ADLINK: Computer-on-Modules

Intro of OSM

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26/9-2024

The Vitals

Founder and CEO

Jim Liu

Founded

1995

Headquarters

Taoyuan, Taiwan

Worldwide Employees

>1,800+

Revenue (USD)

$390 Million (Y2023)

Publicly Traded 2022

TAIEX: 6166

Capital (USD)

$78.5 Million

Market Cap (USD)

$509.17 Million

Computer on Modules

Design Centers & Production

9 Design centers

In USA, Europe, Taiwan, China, and India

3 Local project management teams

In USA, Europe, China

2(+1) Manufacturing centers

In Taiwan, and China, (and Vietnam soon)

20 Support offices

In USA, EMEA, Asia Pacific, and China

Thorough support from Prototyping and Design Review to Certification and Branding

Computer on Modules

Design Centers & Production

Taipei Manufacturing Center (TPMC)

Manufacturing Footprint

9,949 m² / 107,150 ft²

Production Capacity

2 SMT lines, max. capacity: 40,000 boards
2 system assembly lines, max. capacity: 6,000 sets per month

Future Expansion

3 SMT lines, max. capacity: 60,000 boards
8 system assembly lines, max. capacity: 24,000 sets

Quality Certifications

ISO9001: 2015
TL9000
ISO13485: 2016
ISO/IEC 17025: 2017
ISO/IEC 80079-34: 2018
ISO14001: 2015
ISO45001: 2018

Shanghai Operation Center (SHOC)

Manufacturing Footprint

29,878 m² / 321,604 ft²

Production Capacity

3 SMT lines, max. capacity: 65,000 boards
1 assembly line capable of 3,000 systems per month

Future Expansion

4 SMT lines or 80,000 boards/month
8 assembly lines or 25,000 systems/month

Quality Certifications

ISO 9001: 2015
TL9000
ISO 13485: 2016
ISO/IEC 80079-34: 2018
ISO 14001: 2015
ISO 45001: 2018

TPMC	*SHOC*
Taipei manufacturing Center	*Shanghai Operation Center*
High Product Mix	*High Volume*

