



MHRD

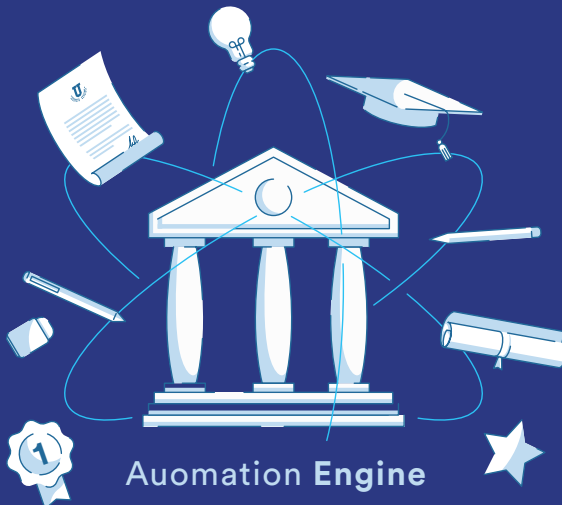
Government of India
Ministry of Human Resource Development

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 Online Admissions

- ✓ UG, PG, PH.D/M.PHIL
- ✓ Applicant Dashboard
- ✓ Admission Process Automation
- ✓ Integrated Helpdesk

02 Student Lifecycle

- ✓ LMS & Architecture
- ✓ Exam & Certificate
- ✓ Training & Placement
- ✓ Alumni

03 HR & Payroll

- ✓ MHRD/UGC Compliant Recruitment
- ✓ Employee Record
- ✓ Leave Management
- ✓ Casual Leave Information

04 Administration

- ✓ Federated Content Management
- ✓ Faculty Proforma
- ✓ AQAR

05 Accounts & Finance

- ✓ Research Project Management
- ✓ Grants & Other Charges Management

06 Establishment

- ✓ Estate Management
- ✓ Inventory Control & Management

07 Governance

- ✓ File Management & Tracking
- ✓ Legal Case Management
- ✓ RTI Management
- ✓ Core Communication

08 myUNI

- ✓ uniCAN - Computer Access Network
- ✓ Email and Web Services
- ✓ ICT Services

2.1 Key Terms

- **MHRD** : Ministry of Human Resource Development
- **Project** : Project Samarth
- **DU** : University of Delhi
- **CU** : Central University selected for ERP implementation
- **HEI** : Higher Education Institution selected for ERP implementation
- **Nodal Officer** : Single point of contact at CU for Samarth Project
- **CA** : Competent Authority

2.2 Overview

Based on interactions held with MHRD, it emerged that there is a need to provide the developed framework to other Universities & HEIs. In the following chapters, details on the exhaustive “Project” for implementing in Central Universities (CU) have been provided.

2.3 Objectives of the Project

- ✓ Develop and maintain consistent data definitions;
- ✓ Increase data security, integrity, validity and reliability;
- ✓ Assure system-wide security and protection of confidential information;
- ✓ Seamless integration between technology and education delivery by providing a single
- ✓ Platform based on new technologies and open standards;
- ✓ Access control/role-based access to data in real-time (for all its stakeholders) provide accessible, user-friendly administrative and student support services;
- ✓ Reduced the need for backup or shadow systems;
- ✓ A platform for re-engineering practices and continuous process improvements.

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

09

Primary Functions

40+

Samarth Modules

60+

Sub-Modules/Features

100%

Automation Engine
for Universities



4.1 Samarth Modules

Functions	Modules	Sub-Modules/Features
→ Student Related Activities/ Services	Admissions	Centralised Online Admission Portal
	Pre Admissions	Online Application Exam Center Management Center Allocation Automated Roll Number, Hall Ticket - and Attendance Sheets Interview Management Shortlisting and Merit List Preparation
	Fee Management	-
	Hostel Management	Allocation Complaints Maintainence Discipline
	Academics	Time Table preparation & Dissemination Attendacnce Management Assignments & Feedback Forums and Blogs Academics Resources: Notes and - Online Material
	Evaluation & Grading	Scheduling of Exams Exam Fees Hall Tickets Seat Allocation Result Preparation & Communication Transcripts & Certificates
	Student Life Cycle	PIS Academic Records Aadhar Linkage Alumni Portal Training and Placements Portal

