Global e-Science Framework in the Regional Context

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Abstract

Data deluge drives the evolution of e-science paradigm and the realization of Grid-based distributed computing infrastructure such as WLCG and EGEE. In Asia, the regional e-Infrastructure construction reflects the e-Science applications in every aspect. This region as a whole is traditionally inexperienced in regional cooperation. Starting from WLCG, with the support of Asia Pacific Regional Operation Center (APROC) running by the only WLCG Tier-1 Center in Asia - ASGC, Grid resource centers has growth from 6 sites in 2005 to 38 sites in 2010 and contributing to 16 virtual organizations, CPU utilization increases over 580 times in the past 5 years. However, the world largest biomedical grid application on avian influenza drug discovery was initiated by ASGC with close cooperation with worldwide grid and user communities in 2006. With support of EUAsiaGrid project, non-HEP partner countries in Asia could build up its own resource center and join the global e-Science collaboration. EUAsiaGrid aims to demonstrate the usefulness of grid infrastructure, raise awareness among scientists and support early adopters of the grid technology. While the EUAsiaGrid project is at its end, the collaboration started moving into new levels. The use grid resources is gaining momentum, with more groups willing to include grids as very useful tools into their daily routine. Also, the benefits of grids as collaborative environment are recognized by more and more scientific teams, contributing thus through grid use to a sustainability of the whole.

Asia regional infrastructure is fully compliant with EGI structure and similar federated initiatives in the rest of the world. In terms of e-Science applications, not only computing models were ported to EUAsia VO, but also research oriented production services and long-term scientific collaboration among partners were established. Grid-based global production e-Infrastructure is already in operation. ASGC is bridging those invested resources, technologies and collaborative scientific applications between Taiwan/Asia and the World.

Although digital divide and collaboration culture are still issues of e-Science uptake, Asia already demonstrated promising evolution to deploy the new e-Infrastructure and engage in regional and international collaborations. From the lessons learnt in past few years on e-Science, we are confident that regional collaboration could make very unique scientific research. Moreover, very distinctive scientific data values of e-Science application data could be further manifested. For example, earthquake data about the fault characteristics provides deeper level of earth structure ingredients with potential for other related researches and for reduction of computation cost. Drug discovery data on neglected diseases is advantageous to more knowledge discovery.