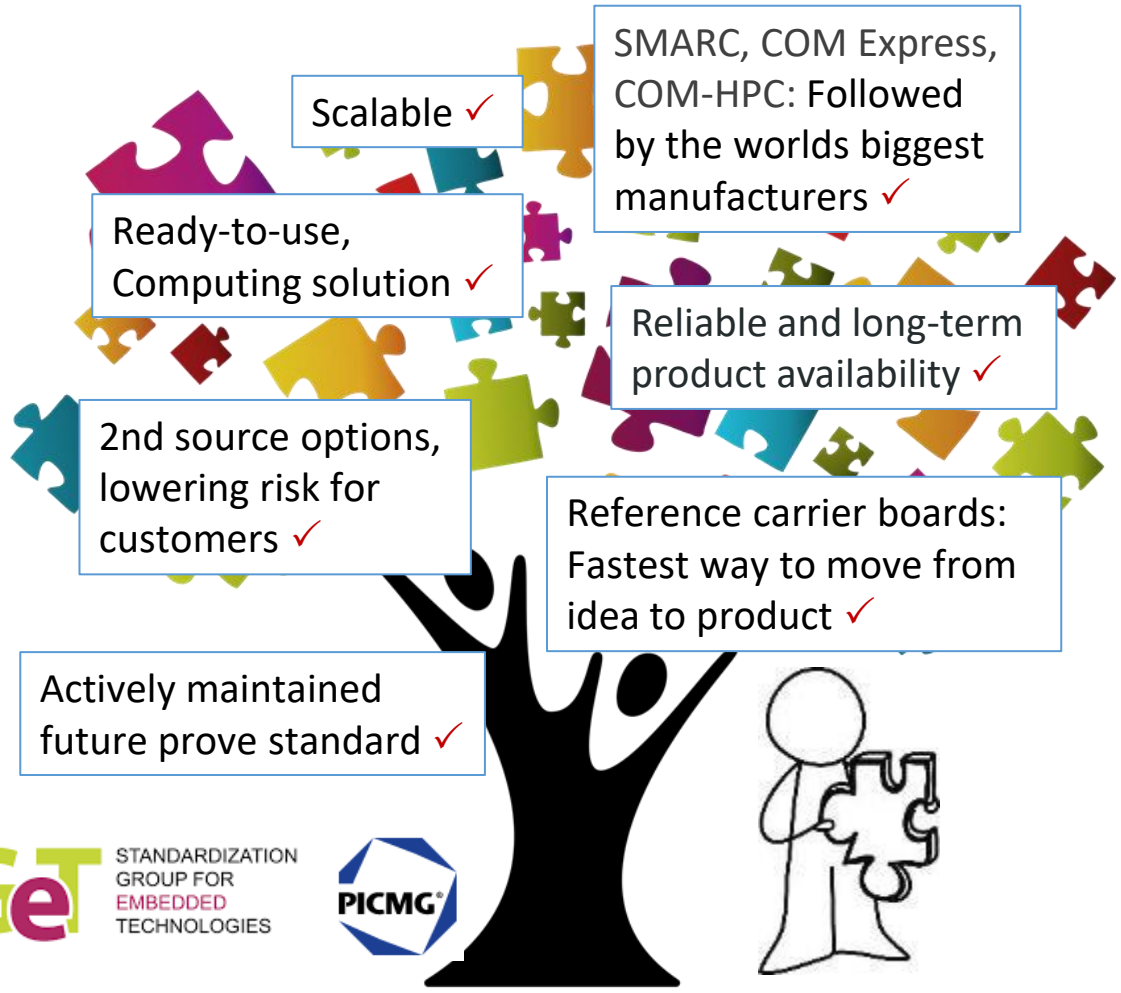
Capabilities

Advanced manufacturing technologies
Robotics for automated production
Smart Factory applications in manufacturing
Optimized ADLINK Production System
Lean production

Computer on Modules
What is COM?

Computer-on-Module:

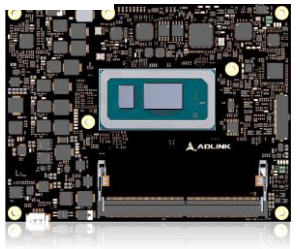
1. Wording: Computer-on-Module = System-on-Module = COM = CoM = SOM = SoM
2. Based on X86 / ARM / FPGA / GPUs
3. System memory is interfaced to the CPU/SOC on the module: soldered memory, SO-DIMM memory or DIMM memory
4. Proprietary vendor specific modules vs. defined open industry standards (like e.g. SMARC, COM Express, COM-HPC)
5. Carrier board to reflect project specific requierments



OPEN STANDARD MODULE™

SMARC module

COM Express®



COM-HPC™

ADLINK CORE COMPETENCE

Inventing the Industrial Standard

PC/104 Embedded Consortium
Affiliate Member

Future Airborne Capability Environment
Consortium Member

SOSA Associate Member

PXISA
Sponsor Member

VITA Standards Organization
Member

Object Management Group
Member

Edge AI Vision Alliance
Alliance Member

Open Data Center Committee
Supplier Member

Association for Advancing Automation
Member

Association of Gaming Equipment Manufacturers
Associate Member

Gaming Standards Association
Bronze Member

Robot Operating System - Industrial
Contributing Member & Technical Steering Committee

