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ICCS 2012 Workshop Highlights Advances in Kepler Scientific Workflows

Workshop Gathers Myriad Success Stories Across Diverse Applications

A first-time workshop highlighting the latest advances in the [Kepler Scientific Workflow System](#) brought together researchers and computational scientists to discuss a wide array of innovative uses for the software application, ranging from data curation of natural science collections to facilitating nuclear fusion computations.

The workshop, presented at the International Conference on Computational Science (ICCS2012) earlier this month, gathered computational scientists and researchers from diverse areas such as bioinformatics, computational physics, natural language processing, and microscopy imaging to discuss the latest advances using Kepler, a workflow application designed to help scientists, analysts, and computer programmers create and share models and analyses across a broad range of scientific and engineering disciplines.

The session helped facilitate further development and collaborations for using the workflow system, and attracted numerous new science papers and success stories on the use of distributed computing technologies, e.g. grid and cloud computing, data curation, and text mining methods using Kepler.

“Our goal for this first-time workshop was to start an interactive, multidisciplinary discussion as a forum for all Kepler users and contributors to explore requirements for existing and next-generation applications,” said Ilkay Altintas, Deputy Coordinator for Research at the San Diego Supercomputer Center (SDSC) at the University of California, San Diego.

“To accomplish this goal, we accepted a diverse set of research articles on state-of-the-art Kepler applications and success stories, which helped illustrate the newest developments and modules in Kepler,” said Altintas, who also is the lab director of Scientific Workflow Automation

Technologies (SWAT) at SDSC. “Going forward, we would like to see more articles on the server-side usage of Kepler in virtual laboratories and other end-to-end cyberinfrastructure environments, including portals.”

“It is good to see the continued interest in adopting, using, and extending the open-source Kepler system expansion of the Kepler workflow system,” said Bertram Ludäscher, one of the co-founders of the Kepler project, ICCS workshop co-chair, and a professor of computer science at the Department of Computer Science and Genome Center at UC Davis. “I’m excited to see Kepler used and advanced through new projects such as the UCSD-based BioKepler project, and many other international initiatives as witnessed by our participants from Canada, Europe, and Australia.”

One of the accepted workshop papers focused on the progress of using the Kepler workflow engine to prototype “end-to-end” application integration workflows focused on data coming from microscopes deployed at UC San Diego’s National Center for Microscopy Imaging Research (NCMIR). This system is built upon the mature code base of the Cell Centered Database (CCDB) and integrated Rule-Oriented Data System (iRODS) software system for distributed storage. The paper also discusses how Kepler allows integration with external projects, such as the Whole Brain Catalog (WBC), a ground-breaking, open-source 3-D virtual environment developed by a team of researchers from UC San Diego.

Accepted papers are published in Volume 9 of Procedia Computer Science. Papers specific to the ICCS2012 Kepler workshop are numbered 173 through 181, and can be viewed in full here.

The ICCS2012 conference was held in Omaha, Nebraska, June 4-6.

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