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INTEGRATION AND COMMISSIONING OF A PROTOTYPE FEDERATED CLOUD FOR SCIENTIFIC WORKFLOWS

Cooperative Research and Development Final Report

CRADA Number: FRA-2013-0001

Fermilab Technical Contact: Gabriele Garzoglio

Summary Report
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NOTICE

In accordance with Requirements set forth in Article XI.A(2) of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

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CRADA Title: INTEGRATION AND COMMISSIONING OF A PROTOTYPE FEDERATED CLOUD FOR SCIENTIFIC WORKFLOWS

Parties to the Agreement: Korean Institute of Science and Technology Information (KISTI) and Fermi Research Alliance

Abstract of CRADA work:

The Fermilab Grid and Cloud Computing Department and the KISTI Global Science experimental Data hub Center are working together to demonstrate proof-of-principle integrations of Cloud and Grid systems to run scientific workflows of stakeholders on multiple dynamically allocated resources. These resources will be run through the use of Virtual Infrastructure Automation and Provisioning, Interoperability and Federation of Cloud Resources, and High-Throughput Fabric Visualization.

Summary of Research Results:

The collaboration between Fermilab and KISTI achieved the goals in the statement of work for the first year of the CRADA. It demonstrated a proof-of-principle of running scientific workflows on FermiCloud and AWS. To achieve this goal across multiple Cloud providers, the program produced procedures to convert VM formats across a variety of Clouds solutions and studied the shortcomings of the EC2 interface emulation from the same solutions. In addition, it developed system administration procedures to present the high-throughput devices available on physical nodes to the virtual machine with minimal overhead.

Subject Inventions listing: None

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