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A Complete Digital Transformation Partnership

With a top 100+ year old research university in the World

1

Legacy Application Transformation with Application Management, Validation and Modernization

2

Leveraging Newer Technologies with Cloud, Infrastructure Optimization & DevOps

3

Bringing in the Domain Expertise Towards Data Transformation for ERP Deployment

Client Profile

The client is a 100+ year old public, deemed, research university for higher education and research in science, engineering, design, and management. It is ranked second in the world in terms of citations per faculty and is one of the top research universities in World.

The client (the university) has several internal systems, softwares and platforms in place to help its students, faculty, vendors, visitors etc., with various functions.

The university partnered with IMSS to help revamp its solutions, integrate disparate solutions to work together seamlessly and develop new solutions on various platforms where necessary.

Summary

In order to cater to the growing needs and changing technology landscape, the university executed the project to conduct the system and feasibility study of its applications, provide enhancements to applications, re-engineer and enhance the functionalities.

The multi-phased and multi-year project started with just setting the systems right, produce accurate data with minor upgrades. Subsequently multiple projects were spun off with overall objective expanded to have an end-to-end ERP implementation and migration of applications and data.

Opportunity

The university has multitudes of independent applications covering the entire student life cycle management including the aspects of a admissions, campus, education, research, human resources, equipments, laboratories and administration functions evolved over a period of several decades of computing with multiple programming languages, operating systems , and databases.

These disparate systems have become
- Difficult to maintain as the expert programmer not available, hardware/OS obsolete.
- Difficult to enhance the functionality or scaling up as source code. documents, design documents poorly maintained or unavailable.
- Cost of operations and failure is very high with poor reliability.
- Maintain focus on research aspects of the university instead of building and maintaining an ERP.

The below systems were identified for transformation:

- Online Admission Management System
- Student Management (Post Admissions and enrolment)
- Course Management / Planning
- Research Conformance
- Course & Instructor Feedback System
- Purchase and Finance (Including online fee collection and management)
- Hostel / Quarters Management Systems

- Main Website and Resource information (Key front end to the University)
- Content Management Systems (for Course material, White papers, R&D)
- Inventory Management
- Employee and HR Management
- Research and Development
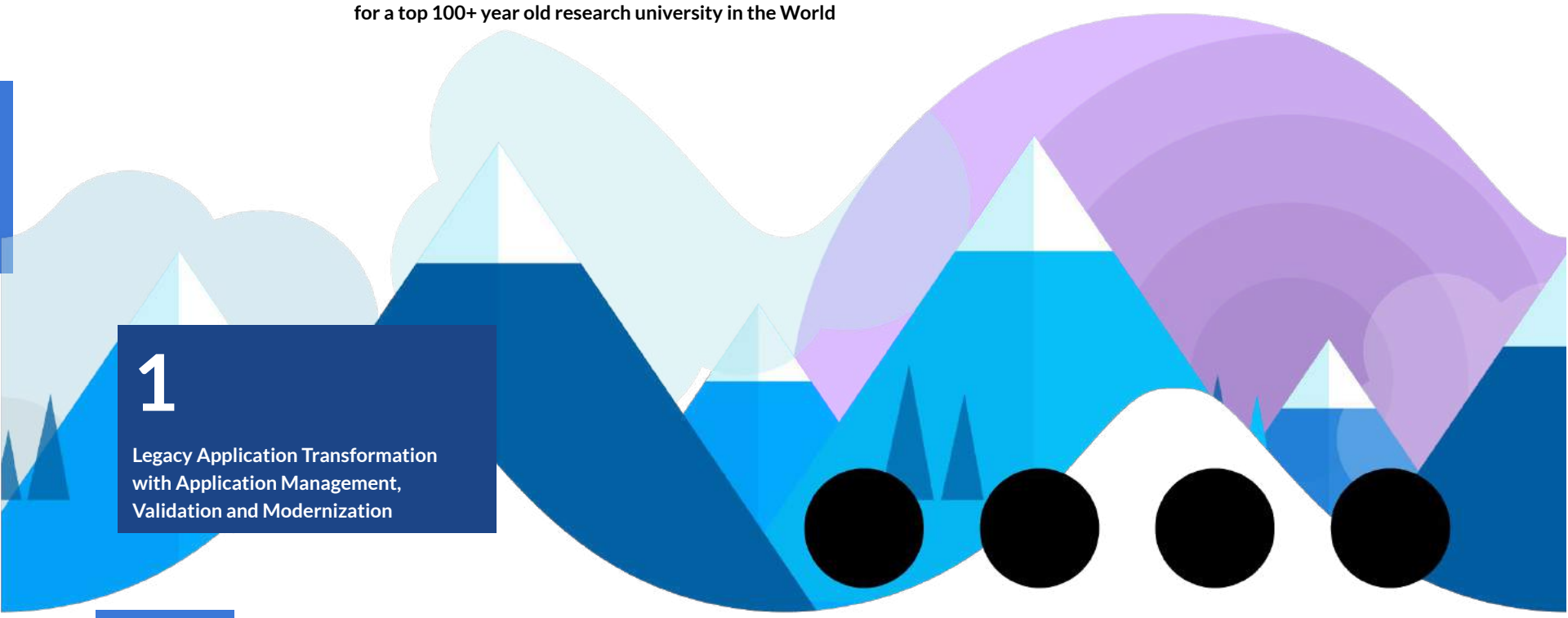- Hospital Management & Information System

