



Success Story
 Intel® Software Partner Program
 Cakewalk, Inc.

Performing Brilliantly to Enable Audio Dreams



"Our users are always hungry for performance. They want capabilities like adding in a virtual Steinway grand piano with 24-bit samples at one- or two-millisecond maximum latency. That kind of thing hits the CPU hard, and it's where our joint effort with Intel pays off."*

- Noel Borthwick
 Chief Technology Officer, Cakewalk

Challenge:

Give sound engineers the power to add more active tracks, real-time effects, and virtual instruments in the studio. Let them spend less time on technical workarounds and more time on creative effort.

Solution:

Optimize performance of digital audio workstation software for the latest Intel® platforms, helping it avoid getting CPU-bound when users push the envelope. Call on the Intel® Software Partner Program to test and validate code on pre-release platforms, getting ready for the future before it comes.

Learn more:
www.intel.com/partner

Professional recording environments place huge demands on both hardware and software, and Cakewalk, Inc. has spared no effort in rising to the occasion. Working in tandem with the Intel® Software Partner Program, the company has highly optimized its SONAR® digital audio workstation to put technology at the service of art.

Cakewalk Inc., located in Boston, Massachusetts, builds software that puts sound engineers in control of their recording environments, instead of vice-versa. Dedicated to the proposition that precious studio time must deliver efficient results, the SONAR digital audio workstation (DAW) pulls incredible performance out of the latest Intel® platforms. Even at very low latency, users can pile on data streams, freezing or mixing down their projects less frequently without audio glitches.

Joining Forces to Scale Up Capabilities

A chief ingredient to Cakewalk's success is delivering serious optimization to studios for recording and mixing on the latest and greatest computing hardware. One way they stay ahead of the curve is to align their engineering efforts with the technology roadmap provided to them by the Intel® Software Partner Program. For example, the company was hard at work optimizing for the Intel® Core™ i7 processor long before the public buzz got started, and their full product line shines on the platform as a result. For example, increased headroom makes it possible to get the increased fidelity of 64-bit processing during performance, satisfying even the most golden ears.

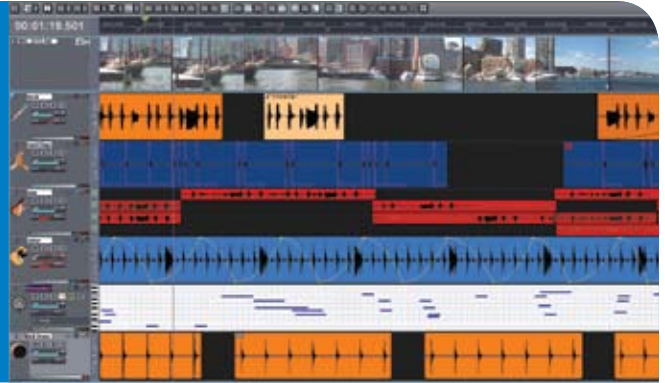
To enable the highest possible number of simultaneous processes, the return of Hyper-Threading Technology¹ to the desktop emerged early as a performance opportunity. Cakewalk worked with Intel performance engineers to improve aspects of their threading model such as their spin-lock implementation to maximize the benefit. Using Intel® Threading Tools and VTune™ Performance Analyzer, the development team refined the parallelism in their code. Excellent scalability provides stellar results on everything from relatively modest machines to dual-processor, quad-core workstations with Hyper-Threading Technology turned on.



Recording Every Need

Cakewalk solutions of every size put the company's optimizations to work:

- **SONAR* 8** powers the professional recording industry
- **Cakewalk Home Studio* 7** gives working musicians high-end results
- **Cakewalk Music Creator* 4** puts potent tools in the hands of hobbyists



Reaping the Sweet Rewards of Collaboration

A key aspect of their success in optimizing SONAR 8 for next-generation hardware was the fact that Cakewalk had access to Intel application engineers, on hand to provide advice, testing services, and access to pre-release development platforms. In addition to the custom testing tools and sample workloads developed in-house at Cakewalk, the product team benefited from the internal expertise, tools, and processes in Intel's platform validation organization.

Every step of the way, Cakewalk engineers maximized results for a more efficient engine, processes, and user interface. Stringent testing and platform validation in conjunction with the team at Intel revealed the fruits of their labor; the following improvements demonstrate the performance gains they achieved with SONAR 8, compared with its predecessor, SONAR 7.0.2:²

- **Playback of a typical SONAR project, loaded with plug-ins.** 5-20 percent performance improvement.
- **Recording high-bandwidth audio.** 15-20 percent performance improvement when recording at 2 ms of latency, and as much as 50 percent when recording at 10 ms of latency.

- **Live input monitoring.** As much as 45 percent performance improvement.
- **SONARBench* test project.** Performance improvements of at least 30 percent, and as high as 240 percent.

Conclusion

Noel Borthwick, Cakewalk's chief technology officer, sums up the real-world value of the company's ongoing involvement with the Intel Software Partner Program: "Our users are always hungry for performance. They want capabilities like adding in a virtual Steinway* grand piano with 24-bit samples at one- or two-millisecond maximum latency. That kind of thing hits the CPU hard, and it's where our joint effort with Intel pays off."

More improvements are cooking in the lab right now, with further plans to take even more advantage of advanced hardware and instruction set architectures enabled by Intel platforms. Audio geniuses the world over will not be disappointed.

About the Intel® Software Partner Program

The Intel® Software Partner Program provides a framework for collaborative solution development around Intel architecture. From business planning and product development to marketing and sales, the program drives increased business success and market opportunities. Learn more at www.intel.com/partner.

Success Story by:



¹ Intel® Hyper-Threading Technology (Intel® HT Technology) requires a computer system with an Intel® Processor supporting Intel HT Technology and an Intel HT Technology enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/products/ht/hyperthreading_more.htm for more information including details on which processors support Intel HT Technology.

² Comparisons reflect CPU use between the two software generations; see: www.cakewalk.com/Products/SONAR/English/benchmark.asp