ARCHITECTING PROJECT MANAGEMENT
for Enterprise Agility…

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India Post Financial Services and Rural ICT System Integration program Managed by Infosys

Leverage of Technology for Enterprise Agility

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ABSTRACT

India Post, with over 1,55,000 Post Offices spread across the country, embarked on a modernization plan starting 2008. As part of the 'Implement India Post 2012 project' Infosys has partnered in evolving, and implementing a solution enabling Core Banking Solution (Finacle), Postal Life Insurance (McCamish), Enterprise Content Management (FileNet), ATMs, Rural integration (RICT), etc, for integrating banking and insurance service across all POs in the country. Core features of the massive implementation include vertically scalable DB servers, 100% Scale-out at Application Layer, H/W Load Balancers at Web and Application Tier, 100 % storage replication at DR, Handheld devices operating over mobile network, etc. The system is capable of handling a mammoth 50 Cr+ banking system accounts, almost 3 Crore insurance policies, over 50,000 user concurrency, handling over 20 lakh transactions per day. As India Post continues the modernization journey transforming from a postal behemoth, into a technologically-enabled inclusive banking partner for Govt of India rolling out socially relevant schemes such as MGNREGS / NREGA, eMO, 'Jan-Dhan Yojana', etc, taking such services even to remote rural areas of India via Rural Integration Communication Technology with rural agents using hand held devices connecting agencies to Post Office systems and data centers in real time. This ground-breaking program has enabled agile transformation of a century old organization, using technology to modernize and rejuvenate, for it to continue to be of great relevance, emerging as an enabling instrumentation of far-reaching social schemes for the masses. This paper will attempt to detail the solution aspects.

INTRODUCTION

Department of Posts (DoP or India Post), with over 150,000 Post Offices, is the largest postal network in the world, spanning the length and breadth of the country, catering to crores of people even in remotest rural areas, bringing services to the unbanked, playing a crucial role in socio-economic development of the nation. Some of the core services include – mail and package delivery, Small Savings Scheme deposits, life insurance cover under Postal Life Insurance (PLI) and Rural Postal Life Insurance (RPLI) apart from retail services like bill payment collection, sale of forms, etc.

DOP was faced with challenges of increasing competition, and needed to keep abreast of advances in information communication technology. In order to provide best-in-class customer service, deliver new services and improve operational efficiencies, DOP had undertaken an end to end IT modernization project to equip itself with requisite modern tools and technologies. DOP's business need was to achieve the following:

1. Wider and more inclusive reach to the Indian populace through more customer interaction channels

2. Better customer service

3. Growth through new lines of business

4. IT enablement of business processes and support functions for operational efficiency

In 2012, Department of Post, Ministry of Communications and Information Technology, Government of India decided to partner with Infosys for a mission-critical program to enhance India Post's financial services across 150,000 post offices in the country. This is part of the 'India Post 2012' modernization program that aims at bringing transparency, agility, flexibility and scalability to India Post's operations. As part of this, Infosys and India Post embarked on a transformational initiative, which encompasses Financial Services System Integration. As Financial Services System Integrator, Infosys was to implement and manage its flagship Finacle core banking solution and McCamish Insurance products to help India Post transform its banking and insurance operations - covering more than 200 million banking customers across urban and rural India; including a large base of insurance customers.

The overall scope, scale, complexity and challenges of this program is illustrated by the following:

- Requirement to modernize Financial services (banking & insurance) business across 155,000 post offices in 3 phases (Pilot, Phase 1 and phase 2)

- Establishing Data Centre and a business contingency Disaster Recovery Centre – through design, procurement, deployment and maintenance

- Enabling 20,000+ offices and 40,000+ staff on IT infrastructure, application and user training pan India for FSI program.

- Rollout of 1,000 ATMs across India, and subsequent support and maintenance

- Support and Integration of legacy application (Sanchay Post)

- Operations and Maintenance for FSI core banking and insurance solutions

- Previous decentralized Banking and Insurance operations practice with heterogeneous infrastructure and disparate standards and practices across 25,000+ locations.

