

Enrolment to Result Management System



eRMS<sup>®</sup>

Complete End2End University Solution

Designed, Developed & Implemented by

**PC TECHNOLOGY CENTER PVT. LTD.**

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## Foreword

In recent years, all Indian Colleges, Universities and Tech. Boards have struggled to manage, process and intelligently interpret volume, variety and velocity of student data. As volume of student data multiplied, deployment and implementation of a transparent Student Result Management System has become TOP Priority of stakeholders across India. While everyone is discussing on various IT solutions to make life of a student better, following questions crop up again and again:

1. What is ERP in Universities? Does University need an ERP or an e-Learning and Assessment Platform (eLAP)?
2. How to Computerize Examination Result Management System (eRMS)?
3. How to implement an affordable University e-Learning and Assessment Platform (eLAP)?
4. How to use student data to make intelligent decisions?
5. What value is eRMS capable of delivering to the Government, who fund such initiatives and who have declared Right to Education, a Fundamental Right for every child and youth of the country?

To answer these questions and to provide broader perspective on the University Examinations Result Management Software, PC Technowledge Center P. Ltd., describes key outcomes the eRMS will serve and provide a framework for discussion.

Best part of act is an intense focus in Indian Universities on Computerization of Examination Result Process. Yet, there remains confusion regarding what path to follow, value it will provide to government agencies seeking to optimize RPS process and improve accountability through University Management System (UMS). The delay in implementation of UMS may partly be due to variance in approach to the solution by the Government Administrators, Academicians who are heading the Universities and ground realities in information technology solution providers.

This white paper approaches eRMS from the perspective of the Manager of Universities and beneficiaries of improved system and touches upon Current Scenario of University Result Management System, ideal Business/Mission Value of Transparent eRMS, and offers some

Suggestions for formulating Universities' Software Policy. We have included a couple of case studies and suggested a roadmap to the Universities.

This white paper is based PC Center findings and field experience while implementing its projects, client and service providers' feedback at various universities spread across India. This White Paper discusses the best practices and lessons learned, to shorten adoption curve, and provide a pragmatic road map. Further suggestions and comments from Industry Experts and Policy makers are most welcome.

## Executive Summary

What is eRMS? eRMS is an End-to-End Examination and Result Management System, developed for Indian Universities and Tech. Board. eRMS starts with Student Enrolment, pre-exam, during-exam i.e. Conduct and Processing of Examination Result, and also post-examination reports. As entire eRMS processes are computerized students are assured of accuracy, security, and fairness in the RMS and timely declaration of results. The eRMS has transformed Universities' Examination Department itself.

Leveraging eRMS: Perfect implementation of eRMS, iTest, iLearn, iPay and eGazette, will improve student's experience of Result Process and society at large.

RTI & eRMS: When RTI Act was introduced in 2005, huge responsibilities are cast on the administrators of Universities and Tech. Boards. eRMS offers transparency to university management can quickly respond to most of the RTI queries pertaining to Result Process.

UGC and Government of India who are driving Digital University Strategy across India, will find in eRMS the step in the right direction, as it is a tested product, offering public accountability.

Over the years, Student Data has emerged as a strategic resource, which if used for trend analysis by Planning Commission, higher employment generation and wealth creation can be achieved. Due to incomplete information, we struggle to keep pace with economic developments. If every University computerizes its systems, policy makers and Industrialists will have information to plan investment in those segments which have demand and growth so that all pass-outs will get employment.

Challenges, Solutions and path forward:

Challenge today is to implement Secured, Scalable and Transparent eRMS software which meets the needs of various Universities in computerizing their RMS at the earliest, so that other systems of University Management can be brought under the realm of Digital Initiatives. Our iLearn, iTest, eGazette Apps can be integrated to the eRMS System, offering an Umbrella of Digital University Experience.

Educators and teachers play a significant role in this initiative in building quality contents in the eLearning System and improving and updating the same as an ongoing activity, so that every student can be benefitted from the Digital University initiative.

It is possible to extract value from these e-Education initiatives, and path is relatively straightforward. Business ERP has demonstrated numerous success stories. Time has come to showcase University eRMS Bouquet so that we move fast forward.

Setting up of eLAP is now affordable. It is this convergence of various technologies, availability of infrastructure and the affordability of doing so that brings Universities to an inflection point. The time is NOW!!

Success in capturing the transformation lies in leveraging the skills and experiences of stakeholders and technology partners. The synergy of University Administrators, Solution Software Developers, small or big, Internet Solution Providers (ISPs), Content Builders (i.e. the educationists and teachers) can take the country ahead at a rapid pace.

