CHAPTER 5

CONCLUSION

5.1 INTRODUCTION

This chapter reviews the significance of the proposed models for on-line power system analysis and presents suggestions for future research. Before proceeding with the review of the work done, the objectives of the thesis stated earlier in the introductory chapter are recalled.

The primary objective of this research is to integrate the advanced IT technology with existing architectural models for on-line power system analysis. In order to build completely secured, distributed, platform-independent and language-independent environment, Web-enabled architecture has been proposed.

5.2 SUMMARY

In the introductory chapter, a brief survey of the techniques and methods available in the literature for effective implementation of on-line power system analysis has been discussed. The motivation for the present work is also brought out. Based on the investigation, the following outcomes are arrived:

- The role of different architectural models for on-line power system analysis such as client-server model, Web service
model, grid service model and service-oriented architectural model has been reviewed. The need for making power system data representation into a standard format has been analyzed and the interoperability among the heterogeneous power system clients in a highly distributed environment has been achieved through XMLisation of power system data which provides meaningful solution to the legacy issues associated with power system applications.

- The environment has been standardized using generalized Broker architecture. The major advantage of the Broker architectural model is that the client can utilize the service even when the client does not know the IP address of the hosted server and the port at which the required service is rendered and the client is decoupled from the network programming code. A container model is proposed to collect all output information from various services and an effective decision making engine has been developed. The trigger model in power system operation automation has been discussed.

- The need for integration of legacy power system applications has been reviewed. The Web-based architectural model for on-line power system analysis has been proposed and implemented, which is based on well-developed Internet protocols, distributed processing and Java programming language. The proposed model uses JAX-RPC, the power system client written in a language other than Java can access service which is developed and deployed on Java platform. Conversely, a client written in Java programming language
can communicate with a service that was developed and deployed using some other language.

- One of the major advantages that the proposed Web service models has over the more traditional approaches is that they have been described formally in a document called a Power System Web Service Description Language. The PWSDEL provides an XML description of the power system service that clients can invoke.

- The Service-Oriented Architectural model has been proposed and developed to provide the service orientation for different power system applications like Load flow analysis, Contingency ranking and Economic Load Dispatch. All the power system applications have been developed and deployed as different Web services and all encapsulated into one SOA frame.

- An efficient grid service model has been developed to carry out on-line power system analysis. The proposed system provides excellent scalability, high security and has a capacity to meet the huge computation requirement. The proposed grid model is suitable to carry out on-line monitoring for large interconnected power systems.

- The performance analysis has been carried out on proposed models.
5.3 SCOPE FOR FUTURE RESEARCH

The proposed model implements a registry which can be utilized for a specific service. For each service, a new registry has to be deployed. For storage of service information, the registry can be generalized. The broker architecture model can be extended such that it can understand the client request for a service in which the service name is not known clearly and the client can put its request in a theoretical way. The developed SOA models can be extended for monitoring the multi-area power systems in distributed environment. The proposed models can be implemented as a dedicated embedded platform which could control the networked power distribution system.