

## Excel Spreadsheets Get an ACCELERANT

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It's been years in development, and several months delayed in release, but Microsoft Corp.'s enhanced Office Excel 2007, with high-performance features that traders and financial modelers are supposed to love, is finally shipping. But there's a catch.

If existing Excel applications are written for single-processor machines, they won't automatically be able to take full advantage of the software's new resources and capabilities. "Without reengineering those programs--rewriting them in C#--which most firms will really not be interested in doing, you can't get optimum usage," explained Kurt Ziegler, EVP of product development at Aspeed Software, based in New York.



Ziegler

Ziegler, though, has a fix: Aspeed's ACCELERANT 4.1 for Excel. "Existing Excel programs that are Visual Basic applications [VBAs] are not parallelized," he said, referring to their lack of compatibility with parallel processing configurations that juice up performance. "If your programs are not written for multiple cores, then they just can't run any faster," added Ziegler.

Many existing Excel applications are single-thread VBAs, even as new desktop and laptop computers are produced with multiprocessor cores. ACCELERANT wraps an application programming interface (API) around the application that will unleash the power of parallel processing. "If you're on your laptop and it usually takes a minute to run your program, with ACCELERANT it will take half a minute," said Ziegler.

"If you have a dual processor with a quad core, that will cut running time by an eighth," he continued. And that will come in handy for derivative calculations and other complex

analytics. "What took seven or eight hours, by being able to take advantage of your dual-socket, four-core machine, is cut down to one hour," said Ziegler. And this is possible without having to change the fundamental logic of an existing program. "Version 4.1 also supports programs written in C and C++," he noted.

Considering the power being built into the new Excel version, Gene Kim, consulting manager at Framingham, Mass.-based research firm Financial Insights, said last year that it appeared "almost like grid Excel," with strong collaborative and enterprise-oriented features, not to mention processing capacity. Carl Claunch, research VP of Stamford, Conn.-based Gartner, said that the grid analogy refers to the "inherent parallelism written into Excel 2007 ... so that if you wanted to divide your spreadsheet and have each cell run on a different machine, you could do that. The cells can hop across machines now and eventually across the multiple cores in a single machine."

Aspeed adds operational flexibility. "The scaling part is already done in Excel 2007; the operation control is via Aspeed," Claunch explained. He agreed on the underlying usefulness of the ACCELLERANT product: "With a high-end, single-core, single-processor system running single-threaded programs, a program would run in, say, 100 minutes. Now it will take only 13."

Suppose you want to do a market trade and run risk calculations to validate it right away. Said Claunch: "If you get the right answer right away, you do the trade. But if you can't get the thing to run fast enough, the opportunity to do the trade passes--not good."

Single-threaded programs on multicore machines will be a common challenge, said Claunch. "We're talking HPC--high-performance computing," he went on. "If you have general programs doing risk modeling, you're thinking, how can I make it go faster?' To set up the programs to go parallel and take advantage of being deployed against a grid of many computers, many try brute force to make the program scale up and work in parallel. Aspeed's basic product deals with the underlying mathematics and therefore lets the user ignore all the details and just call up an API that makes it work."

Claunch said he has clients that have shown the product works in financial services, the energy sector and in pharmaceutical companies that use ACCELLERANT to see correlations in clinical trials. But he said that technical expertise is critical: "Single-thread programmers don't have the skill--they don't understand how to run the program in

parallel. ... It's simply not worth the time, effort and looking for the skills to do this in-house."

Excel 2007 is built to accommodate cluster computing and the potential of running spreadsheet cells on different machines. "If you run Excel 2007 across ten machines, Aspeed offers the operational flexibility to do it for your portfolio calculations," he added."

On operational flexibility, Aspeed's Ziegler explained, "Excel 2007 offers parallelization of native Excel logic to use a single system. An Excel server supports multiple threads for apps using C# programs that are thread safe.' Prior to this version of Excel, many companies used C and C++ libraries that could be invoked by Excel as functions."

He added: "Aspeed enables the logic within these functions to be run across multiple cores and processors in a single system or across multiple systems. So any IT organization can transparently provide Excel-invoked function capacity on a variety of hardware configurations, without making any changes other than the initial Acceleration.'" The end result is optimum performance on a variety of configurations, with "the organization enabling the capacity," he said.

As Gartner's Claunch put it, "Using Aspeed, the Excel spreadsheet can be run many different ways by changing only some simple parameters to Aspeed. The spreadsheet can run on a PC, but then be moved to a newer machine with two dual-core processors, changing only the input to Aspeed to make it take full advantage of the more powerful hardware."

The frustration of a Wall Street quant, Abraham Gulko, gave rise to all this. Aspeed's founder and chief technology officer, Gulko was VP of the financial engineering group for derivative products for Hongkong & Shanghai Banking Corp. in New York, formerly Republic National Bank and a predecessor of today's HSBC. Building data-intensive algorithms for derivative pricing, Gulko often got stuck having to rewrite programs and got fed up, explained Ziegler, adding, "That's how he came up with this company and product. You could look at ACCELLERANT as scaffolding that goes around programs so they can be used more efficiently."

Gulko was also one of the founding employees of Uniondale, N.Y.-based trading systems company OpenLink Financial and an AVP in the research and analytics group of agency brokerage Instinet, where he developed equity option calculators.

Quants will want to use Excel 2007's new functionality to the utmost, said Ziegler. Already observed among Aspeed beta-testers were: an 87 percent elapsed run-time reduction on Intel Xeon 5300 quad-core dual processors; a reduction in run-time of 75 percent using Intel's Woodcrest 2.66 gigahertz dual-core dual processor; and a 50 percent run-time reduction on dual-core systems overall.

The upshot is that programs can be run more frequently, and with more what-if calculations, by taking advantage of server, workgroup, cluster and grid configurations, said Ziegler. For VBA programs, the product comes with a system developer kit with a "wizard" that, with ACCELLERANT's API, enables the advantages of parallelization. The developer kit also provides random number generation to work with any chosen level of parallelization.