# Defining eRMS

## eRMS, its characteristics and Bouquet of Applications

### What is eRMS?

eRMS is an End-to-End Examination Results Management Software System. Scope of eRMS starts with Enrolment of a student to the University and covers every aspect of pre-examination, during examination and post examination reporting requirements. Every learning, examination and assessment related event is recorded and could be made available to him and other stakeholders in the process.

### Characteristics and features of eRMS

University users look forward to a Transparent RMS, which is parameterized so that it can be implemented in a short span of time. It should facility to import Student History Data in a structured form, by maintaining proper trail, facilitating Reduced Time to Result Processing Cycle. Parameterized software ensures that future changes in Exam Rules can be implemented in a minimum timeframe. eRMS has Modular Design and extensive security features, facilitating integration of complementary Systems.

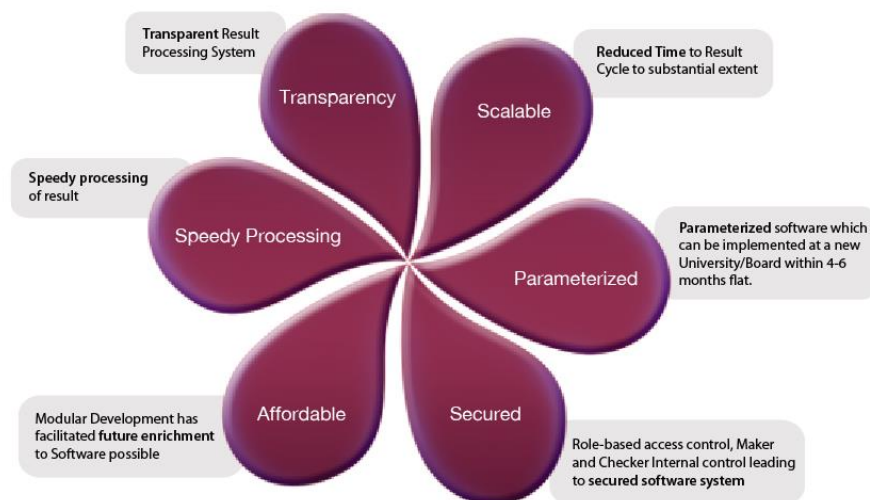


Figure 1 : Characteristics of eRMS



## Bouquet of University Applications



Figure 2: Bouquet of University Applications

We offer bouquet of products invaluable for Education and University Management to complement eRMS such as iTest - Online Examination and Assessment System, iLearn - a Learning Management System, eGazette - a Digital Workflow system to manage and edit Student Gazette, and iPay - Electronic Payment Gateway System, which, once integrated with the Internet Backbone, can build a robust Digital University Model. Together these systems make an unbeatable offering which is of immense value to each and every University across India as an e-ERP. All these Solutions are Cloud ready, and can be deployed as

secure intranet for the benefit of its stakeholders.

## Current Scenario of University Result Management System in India

Currently many Indian Universities are processing their Results in manual or hybrid form with incomplete data and information. Student's history is maintained in physical file records, with all its limitations. Result corrections are carried out manually with missing audit trail, sacrificing transparency, leading to malpractices and/or delays. Some Universities outsource RPS activities and do not keep pace with changes in technology and IT Infrastructure. As a consequence quality of service suffers, causing immense hardships to students and society at large. No doubt, some of the Boards and Universities are tech-ready; as a result they are the trend setters in this niche field and reap rich fruits for their dynamism.

## Social Trends

Today the Info-Technology is stable, and Internet backbone is available across India at an affordable price. The growing Middle class is opting for better, higher education and with Government support, Universities would want to give better quality service than before. Examination Rules are flexible and student-friendly, making result processing logic intricate and manual result processing under current situation is simply impossible. Moreover, stakeholders' expectations, legal and media support and demands from University administrators to offer error-free result process has made it mandatory for Universities to deploy best available software systems in their universities, at competitive commercial terms. With markets opening out, multiple vendors offer different software solutions giving wider options to University administrators.

# Technology Underpinnings

## Recommended IT Infrastructure for eRMS

In case of incorrect sizing of Application and Student Data size, the hardware and software infrastructure falls short of application requirements within a couple of years, as student data multiplies every semester. We recommend following IT Infrastructure for 150000 student size of University/BTE with 5 years of student history:

### Recommended Hardware and Software specifications for eRMS Intranet Application

Form factor/height	Rack/2U
Processor (max)	Up to two 3.46 GHz six-core (3.60 GHz 4-core) Intel Xeon 5600 series proc.
Number of processors (std/max)	One/two
Cache (max)	Up to 12 MB Level 3 (L3)
Memory (max)	288 GB (model dependent)
Expansion slots	Four
Disk bays (total/hot swap)	Up to 16 2.5 in. hot-swap serial attached SCSI (SAS)
Maximum internal storage	Up to 16 TB (hot-swap SAS/SATA)
Network interface	Integrated two ports, plus two ports optional Gigabit Ethernet (GbE)
Power supply (std/max)	One/two; 460 W, 675 W, 675 W high efficiency (model dependent)
Hot-swap components	Power supplies, fan modules, disks
RAID support	Model Dependent
Operating system	Microsoft® Windows® Server Enterprise, 2008 R2 or latest
RDBMS	MS SQL Server latest version
Dev. Platform	MS Visual Studio.net 2010 or latest
Reporting Tool	SAP Crystal Report

