

PR Newswire

## Want to Help Cure Disease or Discover New Stars? Now You Can, Using Your Smartphone

<p>Press release</p>

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*Einstein@Home & IBM's World Community Grid efforts among first to enable Android devices to contribute to cutting-edge research*

ARMONK, N.Y. & HANNOVER, Germany, July 22, 2013 /PRNewswire/ -- Android users can now boast of another capability on their smartphones and tablets: fighting AIDS and discovering new stars.

That's because, for the first time, owners of Android-based smartphones and tablets can now "donate" the surplus computing power of their devices to science. With the additional processing power from smartphones, researchers from IBM's (NYSE: IBM) World Community Grid and the Einstein@Home project will accelerate their search for medical cures and for unknown pulsars.

Using what is called volunteer computing, these scientists already tap into a pool of donated computer processing power to conduct their simulations and data analysis. Volunteer computing enables people and organizations to contribute toward scientific progress with little effort, and provides researchers with what are essentially very powerful, globally distributed supercomputers.

### Citizen science on Android devices

Until now, volunteer computing has used traditional computers such as desktops and laptops. However, mobile devices such as smartphones and tablets have become more powerful, energy efficient, and numerous. There are now about 900 million Android devices, and their total computing power exceeds that of the largest conventional supercomputers.

To allow these devices to participate, volunteer computing software developed at the University of California, Berkeley - called Berkeley Open Infrastructure for Network Computing (BOINC) - has just been updated. Owners of devices that use Android 2.3 or higher can now participate in citizen science efforts by downloading BOINC from the Google Play site, then choose the projects to which they want to contribute.

To preserve battery life, minimize recharge time, and avoid the use of allotted data on cellphone plans, smartphones and tablets running BOINC will only perform calculations when they are being

charged, when the battery life is above 90%, and when they are connected to wireless local area networks (WiFi). While these are the default settings when BOINC for Android is downloaded, the rules governing its use can be further customized by users.

### Discovering new stars with Einstein@Home

One of the first projects to be enabled for Android-based volunteer computing is the Einstein@Home search for unknown radio pulsars led by the Max Planck Institute for Gravitational Physics in Hannover, Germany. Android users will power an application that analyzes data from the Arecibo Observatory in Puerto Rico, the world's largest radio telescope. The application searches for radio pulsars by detecting their pulsed electromagnetic wave emission.

Pulsars are very compact stellar remnants with extreme physical properties compared to normal matter. Some of them tightly orbit companion stars, providing unique test beds for Einstein's general theory of relativity. However, the sensitivity to discover new pulsars is limited by the computing power available. More computing power will accelerate the Einstein@Home search and will make it more sensitive. This work helps scientists understand how stars and the universe evolve, and enables volunteers to discover new radio pulsars with their Android devices.

### FightAIDS@Home on IBM's World Community Grid

Another project enabled for Android smartphones and tablets is Fight AIDS@Home, a search for more effective AIDS treatment hosted on IBM's World Community Grid. The Olson Laboratory at The Scripps Research Institute is using computational methods to identify new candidate drugs that have the right shape and chemical characteristics to block HIV protease, HIV integrase, or HIV reverse transcriptase, the three enzymes that the deadly AIDS virus needs to function and spread.

IBM's World Community Grid plans on Android-enabling other projects in the future. World Community Grid has been used to facilitate research into clean energy, clean water and healthy foodstuffs, as well as cures for cancer, malaria and other diseases.

Background information:

### BOINC

The BOINC project, which choreographs the technical aspects of volunteer computing, was founded in 2002 at The University of California, Berkeley, with support from the National Science Foundation. Development of its Android version was funded in part by the Max Planck Institute for Gravitational Physics, IBM World Community Grid, the National Science Foundation, and Google.

## Einstein@Home

Einstein@Home was founded as a key project of the World Year of Physics activities in 2005 and is an International Year of Astronomy 2009 project. More than 340,000 participants globally have helped to discover almost fifty new radio pulsars. Einstein@Home is led by the Center for Gravitation and Cosmology at the University of Wisconsin-Milwaukee and the Max Planck Institute for Gravitational Physics (Albert Einstein Institute, Hannover), with financial support from the National Science Foundation and the Max Planck Society. The long-term goal of Einstein@Home is the direct detection of gravitational waves from rapidly rotating neutron stars. Gravitational waves were predicted by Albert Einstein in 1916, but only now is technology catching up: soon scientists will be able to measure these tiny ripples in space-time.

## IBM's World Community Grid

More than 2.3 million computers used by over 600,000 people and institutions from 80 countries have contributed power for projects on World Community Grid. The result is one of the fastest virtual supercomputers on the planet, advancing scientific work by hundreds of years. By 2013, at least 22 projects were running or had been completed as part of World Community Grid. Since its inception in 2004, this resource created and managed by IBM has provided research scientists with the equivalent of more than 750,000 years of computing at no cost to them.

More information:

IBM's World Community Grid: <http://www.worldcommunitygrid.org>

Einstein@Home: <http://einstein.phys.uwm.edu/>

Fight Aids@Home: <http://fightaidsathome.scripps.edu/>

BOINC: <http://boinc.berkeley.edu/>

Max Planck Institute for Gravitational Physics: <http://www.aei.mpg.de/>

BOINC for Android FAQ: [http://boinc.berkeley.edu/wiki/Android\\_FAQ](http://boinc.berkeley.edu/wiki/Android_FAQ)

Get the BOINC Android beta application: <https://groups.google.com/forum/#!forum/boinc-android-testing>

Media Contact(s):

Ari Fishkind

IBM Media Relations

Email: [fishkind@us.ibm.com](mailto:fishkind@us.ibm.com)

Phone: +1-914-499-6420

Benjamin Knispel  
Press and Public Relations Office  
Max Planck Institute for Gravitational Physics  
Email: [benjamin.knispel@aei.mpg.de](mailto:benjamin.knispel@aei.mpg.de)  
Phone: +49-511-762-19104

Robert Sanders  
Manager of Science Communications  
UC Berkeley  
Email: [rlsanders@berkeley.edu](mailto:rlsanders@berkeley.edu)  
Phone: +1-510-643-6998

Mika Elizabeth Ono  
Director of Communications  
The Scripps Research Institute  
Email: [mikaono@scripps.edu](mailto:mikaono@scripps.edu)  
Phone: +1-858-784-2052

Greg Walz-Chojnacki  
Web Editor  
University of Wisconsin-Milwaukee  
Email: [gwc@uwm.edu](mailto:gwc@uwm.edu)  
Phone: +1-414-229-4454

Lisa-Joy Zgorski  
Office of the Director, Legislative and Public Affairs  
National Science Foundation  
Email: [lisajoy@nsf.gov](mailto:lisajoy@nsf.gov)  
Phone: +1-703-292-8311

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