



MHRD

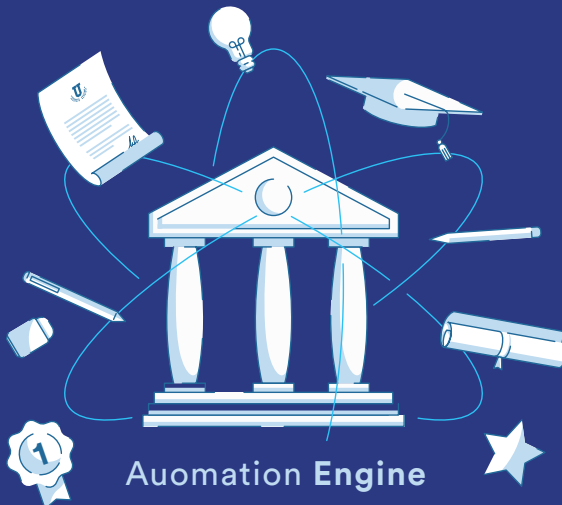
Government of India
Ministry of Human Resource Development

Samarth

An Open Source, Open Standard enabled Robust, Secure,
Scalable and Evolutionary Process Automation Engine
for Universities and Higher Education Institutions

Project Under

“National Mission in Education through ICT”



1.1 Introduction

“An Open Source, Open Standard enabled Robust, Secure, Scalable and Evolutionary Process Automation Engine for Universities and Higher Education Institutions.”

Enterprise resource planning (ERP) systems have been one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business processes in large organizations. However, not all ERP efforts have been successful. Since ERP implementation affects the entire organization, its process, people, and culture, there are a number of challenges that an agency/institution may encounter in implementing ERP systems.

A university’s most valuable assets are faculty, students, and staff. Each has distinctive interests within the same organization. For faculty, a university is a place to teach, conduct research, and write. For students, it is a place to learn, live, and grow. For staff, it may share many features with corporate work, including management structure, hours, and HR practices. Recently, some universities have begun replacing their legacy systems with ERP systems to improve management and administration. Our Lab reviewed many studies that determine Critical Successful Factors (CSFs) and risk factors to implement ERP in a University and formulated an implementation approach that emphasized upon the organizational dynamics involved in ERP implementation by using Critical Functions and three phases of framework viz. precursor condition, implementation process, and outcomes.

Critical Success Factors (CSFs) are among the important issues that ERP literature focuses on. Approaches and issues of CSFs by case studies were identified, studied, analyzed, proposed and developed. CSFs are defined as a set of activities that need constant attention in order to plan and implement an ERP system. Despite the differences that exist between organizations’ environments, the main categories of technical CSFs are a concern of almost all universities. They are categorized as an organizational, technical, vendor, individual, cultural, social, political and national.

The major CSFs include:

- ✓ Complexity
- ✓ Transparency in Process
- ✓ Security
- ✓ Flexibility and efficiency of use
- ✓ System’s response time to users’ requests
- ✓ Data quality, analysis, and conversion
- ✓ Minimum customization
- ✓ User-friendliness, help, and documentation

- ✓ Visibility of the system's status
- ✓ Robustness and error prevention
- ✓ Software development (evolution), testing and troubleshooting

1.2 Samarth Modules Snapshot

01 Student Services

- ✓ Student Lifecycle
- ✓ Grievance Management
- ✓ Alumni Portal
- ✓ Training and Placement

03 Administration

- ✓ File Management and Tracking System
- ✓ Research Project Management System
- ✓ Affiliation Management
- ✓ Content Federation System (CFS)
- ✓ Endowment Portal

05 HR

- ✓ Recruitment System
- ✓ Employee Management
- ✓ Leave Management
- ✓ Residence Allocation Management

07 Knowledge Management

- ✓ Research Management
- ✓ Knowledge Management
- ✓ ToT Management

02 Academics

- ✓ Programme Management
- ✓ Academic Management
- ✓ Evaluation and Grading

04 Establishment

- ✓ Estate Management System
- ✓ Inventory Management System

06 Accounts and Finance

- ✓ Fee Management
- ✓ Payroll Management
- ✓ Budget and Accounts
- ✓ Procurement of Goods
- ✓ Bill Tracking System

08 Governance

- ✓ RTI Management
- ✓ Legal Case Management System
- ✓ Central Data Unit
- ✓ University Web Portal
- ✓ Third-Party University Ranking Systems
- ✓ Minutes Archive & Retrieval System

03 Implementation Methodology

3.1 Onboarding

The onboarding process involves provisioning of ERP instance for CU under the SAAS model after selection.

The steps involved are orderly listed below:

- ✓ Project induction to Nodal Officer
- ✓ Formation of CU Project Group
- ✓ Provisioning of Demo ERP instance for CU
- ✓ Feedback about the system configuration from CU Nodal Officer
- ✓ Analysis, Time and effort estimation for carrying out configurations using PERT Method
- ✓ Review and Agree on Criteria for Prioritizing the configuration requirements with Nodal Officer
- ✓ Acceptance of configured ERP Instance by CU (Nodal Officer)

3.2 Roll-out/Deployment

Roll-out/Deployment starts after acceptance of provisioned instance by CU.