A Case Study

Application Management, Validation & Re-engineering

for a top 100+ year old research university in the World

1

Legacy Application Transformation with Application Management, Validation and Modernization

Solution

IMSS delivered validation, re-engineering and modernization services. Services delivered include:

- Consolidation of individual application source code and corresponding available documentation from varied sources
- Compilation / Setup and publishing with preliminary validation of the above-mentioned applications individually.
- Required exploration / analysis and discussions done, to propose an approach for migration of identified applications to an integrated architecture.
- All applications were ported to a later environment i.e. Microsoft Server and .NET frameworks
- Study / understanding and testing of the applications with the available documentation in progress.

- Creation of detailed Application Guides for all applications in progress. Details as part of this exercise will aid/serve as inputs for the proposed approach for application database integration.
- Miscellaneous minor tasks like development of encryption/decryption and other support utilities were done.
- Preliminary meeting / discussions were also done with Microsoft personnel on probable cloud implementation and architecture
- The team interacted with business users to understand usage, pain points, desired enhancements etc.
- Creation of process documentation / identification of Metrics in progress.
- Network and Infrastructure Setup
- Cloud enabling of re-engineered applications.

Results

1. Consolidation of legacy systems running under diff OS and technologies onto single platform
2. Cloud enabling legacy systems and stabilizing the applications
3. System and technology feasibility and interoperability study
4. Providing enhancements for various applications
5. Re-engineer and enable the applications with a single sign-on (AD), common enterprise-wide framework, common enterprise-wide database and cloud enablement using contemporary technologies.
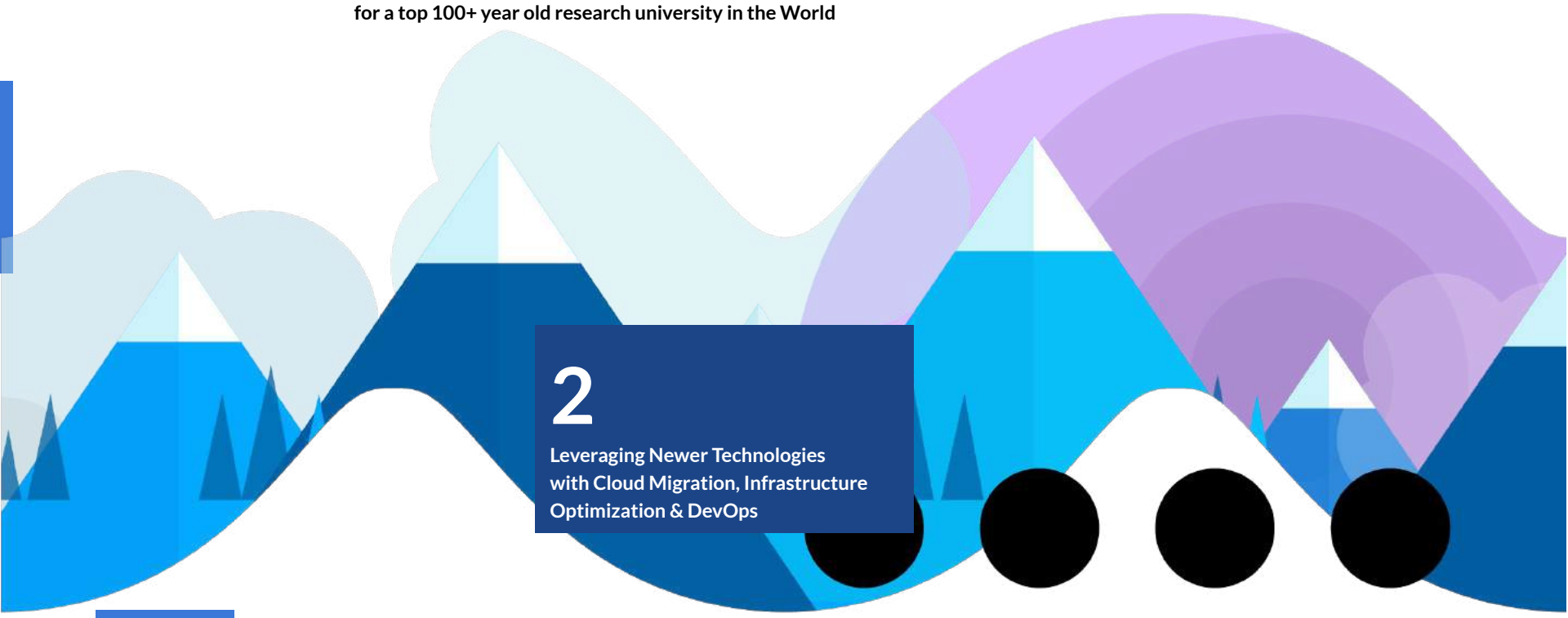6. Verification & Validation with bug fixes with over 300+ issues identified and fixed.

