

## GTC Day Two Keynote



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Today at the GTC, there are about 112 sessions to explore. Too much. I'll pick some and run. This is computer graphics, not limited to media and entertainment but for the protection of the wider community.

Dr Schulten, one of the world's top computational biologists talked enthusiastically about the use of GPU to generate sensational imagery and illustrative complementaries to assist in the understanding of the Swine Flu and associated protein.

"The GPU provides microscopic views that are not available otherwise," added Schulten. "Our microscopes are not glass and brass tubes. Instead they are mathematical formulae, Physics, software and hardware."

The visualisation of molecules possible in the VMD system allow us to see how the cells, viruses and proteins behave, move and interact. Useful Computer Graphics.

Using the GPU, massive time savings in calculations on virus complexes bring the process down from one hour to 90 seconds. The Ribosome used to be only seen in a 'portrait' state. Now we can see a nascent protein in action, showing how it behaves and decodes genetic info from mRNA. Truly amazing computer visualisation.

In Quantum Chemistry of electrons, GPUs enable the dynamics of electronics structures to be interactively visualised with a speed up of up to almost 400x on previous technologies. As an example of a truly gigantic computational result, the 'misfolding of proteins' is the cause of many motor-nuerone malfunctions in humans. This can now be

visualized for the first time using GPUs.

"Without GPUs this field would not exist. With GPUs, the field has a great future," Dr Schulten confided. "Simulations now take minutes instead of weeks, making previously unreachable scales accessible."

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