Application of Information Technology in Business Process of Power Utilities

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Abstract-MBC, R-APDRP, Discom, SOA, CRM, O&M, CIS, OLAP, MOSS, Firewall, SAN, Intranet, Data Layer, IVRS, CA IAM, Web Clients, MIS, Business Intelligence

I. OBJECTIVE

The purpose of this research is to bring the details of the business process requirements of IT Package. This research details the project requirements, which are to be met by the applications and interfaces required between different hardware and software systems. The objective of this research includes the software solution, availability, readiness for metering, billing, collection (MBC) and several other business processes of the utilities.

II. OVERALL SOLUTION DESCRIPTION

This solution serves the applications/modules for the purpose of the Subdivision Automation of State Electricity Departments in respect to the business functionality. This solution covers the functionality as mentioned and required in the Document as this is an advanced engineered office management tool. It is developed to manage all types of useful databases, analyzes them by applying standard concepts and implement them in a manner consistent with its purpose or design the logic of electrical engineering and subdivision level management in a modernize way. After a deep study of RAPDRP requirements and the difficulties of DISCOMs, our research has suggested the solution with additional amenities. DISCOMs related business functionality would be customized in the product on the base of the Document. The solution has the capability to integrate with other Business Process Applications as per the requirement captured in system study and suggested by Document. The integration architecture of this solution is based on SOA (Service Oriented Architecture) and due to this it is easily mapped with the integration middleware for exposing the business functionality to external systems as well as to consuming the business functionality of external systems.

Features:
- Flawless Integration of Functions and Processes
- Increase Operation Efficiency
- Process Streamlining
- Enhance Customer Service
- Business Assessment Support for Strategic Issues
- Revenue Augmentation
- Scalability, Flexibility for future application integration

III. SOLUTION OVERVIEW & CONTEXT DIAGRAM

The solution has the following applications which contain the business functionality for the Subdivision Automation of Discoms:

1) CRM
   a) Request Management
   b) Consumer Section
   c) Collection Management
   d) Technical Section
   e) Estimation Section
   f) Metering Section
   g) Revenue Management
   h) Technical Complaint Center
   i) Commercial Complaint Center
   j) Subdivision MIS
   k) A.En Sectio

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System Context Diagram for CRM
The diagram gives an overall view of the CRM functionalities.
IV. CRM PERSPECTIVE

This solution is mainly used for the purpose of the subdivision level business functionality. Following diagram shows the mapping of the subdivision modules with the subdivision level actors/role.

The present working system of distribution wing (O&M) of DISCOMs covers various activities spanning in Sub-Division’s various departments. The functionality includes the consumer related work of Sub-Division i.e. Consumer information system (CIS), creation of new consumers, work related to existing and prospective consumers, preparation of priority and master register etc. Cash related work of Collection, preparation of cash books, budget and expenditure control register etc. Revenue related activities like service connection, meter change, disconnection, reconnection orders, preparation of ledgers, preparation of monthly assessment and realization details, preparation of monthly account etc. All store and inventory management related activities like receipt, issue and accounting of material / expenditure, meter movement, optimum planning etc. is made at the J.En. level. All Sub-Division activities like Estimation, Compliance of Job, New Service Connection, Meter Change, Disconnection, and Reconnection orders. Preparation of material at site accounts, accounting of material / assets etc. It will have a MIS Section to view the reports related to Subdivision working.

Following are the departments, a normal Sub-Division (Operation) has. All the functionality mentioned below would be covered by this application / module The CRM application will handle processes related to:
- Revenue Section
- Cash Section
- J.En. Section
- Consumer Section
- A.En. Section
- Complaint Section
- Field Staff
V. PORTAL AND DOCUMENT MANAGEMENT

This section describes at a high level the scope of the portal and DMS. It attempts to put this system functionality within three contexts. First, it identifies as a project of Intranet Portal Solution purely developed in Microsoft Office SharePoint Server. Second, it provides a brief overview of the project, and third it describes the system context in terms of its sub-components.

Identification: It is a complete portal solution for intranet users of R-APDRP to initiate the various departments related permitting activities and facilitate to store and access various regulatory information, permitting resources on this site based on their permissions.

Brief Overview: The goal of this entire solution is to customize and publish as a separate common portals(for each discom) which provides the intranet users with a user friendly interface and guide them to navigate to the appropriate web pages and sites.

It provides an interface for the users that help them to identify the appropriate documents of various departments and direct them to a set of standard and consistent home pages for various verticals by enforcing a common look across the sites. These websites provide the access to various permitting information and the user can then perform the various permitted tasks available.

The System includes a search facilities for access the whole the site contents and have an advanced search to provides user to access the various file servers and virtual source safe servers and different sites content of both intranet and internet.

The System includes the built-in administration environment to manage the websites and web pages. The application is built using Microsoft Office SharePoint Server with SQL Server as a backend data store for all solution content.

System context: The System consists of mainly five subsystems: The Portal web application The main web application that provides a set of websites with static pages and dynamic web pages with a consistent look and feel.
SQL Server SQL Server relational database used to maintain the entire content sources and configuration sources of all the sites of MOSS.

Active Directory- It’s a distributed database that store and manages information about network resources, as well as application specific data from directory enabled applications.

CA IAM- Its provides a single sign on functionality to access the portal and other applications which are integrated with the portal.

Exchange Server This server provides E-mailing solutions. It would be integrated with Portal for notification and alerts service.

System context diagram:

The high-level deployment architecture of the proposed solution implemented using Microsoft Office SharePoint Server with a full blown high availability solution without a single point of failure is visualized as below.

From the picture (Figure 1) it is evident that the overall solution architecture in Data Centre comprises of

3 Active Directory Servers (Primary and Additional Domain Controllers)
4 MOSS Servers (with 2 windows NLB, 1 Application Server, 1 Index Server)
2 SQL Servers on Active-Passive configuration

Figure 1: Overall Portal Solution Architecture in Data Centre (DC) Si

VI. REFERENCE:
1) R-APDRP, Power Finance Corporation of India 2009-10
2) Ministry of Power, Govt. of India 2009-10
3) JVVNL, Jaipur, Rajasthan 2009-10
4) ITIA, RAPDRP - 2010