



Success Story  
 Intel® Software Partner Program  
 Simul Software Ltd

## Reports of Dramatic Weather for Today and the Future

Its membership in the Intel® Software Partner Program helps tiny Simul Software Ltd get guidance and support toward building and selling products that might be expected by a much larger company.

Simul Software, located in Manchester, England, is a two-man operation that has unpacked the atmospheric science behind providing high-performance, very realistic weather effects that continually update in real time. As a member of the Intel® Software Partner Program, Simul has received expert advice that helps them innovate more effectively and helps them get the word out about their technology.



*"Once I got the suggestion from the [Intel® Software] Partner Program to use Intel® Threading Building Blocks, implementing it was easy. It did exactly what it was supposed to do, and the documentation was clear, so this was a very simple, high-value optimization."*

- Roderick Kennedy,  
 CEO, Simul Software Ltd

### Challenge:

Simplify the effort to take best advantage of hardware capabilities to generate realistic 3D weather effects in real time for game environments.

### Solution:

Simul Software Ltd followed advice from the Intel® Software Partner Program to use Intel® Threading Building Blocks in creating a multi-threading model that takes better advantage of multi-core hardware. Whereas using OpenMP\* and other approaches had proven too complex, Intel Threading Building Blocks easily delivered excellent results.

### Learn more:

[www.intel.com/partner](http://www.intel.com/partner)

### Streamlining a Threaded Implementation for Performance

Having realistic skies in a game doesn't draw a lot of attention. It's one of those aspects that gets noticed most when it isn't done well, such as when the lighting is unnatural or when there is little or no movement in the sky features. In other words, weather effects are a background detail that is nevertheless vital for realistic outdoor scenes. To deliver first-rate weather effects, three main criteria must be met:

- **Natural lighting effects must be understood and simulated**, based on the refractive effects and related phenomena associated with light passing through the atmosphere.
- **Volumetric effects must change realistically over time**, sometimes gradually as in the case of billowy clouds moving with a breeze, and sometimes very quickly as when there is a lightning strike.
- **Underlying code must take excellent advantage of the hardware**, including parallelism, so that the substantial real-time calculations required by 3D weather effects can offer a smooth appearance.



Roderick Kennedy, Simul Software's CEO, reports that they had tried using OpenMP\* and other approaches to implement threading in Simul Weather\*, but that those efforts had proved too cumbersome. Ultimately, for a small software house such as Simul, a simpler means of taking advantage of multi-core processing was needed. The answer to that challenge came when one of his contacts in the Intel Software Partner Program suggested to Roderick that he try using Intel® Threading Building Blocks.

Immediately, it was clear that this new approach was better suited to their needs, and they very quickly got the threaded implementation up and running. Together with Intel-supplied tips and tricks for Intel® VTune™ Performance Analyzer, Simul met performance

goals for their product with very little cost and effort. Developers using Simul's tools in game creation can very easily take advantage of multi-threading for weather effects, or alternatively, integrate Simul Weather with the game's existing threading approach. As a result, the Simul Weather product is flexible and robust, doing a great job of meeting the needs of its customers.



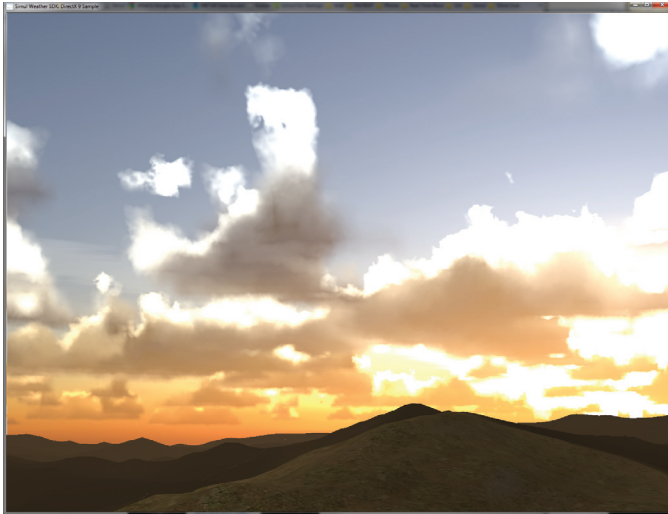
*"It's a very pleasant surprise that Intel would take the time to give this level of support to a two-man software company. We're just delighted, and it's really contributed to our success."*

- Roderick Kennedy, CEO  
Simul Software Ltd

## Building Clear Visibility Within the Game Industry

In addition to helping Simul improve their actual products, the Intel Software Partner Program also helped them get the word out about those products after they were shipping. For example, as Intel laid out its plans for upcoming conferences, representatives of the program recognized that Simul would be an excellent addition to their presentations about optimizing game components for Intel® platforms.

As a result, people from Simul and Intel got together and made a two-DVD set of videos and other content, which they ultimately distributed from the Intel booths at the Game Developers Conference (GDC),



Realistic weather effects can be used as game backgrounds

SIGGRAPH, and several other venues. Simul also posted some of the materials on their website. Producing that sort of publicity materials would ordinarily fall outside the capability of a small company like Simul, and even if they participated in events like GDC or SIGGRAPH on their own, they certainly wouldn't have had the kind of visibility that a major corporation like Intel gave them.

Experiences like these have made participation in the Intel Software Partner Program extremely valuable to Simul, and associating themselves with the Intel name has opened some doors as well. As future platforms and capabilities become available, Simul looks forward to improving its software even further, and the Intel Software Partner Program will be ready.

## Conclusion

Some of the ingredients that are vital to brilliant results hide in plain sight, and the weather effects provided by Simul Software are a great example. Realistic clouds and related effects set the scene for a natural-looking on-screen world, and the multi-threaded algorithms that keep them running are a triumph in their own right. Working behind the scenes with the Intel Software Partner Program, Simul provides limitless skies for all our enjoyment.

Learn more about Simul:  
[www.simul.co.uk](http://www.simul.co.uk)

## 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 helps to drive increased business success and market opportunities. Learn more at [www.intel.com/partner](http://www.intel.com/partner).

Success Story by:



Intel, the Intel logo, Intel Core, and VTune are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

\*Other names and brands may be claimed as the property of others.

Copyright © 2009 Intel Corporation. All rights reserved. 0609/BM/MESH/PDF

322236-001US