AGU 2015 Abstract
Prodiguer Messaging Platform

Session IN044: Scalable and Adaptable Architecture for Earth Science Cyberinfrastructure
Title The Prodiguer Messaging Platform
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CONVERGENCE is a French multi-partner national project designed to gather HPC and informatics expertise to innovate in the context of running French **global climate models** with differing grids and at differing resolutions. Efficient and reliable execution of these models and the management and dissemination of model output are some of the complexities that CONVERGENCE aims to resolve.

At any one moment in time, researchers affiliated with the Institut Pierre Simon Laplace (IPSL) climate modeling group, are running hundreds of global climate simulations. These simulations execute upon a **heterogeneous** set of French High Performance Computing (HPC) environments.

The IPSL's simulation execution runtime libIGCM (library for IPSL Global Climate Modeling group) has recently been enhanced so as to support hitherto impossible **realtime** use cases such as simulation monitoring, data publication, metrics collection, simulation control, visualizations … etc.

At the core of this enhancement is Prodiguer: an **AMQP** (Advanced Message Queue Protocol) based event driven asynchronous distributed messaging platform. libIGCM now dispatches copious amounts of information, in the form of messages, to the platform for remote processing by Prodiguer software agents at IPSL servers in Paris. Such processing takes several forms:

- Persisting message content to database(s);
- Launching rollback jobs upon simulation failure;
- Notifying downstream applications;
- Automation of visualization pipelines;

We will describe and/or demonstrate the platform's:

- Technical implementation;
- Inherent ease of scalability;
- Inherent adaptiveness in respect to supervising simulations;
- Web portal receiving simulation notifications in realtime.