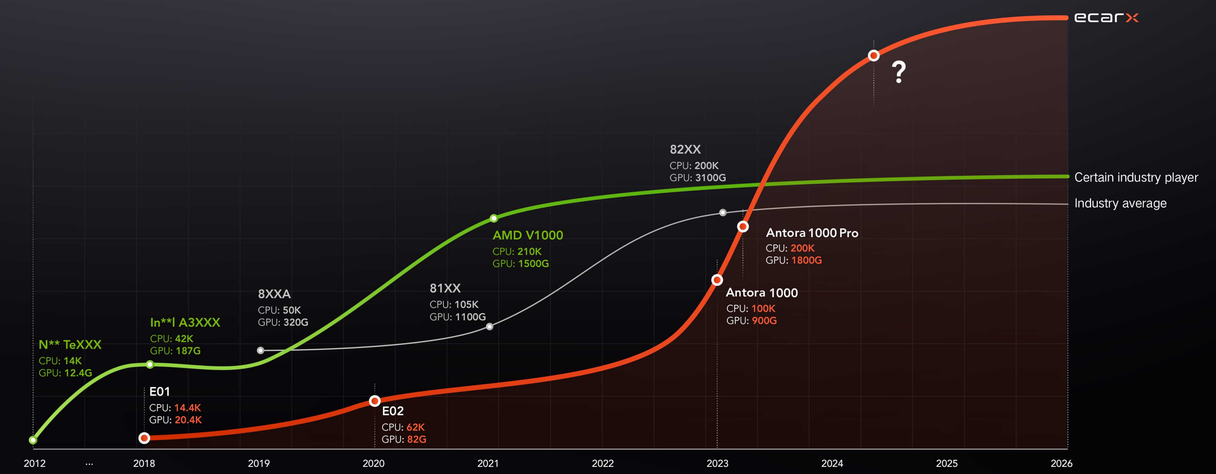
Launch for mass production

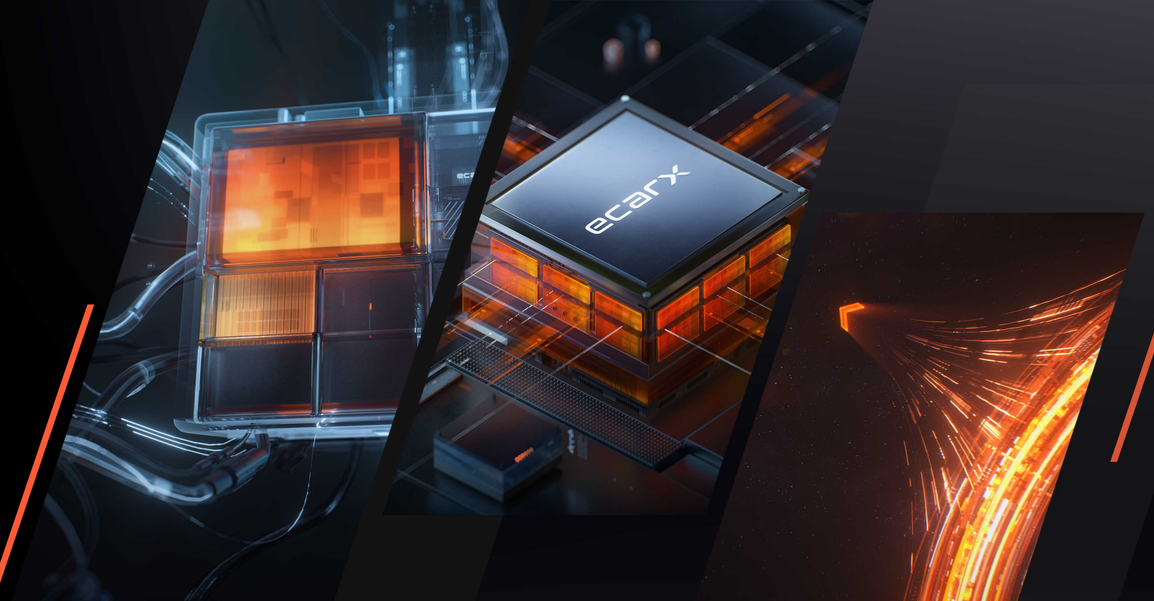
ECARX Antora 1000 to be applied on FAW Hongqi vehicles for mass production

ecarx | 中国一汽 FAW GROUP

What does the best intelligent cockpit look like?

Why is the industry so anxious about performance?





