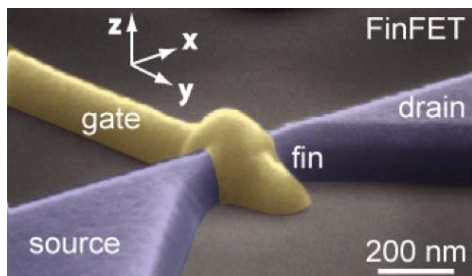


Network for Computational Nanotechnology (nanoHUB.org)

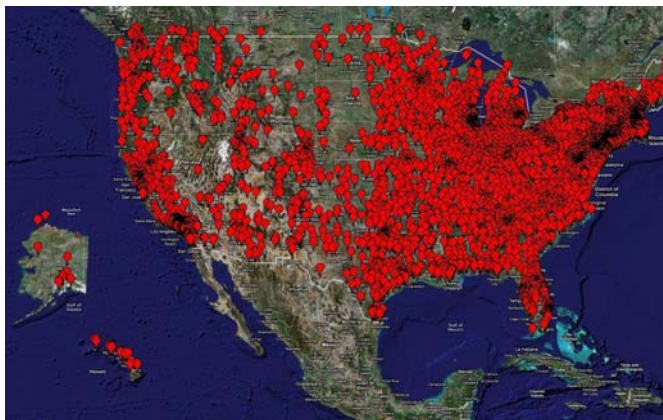
The NSF-funded Network for Computational Nanotechnology (NCN) supports the National Nanotechnology Initiative by designing, constructing, deploying, and operating a national cyber-resource for nanotechnology theory, modeling, and simulation. This mission is embodied in nanoHUB.org, serving over 90,000 users in 2008. More than 7,200 users performed 394,000 numerical simulations, making use of national high-performance computing (HPC) resources with ease never before achieved. nanoHUB is cited more than 300 times in the scientific literature. Users interacted with or downloaded educational resources ranging from leading-edge research seminars to homework sets 212,000 times. In 2008, faculty from 41 universities used nanoHUB in 89 classes.

Among its four nanoscience thrusts, NCN is leading an effort to re-think electronic devices from the nano perspective. With support from Intel Foundation, NCN has created Electronics from the Bottom Up, courseware that designed to reshape the teaching of nanoelectronic technology and train a generation of engineers ready to lead the semiconductor industry in the 21st century.

With support from Intel Corporation and NSF, NCN is building an electronic device simulation platform based on our new concepts for nanoelectronics. This platform powers two simulation tools on nanoHUB.org and scales up to run on the largest computers of the national grid. Recent achievements include modeling the effect of a single donor atom in the active region of a FinFET nano-transistor. Results appear in Nature Physics V4, p 656 (2008) and IEDM 2008.



Nano-transistor simulated on nanoHUB.org using High Performance Computing.



Map of nanoHUB.org user locations.

Contributing Agency: NSF