WORK SUMMARY FOR THE PERIOD-24.05.2016 to TILL DATE

NAVDEEP GARG

STAFF NO: IS05684

SCIENTIST/ENGINEER 'SC'

MANAGEMENT INFORMATION SYSTEMS DIVISION (MISD)

PROGRAMME PLANNING AND EVALUATION GROUP (PPEG)

U.R. RAO SATELLITE CENTRE - BENGALURU

Role and Responsibilities

Role	Software Engineer ,MISD, PPEG, URSC
Responsibilities	• Writing well-designed, testable code and following software development life cycle (SDLC). • Value Addition, Innovations , Operations and Maintenance of MISD applications. • Deploy programs and evaluate users' feedbacks. • Division Level Management Representatives(DMR) from MISD for QMS implementation.
Deliverables	• **Realization of ISRO/DOS PFMS Web Services Interface System (IPWS).** • **Operationalization and maintenance of COWAA Web Interface System(COINS)-Public Financial Management system(PFMS) Interface Software.** • **Realization of Go-Green Initiatives in URSC through office automation.** • **Online information for administrative related activities using Sandesh system** • **Moving towards next generation MIS.**

ISRO/DOS PFMS Web Services Interface System (IPWS)

- **IPWS is background process that processes XML** input requests received from COINS and validate it before sending it to PFMS web services consumption system for obtaining desired responses.

- Carried out requirement gathering , designing and prepared SRS , SDD.

- Developed this application in Java Environment using apache log4J, Quatrz, Jasypt APIs and exchanged messages in SOAP format.

- Carried out functional and non- functional testing (**Tools used:** Coverity 2018.09 and SonarQube).

- Developed shell scripts using **rsync utility** for XML files synchronization between **COINS and IPWS.**

- Deployed the application as a Linux service using **systemd**.

- Implemented recommendations given by ISRO/DOS Cyber Security Mock Drill (CSMD) team on:
  - System Configuration
  - Code Analysis of IPWS Software

- Providing enhancement and maintenance support.

- **IPWS is serving its objective satisfactorily across all ISRO centres/units since 01-Jan-2019.**


System Architecture
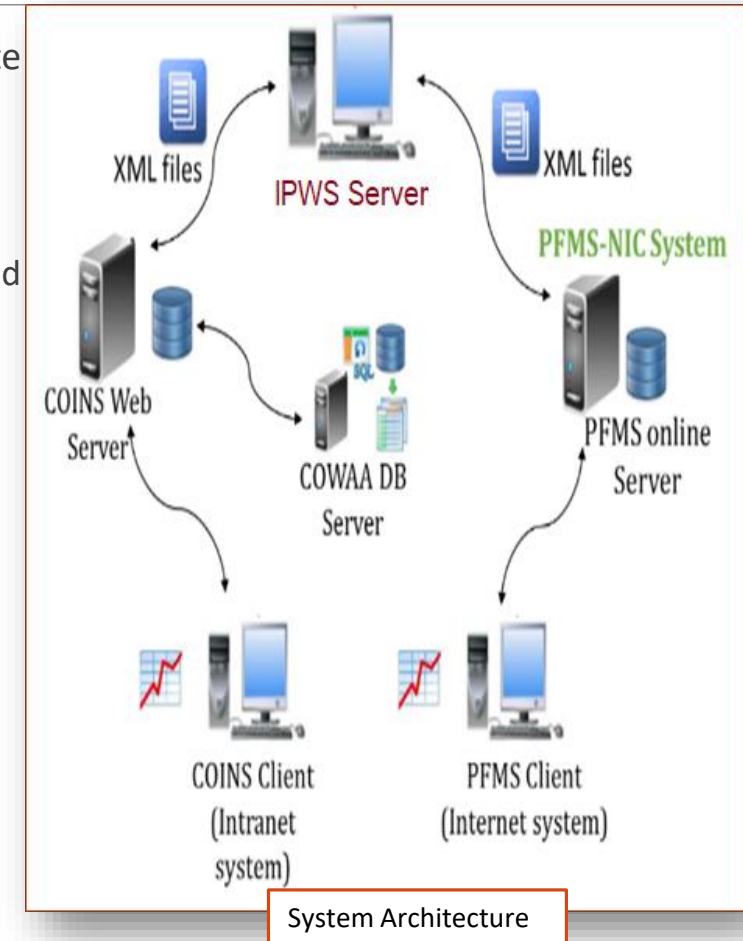
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ISRO/DOS PFMS Web Services Interface System (IPWS)