HDBaseT Alliance
Contributing Member

HDMI
Adopter

AUTOWARE Foundation
PREMIUM MEMBER

Information Technology for Public Transport
Associated Member

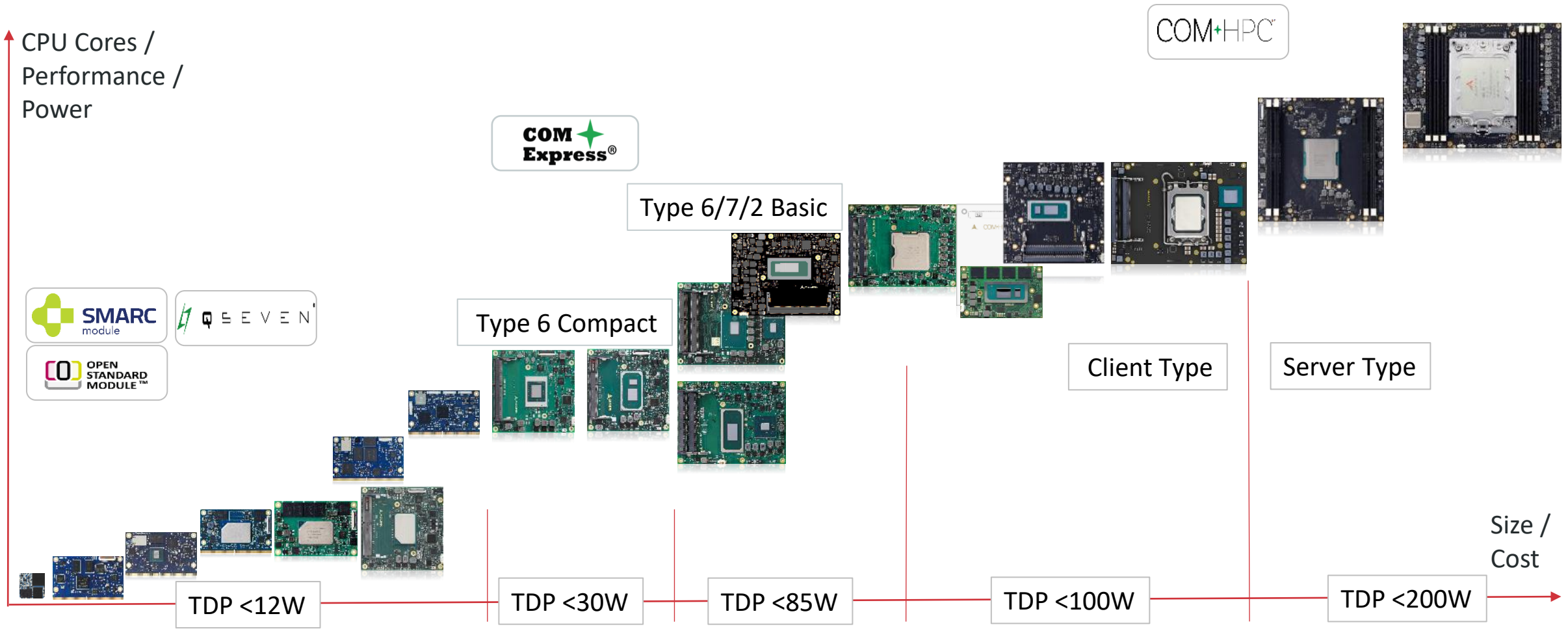
O-RAN Alliance
Contributing Partner

PICMG
Executive Member

SGeT
Founding Member

Roadmaps and Service

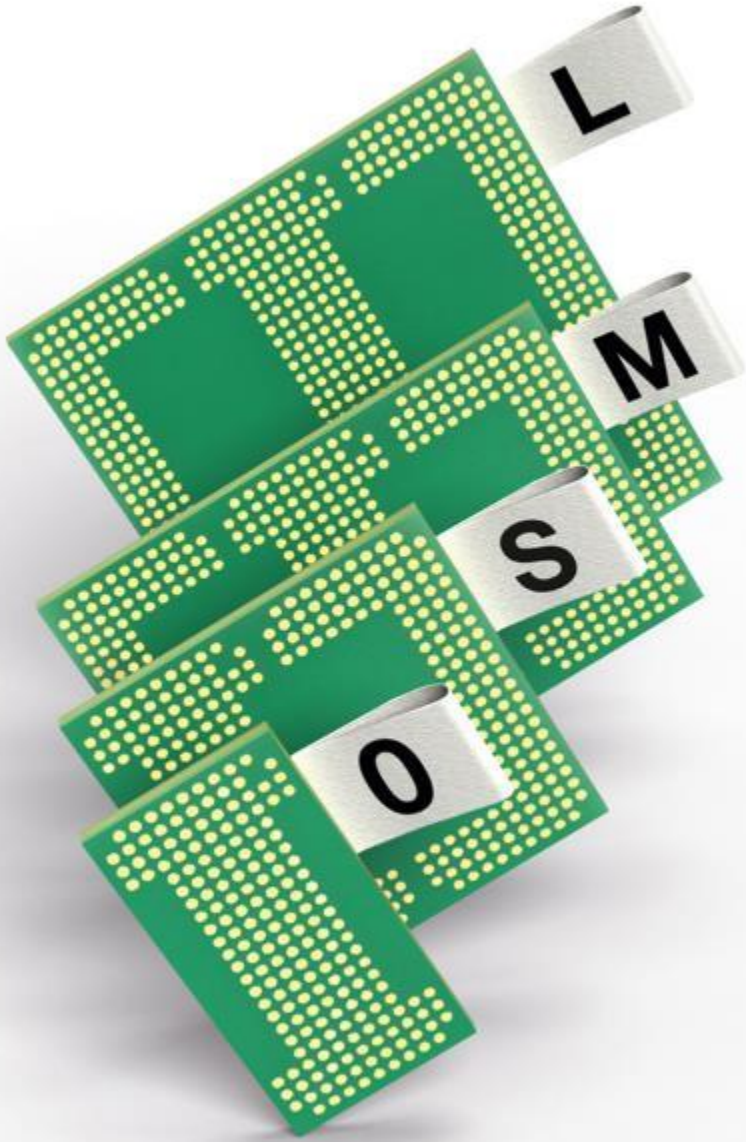
From High-end to Best-cost Competitive Solutions