Table 1 : Recommended IT Infrastructure for eRMS

## **eRMS Integration Process Plan**

Integration between eRMS and legacy RPS and existing IT investments is most important for successful implementation of eRMS. Applications' integration will facilitate User to identify, capture, understand, cleanse, transform, manage, and deliver trusted University information to stakeholders. For successful migration to eRMS, University should transparently identify student data, plan how, when, where, and to whom Student/Exam information should be made available, put in place appropriate management, governance, and security practices and identify and prioritize subsystems projects that deliver the most value to the University and ensure that the subsystems are well-integrated and working in unison.

## **Networking Requirements for eRMS**

eRMS is a Resource-light System and can be deployed over private/public/hybrid network. Yet, during data capture and transfer for Examination marks collection, it needs fully secured network. Since most government agencies and Universities are undergoing significant IT Infrastructure transformations to consolidate operations and standardize on common infrastructures, it will allow data center operators to achieve greater flexibility in how they deploy modular data centric solutions. Every University and BTE will gain efficiencies if it correctly understands its infrastructure requirement.

## **Cloud Computing Considerations for eRMS scaling up**

eRMS system is Cloud-Ready and facilitates quick deployment, cost-competitive and scalable to handle ever increasing student-volume. For a cloud-based eRMS, University should educate, train and hands-hold affiliated colleges, institutes, students.

## **Student and Exam Data Capture Plan**

The first step in eRMS Transformation initiative is to identify and understand sources of data, their volume, variety, velocity, and quality. This understanding helps us develop Data capture and transfer interfaces and methodology of checking and cleaning the same before importing it in the eRMS and process upon it.

## **Student and Exam Data Preparation – Cleansing & Verification**

Once Student/exam data is imported, it may require a simple pass through for direct processing or analysis or it may be filtered, cleaned and used for downstream processing. Structured information may require standardization and verification.

**Data Transformation for BI and DSS purposes**

Once Student, Exam Form, Exam Marks, Scheme Master Data are cleansed and verified and processed through eRMS and stored in RDBMS, University can use it for decision making, reporting and trend analysis. eRMS offers to create information that is accurate, complete, and insightful – such that every nugget of information is extracted from the eRMS database.

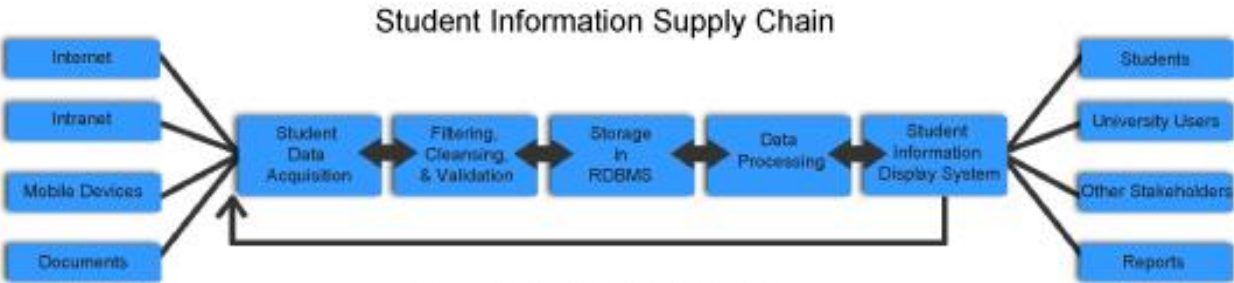


Figure 3 : Student Information Flow in eRMS

# eRMS Case Study I



Confucius said: "The journey of a thousand miles begins with a single step."

eRMS Case Study I: A Leading Board of Tech. Education, from India

This Customer case is one of the most interesting Software Project success stories for BTEs across India, as also for PC Center.

This BTE was outsourcing the Examination Result Process through an ITES Organization and started in-house RPS since 1996, which was carried out till 1999 on Novell Platform. To tackle threat of Y2K, BTE planned to migrate to GUI-based Application using latest technology, so as to make it sustainable on long term basis. Thus, we came in picture and developed the RPS which has sustained itself in its various avatars since 1999 and over the years, it remained relevant and useful.

