
Case Study

Architecture revamp and Modernization of National Digital Seva Portal (DSP)

Scope of work: The scope included due-diligence and audit of current portal ecosystem architecture, performance tuning, error resolution, UX optimization with upgrade and modernization

Ecosystem Mapping

- Conducted mapping of DSP stakeholders, functional components, and service categories.
- Documented service domains including billers, insurance, loans, wallets, payment gateways.
- Established a clear view of the ecosystem to support future scalability and integration.

Functional Flow Analysis

- Developed interface and service flow diagrams - login, re-sync, and multi-channel delivery.
- Mapped user journeys to identify redundancies and streamline service interactions.

Database Optimization

- Analyzed key entities, product structures, queries, and backend cronjob scripts.
- Review and optimization of queries to ensure accuracy and efficiency in service delivery.

Application Architecture Review

- Documented internal and external system interfaces, calls, configuration templates, API parameters, and program flows.
- Established a reference architecture for ongoing development and integration.

Module Documentation

- Completed detailed documentation of electricity, insurance, loan, and wallet modules.
- Captured real-time application flows to support knowledge transfer and onboarding.

Service Group Analysis

- Reviewed code and API documentation for service groups including API, Payment gateways, and Bridge interfaces.
- Identified integration points and dependencies across service clusters.

Payment Gateway Review

- Documented transaction flows for multiple banking interfaces and Global Payment gateways.
- Optimized reconciliation processes and potential optimization areas.

Code Profiling

- Conducted runtime profiling of DSP codebase.
- Identified bottlenecks, inefficiencies, and areas for performance improvement.

Codebase Optimization

- Streamlined Java and PHP layer for improved runtime efficiency.
- Enhanced exception handling and update third-party libraries.
- Optimized backend processes to reduce latency and improve reliability.

Modernization Roadmap

- Implemented containerization using the Molecular framework.
- Integrated DevOps pipelines with automation and code review.
- Upgraded databases, UI, and enabled multi-channel service delivery.
- Rolled out modernization in phased timelines aligned with business priorities.

Enhanced Security Framework

- Introduced multi-factor and biometric authentication options.
- Strengthened API gateway security.
- Ensured compliance with evolving data protection and privacy regulations.

Analytics & Reporting Layer

- Built a centralized analytics dashboard for transaction monitoring.
- Enabled fraud detection and service performance insights through real-time data pipelines.
- Provided actionable intelligence and RBAC driven dashboard for stakeholders.

Scalability via Cloud Adoption

- Gradually migrated workloads to cloud-native environments (AWS, Azure, GCP).
- Implemented elastic scaling, disaster recovery, and managed services.
- Ensured resilience and high availability across critical services.

User Experience Improvements

- Redesigned portal UI/UX with accessibility and multilingual support.
- Adopted mobile-first design principles to drive adoption across diverse user groups.
- Enhanced usability for both urban and rural stakeholders.

Integration with Emerging Services

- Expanded DSP's scope by integrating with new government schemes.
- Leveraged fintech APIs and digital identity services.

Overall Strategic Impact

The Digital Seva Portal modernization initiative positions DSP as a next-generation citizen service platform. By combining technical optimization, security, scalability, and user-centric design, DSP will evolve into a robust, future-ready ecosystem capable of supporting India's digital transformation agenda.