Based on cost, effectiveness and performance, rethinking next-generation intelligent cockpit

Definability

Computing performance far ahead of industry average level
Significantly increase the performance limit of hardware platforms

Vitality

Competitive performance guaranteed throughout the vehicle lifespan
No hardware replacement needed within 5 years

Imagination

High performance & extensibility, comprehensive auto-grade support
Greatly enhanced software iteration space

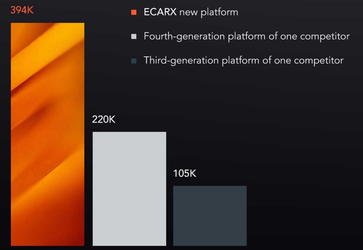
Exclusive customization·world's first auto-grade

AMD Ryzon V2000

CPU

394K DMIPS

› 1.6X the performance of industry's next-generation flagship platform

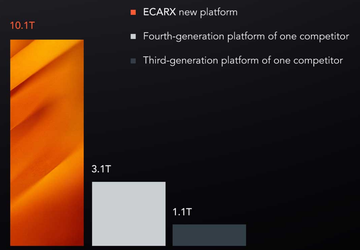


Computing power of core processors

GPU

10.1T FLOPS

› 3.25X the performance of industry's next-generation flagship platform



GPU computing power

* The data are based on testing result compared to the competitor's third generation computing platform, subject to actual operational results.

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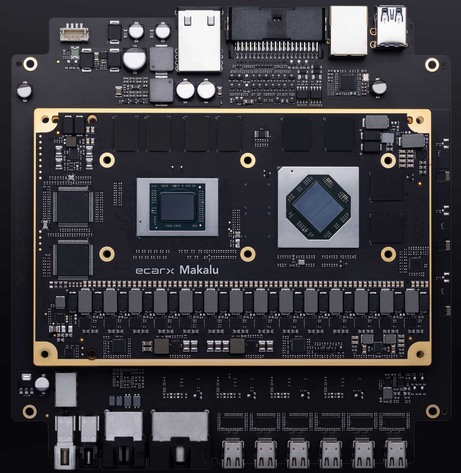
AMD’s first strategic ecosystem partner in China for the digital cockpit


AMD
MARIA TANG, VP Global


ecarx
Makalu
next-generation intelligent cockpit computing platform
Define the best performance

