

THE BENEFITS OF

System-on-Module

INTRODUCTION

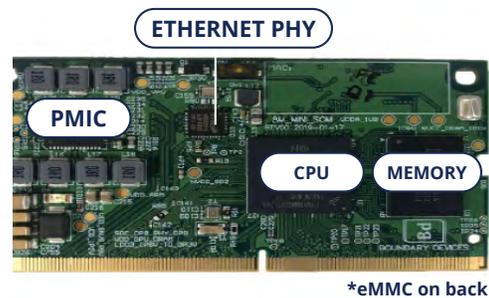
What is a System-on-Module (SOM)?

A System-on-Module (SOM) is a module that incorporates all of the critical elements of an electronics design including microprocessor, RAM, Flash, and power supplies. Optionally, many SOM vendors also include Ethernet PHY and WiFi+BT modules.

The purpose is to offload the difficult design tasks (both hardware and software) and allow customers to focus on the peripherals and application development.

MAIN BENEFITS

- Enables focus on product-differentiating features
- Reduces basic platform software development
- Simplifies and shortens the design cycle
- Reduces baseboard complexity. Boundary Devices provides Altium Design files for existing solutions
- Reduces component EOL/maintenance costs
- Allows easy development of custom, highly-integrated products
- Enables customers to more easily support multiple products with varying IO



DISADVANTAGES

- Requires a custom carrier board. Don't have an engineering team available? Ask us about our custom design solutions!
- SOM + Carrier is more expensive than custom SBC design from Boundary Devices

There are many SOMs to choose from — some are standards-based, and some are proprietary. SMARC and Q7 are the most popular standards-based SOM modules. These standards were designed to provide compatibility between different manufacturers — to give customers a second source. This works well for x86 processors because they are quite inflexible, but not helpful in the ARM architecture. Take for example, **the NXP PINs tool** where you can test drive the flexible IO on an ARM-based NXP i.MX MP.



SMARC SOM



Q7 SOM



BOUNDARY DEVICES SOM

Why Standards Don't Work for SOM

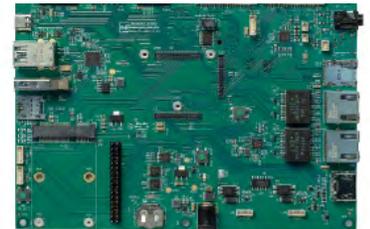
ARM CPUs allow for significant pin multiplexing and each processor has significantly different features. A low-end ARM CPU designed for a light bulb and a high-end ARM processor used for a car navigation system have completely different requirements — how can you have one standard that supports both of those processors?

- High-end ARM processors have a wide range of features and not enough pins to expose them
- The pin multiplexing complexity creates challenges
- A chip designed five years ago has different integrated features that need to be accounted for. For example, parallel display interfaces are no longer represented on newer-generation processors. Or vice versa, MIPI display interfaces are much more prevalent than in the past.

A newer-generation SOM would be hindered by having to be compatible with a previous generation.

Alternatives to Standard Models

Boundary Devices designs the SOM based on our proprietary standard which focuses on what is best for that particular processor. This allows a purpose-built SOM which is lower cost, typically smaller, and much more functional. Although our SOM is sole-sourced, contact us to learn about our availability assurance agreements or discuss escrow options.



SUMMARY

The Benefits of Using a SoM

- ✓ Small form-factor
- ✓ Available carrier board
- ✓ Custom engineering for customer needs
- ✓ Saving your resources
- ✓ Optimizing product development cost
- ✓ Shortening time-to-market
- ✓ Avoiding development risk
- ✓ Available BSP for every HW setup



COMPANY INFORMATION

About Boundary Devices

Boundary Devices is a leading global supplier of ARM-based Single Board Computers and System on Modules for the general embedded market. Founded in 2003, our corporate headquarters is located in Lake Forest, CA.

We specialize in creating custom solutions tailored to the exact specifications of the customer. By using the core layout of existing development systems, we can produce custom designs on time and on budget.

Boundary Devices is an NXP Proven Partner that has completed countless successful projects with the NXP i.MX family of processors. Because we design only i.MX based boards, we are the industry leader in i.MX custom designs. All of our products are designed, tested and manufactured in the US.



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