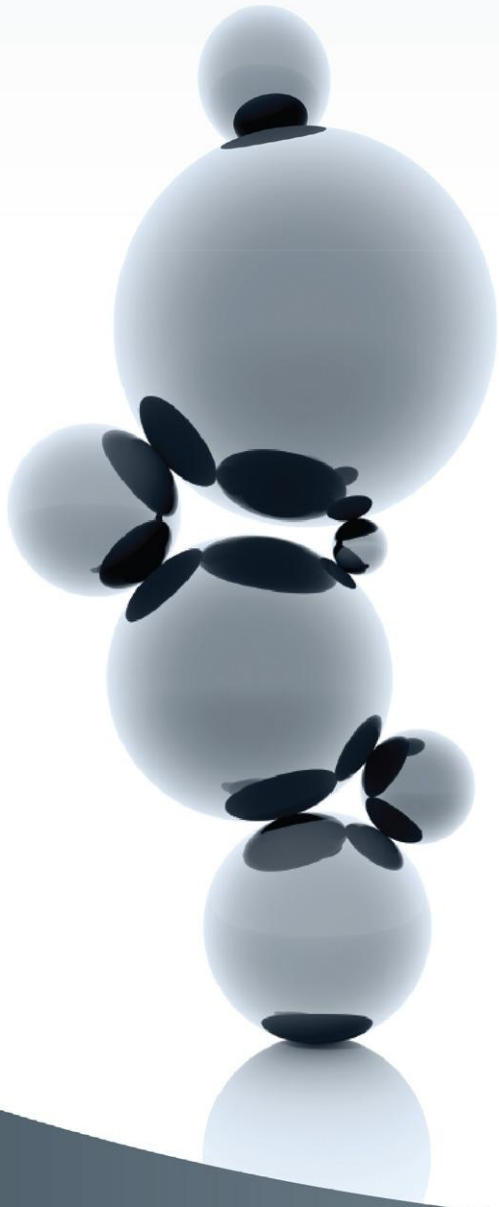
CCSIP R&D Business Plan: Combining Canadian and Californian Know-how to Create Ultra Energy-Efficient High-Performance Computing Facilities



The world of research and discovery has evolved significantly since the development of supercomputing facilities—powerhouses that provide compute capabilities that enable scientists to process very large volumes of data, identify patterns, extract key information and apply it to their research.

But this computing power comes at a cost–a large carbon footprint that accelerates global warming. These facilities consume substantial amounts of energy; US consumption has more than doubled since 2000 and it is expected to double again by 2011.

To address this challenge, researchers from McGill University's CLUMEQ (Consortium Laval, Université du Québec, McGill and Eastern Quebec) and the San Diego Supercomputer Center (SDSC) based at the University of California San Diego, aim to create a bilateral, 'ultra energy-efficient' data center for high-performance computing (HPC).

With support from CCSIP and participation from Hydro Quebec, Rumsey Engineering (San Francisco, California) and ClimateCHECK (Ottawa, Canada), the bilateral team will develop a business plan and design a world-first HPC facility that requires less electricity than existing facilities, helping to reduce greenhouse gas emission reductions.

The plan will propose technical specifications, a cost/benefit analysis, carbon audit and collaborative management model that will benefit both jurisdictions.

If implemented, the centre could serve as a model for HPC facilities around the world; create new expertise and high-paying jobs in Canada and California; and attract a wide range of professionals who are eager to use these facilities.