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A Case Study

Leveraging Newer Technologies

for a top 100+ year old research university in the World

2

**Leveraging Newer Technologies
with Cloud Migration, Infrastructure
Optimization & DevOps**

A subscription based broadcast system

Summary

This project is to revamp the university's broadcast system that delivers thousands of messages to various groups of people.

IMSS delivered a totally revamped subscription-based broadcast which is configurable with various categories of the messages so that only relevant messages get delivered to individuals.

IMSS solution improved audience engagement with the messages and significantly reduced 'noise' compared to the legacy system.

Opportunity

The legacy broadcast system receives and dispatches hundreds of thousands of emails per day to audience. Many members of the university community suggested that several broadcast emails are of less relevance to them. And due to a large number of broadcast messages delivered everyday, important messages get overlooked at times.

The challenge is also to streamline messages originating from tens of departments within the university and integrate with low-code development platform for easy OTT development and deployment for further feature enhancements.

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Solution

IMSS has developed a subscription-based intranet broadcast system to mitigate this issue.

In this system, broadcast items are classified into different categories. Anyone wishing to receive broadcast emails of a certain category in his / her inbox needs to subscribe to that category.

Broadcast mails in categories that are not subscribed to can be viewed on the portal in the intranet.

Subscribe or Unsubscribe the required category and department.

Key Technology Stack
SharePoint, Power Automate, Design Workflows

FEATURES

- Broadcast emails based on department/category
- Intranet system implementation
- Collaboration with different departments
- Mails-Subscribe/unsubscribe based on department
- Email alerts for External users
- Calendar events for quick reference
- SSO Integration to connect different applications
- Profile Management
- Restricted Staff/office subsite
- Students forum
- Year/department wise document repository
- Versioning of documents/files/sites
- Record Management
- Active Directory credentials

Results

With IMSS help the university now has a more manageable message delivery system with enhanced and streamlined flow with significant ease for all stakeholders.

