BOF Title: Science-as-a-Service: Exploring Clouds for Computational and Data-Enabled Science and Engineering

Organizers:

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Abstract (Maximum 100 words): Clouds are rapidly joining high-performance computing system, clusters and Grids as viable platforms for scientific exploration and discovery. As a result, understanding application formulations and usage modes that are meaningful in such a hybrid infrastructure, and how application workflows can effectively utilize it, is critical. This BOF will explore how Clouds can be effectively used to support real-world science and engineering applications, and will discusses key research challenges (from both, a computer science as well as an applications perspective) as well as a community research agenda.

BOF Proposal (Maximum 500 words):

Aggressive Cloud computing technology development has resulted in many multiple classes of Cloud services that provide attractive solutions for many different types of business applications. It is expected that Cloud services will join more traditional research cyber infrastructure (CI) components, such as high-performance computing system, clusters and Grids in supporting scientific exploration and discovery. It is clear from current research that there are real benefits in using Clouds and Cloud computing abstractions as part of a hybrid cyber infrastructure to support CDS&E, for example, to simplify the deployment of applications and the management of their execution, improve their efficiency, effectiveness and/or productivity, and provide more attractive cost/performance ratios. Furthermore, Clouds and Cloud computing abstractions can support new classes of algorithms, and enable new applications formulations and as-a-service delivery mechanisms, which can potentially revolutionize CDS&E research and education. However, before CDS&E can fully realize the potential benefits of a hybrid cyber infrastructure that integrates Cloud services, several research issues remain. The objective of this BOF is to explore these research challenges, from both, a computer science as well as an applications perspective, and develop a community research agenda, including identifying requirements and best practices, establishing community use cases and benchmarks, identifying software frameworks tools, and creating community forums for exchange of ideas and artifacts.

This session will follow prior discussions and BOFs, including discussions at SC 2011, at NIRTD MAGIC meetings (September 2011 and April and May 2012) and a BOF at the XSEDE 2012 conference.

Description of the session format (Maximum 100 words):

The session will consist of a panel session led by the BOF organizers and include leading academic and industry researchers. The panelists will present short overview statements and this will be followed up with open discussion. Towards the end of the BOF, the organizers will lead a discussion towards putting together the research agenda and outlining next steps.