Putting technology adoption on a faster curve

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Keeping up with the pace of changing technology is a challenge for even the most experienced embedded system developer. As new processor architectures, silicon chips and their peripherals come to the market, what is the quickest way for engineers to evaluate and successfully adopt technology to their next design? Development kits from silicon suppliers have long been the first way designers get access to new technology. But with system complexity ever increasing, engineers need more than an isolated IC on a board to determine whether to design in a new technology. The development kit has grown from a vehicle for supplier demonstrations into an important addition to the embedded system design flow, serving simultaneously as evaluation board, software development platform and early system prototype. To support this trend, suppliers and distributors are providing designers with application-oriented platforms, complete with software examples, test suites and integrated development tools needed to turn an evaluation board into a complete system design solution.

Embedded system designers starting a new design choose from thousands of new semiconductor products introduced each year. Since it is impossible for an engineering team to physically test all of the parts available for a given function, designers rely on technical specifications, and third-party reviews. Designers most often choose components based on the experience from their previous designs, making incremental system changes and reusing known technologies. For most designers, the time allotted for new technology evaluation is limited to a short research and analysis phase at the beginning of the design process. Decisions made at this stage of the design flow have major impact on performance, cost and manufacturability of the resulting system. The ability to use development kits as early system prototypes helps designers to put off important technology adoption decisions to later in the process when the implications and design requirements are more clear.

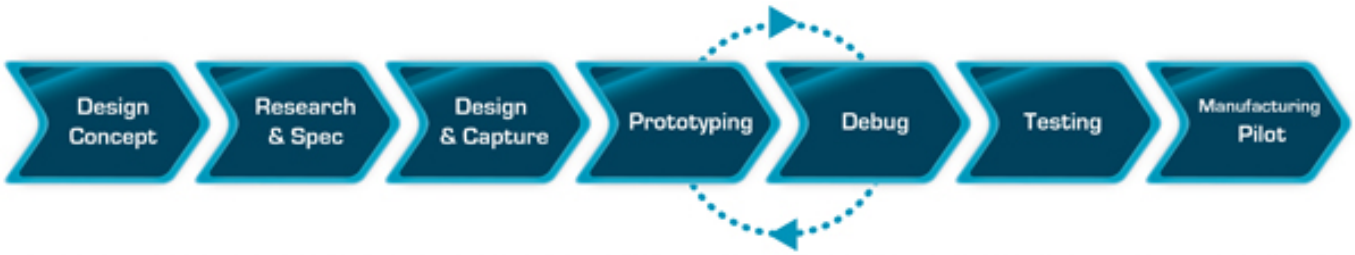

Figure 1. In the typical embedded system design flow, technology decisions made in early stages can have major impact downstream. Using development kits in prototyping gives designers more flexibility to make choices based on their actual system requirements.

Dev kits' new role in development

As software takes a more prominent role in the system design process, development kits are also often serving as application coding platforms. These kits enable early software development and debug on a system prototype that can be reused in the eventual system design. Suppliers introducing new processors are releasing development kits application-specific development kits, often in advance of volume silicon. These processor platforms are created with specific applications in mind to allow software coding using a realistic application test environment. The evaluation board can be swapped out for a system using the same processor core when production hardware is available. This gives software developers immediate access to the hardware so that coding can be done in parallel with hardware development and allows designers to develop more accurate system requirements for the system application.

Data accuracy and availability is key

Going beyond development kit hardware, designers also need early access to information about new technology to support their research and to enable informed decisions for design trade-offs. Finding this data presents a problem for designers. Acceleration adoption of new technologies depends on technical information being both readily available and accurate.

Unfortunately, the first places people typically go to find data can be less than effective. For example, a web search on a generic search engine will return mountains of data, most of it unrelated to system engineering. Entering "Bluetooth dev kit" returns 2.8M results, far too many for a comprehensive review and likely burying interesting new technologies underneath paid ads and search engine marketing. But doing a manual search through industry web sites is time consuming and prone to missing new technology alternatives. Designers need another alternative to find technology information.

Solving the problem of access to new technology data for engineers is why electronic distributors are playing an increasingly important role in the embedded design ecosystem. Working with suppliers, tools consolidate information about the latest and most innovative technology from multiple suppliers in order to create a single trusted source for design information. This online technical library combines accurate information about development kits with the product data, design tools, application examples, reference designs, training and other information required in the design process. Distributors can bring together the development kits and the design flows – hardware, software, prototyping, manufacturing and test - required to

implement that technology into an embedded system. The solutions also include services required to implement the design, such as PCB manufacturing, BOM fulfillment and assembly. The benefit to system designers is acceleration of the design process and an easier way of evaluating and adopting new technology.

Embedded systems aren't created in a vacuum, and the technologies needed to design them can't be evaluated that way. Development kits today provide an excellent starting point for application development using the latest technology to improve system performance and optimize power. Distributors and suppliers back up this faster route to technology adoption with complete design solutions so that engineers can make technology decisions with confidence.

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