Streamlined 50+ departments in a single window for subscription/unsubscription options.
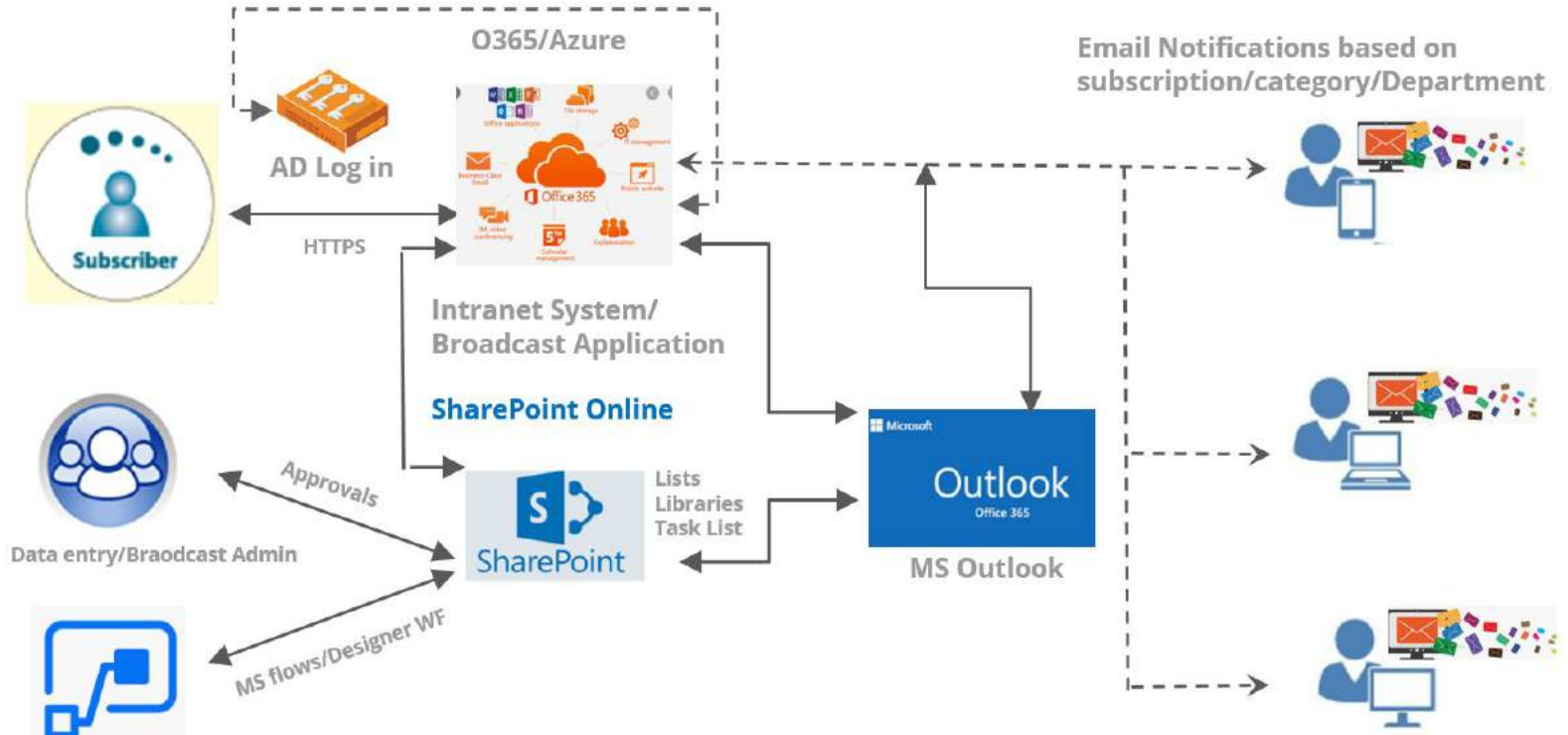
Responsive design based on devices with Outlook integrations for desktop & mobile.

Power Automate for approval based Email alerts.

Maintained process oriented deployment policies and SharePoint tenants for UAT and live deployments.

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Methodology

O365/Azure

AD Log in

Subscriber

HTTPS

Intranet System/
Broadcast Application

SharePoint Online

Data entry/Braodcast Admin

Approvals

MS flows/Designer WF

SharePoint

Lists
Libraries
Task List

Microsoft Outlook Office 365

MS Outlook

Email Notifications based on
subscription/category/Department

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Development of Vendor Management System

Summary

This project is to revamp the university's vendor management system that handles hundred of vendors shortlist process.

IMSS delivered a totally revamped digitized vendor management system which is collaborated with various departments to shortlist and new vendor services creation process which will be completing in a short period of time by avoiding the delay process to short time.

Opportunity

The Vendor management and creation process will be lengthy/manual process and collaborating with each vendor information, registration process, verification of each vendor certifications will be taken more than three to four months to verify each one.

Many vendors submitted physical forms will be missed during the selection process and raised many complaints when selection process undergoing the shortlist process with each department physically.

The challenge is also to streamline by digitalized the forms and collaborating with respective department by reducing the time from months to days and communication will be send over mails in minutes for selection/rejection process.

