MICROPROCESSOR REPORT

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THE INSIDER'S GUIDE TO MICROPROCESSOR HARDWARE

MPR ANALYSTS' CHOICE AWARDS

By Tom R. Halfhill {2/26/07-01}

In this issue, we're honoring the winners of our annual *Microprocessor Report* Analysts' Choice Awards. On our website, we have announced the winners in two groups during successive weeks in late February. For each award, we have written a brief article about the

winning product or technology and the reasons for our choice.

We have recognized seven companies: ARM, Ambric, Eutecus, Freescale Semiconductor, Handshake Solutions, Intel, and Planet82. One award was shared by two companies, ARM and Handshake Solutions. ARM and Intel each won two awards. All our award articles appeared online during the last two weeks in February and are collected in the February print edition of *MPR*.

We modified our award process this year. In the past, we gave awards in narrow categories, such as Best High-Performance Embedded Processor or Best Desktop PC Processor. Although we haven't permanently abandoned such categories, we find them too restrictive. Often, we want to reward an outstanding product, design, concept, or technology without necessarily declaring that a specific processor is the absolute best in its field. Defining what's "best" is always a problem, given the many criteria for evaluating a processor.

So this year, we created a new category: Innovation. This broader category frees us to reward innovative developments

Winners of MPR Analysts' Choice Awards will receive a wall plaque like this one, which displays a reproduction of the MPR article announcing the award.

PHOTO: MPR

relating to microprocessors without necessarily singling out specific chips or cores. Of course, it's possible for more than one company to do something innovative during the year, so we can honor those achievements by bestowing more than one award in the Innovation category each year. In fact, all our awards this year are in the Innovation category—largely because we couldn't agree that any particular processors or cores introduced in 2006 were indisputably the best in their fields.

Ambric wins an *MPR* Analysts' Choice Award for the design concept and architecture of a massively parallel processor, the Am2045. (See *MPR 2/20/07-02*, "*MPR* Innovation Award: Ambric.")

ARM wins two *MPR* Analysts' Choice Awards. The first award, shared with **Handshake Solutions**, is for the ARM996HS, the first commercially available 32-bit processor core implemented in asynchronous logic. (See *MPR 2/20/07-03*, "*MPR* Innovation Award: ARM996HS.") The second award is for Razor, a technique that can allow a circuit to operate beyond its worst-case design conditions. (See *MPR 2/26/07-02*, "*MPR* Innovation Award: Razor.")

Eutecus wins an *MPR* Analysts' Choice Award for its Cellular Visual Technology, which uses massively parallel processing and other techniques to enable high-speed digital imaging, on the order of 100,000 frames per second. (See *MPR 2/26/07-03*, "*MPR* Innovation Award: Eutecus.")

Freescale wins an *MPR* Analysts' Choice Award for MRAM (magnetic random-access memory). Freescale's MR2A16A is the first commercially available memory chip based on spintronics technology. (See *MPR 2/20/07-04*, "*MPR* Innovation Award: MRAM.")

Handshake Solutions, as mentioned above, shares an *MPR* Analysts' Choice Award in the Innovation category for working with ARM to develop the ARM996HS processor core. (See *MPR 2/20/07-03*, "*MPR* Innovation Award: ARM996HS.")

Intel wins two *MPR* Analysts' Choice Awards. One is for the Core microarchitecture, which is dramatically changing Intel's designs of x86 desktop, mobile, and server processors. (See *MPR 2/20/07-05*, "*MPR* Innovation Award: Intel Core.") The other award is for Intel's P1266 fabrication process, which employs high-k dielectrics and metal-gate transistors at the 45nm node. (See *MPR 2/26/07-04*, "*MPR* Innovation Award: High-k.")

Planet82 wins an *MPR* Analysts' Choice Award for designing the first implementation of Single-Carrier Modulation Photo Detector (SMPD) technology. SMPD technology amplifies the output of digital image sensors, improving their sensitivity by about three orders of magnitude. (See *MPR 2/26/07-05*, "*MPR* Innovation Award: Planet82's SMPD.")

Judging last year's many fine accomplishments to arrive at these winners wasn't easy. Often, it required additional research to resolve arguments and reach a consensus. Please join us in congratulating the 2006 winners of our *MPR* Analysts' Choice Awards.

Florida Revolts Against Touch-Screen Voting

In the holiday rush last December, some *MPR* readers may have missed our editorial against paperless electronic voting machines. (See *MPR 12/26/06-01*, "Undo Electronic Voting.") Although we certainly aren't the first critics of these devices, we based our broadside on the technical flaws of electronic voting that should have been obvious to informed decision-makers. Among other things, we noted that only a few additional lines of easy-to-write source code would have eliminated the problem of ambiguous undervotes that plagued the state of Florida in a November 2006 congressional race.

In a growing number of jurisdictions across the U.S., voters are rebelling against paperless electronic voting machines, insisting on verifiable paper trails. In early February, touch screens suffered their biggest defeat to date. Florida's new governor, Charlie Crist, publicly repudiated the machines and called for their ouster statewide. Indeed, Crist is so determined to get rid of the contraptions that he has asked the Florida legislature for $32.5 million to replace them before the next presidential election in November 2008. Political observers in Florida expect the legislature to approve his request.

Florida was one of the first states to adopt touch-screen machines after the embarrassing snafu of the 2000 presidential election. Banishing the machines from Florida is sure to make other states reconsider their rush to embrace the technology. As we urged in our editorial, Florida plans to replace the touch screens with optically scanned paper ballots. We concluded that optical scanners offer the best combination of speed, reliability, verifiability, and cost.

Although we're sure our *MPR* editorial didn't tilt the balance against touch screens in Florida, we believe our technical arguments are solid. We hope it's only a matter of time before decision-makers everywhere in the U.S. come to their senses and recognize the disaster of paperless electronic voting. ◇

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