JOURNAL

FROM THE PRESIDENT

RAISING THE STANDARD TO A NEW LEVEL

At its last meeting, the EEMBC Board of Directors voted to approve a new policy that promises to have a major positive impact on the Consortium and its future. As agreed to by the Board, later this year EEMBC will begin to make its benchmark source code available on a per-seat or per-site license basis to OEMs and other entities that want to use the benchmarks as a tool for their own product development efforts and/or to compare the performance of processors being considered for various designs.

In some ways this is a significant departure for EEMBC. Until now, any commercial enterprise that wanted to use the Consortium's benchmarks could do so only by becoming an EEMBC member. However, the licensing model

has quite a successful precedent in EEMBC U, under which faculty members at universities and college are entitled to license the benchmark source code for teaching and experimental purposes. EEMBC U continues to grow apace thanks to recent public exposure at several industry and academic venues, including the recent International Symposium on Performance Analysis of Systems and Software (ISPASS). The SPEC consortium provides another example of how membership and licensing can successfully coexist within a single organization.

When it comes to EEMBC, I think the licensing program is going to deliver more benefits than we can now imagine. For one thing, it will make it much easier for

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OEMs to use EEMBC benchmarks. EEMBC's real "competitors" aren't other benchmark organizations but rather the proprietary benchmarks that manufacturers have developed on their own to test embedded processors. By making it simpler to use EEMBC, we will become that much closer to supplementing (or displacing) those in-house benchmarks with our performance measures that have been established in a collaborative way by the leading

from the lab

Documentation Support Planned for Members and New Licensing Program

Alan R. Weiss, EEMBC Certification Laboratory (ECL, LLC)

Over the years, EEMBC has generated a large amount of documentation on its benchmarks, including an *Operations Manual*, *Porting Guide*, datasheets, the annotated source code itself, and a *Reference Manual* that goes into still more detail. Until now, the one thing missing in all

this has been a simple set of instructions that new EEMBC users could take and immediately use to get the benchmarks up and running. The existing documentation is complex and was never really targeted towards those not familiar with EEMBC and its source code.

This is about to change. EEMBC President Markus Levy has been working on a plan to license the EEMBC source code, and if we are to expand EEMBC's usage beyond the membership, documentation must be upgraded to "user level."

Benchmark Scores
✓ ANALYSIS
✓ COMPARISON
✓ PERFORMANCE

NEWS BRIEFS

EEMBC benchmarks are the topic of several recent feature articles by Markus Levy, including "How to analyze processor features for network use," which appeared in the April 2005 issue of Embedded Systems Programming, and "Benchmarks Identify Best Power Train Microcontrollers" in the February 16 issue of Automotive DesignLine. Links to these and other articles about EEMBC benchmarks are available from the "Press and Events" section of the EEMBC Web site. www.eembc.org.

"Understanding The Delicate Balance of Performance and Power in Embedded Applications" was the title of a two-and-a-half hour talk delivered by EEMBC President Markus Levy at the IEEE-sanctioned/sponsored Cool Chips VIII, held April 20 – 22 in Yokohama, Japan. An audience of more than 120 persons was on hand for Levy's two-hour presentation. Earlier the same week, Levy gave the opening talk at the Portable Power Developers' Conference held in San Jose.

EEMBC Calendar

May 18, San Jose

EEMBC President Markus Levy will be among the participants in "Soul of the New Benchmark," an informal panel discussion on the latest challenges in benchmarking processors and systems. The panel will be moderated by Kevin Krewell, In-Stat Editor in Chief. For conference information, visit www.instat.com/spf/05/.

May 19, Santa Clara

Markus Levy will be guest speaker at "Enabling Innovation: SoC Design and Verification Solutions from the Industry Leaders," a full day seminar being presented by ARM, LSI Logic, and Mentor Graphics. His talk begins at 9 a.m. For more information, visit www.mentor.com/products/fv/events/enabling_innovation_reg.cfm?int=1&id=25483.

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EEMBC Reaches Out to Academic Members

The Department of Computer Science and Engineering at Chalmers University of Technology in Gothenburg, Sweden and the University of Hertfordshire in the United Kingdom are the newest members of the EEMBC U program, under which faculty at academic institutions can license EEMBC's benchmark software at a reduced cost. With more than a dozen university members now enrolled, EEMBC is increasing its outreach to the academic and research communities. For example, last month, EEMBC President Markus Levy delivered the keynote address at the 2005 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS) held in Austin, Texas.