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Solution

IMSS has developed a digitalized vendor management system to mitigate this issue.

In this system, capturing each vendor basic information like capacity of staff, registration certificate verification, vendor bank details, bidding price and various details based on respective services which will be shared with different departments for selection process and centrally stored all selected vendors information for all departments references.

Purchase section and payment section will be streamlined for regular payment sections with workflow-based approvals for the ease of vendor management system .

Key Technology Stack
Stack SharePoint Online, Power Automate, Designer Workflows, Office 365

Digitized vendor management system centrally stored vendor details for all departments reference and work-related biddings.

Easy of vendor payments with workflow level of approvals

Transparency in vendor shortlist process Immediate notifications for vendor selection/rejection process.

Block listing vendor details based on quality work process.

Results

With IMSS help the university now has a more manageable and digitalized vendor selection system with enhanced and streamlined flow with significant ease for all stakeholders.

Streamlined and digitalized approach from physical and manual verification of documents.
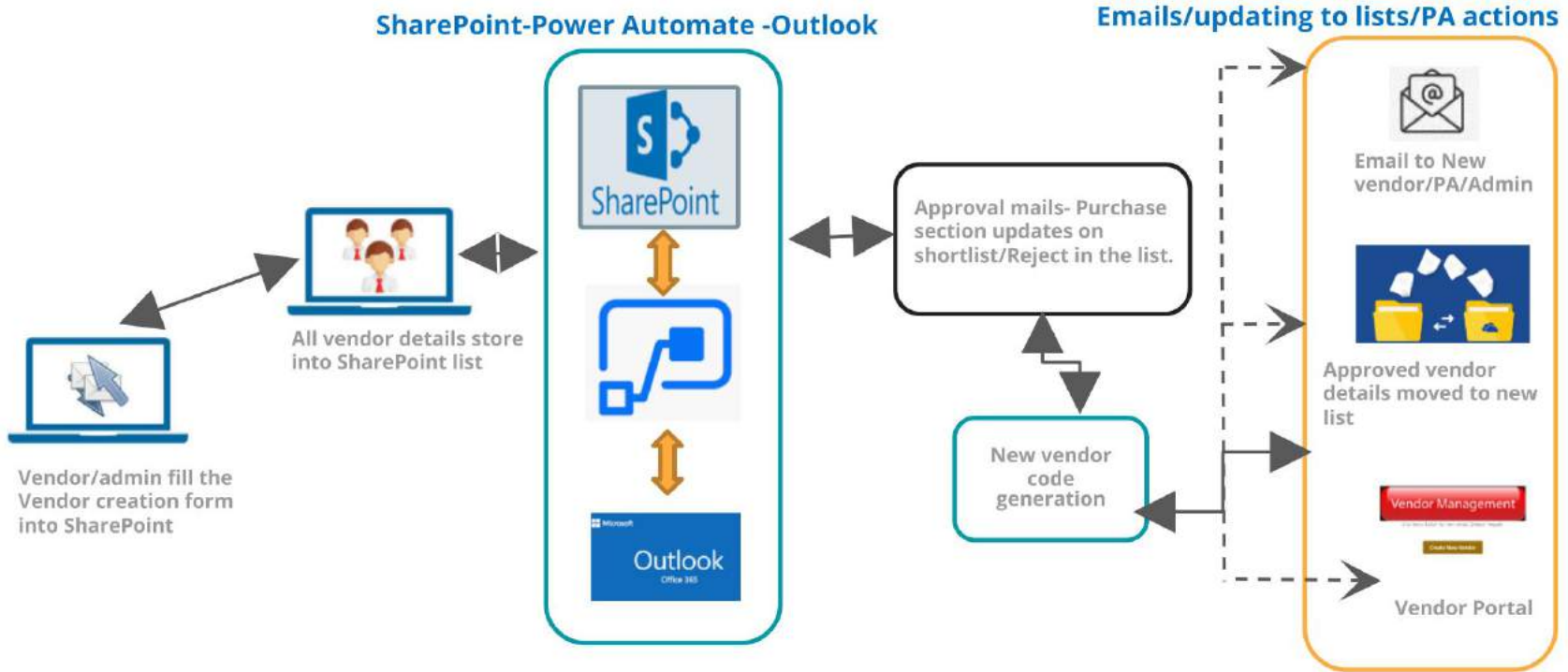
Transparency in vendors selection process with all departments..

