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D2S RELEASES FOURTH-GENERATION GPU ACCELERATION PLATFORM FOR SEMICONDUCTOR MANUFACTURING

14 installations of Computational Design Platform family used by customers worldwide

SAN JOSE, Calif., September 12, 2016—D2S®, a supplier of GPU-accelerated solutions for semiconductor manufacturing, today announced that it has released the fourth generation of its computational design platform (CDP), which enables extremely fast (400 Teraflops) and precise simulations for semiconductor design and manufacturing. To date, 14 CDPs across four platform generations have been installed and are in use by customers around the globe, including six of the latest fourth generation. The fourth-generation CDP from D2S is based on NVIDIA Tesla K80 GPUs and Intel's Haswell-generation CPUs. CDPs are architected to ensure the high speed, precision and reliability required for 24x7 cleanroom production environments.

Scientific computation applications, such as those used in mask data preparation (MDP) and other aspects of semiconductor design and manufacturing, require ever-increasing levels of speed and reliability as the data sets upon which they must operate grow larger and more complex with each device generation. GPUs, which were first developed as processing engines for the complex graphical content of computer games, have since emerged as an attractive option for compute-intensive scientific applications due in part to their ability to run many more computing threads (up to 500x) compared to similar-generation CPUs. However, adopting GPU-accelerated computing is more than a matter of augmenting CPUs with GPUs, as each offers unique strengths and capabilities. D2S GPU-accelerated CDPs, coupled with the company's expertise in software for semiconductor manufacturing, effectively leverages GPU technology to maximize overall acceleration results.

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“We’re pleased to see D2S bring the power of massively parallel GPU processing and software simulation to semiconductor design and manufacturing. It is great to see D2S take advantage of Tesla family’s superior scalability in computing power over generations of processors,” stated John Chen, vice president of technology and foundry management at NVIDIA.

The D2S CDP is engineered for high reliability to support stringent environmental requirements, including cleanroom manufacturing environments. A few of the semiconductor manufacturing applications where D2S GPU-accelerated CDPs are currently being used include:

- model-based mask data preparation (MB-MDP) for designing leading-edge photomasks that require increasingly complex mask shapes;
- wafer plane analysis of mask images captured in scanning electron microscopy (SEM) systems to accurately identify mask problems that matter to the wafer in interactive time; and
- inline thermal-effect correction of eBeam mask writers to lower write times to an acceptable level

“The amount of design data required to produce photomasks for leading-edge chip designs is increasing at an exponential rate, which puts more pressure on mask writing systems to maintain reasonable write times for these advanced masks. At the same time, writing these masks requires higher exposure doses and shot counts, which can cause resist proximity heating effects that lead to mask CD errors,” stated Noriaki Nakayamada, group manager at NuFlare Technology. “D2S GPU acceleration technology significantly reduces the calculation time required to correct these resist heating effects. By employing a resist heating correction that includes the use of the D2S CDP as an OEM option on our mask writers, NuFlare estimates that it can reduce CD errors by more than 60 percent, and reduce write times by more than 20 percent.”

“Since we first introduced our GPU-accelerated CDP four years ago to solve some of the photomask industry’s most pressing design and manufacturing challenges, we’ve invested significant resources to ensure that it meets the demanding requirements of semiconductor cleanroom environments,” stated Aki Fujimura, CEO of D2S. “Bringing the computation power of GPUs to simulating complex processes in semiconductor manufacturing opens up the potential for a wide variety of exciting new applications. We look forward to working with our customers to explore the full potential and benefits of GPU acceleration.”

D2S offers its GPU-accelerated platform as part of its TrueMask® family of products and as custom OEM additions to manufacturing systems. For more information on the Computational Design Platform from D2S, visit www.design2silicon.com.

About D2S, Inc.

D2S is a supplier of GPU-accelerated solutions for semiconductor manufacturing. The company provides simulation-based custom solutions to leading equipment partners. D2S TrueMask® solutions use the D2S Computational Design Platform to enable advanced photomask designs using complex shapes for superior wafer quality but within practical, cost-effective write-times. D2S is the managing sponsor of the eBeam Initiative. Headquartered in San Jose, Calif., the company was founded in 2007. For more information, see: www.design2silicon.com.

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