In FY 2000, this Software was called as Result Processing System (RPS) and covered pre-exam, during exam and post-exam processes under Client-Server Technology. In FY 2001 (i.e. for second exam RPS cycle), BTE RPS went Live which was an occasion to celebrate success of Project. All systems analysts, Controller of Examination and Top Management worked very hard from the day one and within no time, various new milestones were reached. Over the years, motto of "Pursuit towards Excellence" was followed and many student friendly initiatives were incorporated in the RPS, making it flexible and responsive.

1. Technology deployed from 1999-2000 to current eRMS:
  - RPS 2000: Window-Based Client/Server RPS System (Annual Pattern), Dev. Tool: V. Basic 6.0, RDBMS: MS SQL Server
  - RPS 2006 onwards: RPS System, Modified from Annual Pattern to Semester based RPS. VB: RDBMS:
  - eRMS 2012: Web-enabled system capable of integrating to Cloud Computing web-interfaces. Dev Tool: RDBMS

2. Go Live Preparations and Actionable: As candidate-count increased from 170000 for CY 2000 to 15,00,000 for CY 2013, we migrated from RPS to eRMS, which was possible due to following steps:
- Thorough testing of each and every condition before going live, covering more than 99% candidate records, exam schemes.
  - Candidates/Exams/Course Data migration to eRMS by processing candidate result since inception.
  - Two Exam Results processed in parallel for RPS and eRMS systems, and results compared and matched, before complete migration. eRMS new release tested and implemented (third release) starting W-2012.