ADLINK: Computer-on-Modules

OSM

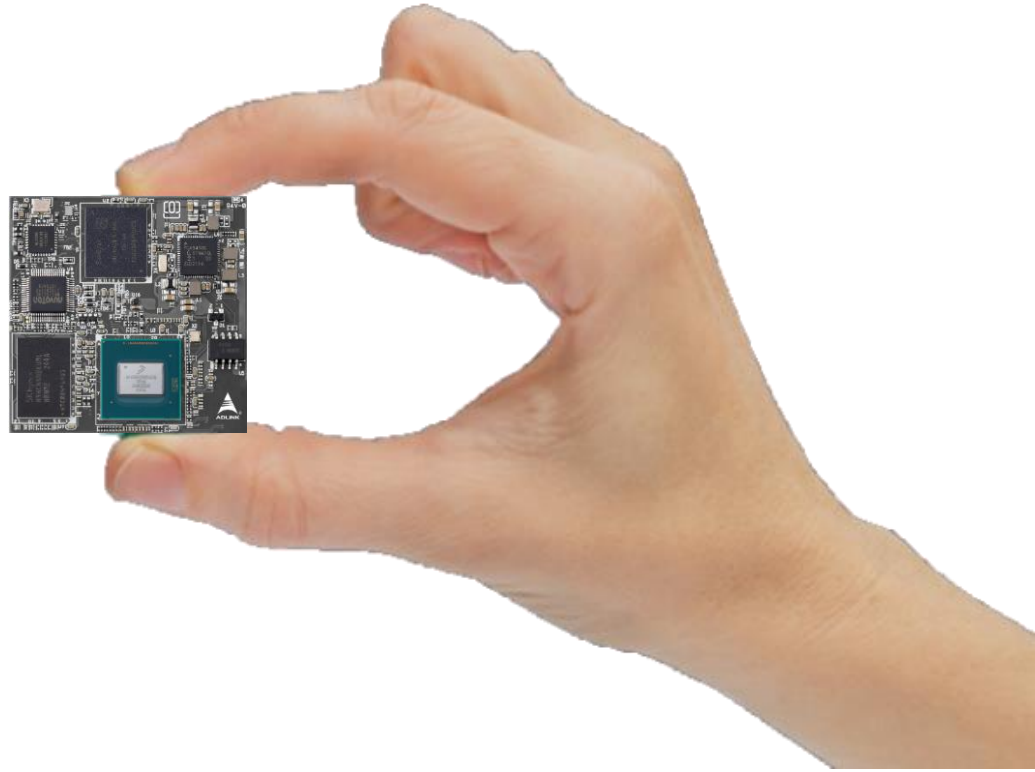
SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES



OPEN STANDARD MODULE™

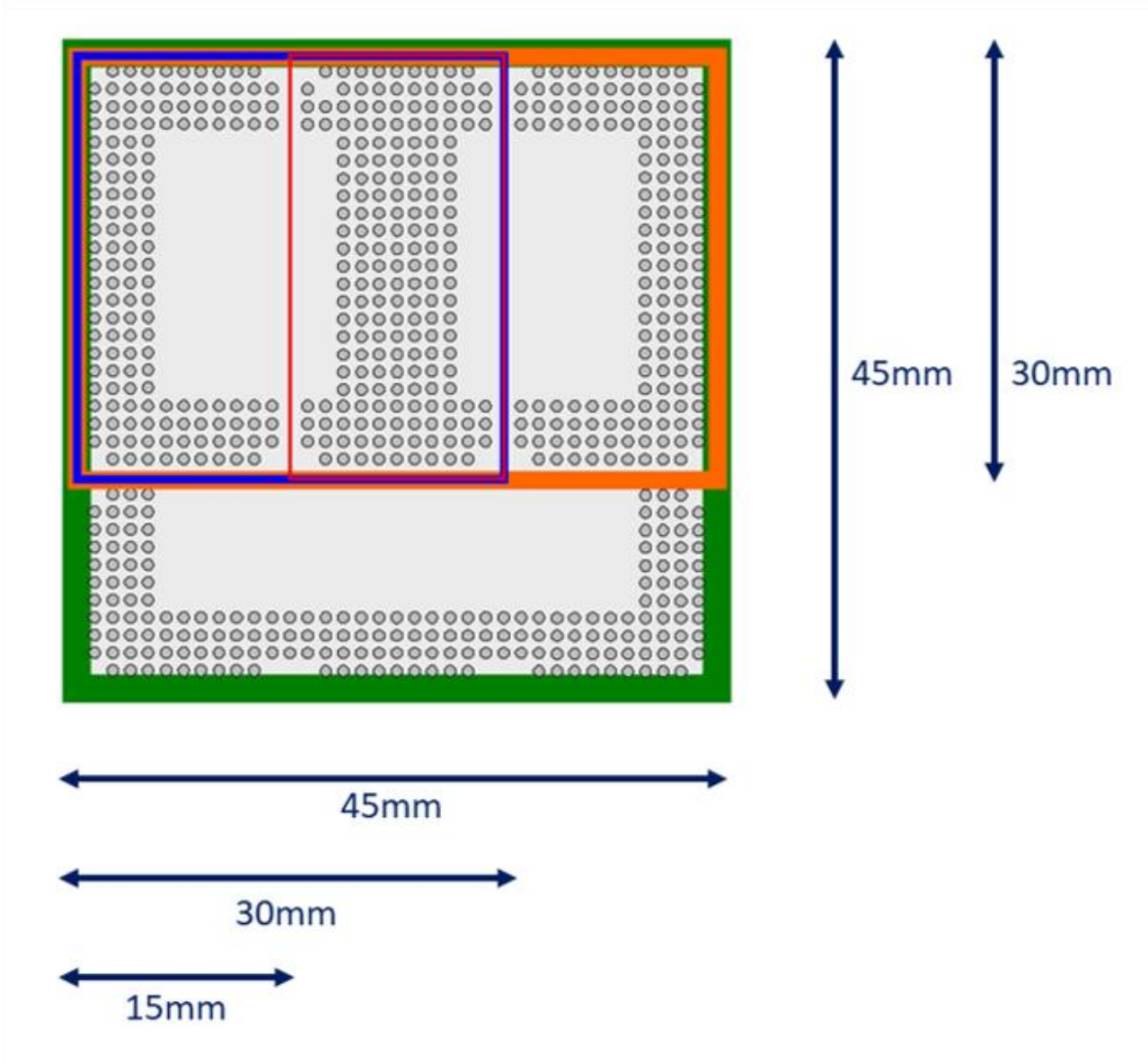
OSM : Open Standard Module™

- Just 50% of the board estate compared to SMARC (L-size)
- **Completely machine processible during soldering, assembly and testing of module + carrier**
- 662 pins, allowing output of all SOC provided I/O
- up to 40 Watt max input power
- Multi architecture x86/arm
- Just bring out SOC functions (incl Analog) + memory + SSD only
- Short term products plan :
  - OSM-iMX8M Plus Q1/2024
  - OSM-EL Q2/2024
  - OSM-iMX93 Q3/2024
  - OSM-MTK-G510/G700 Q4/2024



OSM Mechanical

Size	Form Factor	Pinouts
Zero	30 mm x 15 mm	188
Small	30 mm x 30 mm	332
Medium	30 mm x 45 mm	476
Large	45 mm x 45 mm	662



Small, only in size.