Key functions undertaken under this are:

- ✓ Support for initial configuration of ERP modules
- ✓ Training of system and department users
- ✓ On-site support for roll-out period of 2-3 months, extendable to 4-6 months.
- ✓ Ongoing remote support with periodic performance reviews for the project duration.

3.3 Roles and Responsibilities of Nodal Officer

The Nodal officer will champion Samarth ERP implementation in her/his University by participating actively in the project and ensuring smooth coordination for timely onboarding of academic and other units of the university.

The Nodal Officer will be the single point of contact for the following, but not limited to, key activities:

- ✓ Coordination with Samarth Team at University of Delhi
- ✓ To provide basic technical infrastructure and support to departments and other units of the university for using Samarth ERP

- ✓ Arrange technical human resources to be engaged with Samarth Team and Samarth ERP Roll Out Staff to be deployed at the university for smooth implementation
- ✓ To arrange regular training sessions related to the deployment
- ✓ To help in implementing Samarth ERP
- ✓ Timely provide all necessary approvals for the project implementation
- ✓ Arranging suitable accommodation/guest house for Samarth Team as and when required
- ✓ To arrange long term boarding and lodging of Maximum 2 Samarth ERP Roll Out Staff members at or nearby the university
- ✓ To setup a web-based video conferencing facility for day to day communication regarding the project
- ✓ To provide required information related to the institution's profile and level of existing automation of processes, if any.

3.4 Some Quick Statistics

11

Core Functions

40+

Samarth Modules

60+

Sub-Modules/Features

100%

Automation Engine
for Universities



Functions	Modules	Sub-Modules/Features
→ HR (Continued)	Residence Allocation Management	Allocating residences to university staffs Managing residences Maintenance of residences
→ Accounts and Finance	Fee Management	Customised fee rules for various services Fee administration <ul style="list-style-type: none"> - Received and refunded payment - Public Payments - Check Payments Event Fees Departmental Roles and Access Report Generation
	Payroll Management	7th CPC With Salary Customizable salary structures Income Tax Declaration/Deposition Form 16 and Form 24 reporting Tax Deduction Remittances PF Interest Calculation Automated recurring and non-recurring salary generation Multi level approval mechanism Employee Salary Slips
	Budget and Accounts	Formulation & Allocation Expenditure Monitoring Grants-in-Aid (for Sponsored Projects in RPMS) Budget and expenditure Other Charges Records Department Access Dashboards
	Procurement of Goods (linkage and Interfacing)	Integration with GEM and CPPP
	Bill Tracking System	Manage Vendor bill Payments <ul style="list-style-type: none"> - Purchase orders - Capture Diary No., Date of passing from Finance Dept. - Objections raised Activity Logs Report Generation

Functions	Modules	Sub-Modules/Features
→ Governance (Continued)	Third-Party University Ranking Systems	QS World The World University Ranking (WUR) IndiaToday University Ranking
	Minutes & Resolutions Archive & Retrieval System	Repository of minutes and files Role based access and retrieval
→ Core Modules	Core Communication System	Send Bulk/Targeted Emails Send Bulk/Targeted SMS Send Bulk/Targeted Push Notifications
	IT Service Desk (for University Computer Center)	Manage Incidents/Service Requests Manage SLAs Service Request for University IT Services Self Service Portal
→ Other Services	Sports	Sports Mapping Sports Facilities In Organization Sports/Gym Membership - Register - Optional Fee Payment
	Transport	Fleet Management - Manage Vehicles - Assigning vehicles Daily Tracking of vehicles Expenditure Reports - Miles covered - Fuel Usage
	Health	Health Dashboard - List of Hospitals/Panel - Health Facilities Subscription and memberships - Membership Plans - Membership Records - Fee status and Fee Amount - Payment Integration Health Record
	Security	University Helplines - List multiple types of helpline, Contact authority, Helpline number and email - Track Status of helpline - Data APIs to display information on Website Security Facilities - Security Guidelines - Data APIs to display information on Website

Functions	Modules	Sub-Modules/Features
→ Other Services (Continued)	Security (Continued)	<p>Awareness Programs/Workshops</p> <ul style="list-style-type: none"> - Create programs with Program Type, Duration, Organiser, Feedback/outcome - Data APIs to display information on Website <p>Incident Record</p> <ul style="list-style-type: none"> - Resolution - Incident type
	Essential Services	<p>Incident Management</p> <p>Amenities Subscription</p> <ul style="list-style-type: none"> - Guest House - Conference hall - Parking