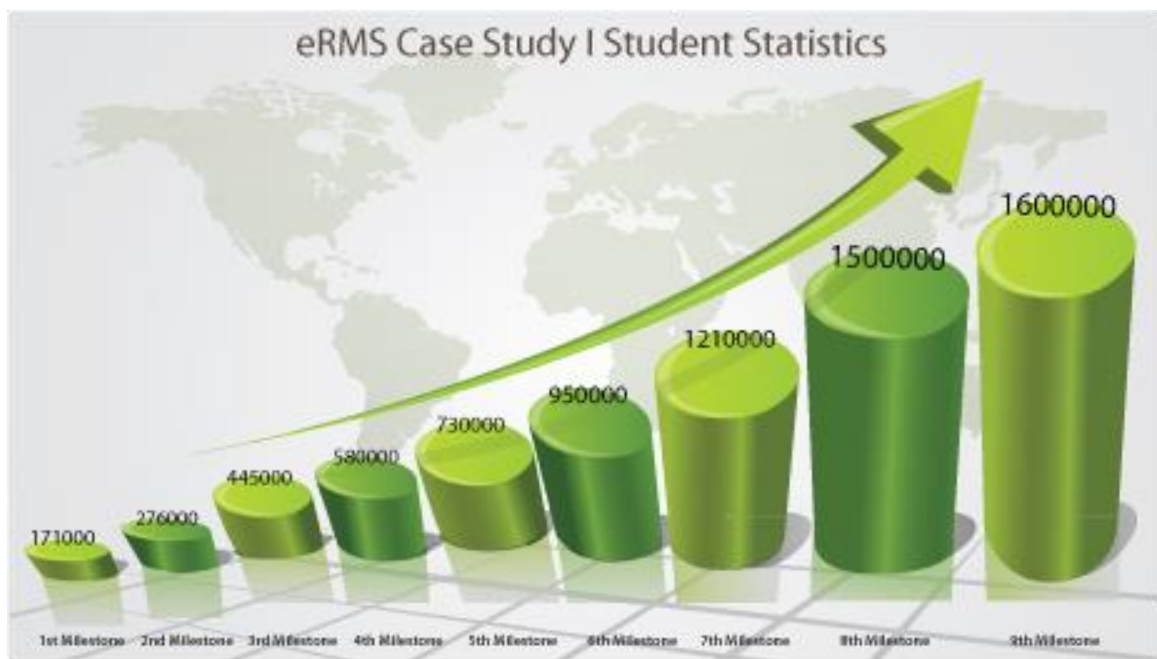


Figure 4 : eRMS Case Study I

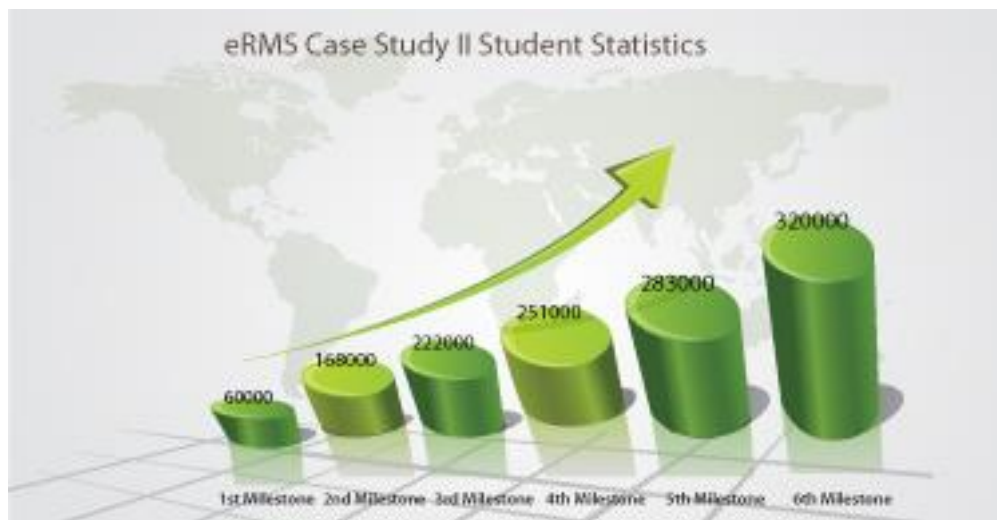
3. Key Benefits of migration to eRMS are that the new system is a fully secured system, where Processing time came down by almost 40% of existing RPS System. Multiple manual interrupts and checks of RPS were done away with, as all these checks were built in to the new system. This has crushed the RPS Cycle from 45 days to 25 days. Some activities redrawn, through BPR, which streamlined the department and improved Productivity. This ensured Error-free Results. eRMS implemented the concept of Single Process Activity to take care of Results, Grace Marking and Menu-driven solution for proper audit trail and accountability of administrators.
4. We faced “Go Live” challenges such as efforts in transferring History data of around 6.5 lakh candidates, importing the cloud data of third party in to eRMS only after cleaning and authenticating the same, changing many-post exam workflows to bring in transparencies to various processes. Revaluation- Reassessment and Class Improvement processes which used to take 30 days under earlier system, was completely ‘Process- re-engineered’ as a result, same activities are centralized and revised results declared within 3 days of re-assessment. We also implemented iTest, an Online Assessment & Testing System, where 1.5 lakh students are tested and results processed online.
5. Since we have implemented this RPS/eRMS in the year 2000-01, the system has witnessed 24 plus examination cycles and there many continuous changes, modifications and improvements in the system to keep pace with technology, user requirement and adaption to Cloud Computing. The lessons learned in the process has given us confidence to undertake and implement eRMS meeting the University requirement based on the level of technology it wants to implement.

Success of Software Project is Synergy. Synergy implies "The whole is greater than the sum of its parts".

# eRMS Case Study II

## eRMS Case Study II: A Leading Technical University from India

1. Background: We implemented our RPS system with modifications under the acronym University Management System Software (UMSS) for a TU University in FY 2007-08, and approximately 60,000 candidates appeared for October 2007 Examination.
2. University Milestones: Since May 2008 to May-2013, number of students increased at a fast pace, and for FY 2014-15, more than 3,25,000 candidates are expected to appear for the examinations per year.
3. The student count increased over the years due to following:
  - Since 2008, the TU introduced many Degree, Diploma and Management courses under its scope.
  - Since 2008, number of colleges and institutions added to the TU has gone up rapidly and so also Student intake.
  - In the year 2009-2010, the Backlog Rules were changed and students with backlog in 3 subjects were “Allowed To Keep Term” (ATKT) as a result, number of students appearing for examinations has gone up substantially.





4. **Current Challenges:** Over a period of time there is a substantial increase in workload at TU for data processing, and at the same time, the stakeholders' expectation about easy and Quick Access to Information has gone up sky-high. Once software was developed and handed over to TU, due to procedural reasons, Software Maintenance Contract was not signed, resulting in in-house maintenance, which affected performance, due to tweaking of the system and random patch-up work. Now the UMSS activity is back on track with new improvements in the system and access control is tightened with introduction of Biometric devices and software to monitor and record access to the system. The TU is planning software upgrade which is expected to introduce Cloud-based Data capture and processed results an Online display module. It is expected to offer easy access to student information from the farthest corners of the State.
  
5. **Big Picture:** The student count increased from 60,000 to almost 3,00,000 from 2007 to Year 2013-14, which is 5 times growth. And it is our UMSS Software which is processing the results of the TU despite so many challenges.
  
6. **Future Roadmap:** After experiencing all these challenges, we recommended the TU to Upgrade existing UMSS to eRMS along with Long-Term Facility Management and System Upgrade MOU, to ensure scalability, better performance, greater security and more transparency. We recommend TU as well as every University Set-up to implement iTest, eGazette, iLearn, iPay solutions so as to take TU to Digital University level. This will ensure better service offerings to the Stakeholders at large.