Potentially

the most powerful intelligent cockpit platform ever launched



Advanced 7nm process meeting AEC - Q100 G2

AMD Zen 2 APU
6cores and 12 threads

GPU: 28 computing units, 1,792 stream processors

Standalone memory 32GB

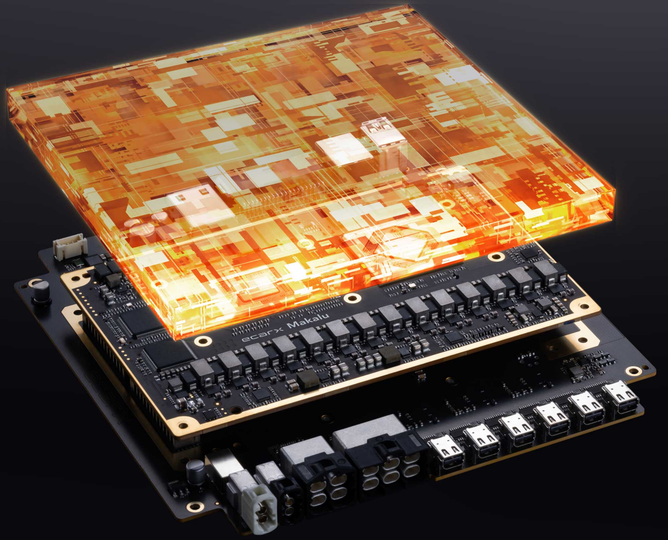
Standalone VRAM 8GB

Storage of 1TB NvMe M.2 SSD

4K@120Hz /8K@60Hz display

Capability foundation

Cloudpeak Virtualization

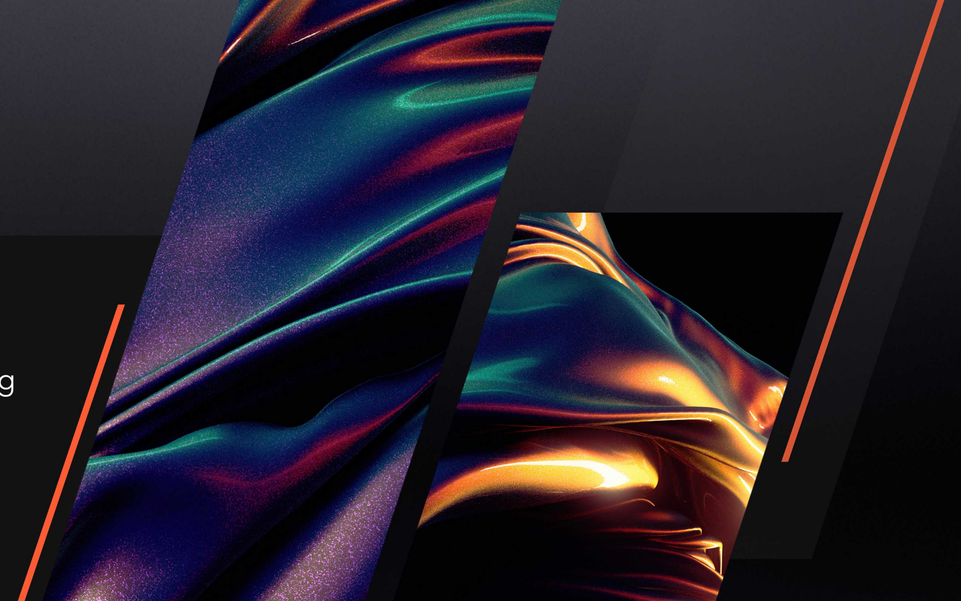


- Compliant with ASIL D, the highest functional safety standard of ISO 26262
- 11.7% higher computing power utilization than generic industry level
- performance loss for virtualization lowered by 67% than industry average
- leverage full potential of heterogeneous computing platform with ultra-high performance
- providing hardware and software capability foundation for next-generation intelligent cockpits.

* Based on the lab data of development kit in comparison with mass-produced models in 2022

Powerful performance superior experience

Support for the latest graphic processing interfaces of desktop computing platforms and Unreal Engine 5
full 3D HMI interactive avatars / real-time 3D environment rendering
/ 7.X.4 surrounding spatial audio



Strategic ecosystem partner


EPIC
GAMES
ZHUANG HUAXIANG
director, China


ecarx
EPIC
GAMES

ecarx Live cockpit

Digital Twin + 3A Game

Set a new bar for next-generation immersive intelligent cockpits

6×4K
Display

4K@120Hz
8K@60Hz
Immersive screen

7nm

Full scenarios
3D HMI

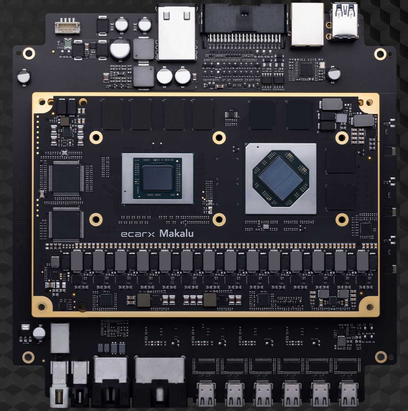
32 GB
LPDDR4X

1TB
NvMe M.2 SSD

7.X.4
Surrounding spatial audio effect

CPU
394K
DMIPS

ecarx
Define the best performance
Makalu intelligent cockpit computing platform



GPU
10.1T
FLOPS

AEC-Q100 G2

GDDR6 8 GB

Cloudpeak
Security
In line with international information security standard

ECARX
Cloudpeak
Cross domain system capability base

Immersive
3A games
UNREAL ENGINE 5

Cloudpeak
Virtualization
Virtualization loss <5%
ASIL-D Function safety

*Source from lab data of development kit

Enable vehicle cockpits to embrace the brand new experience

Further explore the possibilities of digital world

Debut on a massive scale

ECARX Makalu next-generation intelligent cockpit computing platform
to empower smart models for mass production in 2024


smart
YANG JUN
Vice President of Research and Development of smart

ecarx

Stay committed to one mission

Create central computing platforms for cars

All in One

One Box

One super computing controller, integrating cockpit and AD domain control

One Board

One board containing multiple SoC modules,integrating cockpit SoC, AD SoC, and MCU

One Computer

Centralized computing power and storage, converged computing, integrating cockpit and driving


ecarx
Super Brain
All In One
Central computing platform

One Box

The answer to cost efficiency

↓5%

less wiring harness
in the entire vehicle

↓15%

less software licensing costs
brought by high integration
and convergence

↓20%

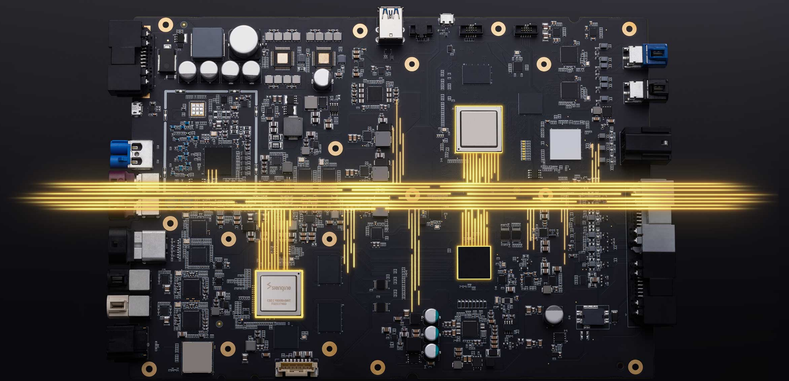
lower cost than distributed
controllers resulting from
efficient reuse and compact structure

