A Grid Based Diagnostics and Prognosis System for Rolls Royce Aero Engines: The DAME Project.

Professor Jim Austin
Professor of Neural Computation
Advanced Computer Architectures Group
Department of Computer Science
University of York
York, YO10 5DD, UK

This talk will describe an implementation of a distributed data intensive Grid application aimed at diagnosis and prognosis of Rolls-Royce Aero Engines. Undertaken in partnership with Rolls-Royce, Data Systems and Solutions and Cybula Ltd. with four UK Universities (York, Sheffield, Leeds and Oxford), the Distributed Aircraft Maintenance Environment (DAME) has been a major UK Pilot project to demonstrate the capability of Grids in engineering applications.

The DAME system is based on a number of existing technologies, Quote (on wing Diagnostic system, AURA (scalable pattern matching technology) and CBR (existing expert systems methods). These have been combined into a scalable system supported using Grid middleware. The project has been undertaken in close partnership with Rolls-Royce and has been aimed at utilizing large amounts of vibration and performance data available from modern aero-engines for fleet based diagnostics. The Grid provides the infrastructure to allow reuse of the data between aircraft to enhance the accuracy and speed of diagnosis of possible problems. The talk will overview the project, its objectives, component services and how they have been integrated into the DAME system.