- Ingrained century old practice of manual process involving physical files (~ 30 million) moving across locations for approvals, with no holistic or integrated business practices followed.

A unique and innovative core banking implementation program followed. Owing to lack of user awareness about banking practices, requirement engineering processes were combined with design and solution Phase. Finacle solution has been deployed in a true multi-tier high availability and scalable architecture across all layers (Web, J2EE, C++, DB) with Radware load balancer. The program involved implementation of products unique to postal

banking such as Recurring Deposits (RD), Public Provident Fund (PPF), Monthly Income Scheme (MIS), Senior Citizen Savings Scheme (SCSS), certificate products, government social security schemes, etc. Solutions for corresponding process flows have been achieved through convenient user interface design layer ensuring higher usability for end users with minimal IT exposure. Monitoring dashboard has been developed for IT operations team. Agent business portal solution has been developed where India Post agents can service their customers through internet spreading financial inclusivity.

Presently core banking solution rollout has been completed for over 22,000 POs with over 55 Cr accounts, and over 900 ATMs live. Postal Life Insurance (PLI) rollout has been completed for 25,448 POs with almost 3 Crore policies. Infosys implementations have enabled DoP to offer Banking and Insurance services to its customers through simplified business processes enabling alternative channels like ATM, mobile devices, internet, etc with increased transparency.

Some key highlights indicating success of the program are listed below:

- Largest financial institution (by transaction volumes) in a centralized CBS in the target state in a truly 24/7 business environment for DOP support including across channels
- The transformation program has reduced TCO with a simplified product and by retaining the benefits of multi-tiered architecture
- Target of 525 TPS with less than a second response time for critical over the counter operations
- Highly scalable deployment architecture (8 node application stack) supporting 99.99% availability
- Solutions for unique postal savings products which is different from products and services offered by other Financial services industry
- Quicker Time to Market for key social security schemes introduced by GoI – Sukanya Samridhi, Kisan Vikas Patra, Pradhan Mantri Yojana – Jan Dhan, Jan Suraksha, Atal Pension Plan,
- Simplified UI, processes, and automation to support users even with minimal IT exposure.

DETAILS OF THE PAPER

Solution overview

Core components of the solution is comprised of the following:

- Core Banking, Insurance & Enterprise Content Management solutions
- Key channel capabilities around Internet, mobile and Remote Applications provided through Infosys Core Banking product - Finacle. Implemented ATM and IVR by partnering with leading industry solution providers
- Powerful risk based authentication and secure transactions
- Solution designed using globally proven solutions like Oracle Enterprise solutions and Infrastructure components from IBM.
- Additional layer of reliability and availability through supporting 24X7 processing capabilities
- Interoperability and flexibility of the architecture designed to comply with industry standards like SOA, ISO8583, XML, XSLT, BPEL, web services standards (WSDL 1.1) etc.

