IBM'S World Community Grid Unveils Research Projects on Three Continents to Improve Water Quality

IBM

ARMONK, N.Y., - 07 Sep 2010: IBM's (NYSE: IBM [1]) World Community Grid, a worldwide network of PC owners helping scientists solve humanitarian challenges, today announced several computing projects aimed at developing techniques to produce cleaner and safer water, an increasingly scarce commodity eluding at least 1.2 billion people worldwide.

One initiative will simulate how human behaviors and ecosystem processes relate to one another in watersheds such as the Chesapeake Bay. Other projects will explore advanced water filtering techniques and seek cures for a water-borne disease.

To accelerate the pace, lower the expense, and increase the precision of these projects, scientists will harness the IBM-supported World Community Grid to perform online simulations, crunch numbers, and pose hypothetical scenarios. The processing power is provided by a grid of 1.5 million PCs from 600,000 volunteers around the world. These PCs perform computations for scientists when the machines would otherwise be underutilized. Scientists also use World Community Grid -- equivalent to one of the world's fastest supercomputers -- to engineer cleaner energy, cure disease and produce healthier food staples.

The University of Virginia Watershed Sustainability Project will use World Community Grid to power its "UVa Bay Game/Analytics" project, which models the effects of agricultural, commercial and industrial decisions on the Chesapeake Bay. This waterway is a vital estuary on the East Coast of the United States stretching 64,000 square miles with 11,600 miles of tidal shoreline, and home to nearly 17 million people. It will simulate and analyze the results of choices made by the sometimes-competing interests of fishermen, farmers, real estate developers, power plant designers, conservationists, forestry experts and urban planners. Better understanding the potential outcomes of complex, intersecting decisions can help society manage the watershed more effectively.

"Through this collaboration, the University of Virginia and World Community Grid are bringing new resources to bear to improve the future of the Chesapeake Bay," said Philippe Cousteau, co-founder of Azure Worldwide, which helped develop the UVa Bay Game. "Responsible and effective stewardship of complex watersheds is a huge undertaking that must balance the needs of each unique environment with the needs of the communities that depend on them for survival. I'm confident that this

partnership will help provide the tools we need to meet this challenge head- on."

Another new water-related project, called "Computing For Clean Water," is looking to produce more efficient and effective water filtering, and is now getting underway at Tsinghua University's newly launched Centre for Novel Multidisciplinary Mechanics in China. The idea is to develop ways to filter and scrub polluted water, as well as convert saltwater into drinkable freshwater, with less expense, complexity, and energy than current techniques.

The effort will seek to reduce the pressure and energy required to force water through microscopic, nanometer-sized pores in tubes made of carbon, whose tiny holes prevent harmful organic material from being transmitted. Scientists need to produce millions of computer simulations to model how water molecules interact with one another and against the walls of these carbon nanotubes.

Although led by China's Tsignhua University, researchers are participating from all over the world, including Australia's University of Sydney and Monash University; as well as the Citizen Cyberscience Centre, based in Geneva, Switzerland. The project is the result of an initiative launched by the Chinese Academy of Sciences to promote volunteer participation in science. It is called CAS@home, and is hosted by the Institute of High Energy Physics in Beijing.

A third initiative, to be run on World Community Grid out of Brazil's Inforium Bioinformatics, in collaboration with FIOCRUZ-Minas, is seeking to cure schistosomiasis, a significant, parasite-based disease prevalent in tropical regions that is incubated and transmitted via foul water. The World Health Organization lists this disease as highly necessary to control. It kills from 11,000 to 200,000 people every year and infects about 210 million individuals in 76 countries. It takes a severe toll on undeveloped countries, causing about 1.7 million disability-adjusted life-years of burden annually. While the drug Praziquantel has been largely effective in treating the disease for more than 25 years, drug-resistant strains are of concern.

Researchers will now seek to identify human protein targets for possible new drug treatments. They will use the World Community Grid to screen up to 13 million compounds found in the zinc.docking.org database against 180 protein structures involved with the parasite. While this may not lead to new drugs immediately, it will greatly augment the study of this disease by scientists around the world.

IBM donated the server hardware, software, technical services and expertise to build the infrastructure for World Community Grid and provides free hosting, maintenance and support.

"I can think of few endeavors more important than making sure people across the globe have ready access to clean water," said Stanley S. Litow, IBM Vice President of Corporate Citizenship & Corporate Affairs, and President of IBM's Foundation. "I would even suggest that it's a basic human right, and a hallmark of sophisticated and compassionate societies everywhere. That's why IBM is so incredibly proud to help scientists harness the resources of World Community Grid to make strides in this vital arena."

In the last 100 years, global water usage has increased at twice the rate of population growth. The United Nations predicts that nearly half the world's population will experience critical water shortages by the year 2025.

Individuals can donate time on their computers for these and many other humanitarian projects by registering on www.worldcommunitygrid.org, and installing a free, unobtrusive and secure software program on their personal computers running either Linux, Microsoft Windows or Mac OS. When idle or between keystrokes on a lightweight task, the PCs request data from World Community Grid's server, which runs Berkeley Open Infrastructure for Network Computing (BOINC) software, maintained at Berkeley University and supported by the National Science Foundation.

World Community Grid is also part of People for a Smarter Planet -- a dynamic and intelligent network of activities, conversations and discussions in which anyone can participate to help build a sustainable and smarter world. At People for a Smarter Planet [2], people can share ideas, engage and discuss, or participate in one of the growing list of projects like World Community Grid.

Note to registered journalists and bloggers: You can view and download a related video news release, sound bites and b-roll by going to http://www.thenewsmarket.com/ibm [3]. All materials are available in standard definition broadcast and streaming quality. [registration available online]

Journalists and bloggers can also visit www.ibm.com/press/worldcommunitygrid [4]for additional background information and supporting multimedia related to IBM's role in World Community Grid. Or they may visit http://www.worldcommunitygrid.org/ [5]

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