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December 3, 2013

## Russia Aims to Close Supercomputing Gap

Tiffany Trader

The supercomputing arms race is on in full force as nations around the world awaken to the potential that is HPC. The current state of Russian HPC was spotlighted during the country's National Supercomputing Forum, which took place last Tuesday outside Moscow, with sponsorship from Intel, AMD, IBM, QLogic and Asus among others.

First, a little background is in order. In 2009, Russian President Dmitry Medvedev called for the development of supercomputers in Russia. His speech to the Security Council was reported by news outlet ITAR-TASS and [archived](#) on the Kremlin's website.

"If we are talking seriously, a huge number of entrepreneurs, not to mention officials, do not know what supercomputers are: For them it is an exotic type of those machines that were created in the 1920s to catch up and overtake America," Medvedev said.

"We have to work at stimulating demand (for supercomputers) in every possible way, not because this is a fashionable topic, but simply because if we don't create such a demand our products will not be competitive or of interest to potential buyers," he continued. "Once again any sort of airframe or engine that is not produced with the aid of supercomputers is unlikely to trigger interest among buyers in a few years, because even now there are standards already set and so far we are doing practically nothing to meet them."

The speech triggered a wave of support for HPC in Russia, and less than two years later, the nation [celebrated its first petascale system](#). An upgrade to Moscow State University's "Lomonosov" supercomputer increased its peak theoretical operating speed to 1.3 petaflops, scoring the T-Platforms system a 13th place finish on the June 2011 TOP500 list.

Despite such impressive progress, Russia still lags five-and-a-half years behind the US in terms of supercomputing technology, according to a recent [piece](#) in *The Moscow Times*. An expert from the Russian Academy of Sciences argues that closing this gap is essential for the competitiveness of the Russian economy.

Sergei Abramov is head of the academy's Program Systems Institute in Pereslavl-Zalessky, an historic town, 140 kilometers north east of Moscow. Abramov spoke with *Moscow Times* during the National Supercomputing Forum last week, which was held there.

The HPC expert cited a number of ways that supercomputing bolsters an economy, e.g., by enabling advances in material sciences, streamlining the manufacturing process and providing a launch pad for new technologies.

Supercomputers by definition cut the processing time by many orders of magnitude compared to conventional computers. The result is a tremendous competitive advantage.

Abramov went so far as to say “a supercomputer is the only instrument to beat a competitor” as he recalled words spoken by U.S. Council on Competitiveness’ President Deborah Wince-Smith: “the country that wants to outcompete must outcompute.”

The most difficult part for countries attempting to “outcompute” is developing their own “homegrown” supercomputing technologies. This capability provides the ultimate competitive advantage over other nations, according to Abramov. Currently, Russia must rely on commercially available components from other countries, most notably for its chips and storage, which Russia has not developed internally.

Abramov believes that targeted partnerships with foreign and domestic vendors as part of a state-funded program will be key to building a Russian-made supercomputer and closing the gap with supercomputing leaders like the US and China. Russian leaders could take a page from China, which faced many of the same challenges yet now operates the fastest supercomputer in the world.

As of the most recent TOP500 list, Lomonosov is still the fastest supercomputer in Russia with a peak theoretical speed of 1.7 petaflops. The country has yet to field a LINPACK petascale system.