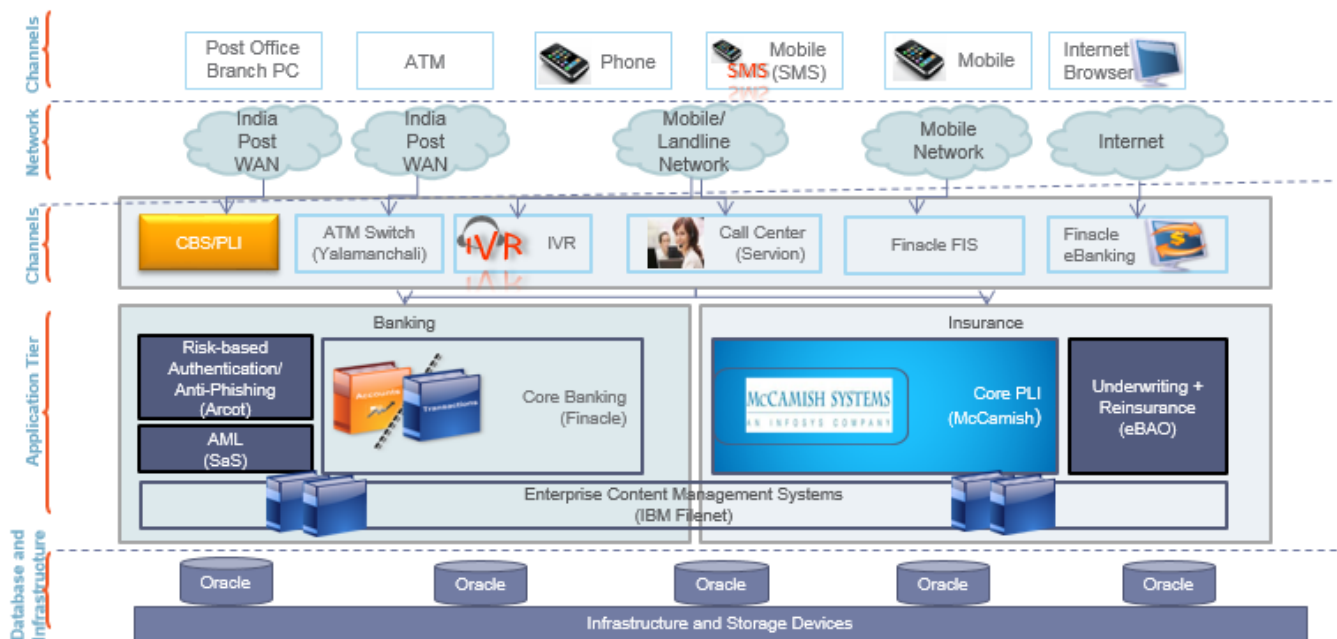The overall architecture is depicted in Figure 1 below:

Figure 1.   Financial System Architecture

As Financial Services System Integrator, Infosys implemented and managed its flagship Finacle core banking solution and McCamish Insurance products to help India Post transform its banking and insurance operations – covering more than 200 million banking customers across urban and rural India; including a large base of insurance customers.

Some solution aspects of the program include:

- Project was unique when compared to other core banking implementation projects in banking institutions in the sense that there was no user acquaintance in Finacle before requirement gathering phase which is a normal practice. The requirement gathering activity was combined with BPD and Solutioning Phase.
- Finacle solution has been deployed in a true multi-tier high availability and scalable architecture across all layers (Web, J2EE, C++, DB) with Radware load balancer.
- The program involved implementation of products unique to postal banking such as Recurring Deposits (RD), Public Provident Fund (PPF), Monthly Income Scheme (MIS), Senior Citizen Savings Scheme (SCSS), certificate products, government social security schemes, etc. Complete solutioning of these products have been achieved.
- Integration of Finacle with Aadhar Unique identification (UID) is complete. UID is the 12-digit unique identity number issued by Unique Identification Authority of India (UIDAI), a central government agency of India.
- Quick data entry screens have been built to enhance quick data capture and usability for the end users with minimal IT exposure
- EOD monitoring dashboard has been developed for IT operations team
- Agent business portal solution has been developed where India Post agents can service their customers through internet for financial inclusion reach
- Finacle has been integrated with Open source application monitoring tool in Nagios
- Integration with IBM FileNet
- ATM solution has been secured under Finacle SSO
- IBM Appscan has been used for security testing and certified by STQC (Government Agency)
- ISO Reconciliation, EABGST and Asynchronous balance update has been configured in service mode to reduce EOD duration
- EOD batch job scheduling and execution automated using FIBEE framework in turn supporting largest EOD executions in Finacle
- Integration with third party systems such as Western Union, Money Gram, Aadhar, NREGA payments, ATM
- Integration with enterprise systems such as SAP GL, SAP CRM, HRMS, Post POS, CA Site Minder and CA Identity Minder, IVR solution, SIEM, CA APM