"Faculty members of EEMBC at colleges and universities are playing an increasingly important role for the Consortium, in lending credibility to our benchmarks and as a source of new ideas of how benchmarks can be applied to embedded microprocessors," said Levy. "Throughout 2005, we're going to be looking at ways that we can expand this involvement and expand EEMBC's recognition of the contribution of university faculty members."

FROM THE PRESIDENT *(continued from page 1)*

processor vendors. This is a crucial next step in making EEMBC benchmarks *the* industry standard. Proliferating the number of EEMBC users, moreover, stands to greatly increase interest in the benchmarks and encourage OEMs to contribute feedback to the Consortium on future directions for benchmark development.

Until now, most users of the EEMBC benchmarks have been

the processor vendors that developed them, so part of our task in the coming weeks and months will be making the benchmarking process user-friendly for a broader audience of embedded systems designers and others for whom the processor is just part of the bigger picture. We'll be adding to the information about the benchmarks on the EEMBC Web site and improving benchmark documentation – a process that Alan

Weiss of ECL talks about in his "From the Labs" column elsewhere in this *EEMBC Journal*. Your suggestions and feedback will be an important part of what makes EEMBC's licensing program a success, and I look forward to hearing from you as this new chapter in the EEMBC story progresses.

Markus Levy

Documentation Support Planned for Members and New Licensing Program *(Continued from Page 1)*

In response, ECL has developed a *Quick Start Guide*. As the author of this guide, I wanted to start with a fresh, clean sheet of paper (so to speak) and write everything from scratch, instead of basing it off of the existing *Porting Guide*. In preparing this new *Quick Start Guide*, I kept in mind that my intended audience would include many newcomers to EEMBC, although these might include individuals from the Consortium's member companies.

In this document, Part 1 focuses on "Porting, Building, and Running," and provides a very quick overview of EEMBC benchmarking. It explains all of the following for you:

- How to download source code

- How to unzip the zip files that you've downloaded

- How to run the benchmarks on a Windows, Cygwin, or Linux PC to get a feel for how they function

- How to obtain technical support

The second part, "Modification and Porting to Embedded Platforms," identifies and explains modification activities that are common to all of the benchmarks, so that you can port it to your embedded platform. Both Version 1.1 and Version 2 activities are covered, and the contents include an explanation of:

- The benchmark code hierarchy (showing layout of different benchmarks and how they fit together)

- The difference between Test Harness Regular and Test Harness Lite

- Basic steps for getting the source code to compile on your platform using the EEMBC makefile technique

- The different compiler and source code options that can be used, including the heap and the #DEFINEs

- How to build for, and run on, an embedded platform

- Verifying correct operations

- Common problems and troubleshooting tips

Part 3, "Application Benchmark Suites" walks through the EEMBC application areas: Automotive/Industrial, Consumer, Digital Entertainment, Network

Ing , Office Automation, and Telecom. (Java is not covered because it neither requires nor allows for any modifications or decisions.) I cover individual benchmark suites, and useful things in porting and tuning that are specific to each benchmark suite.

If you follow these three parts one by one, at the end you will be very far along to having the benchmark code ported to your embedded platform. No documentation can substitute for technical support, nor for careful attention paid to your own tool chain and your platform's characteristics. But the *Quick Start Guide* will help users to avoid common pitfalls, while describing typical situations, offering answers to common issues, and providing solid advice. We believe it will go a long way towards making EEMBC benchmark software just as easy and friendly as the people who invented it.

EEMBC

BENCHMARK SOFTWARE

Quick Start Guide

MEMBERS ONLY

At its meeting in Austin, Texas on March 23, the EEMBC Board of Directors voted to authorize the development of the benchmark source code licensing program discussed in the Letter from the President on page 1 of this *EEMBC Journal*, and additionally approved a proposal from the Java Subcommittee aimed at revitalizing the EEMBC GrinderBench™ suite. As presented by Java Subcommittee Chair Graham Wilkinson of ARM Ltd., the new program will allow EEMBC members and ECL to post Grindermark™ scores for any Java-enabled mobile phone or PDA to the EEMBC Web site. A WAP-enabled page on the EEMBC Web site will enable the benchmarks to be sent directly to any mobile phone, and visible score results will be categorized depending on whether they come from one of more member companies or ECL. Implementation of the program is expected to begin in Q3 2005.

At the same meeting, the Board also agreed to remove the link to the 8/16-Bit Microcontroller benchmark scores from the public Web site, noting that only two devices had been tested against these benchmarks since their introduction in 2001. Scores for these will remain available on the members-only section of the EEMBC website.