Research Brief

Mobile Application Processor Interfaces Get a Standards Body

Abstract: ARM, STMicroelectronics, Texas Instruments and Nokia have founded the Mobile Industry Processor Interface (MIPI) Alliance. Mobile phone makers and their suppliers must either join or offer viable standards of their own.

By Alan Brown

Recommendations

- Mobile phone manufacturers, semiconductor companies, software developers and other suppliers in the mobile application processor market must assess what the MIPI Alliance has to offer and decide whether to join.
- Before joining, they should see whether it acquires more high-profile members, as it's unlikely to achieve all its aims without them.
- Those that join should negotiate unambiguous access to all the intellectual property they need.

Strategic Planning Assumptions

- The MIPI Alliance is unlikely to become the dominant worldwide standards body for mobile application processor interfaces by 2008 (0.8 probability).
- Some of its standards will be widely adopted by mobile phone manufacturers by 2006 (0.8 probability).

Publication Date: 5 September 2003
The MIPI Alliance Demands Your Attention

ARM, STMicroelectronics, Texas Instruments and Nokia announced the formation of the Mobile Industry Processor Interface (MIPI) Alliance at the end of July 2003.

This important industry initiative aims to define and promote open standards for interfaces to mobile application processors. It wants to make interfaces consistent, so that hardware and software is easier to design and implement and reaches the market more quickly.

The announcement focused on the alliance’s aims and governance, not on detailed specifications for standards. Even so, it is clear that its open structure and the rights it offers members give it more potential than its forerunner, the Open Multimedia Application Processor Interface (OMAPI) alliance created by STMicroelectronics and Texas Instruments. Participants in the mobile application processor market must understand the implications of the new alliance and take action.

Standards Are Needed, But It’s Seldom Easy to Agree Them

Open standards are needed throughout the mobile phone and PDA industry to produce interoperable components, speed up product development and lower R&D costs. Most suppliers and users of hardware recognize this.

The difficulty lies in the usually long and politically charged process of agreeing them. Companies try to steer the "common" specification to their advantage, especially if they are in competition with other participants in the process. Each favors its own specification or, failing that, one it can easily meet and benefit from. And once a standard is agreed, the majority of the market’s participants — not just those in the standards body — still have to back it.

There are various approaches to attaining a standard. The most common is via the Institute of Electrical and Electronics Engineers. This was the path taken to agree the 802.11 standards for wireless LANs.

Another approach is to create a sponsored organization to oversee a standard (or set of standards); for example, the Bluetooth Special Interest Group oversees the standard for Bluetooth wireless technology. This is the path chosen by the MIPI Alliance.

Rival Standards and a Lack of Flexibility Could Put Off Potential Members

ARM, Nokia and the phone manufacturer’s two main component suppliers have, it seems, teamed up to bring their in-house standards to a wider forum. They believe this will be to their benefit, but to succeed they must convince a majority of suppliers and users of mobile application processors that it's also in their interest to join.

Gartner believes the founder members hope to do this by persuading peripheral suppliers, software suppliers and perhaps competitors to join and (possibly) modify the standards. However, two factors could discourage new members. First, there seems to be little room for radical change to the specifications of the founder members. Second, companies outside the alliance may offer standards that are as good or better.
What Common Standards Could Mean for This Market

The alliance’s areas of interest include security, cameras, displays, general interfaces and memory interfaces. But its four key working groups cover system power management, the High-Speed Multipoint Link, software, and testing and debugging. A look at these four should shed light on the areas it seeks to control.

System Power Management

Power management is vital for mobile application processors. The alliance seeks to define standards that coordinate power management between the processor and peripherals such as liquid-crystal display modules and image sensors. At present, each processor has its own means of limiting power consumption, which must be customized to work with peripherals if the system’s power is to be reduced.

If the alliance uses a predefined Texas Instruments specification for power management, manufacturers of processors and peripherals would have to make at best minor and at worst major design changes. But companies already working to match peripherals to OMAPI-compliant platforms could have a time-to-market advantage.

High-Speed Multipoint Link

At present, peripherals have different requirements for serial links to the mobile application processor. The proposed High-Speed Multipoint Link would avoid redundancy and reduce the pin count by letting peripherals share the external bus.

ARM defines the specification of the internal processor bus for the embedded ARM processor used for many mobile applications. Because of this, it will also want to influence the development of the external interface. The alliance’s inclusion of the High-Speed Multipoint Link could affect all of ARM’s clients, whether or not they are members.

Software

Mobile application processors’ physical interfaces don’t work without software, so the alliance’s interest in this area is significant. But it’s unclear what advantage it will offer software developers, as designers of operating systems and Java Virtual Machines (JVMs) already try to give them consistent access to memory and peripheral resources. Perhaps the middleware envisaged by the alliance will make it easier for designers of operating systems and JVMs to adapt their software to the hardware.

Testing and Debugging

Nokia has the permanent chair of this working group. It will make its participants aware of developments in the standards, and may also let them take part in testing. Phone manufacturers should find this group especially interesting to participate in.

Fair Dealing on Intellectual Property Is Key to Success

The questions of who will determine the alliance’s standards, what intellectual property will be freely available to members and what will remain proprietary are fundamental. The alliance will have to work hard to convince potential members that its founders won’t dominate the definition of standards and that equitable governance will prevail. Often it’s the intellectual property left out of an agreement that decides whether it succeeds. (Note that lack of agreement about intellectual property for code division multiple access chipsets is a source of tension between Qualcomm and Texas Instruments.)
The alliance will have to handle its intellectual property equitably if it is to achieve its aims and become an independent certification body for interoperability.

**The Alliance Must Avoid Dilution of Its Standards by Individual Members**

The alliance must develop, for it lacks a supporting and independent certification body on interoperability. Without one, there’s a real danger that its work will form merely a loose framework for reusing technology.

And if individual members can dilute the standard with extensions suited to their own needs, the aim of true plug-in compatibility will not be achieved.

**You Must Decide Whether to Join**

Companies in the mobile application processor market cannot afford to ignore the MIPI Alliance (unlike the original OMAPI standard). It's an important development, as it aims to meet the need for common interface standards. If successful, it would benefit mobile phone manufacturers and their suppliers by reducing R&D costs and, perhaps, time-to-market.

These companies must decide whether to join the alliance, having weighed the pros and cons. Those that fear it and want to influence its direction should join. But they must consider whether they will be able to differentiate their products, as a common standard could lead to mobile application processors becoming commodities. And, when joining, some companies may want to negotiate equal status and influence with the founder members.

Those that don’t join risk isolation. They will have to rely on the market’s continued acceptance of their existing standards or develop new ones.

The reactions of Intel, Motorola, Qualcomm and Samsung will be important. The alliance needs more than one of them to join if it is to oversee a widely adopted standard. Unfortunately for it, history suggests that Intel, Motorola and Qualcomm won’t join. Intel, for one, has an open but proprietary alternative in its Personal Client Architecture.

Most original equipment manufacturers won’t consider the alliance’s standards important unless they increase products’ value for customers. If other standards perform equally well, adherence to the alliance’s will be irrelevant. And one thing is certain: if the alliance doesn’t attract more industry heavyweights, it will face rival standards.

**Bottom Line**

Gartner’s view is that the MIPI Alliance won’t become the dominant worldwide standards body for mobile application processor interfaces by 2008. This is because Intel, Motorola and Qualcomm are unlikely to join it.

However, every other market player must decide how to react. It is never a good policy to ignore the progress of new standards.