Infosys Approach

Infosys approach in handling the multi-year, multi-regional, multi-partner, heterogeneous, complex transformation program is illustrated in the simplistic box diagram in Figure 2 below.
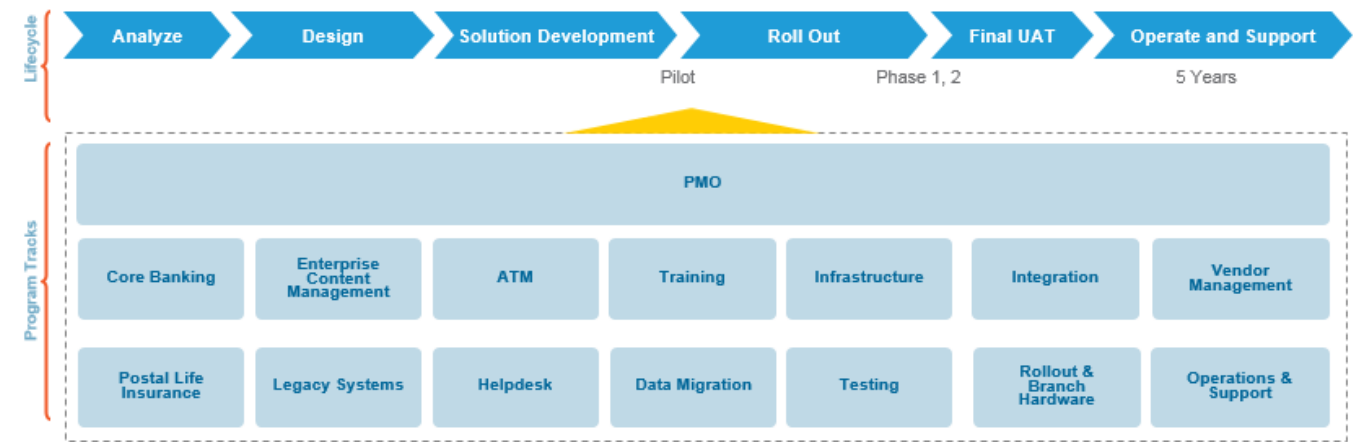

Figure 2.   Infosys approach

Business benefits

Business issues	Solution functionality
1. Wider reach to the Indian population through more customer interaction channels 2. Better customer service 3. Growth through new lines of business 4. IT enablement of business processes and support functions	• Largest financial institution (volumes) in a centralized CBS in the target state in a truly 24/7 business environment for DOP with multi-lingual support including channels • The program involved implementation of products unique to postal banking such as Recurring Deposits (RD), Public Provident Fund (PPF), Monthly Income Scheme (MIS), Senior Citizen Savings Scheme (SCSS), certificate products, government social security schemes, etc. • Faster Time to Market for key social security schemes introduced by GOI – Sukanya Samridhi, Kisan Vikas Patra, Pradhan Mantri Jan Dhan Yojana, Jan Suraksha, Atal Pension Plan, MNREGA payments, etc • Customization of new schemes like SSA (Sukanya Samriddhi account) within a month of Prime minister's announcement which also contributed to business

success of Post Offices

• Reaching unbanked sector through financial inclusion solutions by device based banking using 155,000 hand held devices at rural post offices.
• Agent business portal solution has been developed where India Post agents can service their customers through internet for financial inclusion reach
• The transformation program has reduced TCO with a simplified product and by retaining the benefits of multi-tiered architecture
• Achieving high transaction rate (525 TPS), and quick response time
• Highly scalable deployment architecture using a 8 node application stack supporting 99.99% availability
• Enabled the Department of Post to offer Banking and Insurance services to its customers through simplified business process enabling alternative channels like ATM, Internet and Mobile with increased transparency via KYC norms. Simplified intuitive UI, processes, menu and automation to support business users with minimal IT exposure.

Key Business indicators

business parameters / objectives	Target / benchmark achieved
Number of branches powered by core banking solution	22,000+
Number of accounts being powered by Finacle core banking solution	55 Cr
Highly scalable deployment architecture	8 node application stack supporting 99.99% availability
Critical over the counter operations	525 TPS with less than a second response time for critical over the counter operations ; Capability of Millions of transactions per day

Key Success indicators

Key indicator	Project success
Time to create new product and service	• Quicker Time to Market for key social security schemes introduced by GOI – Sukanya Samridhi, KVP, Pradhan Mantri Yojana – Jan Dhan, Jan Suraksha, Atal Pension Plan, MNREGA payments.