Functions	Modules	Sub-Modules/Features
→ Administrative Tasks/ Services	HR (PIS)	Faculty Non-Faculty
	Payroll	-
	Leave Management	-
	Grievance Management (linkage with CPGRAM)	-
	Budget (With linking to various regulatory agencies like PFMS, EAT etc.)	Formulation & Allocation Expenditure Monitoring DBT Grants-in-Aid (for Sponsored Projects)
	Accounts	-
	Procurement of Goods (linkage and Interfacing)	GEM CPP
	Inventory Management System	Metadata based Asset Tracking Asset Assignment Vendor Management
	File Management & Tracking	-
	Bill Tracking System	-
	Recruitment Management System	Compliance with UGC Points Calculation for Assistant - Professor API calculation for Professor and - Associate Professor Online Screening comments and - shortlisting
→ Campus Management	Sports Facilities	-
	Health Facilities	-
	Essential Services	-
	Transport Management	Manage Fleet Manage Plying Schedule Track and Monitor Fleet
	Security Management	-
	Residential (Accommodation) Allocation & Management	-

Functions	Modules	Sub-Modules/Features
→ Knowledge Management	Paper Publications	-
	Patents	-
	Thesis & Reports	-
	ToT Management	-
→ Library Management	Automation of all functions	-
	Digitization	-
	E-Journals	-
	Linkage with INDL (Meta Data)	-
→ Administration of Affiliated Colleges	Reports and Returns	-
	Scheduling & Monitoring	-
	Content Federation System	Manage Information on University Portal Post Events, Notifications on - University Portal
→ Governance Activities	RTI Management	-
	Minutes and Resolutions Archive & Retrieval System	-
	Legal Case Management System	-
	Third-Party University Ranking Systems	QS World The World University Ranking (WUR) IndiaToday University Ranking
	Integrated University Information Portal	Web Portal (CMS-based) Integrated Service Gateway
→ myUni Portal	Service Request Portal	Service Request for University IT Services Self Service
→ Core Modules	Core Messaging 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

4.2 Salient Features of the System

✓ Single Sign-On

Cross Browser, Cross Screen and Mobile viewing compatibility

✓ 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.

4.3 Samarth Pack 01

Functions

Modules

→ Student Lifecycle

01 Pre Admissions and Admissions
02 Fee Management

→ Administration

03 HR (Profile)
04 Leave Management
05 RPMS
06 Estate Management System
07 Inventory Management System
08 FMTS
09 Bill Tracking Services
10 Recruitment

→ Governance

11 RTI Management
12 Legal Case Management System
13 University

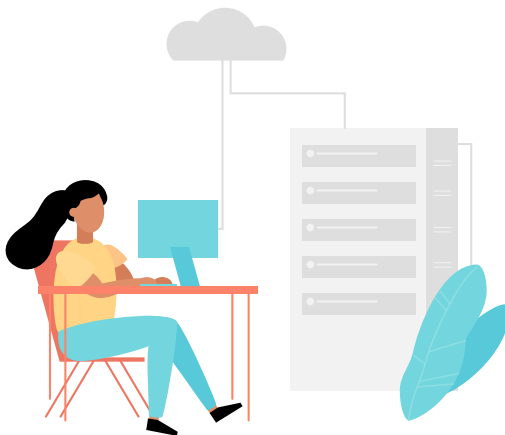
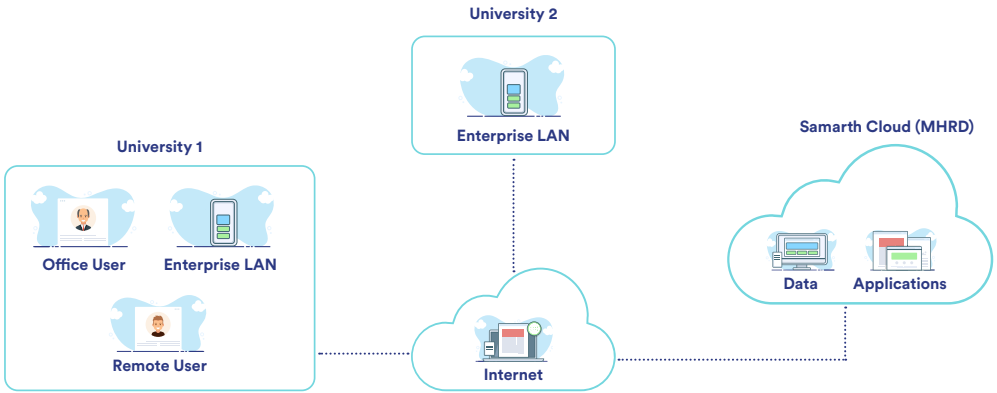
05 Deployment Architecture

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

Coordinated By



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