## The Path Forward: Getting Started

We have deep domain knowledge and on-site experience in eRMS processes and challenges of BTEs and Universities, we are well-aware of the business and mission challenges these Universities and Boards. As such, we share the Lessons Learned, and the best practices to be followed for successful migration:

1. Define Software Project requirements: eRMS initiative starts with specific and well defined project requirements, selection of proven Solution with “fit for purpose” approach.
2. Plan to augment IT Investments for better ROI: Implementing scalable system by augmenting current IT investments rather than building entirely new enterprise scale systems. Our eRMS takes care of initial requirements, capable of scalability to Cloud Computing leading to Digital University in phased manner. We offer lightweight, low trauma solutions with integration to bouquet of other products at an affordable cost with high ROI.
3. History Data Migration: For successful implementation, eRMS needs clean history data. For an established University biggest challenge is to migrate history data, which should be budgeted in Business Plans.
4. Student Data entry points: We consider following patterns of data deployment:
  - Velocity: eRMS has incorporated Use cases at every data-entry point in every data-import sub-system to take care of high degree of velocity in OLTP.
  - Volume: With ever-increasing student data, cleaning, managing, analyzing student data, is a challenge, which well-designed Data base architecture of eRMS very efficiently.
  - Variety: As new courses are added every year, eRMS explores, understands and analyzes variety of data sources, across all formats, scaled for high performance while maintaining low cost.
5. Identify Infrastructure gaps: Once business requirements are assessed and identified our eRMS Team takes care of Customer’s immediate, mid and long term requirements. Customer should then plan how to close Infrastructure gaps.
6. Iterate System Process: Once eRMS is successfully implemented, it should be run for foreseeable future, as an iterative process, so that only screened and clean data gets in to the system and clean Information reaching out to the stakeholders, enabling authorities to take informed decisions.

## **Phase-wise Implementation:**

**Phase I** is to deploy the eRMS as per plan outlined above, setting platform for Phase II.

**Phase II** would include implementation of various Learning related Applications and other allied applications such as eGazette: a DMS with Workflow, i-Learn LMS, i-Test: Online Examination and Assessment System and i-Pay: Online Student Fee Management System, with Payment Gateway.

**Phase III** of Deployment: Go Cloud Computing and Convert your University to a Digital University: As eRMS and linked eGazette, iLearn, iTest, iPay are implemented, the eLAP & MIS platform will be able to encompass all allied activities and will set a stage to become Digitally Ready University. At this stage entire data and information will flow across the University digitally, facilitating “Any-Time Learning” and “Any-where Learning” resulting in reduced pressure on physical assets and infinite possibilities of growth at the University. A word of caution at this juncture. While migration to cloud offers the promise of rapid scalability, University should take each step carefully, as it is dealing with students and their career, as the cloud has important caveats to keep in mind. Before leaping over tall clouds in a single bound, understand that cloud may only be a part of your overall IT Infrastructure strategy and that happy stakeholders and student community is the yard stick for success.

## Recommended Road Map for Getting Started:

The time is NOW!! Let's join hands, take planned steps quickly and de-bottleneck the systems. Rapid changes in technology has made it more affordable. As volume, variety and velocity of student data has gone up, new information, facts, and dimensions that could not be practically discovered in the past, can be captured, managed, and analyzed, enhancing effectiveness of education and eLearning experiences at University. With eRMS and our Educational Bouquet, one can imagine University with expanding student-base but a reduced strain on its services and infrastructure.