System Configurations

- Allowing **only** required TCP/80 and TCP/443 ports in the firewall on Internet side

- Only **rsync** protocol to be allowed in the firewall on intranet side

- Minimal installation of CentOS/RHEL OS without GUI/application software

- Import SSL/TLS certificate deployed at **pfms.nic.in** and handle in **jre**.

- Selinux based mandatory access control to be enabled and enforced.

- Strong password for root & other users.

- For OpenSSH
    - X11 forwarding should be disallowed
    - Listening port must be a non-standard port
    - GSSAPIAuthentication must be set to 'no'
    - Only RSA key based authentication

- No direct login to root account, No remote login to any account, locking of account on 3 unsuccessful attempt.
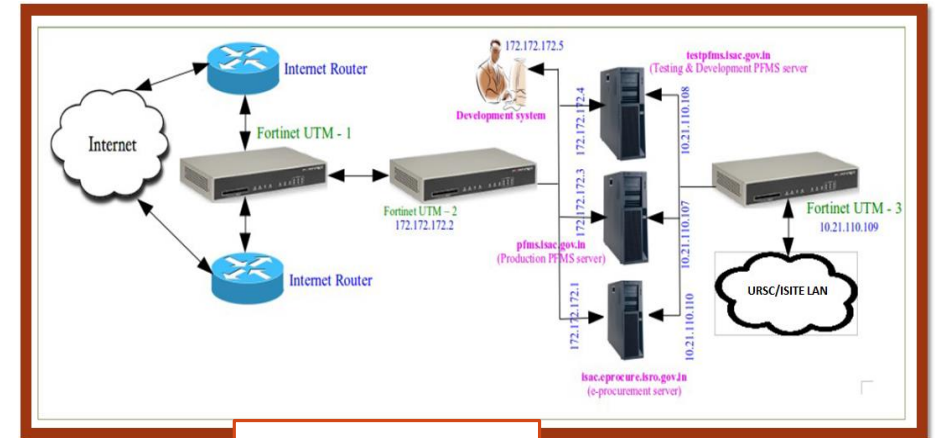
Network Architecture
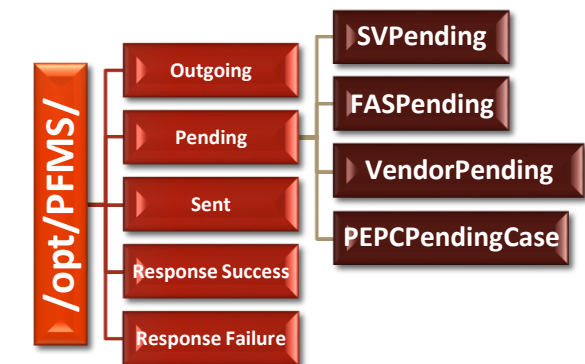

IPWS Directory Structure

COINS-PFMS Interface Software

- An interface to PFMS through web service consumption using XML files - jointly developed **by SDSC and URSC**

- As a member of **Code-walk through** Committee of COINS-PFMS Interface software carried out detailed analysis and reported all major incidents related to business logic, bugs, performance related issues, code-reusability and modularity were submitted to DD, RO, SDSC , and recommended possible code optimization , enhancing exception handling and modularity in code.

- Involved in **Testing and Evaluation** of COINS-PFMS Interface Software and submitted detailed test results report for making the desired changes.

- Providing **operational and maintenance support** for Finance, Accounts and Stores modules in URSC.

SANDESH - The Information System

- SANDESH system provides personal information to employees, support to back office and MIS reports to management for decision making based on COWAA database.

- Responsible for **continual** value addition, innovation and maintenance in SANDESH system.

