

Chapter XIII

Towards an E–Governance Grid for India (E–GGI): An Architectural Framework for Citizen Services Delivery

C.S.R. Prabhu

National Informatics Centre, India

ABSTRACT

The National e-Governance Plan (NeGP) proposes citizen service delivery up to the village level through various channels including village kiosks. The citizen services to be delivered are going to be web services (as against the present simply web enabled services) based on the Service Oriented Architecture paradigm. These Web Services expect adequate networking and computing resources for effective and efficient service delivery. Grid computing is the new computing paradigm. According to Gartner, computing (scientific, business and e-governance based) will be completely transformed in this decade by using grid enabled web services to integrate across the Internet to share not only information and application but also computing power. The latest grid computing standard OGSA (Open Grid Services Architecture) integrates the power of the grid with that of the web services – both stateless and stateful, based on Service Oriented Architecture (SOA). Leveraging the power of grid computing for e-governance takes us towards an e-governance grid for India. Towards this objective, the existing computing networks such as NICNET with all its SAN Data Centres connected with each other and also the other state owned Data Centres and SWANs (State Wide Area Networks) are required to be connected with each other to ultimately form the e-Governance Grid of India (e-GGI). Once this is achieved, the web services which offer citizen services will be effectively supported by the powerful resources of this e-ggI, ensuring nonstop, fast and efficient delivery, with all the due backup, mirroring and recovery features in place. Then we can successfully operationalise Web Services Repositories at the District, State and National levels on the e-governance grid of India, thereby delivering citizen services across the country. An architectural framework for citizen services delivery is also proposed based on e-GGI.

INTRODUCTION

The National e-Governance Plan (NeGP) is an ambitious plan to achieve e-governance and deliver citizen services through the 100000 kiosks throughout the country including rural areas. These citizen services will have to be web services based on Service Oriented Architecture. This gigantic effort calls for extensive computing and network infrastructure and resources so as to meet the requirements of NeGP. Conventional technological approaches such as client server model of architecture or the central server model of architecture will not be able to meet the requirements of NeGP. The Storage Area Network (SAN) based Data Centres being set up by NIC and also various state governments will be the first step towards a more recent technological advancement, popularly described as “grid computing”. In a “grid” of computer systems all the Data Centres (SAN) will be connected into a grid where in all the computational resources such as the CPUs, disk storage system, specialized software systems, etc., will be shared by all the users connecting to the grid and the users are expected to draw adequate computational power from the grid just like they draw electric power from the Power grid, ubiquitously and unlimited or at least more than adequate required for any authorized user.

According to Gartner, in the current decade all computing (including e-governance) will be completely transformed by using grid enabled web services to integrate across the Internet to share not only information and application (as of now) but also computing power (through grid computing). Sooner or later all the computing function in the world is thus expected to become grid based – to share resources – so as to minimize the cost by optimizing the utilization of the resources. In a country like India, where the government administration is structured in a 3 tier—Central, State and District levels—Web Services Repositories

can be launched and operationalized in the same three levels in the grid.

OGSA (OPEN GRID SERVICES ARCHITECTURE): INTEGRATING WEB SERVICES (BASED ON SOA) WITH GRID COMPUTING

While the earlier versions of grid computing technology were supporting predominantly applications of scientific domain and thus were not concerned with the concept of Web Services (based on Service Oriented Architecture), the current grid technology initiatives are based upon the new standard OGSA or Open Grid Services Architecture, wherein the Web Services are integrated with grid technology so as to result in a win-win situation both for the Web Services (by higher resource provision) and grid technology (extending to the commercial or e-governance domain). As Web Services are increasingly becoming standardized, the ability of the “grid” to support Web Services is a key provision for effective delivery of services in any application domain, especially e-governance domain, wherein citizen services are being launched as Web Services over the grid for better and efficient service delivery. In fact, without the grid computing approach, Web Services may not even be possible to be launched at a large scale.

OGSA (Open Grid Services Architecture) is the latest standard evolved by Global Grid Forum (GGF) to integrate Web Services with grid computing. This Architecture integrates the conventional grid computing features such as resource allocation and monitoring, mirroring, etc., with Web Services facility. Citizen services which are basically Web Services, will be supported by grid computing features and facilities to ensure adequate resources and background processes to effectively operationalize them.

5 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/towards-governance-grid-india-ggi/8985

Related Content

Interactive E-Government: Evaluating the Web Site of the UK Inland Revenue

Stuart J. Barnes and Richard Vidgen (2007). *International Journal of Electronic Government Research* (pp. 19-37).

www.irma-international.org/article/interactive-government-evaluating-web-site/2025

Identifying Factors of Integration for an Interoperable Government Portal: A Study in Indian Context

Rakhi P. Tripathi, M. P. Gupta and Jaijit Bhattacharya (2011). *International Journal of Electronic Government Research* (pp. 64-88).

www.irma-international.org/article/identifying-factors-integration-interoperable-government/50293

City E-Government: Scope and its Realization

Hanuv Jit Singh Mann, Gerald Grant and Inder Mann (2011). *International Journal of Electronic Government Research* (pp. 38-50).

www.irma-international.org/article/city-government-scope-its-realization/50291

Analyzing the Network Readiness Index in the United States to Assess ICT Infrastructure in Handling Crises Like COVID-19

Saeed Tabar, Sushil Sharma, David Volkman and HeeLak Lee (2021). *International Journal of Electronic Government Research* (pp. 1-14).

www.irma-international.org/article/analyzing-the-network-readiness-index-in-the-united-states-to-assess-ict-infrastructure-in-handling-crises-like-covid-19/289353

E-Government Service Development

Mahmud Akhter Shareef and Norm Archer (2012). *E-Government Service Maturity and Development: Cultural, Organizational and Technological Perspectives* (pp. 1-14).

www.irma-international.org/chapter/government-service-development/55778