Bank staff productivity (Time taken)	• Target of 525 TPS with less than a second response time for critical over the counter operations (4.5 times more than IRCTC - which is India's online railway ticket booking portal that handles one of the world's largest volumes)
Time to market	• India Post has been able to customize new schemes like SSA (Sukanya Samriddhi account) within a month of Indian Prime minister's announcement which contributed to business success of Post Offices
Cross sell rate	Number of accounts for customized products: RD : ~ 74.3 million PPF: ~ 2 million
New customer reach	India Post is now able to reach the unbanked sector through financial inclusion solutions via mobile devices (155,000 field hand-held devices in rural areas)

Key Challenges

Some of the challenges, mitigations and best practices are highlighted below:

1. Key Practice – ETL Automation

Technical Challenges

• Extraction and Transformation of data centrally had taken more time and disk space(transformation at central location)

• Manual Migration and Electronic migration were done separately for a single Post office which took lot of time.

Solution

• Overcame the above mentioned challenges using One migration tool

• Electronic and Manual accounts are merged and executed in the same tool

• Over 180+ transformation jobs have been integrated through Spring batch in the One Migration Tool

• Moving the data extraction and Transformation activities to Pos

Benefits

With this Solution, Migration capacity increased from 10lakh accounts to 20lakh accounts for weekday migration and from 54 lakhs to 100 lakh accounts for weekend migration.

2. Key Practices – Automated Vendor Payment Process

Business Challenges:

• Largest Data digitization of over 50 million accounts across 25k+ post offices, many in rural and remote parts of India (villages, north east).Data digitization across 38 different financial products with a portion of data being available in vernacular language too

• Data being digitized from ledgers, few more than 8 years old with the paper becoming fragile to handle, remotest parts of the country – including Tiger Hill Kargil, Floating post office Srinagar.220 vendors empaneled to undertake activity with over 10,000 data entry operators deployed in field

• Liaison with over 30,000 client personal across levels and locations with limited support from the client organization. Processing over 30,000 invoices by validating the data digitized and client sign off

Solution:

• Portal created for Vendor Management.

• Data digitization tool upgraded for generating automated sign off report.

• Vendors to upload sign off report to the portal.

• Batch jobs implemented to pick up uploaded sign offs and validate the data and finally generate the Invoice Requisition

Benefits:

With this Solution the TAT for processing an Invoice is reduced to 5 days (PO completed to payment to the vendor) from earlier 22 days.

3. Tickets Inflow with Increase in Rollouts

Challenges:

• Infosys was getting about 2300 tickets every month with only 1800 branches live

• This was the biggest concern with the management team as with the final state of 25000+ branches would have flooded the team with tickets for which the team size would have to be augmented by 10 times. This had to be sorted with highest priority.

Solution:

• Monthly ticket level data from the defect management tool was fetched to analyze the nature of incidents which revealed that more than 90% of the incidents were clarifications and not defects.

• Renewed focus on Zero Distance and Problem management helped team to fix the root cause of the issues

• FAQ document was created and ensured it reaches all users. Also, ensured client starts following it. This has helped reduce the number of clarification tickets drastically

Benefits:

• The monthly count of tickets has come down from 2300 tickets from 1800 branches to only 560 tickets from 11,800 branches. So even though number of branches has increased 5 times the number of incidents have reduced to 1/4th.

4. Business workflow Optimization:

Challenges:

• Client was using Filenet for Enterprise content management (ECMS) and the performance was severely impacted due to huge inflow of documents to process

• Client was able to process 25% of the daily inflow resulting in huge backlog (in Lakhs)

• This was impacting their new business target

Solution:

• Business process reengineering was done and whole ECMS process was redefined. Removed unwanted scanning and processing resulting simplified process

• In addition, user friendly tools were developed to upload the business documents to be uploaded to ECMS system efficiently

Benefits:

• 20x improvement seen within a month.

