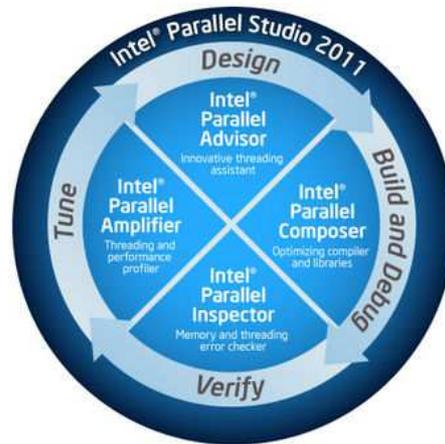## *Intel Parallel Studio 2011*

Intel® Parallel Studio software development suite provides Microsoft Visual Studio C/C++ developers a comprehensive tool suite that includes an innovative threading assistant, optimizing compiler and libraries, memory error and threading performance profiler.

Introduction:

Intel Parallel Studio is an add-in for Microsoft Visual Studio that gives you a large set of features for writing parallel code that targets multiple processor cores. It includes a new C++ compiler that gets run instead of the built-in Visual C++ compiler, allowing you to take advantage of several new features. Parallel Studio integrates with all the recent versions of Visual Studio: 2005, 2008, and 2010.

Parallel Studio 2011, which is the second version, is a significant improvement over the first version. The new features are as follows:

1. Cilk Plus: New C++ keywords (called *Cilk Plus*) that simplify the writing of parallel, threaded code.

2. BPP: Parallel Studio includes an entire template library called Parallel Building Blocks (PBB). PBB is built on Threading Building Blocks 3.0, an open-source threading library that was also created by Intel, along with Array Building Blocks. This threading library includes several classes that are similar to the ones in the standard C++ library, with the difference being they are totally thread-safe and will, when possible, run simultaneously on multiple cores. This takes away a lot of the hard work of programming for multiple threads, and that's one of the primary goals of Intel Parallel Studio 2011.

3. Intel Parallel Advisor: This is all new for 2011. (The earlier version included a "Lite" version.) The idea here is that you'll receive guidelines for developing parallel code. What is impressive with Parallel Advisor is how smart it actually is. The idea is that it monitors your running program and finds places where you could benefit from parallelization. It includes a workflow window that

takes you through the steps.

Pros and Cons:

People are often surprised at the gains in performance, but some feelings are positive and some are negative. For example, some has able to speed up a sample application three times by dividing the work up on a quad-core processor. But developers would expect a much bigger number. Some may expect to see double-digit or even 100-times improvements. However, the reality is that we were dealing with only four cores, and not everything can realistically be divided among the cores.

Perhaps one potential drawback is in the addition of three new keywords in C++. On one hand, these keywords greatly simplify the writing of parallel code. But the problem is you completely lose portability to other compilers. The reason this might be a problem is if you want to port your software to other platforms (such as handheld devices), then you might have problems. However, realistically, if you're porting to handheld devices, you'll probably be making lots of other changes to the code anyway, so having to work around these three keywords is probably the least of your problems. I would argue, then, that the additional keywords really aren't a big problem.

Conclusion:

This is a fantastic tool, and the new version adds some amazing tools that will hopefully get everybody thinking about targeting multiple cores with their software. There is, however, a learning curve involved in this tool, and sometimes you might be disappointed with the performance increase. The price also might be a little prohibitive to individual developers, but larger software houses should have no problem affording it. The full product contains Advisor, Amplifier, Composer, and Inspector. Free 30-day trial is available too. Go, get it and Try!!

Happy MultiThreading!!!

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