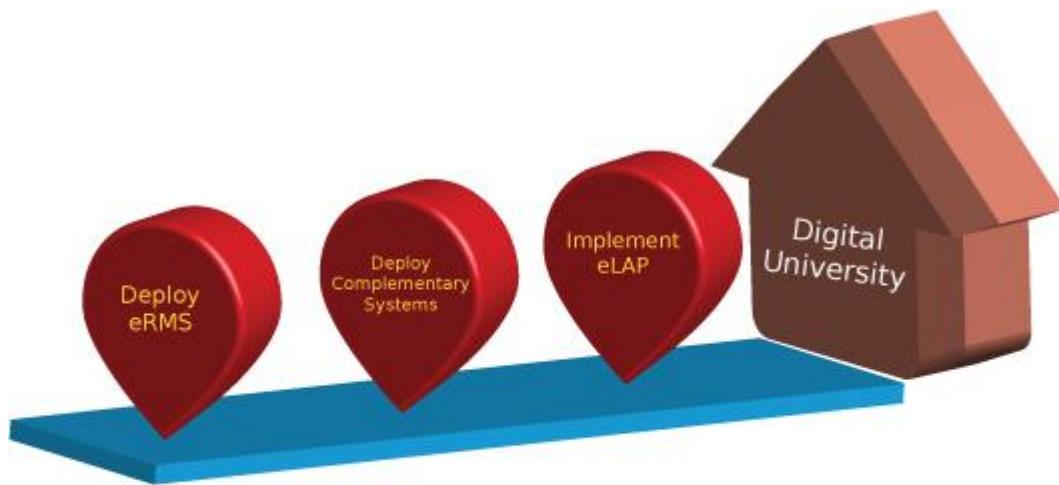


Figure 6 : Road Map for Getting Started

\*Complementary Systems

- 1.i-Learn
- 2.i-Test
- 3.i-Pay
- 4.e-Gazette

\*eLAP

- electronic Learning & Assesment Platform

# Conclusion & Acknowledgements

## Conclusion

Today's student lives in challenging and exciting time, when competition is ever-growing (so also the opportunities), cost of living has gone up, Indian Government would like our Universities to be catalysts for change and offer International Quality of education at Indian Purchasing power. As India has the highest percentage of young population, pressure on the Universities and Boards will increase substantially, more so since international Universities plan to enter Indian market. Indian Software Developer ecosystem need to scale up our software solutions to meet ever-increasing demand of the society.

As of now, the Student Information system, such as eRMS, iLearn- LMS, iTest and other complementary systems are either non-existing or at a primitive level. Many of Indian Universities covered by us during the last decade have implemented solutions on out-sourcing modules as these Universities do not have any trained man-power and they cannot attract or retain quality manpower.

Under such circumstances, the Universities must take initiatives to implement proper/reliable and scalable software which has proven track records so that they can offer better experience to their students at pre-exam, during exam and post-exam stages. If entire Student Information System is integrated from the time of entry of a student to the University to his/her leaving the University on completion of his studies, we would be helping the student in his goal of life. Moreover, hidden in the immense volume, variety and velocity of data that is produced today at every University, is new information – facts, relationships, indicators and pointers -- that either could not be practically discovered in the past, or simply did not exist before. This new information, effectively captured, managed, and analyzed, has the power to change the way education is offered to the society, thereby improving the lives of the common man of India.

To make the Student data a strategic asset that can be used to better achieve mission outcomes, data should be included in the strategic planning, education architecture, and human capital of the Society. These precepts should be embodied in Digital University Strategy, which can lead to unlock the power of Student Information to offer better, Job-oriented education and improve the quality of services for the Indian people, leading to increase in GDP of India.

The Universities/BTEs should continuously upgrade and update both hardware and software Infrastructure and ensure the systems are under proper maintenance; else they would lose valuable years to keep pace with technology and solution, as University Systems are always live, dynamic and interactive, needing continuous nurturing and monitoring.

### **Acknowledgements**

PC Technowledge Center P. Ltd., Mumbai India 400016, gratefully acknowledges contributions of the Universities, their Leaders, Administrators, respective Ministries and its Officials who have given us the opportunities in implementing the Technologies and solutions over the years in their states over these years. In each of these universities and States where we have successfully implemented the solutions of ours (including eRMS), we have made some unique and pioneering efforts in making these experiments successful. We are also thankful to those, who have not considered our solutions favorably since even such missed opportunities have taught us a lot. Due to professional relationships with these government agencies, we are unable to disclose the names of Universities and Boards (due to our NDAs with them). The case studies are actual ones and can be discussed with interested Universities with prior permission of our clients. We once again, express our thanks for their participation in making these solutions practical and effective and acknowledge their efforts and the valuable knowledge and innumerable years of experience they shared to develop the low-cost solutions for them. And the Systems Analysts, Secretaries and Directors of these Boards, Dy. Registrars, Registrars and Vice-Chancellors of Universities who have shared their Domain knowledge for the development of the Software Solutions are the real unsung hero for whom we take a bow!!

## Glossary of Terms and Acronyms

**eRMS:** eRMS is an End-to-End Examination Management Software System, developed by PC Technowledge Center P. Ltd., Mumbai 400016 catering to the specific needs of Indian Colleges, Universities and Technical Board. This End-to-End Solution starts with Student Enrolment and tracks student Examination activities process till the Conduct and Processing of Examination Result and maintaining the e-Gazette for future reference. As entire Examinations-related processes are digitized and transparency ensured, students are assured of accuracy, security, and fairness in the Result Process as well as timely declaration of results. The eRMS along with its complementary systems, has transformed Universities' Examination Department and the Result Process itself.

**eGazette:** Gazette is an Official Result Record which is printed for future references. To manage, store and retrieve the information therein, we have designed, developed, and implemented a Document Management System called eGazette. This is a workflow system that manages student records, edits, corrects and tracks all changes with complete audit trail. It is an Add-on/Complementary to eRMS.

**iPay:** iPay system offers a Payment Gateway facility for students spread all over the region/state to make payment of Examination fees, late fees and reassessment fee related to the Examination Management System. This important Add-on/Complementary system facilitates smooth payment, collection, tracking and accounting of various fees as also payments to examiners, paper-setters, Examination Supervisors, etc. Implementation of this system reduces the pain points of various stakeholders of University and adds to overall efficiency of the University.