*Note that these are lab estimation only

One Board

Single SE1000 + advanced AD chipset

AI performance in full play by ultra-fast inter- processor communications



CPU
132K DIMPS

GPU
900G FLOPS

NPU
61 TOPS

RAM
Up to 16G LPDDR5 + 8G LPDDR4

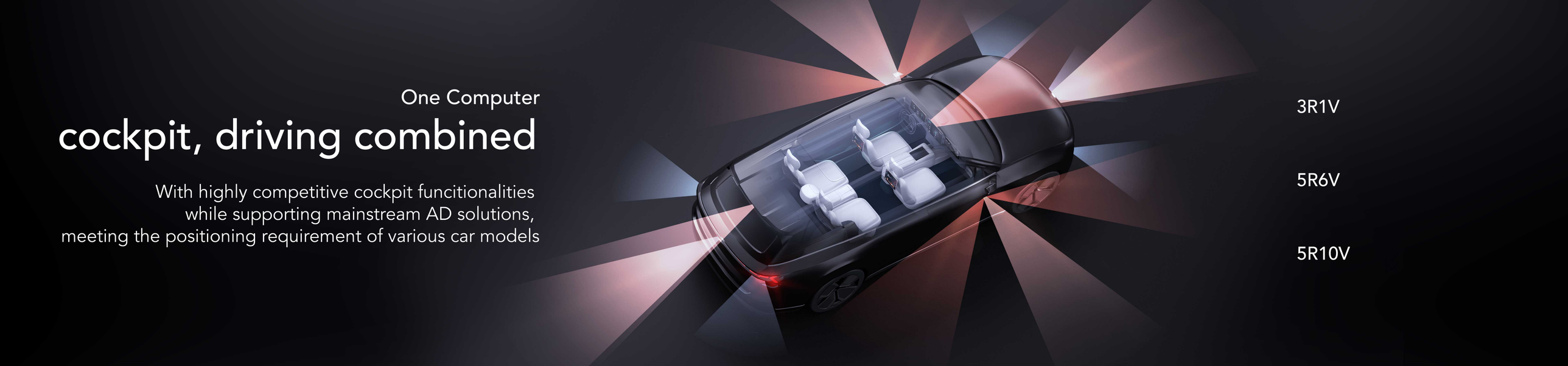
Display
Max 4K HD Resolution / Up to 4*Display

Camera
Up to 12*Camera
FLC (Max 8MP) + 4*Side Camera (Max 2.5MP)
4*AVM (Max 3MP) + RLC + 2*Option (DMS/OMS/TOFS)

One Computer

cockpit, driving combined

With highly competitive cockpit funcitionalities
while supporting mainstream AD solutions,
meeting the positioning requirement of various car models



3R1V

5R6V

5R10V

Dual system
Security redundancy

All in one toolchain
Reduce development cost

ONE BOX

↓5%
Wires

↓15%
Reduce software cost

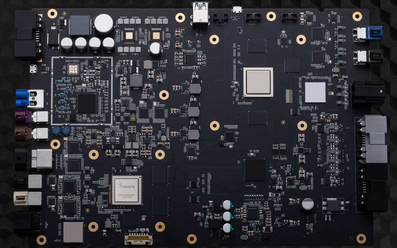
↓20%
BOM Cost

<5ms
Cross domain data sharing latency

<1ms
End to end data latency

1000 Mbps
ETH transmission

ecarx
ALL IN ONE
Super Brain Central computing platform



ONE BOARD

CPU
132K
KDMIPS

Up to
LPDDR5
16GB

NPU
61 TOPS
int 8

ASIL-B
Software functional safety

GPU
900G FLOPS

4K
HD display

L2+ ADAS

ECARX
Cloudpeak
Cross domain system capability base

ONE COMPUTER

NOA

3R1V~5R10V
Multi-sensor solutions supported

* Source from lab data of development kit

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Enable & Accelerate

Global leading automotive intelligent solutions

ecarx

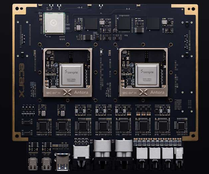
Antora 1000

intelligent cockpit computing platform

ecarx

Antora 1000 Pro

intelligent cockpit computing platform



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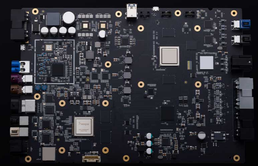
Makalu