OPEN STANDARD MODULE ™

CSI 4L

DSI 4L
RGB

eDP
LVDS

DP++
HDMI

Up to 2 I2C

Up to 3 SPI

Up to 4 UART

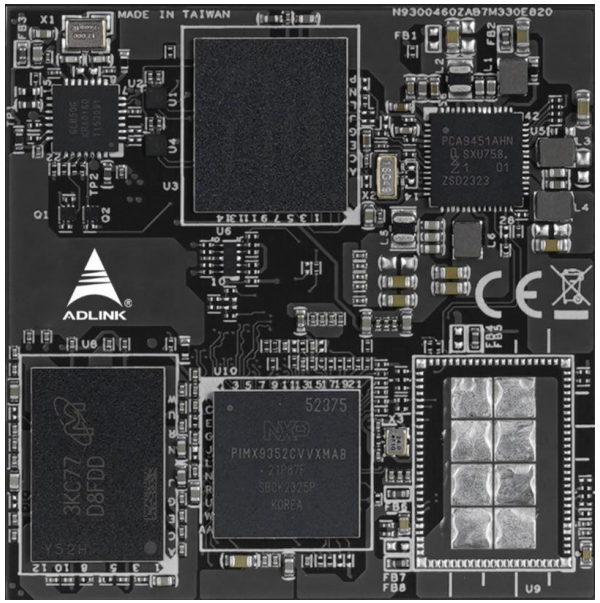
Up to 2 CAN

Up to 4 PWM

Up to 2 ADC

Up to 40 GPIO

Up to 2 I2S



Up to 5 LAN ports

Up to 10 PCIe lanes

Up to 4 USB ports

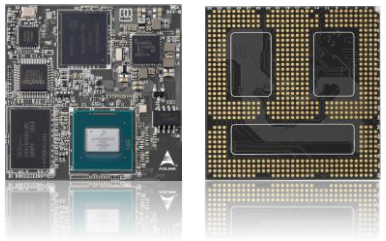
Up to 2 SDIO interfaces

UFS storage to carrier

662 ball contact grid, max power up to 42.5W

Space saving and contacts compared to other standards

OPEN STANDARD MODULE ™



In Production | Under Design | Under Consideration

OSM rev 1.1

Performance

OSM-EL
Intel Elkhart lake SOC,
up to 8GB LPDDR4
DSI/CSI/HDMI
Up to 4 core x86

OSM-AML
Intel Amston lake SOC,
up to 16GB LPDDR5, up to 256 GB eMMC
DSI/CSI/HDMI
Up to 8 core x86

OSM-AM77
TI AM77 SOC,
up to 16GB LPDDR5, up to 256 GB eMMC/UFS
DSI/CSI/HDMI up to 30 TOPS
Up to 8 core A510/A705

OSM-MTK510/700
Mediatek Genio 510 SOC,
up to 8GB LPDDR4, up to 256 GB eMMC
DSI/CSI/HDMI/eDP/PCIe
dual core A78, quad core A55

OSM-IMX95
NXP i.MX9 SOC,
up to 8GB LPDDR4, up to 256 GB UFS
DSI/CSI/LVDS/eDP
Up to 6 core A55

OSM-IMX8MP
NXP i.MX8 M plus SOC,
up to 8GB LPDDR4, up to 256 GB eMMC
DSI/CSI/LVDS/eDP 2.3 TOPS
Up to 4 core A53

OSM-AM7A
TI AM77 SOC,
up to 16GB LPDDR5, up to 256 GB eMMC/UFS
DSI/CSI/HDMI up to 4 TOPS
Up to 8 core A510

OSM-iMX93
NXP imx93 SOC,
up to 4GB LPDDR4, up to 256 GB eMMC
DSI/CSI
Up to dual core A55

2023 Q3~Q4 | 2024 Q1~Q2 | 2024 Q3~Q4 | 2025 Q1-Q2 | 2025 Q3-Q4

COM Products

ARM: Decarbonization by Technology (NDA required)

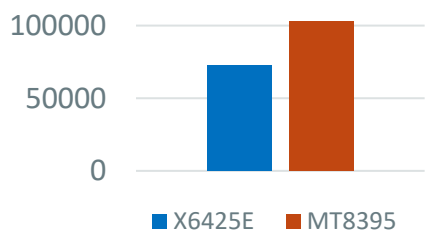
Decarbonization by Technology

x86 vs ARM : Better performance and Power Consumption at Cost Parity

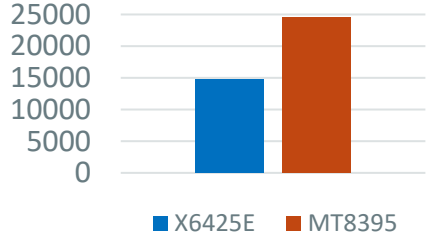
All benchmarks where carried out under Ubuntu 22.04, except for GLMARK2 for MT8395 that was carried out under Yocto Kirkstone
Power measurement where done for SMARC modules and include power draw of the I-Pi SMARC standard carrier at around 0.5W.