Power Automate for approval-based vendors selection, payments and notification alerts.

Maintained process-oriented vendors selection process for ease of doing.

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Methodology

SharePoint-Power Automate -Outlook

Emails/updating to lists/PA actions

All vendor details store into SharePoint list

Vendor/admin fill the Vendor creation form into SharePoint

Approval mails- Purchase section updates on shortlist/Reject in the list.

New vendor code generation

Email to New vendor/PA/Admin

Approved vendor details moved to new list

Vendor Management

Vendor Portal

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Implement DevOps & Ensure Delivery Quality

Summary

This project is to ease the requirement management and in turn optimize the schedule and quality of deliveries.

IMSS identified and integrated various DevOps tools and practices to efficiently manage the projects.

By the end of the project, IMSS made it easier for the client and their development teams to streamline the requirement receival process, tracking and project management for better resource management, inculcate better project discipline using DevOps tools and traceability from requirement to closure.

Opportunity

IMSS has been engaged in maintenance of multiple applications which are catering to core academic functions of IISc. IMSS team has been delivering enhancements and support on these applications.

Generally, the requirements are received from multiple stakeholders through emails, meetings and verbal communications.

Often, it becomes difficult to manage the requirements effectively, which in turn affecting the delivery schedule and quality of delivery.

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Solution

IMSS integrated various DevOps tools and processes to achieve the below.

- Requirements should be captured at a central location and team members for performing their respective activities.
- Processes to be defined for addressing the conflict between support and development activities.
- Process Discipline like Daily Stand-Up, Review Process, Periodic project Reviews
- Building of test cases for the requirements.
- Time tracking for better resource management
- Source Code Management
- Traceability from Requirement to closure.
- Automation of builds and deployment.

Tools and Practices

- *PLAN & CODING:*
  JIRA, AIO Time Sheet, Xray Test Management, GitLab

- *QUALITY MANAGEMENT:*
  Maven, MS Build, Nunit, Xray Test Management

- *DEPLOYMENT MANAGEMENT:*
  Ansible, Puppet

- *MONITORING:*
  JIRA Dashboards, Auto Status mails team, Auto Build Mails , Auto Unit test mails, Auto release notes.

- *INTEGRATION MANAGEMENT:*
  Bamboo, Jenkins

Results

- 90% shift in team focus shift from operations to technology.
- 100% automation of weekly / monthly report submission to respective reporting managers.
- 100% automation of team velocity calculation - burnt story point w.r.t sprint and automate reporting.
- 100% automation of creating the build upon code check-in to source control and automatically perform unit-tests and produce results.
- 100% auto-generation of release notes w.r.t. product deployment.
- 100% automation of bi-directional traceability matrix management.
- 90% automation of test life cycle management - test plan, design, execution and reporting.
- 85% reduction in manual monitoring and project management.

Solution

Cloud Migration, Infrastructure Optimization

- Database access control.
- Realtime tracking of enhancements and issues.
- SSL implementation for all applications.
- Updating academic applications to newer platforms for future scalability.
- Hosting & testing of apps on Cloud.
- Database migration from MySQL to MS SQL.
- Application upgradation and migration to Azure Cloud.
- Migration of various departmental websites (from a wide range of activities including fitness, pension, brain computation, security research, visual analytics, microelectronics etc.,) to Azure Cloud.
- Technical support for most of the websites within the University (apart from the setup and configuration of SSL, DNS, Virtualhost etc.,)
- Development of new portals like amenities portal, general grievances reporting portal, faculty reporting environment etc.,

Results

1. Over 120 websites have been migrated to Azure Cloud as part of infrastructure optimization.
2. End-to-end ERP implementation and migration of applications and data.
3. Many applications, websites and systems were re-architected and migrated to cloud with necessary security measures in place with 3-tier architecture.
4. Major steps taken to optimize resource usage and cost.
5. Over 60 servers have been optimized into a single WAF. gateway for ease of security.
6. Multi-site Virtual Machines for different logins.

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IMSS | Digital | Automate | Accelerate | Assure

About IMSS
IMSS is a reliable provider of software services in Digital Automation, Application Development, Consulting & Outsourcing.

The insights and quality services we deliver help build trust and confidence in our customers. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people and for our clients.

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