computing platform

ecarx

Super Brain

Central computing platform



One more thing…

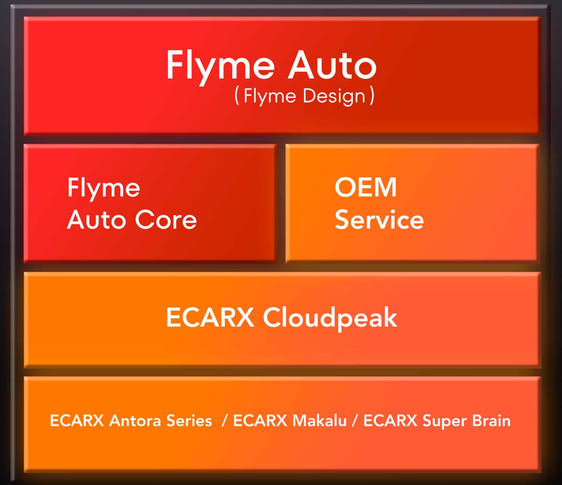

ZIYU SHEN
Chairman & CEO, ECARX
Chairman, SiEngine
Chairman & CEO, XINGJI MEIZU Group

Exclusive strategic partnership

ECARX & XINGJI MEIZU Group

Build the core of an integrated, intelligent ecosystem
Form unique and complementary competitive advantages

Flyme *Auto*


Flyme Auto
(Flyme Design)
Flyme
Auto Core
OEM
Service
ECARX Cloudpeak
ECARX Antora Series / ECARX Makalu / ECARX Super Brain

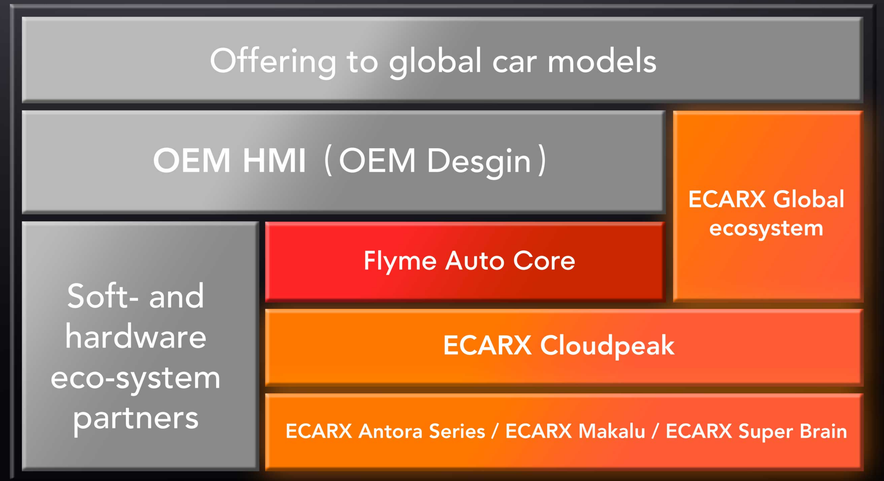

ecarx
Antora 1000 Pro + Flyme Auto
to jointly debut in the high profile Lynk & Co 08 model for mass production

Flyme Auto Core + ECARX computing platform

Support OEMs to build interactive innovation across different OS

Polestar 极星

Fully adopted by Polestar in China



Enable & Accelerate

Become the foundation and hub of automotive intelligence

continuous in-depth innovation | industry-leading development paradigms |
To serve ever more OEMs and tier-1 suppliers with ambition eyeing global markets


Global R&D · Global delivery

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This document contains statements that may constitute “forward-looking” statements pursuant to the “safe harbor” provisions of the U.S. Private Securities Litigation Reform Act of 1995.
These forward-looking statements can be identified by terminology such as “will,” “expects,” “anticipates,” “aims,” “future,” “intends,” “plans,” “believes,” “estimates,” “likely to,” and similar statements. Statements that are not historical facts, including statements about the beliefs, plans, and expectations of ECARX, are forward-looking statements.
Forward-looking statements involve inherent risks and uncertainties, including those identified under the heading “Risk Factors” in the registration statement on Form F-4 filed by ECARX with the U.S. Securities and Exchange Commission.
All information provided in this document is as of the date of this press release,
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