PERFORMANCE

CPU : Coremark

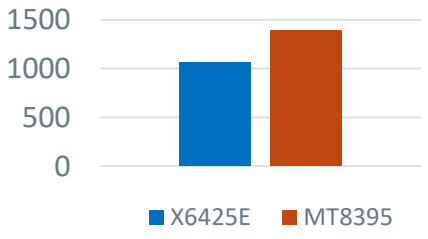


Memory : Stream

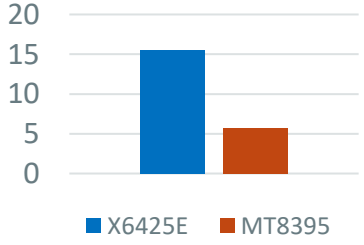


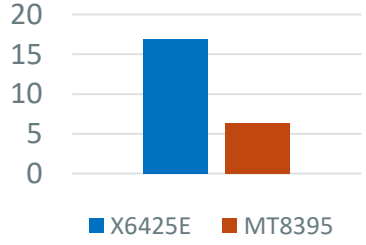
GPU : GLMark2

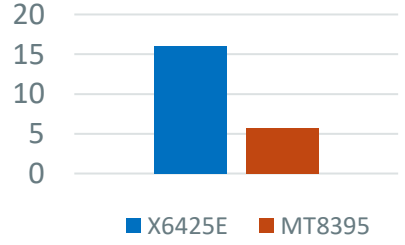
800x600



POWER CONSUMPTION (W)







Reduce Carbon Footprint and Save Money

x86 → arm

Power Savings

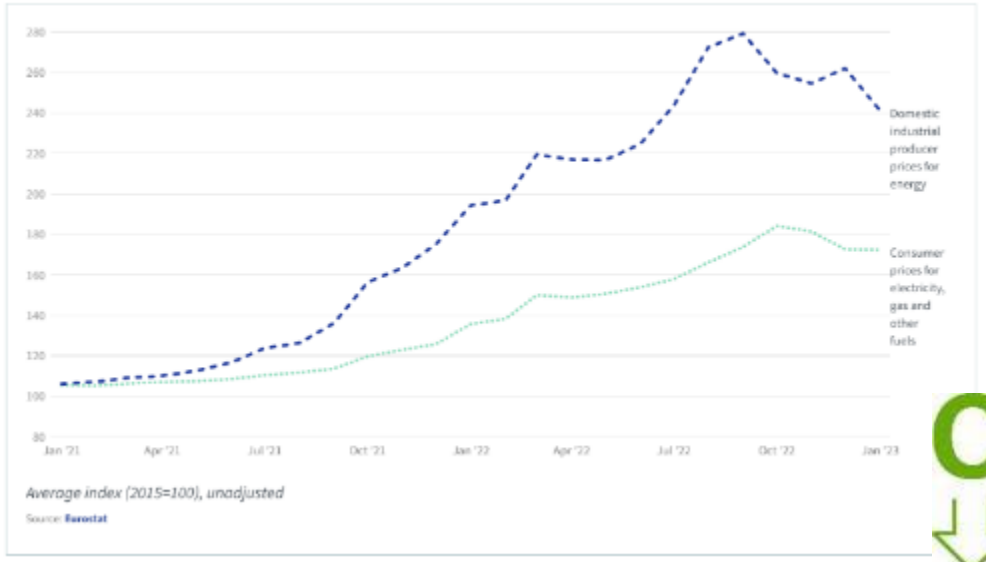
up to **60%**

Financial Savings

up to **30%**

(for the same performance level)

- Carbon footprint reduction is mandated by law
- Energy cost is increasing quickly
- arm platforms are less complex
- Lower power consumption results in simpler thermal designs



Q&A

ADLINK