- Developed a dashboard based Official Travelling Allowance Processing system.
  - **Domestic Tour Allowance (DTA)**, to process advance and settlements for domestic official tours.
  - **Foreign Tour Allowance (FTA)**, to process advance and settlements for foreign official tours.
  - **Digitization** of air-travel booking transactions made by TRAVEL Agents like 'Balmer Lawrie'.
  - **Incentive Management Module**, to adjust received incentives with air ticket cost.

- Successfully operationalized **email and SMS gateway interface for payment acknowledgments to encourage** e-Governance.

- Transform the database connection mechanism to **CONNECTION POOLING** .

- Implemented **software version control system** using **GIT** tool.

- SANDESH system is presently **deployed at VSSC, LPSC(B), HSFC, MCF, ISRO HQ and PRL** due to its effectiveness.
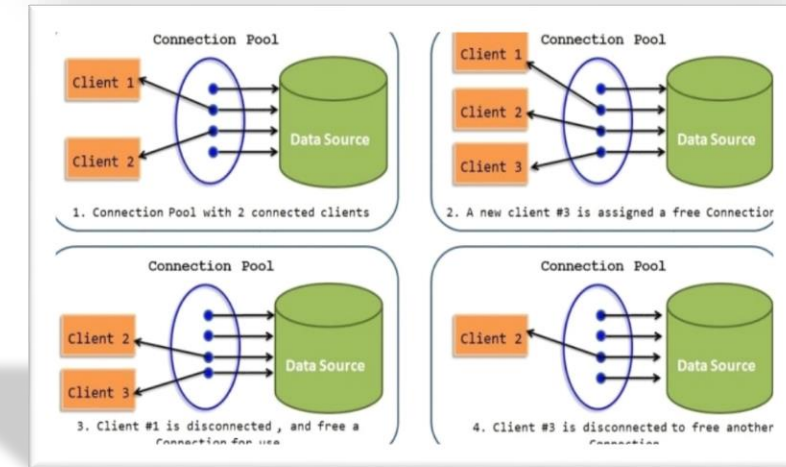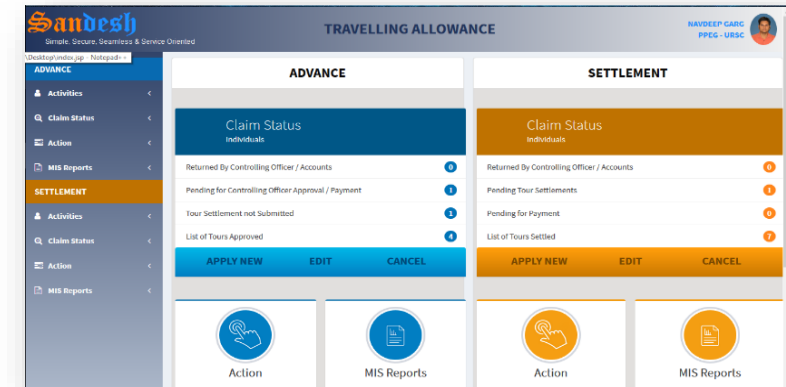
Additional Activities

- As an author of technical paper on '**e-Governance Initiative in URSC - Automation of various Government-to-Employee (G2E) Services**' got the opportunity for oral presentation at ISRO Seminar on Computer and Information Technology (**ISCIT**)-2018.

- Designed, developed and demonstrated a prototype model to retrieve data from **distributed database** on real time basis using **SPRING-BOOT, Hibernate and bootstrap technologies.**

- As **Division Level Management Representatives (DMR)** of MISD, responsible for **implementing ISO 9001:2015 QMS in MISD.**

- Configured an open-source tool **DOXYGEN** , that generates coding and design documents for all MISD applications.

- Pursuing **M.Tech. Software Systems program in Data Analytics from BITS-Pilani ,Work Integrated Learning Programmes (WILP).** This program is carried out in online classes mode and conducted mostly on weekends or after business hours.

- Configured successfully **Hindi Knowledge Management Application** (developed by SAC) on URSC test server. Application is presently deployed for functional testing by end users.

- Member of 'Vikram Sarabhai Life Journey Team' in 'Vikram Sarabhai Centenary Programme' (VSCP).

- Member of 'Gymnasium Committee' to support the management of all four GYM complex of ISRO in Bengaluru.

THANK YOU