• Within 2 months, entire backlogs were cleared

• Seen drastic (77%) reduction in tickets raised on ECMS

5. Other Risks and Challenges

Challenges:

• Stringent time-lines with severe financial penalties for slippage of milestones

• Additional program governance overhead layer due to external validation of deliverables by integration consultant for compliance with RFP and audit by STQC (government agency) for process and quality

• Business Requirements differed from Indian banking practices which resulted in added complexity in solutioning and customization with stringent NFR requirements

• Solution fitments for non-banking client like India Post resulted in high customization to the tune of 390 person months to be delivered within 5 months

• India Post being a government establishment there were challenges towards quicker decisions (due to stringent time-lines) and expected Infosys to mentor and drive critical aspects of the transformation exercise at all times.

• Challenge in managing multivendor program level co-ordination and direct interfacing with clients and their partners (including multi-nationals and independent government bodies).

• Unlike other banks, no scope for changes in already established business rules and expected to adapt Finacle to the as-is processes.

• Complex deployment architecture involving multiple layers of firewalls, redundancies, load balancers etc. supported by India post.

• IA policy changes.

• Adequate Talents availability to the program at critical stages.

Measures taken to overcome the challenges:

• Owing to lack of user acquaintance in banking practices before requirement gathering phase, requirement gathering activity was combined with business process design and solution Phase.

• Finacle solution has been deployed in a true multi-tier high availability and scalable architecture across all layers (Web, J2EE, C++, DB) with Radware load balancer.

• Complete solutioning achieved for unique Postal products such as Recurring Deposits (RD), Public Provident Fund (PPF), Monthly Income Scheme (MIS), Senior Citizen Savings Scheme (SCSS), certificate products, government social security schemes, etc.

• Integration of Finacle with Aadhar Unique identification (UID) is complete. UID is the 12-digit unique identity number issued by Unique Identification Authority of India (UIDAI), a central government agency of India.

• Quick data entry screens have been built to enhance quick data capture and usability for the end users with minimal IT exposure

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• ISO Reconciliation, EABGST and Asynchronous balance update has been configured in service mode to reduce EOD duration

• EOD batch job scheduling and execution automated using FIBEE framework in turn supporting largest EOD executions in Finacle

• Integration with third party systems such as Western Union, Money Gram, Aadhar, NREGA payments, ATM

• Integration with enterprise systems such as SAP GL, SAP CRM, HRMS, Post POS, CA Site Minder and CA Identity Minder, IVR solution, SIEM, CA APM

CONCLUSION

Program impact

Key benefits of the transformation program to DoP can be summarized as follows:

- IT enablement of business processes and support functions; Highly efficient Operations
- Improved customer service levels
- Single view of the customer - any branch banking across post offices
- Centralized reporting for both Banking and Insurance services
- Growth through new products and businesses
- 24 X 7 access to banking and insurance facilities through multiple alternate channels
- Faster incentive pay-out cycle.

For the Customer

- Better financial inclusion in the rural and semi-urban location through mobile remittances, mobile banking, mobile insurance
- Transparency in social security and employment guaranty schemes
- Faster and reliable delivery of services
- Multiple touch points with customer like ATMs, Mobile, Internet, Call centres.
- Better visibility and transparency
- Improved customer satisfaction due to faster services

For the Organization

- Significant enhancement in revenue & market shares
- Better decision making and operational planning due to availability of management information in a timely manner
- Potential reduction in the transaction cost through automated processes
- Increased productivity and accountability

For the Employees

- Opportunity to learn, build and enhance new skills and expertise
- Reduction in manual work in long term, which will result in enhanced productivity levels
- Opportunity to deliver enhanced IT enabled services to their customers leading to a significant reduction in customer complaints
- Improvement in employee engagement and empowerment
- Opportunity to work in an innovation based culture & be a part of a growing and vibrant organization

REFERENCES

None.