4.2 Samarth eGov Suite - Roadmap

Product Rollout Phases	Modules	Total = 44 Modules
→ Pack 01 (15 Modules)	01 Organisation Structure 02 Organigram 03 User Management System 04 Admissions System 05 Research Project Management System (RPMS) 06 File Management and Tracking System 07 Estate Management System 08 Inventory Management System 09 Recruitment System 10 Employee Management 11 Leave Management 12 Fee Management 13 Bill Tracking System 14 RTI Management 15 Legal Case Management System (LCMS)	
→ Pack 02 (11 Modules)	01 Hostel Management 02 Training and Placement 03 Programme Management 04 Content Federation System (CFS) 05 Payroll Management 06 Budget & Accounts 07 Knowledge Management System 08 Sports 09 Transport 10 Health 11 Security	

→ **Pack 03**
(18 Modules)

- 01 Student Lifecycle
- 02 Grievance Management
- 03 Alumni Portal
- 04 Academics Management
- 05 Evaluation & Grading
- 06 Affiliation Management
- 07 Endowment Portal
- 08 Residence Allocation Management
- 09 Procurement of Goods (linkage and Interfacing)
- 10 Research Management
- 11 ToT Management
- 12 Central Data Unit
- 13 University Web Portal
- 14 Third-Party University Ranking Systems
- 15 Minutes & Resolutions Archive & Retrieval System
- 16 Essential Services
- 17 Core Communication System
- 18 IT Service Desk (for University Computer Center)
- 19 Library Integration
- 20 Student feedback system
- 21 Career advancement scheme

4.3 Salient Features of the System

✓ **Single Sign-On**

Web based Single sign-on with Optional LDAP integration

✓ **Cross-Platform**

“Samarth” is based on open standards, hence gives the flexibility to choose from the various available platforms for the deployment including Linux, UNIX and Windows.

✓ **Interoperability**

Each module exhibits great easy while exchanging information, hence a transaction flow, which requires passing through the multiple components can be easily implemented.

✓ **Modularity and Scalability**

“Samarth” modules can function as independent applications. The modular architecture enables the users to define the functional instance by selecting application modules relevant for the use case. The architecture is SAAS oriented and hence highly scalable.

✓ **Security**

“Samarth” addresses security at multiple layers. The entire framework works on RBAC (Role-Based Access Control) and requires multilevel authentication for business-critical functions. At the data layer, critical user information like passwords is encrypted prior to storage in the database. The web transactions are secured by implementing HTTPS (Access Control) and requires multilevel authentication for business-critical functions. At the data layer, critical user information like passwords is encrypted prior to storage in the database. The web transactions are secured by implementing HTTPS

✓ **Logs**

“Samarth” maintains a complete audit trail life cycle for each individual transaction.

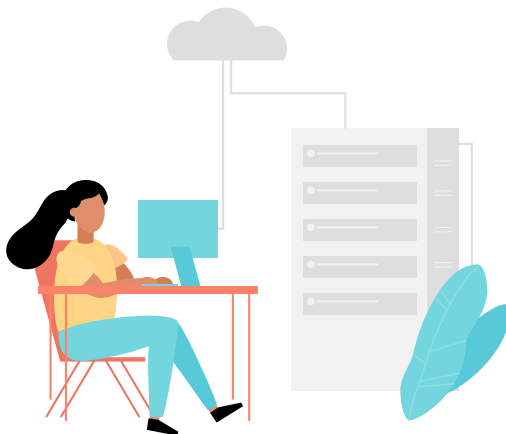
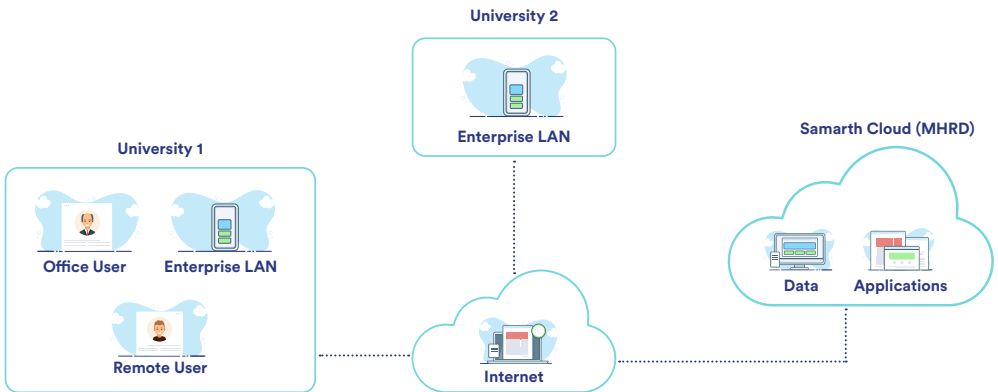
05 Deployment Architecture

5.1 Software as a Service (SaaS)

Where the system is hosted centrally on cloud and offered to other universities as a Service (SAAS)

→ Deployment Architecture - SaaS

- No Capex
- Quick Deployment & Roll Out



SaaS

Software as a
Service Architecture

Project Samarth

Designed and Developed By



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