**iTest:** Currently there are challenges of conducting examinations and declaration of results. As such, practical tests and classroom assignments carry up to 40% weightage and theory papers carry up to 60% weightage. This iTest is an Online Examination-Test and Assessment Software System handles this part of Examination Management. By implementing iTest system, which is integrated with eRMS, regular student assessment and evaluation can be carried out and Result Processing cycle can be reduced sizably.

**iLearn:** iLearn is an Online Learning Management System (LMS) where state-of-art Learning Platform is provided offering facility to design customized courses with in-house developed course-contents so that students learn “Any-Time, Anywhere” and improve their subject knowledge through quality learning tools and contents.

**eLAP:** eLAP, an e-Learning and Assessment Platform, facilitates integration of Online Learning and Examination and Assessment processes in to a single system. Through eLAP, one can deploy any courseware on the Cloud and offer flexible learning methodology, taking the University to the level of Virtually Global University.

**RTI:** RTI is the acronym for Right to Information Act 2005. With the introduction of the Act, Universities, Tech Boards and college administrators are required to maintain their student, examinations and results data in an organized and transparent manner.

**Student Data:** Student Data is at the heart of eRMS. Timely Capturing, and cleaning student data are the most important activities and part of successful implementation of eRMS.

**UGC:** University Grant Commission (UGC). UGC and other Govt. authorities are driving e-Governance Initiatives across all aided Universities.

**Information Resource Management (IRM):** An effective IRM plan has following four components:

1. Information strategy is the vision that guides decisions and will help the University determine how best to support its goals.
2. Information infrastructure comprise of technology and capabilities needed to establish common information framework.
3. Information governance is the policies and practices that facilitate the management, usage, improvement, and protection of information across the University.
4. Road map is a phased execution plan for transforming the conventional University to Digital University.



**Digital University:** Digital University should be the Vision, Mission and Strategy for every Indian University which wants to compete with International Universities who want to enter in to India’s vast education market. Once eLAP platform, iTest, iLearn, eRMS and eGazette are implemented at the University, it can truly make a claim to be a Digital University.

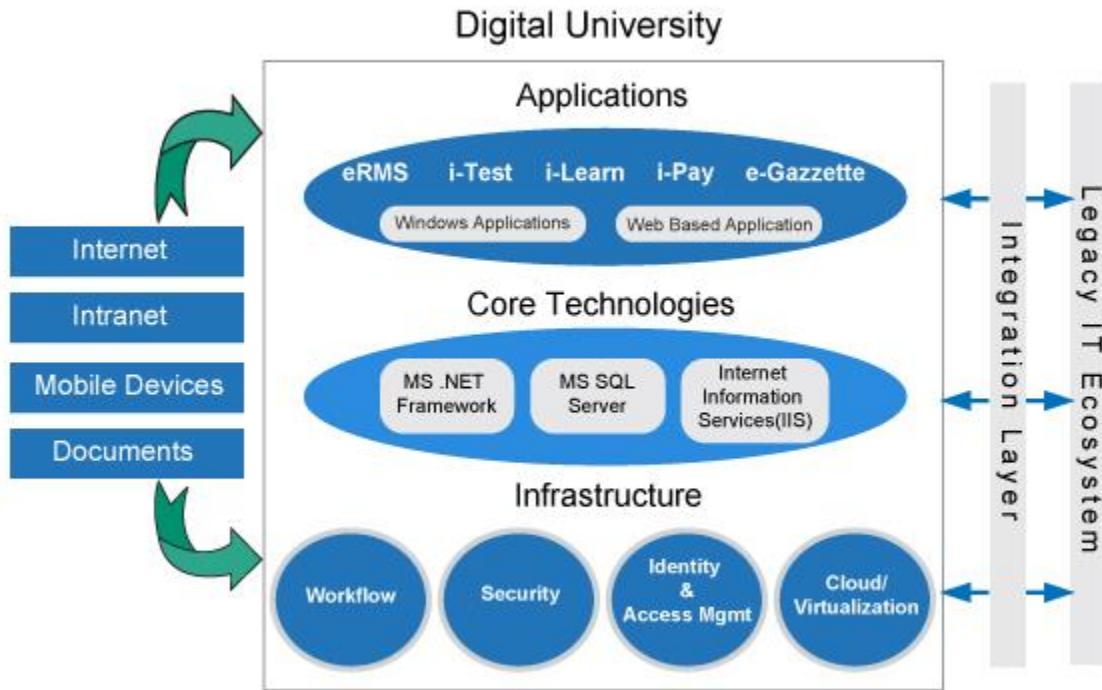


Figure 7 : Digital University

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